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Seek: Composition Portfolio and Commentaries

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Submitted to the University of Dublin for the degree of D.Phil.

June 2010

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Abstract

This thesis serves as an accompanying commentary for a portfolio of ten musical compositions composed between 2005 and 2009. The works presented incorporate a broad range of forces and performance contexts, from live instrumental performer with electronics to multi-channel spatial works, string quartet to Javanese gamelan as well as bi-locational orchestral performance. A thread of compositional approach may be traced throughout the pieces, with a strong focus on the possibilities of timbre. A review of work is presented which aims to contextualize the concepts explored in the music, as well as a consideration of the individual concerns of the composer. Each work is individually discussed in relation to its approach and techniques used, with a consideration of the primary objectives outlined – texture, space and contrasting energies.

Acknowledgements

I am deeply indebted to my supervisor Donnacha Dennehy who has helped to nourish my growth as a composer over the years, inspiring in his joyous approach to composition and the musical experience.

I am grateful to all those who have supported my music, those who make me strive further towards the communicative nature of the act of composing – who have felt a connection to, or emotional affect from my work. This is perhaps one of the most profoundly rewarding aspects of being a composer, when one's initial idea has translated from the internal to the external and can take on a life of its own.

I would like to thank all at Trinity's Music and Media Technologies course and School of Music for their continuing support and encouragement, in particular Fionnuala Conway, Nora Moore, Dermot Furlong and Martin Adams.

I am also very grateful for the support of my family, friends and fellow members of the Spatial Music Collective.

Table of Contents

Abstract

Acknowledgements

Table of Contents

List of Figures

List of Tables

List of Compositions

Chapter One: Review of Work 1

1.1.1 Introduction 1

1.1.2 Compositional Interests – Review of Work: Texture 2

1.1.3 Acoustic/Electronic: Electronic influence on Acoustic writing 2

1.1.4 Acoustic and Electronic Combinations 3

1.1.5 Colour 4

1.1.6 Glissando 5

1.1.7 Sound Morphing 6

1.1.8 Ambience – Immersion 7

1.1.9 Harmony/Purity 8

1.1.10 Damaged Tape Cassettes – Aesthetic of Low Fidelity 8

1.1.11 Noise 9

1.2 Spatial Music 10

1.2.1 Early Developments in 20th century Sound Spatialization 11

1.2.2 John Chowning *Turenas* (1972, for four channel tape) 12

1.2.3 Spatial Choirs 13

1.2.4 Spatial considerations in Stockhausen's acoustic work: *Gruppen* and *Carré* **15**

1.3 From Pattern to Process: Variation Form **16**

1.3.1 Post-Minimal Permutations **17**

1.3.2 Climax **19**

1.4 Conclusion – Points of Contact **19**

Chapter Two: Texture - Space - Energy: My Compositional Palette **22**

2.1.1 Introduction **22**

2.1.2 Texture **22**

2.1.3 Aural Illusion **22**

2.1.4 Auditory Scene Analysis **23**

2.1.5 Noise: Electronic Experimentation, Sonic Scattering – Granulation **24**

2.1.6 A Distorted View – Beauty made Strange **25**

2.1.7 Pure Tone versus Noise **25**

2.2 Spatial Aesthetics **27**

2.2.1 Tracing Shapes in Sound - Visual made Spatial **28**

2.2.2 Localisation **29**

2.2.3 Spectral Space **29**

2.4 Kinetic Energy **30**

2.5 Conclusion – Parameters **32**

Chapter Three: *do you remember the planets?* for Viola and Tape **33**

3.1 Introduction - Music of the Spheres **33**

3.2 Solo Instrumental Writing - Plurality within Singularity **35**

3.3 Viola Writing and Formal Considerations 36

3.4 Electro/Acoustic - The Hyperinstrument 38

3.5 Electro/Acoustic Interplay in *do you remember the planets?* 39

3.6 Conclusion 42

Chapter Four: *stop what's started* for four-channel tape 44

4.1 Introduction 44

4.2 Spatial movement 44

4.3 Formal Design 45

4.3.1 Calm after the Storm - from Chaos to Rest and back again 47

4.3.2 Localisation versus Immersion 50

4.4 Conclusion 51

Chapter Five: *seek* for eight-channel tape 52

5.1 Introduction 52

5.2 A Lot from a Little - Sound Source Progression within *Seek* 54

5.3 Spatial Envelopment 54

5.4 Conclusion 56

Chapter Six: *latitude longitude* for String Quartet 58

6.1 Introduction 58

6.2 Approaches to String Quartet Composition – Maconchy 58

6.2.1 Bartók 59

6.3 *Latitude Longitude*: Mvt I (Double-stop Etude) 60

6.3.1 Mvt II - Endless Melody Etude 64

6.3.2 MVT III - Pizzicato Etude 66

6.3.3 MVT IV - Harmonic Etude 69

Chapter Seven: *Fall Approaches* for Choir and Eight-channel tape 72

7.1 Introduction 72

7.2 Call and Response - Structural Considerations 73

7.3 Soon we will not see the sun - Text setting and Icelandic connection 76

7.4 Conclusion 77

8.1 Chapter Eight: *fiol* for String Trio 79

Introduction 79

8.2 Emotional Affect –Tension and Release 80

8.3 Conclusion 86

Chapter Nine: *nikuda* for ensemble 88

9.1 Introduction 88

9.2 Pattern Permutation 89

9.3 Breaking Point 92

9.4 Conclusion 94

Chapter Ten: *eriu* for Javanese Gamelan 95

10.1 Introduction 95

10.1.1 Satie and the minimal aesthetic 95

10.2 Composing for gamelan 97

10.2.1 Instrumental considerations 98

10.2.2 Notation and Tuning Systems 100

10.2.3 Communal Expression 100

10.3 The gamelan in my life - background to composing *eriu* 102

10.4.1 *eriu I* 103

10.4.2 *eriu II* 105

10.4.3 *eriu III* 106

10.4.4 Conclusion 106

Chapter Eleven: *turn* for Orchestra and Ensemble 107

11.1 Introduction 107

11.2 Turn as the earth and the moon turn - the use of Rumi Poetry 108

11.3 Timbral Considerations 109

11.4 Harmonic Morphing 110

11.5 Bi-locational Composing 113

11.6 Structural Issues 113

11.7 Orchestral Considerations 116

11.7.1 Conclusion 120

Chapter Twelve: *numarimur* for two voices and electronics 121

12.1 Introduction 121

12.2 Medieval resonance 122

12.3 Oliveros - Reverberation as a Compositional Parameter 122

12.4 Electronic Component - Numarimur I 123

12.4.1 Numarimur II 123

12.5 Icelandic song 124

12.6.1 *numarimur I* 125

12.6.2 *numarimur II* 127

12.7 Conclusion 130

Chapter Thirteen: Conclusion 131

13.1 Introduction 131

13.2 Think/Feel - Music and Inspiration 131

13.3 '21st-century Schizoid Music' 133

13.4 Future Work 135

Bibliography

Appendix - Scores

List of Figures

Fig 1.1 Xenakis' graph plotting paths of glissandi in "Pithoprakta," bars 52- 60.....6

Fig.1.2 Spatial Trajectories in Chowning's *Turenas*.....12

Fig. 1.3 Waveform and spectrogram of Chowning's *Turenas*.....13

Fig 1.4 Interior of St. Mark's Cathedral Venice displaying opposite galleries.....13

Fig 2.1 Grouping Principles in Auditory Scene Analysis.....23

Fig.3.1The Intervals and Harmonies of the Spheres from *The History of Philosophy* (1655)..33

Fig. 3.2 *do you remember the planets?* Viola theme B.6-11.....35

Fig. 3.3 Viola frantic to calm.....36

Fig. 3.4 Viola voice leading.....41

Fig. 4.1 Waveform and harmonic spectrum of *stop what's started* 44

Fig. 4.2 Pitch material used in second section of *stop what's started*.....47-8

Figure 5.1 *Seek* violin source melody.....51

Figure 5.2 Order of spatial entry from *seek* opening.....54

Fig. 5.3 High frequency 'spikes' representing short 'glitch' granules, mid-*seek*.....54

Fig. 5.4 Unusual spectral display – extreme ascending glissandi in channel 6 of seek.....55

Fig. 6.1 Opening bars of *Latitude Longitude,* mvt I.....60

Fig. 6.2 Raucous to calm in *Latitude Longitude,* mvt I.....61

Fig. 6.3 Mvt I B material presented in viola.....61

Fig. 6.4 Moving away from double-stops, introduction of viola glissandi.....62

Fig. 6.5 Registral expansion with obsessive repetition in viola – mvt I conclusion.....63

Fig. 6.6 Opening violin I melody of mvt II.....64

Fig. 6.7 Rhythmic unity in mvt II – momentary alignment of parts.....65

Fig. 6.8 Rhythmic deviation in mvt III – syncopation in viola and violin I.....66

Fig. 6.9 Rhythmic deviation in violin I, with overall harmonic stability.....67

Fig. 6.10 Opening bars of mvt IV.....68

Fig. 6.11 Dovetailing between parts in mvt IV.....69

Fig. 6.12 Asychronicity leading to first moment of alignment in violin I and viola.....70

Fig. 7.1 Dark Icelandic landscape – visual inspiration for *Fall Approaches*..... 75

Fig. 8.1 Norwegian Hardanger fiddle with sympathetic strings.....79

Fig. 8.2 *fiol* opening.....79

Fig. 8.3 *fiol* expansion, with violin 'slow air'.....81

Fig. 8.4 *fiol* glissando morphing.....83

Fig. 8.5 Bartók - sketches for *Music for Strings, Percussion and Celesta,* mvt I.....84

Fig. 8.4 *fiol* final canon displaying entry of 'rubato-like' melodic line in cello.....85

Fig. 9.1 *nikuda* opening system displaying pattern permutation.....88

Fig. 9.2 *nikuda* weaving patterns with added bass line - registral extremes in bowed cymbal and bass.....90

Fig. 9.3 Disparate parts beginning to converge – aided by bass clarinet repetition.....91

Fig. 9.4 Momentum building through shifting layerings of repetition, with drumkit asymmetric interjection.....93

Fig 10.1 Central Javanese gamelan instruments (from J T Titon (ed.) Worlds of Music, 235)...97

Fig.11.1 *turn* harmonic progression.....110-1

Fig.11.2 Venice ensemble increase in activity against slow-moving Dresden orchestra.....113

Fig.11.3 'Mechanistic'rapid piano and half-speed harp, with syncopated line passed from celli to violas to violin I.....114

Fig.11.4 Orchestrating a crescendo near the end of *turn*.....117

Fig.12.1 Glacial Icelandic landscape as inspiration for *numarimur*.....123

Fig.12.2 Opening of *numarimur*.....125

Fig.12.3 *numarimur* – registral extremes and wide harmonic spacing between live and recorded voices.....126

Fig.12.4 *numarimur II* – dark low range with close dissonance between voices.....127

Fig.12.5 *numarimur II* – 6-note chords through layering, final section.....128

List of Tables

Table 3.1 Structure of *do you remember the planets*?.....36

Table 4.1 Structure of *stop what's started*.....45

Table 7.1 Structure of *Fall Approaches*.....72

Table 7.2 Text setting in *Fall Approaches*.....75

Table 11.1 – Rumi structure of *turn*.....107

Table 11.2 – *turn* overall form.....115

List of Compositions

do you remember the planets? **for Viola and tape playback (2005)**

stop what's started **for four-channel tape playback (2006)**

seek **for eight-channel tape (2007)**

latitude longitude **for String Quartet (2007)**

Fall Approaches **for Choir and eight-channel tape (2007)**

fiol **for String Trio (2008)**

nikuda **for ensemble (2008)**

eriu **for Javanese Gamelan (2009)**

turn **for Orchestra and Ensemble (2009)**

numarimur **for two voices and electronics (2009)**

Chapter One: Review of Work

1.1.1 Introduction

From a young age I was fascinated by sound, growing up on a dairy farm on a remote peninsula on the southern Irish coastline. The sounds which had most significance were milking machines on the farm and foghorns from the nearby lighthouse. The milking machine had a percussive, rhythmic quality combined with a harsh metallic 'noisy' rich inharmonic spectrum. This quite industrial, machine-like sound world had a major impact on the development of my sonic sensibility.

These are not perhaps the sounds one may immediately associate with the countryside or nature, but more mechanical. This connects to my way of approaching the combination of acoustic and electronic - the marrying of nature and technology, a recurring concern in my work.

The compositional concerns evident in the works presented in this thesis involve a focus on texture and space, with an interest in the dichotomy of purity and noise, and differing forms of energy - chaos versus stasis. Another significant feature is my approach to acoustic writing, which has evolved from sonic experimentation in the field of electronic music.

I feel a strong connection to the work of composers whose ideas have developed from a curiosity about the internal properties of sound, and aspects of listener perception. The concepts of those composers to which I most feel an affinity (Review of Work) are discussed in Chapter One, followed by a discussion of my own individual compositional palette in Chapter Two. Commentaries on my portfolio compositions are then presented in the succeeding chapters, with a conclusion reflecting on my impetus for composing, assessing current trends and considering possibilities for future work. Of particular focus within this chapter are the aesthetics of texture, space and process.

1.1.2 Compositional Interests – Review of Work

Texture

There is an interesting parallel between the New York-based composer Annie Gosfield's approach and my own, which stems from a deep-rooted fascination for found sound:

I've always been captivated by sounds that aren't considered music. Any barrier between music and noise has always seemed artificial to me. Incorporating these sounds in my music is as natural as choosing a pitch set or creating a rhythmic figure. It simply means working with a broader palette of sounds and a deeper pool of influences. Many of my compositions explore the inherent beauty of non-musical sounds and are inspired by such diverse sources as machines, destroyed pianos, warped 78 records, and detuned radios. There was such a variety of music in the house when I grew up it opened my ears to non-musical sound as well, and as a child I enjoyed listening to the television tuned between channels, cars driving by, and creaking floorboards in the same way I enjoyed music.[1]

Similarly to Gosfield, my own experience of environmental sonic awareness led to my interest in the combination of recorded 'found' sound and instrumental acoustic sound. This resulted in a search for common sonic characteristics, points of contact based on the nature of the timbre itself, rather than its origin, the 'white noise' created from the soft unpitched bowing of a violin's strings resembling static between stations on a radio.

1.1.3 Acoustic/Electronic: Electronic influence on Acoustic writing

There are many notable examples of the influence of electronic compositional concepts and sonic experimentation upon composers working in an acoustic context. There is evidence of this within the work of Ligeti and Saariaho, whose experience of working in the electronic studio had major impact on their approach to acoustic writing – often resulting in a stronger focus on colour, timbre, texture and the inner details of sound.

The electroacoustic music of the 1960s and 1970s, made possible for the first time by analogue devices and digital computers, encouraged composers to think differently not only about music and the process of composition but also

[1] Annie Gosfield, unedited transcript of interview by Julian Cowley, *The Wire* 255, May 2005, http://www.anniegosfield.com/the.wire.html accessed January 5th 2010

about the sensation of the musical experience…*musique concrete* led composers to explore timbre, textures, time flow, transitions, phase shifts, and sound morphs.[2]

Mario Davidovsky, a significant figure in electronic music, describes the effect electronic music had on his acoustic writing: "...and then when I would return to write chamber music and orchestral music, I was incredibly influenced by all these new ideas of how sound could behave." He also regards this development to have had a major impact on the evolution of new music: "We can say that twentieth century music has been greatly influenced by electronic music, whether the composers were using electronic instruments or not".[3]

The influence of electronic experimentation in the work of Kaija Saariaho is noted by the composer herself, who has developed a unique timbral language evolving from the search for points of contact between acoustic and electronic sound. This can often result in a form of aural trickery, where the timbral merging is such that it is difficult to discern between the sound's acoustic or electronic origin, with electronics being considered an extension of the instrumental sound.

1.1.4 Acoustic and Electronic Combinations

Paul Nelson refers to the timbral combinations achieved by Saariaho when writing for solo performer and live electronics:

In general, Saariaho uses electronics to enhance, rather than supplant the music which is present in acoustic performance. The electronic effects are always complementary to the sound of the instrument, never fighting or opposing the performer. Rather, the performer and the electronics work together to create an enhanced, and quite beautiful sound world which would be difficult, if not impossible, to achieve by a single performer alone.[4]

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[2] Daniel V. Oppenheim, from Foreword to *Composing Music with Computers* by Eduardo Reck Miranda, Focal Press, Oxford, 2001

[3] Mario Davidovsky, Telephone interview by Bruce Duffie. Tape recording, Chicago, IL, 4 February 1994 from Sarah Louise Bassingthwaighte *Electroacoustic Music for the Flute*, University of Washington School of Music Seattle, 2002, http://www.subliminal.org/flute/dissertation/biblio.html accessed January 10th 2010

[4] Paul Nelson, 'The Uses of Electronics in Three Works by Kaija Saariaho', 2004 http://www.pnelsoncomposer.com/writings/KaijaSaariahoAnalysis.html accessed January 21st 2010

Nelson goes on to discuss the extension of cello timbre through the use of electronics in *Prés,* "It is as if the cello has additional sympathetic strings (such as with a viola d'amore) which are excited by the player and ring well after the player has finished."

1.1.5 Colour

It is evident that 'colour ' has long been considered an important compositional parameter for exploration, with Schoenberg observing that the distinction between pitch and tone colour (timbre) could not be made. He stated that the perception of pitch relied on its timbre or colour and the pitch was only one dimension of this, coining the term 'Klangfarbenmelodien' or 'tone-colour melodies'. An example of this may involve the passing of a melody line from one instrument to the other (explicitly explored by Schoenberg in the *Farben (Colour)* movement of his *Five Orchestral Pieces,* therefore emphasizing the varying emergent timbres.

Richard Steinitz describes the significance of Ligeti's distinctive timbral explorations noting "in *Apparitions* and *Atmosphères* Ligeti created his trademark, the unmistakable 'Ligeti sound' that would define his music for the next two decades".[5]
Ligeti himself has acknowledged the influence of his Cologne electronic studio experience on work such as *Atmospheres* and *Requiem*, describing his musical goal as an emphasis on tone colour. His concept of 'micropolyphony' was inspired by additive synthesis techniques (as well as Renaissance polyphony with its emphasis on equality of parts), where dense textural sound mass can be created as a result of layering of lines, canons with microscopic time-lags between soft almost imperceptible entries. This can create the aural illusion of a morphing sound mass, where individual voicings are rendered indistinguishable.

Pitch restriction and emphasis on slow-moving timbral evolution is significant in much of Ligeti's micropolyphonic work from the 1960's, most notably in the opening of his *Cello Concerto* (1966). The work begins with a cello note marked *pppppppp,* 'entry inaudible as if coming out of nothing'. As the opening E pitch increases in dynamic, is taken up by other instruments, and the pure sound thickened with harmonics, then the F above is added, followed

[5] Richard Steinitz, *Gyorgy Ligeti: Music of the Imagination*, Faber and Faber Limited, London 2003, p.98

by more close intervallic pitches to form a small chromatic cluster.
While the development of his textural concepts through micropolyphony has its roots in the equality of voices in Renaissance polyphony and the additive synthesis experiments of Koenig in the Cologne studio, here, Ligeti is also perhaps experimenting with the idea of Klangfarbenmelodie, development through timbre changes alone rather than on pitch/harmonic change.

Within the work of Stockhausen, Trevor Wishart discusses a compositional approach which is similarly concerned with exploring the internal detail of sound:

Stockhausen's *Carré* illustrates an attempt to deal with the internal morphology of sound-objects. The piece is largely concerned with relatively sustained events in which there is internal motion, for example the slow glissandoing of trombones and voices in the opening moments.[6]

1.1.6 Glissando

Wishart also discusses the prominence of glissandi within Xenakis' compositional technique in *Pithoprakta*, an interesting example of what Wishart terms 'non-lattice-based' musical organization:

For anyone who has ever heard a pitch portamento or a tempo accelerando, both pitch and tempo can take on an infinitude of possible values and may vary continuously over this continuum. Notation however, imposes a finite state logic upon the two domains. The result is that the music, at least as seen in the score, appears to take place on a two-dimensional lattice.[7]

The complex result of Xenakis' layering technique moves far beyond this lattice concept:

Xenakis has grouped individual short glissandi on the string instruments into larger arching glissandi (glissandi of glissandi!). At the same time the sounds are grouped into three contrasting string sonorities and the three resulting timbre streams arch up and down independently. In this way a pitch-based counterpoint of timbre-streams is created which in no sense depends on the typical pitch lattice of conventional music. At the end of the section, the glissandi

---

[6] Trevor Wishart, *On Sonic Art*, Ed. Simon Emmerson, Harwood Academic Publishers, 1996, p.34
[7] Ibid

of glissandi thicken out and unfold into a sustained chord, a wonderful process of pitched evolution which has no real parallel in typical lattice aesthetics.[8]

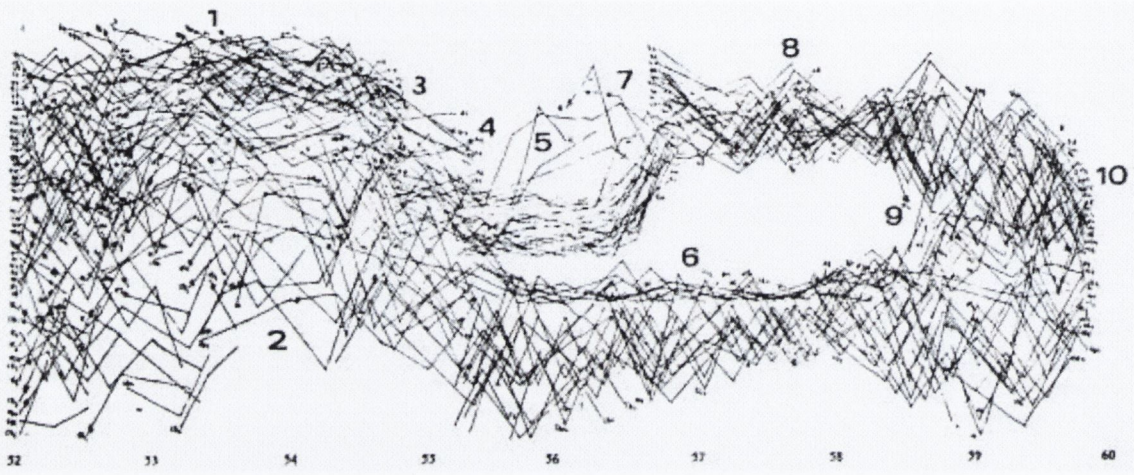


Fig. 1.1 Xenakis' graph plotting paths of glissandi in *Pithoprakta*, bars 52-60. Each line represents a string instrument listed on the vertical axis, beginning with the lowest register at the bottom to the highest at the top while the horizontal axis represents time. (Nouritza Matossian, *Xenakis*, London: Kahn & Averill 1986, p.98)

1.1.7 Sound Morphing

A similar 'sound morphing' aesthetic is evident in Morton Feldman's *Coptic Light* for Orchestra. This has a very dense texture throughout, making it difficult to isolate small details. It demonstrates dovetailing techniques, where as the sound of one instrument fades and decays another instrument takes over, morphing into one another in slow motion.

There is much discussion of the connection between the concepts of Mark Rothko and Feldman. The overall aural effect achieved in *Coptic Light* is similar to some of Rothko's painting techniques, where colour is applied thickly yet edges remain blurred. Within each section of the orchestra, pitches are echoed back and forth in asymmetric rhythms. As a result, there is stability in the harmony for long sections, but this is presented in colourful waves of sound, where the movement of pitches around the orchestra makes it difficult for the listener to focus on a specific sound.

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[8] Ibid, 23, 32

Feldman was a collector of Middle Eastern rugs, and often based his compositional techniques on their asymmetrical patterns. In his own program notes, he explains that *Coptic Light* was inspired by ancient Coptic textiles on display at the Louvre. He also refers to Sibelius's comment that the primary difference between writing for orchestra and piano is that the orchestra has no pedal. In *Coptic Light*, Feldman attempts to achieve a form of 'pedal sustain' through orchestral morphing techniques – acoustic immersion.

1.1.8 Ambience - Immersion

A point of reference for an interest in the immersive use of sonic envelopment in an electronic context is Brian Eno's concept of ambient music and immersion: "We wanted to use music in a different way – as part of the ambience of our lives – and we wanted it to be continuous, a surrounding. And immersion was really the point: we were making music to swim in, to float in, to get lost in".[9]

The immersive nature of the sonic experience is also of concern in the multi-layered 'drone' work of Phill Niblock, who often works with recordings of sustained pitches of long duration, multi-tracked to form a dense sound mass. These may develop from recordings of acoustic string or wind instruments which have been edited to remove the attack and decay, focusing on the steady state portion of the sound, with crossfades used to achieve the effect of a seamless line.

A clear sense of rhythmic 'pulse' is avoided, yet pulsations emerge as a result of microtonal beatings between close frequencies. A sonic space for the listener is created, an immersive world for them to inhabit for the duration of the piece. Niblock describes his music as "architectural. The intent is to fill the space. It's non-frontal music, nonproscenium, anti-stage, not about an ensemble sitting in front of an audience, not about a single sound source. At least four speaker systems are desirable, arrayed around the periphery of the room, saturating the total space, engaging the air".[10]

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[9] Brian Eno, cited in *Audio Culture, Readings in Modern Music*, ed. Christoph Cox & Daniel Warner, p.94

[10] Niblock 1982, cited in 'Technological implications of Phill Niblock's drone music', Volker Straebel, *Organised Sound* 13(3): 225–235, 2008 Cambridge University Press.

1.1.9 Harmony/Purity

It is evident that the medieval organum of Leonin and Perotin has inspired the harmonic language of composers in recent times, from Steve Reich to Ligeti. Of particular note is the presence of pure fifth intervals within Ligeti's second Piano Étude *Cordes á vide* (*Open Strings*), 1985. While this is perhaps more directly related to the fifth sonority of open strings rather than a specific reference to organum, this piece is built from successions of perfect fifths which are predominantly presented in arpeggiations, but also sounded together with the soft pedal, akin to bowing softly open strings.

Xenakis has noted the discouragement of using parallel fifths within his own experience of composition study:

What counted above all was the row I had with Honegger. I was enrolled in his composition class at the École Normale. The students would bring their works, and he would critique them in front of everyone. I went there. I showed him a score. He played it and said,

"There you have got parallel fifths."

"Yes, but I like them."

"And there, parallel octaves."

"Yes, but I like them."

"But all this, it's not music, except for the first three measures, and even those..." And the madder he got, the madder I got. I thought that he was a free-thinking man. How could he make a thing out of parallel fifths, especially after Debussy, Bartók, and Stravinsky?[11]

1.1.10 Damaged Tape Cassettes – Aesthetic of Low Fidelity

A'lo-fi' aesthetic and use of microtonality is related to my interest in the work of electronica/ambient artists Boards of Canada, whose early work developed from constructing pieces inspired by the corroded sounding music found on the soundtracks of 16mm educational documentaries made by the National Film Board of Canada. Their work often incorporates use of dissonant, melancholic harmonies with an intentional low-fidelity aesthetic to the production. The melodic lines and layered harmonies often have a strong microtonal quality, similar to the sound produced from perhaps an old damaged tape cassette. In a world of clean, digital

[11] 'Xenakis on Xenakis', *Perspectives of New Music* 25/1-2 (Winter-Summer 1987), p. 20.

production this damaged 'imperfect' sound, with an almost 'analog' warmth evokes an atmosphere from another time and place. I am interested in this notion of 'imperfection' and noise, perhaps reflecting the innate 'flawed' aspects of human nature, its individuality and unpredictability.

1.1.11 Noise

I believe what composers most generally do is to compose their environments. From music's very beginning we have put into order the sounds we have heard...the industrial age is loud, and our music reflects it.[12]

The concepts of John Cage certainly resonate strongly with the idea of the potential and beauty of found sound from our environment, sounds considered to be 'noise' being explored as musical sound.

Whereas in the past, the point of disagreement has been between dissonance and consonance, it will be, in the immediate future, between noise and so-called musical sounds. Wherever we are, what we hear is mostly noise. When we ignore it, it disturbs us. When we listen to it, we find it fascinating. The sound of a truck at fifty miles per hour. Static between the stations. Rain. We want to capture and control these sounds, to use the not as sound effects but as musical instruments.[13]

Annie Gosfield, previously cited for her interest in found sound, has particularly been inspired by industrial and factory sound environments, most notably in *EWA7,* which evolved from a composer's residency combining music and industry, in Nuremberg, Germany.

EWA7 was inspired by machine and factory sounds: the scrapes, squeaks and bangs of metal, the ambient buzzes and whines of electric devices, and the imperfect rhythmic repeats of heavy machinery... I was particularly fascinated by the ever-changing sonic landscapes that occur in each factory as sounds shift, overlap and echo in the distance... Machine rhythms went in and out of phase, dynamics varied wildly, and in an environment of constantly shifting activity and noise, the frequency spectrum fluctuated from sub-audio rumbles to barely audible high-pitched whines....[14]

Gosfield has also discussed the impact her experience of recording factory sounds at Nuremburg

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[12] Erickson, Robert. 1988. 'Composing Music', *Perspectives of New Music* 26, no. 2 (Summer): 86–95

[13] John Cage, 'The Future of Music: Credo' (1937) in *Silence: Lectures and Writings by John Cage*, Wesleyan University Press, 1961, p.3

[14] Annie Gosfield quoted in Margaret Lucy Wilkins, *Creative Music Composition*, Routledge, Taylor & Francis Group, New York 2006

has had on her compositional development:

My days in Nuremberg have had a profound influence on my perception of sound and music. The incredible sense of overlapping and shifting sounds has influenced my compositions, as has the combination of powerful rhythms contrasted with quiet, ambient found sounds. The boundaries between noise and music have been permanently blurred in my mind, if not completely erased. Almost every day I hear some beautiful music in the distance, but when I try to track down its source, I am led back to a droning industrial hum or a massive rhythmic machine.[15]

The creation of a machine-like factory world to dramatic effect, the unleashing of a 'noise-machine' may be seen at the opening of *stop what's started*, later discussed. This piece also incorporates a quadraphonic array exemplifying the use of space as another parameter to investigate within my compositional palette.

1.2 Spatial Music

The exploration of 'space' as a significant compositional parameter has become an increasing area of interest within my work. 'Spatial music' refers to a broad area of compositional practice in which the distribution of sound sources around the listener is a significant factor in the overall structure of the composition. It can entail a variety of approaches, from the presentation of sound sources through multiple speakers to the spatial placement or movement of performers around the audience.

Such a distribution of sound in space can have major impact in terms of audience perception. With spatial music, the parameter of space has become an increasingly significant aspect of composition; another musical parameter for exploration in conjunction with pitch, rhythm or timbre. In the field of electronics, there is potential for space to be considered as a richly variable and dynamic parameter for precise compositional manipulation to a much greater extent than with perhaps purely acoustic presentation alone.

The spatial possibilities open to the electroacoustic composer are significant: one can transport the listener to a great variety of virtual sound environments, expand the listening space beyond its physical boundaries, play with intimacy and remoteness, and utilize movement and direction. All of these factors can be integrated into the compositional

[15]Annie Gosfield, http://www.anniegosfield.com/EWA7_story.html accessed 21st February 2010

structure.[16]

1.2.1 Early Developments in 20th century Sound Spatialization

In 1958 Varese created the tape piece *Poeme Electronique* for the Philips Pavilion at the Brussel's World Fair. This was produced on a three-track tape, with several auditory 'images' fed through ten amplifiers into a bank of 150 loudspeakers. The speakers were placed at various points throughout Le Corbusier's structure, so that the music recreated the shape of the building itself. Space was therefore considered to be a significant musical parameter to explore from the early years of electronic music. Varese noted: "In the *Poeme* I heard my music literally in space for the first time".[17]

In the same year as *Poeme Electronique*, Stockhausen gave a lecture in Darmstadt on music in space, discussing his new spatial acoustic work *Gruppen*. For Stockhausen, this movement of sound in space becomes as significant a parameter as the composition of melody and rhythm:

> Whether a sound moves clockwise or counter-clockwise, is at the left back or at the front, or any other combination, these are all configurations in space which are as meaningful as intervals in melody or harmony…I have been composing and finding a notation for space melodies, to indicate movement up or down in space, or describe a particular configuration in a given space, at a certain speed.[18]

This concept of space being a musical parameter may also be considered in relation to the 'multi-layered spatial composition' - as well as the sound moving around the listener, it can be perceived to move from distant and close. According to Stockhausen, building spatial depth by superimposing layers allows one to compose perspectives in sound from near to distant, almost akin to foreground and background considerations of melody and harmony.

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[16] Frank Ekeberg Henrikson *Space in Electroacoustic Music: Composition, Performance and Perception of Musical Space* p51, 2002

[17] Herbert Russcol & Alan Rich prog notes to the *transparent tape music festival*, San Francisco 2002 from http://www.sfsound.org/tape/varese.html accessed January 30th 2010

[18] Karlheinz Stockhausen *Stockhausen on Music - Lectures and Interviews compiled by Robin Maconie*, Marion Boyers, London, 1989, pp102-3

1.2.2 John Chowning *Turenas* (1972, for four channel tape)

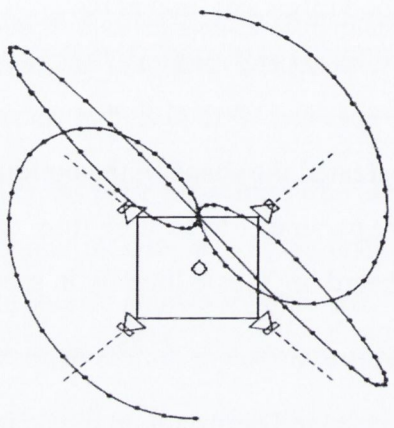


Fig.1.2 Spatial Trajectories in Chowning's *Turenas,* 'Escuchando Turenas de John Chowning', Luis Jure, Escuela Universitaria de Música, *Músicas al Sur* Número 1, Enero 2004,

http://www.eumus.edu.uy/revista/nro1/jure.html accessed 30th January 2010

John Chowning had a significant influence on the aesthetics of electroacoustic music by allowing his choices of timbre to be influenced as much by psychoacoustics as by musical considerations (with percussive sounds being easier to localize). His piece *Turenas* was one of the first compositions to create the impression of moving sound sources in a 360 degree sound space, as indicated in the spatial trajectory figure (Fig. 1.2). The title is an anagram of 'Natures' - pointing to the issues Chowning addresses in this piece: the question of how to apply knowledge gained in the study of the properties of natural sound to a compositional goal.

Often in the work, as the sounds cross the space they undergo a simultaneous timbral transformation. Sharp transient sounds are used which appear to move around the listener. Repetitions with slight pitchshifting around speakers creates an effect similar to doppler. Immersive more harmonic material is coupled with easily localised short sonic gestures or 'events', to create simultaneous envelopment and localisation. Bell-like FM timbres are used which morph into one another, with the dense harmonic spectrum of these chosen sound sources suited to the sound transformations explored in the piece. Different rates of change are combined together, for instance rapid short sonic events superimposed with slow moving chords

underneath, as is evident from the figure of the waveform and spectral graph provided (Fig. 1.3).

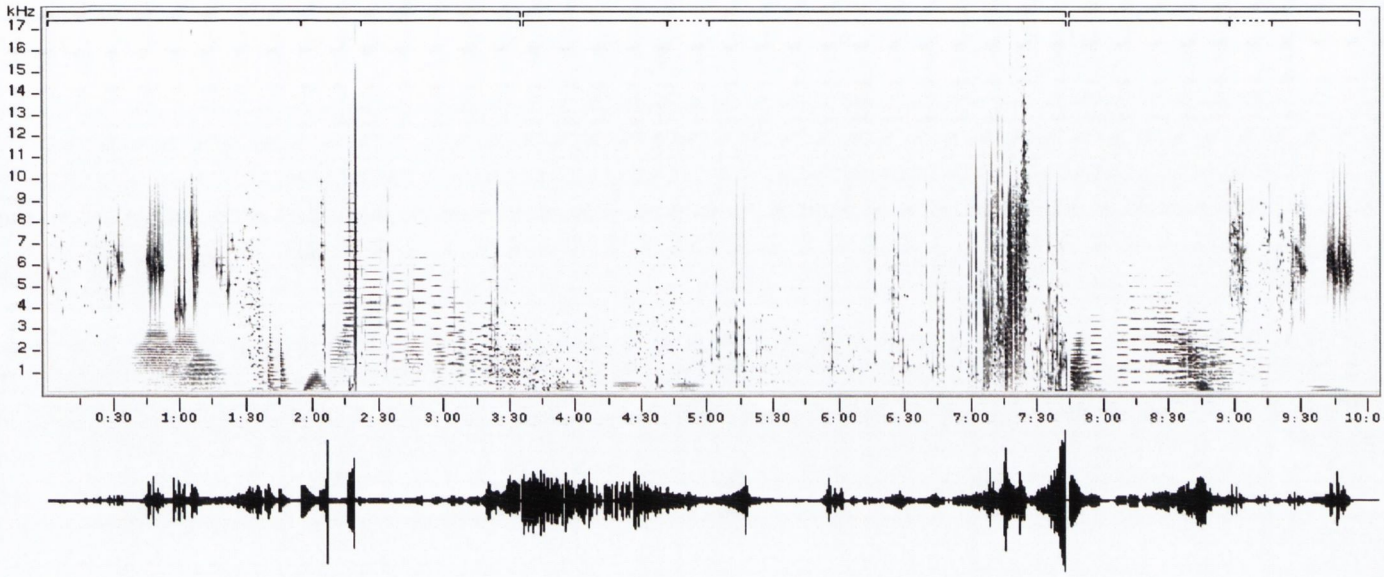


Fig. 1.3 Waveform and spectrogram of Chowning's *Turenas* 'Escuchando Turenas de John Chowning', Luis Jure, Escuela Universitaria de Música, *Músicas al Sur* Número 1, Enero 2004,

http://www.eumus.edu.uy/revista/nro1/jure.html accessed 30th January 2010

The study of the spatial techniques used in *Turenas* has certainly influenced much subsequent work in the area, and is evident in the spatial considerations of *stop what's started, seek* and *fall approaches*. Of particular interest within the compositional process of *fall approaches* was a consideration of spatial music from another time, the 'cori spezzati' of the sixteenth century.

1.2.3 Spatial Choirs

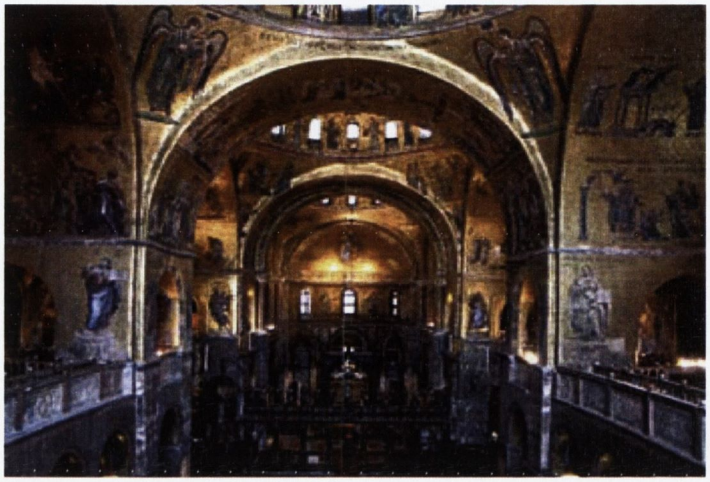


Fig 1.4 Interior of St. Mark's Cathedral Venice displaying opposite galleries
(http://europeforvisitors.com/venice/articles/top-11-basilica.htm accessed 5th February 2010)

The earliest known evidence of spatial choirs dates from the mid 16th century, at St Mark's Cathedral in Venice, where small choirs were positioned in opposite galleries of the church. These choirs were used to sing musical phrases, alternating with one another. This technique of polychoral spatialisation furthers the notion of antiphony, evolving through the Renaissance and Baroque Era. The development of 'cori spezzati' demonstrates how compositional technique and acoustic space can interact to create a novel and innovative performance environment. The style which emerged from the Venetian spezzati arrangements was derived from the ancient mode of antiphonal singing, whereby each choir would sing a verse in turn, then combine. Such simple arrangements were not used for long as many composers attempted to exploit the contrasts possible with this spatialization. The use of cori spezzati was prevalent around the time of Andrea Gabrieli (16th century). Gabrieli used the effect quite radically in his music, wishing to create textural density through elaborate contrapuntal activity and accent placement divided between choirs, creating an almost 'hocketing' (rapid alternation between parts) effect between the two galleries.

The cori spezzati device developed to provide the composer with a freedom of spatial dialogue. Gabrieli was skilled in manipulating his forces to manipulate the listener's sense of expectation by providing uncertainty with regard the source of the next musical phrase. He may, for example,

begin a motet with long phrases, then suddenly alternate his choirs in short dramatic phrases, often consisting of no more than two or three chords. This is used to great effect in his *Gloria in excelsis Deo* where sixteen parts are divided into four choirs of voices and instruments. Interplay between the different groups may be heard, combining at climactic points in the music for dramatic effect. The innovations of 'cori spezzati' were to resonate strongly with composers hundreds of years later in the twentieth century avant-garde, most notably within the acoustic spatial experimentation of Karlheinz Stockhausen.

1.2.4 Spatial considerations in Stockhausen's acoustic work: *Gruppen* and *Carré*

Spatial movement of sound was a key concern for Stockhausen throughout his career, going beyond the electronic into the acoustic realm. *Gruppen* (1957) for three orchestras and *Carré* (1960) for four orchestras and four choruses both explore the spatial movement of musical materials from ensemble to ensemble. *Stimmung* (1968) for six vocalists was amplified through six equally-spaced loudspeakers surrounding the audience, placing the listener at the sonic centre of the ensemble.

The difficulty for a conductor to direct several time layers for one orchestra resulted in the new musical possibilities inherent in *Gruppen*. The orchestra was divided into three groups of equal size and positioned at different points in the hall, each with its own conductor. This enabled movement of the sound in space, alternation between two orchestras and rotations of the sound around all three orchestras. Only a few passages were conceived in terms of a single metronomic tempo. *Carré*, spatial music for four orchestras and four choruses, is inspired by the concept of the sixteenth century cori spezzati. In the work, the orchestras and choruses are placed at each side of a square-shaped hall, the choruses singing phonemes and pitches woven into the texture of the orchestral sound. The approaches of Stockhausen were to have a profound influence on the development of space in electronic music. The use of multi-channel diffusion and live performer spatialization in combination greatly increases the possibilities for direction and paths of spatial movement.

Variation may be created through spatial placement, perhaps using a similar musical idea or 'gesture' but presented at different spatial locations around the listener.

Variation and permutation as a means for the development of musical material will be now considered, in particular relation to the development of variation form and the process of pattern permutation found in the work of Julia Wolfe and Louis Andriessen.

1.3 From Pattern to Process

Variation Form

> A motive, sketch, postulate, motion, or statement is elucidated by framing, by contrast, by changes of lighting, by reflection, convolution, or reforming, by fleshing out, by proof. Its value as a kernel concept or seed idea is understood by what it grows (or is made to grow) into. The entire of a plant may be represented by the embryo, the seed. Certainly the imprint of every aspect of that plant is already there; why grow it? Only in its growth--its stages of breaking ground, turning up leaves, budding, providing flower and fruit, and its maturity and death--can all its beauty be revealed.[19]

Variation has been described as 'one of the oldest of all structural procedures in the history of instrumental music'.[20] Historically, there is evidence of its use from the early sixteenth century, spanning works by the English virginalists such as Byrd, the Goldberg Variations of Bach to the large-scale works of Brahms and Elgar, and the serial composers Schoenberg, Berg and Webern.[21]

Other examples of variation form may be found outside the realm of western art music, within improvisatory genres such as the jazz 'standard', in which the 'head', or theme, is first stated, with soloists alternating and extemporizing over its fixed harmonic structure.
Variation form is also evident in non-western musical genres, for example in the kembangan (meaning "flowering") improvisation of a Javanese gamelan ensemble, the ornamentations with which Irish traditional instrumentalists and sean-nós singers freely embellish the basic melody, and the improvisations of Ghanaian lead drummers over fixed repeating patterns in Ewe dance drumming.

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[19] Dennis Bathory-Kitsz, 'Variations on the Notion of Variation, Questioning the Whys of Composing', 1987 http://maltedmedia.com/books/papers/sr-varia.html accessed 10th February 2010, p.1
[20] Berry, W. (1986) *Form in Music*. Prentice-Hall, Inc., Englewood Cliffs, New Jersey, p.293
[21] Sadie, S. (ed.) (1988) 'Variations', *The Grove Concise Dictionary of Music*, Macmillan Press Ltd., London, p.793-4

Webern considered variation form to be of great importance as a structural device – as Kathryn Bailey has noted, he thought it to be "the most universal solution to the fundamental requirement for unity and variety in music".[22] His *Piano Variations*, Op. 27 (1935-36) and *Orchestral Variations*, Op. 30 (1940) employ short, rhythmic motives manipulated through techniques such as augmentation, diminution, and imitation.

1.3.1 Post-Minimal Permutations

Of particular interest is current experimentation displaying aspects of 'variation form', evident in the work of the 'Bang on a Can' composers Julia Wolfe, Michael Gordon and David Lang.

What makes Wolfe's music continually interesting is that the patterns are forever changing. In *Dig Deep*, the dotted-eighth note chords are repeated some number of times and then quarter note chords are repeated. These sets are all of differing sizes. For example, the first 53 chords in *Dig Deep* have the following rhythmic values: (de = dotted-eighth, q = quarter-note) 2de, 8q; 3de, 4q; 2de, 9q; 5de, 7q; 6de, 2q; 3de, 2q; etc. Variety appears to be the overriding factor. This keeps the listener deliciously on edge and continuously surprised about when the next note will occur. This technique of local variety also destroys any traditional sense of meter. For example, the pattern shown above has the following quantities of 16th notes: 6, 32; 9, 16; 6, 36; 15, 28; 18, 8; 9, 8; = 48; 25; 42; 43; 26; 17. The end result of this rhythmic variety is to provide alternating feelings of interruption and anticipation. The ear is always listening for the next change in pattern. When that change is delayed, the listener feels a heightened intensity of anticipation. When the new pattern comes before it is expected, one gets a sense of interruption. Both sensations serve to heighten the sense of relentless urgency that one feels throughout the work. I feel the rhythmic patterns, more than any other aspect of her style, impart a jarring, urban feel to her music.[23]

Techniques of pattern establishment and deviation from expectation are certainly of importance to David Lang in much of his work, particularly evident in his ensemble work *Cheating Lying Stealing*. Here, the listener is introduced to repeating patterns which constantly shift in rhythmic position, similar yet ever-changing material is heard which maintains a high level of suspense and deviation from expectation.

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[22] Bailey, K. (1991) *The Twelve-Tone Music of Anton Webern: Old Forms in a New Language*. Cambridge University Press, Cambridge

[23] Paul Nelson, 'Julia Wolfe - A short analysis of style', Peabody Conservatory, 2003 http://www.pnelsoncomposer.com/writings/JuliaWolfeAnalysis.html, p.2 accessed 15th February 2010

Besides pattern manipulation, another significant recurring feature of this 'school' of composition is the interest in expanding the possibilities of rhythm.

This has been noted in the work of Michael Gordon:

Gordon's early compositions demonstrate a deep exploration into the possibilities and nature of rhythm and what happens when rhythms are piled on top of each other, creating a glorious confusion. John Adams, who has conducted Gordon's works with the London Sinfonietta and Ensemble Modern, calls these raw and complicated sounds "irrational rhythms".[24]

While there is much evidence of rhythmic experimentation within contemporary classical music, many composers have cited outside influences from other musical spheres, particularly within an ethnomusicological context. Klingsberg and Hall describe the asymmetry inherent in many examples of non-western music:

Many rhythm cycles from Africa, Latin America, and Eastern Europe are *asymmetric* that is, they cannot be broken into two parts of equal duration, where each part starts with a note onset. Asymmetric rhythm cycles are, in a sense, maximally syncopated: although they live in a world in which measures are naturally divided in half, they cannot be delayed so that note onsets coincide with both the beginning and midpoint of a measure. Asymmetric rhythms are always a little out of sync with our expectations.[25]

Other influences may come from early music, as in the case of Louis Andriessen's use of hocketing interplay between parts. Wilkins, in her discussion of Andriessen's *Hoketus* (1975-77) for two groups of six instruments describes his use of 'rhythmic pulsing technique'.

Referencing the medieval technique of the hoquet, the two groups alternate note by note, in rapid succession. The opening section sets up a simple rhythmic pattern:

Notes:	2]	3]	3]	4]	4]	5]	5]	6]	6]	7]	7
Silences:	8]	7]	7]	6]	6]	4]	4]	3]	3]	2]	1
Addition:	10					9					

[24] Michael Gordon biography, http://bangonacan.org/summer_festival/faculty accessed 20th February 2010
[25] Rachel W. Hall and Paul Klingsberg, 'Asymmetric Rhythms, Tiling Canons, and Burnside's Lemma', Dept. of Math and C. S. Saint Joseph's University Philadelphia, 2006

As the number of sounding notes increases, the number of silent pulses decreases, until eventually there are continuous sounding notes. The total effect is antiphonal, the two groups being spatially separated, but, because of the similarity of the instrumentation, their identities gradually become blurred.
The setting up of processes can be enticing. However, judging when and how to break up the pattern, so as to avoid mathematical predictability, is an acquired skill.[26]

1.3.2 Climax

Another intriguing connection may be seen between my approach to formal structure and that of Wolfe's, which is rooted in emotional affect, the creation or avoidance of tension, the use of climax.

What makes her overall forms compelling is that they consistently build to a "breaking point" (often, it appears, near the 2/3 point of the work), at which point the work dramatically shifts to a completely different mood. In *Believing* this happens at 5:'21" (of a 9 minute work) where the mood suddenly becomes mysterious and exotic. In *Dig Deep* the break occurs at 10'56" (of a 14 minute work) where the thick textures turn into a solo violin cadenza. *Four Marys* contains a couple of major shifts, but I think the most dramatic is at 6'53" (of 10'48") where the 16th note fundamental pulse is abandoned and the entire character of the work shifts from driving and angular to searingly emotional and plaintive. The idea of building a texture to a breaking point and then shifting to an entirely new, contrasting section or mood is a powerful dramatic device.[27]

This recurs in my work, a build up of energy between elements which reach breaking point which may dissipate into silence, or calm, a completely contrasting musical section. It is interesting to note this parallel between the work of Wolfe and my own, this interplay of chaos and stasis, frenetic energy and quiet calm.

1.4 Conclusion – Points of Contact

Many interesting points of contact may be seen through my own compositional approach and in the work discussed, placing it in context.

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[26] Margaret Lucy Wilkins, *Creative Music Composition*, Routledge, Taylor & Francis Group, New York 2006, p54
[27] Paul Nelson, 'Julia Wolfe - A short analysis of style', Peabody Conservatory, 2003 http://www.pnelsoncomposer.com/writings/JuliaWolfeAnalysis.html, p.2 accessed 15th February 2010

In the case of Saariaho, similar concerns are evident in my *do you remember the planets?* with the creation of harmonic progression through doublestopping (going beyond the treatment of this solo instrument in a monophonic sense) and using the rich potential of the electronic component as 'additional sympathetic strings', often like an extension of the viola itself.

The use of 'slow glissandoing' and emphasis on internal morphology of sound within the work of Ligeti and Stockhausen certainly calls to mind the aesthetic concerns of *seek*, with its focus on slow enveloping sonic transformations.

Within my work, glissando is often used to create internal sound transformations acoustically, to morph between electronic and acoustic sound, and to develop a density of shifting texture - a notable influence being within the layered glissandi for the creation of dense sound mass in the music of Iannis Xenakis.

The development of dense shifting textures, 'chordal evolution' recurs throughout my work, and is particularly evident within *turn* for orchestra. The harmonic blurring and dense colour saturation within *turn,* also bears a connection to the slowly evolving sound metamorphoses of Morton Feldman's *Coptic Light*. As later discussed, the sustain created through dovetailing of lines in *turn*, like the orchestral equivalent of an electronic delay in slow motion, is created from the staggered superimposition of perfect fifth harmonies, evoking an almost medieval sound world which resonates throughout my work, from early pieces such as *do you remember the planets?* to the recent *numarumir*.

Numarimur conveys my interest in combining the purity of perfect fifth intervals with reverberant immersion. This perhaps also connects to the origin of medieval performance practice - the performance of sacred vocal music in a reverberant acoustic church setting, the overlapping of harmonies contributing to its atmospheric nature, its ambience.

A point of reference for the immersive use of sonic envelopment within *numarimur, seek*, and *stop what's started*, is Brian Eno's concept of ambient music and immersion.
Relating to the concepts of Niblock, the long sustained morphing and arhythmic nature of *seek*

attempts to 'saturate the space', magnifying the minute subtleties of the string source timbre, with its intentionally low-fidelity recording and microtonal layerings.

The use of pattern permutation and rhythmic asymmetry as previously outlined, is most evident in my ensemble work *nikuda*, later discussed.

A consideration of the most significant compositional concerns within my own work may be found in the commentaries which accompany the works, with an overview provided in the next chapter.

Chapter Two: Texture - Space - Energy: My Compositional Palette

2.1.1 Introduction

As previously outlined, my background in the areas of electronic music and psychoacoustics has cultivated my interest in exploring instrumental and electroacoustic sound in the creation of unique timbres and combinations. My approach conveys a connection to the way in which developments in electronic composition have influenced acoustic writing with notable examples discussed. My own compositional experimentation has been inspired by a wide diversity of interests: from electronica to Javanese Gamelan, from medieval organum to the blurring of boundaries between genres in the current work of composers such as Michael Gordon and Annie Gosfield.

2.1.2 Texture

My own experience in the realm of electroacoustic composition informs the development of my approach to working within an acoustic instrumental context, fostering an interest in timbral exploration. This is one of the considerations which inspired many of the works featured as part of this thesis.

2.1.3 Aural Illusion

The creation of aural illusions is another area of interest, where often in my work, sonic fusion, morphing and transformations occur between acoustic and electronic forces, or between various instruments/voices in a purely acoustic context. This is particularly evident in the tightly-knit viola and tape synchronicity of *do you remember the planets?* and in *fall approaches* where there is acoustic vocal merging between parts, as well as choral sonic morphing into electronic and back again. It also occurs in *fiol*, where the three string instruments are at times treated as one single twelve-stringed 'meta-instrument', timbrally converging.

In the final movement of the string quartet there is a sense of smooth overlapping of lines

between second violin and viola, resulting in a seamless flow of sound. This is achieved through use of close pitches and register, and unity of playing techniques - both using harmonic tremolo. Saariaho explores similar considerations in the second movement of *Orion* for Orchestra (2002) *Night Sky*, where pitch and playing methods are matched to dovetail smoothly between instruments which may be regarded as being timbrally disparate. For instance, a piccolo melodic line is taken up by solo violin harmonics, merging due to the sustain of tone at unison pitch and overlapping dynamic envelopes to fuse the elements and form a seamless unity.
My interest in aural illusion stems from the study of psychoacoustics, of particular interest being auditory scene analysis.

2.1.4 Auditory Scene Analysis

Albert Bregman has termed 'auditory streams', the aural images formed of fused lines of sound. Factors which contribute to our sense of streaming include: timbre (spectral shape), fundamental frequency (pitch) proximity, temporal proximity, harmonicity, intensity, and spatial origin[28].
A summary of the principles have been outlined by Purwins, Blankertz and Obermayer (see Fig 2.1):

From the seventies on, computer-supported sound synthesis and analysis enforced the application of Gestalt theory to auditory perception, exhaustively reviewed in (Bregman 1990).

The principle of 'proximity' refers to distances between auditory features with respect to their onsets, pitch, and loudness. E.g. the slow sequence of notes A-B-A-B... (Fig. A1) which contains large pitch jumps, is perceived as one stream. The same sequence of notes played very fast (Fig. A2) produces one perceptual stream consisting of A's and another one consisting of B's.

'*Similarity*' is very similar to proximity, but refers to properties of a sound, which cannot be easily identified with a single physical dimension (Bregman 1990: 198), like timbre.

The principle of *'good continuation'* identifies smoothly varying frequency, loudness, or spectra with a changing sound source. Abrupt changes indicate the appearance of a new source. In (Bregman and Dannenbring 1973) (Fig. 1 B) high (H) and low (L) tones alternate. If the notes are connected by glissandi (Fig. 1 B 1), both tones are grouped to a single stream. If high and low notes remain unconnected (Fig. 1 B 2), H's and T's each group to a separate stream.

The principle of '*closure*' completes fragmentary features, which already have a 'good Gestalt'. E.g. ascending and descending glissandi are interrupted by rests (Fig. C2). Three temporally separated lines are heard one after the

[28] Albert Bregman, *Auditory Scene Analysis*, MIT Press, 1990

other. Then noise is added during the rests (Fig. C1). This noise is so loud, that it would mask the glissando. Amazingly the interrupted glissandi are perceived as being continuous. They have 'good Gestalt'.[29]

While an in-depth discussion of the area of auditory scene analysis is outside the scope of this study, concepts from A.S.A inform my approach to electro/acoustic sonic combination, where a consideration of these principles of perceptual organization, streaming and segregation, can yield many interesting compositional results, evident in the works later discussed.

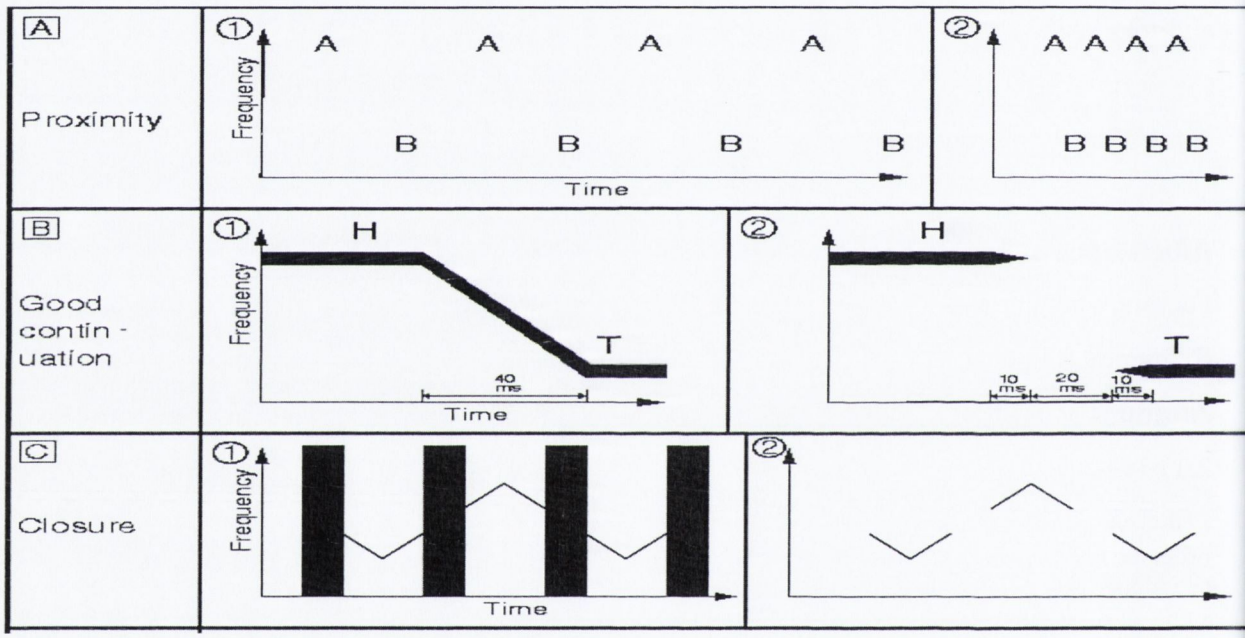


Fig 2.1 Grouping Principles in Auditory Scene Analysis from H. Purwins, B. Blankertz, and K. Obermayer. "Computing auditory perception" *Organised Sound* 5(3), 2000

2.1.5 Noise: Electronic Experimentation

Sonic Scattering – Granulation

One technique which can be used to create strong points of contact between the acoustic and electronic is that of granulation, playing between enhancement and subversion.

[29] from H. Purwins, B. Blankertz, and K. Obermayer. "Computing auditory perception" *Organised Sound* 5(3), 2000

There are many reasons why aesthetically I find this method of sound processing to be particularly interesting, primarily due to the unpredictability of grains (variables in size, duration, number of voices etc) and the ability to build dense harmonic textures. It also relates to the notion of constructing something expansive from quite minimal components (eg. tiny grains of sound).
The granulation can affect composition on both a micro and macro level - isolating short fragments of sound, individual granules, and allowing these to expand into the overall harmonic structure. 'Microscopic' millisecond components of the sound or 'grains' are extracted from the sound source and recombined to form differing textures. This use of granular synthesis to effect the purity of the string sound in *do you remember the planets?* and vocal timbre of *fall approaches* also perhaps exemplifies the 'beauty with an edge' aspect of my musical language.

2.1.6 A Distorted View – Beauty made Strange

Distortion is another recurring feature in my work, particularly when combining acoustic and electronic sound. It can allow for an abstraction of the original sound which is perhaps harmonically intact but timbrally modified. Points of reference here may be found in the music of Michael Gordon, and in more rock genres, such as in the distorted guitar experimentation of the group My Bloody Valentine whose work has been described as "beauty under siege".[30]
This ambiguity also occurs in Michael Gordon's *Weather*, where beautiful almost 'Vivaldian' harmonies played on strings are put through a fuzz-box. The purity of the string sound is distorted - beauty made strange.

There is a thread of this ambiguity which can be traced throughout my work, and is certainly evident in *seek* with its use of expansive asymmetric melodies and layers of dense textural detail which become increasingly dark and dissonant. The dichotomy between purity and darkness is a recurring concern, at times exploring the transformation between these two planes and their varying degrees, the 'purity' of clean lines and harmonies, moving toward darkness, dissonance and microtonal layerings.

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[30] *Hype*, August 1992 bio, http://www.mybloodyvalentine.net accessed 25th February 2010

2.1.7 Pure Tone versus Noise

An exploration of the distinguishing features and points of contact between pure tone and noise-based sounds is a recurring characteristic of my work. Wishart discusses the nature of 'noise-based' sound signals and their relationship to more clearly 'pitched' periodic signals:

> At another perceptual extreme we have entirely non-periodic signals. In the architecture of typical analogue synthesisers (and in much discussion of electronic music) such sounds, usually referred to as 'noise' are often treated as entirely separate entities from materials with clearly defined spectra usually generated from simple oscillators. In fact there is no simple dividing line between periodic and non-periodic signals, but in fact a multidimensional array of complex possibilities between the two extremes. Noise is not something to be treated separately from other materials, either compositionally or conceptually, but an alternative way of perceiving and relating to sound phenomena.[31]

It is interesting to note Wishart's consideration of noise and more pitched periodic pure tone as having a connecting thread, not as completely separate entities. This is explored in *stop what's started*, often attempting to search for points of contact between pure-tone stable signals and those which are more 'chaotic', inharmonic and noise-based - the sound/noise axis.

A point of reference for similar concerns may be found in work of Saariaho and also in the Spectral composition of composers such as Gerard Grisey and Tristan Murail. "Along this axis, generally speaking, "noise" replaces the concept of dissonance and "sound" that of consonance".[32]

A technique explored by Saariaho was the Griseyan notion of 'sound axis' to control harmony and timbre along parallel lines. This may be depicted by visualising a line in space, with perhaps a single sine tone at one end and white noise at the other. It is the timbral transformations that may occur along this axis which are of most interest.

This internal timbral space may be further magnified through spatialization. The possibility of spatial distribution greatly increases the potential for direction and movement of sound, adding a fascinating new layer of compositional consideration, another parameter to explore.

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[31] Trevor Wishart, *On Sonic Art*, Ed. Simon Emmerson, Harwood Academic Publishers, 1996

[32] 'Timbre and Harmony, Interpolations of Harmonic Structures', Kaija Saariaho, *Contemporary Music Review*, 1987, Vol 2: 1 p133-93

2.2 Spatial Aesthetics

For the past three years I have been a member of The Spatial Music Collective, a group of Dublin-based composers working in the field of spatial music. This has provided an important platform for the realization of my spatial ideas, and since its inception we have concentrated on the presentation of new spatial works incorporating both electronic and acoustic forces.

My current focus in this area ranges from electronic distribution (*stop what's started*, *seek*) to a consideration of the physical spatial placement of performers (*fall approaches*). I am often interested in the creation of rapid spatial changes in a rhythmic context, alternating musical material between performers or sources in different locations for a dramatic variation on the practice of hocketing. Other approaches involve the manipulation of sound where material rotates in a circular plane around the audience.

This concept of space as musical parameter may also be considered in relation to multi-layered spatial works where, in addition to the movement of sound around the listener, another dimension of depth can be presented with the exploration of distance and proximity, involving issues of foreground and background. The spatial distribution of sources can also enhance the listener's ability to perceive separation between individual lines and layers providing an added dimension of perceptual stream segregation and fusion to the work, connected to aspects of auditory scene analysis and aural perception.

When working within the medium of multi-channel presentation, a major interest is that of exploring aspects of envelopment and localisation. To create a sense of sonic envelopment and an immersive atmosphere, a slow rate of change, the gradual unfolding of a harmonic progression and soft attacks on sound samples may be used.
This is explored throughout *seek* and in the mid-section of *stop what's started.*

2.2.1 Tracing Shapes in Sound - Visual made Spatial

In acousmatic music (ie. electronic music presentation where no visual component is present) our visual perception is not part of the listening experience. Taking this visual element of sound 'source' away, the composer is free to manipulate the placement of a sound-object within a space,

and the relationships between sound objects. In this situation, the composer/listener must piece together the complete sound picture, which may result from the combination of sound objects and their spatial positions.

Often in my work, paths of spatial trajectory may be informed by visual imagery - in the case of *Fall Approaches* the electronics act as a form of sonic aurora borealis, 'northern lights' of textural colour which surround the audience and move in different directions with varying degrees of colour saturation. *Seek* was considered in terms of allusion to being sonically immersed in a vast pool of dense liquid, while *stop what's started* could depict a factory world on an isolated industrial wasteland.

The element of the visual is quite significant in my compositional process, often experiencing a form of aural and visual 'hallucination' which is then sonified. It is this attempt at sonification which is one of the most challenging and equally rewarding aspects of the process - like remembering the details of a dream, giving voice to internal feeling, the unconscious made conscious. This is perhaps most clearly evident in works such as *eriu* and *numarimur*, like a sonification of snow - pure still white landscape.

The reverberant field can give the listener cues about distance, if the sound appears to be near or far away, in the background or foreground. If we hear a sound moving off into the distance, there may not only be a decrease in amplitude, but an increase in reverberated sound in relation to direct sound. Reverb on a sound implies distance, used to dramatic effect in the second *numarimur* with voices appearing to emerge from another time and place.
It also features prominently halfway through *stop what's started*, where a clear sense of melodic line is abstracted giving rise to 'ghost' harmonies - harmonic blurring created from pitches which overlap through the vast quantity of reverberation, increasing sustain.
Object size is another aspect for spatial consideration - the closer the sound-object to the listener, the larger its perceived sound image. Image sizes give a good clue to the proximity of sound-objects in relation to each other, as well as in relation to the listener. The motion of a sound-object is the main clue to the size of an enclosed space. The perceived space covered by a moving sound is very much linked to speed, gesture and doppler shifts (eg. pitch changes in a

moving sound source).

2.2.2 Localisation

Localisation is one of the most significant factors to consider in my spatial approach - due to the fact that our aural perception can locate higher frequencies and texturally varying material more easily than lower frequencies and static material, the nature of the sound itself plays an major part in the choice of material. These factors were taken into consideration when assigning material spatially, particularly regarding localisation, envelopment and the creation of immersive environments. The application of localisation and immersion techniques are later discussed in relation to the three spatial works presented, *seek*, *stop what's started* and *Fall Approaches.*

Techniques such as time stretching, delays, filtering and granulation can be used in an attempt to create an illusion of space. These can aid in the morphing or extension of the sound.
This is an important consideration throughout my work, not reserved for the composition of multi-channel music - within the stereo field of *do you remember the planets?*, spatial extension and expansion is created using granulation with delay panned between the two speakers, the scattering of grains creating the illusion of a wider spatial image.

2.2.3 Spectral Space

Spectral space[33] is often discussed in relation to instrumental as well as electroacoustic music, particularly with reference to spectral composers such as Tristan Murail and Gerard Grisey - the space within a timbre. Spectral space is alluded to with the occurrence of registral expansion throughout my work, its use often withheld until pivotal moments in the piece. For instance, this occurs at the end of *seek* and *latitude longitude*, the climactic points of *fiol* and to herald the shift to new material in *nikuda.* In the case of *nikuda* there is a momentary glimpse of spectral expansion offered by the bowed cymbal's piercing high frequencies coupled with low register double bass warmth, at opposite extremes of the spectrum.

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[33] Denis Smalley 'The Acousmatic' from Nicholas Collins, Nick Collins, Julio d'Escriván, Julio d' Escrivan Rincón, *The Cambridge Companion to Electronic Music,* p78-80

A sound mass can suggest a volume of space, through density, texture and amplitude. This is explored in *seek* through the gradual and cumulative unfolding of harmonies, building up a dense mass.

Variation may be created through spatial placement, perhaps using a similar musical idea or 'gesture' but presented at different spatial locations around the listener. This occurs throughout *seek* with minimal source material varied through transposition and location, and in the shifting spatial placements of repeated vocal fragments in *fall approaches*.
Space can be explored as another expressive dimension of the musical language akin to timbre, pitch, amplitude, duration - embracing the totality of the sonic experience.

This also relates to my interest in the initial restriction of source material, for later variation and expansion providing connection and coherence - *seek* evolves from one slow-moving melodic line, with a single violin timbre, achieving variation through transposition and layering.
It is an interesting experiment to attempt to achieve expansion of one sound source or idea, the minimal becoming maximal, creating a solid, memorable aural 'image' for the listener.
The use of minimal material is also perhaps connected to my experience of gamelan, with its focus on elaboration upon simple melodic ideas, repetition and cyclical structures.
There is an interest in the cumulative power of textural additive process - a heightening momentum through gradual accumulation of forces.

2.4 Kinetic Energy

The use of climax recurs in my work, a buildup of energy between elements which reach breaking point which may dissipate into silence, or calm, a completely contrasting musical section. This interplay and tension between chaos and stasis may be found throughout my music, most overtly referenced in the title of the earlier work *all collisions end in static* for flute, viola, harp and tape. The thread of this compositional concern is also evident in works such as *do you remember the planets*, *stop what's started*, *latitude longitude* and *fall approaches.*

Much of the music which I am drawn to, displays an interest in varying forms of energy, as noted

by Rob Casey in his article on my curation of a 'Composer's Choice' concert at the National Concert Hall Dublin:

Although the works curated by Linda Buckley had unique voices, they were united by a sense of perpetual motion. Kinetic energies evidently hold a particular allure for Buckley, both as composer and listener: a relentless, mechanistic drive characterised Ligeti's *Fanfares*, Nancarrow's *Toccata* and Dennehy's *Bulb*; unseen forces seemed to relay through an electric circuit and guide the fitful interplay of violin and piano in Buckley's *Volt*, and her *jöklar*, for solo piano, is inspired by the slow movement of glaciers.[34]

Throughout the works presented as part of this thesis, energy is explored in its various forms - the dichotomy of internal and external. *do you remember the planets* juxtaposes an extroverted electronica-like riff, with contemplation and rest in soft, delicate fifth harmonies.

stop what's started conveys the differing energies of anarchist shout versus soft whisper. The first section proceeds like a series of aggressive, tumultuous roars that explode into silence, calm after the storm. Exhaustion follows the extreme angst and exertion, yet the energy once again builds and overflows - the quiet calm, melody, purity and beauty subsumed by noise. *Seek* conveys a similar kind of dichotomy, the energies of light versus dark, where the simplicity and tonal centre of the line is dissonated and abstracted through dense microtonal detunings - a cumulative energy growing in momentum and intensity.

Extremes are evident in the contrasting movements of *latitude longitude*, the chaos of the opening's raucous doublestopping, the calm meandering melodies of the second movement, the high energy of hocketing pizzicato in Mvt III and the restraint and containment at the conclusion, heard in the use of fragile harmonics, yet with a sense of breaking free from confinement in the tremelo and crescendo. The final movement is deceptive in its apparent stillness and harmonic stasis - it is anything but calm, with extreme forte pitches between the strings emerging from the texture at various points in an attempt to rebel against the constraint, finally breaking free.

[34] Rob Casey, 'NCH Composer's Choice Review', *Journal of Music*, May/June 2008

fiol is concerned with tension and resolution throughout, extremes of emotion, differing from the jagged rhythmic energy that is attempting to take off and move in a new direction within the more exuberant *nikuda*.

2.5 Conclusion - Parameters

Particular compositional parameters are focused on for each piece - with *do you remember the planets?* concerned with harmony, timbre and points of contact, and *fall approaches* sharing a similar emphasis including an additional spatial component.

The primary focus of *nikuda* is rhythm, process, pattern construction and deconstruction.
Harmony comes to the fore in *fiol* as well as timbre, in the merging of strings to form a unified sound.

The string quartet *Latitude Longitude* explores gesture and hocketing interplay, while also sharing a concern with timbre.
The parameters of noise versus purity and energies of chaos versus calm, immersion, timbre and space are the main subjects of *stop what's started,* with consonance versus dissonance, stability versus tension, timbre, microtonality and space combined within *seek*.

Textural writing features in *turn*, also an interest in blurred harmonies, dense layering and colourful orchestration.
Both *numarimar* and *eriu* share an emphasis on simplicity, purity, pacing.

It is interesting to uncover points of contact, as well as contrast, within the ten works discussed. In the following chapters, the aesthetics and compositional concerns of each individual piece will be considered, the first of which led to a new way of approaching electro/acoustic merging, inspired by the 'music of the spheres'.

Chapter Three: *do you remember the planets?* for Viola and Tape

3.1 Introduction

Music of the Spheres

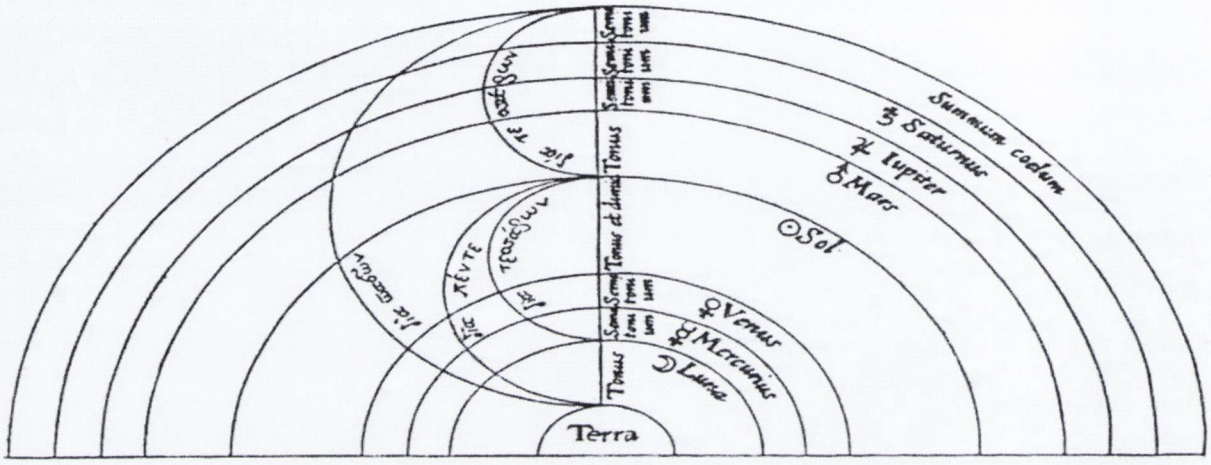
'Music and Science begin at the same point, where civilisation itself begins, and standing at the source is the quasi-mythical figure of Pythagoras'.[35] Pythagoras believed in an interconnection between planetary movement and musical harmony, a philosophy based on a reverence for mathematics and faith in the interrelatedness of all human knowledge. Perhaps his most significant contribution to music theory was his discovery of the mathematical relationship between harmonic intervals, which revealed correlations between the purity of arithmetic expression and the consonance of the resulting music. 'He recognised in those sounds the concord of the octave, the fifth and the fourth. He saw that the sound between the fourth and fifth, taken by itself, was a dissonance, and yet completed the greater sound between them'.[36]

do you remember the planets? was partly inspired by Pythagoras and his theory of the 'music of the spheres'. Pythagoras developed the theory that the distances between the planets would have the same ratios as produced harmonious sounds in a plucked string. He believed that the solar system consisted of ten spheres revolving in circles, with each sphere producing sound as it moved through the air. It was thought that the closer spheres produced lower tones while the farther moved faster producing higher pitched sounds. All combined into a beautiful harmony, *the music of the spheres.* Hoffmann has noted the appeal of this concept to the compositional imagination:

> Pythagoras taught that each of the seven planets produced by its orbit a particular note according to its distance from the still center, which was the Earth. The music thus produced is what was called Musica Mundana, which is usually translated as Music of the Spheres. (Needless to say, it proved irresistible to some composers; the Danish composer Rued Langaard wrote a symphonic tone poem of that title. Its music is so otherworldly that Pythagoras, surely

[35] Jamie James, *Music of the Spheres*, Copernicus , New York, 1993, p.20
[36] Ibid, p.33

would have approved).[37]



From Stanley's *The History of Philosophy.*

THE INTERVALS AND HARMONIES OF THE SPHERES.

In the Pythagorean concept of the music of the spheres, *the interval between the earth and the sphere of the fixed stars was considered to be a diapason—the most perfect harmonic interval. The following arrangement is most generally accepted for the musical intervals of the planets between the earth and the sphere of the fixed stars: From the sphere of the earth to the sphere of the moon, one tone; from the sphere of the moon to that of Mercury, one-half tone; from Mercury to Venus, one-half tone; from Venus to the sun, one and one-half tones; from the sun to Mars, one tone; from Mars to Jupiter, one-half tone; from Jupiter to Saturn, one-half tone; from Saturn to the fixed stars, one-half tone. The sum of these intervals equals the six whole tones of the octave.*

Fig.3.1 The Intervals and Harmonies of the Spheres from Stanley's *The History of Philosophy* (1655)

The octave, fourth and fifth were the intervals considered most harmonious by the Greeks. It is thought that these were discovered by the Pythagoreans from experimentation with a single string and moveable bridge, finding that these 'pleasant' intervals could be expressed as the ratio of whole numbers, in particular those derivable from the number 3 (2/1, 3/2, 4/3). *Do you remember the planets?* makes much use of intervals of the fourth and fifth, played by stopped strings. These 'harmonious' intervals are explored in contrasting ways – in a raw, visceral manner using distorted electronic manipulations and in a 'pure' almost austere way with ethereal harmonics.

One of the primary concerns when composing this piece was the expression of such a rich and multi-layered concept (the emergent sonic properties of planetary motion) with a single solo

[37] Paul Hoffman, *Greek Drama, Philosophy and Mythology in Classical Music,* New Jersey, 2009

instrument. The timbral language available can be expanded through electronic addition and manipulation which is evident in the piece, yet there was also a wish to first explore the acoustic sonic possibilities of the viola itself.

3.2 Solo Instrumental Writing - Plurality within Singularity

Wilkins, in *Creative Music Composition* discusses the various challenges and considerations when composing for solo instrument, where the timbral possibilities of the individual instrument may be explored to create a sense of 'plurality within singularity.'

> Composing for a monodic instrument requires technical virtuosity of the composer as well as from the performer. In the most interesting works of this genre, several musical layers are in play simultaneously. With the capacity of sounding only one note at a time, the monodic instrument is given the task of implying a multiplicity of musical threads. Harmonic fields can be established through the repeated sounding of specific note groups. Thus, melody and harmony can be suggested. In addition, the full range of instrumental timbres can be employed as layers. The whole might be enhanced with integrated electronics in order to transform the "natural" sound of the individual instrument. This element provides yet another layer to add to the principle of "plurality within singularity".[38]

do you remember the planets? does incorporate the potential for harmonic writing (rather than implied harmony) due to the availability of multiple-stopping on viola, which extends the harmonic possibilities beyond monophony. The use of electronics further increases the possibilities for timbral variation and extension. Wilkins cites the approach of Saariaho as an intriguing example of exploiting the richly diverse sonic potential within solo instrumental writing:

> Saariaho is a composer who thoroughly researches the possibilities of the medium prior to composition. In this case (*NoaNoa* for flute and electronics) the plurality within singularity includes the solo flute with its stock of extended playing techniques, the involvement of a text, and the subtle sonic enhancement effected by the use of electronics.[39]

With this piece there was a desire to contribute to the repertoire of solo viola music, bringing this instrument which is so sonically rich in potential, to the foreground.

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[38] Margaret Lucy Wilkins, *Creative Music Composition*, Routledge, Taylor & Francis Group, New York 2006
[39] Ibid

There is certainly the sense that the electronics, while at times attempting to abstract and subvert the original acoustic timbre, are primarily used to enhance and extend the viola sound. I wish to explore this dichotomy between pure acoustic and digital electronic sound, with varying degrees of abstraction. There is interplay between subtle closely linked electronic enhancement, to noise elements at the opposite end of the scale, retaining little semblance of the original viola timbre.

For the opening section of the work, rich 'glitchy' electronic harmonies are created using granulation of the viola double-stops with a delay. This produces a quasi-canonic sense of harmonic overlap. Throughout this section the electronic aspect dissipates into noise, due to increasing distortion creating a sense of 'beauty with a rough edge' which is a recurring feature in much of my work, the purity of the string sound corrupted with distorted noise.

3.3 Viola Writing and Formal Considerations

The opening section of the piece provides a strong statement of the 'theme', which utilizes a figure of consecutive fourths and fifths. While these double stops are being used to convey an atavistic connection to Pythagoras' notion of the 'stopped string', there is a clear sense of melodic line, from the upper pitches (eg. C E B x 2 - D C A - C B A). This sets up a 'riff'-like figure, stating a memorable landing mark as a point of departure for the piece, rooting it back from its many excursions away toward contrasting material.



Fig. 3.2 *do you remember the planets?* Viola theme B.6-11

Once a strong aural image like this has been established in the mind of the listener, it allows for the development of variations upon this thematic material. Due to the characteristic melodic contour of this repeated motif, it can be used at various points throughout the piece to provide interruptions or interjections within quite contrasting musical material (eg. the pizzicato and arco alternations, and the frenetic semiquaver passage interspersed with moments of calm at b.104-108).



Fig. 3.3 Viola frantic to calm

Structure: Section A
1-4 Introduction: Introduces premise of double stopping and pitch material of theme 5-39 Statement of theme, introduction of glissando element 40-61 Development of thematic material using alternating pizzicato and arco 62-85 Transition: Noise-based section, emphasis on texture and intensity, not clearly pitch-based
Section B
89-108 Semiquaver rapid passage, more chromatic, staccato, using interjections of opening thematic material. These very abrupt shifts in mood and harmony aim to jolt the listener and play with their sense of expectation. This leads to a strong restatement of the theme/'riff' at b.109. 109-122 A return to the opening 'riff' figure, variation primarily is explored through the electronic component. There is an attempt here to create coherence and consistency through maintaining an unchanging aspect (in this case the viola figure) with variation of one parameter (here evident in the choice of electronic manipulation used, using timbral variation while keeping pitch constant).
Section C
b. 126-160 Sparse fluid section, exploring the use of viola artificial harmonics - this connects to the notion of interstellar space, the stillness of the night sky. 161-170 Transition to concluding section using glissandi - the overtone series is used here to relate to the concept of the harmonic spectrum, with its association to the concept of 'music of the spheres' (the Pythagorean theory of harmonic ratios) 174-198 Concluding section again connects to opening material through the use of double stops based on consecutive fourth and fifth intervals. This is harmonically expanded, moving into a wider pitch range and also incorporating at times wider intervals of the sixth.

Table 3.1 Structure of *do you remember the planets?*

Parallel fifths are a significant part of the harmonic language of *do you remember the planets?* particularly prominent in the final bars. There is a reflective conclusion to the piece, providing calm and finality after the preceding glissando gesture ascends into the ether, trailing off into floating granular ghosts of the viola line.

3.4 Electro/Acoustic - The Hyperinstrument

Mapping of musical gestures onto the various parameters of signal processing must be carefully planned. The output may be considered in two different ways: as an integrated component of an instrument, capable of enhancing its timbral qualities, or as a generator of new musical material, producing variations and as an accompaniment based on the original output. Processing can also be used to create a single "hyperinstrument" that is closely wedded to the original instrument's sound and playing technique, greatly expanding the instrument's sonic palette and the performer's expressive role in shaping the sound.[40]

With this piece, there was an interest in the consideration of new approaches to combining acoustic and electronic sound, attempting to uncover strong sonic connections between them. A primary concern was the idea of extending the possibilities of the viola's timbre, building a form of hyper-instrument, through acoustic and electronic combinations. At times the electronics appear to act like an extension of the viola sound, adding a whole new layer of possibilities.
I was interested in the notion of creating close synchronization, similar to live processing, with that sense of dynamic interaction. The degree of interactivity and immediacy associated with live interactive processing, 'expanding the performer's expressive role in shaping the sound' can produce an engaging performance environment, yet was not employed on this occasion. Experiments in recent years have resulted in the successful integration of live processing within my electroacoustic compositions (eg. *Wayang* for clarinet, cello and piano, with live computer processing of the acoustic sound). However, the exact synchronicity developed in the process of composing *do you remember the planets?*, coupled with the specificity of detailed timbral effects and layerings meant that the use of prerecorded tape playback for the piece was preferred. There was also a concern that there may be some latency issues in attempting to achieve this effect with live processing.
In the early stages of the compositional process, much of the viola material was developed, converted from midi to audio and then used for electronic processing experiments in Max/MSP. The electronic material is entirely derived from manipulations of the viola line, at times used in a quite a clearly connected manner focusing on one particular electronic effect, while other sections incorporate layerings of processed viola sound to create a more dense texture.

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[40] Machover, T., and J. Chung 1989. 'Hyperinstruments: Musically Intelligent and Interactive Performance and Creativity Systems', *Proceedings of the 1989 International Computer Music Conference*, San Francisco: International Computer Music Association, 186-190

3.5 Electro/Acoustic Interplay in *do you remember the planets?*

For the introduction, distortion is used with ring modulation and reverberation. A recurring concern is the use of electronic processing to play with the listener's sense of performance acoustic space, for instance utilizing reverberation to suggest a larger acoustic environment. This is also used to dramatic effect in the second movement of *numarimur*, where extreme reverberation to process and abstract the vocal sound is used in the tape component. The sonic result is that of voices heard in a heavily reverberant cathedral, even when actually performed in a dry acoustic space.

In *do you remember the planets?* another layer is added to the electronic sound, creating a form of textural additive process - where layers of quite simple and repetitive material are superimposed to produce a much more complex overall result, perhaps building to a climax both dynamically and in density. Additive process also occurs in *seek*, where fluid detuned melodic lines are layered to create a rich microtonal texture. This new layer introduces an electronic sound world which is to become a pivotal part of the tape component - that of granulation, repitched an octave higher with delay. The repitchings allow the electronics to at times occupy a frequency space which is not already filled by the viola line - frequency range is used to merge and diverge the viola and electronic lines. When both lines occupy a very close frequency space, it can aid in their perceptual fusion (streaming), the opposite aiding in their differentiation (segregation) – a principle derived from auditory scene analysis.

The granulation used throughout the piece is created using a shuffling technique, whereby short sections of the audio signal are isolated and rearranged, 'shuffled' in playback. At times this has the effect of extending the sound, 'scattering' the harmonies through various granular permutations and providing internal timbral nuance.

The level of ring modulation is increased to heighten the level of increasing tension which is later echoed by the viola line. This increase in tension is further developed with the introduction of noisier transient elements in the electronic part heralding the move to a more percussive, sharply articulated viola pizzicato section. As previously noted, a search for strong sonic

connections between the acoustic and electronic forces is a recurring concern in my electroacoustic work, at times merging in close timbral unity, and also to introduce an upcoming shift in material or mood. For example, in this case, the tape part is subtly signalling change to more percussive rhythmic material, while the viola continues with the characteristic double stop figure.

The interplay of acoustic and electronic, can aid in the construction of transitional sections, evident in this case. A similar method is employed where the viola continues its pizzicato material, while a high pitched descending electronic glissando enters in the background. This moves increasingly to the foreground, where the percussive viola with tape glissando section results in a battle for supremacy between the acoustic and electronic.

A dense glissando permeates the electronic sound world, created using source material from a viola glissando. As the glissando grows in tension and dynamic, extra layers are added creating the effect of layered descending glissandi moving at differing speeds. This also connects to an interest in the use of textural additive process, creating an almost Escher-like *Ascending and Descending* endless staircase effect, where downward slides moving at different rates overlap upon one another, always descending yet appearing to never reach a fixed destination point. In another connection to Ligeti, this perhaps suggests the layered ever descending melodies within his sixth Piano Étude *Automne á Varsovie (Autumn in Warsaw)*. This device perhaps also subconsciously stems from an interest in the textural writing of Xenakis as previously cited, for instance, the use of superimposed ascending glissandi at the opening of his orchestral *Metastasis*.

The layered electronic glissandi eventually reach a stasis, a landing point, where the drone stabilizes to prepare for the following punchy section. The staccato choppiness of the viola part was used to trigger sharp percussive impulses, which contributes to the strong sense of interactivity and dynamism. The electronic part generated here certainly demonstrates the influence of experimental electronica and industrial noise-based musical genres, with its metallic edge and rhythmic asymmetry.

A rapid semiquaver section deviates from the preceding material in many significant ways, in the sense of tempo change with frantic rhythms, in the sharp articulation, and also in how the electronics are treated. Another major deviation is evident in the harmonic change - there is a move away from the almost modal 'white-note' harmonies of the opening section to a much more chromatic language. This perhaps represents turmoil, moving away from still, stable harmonies towards instability and a state of flux. This interplay and tension between chaos and stasis, as previously discussed, may be found throughout my work.

Order returns with conviction from the restatement of the opening thematic material - there is almost a 'theme and variations' approach to handling this structurally, as whenever this figure recurs at various points throughout the piece, it is recontextualised through the superimposition of differing electronic textures, now delay, granulation and distortion are introduced simultaneously. A much greater degree of distortion is used here to lend more intensity to the sound, and further abstract it from previous occurrences.

In contrast to this, ethereal string harmonics emerge from the silence - a calm stillness after the manic tension of the preceding passage. The electronics subside into silence, allowing the purity of the viola harmonics to gain prominence, later shadowed by a granulated version of the viola line pitched an octave higher and delayed, creating a canon effect between both forces, led by the viola. Again, granulation with delay is used in the tape part to achieve a strongly integrated unity, where the tape part appears to be directly 'following' the viola's melodic line. The viola then moves into an overtone series glissando on harmonics, recalling the origins of timbre, of harmony, alluding to the underlying concept of planetary motion and the harmonic spectrum.

The closing section incorporates delay and granulation in the tape with double stopped viola harmonies - the viola part traces a clear sense of melodic line, using upper pitch voice-leading.



Fig. 3.4 Viola voice leading

Often the electronic aspect acts as a timbral modifier here, to imbue the viola sound with an otherworldliness, while also as a way to extend the sustain of the line. For example, a viola chord may have reached the decay portion of its natural amplitude envelope, yet this is morphed into the tape sound which continues beyond the viola's decay, dovetailing into a seamless legato unity.

3.6 Conclusion

Double stops using intervals of the fourth and fifth frame the piece, perhaps alluding to an almost medieval harmonic language. I wished to create the effect of timelessness for the closing section here, a music that has no beginning or end, resonating through space.

Through use of granulation and 'glitch'-based digital effects there is an attempt to make a connection between old and new, medieval and contemporary experimental electronica. I wished to create a unique sound world that would have immediate impact from the opening bars, drawing the listener in. There is a dichotomy between the overtly 'electronic' nature of the sound and the more 'acoustic' timbres, at times the viola is deliberately overwhelmed by the tape (for example the downward electronic glissando halfway through) and vice versa (where the viola's strength is daubed with fragile electronic echoes).

There was a desire to create an exciting 'rollercoaster' for the listener, with rapid 'jump cuts'[41] between material. I also wished for the piece to have immediacy and be communicative on first experience. While taking the theory of the music of the spheres as inspiration, there was not a reliance on abstract sonification of numbers or theory to be the driving force, but an aim that the overall piece be appreciated for its sonic result and atmosphere.

At the end of the piece there is an aching quality to the way in which the fragile echoes appear to spin through the space, giving it an added spherical dimension, in this sense, perhaps a true 'music of the spheres'.

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[41] 'Jump cuts' is a term from film editing in which an edited cut causes the subject of the shots to appear to "jump" position in a discontinuous way

...one senses a connection in her use of microtonal inflections within harmonically open textures, something that gives her music a combination of bold assertiveness and smooth glassy elegance. *Planets* is a good example: the viola part is quite sparse, dominated by strident fifths and fourths, but the accompanying soundtrack offers an alternative perspective of diffuse textures and harmonies that completely transform the solo line, opening its solidity and certainty up to question.[42]

The 'alternative perspectives' explored in *Planets* as noted by Rutherford-Johnson, are further developed in *stop what's started,* with its extreme contrasts. The noise-based elements which attempt to break through the texture during *Planets* are certainly given full voice in this next work for four-channel tape.

[42] Tim Rutherford-Johnson, *The Rambler*, April 2010 http://johnsonsrambler.wordpress.com/2010/04/18/10-for-10-linda-buckley accessed 20th April 2010

Chapter Four: *stop what's started* for four-channel tape

4.1 Introduction

Bob Gilmore in his article 'All collisions end in static - the music of Linda Buckley' refers to the dichotomy of opposite extremes explored in *stop what's started*:

> The piece is in two contrasting parts, the first noisy and industrial, like a consort of malfunctioning chainsaws that nonetheless prove to be surprisingly harmonious, and the second gentle and hypnotic, like distant organ music on the threshold between sleep and waking, giving way to a surprising, quasi-chaotic conclusion.[43]

This was the first piece which was composed for presentation by the Spatial Music Collective. *stop what's started* is for four-channel tape playback, the title referring to the inspiration behind the piece, that of an unrelenting noise machine. The opening uses a series of rhythmic noise-like timbres, with varying degrees of intensity. The work, as previously noted, is concerned with the polarization of opposite extremes, in this case, chaos and stasis. It explores the notion of a powerful 'noise machine' which eventually exhausts itself. The tensions which lie between points of stasis and high activity is of interest here – hardcore noise versus delicate fragility, chaos versus order. The 'noise' element so prevalent in the work is also related to my experience of Berlin noise improvisation.

4.2 Spatial movement

Spatially a major consideration was the interplay between sound presented in the front speakers and the speakers positioned behind the listener - front versus back. This is particularly evident where for the first half of the piece, the rear speakers are mostly 'shadowing' what is occurring in the front two channels. For the latter half, there is almost a dialogue between front and rear, a form of counterpoint which is slow moving and immersive, then increasing in intensity. To achieve this immersive effect in this second section, soft attacks are used on sounds, to create merging, warm, sustained textures.

A sense of stasis emerges from the chaos in the front channels with a slow-moving melody. This is later taken up by the channels positioned behind, in a form of counterpoint. Harmony is the

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[43] Bob Gilmore, "All Collisions End in Static – the music of Linda Buckley", *The Journal of Music in Ireland*, vol.8 no.5 (September-October 2008), 28-32.

focus here, a more clearly pitched section following the quite unpitched opening noise section. The aim was to create a sense of absolute contrast, enveloping the listener in sound. For instances where sharp localisation is required, dynamic and intensity builds, using the same pitches from the immersive harmonic texture, but in a more pointillistic fashion, with sharper attacks and a sense of almost percussive 'glitchiness'. The concept of 'beauty with a rough edge' comes to the fore in this piece, where pure textures and harmonies are attributed a raw quality through the use of noise and 'glitchy' granular processing.

4.3 Formal Design

This piece certainly relates to an early interest of mine in found sound and machine sound - how machine-like sounds may be used in an interesting way musically.

The opening of the piece however is not simply experimentation with noise in a timbral sense, but asymmetrical rhythmic patterns emerge, speeding up, slowing down, shifting gear. There is an imagined space created, that of a factory machine world, an industrial tumultuous energy which erupts at various points throughout. The extreme contrast between sections is evident in the waveform and spectrum graph provided below (Fig. 4.1).

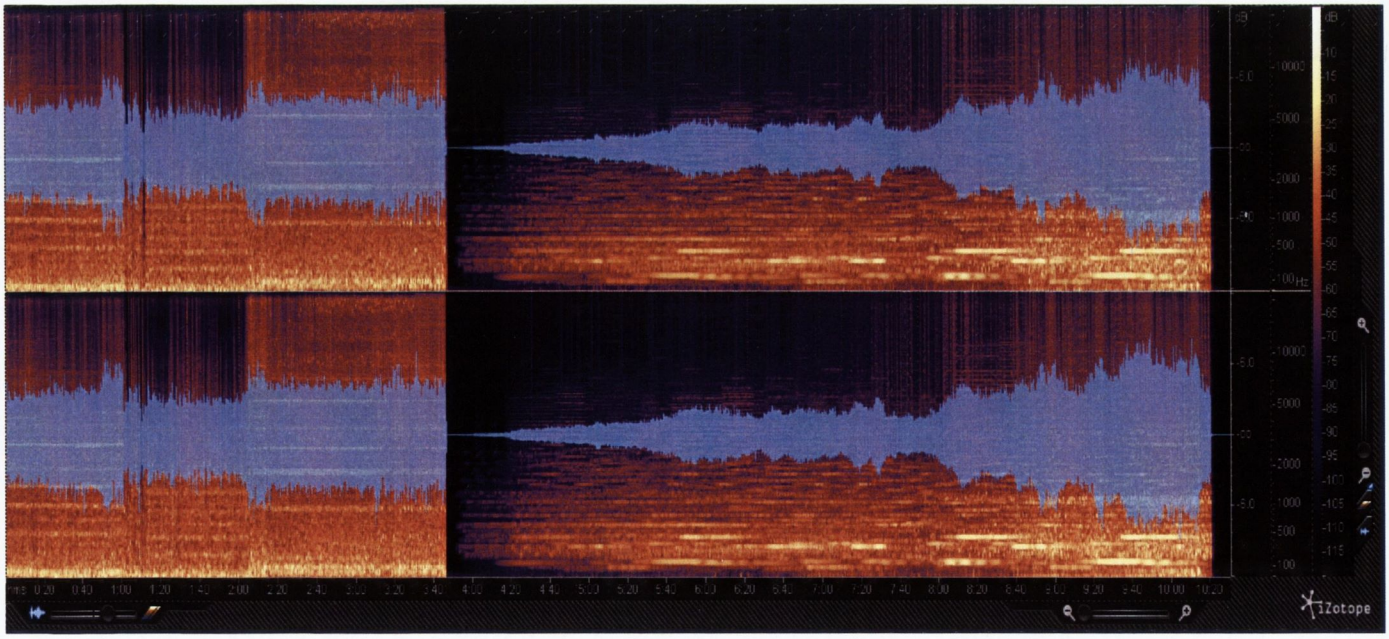


Fig. 4.1 Waveform and harmonic spectrum of *stop what's started*

Structure
0.00 Violent noise-based shifting rhythms of most prominence in the front speakers, rear speakers at times mirroring the front.
0.50 New rhythmic figure emerges, strongly accented.
1.01 Interruption to rhythmic noise patterns, with extreme pitch shifting and glissandi.
1.12 Begins with another rhythmic pattern at a lower pitch range. Higher frequency layers morph out of this repetitive pattern.
2.04 A sweep up into the higher frequency plane, with a sense of increased tempo and heightened intensity
3.10 This intense cloud of sound breaks into a new rhythmic pattern, which has an asymmetric quality, constantly shifting.
3.48 The energy abruptly dissipates into silence, leaving room for calm contemplation and a move to simplicity. This silence morphs into a slow fade in of stable harmonic material.
6.20 The stable ambient 'door creak' figure becomes more intense.
7.20 Glitchiness increases in a sense of growing intensity, adding arpeggiations of the smooth ambient figure.
8.08 An extra layer is added, that of the melodic line which has been pitched an octave higher and granulated. There is a sense here of elements fighting against one another for supremacy.
9.00 Rapid electronic arpeggiations become increasingly random and chaotic, combined with the slow moving expansive melody line.
10.00 The texture continues to build in density, dynamic and tension, with the opening noise material returning, perhaps providing a sense of recapitulation. This produces an overall structure of A B B+A (combined).

Table 4.1 Structure of *stop what's started*

4.3.1 Calm after the Storm - from Chaos to Rest and back again

To achieve the result of dense noisy textures, layered distortion processed in Max/MSP was used. I chose to limit the type of sound used for greater impact and to produce a solid clear statement: the opening only uses all electronically generated noise with no organic sound of acoustic origin. Various rhythms are created that constantly shift, creating a tense & chaotic atmosphere.

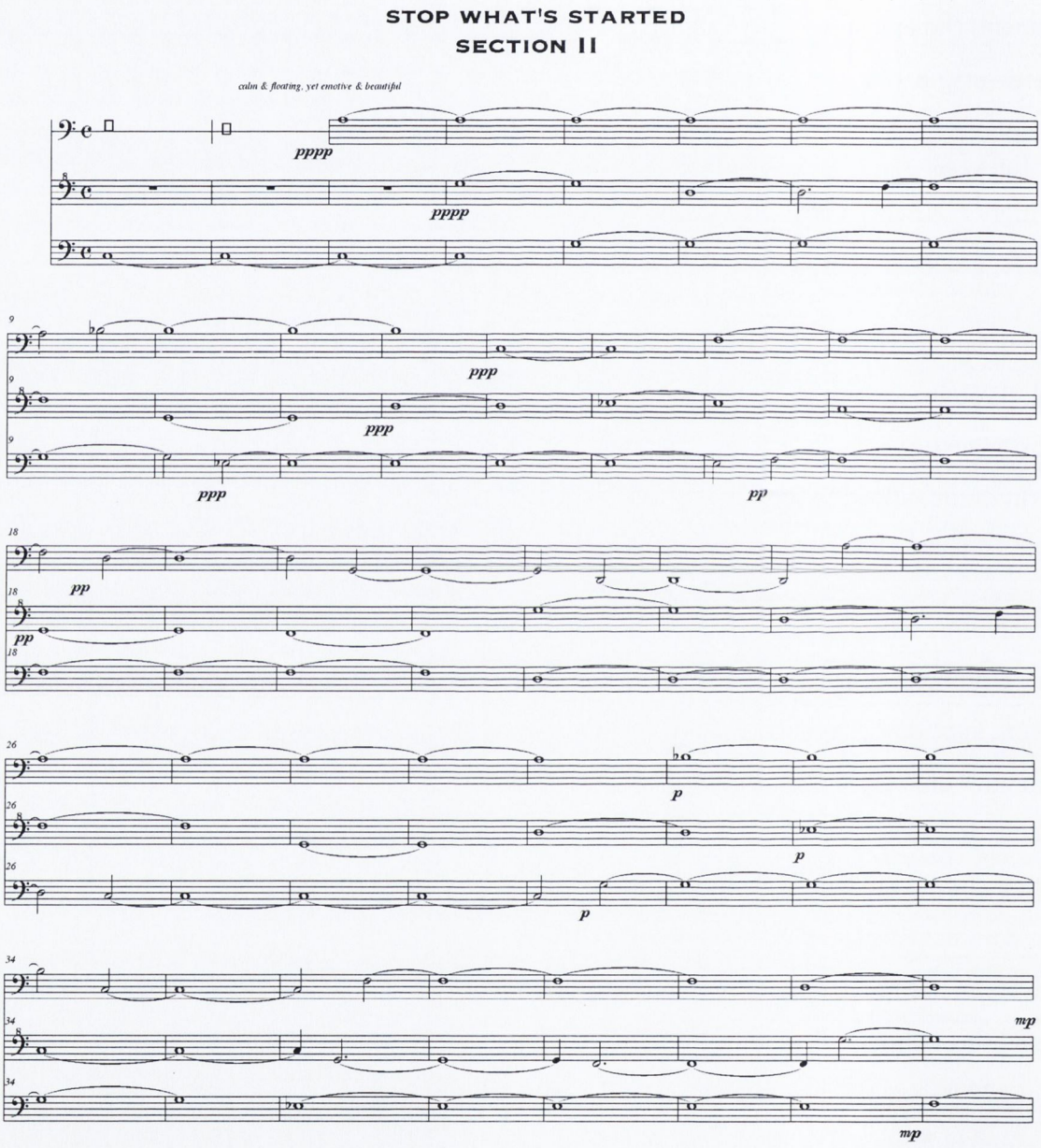
The higher 'glitch' based sounds which recur at various points throughout the piece are easier to localise, emphasising the spatial aspects.

In the opening section there is an atmosphere of energy which cannot be contained, wishing to break through, requiring resolution. Resolution is however delayed, which contributes to the almost claustrophobic quality of the sound. Noise and texture is the focus here where it becomes less rhythmic, allowing the ear to focus on the internal frenetic energy of the sound itself. This leads to a tense climactic section, reaching an explosive breaking point.

The waveform displays clearly the dramatic shift from noise signal to silence. There is a sense of relief, a moment of pause following the sonic assault of the preceding few minutes. A smooth ambient harmony emerges from the silence in complete contrast to the chaotic noise heard until this point - enveloping warmth following abrasion. This was created from a source recording of a metallic door creak which has undergone various electronic manipulations - particularly pitch shifting and reverberation abstracts the sound from its original source association. This material is predominantly placed in the front speakers. An expansive overlapping melodic line joins this more static harmonic texture from the rear speakers, beginning at a soft dynamic and increasing in level throughout. The combination of these parts produces an immersive, hypnotic dream-like effect which can also be quite emotive, due to the resultant harmonies. The melodic line is presented in quite a reverberant manner for subtle minor abstraction while retaining the sense of harmonic progression.

A notated example displaying the pitch relationships and harmonic progression from the second section of the piece is provided in the following pages (Fig. 4.2). This pitched material emerges gradually from behind the listener, positioned in the rear speakers and increasing in intensity,

creating slow overlapping harmonies.



Linda Buckley 2006

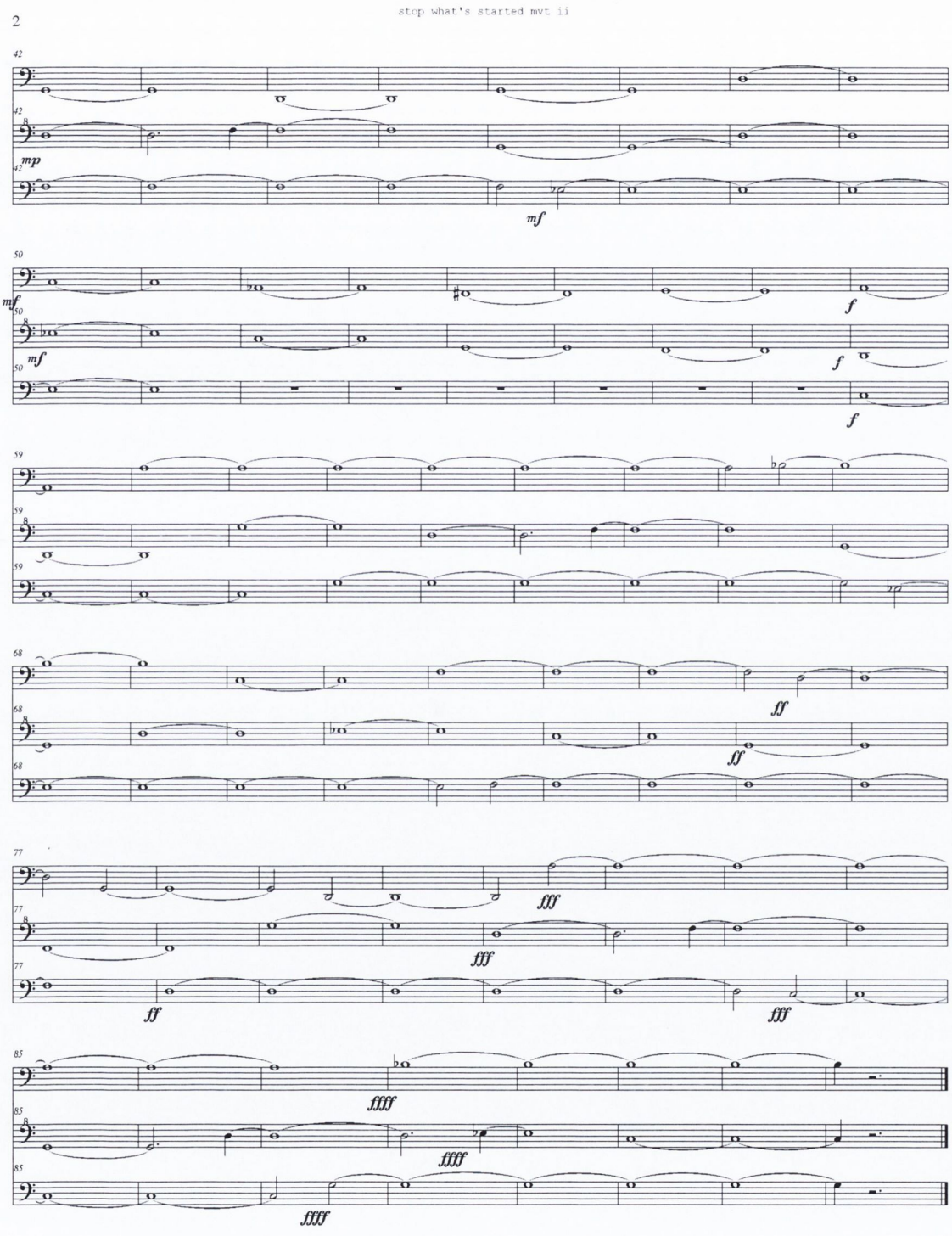


Fig. 4.2 Pitch material used in second section of *stop what's started*

4.3.2 Localisation versus Immersion

The glitchy arpeggiations used in the final build up of intensity has the effect of rhythmicizing what has previously been presented in a legato almost 'drone-like' fashion - it becomes more active and increases in volume. Issues of spatial perception certainly informed the choice of material used and the sonic properties desired. The listener's most acute sense of localisation lies in the frontal direction, which is a significant factor to take into consideration when assigning material in a spatial context. The high pitched 'glitch' sharp transient figures are mostly placed in the front channels.

Localisation is made possible here with the use of directional sounds - the most effective of these have a strong attack and a significant spectral content. A strong attack has the potential to instantly attract the listener's attention in the direction of the sound's spatial origin. High frequencies may also be more easily localised than lower, due to the shorter waveform. Issues of localisation and immersion were considered in terms of sound source choice, and its subsequent implied spatial movement. Granulation (particularly using long grains, noisy/glitchy) allows for clear articulation of spatial trajectory, as a succession of short attacks constantly reiterate the sound's position for the listener.

By granulating the sound sample in this case, the line becomes stretched and expanded. When panned through the surround speaker array, elements within the sound are highlighted and brought to the audience's attention which previously may have receded into the background. Shapes and movement within a short sound sample can become apparent, emphasizing internal timbral nuance. There was also a desire to move from sharp localised sounds to more sustained elements, from pointed to more immersive. This can begin at a very precise spatial point for the listener, then through a granulation process of changing grain size, overlap, speed, and spatial distribution transforms the sound from a short gesture or object which is easy to localise, to a sound-mass, more immersive and perhaps widening out the sense of space.

In the three-dimensional field, there is perhaps the potential to experiment with a greater number of simultaneously identifiable sounds than in a stereo presentation. Here I was afforded the opportunity to construct quite dense counterpoint - the spatial separation means that more sounds can be distinguished from one another, and perceived (with less masking than in a stereo

situation).

When the noise-based timbre is revisited in the final moment, this material is added as a new layer, however due to the surrounding chaos, it feels quite embedded in the texture, almost like a subliminal sonic connection, framing the work.

4.4 Conclusion

From the jolting first seconds of the piece, it appears that the intention of *stop what's started* is a sonic assault on the listener - calling to mind an intriguing term used within underground electronic improvisation, that of 'noise terrorism'. There is an expression of a different part of my personality, extreme, forceful, internal made external, with a machine-like intensity. The energy is constantly being 'ramped up', taken up a gear with many different strata of activity contained within. From the slow section there is an attempt to create emotional impact from the vertical made horizontal, with extremely slow moving melody lines layered producing resultant harmonies. The glitch/noise elements begin to subvert the purity of the melodic lines, yet perhaps this is not merely subversion. The rapid arpeggiations seem to represent beauty intensified, until there is nowhere left for it to go – when it becomes subsumed by an onslaught of noise, perhaps that is its natural destination, bringing it to another place, to joy.

Seek seems to explore this concept in reverse, moving from purity to darkness in an immersive eight-channel array.

Chapter Five: *seek* for eight-channel tape (2007)

5.1 Introduction

The power of the computer to help us construct the internal architecture of sounds from first principles allows us to broaden the concept of composer to include the notion of sonic sculpture.[44]

seek was also originally composed for presentation by the Spatial Music Collective. The piece evolved from a project where international artists from many differing disciplines (eg. sound, video, photography, sculpture) contributed to and collaborated on a multimedia installation based on the theme of 'secrets', to be exhibited at the National Gallery of Fine Arts, Amman, Jordan: "It is always exciting to know a secret. We as humans have a desire to see behind the mask of everyday life and there is always a thrill in discovering a secret, whether personal and political, fiction or reality".[45]
In this piece, I was interested in the 'secrets' inherent within instrumental sound - in this case wishing to explore those sounds which fall between the twelve tones of the equal tempered scale, microtones. All of the material for this piece is derived from a single source, that of a short violin line which is expanded through microtonal deviations.

The original recording was made of the Cork-based musician Áine Mangasang on violin - this was intentionally recorded in a 'lo-fi' manner using a minidisc recorder and condenser microphone, as it was felt that the addition of external environmental sound and certain 'flawed' qualities or tuning discrepancies within the string sound would be desirable in producing a richer and more engaging overall timbral result.
The original violin line is notated below:

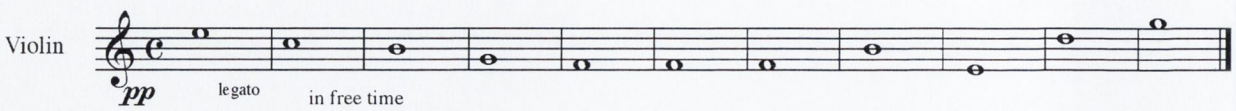


Figure 5.1 *Seek* violin source melody

[44] Trevor Wishart, *On Sonic Art*, Ed. Simon Emmerson, Harwood Academic Publishers, 1996

[45] Trish Edelstein, Boomerang Productions, Cork 2007 http://boomerangproductions.ie/secrets_audiomap.htm accessed 1st March 2010

This is played with legato bowing and a free sense of time, an emphasis on rubato which lends the original recording an intimate and fragile quality, almost akin to listening to a fiddler play a slow air in their kitchen. There are 'noisy' fragments of sound introduced between bowings which produce an imperfect, natural quality to the playing.

In previous interviews I have described the aural effect of *seek* as akin to "diving into a sea of lush microtones', which was the desired effect when composing the work. There was a wish to envelop the listener in a blanket of rich warm sound, through the use of eight-channel spatial diffusion. This sense of immersion is achieved in many ways throughout the piece, primarily through the gradual construction of dense textures using a form of textural additive process, removing the sharp attack from sound to create less localisation, therefore resulting in a more immersive overall effect. There is an attempt to create a visceral experience for the listener, which connects physically as well as sonically.

Joanna Demers has noted the inherent sensuality in the experience of drone music, "some we hear purely for its physical, rapturous sensual qualities".[46]

Demers discusses the difficulty of encapsulating in words the physicality of this immersive aural experience:

> But there is also the physicality of sound, and this physicality is the most challenging aspect about the listening experience. It defies words… part of this interpretation entails a mute, wordless immersion - an experience of sound. We have great difficulty describing this experience, but it nonetheless assures us that music has not reached an end, because all the philosophising in the world cannot duplicate what it feels like to hear a sound.[47]

5.2 A Lot from a Little - Sound Source Progression within *Seek*

Seek was constructed using one single sound source – a violin. The violin sound is mostly used in its unprocessed state, retaining much of its original sonic characteristics. The original violin sample is pitched slightly upwards producing a microtonal quality which opens the piece. While

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[46] Joanna Demers, 'Sensuality Matters', *The Journal of Music*, Vol. 2 No. 2, June/July 2010 p.32
[47] Ibid, p.31

some sense of melodic line exists in the piece, this is intentionally not motivically based, with a line that is stretched out in time, played so slowly that the focus is on the timbre itself, rather than on a clear sense of melodic phrasing.

The source material is deliberately restricted, just one sound source is used to generate the material for the whole piece – a short violin melodic line, expanded through microtonal deviations and layering of sound between speakers. The piece opens with a clear statement of the melody in a horizontal manner. As the piece progresses, traces of melody can be perceived however due to the increasingly density of the layered lines, this becomes much more vertical and harmonic, and later abstracted - as the pitch deviates further away from the original source.

5.3 Spatial Envelopment

The slow melody line is heard moving between the different channels of the eight-speaker array, heard once without additional microtonal layerings, then one by one layers are superimposed. The 'tune' is still recognized but is strangely askew and becoming increasingly blurred.
This slow morphing polyphony has the spatial order of entry 5, 6, 8, 3, 4, 7, 1 and 2, which increasingly envelops the listener, beginning from the rear channels and moving gradually to the front (See Fig. 5.2). This perhaps adds an element of mystery, where the sound is gradually unveiled, shifting and morphing in the background, positioned behind the listener. It does not reach the frontal position until one minute into the piece, where it is finally revealed in its entirety, becoming foreground.

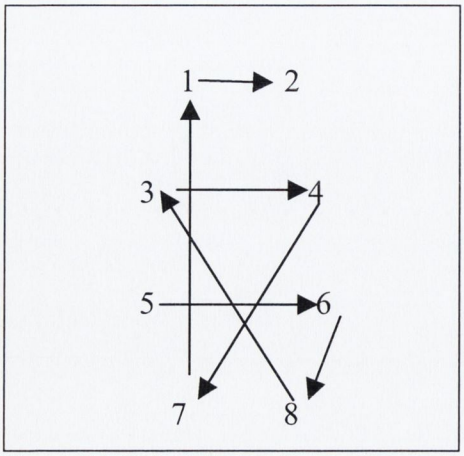


Figure 5.2 Order of spatial entry from *seek* opening

Extra pulsating drones occupy the lower frequency space to saturate the spectrum heard from the frontal position for greater impact. Included within this layer are high pitched subtle granulated interjections, evident in the appearance of high frequency energy 'spikes' which occur intermittently in the spectrum. (See Fig. 5.3)

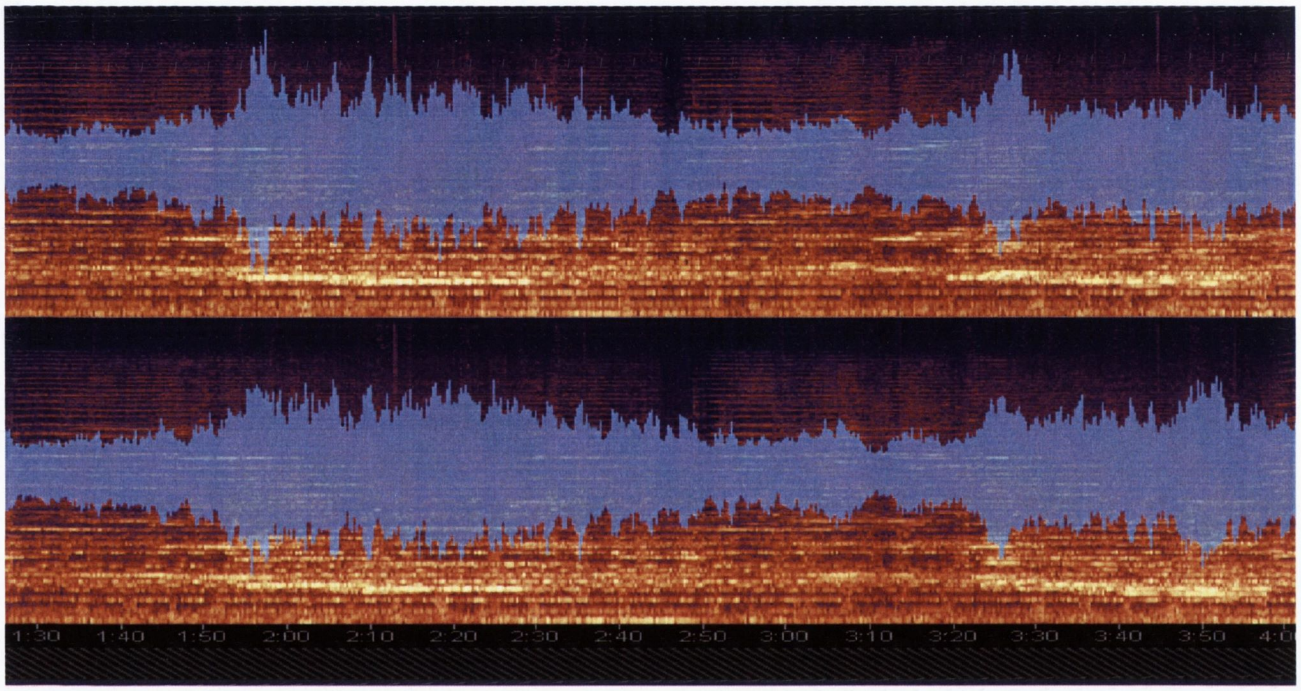


Fig. 5.3 High frequency 'spikes' representing short 'glitch' granules, mid-*seek*

The rate of change increases as the piece develops - the pitch deviations are slight and spaced out over longer durations at the beginning, moving to more extreme glissandi in both directions at the end of the work. This is clear in the unusual harmonic spectrum of channel six, where there is a spectral expansion in the final few minutes, predominantly ascension to a higher frequency plane. The upward glissandi are exemplified in the frequency sweeps which begin four minutes into the piece, a major deviation from the preceding energy displayed in the spectrum, which has been more harmonically constant and stable (See Fig. 5.4).

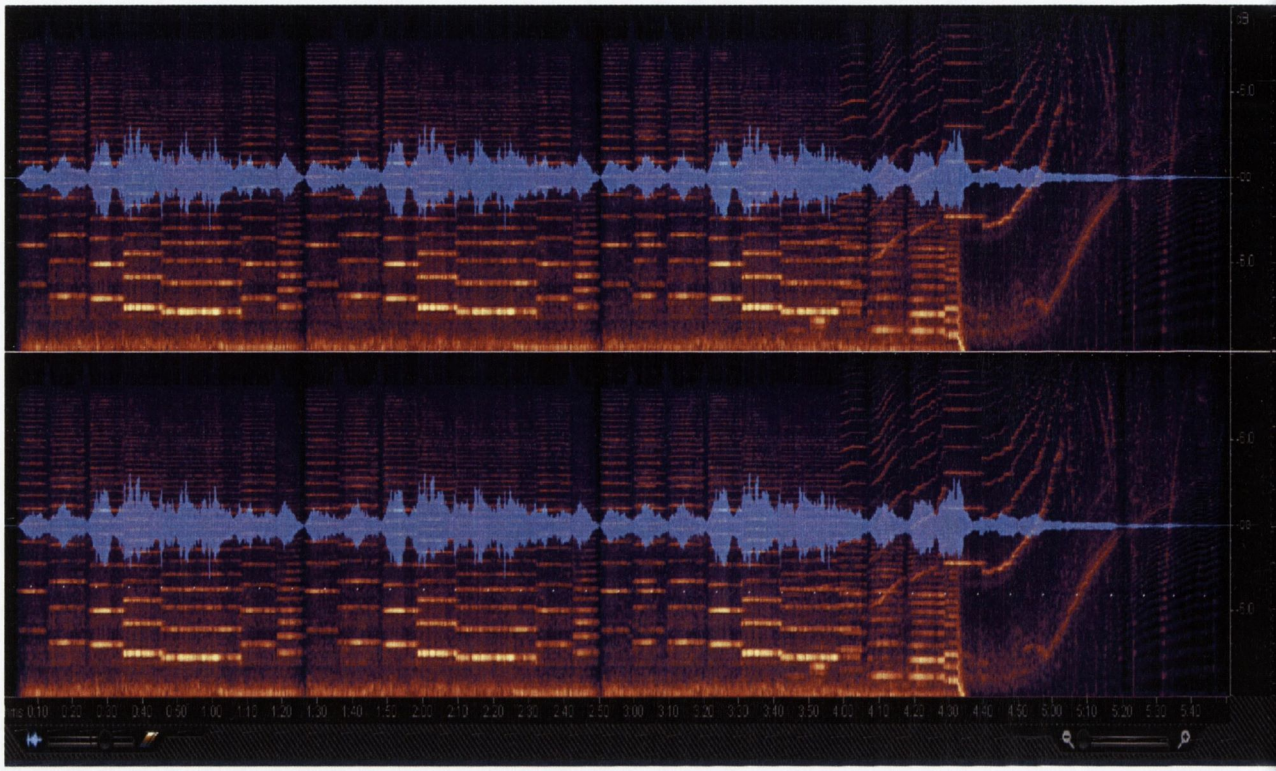


Fig. 5.4 Unusual spectral display – extreme ascending glissandi in channel 6 of *seek*

5.4 Conclusion

The sense of immersion is created through the use of quite an asymmetric 'legato' line, little attack used and similar sounds used between speakers making localisation difficult and thus more immersive, also with change (the microtonal shifting) occurring gradually. The density increases until the register widens out and the sound feels as though it almost disappears into the ether. There is a sense at the end of glissandi moving up beyond our hearing range, again perhaps connecting to an otherworldly place, another 'music of the spheres'.

The pieces presented here are in chronological order of composition, tracing a line of progression throughout my work. This is most evident in the exploration of string timbres from *the planets* to *latitude longitude* - from viola and tape, to use of recorded violin in a purely acousmatic spatial capacity without live performer, to string quartet with no electronic component. While the forces are purely acoustic, the process of composing these earlier electroacoustic works certainly impacted on my approach to string writing in *latitude longitude*, with an emphasis on timbral experimentation.

Chapter Six: *latitude longitude* for String Quartet

6.1 Introduction

This string quartet was composed in response to an Arts Council commission from a new Irish group (Maconchy Quartet) who wished to mark the centenary of the birth of the Anglo-Irish composer Elizabeth Maconchy (2007).

There are four movements, but *latitude longitude* may also be thought of as 'four short pieces for string quartet', wishing for each movement to be quite complete in itself, existing on its own or in combination. Extra-musical concepts are often taken as a starting point in thinking about the overall shape or structure of a piece (sometimes relating to aspects of geography, eg. the notion of latitude and longitude, glaciers, clouds). Taking a geographical analogy here, latitude lines run horizontally, longitude vertically. Latitude lines are also known as parallels since they are parallel and are an equal distance from each other. The work explores parallel, closely relating lines which take many forms - running in synchronization, weaving intricate patterns in combination and dissipating in different directions. The concept of how latitude and longitude intersect is explored in the piece, where the vertical (harmonic) and horizontal (melodic) play many changing roles. At times the melodic material occurs as a direct result of a harmonic process, and conversely, harmonic plateaus are created from the superimposition of differing melodic lines. There is a variation between the degrees of latitude due to the fact that the earth is not a perfect sphere but an oblate ellipsoid. This concept of deviation from the 'perfect' shape may be compared to the derailing or interrupting of a seemingly robust process which occurs throughout the work.

6.2 Approaches to String Quartet Composition

Maconchy

While the work of Maconchy had previously been an interest, the commemorative nature of the commission sparked even more curiosity about her life and approach. Upon further exploration into her ideas, many points of contact and interesting parallels emerged between our compositional perspectives. For Maconchy there was no divide between the intellect and emotion - she felt that music was an expression of emotion, which is expressed through an 'impassioned argument'. She also discussed the power of the unconscious when writing music, noting that when composing is going well, 'one feels that the music goes its one way and one follows it'. This conveys a strong faith in the power of instinct and intuition within the compositional process which is also of great importance within my own work. She was very interested in writing for strings, often using a four movement form. She was also drawn to the dramatic use of counterpoint, especially with writing for string quartet – she thought of the string quartet as a 'drama with four characters'.[48]

latitude longitude is also in four movements, with each movement functioning as a short piece, a complete entity unto itself. They could also be thought of as 'string etudes' - exploring various string sounds, studies in different types of string techniques. The first movement focuses on double-stopping, the final explores harmonics with high-pitched layers of sound, and movement III focuses on the use of pizzicato.

6.2.1 Bartók

Another point of reference was the study of Bartók's string writing, with his Fourth String Quartet being of particular interest. Many intriguing ideas resonated with me, such as the potential to focus on a specific string timbre or playing technique within different movements, the experimentation with a diverse range of timbral possibilities available on the string instruments, and variation achieved through colour change, providing coherence in the development of material. Other aspects certainly inspired the creation of *latitude longitude* at a

[48] Anthony Burton, 'Elizabeth Maconchy: Intense But Disciplined', *The Full Score*, Chester Music 2005

local and also broader overall structural level: the dramatic contrast created between movements, its expressive and violent character and the device of recapitulation within movements. At times the music seems to derail in quite a frantic, unrelated direction, then is pulled back to material that the listener has heard before, for coherence.

As a contrast Bartók's third movement allows for stillness and contemplation in the middle of conflicting emotions (in the other movements). This also perhaps occurs in *latitude longitude,* where glacial stasis brings the often frenetic preceding energy to a resolution. A slow rate of change in harmonic movement and removal of pulse is used to achieve stillness, feeling suspended in time and space. Bartók also employs many contrapuntal devices throughout the quartet - canon, imitation by direct or contrary motion and symmetrical patterns.
One of the most striking innovations of this work is the major contrast created between sonorities and the invention of new string techniques. Timbral contrast is achieved through a diverse variety of string effects: sul ponticello, combined glissandi, massive multiple stops, snap pizzicato (Bartók pizz) and tremolo sul pont in rapid alternation with ordinary tremolo. His fourth quartet perhaps marks the climax of Bartók's string quartet writing - a demonstration of his mastery of the medium, conveying extreme expressive opposites.

6.3 *Latitude Longitude*

Mvt I (Double-stop Etude)

There is a strong dramatic opening, using combinations of superimposed double stops, accented strongly and played 'at the frog' or 'heel' of the bow, to create a raucous effect and maximum impact. The first section of this movement (A) is based on a series of four harmonies, which are presented in various orders. These have a dissonant bitonal quality to their construction, eg, the opening chord (I) is built from two superimposed diminished fifth intervals or tritones, D G sharp, A D sharp. It is interesting to consider the historical association of the tritone to darkness and disorder, 'the devil's interval', here heard in double form. The second chord (II) consists of A D E A sharp, also two stacked tritones. This harmonic premise of stacked tritones then continues with the third and fourth chords of the sequence, C F sharp G C sharp (III) and B D F sharp C

(IV) respectively, almost filling up the entire 12-tone spectrum. At this point the only pitch omitted from the chromatic scale is that of F natural, which is later introduced as a deviation from the harmonic pattern established.



Fig. 6.1 Opening bars of *Latitude Longitude,* mvt I

Marcato bowing is used to emphasize the chromatic nature of these harmonies, which are first presented in sequence, then in varying combinations and re-orderings, eg. in the opening four bars they are used in the following sequences: I II III IV, I II II IV, I III I+II IV etc. They are heard in many differing permutations throughout, maintaining coherence due to their identifiable stacked tritone quality while providing variation through modification of their sequential ordering.

Contrast is achieved in b.11-12 (B) with the interjection of material displaying a greater degree of consonance and a softer dynamic, played in a 'calm, legato' fashion. There is an abrupt move from one atmosphere and performance style to another, a device which also occurs in *do you remember the planets?*, where frantic semiquaver choppy bowing is contrasted with slow calm passages. Another point of reference is perhaps Erik Satie's *Parade*, with its rapid juxtaposition of seemingly unrelated material in differing styles. The significance of this new material within the more legato section is later revealed in the movement.



Fig. 6.2 Raucous to calm in *Latitude Longitude,* mvt I

There is a return to the opening material (A), made apparent through use of heavily accented strong down bow strokes and increased level of dissonance. The listener, having experienced an aural 'glimpse' of the B material is now presented with this new material in its developed form, from b.16. Here the viola line is assigned the line with most prominence in its later reiterations, becoming the focal point from b.30, presented in solo form, with the use of silence to frame this and give it additional space and significance. It is first heard in its most sparse and exposed form, at b.30, later strengthened through layering of lines from the other quartet forces. At b.32 syncopation is introduced between second violin and viola, the inner voices of the quartet provided with a moment to move to the foreground. Violin and viola here are both playing in the same register (violin in its low register, viola in its middle register) which creates a sense of overlapping lines, and allows for the resulting (syncopated) pattern to emerge. This dissipates again abruptly into silence, almost as if the pattern is interrupted by the succeeding bars rest.



Fig. 6.3 Mvt I B material presented in viola

The pattern returns at b.34 and is presented in a series of repetitions, which gives a sense of development and increased momentum, through addition of first violin and cello voices. The full force statement of this figure occurs at b.38, giving it strength and solidity.

Once the dense texture at b.38 has been established, there is a move to a pared down sparsity of line with solo viola beginning the process once again of textural addition, culminating in the full quartet's climactic statement at b.44.

There is a move away from the prominence of double-stopping from b.48 until the end of the movement. The harmonies from the opening tritone chords are used (eg. D G sharp, E A sharp), presented in an angular, arpeggiated manner. A repeated viola glissando figure between E and A is introduced at b.50, which is later taken up by the second violin, and also Violin I. The same pitches are utilized, enabling the line to move seamlessly from viola to second violin, followed by a smooth dovetail from Violin I and II. The simultaneous glissando between both violins results in slight pitch deviations from one another, producing subtle microtonal layerings. The use of sul ponticello bowing provides timbral contrast which creates an almost metallic shimmering above the other lines.



Fig. 6.4 Moving away from double-stops, introduction of viola glissandi

Attention is drawn to the first violin line from b.58, moving to the foreground and presented in a higher register to the other instruments, with sharp articulation, aiding in its audibility and clarification of line. Aural prominence is then assigned to the second violin (b.60), which moves above Violin I in register and penetrates through the texture of the quartet. From b.61 the viola

provides an almost percussive repeated semiquaver doublestop which grounds the angularity of the surrounding lines. This almost feels like an electric guitar strum, with a rock-like 'riff' quality[49]. Bartok (snap) pizzicato is introduced in b. 66 on second violin, followed by the remaining instruments, for percussive effect and timbral contrast.

The register widens out from b.72 for greater dramatic impact in the closing section, with the cello's material presenting an inversion of the Violin I line at an interval of a fifth. This is superimposed, yet beginning a crotchet beat after the original violin pattern, providing a sense of strange symmetry and coupled with the frantic repeated viola chord and dynamic increase, brings the movement to an intense conclusion.



Fig. 6.5 Registral expansion with obsessive repetition in viola – mvt I conclusion

6.3.1 Mvt II - Endless Melody Etude

The concept behind this movement was an exploration of 'endless' melody, overlapping line and textural density. An extremely slow tempo of forty is used to achieve the sense of timelessness and meditation upon which the piece is based. The slow tempo used denotes my interest in playing the listener's sense of time, perhaps most clearly exemplified in the slow movements of Messiaen's *Quartet For the End of Time* where the clear sense of pulse is destroyed due to the long durations. The 'endless melody' first appears in Violin I, which primarily presents the foreground melodic material throughout the movement. The opening phrase incorporates the interval of a perfect fifth which expands out to a major seventh, followed by a perfect fourth

[49] Julia Wolfe has also often noted the use of 'riff-like' repeated patterns in her work, particularly evident in the raw and raucous cello writing contained within the piece *Believing*, Bang on a Can Summer Institute of Music, July 2004

widening to a minor seventh in the second phrase, feeling like a small seed blossoming out into something greater and more expansive. The same pitches are used in the following phrase (b.5-6), now ascending and becoming more transcendental.



Fig. 6.6 Opening violin I melody of mvt II

Throughout the movement I wished to explore horizontal lines that converge and diverge with harmonies produced as a result of the horizontal becoming vertical, melodic lines merging vertically. There is also an exploration of resultant harmonies from a combination of 'white-note', 'pure' lines which contain no chromatic elements, sharps or flats, and those within which chromaticism is a significant feature. The foreground melodic material heard in first violin is presented at quite an upper register relative to the other voices, lending this clarity, differentiation and prominence. This Violin I material is entirely 'white-note', almost like a line of modal plainchant which is recontextualized by the lower lines, where darker, more chromatic harmonies emerge. It is akin to the placing of darkness with light, bitonal expression also found in the work of Stravinsky and Louis Andriessen.

This chromatic darkness and tension is first introduced at b.5 with the D sharp and A sharp in viola and cello, following the clean purity of the opening solo violin phrases. From b.7-14 there is no chromaticism in any of the harmonies throughout the quartet, allowing for the ear to focus in on the interplay of merging lines, points of fusion and divergence. There is much use of asymmetry between the voices and phrasings, which produces a blurred effect of textural overlap. Amidst this textural density, elements of fusing lines may be found moving around the instruments at particular points, with rhythmic coupling being used to create a sense of clear

synchronized unity between the voices, like momentary focus points in a blurred image.
For instance, rhythmic unity occurs between Violin II and Viola at b.9-11, moving to Viola and Cello at b.11-12 and Violin II coupled with Cello from b.12-13. This also occurs between Violin I and Cello at b. 15 with minim movement, Violin II and Cello from b.18-19 and Violin II and Cello from b.21-22. The harmonic tension begins once more from b.15 with Viola introducing an A sharp into the previously quite consonant white-note harmony.



Fig. 6.7 Rhythmic unity in mvt II – momentary alignment of parts

The sense of stasis achieved at b.27-29 through use of more expansive sustained pitches indicates that the movement is reaching a closing point. The final five bars function as a quasi-coda to the movement, where the first violin moves to its higher register (echoing the climax at b.14-15). The closing harmony uses a widely spaced chord between the instruments, which feels quite open-ended, as if asking a question. The questioning nature of this concluding passage makes an effective connection to the following movement, which explores very different concerns, that of clarity and sharpness of articulation.

6.3.2 MVT III - Pizzicato Etude

A point of contact here between this and the preceding movement is the treatment of the first violin as conveyor of the opening prominent material. Movement IV begins with sharply accented pizzicato violin, setting up a premise for the entire movement, which is concerned with using the full quartet as a closely interlinked pizzicato entity. There is a sharp contrast between this and the merging, overlapping expansive lines of Movement III. Although the opening

material is assigned to Violin I solo, there is a greater sense of equality between the four voices than in the preceding movement, a contrapuntal texture that is not led by a foreground violin melodic hierarchy.

Violin II enters in counterpoint with first violin at b.3 with the same material as the opening, but presented an octave higher. This gives prominence to the line, as well as stream segregation from the opening Violin I line.

The viola enters with an inversion of the line (b.4), which later moves to a retrograde inversion (b.5) and back again to inversion (from b.6). The cello completes the overall effect of interlocking pizzicato, with a version of the line moving at a slower rate, in crotchets. There is a sense of differing rates of change being superimposed, from the violin to cello lines. The viola introduces the first rhythmic deviation from the established pattern at b.7, with semi-quaver off-beat syncopations upsetting the continuity of the pattern.



Fig. 6.8 Rhythmic deviation in mvt III – syncopation in viola and violin I

At. b.9 the second violin line harmonically derails, introducing pitches which deviate from the preceding patterns. Variation in the first violin pattern at. b.11 destabilizes the harmony, and stability is restored at b.12 throughout the quartet. At b.13 there is rhythmic deviation in first violin – early on in the movement unstable elements are introduced via one parameter at a time, eg. if the harmony has been altered, the rhythm remains constant and vice versa. This is not adhered to later in the movement where more chaotic elements are desired, once given a concrete point of departure due to the initial establishment of patterns and processes. The interlocking patterns remain harmonically stable during the rhythmic syncopation used at b. 15 in second violin and at 16 in the viola, maintaining coherence while introducing change in a single

parameter.



Fig. 6.9 Rhythmic deviation in violin I, with overall harmonic stability

The syncopation which begins at b.25 in first violin is made more apparent due to the registral shift which occurs at b.27, exploring the brittle nature of high-pitched pizzicato and penetrating through the overall texture. This sets up a hocketing interplay between both violins from b.29, where single pitches are bounced back and forth in an interlocking syncopation. There are many notable influences for this hocketing effect which recurs in my work, most significantly being that of the 'imbal' style of bonang and saron playing in Javanese Gamelan performance practice, where patterns are created from the interlocking of two performers playing, one on the beat, one on the off-beat, streaming together to form a seamless melodic unity.

There is a 'staggered' paring back of forces to emphasize the fragility of the first violin high-pitched pizzicato from b.33, which builds up again leading to a 'landing point' at b.41 strengthened by the low register of the cello. Syncopation again occurs in viola at b.42 and first violin at b.44 signalling a move toward the excitement of the rapid hocketing interplay which brings the movement to a close. A strong landing point occurs at b. 48 with the low D on cello, before the increased angularity of the violin lines. Here a move to wide intervals prepares for the conclusion - registral expansion and rhythmically unsettled interlocking of parts is used to create a quasi-chaotic effect later resolved by close synchronization of full quartet in the final bar, all playing straight quavers. This provides a solid conclusion following the prominence of syncopation and deliberate avoidance of synchronicity in the preceding bars. If there is perhaps an earthy, almost folk-like liveliness to this movement, the next and final movement of this

quartet transports the listener to a very different place, with its emphasis on stark lines, stratospheric harmonics and an ethereal otherworldliness.

6.3.3 MVT IV - Harmonic Etude

This movement provides quite a haunting glacial close to the overall quartet, almost entirely constructed using string harmonics, with an emphasis on timbre, and little harmonic movement. The opening sustained C harmonic on first violin sets the premise for the piece, a slow moving timbral study primarily based on harmonics. Elements of blurred melody may be heard through the dovetailing of lines between both violins, using the pitch material C A sharp, C G, led by the opening Violin I held pitch. The roles are then swopped between Violin I and II, with the sense of 'melody' beginning in second violin from b.7. The pitch material has been restricted to C A sharp and G – these are the only pitches used for the first fourteen bars, spanning the first minute of the movement.



Fig. 6.10 Opening bars of mvt IV

This pitch restriction and emphasis on slow-moving timbral evolution is also significant in much of Ligeti's micropolyphonic work from the 1960's, most notably in the opening of his *Cello Concerto* (1966), as previously discussed.

Pitch changes occur at a slow rate in the fourth movement of *Latitude Longitude*, allowing the ear to focus in on the subtle timbral evolution of the sound, from harmonics being passed

between the various instruments, to the addition of tremolo, to the contrast achieved when 'non-harmonic' pitches are finally introduced. There also seems to be the removal of any sense of pulse, or strong downbeat giving a sense of place. The tremolo is first heard in Violin I at b.19, where there is a sense of stasis created through lack of harmonic progression and pitch deviation, yet colouration of timbre with harmonic tremolo provides internal movement. At b.22 a C sharp is introduced in the second violin – this feels like a major change due to the still and static nature of the opening. Dovetailing with crescendo is used between Violin II and viola at this point, where the viola tremolo seems as though it is emerging from the second violin's pitch and vice-versa.



Fig. 6.11 Dovetailing between parts in mvt IV

From b.27 dynamics are used for variation and nuance, allowing internal interest while maintaining harmonic stasis. Grace notes are also incorporated into the lines for additional subtle variation. A major change which interrupts the glacial floating sustain of the opening section occurs at b.30, where high-pitched pizzicato in Violin II abruptly cuts off the flow of sound. These brittle pizzicato reiterations are framed by silence and provide a startling contrast to the preceding material – short, sharp, unlike the legato bowing of the previous section. For the first time in the movement we then hear non-harmonic bowing (normale) in first violin, creating a registral shift to a lower plane and timbral change, appearing stronger and more defined, less fragile than the harmonics.

This C sharp is reiterated to produce a concrete sonic image, again using silence as a framing device. The 'melodic' line is spread between the two violins and viola, demonstrating equality between the forces with no instrument is assigned a hierarchical foreground role. Another significant change occurs at b.43, where the first violin and viola synchronize on a unison A sharp creating a sense of landing point. Prior to this point, no two instruments have parallel points of contact in the lines, subtly shifting and merging.



Fig. 6.12 Asychronicity leading to first moment of alignment in violin I and viola

Opposing registers are explored at b.44 with the low cello D sharp and the high stratosphere of upper string harmonics. This widening of spectrum recurs and is developed from b.51, where the low A and F sharp in cello lends a dark edge to the harmony. The abrasive effect of this dissonance is heightened through use of close intervallic spacing (a minor third) at a low frequency range of the spectrum, going against the natural spacing of the overtone series with wide intervals lower in the range, moving closer further up the series. There is a sense of climax built through crescendi and tremolo combinations which moves to a recapitulation of the opening material and a dynamically and timbrally intense finale.

Dynamic intensity and the movement to climactic 'breaking point' occurs to an even greater extent in the choral *fall approaches*, discussed in the following chapter.

Chapter Seven: *Fall Approaches* for Choir and Eight-channel tape

7.1 Introduction

Fall Approaches is highly serene music filled with deep undercurrents of emotion, which well up and seem several times on the point of flooding out. The vocal harmonies are entirely built from the notes of the C major scale but for the most part without conventional tonal voicings; this makes the sound at once familiar and slightly strange, the strangeness intensified by the eight-channel tape part, which adds subtle ring modulation to the vocal timbre as well as providing brittle, "glitchy" fragments of melody and low bass pulsations. The text, by the turn-of-the-last-century Icelandic poet Stefan Hvitadel, looks to the coming cold season and the loss of the sun, which will remain for weeks below the horizon, yet takes consolation in the protection of the stars – "a light watching over us, hope emerging from the darkness". The music is intensely beautiful, almost tearfully so. *Fall Approaches* has a sound world characteristic of her, combining pure vocal tones and electronic noise: "beauty with a rough edge".[50]

Fall Approaches was commissioned for Spatial Music Collective's collaboration with the choir New Dublin Voices, with funds provided from the Arts Council of Ireland. The concept behind this collaboration was the combination of acoustic and electronic spatialization, using the performance space for physical movement and positioning of choir members, as well as an eight-channel speaker array. The live spatial aspect of this piece was developed as part of the rehearsal process, with soprano soloist positioned in a separate spatial position to the rest of the choir, and the soprano and alto parts fusing together, facing the tenor and basses opposite, with the conductor placed on a raised platform in the centre, visible to all choral sections. The rhythm is deliberately kept simple, to draw attention to the clear declamation of the text, purity of vocal timbre and melodic line and to focus on the unfolding of the harmonic progressions. There are points in the piece where the texture becomes increasingly dense with interweaving contrapuntal lines. Of particular influence is the work of the cori spezzati, the spatial choirs of the sixteenth century.

[50] Bob Gilmore, 'All Collisions End in Static – the music of Linda Buckley', *The Journal of Music in Ireland*, vol.8 no.5 (September-October 2008), 28-32.

7.2 Call and Response - Structural Considerations

Structure	
B.1-10	Verse I - Soprano Solo (pure, simple, use of intervals of third and fourth, 'white-note').
B.12-21	Chorus 1 - Tutti Choir, homophonic (voice leading in soprano section uses pitch material from opening verse, 'white-note' harmonies).
B.23-32	Verse II - Soprano Solo (Electronic entry, colouring the vocal timbre).
B.32-40	Chorus II - Tutti Choir, homophonic, electronic pulsations become more intense.
B.41-50	Electronic section, emphasizing the spatial aspects, using the high A of a transformed violin note, expanded through delay and granulation. b.41
B.51-105	Canonic section using divisi voices for maximum density potential, beginning sparse in the female voices and increasingly expanding descent to include all voices. B.66 signals a move to different electronic material, a 'glitchy' soprano vocal three-note ascending figure that repeats, interspersed with bar's rest.
B.105-115	Electronic section, using high soprano sample with a repeated figure, sets up pattern and morphs with following soprano entry.
B.116-125	Soprano solo Verse III (using pitch material from opening verse), with electronic accompaniment.
B.126-End	Polyphonic section based on pitch material from the homophonic chord progression in Chorus I

Table 7.1 Structure of *Fall Approaches*

The opening is sparse and haunting, focusing on the sonority of the solitary solo soprano voice. Often when composing for soprano voice, I feel that, as a singer, the soprano is like a representation of my own personal voice, connecting strongly to the internal made external, the expression of inner self and emotional state. A 'call and response' device is set up between solo soprano and the rest of the choir, the lone figure, spatially separated and removed, wishing to communicate with and connect to the outside world, the dichotomy of private and public,

internal becoming external, giving voice to inner thought.

From the choral entry the harmonies contained in the upper voices display quite 'open' consonant use of thirds (eg. A & C), with darker dissonances used lower down in the bass parts (eg. a clash between the close E and F, then B and C in Basses). This dissonance is almost treated as a suspension that requires resolution, this occurs at b.15, where the chord widens out to a B and E. There is then contrary motion treatment of the homophony with ascending soprano line and descending bass, producing an expansive harmonic spectrum. This opens out to a stable resolved harmony to close this 'Chorus' section. There is also call for extremities of pitch range, particularly within the soprano's intense and extreme high B, perhaps representing extreme emotional states.

The first entry of electronics acts as a colouration of the solo soprano vocal timbre, using a soft pulsating sound, a tremolo which is panned between speakers for movement, (this sound should feel as though it is emerging from the soprano line). This electronic sound has been generated by the pitch material of the original vocal line to create a tangible connection and unity between the acoustic and electronic. This also moves to the soprano's highest range, almost like a cry.
When the electronic pulsations become more intense they help to emphasize the spatial array, moving around the listener. Again, dissonances occur within the bass parts, eg. the suspension of C and D at b.39 which resolves to an E and A at b. 40.
Considerations of sound source choice for particular spatial effects are at play throughout the work - the granulated and delayed violin note in the first electronic 'solo' is quite a smooth sound, yet contains internal short sonic 'grains' which allow for localisation.

In the first polyphonic section, gradually the upper voices complete their pattern, allowing for a focus on the lower frequencies (with low bass rumblings on the tape) and the tenor/bass textures. The canon entry points often occur at quite asymmetric places to create interesting relationships between the parts, eg. the Soprano II line's entry is displaced by a beat. At the end of this section, repetition of the electronic figure is used to build up tension, leading to a very emotive moment and sense of release. Here there is also a significant saturation of the harmonic spectrum, from high to low with a granulated soprano vocal ascending repeated figure framed by silence. Once a

pattern of repetition has been established, the point at which this electronic figure recurs is changed, to play with the listener's sense of expectation, and deviate from the anticipated pattern. Low-pitched bass chords rumbling enter the electronics to connect more closely to the prominence of male voices.

The unity of pitch material from the first homophonic tutti chorus and final polyphonic expansion provides a sense of connection, framing the work. Again, the contrapuntal entries are often displaced (not on an obvious downbeat), for a greater sense of overlap and blurred line, almost masking the points of entry. A deliberate lack of differentiation between parts is employed here, to produce an overall density of texture. For instance, the polyphony between voices occurs in close registers, with smooth legato phrasing and lack of distinguishing rhythmic features. This creates a sense of single morphing aural entity, like a sonic cloud with varying degrees of internal movement.

The final section explores extended vocal technique, like an acoustic transcription of an electronic phenomenon. A form of acoustic vocal granulation is attempted, with vocal ululations. The singers are asked to gradually alternate between straight sung pitch and vocal ululations in the throat. The indication also describes "move between pitch and noise. React to 'glitchy' sounds on Tape, increasing in intensity". This technique was developed through my own vocal experimentation, and demonstrated to the choir in rehearsals. This culminates in a dramatic forte conclusion to the work. Here there is an exploration of the noise/pitch axis, with voice being a suitable vehicle for sonic experimentation between purity of tone and gritty noise-like timbres.

7.3 Soon we will not see the sun - Text setting and Icelandic connection



Fig. 7.1 Dark Icelandic landscape – visual inspiration for *Fall Approaches*

The thread of Icelandic fascination may be traced throughout my work, from the interest in sonically conveying the purity and beauty of glacial landscapes (most notably in *joklar* for piano, literally meaning 'glacier'), to the intriguing aural qualities of the Icelandic language itself. This is also explicitly displayed in *numarimur* for voices and tape, later discussed.
Icelandic musical output from more 'crossover' genres has also been a notable influence, eg. the combination of expansive yet sparse landscape influence with rich emotive content found in the work of Sigur Ros. The text chosen for *Fall Approaches* was of interest for the sonic beauty of the language, and particularly for its subject matter, that of the search for hope through darkness.

Text setting: from Haustid Nalgast - rimur (tradition of Icelandic 'rhyme' epic poem)
I Opening soprano solo: 'The sensitive river keeps on crying (moved to tears)' -outpouring of sadness, sense of emotion that cannot be contained and overflows (later reflected in piece with close harmonic density and intense saturation of sound)
II b.12 Chorus response from tutti choir: 'Soon we will not see the sun' (sense of foreboding, impending darkness, resignation to ones fate, or struggle to overcome?)
III b.23 End of 2nd soprano solo verse: 'the sun in the south covers her with gold' (sense of hope, ecstasy, warmth)
IV b.32 Tutti chorus: 'The inner desire cries' (intense, heightened with increasing electronic pulsations, loud dynamic, 'dramatic!" marking)
b.51 Sop I enters leading a canonic section 'No relief nor inner rest, And no amends for suffering?' - inner turmoil reflected through constant movement
Final section 'The sky above consoles the crying, stars glow because of the light from God through the winter nights'. The lone soprano solo figure is strengthened through addition of full choir - providing consolation

Table 7.2 Text setting in *Fall Approaches*

The first canonic section moves from addition of female voices, to full harmonic spectrum eventually joining basses which completes the dense texture. The lack of 'inner rest' implied in the text is reflected through constant movement and interweaving of lines, harmonic suspensions that are delayed in resolution, giving a sense of tension. There is evidence of word painting where the questioning nature of the text ('No relief nor inner rest, And no amends for suffering?) is characterized by an ascending interval to mark the end of the phrase - this feels quite yearning and restless. Intensity recedes through paring back of forces to male voices alone (with some alto interjections).

Electronics take over with a high-pitched soprano sample figure which has been granulated almost to the point of abstraction, yet with some semblance of remaining vocal quality. This connects it to the entry of solo soprano again, singing a melodic line whose pitch material is derived from the solo which opens the piece. A form of recapitulation may be seen here, with the line recontextualised through its electronic superimposition and building to the contrapuntal final section. This time the atmosphere is that of hope and consolation, depicting a text that assures that the beauty of the stars shining in the sky can give comfort, even on the darkest of nights, and to never lose hope: 'The sky above consoles the crying, stars glow because of the light from God through the winter nights'. The solitude of the lone soprano solo figure is usurped through addition of full choir, one by one giving strength to the fragility of the solo voice, in the faith that there is no cause for sadness or fear: "The winter night will barely harm us, as the lights from above are watching over the people".

7.4 Conclusion

An overall atmosphere of hope and beauty permeates *Fall Approaches*. It is filled with intensity, emotion, extreme sadness and search for joy. This moment of extreme joy is most apparent in the first instance of ascending granulated vocal line, breaking out into beauty and hope, like a holding of breath and dramatic intake of air, of life. Sometimes the processed vocal sounds create a strange timbral colouration, retaining some recognizable vocal features but a ghosted version, like a figure locked behind a glass case. The glitches at the end emphasise the spatial movement with rapid panning between speakers and high frequency bursts that jump out of the

texture - moving and morphing colours like the aurora borealis which may be seen in the Icelandic night sky.

In works like *Fall Approaches,* and in even more recent pieces like *Q* for female voice and electronics and *Fiol* for string trio, all premiered this year, Buckley engages with an area of experience that new music is generally shy of, which, simplified and reduced to a single word, I'd call *ecstasy.* Not the drug-induced euphoria of dance music, but exultant, heightened states of being that are the product of an excitable sensibility, of an emotional response to the world that sees the bright places of life as clearly as the dark.[51]

[51] Bob Gilmore, All Collisions End in Static – the music of Linda Buckley,*The Journal of Music in Ireland*, vol.8 no.5 (September-October 2008), 28-32.

8.1 Chapter Eight: *fiol* for String Trio

Introduction

The low, foreboding rumble of distant thunder on an oppressive summer afternoon, its growing intensity as it approaches, the crescendo of the gradually rising wind, the ominous darkening of the sky, all give rise to an emotional experience in which expectation is fraught with powerful uncertainty - the primordial and poignant uncertainty of human existence in the face of the inexorable forces of nature. With mixed feelings of hope and apprehension in the presence of the unknown, we anxiously await the breaking of the storm, the discovery of what unrelenting fate has decreed.[52]

Leonard Meyer in *Emotion and Meaning in Music* creates an analogy between the arousal of affect and suspense in music and our real-world experiences. This build up to saturation point[53] and 'breaking of the storm' occurs throughout my musical output, and is particularly evident within *fiol*.

fiol was commissioned by the Rothko String Trio with funds provided by the Arts Council of Ireland. The sound world of this piece was inspired by the Norwegian Hardanger fiddle (hardingfele). 'Fiol' was the predominant term used for 'fiddle' in DanishNorwegian of the 17th and 18th centuries. This instrument is mainly used for the performance of Norwegian folk music and is similar in construction to the violin, but with eight or nine strings. Four of the strings are strung and played like a violin, and the remaining strings, called 'sympathetic strings' resonate 'in sympathy' with the other four. There was an interest in treating the trio as a single twelve-stringed 'meta-instrument' rather than as three separate voices, almost like a hardingfele or Baroque viola d'amore with sympathetic resonating strings.

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[52] Leonard Meyer, *Emotion and Meaning in Music*, 28-29

[53] Meyer cites an example of 'saturation point' being created within the first movement of Beethoven's Symphony No. 6, Ibid, p.135

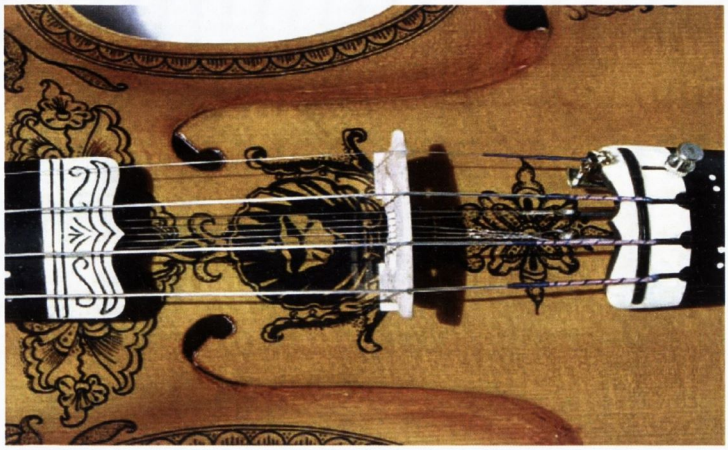


Fig. 8.1 Norwegian Hardanger fiddle with sympathetic strings, http://acrosstheuniverse.forumotion.com/t2519-hardanger-fiddle accessed April 10th 2010

This piece was composed for a national tour of Ireland, with the premiere at the Hugh Lane Gallery Dublin and subsequent performances mostly using reverberant acoustic spaces. This was taken into consideration when composing the work, imagining a rich sonorous effect heightened through the acoustic reverberation. This was certainly evident in the Hugh Lane Gallery performance, with the space acting like an additional instrument, a resonating body adding further atmosphere and sustain.

8.2 Emotional Affect –Tension and Release

The opening viola and cello chords should feel quite atmospheric and poignant, focusing on the repetition of upper pitches of the harmony while changing the lower, creating bass movement, eg. A F in cello with G A above on viola, later moving to G E in cello, retaining same G A pitches in the viola. Consistency and continuation is maintained in the upper harmonies, creating variation using the lower shifting bass pitches.



Fig. 8.2 *fiol* opening

Different treatment of the double stops between viola and cello is exemplified at the opening - with a wide, open sonority for cello and more dissonant close minor second intervals used in viola. There is a sense of suspension and resolution, tension and release created in the treatment of dissonant and consonant alternations which is explored throughout the work.
Meyer discusses the issue of consonance and dissonance for emotional impact:

> The role of dissonance in arousing affect or in depicting emotional states is evident in the practice of composers and in the writings of theorists and critics. The case is well stated by Cazden "In musical harmony the critical determinant of consonance and dissonance is expectation of movement...A consonant interval is one which sounds stable and complete in itself, which does not produce a feeling of necessary movement to other tones. A dissonant interval causes a restless expectation or resolution, or movement to a consonant interval...Context is the determining factor".[54]

The opening section of *fiol* also conveys an interest in playing with time and expectation, altering the points where the chord appears in time, treating it as a sonic 'event', a gesture rather than in a clearly directional sense of harmonic progression. There is an attempt to create a sense of timelessness, also demonstrated by the use of silence. The process set up of gesture alternating with bar rest produces tension, for example from b.3-7 there is a bars rest, two dotted minim chords, followed by a longer semibreve chord. The next chord is delayed by a beat, perhaps disrupting the listener's sense of expectation with regard gestural recurrence.

The performance indication of 'slow inhale and exhale' is inspired by breathing practice associated with meditation, conveying the significance of the breath as life-giving. It is interesting to also note that the origin of the term 'inspire' in derived from 'intake of breath', connecting to the fundamental origins of the compositional process itself, that of inspiration, the rhythm of the breath being the driving force behind our thoughts and actions.

From the beginning of the piece the entry of the violin is deliberately delayed, aiming to invoke greater emotional affect - using a low register which moves increasingly upward and outward. The long duration of the doublestopped harmonies creates elongation and sustain.

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[54] Meyer, *Emotion and Meaning in Music*, p.230

Leonard Meyer cites the "central thesis of the psychological theory of emotions. Namely: Emotion or affect is aroused when a tendency to respond is arrested or inhibited." This device recurs throughout *fiol*, where expected resolutions or developments are delayed, to heighten tension and suspense, therefore providing a greater sense of release when the expectation is finally fulfilled. Meyer also notes that "suspense is essentially a product of ignorance as to the future course of events. The stimulus situation creating doubt and uncertainty must be progressively intensified if suspense is to be maintained or increased. The greater the buildup of suspense, of tension, the greater the emotional release upon resolution." (Meyer, p.15, 28)

There is a return to the presence of perfect fifth harmonies in this piece (also significant in works such as *do you remember the planets?* and *numarimur*), where the resonance of the open fifth G and D interval gives an almost medieval quality to the sound, echoing an interest in the organum of composers such as Leonin and Perotin.

The use of trilling is another notable recurring feature of the work, with trills varying in speed (eg. from slow to increasing in speed). This provides internal colour variation and nuance to the upper pitches of the harmonic line. Trills which occur between the A and B flat produce a quasi-'minor' tonal quality, appropriate to the opening melancholic atmosphere.
At b.20 the lower harmonies are removed, isolating the violin line – stark, sparse, solitary, requiring resolution. The resolution of this section is delayed until b.24-26, where there is a feeling of expansion, opening out and completion, almost functioning as a cadential point.

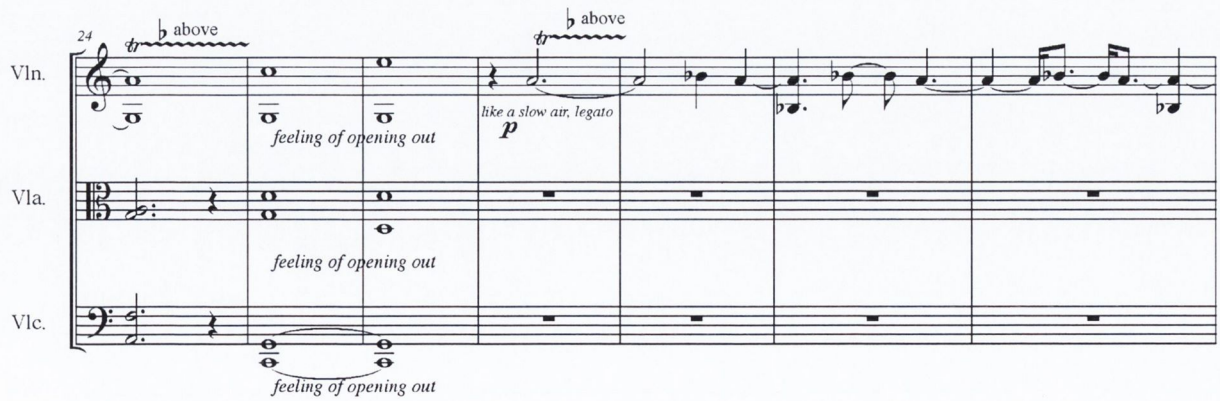


Fig. 8.3 *fiol* expansion, with violin 'slow air'

Following this, starkness and sparsity are again emphasized, pre-empted by the b.20 solo violin moment with the A to B flat trill. This calls for solo writing, establishing the importance of the A and B flat pitches. The performance indication here is 'like a slow air', wishing to evoke an atmosphere connected to perhaps Irish traditional music performance, like a lament in the sean-nos (old-style) singing tradition, or an instrumental slow air. Ornamentation and spontaneous variation is an important feature of Irish traditional performance practice, conveyed here through rubato trills of indeterminate speed and subtle glissandi (like a 'slide' used in a slow air).

Meyer discusses this concept of expressive deviation in non-western music:

> Ornaments are the essence of music...(they) must be considered as inseparable from the structural tones and basic plan which they ornament and to which they give meaning. They themselves are likewise inseparable from and meaningless without the basic substantive tones, harmonies, and rhythms which they ornament. From this point of view, the basic structural framework of a passage or composition may be considered as a norm, and the ornaments which breathe meaning and feeling into this plan may be regarded as deviants.[55]

This 'slow air' which begins in violin, is passed to viola with a smooth dovetailing transition, as if the viola is emerging from the violin timbre. An interesting technique is then employed in the cello to add rich low sonority and punctuation – that of a continuous sustaining high B and trill, simultaneously played with pizzicato interjections on the low C string. This is the first non-arco sonority presented, providing timbral variation and contrast which adds to the sense of heightening tension leading to the impending emotive eruption. The viola continues with its 'slow air' while violin moves to a higher register at b.51 culminating in the first major climax of the piece.

From b.51 to 70, following a crescendo and widening of spectrum we reach the first climax, with a 'sense of arrival' and overlapping 'blurred' harmonies with doublestops spanning three octaves between full trio. For the first time, the listener is provided with wide spectrum saturation, combined with shifting harmonies and emotive expressivity. There is a sense that something which has been contained (narrow range, soft dynamics) has broken free, a point of release. This build up to saturation point and 'breaking of the storm' is particularly evident at the two

[55] Meyer, *Emotion and Meaning in Music*, p.205

climactic registrally expanded multiple-stopped sections within *fiol*.

The next section introduces material which is to return in the conclusion, creating transition, preparation and also a buildup of tension which leads to the next climax. From b.95-117 the second climax is reached, this time using triple stops adding even greater intensity and variation with ascending arpeggiation. At b.112 sul tasto bowing is used in the viola, with sul ponticello in cello, both in the same register intersecting their lines. There is a blurred effect achieved through this merging of parts, however the differing methods of sound production with disparate bowing techniques allows for a certain degree of timbral differentiation. From b.116-120 glissando is used in all three instruments, often in contrary motion. These short glissandi create microtonal inflections when heard in combination.



Fig. 8.4 *fiol* glissando morphing

The final section (b.123) features melodic material assigned to all three instruments with no hierarchy between the voices. This equality of parts perhaps echoes Renaissance polyphony, also a noted influence for Ligeti's micropolyphonic approach. Similar concerns are evident in the contrapuntal string writing from the opening of the first movement to Bartok's *Music for Strings, Percussion and Celesta*, with interweaving asymmetric legato string parts in similar registers demonstrating a deliberate attempt to 'blur' the lines and achieve textural density. The imitative writing between the voices adds to the heightening harmonic tension, and similarity of lines, rhythmically indiscernable combinations contributes to the overall morphing, weaving effect. This also occurs within John Adams' *Shaker Loops*, in the third movement Loops and Verses, with cello lines that merge and blur into one another.



Fig. 8.5 Bartok - blurred string lines in sketches for *Music for Strings, Percussion and Celesta,* mvt I (Paul Sacher Stiftung, Basel, 2000)

The device of producing textural density through layering of melodic lines is explored in a number of ways throughout the final section of *fiol.* This is primarily achieved by employing an asymmetric melodic line as the basis for contrapuntal expansion, which perhaps deviates from expectation with regard phrase length and internal rhythm. The use of a similar register between different parts also aids in their merging into a more fused auditory stream. Legato playing features, in this case smooth bowing without a sharp attack, providing fluidity. The points of polyphonic entry are not placed on a fixed sense of downbeat which also contributes to the overall blurred effect.

As part of the compositional process, I became interested in developing a melodic sensibility connected to the spontaneity and improvisatory nature of Irish traditional performance practice. For the closing polyphonic section and to generate melodic material for the piece, a lengthy process of translating ideas from the approach of a more 'sean nos' ('old-style' singing) oral tradition was undertaken. A melodic line was written (found in violin b.123-144 and cello at b.125) with quite simple metrical rhythm. This line was varied, through a rubato rendition akin to

singing a lamenting sean nos song or playing a slow air. This was recorded, displaying much subtle rhythmic variation from the original melodic line, transcribed and used as material for the piece - the unconscious, spontaneous variation made conscious, internal becoming external. It was discovered that many new and interesting rhythmic deviations, as well as additional ornamentation can occur from this process, that once layered, produces quite a complex result, with lines interlocking at unusual and unexpected points.



Fig. 8.4 *fiol* final canon displaying entry of 'rubato-like' melodic line in cello

8.3 Conclusion

Many 'concluding' devices were explored and combine to guide the listener to finality, the point of rest. The overlapping lines eventually move to a lower range, softer dynamic and slower rate of change, dying away into silence 'slowly and gently', producing a conclusion of calm contemplation, harmonic stasis, at rest. Meyer illuminates the techniques which may create a feeling of completion or closure for the listener:

Our sense of closure is in part a product of the general configuration of relaxation and quiescence. Melodically speaking, relaxation is associated with the decline in tension which is effected when pitches are lower - when a progression descends at its close. The slowing down which brings a piece of music to its close is not a slowing down in the physical tempo but a slowing down of the rate of musical process. That is, though the tones may fly by with great rapidity, the melodic, harmonic, and rhythmic changes which create a sense of tendency are brought to a standstill. The music no longer progresses; it marks time; it is static.[56]

[56] Meyer, *Emotion and Meaning in Music*, p139-140

Through harmony, register and dynamics, the development of *fiol* is akin to the opening out of a flower in slow motion. *nikuda* is quite a contrast to *fiol*, exuberent and energetic, displaying an interest in rhythmic and pattern permutation.

Chapter Nine: *nikuda* for ensemble

9.1 Introduction

nikuda was composed for the Brighton based Ensemble Scratch the Surface directed by Conal Gleeson. The title is a Russian term for 'nowhere' and refers to the technique of rhythmic displacement which recurs throughout the piece, the sense of downbeat is constantly shifting, it is somewhere, yet its position is unstable, unfixed, 'nowhere'. Dungan notes that "*Nikuda* (*Nowhere*) opens and closes with a busy, funky pulse that goes into hiding but remains implicit when the scoring pares down to a single voice".[57] This observation certainly conveys the influence of rhythmic 'play' associated with the performance of Indian and Indonesian music within my work, and the study of South Indian konokol (study undertaken at University College Cork 1996-2000) with its vocal recitation of mridangam drum patterns and deviation from beat expectation. There is discussion of this element of 'play' and variation within Indian musical performance practice by Leonard Meyer in 'Emotion and Meaning in Music':

> Cross-rhythm drumming in India, in some parts of Indonesia, and in Africa is often extremely complex. Its function is to add tension and interest by creating subtle counter rhythms and meters to those of the melodic line. Such crossing affords great delight to the Indian audience, particularly when it deviates from the standard pattern or the introduction of new one. In all this there is a strong element of play.[58] "The singer and drummer like to play hide and seek with each other; and the audience watch the contest with amusement".[59]

The 'hide and seek' referred to is the disguising of the *sam*, the structural beat, through use of cross rhythms causing deviation from a strong sense of pulse - it 'goes into hiding'.

Also of interest compositionally within *Nikuda* is a personal interpretation of the technique of variation form to develop the material, achieving a balance between musical coherence and expressive deviation.

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[57] Michael Dungan, Ensemble Scratch the Surface review, Irish Times, November 2008
[58] Meyer p236-7
[59] A. H. Fox Strangways, *The Music of Hindostan*, London: Oxford University Press, 1914, p.329

9.2 Pattern Permutation

Variation form and the manipulation of patterns are certainly evident throughout *Nikuda,* most notably at the opening of the piece, where a five-chord pattern is established and varied with subsequent re-orderings. For instance, in the opening bar we hear the pattern in its full five-chord pattern and its original ordering (A - 1 2 3 4 5). There is a gap of silence for one bar, leading to the pattern being presented in its first variation (B - 2 3 5). This is again framed by silence of one bar, then the next variation (C - 2 3 5 2 5). Another silent bar distinguishes between this and the following altered pattern (D - 1 1 2 3 2). This sets up a process of pattern permutation which is further extended and developed in the next sequence, where the patterns recur but move more rapidly into one another, omitting the use of silence (ABCD). This creates a greater sense of continuity and flow, providing onward movement and progression. Following this establishment of pattern sequence, there is deviation in the next section, where the ordering of patterns is modified - BCBA1ABCD. Pattern D is used as landing point to create a feeling of closure to the sequence.



Fig. 9.1 *nikuda* opening system displaying pattern permutation

This pattern is presented in violin, viola and double bass, with percussion providing additional punctuation and punch. For the opening section, these instruments are grouped together as a single strong entity, playing loud dissonant chords and allowing for timbral differentiation upon the clarinet entry at b.11. This enters on the third beat of the bar which should perhaps have a

strong sense of downbeat, but the solidity of this pulse is lessened, feeling more syncopated due to the surrounding rhythms. The clarinet line displays elements of contrary motion inversion of the opening pattern, moving in descending motion and offset in time which draws further attention to the new line. The entry is also further pronounced due to the low register and rhythmic unity of the other parts, giving the clarinet quite a foreground role above the overall texture. Throughout this section, the relationship between clarinet and the other instruments is constantly changing, producing varied resulting patterns dependent upon differing points of crossover.

At b.21 the violin moves from the low/mid range to its upper register, coupled with the removal of bass signalling a change, a move to new material, preparing for the following section's violin and viola interplay. From b.27 the texture is pared back to a duet between violin and viola, this is quite contrasting in mood, with legato bowing and a softer dynamic after the accented choppiness of the opening section. This B section develops an ascending figure derived from the A pattern's melodic contour, presented contrapuntally between violin and viola, with later addition of clarinet. There is a focus here on a narrow registral band on the three canonic lines (mid/high range), building up a sense of tension through repetition of melodic fragments and harmonic stasis.

A moment of opposing registral extremes occurs at b.36 with the entry of bowed cymbal and low bass A to provide high and low strata respectively. This produces a feeling of harmonic development and sustain, while the contrapuntal section continues. A slow sustained descending bass pattern unfolds, AEDC. The upper lines are therefore recontextualised through shifting bass pitches. The repetition of this bass pattern deviates slightly from its original form by moving to the F which closes this section and with a crescendo, leads to a recapitulation of the opening punchy material (A). Bowed cymbal at b.65 signals a break to the new section beginning at b.67 (C).



Fig. 9.2 *nikuda* weaving patterns with added bass line - registral extremes in bowed cymbal and bass

There is a sharp contrast with the opening of the C section, with a very different treatment of the instruments, exploring their percussive qualities using slap tongue on bass clarinet (the more resonant timbre of the bass instrument better suited to effective percussive slap tongue), hard pizzicato on the strings (almost like a 'snap' pizz, abrupt and sharp) and drumkit bass drum kicks. There is a deliberate attempt at the opening of this section to create something that feels very disjointed, with short instances of single-note sonic gestures heard alternating between instruments. There is no attempt to synchronize these elements at first, yet as the section evolves it feels as though a relationship between the seemingly opposing fragments is beginning to emerge.

Upon 'exposing' these elements coherence is achieved through realizing the potential of this new relationship between the sonic fragments presented. This is conveyed through the emergence of a pattern which is solid and pulse-based, converging the previously disparate components (from b.94). From this point it feels as though the various parts begin to 'lock in' to a more fixed groove. Also, the widely displaced bass clarinet figure pre-empts this from b.88, where its figure increases in frequency with more regular reiterations of the pattern, for continuity and progression.



Fig. 9.3 Disparate parts beginning to converge – aided by bass clarinet repetition

The percussion entry at b.99 is firmly establishing the groove, yet moves away from the downbeat in later bars, eg. 100 and 102. While deviations from the main beat are evident at certain points, there is always a return to some sense of pulse within the drum kit writing, to lend the music a sense of drive, solidity and forward momentum. This is certainly evident with the increase to semiquaver activity in the percussion from b.107. Here, the music becomes more active in all parts, with the exception of double bass which retains a steady repeated B pitch grounding the other busy components.

9.3 Breaking Point

There is a sense of chaos building, with syncopated triplet rhythms offset against each other, moving to a breaking point – a solid landing point where the parts are finally in rhythmic synchronicity. This recurs in my work, a buildup of energy between elements which reach breaking point which may dissipate into silence, or calm, a completely contrasting musical section. This technique of 'internal breaking point' has also been discussed in relation to the work of Julia Wolfe.

The section from b.115 is marked 'legato, with a sense of release', using longer minim lines in violin and bowed cymbal for sustain and expansive fluidity. There is still much movement in the bass clarinet and viola parts which gradually becomes less active, heralded by the viola's move from crotchets to minims from b.123, later followed by the clarinets lengthening of crotchets and

quavers to dotted minims at b.131. This creates an overall sense of slowing down, through lengthening of note values between parts, a decrease in activity and rate of change.

The use of different dotted rhythm to segregate from the overall legato texture occurs in the violin part at b.147, preparing for the solo which emerges from this material, emphasizing the solitary fragile aspects of the violin timbre. This leads to the second violin and viola duet from b.163, a major contrast to the sharp punchy energy of earlier drum kit dominated sections, and revealing a very different sound world, the beauty of merging string lines with close overlapping harmonies. An offbeat bass tone provides low-range warmth and depth, yet it slightly unsettling, due to its occurrence a fraction after the first beat of the bar (triplet quaver rest).

The bass clarinet enters at b.179 on a low D which interlocks and merges with the double bass line's low B. There is a major deviation at b.187 with the move of the bass line from B down to the A, creating a sense of harmonic shift. This returns to the B at b.195, to signal the move to a more active rhythmicization of the harmonic progression. This is first implemented through the bass clarinet's sustained tied semibreves changing to triplet pulsations, giving internal movement and building in tension and energy. Additional devices are employed to further the heightening momentum, particularly the use of bass drum punctuations and rapid hocketing interplay between bass clarinet and double bass. The percussion becomes more active with semiquaver explosive gestural interjections, short flourishes which upset the sense of flow within the rest of the ensemble's lines. At b.219 the viola and violin move to an interlocking pattern, marked 'with intensity and sense of forward motion'.

In general, throughout this final section, the harmony gradually shifts by changing the pitch of one instrument at a time. There are no dramatic harmonic shifts that occur in many parts simultaneously, but often rather a more gradual parsimonious morphing of the harmony (eg. B D A Csharp moving to B D A Fsharp, one singular pitch movement at a time). As this harmonic progression undergoes various extended transformations, the percussion part becomes increasingly frantic and active, more frequent and expanded in its interjections, with more intense outbursts of energy. At b.229 the percussionist is asked to play a 'rimshot', to strike the metallic rim of the snare drum with the drum stick producing a short sharp sound appropriate to

the increase in intensity.



Fig. 9.4 Momentum building through shifting layerings of repetition, with drumkit asymmetric interjection

9.4 Conclusion

After the constant harmonic movement of the preceding section, the viola and violin land together on a unison D sharp, a harmonic stasis to produce a sense of closure to the piece. There is still inherent internal tension within this final statement, as it is contained within a dissonant closing chord of D Csharp and D sharp. Resolution is achieved through settlement on a repeated single chord and maintaining pitch continuity, yet there is ambiguity inherent in the dissonance, meaning that the chord is not entirely stable, there is unrest to this arrival point.
As the title of the piece suggests, it is perhaps somewhere and yet 'nowhere'.

Chapter Ten: *eriu* for Javanese Gamelan

10.1 Introduction

> "True tears are not shed over a sad page, but over the miracle of a word in exactly the right place. Few are worthy to weep such tears".[60] - Jean Cocteau

The above quote provides Jean Cocteau's description of his own work as a poet, which parallels his view on the concepts of the composer Erik Satie.

10.1.1 Satie and the minimal aesthetic

The simplicity, sparsity and purity within recent works such as *eriu* and *numarimur* perhaps echo Cocteau's sentiment. Satie's concepts of timelessness and perfection through simplicity have certainly been a point of inspiration for my work. While his influence has manifested itself in some of the ideas associated with early minimalism (particularly those who vastly simplified their musical language, and returned to a stable tonal centre), there has been much discussion of how Satie's aesthetic also resonated with John Cage.

Cocteau's statement conveys a deep respect for Satie's precision, understatement and directness. There is a deceptive simplicity to works such as the *Gymnopédies* – with a characteristic precision of placement and pacing to evoke a sense of timelessness. In the *Ogives* (title referring to a two or three-dimensional object), a single melodic line may be the central component, with variation created through harmonic recontextualisation - using harmonizations of parallel octaves, alternating root position chords and inversions.

Similar concerns can also be seen in the three *Gymnopédies*, where Satie explores circular patterns, slow expansive asymmetric melodies and reiteration of low pedal bass tones, contributing to the overall hypnotic sense of modality and timelessness.

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[60] Jean Cocteau, from Hugh Griffith, *Art and Music, Pablo Picasso - Music of His Time*, online Picasso Project

"Before I compose a piece, I walk around it several times, accompanied by myself"[61]

This famous quotation from Satie shows how he considered music in an almost sculptural sense, immediately apparent upon listening to the *Gymnopédies*. As in the *Ogives*, Satie abandons the concept of progressive development from one piece to the next. Rather, with each piece, he seems to take the same material and compose it from a different perspective. Similarly, the three pieces that form *eriu* all contain similar melodic material composed from different angles, where certain layers or elements which have previously been in the background are brought to the foreground.

Cocteau's argument raises the question of whether, for some, Satie's understatement, with use of repetition and augmentation on small melodic motifs (word in exactly the right place) could possibly have more poignant emotional impact on the listener than that of the prominent 'hyperexpressive' language associated with the large symphonic and operatic works of the late nineteenth century, with its emphasis on large dramatic forces and chromatic modulation. Each note and chord is sparsely placed from one another in time, allowing the listener space to immerse themselves in the beauty of the individual sonorities. The 'perfectly placed' note perhaps has greater impact and resonance when presented in an unadorned and concise way, uncluttered by density and complexity. There are parallels to be found between the concepts of Erik Satie and in some of the minimalist aesthetics associated with composers such as Terry Riley, La Monte Young and Steve Reich, particularly the idea of finding "expression in pared-down means of composition, with no sense of time orientated direction. Stasis and repetition replaced the melodic line, tension and release, and climax of conventionally tonal music".[62]

It is perhaps most appropriate to include Satie in a discussion of gamelan in this context, as there is much evidence to suggest that the music of Java had a significant impact on his ideas. While the influence of gamelan on the compositional output of Debussy is widely acknowledged, in 1889 Satie visited the Paris Exposition Universelle and also witnessed a demonstration of

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[61] Satie cited in http://www.miskatonic.org/nuitblanche2010 accessed 5th April 2010

[62] Lucy Davies, 'Minimalism - Music as a Gradual Process, In C, Music in Fifths' http://arts.jrank.org/pages/4430/minimalism.html, accessed 10th April 2010

Javanese Gamelan music. The impact of this was conveyed in the *Gnossiennes* which were composed the following year. It is not difficult to understand why this music would appeal to Satie, with its pure bell-like sonorities, cyclical structures and sense of meditative harmonic stasis. For many, the gamelan has been a rich source of compositional inspiration, as noted by the American composer Philip Corner who has written extensively for gamelan forces.

10.2 Composing for gamelan

Gamelan has something that is different from the richness of random sounds - it has uniformity and concentration, refinement, a tuning system, a homogeneity of colour, a limitation of scale. To me it's an integration of left and right brain, the world of the intellect with the world of gestalt. There's no opposition between the analytical structure and the intuitive structure. I see this in Indonesian music more than any other music I know. Those elements, which of course exist in all music, both intuitive and rational, are clearly integrated and balanced so that there is no disharmony. There is a structure that can be very rigid, mixed with the incredible richness and sensuality of the sound itself. The pure gorgeousness of sound is bound and put into a structure.[63]

[63] Philip Corner, interview 'You Can Only Be Who You Are' with Jody Diamond, *Balungan* Vol II no.3 1986 p23-32

The gamelan instruments and techniques used in *eriu* are detailed below.

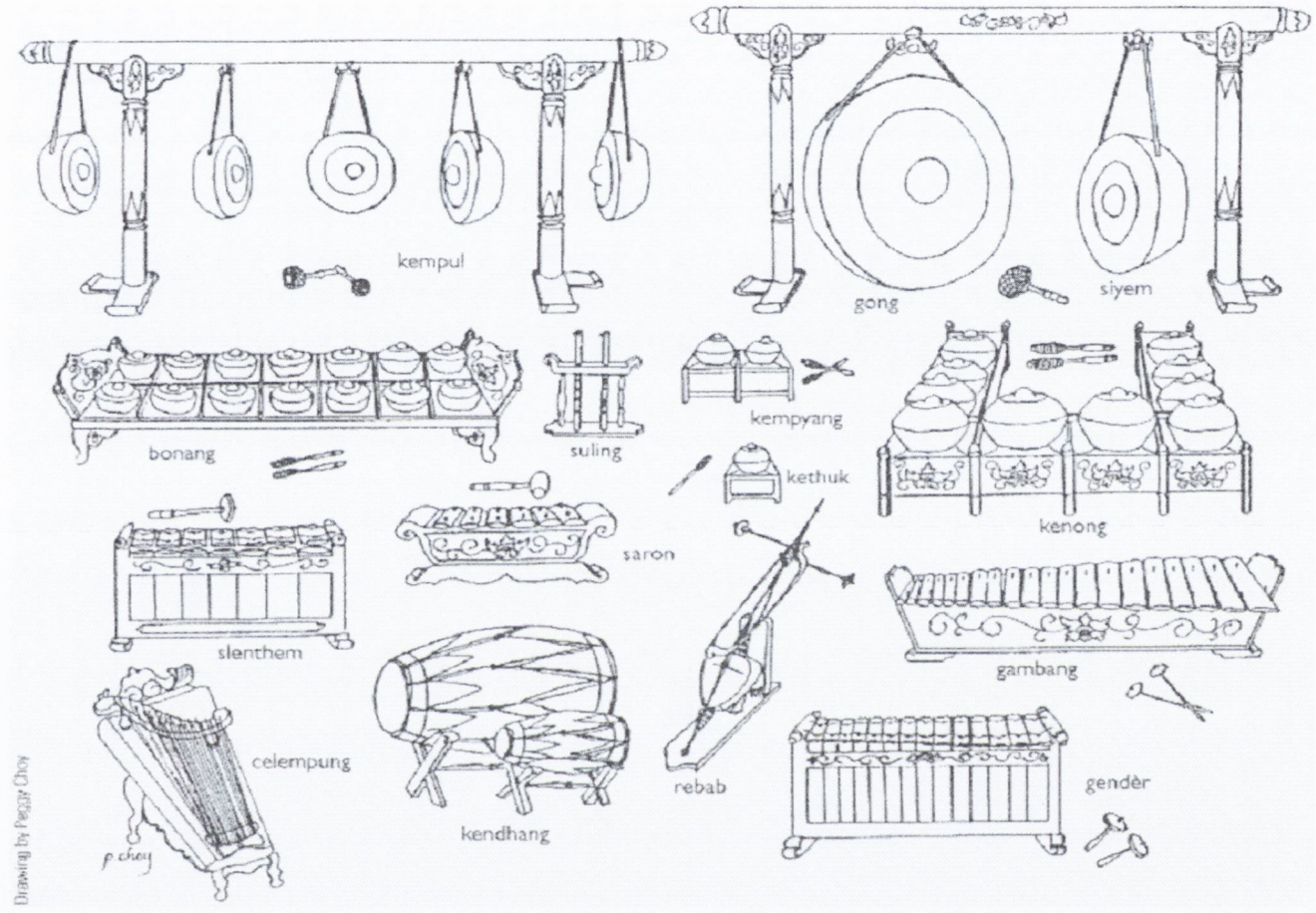


Fig 10.1 Central Javanese gamelan instruments (from J T Titon (ed.) Worlds of Music, 235)

10.2.1 Instrumental considerations

Traditionally, Javanese gamelan melodic patterns are played smoothly. Once a tone is played, the sound sustains until the next tone is played. One should mute the note just struck, slightly after the moment one strikes the next, in order to achieve a smooth legato. Short staccato playing is possible with simultaneous striking and muting of the key (which can produce a sharp clanking thud) as is the opposite effect, that of a creating a 'blurred' wash of sonority through avoidance of damping. Both of these extremes are explored in *eriu*, perhaps related to an interest in psychoacoustics and isolating the detail of the dynamic envelopes inherent in sound, from

transient attacks to resonant sustain.

The ensemble consists of several families of instruments, all with their own characteristic sound colour and properties. The families which feature in the piece are sarons, genders (slentem), bonangs, kenong, gongs and kempul.

The saron consists of seven keys made of a bronze alloy mounted on a wooden trough-like frame. The trough itself acts as a sound amplifier. Sarons come in three sizes: small (panerus); medium (barung) and large (demung). Each instrument sounds an octave lower than the former, demung being the lowest, and played with a large wooden hammer. In traditional Javanese music the sarons carry the main melody (balungan).

The gender is a metallophone comprising thin keys strung up by cords, hanging above tubular resonators. Genders come in several varieties in the gamelan of Central Java. Of most relevance to this discussion is the single octave slenthem with larger and heavier keys than those of the higher gender, giving significant penetration of sound. The slenthem is played in saron style, although with a large disc-headed mallet. Their tones have the longest sustain in the whole gamelan ensemble.

The bonang consist of two rows of horizontal bronze gong-pots, placed open side down, on cords stretched over a rectangular wooden-frame. The bonangs form a set of two: bonang barung, and bonang panerus which sounds one octave higher and are played with sticks containing a cylindrical head wound with cord.

The kenongs are similar in construction to the bonang, but larger in size and played with heavier sticks.

The set of hanging gongs are an important and auspicious part of the gamelan. The smaller ones are called kempul, ranging from 3 to high 2. The gong has a significant function in the ensemble, marking the beginning and end of the piece and providing a sense of balance following the

longest melodic section of a piece.[64]

10.2.2 Notation and Tuning Systems

Traditionally, one learns to play gamelan aurally, with listening, observation and practical participation to the fore. Many musical notations have been developed and in present-day Java, cipher notation is commonly used as a teaching device and for analyses. Symbols used in cipher/number notation include a dot above a number indicating the upper octave; below a number, the lower octave. A dot in the place of a number indicates a rest or sustained sound. A dash above a number, or numbers, indicates a further division of the beat.

There are two tunings: *slendro* (pentatonic) and *pelog* (heptatonic), with the latter being used as the basis for *eriu*. Each tuning system is characterized by its intervallic patterns. In slendro, the five intervals consist of short and medium steps. The pelog's seven pitches consist of small, medium and large steps.

10.2.3 Communal Expression

Of primary importance within this piece was the concept of simple interweaving lines, joining to form a whole unity. Gamelan performance is rooted in this form of 'communal expression':

The gamelan ensemble can be characterized as music based on communal expression. The melody of a single instrument cannot be conceived as separable from the whole sound of the ensemble. Actually, the feeling of unity, communality, or totality is based on the interactions or interrelationships among the instruments in the ensemble. This is the most important concept of the gamelan ensemble. The interrelationships among the instruments provide our understanding of how musicians intuitively conceive of the melody of gendhing as the result of their own inner creativity at work. Instruments in group Ib (sarons etc) play a melodic abstraction or the melodic skeleton (balungan) of a composition in simple rhythm and within the limits of a one-octave range. Bonang and saron panerus play melodies which offer guidance to the instruments in groups Ia (front row elaborating) and Ib, regarding the melody of a composition.[65]

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[64] Klaus Kuiper, Composing for Javanese Gamelan, http://www.gending.nl accessed 20th April 2010
[65] Sumarsam, 'Introduction to Javanese Gamelan', Wesleyan, 1988
http://sumarsam.web.wesleyan.edu/Intro.gamelan.pdf, accessed May 5th 2010

The importance of a symbiotic relationship between instruments is well demonstrated by the various forms of bonang technique associated with Javanese performance practice.
There are three fundamental types of bonang playing technique, gembyang, mipil and imbal - the latter two being explored in *eriu*.

Mipil translates as 'to pick off one by one' or to play single tones one at a time. In mipil technique, the bonang barung leads the saron player by anticipating or providing melodic cues. The bonang panerus doubles the speed of the barung:

Example Pipilan bonang in the balungan mlaku (2321)
Balungan 2 3 2 1
Bonang barung 2 3 2 . G2 3 2 . 2 1 2 . G2 1 2 .
Bonang panerus 232.232.232.232. 212.212.212.212.[66]

Imbal technique (meaning 'interlocking') uses interlocking patterns between barung and panerus, traditionally usually reserved for lively sections of a composition, adding to the overall excitement and feeling of increased speed.

10.3 The gamelan in my life - background to composing *eriu*

eriu was composed in response to a request from the University of York Javanese Gamelan Ensemble led by Neil Sorrell, for performance at the 2009 Ergodos Festival in Dublin.

A return to writing for gamelan had long been an interest, based on many years experience of performing with the Javanese Gamelan Nyai Sekar Madu Sari (Venerable Flower of Honey Essence) based at University College Cork directed by Mel Mercier. I had the opportunity to perform regularly with the gamelan, as well as acquiring practical experience of studying 'front-row' instruments such as gender panerus, and psindhen (traditional Javanese vocal technique, usually performed by female solo) with the esteemed Javanese performer Pak Slamet Riyadi.

[66] Ibid

Previous approaches to composing for gamelan were very much an 'in situ' context, where ideas evolved from sitting among the instruments of the gamelan, tested and developed within the group rehearsal situation. This was certainly the case throughout the process of composing *Telephones and Gongs* with Mel Mercier (2003). While the core melodic ideas are provided, there is much room for re-interpretation, resulting in many forms and metamorphoses of the piece. The work is mostly characterized by the prominence of rich layers of sound, much rhythmic activity and sense of forward momentum. There is great physicality and virtuosity in some of the syncopation and abrupt shifts to different material, often building to moments of great volume and intensity.

When approached to compose again for these forces some six years later, I wished to convey a different side to the gamelan, emphasizing the beauty of sound, its resonance, with slow rates of change and purity of expression. There is something quite intimate and subdued about the three short pieces that make up *eriu*, an element of simplicity and restraint, a paring back to reveal the inner beauty of the sonorities themselves.

In rehearsal with Neil Sorrell, one observation which I felt to be particularly appropriate was 'there is no need to gild the lily'. In this sense, while the material provided in the score could arguably be used as a form of 'balungan', (core skeletal melodic ideas which can be elaborated upon by additional instruments within the gamelan orchestra), it is effective within its own world of sparsity and simplicity. This certainly connects to the concepts of Satie, the attempt to create a sense of understated beauty, stripped of extraneous elements, laid bare. There is a vulnerability to the treatment of gamelan here, with often long moments of silence between notes, honing in on the fragility of the decay of a single pitch.

One of the most prominent features of *eriu* is the performance indication allowing for the notes to ring out, without the established technique of damping. This enables resonances to build up, creating soft resultant harmonies where many pitches may be decaying together simultaneously.

The pelog scale is used, preferring the greater intervallic variety inherent in this tuning, as opposed to the five-note slendro scale. Each of the three short pieces share certain common

features, whether that be a melody line which was previously hidden in the background gaining foreground prominence in another, or the use of textural additive process, where each builds from sparse to greater density through layerings of punctuation or countermelody.

10.4.1 *eriu I*

The first piece begins quite sparsely, with saron barung focusing on a minimal set of pitches, 1 and 2. A two-note 'chord' is achieved on each instrument through the technique of turning the mallet to its side, accommodating the striking of two notes simultaneously by one player. This is a device which is not associated with traditional gamelan performance practice, nor is the deliberate avoidance of damping which occurs throughout the work.

Many notes are struck in succession in the saron barung (233142 etc) which produces a cloud of sound, where the pitches are resonating and decaying together - a form of 'ghost' chord that lingers long after the keys at struck.

The simultaneous striking of bars 1 and 2, after the opening kempul 6 and gong suwukan gives a degree of dissonance resulting from these close intervals. The opening section is repeated to provide a strong and memorable aural image for the listener.
Struck pitches later replacing rests featured in the opening saron line, aid in the sense of progression on the third hearing of this pattern.

While this pattern is maintained in the saron barungs, new elements are introduced. There is a lengthening of the phrase to include the single and open-ended pitch 4, emphasizing the pelog tuning. Another addition is the use of saron demung to strengthen the saron barung lines, accenting the 1 and 2 pitches. There is a feeling of increased dissonance due to the greater presence of the demung (in size and volume) playing simultaneous close intervals (2 and 1). The bonangs are introduced together, with a pairing of bonang barung and panerus as commonly found in standard Javanese gamelan practice. At first their lines are sparse, to introduce the listener to this new upper stratosphere.

Silence is used to frame the pattern, which then moves into a more continuous sequence. Within *eriu*, slenthem in general functions as a lower pitched harmonic layer, to give soft sustain and warmth to the sound, either emphasizing significant pitches in the sarons, or to provide countermelodic components. Deviation from expectation is also a concern here, evident in the establishment of a repeated kempul figure which is later modified in a simple and subtle way, yet one which contributes to a sense of shifting bass harmony (eg. 6 6 5 moving to 6 5 6).

The saron demung line which had previously interspersed sounding notes with rests, moves to a section where rests are omitted, doubling the occurrence of pitches which creates an insistence, building in momentum, the faster rate of activity perceived as an increase in speed. The slow and steady slenthem also shifts to rapid repeated 1 pitches, providing an articulated lower bass line. A new and interesting sonority occurs where the saron barung bars are struck while being gripped with the players other hand, 'stopping' the sustain resulting in an industrial sharp metallic sound. The close of the first piece offers a significant contrast to the preceding sharp transient qualities of the repeated 6 almost anvil-like hammerings.

I wished to focus on the purity and beauty of the bonang sound, giving them space to create an elaboration of the line, a 'flowering'. Relating to the previous discussion of expressive deviation in non-western music, Sekaran (Javanese for "flowering") is a type of elaboration used in the Javanese gamelan, particularly on bonang barung. A sekaran often occurs only at the end of a cycle and is usually preceded by imbal playing. A very sparse and minimal 'sekaran' ends this first piece with bonangs alone focusing on pitches 6 7 and 3 4, playing in syncopated imbal style hocketing between one another, with bonang panerus emphasizing the upper octave. This is first heard with a slow-moving line on saron barung (using pitches 7 and 3), later paring down to a single voice of bonang panerus. The saron barung line here prepares the pitches which will be used for further expansion in the second piece.

10.4.2 *eriu II*

This second piece presents material which seems familiar but not quite the same as earlier instances - there is an ambiguous connection. The prominence of pitches 7 and 3 from the end of

the first piece return in saron barung, but in more extended melodic form. It is extremely sparse, with purity and simplicity to the fore - long rests allow for sustain of sound. Harmony is added with division of sarons into two lines, a dissonance disturbing the purity of the melody with the simultaneous struck 7 and 4, and embellishments on the melodic line creating deviation from the deceptive clarity of the line.

The move to a more fluid sense of phrase, with fewer interruptions of silence in the saron barung line feels as though a landing point has been reached. We hear a clear sense of melody line, a pattern conveying a faster rate of change streamed as a line, with temporally closer pitches. A descending countermelody in slenthem adds to the sense of arrival, with its low register sustain. A joyous bonang line enters, further heightening the sense of stability - elements interlocking in harmony with one another, demonstrating the mipil style of bonang technique (panerus following barung's lower pitched punctuation with more rapid upper repetitions, eg. 767, 767 etc).
The second piece ends with saron barung alone on pelog 4. This feels open ended, unfinished, like a question that needs to be answered. Perhaps the answer is contained within the third and final piece of *eriu*.

10.4.3 *eriu III*

The closing piece takes the saron demung line from number II as its basis, akin to taking a microscope and honing in on one level among the layers - isolating this and developing it. Slenthem provides a slow moving harmony underneath, with later an ascending countermelody placed against it in saron barung. This conveys my interest in exploring the relationships which emerge from the superimposition of simple melodic lines. When composing this section, these interweaving melodic lines were thought of as akin to two vocal lines which cross over at various points, the horizontal made vertical, producing sustained resultant harmonies. Within my approach to composing for gamelan there is often a modular way of thinking, superimposing layers of patterns, repetition and cyclical elements which are perhaps strongly connected to my experience of performing Javanese music.

The entrance of kempul lends a sense of evolution and emotion, a progression from the preceding restraint, like a soft shadow in the background.
The bonang techniques employed in this piece have certain aspects of imbal influence, but differ from an exact 'every second note back and forth' hocketing type of interplay. Rather, more of the pattern is assigned to each, allowing for a longer form of interplay with more extended lines.

10.4.4 Conclusion

The largest and most revered of the gongs, gong ageng is reserved for the conclusion - its use withheld until the final piece, and the final section within this. It is used sparingly, to provide a sense of impending closure, finality and quasi-resolution. The expectation of a resolved ending is somewhat usurped by the final saron barung 5 note, which is the last note heard, ringing out. This gives a certain degree of ambiguity, feeling quite open due to the association previously set up, of the 5 leading to another pitch, a passing note, not a concrete landing point. The 6 in this case may have felt more 'closed', yet this 'passing note' perhaps conveys a continuation, the resonance of the gamelan within my own life, its spiritual and musical presence never ending.

Chapter Eleven: *turn* for Orchestra and Ensemble

11.1 Introduction

Commissioned by Hellerau - European Centre for the Arts, Dresden
In collaboration with Hellerau - European Centre for the Arts, Dresdner Sinfoniker and Ex Novo Musica.

This was an unusual, experimental and multi-faceted project, involving the creation of a composition which would be performed in two discrete locations simultaneously, connected via video link-up, the Dresdner Sinfoniker Orchestra in Dresden and the Ex Novo Ensemble in Venice. An element of Indian influence is also evident, where within the commission brief, a collaboration was suggested between the Indian poet Ikram Uddin Akram, with sung text (from video recording) being used within the piece. The subject matter of the text was concerned with the Bhopal tragedy (India, 1984), often cited as the world's worst industrial catastrophe, in which a pesticide plant gas leak resulted in the death of thousands. This idea originated from Andrea Molino's (director of Ex Novo Ensemble) participation in the Venice World Forum 2009, themed 'The Health of the Earth and of Human Beings - Environmental disasters: responsibilities and protection'. The 'theme' of the environment was also connected to the work's bilocational performance context between Dresden and Venice. One of the first challenges to overcome was the issue of time latency in linking both musical groups.

An element of possible time-delay was discussed in relation to the composing of the piece, and was a major aspect of consideration, presented with the challenge of creating a meaningful connection between the musical material assigned to both groups, while allowing some degree of flexibility regarding the length of the delay time, and how this would impact the overall musical result. It was ascertained that the length of delay time could not be accurately predicted, yet it was decided that this aspect of slight asynchronicity could be exploited to interesting effect. Much consideration was taken, in terms of how to explore this unique performance scenario in a musically engaging manner. A strong connection between the material assigned to the Venice ensemble and the orchestra was desired, from my initial conception of the piece.

11.2 Turn as the earth and the moon turn - the use of Rumi Poetry

The overall work was inspired by text from the thirteenth century Persian poet Rumi, particularly structural considerations.

'Inside water, a waterwheel turns, A star circulates with the moon. We live in the night ocean wondering, *What are these lights?'*	The first section is informed by the concept of 'night ocean' - something which appears to be static on the surface, but has internal movement and 'shimmering', like stars in the night sky. This is conveyed through harmonic stasis and emphasis on timbral movement and transformation to accompany the Indian vocals.
'A secret turning in us makes the universe turn. Head unaware of feet, and feet head. Neither cares. They keep turning.'	A : This section marks a move to a harmonic progression which feels as though it is moving forward and backward at the same time, cycling back on itself. This is achieved through various permutations of a short chord sequence, and variation through inversion, a 'turn'.
'Walk to the well. Turn as the earth and the moon turn, circling what they love. Whatever circles comes from the centre.	D: The text is reflected in the exuberance of the rapid figurations, while maintaining some of the circular harmonic elements from the previous section, 'circling what they love'. This also occurs a little after the mid-point of the piece, 'Whatever circles comes from the centre.'
'Some nights stay up till dawn, as the moon sometimes does for the sun. Be a full bucket pulled up the dark way of a well, then lifted out into light.'	E: This is evident in the orchestration, with the move from low registers of cellos, piano and bassoon to the 'brighter' ranges of woodwind harmonies, like moving from dark into light, 'lifted out into light'
'Dance, when you're broken open. Dance, if you've torn the bandage off. Dance in the middle of the fighting. Dance in your blood. Dance, when you're perfectly free.'	F: The closing section becomes almost like a dance, with punchy syncopated brass harmonies and semiquaver activity in harp and piano. The final bars feel like a breaking out of containment, with widening of register, increase in dynamic and rapid ascending figures in the coupled piano and harp lines, 'dance when you're perfectly free.'

Table 11.1 – Rumi structure of *turn*

11.3 Timbral Considerations

The opening of the piece is textural, a wash of sonority featuring no significant aspects of melodic line or pattern, with a focus on the Indian vocalist line as foreground. There is predominantly an F sharp C sharp harmonic basis to this section, derived from the pitch content suggested by the excerpt of vocal. In live performance this was presented on prerecorded video, deriving from footage originally filmed in India by Andrea Molino, who first approached me with this concept.

Many extended techniques are employed to create this overall textural resonance:

String trills - players trilling at different speeds in combination, producing a complex textural result. This technique was first explored in *fiol*, at a smaller scale with the trio.
'White-noise' bowing without producing pitch, at times some pitches may emerge from this but this element of indeterminacy is desired, to introduce subtle colour variation to the overall slowly evolving texture.

Cello/bass endpin bow: Drawing bow across the 'spike' or endpin of the cello and double-bass. This can produce quite a pure harmonic-like timbre, and can be a little unpredictable in terms of exact pitch, yet similarly this slight deviation from the dominating Fsharp Csharp harmony is welcomed.

Playing on the inside strings of the piano with soft (felt) mallets, for a dark wash of sonority.

Bowed vibraphone, for a pure sinetone-like sound.

11.4 Harmonic Morphing

A wide harmonic spectrum opens up in the second section II (Letter A), a harmonic progression which contrasts with the previous section in many significant ways, particularly in the orchestration. The instrumentation here moves from the string-centric opening to a much more expansive rich sound world, incorporating low brass to high woodwind - a sense of filling up the spectrum. There is a focus on slow-moving harmonic transformations and colour morphing, a point of influence here being evident in the abstract expressionist visual art of Mark Rothko with its emphasis on colour saturation, and Morton Feldman's ability to achieve the effect of sustained sonic fluidity within his orchestral *Coptic Light*.

At the beginning of the A section of *turn*, the performance indication calls for 'a sense of release, beauty and wonder'. This section feels like an opening out harmonically as well as through colour expansion. The way in which the harmonic movement develops is inspired from the Rumi poetry's concept of turns, turning back on itself with a sense of repetition, familiarity yet change. The voice-leading creates a long asymmetric melody line, primarily assigned to flute. The harmonic basis for this lengthy section is provided in simpler reduced form, which is treated contrapuntally in the piece (See Fig.11.1 on the next two pages).

TURN HARMONIC PROGRESSION



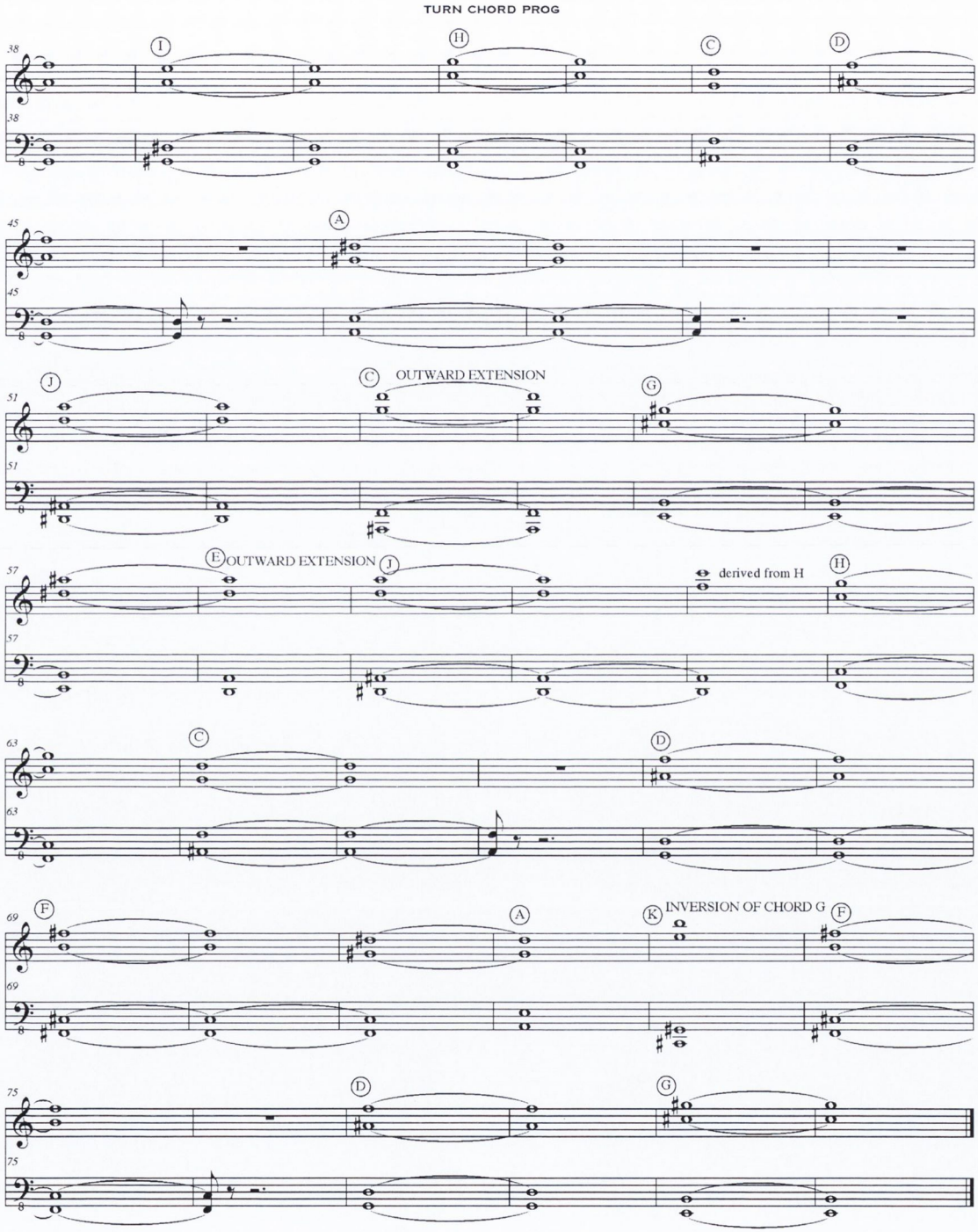


Fig.11.1 *turn* harmonic progression

11.5 Bi-locational Composing

The contrapuntal writing produces a 'blurred' effect, with the orchestra moving together as a sonic entity with slowly morphing harmonies contained within. This blurred effect is heightened by the time delay from Venice (in actual performance, almost one second late). The latency is therefore treated as another compositional parameter to explore. In correspondence with Andrea Molino, many possibilities of how to treat this delay were discussed - it is interesting to note his early observations on this element of the compositional process:

> Please note that the 300ms work BOTH WAYS: that means that one of the sites will always have to "accompany" the other. Also, a hypothetical chord which is "together" from the point of view of one location is not from the point of view of the other. In principle, Linda should compose like if the two Ensembles were approx. 100 metres far away from each other in a "real" space. Intriguing...
> Please take care of the two-ways audio feedback. We can minimize it by placing the microphones as close as possible to the instruments and by placing the loudspeakers up front the stage; Feedback Italia is also testing a specific device. Nevertheless, a certain feedback will be probably unavoidable, given the delay, so the composition should take care (or maybe even take advantage...), of this issue.[67]

The length of delay was actually greater than indicated (almost c.1 second), thus it was felt that the composition had to allow for flexibility regarding delay time - something that would be effective regardless of unforeseen time discrepancies, with slow harmonic transformations and without reliance on rapid interplay between the two cities. Venice, being later in time, was chosen for the more 'accompaniment' role in this case. Of course a form of hocketing between forces could yield exciting and engaging results, but was deemed too great a risk in the context provided. Possible future work in this area may include a focus on the exploration of bi-locational performance for a more closely synchronized interplay of material.

11.6 Structural Issues

At b.73-4 the harp introduces material from the section which is to follow, like a short interjection. This also occurs at b.119-20 and b.128-129, setting up a pattern of interjections.

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[67] Andrea Molino, email correspondence with the author, July 2009

At b.121 the Venice ensemble begin to play a rhythmicization of the harmonic progression, connecting to the following more rhythmic section. This works well with the time delay, as the ensemble here are notably more active with busier material, contrasting with the smooth expansive nature of the orchestra's slow sustained harmonic unfolding.



Fig.11.2 Venice ensemble increase in activity against slow-moving Dresden orchestra

At letter D there is a major contrast with new material, a move to a fast tempo (double speed from 60 to 120) and the use of more active patterns. The Venice ensemble material maintains strong links to the preceding harmonic section - an extension of this material to distinguish them from the orchestral rapid figurations while creating a sense of continuity and coherence. There is a focus here on the layering of different rates of activity and change - the ensemble are moving at a slower pace to the orchestra at this point. The rapid semiquaver passages on piano provide a sense of building momentum, with arpeggiations based on the surrounding 'white-note' harmony. Again the layering of different 'speeds' is evident here, where the harp plays the same material as the piano's b.135 semiquaver figure, but in quavers, beginning on the third beat of the bar.
This is perhaps related to an influence from the work of Conlon Nancarrow and the concept of tempo canon, which was a noted inspiration for Ligeti's *Piano Etudes*. The celli pizzicato at this

point are also playing the same pitches of the harp and piano lines, but provide a sense of syncopation, with the superimposition of their dotted quaver pattern on quaver and crotchet movement of the other lines. This cello syncopated pattern is then taken up by flute and clarinet, bringing it to a higher register, moving it from background to foreground. The dotted syncopation is carried over to viola and violin pizzicato, with transitions constructed at b.145 and b.149.



Fig.11.3 'Mechanistic'rapid piano and half-speed harp, with syncopated line passed from celli to violas to violin I

A more legato expansive line is presented by a combination of clarinet and bowed vibraphone from b.159-183, appearing to float above the busier texture underneath. The semiquaver piano line also produces shimmering waves of sound, weaving in and out of the heavily accented arco string punctuations.

Letter E provides a major change in the orchestration, with the move to a woodwind focus. The treatment of wind harmonic spacing is inspired by Stravinsky's orchestral sound world, particularly in the *Symphonies of Wind Instruments* (1920, rev. 1947).
The horn functions as an extension of the woodwind section, with an emphasis on woodwind colour and the interplay of lines. This section begins sparsely, with flute and clarinet and widely-spaced chords. The more prominent line is assigned to oboe, for its penetrating quality (b.186).

There is a deliberate paring back of forces, allowing the listener to focus in on the woodwind sonority.

At letter F there is construction of a build up to the conclusion, with additional textural density through use of full brass and strings, harp and piano. Many interlocking lines occur between the various instruments here, becoming increasingly active and intense.

The overall structure may be described as follows:

B.1-42	Intro	focus on strings, exposition of Indian song in foreground
B. 42-52	Transition	bowed vibraphone introducing melodic material from the following section (preparation for letter A)
B.53-120	A	dense sound mass, emphasis on orchestral colour and morphing harmonic progression
B.121-133	Transition	where Venice ensemble introduces more activity into the slow moving harmonic progression
B.135-183	B	more rhythmic, pulse and pattern based, with the ensemble and brass section providing a sense of coherence and consistency by connecting to material from A.
B. 185-212	C	emphasis on woodwind
B. 213-246	D	includes elements from A + B, syncopation building in intensity to end.

Table 11.2 – *turn* overall form

11.7 Orchestral Considerations

What is orchestration? The common conception of orchestration as assigning timbres to lines is very inadequate. Timbre is a potent aspect of musical character. Using it effectively requires much knowledge about texture - the ways in which musical strands can be combined - and how changes of timbre affect our perception of musical form. There is in fact no area of music that is not dependant on timbre: It impinges even on the most elementary harmony exercise. Our definition of orchestration here will therefore be: Composing with timbres.[68]

[68] Alan Belkin, 'Artistic Orchestration', University of Montreal 2001, 2008, p.4

Many orchestral principles were considered (outlined here from Alan Belkin's *Artistic Orchestration*):

Artistic orchestration also needs to be seen as an integral part of musical form. Changes of timbre must be logical in the musical context. A change of sound creates a formal articulation. The normal place for timbre to change is between phrases, sections, etc. Within a phrase, orchestral changes will normally occur at musically significant moments: motivic changes, climactic moments, and cadences.

This principle is certainly taken into consideration, evident in the move from strings to tutti signifying a major change to a new section and to present new musical material. This dramatic timbral shift can also be seen in the change from rich legato tutti to a more pared down percussive use of pizzicato celli, piano and harp at letter D. There is contrast, but some sense of continuation, through warm sustained harmonies in horns and trombones. The next most prominent timbral change is the isolation of woodwind from letter E, and the subsequent tutti build to the closing climax. Timbre strongly affects the perception of musical form – colour shifts and orchestrational considerations were used as aids in the clarification of *turn's* formal structure.

Like harmonic rhythm - the rate of harmonic change - the rate of orchestral change has an important impact on the music's pacing. The rate at which timbres are added or removed, especially within a phrase, can contribute to effects of tension or of relaxation. Such orchestral "speeding up" and "slowing down" normally compliments and enhances the phrase structure of the work.

The rate of orchestral change speeds up as the piece progresses, from the 'relaxation' of full sustained tutti for the lengthy section from A to D, to shorter bursts of colour, more rapid interplay between the differing timbres.

Crescendi and diminuendi: An orchestral crescendo is achieved by adding instruments in a well graduated order, and a diminuendo by subtracting them.

This is achieved through addition of more brass sustain from the original horn and trombone line at b.135 to the full brass section (excluding trumpet at this point, as low register legato warmth is

called for). This creates the effect of the orchestrated crescendo achieved not through changing dynamics, but build up of forces alone. The opposite effect is required at b.204, a paring back of forces to produce a sense of diminuendo.

The most dramatic orchestral crescendo occurs from b.210, where woodwind alone are first joined by brass (b.213), then ensemble (b.215), then strings (upbeat to b.216), piano (b.216), and harp (b.222), with incremental addition of each family to build towards a conclusion, culminating in the full force and impact of the tutti sound.



Fig.11.3 Orchestrating a crescendo near the end of *turn*

It is possible to enhance the contour of a phrase orchestrally.

This is the aim at b.159, where the subtle and ethereal effect of bowed vibraphone is coupled with the clarinet's soaring melody line, creating a timbral colouration and emphasizing the floating stratospheric nature of the line.

Accents and highlights: accents are achieved by momentary additions of one or more instruments, often with percussive attacks.

From b.171 the violins accented double-stops create articulations within the harp's quaver figures, particularly with the A at b.171, E at b.172, G at b.175, A at b.178 and b.180, and the C at b.181 emphasizing these pitches. The vibraphone also begins to double the harp's line from b. 178, lending it strength and sustain. Piano is also used from b.213 to add weight and attack to the punchy brass syncopation.

Especially when working towards or away from climaxes, often it is effective to create progressions of register, either widening out from the middle in both directions, or else adding more and more high or low material. Such progressions are powerful sources of musical direction.

This certainly evident from the low/mid opening ranges registral expansion upward to high woodwind and the widening out of harmonic which occurs in the final section the piece, from a 'contained' mid-range to the outer extremities of double bass and piccolo.

It is often remarked that the orchestra has no sustaining pedal. While this has obvious consequences for transcribing piano music, it also points to an important issue in orchestration in general: Resonance. Resonance is by definition a part of the background layer. Resonance can also be deliberately composed orchestrally, and therefore individualized. There are numerous examples of held notes used as points of departure for important lines. This particular way of composing with resonance - others include the lines which dissipate into held notes, and resonance which is intermittent, or which includes some simple rhythmic formula - gives way to more refined ways of using sustained sound in the background to enrich the texture.

Sustained pitches and slow overlapping of lines create a sense of resonance within the 'harmonic morphing' section from letter A. Brass is most utilized in the section following this to create a resonant warmth in the background, allowing the more percussive elements to come to the fore.

The top line normally attracts the most attention. The ear normally follows **activity**: If, say, in the string choir, all the parts except the viola are static, the movement in the viola will stand out.[69]

This may seem like an obvious and simple principle, yet can have a major impact on the orchestration. The harmonic stasis (yet textural movement) and slow rate of instrumental change of the opening provides space for the vocal line (from the Indian singer) to remain in the foreground. Later from A, the flute is assigned the most prominent melodic 'voice-leading' material of the harmonic progression, at a high register to delineate it from the other lines.

11.7.1 Conclusion

Another major aspect of consideration was to take these principles further, discovering the points of contact which could be made between both orchestra and ensemble. It was fascinating to have the opportunity to explore the concept of 'spatial music' in a very real geographical sense - where simultaneous musical elements from different locations can merge to form a whole unity. At times the different elements form an 'aural shadow' of one another, converging, morphing, fusing.

From the massive forces of *turn* to glacial sparsity and purity, *numarimur* is the final piece discussed, an intimate two-voice setting of Icelandic text, with a focus on clean lines and harmony - horizontal made vertical.

[69] Alan Belkin, *Artistic Orchestration*, University of Montreal 2001, 2008, p.18

Chapter Twelve: *numarimur* for two voices and electronics

12.1 Introduction

numarimur was composed in response to a commission from the York-based group Ergodos Voices, with funds from the Arts Council of Ireland.

Both 'songs' which form *numarimur* were based on an original concept to incorporate live voices with a live electronic component. At an early stage in the compositional process experiments were undertaken whereby no actual electronic effects or processing would be used, maintaining the purity and clarity of the vocal timbres. Alternatively, an emphasis on harmony and vocal layering would be of primary importance, with an attempt to create superimposition of harmonies through live recording and playback of piece sections, upon which additional sung layers could be applied. One possibility considered and explored was the construction of a delay patch in Max/Msp, which would record the sections required into a buffer and play them back at the timings necessary for synchronization. This was tested in rehearsal and proved to be quite challenging, due to some timing unpredictability and potential for uncertainty regarding the close synchronization of lines. While live interaction with delays was an interesting experiment in theory, the singers expressed a desire to create a tape part for playback which they could rehearse with, and for practical considerations, this proved to be a worthwhile solution. The sections in the score which could potentially be triggered as live delays were recorded and constructed into a tape part for technical ease and vocal security. Additional electronic expansions were developed for enhancement of the vocal lines and for sustain. The vocal lines were recorded by Michelle O' Rourke and Marja Kay who premiered the work.

The first piece evolved from a simple idea, with the two voices, often moving in parallel motion focusing on intervals of the fourth and fifth, alluding to an organum medieval influence. I wished for a close connection with the electronics used - all the tape pitches are derived from the vocal, using pure tones such as bowed glass, effected by echo for greater sustain. Harmonies are constructed from the technique which originates from the live electronics concept, where the vocalists would sing new harmony lines as another layer upon the section which has just been

previously sung, building up richer harmonies. This technique is used to great effect by the thereminist Pamelia Kurstin, who creates dense textures from the superimposition of repeating lines, recorded and played back live using loop pedals.

The second of the pieces contains more obviously 'melodic' vocal lines, using electronics to create a wash of sonority, as if they are performing in a room with a long reverberation time, a magical, imagined acoustic space. This results in interesting harmonic effects, as some pitches within the reverberation ring out and extend into the next sung phrase.

12.2 Medieval resonance

Many aspects of the *numarimur* echo the sound of another time, the purity of organum spiked with a form of dissonated diatonicism and electronic effects from a modern world. Another point of reference is the medieval motet, with its superimposition of different texts and vocal layering. The simplicity of the two-voice harmonies is made increasingly dense and more complex due to repetition of sections upon which there is superimposition of layered harmonies. This is evident in the four-note chordal expansion of *numarimur I* and the six-note harmonies of *II* which evolve from the original opening sparsity of two voices, perhaps recalling the development of polyphony itself:

> The creation of three- and four-voice organum c.1200 is an important step in the development of polyphony which until then had been conceived in terms of two voices, and Pérotin's compositions show great awareness of the implications for structure and tonality.[70]

12.3 Oliveros - Reverberation as a Compositional Parameter

The use of electronically generated reverberant resonance is also in recognition of this influence, with its sacred origin of church performance, recalling the acoustic characteristics of such spaces. Exploration of acoustic reverberation has long been an interest, also notable in the work of the American composer Pauline Oliveros. Oliveros recorded a series of experimental pieces at

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[70] ed. Stanley Sadie, 'Pérotin', *The Grove Dictionary of Musicians*, 1988 Macmillan Press Ltd, London

the Fort Worden Cistern in Port Townsend, Washington in 1989. This 186 foot diameter cistern was renowned for its unique acoustic properties with a reverberation time of forty-five seconds. The reverberation of the cistern differed from that of a large cathedral in that there were no early reflections, only a dense diffuse reverberation tail. Panaiotis writes:

"The remarkable thing about the acoustic space is the long reverb, which could approach 45 seconds, and the lack of slap echoes and distinct early reflections that are often characteristic of large cathedrals; only pure, smooth reverb, the type that can be simulated electronically but is thought to be unrealistic and fantastical. The space is real, and unique. A large cathedral will return slap echoes and uneven resonance characteristics. The cistern showed a very smooth frequency response and no echoes, only a smooth reverberation, the amplitude of which appears to begin at the same decibel level as the source. Consequently, it is impossible to tell where the performer stops and the reverberation takes over. One additional aspect of the reverberation field that does not seem to record easily and which makes simulation very difficult, is that it slowly moved from the sound source along the walls until it enveloped the listener: a most remarkable and beautiful phenomena." It is evident from this that Oliveros used the space in which these pieces were performed as a compositional parameter.[71]

12.4 Electronic Component

Numarimur I

The electronic component is all generated from the vocal material, with its pitches used to trigger bowed glass samples which are then processed with echo for blurring of sound. Soft slow pulsations emerge as a result of the close intervallic 'beating', emphasized through echo effects. The extreme echo is lessened when the voices begin to become more layered, for clarity and to fully perceive the impact of the harmonic progressions. The additional pure glass-like timbres are omitted for the final phrases of the first piece, to provide a sense of paring down to closure.

12.4.1 Numarimur II

The tape part of the second piece is entirely generated from recordings of the vocal parts, all evolving from the one sound source. Extreme reverberation is used on the pre-recorded voices to

[71] Panaiotis cited in James R. Briscoe, 'Deep Listening' *New Historical Anthology of Music By Women*, Indiana University Press, Bloomington and Indianapolis, 2004

create the aural illusion that in conjunction with the live vocals, will sound as though the singers are performing in a large cavernous acoustic space. Very little direct sound is used in the tape component, as this is provided by the voices in live performance, contributing to the overall perception of the cause and effect, voices and reverberant sustain.

The extremes of wet to dry reverb signals are explored in the second of the *numarimur* pieces. As the vocal layerings build up, again for issues of clarity, the wet ratio of reverb time is brought to its dry extreme, instead choosing more subtle delay effects in the background. As more layerings of vocal harmonies are added, a clean uneffected sound is chosen to allow space for the interweaving lines.

12.5 Icelandic song



Fig.12.1 Glacial Icelandic landscape as inspiration for *numarimur*

The Icelandic text (another example of rimur poetry) by Sigurdur Breidfjord is 'an ode to the land', describing the beauty of the glacial landscape, and like *fall approaches* again relates to my fascination with the music and natural imagery of Iceland. With the *numarimur,* I was afforded the opportunity to explore Icelandic text in an intimate two-voice setting.

As previously noted, writing for female voice often feels like a direct extension of my inner voice, deeply ingrained in my own personal thoughts and emotions with no possible instrumental abstraction. It is interesting to consider the power of song to evoke feeling and its connection to the unconscious, apparent in the composition of these pieces. This may certainly also refer to

instrumental writing, yet there is something innate about the human voice that seems to connects to the primal, the internal.

Even Weber's *Rational and Social Foundations of Music* (1921) embodies the view that "music is the most spiritual of the arts...the most mystic and emotional of the arts" (Martindale and Riedel 1958:xxiii). What is it about music that enables it "to over-awe, to impose itself upon the listening worshippers" (Hughes 1970:58)? In linking the phenomenon to the "essential relations of being," Confucius may have had part of the answer, for in a recent study Booth (1981) argues that song evokes primordial memories of the rhythms and vibrations experienced in our mother's womb. As a glimpse of "authentic togetherness", song offers us "the experience of unity with what seems to lie apart from ourselves" (p206). Booth further proposes that these feelings may echo a deeper unity which occurs between the cerebral hemispheres at the moment when song effects the marriage of music and words .[72]

12.6.1 *numarimur I*

The whole work opens with an ascending line in both voices, with short phrases framed by rests. Perfect fifth harmonies feature prominently (eg. b.18-19), again alluding to a medieval sound world, mostly moving in parallel lines, yet demonstrating deviations from this premise (eg. the contrary motion of b.5-6). Throughout the work there is an interest in the crossing over of lines, points where Voice I moves lower in pitch to Voice II which results in a strange colouration of the vocal timbre, almost like 'swopping' lines. While there are connections to organum (eg. pure non-vibrato vocal tone, parallel movement) this generally displays a language which is more rhythmically intricate at times, with use of syncopation potentially disrupting the listener's sense of expected pattern simplicity set up at the opening. Another deviation occurs at b.12 with Voice II remaining static and movement heard in the Voice I line, slightly offset in time. This is then restored to the established device of parallel harmonies. There is also prominence of minor and major sixth harmonies, with wide leaps built into the phrasing.

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[72] Donald Tuzin, 'Miraculous Voices: The Auditory Experience of Numinous Objects', *Current Anthropology*, Vol.25. December 1984, p.67



Fig.12.2 Opening of *numarimur*

The tape has remained in the background up to this point, yet an emotive harmonic swell in the electronics occurring at b.20 and b.30 lends it greater presence. The tape provides sustain through the silence – there were practical as well as aesthetic reasons for this, with regard breathing considerations for the singers. At b.25 Voice II enters slightly after Voice I at a lower pitch, like an aural shadow. The vocal lines become quite rhythmically intricate from b.31, connecting to the austerity of an organum-like sound world, with all the rhythmic deviation and variation associated with the rubato nature of folk singing.
At b.43 and b.96 the vocalists are encouraged to whisper sections of the text, wishing for a degree of spontaneity and indeterminacy with unpitched momentary fragments focusing on the beauty of the Icelandic language, and a contrast from the dominance of pitched material.

All of piece I is based on material from the opening section (to b.52), with harmonization constructed upon this. The vocal harmonies from bars 1-52 repeat as a layer in the tape, allowing for the superimposition of live harmonies or countermelodies upon this.
Contrary motion is employed for the opening of the next section (b.54), led by the live Voice I. Layering of different texts is deliberately used here, with an interest in the relationships that emerge from simultaneous text presentation, referencing this practice in the medieval motet.
The harmony begins to introduce moments of darkness, for instance in the close minor second dissonance created by the A sharp and B at b.60 in the live component, which proceeds to add a low register layer to the tape voices with contrary motion harmonic expansion from b.63.

Registral extremes are reached at b.68 with a combination of low F sharp and high F almost two octaves higher. The resultant harmony of the combined lines held from b.72 to end of 75 feels like a landing point, due to its longer duration and wide harmonic spacing. This creates an open

spectrum of G sharp, D sharp, A sharp and F sharp – a perfect fifth and minor sixth superimposed, perhaps old and new worlds combining to form a complete sense of unity. This chord is repeated at b.76-77 to reiterate its significance.



Fig.12.3 *numarimur* – registral extremes and wide harmonic spacing between live and recorded voices

There has been much parallel movement between live and tape voices until this point, there is now a shift to more contrapuntal writing with rhythmic differentiation in the four lines (b.78-80) and a move to a greater degree of dissonance, evident in the close harmonies of G, G sharp, B, C sharp (b.81). Parallel movement is again restored with rich harmonies, disrupted by the disjointed nature of the broken rhythms from b.93-95. The rhythm locks into more stable patterns for the final bars of the first piece, providing closure.

12.6.2 *numarimur II*

The second section of *numarimur* opens with a much more expansive sense of melodic line led by Voice I, with reverberation in the tape. Voice II acts almost as an accompaniment to the Voice I's foreground line. There is an implied tonal stability inherent in the fluid melodic contour of the opening bars which is strayed from and dissonated with the minor second interval of b.115's low G and G sharp. This low register dissonance prepares for the sequence of minor second intervals developed in the following passage from b.124-129. I was interested in emphasizing the murky qualities and beating effects produced by the superimposed low sustained G and G sharps, accessing pitches in the lowest reaches of the female vocal range.



Fig.12.4 *numarimur II* – dark low range with close dissonance between voices

The melodic material is not assigned to Voice I alone, with equality of lines displayed from b.131's alternating foreground line to Voice II, which is later passed back to I with an interplay of melodic material. An emotive moment occurs at b.139 with reverberant 'spill' creating harmonic blurring, as previous pitches are sustained into the chords following. Layering occurs to greater degree in *numarimur II*, with one extra 'cycle' forming six-note harmonies concluding the work. The first layering occurs at b.145, with addition of a low-register line to the recorded legato melody. This new layer is less active and feels as though it moves at a slower pace to the tape vocal lines, a superimposition of differing rates of change, again perhaps connecting to the technique of layering different vocal parts in the isorhythmic motet, with a slow-moving tenor and more intricate upper triplum line. This shifts to synchronized parallel movement in all parts from b.149 and is uninterrupted for some time, with the later exception of some rhythmic divergence (b.169-174). Quite an unusual harmonization occurs in the final layering, the new voice parts in this section are mostly derived from the material of the opening section of *numarimur II* in a transposition a perfect fifth higher – this results in some periods of relative harmonic stability, but mostly the degree of dissonance is increased as a result of this superimposition.



Fig.12.5 *numarimur II* – 6-note chords through layering, final section

There is a feeling of upward expansion, for the final section of this whole work, evident in the rich yet wide harmonies created at b.194-5, encompassing a low G to high F - G, C, C sharp, A sharp, F. Dissonance returns and is further intensified due to its occurrence at the ends of phrases, (eg. the F, G, G sharp, C sharp, D, D sharp of b.203) – these close intervals create an unsettling effect, featured at points where perhaps a greater sense of resolution may be anticipated. The work, a form of modern day motet, comes to rich harmonic close with pattern repetition slowing down the rate of change and providing a moment of final calm, the voices, as Cagney notes, 'recalling the glacial planes of landscapes both inner and outer[73]'.

[73] From Liam Cagney, musicalcriticism.com, "The last full work on the programme was Linda Buckley's *Númarimur*, a slow-moving and finely wrought duo based on an Icelandic text from the tradition of rimur poetry. The voices sang alongside an electronic part which occasionally outlaid the sung tones with resonators and other effects, their voices recalling, as they moved towards an ever-richer harmony, the glacial planes of landscapes both inner and outer." http://www.musicalcriticism.com/concerts/nch-ergodosvoices-1209.shtml accessed 20th May 2010

12.7 Conclusion

The medieval motet is perhaps the quintessential medieval genre: based on chant, combining different texts, exploiting the intersections between what we separate as 'sacred' and 'secular', relying on intertextuality and sometimes arcane symbolism to create meaning, the motet is less about music as sound (though sound obviously does matter) than about harmonies that are beyond the merely audible. In that way, the motet perhaps best exemplifies the thought of people such as Boethius, who argued that the true musician was one who understood and had the capacity to judge, not (or not only) one who had instinctive talent, and that the highest forms of music were those that cannot be heard – with the most important being "the music of the spheres".[74]

[74] Alice V. Clark, The Medieval Motet, The Orb reference for Medieval Studies, 2004, http://www.the-orb.net/encyclop/culture/music/clarkmotet.html accessed 30th May 2010

Chapter Thirteen: Conclusion

13.1 Introduction

It is fitting that the notion of the 'music of the spheres' be considered in the first and final piece discussed here, spanning five years of composing (2005-9), framing this thesis and discovering parallels between my earlier work and the music I am writing today. There are many commonalities to be found, a line of progression to be traced throughout this work - careful consideration of construction led by an inherent faith in instinct and intuition, a combination of 'head and heart' - as mentioned by Clark, the capacity to 'judge' coupled with 'instinct'.

13.2 Think/Feel - Music and Inspiration

> The element of mystery – a sense that something miraculous, beyond rational explanation, is taking place – is a crucial component of the experience of inspiration for most composers. The need for this element can be expressed in psychological terms, by suggesting that inspiration requires the involvement of the unconscious mind: it cannot take place at a purely conscious level. Inspiration is often the result of a collaboration between unconscious and conscious mind, or between the internal workings of the composer's mind and outside influences upon him.
> The absolute conviction in the rightness of unconscious inspiration has been described by many composers as 'instinct': this, rather than the lesser virtues of craftsmanship or intellect, is the essential mark of the creative artist.[75]

This interplay between technique and instinct, head and heart is of major significance in my approach to composing. The power of feeling and intuition is certainly an important element within the compositional process, yet it is through its complex intercommunication with issues of construction, aspects of perception and thought process where perhaps the true magic and mystery of composing lies.

Leonard Meyer has also discussed the merging of these perhaps seemingly opposing elements within the experience of music, noting the 'traditional dichotomy between reason and emotion, polarity between mind and body[76]':

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[75] Jonathan Harvey *Music and Inspiration*, ed. Michael Downes, Faber and Faber, London p.3-4

Once it is recognized that affective experience is just as dependent upon intelligent cognition as conscious intellection, that both involve perception, then thinking and feeling need not be viewed as polar opposites but as different manifestations of a single psychological process.[77]

Ligeti has expressed similar views in relation to composing his *Piano Etudes*: "In my music, one finds neither that which one might call the 'scientific' nor the 'mathematical' but rather unification of construction with poetic, emotional imagination." He revealed that he first composes with his inner ear, and then searches for a system, a particular 'construction' which, while significant for him, is of secondary importance to the music itself: "I detest both absolute geometrical precision and total openness. I want a certain order, but an order slightly disorganized...I love irregularities. My artistic credo is, truly: I want to be free, individualistic, do as I please, and I refuse to subject myself to a certain rule. But I cannot compose without a set of rules adequate to the idea. Music comes first.[78]" We see in Ligeti the union of painstaking construction with original, personal musical expression.

This recalls an interesting example of opposing viewpoints from the concepts of Morton Feldman and Stockhausen, on the issue of instinct versus system, intuition versus construction.

Feldman has often discussed his interest in the exploration of sound as sound:

In that sense, my compositions are not 'compositions' at all. One might call them time canvases in which I more or less prime the canvas with an overall hue of music. I have learned that the more one composes or constructs the more one prevents Time undisturbed from being the controlling metaphor of the music.[79]

Stockhausen offers quite a different perspective on the avoidance of construction in composition and the concept of 'allowing sounds to be as they are':

So many composers think that you can take any sound and use it. That's true insofar as you really can take it and integrate it and ultimately create some kind of harmony and balance. Otherwise it atomizes...You can include many different forces in a piece, but when they start destroying each other and there's no harmony established between the

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[76] Meyer, p.39
[77] Meyer, p.39
[78] Pierre Michel, *Gyorgy Ligeti: Compositeur d'aujourd'hui*, Paris, Minerve, 1985, p180
[79] Morton Feldman, 'Between Categories', *Contemporary Music Review*, Volume 2, Issue 2 1988 , 1 – 5

different forces in a piece, then you've failed. You must be capable of really integrating the elements and not just expose them and see what happens.[80]

13.3 '21st-century Schizoid Music'

Much of my work is rooted in a curiosity about sound, and about the diversity of sound's origin, from the austere harmonies of the medieval motet to the raucous din of our machine world. In my musical world, these have many points of contact, while seemingly at opposite ends of the spectrum I choose to filter and fuse them into a new language, a distinctly personal voice.

It is interesting to consider the context of where my work can be placed in today's compositional climate, from an early background in the oral tradition of Irish song, to a fascination for the everyday sonic experience, discovering beauty in the ordinary, the flawed aspects of sound. From the experience of Javanese gamelan to electronic 'glitch' improvisation, from the purity and sparsity of isolated sonorities, to the saturation and density of orchestral sound-mass - perhaps it is timely to consider the question of where I belong within today's musical landscape. I may never know the answer to that question, perhaps at once belonging nowhere and everywhere, while I revel in the exciting new work that is emerging from 'cross-over' genres, pointing towards an inclusive blurring of boundaries between musics, where categorization is no longer an issue.

This potential for inclusivity has been considered by the composer Jonathan Harvey, who feels that electronic and acoustic combinations, as well as a greater diversity in ensemble choice and performance contexts, could lead to new and innovative developments for the twenty-first century:

I think it is realistic to think that electronics will be the big discovery and evolution in the 21st century. If the orchestra is to survive and evolve, and not just become very much a museum, then I am sure that it will be in the domain of electronics that the expansions will take place. I think that will be an issue in the 21st century, and of

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[80] Stockhausen cited in Michael Nyman, *Experimental Music - Cage and Beyond*, Cambridge University Press 1974, p.29

course, the whole development of other types of groups: early music groups, groups or concerts that cross-over much more into different categories, which have been kept too compartmentalized.[81]

The merging of different musical worlds within my own compositional language also seems evident in Oteri's description of Brazelton's diverse approach, perhaps embracing a form of "21st-century schizoid music":

For Kitty Brazelton and other composers of her generation and beyond, there is no longer an uptown or a downtown, no hermetically-sealed classical music and no must-be-shied-away from pop music, and there's no longer a clear dividing line between the irrefutable will of a composer and the dutiful obeisance of a performer. Brazelton, like many of these new composers, is a composer-performer and is equally at home writing a string quartet or playing in a punk rock band. Kyle Gann describes the music of these composers as totalist, since it embraces the totality of music-making possibilities. Another appellation, "21st-century schizoid music," implies the unpredictability and volatility of this multiple-personality music.[82]

Stefan Kostka writes, in Materials and Techniques of Twentieth-Century Music, the following:

And so twentieth-century music continues as it has always been--a maddening but fascinating collage of approaches and materials, a period without a style. Those who struggle to understand twentieth-century music are generally more impressed by its contrasts than by its consistencies. It is this author's prediction that this will be the century of inclusion. We have witnessed some of this happening already at the end of the 20th century. Our preconception that certain styles are better than others is being eroded away. Music of the 21st century will continue to accept all influences as valid, and will find a way to amalgamate diverse styles. The first "great" composer of this century will be the one to find a way to cross this hurdle; he or she (in the 21st century, the concept of a female composer will not be exceptional) will not be an Eric Clapton or an Elliott Carter; this composer will represent both sides equally, and will be a new breed. [83]

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[81] Interview with Jonathan Harvey by John Palmer, the SAN *Journal of Electroacoustic Music* vol. 13, September 2000

[82] Frank J. Oteri, *Entering the 21st Century with Kitty Brazelton,* sequenza21.com/newmusicbox.org accessed 1st December 2009

[83] Stefan Kostka, *Materials and Techniques of Twentieth-Century Music,* Prentice Hall, 3rd edition, 2005

13.4 Future Work

As demonstrated from this thesis, much of my work has been concerned with the combination of acoustic and electronic sound worlds, creating a strong sense of dynamism and interaction between them. While this will continue to be a focus, I have also expanded my development in the area of instrumental and vocal work, which attempts to explore the immensely rich sonic potential of acoustic sound.

I am interested in translating techniques developed in my electronic music to an acoustic/instrumental setting, of furthering the timbral experimentation which evolved from the works discussed. The techniques of immense potential for further exploration in an acoustic setting, may include granulation (vocally produced at the end of *fall approaches*), delay (between live viola and tape in the ghostly granular shadows of *do you remember the planets?*), time-stretch (creating expansive microtonal deviations in *seek*), crossfade (with string quartet in the final movement of *latitude longitude*) and explorations of 'pure' tone and white noise (orchestrally implemented at the opening of *turn*).

I am currently attempting to implement these techniques and novel combinations in an orchestral context, dealing with the orchestra as a large-scale timbral palette. I am in the process of developing work which further explores these concepts, the first of which is a commission for the RTE National Symphony Orchestra (premiere April 2011).

The ten works discussed here are chosen from the past five years of composing, like an aural diary of my life, encompassing an intense and invaluable learning experience. It is my greatest wish that I will continue to be inspired, and that my music will give true voice to my expression. I will always wish to trust in the mystery of composing, to make a connection with the listener through sound, to be communicative. The writer Mary Gaitskill describes an analogy to this with the medium of written word:

> It's being able to take something whole and fiercely alive that exists inside you in some unknowable combination of thought, feeling, physicality, and spirit, and to then store it like a genie in tense, tiny black symbols on a calm white page. If the wrong reader comes across the words, they will remain just words. But for the right readers, your vision

blooms off the page and is absorbed into their minds like smoke, where it will re-form, whole and alive, fully adapted to its new environment. [84]

I wish to conclude with a sentiment expressed by Rachmaninov, which resonates strongly with my own motivation to compose:

My constant desire to compose music is actually the urge within me to give tonal expression to my feelings, just as I speak to give utterance to my thoughts.[85]

[84] Mary Gaitskill, *Advice for Aspiring Writers*, http://procomicdiva.pnn.com/articles/show/57165-advice-for-aspiring-writers-pt accessed 10th December 2009
[85] Rachmaninov, quoted in Jonathan Harvey, *Music and Inspiration*, p.6

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do you remember the planets?

for viola & tape

Linda Buckley

January 2005

***do you remember the planets?* for Viola and Tape - Linda Buckley**

do you remember the planets? was partly inspired by Pythagoras and his theory of the 'music of the spheres'. Pythagoras developed the theory that the distances between the planets would have the same ratios as produced harmonious sounds in a plucked string. He believed that the solar system consisted of ten spheres revolving in circles, with each sphere producing a sound as it moved through the air.
It was thought that the closer spheres produced lower tones while the farther moved faster and produced higher pitched sounds. All combined into a beautiful harmony, *the music of the spheres.*
The octave, fourth and fifth were the intervals considered most harmonious by the Greeks.
The Pythagoreans supposedly found them by experimenting with a single string with a moveable bridge, and found these pleasant intervals could be expressed as the ratio of whole numbers.
Do you remember the planets? makes much use of intervals of the fourth and fifth, played by stopped strings. These 'harmonious' intervals are explored in contrasting ways – in a raw, visceral manner using distorted electronic manipulations and in a 'pure' almost austere way with ethereal harmonics.

I wish for there to be a very strong integration of acoustic and electronic elements, blurring the line of distinction between them. Throughout the work a coherent marriage of electronic and acoustic creating a unified soundworld is of primary concern.
Much of the viola material was conceived first, and then transformed electronically to create an aural 'shadow'. For the opening section of the work, rich 'glitchy' electronic harmonies are created using granulation of the viola double-stops with a delay. This produces a quasi-canonic sense of harmonic overlap. Throughout this section the electronic aspect dissipates into noise, due to increasing distortion.
A dense glissando then permeates the electronic soundworld, created using source material from a viola glissando. In creating the electronic element from b.89, the viola part was used to trigger sharp transient percussive impulses, which contributes to the strong sense of interactivity and dynamism.
In contrast to this, ethereal string harmonics emerge from the silence - a calm stillness after the manic tension of the preceding passage. Again, granulation with delay is used in the tape part to achieve a strongly integrated unity, where the tape part appears to be directly 'following' the viola's melodic line.
Double stops using intervals of the fourth and fifth frame the piece, perhaps alluding to an almost medieval harmonic language.

Technical considerations

2 CDs provided with score:

1. Audio CD with Viola & Tape version, Tape part alone, and Tape with click (practice version).
2. Data CD of audio files: Stereo Tape part and metronome click (audio files to be lined up together at 0.00 in an audio program for playback, eg. ProTools, Logic, Cubase)

In performance, the Tape part may be played from computer (with multiple outputs), with metronome click provided on headphones to the viola player.
This must be supplied on a separate channel to the stereo Tape output, ensuring minimum headphone 'spill'. 2 bars lead in before the Tape part begins is provided in the click for the performer.

Viola should be amplified, ensuring a good balance between the live sound and Tape.
If the performance space has a non-reverberant 'dry' acoustic, apply a reverberation effect to the viola to achieve a strong integration of the electronic and acoustic sound.

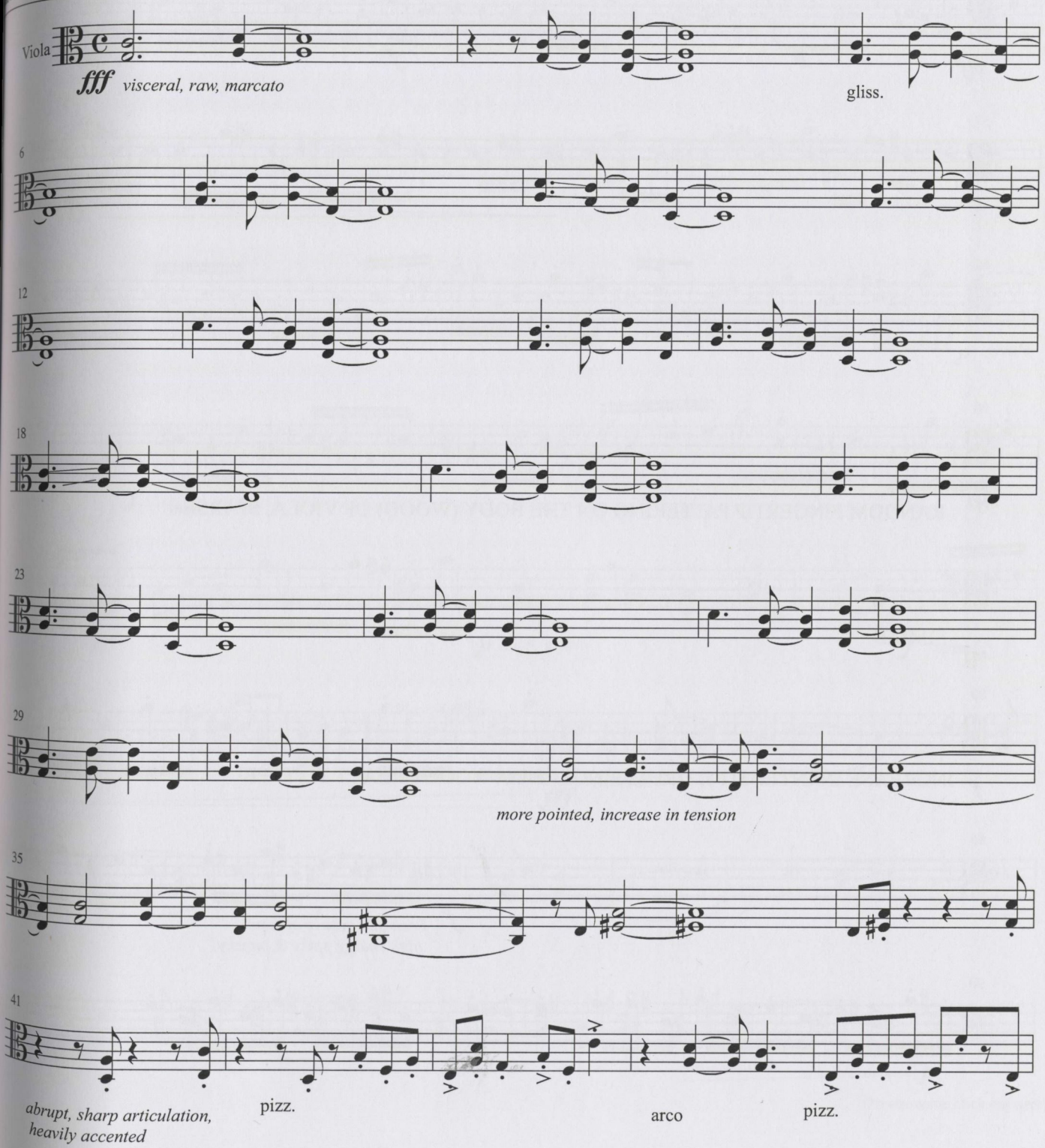
do you remember the planets ?

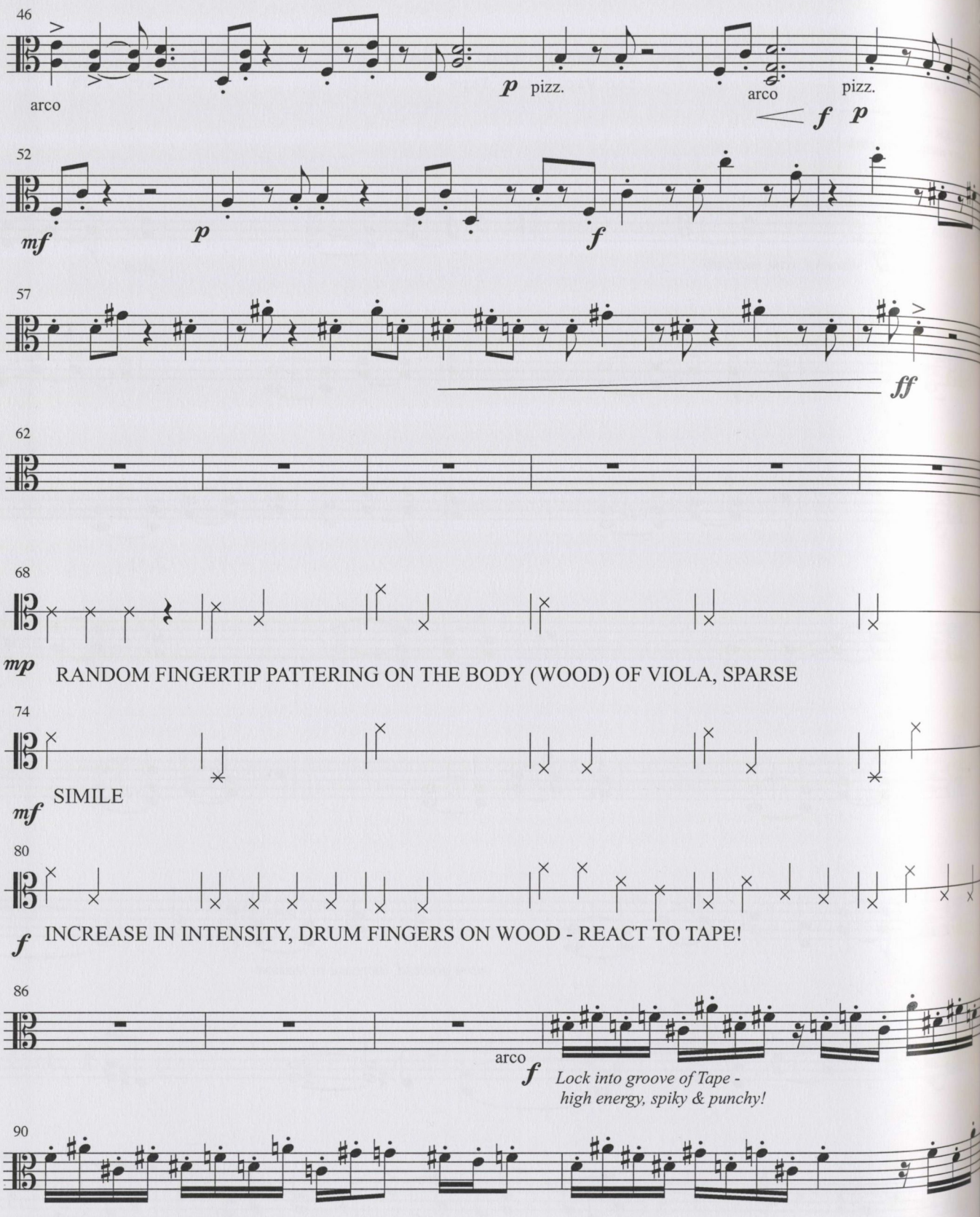
for Viola and Tape

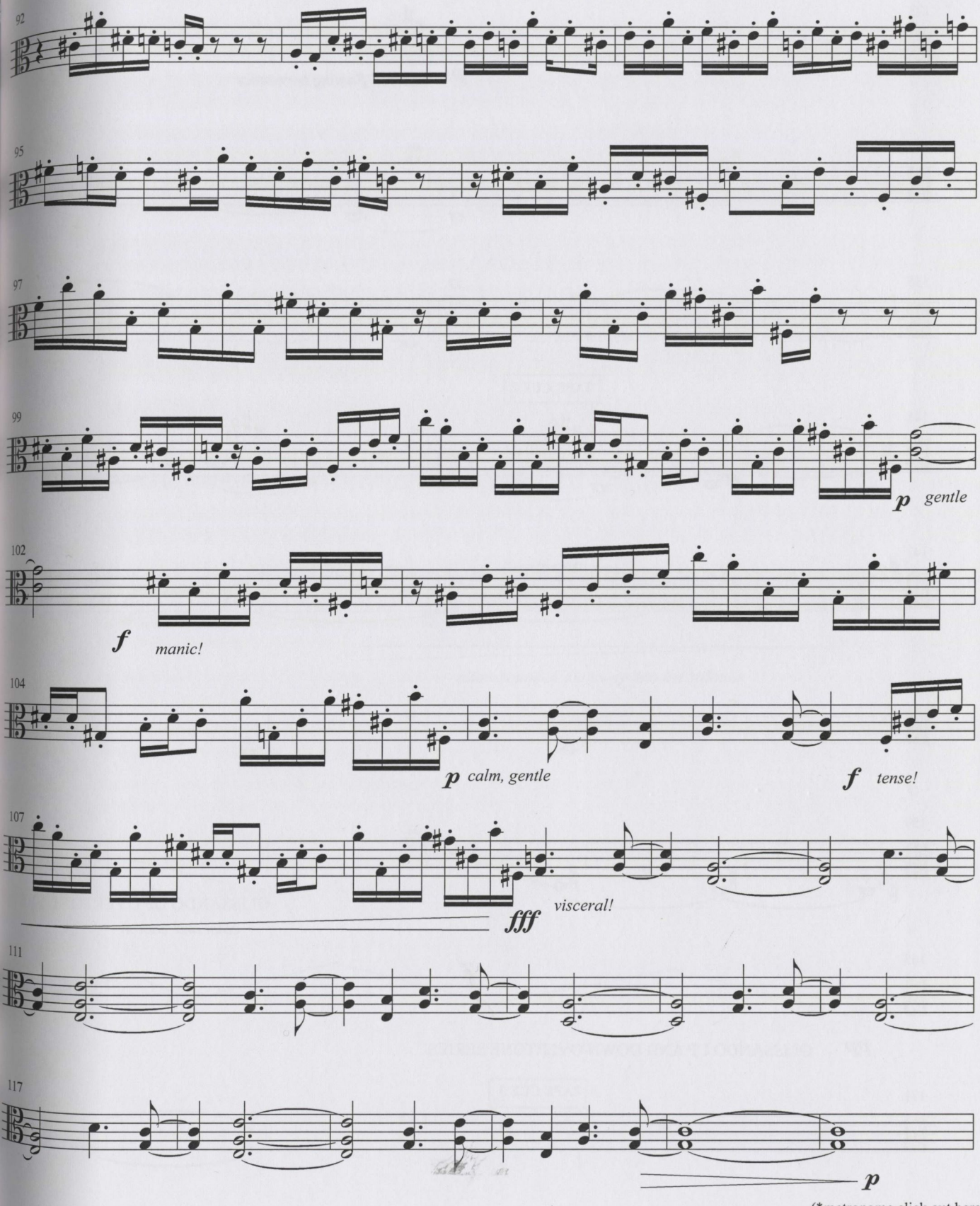
Linda Buckley
January 2005

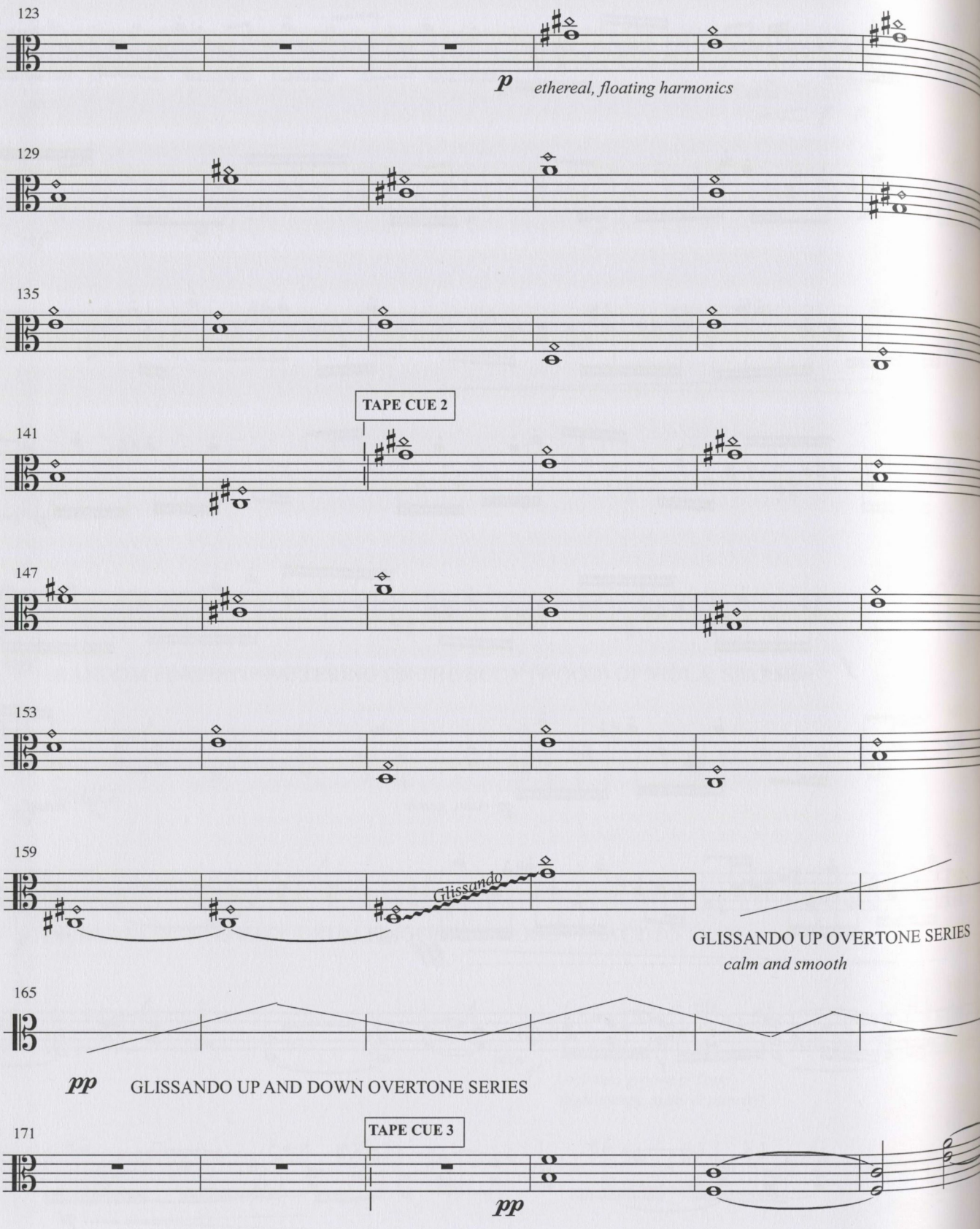
♩=120

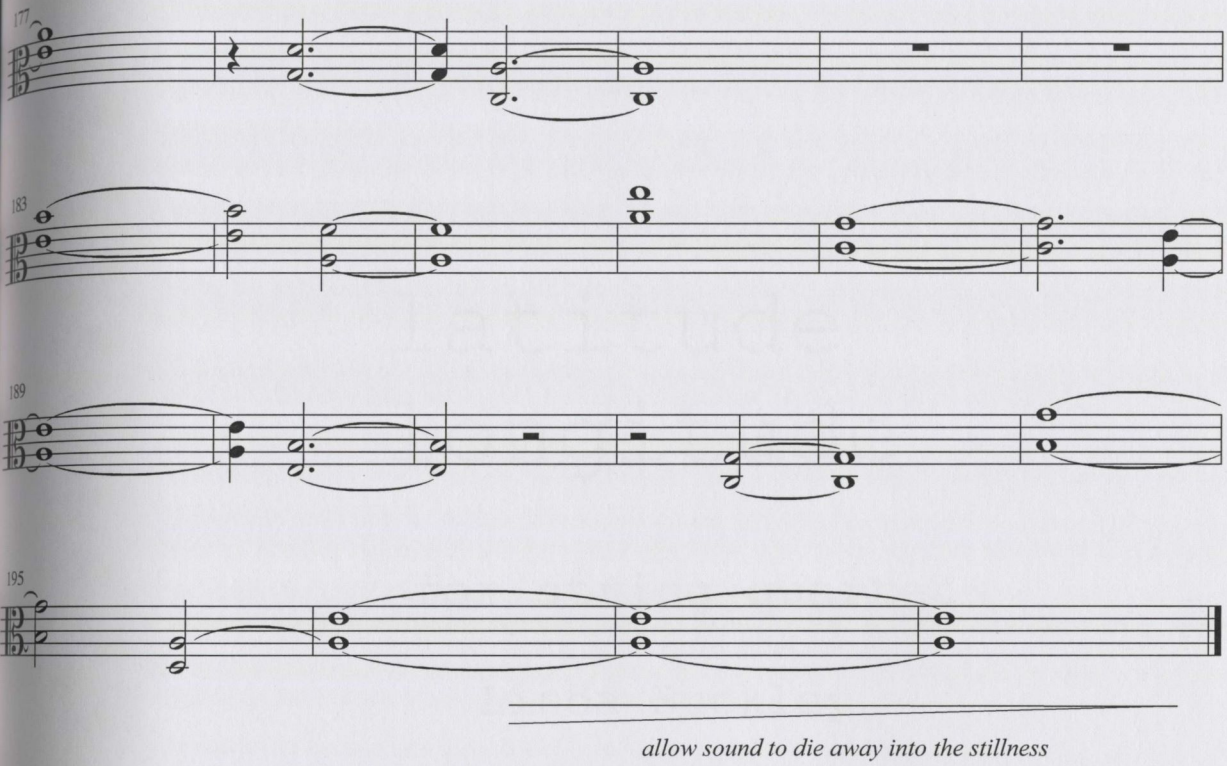
TRIGGER CUE:
2 bars metronome click




46
arco
p
pizz.
arco
f
p
pizz.
52
mf
p
f
57
ff
62
68
mp
RANDOM FINGERTIP PATTERING ON THE BODY (WOOD) OF VIOLA, SPARSE
74
mf
SIMILE
80
f
INCREASE IN INTENSITY, DRUM FINGERS ON WOOD - REACT TO TAPE!
86
arco
f
Lock into groove of Tape -
high energy, spiky & punchy!
90


92
95
97
99
p gentle
102
f manic!
104
p calm, gentle
f tense!
107
fff visceral!
111
117
p
(*metronome click out here)


123
p
ethereal, floating harmonics
129
135
TAPE CUE 2
141
147
153
159
Glissando
GLISSANDO UP OVERTONE SERIES
calm and smooth
165
pp
GLISSANDO UP AND DOWN OVERTONE SERIES
171
TAPE CUE 3
pp


177
183
189
195
allow sound to die away into the stillness

latitude
longitude

for string quartet

Linda Buckley

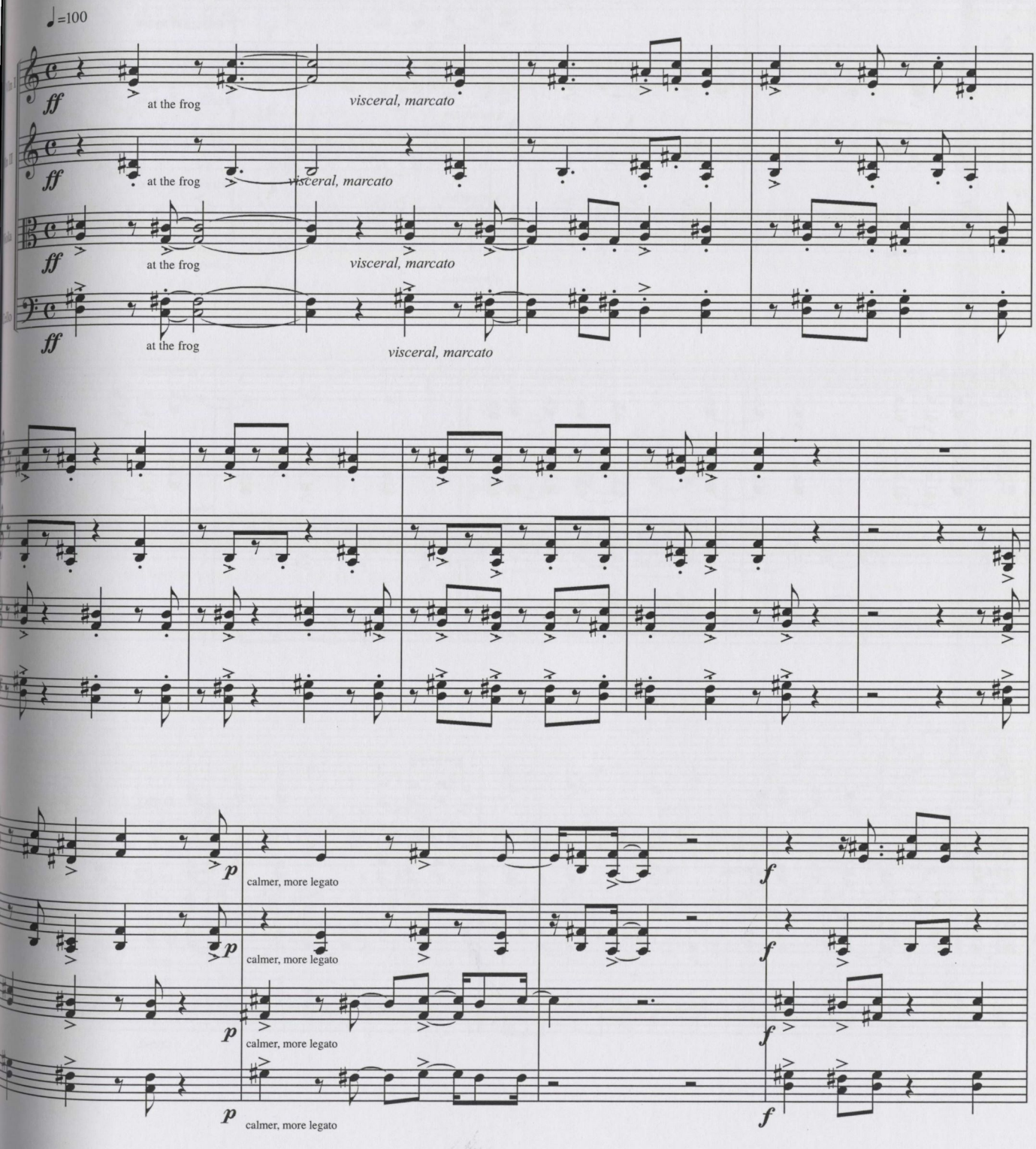
September 2007

***latitude longitude* for string quartet**

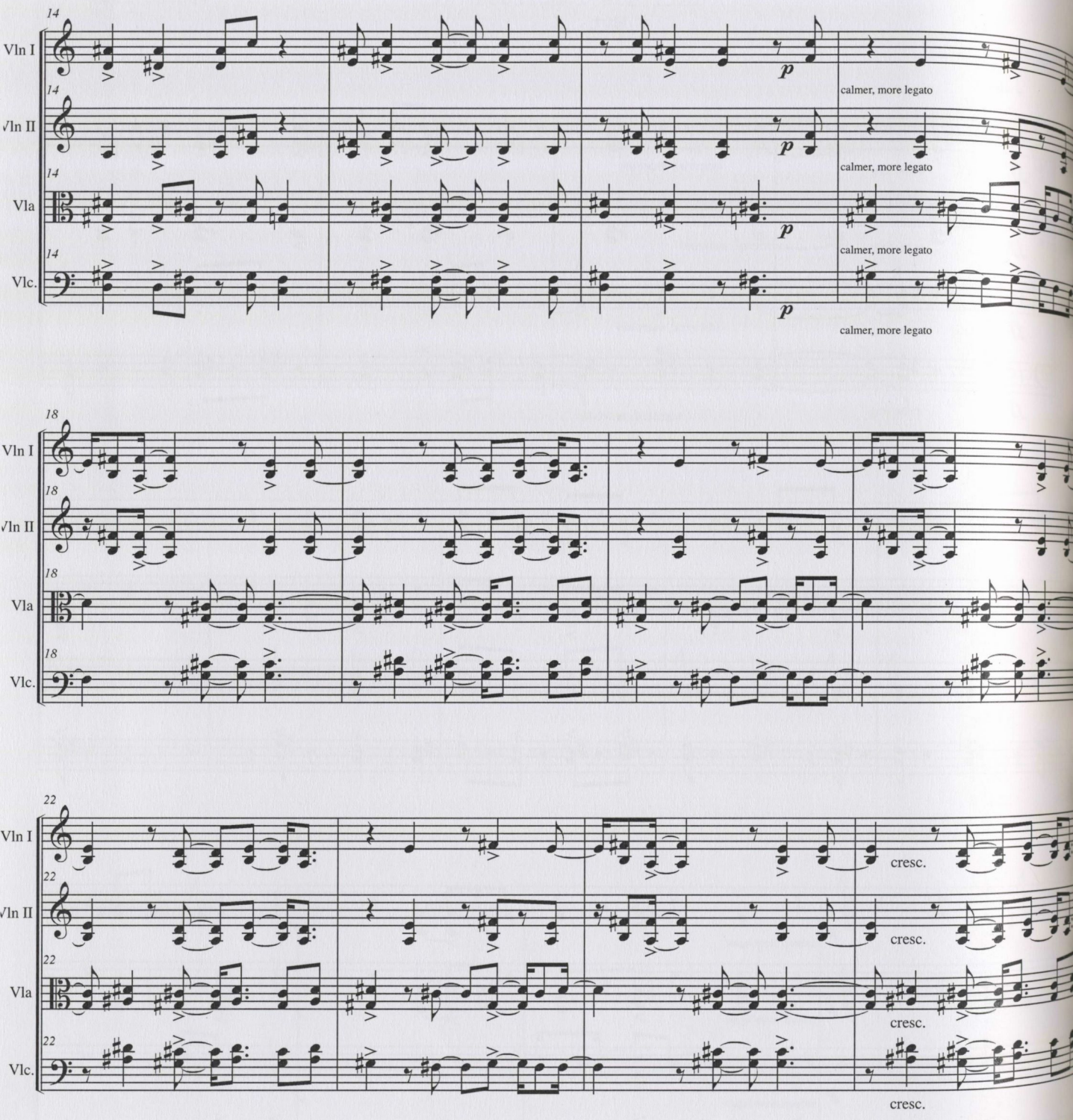
There are four movements, but *latitude longitude* may also be thought of as 'four short pieces for string quartet', as I wished for each 'movement' to be quite complete in itself, existing on its own or in combination. I often take non-musical concepts as a starting point in thinking about the overall shape or structure of a piece (sometimes relating to aspects of geography, eg. the notion of latitude and longitude, glaciers, clouds). I'm interested in changing perspectives, different ways of viewing the world - "geography is both science and art" (H.C. Darby, 1962). Taking a geographical analogy here, latitude lines run horizontally, longitude vertically. Latitude lines are also known as parallels since they are parallel and are an equal distance from each other. The work explores parallel, closely relating lines which take many forms - running in synchronization, weaving intricate patterns in combination and dissipating in different directions. The concept of how latitude and longitude intersect is explored in the piece, where the vertical (harmonic) and horizontal (melodic) play many changing roles. At times the melodic material occurs as a direct result of a harmonic process, and conversely, harmonic plateaus are created from the superimposition of differing melodic lines. There is a variation between the degrees of latitude due to the fact that the earth is not a perfect sphere but an oblate ellipsoid. This concept of deviation from the 'perfect' shape may be compared to the derailing or interrupting of a seemingly robust process which occurs throughout the work.

String Quartet No.1
'latitude longitude'
Mvt. I

Linda Buckley
August 2007



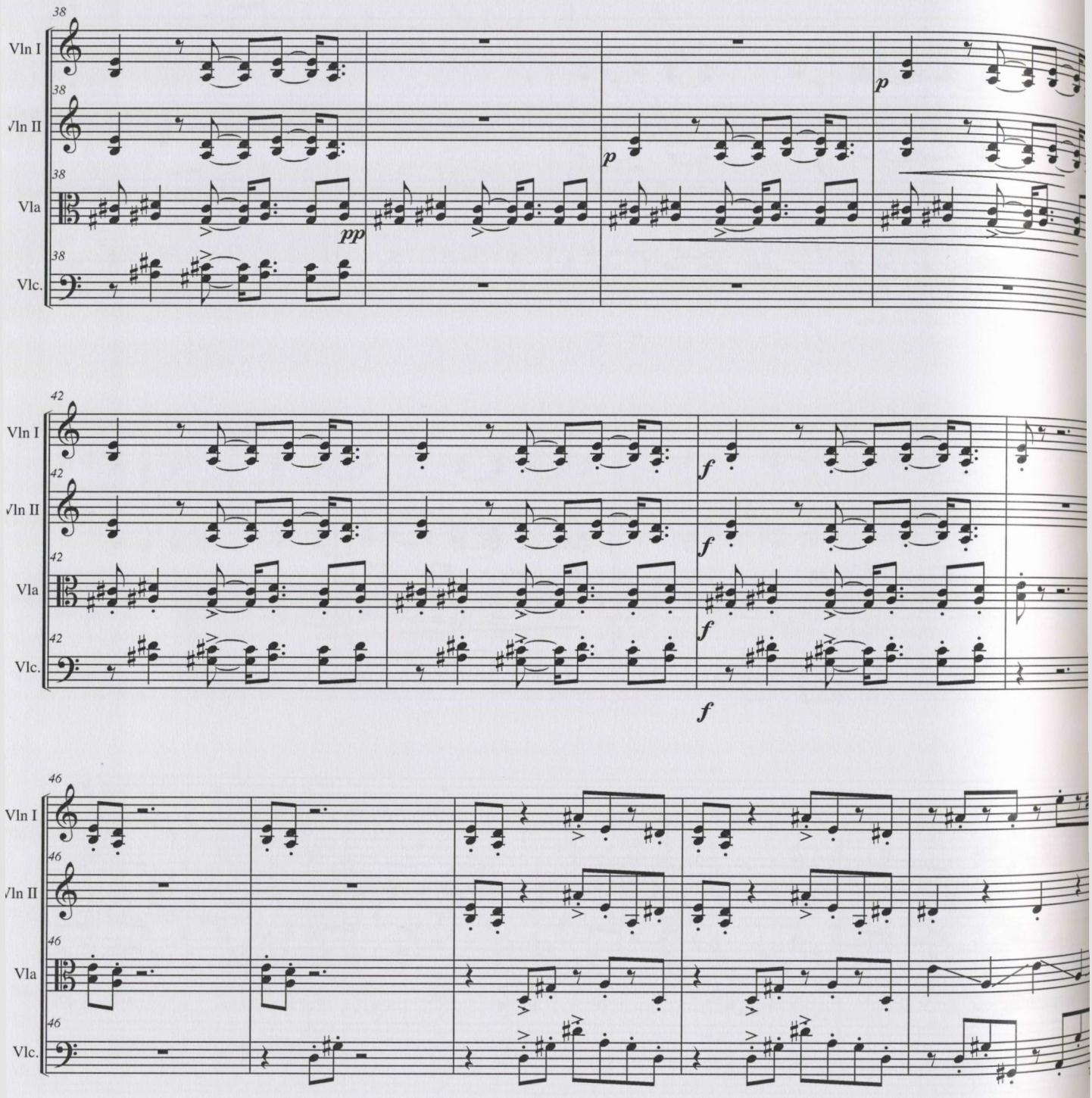
Linda Buckley 2007

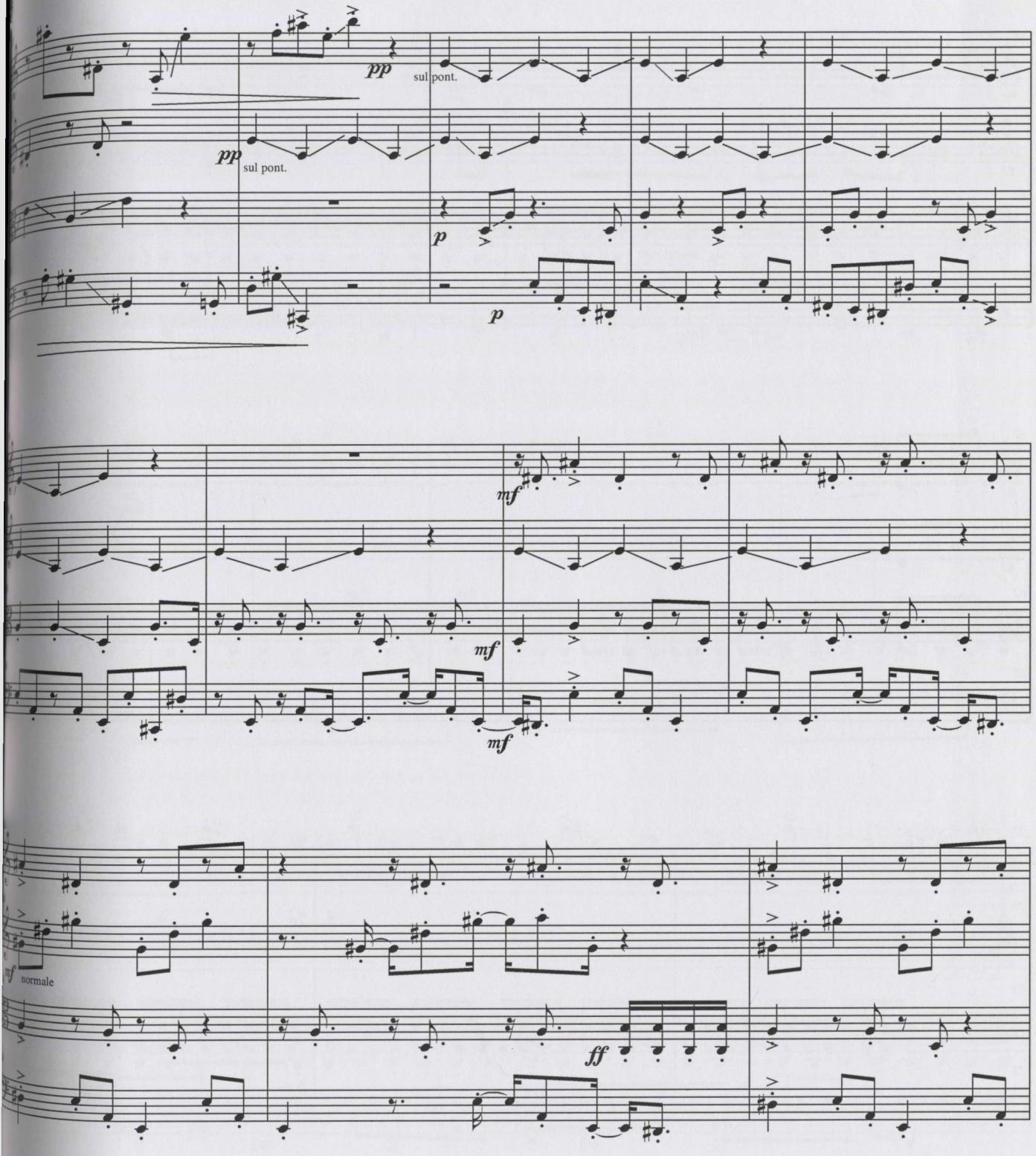

14
Vln I
Vln II
Vla
Vlc.
p
calmer, more legato
18
22
cresc.


f
end abruptly!
f
end abruptly!
f
end abruptly!
f
end abruptly!

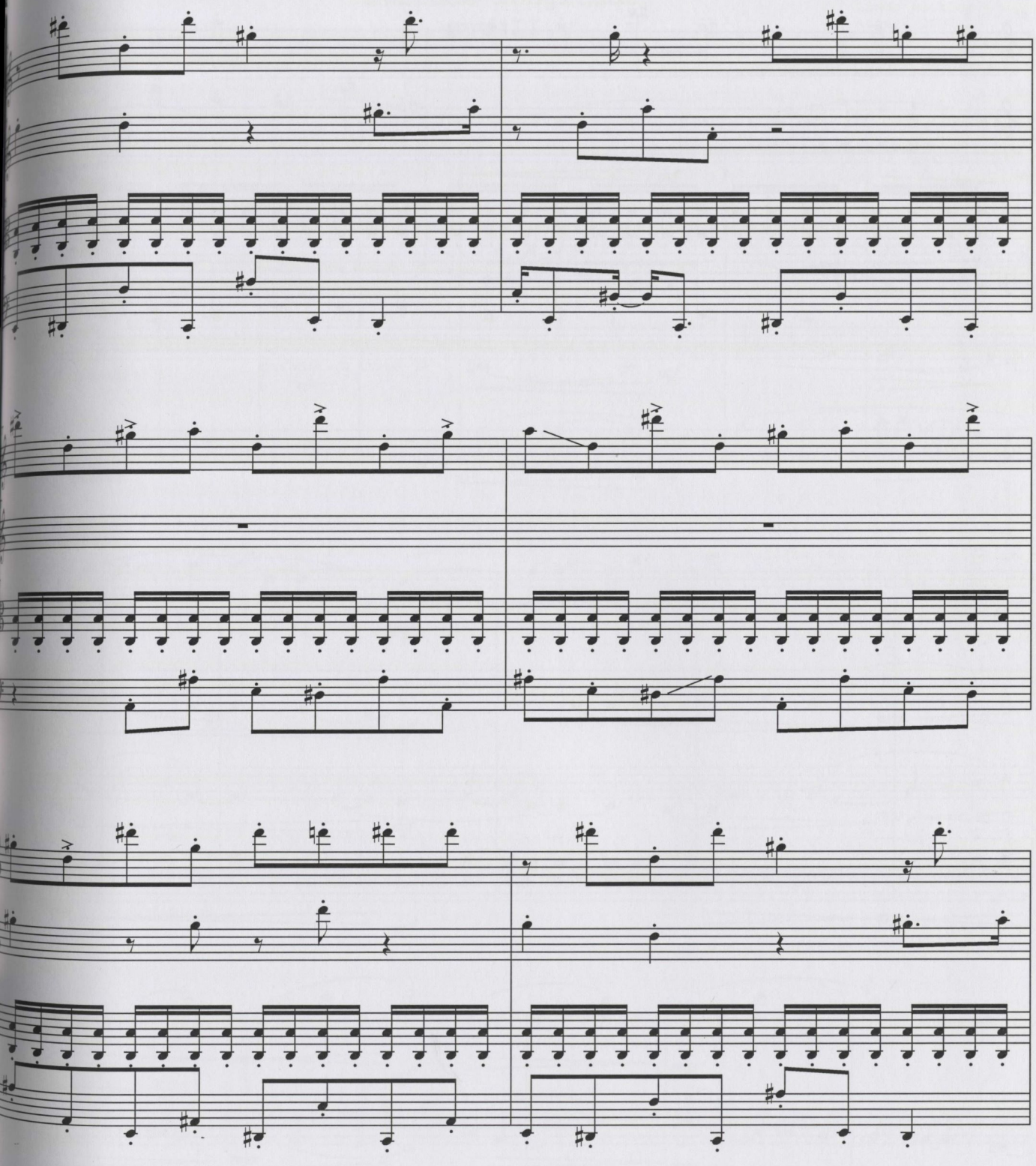

pp
calm & light
p
calm & light


p
p


38
Vln I
Vln II
Vla
Vlc.
pp
p
42
f
46


pp
sul pont.
pp
sul pont.
p
p
mf
mf
mf
mf
normale
ff

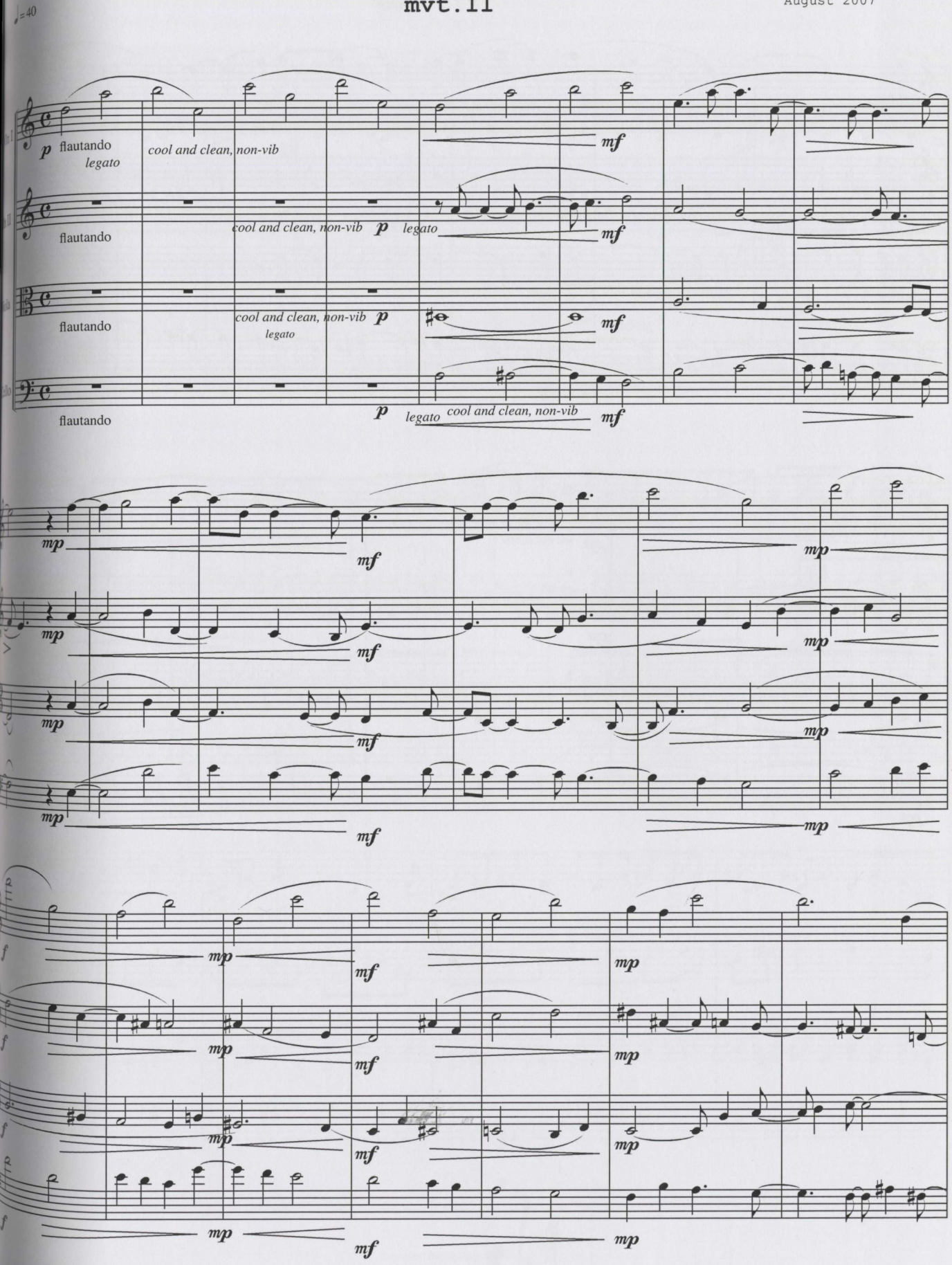

63
Vln I
63
Vln II
63
Vla
63
Vlc.
67
Vln I
67
Vln II
67
Vla
ff
67
Vlc.
72
Vln I
72
Vln II
72
Vla
72
Vlc.




81
Vln I
81
Vln II
81
Vla
81
Vlc.
dramatic abrupt ending
dramatic abrupt ending
dramatic abrupt ending
dramatic abrupt ending

latitude longitude
mvt.II

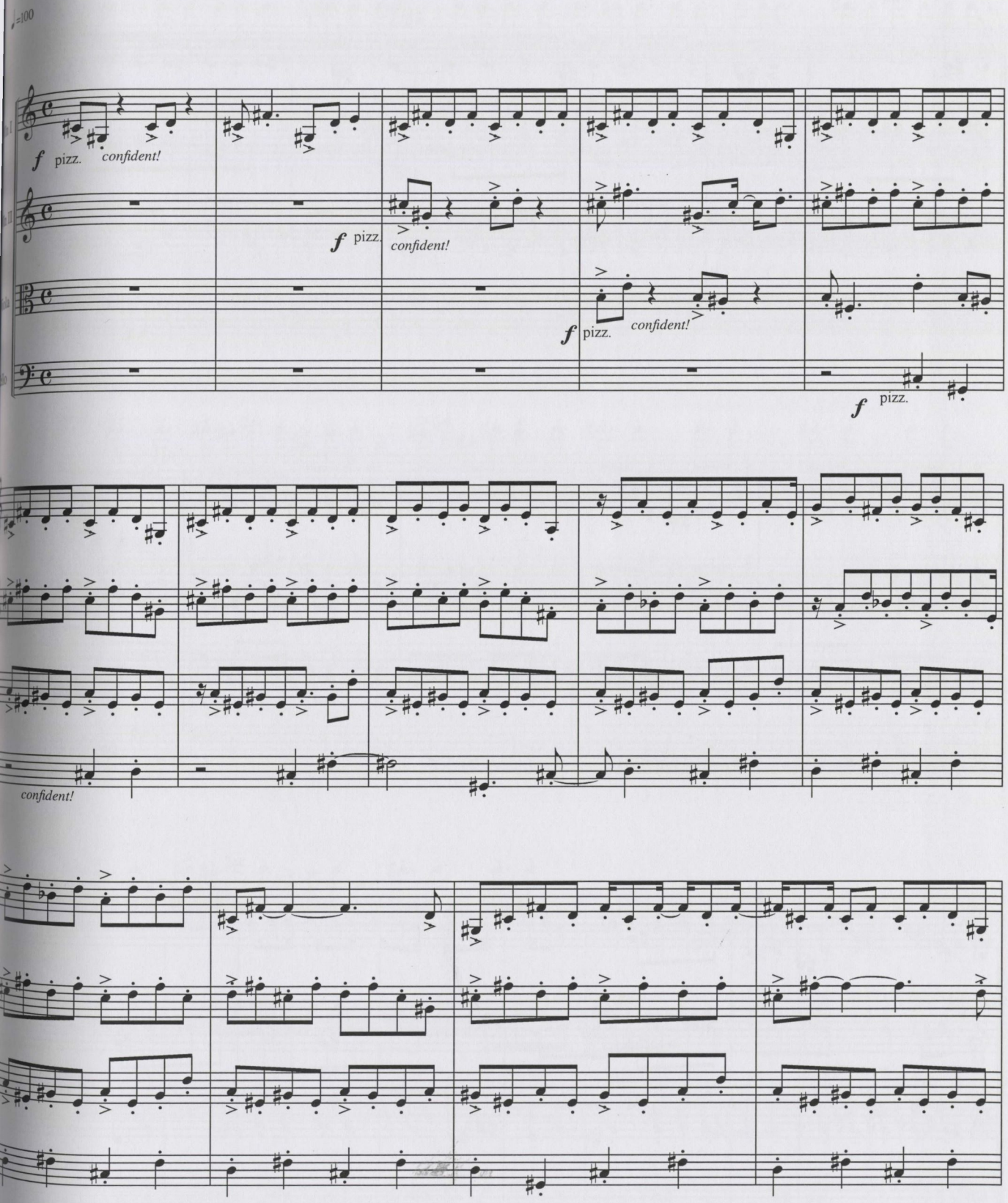
Linda Buckley
August 2007

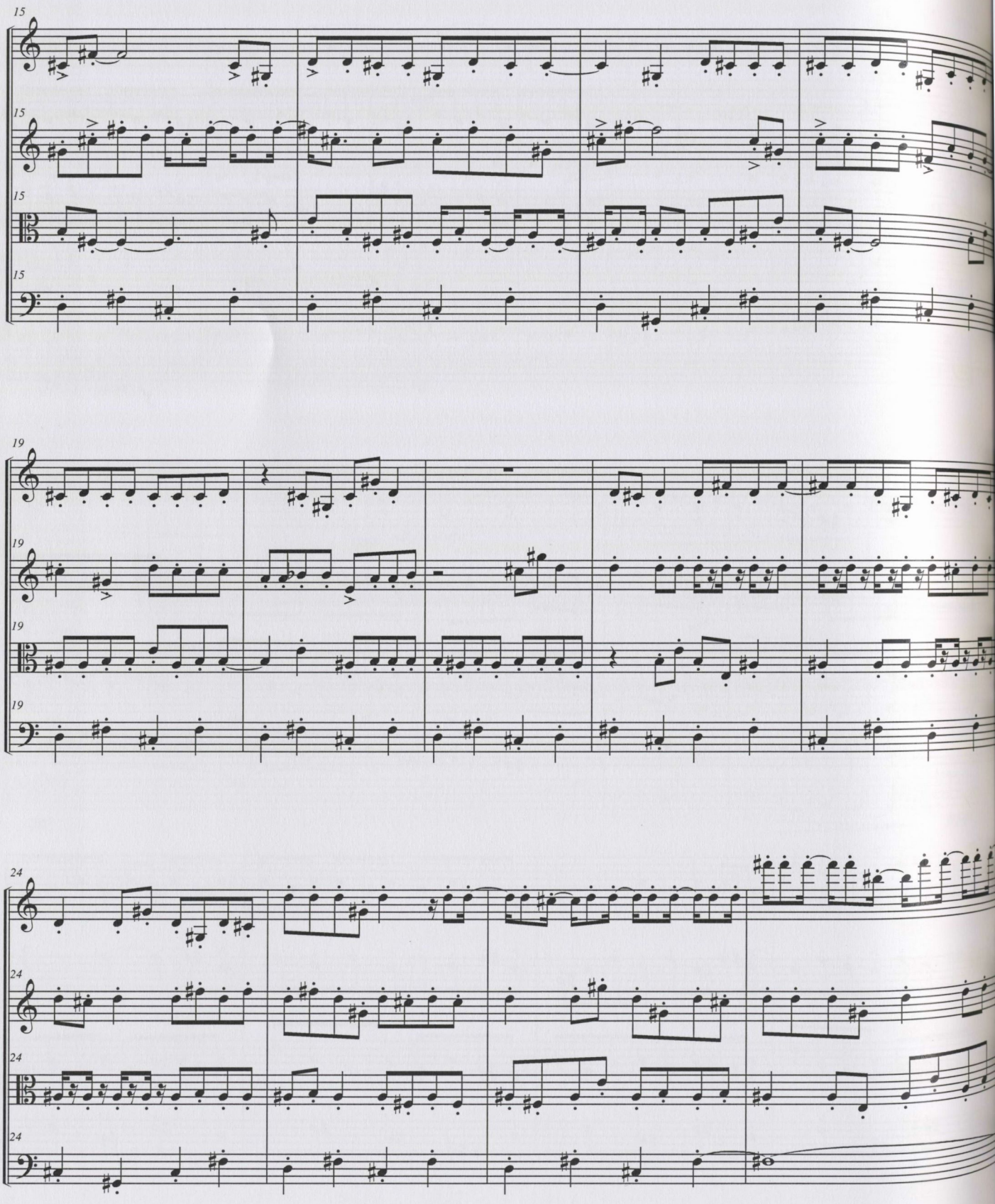

♩=40
p flautando
legato
cool and clean, non-vib
mf
flautando
cool and clean, non-vib p legato
mf
flautando
cool and clean, non-vib p
legato
mf
flautando
p
legato cool and clean, non-vib
mf
mp
mf
mp
mf
mp

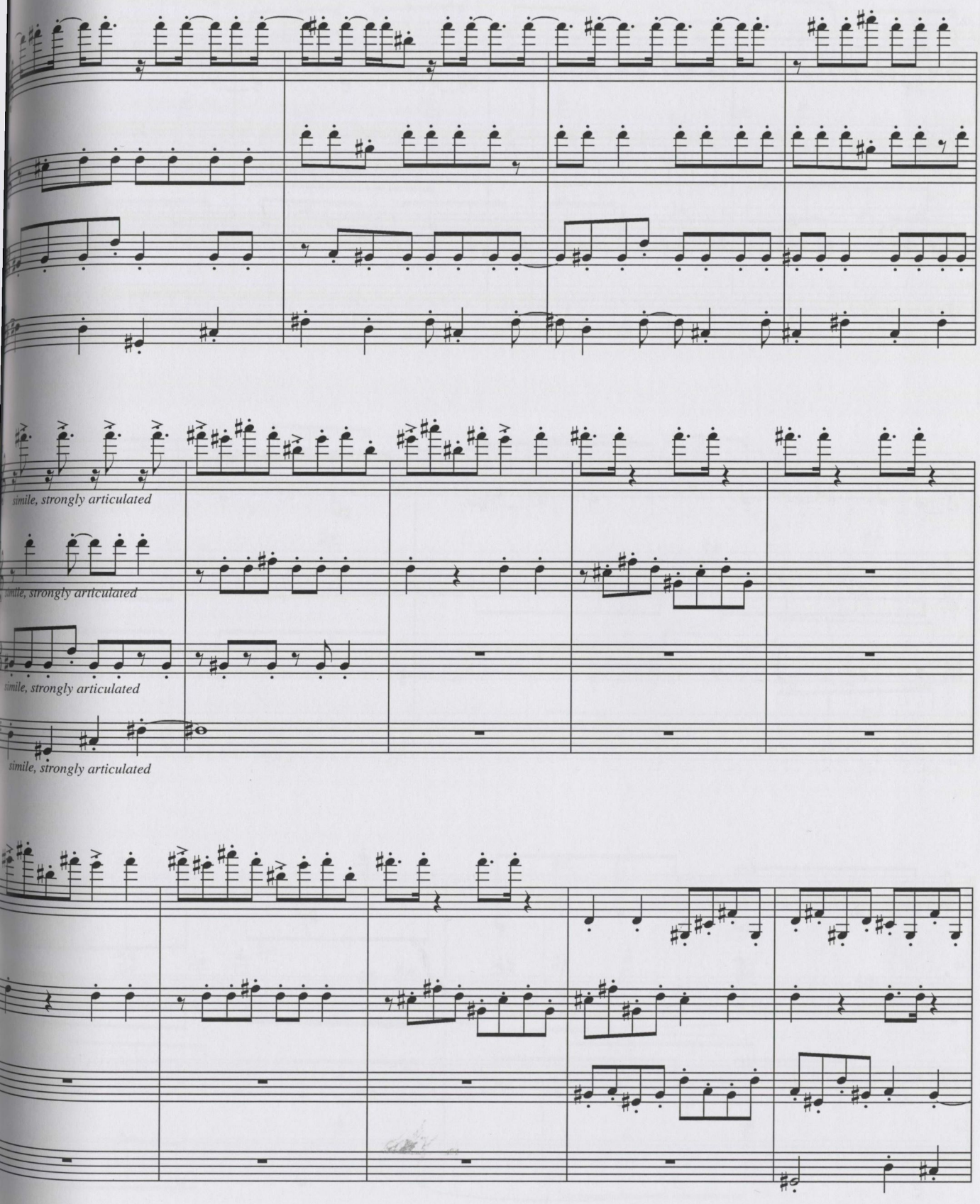

22
mf
22
mf
22
mf
22
mf

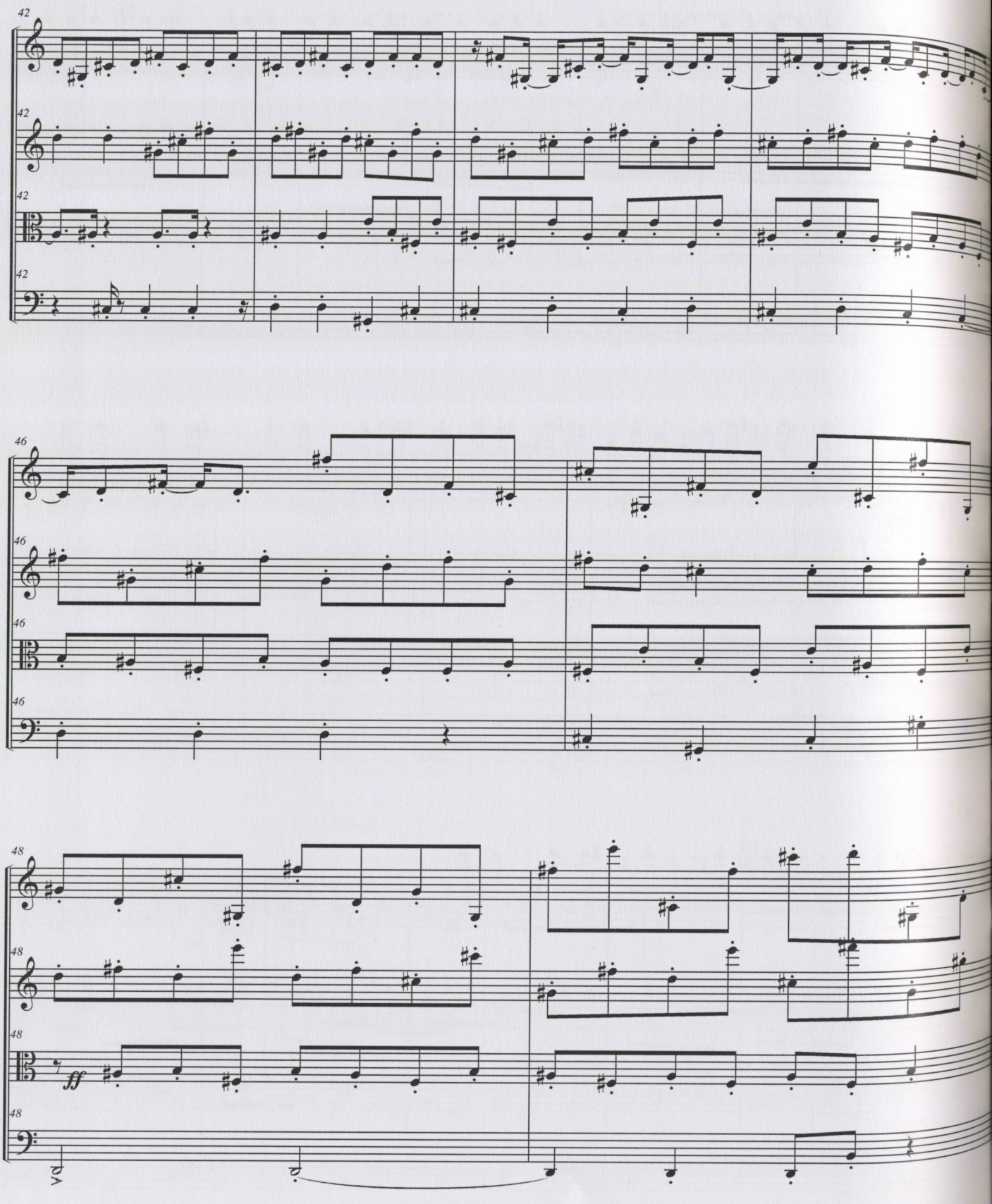

28
pp
sad and wistful
28
pp
28
pp
28
pp
ppp

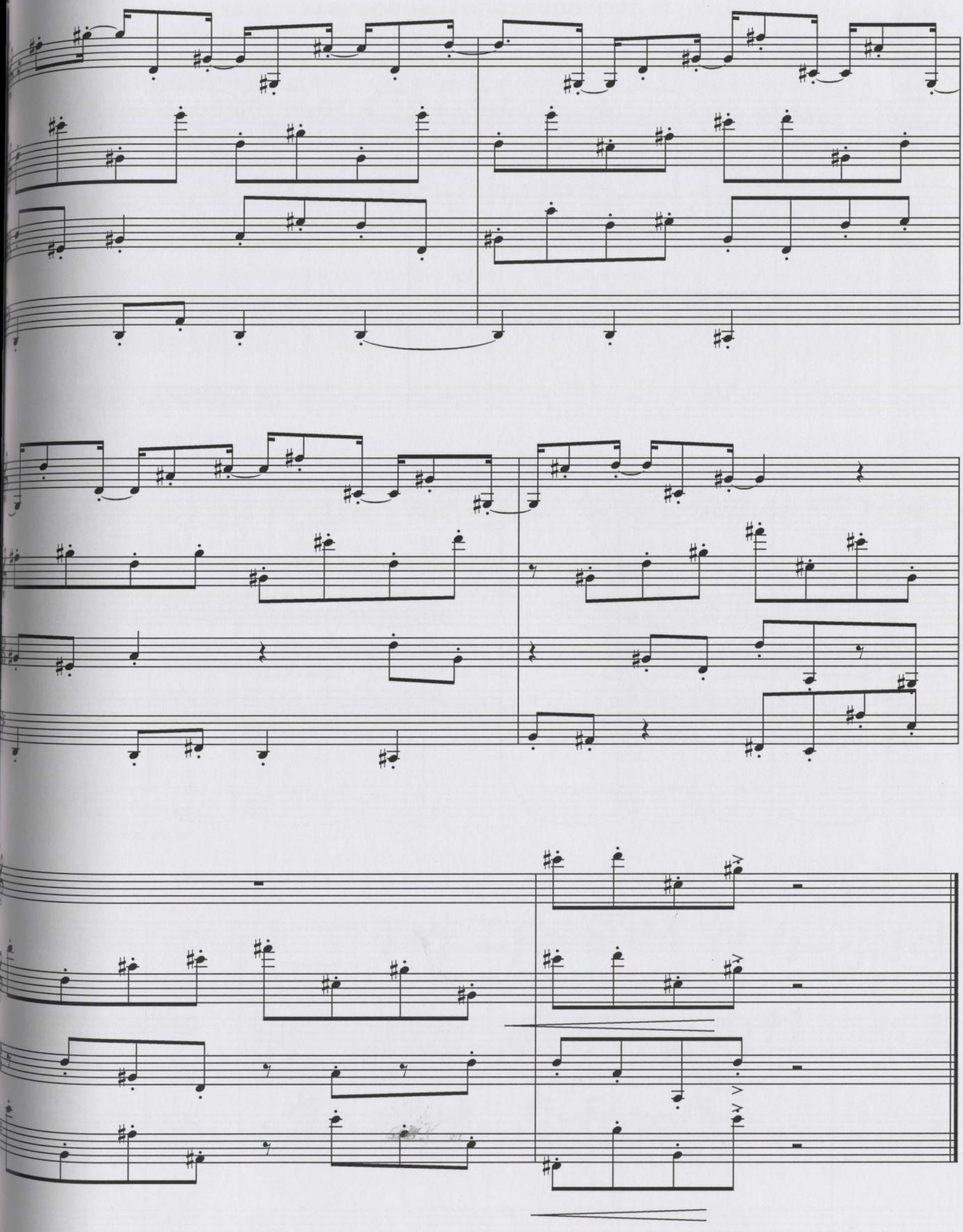
latitude/longitude
mvt.III




15
15
15
15
19
19
19
19
24
24
24
24

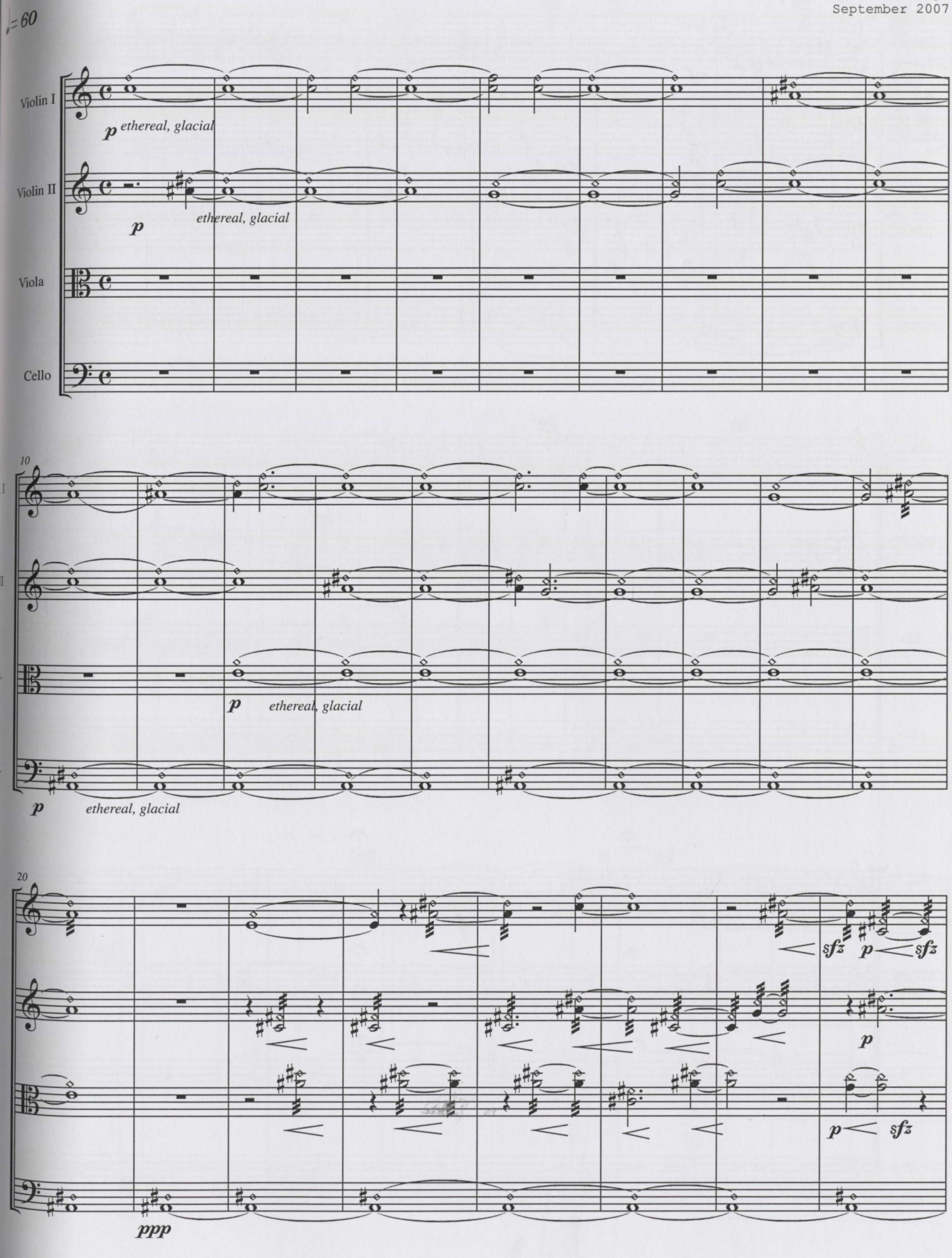

simile, strongly articulated
simile, strongly articulated
simile, strongly articulated
simile, strongly articulated


42
42
42
42
46
46
46
46
48
48
48
48
ff

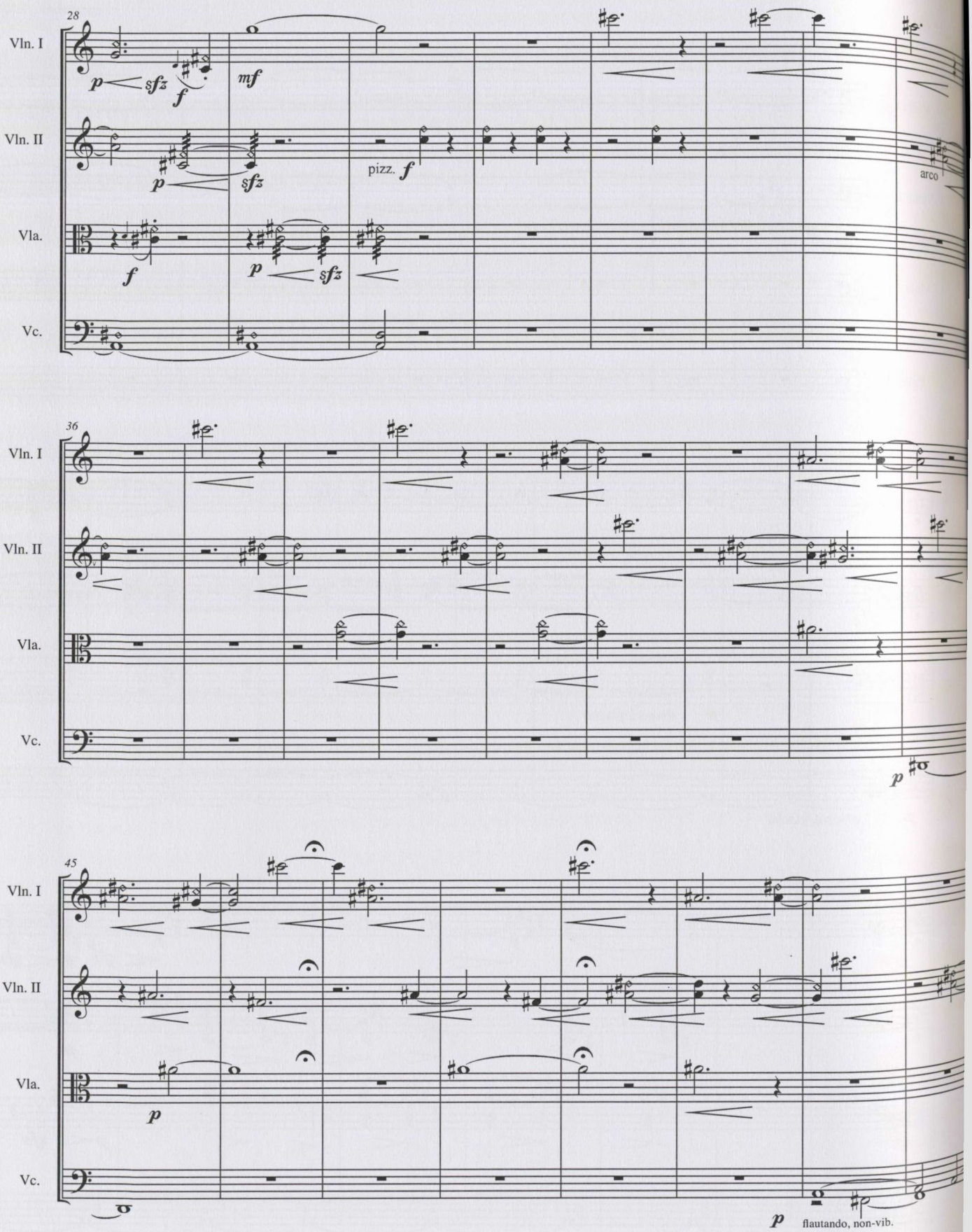


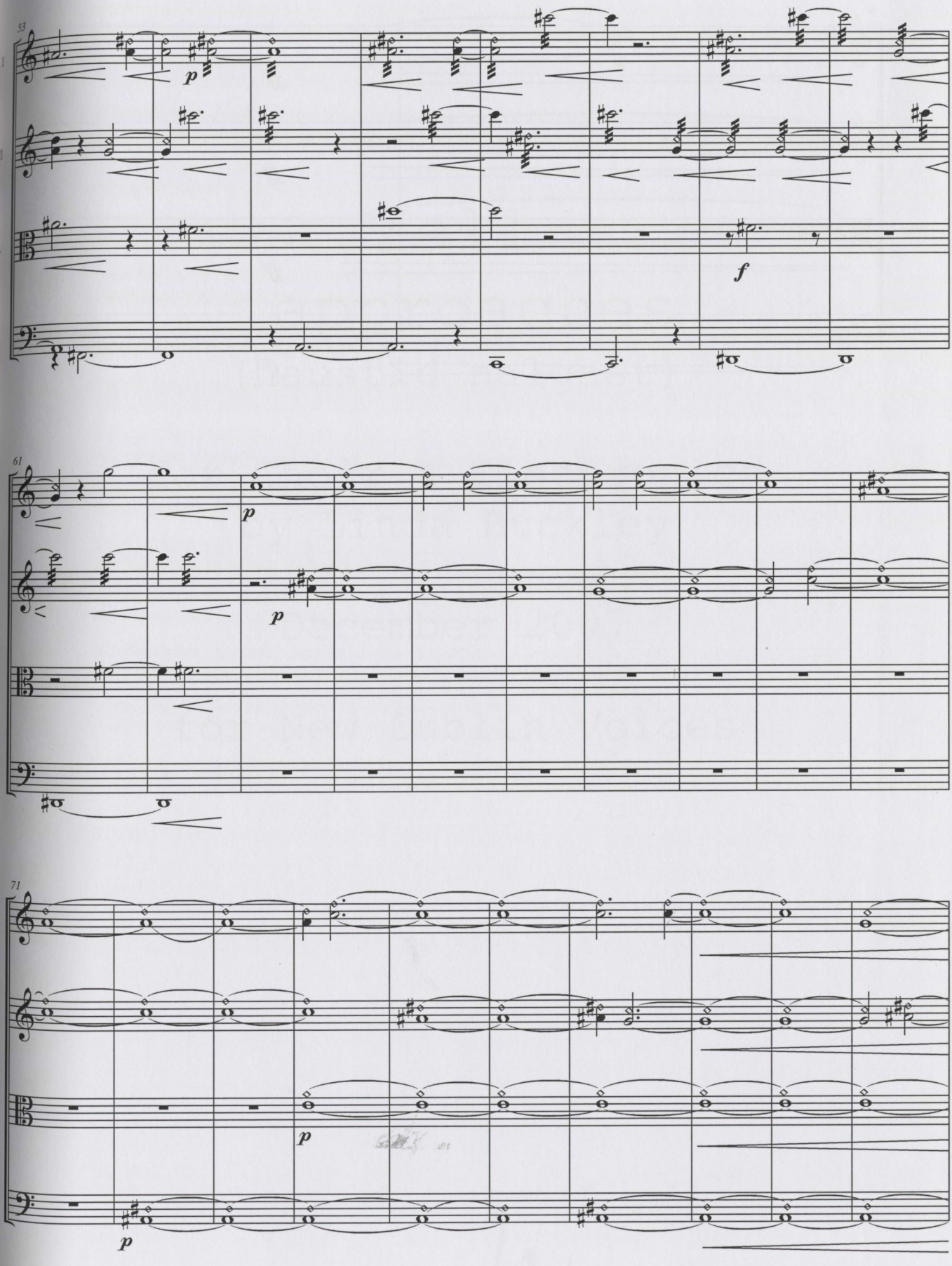
latitude longitude mvt 4

Linda Buckley
September 2007



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28
Vln. I
Vln. II
Vla.
Vc.
p
sfz
f
mf
pizz.
arco
36
45
flautando, non-vib.


53
p
f
61
p
p
71
p
p


81
Vln. I
Vln. II
Vla.
Vc.
ff
ff
ff
ff

fall
approaches
(haustid nalgast)

for Choir & Electronics
by Linda Buckley

December 2007

for New Dublin Voices

fall approaches

Linda Buckley

Duration: 10.30

Instrumentation:

S.A.T.B Choir & 8 Channel Tape*
*This piece may also be performed as an acoustic version, without electronics.
In this case, bars 42-50, and 106-115 are omitted - move to next vocal section.

Possible Spatial Layout of Choir and Speakers

The following choral and channel/speaker distribution may be used:

FRONT (ALTAR)

		1		2	
			TENOR/BASS		
	A		SOP/ALTO	A	
3	U		SOP SOLO	U	4
	D			D	
	I		CONDUCTOR	I	
	E			E	
	N			N	
5	C		ALTO/SOP	C	6
	E		BASS/TENOR	E	
		7		8	

BACK

Technical Note

The Tape part is to be cued and triggered at b.23, as indicated. If synchronization is proving difficult between choir and tape, separate triggers may be provided (eg. at b.41 & at b.105) Tape level should be set to ensure a good balance between live and electronic sound.

Note for Choir:

Due to prominence of divisi in the Soprano parts, the soprano soloist should join the Soprano I line. Overall, clear pronunciation of the text is desired, with sparing vibrato used - almost a pure 'medieval' tone. If there is a difficulty in reaching the high B pitch in sopranos, this may be substituted with the lower E, a fifth below.

The only 'extended' technique occurs near the end of the piece, desiring a sound which is inspired by the 'glitchy, noisy' tape sound.
This is indicated by a dashed line ----------.
IN ALL VOICES: GRADUALLY ALTERNATE BETWEEN 'STRAIGHT" SUNG PITCH & VOCAL ULULATIONS IN THE THROAT. MOVE BETWEEN PITCH & NOISE.
REACT TO 'GLITCHY' SOUNDS ON TAPE, INCREASING IN INTENSITY

Note on the Icelandic Text

Haustid Nalgast is an example of Rimur, written by Stefan Hvitadel (1887-1933).
Rima (plural rimur) is a traditional form of narrative Icelandic epic song chanted or intoned in a specific manner called "ad kveda." The inner structure and content can partially be traced to Eddic and Skaldic poetry of the Viking Age. The Skaldic poetic stanza was an extremely intricate construct with a unique poetic vocabulary and syntax, frequently employing metaphors within metaphors in a manner reminiscent of the cryptic crossword. In the 14th century, the rima started to supplant the earlier forms of poetry - its attraction being a simple metric style with end rhymes. The early rimur are primarily based on pre-existing narratives in prose, heroic tales, and mythical or purely fictitious Sagas being those most frequently selected for adaptation into this metrical form. As time went on, the poets took pride in inventing new metrical forms and rhyme structures, and in the 19th century these were counted in the the thousands. It is well documented that the Icelanders enjoyed a special form of communal story-telling and poetry recitals from the earliest times, and these seem to have developed into the institution of "kvoldvaka" (night-vigil), of which the chanting of rimur was an integral part.

Haustid Nalgast by Stefan fra Hvitadel

Icelandic:	**Phonetic Pronunciation (roll 'r's):**
Solin blessud sigur raud til vidar gloa a lofti gullin sky, gratklokk ain nidar.	Solin blessood seegoor raud til veedar glau a loftee gullin shkee, graut klokk owin needur
Haustid nalgast, hrid og vetrarrosinn,	Hauhshtidh nowlgast, hreed ohg vetrarrosinn,
senn er ekki solar von, senn er ain frosin.	senn er ekki solar vohn, senn er owin frohseen.
Loan horfin, lokid songvafulli, rokkvar her, en sudræn sol sveipar hana gulli.	Lowan horwin, lokid songvafulli, rohkvar her, en shudryan soul. sveypar hana gullee.
Ógnar myrkrid oss a nordurstrondum, innra grætur odfús bra eftir sudurlondum.	Ohgnar mirkrid oss a nordoorstrohndum, innra graytur ohdfoos brow eftir soodoorlohndum.
Eigum ver ba adeins myrkar nætur, enga fro ne innri hvild, engar raunabætur?	Aygum veer bow nightoor enga froh ne innree hveeld, engar raunabaytoor?
Himinn yfir. Huggast bú, sem grætur. Stjornur tindra, geislar guds, gegnum vetrarnætur.	Hihminn ifir. huggart boo, sem graytur Styornur tindra, geshlar goods, gegnum vetra nightoor.
Vetrarnottin varla mun oss saka, fyrst ad ljosin ofan ad yfir monnum vaka.	Vetranottin varla mun oss saka, fyrst ad lyosin ofan ad ifir moonum vahka.

Fall Approaches - English translation

The blessed sun goes under the horizon
The golden clouds are glowing in the sky
The sensitive river keeps on crying (moved to tears)

The fall approaches and the winter storm
Soon we will not see the sun
Soon the river will be frozen

Plover disappears and its song is finished
It's getting dark but the sun in the south
Covers her with gold

The dark threatens the northern coast
The inner desire cries
For the Southern atmosphere

Do we just have dark nights
No relief nor inner rest
And no amends for suffering?

The sky above consoles the crying
Stars glow because of the light from God
Through the winter nights

The winter night will barely harm us
As the lights from above
Are watching the people

haustid nalgast
(fall approaches)

for New Dublin Voices
(Choir & Electronics)

Linda Buckley
December 2007

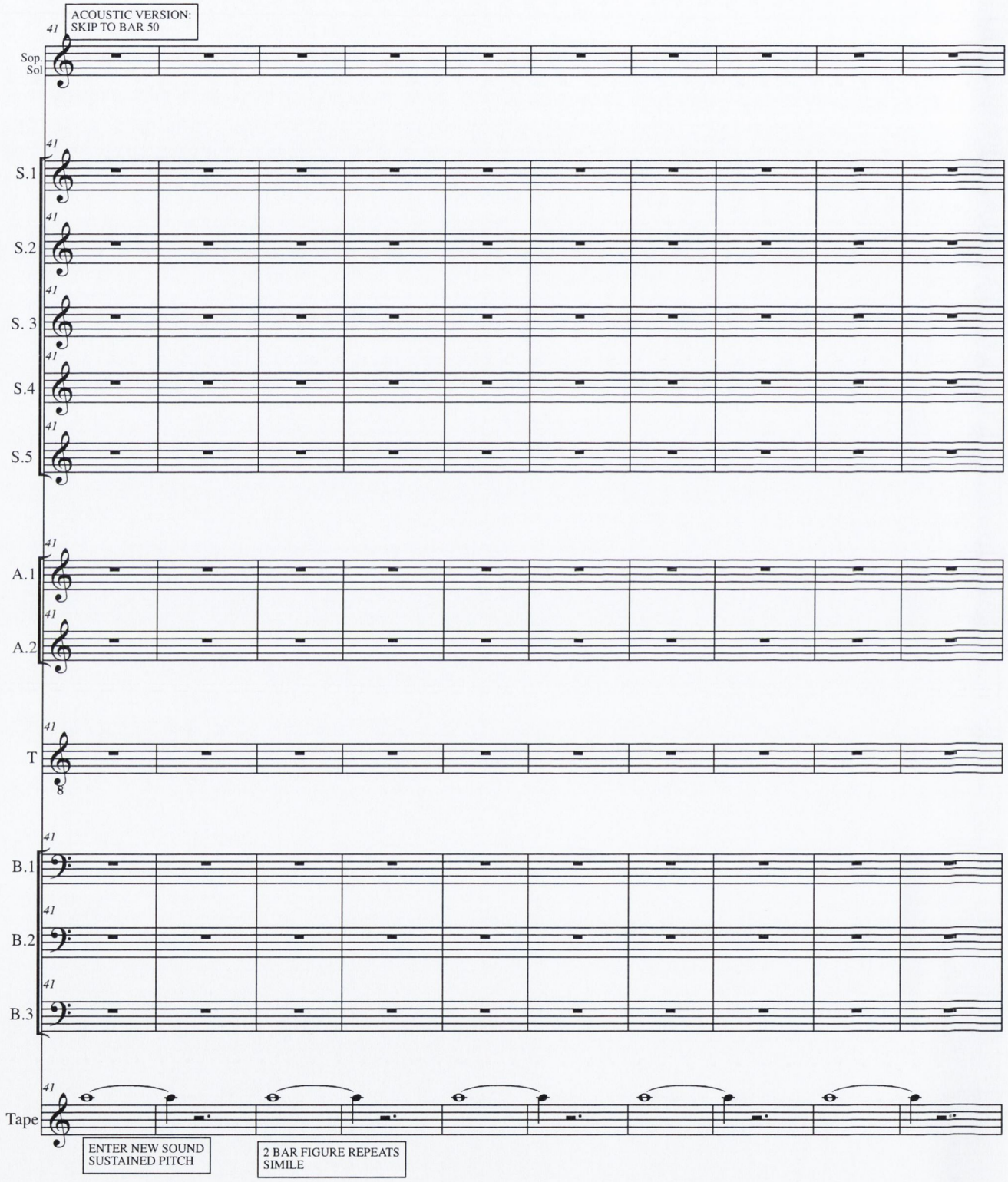



A
Sop. Sol
S.1
S.2
S. 3
S.4
S.5
A.1
A.2
T
B.1
B.2
B.3
Tape
— grat-klokk a - in ni - dar
p
Hau - stid nal - gast, hrid og ve-tra-ro-sinn, senn er ek - ki


Sop. Sol
so - lar von, senn er a - in fro - sin.
p Lo - an hor - fin,
S.1
S.2
S. 3
S.4
S.5
A.1
A.2
T
B.1
B.2
B.3
Tape
CUE 1
TAPE ENTRY
SOFT PULSATING
RING MODULATION
SHOULD SOUND AS IF
EMERGING FROM SOPRANO LINE


B
Sop. Sol
lo - kid song-va-ful-li, rokk-var her, en sud raen sol svei-par ha - na gul - li.
f Dramatic!
S.1
S.2
S. 3
S.4
S.5
A.1
A.2
T
B.1
B.2
B.3
Tape
Og - nar
MORE INTENSE PULSATIONS


33
Sop. Sol
S.1
S.2
S. 3
S.4
S.5
A.1
A.2
T
B.1
B.2
B.3
Tape
myr-krid oss a nord - ur - stron - dum, in-nra grae-tur od - fus bra ef-tir sud - ur - lon - drum.
END OF PULSATION SOUND


ACOUSTIC VERSION:
SKIP TO BAR 50
41
Sop.
Sol
S.1
S.2
S. 3
S.4
S.5
A.1
A.2
T
8
B.1
B.2
B.3
Tape
ENTER NEW SOUND
SUSTAINED PITCH
2 BAR FIGURE REPEATS
SIMILE


C
51
Sop. Sol
S.1
S.2
S. 3
S.4
S.5
A.1
A.2
T
B.1
B.2
B.3
Tape
pp Ei - gum ver ba a - deins myr - - - kar
pp Ei - gum - ver - ba - - a - - deins - - - myr -
pp Ei - gum - ver - - - ba - - - a - - - deins -
pp Ei - - gum ver ba
pp Ei - - - gum ver
6TH REPEAT OF 2-BAR FIGURE
& S.1 ENTRY


D
59
Sop. Sol
S.1
nae - - - tur, en - - - ga fro ne in - - -
S.2
- kar - - - nae - - - tur - - - en - - - ga - - - fro - - - ne -
S. 3
- - myr - - - kar - - - nae - - - tur - - - en - - - ga - - - fro -
S.4
a - - - deins myr - - - kar nae - - - tur, en - - -
S.5
ba a - - - deins myr - - - kar nae - - - tur,
A.1
A.2
T
p Ei - - - gum ver ba a - - -
B.1
p Ei - - - gum ver ba
B.2
p Ei - - - gum ver
B.3
p Ei -
Tape
LAST REPEAT OF 2-BAR FIGURE


Sop. Sol
S.1
S.2
S. 3
S.4
S.5
A.1
A.2
T
B.1
B.2
B.3
Tape
nri hvild, en - gar rau - na - bae - - - tur?
- - in - - - nri - - - hvild, en - gar rau - na - bae - - - tur?
- - - ne - - - in - - - nri - - - hvild, en - gar rau - na - bae -
ga fro ne in - - - nri hvild,
en - - - ga fro ne in - - - nri
tur
deins myr - - - kar nae - - - tur, en - - -
a - - - deins myr - - - kar nae - - - tur,
ba a - - - deins myr - - - kar nae -
- - gum ver ba a - - - deins myr -
NEW SOUND: GLITCHY SOP VOCAL 3-NOTE ASCENDING FIGURE
GLITCHY SOP VOCAL REPEATED SIMILE


E
Sop. Sol
S.1
S.2
S. 3
S.4
S.5
A.1
A.2
T
B.1
B.2
B.3
Tape
tur?
en - gar rau - na - bae - - - tur?
hvild, en - gar rau - na - bae - - - tur?
tur
ga fro ne in - - - nri hvild, en - gar rau - na -
en - - - ga fro ne in - - - nri hvild,
- - tur, en - - - ga fro ne in - - - nri
- kar nae - - - tur, en - - - ga fro ne
ENTER LOW-PITCHED
BASS CHORDS
RUMBLING


79
Sop. Sol
S.1
S.2
S. 3
S.4
S.5
A.1
A.2
rau
rau
rau
T
bae - - - tur? y - - - gar rau - - na - - bae - - tur?
B.1
en - - - gar - rau - - na - - bae - - tur? en - - - gar -
B.2
hvild, en - gar - - rau - - na - - bae - tur? - - en -
B.3
in - - - nri hvild, en - - gar - rau - - na - - - bae -
Tape


87
Sop.
Sol
S.1
S.2
S. 3
S.4
S.5
A.1
A.2
ur
hvild
hvild
T
rau - - na - - bae - - tur?
B.1
rau - - na - - bae - - tu - - ur?
B.2
- - ga - - fro - - ne - - - in - - nri - hvild, - en - gar -
B.3
- tur? - en - - - ga - - - fro - ne - - - in - - - nri - hvild, -
Tape


Sop. Sol
S.1
S.2
S. 3
S.4
S.5
A.1
A.2
tur?
T
B.1
B.2
rau - na - bae - tur? - rau - na - bae - tur?
B.3
en - gar - rau - na - bae - tur? rau - na -
Tape


ACOUSTIC VERSION:
SKIP TO BAR 115
103
Sop. Sol
S.1
S.2
S. 3
S.4
S.5
A.1
A.2
tur?
T
B.1
B.2
B.3
- bae - - - tur?
Tape
END OF BASS RUMBLING SOUND
NEW SOUND: HIGH-PITCHED SOPRANO LINE 2-BAR FIGURE
FIGURE REPEATS SIMILE


109
Sop. Sol
p
Hi minn
S.1
S.2
S. 3
S.4
S.5
A.1
A.2
T
B.1
B.2
B.3
Tape
TAPE FIGURE DEVELOPS INTO CANON


117
Sop.
Sol
y - fir. Hug - gast bu, sem grae - tur. Stjor - nur tin - dra, geis - lar guds, geg - num vet - ra -
S.1
S.2
S. 3
S.4
S.5
A.1
A.2
T
8
B.1
B.2
B.3
Tape


F
Sop. Sol
nae - tur.
S.1
S.2
S. 3
S.4
S.5
pp Vet - rar - not - tin var - la mun
pp Vet - rar - not - tin var - la mun
pp Vet - rar - not - tin var - la
pp Vet - rar - not - tin var - la
pp Vet - rar - not - tin var -
A.1
A.2
pp Vet - rar - not -
pp Vet - - - rar -
T
B.1
B.2
B.3
Tape
NOISY VOCAL GRANULATIONS


G
133
Sop. Sol
S.1
S.2
S. 3
S.4
S.5
A.1
A.2
T
B.1
B.2
B.3
Tape
oss sa - - - ka, fyrst ad ljo - - - sin
mun oss sa - - - ka, fyrst ad ljo -
- - la mun oss sa - - - ka, fyrst ad
tin var - - - la mun oss sa - - - ka,
- - not - - - tin var - - - la mun oss sa -
mp Vet - - - rar - -
mp fyrst


H
GRADUALLY ALTERNATE BETWEEN 'STRAIGHT' SUNG PITCH & VOCAL ULULATIONS IN THE THROAT. MOVE BETWEEN PITCH & NOISE. REACT TO 'GLITCHY' SOUNDS ON TAPE, INCREASING IN INTENSITY
Sop. Sol
S.1
S.2
S. 3
S.4
S.5
A.1
A.2
T
B.1
B.2
B.3
Tape
o - - - fan ad y - - - fir mon num
- sin o - - - fan ad y - - - fir mon -
ljo - - - sin o - - - fan ad y - - - fir
fyrst ad ljo - - - sin o - - - fan ad
- - ka, fyrst ad ljo - - - sin o - fan ad
not - - - tin var - - - la mun oss sa - - -
ad ljo - - - sin o - - - fan ad y -
mp fyrst ad ljo - - - sin o - - - fan ad
mp fyrst ad ljo - - - sin o - - -
INCREASING INTENSITY IN GLITCHINESS!


147
Sop. Sol
S.1
va - - - - - - - a - - - - - - - y
S.2
va - - - - - - - a - - - - - - - y - - - - - - -
S. 3
- - num va - - - - - - ka. - - - - - - -
S.4
- - num va - - - - - - ka. - - - - - - -
S.5
mon - - - - - - - num va - - - -
A.1
y - - - - - - - fir mon
A.2
y - - - - - - - fir mon -
T
ka, ljo - - - - - - - sin
B.1
- - fir mon - - - - - - num
B.2
y - - - - - - - fir mon
B.3
fan ad y - - - - - - -
Tape


End dramatically with electronics!
Sop. Sol
S.1
S.2
S. 3
S.4
S.5
A.1
A.2
T
B.1
B.2
B.3
Tape
150
fff
fir mon num va - - - a - - - ka.
- y - - - fir mon - - - num va - - - - ka.
- - ka. mon - - - num va - - - ka.
num va - - - a - - - va - - - a - - - ka
- - num va - - - ka. va - - - ka.
o - - - fan ad va - - - a - - - ka
va - - - ka. mon - - - num va - - - ka.
num va - - - ka. va - - - a - - - ka.
fir mon num va - - - a - - - ka

Linda Buckley - for Rothko String Trio - March 2008

***fiol* for String Trio**

fiol was commissioned by the Rothko String Trio with funds provided by the Arts Council of Ireland. The soundworld of this piece was inspired by the Norwegian Hardanger fiddle (hardingfele). 'Fiol' was the predominant term used for 'fiddle' in DanishNorwegian of the 17th and 18th centuries. This instrument is mainly used for the performance of Norwegian folk music and is similar in construction to the violin, but with eight or nine strings. Four of the strings are strung and played like a violin, and the remaining strings, called 'sympathetic strings' resonate 'in sympathy' with the other four. Here I was interested in treating the trio as a single twelve-stringed 'meta-instrument' rather than as three separate voices, almost like a hardingfele or Baroque viola d'amore with sympathetic resonating strings.

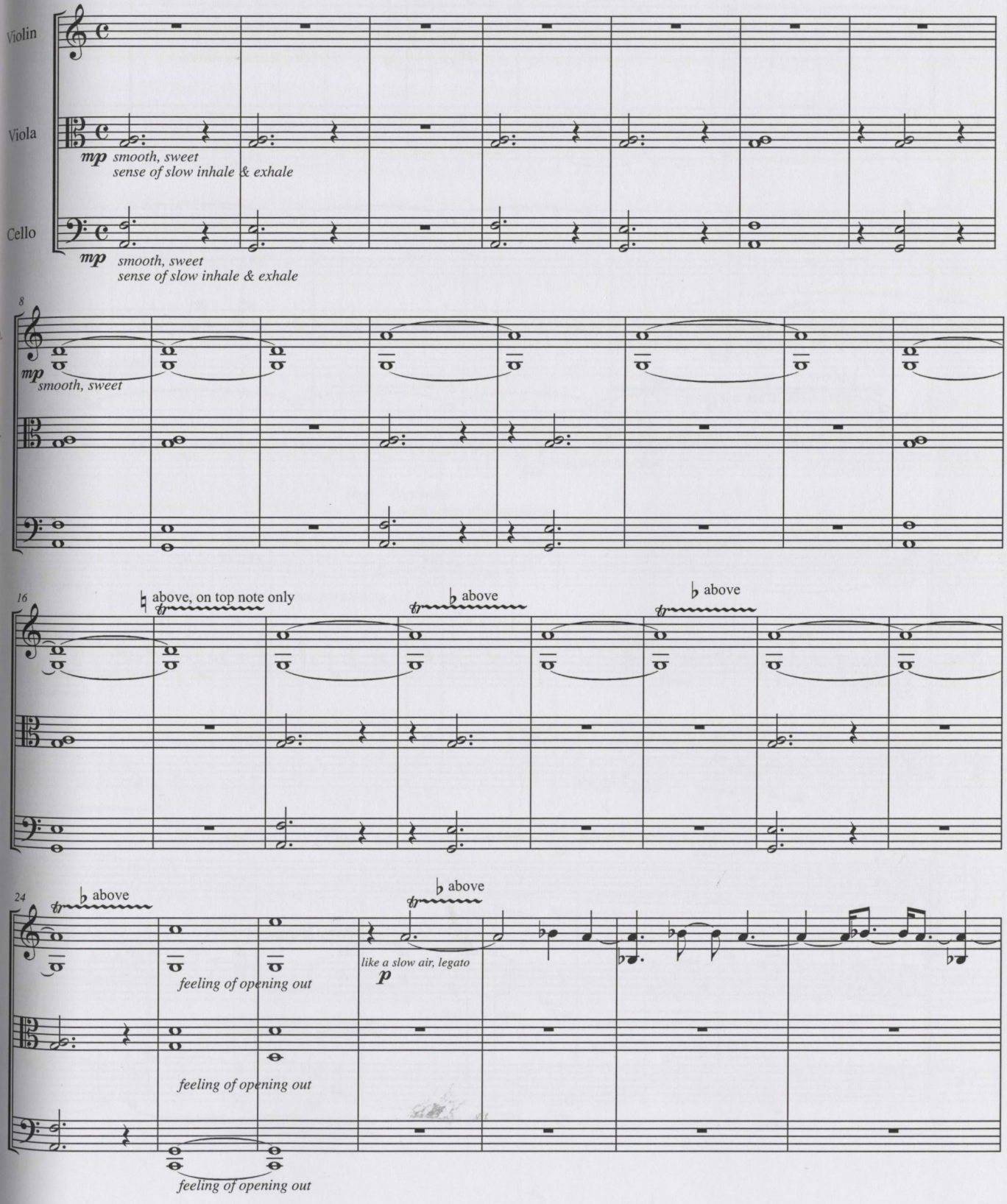
fiol

for the Rothko String Trio

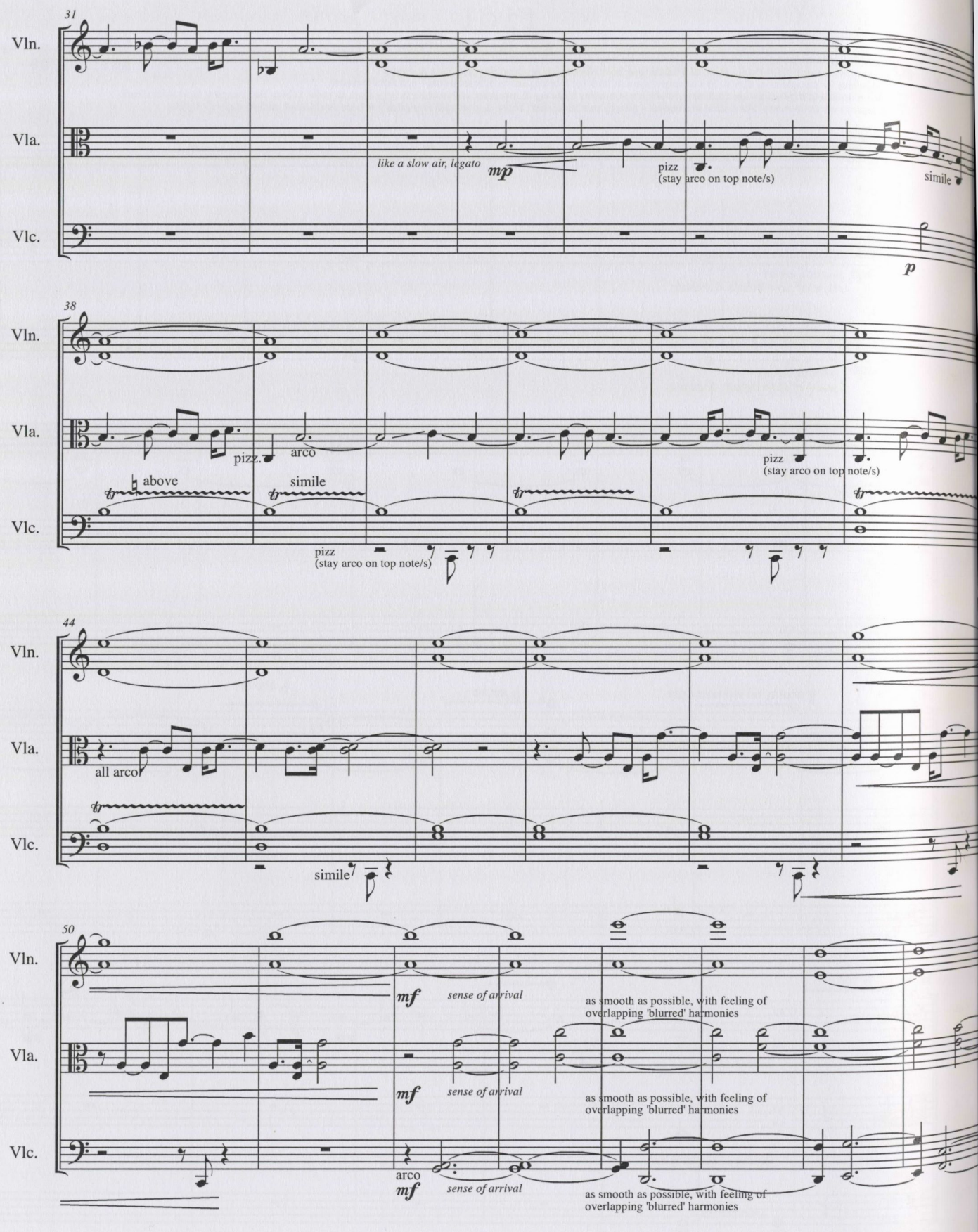
Linda Buckley
April 2008

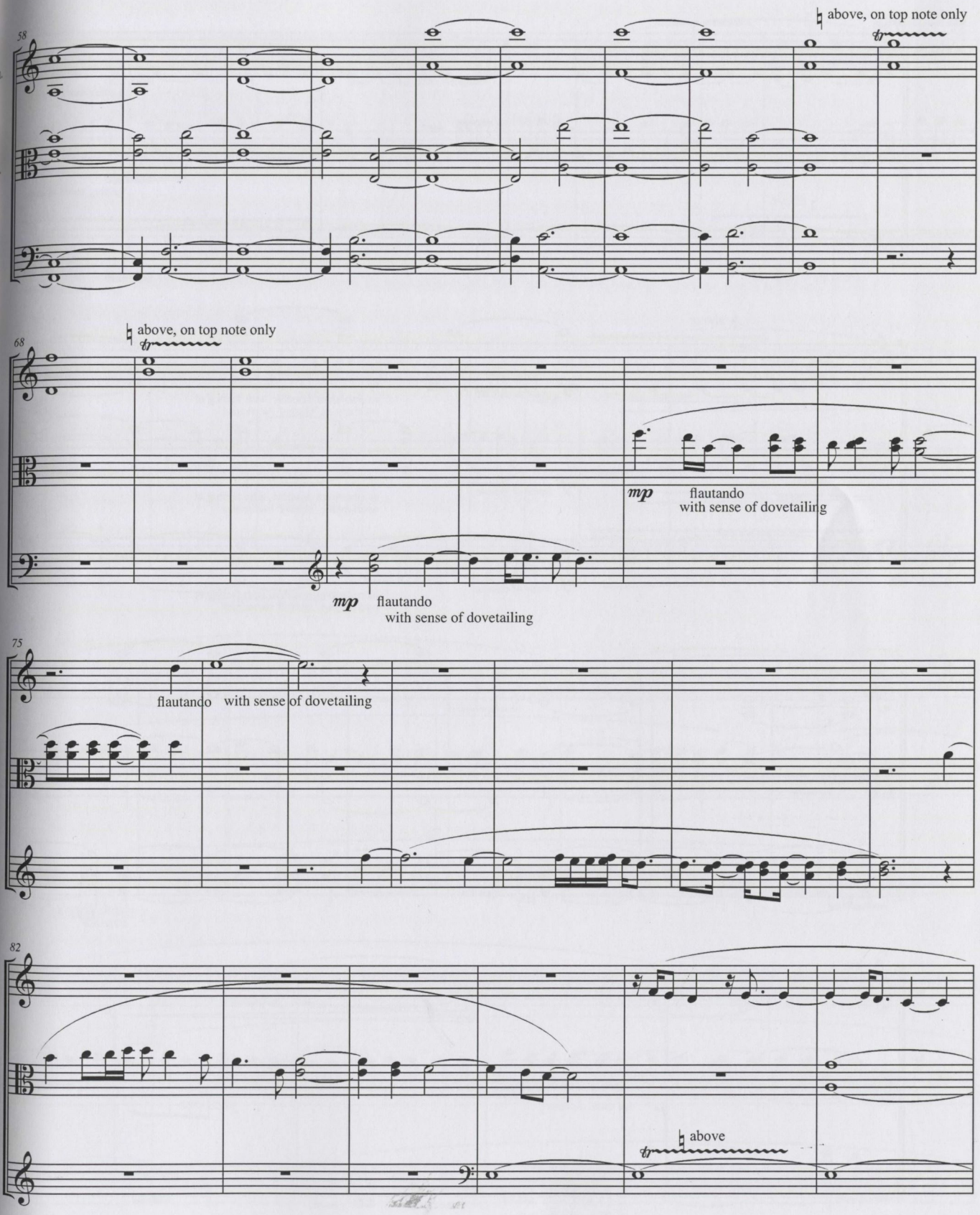
♩= 40

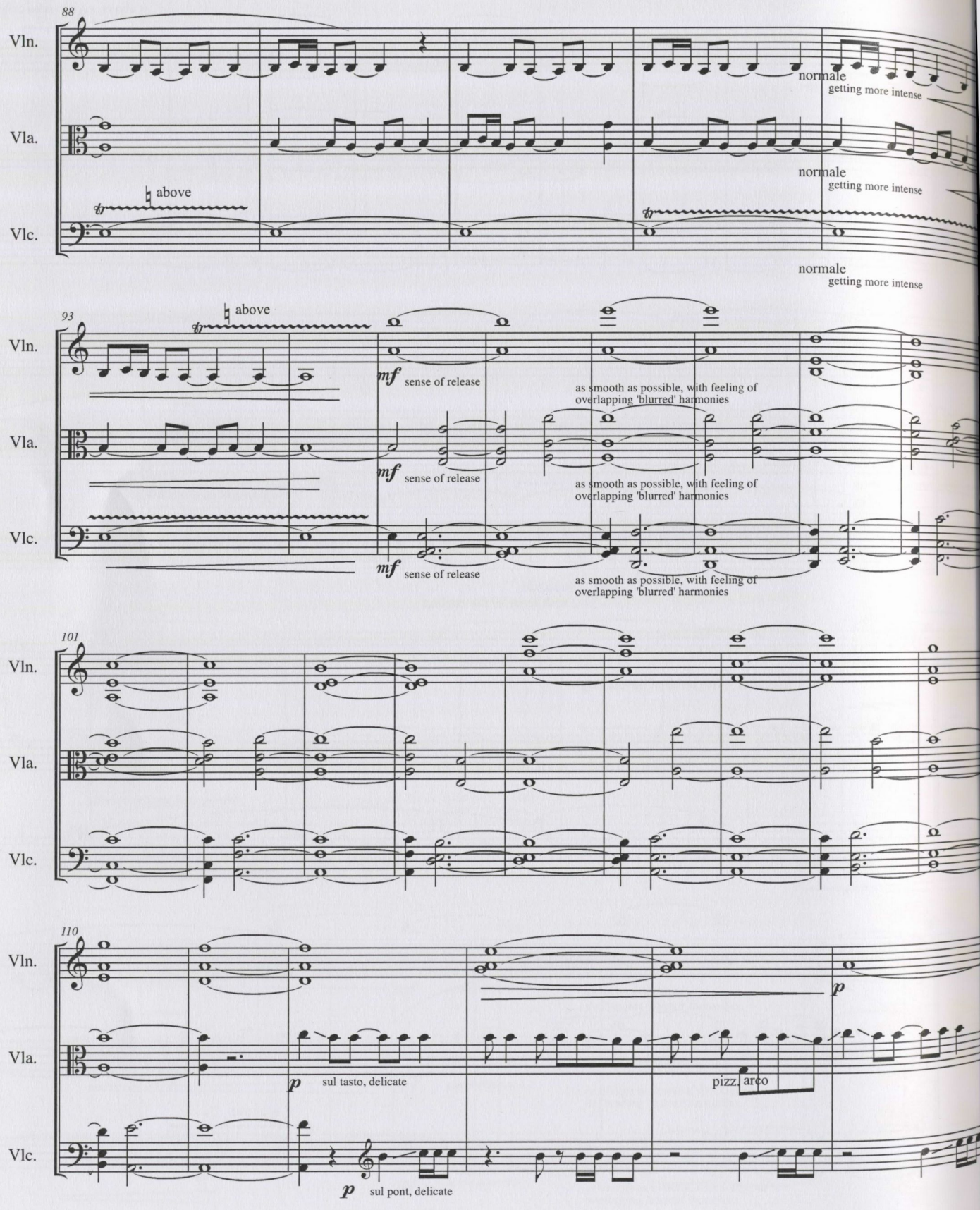
General performance notes:
Tone quite non-vib throughout - think of a fiddle tone from Norwegian hardangfele, quite pure & sweet.
Trills may be thought of as almost like ornamentation in Irish (or Norwegian) traditional music - not strict/classical.
When double or triple-stops are combined between instruments blending & matching of dynamics is important, in order to hear the changing harmonies clearly.
Glissandi are quite subtle, like a slide in a lament - gliss to new note, don't begin to gliss until first pitch has been established, maintain given rhythm

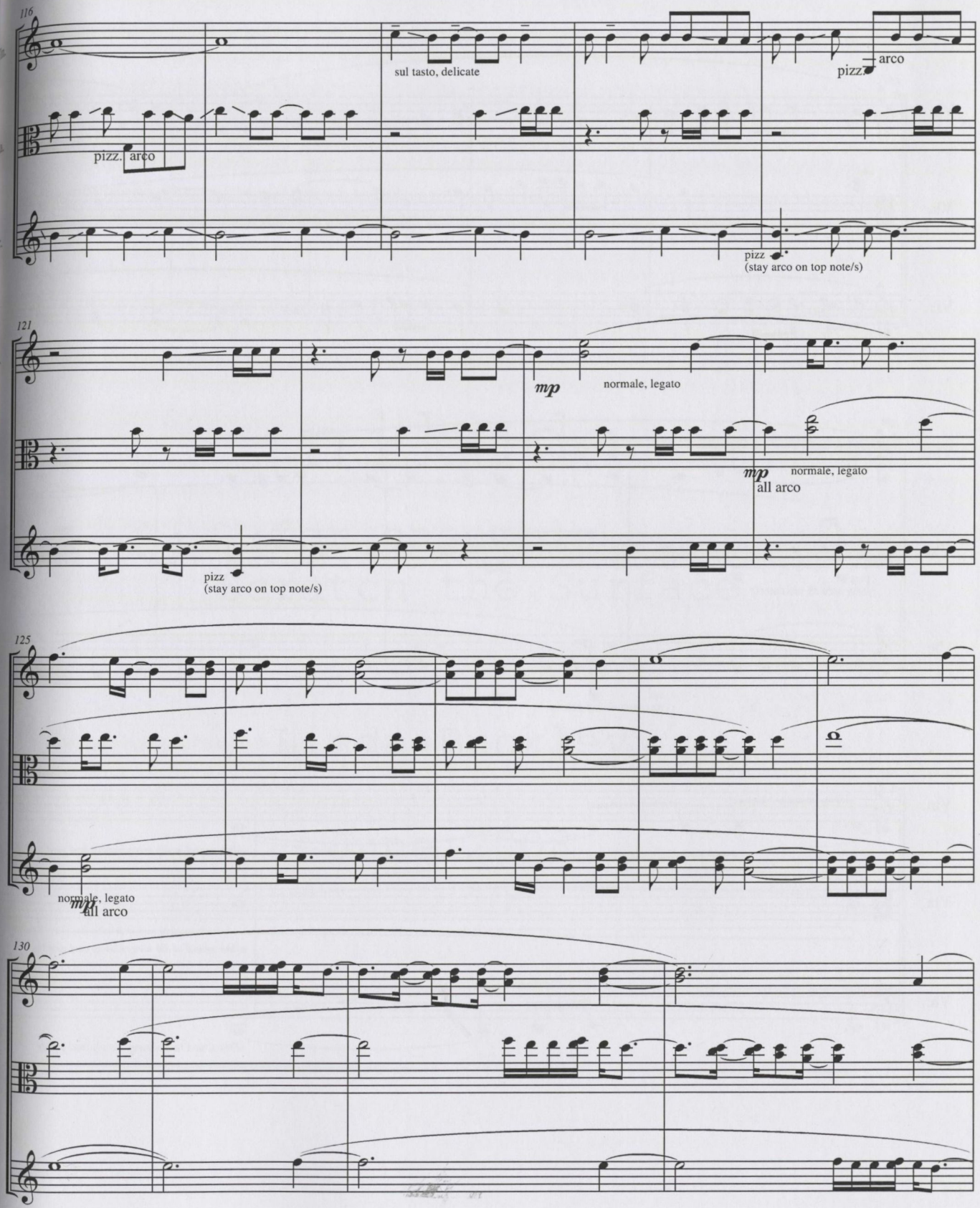


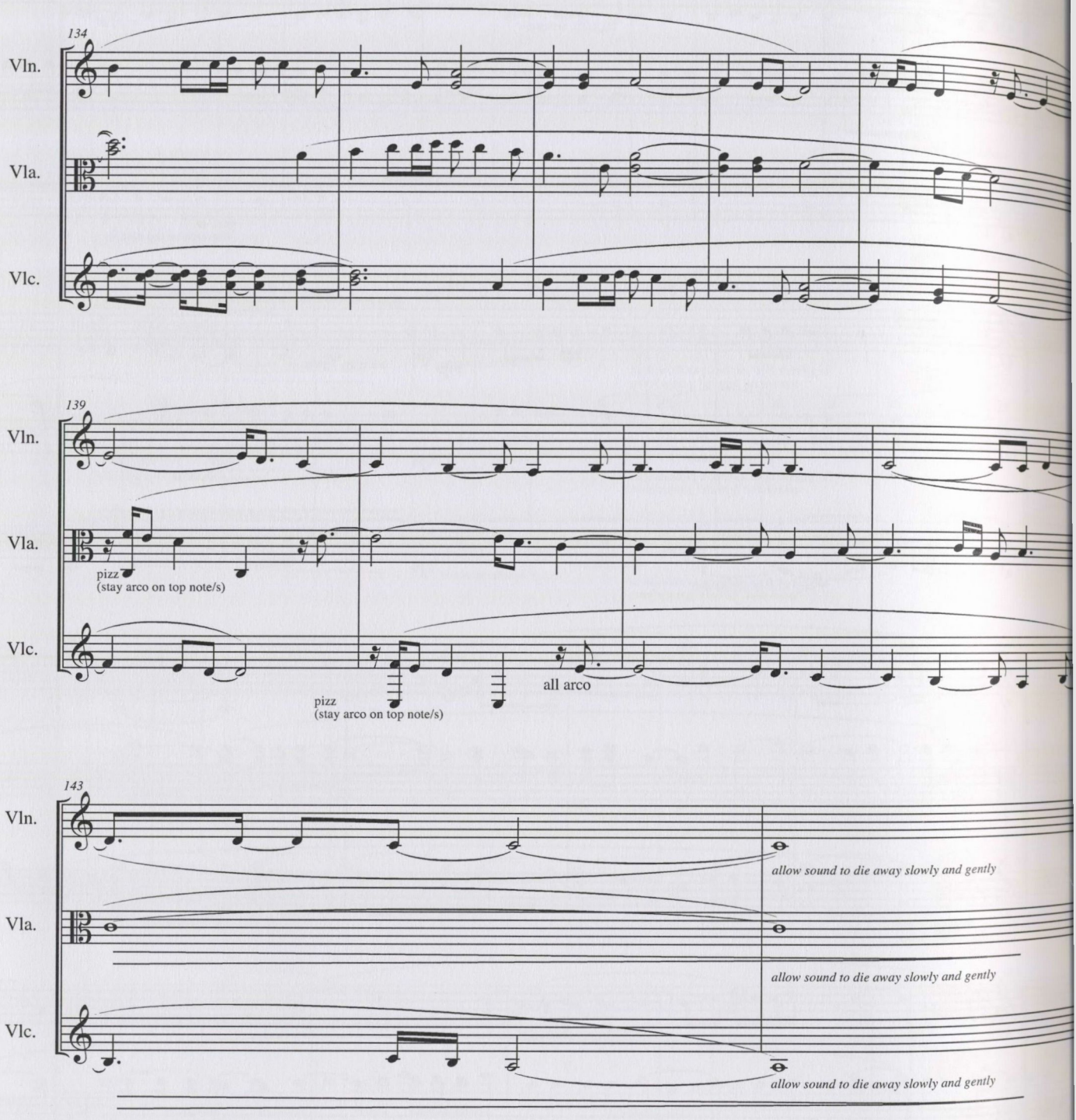
©Linda Buckley 2008


31
Vln.
Vla.
Vlc.
like a slow air, legato
mp
pizz
(stay arco on top note/s)
simile
p
38
Vln.
Vla.
Vlc.
pizz.
arco
above
simile
pizz
(stay arco on top note/s)
pizz
(stay arco on top note/s)
44
Vln.
Vla.
Vlc.
all arco
simile
50
Vln.
Vla.
Vlc.
mf
sense of arrival
as smooth as possible, with feeling of
overlapping 'blurred' harmonies
mf
sense of arrival
as smooth as possible, with feeling of
overlapping 'blurred' harmonies
arco
mf
sense of arrival
as smooth as possible, with feeling of
overlapping 'blurred' harmonies


above, on top note only
58
above, on top note only
68
mp
flautando
with sense of dovetailing
mp
flautando
with sense of dovetailing
75
flautando with sense of dovetailing
82
above


88
Vln.
Vla.
Vlc.
above
normale
getting more intense
normale
getting more intense
normale
getting more intense
93
above
mf sense of release
mf sense of release
mf sense of release
as smooth as possible, with feeling of overlapping 'blurred' harmonies
as smooth as possible, with feeling of overlapping 'blurred' harmonies
as smooth as possible, with feeling of overlapping 'blurred' harmonies
101
110
p sul tasto, delicate
pizz. arco
p
p sul pont, delicate


116
pizz.
arco
sul tasto, delicate
pizz.
arco
pizz
(stay arco on top note/s)
121
mp
normale, legato
mp
normale, legato
all arco
pizz
(stay arco on top note/s)
125
mp
normale, legato
all arco
130


134
Vln.
Vla.
Vlc.
139
Vln.
Vla.
pizz
(stay arco on top note/s)
Vlc.
pizz
(stay arco on top note/s)
all arco
143
Vln.
allow sound to die away slowly and gently
Vla.
allow sound to die away slowly and gently
Vlc.
allow sound to die away slowly and gently

nikuda

for ensemble
Scratch the Surface

Linda Buckley

June 2008

nikuda for ensemble**, Linda Buckley June 2008**

nikuda was composed for ensemble Scratch the Surface - the title means 'nowhere' in Russian.

Duration: c. 9 minutes

Score in C

Instrumentation:

Clarinet in B flat (doubling with Bass Clarinet)
Violin
Viola
Double Bass
Percussion: Kick/Bass Drum, Low Tom, Snare, Cymbal (bowed with cello bow).

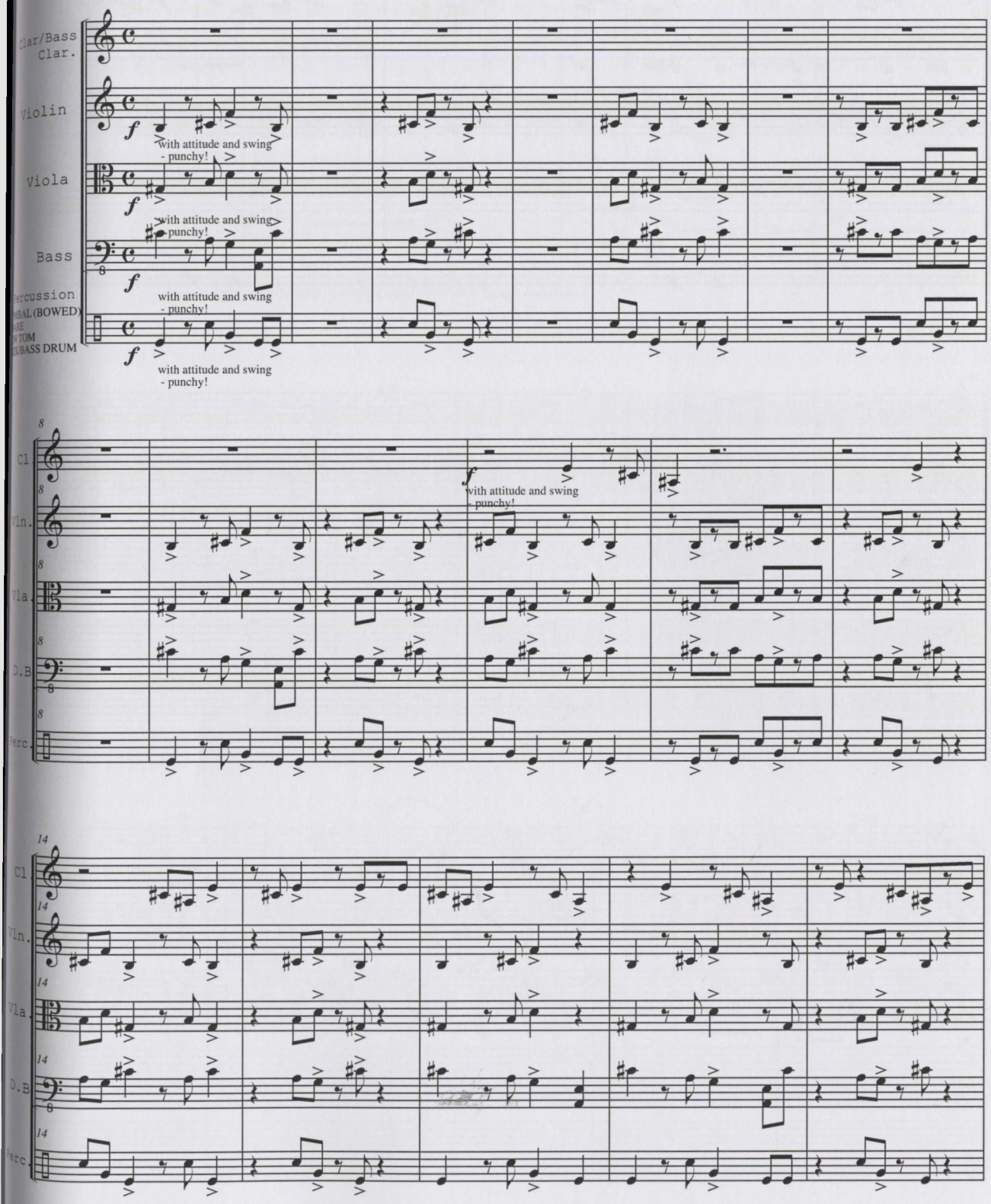
nikuda

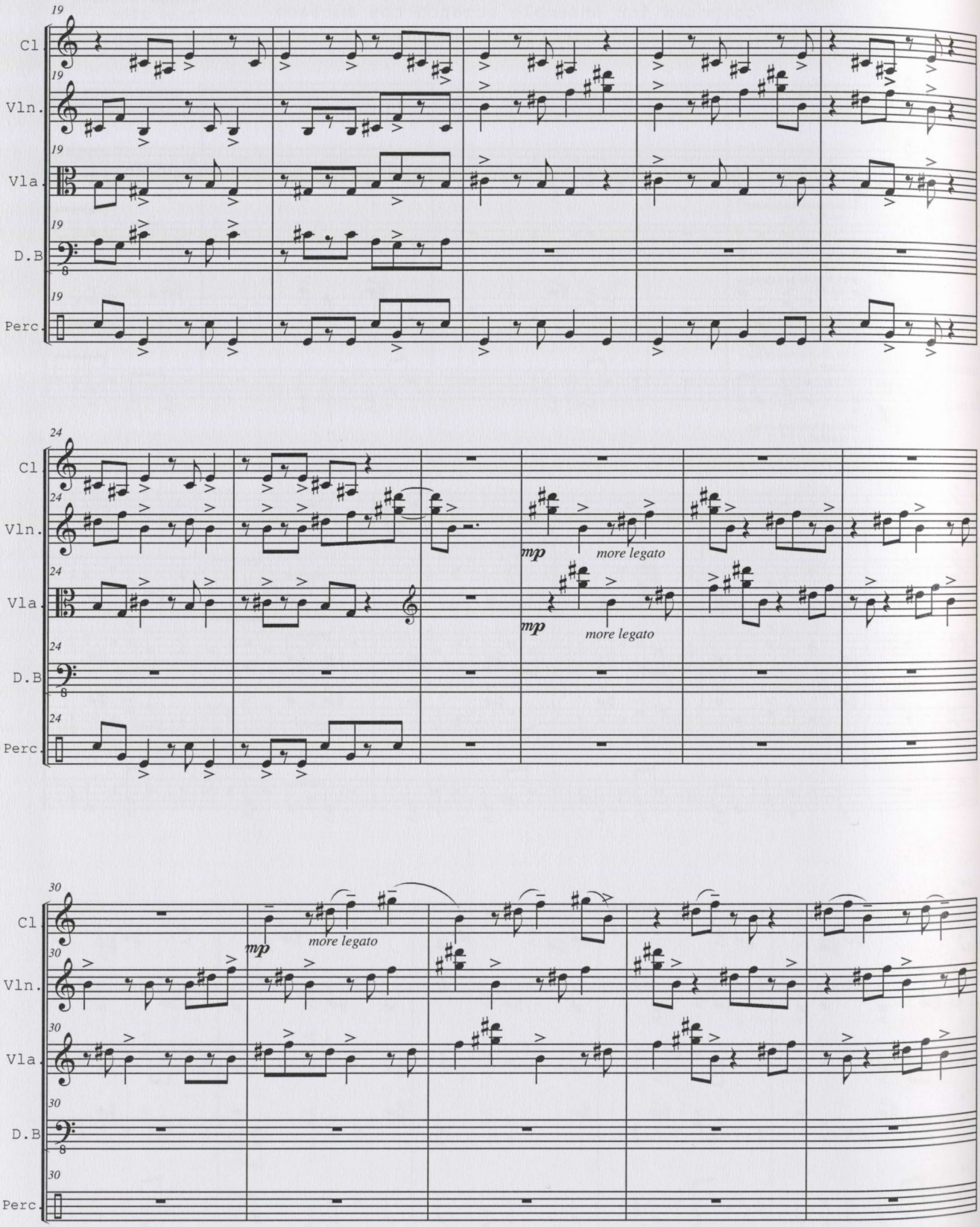
composed for ensemble scratch the surface

Score in C

Linda Buckley
June 2008

♩ = c. 120



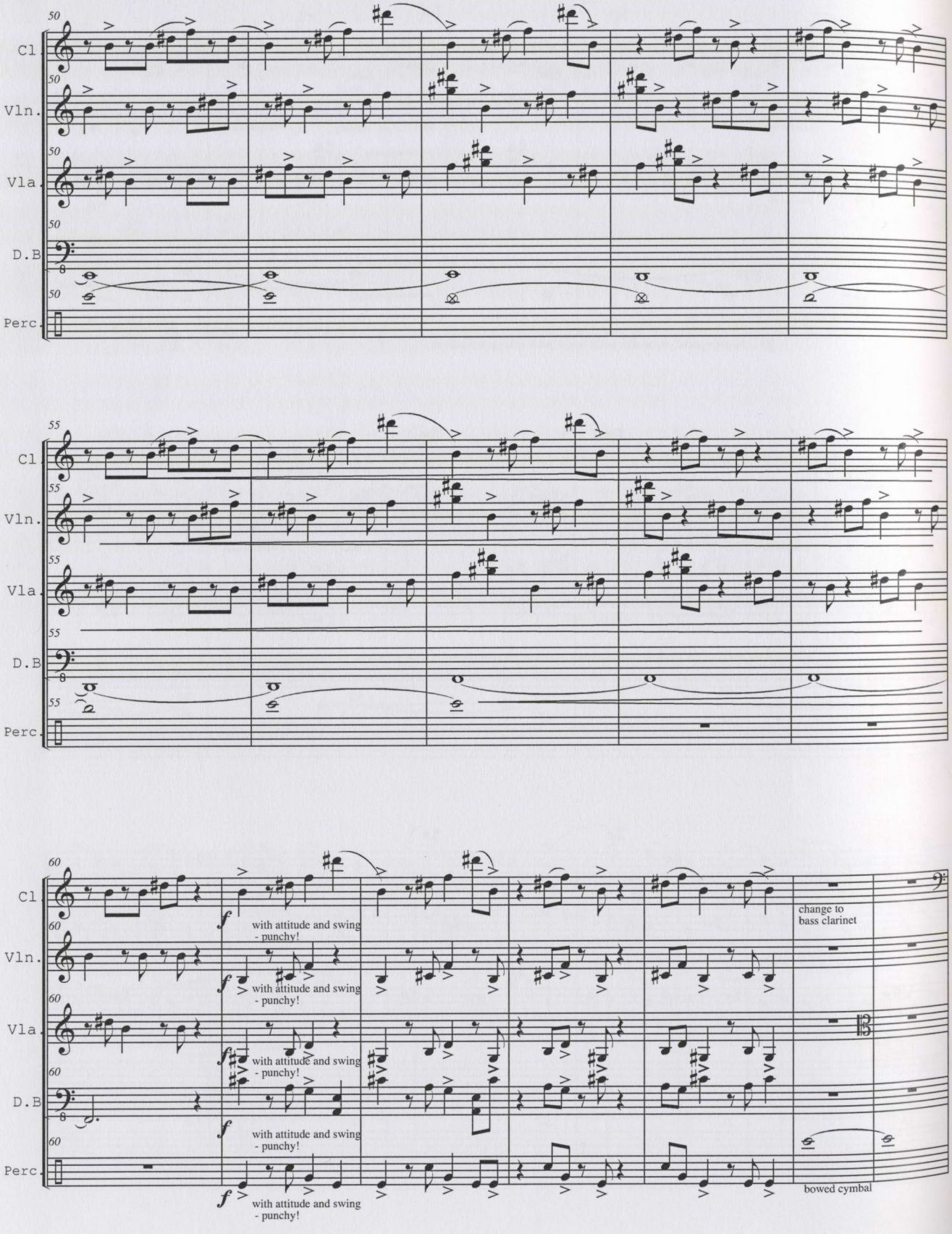

19
Cl
Vln.
Vla.
D.B
Perc.
24
mp
more legato
30
mp
more legato

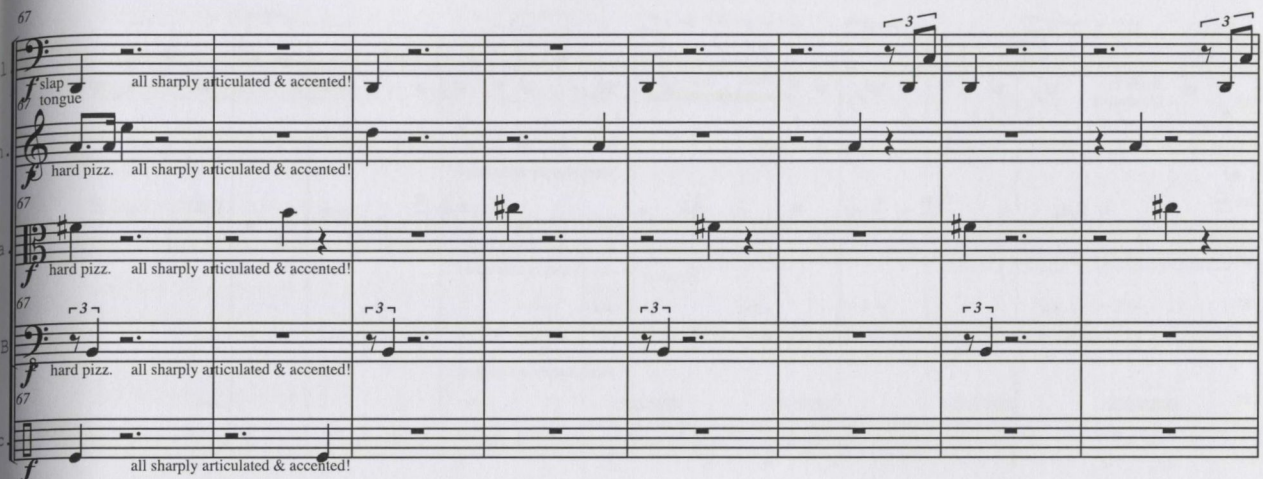


p bowed cymbal - try to alter sound where 'pitch' changes are indicated



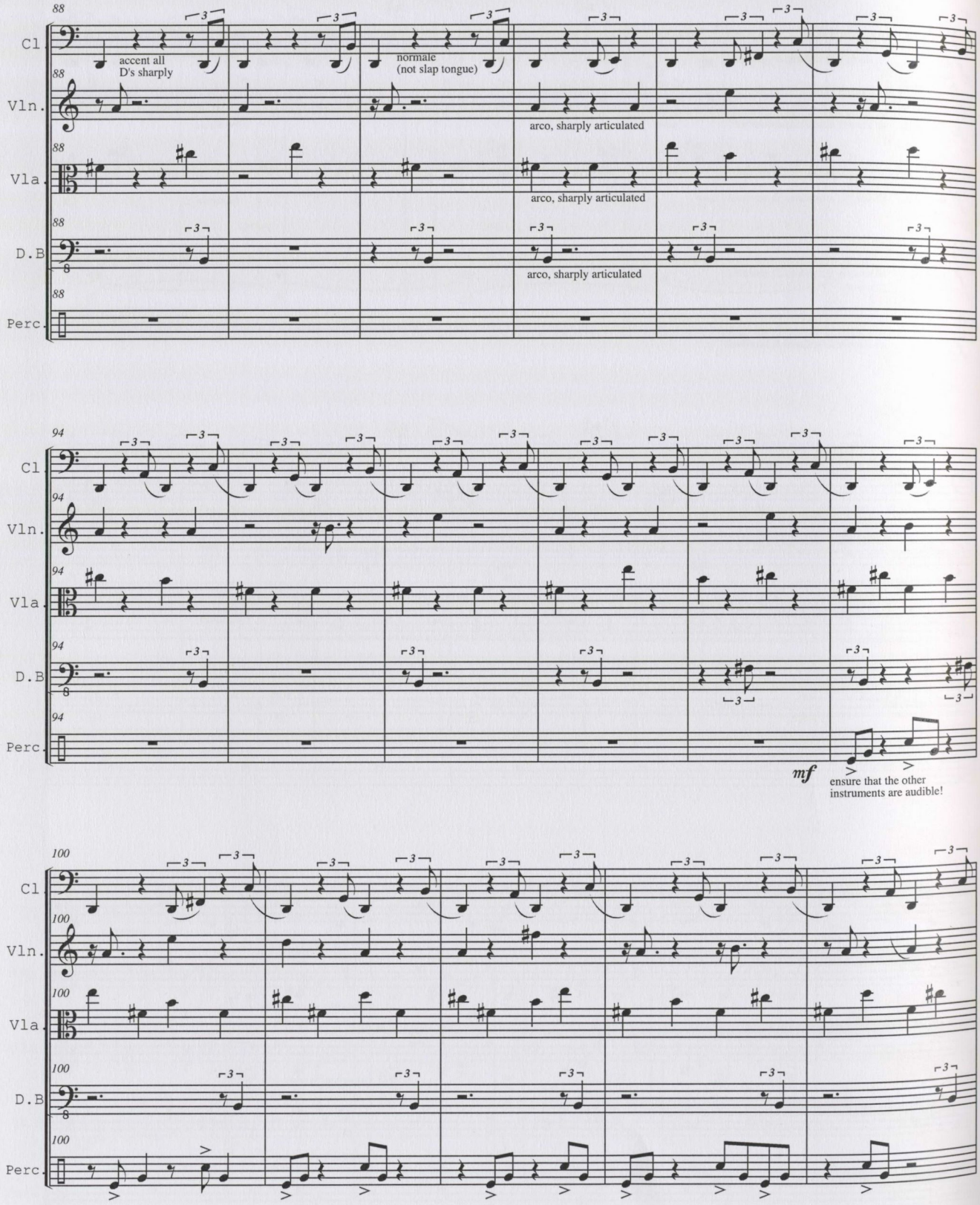


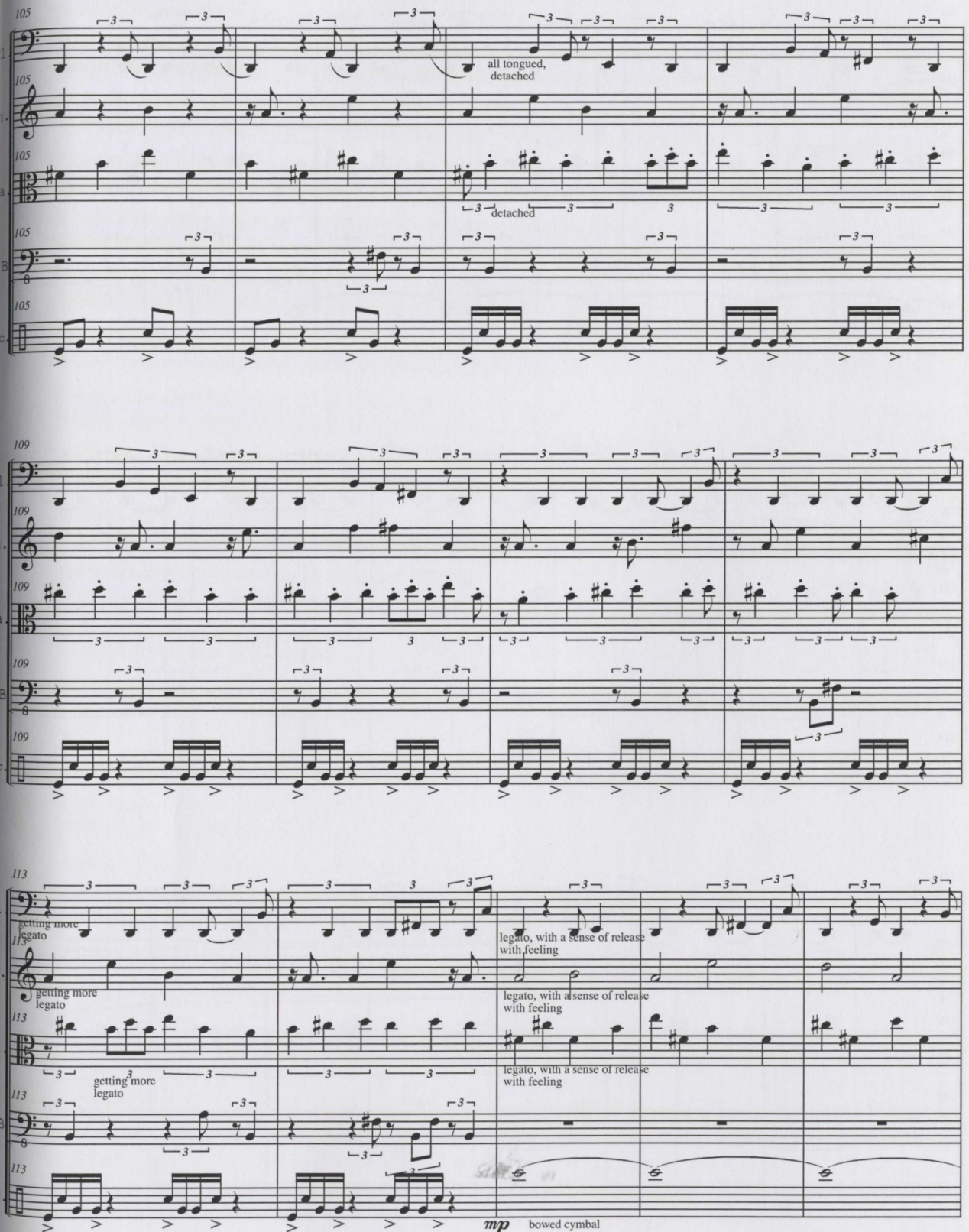

50
Cl
Vln.
Vla.
D.B
Perc.
55
60
f
with attitude and swing
- punchy!
change to
bass clarinet
bowed cymbal


67
Cl
slap tongue
all sharply articulated & accented!
Vln.
hard pizz.
all sharply articulated & accented!
Vla
hard pizz.
all sharply articulated & accented!
D.B
hard pizz.
all sharply articulated & accented!
Perc.
all sharply articulated & accented!

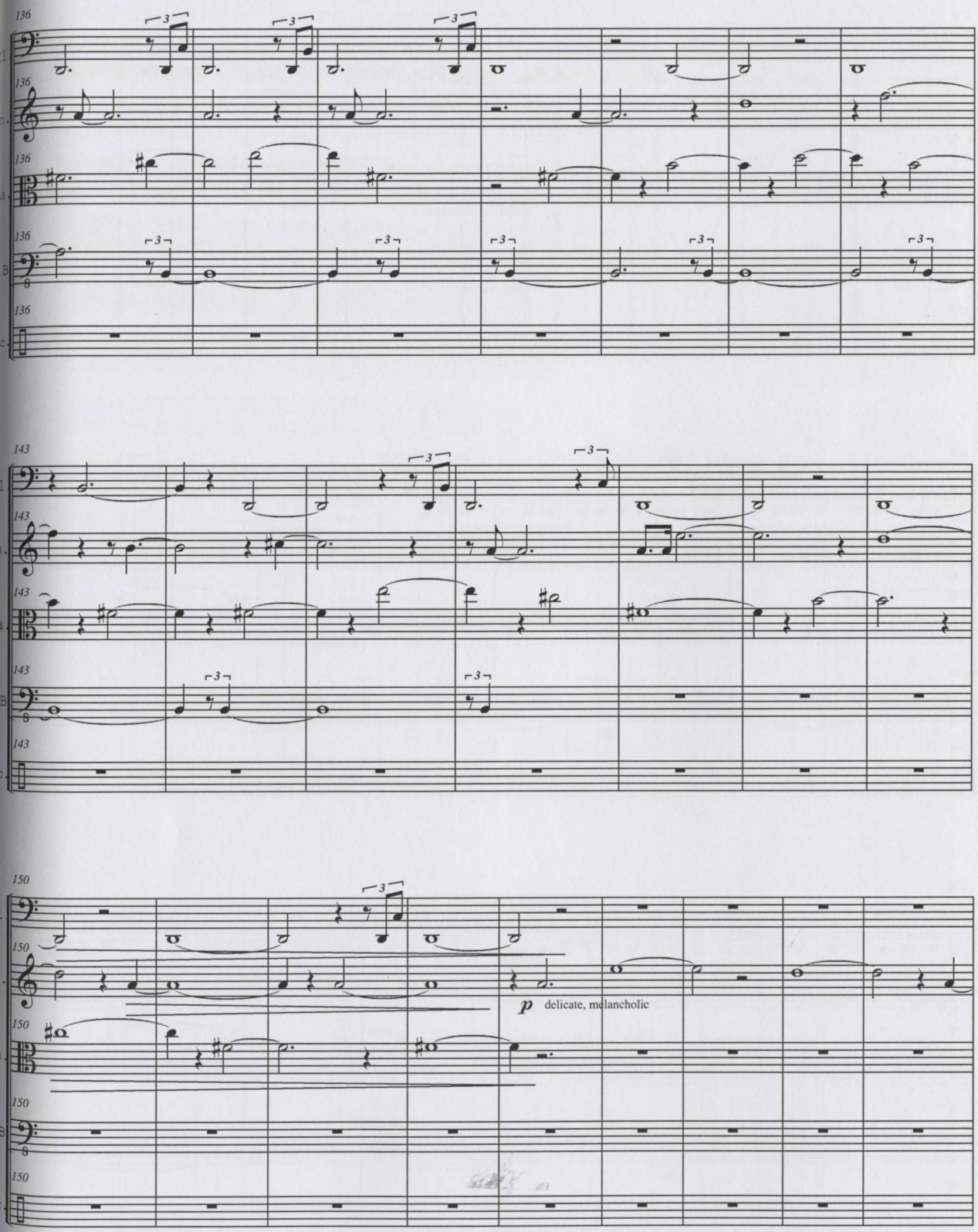

75
Cl
Vln.
Vla.
D.B
Perc.

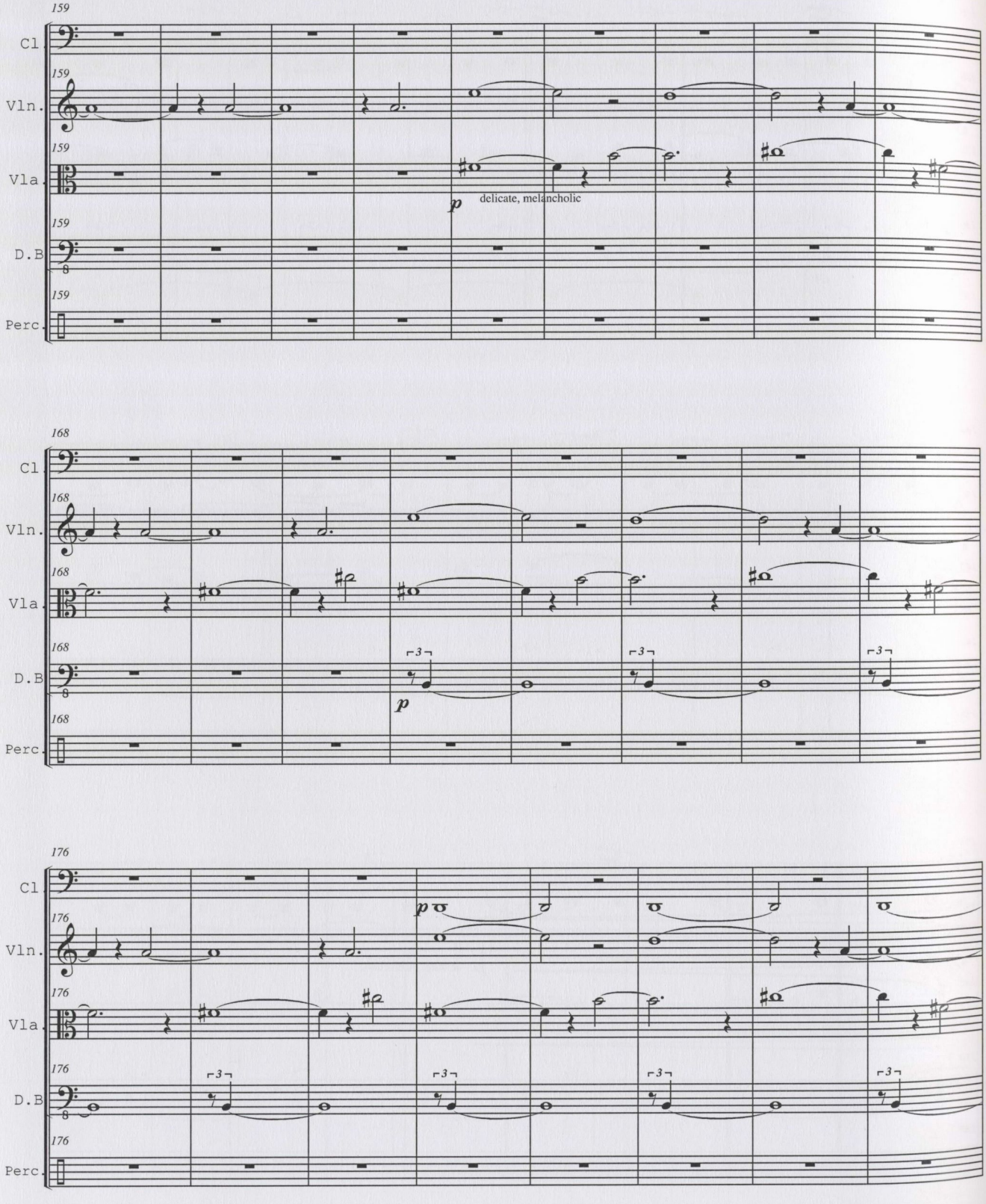

82
Cl
Vln.
Vla.
D.B
Perc.

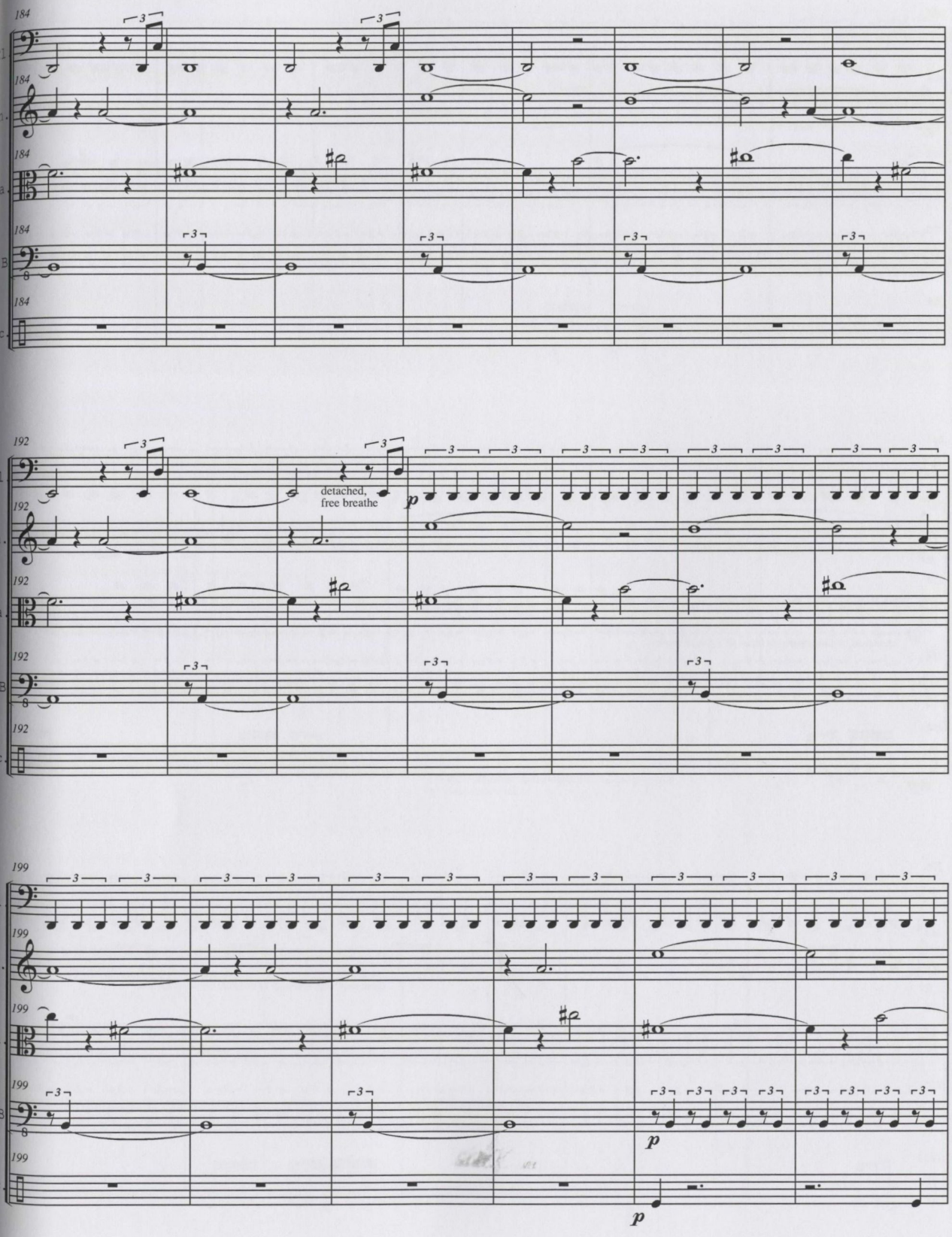

88
Cl
accent all
D's sharply
normale
(not slap tongue)
Vln.
arco, sharply articulated
Vla.
arco, sharply articulated
D.B
arco, sharply articulated
Perc.
94
100
mf
ensure that the other
instruments are audible!


105
Cl
Vln.
Vla.
D.B
Perc.
all tongued,
detached
detached
109
113
getting more
legato
legato, with a sense of release
with feeling
mp
bowed cymbal

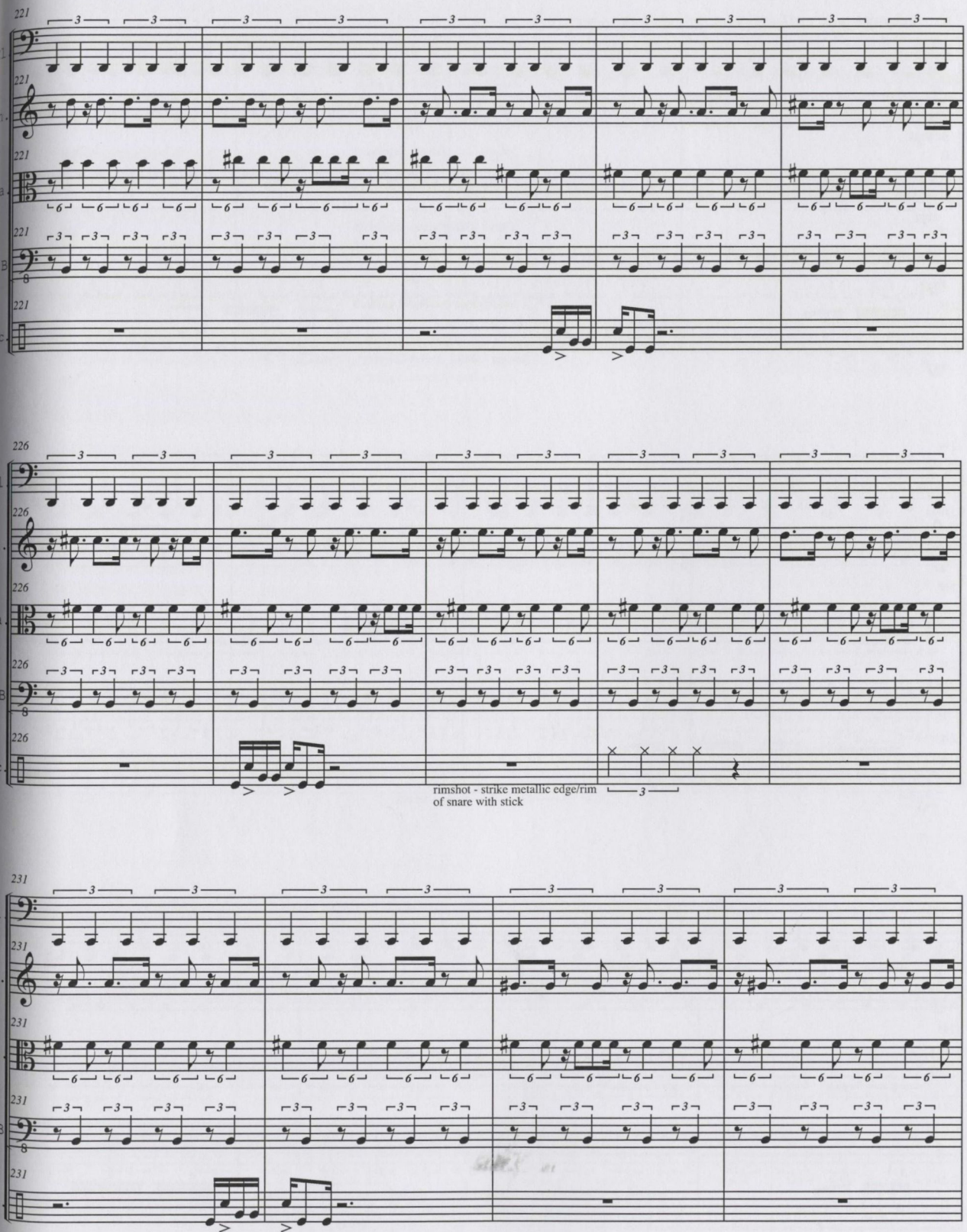

118
Cl.
Vln.
Vla.
D.B
Perc.
124
129


136
Cl.
Vln.
Vla.
D.B
Perc.
143
150
p delicate, melancholic

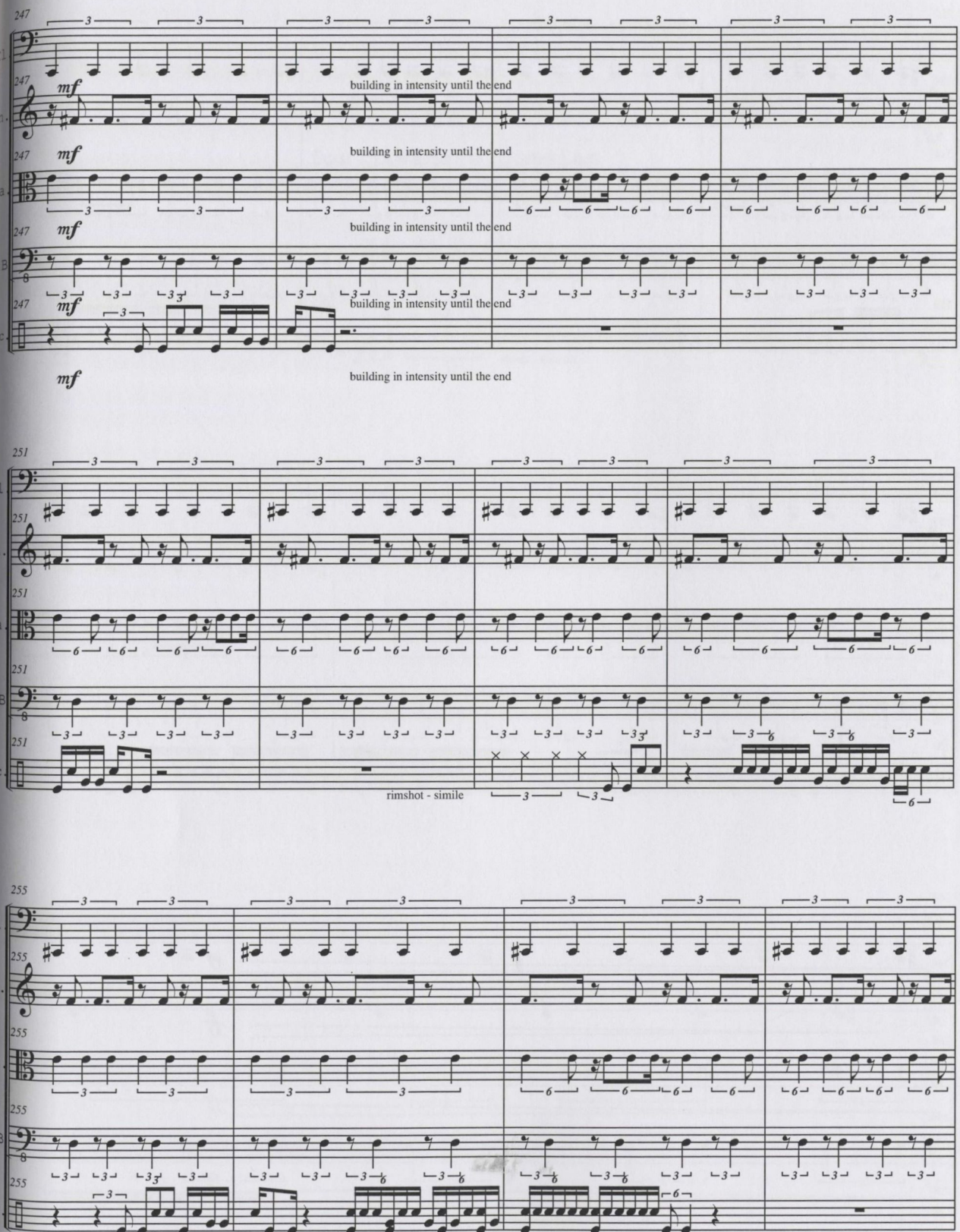

159
Cl.
Vln.
Vla.
D.B
Perc.
p
delicate, melancholic
168
176


184
Cl
Vln.
Vla.
D.B
Perc.
192
detached,
free breathe
p
199
p
p


205
Cl
Vln.
Vla
D.B
Perc
211
p
detached, with intensity & sense of forward motion
mp
216
detached, with intensity & sense of forward motion


221
Cl.
Vln.
Vla.
D.B
Perc.
226
231
rimshot - strike metallic edge/rim
of snare with stick


235
Cl.
Vln.
Vla.
D.B
Perc.
mp
mf
rimshot - simile
239
243


247
Cl.
Vln.
Vla.
D.B
Perc.
mf
building in intensity until the end
251
rimshot - simile
255


259
Cl
Vln.
Vla.
D.B
Perc.
f
rimshot - simile
263
266
ff

eriu

for javanese gamelan
composed for Gamelan Sekar Pethak

Linda Buckley
February 2009

eriu for javanese gamelan

eriu was composed for Gamelan Sekar Pethak.
This piece is dedicated to the University of York Gamelan ensemble, with special thanks to Neil Sorrell and Garrett Sholdice.

In Irish mythology, Ériu, daughter of Ernmas of the Tuatha Dé Danann, was the matron goddess of Ireland.
Her husband was Mac Gréine ('Son of the Sun').

Rehearsal & performance notes

Except when indicated, allow all notes to ring out - do not damp before playing next note, to build up rich resonances.
Allow sound to decay naturally through the rests.
Where a 'chord' is indicated, eg. 2 in saron barung and demung, turn mallet sideways to strike both bars together.
1

Eriu in three short 'movements' - these are like three short pieces (miniatures) which can be played in succession, or separately. The score provided here is deliberately sparse and open to the interpretation of the group - it can be thought of as almost like a balungan, which may be embellished. The saron barung and demung parts are fully indicated - feel free to experiment with playing additional layers in the elaborating instruments, eg. gender, gender panerus. The piece can evolve organically in rehearsal, with drumming etc.
The material may also lend itself well to the repetition of sections within, to allow for the addition of more layers - this can be explored in rehearsal.

In general, the tempo may be thought of as c. crotchet = 60 (main division of beat)
eg: 1 . 2 = crotchet, crotchet rest etc. (eg. sarons)
line above ciphers indicate double speed, (c.quavers)
double line above indicates c. semiquavers (eg. in bonang)

All in pelog, with the exception of slendro 6 in kempul

Each page indicates a new section, and should follow on logically from the previous section - it also denotes possible shifts to new material, the addition of more layers, or can serve as a good indicator for possible section repeats, if desired.

The // symbol indicates moving to a new line within a part, or a new section (like a system change) - to avoid confusion with the 'lining up' of simultaneous layers.

A eriu I

saron barung (x 2 - unison & divided at end of this line)

1 . 1 1 2 1 . 2 . 2 3 3 1 42 3 4 2 1 42 . 12 ----------

1 . 1 1 2 1 . 2 . 2 3 3 1 42 3 4 2 1 42 . 4 ----------

kempul

6 6 5

gong suwukan

() () ()

(this opening section x 2)
//
saron barung

1 1 1 1 2 1 . 2 . 2 3 3 1 42 3 4 2 1 42 . 12 ----------

1 1 1 1 2 1 . 2 . 2 3 3 1 42 3 4 2 1 42 . 4 . 4 ---

saron demung

1 . 1 . 2 1 . . . 2 1 . . . 2 1 ----------

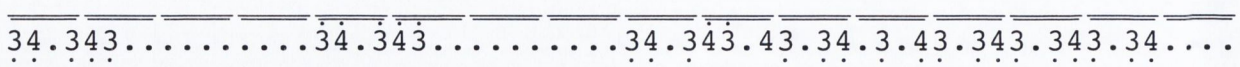
kempul

6 6 5

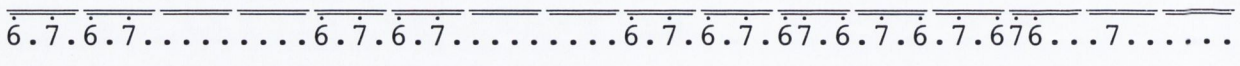
gong suwukan

() () ()

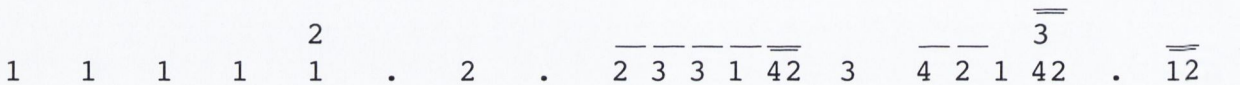
B // bonang panerus

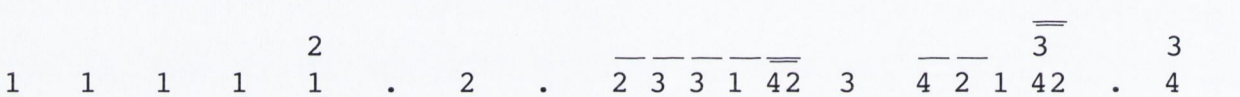


bonang barung



saron barung





saron demung



slenthem



kempul



gong suwukan



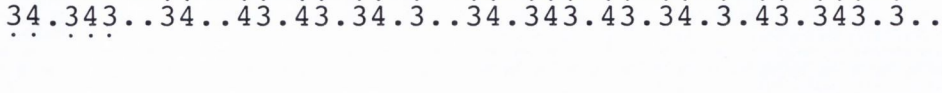
C

// bonang panerus

bonang barung

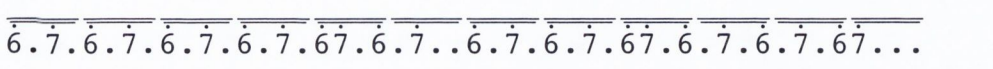


saron barung





saron demung



slenthem

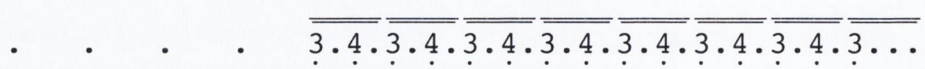


kempul

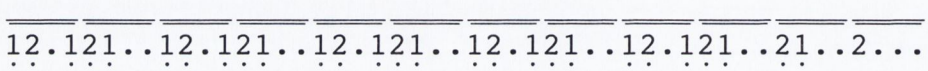
gong suwukan

()

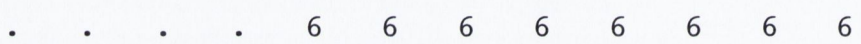
D //
bonang panerus



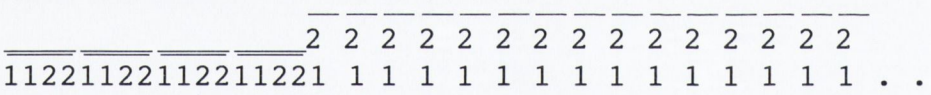
bonang barung



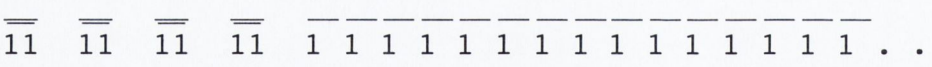
saron barung
(dampen bar tightly with LH while striking with RH - sharp quite unpitched sound, attack!)



saron demung

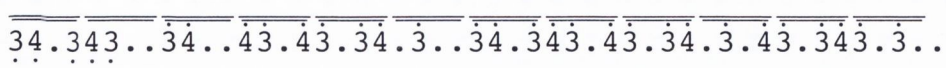


slenthem

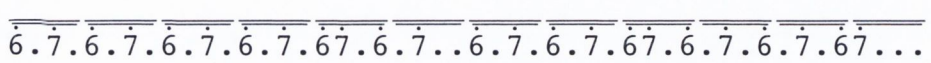


E

//bonang panerus



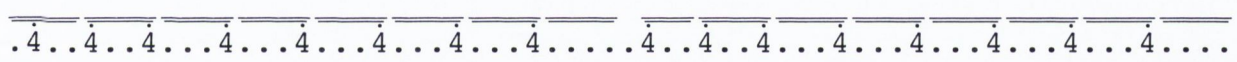
bonang barung



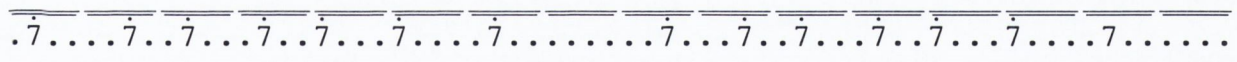
saron barung (normal - allow sound to decay fully)

7 . . . . . 7 . . .

// bonang panerus



bonang barung

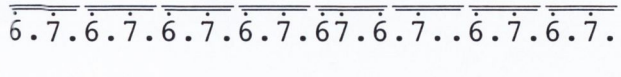


saron barung

7 . . . 7 . . . 3 . . . 7 . . .

/

bonang barung



bonang panerus



saron barung

7 . . . 3 . . . 7 . . . 7

eriu II

A

saron barung (all unison - allow to ring out/don't damp between notes - ie. 7 3 5 7 6 line x 3 times)

```
7   .   .   .   3   .   .   .   5   .   .   .   7   .   .   .
/
6   .   .   .

//

7   .   .   .   3   .   .   .   5   .   .   .   7   .   .   .
/6  .   .   .

//

7   .   .   .   3   .   .   .   5   .   .   .   7   .   .   .
/6  .   .   .

//----------------------------------------------------------------------------------------------------------------------
```

divided sarons (top line saron I, lower line saron II)

```
{7  .   .   .   3   .   .   .   5   .   .   .   7   .   .   .
{
{1  .   .   .   .   .   .   .   .   .   .   .   1   .   .   .


{6  .   .   .
{¯¯
{27 6   .   .

//

{7  .   .   .   3   .   .   .   5   .   .   .   7   .   .   .
{
{7  .   .   .   3   .   .   .   5   .   .   .   4   .   .   .

{6  .   .   .
{¯¯
{27 6   .   .

//

{1  .   .   .   .   .   .   .   1   .   .   .   .   .   .   .
 ¯¯¯                            ¯¯ ¯¯
{2 7 6  .   2   .   .   .   .   2 7 6   2   6   .   .   .   .
```

B

//

saron barung (all unison)

2 7 6 1 2 6 5 . 7 . 3 . 4 .

demung

2 . 7 . 6 . 1 . 2 . . .

slenthem

. . . . . 6 . . . 5 . .

//----------

saron barung (all unison)

2 7 6 1 2 6 5 . 7 . 3 . 4 . . . . .

demung

6 . 5 . 7 . 3 . 4 . . . . . .

slenthem

. 4 . . . 3 . . . 2 . . . 6 . .

kenong

. 2

C

//

bonang panerus

. .767.767 .7677767 .767.767.7677767.767.767 .767

bonang barung

. 1 . 1 i . . 1 i 1 . 1

saron barung (all unison)

2 7 6 1 2 6 5 . 7 . 3 . 4 .

demung

2 . 7 . 6 . 1 . 2 . . .

slenthem

. 5 . . . 4 . . . 3 . .

kenong

. . . . 3 . .

kempul

. 5 . . . .

D

//

bonang panerus

7767 .767.767.767.7677767.767

bonang barung

i . . 1 i 1 . 1 . 1

saron barung (all unison)

2 7 6 1 2 6 5 . 7 . 3 . 4 .

demung

6 . 5 . 7 . 3 . 4 . . .

slenthem

. 2 . . . 1 . . . . . .

(allow sound to decay naturally at the end - allow the 'wash' of harmonies/sonorities time to decay)

A eriu III

saron demung

2 . 7 . 6 . 1 . 2 . . .
//
6 . 5 . 7 . 3 . 4 . . . . . .

slenthem

. . . . 7 . . . 6 . . .
//
1 . . . 2 . . . 6 . . . 5 . . .

//----------

saron barung

. . . 1 . 2 . 3 . . . 7
//
. . . 6 . . . 5

saron demung

2 . 7 . 6 . 1 . 2 . . .
//
6 . 5 . 7 . 3 .

slenthem

7 . . . 3 . . . 4 . . .
//
1 . . . 2 . . .

//**B**

saron barung

. . . 1 . 2 . 3 . . . 7

//

. . . 6 . . . 5

saron demung

2 . 7 . 6 . 1 . 2 . . .

//

6 . 5 . 7 . 3 .

slenthem

. . . . 7 . . . 6 . . .

//

1 . . . 2 . . . 6 . . . 5

kempul

. 6 . . . 5 . . . . . .

//

. 5 . . .

C //bonang panerus

3̤2̤1̤.2̤.....2̤.. . . . . . 4̤..6 3̤2̤1̤.2̤.7̤.

//

.....2̤....6̤.

bonang barung

...7̤.....7̤7̤...6̤. ..5̤6̤ ...7̤7̤...2̤2̤.. .6̤7̤.....7̤....

//

.7̤7̤...6̤...5̤6̤...7̤ 7̤...2̤2̤...6̤7̤.....

saron barung

. . . 1 . 2 . 3 . . . 7

//

. . . 6 . . . 5

saron demung

2 . 7 . 6 . 1 . 2 . . .

//

6 . 5 . 7 . 3 .

slenthem

7 . . . 3 . . . 4 . . .

//

1 . . . 2 .

kempul

. . . . 6 . .

//

. 5 . . . .

gong ageng

. ( )

D //bonang panerus

3 2 1 . 2 . . . . . 2 . . . . 4 . . 6 3 2 1 . 2 . 7 .

//

. . . . . 2 . . . . 6 .

bonang barung

. . . 7 . . . . . 7 7 . . . 6 . . . . 5 6 . . . 7 7 . . . 2 2 . . . 6 7 . . . . 7 . . . .

//

. 7 7 . . . 6 . . . 5 6 . . . 7 7 . . . 2 2 . .

saron barung

. . . 1 . 2 . 3 . . . 7

//

. . . 6 . . . 5

saron demung

2 . 7 . 6 . 1 . 2 . . .

//

6 . 5 . 7 . 3 .

slenthem

7 . . . 3 . . . 4 . . .

//

1 . . . 2 . . .

kempul

. . . . . 6 . .

/

. 5 . . . .

gong

. (ageng) . . . . . .

/

. . . . . (suwukan).

turn

for large orchestra ensemble & vocalist

Linda Buckley

August 2009

composed for

Dresdner Sinfoniker & Ex Novo Ensemble

with Ikram Uddin Akram, speaker (video)

a commission by

Hellerau - Europäisches Zentrum der Künste Dresden

Commissioned by Hellerau - European Centre for the Arts, Dresden
In collaboration with Hellerau - European Centre for the Arts, Dresdner Sinfoniker and Ex Novo Musica.

turn

Duration: 12.40

Score in C

Instrumentation

Vocalist (pre-recorded video)

Ensemble:
Flute
Clarinet in Bflat
Violin
Cello
Piano

Orchestra:
Piccolo
2 Flutes
2 Oboes
2 Clarinets in Bflat
2 Bassoons

4 Horns in F
3 Trumpets in Bflat
3 Trombones (3rd Bass Trombone)
Tuba

Percussion (1 player):
Vibraphone (bowed, possibly with cello bow)

Harp

Piano

Violin I
Violin II
Viola
Cello
Double Bass

turn

turn was partly inspired by the poetry of the 13th century Persian poet Rumi, the term 'turn' signifying many things - the 'turn', the moving meditation done by the 'whirling' dervishes (which originated with Rumi), the earth turning on its axis, musical tunes and 'turns' particularly associated with Irish traditional music.

Rumi (translated by Coleman Barks):

Inside water, a waterwheel turns,
A star circulates with the moon.

We live in the night ocean wondering,
What are these lights?

A secret turning in us
makes the universe turn.
Head unaware of feet,
and feet head. Neither cares.
They keep turning.

Walk to the well.
Turn as the earth and the moon turn,
circling what they love.
Whatever circles comes from the centre.

Some nights stay up till dawn,
as the moon sometimes does for the sun.
Be a full bucket pulled up the dark way
of a well, then lifted out into light.

Dance, when you're broken open.
Dance, if you've torn the bandage off.
Dance in the middle of the fighting.
Dance in your blood.
Dance, when you're perfectly free.

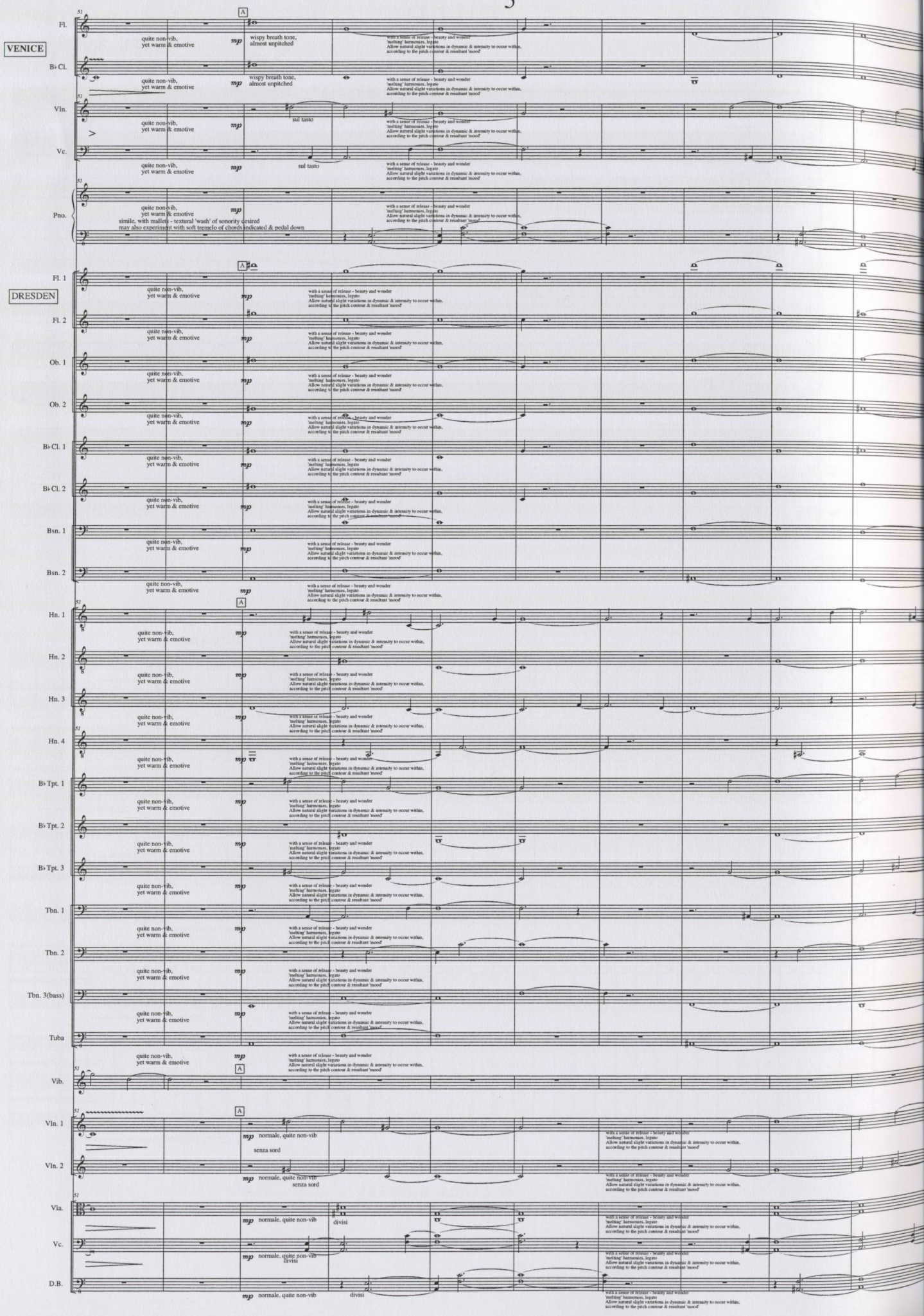
Score in C

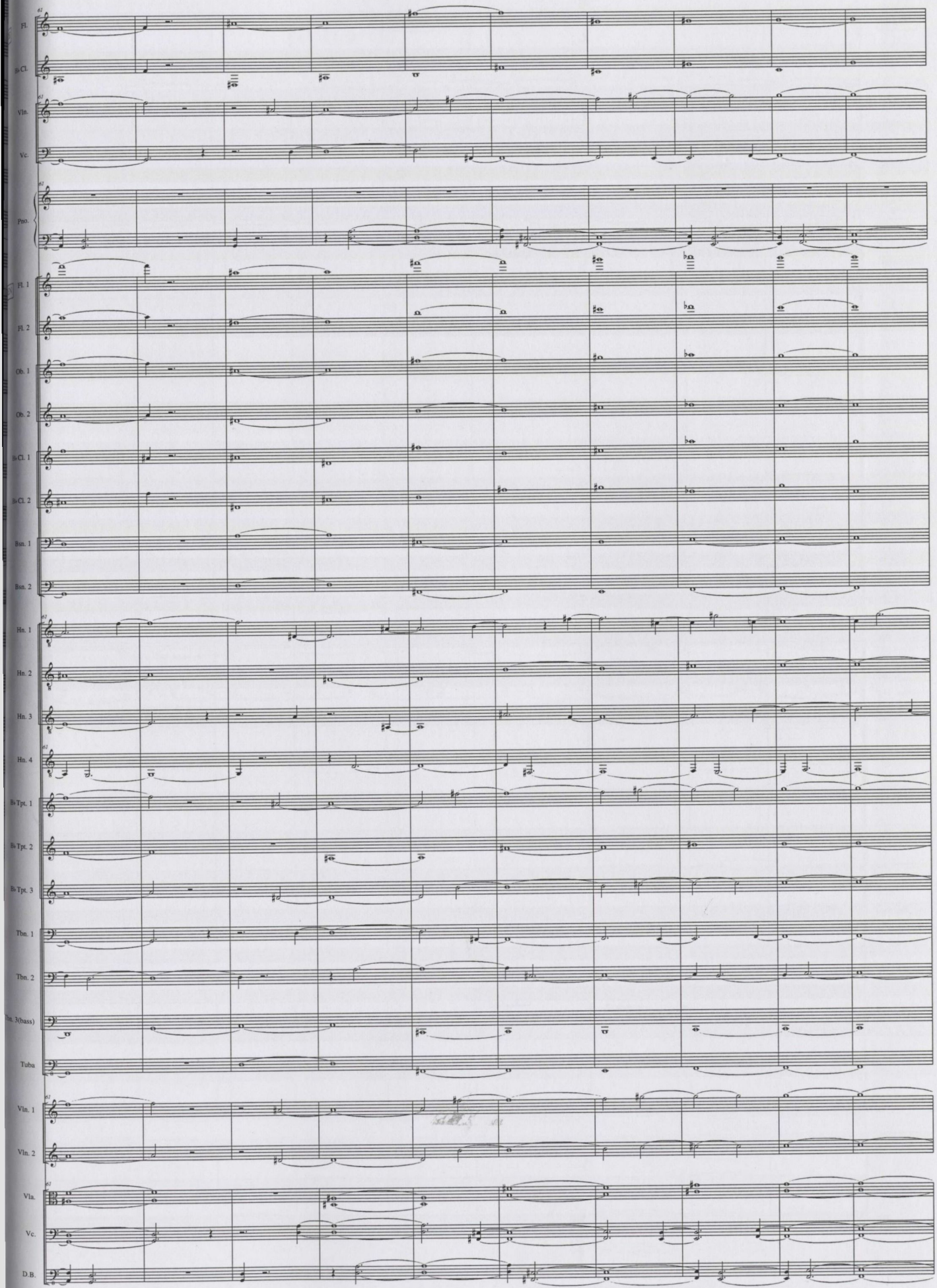
turn

Linda Buckley
August 2009



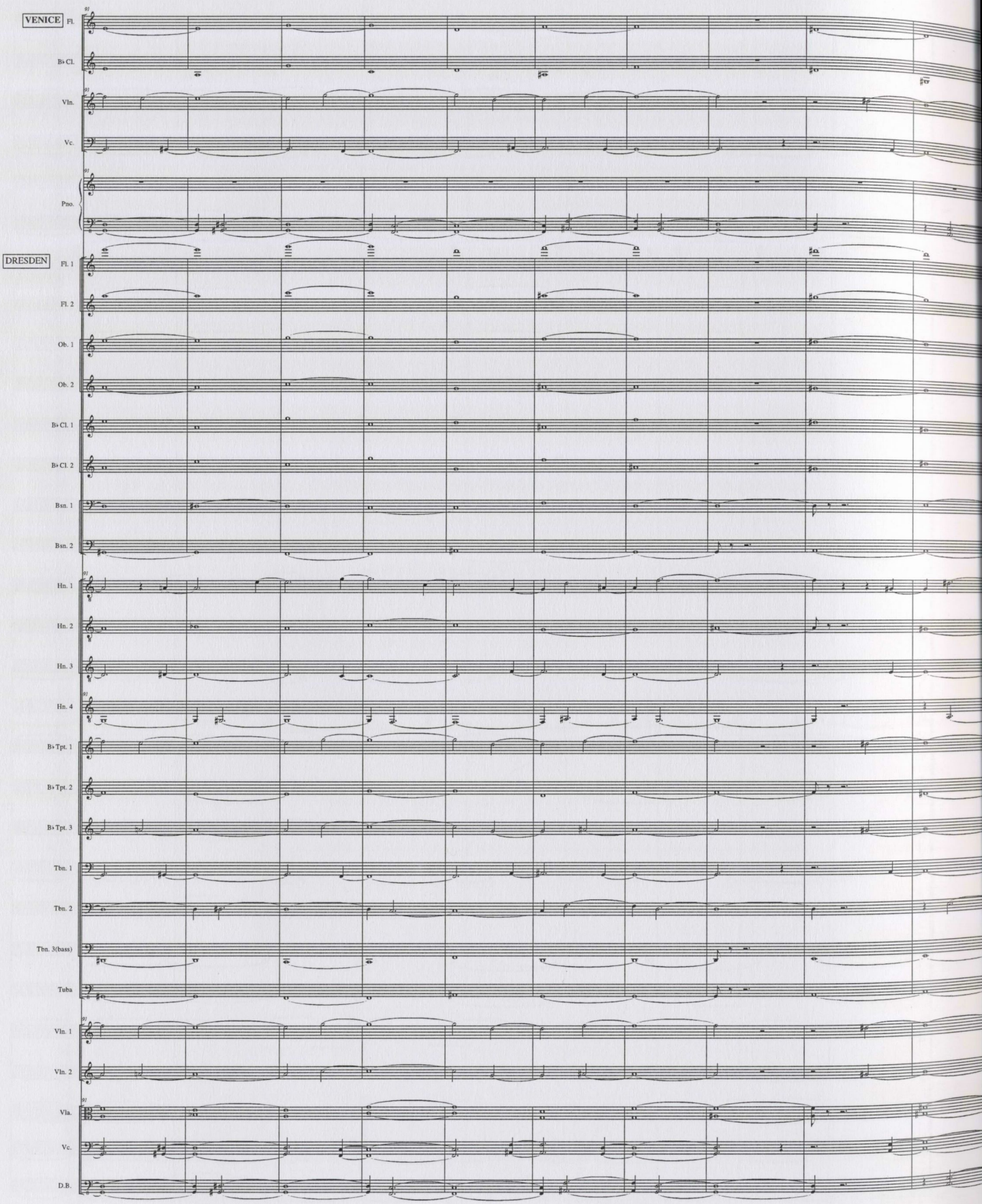
© Linda Buckley
August 2009


VENICE
DRESDEN
Fl.
B♭ Cl.
Vln.
Vc.
Pno.
Fl. 1
Fl. 2
Ob. 1
Ob. 2
B♭ Cl. 1
B♭ Cl. 2
Bsn. 1
Bsn. 2
Hn. 1
Hn. 2
Hn. 3
Hn. 4
B♭ Tpt. 1
B♭ Tpt. 2
B♭ Tpt. 3
Tbn. 1
Tbn. 2
Tbn. 3(bass)
Tuba
Vib.
Vln. 1
Vln. 2
Vla.
Vc.
D.B.
quite non-vib, yet warm & emotive
mp
wispy breath tone, almost unpitched
sul tasto
normale, quite non-vib
senza sord
divisi
with a sense of release - beauty and wonder
'melting' harmonies, legato
Allow natural slight variations in dynamic & intensity to occur within, according to the pitch contour & resultant 'mood'
simile, with mallets - textural 'wash' of sonority desired
may also experiment with soft tremelo of chords indicated & pedal down


61
Fl.
B♭Cl.
Vln.
Vc.
Pno.
Fl. 1
Fl. 2
Ob. 1
Ob. 2
B♭Cl. 1
B♭Cl. 2
Bsn. 1
Bsn. 2
Hn. 1
Hn. 2
Hn. 3
Hn. 4
B♭Tpt. 1
B♭Tpt. 2
B♭Tpt. 3
Tbn. 1
Tbn. 2
Tbn. 3(bass)
Tuba
Vln. 1
Vln. 2
Vla.
Vc.
D.B.


VENICE
Fl.
B♭ Cl.
Vln.
Vc.
Pno.
DRESDEN
Fl. 1
Fl. 2
Ob. 1
Ob. 2
B♭ Cl. 1
B♭ Cl. 2
Bsn. 1
Bsn. 2
Hn. 1
Hn. 2
Hn. 3
Hn. 4
B♭ Tpt. 1
B♭ Tpt. 2
B♭ Tpt. 3
Tbn. 1
Tbn. 2
Tbn. 3(bass)
Tuba
Hp.
mp
mysterious, L.V.
Vln. 1
Vln. 2
Vla.
Vc.
D.B.

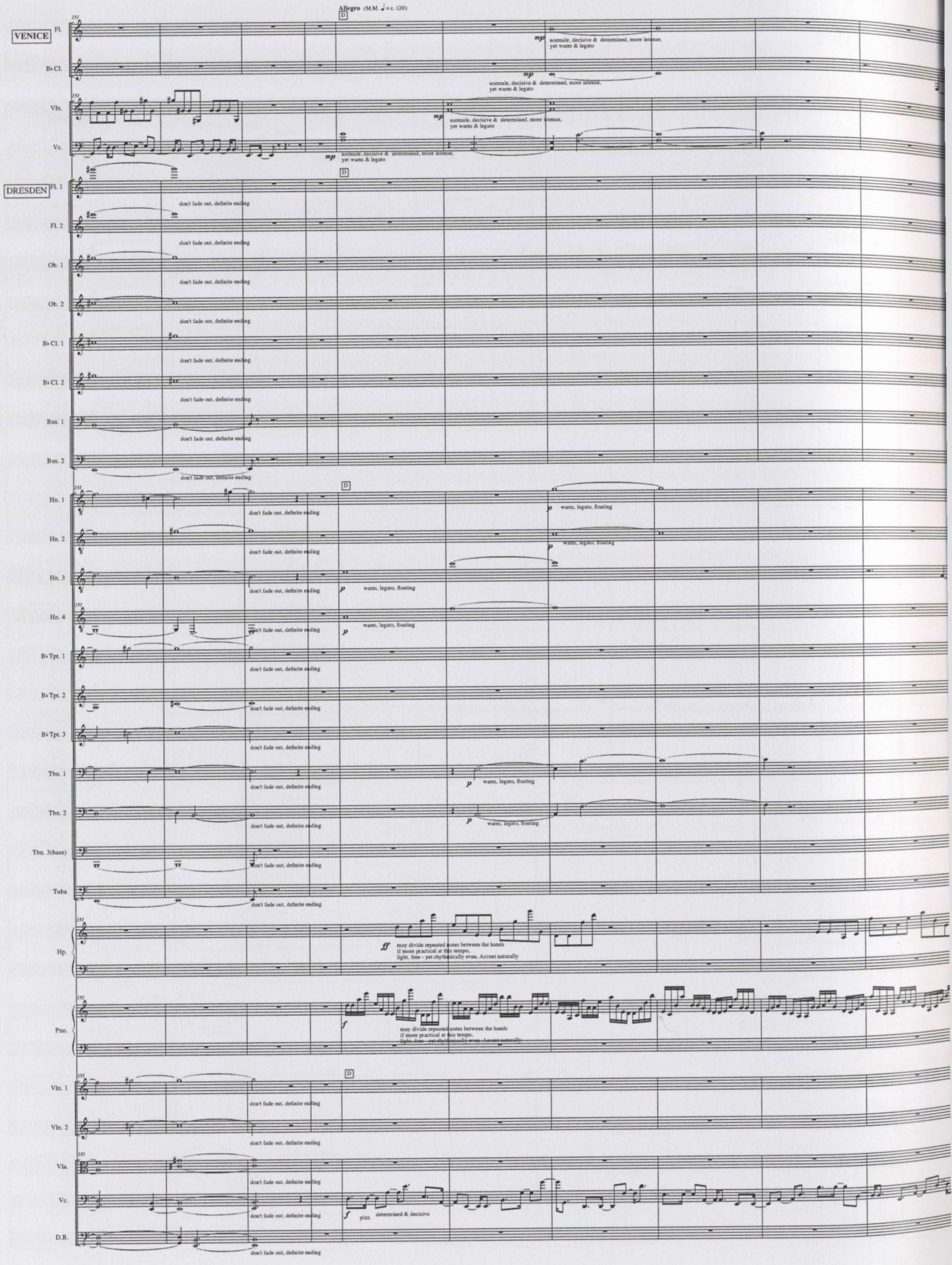

Fl.
B♭Cl.
Vln.
Vc.
Pno.
Fl. 1
Fl. 2
Ob. 1
Ob. 2
B♭Cl. 1
B♭Cl. 2
Bsn. 1
Bsn. 2
Hn. 1
Hn. 2
Hn. 3
Hn. 4
B♭Tpt. 1
B♭Tpt. 2
B♭Tpt. 3
Tbn. 1
Tbn. 2
Tbn. 3(bass)
Tuba
Vln. 1
Vln. 2
Vla.
Vc.
D.B.


VENICE
Fl.
B♭Cl.
Vln.
Vc.
Pno.
DRESDEN
Fl. 1
Fl. 2
Ob. 1
Ob. 2
B♭Cl. 1
B♭Cl. 2
Bsn. 1
Bsn. 2
Hn. 1
Hn. 2
Hn. 3
Hn. 4
B♭Tpt. 1
B♭Tpt. 2
B♭Tpt. 3
Tbn. 1
Tbn. 2
Tbn. 3(bass)
Tuba
Vln. 1
Vln. 2
Vla.
Vc.
D.B.

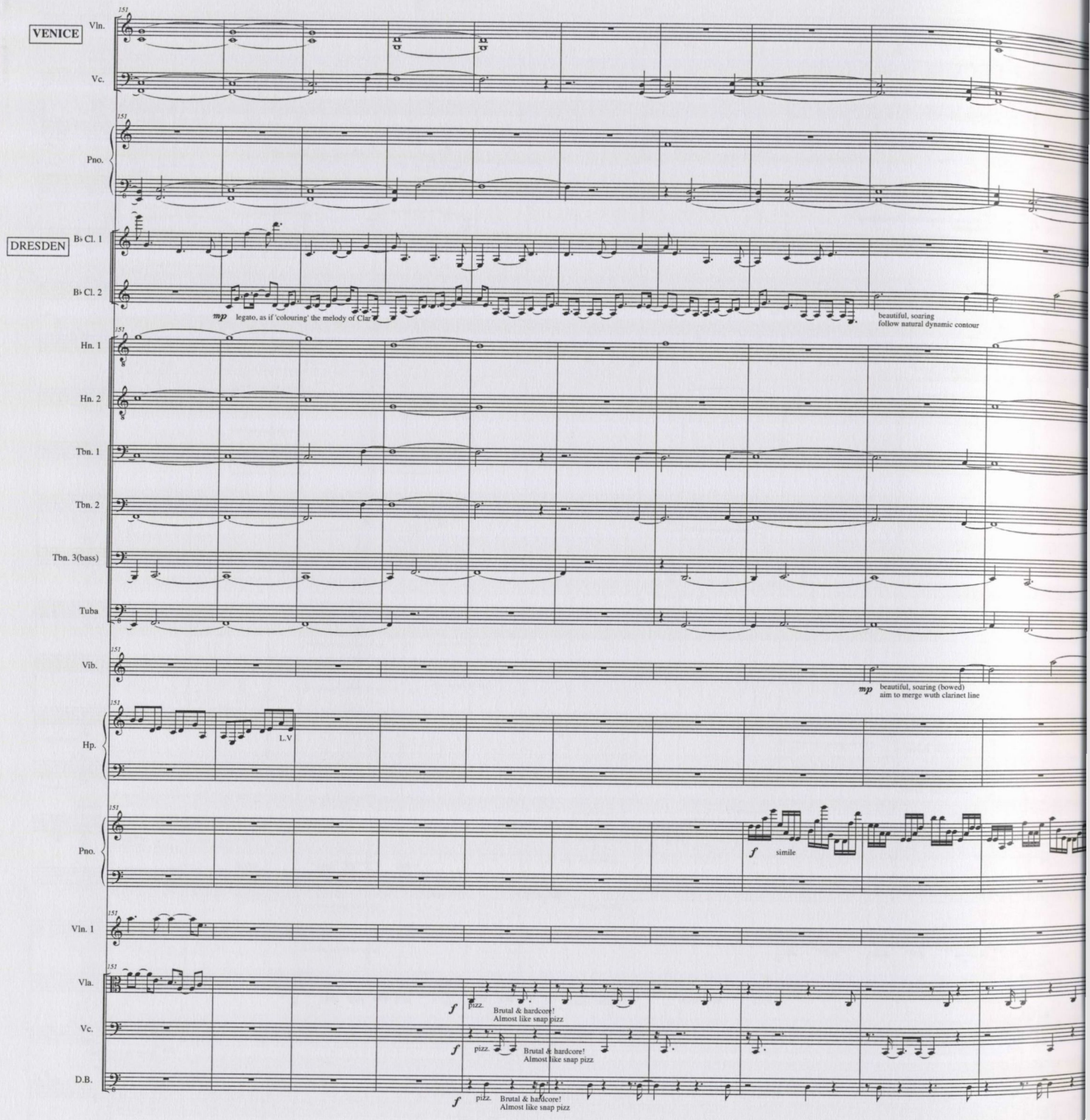

C
Fl.
B♭ Cl.
Vln.
Vc.
Pno.
Fl. 1
Fl. 2
Ob. 1
Ob. 2
B♭ Cl. 1
B♭ Cl. 2
Bsn. 1
Bsn. 2
Hn. 1
Hn. 2
Hn. 3
Hn. 4
B♭ Tpt. 1
B♭ Tpt. 2
B♭ Tpt. 3
Tbn. 1
Tbn. 2
Tbn. 3(bass)
Tuba
Vln. 1
Vln. 2
Vla.
Vc.
D.B.


VENICE
Fl.
B♭ Cl.
Vln.
Vc.
Pno.
DRESDEN
Fl. 1
Fl. 2
Ob. 1
Ob. 2
B♭ Cl. 1
B♭ Cl. 2
Bsn. 1
Bsn. 2
Hn. 1
Hn. 2
Hn. 3
Hn. 4
B♭ Tpt. 1
B♭ Tpt. 2
B♭ Tpt. 3
Tbn. 1
Tbn. 2
Tbn. 3(bass)
Tuba
Hp.
Vln. 1
Vln. 2
Vla.
Vc.
D.B.
f
calmly, evenly
L.V.
legato


Fl.
B♭Cl.
Vln.
Vc.
calmly, evenly
calmly, evenly
simile
simile
Pno.
normale
calmly, evenly
Fl. 1
Fl. 2
Ob. 1
Ob. 2
B♭Cl. 1
B♭Cl. 2
Bsn. 1
Bsn. 2
Hn. 1
Hn. 2
Hn. 3
Hn. 4
B♭Tpt. 1
B♭Tpt. 2
B♭Tpt. 3
Tbn. 1
Tbn. 2
Tbn. 3(bass)
Tuba
Hp.
f
calmly, evenly
L.V.
legato
Vln. 1
Vln. 2
Vla.
Vc.
D.B.

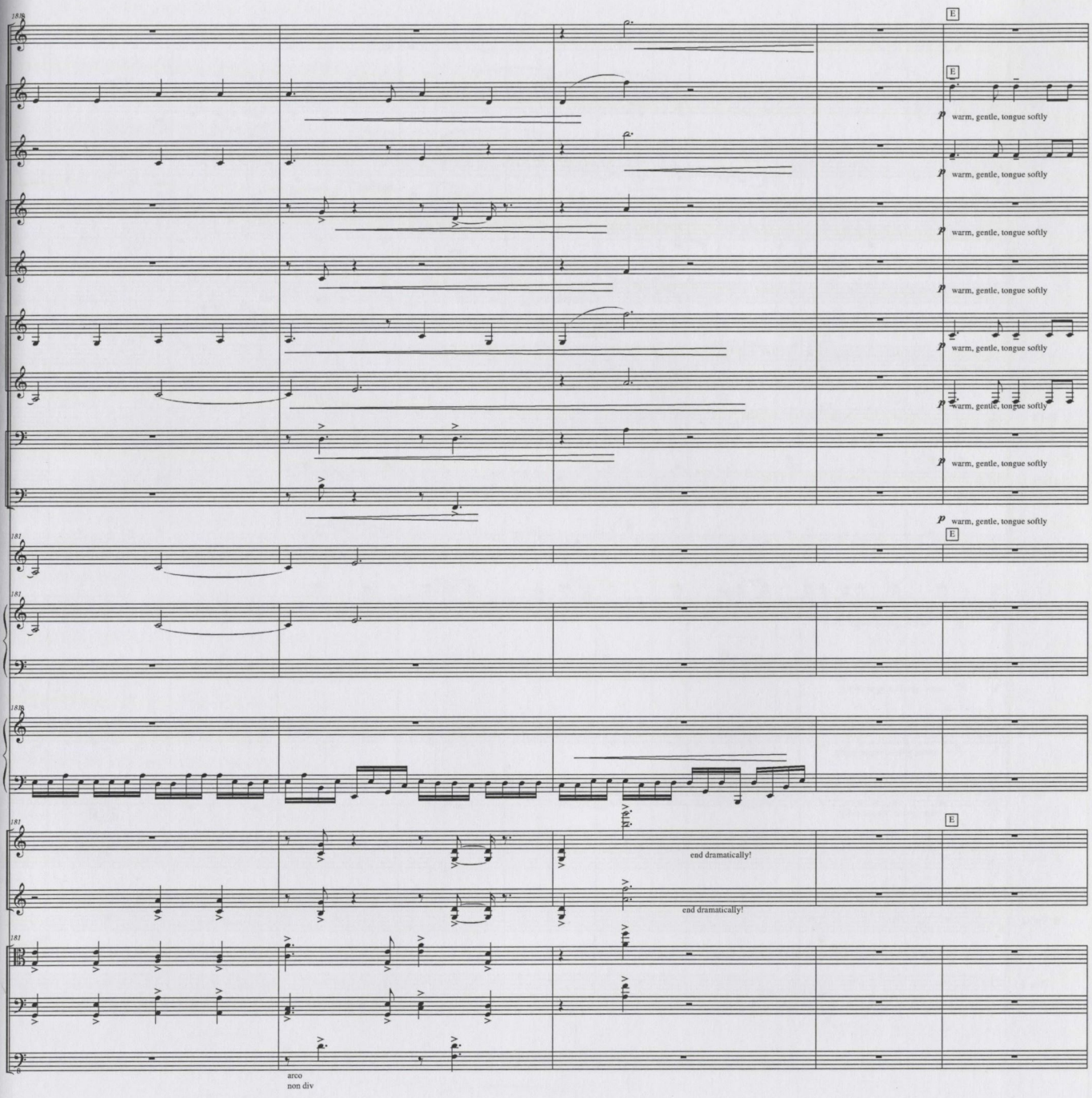

Allegro (M.M. ♩= c. 120)
VENICE
DRESDEN
Fl.
B♭ Cl.
Vln.
Vc.
Fl. 1
Fl. 2
Ob. 1
Ob. 2
B♭ Cl. 1
B♭ Cl. 2
Bsn. 1
Bsn. 2
Hn. 1
Hn. 2
Hn. 3
Hn. 4
B♭ Tpt. 1
B♭ Tpt. 2
B♭ Tpt. 3
Tbn. 1
Tbn. 2
Tbn. 3(bass)
Tuba
Hp.
Pno.
Vln. 1
Vln. 2
Vla.
Vc.
D.B.
mp normale, decisive & determined, more intense, yet warm & legato
don't fade out, definite ending
p warm, legato, floating
ff may divide repeated notes between the hands if more practical at this tempo, light, free - yet rhythmically even. Accent naturally
f pizz. determined & decisive

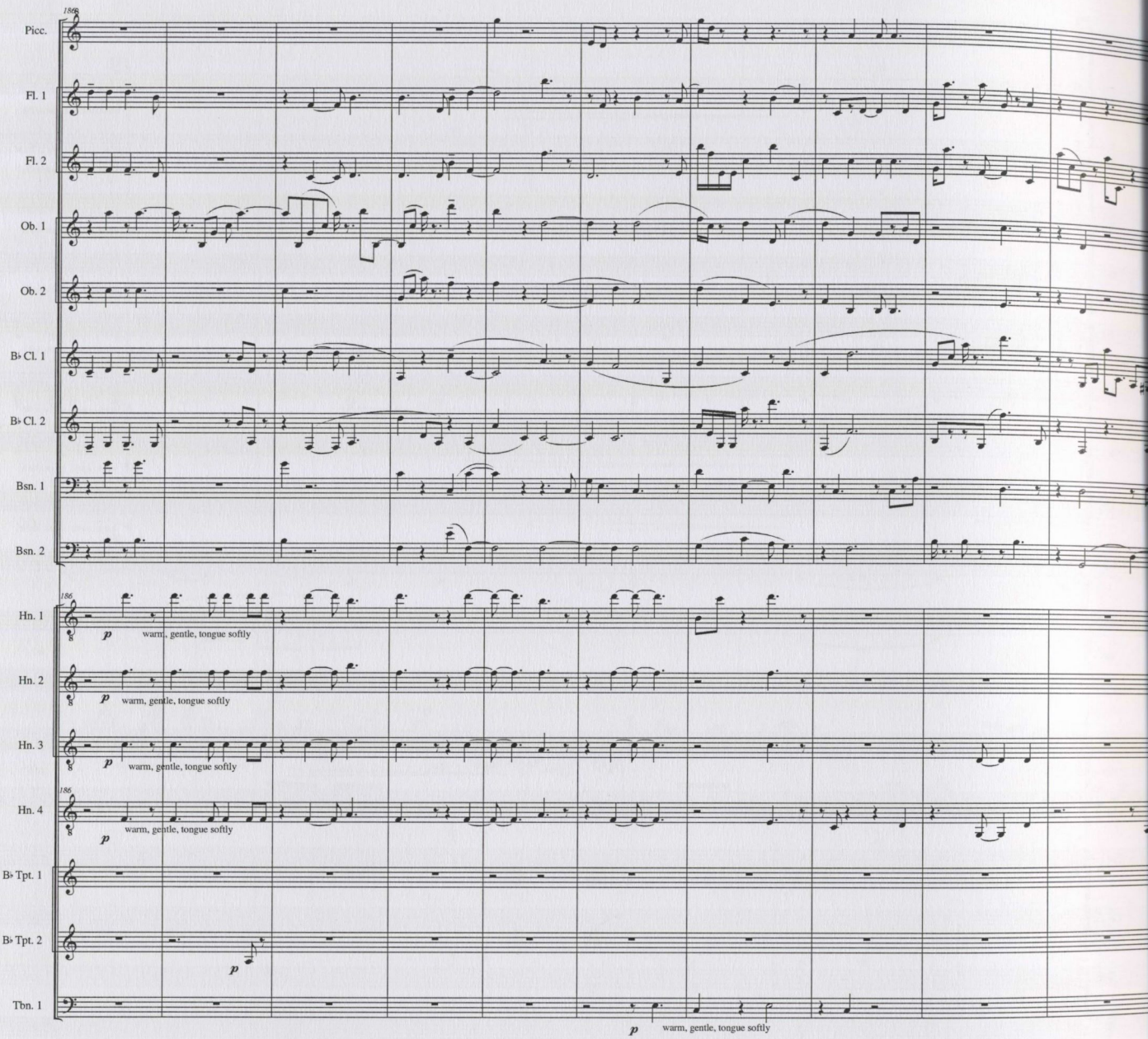

141
B♭ Cl.
Vln.
Vc.
Pno.
mp
normale, decisive & determined, more like pedal
yet warm & legato
Fl. 1
mf
legato, yet determined
B♭ Cl. 1
mf
legato, yet determined
tongued, yet smooth
allow dynamic to naturally follow melodic contour
Hn. 1
Hn. 2
Hn. 3
Hn. 4
Tbn. 1
Tbn. 2
B.3(bass)
p
warm, legato, floating
Tuba
p
warm, legato, floating
Hp.
Pno.
Vln. 1
f
pizz.
determined & decisive
Vla.
f
pizz.
determined & decisive
Vc.

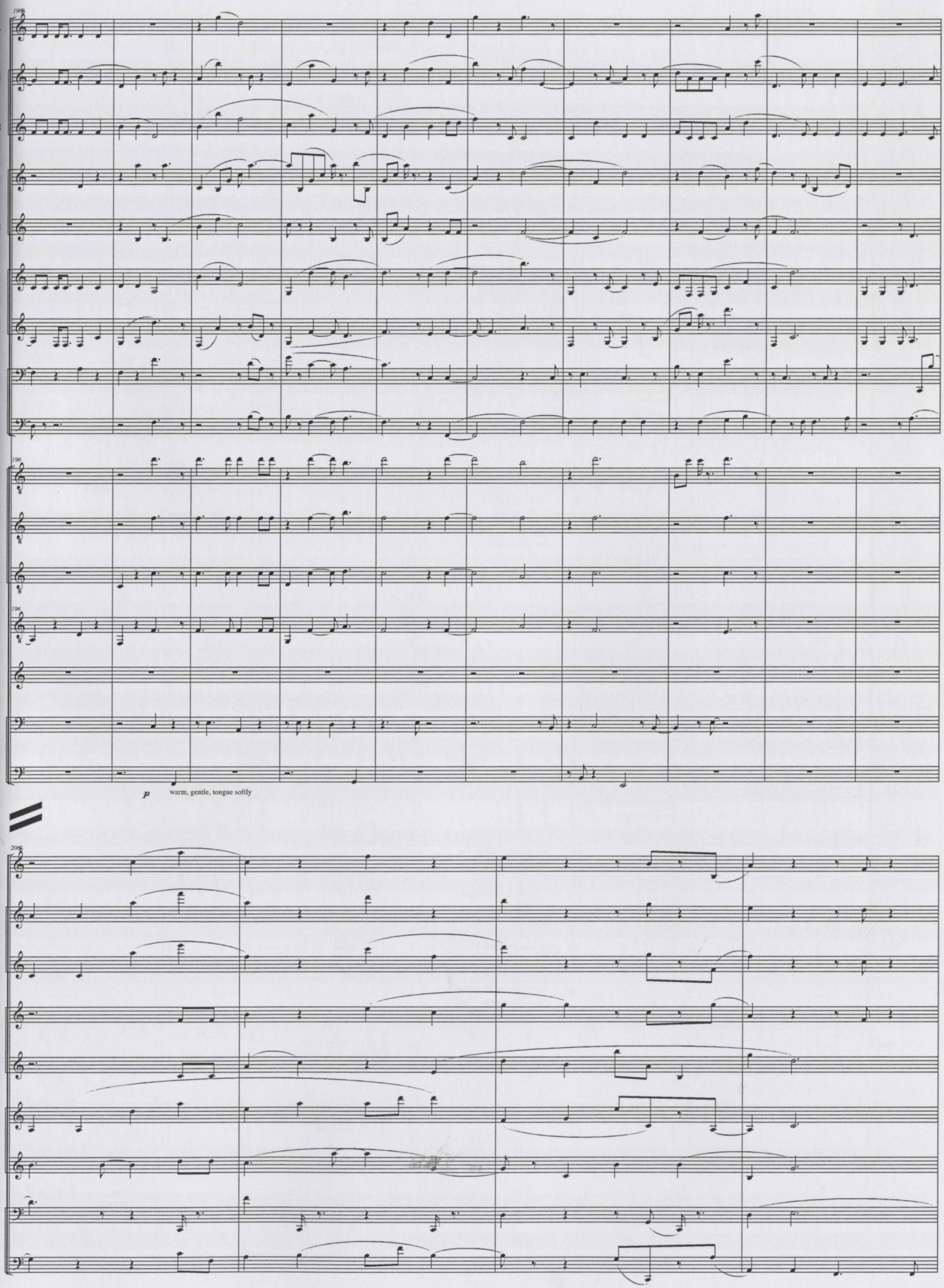

VENICE
Vln.
Vc.
151
Pno.
DRESDEN
B♭ Cl. 1
B♭ Cl. 2
mp legato, as if 'colouring' the melody of Clar
beautiful, soaring
follow natural dynamic contour
Hn. 1
Hn. 2
Tbn. 1
Tbn. 2
Tbn. 3(bass)
Tuba
Vib.
mp beautiful, soaring (bowed)
aim to merge wuth clarinet line
Hp.
L.V
Pno.
f simile
Vln. 1
Vla.
Vc.
D.B.
f pizz. Brutal & hardcore!
Almost like snap pizz

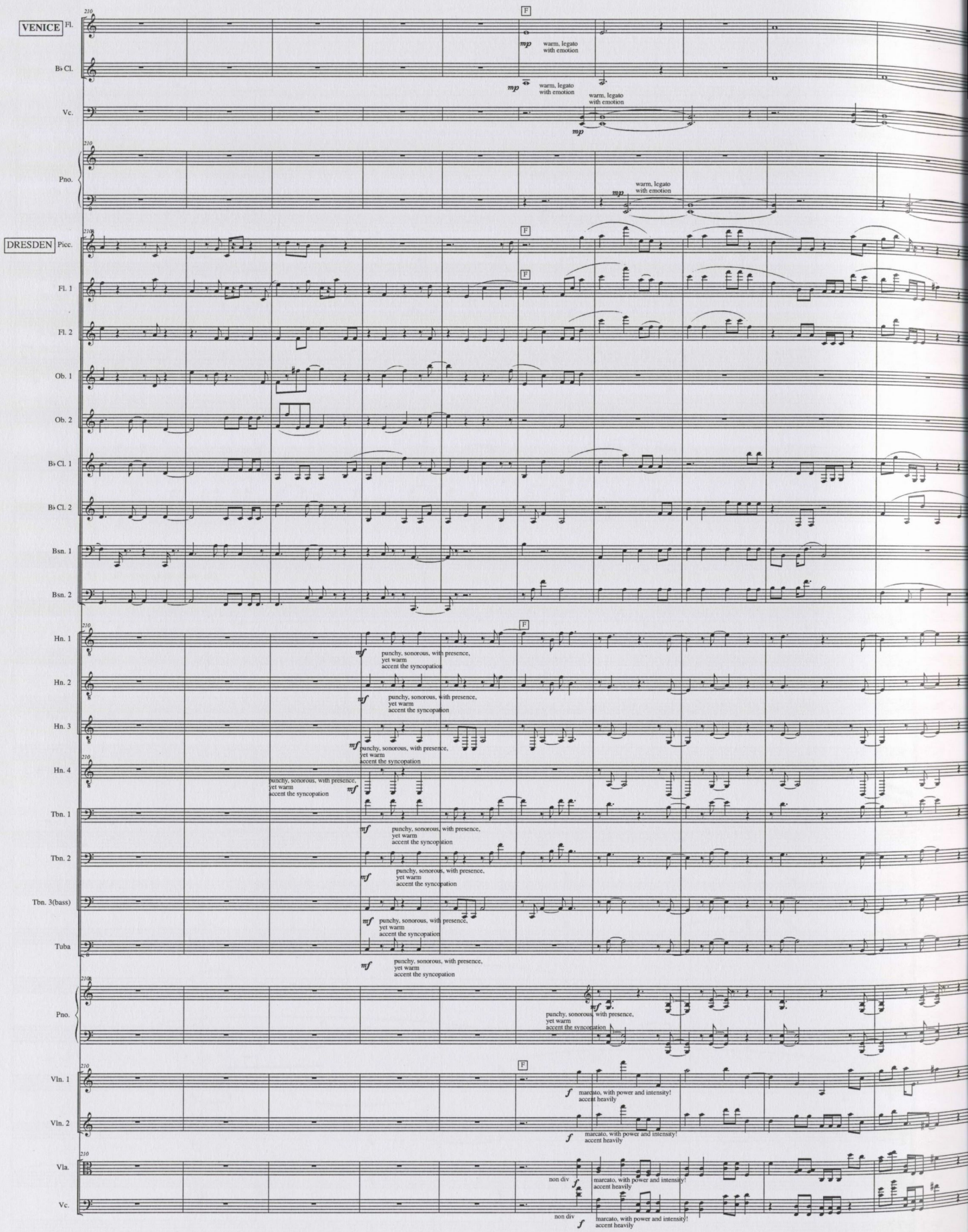

161
Vc.
Cl. 2
Vib.
Hp.
f
determined & decisive
Vln. 1
Vln. 2
Vla.
Vc.
D.B.
arco
non div
with intensity!
hold for full value


DRESDEN
Picc.
Fl. 1
Fl. 2
Ob. 1
Ob. 2
B♭ Cl. 1
B♭ Cl. 2
Bsn. 1
Bsn. 2
Vib.
Hp.
Pno.
Vln. 1
Vln. 2
Vla.
Vc.
D.B.
171
178
even, determined - detached
legato, as if 'colouring' the melody of Clar II
L.V
floating, shimmering waves of sound
without feeling of accent or downbeat
more gentle, sul tasto
normale, raw & visceral

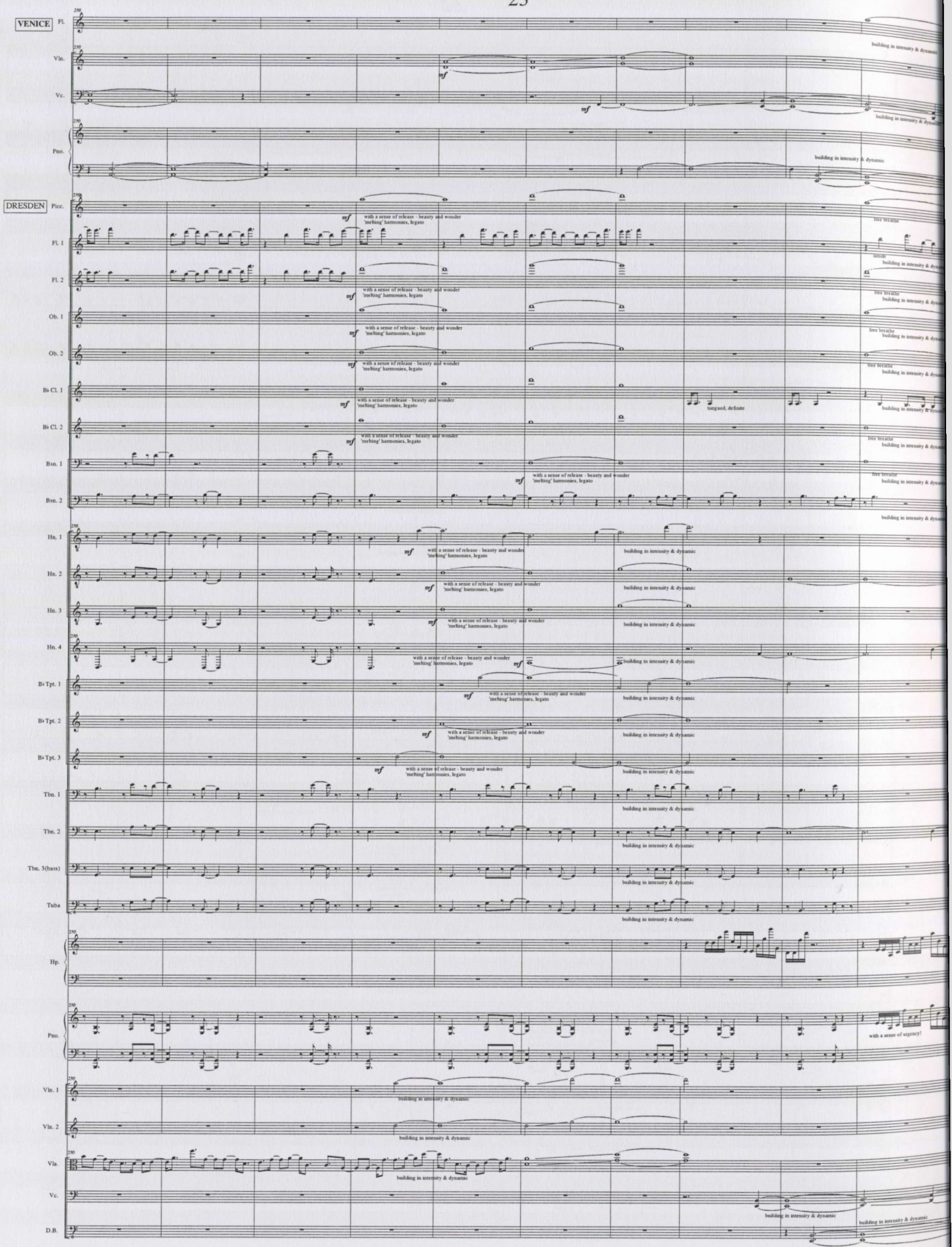

Acc.
Fl. 1
Fl. 2
Ob. 1
Ob. 2
Cl. 1
Cl. 2
Bsn. 1
Bsn. 2
Vib.
Hp.
Pno.
Vln. 1
Vln. 2
Vla.
Vc.
D.B.
E
p warm, gentle, tongue softly
end dramatically!
arco
non div

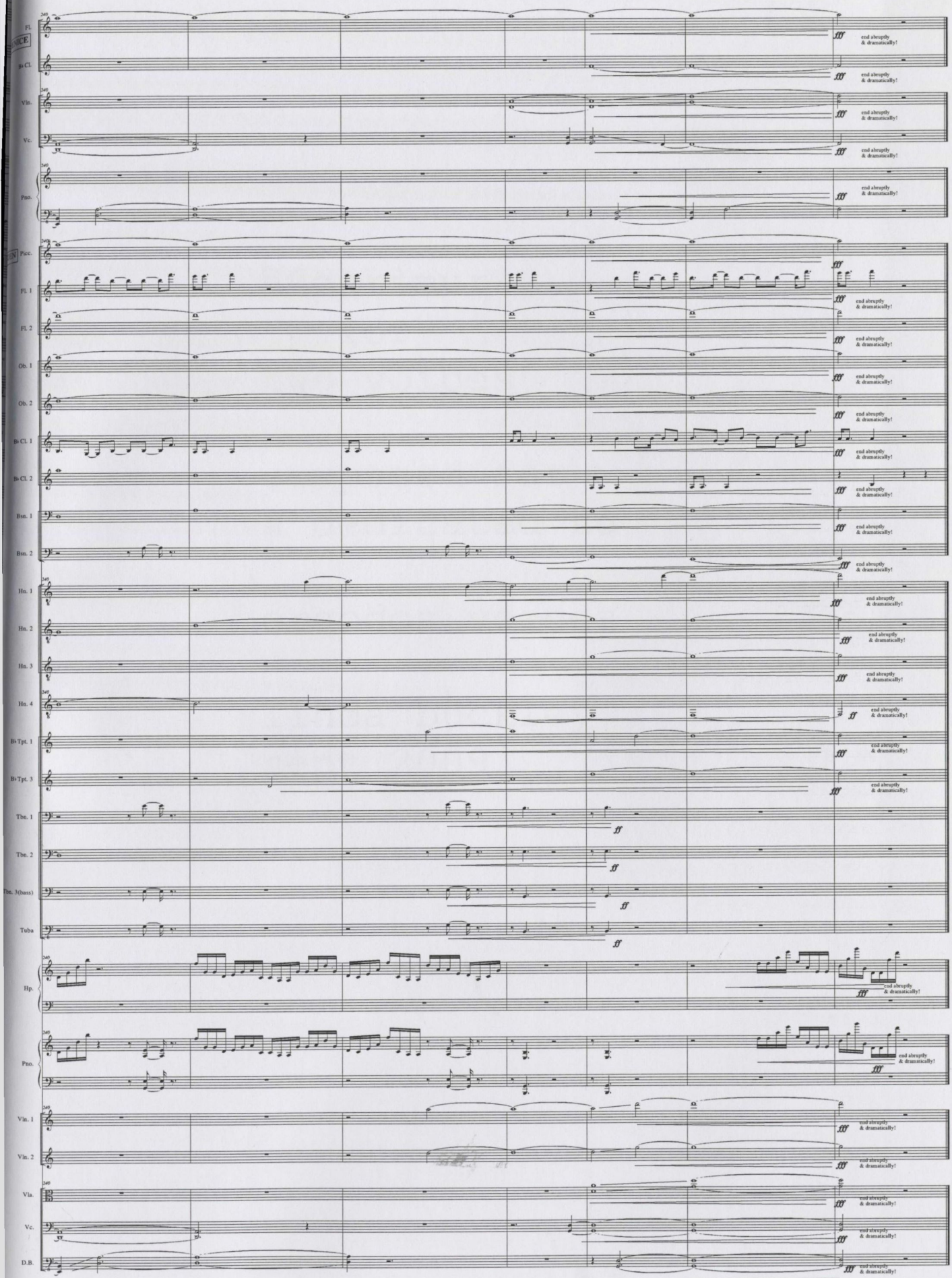

186
Picc.
Fl. 1
Fl. 2
Ob. 1
Ob. 2
B♭ Cl. 1
B♭ Cl. 2
Bsn. 1
Bsn. 2
186
Hn. 1
p
warm, gentle, tongue softly
Hn. 2
p
warm, gentle, tongue softly
Hn. 3
p
warm, gentle, tongue softly
186
Hn. 4
p
warm, gentle, tongue softly
B♭ Tpt. 1
B♭ Tpt. 2
p
Tbn. 1
p
warm, gentle, tongue softly


198
Picc.
Fl. 1
Fl. 2
Ob. 1
Ob. 2
B♭ Cl. 1
B♭ Cl. 2
Bsn. 1
Bsn. 2
196
Hn. 1
Hn. 2
Hn. 3
196
Hn. 4
B♭ Tpt. 1
Tbn. 1
Tbn. 2
p
warm, gentle, tongue softly
205
Picc.
Fl. 1
Fl. 2
Ob. 1
Ob. 2
B♭ Cl. 1
B♭ Cl. 2
Bsn. 1
Bsn. 2


VENICE
Fl.
B♭ Cl.
Vc.
Pno.
DRESDEN
Picc.
Fl. 1
Fl. 2
Ob. 1
Ob. 2
B♭ Cl. 1
B♭ Cl. 2
Bsn. 1
Bsn. 2
Hn. 1
Hn. 2
Hn. 3
Hn. 4
Tbn. 1
Tbn. 2
Tbn. 3(bass)
Tuba
Pno.
Vln. 1
Vln. 2
Vla.
Vc.
F
mp warm, legato with emotion
mf punchy, sonorous, with presence, yet warm accent the syncopation
f marcato, with power and intensity! accent heavily
non div


Fl.
B♭ Cl.
Vc.
Pno.
Picc.
Fl. 1
Fl. 2
B♭ Cl. 1
B♭ Cl. 2
Bsn. 1
Bsn. 2
Hn. 1
Hn. 2
Hn. 3
Hn. 4
Tbn. 1
Tbn. 2
Tbn. 3(bass)
Tuba
Hp.
Vln. 1
Vln. 2
Vla.
Vc.
220
G
tongued, definite
bring out natural accents of the syncopation
mf
punchy, sonorous, with presence,
yet warm
accent the syncopation
f
with a sense of urgency!
with bite, raw & visceral
emphasise syncopation


VENICE
Fl.
Vln.
Vc.
Pno.
DRESDEN
Picc.
Fl. 1
Fl. 2
Ob. 1
Ob. 2
B♭ Cl. 1
B♭ Cl. 2
Bsn. 1
Bsn. 2
Hn. 1
Hn. 2
Hn. 3
Hn. 4
B♭ Tpt. 1
B♭ Tpt. 2
B♭ Tpt. 3
Tbn. 1
Tbn. 2
Tbn. 3(bass)
Tuba
Hp.
Pno.
Vln. I
Vln. 2
Vla.
Vc.
D.B.
mf
with a sense of release - beauty and wonder
'melting' harmonies, legato
building in intensity & dynamic
free breathe
tongued, definite
with a sense of urgency!


Fl.
B♭ Cl.
Vln.
Vc.
Pno.
Picc.
Fl. 1
Fl. 2
Ob. 1
Ob. 2
B♭ Cl. 1
B♭ Cl. 2
Bsn. 1
Bsn. 2
Hn. 1
Hn. 2
Hn. 3
Hn. 4
B♭ Tpt. 1
B♭ Tpt. 3
Tbn. 1
Tbn. 2
Tbn. 3(bass)
Tuba
Hp.
Pno.
Vln. 1
Vln. 2
Vla.
Vc.
D.B.
end abruptly & dramatically!

númarimur
for
two voices

composed for
& dedicated to

ergodos voices

linda buckley
sept 2009

rimur

Buckley

rgodos Voices

tion: 12.20

nical note:

work involves vocal layering of harmonies using amplified voices.
e are recorded, and played back (unprocessed) using a delay in Max

te on the text:

text is in Icelandic, from the tradition of rimur poetry, by Sigurdur Breidfjord.

rdur Breidfjord

8 - 1846)

greatest of the Rimur poets.
learned the cooper's trade in Copenhagen, was in the Danish mercantile service and lived for some time in Greenland.
lived an unsettled life with alcohol and poetry as his two mainstays and died of starvation in Reykjavik, unjustly neglected and maligned by
unger generation of poets and intellectuals who wanted to abandon the entire rimur tradition to the dustbins of history.
was immensely popular in his day as a poet and personality, and even today, his way with words, technical wizardry, humour and humanity command respect and admiration.

marimur I

ode to the land that fostered the poet. A

nsongur where the maiden is the land itself.

marimur I

Sigurdur Breidfjord

durjord hvar madur faedist

n hún eigi flestum kaer

sem ljosid lifi glaedist

litil skopun broska nar?

eiri lond bo fengi drengir

laganna vadid sjo

gurinn bangad brengist lengi

beirra fogur aeskan bjo.

undi eg eigi minnast hinna

durjardar tinda ha

kaerra heim til kynna minna

mast hugarflugi a?

eg minnist fostra forna

jollin keiku sem bú ber

joltu binni kvold og morgna

ikur leikur muni ser.

n bina prydi ad benkja og tala

d er tidast gledin min

ogum fridu hlyrra dala

rd um skridur brjostin bin.

nala hlydinn hjardar fjoldinn

im ad lidur stekkonum

r eg sid a sumarkvoldin
i vidibrekkonum.

Linda Buckley
September 2009

númarimur

medieval organum
intensity at discretion of performer
ect to the harmonic layerings
register in certain sections of the piece is deliberate! (for dark harmonies etc, these low notes can be sung quite softly, if proving difficult to reach)
tion, bars rest may be used to experiment with whispering the text softly at your own speed.
will be provided for performance with delay, so that harmonic layering can be achieved, ie. a section is performed, recorded, and played back (unprocessed)
sing over this for dense harmonic layering

♩ = 70

mp mo dur jord mo dur jord hvar ma dur

with a sense of beauty & wonder
follow natural dynamic changes within melodic contour throughout

mp mo dur jord mo dur jord hvar ma dur

with a sense of beauty & wonder
follow natural dynamic changes within melodic contour throughout

mo dur jord fae dist fae dist mún hún ei gi

mo dur jord fae fae dist mún hún ei gi

fles tum kaer bar ljo li - - fi og

fles tum kaer sem sid glae dist og

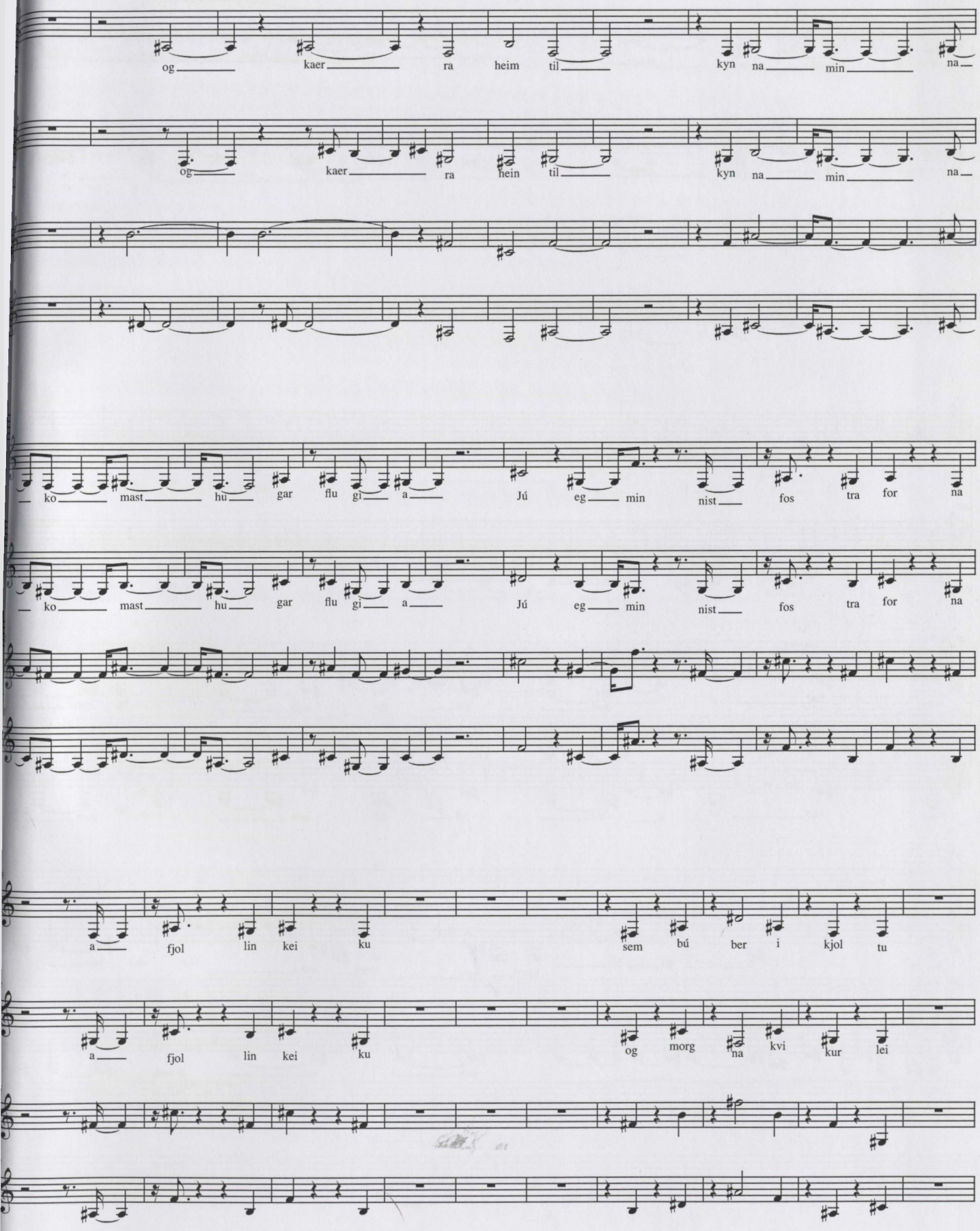
li til sko pun bro ska nar í flei ri lond

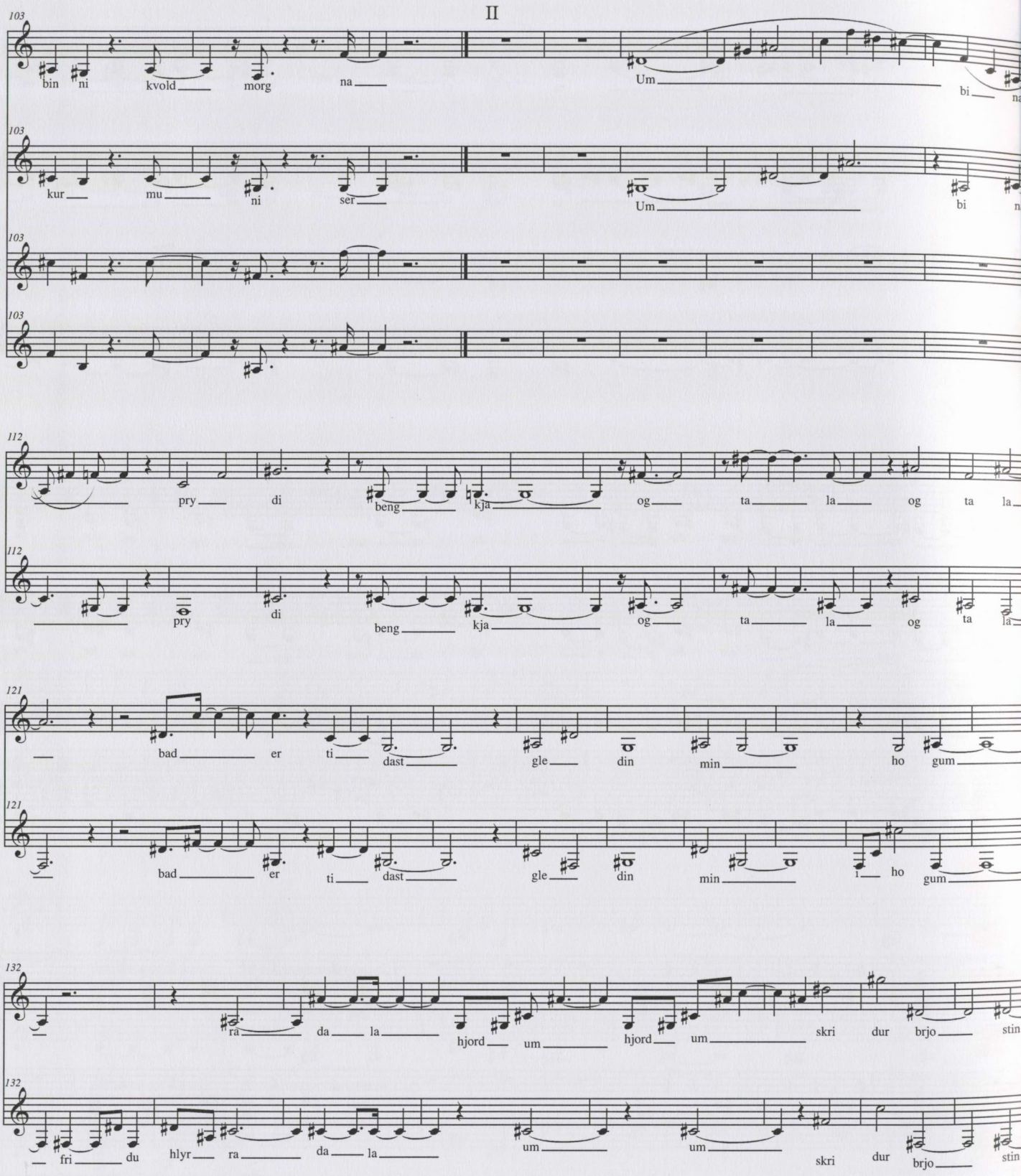
li til sko pun bro ska nar í flei ri lond

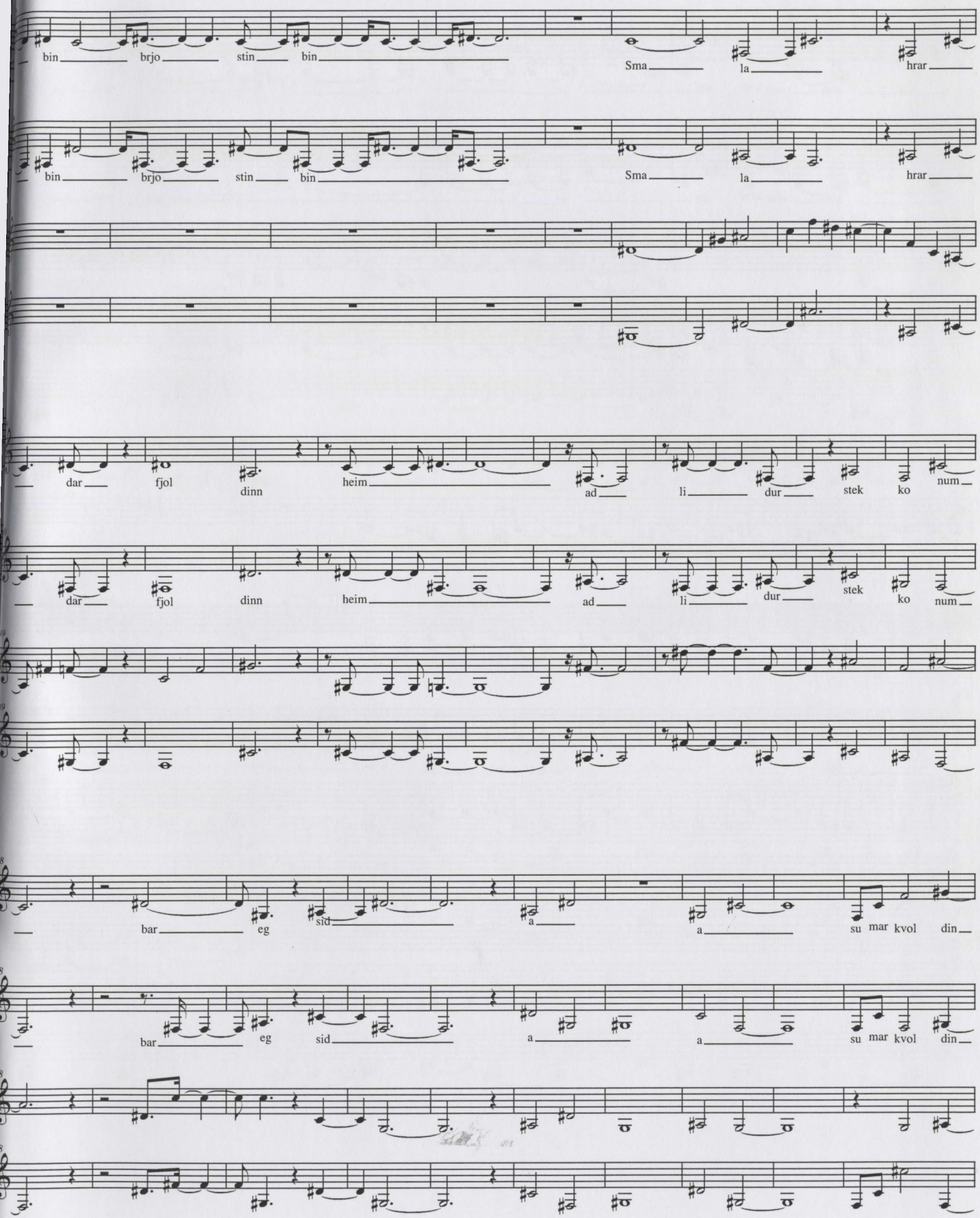
bo fen gi lond bo fen gi for la gan na

bo fen gi dren gir dren gir for la gan na

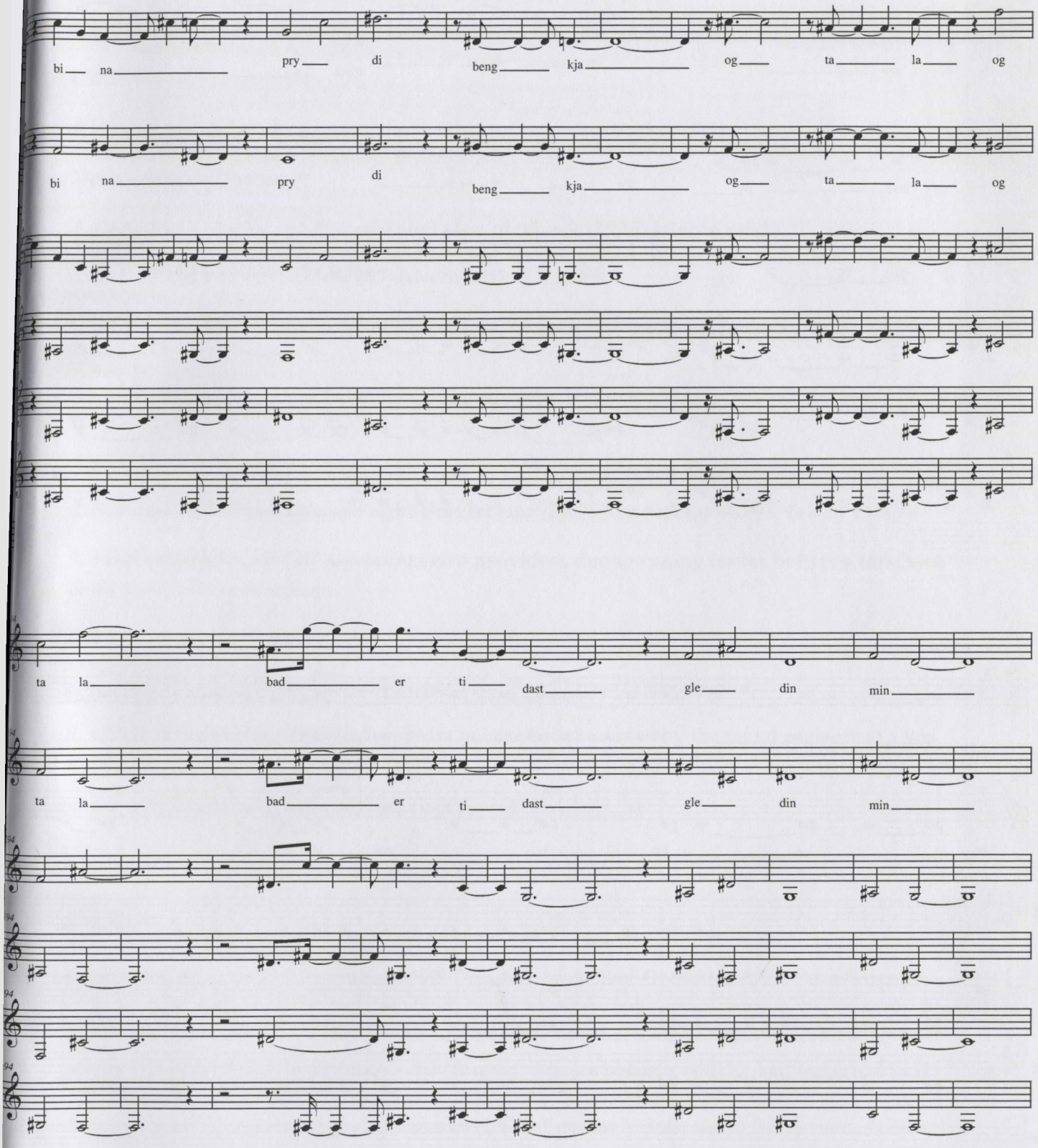

48
VI
va did hu gu rinn ban gad mun di mun
48
VII
sjo o beir ra fo gur bjo mun di mun
48
DI:VI
48
DI:VI
57
VI
di eg ei gi min nast
57
VII
di ei gi ei gi min nast
57
DI:VI
57
DI:VI
66
VI
hin na mo dur jar da tin ha
66
VII
hin na mo dur jar da tin da ha
66
DI:VI
66
DI:VI


og kaer ra heim til kyn na min na
og kaer ra hein til kyn na min na
ko mast hu gar flu gi a Jú eg min nist fos tra for na
ko mast hu gar flu gi a Jú eg min nist fos tra for na
a fjol lin kei ku sem bú ber i kjol tu
a fjol lin kei ku og morg na kvi kur lei


II
103
VI
bin ni kvold morg na
Um bi
VII
kur mu ni ser
Um bi
DI:VI
DI:VI
112
VI
pry di beng kja og ta la og ta la
VII
pry di beng kja og ta la og ta la
121
VI
bad er ti dast gle din min ho gum
VII
bad er ti dast gle din min i ho gum
132
VI
ra da la hjord um hjord um skri dur brjo stin
VII
fri du hlyr ra da la um um skri dur brjo stin


bin brjo stin bin
Sma la hrar
bin brjo stin bin
Sma la hrar
dar fjol dinn heim ad li dur stek ko num
dar fjol dinn heim ad li dur stek ko num
bar eg sid a a su mar kvol din
bar eg sid a a su mar kvol din


168
VI
sum mar kvol din sat i vi di brek ko
168
VII
sum mar kvol din sat i brek ko
168
DI:VI
168
DI:VI
176
VI
num sat i vi di brek ko num Um
176
VII
num sat i vi di brek ko num Um
176
DI:VI
176
DI:VI
176
II:VII
176
II:VII


bi na pry di beng kja og ta la og
bi na pry di beng kja og ta la og
ta la bad er ti dast gle din min
ta la bad er ti dast gle din min


204
VI
ho gum ra da la hjord um hjord um
204
VII
i gum fri du hlyr ra da la um um
skri
204
DI:VI
204
DI:VI
204
II:VII
204
II:VII
212
VI
brjo stin bin brjo stin bin
212
VII
dur brjo stin bin brjo stin bin
212
DI:VI
212
DI:VI
212
II:VII
212
II:VII

CD Track List of Composition recordings

CD 1

***1. do you remember the planets?* for Viola and tape playback (2005)**

Viola – Karen Dervan

***2. stop what's started* for four-channel tape playback (2006) (stereo mix)**

***3. seek* for eight-channel tape (2007) (stereo mix)**

***4. latitude longitude* for String Quartet (2007) mvt I Maconchy Quartet National Gallery Dublin**

5. mvt II

6. mvt III

7.mvt IV

***8. Fall Approaches* for Choir and eight-channel tape (2007) New Dublin Voices, Trinity Chapel**

9. Midi realization of *Fall Approaches* also provided, due to tuning issues between tape and choir in this live recording

CD 2

***1. fiol* for String Trio (2008) Rothko String Trio, Hugh Lane Gallery Dublin**

***2. nikuda* for ensemble (2008) (this appears to have been recorded by the sound engineer at a low level)**

***3. eriu* I for Javanese Gamelan (2009) Own recording**

4. *eriu* II

5. *eriu* III

6. *turn* for Orchestra and Ensemble (2009) Dresdner Sinfoniker Orchestra & Ex Novo Ensemble

7. *turn* midi provided also, as the Venice ensemble are heard at a high level in the recording which obscures the orchestral detail excessively – it requires more balance, with higher orchestral level.

***8. numarimur* I for two voices and electronics (2009), Ergodos Voices, Kevin Barry room, National Concert Hall Dublin**

9. *numarimur* II