

A RADICAL RECONSIDERATION OF SERIALISM AND CHORD  
STRANDING, APPLIED TO A PERSONAL JAZZ STYLE  
(CD RECORDINGS AND EXEGESIS)

VOLUME 1: EXEGESIS

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## VOLUME 2: CD RECORDINGS

### SERIALISM CONCEPT DEVELOPMENT (CD 1)

Tr. 1.	<i>Giant Steps</i> – solo (Coltrane).....	5:35
Tr. 2.	<i>Miles' Mode</i> – solo (Coltrane/Dolph).....	9:54
Tr. 3.	<i>Brazilia</i> – solo (Coltrane).....	7:07
Tr. 4.	<i>Naima</i> (Coltrane).....	4:33
Tr. 5.	<i>T.T.T.T.</i> (Evans).....	5:12
Tr. 6.	<i>Hanging on for the Ride</i> .....	5:19
Tr. 7.	<i>4 Rainbows</i> .....	5:48
Tr. 8.	<i>Softly Does It</i> .....	5:45
Tr. 9.	<i>Block-Out</i> .....	6:09
Tr. 10	<i>Rhythm-a-Bling</i> .....	2:28
Tr. 11	<i>Kinda Kooky</i> .....	6:08
Tr. 12	<i>T.T.T.</i> .....	3:34
Tr. 13	<i>PGR</i> .....	6:16

TOTAL TIME – 73:48

Tracks 1, 2, 5, 6, 7, 12 recorded 23-24 January 2006.

Chris Martin – *piano*, Lauren Sturdy – *voice* (track 6)

Tracks 3, 4, 8, 9, 10, 11, 13 recorded 21 September 2006 (with studio audience).

Chris Martin – *piano*, Lyndon Gray – *bass*, Hugh Harvey – *drums*

Recorded and mixed at EMU Studio (Adelaide University). Silver Moon – Audio Engineer

All compositions and arrangements by Chris Martin unless otherwise noted.

**CHORD STRANDING CONCEPT DEVELOPMENT (CD 2)**

Tr. 1.	<i>Diggers – Song I (solo)</i> .....	4:56
Tr. 2.	<i>Winter Song – Song III (solo)</i> .....	4:46
Tr. 3.	<i>Silver Moon – Song IV (solo)</i> .....	4:46
Tr. 4.	<i>Diggers – Song I (trio)</i> .....	7:12
Tr. 5.	<i>Montage – Song II</i> .....	7:17
Tr. 6.	<i>Winter Song – Song III (trio)</i> .....	4:24
Tr. 7.	<i>Silver Moon – Song IV (trio)</i> .....	6:18
Tr. 8.	<i>The Bell-Ringer – Song V</i> .....	7:32
Tr. 9.	<i>You Against the World</i> .....	4:54
Tr. 10	<i>All of You (Cole Porter)</i> .....	5:28

TOTAL TIME – 57:33

Tracks 1, 2, 3, 9 recorded 23-24 January 2006.

Chris Martin – *piano*, Lauren Sturdy – *voice* (track 9)

Tracks 4, 5, 6, 7, 8, 10 recorded 21 September 2006 (with studio audience).

Chris Martin – *piano*, Lyndon Gray – *bass*, Hugh Harvey – *drums*

Recorded and mixed at EMU Studio (Adelaide University). Silver Moon – Audio Engineer

All compositions (except track 10 by Cole Porter) and arrangements by Chris Martin. Tracks 1-8 are re-compositions of Lutoslawski's *Piec Piesni (Five Songs)*.

**CHRIS MARTIN TRIO PLAY A LOVE SUPREME (CD 3)**

Tr. 1.	<i>Giant Steps</i> .....	6:09
Tr. 2.	<i>Miles' Mode</i> .....	9:53
Tr. 3.	<i>Brazilia</i> .....	9:38
	<i>A Love Supreme</i>	
Tr. 4.	<i>Acknowledgment</i> .....	6:55
Tr. 5.	<i>Resolution</i> .....	8:43
Tr. 6.	<i>Pursuance</i> .....	11:11
Tr. 7.	<i>Psalm</i> .....	6:07

TOTAL TIME – 58:36

Recorded live on 18 June 2007 at the Wheatsheaf Hotel, Adelaide. Live sound by Martin Jones, recording and mixing by David Grice.

Chris Martin – *piano*, John Aué – *bass*, Josh Baldwin – *drums*

All compositions by John Coltrane, all arrangements by Chris Martin. Cover art by Michelle Martin.

**TRIPTYCH – 1 + 1 = 1 (CD 4)**

Tr. 1.	<i>2 + 2 + 2 = 3</i> .....	8:37
	<i>Amy's Suite</i>	
Tr. 2.	<i>Stand Up</i> .....	9:09
Tr. 3.	<i>Get Rollin'</i> .....	11:39
Tr. 4.	<i>I Feel</i> .....	5:12
Tr. 5.	<i>Hanging on for the Ride</i> .....	5:52
Tr. 6.	<i>Billy's Bridge</i> .....	4:53
Tr. 7.	<i>Stranded Chord Blues</i> .....	6:22
Tr. 8.	<i>1 + 1 = 1</i> .....	6:48

TOTAL TIME – 58:32

Recorded September 25 & 26 2007 at ABC Studios Adelaide. Mixed and mastered by Peter Dowdall, Kevin Roper, and Wayne Baker November-December 2007.

Chris Martin – *piano*, Lyndon Gray – *bass*, Hugh Harvey – *drums*

All compositions by Chris Martin. Cover art by Michelle Martin.

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## ABSTRACT

Despite a widely held view that serialism is incompatible with jazz improvisation, there are many instances of jazz musicians successfully engaging with this concept. This conflict seems likely to have arisen from differing interpretations of 'serialism'; however, the question of how a jazz improviser's approach to serialism might, or perhaps should, differ from a classical composer's, has been left unasked. In addition, most attempts at the use of serialism within improvisation remain undocumented by the musicians concerned. The chord stranding techniques of Lutoslawski are less well known and less controversial than serialism. Connections between Lutoslawski's twelve-note chords and traditional twelve-note rows are obvious, as are connections between the concept of harmonic 'strands' and the jazz harmonic device of superimposition. The possibilities for use of Lutoslawski's ideas within a jazz context are interesting and worthy of consideration.

This research project involves the composition and performance of jazz pieces applying serialism and chord stranding, as well as the exploration of precedents for these ideas within the jazz tradition. The four CD recordings within this thesis present the initial development of these concepts (CDs 1 and 2); an exploration of serialism in the music of John Coltrane (CD 3); and an album of original material demonstrating the integrated application of these concepts (CD 4). The exegesis describes the broader context of this project and examines the relevant music theory concepts. It uses analysis of transcriptions to show the specific application of techniques.

The key outcomes from this research are (i) the development and (ii) the demonstration of techniques for pitch organisation based on serialism and chord stranding that are appropriate for jazz improvisation. The recordings and exegesis show the successful integration of these techniques with existing melodic and harmonic ideas familiar to jazz musicians. It is argued that the approach to jazz improvisation explored within this research represents a novel and radical reinterpretation of the traditional concept of serialism and that this approach is helpful when considering the effective use of serialism in a jazz context. From a broader perspective, this research offers a case study of an improviser grappling with the challenges of synthesis and stylistic integrity and, as such, it has the potential to inform contemporary debates concerning tradition and innovation within jazz.

## DECLARATION

This thesis contains no material that has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text of the thesis.

I give my consent to this copy of my thesis, when deposited in the University Library, being made available for photocopying and loan.

Signed:

Christopher Robert Martin

Date:

## ACKNOWLEDGMENTS

Many people have contributed to every stage of this project, and I am grateful to the wonderfully supportive performance and research community at the University of Adelaide. I extend thanks to my supervisor, Professor Graeme Koehne, and co-supervisors, Bruce Hancock and Professor Ted Nettelbeck. Their wealth of experience and diverse skills gave me great confidence in this complex journey. I also thank Professor Charles Bodman Rae for his initial encouragement to commence this research, for many fruitful discussions, and for insights into the music of Lutoslawski.

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The success of this project rested a great deal on the musicians who generously contributed their skills and personalities to the cause. John Aué, Josh Baldwin, and Lauren Sturdy brought unique and valuable contributions to this music. My gratitude goes to Lyndon Gray and Hugh Harvey, in particular, for their willingness to go along with my ideas, and for the depth of familiarity and experience they brought to the recordings. I also thank the sound engineers who worked with me in these recording sessions: Silver Moon, David Grice, Martin Jones, Kevin Roper, and Wayne Baker. Peter Dowdall's generous and tireless contribution in mixing and mastering the final recording is particularly appreciated.

Thanks also go to my sisters—Michelle for contributing her beautiful paintings for the CD covers, and Amy for providing the inspiration for *Amy's Suite*. Finally, I extend my gratitude to Tamera, my wife, for her support and patience with me and my strange musical activities. I could not have made it to the finish line without you.

# 1 INTRODUCTION

By proposing and exploring a radical approach to incorporation of serialism and chord stranding into jazz improvisation, this thesis<sup>1</sup> examines the process of identity development in jazz from a personal perspective. These terms will be examined in depth in later chapters: ‘serialism’ refers to musical organisation where a fixed order of elements is referential (this research project is restricted to ‘pitch-class serialism’ only); ‘chord stranding’ refers to twelve-note chords comprising two, three or four complementary harmonic strands. The key outcome of this research, demonstrated in the CD recordings and this exegesis, is a unique, personal and cohesive style of jazz improvisation that draws on both the jazz tradition and techniques derived from serialism and chord stranding. Further, this thesis proposes a viewpoint on serialism that gives new significance to many prior explorations in improvisation by jazz musicians. From a broad perspective, this research seeks to enrich the discussion of tradition and innovation within jazz<sup>2</sup>. This introductory section of the exegesis will briefly review the context and precedents for the research project, state the key areas for investigation, and describe how the four CDs, together with the written exegesis, will address these issues.

At its inception, jazz was already a music of synthesis, “...a music compounded of African rhythmic, formal, sonoric, and expressive elements and European rhythmic and harmonic practices.” (Schuller 1968 [1986]: 3). This European influence has also extended to the adoption of melodic and harmonic practices from classical<sup>3</sup> music by jazz musicians. Some individuals, such as Bill Evans, have famously contributed to this aspect of jazz, but in fact the lineage of classical music in jazz goes back much further—all the way to Jelly Roll Morton and Bix Beiderbecke, two musicians from the early history of jazz (Berliner 1994: 55). Many commentators have described

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<sup>1</sup> ‘Thesis’ refers to the entire submission, comprising four CDs and this written ‘exegesis’.

<sup>2</sup> Musicological examination of the related issues of ‘identity development’ (or ‘getting your own sound’), ‘tradition’, and ‘innovation’ within jazz is outside the scope of this exegesis. However, engagement with these issues was the motivation driving this research project, and comment is made on potential relevance to these issues in the introductory and concluding sections of this exegesis.

<sup>3</sup> Throughout this exegesis, the term ‘classical’ will refer broadly to the ‘European Classical Music’ tradition, including the modern-day extension of this tradition, sometimes termed ‘New Music’.

the development of 'free jazz' with emphasis on connections between these musicians and classical music, in particular the classical avant-garde<sup>4</sup>. Such comparisons are particularly relevant in discussions of European jazz<sup>5</sup>. Although there are some aspects of truth to these comparisons, this should not be viewed as jazz 'catching up' with the classical avant-garde—rather it is an indication of the ability of jazz musicians to reinterpret and adapt a wide variety of musical ideas. Ake has suggested that a consideration of which stylistic elements have been rejected by jazz musicians may be more productive, and that historiographical approaches that place the jazz and classical traditions side by side work to 'conceal rather than to reveal the meanings and values of both music communities' (2002: 80-81). The goals of this submission are not to 'catch up' with classical music theory. Rather, in the tradition established by the above examples, concepts and techniques are borrowed from classical music to provide possibilities for jazz improvisation, as part of a process of identity development for a jazz musician.

Ake does not list stylistic elements rejected by jazz musicians, but in the minds of many commentators, serialism would feature highly on the list. The most recent published survey of 'serialism' within jazz was Max Harrison's article 'Serial Jazz', in *A Jazz Retrospect* (Harrison 1976: 94-107). In a review from the following year, Middleton asked: 'what significance has serial jazz turned out to have?' (1977: 328-330). This rhetorical question represents a widespread attitude of jazz commentators towards attempts to incorporate ideas derived from serialism within jazz. Bill Evans' abandoned attempts at applying serial technique within improvisation (Pettinger 1998: 204-205) and Gunther Schuller's initial hostility to the very idea of 'serial jazz' (Schuller 1986: 74, first published 1959)<sup>6</sup>, along with the perceived 'unmalleability' of serial technique have reinforced this perception. Nevertheless, many jazz musicians have engaged with serialism and related concepts, and continue to do so<sup>7</sup>. Musicians who have taken serial technique at face value (as interpreted by classical composers) and sought to combine it with jazz improvisation include Bill Evans (Pettinger

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<sup>4</sup> See for instance Jost's *Free Jazz* (1974 [1994]), and Wilson's biography of Ornette Coleman (1999). Jost in particular suggests connections between many jazz musicians and the classical avant-garde, including Ornette Coleman, Cecil Taylor, Albert Ayler, Archie Shepp, Don Cherry, and Anthony Braxton.

<sup>5</sup> Nicholson relates an interview in which musician Gianlugi Trovesi describes the European musicians installing themselves in a 'jazz delta', with access to jazz and 'the traditional, historic music of their own country' (Nicholson 2005: 180), and the cover of Whitehead's *New Dutch Swing* presents the sweeping equation 'Jazz + Classical Music + Absurdism = New Dutch Swing' (Whitehead 1999).

<sup>6</sup> Schuller may have revised his opinion on the possibilities of 'serial jazz' since 1959, given his more recent comments on *rush hour*, a collaboration with Joe Lovano (Lovano 1995).

<sup>7</sup> The following list focuses on the contributions of significant jazz performers. There are other publications demonstrating engagement with serialism and related concepts, for instance Kupferman's *Atonal Jazz: A Systematic Approach to Atonal Improvisation* (1992).

1998), most of Harrison's examples (1976), and (in the context of 'Third Stream' rather than jazz) Gunther Schuller. Other musicians have taken an intuitive approach to the incorporation of serialism within improvisation, including Paul Bley (Meehan 2003), Steve Lacy (2006), and the countless jazz musicians who, as David Baker has suggested, practice twelve-note rows with the goal of using them intuitively within improvisation (Baker 1979). A third approach is a synthesis that takes a radical reconsideration of serial technique as a starting point, and develops techniques uniquely suited to jazz improvisation. Walter Bishop Junior's *A Study in Fourths* (Bishop 1976), which centres on a twelve-note row derived from the circle of fourths, is an example of this approach; George Garzone's triadic / chromatic improvisation is another (Garzone 2003)<sup>8</sup>. The current submission explores a radical reconsideration of serialism, with a particular focus on the serial compositions of John Coltrane (including *A Love Supreme* [1964], based on interval cells) and on original compositions. The important serial frameworks for melodic development presented in this submission are twenty-four note rows (flexible structures with strong connection to extant jazz melodic language), row-based chords (closely connected to thirds cycles in the music of Coltrane), and interval cell development (an extension of existing motivic development within jazz). The originality of this submission's exploration of serialism lies in the nature of the serial techniques developed, and the serial perspective applied to the music of John Coltrane.

Debussy and Stravinsky pioneered a compositional technique where distinct harmonic groupings of notes are presented, separated by register or timbre. Stravinsky's partitioning of the octatonic scale into dominant seventh chords is an example of this (Van Den Toorn 1983). The Polish composer Witold Lutoslawski, influenced by Debussy and Stravinsky, developed a technique termed 'chord stranding', which uses twelve-note chords divided into two, three or four distinct harmonic 'strands' (Bodman Rae 1999). There are obvious connections between twelve-note serialism and twelve-note chords, and 'stranded' (or 'layered') harmony is already familiar to jazz musicians through the concepts of superimposition, and polychords. Superimposition became increasingly important in the playing of Charlie Parker, Dizzy Gillespie and others during the development of bebop, and has been documented in the playing of Herbie Hancock (Morgan 2000-2001), amongst others. Hancock has also pioneered chord voicings based on polychords, such as

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<sup>8</sup> This reference is to the mini-disc recording of a private lesson given by George Garzone to Steve Mooney in 2003.

the ‘double-diminished’ chord voicing. Lutoslawski’s chord stranding forms a logical extension of concepts of superimposition and polychords, bringing both concepts into the total chromatic. The division of harmonic space into low, middle and high regions, along with potential use of contrasting pitches in each register, has a strong place in jazz tradition, but the use of Lutoslawski’s chord stranding in improvisation has not been documented. This submission explores possibilities for the use of this concept in a small jazz ensemble setting, through the re-composition<sup>9</sup> of Lutoslawski’s *Piec Piesni* (1957, hereafter *Five Songs*) and original compositions. Twelve-note chords with close connection to extended chords common in jazz are developed and explored, as are possibilities for assigning particular ‘strands’ to piano and bass.

Key areas under examination within this thesis are:

- (i) Can reconsideration of serialism, from an improviser’s perspective, lead to the development of new tools for the jazz improviser, and, can these tools be integrated within a standard jazz vocabulary?
- (ii) How can the concept of chord stranding, as developed by Lutoslawski, be applied within jazz improvisation, and, how can this concept be integrated with existing harmonic concepts in jazz?

The four CDs and written exegesis address these issues, exploring possible answers through performance and elaborating on the results through transcription and analysis.

Certain compositions of John Coltrane form an important precedent for the exploration of serialism within jazz. The opening tracks of CD 1 (*Serialism Concept Development*) present solo piano performances of the three Coltrane compositions with clear connections to serialism: *Giant Steps* (1959), *Miles’ Mode* (1962), and *Brazilia* (1965). The three techniques for the use of serialism within jazz explored within this submission are presented here: twenty-four note rows in *Giant Steps*, interval cell development in *Miles’ Mode*, and row-based chords in *Brazilia*<sup>10</sup>. Track 4 of CD 1 presents an application of twenty-four note rows over *Naima* (1959), another Coltrane

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<sup>9</sup> Re-composition refers to the use of a significant portion of musical ideas from an existing composition in a new composition, falling somewhere between ‘an arrangement of a piece’ and ‘a composition influenced by a piece’.

<sup>10</sup> These concepts (twenty-four note rows, row-based chords, and interval cell development) are described in detail in section 2 of this exegesis.



composition. This connection with John Coltrane is explored further in CD 3 (*Chris Martin Trio play A Love Supreme*). *Giant Steps*, *Miles' Mode*, and *Brazilia* are presented in a piano trio setting, with some further development in the serial techniques employed. The closing tracks of CD 3 present an interpretation of *A Love Supreme*, focusing on the interval cell that underlies the piece and its potential development. This performance shows that a 'serial' perspective of the melody and harmony of this piece allows for interesting, previously unexplored possibilities. The aborted serial explorations of Bill Evans form another important precedent for this research<sup>11</sup>. Track 5 of CD 1 is a solo piano performance of Bill Evans' *T.T.T.T.* (1973), using serialism in the improvised section (although based on a different row to the head). The circular relationship between composition and improvisation for jazz performers is well-documented (Berliner 1994: 221-242), and tracks 6-11 of CD 1 are original compositions showing the application of twenty-four note rows in a wide variety of settings, including four 'contrafacts' (tracks 8-11). Track 12 is a solo piano performance of Bill Evans' *T.T.T.* (1971), again seeking to apply serialism in the improvised section as well as in the head. In this case, the improvisation shows a gradual transition from 'changes' oriented improvisation, as originally used by Evans, to improvisation using row-based chords. Track 13 (*PGR*) presents an original composition applying row-based chords within an ensemble context, addressing some difficulties with row-based chords identified in the performance of *T.T.T.* Together, CDs 1 and 3 show the development and application of techniques based on serial principles, in a jazz context. Chapter 2 of this written exegesis (*Serial Jazz Reconsidered: John Coltrane and Beyond*) serves to clarify the context, goals and achievements of the serial explorations presented in the recordings. The definition of serialism adopted within this submission is justified, important precedents for this research within the jazz tradition are examined, and the techniques explored within the performances are explained (twenty-four note rows, row-based chords, and interval cell development). Then, transcriptions and analyses of selected excerpts illustrate the application of serialism within the four recordings, and the integration of these techniques with more standard jazz techniques.

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<sup>11</sup> Despite his explorations of twelve-note composition in *T.T.T.* and *T.T.T.T.*, Bill Evans stated that "twelve-tone music (as a pervasive operating language) was incompatible with the art of improvising." (Pettinger 1998: 204-205)

Re-composition of Lutoslawski's *Five Songs* is central in the development of chord stranding in this submission<sup>12</sup>, and tracks 1-8 of CD 2 (*Chord Stranding Concept Development*) are performances of these pieces in solo and trio contexts. These re-compositions apply chords in two, three, and four strands. They explore various approaches to interpretation of twelve-note chords, including complementary scales, assignation of strands to piano and bass, and derivation of register specific chords from complex chord structures<sup>13</sup>. In addition to the re-compositions of *Five Songs*, CD 2 includes an original composition demonstrating a consonant application of chord stranding restricted to one twelve-note chord (track 9, *You Against the World*), and an application of the chord stranding from *Zima* (of *Five Songs*) to the jazz standard *All of You* (1954). As a whole, CD 2 shows the initial development of techniques for applying chord stranding within improvisation, and the application of these techniques within an ensemble setting. It also explores the harmonic language of Lutoslawski through an examination of *Five Songs* from a jazz perspective. Section 3 of this written exegesis (Chord Stranding: an Extension of Superimposition) defines chord stranding as applied by Lutoslawski, and examines superimposition and polychords as precedents for chord stranding in jazz. The twelve-note chords used in the submission are explained, as are the techniques for their application. Then, transcriptions and analyses of selected excerpts illustrate the application of chord stranding within the four recordings, and the integration of these techniques with more standard jazz techniques.

CD 4 (*Triptych – 1 + 1 = 1*) is an album of original compositions applying serialism and chord stranding, drawing on the techniques and precedents explored in CDs 1, 2 and 3. This final recording in the submission shows the integration of serialism and chord stranding within a personal jazz style. Track 1 ( $2 + 2 + 2 = 3$ ) applies row-based chords to the twelve-note row from Alban Berg's *Violin Concerto* (1935). Tracks 2-4 form a suite (*Amy's Suite*) that uses integrated applications of interval cells, row-based chords and chord stranding. Track 5 is a trio performance of a composition recorded on CD 1 in a solo piano context, demonstrating more advanced application of serialism (*Hanging on for the Ride*). Tracks 6 and 7 demonstrate application of the techniques over traditional jazz vehicles. Track 6 (*Billy's Bridge*) applies twenty-four note rows

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<sup>12</sup> These re-compositions are applications of Lutoslawski's harmonic concepts, as demonstrated in each of the five songs, within a jazz context. With the exception of *Song V – The Bell-Ringer*, the melodic and rhythmic material of Lutoslawski's pieces is not used.

<sup>13</sup> The concept of chord stranding and techniques for its application are described in detail in section 3 of this exegesis.

over the jazz standard *Chelsea Bridge*, and track 7 (*Stranded Chord Blues*) is an application of chord stranding within a twelve-bar blues context. Track 8 ( $1 + 1 = 1$ ) applies chord stranding to the blues, in a more general sense. The album demonstrates highly developed, integrated application of all the techniques explored in this submission. Despite its conception within the context of a research project, CD 4 is a personal expression of the author's jazz style (and the style of the band, Triptych), aimed at the musically minded public rather than the academic establishment.

Although this project focuses on the incorporation of specific concepts within jazz improvisation, the broader context of this research is its contribution to the understanding of tradition and innovation within jazz, and particularly as an annotated case study of identity development by a jazz performer<sup>14</sup>. The importance of both tradition and individuality within jazz was summed up by Walter Bishop Junior:

It all goes from imitation to assimilation to innovation. You move from the imitation stage to the assimilation stage when you take little bits of things from different people and weld them into an identifiable style—creating your own style. Once you've created your own sound and you have a good sense of the history of the music, then you think of where the music hasn't gone and where it can go—and that's innovation.

(Berliner 1994: 120)

This balance between tradition and innovation is, according to many musicians and commentators, an important aspect of becoming a jazz musician. Methods for negotiating this difficult balance are mentioned less frequently. When asked 'how one becomes a player?' Paul Bley replied:

My philosophy is that you don't *have* to do anything. It's very important that whatever you do is totally effortless, which means it is supposed to be easy for you to do. Any efforts you make are a bad idea, because they are efforts. That's the overall idea: the activities that you are going to engage in should fit you like a custom-made suit. You don't have to fit the suit, the suit is made to fit your body, which is different from anybody else's body, including your own as of a year ago. The hard thing to do is the wrong thing to do.

(Cited in Meehan 2003: 21)

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<sup>14</sup> Lewis has described the importance of studies by improvisers presenting documentation of their own practice, stating that 'recent initiatives by improvisors to produce and disseminate not only recorded performances, but textual documentation of their own practice—thereby directly intervening in the documentary process—[are] an important and necessary step in redressing an apparent imbalance between literature and orature in the society at large' (2000: 106).

If the hard thing to do is the wrong thing to do, Bley also indicated that the easy thing to do is the right thing to do. This does not necessarily imply that every step in a jazz artist's development will require no work, no practice—though some might. Rather it suggests that the right paths to pursue are those that most clearly present themselves, and that a musician is most equipped to travel.

I am a jazz pianist, and so I too am engaged in this balancing act between tradition and innovation. Like most jazz musicians, I bring more to my musical experience than my involvement in jazz tradition. My early training in classical music, my ongoing interest in music theory, and my location within Australia, with its own musical traditions (including jazz traditions) and cultural environment, are significant parts of my musical background. Naturally, the music I make will draw on these influences, and the paths I choose to pursue will reflect them. At the outset of this project, I had recently encountered the concepts underlying serial composition and was fascinated by the potential applications of these concepts within improvisation. Thus, the original conception of this project was to describe the next natural step in my development as a jazz artist. The greatest difficulty in the negotiation of this project, however, is suggested by Bley in his response—a jazz musician's situation, skills and opportunities are changing constantly, and it is quite unusual for a jazz artist to spend years focusing exclusively on one avenue of development. The artificial nature of a research project has restricted this organic process in my own playing, forcing me to some degree to curb other creative impulses over this time. This aspect of research, particularly of the introspective kind, can never be entirely removed. At best, it can be acknowledged and understood.

As described above, chapters 2 and 3 of this exegesis clarify the context, goals, specific techniques, and application of serialism and chord stranding within the four CDs. Chapter 4 describes some aspects of the unified application of serialism and chord stranding in the submission. The concluding section of this exegesis summarises the thesis and its original contribution to the discipline, and comments on the potential relevance of the research to the understanding of identity development and innovation within jazz.

## 2 SERIAL JAZZ RECONSIDERED: JOHN COLTRANE AND BEYOND

'Can reconsideration of serialism, from an improviser's perspective, lead to the development of new tools for the jazz improviser, and, can these tools be integrated within a standard jazz vocabulary?'

This chapter of the exegesis accompanies the CD recordings, describing their context with respect to 'serial jazz', and explaining how they provide answers to this question. The definition of 'serialism' adopted within this submission is stated and clarified (section 2.1); some precedents for the application of serialism within jazz are examined (section 2.2); the goals and techniques for application of serialism are described (section 2.3); and transcriptions from the recordings are used to demonstrate the attainment of these goals, and successful application of the techniques (section 2.4).

### 2.1 'Serialism' Defined

The definition of 'serialism' is widely contested, and great confusion surrounds the use of this term and related terms such as 'twelve-note' (or 'twelve-tone'), and 'dodecaphony'. This section states the definition of serialism as applied within this submission, and briefly examines the implications of this broad definition in the context of 'serial jazz'.

Griffiths defined serialism as 'A method of composition in which a fixed permutation, or series, of elements is referential' (2001: 116-123). This is in contrast to modalism, where sets of elements in *free* permutation are referential. Boulez defined the series (and to some extent his approach to serial composition) as a developing hierarchy (a hierarchical structure to be used for the

development of musical ideas), with the purpose of the organisation of creative possibilities (Boulez 1971: 35). Serialism is then composition using a series. These two statements establish the definition of serialism applied within this submission:

Serialism is a method of composition in which a fixed permutation, or series, of elements is used for the organisation of creative possibilities<sup>1</sup>.

This definition of serialism is very broad in application. The concept of a series can be applied to any aspect of music, including duration, attack, timbre, instrumentation, and form<sup>2</sup>. Application of serialism within this submission, however, is restricted to pitch-class (melodic and harmonic<sup>3</sup>) serialism only. This definition, and its application, is a radical reinterpretation of serialism in that it goes to the root of serial technique, placing the stylistic choices associated with serialism into context. Of particular significance for this research is the removal of the following requirements often associated with serialism (amongst others): atonality; the use of twelve notes within a series; the use of each chromatic pitch only once within each series; avoidance of clear metre and pulse; and avoidance of repetition. In the definition of serialism adopted by the author, these requirements are considered to be stylistic choices made by many composers in the serial school, but not essential components of 'serialism' as a compositional technique<sup>4</sup>. This approach is further supported by the music of many serial composers. For instance, Berg's *Violin Concerto* (1935)<sup>5</sup> includes many tonal references, clear metre and pulse, and makes extensive use of repetition; Stravinsky's *In Memoriam Dylan Thomas* (1954) uses a five-note series. This broad definition of

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<sup>1</sup> Under this definition, twelve-note (or twelve-tone) composition is a subset of serial composition, referring to pitch-class serialism applying a series including all twelve pitch classes. The term 'dodecaphonic' is often used to refer generally to serial and twelve-tone music, but as Perle pointed out, it should designate 'any musical idiom based upon the twelve-tone, or semitonal scale, including "free" atonality' (Perle 1962 [1981]: 8).

<sup>2</sup> Composition applying serialism to multiple musical elements is often referred to as 'total serialism' or 'integral serialism'. Boulez' text (1971), and his music, provide an introduction to this aspect of serial technique.

<sup>3</sup> The harmonic validity of serialism has been questioned frequently, but composers employing serial technique have consistently mounted effective rebuttals. In her analysis of Schoenberg's *Suite Op. 29* (1925) Hyde lists a wide array of articles debating the existence and nature of serial harmony, and these provide an excellent introduction to the debate (Hyde 1982: 153-154).

<sup>4</sup> Interestingly, it is these *stylistic* aspects of 'serialism' as applied by classical composers which most frequently feature in lists of objections to serial music, see for instance Storr (1992: 170-171). More recent research on the serial repertory has shown the inadequacy of many of these stereotypes when applied to even the originators of serial technique (see for instance the work of Haimo (1990) and Headlam (1996) on Schoenberg and Berg respectively). I am indebted to Professor Keith Waters for directing me to these publications, along with the work of Richard Cohn on Bartók and Jose Martins on Stravinsky. These are interesting topics for further study, but beyond the scope of the present investigation.

<sup>5</sup> See Pople's *Berg, Violin Concerto* (1991) for a detailed analysis of Berg's piece and a description of its genesis.

serialism is of particular significance for jazz improvisers, because it suggests a conceptual connection between processes of motivic development and serial composition.

In the concluding sections of *Free Jazz*, Jost commented on the importance of synthesis for free jazz musicians—in particular, synthesis of world music, and synthesis of the European avant-garde. He wrote:

That Cecil Taylor, Archie Shepp and Don Cherry could, without detriment to their own music, absorb Bartok and Stravinsky, African drum rhythms, and Arabic and Indian melodic models respectively, doubtless had something to do with their ability at synthesizing, but it had even more to do with the characteristics of the material they brought in from “outside.” The qualities and creative principles of the newest European music, however, are possibly too unmalleable to be integrated into the substance of jazz, without leading at the same time to a metamorphosis in which jazz itself is lost.

(Jost 1974 [1994]: 175)

By the ‘newest’ European music, Jost possibly referred to serialism and associated compositional techniques, including the ‘total serialism’ of Boulez and others. These were hardly the newest concepts in the European musical tradition in 1974, but were topical debates at the time. The perception of the techniques associated with serialism as being ‘too unmalleable’ for use by jazz musicians is of central importance to this research, because despite lack of deep consideration of this idea, it remains widely accepted. The definition of serialism adopted within this thesis removes the ‘unmalleable’ stylistic choices that are likely to cause difficulties for jazz improvisers, and paves the way for new stylistic choices and frameworks for idea development, tailored to the needs of the real-time composer.

## **2.2 Precedents for Application of Serialism within Jazz**

A complete survey of past and present attempts to apply serialism within improvisation is beyond the scope of this exegesis. In order to place the current submission into context, this section proposes a three-part model for categorising attempts at applying serialism within jazz and briefly examines selected examples of each type of synthesis.

Some jazz musicians take the classical serial tradition at face value, seeking to incorporate the constraints that are commonly applied within classical serialism. I will refer to this approach as a 'face value synthesis'. Others arrive at the sounds associated with classical serialism by intuitive means. This will almost certainly include some study of classical serialism, but the essence of this approach is a reliance on intuition rather than theoretical frameworks. I refer to this approach as 'intuitive synthesis'. A third approach, possible only with a broad definition of serialism, is a radical reappraisal of theoretical ideas associated with serialism, taking the basic idea of using a fixed permutation of elements for the organisation of creative possibilities and applying this idea within a jazz context, considering the specific needs and background of a jazz improviser. I refer to this approach as 'synthesis by radical reconsideration'. Of course, any model as simple as that described cannot conveniently pigeonhole all attempts made by jazz musicians in this area. Nevertheless, these categories assist in finding similarities between various attempts and improving understanding of the thought processes of jazz musicians concerned.

In reference to serial music, Bill Evans '...pointed out, twelve-tone music (as a pervasive operating language) was incompatible with the art of improvising' (Pettinger 1998: 204-205). Despite this, Evans was responsible for some of the most well known instances of 'face value synthesis'. He was trained in classical music, including serial composition, and has described filling notebooks with twelve-note rows (Pettinger 1998). His piece *T.T.T.* (Twelve Tone Tune, 1971) consists of a twelve-note row, repeated three times in the 'head', and harmonised according to traditional jazz harmony principles. His solo on this piece bears little or no relation to the twelve-note row employed in the melody. Later, Evans composed and performed *T.T.T.T.* (Twelve Tone Tune Two, 1973). This piece made more effort to engage with classical serialism, using a more abstract melody, based on the repetition and cyclic permutation of a twelve-note row. The harmonisation in this case consisted of major seventh chords moving first down and then up in sequence<sup>6</sup>. Again, Evans' improvisation did not make any use of the rows on which he had based the composition. Both of these tunes present composed sections taking classical serialism at face value, juxtaposed with improvisations that do not engage with serialism. This element of juxtaposition, and lack of

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<sup>6</sup> Interestingly the bass movement in the second half of the piece approximates the inversion of the bass movement in the first half of the piece, and as a whole the bass line very nearly approximates another twelve-note row.



engagement with serialism during improvisation, characterises many attempts at face value synthesis<sup>7</sup>.

Many examples of 'face value synthesis' contain little or no improvisation. In contrast, examples of 'intuitive synthesis' have occurred most commonly in the arena of free jazz, or free improvisation. The use of a twelve-note row as a guideline for free improvisation is a common example of 'intuitive synthesis'. Another is the Paul Bley album *12 (+6) In a Row* (1990). Bley has described that, although the use of serial technique was not strict, "there was a row "hovering nearby," and by playing with Viennese musicians and recording in Europe, we had Schoenberg and his school nearby' (Meehan 2003: 11). Bley's description of 'Schoenberg and his school nearby' neatly summarises the process and intent of music that attempts an 'intuitive synthesis' of jazz and serialism. Further, this approach should not be dismissed as inconsistent with the concept of serialism, or considered inferior to other, more rigorous attempts at synthesis (such as those described in the preceding and following sections). In fact, by placing emphasis on the considerable aural and intuitive abilities of jazz musicians, an intuitive synthesis is often more successful than other approaches<sup>8</sup>.

Whereas face value synthesis seeks to maintain the rules and limitations of classical serialism, and intuitive synthesis applies the jazz musician's considerable improvisatory and intuitive skills to the style and materials of classical serialism, 'synthesis by radical reconsideration' involves the development of techniques uniquely suited to jazz improvisation derived from the central ideas of serialism. The techniques of classical serial composers may influence these 'jazz serialism techniques', but they are more likely to bear only passing resemblance to techniques suited to a musical idiom where painstaking deliberation and calculation in composition is the norm. These 'radical reconsiderations' may arise as the result of study of classical serial technique, but they may

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<sup>7</sup> Most of the examples given by Harrison in his survey of serial jazz apply face value synthesis, including pieces and albums by Shorty Rogers, John Carisi and David Mack (1976: 100-103). Gunther Schuller's 'Third Stream' music is another significant example of face value synthesis. Many of his compositions, such as *Conversations for Jazz Quartet and String Quartet* (1959), present 'classical' sections (composed by Schuller using classical serial technique) alongside 'jazz' sections (often consisting of a set of chord changes and a tempo direction). Schuller's *Abstraction* (1961), however, combines a freely improvised alto saxophone part with scored parts applying serialism, and is an example of intuitive synthesis.

<sup>8</sup> Other examples of intuitive synthesis include the practice of twelve-note rows with the goal of using them freely and intuitively within improvisation as suggested by David Baker (1979), Steve Lacy's transcription of the vocal lines of Webern's voice and piano duets (Lacy 2006), and pieces by European jazz musicians such as Misha Mengelberg (Whitehead 1999: 50)

equally arise from study of the use of intervals in improvisation, and the improviser may only at a later stage, if at all, make a connection between serialism and the compositional techniques developed.

It is widely acknowledged that study of music theory was important for John Coltrane. In his introduction to an analysis of Coltrane's *A Love Supreme* (1964), Porter writes:

He had earlier expressed interest in writing music that was atonal—without a tonal center at all—and in the serial or twelve-tone system of Arnold Schoenberg that facilitated this approach. He had discussed twelve-tone music with jazz composer George Russell and used that system in 1961 to write the theme of “Miles’s Mode” (also known as “The Red Planet”), but used a mode for the solos. Asked if it would be possible to adhere to the twelve-tone method while improvising, he had replied “Damn the rules, it’s the feeling that counts [during improvisation]. You play all twelve notes in your solo anyway.” (Goldberg 1965: 210) When the subject of atonality came up again in the 1963 interview, he replied that he didn’t want to commit himself to one approach: “I don’t know. Probably so. But I don’t know whether I can call it that because I don’t know just what it will be. I think the thing that I’m going to do will be nearer a modal thing than atonal. But I’m not sure. It’s probably going to be shades of each, it’s gonna overlap—you know? It’s not going to always be something where you could say this is it, because it’s not going to always be the same thing. In other words, I think that every piece of music demands a certain type of interpretation, just by the nature of the song itself. And that’s what I’m going to allow myself to be governed by, just what I feel the song calls for.”<sup>9</sup>

(Porter 1998: 231) Referencing style adjusted by present author.

These statements suggest a balance of intuitive and theoretical approaches. Demsey (1995) has noted the similarity between a harmonised twelve-note row from Slonimsky's *Thesaurus of Scales and Melodic Patterns* (1947: v-vi) and the second eight bars of Coltrane's composition *Giant Steps*. Coltrane's composition *Miles' Mode* (1962) can be described as an attempt at ‘face value synthesis’ of serialism and jazz improvisation, because here, as in Bill Evans' pieces, a head derived from a twelve-note row is followed by improvisation with no reference to that twelve-note row<sup>10</sup>. Schott has written an excellent and extensive account of Coltrane's use of twelve-note principles (2000), including specific reference to his application of ideas derived from serial composition in *One Down, One Up* (1965), *Giant Steps* (1959), and *Miles' Mode*. *Giant Steps*, *Brazilia* (1965) and *Miles' Mode* apply serialism during composition, but this application is not carried through to improvised sections. In *A Love Supreme* Coltrane achieved something rather different. Porter's analysis showed the importance of interval cells in *A Love Supreme* (Porter

<sup>9</sup> This is endnote 1 in Porter's chapter: 'Interview by Michel Delorme and Jean Clouzet, Hotel Claridge, Paris, November 1, 1963, in the late afternoon before the concert. I thank Delorme for allowing me to transcribe this from the original tape.' (Porter 1998: 331)

<sup>10</sup> This conclusion is based on the author's transcription and analysis of Coltrane's 'studio' solo over *Miles' Mode*.

1983). In his analysis of *Acknowledgment* Porter writes that ‘Coltrane hears cell a as his basic unit of composition, isolatable from the scale built upon it’ (Porter 1983: 211). The use of an interval cell in this way can be referred to as the use of serialism, in this case a three-note row. Such a structure is consistent with the basic concepts of serialism<sup>11</sup>. The characteristic interval cell is so pervasive that many of the most recognisable aspects of the suite are derived from it exclusively: the bass-line and Coltrane’s ‘key-hopping’ (an inaccurate term) in *Acknowledgment*; the melody of *Pursuance*; the referential motifs in *Psalm*. Coltrane’s use of this interval cell in both the composition and improvisation of *A Love Supreme* is certainly not consistent with techniques familiar from classical serialism, and has not commonly been recognised as use of serial technique. However, it seems clear that this description has potential to fit the music in question more accurately than some other models that have been proposed. For instance, Coltrane’s use of the interval cell in the later sections of *Acknowledgment* (in both the studio and the live versions of the piece) is far better described as transposition of an interval cell than as ‘key-hopping’—this section has everything to do with the referential nature of a sequence of intervals, and nothing to do with major or minor keys. Coltrane’s use of serialism, in the pieces *Giant Steps*, *Miles’ Mode*, *Brazilia*, and *A Love Supreme* is of central importance for this research.

In my opinion, the approaches to the use of serialism within jazz improvisation that I have described as ‘intuitive synthesis’ and ‘synthesis by radical reconsideration’ have been more successful than attempts at ‘face value synthesis’. Any ‘face value synthesis’ approach soon meets with great difficulty in simultaneously satisfying the many strictures of classical serialism and maintaining freedom of improvisation. An ‘intuitive synthesis’ of the various concepts and sounds associated with classical serialism allows the improviser to use their creativity and skills to their full potential. Paul Bley’s music, not just in the recording described above but also in many performances throughout his career, shows that such an approach can be highly successful as part of an improviser’s style. A ‘synthesis by radical reconsideration’ allows a jazz musician to develop techniques that fit very closely with their extant knowledge base. In addition, this method allows a selection of materials for incorporation, and opens up the possibility of, for instance, avoiding the ‘sound’ of classical serialism and focusing on the theoretical concepts. Thus, techniques and

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<sup>11</sup> As is described above, Stravinsky’s first serial piece (*In Memoriam Dylan Thomas*) used a five-note row. The connection between interval cells and serial technique also suggests connections between motivic development processes, familiar to jazz musicians, and serialism.

sounds that are radically different from those of classical serialism, and immediately identified with the jazz tradition, can be developed from the same core ideas as classical serialism. Although John Coltrane may not have had this process in mind while composing *A Love Supreme*, this piece gives us an idea of one possibility to which a radical reconsideration of serialism might lead.

### **2.3 Application of Serialism in CDs**

In this section, the goals for application of serialism within jazz improvisation are stated, and the serial techniques developed in the course of the research project are described. Then, in section 2.4, the achievement of the stated goals is demonstrated by transcription and analysis of excerpts from the four CDs.

The initial goal for this research in application of serialism within jazz was to develop frameworks based on serial technique, appropriate for improvisation. The development of these concepts involved research into classical serialism, including study of serial composers, their music, and theoretical texts describing serial composition technique. Previous applications of serialism within jazz were also explored, especially the efforts of John Coltrane, Bill Evans and George Garzone. Then, through the performance and composition of pieces applying serialism, and subsequent analysis, three key concepts were developed and refined—twenty-four note rows, row-based chords, and interval cell development. The central goal in this aspect of the research was to apply these frameworks as an extension of my personal jazz style, integrating the new concepts with my extant jazz style as an improviser. The aim was to produce music that is identifiably ‘jazz’, of high artistic and technical quality, and demonstrative of a unique, personal jazz style. This section of the exegesis clarifies how and where the four CDs show achievement of these goals, and to what extent. Although this process took place in the artificial context of a research project, it represents an approach to style development that I have followed in the past, and am likely to follow in the future. The significant exception to this is the use of transcription and analysis to demonstrate the achievement of artistic goals, which would not normally form part of my process of development.

### 2.3.1 Frameworks for improvisation—twenty-four note rows, row-based chords, interval cell development

Twenty-four note rows were developed in this research project with the aim of providing maximum flexibility and immediate connection with 'standard' jazz melodic language<sup>12</sup>. Two different rows were developed and applied, the first consisting of a repeating pattern of 'major third, minor third' (major twenty-four note row), the second a pattern of 'major third, major third, minor third, minor third' (minor twenty-four note row)<sup>13</sup>. The designations 'major' and 'minor' refer to the scales most closely connected to the rows—the major scale in the first, and the melodic minor in the second. Figure 2.1 (overleaf) shows examples of these two rows, their properties of invariance, and their connections to jazz melodic and harmonic language.

In general, application of twenty-four note rows in this project follows a number of guidelines. Firstly, melodies and harmonies based on the row move freely forwards and backwards through the twenty-four note structures, or jump from one section to another. There is no requirement to complete any row-form once begun. Secondly, the rows may be segmented into four-part chords, and into seven-note scales, and these groups may then be treated modally (that is, the elements freely reordered). This leads to a serial arrangement of modal structures<sup>14</sup>. Thirdly, the rows are applied over either a stationary tonic, or repeating chord progression, and the relative consonance or dissonance relationship between sections of the row and the tonic or repeating chord progression is used to create tension and release. This type of application allowed for use of twenty-four note rows without engagement with the concept by the bassist. Fourthly, the connection between fragments of the row and standard jazz melodic shapes, such as arpeggiated seventh chords, is used to effect transitions between standard jazz melodic improvisation and improvisation applying the twenty-four note row. Table 2.1 (overleaf, page 19) summarises the application of twenty-four note rows in the four CDs.

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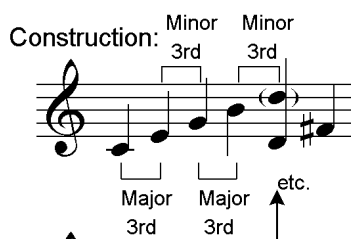
<sup>12</sup> I was introduced to the circular arrangement of twenty-four intervals for the 'major' twenty-four note row by Freddie Payne, a fellow Adelaide jazz musician, in the guise of an eight-string guitar tuning.

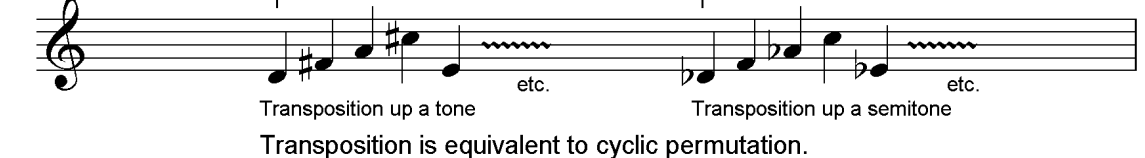
<sup>13</sup> Classical serialism refers to rows with repeating interval classes (such as these twenty-four note rows) as 'degenerate rows'. Despite the unfortunate terminology, 'degenerate rows' are no less useful or valid applications of serialism than (for example) 'all-interval rows'. For the purpose of improvisation, repetition of intervals in a row greatly increases the versatility and flexibility of a serial structure.

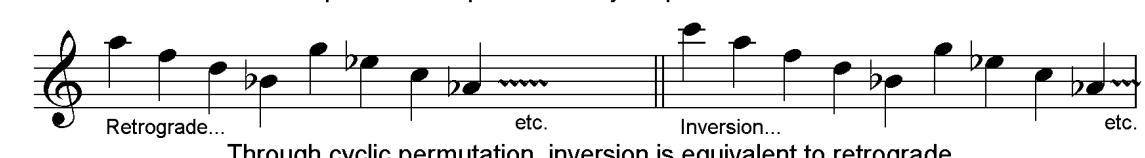
<sup>14</sup> Garzone's triadic improvisation system applies a very similar process, with triads arranged serially (moving up and down by semitones) interpreted modally (Garzone 2003).

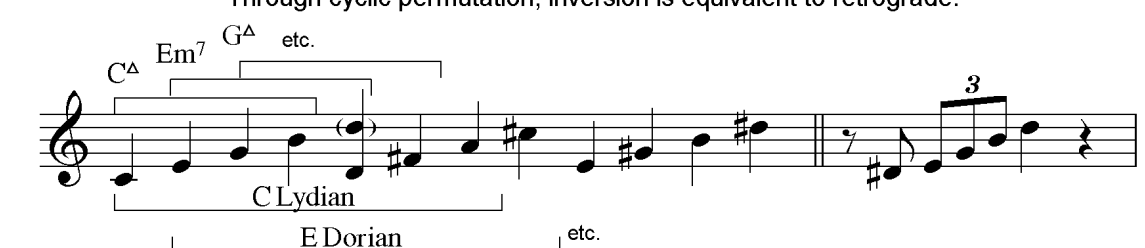
Figure 2.1 Twenty-four note rows, their properties and connection to jazz language.

'Major' twenty-four note row

Construction:  Figures showing rows throughout this exegesis follow the convention of using local accidentals.

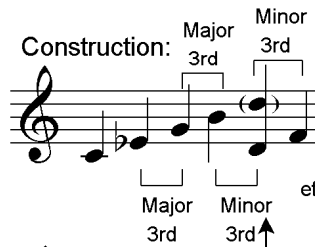
 Transposition up a tone etc. Transposition up a semitone etc.  
Transposition is equivalent to cyclic permutation.

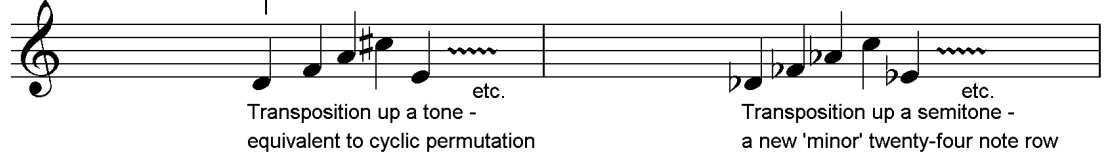
 Retrograde... etc. Inversion... etc.  
Through cyclic permutation, inversion is equivalent to retrograde.

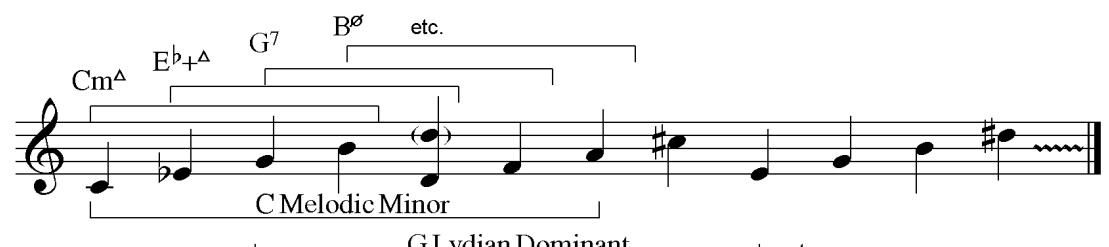
 C<sup>Δ</sup> Em<sup>7</sup> G<sup>Δ</sup> etc.  
C Lydian E Dorian etc.

Connections to standard jazz melody / harmony:  
Four-part chords, major scale modes, and arpeggiation of four-part chords.

'Minor' twenty-four note row

Construction:  Major 3rd Minor 3rd etc.

 Transposition up a tone - equivalent to cyclic permutation etc. Transposition up a semitone - a new 'minor' twenty-four note row etc.

 Cm<sup>Δ</sup> E<sup>b+Δ</sup> G<sup>7</sup> B<sup>ø</sup> etc.  
C Melodic Minor G Lydian Dominant etc.

Connections to standard jazz melody / harmony:  
Four-part chords, melodic minor scale modes.

Source: Compiled by the author

Table 2.1 Application of twenty-four note rows in the four CDs.

CD: Track	Piece	Application of twenty-four note rows
1:6	<i>Hanging on for the Ride</i>	First application of major twenty-four note rows—used in composition and in improvisation over constant pedal point
1:7	<i>4 Rainbows</i>	First application of minor twenty-four note rows—over chords derived from the row, showing a gradual exposition of the row over time
Connection between twenty-four note rows and chord progressions moving in major seconds and major thirds perceived		
1:1	<i>Giant Steps</i> (solo)	First application of major twenty-four note rows over repeating chord progression (thirds-cycle)
1:4	<i>Naima</i>	Reharmonisation of head to accommodate major twenty-four note rows, and some 'free' harmonic use of rows
1:5	<i>T.T.T.</i>	Application of major twenty-four note row to chord progression moving in major seconds
Contrafacts composed, to facilitate further explorations of twenty-four note rows		
1:8	<i>Softly does it</i>	Major twenty-four note rows—contrafact of <i>Softly, as in a Morning Sunrise</i>
1:9	<i>Block-Out</i>	Minor twenty-four note rows—an F minor blues
1:10	<i>Rhythm-a-Bling</i>	Combination of major and minor twenty-four note rows—a Rhythm Changes tune
1:11	<i>Kinda Kooky</i>	Minor twenty-four note rows—contrafact of <i>Kinda Dukish</i>
Further development of the concept		
3:1	<i>Giant Steps</i> (trio)	Advanced application of major twenty-four note rows in piano trio setting
4:5	<i>Hanging on for the Ride</i>	Advanced application of major twenty-four note rows in piano trio setting
4:6	<i>Billy's Bridge</i>	Gradual exposition of minor twenty-four note row (as in <i>4 Rainbows</i> ) in piano trio setting
Integration with other concepts		
3:6	<i>A Love Supreme: Pursuance</i>	Integration of twenty-four note rows with other improvising techniques, use in line development

Source: Compiled by the author

The concept of 'row-based chords' was developed in this project as a way of connecting 'chord-changes' based improvisation with a particular twelve-note row. The idea was conceived during preparation of Bill Evans' *T.T.T.* for performance (CD 1: track 12). In Evans' original piece, a twelve-note row is harmonised using traditional jazz cadences and chord progressions, and improvisation is based solely on these chord progressions, bearing little or no connection with the original twelve-note row. Experimentation with chord sequences more closely matching the twelve-

note row led to the initial application of ‘row-based chords’ (see Figure 2.2). Essentially, the row is divided into groups of three or four notes, and a possible harmonic implication of each group of notes is selected, represented by a chord symbol<sup>15</sup>.

Figure 2.2 Comparison of row-based chords with Bill Evans’ original harmony for *T.T.T.*

Gm<sup>A</sup>      Cm<sup>7</sup>    Fm<sup>7</sup>    B<sup>b</sup>m<sup>7</sup>    E<sup>b</sup>7<sup>#11</sup>    Am<sup>7</sup>    D7<sup>b9</sup>

Bill Evans' original tune and changes for the first four bars of *T.T.T.*

G<sup>A</sup>                      B<sup>b</sup>7<sup>sus</sup>4                      A7<sup>#9</sup>

Segmentation of the twelve-note row, verticalisation of row segments, and row-based chords

Source: *T.T.T.* from (Wetzel 1996: 81). Row-based chords by the author.

The connection between particular twelve-note rows and particular row-based chord progressions is of more importance for the aesthetic satisfaction of the improviser than the listener.

Nevertheless, by avoiding standard jazz cadences and generally maintaining a minimum of pitch-class redundancy between chords, these progressions allow for a suspension of the sense of overall tonic, some aural connection with the original twelve-note row, and increased scope for other serial procedures such as the development of interval cells derived from the row. Table 2.2 (overleaf) summarises the application of row-based chords in the four CDs.

Interval cell development was first applied in early performances using twelve-note rows, in particular *Miles' Mode* (CD1: track 2) and *Brazilia* (CD1: track 3, also applying row-based chords). Abstract twelve-note structures are difficult to work with spontaneously in improvisation, and the fragmentation of a twelve-note row into multiple interval cells<sup>16</sup> is an effective way of dealing with

<sup>15</sup> This procedure is similar to the ‘verticalisation’ of rows found in many classical serial pieces, perhaps most famously in Schoenberg’s *Klavierstück Opus 33a* (1928).

<sup>16</sup> An ‘interval cell’ can also be described as a row using less than twelve pitch-classes—typically three, four, or five within this submission.



Table 2.2 Application of row-based chords in the four CDs.

CD: Track	Piece	Application of row-based chords
1:12	<i>T.T.T.</i>	First application of row-based chords—improvisation section uses a gradual transition from Bill Evans' original changes to row-based chords
1:3	<i>Brazilia</i> (solo)	Application of row-based chords—the long time period for each chord undesirably reduces chromatic effect and establishes E <sup>b</sup> m as a tonal centre
Rate of change between row-based chords identified as an important issue for concept development		
1:13	<i>PGR</i>	First original composition applying row-based chords with a rapid rate of change. Row-based chords using inversion of twelve-note row form basis for bass solo
3:3	<i>Brazilia</i> (trio)	Redevelopment of original plan for this tune, with constant cycling between chords and use of both twelve-note rows from the melody
4:1	2 + 2 + 2 = 3	Composition applying row-based chords to the twelve-note row from Berg's <i>Violin Concerto</i> , with rapid chord changes and use of retrograde variation of row
Integration with other concepts		
4:3	<i>Amy's Suite: Get Rollin'</i>	Use of row-based chords in sections 'B' and 'E', and use of polyphony (multiple statements of one row) to create derived chord sequences as well as verticalisation in section 'D'

Source: Compiled by the author

such materials. Later in the project, examination of Coltrane's *A Love Supreme* led to more focus on interval cells and their potential development, including application of standard serial procedures such as retrograde, inversion, transposition, and cyclic permutation, along with the derivation of twelve-note rows from repeated interval cells. Interval cell development is also strongly connected to motive development, and this connection is important for the application of interval cells within this project. Figure 2.3 (overleaf) shows serial procedures applied to the interval cell from *A Love Supreme*. Table 2.3 (overleaf, page 23) summarises the application of interval cell development in the four CDs.

The techniques described above are designed for application with little to no ensemble preparation. Twenty-four note rows, row-based chords and interval cells are usually applied in ways that require no engagement with these concepts from the bassist, other than reading chord symbols and applying typical jazz performance practice. In the case of twenty-four note rows and interval cells,

Figure 2.3 Potential development of the interval cell from *A Love Supreme*.

Interval cell: Prime (P)

Inversion (transposed) (I)

Retrograde (R)

Retrograde Inversion (transposed) (RI)

Cyclic permutation

A derived twelve-note row

Interval multiplication (by a factor of 2)

2 semitones → 4 semitones

3 semitones → 6 semitones

Examples of chord voicings - stacking of interval cells

Stacked F Minor pentatonic

A more dissonant chord voicing

Source: Compiled by the author.

the bassist is often outlining underlying harmony or a tonal centre, and serial-derived ideas are used 'on top' of this basis. In the case of row-based chords, the chord symbols themselves, along with their standard interpretation, form part of the serial-derived structure, and the bass is involved with an idea based on serialism with no need for engagement with the concept. Ensemble interaction is not the focus of this submission, although this may form an interesting area for future research. The performance of *I Feel* (CD4: track 4) places the piano and bass on equal footing in terms of engagement with interval cells, and this produced some interesting results. In particular, engagement with interval cells provided a certain aesthetic satisfaction for the bassist. The following section presents transcription and analysis of excerpts from the recordings, demonstrating achievement of the goals for application of serialism stated previously.

Table 2.3 Application of interval cell development in the four CDs.

CD: Track	Piece	Application of interval cells
1:2	<i>Miles' Mode</i> (solo)	Segmentation of twelve-note row into three four-note segments, and development of these cells
1:3	<i>Brazilia</i> (solo)	Application of interval cell development as an outgrowth of row-based chords
Further development of interval cell concept, drawing on studies of chord stranding		
3:2	<i>Miles' Mode</i> (trio)	More advanced application of interval cell development
3:3	<i>Brazilia</i> (trio)	More advanced application of interval cell development in the context of row-based chords
3:4	<i>A Love Supreme: Acknowledgment</i>	Use of a wide variety of techniques for interval cell development
3:5	<i>Resolution</i>	Integration of a wide variety of techniques, including interval cell development
3:6	<i>Pursuance</i>	Integration of a wide variety of techniques, including interval cell development
3:7	<i>Psalm</i>	Exploration of interval cell stacking, and greater levels of dissonance, in a solo piano context
Composition of suite using thoroughgoing application of an interval cell (the five-note row from Stravinsky's <i>In Memoriam Dylan Thomas</i> )		
4:2	<i>Amy's Suite: Stand Up</i>	Application of a wide variety of techniques for interval cell development, and textural variation
4:3	<i>Get Rollin'</i>	Integrated application of interval cells, row-based chords, and chord stranding
4:4	<i>I Feel</i>	Polyphonic improvisation between piano and bass applying the interval cell in its various forms

Source: Compiled by the author

## 2.4 Transcription and Analysis Demonstrating Application of Frameworks

The goal for application of serialism within this research was to develop and apply concepts as an integrated extension of my personal jazz style. Due to this focus on integration, the use of specific concepts is often difficult to locate aurally. Aural impressions will always be subjective, but in the author's opinion each specific concept applied in this submission has a unique, identifiable sound, and with some familiarity this can be identified within the recordings. The specific details of each application, especially without familiarity with the concepts applied and their sounds, are far more difficult to discern accurately through listening alone. Therefore, this section provides transcriptions and analyses from selected performances, demonstrating the application of techniques from the

performer's perspective. Additional transcriptions related to particular concepts are included as Appendices, and referred to in the text. The transcriptions and analyses focus on (i) the specific application of each technique, and (ii) the integration of each technique with other jazz improvisation techniques.

### *Twenty-Four Note Rows*

Four tracks applying twenty-four note rows are referred to specifically in this section: *Giant Steps* – solo version (CD1: track 1), *Giant Steps* – trio version (CD3: track 1), *Kinda Kooky* (CD1: track 11) and *Billy's Bridge* (CD4: track 6).

#### 2.4.1 *Giant Steps*

This section analyses excerpts from the two performances of *Giant Steps* presented on the CDs, demonstrating the initial application of concepts in a solo setting and their further development in a trio setting. Analysis of the 'solo piano' excerpt shows typical application of the major twenty-four note row, and integration of this with more standard ideas over *Giant Steps*. Analysis of the later 'trio' excerpt shows more complex use of the twenty-four note row structure, in a trio setting. For the aid of analysis, a numbered version of the row is referred to (see Figure 2.4). For example, 'pitch 4' refers to A<sup>#</sup>/B<sup>b</sup> <sup>17</sup>.

Figure 2.4 *Giant Steps* 'twenty-four note row' with numbers



Source: Compiled by the author.

The 'solo piano' excerpt makes use of several ideas that recur throughout the solo, particularly use of the row segmented into major seventh chords, polyrhythmic ideas, and contrast between quaver

<sup>17</sup> These numbers are used to aid accurate discussion of the row's application. Rather than being conscious of a particular 'number' associated with a particular pitch-class during performance, I was conscious of the notes local to a particular pitch-class, moving both forwards and backwards through the row, and of approximate paths to get from one given pitch-class or group of pitch-classes to another via the row.

single-note right-hand lines and syncopated use of block chords between the hands. Figure 2.5 (overleaf – pages 26-27) presents an annotated transcription of this excerpt (see Appendix 1A for other transcribed excerpts from this performance).

In bars 1-3 of Figure 2.5, the right hand sustains pitches 4-7 of the row over moving harmony. Here the left hand omits the dominant seventh chords. Pitches 4, 5 and 7 are arranged as a chord, played in alternation with pitch 6. Bar 4 begins with a voice-leading movement from the  $A^b$  of the previous bar to a G, consonant with  $Am^7$ . The rest of the bar employs the common jazz device of ‘up a semitone’, taking the  $B^b m^7$  four-part chord (pitches 4-7) that was sustained over bars 1-3 and transposing up to a  $Bm^7$  four-part chord. This device also acts as a jump through the row, and these resultant pitches ( $Bm^7$  chord, pitches 18-21) connect to the next serial-derived idea beginning in bar 5, beginning with a reversal of direction in movement through the row. Throughout bars 5-9 the row is segmented into a sequence of major seventh chords, and these are used as the basis for a quaver melodic line<sup>18</sup>. These major seventh chords maintain an alternating tension and release relationship with the underlying harmony through to the end of the excerpt, resolving in the third bar of the form. This use of tension and release is effective, but tendencies to resolve each tension within several bars and maintain a constant, strong connection with the underlying harmony are, in the author’s opinion, a weakness of this performance.

This analysis demonstrates consistent use of the ‘major’ twenty-four note row to organise creative possibilities for improvisation. Specific uses of the row include segmentation into four-note chords, forward and backward movement through the row, and suspension of row segments. These ideas are integrated with more typical jazz ideas such as ‘outlining changes’, ‘transposition up a semitone’, and ‘chord substitution’. Harmonic tension and release is also very important in this excerpt—rather than seeking to maintain a constant level of harmonic tension, this shows an exploitation of the tension and release possibilities created by the use of one harmonic concept (a twenty-four note row) simultaneously with another (the chord progression of *Giant Steps*). A key weakness of this performance, identified in subsequent analysis, was that tension, once established, was always quickly resolved, leading to a very consonant overall sound.

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<sup>18</sup> Segmentation of the twenty-four note row in retrograde form into major seventh chords (descending in tones) in this way leads to articulation of the ‘major seventh’ chords in *Giant Steps*’ harmonic structure (descending in major thirds).

Figure 2.5 Annotated transcription of excerpt from solo piano *Giant Steps* performance (CD1: track 1. 1:51-2:11). Chorus 4 of piano improvisation.

Use of twenty-four note row Jump through row - Pitches 21-18

8<sup>va</sup> B<sup>Δ</sup> D<sup>7</sup> G<sup>Δ</sup> B<sup>b7</sup> E<sup>bΔ</sup> Am<sup>7</sup> D<sup>7</sup>  
 Melodic fragment repeated up a semitone

Pitches 4-7 sustained in right hand  
 Voice-leading A<sup>b</sup>-G

Left hand plays assumed harmony

Reversal of movement for pitches 17-20... then continuous forward movement through segmented row.

G<sup>Δ</sup> B<sup>b7</sup> E<sup>bΔ</sup> G<sup>b7</sup> B<sup>Δ</sup> F<sup>m7</sup> B<sup>b7</sup>

targeting tension... resolution to B<sup>Δ</sup> tension...

G<sup>Δ</sup> (17-20) A<sup>Δ</sup> (21-24) B<sup>Δ</sup> (1-4) D<sup>bΔ</sup> (5-8)

E<sup>bΔ</sup> Am<sup>7</sup> D<sup>7</sup> G<sup>Δ</sup> C<sup>#m7</sup> F<sup>#7</sup>

resolution to E<sup>bΔ</sup> tension... resolution tension...

E<sup>bΔ</sup> (9-12) F<sup>Δ</sup> (13-16) G<sup>Δ</sup> (17-20) A<sup>Δ</sup> (21-24)

13 1 2 3 4 14 5 6 7 8 15 9 10 11 12 16 13 14 15 16

$B^{\Delta}$   $Fm7$   $B^{\flat 7}$   $E^{\flat \Delta}$   $C^{\sharp m7}$   $F^{\sharp 7}$

resolution tension... resolution tension...

$B^{\Delta}(1-4)$   $D^{\flat \Delta}(5-8)$   $E^{\flat \Delta}(9-12)$   $F^{\Delta}(13-16)$

Reversal of movement for pitches 17-20.

17 18 19 20 21 22 23 24 18 20 19 18 17 16 15 14 13 19 12 11 10 9

$B^{\Delta}$   $D7$   $G^{\Delta}$   $B^{\flat 7}$   $E^{\flat \Delta}$

...tension... resolution

$G^{\Delta}(17-20)$   $A^{\Delta}(21-24)$   $G^{\Delta}(17-20)$   $F^{\Delta}(13-16)$   $E^{\flat \Delta}(9-12)$

Source: Transcribed and compiled by the author.

The second performance of *Giant Steps* in this submission (CD3: track 1) shows more complex application of the twenty-four note row. The overall tendency towards the use of tension and release in relationship to underlying harmony is still observed, but the application of dissonance and structures derived from the row is carried out on a larger scale. Figure 2.6 (overleaf, pages 28-29) shows the last chorus of the improvised solo on this track (see Appendix 1B for other transcribed excerpts from this performance).

Bars 1-9 of Figure 2.6 show the application of the twenty-four note row spread over four octaves of the piano, using consecutive two-note groupings from the row. This type of application reduces the sound of 'segmentation', providing a smooth intervallic transition from the low, dissonant use of  $Gm7$  over  $B^{\Delta}$  in bar 1, through to the false resolution of  $E^{\flat m7}$  over  $E^{\flat \Delta}$  in bar 9. The left hand

Figure 2.6 Annotated transcription of excerpt from trio *Giant Steps* performance (CD3: Track 1. 4:43-4:59). Final chorus of piano improvisation.

Use of twenty-four note row

10 11 12 13 14 15 16 17 ② 18 19 ③ 20 21 ④ 22 23

B<sup>Δ</sup> D<sup>7</sup> G<sup>Δ</sup> B<sup>b</sup>7 E<sup>b</sup>Δ Am<sup>7</sup> 3 D<sup>7</sup> 3

⑤ 24 ⑥ 1 2 ⑦ 3 4 ⑧ 5 6

G<sup>Δ</sup> B<sup>b</sup>7 E<sup>b</sup>Δ F<sup>#</sup>7 B<sup>Δ</sup> Fm<sup>7</sup> B<sup>b</sup>7

Left Hand - chord voicings on black notes (continuation of an idea established several choruses previously)

These four-note groupings are applied broadly as harmonic sonorities

⑨ 7 ⑩ 2 3 4 5 ⑪ 4 5 6 7 ⑫ 9 10 11 12

E<sup>b</sup>m<sup>7</sup> B<sup>b</sup>m<sup>7</sup> E<sup>b</sup>Δ

⑧ E<sup>b</sup>Δ Am<sup>7</sup> D<sup>7</sup> G<sup>Δ</sup> C<sup>#</sup>m<sup>7</sup> F<sup>#</sup>7

'False' resolution to E<sup>b</sup>m<sup>7</sup> - left hand maintains this sonority underneath moving right hand



Left Hand - chord voicings on white notes  
(completing twelve-note idea begun in bar 5)

True resolution to  $E^{b\Delta}$ , resolving tension

Source: Transcribed and compiled by the author.

applies an idea derived from Lutoslawski's chord stranding throughout Figure 2.6—black notes (bars 4-13) contrasted with white notes (bar 14), as used in *Morze of Five Songs*. Having arrived at the false resolution in bar 9 (grouping notes 2-7 of the row, an  $E^{b\Delta}$  sound, where the underlying harmony is  $E^{b\Delta}$ ), the right hand gradually moves through notes 2-12 of the row, by deriving four-part chord structures and using these as a basis for quaver lines. This comes to rest on notes 9-12 in bar 12 (an  $E^{b\Delta}$  chord). The underlying harmony's second resolution to  $E^{b\Delta}$  in bar 15 then effects a complete resolution of tension, and this is the closing statement of the piano solo.

Whereas the 'solo piano' excerpt shows only small-scale application of tension and release between the row and the underlying harmony, the 'trio' excerpt shows the consistent maintenance of tension over an entire chorus, and controlled release in the closing bars. The 'trio' excerpt also shows a use of the row that avoids clear segmentation into four-part chords (which the 'solo piano' excerpt is largely dependent upon). Overall, these excerpts show effective integration of ideas derived from twenty-four note rows with many other jazz improvisation techniques.

#### 2.4.2 *Kinda Kooky*

Twenty-four note rows were initially applied over static tonal centres (as in *Hanging on for the Ride*, CD1: track 6 and CD4: track 5) and chord progressions based on bass movement in major thirds and major seconds (as in *Giant Steps*, and also *Naima*, CD1: track 4, and *T.T.T.T.*, CD1: track 5). In order to use these ideas in other contexts, contrafacts were written, applying both major and

minor twenty-four note rows. Once such tune was *Kinda Kooky* (CD1: track 11), a contrafact of Ellington's *Kinda Dukish* (1953). The key success of the performance of *Kinda Kooky* is the integration of a wide range of improvising techniques with the use of the twenty-four note row and the controlled use of serialism as a tension-building device, contrasting with the use of standard improvising material such as the C Mixolydian scale. Figure 2.7 (overleaf) shows a melodic line derived from the row, applying chromatic enhancement, circling of target points, arpeggiation of four-part chords, semitone voice leading and the standard harmonic resolution  $A^{b7}-G^7-C^7$ . The entire line begins and ends with ideas based on the C Mixolydian scale (also loosely derived from the row).

Appendix 1C shows the complete transcription of the piano solo on *Kinda Kooky*. The use of ideas derived from the row and those derived from standard interpretation of the given chord symbols (e.g.  $C^7$ , play C Mixolydian) are indicated in this Appendix. Table 2.4 (overleaf, page 32) shows the number of bars in each section where the performer (present author) is deriving musical material from the twenty-four note row, and the number of bars derived from standard chord interpretation. The figures presented in Table 2.4 demonstrate that throughout the piano solo, the use of serial derived ideas increases in frequency (Chorus 1 19%, Chorus 2 57%, Chorus 3 38%, Chorus 4 66%), and the use of standard chord interpretation decreases in frequency (Chorus 1 94%, Chorus 2 66%, Chorus 3 34%, Chorus 4 35%). The first three sections and the final section use simple ideas based on the C Mixolydian scale, suggesting that this has been used as a framing device for the entire solo. This is very successful as it shows the effective use of the twenty-four note row as a device to create tension and release, and control form in improvisation. In this performance, the twenty-four note row is also used to organise the melody of the 'head', to suggest ideas for the piano accompaniment for the drum solo, and as a basis for the harmonic platform of C Mixolydian / C Lydian Dominant. Thus, it is clear that the row has provided a unifying device for the entire performance.

Figure 2.7 Excerpt from *Kinda Kooky* piano solo (see Appendix 1C) bars 35-42 (CD1: track 11. 2:00-2:06). Integration of serial idea development with more common jazz improvisation techniques and ideas.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Row

(C<sup>7</sup>)  
23-5

(B<sup>b7</sup>)  
21-24

(A<sup>b7</sup>)  
17-20

35 C<sup>7</sup> C Mixolydian derived idea. 36

1 3 4 5 4 23 5 4 3 2 1 22 18 19

guide-tone resolution chromatic enhancement circling target note

(G<sup>b7</sup>)  
13-16

(A<sup>b7</sup>)  
17-20

(G<sup>7</sup>)

39 20 14 13 16 15 14 13 40 19 17 19 22

arpeggiate 4-note chord guide-tone resolution common II-V-I variant, A<sup>b7</sup>-G<sup>7</sup>-C<sup>7</sup> chromatic enhancement

(C<sup>7</sup>)  
41<sup>21</sup>

42

Resolve to simple C Mixolydian derived idea.

Source: Transcribed and compiled by the author.

Table 2.4 Numbers of bars in each section of *Kinda Kooky* piano solo using standard chord interpretation, and number of bars using twenty-four note rows (see Appendix 1C).

Some bars use *both* standard chord interpretation *and* twenty-four note rows, and some bars use neither. Therefore, Table 2.4 should be read *vertically*, showing the gradual increase in focus on twenty-four note rows and the gradual decrease in focus on standard chord interpretation.

	Standard chord interpretation	Use of twenty-four note rows
<i>Chorus 1</i>		
A	8	0
A	8	0
B	8	2
A	6	4
	(total 30 bars, 94%)	(total 6 bars, 19%)
<i>Chorus 2</i>		
A	4	4
A	6	2
B	6	8
A	5	4
	(total 21 bars, 66%)	(total 18 bars, 57%)
<i>Chorus 3</i>		
A	2	0
A	5	0
B	2	6
A	2	6
	(total 11 bars, 34%)	(total 12 bars, 38%)
<i>Chorus 4</i>		
A	0	5
A	3	8
B	0	8
A	8	0
	(total 11 bars, 35%)	(total 21 bars, 66%)
<i>Overall</i>	Total 73 bars, 57%	Total 57 bars, 45%

Source: Compiled by the author.

### 2.4.3 *Billy's Bridge*

Most applications of twenty-four note rows in this submission use very rapid movement between notes of the row. By comparison, the composition *4 Rainbows* (CD1: track 7) was an early attempt to apply a gradual movement through a twenty-four note row. This concept was revisited in CD 4, with the composition *Billy's Bridge*. This is a reharmonisation of Billy Strayhorn's *Chelsea Bridge* (1941), applying the 'minor' twenty-four note row to the original progression using a very gradual movement through the row over the 32 bar form. Appendix 1D presents an annotated transcription of the first chorus, and a graph demonstrating projected movement through the twenty-four note row over time compared with the notes actually played in the first chorus. The analysis, presented in the graph of pitches played over time, and in the annotated transcription, reveals several significant points. The movement through the row indicated by the chord symbols is followed for the first three eight-bar sections of the chorus. Notes outside the suggested row ordering are indicated in the graph. Overall, this use of notes outside the suggested pattern in bars 1-24 is not important, as it is consistent with a level of variation that might be expected in improvisation. In the final eight-bar section (bars 25-32), the piano reintroduces an idea of segmenting the row into melodic minor scales, used earlier in bars 1-4. This idea is used to move forward through the row, rather than backward, as suggested by the chord symbols (see the graph and transcription in Appendix 1D). The end of this forward movement through the row coincides with the harmonic resolution to D<sup>b</sup> in bars 31-32.

These three examples (*Giant Steps*, *Kinda Kooky*, and *Billy's Bridge*) clearly show that the concept of 'twenty-four note rows' is appropriate for jazz improvisation, and has been used in these performances in an integrated way to extend my personal jazz style. The ability to segment twenty-four note rows, especially into four-part chords and seven-note scales, is consistently important for their integration in each of these examples. The extreme flexibility of these structures, including the ability to quickly locate oneself in the row, or connect a portion of the row to a 'bebop' type melodic phrase, is also consistently important. Finally, the application of these concepts over 'underlying harmony' or tonal centres allows for the use of tension and release relationships between the serial structure and the harmonic basis, and this is crucial to the use of twenty-four note rows in this submission. As detailed above in Table 2.1, other tracks demonstrate

further application of twenty-four note rows. In addition, Appendix 1E presents transcribed excerpts from *Naima* (CD1: track 4) and Appendix 1F presents transcribed excerpts from *T.T.T.T.*, both with annotation indicating other applications of twenty-four note rows.

#### *Row-Based Chords*

Three tracks applying row-based chords are referred to specifically in this section: *Brazilia* – solo version (CD1: track 3), *Brazilia* – trio version (CD3: track 3), and  $2 + 2 + 2 = 3$  (CD4: track 1),

#### **2.4.4 *Brazilia***

The two key goals for the use of row-based chords in this project are (i) the creation of a connection between a serial structure and an improvisation based on chord symbols (incorporating derivation of chords from a row and melodic use of interval fragments) and (ii) the use of row-based chords to create a situation where the chromatic total is played consistently within a given timeframe. Row-based chords were first explored in the performances of *T.T.T* (CD1: track 12) and *PGR* (CD1: track 13). Appendices 2A (*T.T.T.*) and 2B (*PGR*) show annotated transcriptions demonstrating the application of row-based chords in these pieces. Coltrane's piece *Brazilia* was chosen for further application and development of this concept. *Brazilia*, recorded in 1965, was Coltrane's last composition to make overt use of twelve-note rows: the head states and embellishes two twelve-note rows, leading into a solo section based loosely on E<sup>b</sup> minor. The Coltrane Quartet's performance explored both tonal and atonal pitch organisation, reaching extreme levels of dissonance and chromaticism; however, Coltrane made no use of the twelve-note rows in his improvisation<sup>19</sup>.

Application of row-based chords in *Brazilia* made use of three chords derived from stacked portions of the row—E<sup>b</sup>m<sup>7</sup> (or E<sup>b</sup>m<sup>Δ</sup>), G<sup>11</sup>, and A<sup>Δ</sup> (see Figure 2.8 overleaf). As shown in Figure 2.8, these chords were greatly embellished during performance, but overall the relatively static use of E<sup>b</sup>m<sup>7</sup> contrasted with A<sup>Δ</sup> was the dominant harmonic feature. This use of a long time-span between row-

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<sup>19</sup> This conclusion is based on the author's transcription and analysis of Coltrane's solo on this piece. Interestingly, large sections of Coltrane's playing in the last minutes of this track are very similar to sections of Coltrane's playing on *Ascension* (1965).

based chords, and the consequent 'modal' sound (reminiscent of Davis' *So What* [1959]), was identified as a significant failure of this performance and influenced subsequent use of the concept.

Figure 2.8 Derivation of row-based chords in *Brazilia* (CD1: track 3. 3:01-3:09), and excerpt from piano solo demonstrating use of left hand to embellish these chords. The use of interval fragments in the right hand is also indicated. See Appendix 2C for more transcription from this track.

Twelve-note row for 'A' section of *Brazilia*

Interval Cell 1 (IC 1) Interval Cell 2 (IC 2) Interval Cell 3 (IC 3)

$E^{\flat}m^7$  (or  $E^{\flat}m^{\Delta}$ )  $G^{11}$   $A^{\Delta}$

Excerpt from piano solo on *Brazilia*.  
Harmonic movement in left hand, interval cells in right hand.

IC 2 IC 2 IC 2

$(F^{\#}m^7)$   $(G^{11})$   $Fm^7$   $E^7$

IC 3 IC 3 IC 3 IC 3

$F^{\#}m^7$   $A^{\Delta}$   $B^{\flat}+^7$   $Bm^7$   $E^7$   $E^{\flat}m^7$

Source: Transcribed and compiled by the author.


The use of interval cells in the solo performance of *Brazilia* (CD1: track 3) was limited in scope, generally being restricted to repetition and transposition of these fragments (see Figure 2.8 and Appendix 2C for examples of this). Recognition of this limited approach to interval cell development affected the subsequent trio performance of *Brazilia*, but even the simple use of

interval cells in the solo version is successful as a device for creating tension and a sense of connection with the twelve-note row. The use of both interval cells (or 'motive development') and harmonic embellishment are practices that are standard in jazz improvisation. In this context, the important factor is that both ideas use material based on the twelve-note row of the head.


In order to apply row-based chords more effectively, the trio performance of *Brazilia* uses a twelve bar chord sequence derived from both twelve-note rows, as shown in Figure 2.9. This chord progression is much more successful in suggesting chromaticism and connection with the row, and obscures any potential tonal centre in the performance.

Figure 2.9 Derivation of row-based chords, trio performance of *Brazilia* (CD3: track 3).

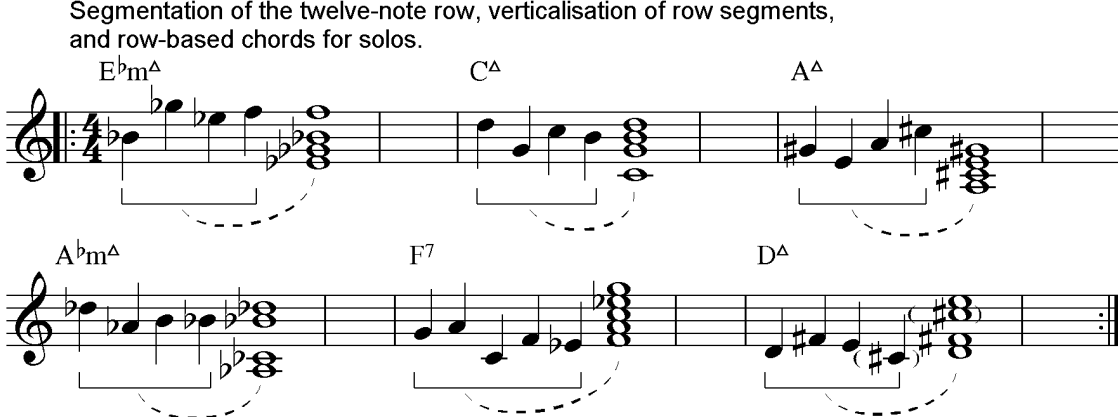
Twelve-note row for A section



Twelve-note row for B section



Segmentation of the twelve-note row, verticalisation of row segments, and row-based chords for solos.



Source: Compiled by the author

The use of interval cells is also much more advanced in this performance. Appendix 2D shows an annotated transcription of the first twenty-six bars of the piano solo. Every six bar section in this transcribed excerpt presents the chromatic total, and the application of interval cells is much more advanced than that used in the solo version of *Brazilia*. Rather than simply repeating and transposing interval cells, the trio version of *Brazilia* shows the use of inversion, fragmentation,



cyclic permutation, modal reordering, and combinations of interval cells. This application of interval cell development reflects an extension of techniques for motive development, standard within jazz performance practice. On the whole, the trio performance of *Brazilia* shows the attainment of the goals for application of row-based chords in this submission.

$2 + 2 + 2 = 3$  (CD4: track 1) also shows successful application of row-based chords. Appendix 2E shows the opening forty bars of the piano solo on this track. The chromatic total is presented in all but one four-bar section of this transcription (bars 29-32). Further examples of row-based chords can be found in the CD recordings as detailed in Table 2.2 above.

### *Interval Cell Development*

In most general texts concerning twentieth-century harmony, a distinction is drawn between 'serialism' and 'interval cells'. Nevertheless, the broad definition of 'serialism' adopted within this submission supports the treatment of 'interval cells' as a subset of 'serialism'. This perspective allows useful comparisons between Coltrane's earlier, overt explorations of serialism (especially in *Miles' Mode* and *Brazilia*) and later compositions such as *A Love Supreme*. As the above analysis of the performances of *Brazilia* suggests, the concept for interval cells was first suggested by work on row-based chords, in particular the segmentation of twelve-note rows into four sections and the independent manipulation of each section. A similar process was used in the solo and trio performances of *Miles' Mode* (CD1: track 2 and CD3: track 2), and in the re-composition of Lutoslawski's *Song II* (CD2: track 5). The two 'suites' presented on CDs 3 and 4 (*A Love Supreme*, CD3: tracks 4-7 and *Amy's Suite*, CD4: tracks 2-4) represent the main applications of interval cells in this submission, and both of these are referred to specifically in this section.

#### **2.4.5 A Love Supreme**

Coltrane's use of the referential interval cell (F – A<sup>b</sup> – B<sup>b</sup>) is pervasive in his recordings of *A Love Supreme*, in both the composition itself and in his improvisation. The nature of the cell, with its close connection to the pentatonic scale and fourth patterns, is already highly consistent with much of Coltrane's and McCoy Tyner's typical melodic language. Coltrane does use the cell in some

ways that are not consistent with his standard use of pentatonic scales—Figure 2.10 shows a selection of these usages from the studio version of *Acknowledgment*.

Figure 2.10 Excerpts from studio version of *Acknowledgment*.

Interval Cell:  
Prime (P)

Interval Cell:  
Retrograde Inversion (RI)

2:09-2:21 of Coltrane's *Acknowledgment* (Studio version) showing transposition of the interval cell. Similar ideas are developed throughout this piece.

Development of P, also the thematic bassline.

4:54-5:05 of Coltrane's *Acknowledgment* (Studio version) - the beginning of the famous 'key-hopping' section (better described as 'interval cell transposition').

Source: Transcribed and compiled by the author from (Coltrane 1964 [1999]).

Although analysis of Coltrane's performance is not the focus of this submission, there are several points concerning his improvisation over *Acknowledgment* that are relevant to this research. Firstly, Coltrane consistently uses the interval cell as a device for creating and maintaining tension, and resolves this tension by returning to more conventional jazz melodic ideas over the tonal centre of F minor. Secondly, the nature of the interval cell allows for immediate connection with Coltrane's more typical melodic ideas, in particular pentatonic scales. He regularly exploits this connection—for instance, in the first two bars of Figure 2.10, he plays two interval cells outlining an F minor pentatonic scale, and then takes the pattern outside of F minor, creating harmonic tension.

Both of these points have obvious relevance to the preceding analysis of twenty-four note rows and row-based chords in this submission.

The performance of *A Love Supreme* in this submission (CD3: tracks 4-7) places explicit emphasis on the interval cell, and explores potential connections between this interval cell and other applications of serialism. Figure 2.11 shows an excerpt from the piano solo on *Acknowledgment* (CD3: track 4), demonstrating various applications of the interval cell and serial technique.

Figure 2.11 Excerpt from *Acknowledgment* (CD3: track 4. 1:52-2:00) demonstrating applications of the interval cell and serial technique.

The figure consists of two parts. The top part shows the interval cell and its transformations: Prime (P), Inversion (I), Retrograde (R), and Retrograde Inversion (RI). The bottom part shows a transcription of bars 17-20 of *Acknowledgment*. The notation includes bar numbers 17, 18, 19, and 20. The right hand (treble clef) features the interval cell and its transformations (RI, I, RI, I, RI, RI). The left hand (bass clef) features cell multiplication and voicing techniques, with labels 'Cell multiplication' and 'voicing' pointing to specific chords. The key signature is one flat (B-flat major/A minor).

Source: Transcribed and compiled by the author.

This excerpt shows the use of the inversion and retrograde inversion forms of the interval cell (the prime and retrograde forms are used at other times in the performance), cyclic permutation of the cell, and, in the left hand at bars 18-19, cell multiplication and cell stacking techniques. Here, the original interval cell (F – A<sup>b</sup> – B<sup>b</sup>, or minor third followed by major second) is ‘multiplied’, in this case by a factor of two. The resultant cell (F – B – E<sup>b</sup>, transposed here to G<sup>#</sup> – D – F<sup>#</sup>; or

augmented fourth followed by major third) is then 'stacked' to form a left-hand voicing. Figure 2.12 shows another excerpt from *Acknowledgment*, demonstrating the use of a twelve-note row derived from the interval cell.

Figure 2.12 Excerpt from *Acknowledgment* (CD3: track 4. 2:54-3:01) demonstrating applications of the interval cell and serial technique.

Derived twelve-note row - one possibility

Bars 47-49 of *Acknowledgment* transcription (Appendix 3A)

Complete statement of derived twelve-note row

Source: Transcribed and compiled by the author.

In this excerpt, a twelve-note row (one of many possible rows derived from the interval cell) is stated in two parts—bar 47 presents the first six pitch-classes, repeated, and bars 48-49 present the final six pitch classes. In subsequent bars, parts of this row are restated and developed, rhythmically and harmonically. See Appendix 3A for an annotated transcription of the first two minutes of the piano solo over *Acknowledgment*.

The performances of the following sections of *A Love Supreme* continue to focus on interval cell development in similar ways to those outlined in the transcription and analysis of *Acknowledgment*. In both *Resolution* (CD3: track 5) and *Pursuance* (CD3: track 6) interval cell development is integrated closely with my personal jazz style, with particular emphasis on McCoy Tyner's melodic, rhythmic and harmonic language due to this context. *Psalm* (CD3: track 7) explores the interval cells in a solo piano context, in free time. Cell stacking is explored further (the stacking of the first six pitches from the row used in Figure 2.12 is particularly noticeable). During this performance, I had a small printed version of the text from *A Love Supreme* on the piano music stand. This text was referential for Coltrane's performance of *Psalm*, particularly in the studio version (Porter 1983). Due to time constraints, I did not play the entire text, but I did choose to use the interval cell, connecting the retrograde form of the cell with the words 'Thank you God', and in particular the 'tonic' (C) with the word 'God'. Personally, I think that this is the most aesthetically important use of the interval cell in Coltrane's piece, because it reveals the 'meaning' of the cell, completing its exposition, and giving ultimate significance to the final rhapsodic, transformed reference to the introductory statement of the suite.

The performance of *A Love Supreme* on CD 3 successfully explores the possibilities of the interval cell (especially in *Acknowledgment* and *Psalm*) and demonstrates integration of these ideas with more standard approaches to jazz improvising (especially in *Resolution* and *Pursuance*). By situating the performance after three Coltrane compositions clearly related to serialism (*Giant Steps*, *Miles' Mode*, and *Brazilia*), and placing explicit emphasis on serial technique in the performance, an alternative view of this piece is also suggested, with interesting results. The religious significance of *A Love Supreme*, for Coltrane, and for many people who love this music, will always be of central importance. The innovative melodic and harmonic ideas of this composition, however, should not be overlooked or de-emphasised. This performance indicates a viable melodic and harmonic path for exploration in this piece, with fruitful results.

#### **2.4.6 Amy's Suite**

The composition *Amy's Suite* aimed to combine a variety of the techniques explored in this submission into one extended composition. An interval cell was used to organise all melodic and

harmonic aspects of the piece. This interval cell was taken from Stravinsky's *In Memoriam Dylan Thomas* (1954), his first piece to use serial technique in a thoroughgoing manner. Theorists usually describe this as a 'five-note row', and it was chosen to highlight the connection between interval cells and rows. Figure 2.13 (pages 42-43) shows the opening of *In Memoriam Dylan Thomas*, together with simple analysis showing the use of the four main row forms (a modified and extended version of the analysis presented on Stravinsky's original score).

Figure 2.13 The interval cell from *In Memoriam Dylan Thomas*, and the first eight bars of Stravinsky's piece, showing application of the cell.

Interval cell:  
 Prime (P)      ② Inversion (I)      ③ Retrograde (R)      ④ Retrograde Inversion (RI)

Described on Stravinsky's score as 'Theme'  
 ♩ = 100-102

① P      ② I      ③ R      ④ RI      ⑤ P

⑥ P      ⑦ R      ⑧ RI

Source: The author's concert pitch reduction of the original score (Stravinsky 1954), incorporating Stravinsky's own analysis of bars 1-5 and the author's analysis of bars 6-8. Articulation and dynamic markings not included.

This introduction shows a number of aspects that are important for the opening and closing sections of this piece: the strict application of all four row forms, the use of four slow-moving voices related in part by canon, and the deliberate extraction of consonant sonorities by careful application of these techniques. Stravinsky has used the strongly ‘cadential’ figure in bars 6-8 repeatedly throughout the Prelude and Postlude, resolving to a ‘C major’ type chord. This approach to the use of the interval cell is referred to repeatedly throughout *Amy’s Suite* (see Appendix 9). The opening of *Stand Up* leads into an irreverent take on Stravinsky’s textures (see Figure 2.14). This idea is restated and developed leading into and throughout the bass solo, at section ‘C’.

Figure 2.14 Opening statement of the interval cell in *Stand Up*. This section focuses on the Prime and Inversion forms of the cell: other parts of this piece explore the Retrograde and Retrograde Inversion forms.

♩ = about 70  
Very drunken and wobbly

Source: Compiled by the author

All other parts of *Stand Up* apply the interval cell in various ways—the bass-line and melody at section ‘B’, the final Coda, and the piano solo. The alternation between D and D<sup>b</sup> as tonal centres in the piano solo forms part of a large-scale exposition of the cell—D-D<sup>b</sup> in *Stand Up*, B<sup>b</sup>-B in *Get Rollin’*, and C in *I Feel*. The cell is also applied throughout the piano solo. Figure 2.15 (overleaf) shows excerpts from the transcribed portion of the piano solo (see Appendix 3B) demonstrating various applications of the cell. Similar applications of the interval cell are applied throughout the piano improvisations on *Stand Up*. The performance of *Amy’s Suite* shows highly developed and

Figure 2.15 Excerpts from piano solo on *Stand Up* (CD4: track 2), demonstrating applications of the interval cell (see Appendix 3B for transcription).

Interval cell multiplication: by factor of 5 (P x 5)

Interval cell:  
Prime (P)      Inversion (I)      Retrograde (R)      Retrograde Inversion (RI)

From 'Excerpt 1' 4:22-5:33

Melodic use of interval cell, and octave displacement within interval cell.

Verticalisation of the final two notes of the interval cell.

From 'Excerpt 2' 6:19-6:52

Quote loosely derived from *Blues in the Corner*

Use of cell multiplication to develop a melodic idea based on 4ths.

From 'Excerpt 3' 8:13-8:21

A twelve-note row derived from repeated interval cells used as top note for voicings, and loosely followed in other voices of the chords.

Source: Transcribed and compiled by the author.



integrated application of interval cells, and, inspired by *A Love Supreme*, demonstrates the viability of interval cells as an organisational device for large-scale composition and performance.

The final section of *Amy's Suite (I Feel)* is the only explicit exploration of improvised, ensemble serial technique in this submission. The concept for this section is to perform an improvised version of the opening textures of Stravinsky's *In Memoriam Dylan Thomas* (see Figure 2.13 above). This is described on the chart (see Appendix 9) as: 'Improvise – each line follows the row (P, I, R or RI) in piano and bass. When you hear a nice chord, pause on it. Continue at will. Improvisation ends when all lines are resolved back to the G<sup>b</sup> starting point.' This allows the piano and bass to participate as equal partners in the creation of melodic and harmonic ideas derived from serial technique, and the results, as demonstrated in the recorded performance, are successful. Appendix 3C shows an annotated transcription of the first minute of improvisation on this track. Almost every pitch-class chosen by the pianist (present author) is derived from the interval cell. The bassist's application of the cell is less strict, playing segments of the cell or occasionally departing from it entirely. Appendix 3C also shows the harmonic consonances chosen as 'rest points' during improvisation. These vary in duration, and in the duration of tension preceding each resolution. In general, as the piece progresses (throughout and beyond this excerpt) the duration of both 'tension' and 'rest point' sections increases. This indicates that the 'ensemble interval cell' model is used successfully to organise the performance of *I Feel*. As a whole, *Amy's Suite* presents the application of an interval cell at every stage from composition to performance, and the integration of ideas derived from this interval cell with more typical melodic and harmonic jazz ideas, as well as the performance style of the group 'Triptych'.

There are several recurring themes in the preceding analyses (sections 2.4.1-2.4.6). Firstly, the development and application of concepts is consistently and overtly connected to existing jazz improvisation practice. Secondly, whereas applications of serialism in classical music often avoid tonal references and seek to abolish (or ignore) consonance and dissonance relationships, the music presented in this submission exploits harmonic tension and release, often using concepts derived from serial technique to create, maintain, and resolve tension. These observations are equally relevant to John Coltrane's explorations of serialism and related concepts, especially in *A Love Supreme*. The broader context of this research project is as an annotated case study of

identity development by a jazz performer. The consistent importance of connection between original ideas and existing jazz practice, and the application of these ideas within a single overarching framework (in this case, harmonic tension and release) may be significant factors in determining the success of the project, and in understanding the processes of identity development conducted by other jazz musicians, such as John Coltrane. As was stated earlier in section 2.3, the central goal for the application of serialism in research was to apply these frameworks as an extension of my personal jazz style, integrating the new concepts with my extant jazz style as an improviser. The analyses presented in section 2.4 clearly show the successful integration of these concepts with more standard ideas for jazz improvisation. In addition, the aim was to produce music that is identifiably 'jazz', of high artistic and technical quality, and demonstrative of a unique, personal jazz style. All of these are subjective judgments, but in the author's opinion, these goals have also been achieved in the application of serialism in this research. The following chapter describes the context, goals, specific techniques, and application of chord stranding within the four CDs.

### 3 CHORD STRANDING: AN EXTENSION OF SUPERIMPOSITION

‘How can the concept of chord stranding, as developed by Lutoslawski, be applied within jazz improvisation, and, how can this concept be integrated with existing harmonic concepts in jazz?’

This chapter of the exegesis accompanies the CD recordings, describing the concept of chord stranding, clarifying its application in the CDs, and explaining how the performances provide answers to this question. The definition of ‘chord stranding’ and its relationship to superimposition in jazz is stated and clarified (section 3.1); the precedents for application of chord stranding within jazz harmony are examined (section 3.2); the goals and techniques for application of chord stranding are described (section 3.3); and transcriptions from the recordings are used to demonstrate the attainment of these goals, and successful application of the techniques (section 3.4).

#### 3.1 ‘Chord Stranding’ Defined

Claude Debussy developed a compositional technique where distinct harmonic groupings of notes are presented, usually separated by register or timbre. An example of this is *Brouillards*, the first piece in the second book of piano preludes (1913). Here, a segmentation between the left and right hands into ‘black notes’ and ‘white notes’ is a recurring theme. There are many other examples of this technique within Debussy’s composition. Influenced by Debussy but seeking to find an original path, Igor Stravinsky developed and applied procedures of partitioning the octatonic scale, including its segmentation into major and minor triads and its segmentation into tetrachords. The ‘Petroushka’ chord is an example of the former approach—two triads, C and F#, are combined melodically and harmonically, generally separated by timbre, register, or both. In *Le Sacre Du Printemps* (1913), Stravinsky transformed the segmented tetrachords into dominant seventh

chords, maintaining segmentation by contrasting timbre and register (Van Den Toorn 1983). Witold Lutoslawski adopted this idea of segmentation and extended it to create

...a technique of subdividing complex (and some simple) interval constructions into clearly defined harmonic 'strands' (the composer's own term), each of which can be invested with a distinctive harmonic character.

(Bodman Rae 1999: 52)

Bodman Rae has described Lutoslawski's various approaches to chord stranding in detail.

As well as twelve-note chords formed by both simple and complex interval combinations, he used chords with low, middle and high four-part 'strands', establishing a local harmony within each register. One of his most commonly used techniques was to make:

...'twelve-note chord-aggregates by superimposing three complementary four-note chords in separate harmonic strands. The word "complementary" is here used to mean having no notes in common and providing all twelve notes when combined'.

(Bodman Rae 1999: 52)

*Five Songs* (1957) was an early Lutoslawski composition applying chord stranding, with a focus on the use of three four-note strands, and some use of structures with two six-note strands, or four three-note strands. The harmonic structures of *Five Songs* are the focus for chord stranding investigations in this research.

In general, Debussy, Stravinsky and Lutoslawski all maintained some degree of separation between these different chord 'strands'. On rare occasions, this separation exists only in the mind of the performer. In *Morze*, the first section of Lutoslawski's *Five Songs*, the two strands (again, 'black notes' and 'white notes' of the keyboard, divided between left and right hands) overlap in register and are presented with identical timbre. In the vast majority of cases, however, composers use either register or timbre to maintain an aural distinction between chord strands. In this submission, chord stranding is defined as the use of contrast in either register or timbre to create distinct harmonic regions (or 'strands'). The specific type of chord stranding applied within this research uses chords that present each of the twelve chromatic pitches once only.

### 3.2 Harmonic Precedents for Application of Chord Stranding within Jazz

This section clarifies connections between superimposition<sup>1</sup>, polychords, and chord stranding, showing the particular relevance of Lutoslawski's approach for the jazz musician.

The typical jazz conception of pitch collection exists on three levels—melody, harmony, and bass. Musicians improvise all three levels in most jazz music, and though often associated with particular instruments within particular ensembles and performances, the three levels frequently crossover instrumentally. Thus, the bass takes on melodic and harmonic functions, even during other instruments' melodic solos, and the chordal accompaniment by harmonic instruments can serve a melodic function. Melodic soloists have interacted with the harmonic level of pitch organization since the earliest days of jazz (e.g. in trumpet soloing by Louis Armstrong). In jazz based on repeating chord progressions or tonal centres, a level of harmony exists that might be termed 'underlying harmony', that is referential to all three performed levels. This underlying harmony acts as a reference point for pitch-class organisation, and melodic and harmonic variation. When speaking about jazz today, 'inside' and 'outside' are adjectives that describe pitch-class choices within the levels of melody, harmony or bass, with respect to the underlying harmony. Generally, 'inside' refers to playing that reinforces the underlying harmony. 'Outside' refers to playing that pushes against the underlying harmony, often using notes foreign to it<sup>2</sup>.

'Superimposition' refers to the clear statement of harmonic ideas that contrast with the underlying harmony (which is often, but not necessarily, stated by the accompanying instruments, or the pianist's left hand). This technique is closely associated with playing 'outside' and with increased harmonic complexity. Figure 3.1 (overleaf), taken from Charlie Parker's improvisation on 'Scrapple from the Apple', demonstrates early use of superimposition to achieve 'outside' sounds in jazz. Notice that by outlining chords a semitone above the underlying harmony (played in outline by the pianist), the combination of melody and harmony presents all twelve notes of the chromatic scale.

<sup>1</sup> Also known as 'Harmonic Super-Imposition' (Boling 1993: 99).

<sup>2</sup> The concept of underlying harmony is not relevant to many 'free jazz' performances. George Russell's 'Lydian Chromatic Concept of Tonal Organisation' (Russell 1959) proposed a more universal model for describing pitch organisation, using the terms 'Ingoing' (based on a selection of notes from the twelve chromatic pitch-classes) and 'Outgoing' (drawing from all twelve chromatic pitch-classes). This model has influenced contemporary usage of the terms 'inside' and 'outside', especially the connection between 'outside' and chromaticism.

As this very typical example shows, applications of superimposition are often connected with greater chromaticism and 'outside' sounds in improvisation.

Figure 3.1 Excerpt from Charlie Parker's improvisation over *Scrapple from the Apple*.

Transcribed by Jamey Aebersold and Ken Slone.

Superimposed harmony (D<sup>b7</sup> A<sup>b</sup>m<sup>7</sup> D<sup>b7</sup> C<sup>7</sup> F<sup>Δ</sup>)

Underlying harmony Gm<sup>7</sup> C<sup>7</sup> 3 F<sup>Δ</sup>

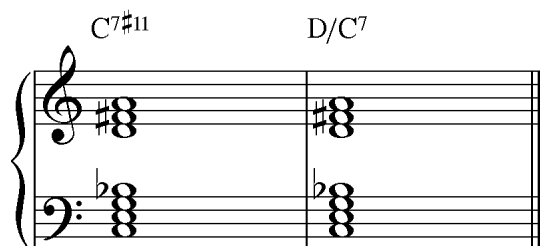


Source: (Aebersold 1978: 17, lines 14-15)

Many jazz improvisers have applied this concept in a wide variety of ways, and superimposition continues to maintain an important place within the tradition today. The tendency to work with harmonic layers in jazz improvisation, along with the frequent use of superimposition with the specific goal of achieving chromaticism, means that Lutoslawski's particular approach to dividing harmonic space into complementary regions has great potential connection with existing practice.

The use of polychords is another well-known technique within jazz harmony. Jazz theory typically divides any given chord into 'chord tones' (1, 3, 5, 7) and 'extensions / alterations' (9, 11, 13), and this 'segmentation' of the notes of the chord often leads to a 'stacked chord' concept, so that for instance C<sup>7</sup><sup>#11</sup> may be played and occasionally even notated as D/ C<sup>7</sup> (see Figure 3.2).

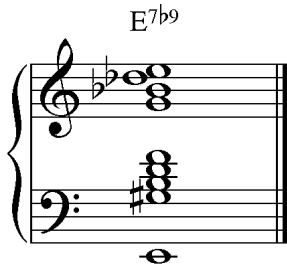
Figure 3.2 Demonstration of C<sup>7</sup><sup>#11</sup> segmented into two stacked chords (polychord).



Source: Compiled by the author.

Other examples of polychords within jazz directly recall Stravinsky's approach, for example the 'double-diminished' chord voicing pioneered by Herbie Hancock. This is a segmentation of the octatonic scale (generally referred to in jazz theory as the 8-note dominant scale when used over a dominant seventh chord) into two diminished chords (see Figure 3.3).

Figure 3.3  $E^{7b9}$  voiced as  $G^{07}/G^{\#07}/E$ .



Source: Compiled by the author

It is only a short conceptual step from this chord to the twelve-note aggregate chords developed by Lutoslawski. A comparison of the double-diminished chord voicing in the above example and a Lutoslawski chord from *Rycerze*, the fourth of his 'Five Songs' (Bodman Rae 1999: 53, Ex. 3:3) serves to illustrate this point (see Figure 3.4).

Figure 3.4 Chord voicings based on Lutoslawski's twelve-note chords and extant jazz chord voicings.

Herbie Hancock voicing for $E^{7b9}$	Lutoslawski chord from <i>Rycerze</i> ( <i>Five Songs</i> )	Potential chord stranding voicing for $E^{7b9}$
$G^{07}/G^{\#07}/E$	$F^{\#07}/G^{07}/G^{\#07}$	$F^{\#07}/G^{07}/G^{\#07}/E$

Source: Bar 2 (Bodman Rae 1999: 53, Ex. 3:3). Bars 1 and 3 compiled by the author.

These examples show that a ‘stranded’ perception of harmony is prevalent in jazz theory and practice. Many players have taken this fundamental idea and extended it, although few, if any, players have followed Lutoslawski’s model as an example. Theorists and analysts have rarely written about chord stranding or analysed jazz musicians’ styles from the viewpoint of this theoretical concept. Due to time constraints, this research project included only very limited transcription and analysis of improvisation by jazz artists who I suspect (based on aural assessment) may be engaged in forms of chord stranding. However, I believe that such transcription and analysis would be fruitful. Stravinsky is a strong influence on many jazz musicians, and his use of harmonic regions may have had some impact on the development of Cecil Taylor’s approach to harmony (which often shows a clear division between low, middle, and high regions). Keith Jarrett also seems to apply a ‘stranded’ concept of harmony, especially in his free improvisation (in both group and solo contexts).

### 3.3 Application of Chord Stranding in CDs

In this section, the goals for application of chord stranding within jazz improvisation are stated, and the techniques, based on chord stranding, developed in the course of the research project are described. Then, in section 3.4, the achievement of the stated goals is demonstrated by transcription and analysis of excerpts from the four CDs.

The development of frameworks and techniques for improvisation based on chord stranding, as applied by Lutoslawski in *Five Songs*, was the initial goal for the application of chord stranding in this research. This involved study of *Five Songs*, and the re-composition of each song in a jazz context. Table 3.1 (overleaf) shows the five parts of this piece, their titles, and the type of chord stranding applied in each.

In most cases, the harmonic ideas from the song were used with no reference to the melodic and rhythmic ideas of Lutoslawski’s composition. At this stage, emphasis was placed on finding effective ways to apply chord stranding in improvisation, in both solo and ensemble settings. Two concept groups were identified—chord stranding focused on register, with the use of harmonic



Table 3.1 *Five Songs*: titles, bars, and application of chord stranding

Song Title	Bars	Application of chord stranding
<i>Morze (Sea)</i>	1-58	Two strands, in five (black keys) and seven (white keys) notes
<i>Wiatr (Wind)</i>	59-125	Three strands, applying identical cells in each strand, separated by major thirds
<i>Zima (Winter)</i>	126-159	Four strands, augmented triads in each strand, derivation of consonant sonorities
<i>Rycerze (Knights)</i>	160-199	Two strands of six notes each, also three strands of four notes each
<i>Dzwony Cerkiewne (Orthodox Church Bells)</i>	200-260	Three strands of four notes each, in a consonant (bars 200-224) to dissonant (bars 225-260) relationship

Source: (Lutoslawski 1957 [1983])<sup>3</sup>

sonorities derived from a larger chord stranding framework, and chord stranding focused on complementary chords and scales. Then, through performance and analysis of these recompositions, Lutoslawski's harmonic language and the potential integration of these techniques within jazz improvisation was explored. This integration of techniques based on chord stranding with my extant jazz knowledge was the central goal for this section of the research. As was the case in application of serialism, the aim was to produce music that is identifiably 'jazz', of high artistic and technical quality, and demonstrative of a unique, personal jazz style. Several original compositions were also written in the later stages of the project, demonstrating relatively mature applications of these concepts, and the integration of ideas from chord stranding with other areas of investigation. This section of the exegesis clarifies how and where the four CDs show achievement of these goals, and to what extent.

### 3.3.1 Frameworks for improvisation—registral significance, complementary chord/scales

In *Zima*, the third of Lutoslawski's *Five Songs*, the piano part in the first section states a single chord, in four three-note strands. Each strand forms an augmented triad, and Lutoslawski exploits this sound, as well as combinations of parts of different strands (see Figure 3.5 overleaf).

<sup>3</sup> I am grateful to Professor Charles Bodman Rae for the use of his annotated manuscript of *Five Songs*, and his helpful explanations of this music.

Figure 3.5 Bars 135-138 of *Five Songs – Zima*, showing exposition of chord and the chord itself. Circled notes in the vocal part are notes of the chord.

The chord:  
4 strands  
8va-7

Source: (Lutoslawski 1957 [1983]: 15), annotated by present author.

The combination of three notes in the piano part at bar 136, creating a major triad (in this case, E<sup>b</sup> major) is used frequently in this piece. The vocal melody in this example is based around the chord, but uses auxiliary and passing tones to weave in and out of this structure. This approach to exposition of chords, placing great importance on the specific register of pitches, is typical of Lutoslawski's approach in *Five Songs*, and I describe this approach as 'chord stranding by registral significance'. The harmonic ideas of *Zima* are explored in the re-composition *Winter Song – Song III*. Lutoslawski's use of derived sonorities, shown in bar 136 of Figure 3.5 above, is taken further, deriving specific chord sounds from the larger four-part chord structure and attaching registral significance to each note in the chord (see Figure 3.6 overleaf). Lutoslawski's use of melody weaving in and out of a chord structure, as shown in Figure 3.5 above, is applied in the improvisation over this piece (CD2: tracks 2, 6). This use of derived sonorities allows for immediate connection with concepts such as first-choice scales and general chord outlining in jazz improvisation, while still maintaining the integrity of the chord and drawing on Lutoslawski's specific approach.

Another connection between chord stranding and common jazz practice was the use of chord stranding to extend the concept of 'polychords', connected with the concept of first-choice scales in

Figure 3.6 Derived sonorities in section 'A' of *Winter Song – Song III*

Melody

Chords derived from chord stranding structure

$G^A/B$     $E^b^A$     $G^b^A/B^b$     $D^A^{\#11}$

The chord (from bars 126-134 of Zima).

Source: Compiled by the author. Chord stranding structure taken from bars 126-134 of Lutoslawski's *Five Songs* (1957 [1983]: 15).

jazz. Figure 3.4 (above) showed the extension of a voicing for  $E^{7b9}$  to a twelve-note chord stranding voicing. The opening chord from Lutoslawski's *Dwzony Cerkiewne*, the fifth of the *Five Songs*, shows another way that a dominant seventh chord can be extended into a twelve-note chord (see Figure 3.7).

Figure 3.7 Bars 216-217 of *Dwzony Cerkiewne*, showing a potential voicing for  $D^{7b9}$  applying chord stranding, using every note from the first-choice scale in the bottom two strands.

$G^{07}$   
(The other notes not in first-choice scale for  $D^{7b9}$ )

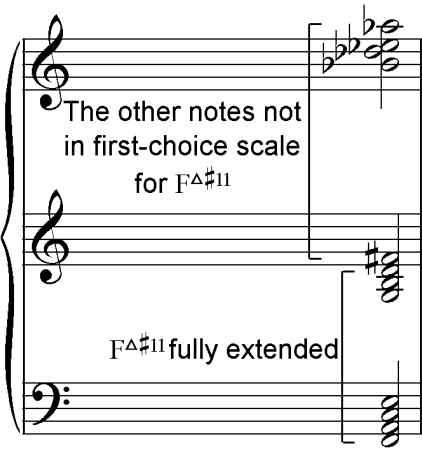
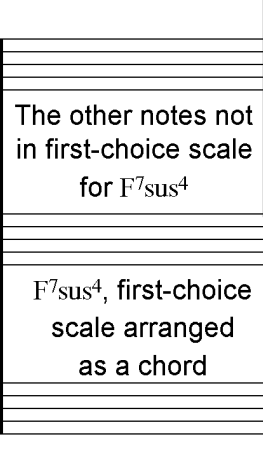
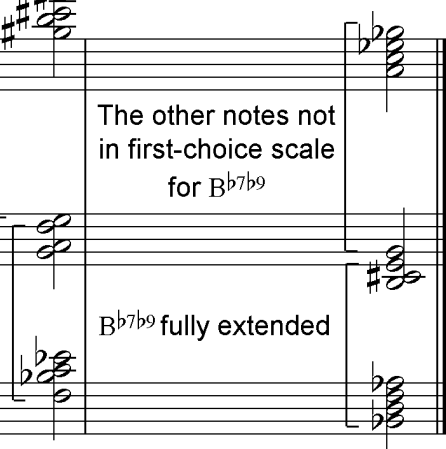
$D^{13b9\#9\#11}$   
( $D^{7b9}$  fully extended)

Potential chord stranding voicing for  $D^{7b9}$

Source: (Lutoslawski 1957 [1983]: 21), arranged onto three staves and annotated by present author.

This concept was used for the derivation of chords in *You Against the World* (CD2: track 9) and *Stranded Chord Blues* (CD4: track 2). Figure 3.8 shows the construction of these chords, and Table 3.2 (overleaf) shows the application of chord stranding by registral significance in the four CDs.

Figure 3.8 Construction of chords for *You Against the World* and *Stranded Chord Blues*, using an extension of ‘polychord’ and ‘first-choice scale’ concepts.

<i>You Against the World</i>	<i>Stranded Chord Blues</i>	
 <p style="text-align: center;">The other notes not in first-choice scale for F<sup>Δ</sup>#11</p> <p style="text-align: center;">F<sup>Δ</sup>#11 fully extended</p> <p style="text-align: center;">Chord stranding voicing for F<sup>Δ</sup>#11</p>	 <p style="text-align: center;">The other notes not in first-choice scale for F<sup>7</sup>sus<sup>4</sup></p> <p style="text-align: center;">F<sup>7</sup>sus<sup>4</sup>, first-choice scale arranged as a chord</p> <p style="text-align: center;">Chord stranding voicing for F<sup>7</sup>sus<sup>4</sup></p>	 <p style="text-align: center;">The other notes not in first-choice scale for B<sup>b7b9</sup></p> <p style="text-align: center;">B<sup>b7b9</sup> fully extended</p> <p style="text-align: center;">Chord stranding voicing for B<sup>b7b9</sup> (identical to Lutoslawski's voicing in figure 3.7)</p>

Source: Compiled by the author

Table 3.2 Application of chord stranding by registral significance in the four CDs.

CD: Track	Piece	Application of chord stranding by registral significance
2:1	<i>Diggers – Song I (solo)</i>	Improvisation in section ‘B’ applies chord stranding by register, using chords from Lutoslawski’s <i>Morze</i> . Chords in three four-note strands
2:2	<i>Winter Song – Song III (solo)</i>	Applications of Lutoslawski’s chords from <i>Zima</i> : chords in four three-note strands, and use of derived sonorities
2:5	<i>Montage – Song II</i>	Application of Lutoslawski’s chords from <i>Wiatr</i> : These chords also apply four-note interval cells, transposed by major thirds (connected to interval cell development)
Further development of concepts, and application in a trio setting		
2:4	<i>Diggers – Song I (trio)</i>	Improvisation in section ‘B’ applies chord stranding by register in a trio setting, assigning the bottom note of each chord to the bass
2:6	<i>Winter Song – Song III (trio)</i>	Application of concept in a trio setting—splitting chords between piano and bass
2:8	<i>The Bell-Ringer – Song V</i>	Application of Lutoslawski’s chords from <i>Dwzony Cerkiewne</i> : one chord in three four-note strands, another more dissonant chord in four three-note strands. Extension of polychord concept in ‘A’ sections
Composition of original pieces / reharmonisations applying this concept		
2:9	<i>You Against the World</i>	Use of derived sonorities from a chord in three four-note strands
2:10	<i>All of You</i>	Application of the expanded chord from <i>Winter Song – Song III</i> to this jazz standard
4:7	<i>Stranded Chord Blues</i>	Application of chord stranding by registral significance in a blues form: two chords applying chord stranding (each using three four-note strands, and the extension of the polychord concept) and a II-V cadence
4:3	<i>Amy’s Suite: Get Rollin’</i>	Section ‘J’ uses the chord stranding by register concept to expand the chords at section ‘D’, derived from polyphonic statements of the interval cell

Source: Compiled by the author

Lutoslawski’s application of chords in *Five Songs* consistently depends on registral significance—attaching a specific register to each of the twelve notes in a chord. Some of the chordal structures, especially those with larger numbers of notes in each strand, suggest the arrangement of notes into complementary<sup>4</sup> chords and scales. The opening chord of *Rycerze* is an example of this. In the re-composition of this piece (*Silver Moon – Song IV*), the two six-note strands are interpreted as a scale in the right hand and a chord in the left hand. Figure 3.9 (overleaf) shows three

<sup>4</sup> As is described earlier, ‘complementary’ refers to chords and scales with no notes in common, that state all twelve chromatic pitches when combined.

examples of chords from *Rycerze* re-interpreted as complementary chords and scales in *Silver Moon – Song IV*.

Figure 3.9 Excerpts from *Rycerze* and their re-composition in *Silver Moon – Song IV*, demonstrating application of complementary chords and scales.

Bars 160-162 of *Rycerze* (opening) The chord:  
Two six-note  
strands.

Interpretation of *Rycerze* (160-162) in bars 1-4 of *Silver Moon - Song IV*

Am<sup>7</sup>/E<sup>b</sup>m<sup>7</sup>/A

Bar 174 of *Rycerze* Interpretation of *Rycerze* (174) in bar 9 of  
*Silver Moon - Song IV*

F<sup>#</sup>m<sup>7</sup>/Cm<sup>7</sup>

Bar 194 of *Rycerze* Interpretation of *Rycerze* (194) in bar 19 of  
*Silver Moon - Song IV*, solo section

Bdim<sup>8</sup>/F<sup>#</sup>0<sup>7</sup>

Source: Lutoslawski's *Rycerze* (1957 [1983]: 17-19) and *Silver Moon – Song IV*.

The original composition  $1 + 1 = 1$  demonstrates an alternate approach to complementary chords and scales, more intimately connected with existing jazz harmony. In the 'A' section of this piece, two complementary scales are used (A Dorian in the bass or 'low' region and D<sup>b</sup> Pentatonic in the treble or 'high' region). This is strongly connected to Lutoslawski's use of a seven-note 'Dm<sup>13</sup>' strand and five-note 'G<sup>b</sup> Pentatonic' strand in *Morze*, the first of the *Five Songs*. Both of these scales are already familiar to jazz musicians, but in  $1 + 1 = 1$  this connection is taken further by use of the G Blues scale as a 'bridge' between these two sonorities—the G Blues scale contains three notes from each of A Dorian and D<sup>b</sup> Pentatonic (see Figure 3.10). Table 3.3 (overleaf) shows the application of chord stranding by complementary chords and scales in the four CDs.

Figure 3.10 Complementary scales from  $1 + 1 = 1$ , and use of G Blues as a 'bridge' between the two.

Source: Compiled by the author.

The techniques based on chord stranding described above are applicable in both solo and ensemble contexts. Whereas the frameworks developed based on serialism are typically applied over a tonal centre or a repeating chord progression, the frameworks based on chord stranding require more involvement from the bassist. Accordingly, the following analysis places more emphasis on the role of the bass in the exposition of chord stranding structures. Where chord stranding by register is employed, the bass is often assigned the bottom note, or bottom group of notes, in a chord. *Winter Song – Song III* (CD2: track 6) is an example of this approach. Here, the notes are assigned to the bass player by chord symbols, or in some cases by specific, notated pitches. Where the extension of the polychord concept is used, the bass sometimes participates

Table 3.3 Application of chord stranding by complementary chords and scales in the four CDs.

CD: Track	Piece	Application of chord stranding by complementary chords and scales
2:1	<i>Diggers – Song I</i> (solo)	Sections 'A' and 'D' apply complementary chords and scales, derived from the chords of Lutoslawski's <i>Morze</i>
2:3	<i>Silver Moon – Song IV</i> (solo)	Derivation of complex chord symbols from chords in two six-note strands and four three-note strands
Further development of concepts, and application in a trio setting		
2:4	<i>Diggers – Song I</i> (trio)	In sections 'A' and 'D' the bottom strand of the chord is assigned to the bass
2:7	<i>Silver Moon – Song IV</i> (trio)	Application of complementary chords and scales in a trio setting—assignment of the bottom section of each chord to the bassist
Original composition applying chord stranding by complementary scales		
4:8	$1 + 1 = 1$	Use of two complementary scales, with 'bridging' scales: G Blues in the 'A' section, D <sup>b</sup> Blues in the 'B' section

Source: Compiled by the author.

simply by referring to the first-choice scale of the given chord symbol, which is invariably represented in the lower sections of the chord. *Stranded Chord Blues* (CD4: track 7) provides an example of this approach. Where chord stranding by complementary chords and scales is applied, the bass is usually assigned the lower section of the chord, by use of 'polychord' type chord symbols. This can be problematic, as a natural tendency of many jazz bassists, when confronted with highly dissonant playing or complex chord sounds, is to simplify their approach, focusing on the tonic of the given chord. This simplification invariably leads to the ensemble inadequately stating the lower strand of each chord, compromising the intended effect. *Silver Moon – Song IV* (CD2: track 7) provides an example of this type of approach, and the problems described.  $1 + 1 = 1$  (CD4: track 8) is in part an attempt to counteract this problem, by using clear, thematic basslines to outline the lower strand of each chord. The following section presents transcription and analysis of excerpts from the recordings, demonstrating achievement of the goals for application of chord stranding stated previously.



### 3.4 Transcription and Analysis Demonstrating Application of Chord Stranding

The integration of techniques based on chord stranding with my extant jazz knowledge was the central goal for this section of the research. The use of twelve-note chords in harmonic strands is aurally distinctive, and each particular twelve-note chord has a unique sound, that can be identified with some familiarity. The specific connections drawn between chord stranding and other techniques for improvisation are more difficult to discern aurally, as are the specific applications of chords, and this section uses transcription and analysis to demonstrate the application of techniques from the performer's perspective. Additional transcriptions related to particular concepts are included as Appendices, and referred to in the text. The transcriptions and analyses focus on (i) the specific application of each technique, and (ii) the integration of each technique with other, more standard, jazz improvisation techniques.

#### *Chord Stranding by Registral Significance*

Three tracks applying 'chord stranding by registral significance' are referred to specifically in this section: *Winter Song – Song III* in both solo (CD2: track 2) and trio (CD2: track 6) versions, and *Stranded Chord Blues* (CD4: track 7).

#### **3.4.1 *Winter Song – Song III***

As is described above, *Winter Song – Song III* draws on Lutoslawski's application of chord stranding in *Zima*, the third of his *Five Songs*. Specifically, the re-composition presented in this submission derives consonant sonorities from twelve-note chords, and uses the twelve-note chords as a melodic framework. *Zima* uses two related chord structures, both comprising four strands, with an augmented triad in each strand. The larger chord structure that the piece builds towards is a variation of the chord used for most of the piece, arranging each augmented triad in minor sixth intervals, rather than major thirds. The re-composition, *Winter Song – Song III* uses the same harmonic framework, but omits the chords before and after the expanded chord structure. Figure 3.11 (overleaf) shows the harmonic progression from *Zima* and the derived underlying harmonic progression for *Winter Song – Song III*.

Figure 3.11 Harmonic reductions of *Zima* and *Winter Song – Song III*, showing the four 'augmented triad' strands in each chord.

Harmonic reduction of *Zima*

Harmonic reduction of *Winter Song - Song III*

Section 'A'      Section 'B'      Section 'C'      Section 'D'      Section 'E'

The figure consists of two musical staves, each with five sections labeled 'A' through 'E'. Each section contains a pair of staves (treble and bass clef) with notes and accidentals. The notes are arranged in a way that highlights the four strands of an augmented triad within each chord. The first staff is for 'Zima' and the second is for 'Winter Song - Song III'. The sections are separated by vertical lines.

Source: (Bodman Rae 1999: 59) and *Winter Song – Song III*

The solo performance of *Winter Song – Song III* demonstrated successful application of chord stranding to organise melody and harmony. Figure 3.12 (overleaf) shows an annotated transcription of the first fifteen bars of improvisation, demonstrating the consistent use of the chord to organise melody, and the application of a variety of other techniques (see Appendix 4A for the same transcription, without annotation). These applications include motif development (bars 1-4), passing and auxiliary notes (throughout), circling and targeting of notes (bar 7), and leading tone resolutions between chords (bar 1 and bars 12-13). Other techniques specific to chord stranding are also demonstrated in this transcription, such as the 'stacking' of notes to form chords (bars 9-10), and the frequent use of pitches, derived from the larger chord structure, that are highly dissonant against the derived sonorities (but surprisingly consonant in context). As a whole, bars 1-12 demonstrate a complete and precise exposition of the twelve-note chord, including reference to all four strands.

Figure 3.12 Annotated transcription from *Winter Song – Song III* (CD2: track 2. 0:51-1:45). Diamond note-heads indicate notes from twelve-note chord.

The figure displays an annotated transcription of piano accompaniment for 'Winter Song – Song III'. The score is organized into three systems, each with a chord chart above and a piano part below.

**System 1:**

- Chord 1:  $E^{b\Delta}/G$  (Chords:  $E^b$  in treble,  $G$  in bass)
- Chord 2:  $B^{\Delta}$  (Chords:  $B$  in treble,  $A$  in bass)
- Annotations: 'This D used as referential pitch in bars 1-4' points to a diamond note-head in the bass line. 'Motif' and 'Fragmentation' label melodic phrases. 'Ornamentation of motif: auxiliary notes (AN) and passing notes (PN)' labels specific notes in the treble line.

**System 2:**

- Chord 3:  $E^{b\Delta}/G$  (Chords:  $E^b$  in treble,  $G$  in bass)
- Chord 4:  $B^{\Delta}$  (Chords:  $B$  in treble,  $A$  in bass)
- Annotations: 'Inversion of motif' labels a melodic phrase in the treble line. 'PN' and 'AN' label notes in the bass line.

**System 3:**

- Chord 5:  $D^{\Delta}/F^{\#}$  (Chords:  $D$  in treble,  $F^{\#}$  in bass)
- Chord 6:  $B^{b\Delta}\#11$  (Chords:  $B^b$  in treble,  $A$  in bass)
- Annotations: '3 PN' labels a triplet in the bass line. 'PN' labels notes in the treble line.

Diamond note-heads throughout the score indicate notes from a twelve-note chord.

The musical score is divided into three systems, each with two staves (treble and bass clef).  
System 1: Measures 7 and 8. Measure 7 has a chord symbol  $D^4/F^\#$ . Measure 8 has a chord symbol  $E^b m^\Delta$ . The melody in measure 7 is annotated with 'Slonimsky idea' and 'Circling'. Measure 8 is annotated with 'E $^b$  Melodic Minor'. The bass line in measure 8 has annotations 'AN' and 'PN'.  
System 2: Measures 9, 10, and 11. Measure 9 has a chord symbol  $B^\Delta \#9$ . Measure 10 has a chord symbol  $E^b \Delta / G$  and annotations '#9 omitted' and '#5 omitted'. Measure 11 has a chord symbol  $B^\Delta \#9$ . The melody in measure 10 is annotated with 'Note-stacking'. The bass line in measure 10 has annotations '3' and '3'. Measure 11 has annotations 'PN' and '3'.  
System 3: Measures 12, 13, 14, and 15. Measure 12 has a chord symbol  $C^\Delta / E$ . Measure 13 has a chord symbol  $C^\Delta / E$ . Measure 14 has a chord symbol  $A^b \Delta$ . Measure 15 has a chord symbol  $C^\Delta / E$ . The melody in measure 12 has annotations '(F $^\#$ )', '(V)', '(I)', and '3'. Measure 13 has annotations '(F $^\#$ )', '3', 'D is common tone', and '(G)'. Measure 14 has annotations 'PN' and '3'. Measure 15 has annotations 'LH resolution 1' and 'LH resolution 2'. The bass line in measure 12 has annotations 'F $^\#$  resolves to G' and 'A $^\#$  resolves to B'. Measure 13 has annotations 'LH resolution 1' and 'LH resolution 2'. Measure 14 has annotations 'LH resolution 1' and 'LH resolution 2'. Measure 15 has annotations 'LH resolution 1' and 'LH resolution 2'.

Source: Compiled by the author

All of the vocabulary elements and devices described above are applied within a new and unconventional harmonic structure, influenced by the significance attached to the register of pitches in the twelve-note chord. The overall musical effect is a focused and coherent sound, integrating familiar jazz materials within an unfamiliar harmonic structure. The integrated application of chord stranding and various other techniques for improvisation in the solo performance of *Winter Song – Song III* represents a significant success. The precision with which the twelve-note chord was outlined in this performance demonstrated that such an approach was possible; however, this tight control of note selection does give a clinical impression to the performance. The trio version of this piece applies a less rigidly structured approach to the twelve-note chord.

In initial rehearsal with various bassists, attempts to explain potential interaction with the twelve-note chords in *Winter Song – Song III* led to the performers feeling restricted rather than emancipated. It was decided to require the minimum engagement with the concept from the bassist, and the chart for the trio version of *Winter Song – Song III* simply presents chord symbols and a melody (see Appendix 7). The free exposition of the larger chord structure in section 'D' allowed for more engagement from the bassist, and here the lower two strands of the chord (rearranged for the double-bass' tessitura) are shown as suggested notes on the chart. The performance of this section, on the trio version of *Winter Song – Song III* (CD2: track 6) provides an excellent example of the exposition of a twelve-note chord in an ensemble setting. Appendix 4B shows the complete improvised section from this performance, with diamond noteheads indicating use of pitches from the twelve-note chords. Figure 3.13 (overleaf) shows three excerpts from this transcription, comparing them with the twelve-note chord and highlighting (with diamond noteheads) these notes. In section 'D', tension is built by the gradual exposition of each part of the chord, culminating in bars 39-40 with the entire chord stated by the piano and bass. This is an example of effective use of chord stranding within the ensemble and the gradual exposition of a twelve-note chord as a developmental device.

The first twenty-four bars of the improvisation fail to state the 'top' strand of each chord, despite occasional ventures into the high register of the piano. This is likely to have resulted from the less clinical approach to twelve-note chord exposition taken in the trio performance, but the failure to

Figure 3.13 Excerpts from *Winter Song – Song III* improvisation section (CD2: track 6)  
demonstrating application of twelve-note chord in ensemble.

Excerpt 1 - Bar 25 (2:12-2:16)

Piano

Bass

Excerpt 2 - Bars 33-34 (2:42-2:49)

Piano

Bass

Excerpt 3 - Bars 39-40 (3:04-3:12)

Piano

Bass

Source: Compiled by the author

address the 'top' strand compromises the overall sound of the chord. The lower nine notes of the chords are, however, used effectively in these bars as frameworks to guide melodic and harmonic playing, and the previous analysis of the solo version shows that a strict approach to exposition of the chords can be employed successfully. Table 3.1 above lists other similar examples of chord stranding, specifically the application of the 'large' twelve-note chord from *Winter Song – Song III* to a reharmonisation of the jazz standard *All of You* (CD2: track 10), and the derived sonorities in *You Against the World* (CD2: track 9).

### 3.4.2 *Stranded Chord Blues*

Chord stranding by registral significance is also applied as an extension of the 'polychord' and 'first-choice scales' concept within this submission, as described above. The composition *Stranded Chord Blues* applies this within the context of a blues progression. The construction of the two twelve-note chords is described above in Figure 3.8. Figure 3.14 (overleaf) shows an example application of these chords in the piano solo, with diamond noteheads indicating the use of pitches directly derived from the twelve-note chord (see Appendix 4C for a transcription of the first two choruses of improvisation). Many other examples of this type can be heard throughout the performance of *Stranded Chord Blues*. In general, as in this example, the 'bottom' strand of the chord is used for more consonant, resolved playing, and the 'middle' and 'top' strands are used to introduce tension and dissonance. Bars 15-16 of Figure 3.14 (overleaf) show three notes from the 'middle' strand transposed up an octave. In this case, the transposition is used to create a sense of melodic voice leading from bar 15 to bar 16. At other times in this performance, the entire chord is transposed up or down an octave, and at these points the chord stranding concept is relying on a sense of relative register (for example, a strand remains the 'top' strand by playing the 'middle' and 'bottom' strands beneath it). The bassist is unlikely to have been consciously engaging with chord stranding during this excerpt, but the analysis shows that he is frequently referring to the 'bottom' strand of each chord, simply by following the chord symbols. This short example from *Stranded Chord Blues* demonstrates a successful use of chord stranding to organise melody and harmony. Table 3.1 above lists other similar examples of chord stranding, in particular the 'B' section of *Diggers – Song I* (CD2: tracks 1 and 4), the 'A' sections of *The Bell-Ringer – Song V* (CD2: track 8), and section 'J' in *Amy's Suite: Get Rollin'* (CD4: track 3).

Figure 3.14 Example application of chord stranding in piano solo over *Stranded Chord Blues* (CD4: track 7. 1:31-1:42).

The  $F^{7sus4}$  twelve-note chord

Piano

Bass

Notes from chord, played up an octave

The  $B^b7^b9$  twelve-note chord

Source: Compiled by the author.

#### *Chord stranding by complementary chords and scales*

Two tracks applying 'chord stranding by complementary chords and scales' are referred to specifically in this section: the trio version of *Silver Moon – Song IV* (CD2: track 7), and *1 + 1 = 1* (CD4: track 8).

#### 3.4.3 *Silver Moon – Song IV*

Chord stranding by complementary scales differs from chord stranding by registral significance in the comparative freedom of register within low and high strands. The use of complementary chords and scales is very similar to the composition technique sometimes termed 'modal zoning',



developed by Messiaen and other composers in the twentieth century. The re-composition *Silver Moon – Song IV* uses two specific approaches to complementary chords. In bars 1-12 the chords are comprised of a six-note ‘upper’ strand and a six-note ‘lower’ strand. In bars 13-24, the chords are comprised of three four-note strands, but the top two strands are generally combined to form an eight-note scale (see chart in Appendix 7 and Figure 3.9, above). The solo performance (CD2: track 3) showed success in outlining these twelve-note chords (see Appendix 5A for a transcribed excerpt) but the freedom of the left-hand was comparatively restricted in this performance by the need to outline the lower strand of each chord, as well as the bass movement.

In the trio performance of *Silver Moon – Song IV* (CD2: track 7), each chord is interpreted by both piano and bass, with the piano taking the top (and middle, if present) strand in the right hand and the bottom strand in the left hand, and the bass being assigned the bottom strand of the chord. This division is quite simple during the piano solo for chords such as  $F\sharp m^7/Cm^7$ . An example of a more complex division is found in bars 1 to 6 of the form—the chord here is  $Am^7/E\flat m^7/A$ . Figure 3.15 (overleaf) shows the successful exposition of this chord in the piano solo (see Appendix 5B for full excerpt) and the bass solo (see Appendix 5C for full excerpt). Throughout the bass solo, the piano supports the bass by referring to the lower sections of the chord with the left hand, usually below the register of the bass improvisation. During rehearsal for the concert the bass improvisation and accompaniment at times had sounded completely separate and this left-hand support was adopted to connect the two elements. In these examples, the melodic lines and chords played are not unusual—the chord stranding provides suggestions as to register for these ideas and suggests first-choice scales and bass notes.

The use of twelve-note chords to suggest first-choice scales in different registers and bass notes, as shown above in Figure 3.15, is the most common use of chord stranding throughout the piano solo, and the only use of chord stranding throughout the bass solo. At times, twelve-note chords also provide beginning and target points for simple intervallic movement ideas in the piano solo (see Figure 3.16 overleaf, page 71).

Figure 3.15 Ensemble interpretation of  $A^m7/E^b m7/A$  in piano and bass solos on *Silver Moon – Song IV* (CD2: track 7).

Piano solo excerpt (1:37-1:44)

$A^m7/E^b m7/A$

Bass player interacts with stranded chord here.

Piano

Right hand plays  $A^m7$ ,  
left hand plays  $E^b m7$

Bass

$A^m7/E^b m7/A$

Both hands play  $E^b m7$  in lower register,  
⑥ notice overlap in register of previous bar.

Piano

Bass solo excerpt (3:59-4:05)

$A^m7/E^b m7/A$

$A^m7/E^b m7/A$

④

⑤

⑥

Piano right hand plays  $A^m7$ , bass plays  $E^b m7$ , piano left hand plays  $A$  underneath.

Source: Compiled by the author

Figure 3.16 Use of twelve-note chord as a target point for an intervallic idea on *Silver Moon – Song IV* (CD2: track 7. 1:52-1:59).

The musical score consists of three staves: Piano (treble and bass clefs), and Bass (bass clef). The key signature is one sharp (F#) and the time signature is 5/4. The score is divided into two systems.

**System 1 (Measures 9-10):**

- Measure 9:** Chord symbol  $F^{\#m7}/Cm^7$ . An annotation "Intervallic idea begins on  $F^{\#m7}$ ." points to the start of the piano part. A note in the right hand is circled with the number 9. A dashed arrow points to the right hand with the text "Simple intervallic movement - right hand moves up, left hand moves down."
- Measure 10:** Chord symbol  $Gm^7/D^{\flat m7}$ . A note in the right hand is circled with the number 10.

**System 2 (Measures 11-12):**

- Measure 11:** Chord symbol  $Dm^7/A^{\flat m7}$ . An annotation "Right hand resolves to  $Dm^7$  here." points to the right hand. A note in the right hand is circled with the number 11. A triplet of notes is marked with a "3".
- Measure 12:** Chord symbol  $Dm^7/A^{\flat m7}$ . An annotation "At this point the line descends in register but does not refer to the lower strand." points to a descending melodic line in the right hand. A note in the right hand is circled with the number 12. A triplet of notes is marked with a "3".

**Other Annotations:**

- At the end of measure 10, an annotation "Left hand resolves to  $E^{\flat m7}$  here." points to the left hand.
- At the end of measure 11, an annotation "Left hand resolves to  $E^{\flat m7}$  here." points to the left hand.
- At the end of measure 12, an annotation "gliss." is written above the bass staff.

Source: Compiled by the author.

These demonstrate important successes because they reveal accurate use of chord stranding to focus musical materials, and effective exposition of chord stranding in an ensemble context. The interpretation of some other chords in this performance, however, is less successful. For example, in bar 12 of Figure 3.16, the chord  $Dm^7/A^{\flat m7}$  is played, with a melodic line that descends rapidly in register. The use of the lower strand ( $A^{\flat m7}$ ) would have more accurately presented the chord. Bars 13-18 of this same piano solo (Appendix 4.2A) have  $E^{\dim 8}/E^{\flat \dim 8}/E$  as their chord symbol. Here the right hand plays scalar lines based on the E diminished 8-note scale with no chromatic enhancement while the left hand plays a standard voicing for  $E^{\flat 07}$ , and the bass plays E (see Figure 3.17 overleaf).

Figure 3.17 *Silver Moon – Song IV* (CD2: track 7. 1:59-2:11) piano solo showing three notes of the twelve-note chord not played by the left hand.

The musical score consists of four systems of staves. The first system (measures 13-14) features a piano staff with treble clef and a bass staff with bass clef. Measure 13 is annotated with the chord symbol  $E\dim^8/E^b\dim^8/E$ . The piano staff contains eighth-note triplets, and the bass staff contains chords. The second system (measures 15-16) continues the piano staff with eighth-note triplets. Measure 16 has a note in the bass staff with a dashed arrow pointing to it and the text "Bass probably thinking of  $E\dim^7$  here". The third system (measures 17-18) shows the piano staff with eighth-note triplets and the bass staff with a 4:3 ratio indicated. The fourth system shows the piano staff with a treble clef and the bass staff with a bass clef, with the chord symbol  $E\dim^8/E^b\dim^8/E$  above it. Dashed arrows in the bass staff point to specific notes.

These three notes (F,  $A^b$  and B) are not played once in this six bar section.

Source: Compiled by the author.

The pitch total for this section (Figure 3.17 above) is far from the chromatic total—[E G<sup>b</sup> G A B<sup>b</sup> C D<sup>b</sup> D E<sup>b</sup>], that is F, A<sup>b</sup>, and B are not played. This failure is probably caused by the chord symbol—which, despite the use of Edim8/E<sup>b</sup>dim8, still suggests that E<sup>b</sup>, G<sup>b</sup>, A, and C are the important pitches for the left hand. In fact, to convey the twelve-note chord accurately, D, F, A<sup>b</sup> and B are the more important pitches. This example illustrates the importance of careful chord symbol selection for applications of chord stranding by complementary chords and scales.

During the transcribed excerpt from the piano solo in *Silver Moon – Song IV* the bass player plays very little other than the root notes of the chords. This has two negative results. Firstly, the bass sounds quite excluded from the ensemble – tied down to repetition of the root notes. As a result, there is almost no melodic or harmonic interaction between the piano and the bass. Secondly, the lower parts of the twelve-note chords are assigned to the bass and the piano left hand (either six or four notes in each chord). As the bass usually only plays one note in each chord and the piano left hand is not always in use, there are often large sections of the twelve-note chords that the ensemble does not play. This analysis suggests that the performance of *Silver Moon – Song IV*, while successful in some ways, also demonstrated some significant problems with the application of chord stranding by complementary chords and scales.

#### 3.4.4 **1 + 1 = 1**

In part, the composition *1 + 1 = 1* is an attempt to explore solutions to the problems with chord stranding outlined in the analysis of *Silver Moon – Song IV*. These were (i) a lack of control of ‘strands’ in improvisation, and (ii) the tendency of bassists to focus on the root note of each chord, compromising the exposition of twelve-note chords. *1 + 1 = 1* also aims to use chord stranding in a more static, slow-moving context, exploring a relatively simple harmonic structure. Division of the twelve chromatic notes into a pentatonic scale and the Dorian scale a major third below is the central harmonic idea in this piece. This specific application of twelve-note chords was first used in *Diggers – Song I* (CD2: tracks 1 and 4), drawing on the chords from Lutoslawski’s *Morze* (the black key / white key dichotomy described earlier). In the performances of *Diggers – Song I*, the blues scale is used during improvisation, suggesting a harmonic space that falls somewhere between the extremes of G<sup>b</sup> pentatonic and D Dorian. *1 + 1 = 1* takes this idea further, explicitly specifying the blues scale as a path between D<sup>b</sup> Pentatonic and A Dorian (see Figure 3.10 above). The most

significant influence on the composition of the piece was the music and concepts of Arvö Pärt. Pärt sums up his famous ‘tintinnabulation’ concept with the equation ‘ $1 + 1 = 1$ ’—he is referring to the use of multiple connected melodies to create a single melodic and harmonic musical statement, as made famous in pieces such as *Fratres* (1976). The interpretation of this equation is different for  $1 + 1 = 1$  on CD 4. Here it refers to the combination of two distinct scales to form one larger twelve-note chord<sup>5</sup>.

Figure 3.18 (overleaf) shows the first sixteen bars of the improvisation chorus on  $1 + 1 = 1$  (see Appendix 5D for the annotated transcription of this chorus). This excerpt shows the initial use of A Dorian by the piano, from bars 1-6. Following this, in bars 7-9, the G Blues scale is hinted at (especially the notes B<sup>b</sup> and D<sup>b</sup>), but this tension is resolved in bar 9. Bars 11-13 show a sudden jump to D<sup>b</sup> pentatonic (prefigured by the limited use of G Blues in bars 7-9). This acts as the high point of tension in this section—note that all twelve chromatic pitches are played in bars 9-12, strictly divided between the piano (D<sup>b</sup> pentatonic) and the bass (A Dorian). Bars 14-15 again show the use of G Blues, this time to release tension. The notes F and B<sup>b</sup> are emphasised, to maintain connection with the D<sup>b</sup> Pentatonic sound. This short excerpt shows highly successful, controlled use of a twelve-note chord structure in an ensemble setting, and similar application can be heard throughout this track.

The above analyses (in sections 3.4.1 to 3.4.4) demonstrate a variety of applications of Lutoslawski’s concept of ‘chord stranding’ in both solo piano and ensemble contexts. This concept is uniquely suited to application in jazz, due to close connections between chord stranding and concepts of superimposition and polychords. The exploration of chord stranding within this submission explicitly focuses on these connections. As a result, the music created is connected with standard jazz vocabulary. In most cases, the twelve-note chords function as frameworks that organise existing melodic and harmonic ideas—suggesting that the piano outline a Dm<sup>7</sup> chord

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<sup>5</sup> As it happens, Pärt’s early pieces apply serial technique, and the twelve-note row for Pärt’s *Credo* (1968—his most famous serial piece) is identical to the twelve-note bass line in bars 34-39 of  $1 + 1 = 1$ . Pärt’s application of serialism in this piece is closely connected to many concepts described in this submission, especially his approach to consonance and dissonance within serial frameworks. I was unaware of *Credo* at the time of composition.

Figure 3.18 1 + 1 = 1 excerpt, showing use of twelve-note chord.

The musical score is divided into four systems, each with a Piano part (treble and bass staves) and a Bass part (bass staff). The score is annotated with circled numbers 1 through 16 and descriptive text boxes.

- System 1:**
  - Piano:** Measures 1-4. Measure 1 is labeled "A Dorian". Measure 2 has a circled "2". Measure 3 has a circled "3". Measure 4 has a circled "4".
  - Bass:** Labeled "A Dorian throughout".
- System 2:**
  - Piano:** Measures 5-8. Measure 5 has a circled "5". Measure 6 has a circled "6". Measure 7 has a circled "7" and a triplet of eighth notes. Measure 8 has a circled "8". A text box above measures 7-8 reads "A Dorian - hinting at G blues with B<sup>b</sup> and D<sup>b</sup>".
  - Bass:** Continues the bass line from the previous system.
- System 3:**
  - Piano:** Measures 9-12. Measure 9 has a circled "9" and is labeled "A Dorian". Measure 10 has a circled "10". Measure 11 has a circled "11". Measure 12 has a circled "12" and is labeled "D<sup>b</sup> Pentatonic".
  - Bass:** Continues the bass line.
- System 4:**
  - Piano:** Measures 13-16. Measure 13 has a circled "13". Measure 14 has a circled "14" and a triplet of eighth notes. Measure 15 has a circled "15". Measure 16 has a circled "16". A text box above measures 13-16 reads "G Blues - mixed with some use of A Dorian sounds".
  - Bass:** Continues the bass line.

Source: Compiled by the author.

while the bassist outlines an  $A^{\flat}m^7$  chord in *Silver Moon – Song IV*, or suggesting that G Blues be used as a bridge between A Dorian and  $D^{\flat}$  Pentatonic in  $1 + 1 = 1$ . Here, the application of chord stranding is bringing new significance to existing ideas. At times, chord stranding suggests entirely new melodic and harmonic ideas, as in the ‘extended polychords’ used in *Stranded Chord Blues* and section ‘J’ of *Get Rollin’*. Here, twelve-note chords allow for application of inside and outside sounds, as more dissonance is created by moving ‘upwards’ through the chord strands. The arrangement of first-choice scales in the lower two strands of these chords allows for immediate integration with existing jazz vocabulary. The consistent use of chord stranding (and, as described in chapter 2, serialism) to focus and give new significance to old ideas, is important for the broader context of this research. As has been described previously, this broader context of the research is as an annotated case study of identity development by a jazz performer. As there was no intention to use serialism and chord stranding to ‘give significance to’ existing ideas at the outset of the project (the development of entirely new musical ideas and approaches was the initial focus), the consistent use of techniques in this way may be significant in understanding the process of identity development and innovation within jazz.

The integration of techniques derived from chord stranding with my extant jazz knowledge was the central goal for this section of the research. Despite the identification of some difficulties, the recordings and analyses show the successful application of chord stranding by registral significance and chord stranding by complementary chords and scales. In addition, as was the case in the application of serialism, the aim was to produce music that is identifiably ‘jazz’, of high artistic and technical quality, and demonstrative of a unique, personal jazz style. All of these are subjective judgments, but in the author’s opinion, these goals have also been achieved in the application of chord stranding in this research. The following chapter describes some aspects of unification and integration of serialism, chord stranding, and standard jazz practice in the submission.



## 4 UNIFIED APPLICATION OF SERIALISM AND CHORD STRANDING

The analyses presented in chapters 2 and 3 have focused on the application of a single concept within each piece, and this reflects the methodology adopted in the early stages of the research. Over the course of the project, however, the continued development and application of concepts has led to frequent cross-pollination between ideas, and this chapter describes some examples of this unified application of serialism and chord stranding concepts.

As is described in section 2.4.4, the performances of *Brazilia* (1965) in this submission demonstrate successful application of row-based chords, and some limited application of interval cells, derived from the twelve-note rows used in the piece. The piano solo on the trio version of *Brazilia* (CD3: track 3) also makes occasional use of chord stranding, expanding the chords derived from the row into twelve-note chords. This application is often subtle, but on one occasion, the use of chord stranding is very clear (see Figure 4.1 overleaf). The specific twelve-note chord in this example is one of the most consonant chord stranding structures developed in the course of this project, due to its close connection with the Lydian scale. This twelve-note chord is versatile, and can be applied over any 'major seventh' chord, creating a clear path for the development of tension, or outside sounds (the top strand) and a means for the release of that tension (the middle and lower strand).

Figure 4.1 Application of chord stranding in *Brazilia* (CD3: track 3. 6:01-6:10)

The musical score for Figure 4.1 is presented in three systems. The first system shows the beginning of the piece in 4/4 time, starting with an  $E^b m^A$  chord. It features a complex rhythmic pattern with triplets and chord stranding. The second system is annotated with the text "Use of chord stranding by registral significance (extension of polychord concept)" and includes bar numbers 3 and 4. The third system shows bars 5 and 6, with a final annotation: "The twelve-note chord applied in bars 3-4".

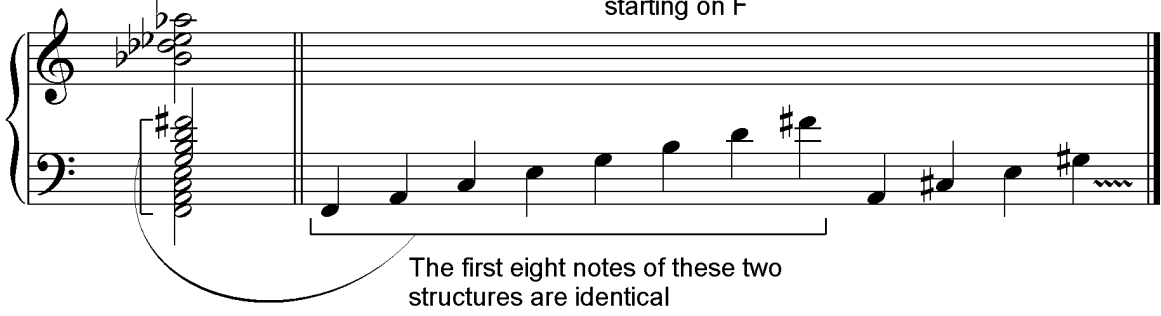
Source: Compiled by the author.

There are also connections between the twenty-four note rows and twelve-note structures applied in this submission. The twelve-note chord applied in *Brazilia* was originally formulated as the harmonic basis for *You Against the World* (CD2: track 9), and is closely connected to the 'major' twenty-four note row. The twelve-note row used for row-based chords in  $2 + 2 + 2 = 3$  (CD4: track 1) begins with the same eight notes as the 'minor' twenty-four note row. Alban Berg's twelve-note row from the *Violin Concerto* (1935) influenced the development of both of these structures (see Figure 4.2 overleaf).

Figure 4.2 Comparisons between twelve-note and twenty-four note frameworks.


The twelve-note chord from *You Against the World*

The first twelve notes of the 'major' twenty-four note row, starting on F




The first eight notes of these two structures are identical

Alban Berg's twelve-note row from the *Violin Concerto* (1935)



The first nine notes of these structures are identical



The first twelve notes of the 'minor' twenty-four note row, starting on G

The twelve-note row from  $2 + 2 + 2 = 3$

Source: Compiled by the author.

The second part of *Amy's Suite (Get Rollin')* incorporates a variety of the techniques explored within this submission. The interval cell derived from Stravinsky's *In Memoriam Dylan Thomas* (1954) is used as a starting point for all melodic and harmonic ideas in this piece. Section 'B' applies the concept of row-based chords to the interval cell. The chords at section 'D', derived from polyphonic statements of interval cells, are developed at section 'J' into a chord stranding framework, and this is used as the background for the final drum solo (see Figure 4.3 overleaf).

Figure 4.3 *Get Rollin'*: Row-based chords at section 'B', polyphonic interval cells at section 'D', and chord stranding at section 'J'.

Segmentation of the five-note row, verticalisation of row segments, and row-based chords.

**B**  $B^{\Delta}$   $D^{\Delta}$   $D^{b\Delta}$  Play 3 times  $B^{\Delta}$   $D^{\Delta}$   $D^{b\Delta}$

**D** Polyphonic statements of the row, and derived chord sounds.

$E^{b\Delta}$   $E^5$   $Fm^7$   $D^{\Delta}$   $D^{b\Delta\#11}$

**J** Chord stranding frameworks derived from chords at 'C'

$A^{b7}$   $Gm^7$   $A$   $Gm^7$   $A^{b7b6}$

$F^{\Delta}$   $F^{\#69}$   $Gm^{\Delta}$   $E^{\Delta}$   $E^{b\Delta}$

$E^{b\Delta}$   $E^7sus^4$   $Fm^7$   $D^{\Delta}$   $D^{b\Delta\#5}$

Source: Compiled by the author

Other connections between concepts and their application in this submission are extensive. For example, *Montage – Song II* (CD2: track 5) applies twelve-note chords derived from Lutoslawski's *Wiatr*, the second of *Five Songs* (1957). Three of the chord types used in this piece apply specific four-note cells, separated by major third intervals, and each of these chords is applied in the performance of *Montage – Song II* (see Figure 4.4). These same interval cells form the basis for the twelve-note row in *Miles' Mode* (1962 – CD1: track 2 and CD3: track 2).

Figure 4.4 Demonstration of the connection between the twelve-note chords in *Montage – Song II* and the twelve-note row of *Miles' Mode*.

The three twelve-note chords, derived from *Wiatr*, applied in *Montage - Song II*

The figure consists of two musical staves. The top staff is in piano style (treble and bass clefs) and shows three chords. Each chord is a twelve-note structure with a four-note interval cell (G4, B4, D5, F5) repeated. The chords are: 1) G4, B4, D5, F5, G4, B4, D5, F5, G4, B4, D5, F5; 2) G4, B4, D5, F5, G4, B4, D5, F5, G4, B4, D5, F5; 3) G4, B4, D5, F5, G4, B4, D5, F5, G4, B4, D5, F5. The bottom staff is in treble clef and shows a twelve-note row: G4, A4, B4, C5, D5, E5, F5, G5, A5, B5, C6, D6. Brackets connect the interval cells of the chords to the corresponding notes in the row. The label 'Interval cell' is placed under the first four notes of each chord. The label 'cyclic permutation' is placed under the last four notes of the row.

The twelve-note row from *Miles' Mode*

Source: Compiled by the author.

The performances of *Miles' Mode* also apply row-based chords, specifically dividing the row into a 'Bm7' or B Dorian section (notes 1-7) and an 'E<sup>b</sup>' or E<sup>b</sup> Pentatonic section, and this specific combination of two scales has obvious connections with chord stranding by complementary chords and scales, especially as applied in  $1 + 1 = 1$ . The improvisation section in performances of *Miles' Mode* uses interval cell development along with various other techniques for twelve-note row exposition, including the 'free forwards and backwards movement' used for twenty-four note rows. The two chord sounds derived from the row (Bm7 and E<sup>b</sup>, as described above), and the use of a consistent B pedal from the bass, allow application of twenty-four note rows beginning on Bm7 or E<sup>b</sup>, similar to the application of twenty-four note rows over *Hanging on for the Ride* (CD1: track 6 and CD4: track 5). The trio version of *Miles' Mode* makes use of twenty-four note rows in this way.

Finally, the first three notes of the twelve-note row for *Miles' Mode* form the interval cell (three-note row) for *A Love Supreme* (1964).

A further example of unified application of concepts in this submission is the consistent connection of all concepts and frameworks to existing jazz harmonic and melodic practice. Many of these connections are detailed in chapters 2 and 3. Chord stranding by registral significance is closely connected to the concept of polychords, and chord stranding by complementary chords and scales is an extension of superimposition. 'Major' and 'minor' twenty-four note rows incorporate linkages to post-bop melodic language and first choice scales, and are particularly suitable for application over thirds-cycle progressions (as in *Giant Steps* [1959]). Row-based chords are also related to thirds-cycle progressions—Schott's description of Coltrane's playing over *Giant Steps* closely echoes the intention and process of row-based chords:

Like *So What*, the keys are chosen for maximum pitch exclusivity... and a more or less constant rotation of the total chromatic results. In Coltrane's solo all twelve pitch-classes are sounded on average every three measures, or roughly every twenty notes.

(Schott 2000: 354)

The broad definition of serialism adopted within this submission, and the inclusion of 'interval cell development' as a serial process, allows for connections between motivic development (one of the most universally applied frameworks in jazz improvisation) and serialism. Processes of motivic development have continually influenced the development and application of concepts based on serialism in this submission.

As is stated in the introduction to this exegesis, this project was initially conceived as a description of the next natural step in my development as a jazz artist. There was no stated intention at the outset of the project to apply concepts in a unified way, or to seek out connections between serialism, chord stranding and my existing jazz improvisation language. In fact, some earlier investigations of serialism applied concepts in ways that were largely disconnected from jazz language<sup>1</sup>. This gradual move towards integrated application, and the consistent use of the theoretical concepts to reorganise, or give new significance to, existing 'jazz' materials, may be

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<sup>1</sup> The introduction to *T.T.T.T.* (1973 – CD1: track 5) is an example of this, but many of these efforts did not survive to feature in the CD recordings.

significant in understanding the process of development for jazz artists. The consistent search for connections between new concepts and existing jazz concepts, and the use of original ideas to give new significance to old ideas, may also suggest a path for the negotiation of tradition and innovation by jazz musicians.

## 5 SUMMARY AND CONCLUSION

The introductory chapter of this exegesis presents a quote from Walter Bishop Junior, providing an explanation of a jazz catch-phrase that is so widely quoted as to have become a part of jazz folklore—‘imitate, assimilate, innovate’<sup>1</sup>. This compact statement, sure to be encountered sooner rather than later by any aspiring jazz musician, makes a number of suggestions. These include the suggestion of a procedure to follow in order to develop as a jazz musician (that is, the three elements are chronological) and a set of aesthetic values—a tradition ethic (imitate); a mastery ethic (assimilate); and an individuality ethic (innovate). Of course, this succinct statement and the accompanying assumptions are not self-evidently true, and within jazz musicology and phenomenology, assumptions about the role of tradition and innovation within jazz have come increasingly into question—to be challenged and revised, supported and verified, or at least acknowledged and understood. The specific process that jazz musicians follow in order to negotiate this set of ethics as part of mature development as an artist, however, is largely undocumented<sup>2</sup>. The ongoing debate concerning ‘innovation’ in jazz may contribute to the reticence of jazz artists to document their innovation process<sup>3</sup>. The definition and understanding of ‘innovation’ is central to this debate, and by documenting a project forming part of a jazz player’s (that is, the author’s) ongoing development, this research provides a personal perspective on the complex relationship between tradition and innovation within jazz.

The specific details of this project have involved the investigation and demonstration of potential applications of serialism and chord stranding within jazz improvisation. Many commentators have previously dismissed ‘serial jazz’ as impossible, undesirable or irrelevant. Serial composition as

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<sup>1</sup> Attempts can be made to trace the origin of this statement, but it seems that any effort to fix a date and person on the genesis of this phrase will sooner or later be met with an earlier date and a different person. Hence, I present this phrase as being of uncertain origin. One could possibly argue for the genesis of this concept, if not the specific words, as far back as art history stretches—it would seem an appropriate description of aspects of the work of figures as diverse as Mozart, Rembrandt and Aristotle.

<sup>2</sup> Sudnow’s *Ways of the Hand* (1978) provides a personal account of his initial ‘induction’ into the jazz world (the imitation and assimilation stages) but not the innovation process; similarly, Berliner’s *Thinking in Jazz* (1994) provides many personal accounts of imitation and assimilation, but none of innovation as such.

<sup>3</sup> Writers such as Stanley Crouch have gone as far as to state that ‘the jazz tradition is not innovation’ (2002).



applied by Schoenberg, Webern and Boulez, with the numerous rules, regulations, and aesthetic ideals applied by these composers, is almost certainly impractical for the purposes of jazz improvisation. It is hardly surprising that techniques developed in the context of classical composition, requiring meticulous calculation, lengthy times for idea development, and stylistic connection to post-tonal classical music, are inappropriate for application in the very different context of jazz improvisation. The core idea of serialism as a theoretical concept, however, is not intrinsically connected to any of these restrictions (as Berg and Stravinsky's application of serialism has demonstrated). Within this research, a broad definition of serialism was adopted, removing the many stylistic choices commonly associated with the term. Then, potential implications of serialism, so defined, were explored within jazz improvisation. CD 1 (*Serialism Concept Development*) showed the initial development and application of three concepts specifically appropriate for jazz improvisation—twenty-four note rows, row-based chords, and interval cell development. CD 3 (*Chris Martin Trio play A Love Supreme*) showed further application of interval cell development. All of these concepts were formulated within the context of jazz improvisation, and as a result, they are closely connected with standard jazz improvisation techniques. This exegesis has shown the specific application of these concepts within the CDs, and noted consistent tendencies towards close connection with standard jazz ideas, and the use of concepts to provide a framework for existing materials, giving new significance to old ideas.

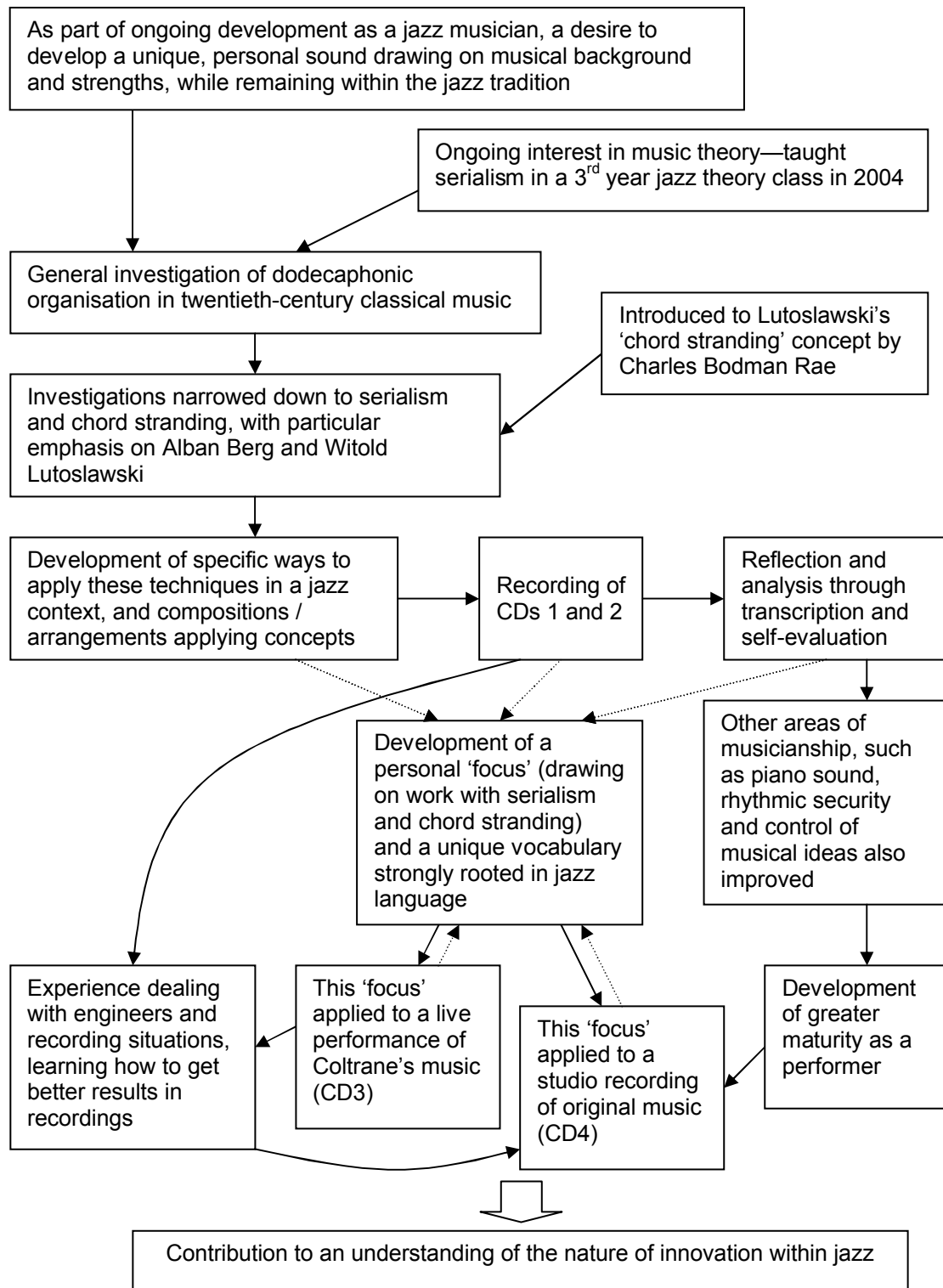
Application of chord stranding (as developed by Lutoslawski) within jazz is undocumented, and this research may represent one of the first attempts to apply this specific idea within jazz improvisation. The concept was chosen due to its significant potential connection to existing harmonic practices in jazz, especially superimposition and polychords. CD 2 (*Chord Stranding Concept Development*) shows the re-composition of Lutoslawski's *Five Songs* (1957), and the application of these harmonic ideas in the context of a jazz style. Two concepts based on chord stranding, differing in the treatment of pitch-classes within strands, were formulated during this process—registral significance, and complementary chords and scales. These concepts were applied successfully in the CDs, with some early difficulties in applying chord stranding by complementary chords and scales. CD 4 (*Triptych: 1 + 1 = 1*) is an album of original compositions, demonstrating mature application of the concepts explored during the project. This CD also contributes to the development and demonstration of concepts based on chord stranding

and serialism, but is primarily an artistic product of this research, showing the integrated application of both chord stranding and serialism as part of a personal style.

This thesis has shown that, in contrast to the views of many commentators, serialism (broadly defined) has great potential for application within jazz improvisation as an extension of existing practices. The removal of stylistic limitations associated with serialism greatly enhances this potential application, allowing scope for the development of new stylistic and aesthetic choices suited to the needs of the real-time composer and performer. The broad definition of serialism proposed within this thesis has also allowed for previous efforts by other improvisers to be re-examined and re-evaluated. CD 3 shows a potential application of this perspective to the music of John Coltrane, arguing that Coltrane's ongoing explorations of serial technique were relevant to his pervasive use of an interval cell in *A Love Supreme* (1964). Such an interpretation will certainly not supplant the more standard religion-centred interpretation of *A Love Supreme*, but it may help us understand the broader significance of this piece within the jazz tradition, and suggest other avenues for further exploration. *Amy's Suite*, on CD 4, shows one such potential use of the theoretical concept that drives *A Love Supreme*. The application of chord stranding within this submission is less controversial than serialism, but the performances show that this concept also has great potential application within jazz improvisation. This project has explored only a limited group of concepts related to this idea, restricted to the harmonic ideas used in Lutoslawski's *Five Songs*. Pieces such as *1 + 1 = 1* and *Stranded Chord Blues* on CD 4 show the diverse potential application of this concept in jazz improvisation, and the integrated usage of chord stranding in pieces such as *Amy's Suite* and *Brazilia* (1965) shows the flexibility of these concepts.

This project has centred on the exploration of music theory in music performance, and the development of specific techniques for generation of melodic and harmonic material in improvisation. The driving force for this project, however, was the desire, as part of my journey as a jazz musician, to develop a unique, personal sound drawing on my own musical background and strengths. Figure 5.1 (overleaf) shows a flowchart describing the genesis of this project, the important milestones throughout the project, and the results of the project.

Figure 5.1 Flowchart showing research process.



Source: Compiled by the author

As this flowchart shows, the most significant 'personal' result of the research was the development of a unique vocabulary strongly rooted in jazz language, influenced by serialism and chord

stranding. Other personal results included the development of greater musical maturity, and experience in getting the best results from recording situations. All of these developments are shown most clearly in *Triptych: 1 + 1 = 1* (CD 4). The recordings in the submission generally show an increase in recording quality and musical maturity, culminating in this final CD.

The broader context of this thesis is its significance as an annotated case study of a jazz improviser's engagement with tradition and innovation. As is suggested earlier, a definition of innovation is central in the debate concerning the role of innovation within jazz. Crouch has offered a definition of innovators in terms of community: a person becomes an innovator when she/he, as an individual, forces a reinterpretation of language and adds fresh choices to the community (2002: 26). In contrast, Bishop has defined innovation in terms of the innovator: it is something that a jazz musician does after developing a personal style, essentially an examination of the music followed by the question "how can I contribute?" (Berliner 1994: 120) In his landmark study *The Classical Style*, Rosen offered a perspective on the interconnectedness between the language of an idiom and innovators within that idiom:

A style may be described figuratively as a way of exploiting and focusing a language, which then becomes a dialect or language in its own right, and it is this focus which makes possible what might be called the personal style or manner of the artist, as Mozart worked against the background of the general style of his age, yet with a more specific relation to Haydn and to Johann Christian Bach. But analogies with language break down because a style is finally itself treated as a work of art, and judged as an individual work is judged and by much the same standards: coherence, power, and richness of allusion.

(Rosen 1971 [1997]: 20)

His description of a 'personal style' as an exploitation and focusing of language may provide a model for understanding tradition and innovation within jazz. Several conclusions from this research are directly relevant to this model of tradition and innovation. Firstly, the CD recordings and the analyses in this exegesis show consistent and recurring connections between the innovative techniques developed and applied in this submission, and elements of the jazz tradition. These consistent connections have been crucial in locating the music produced within the jazz idiom. This suggests that, for music seeking to innovate within an idiom, there is a circular connection between tradition and innovation. Secondly, the CD recordings and analyses show consistent use of new ideas such as twenty-four note rows and chord stranding to organise, or give new significance to, existing jazz ideas. Many of the specific melodies and harmonies presented in

this submission are, taken in isolation, not indicative of innovation or originality. It is the organisation (or, in Rosen's terms, the focusing) of these musical elements that brings these ideas and their application into the realm of 'innovation'. This finding supports Rosen's description of the development of a personal style as a way of 'exploiting and focusing a language', and suggests that such a model may help in understanding the process of innovation, as carried out by jazz musicians.

The research presented in this thesis also suggests several directions for future investigations. The most recently published survey of the use of serialism in jazz was Harrison's *Serial Jazz* in 1976. Despite the general condemnation of 'serial jazz' by commentators, jazz musicians continue to apply serialism and techniques derived from serialism to the present day (several prominent examples have been described in earlier chapters). The time is well overdue for another survey of this concept's use within jazz. The specific concept of 'chord stranding' as applied in this submission is used far less frequently by jazz musicians, but the idea, represented by chord stranding, of extending superimposition and polychord concepts to the total chromatic, is used often. 'Chord stranding' may not be an accurate term for these techniques ('modal zoning' may be more appropriate in many cases), but the use of these concepts by jazz improvisers is worthy of investigation. Perhaps the most important suggestion for future research is in the investigation of the process of innovation within jazz. This process would be certain to differ greatly between musicians, but the research in this thesis suggests that there may be consistencies between very different approaches, such as a circular relationship between tradition and innovation, and the use of original ideas to 'refocus' existing ideas. Finally, this research has focused on the conscious development of a personal style, but there are issues following on from such work, such as how a style, once developed, is applied within a range of musical situations, and how variety is achieved within a style.

Walter Bishop Junior's description of innovation in the terms of the innovator is reassuring for jazz musicians seeking to make an original contribution to their idiom. Very few jazz musicians can expect their playing, however innovative, to lead to (quoting Crouch) a 'dramatic re-interpretation of jazz language' (2002: 26). The music in this submission is presented with no such expectation. Instead, the music is a personal investigation and celebration of innovation by a jazz performer.

Rather than these innovations, and the personal style of which they are a part, being measured by the extent of influence over others, they should be judged (as Rosen has suggested) by their coherence, power, and richness of allusion. Such a perspective takes innovation, and its appraisal, from the province of the lofty elite to the jazz masses, and contributes to the ongoing reinvigoration of jazz.

## APPENDIX 1

### Transcriptions related to twenty-four note rows

APPENDIX 1A	<i>Giant Steps</i> – solo (CD1: track 1).....	92
APPENDIX 1B	<i>Giant Steps</i> – trio (CD3: track 1) .....	94
APPENDIX 1C	<i>Kinda Kooky</i> (CD1: track 11).....	96
APPENDIX 1D	<i>Billy's Bridge</i> (CD4: track 6) .....	103
APPENDIX 1E	<i>Naima</i> (CD1: track 4) .....	108
APPENDIX 1F	<i>T.T.T.T.</i> (CD1: track 5).....	111

**Giant Steps (CD1: track 1)**  
 Excerpt 1, 1:51-2:31 (choruses 4-5)

Bars 1-19 are annotated in Figure 2.5.  
 Bars 20-37 demonstrate similar application of the row.

8<sup>va</sup>

B<sup>Δ</sup> D<sup>7</sup> G<sup>Δ</sup> B<sup>b7</sup> E<sup>bΔ</sup> Am<sup>7</sup> D<sup>7</sup>

5

G<sup>Δ</sup> B<sup>b7</sup> E<sup>bΔ</sup> G<sup>b7</sup> B<sup>Δ</sup> Fm<sup>7</sup> B<sup>b7</sup>

9

E<sup>bΔ</sup> Am<sup>7</sup> D<sup>7</sup> G<sup>Δ</sup> C<sup>#m7</sup> F<sup>#7</sup>

13

B<sup>Δ</sup> Fm<sup>7</sup> B<sup>b7</sup> E<sup>bΔ</sup> C<sup>#m7</sup> F<sup>#7</sup>

17

B<sup>Δ</sup> D<sup>7</sup> G<sup>Δ</sup> B<sup>b7</sup> E<sup>bΔ</sup> Am<sup>7</sup> D<sup>7</sup>

Backwards movement through row, beginning on pitch 1 (B)

21

G<sup>Δ</sup> B<sup>b7</sup> E<sup>bΔ</sup> F<sup>#7</sup> B<sup>Δ</sup> Fm<sup>7</sup> B<sup>b7</sup>



25 E<sup>b</sup>Δ Am<sup>7</sup> D<sup>7</sup> G<sup>Δ</sup> C<sup>♯</sup>m<sup>7</sup> F<sup>♯</sup>7

29 B<sup>Δ</sup> Fm<sup>7</sup> B<sup>b</sup>7 E<sup>b</sup>Δ C<sup>♯</sup>m<sup>7</sup> F<sup>♯</sup>7 *8va*

33 B<sup>Δ</sup> D<sup>7</sup> G<sup>Δ</sup> B<sup>b</sup>7 E<sup>b</sup>Δ Fm<sup>7</sup> B<sup>b</sup>7 E<sup>b</sup>Δ *loco*

Excerpt 2, 3:00-3:17 (chorus 9)

Verticalisation of row segments to create and maintain dissonance against underlying harmony. Left hand follows underlying harmony through row, right hand begins four notes 'behind' the row and follows left hand, then moves freely forwards and backwards through row beginning in bar 11.

1 B<sup>Δ</sup> D<sup>7</sup> G<sup>Δ</sup> B<sup>b</sup>7 E<sup>b</sup>Δ Am<sup>7</sup> D<sup>7</sup> G<sup>Δ</sup> B<sup>b</sup>7 E<sup>b</sup>Δ F<sup>♯</sup>7

7 B<sup>Δ</sup> Fm<sup>7</sup> B<sup>b</sup>7 E<sup>b</sup>Δ Am<sup>7</sup> D<sup>7</sup> G<sup>Δ</sup>

12 C<sup>♯</sup>m<sup>7</sup> F<sup>♯</sup>7 B<sup>Δ</sup> Fm<sup>7</sup> B<sup>b</sup>7 E<sup>b</sup>Δ C<sup>♯</sup>m<sup>7</sup> F<sup>♯</sup>7 B<sup>Δ</sup>

**Giant Steps - trio (CD3: track 1)**

Excerpt 1, 2:17-2:50

Varied use of twenty-four note row, especially for melodic organisation.

B<sup>Δ</sup> D<sup>7</sup> G<sup>Δ</sup> B<sup>b7</sup> E<sup>bΔ</sup> Am<sup>7</sup> D<sup>7</sup>

⑥ G<sup>Δ</sup> B<sup>b7</sup> E<sup>bΔ</sup> F<sup>#7</sup> B<sup>Δ</sup> Fm<sup>7</sup> B<sup>b7</sup>

⑩ E<sup>bΔ</sup> Am<sup>7</sup> D<sup>7</sup> G<sup>Δ</sup> C<sup>#m7</sup> F<sup>#7</sup>

⑭ B<sup>Δ</sup> Fm<sup>7</sup> B<sup>b7</sup> E<sup>bΔ</sup> C<sup>#m7</sup> F<sup>#7</sup>

⑱ B<sup>Δ</sup> D<sup>7</sup> G<sup>Δ</sup> B<sup>b7</sup> E<sup>bΔ</sup> Am<sup>7</sup> D<sup>7</sup>

⑳ G<sup>Δ</sup> B<sup>b7</sup> E<sup>bΔ</sup> F<sup>#7</sup> B<sup>Δ</sup> Fm<sup>7</sup> B<sup>b7</sup>

8<sup>vb</sup>

②⑥  $E^b\Delta$   $Am^7$   $D^7$   $G^A$   $C\#m^7$   $F\#7$

③⑩  $B^A$   $Fm^7$   $B^b7$   $E^b\Delta$   $C\#m^7$   $F\#7$   $S^{va}$

Excerpt 2, 4:43-4:59

Annotated in Figure 2.6.

①  $B^A$   $D^7$   $G^A$   $B^b7$   $E^b\Delta$   $Am^7$   $D^7$

⑤  $G^A$   $B^b7$   $E^b\Delta$   $F\#7$   $B^A$   $Fm^7$   $B^b7$

⑨  $E^b\Delta$   $Am^7$   $D^7$   $G^A$   $C\#m^7$   $F\#7$

⑬  $B^A$   $Fm^7$   $B^b7$   $E^b\Delta$   $C\#m^7$   $F\#7$   $B^A$

### Kinda Kooky (CD1: track 11)

Piano Solo. 1:15 - 3:56

Bars containing serial derived playing underlined.

Bars containing C Mixolydian and other standard playing overlined.

**A** Chorus 1

The first system of musical notation for 'Kinda Kooky' consists of three staves: Piano (right hand), Bass (left hand), and a separate Bass staff. The time signature is 4/4. The first two bars of the piano part are underlined, indicating serial derived playing. The first bar has a C7 chord symbol above it. The second bar has a circled 1 and a C7 chord symbol above it. The piano part features a mix of chords and melodic lines, with some notes underlined. The bass part provides a steady accompaniment with quarter and eighth notes.

The second system of musical notation continues the piece. It features three staves: Piano (right hand), Bass (left hand), and a separate Bass staff. The time signature is 4/4. The first bar of the piano part is circled with a 4, indicating a specific measure. The piano part continues with various chords and melodic lines, some of which are underlined. The bass part continues with its accompaniment.

The third system of musical notation continues the piece. It features three staves: Piano (right hand), Bass (left hand), and a separate Bass staff. The time signature is 4/4. The first bar of the piano part is circled with a 9 and has a C7 chord symbol above it. The piano part continues with various chords and melodic lines, some of which are underlined. The bass part continues with its accompaniment.

The fourth system of musical notation continues the piece. It features three staves: Piano (right hand), Bass (left hand), and a separate Bass staff. The time signature is 4/4. The first bar of the piano part is circled with a 13. The piano part continues with various chords and melodic lines, some of which are underlined. The bass part continues with its accompaniment.

**B**

17  $E^\flat$   $A^7$

21  $D^\flat$   $G^7$  8<sup>va</sup>

**A**

25  $C^7$  8<sup>va</sup>

29 30

Bass continues in this manner (providing rhythmic support and tonal context)

**A** Chorus 2

33  $C^7$

37

A

41 C7

45

8<sup>vb</sup>

B

49 E<sup>o</sup> A7

8<sup>vb</sup>

53 D<sup>o</sup> G7

8<sup>vb</sup>

A

57 C7

8<sup>vb</sup>

61 *8<sup>va</sup>* *loco*

Musical notation for measures 61-64. Treble and bass staves. Measure 61 has an 8va marking. Measures 62-64 contain triplets. Measure 64 ends with a loco marking.

**A** Chorus 3

65 *C7*

Musical notation for measures 65-68. Treble and bass staves. Measure 65 has a C7 chord marking. Measures 66-68 contain triplets.

69

Musical notation for measures 69-72. Treble and bass staves. Measures 70-72 contain triplets.

**A**

73 *C7*

Musical notation for measures 73-76. Treble and bass staves. Measure 73 has a C7 chord marking. Measure 74 has a fermata over the bass staff.

77

Musical notation for measures 77-80. Treble and bass staves. Measures 78-80 contain triplets.

**B**

81 *15<sup>ma</sup>*

These 6 beats not transcribed

Musical notation for measures 81-84. Treble and bass staves. Measure 81 has a 15ma marking. A bracket indicates that the first six beats of the system are not transcribed.

85

3 3 3 3

87

3 3 3 3

**A**

89

C7

8<sup>va</sup>

93

**A** Chorus 4

97

C7

101

8<sup>va</sup>



**A**

105 C7

(8)-----

109

8<sup>th</sup>-----

**B**

113 E $\emptyset$  A7

(8)-----

117 D $\emptyset$  G7

3

(8)-----

**A**

121 C7

(8)-----

125

(8)-----

**A**

105 C7

(8)-----

109

8<sup>th</sup>-----

**B**

113 E $\emptyset$  A7

(8)-----

117 D $\emptyset$  G7

3

(8)-----

**A**

121 C7

(8)-----

125

(8)-----

**Billy's Bridge (CD4: track 6)**

Chorus 1, 0:00-2:24

The twenty-four note row.

A single staff of music showing a sequence of 24 notes. The notes are numbered 1 through 24 below the staff. The key signature has one flat (Bb) and the time signature is 4/4. The notes are: 1. Bb, 2. C, 3. D, 4. Eb, 5. F, 6. G, 7. Ab, 8. Bb, 9. C, 10. D, 11. Eb, 12. F, 13. G, 14. Ab, 15. Bb, 16. C, 17. D, 18. Eb, 19. F, 20. G, 21. Ab, 22. Bb, 23. C, 24. D.

Most pitches played conform to those suggested by the chord symbols, except where indicated by square brackets and 'boxed' notes. Numbers next to the boxes indicate the position of the pitch in the row. Curved brackets around a pitch indicate that it is a 'passing note' and not part of the exposition of the row.

Piano accompaniment for the first system. The top staff is the right hand and the bottom staff is the left hand. Chord symbols are placed above the right hand staff: Bbm<sup>Δ</sup> (1-7), Abm<sup>Δ</sup> (21-3), Bbm<sup>Δ</sup> (1-7), and Abm<sup>Δ</sup> (21-3). A curved bracket labeled "A<sup>b</sup> Melodic Minor (21-2)" spans notes 21 and 22. The left hand has a "C Melodic Minor (5-9)" label and a "B<sup>b</sup> Melodic Minor (1-4)" label. Triplet markings (3) are present over notes 16-18 and 21-23.

Piano accompaniment for the second system, starting at measure 4. Chord symbols are D<sup>b</sup>7<sup>#</sup>11/B<sup>b</sup> (19-1) and Eb<sup>∅</sup> (16-23). Triplet markings (3) are present over notes 16-18 and 21-23. A boxed note with the number 5 is shown in the left hand. A curved bracket labeled "1" is shown in the right hand.

Piano accompaniment for the third system, starting at measure 6. Chord symbols are A<sup>Δ</sup>5/A<sup>b</sup> (16-23), D<sup>b</sup>7<sup>#</sup>11 (19-1), (C<sup>7</sup>), and (B<sup>7</sup>). Triplet markings (3) are present over notes 16-18. Boxed notes with numbers 4 and 5 are shown in the right hand.

Piano and Bass accompaniment for the fourth system, starting at measure 9. Chord symbols are Bbm<sup>Δ</sup> (1-7), Abm<sup>Δ</sup> (21-3), Bbm<sup>Δ</sup> (1-7), and Abm<sup>Δ</sup> (21-3). A boxed note with the number 13 is shown in the piano right hand. The bass line is shown in a separate staff below the piano part.

12  $D\flat 7\sharp 11/B\flat$  (19-1)  $E\flat\Delta$  (16,23)  $A\Delta\sharp 5/A\flat$  (16,23)

5 13 5

15  $G\flat m\Delta/D\flat$  (17,23)  $B7\sharp 11$  (15,21)

17  $B7\sharp 11/F\sharp$  (15,21)  $B7\sharp 11$  (15,21)  $E\Delta$  (15,21,13)  $C\sharp\Delta$  (12,18)

19  $B7\sharp 11/F\sharp$  (15,21)  $B7\sharp 11$  (15,21)  $Em\Delta$  (13,19)  $A7\flat 13$  (7,13)

22  $G7\sharp 11$  (7,13)  $A7\flat 13$  (7,13)  $G7\sharp 11$  (7,13)

17 17

24 F7#11 (3-9) Bbm<sup>Δ</sup> (1-7)

C Melodic Minor (5,6,9,10) B<sup>b</sup> Melodic Minor (1,2,5-8) C Melodic Minor (5-11)

26 Abm<sup>Δ</sup> (21-3) Bbm<sup>Δ</sup> (1-7) Abm<sup>Δ</sup> (21-3) Db7#11/Bb (19-1)

D Melodic Minor (9-15) E Melodic Minor (13-16) F# Melodic Minor (17-20)

29 Eb<sup>♭</sup> (16,23) A<sup>Δ</sup>#5/A<sup>b</sup> (16,23)

A<sup>b</sup> Melodic Minor (21-24)

31 Gbm<sup>Δ</sup>/Db (17,23) Db (19,21)

*Billy's Bridge* – row usage in first chorus

Projected:  Actual: x x (bold if significant) or:

Row	B <sup>b</sup>	D <sup>b</sup>	F	A	C	E <sup>b</sup>	G	B	D	F	A	C <sup>#</sup>	E	G	B	D <sup>#</sup>	F <sup>#</sup>	A	C <sup>#</sup>	E <sup>#</sup>	A <sup>b</sup>	C <sup>b</sup>	E <sup>b</sup>	G
Bar	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1 B <sup>b</sup> m <sup>Δ</sup>					x	x		x	x															
2 A <sup>b</sup> m <sup>Δ</sup>		x	x	x	x	x		x	x															
3 B <sup>b</sup> m <sup>Δ</sup> A <sup>b</sup> m <sup>Δ</sup>	x	x	x		x	x		x	x													x	x	x
4 D <sup>b</sup> 7/B <sup>b</sup>					x																	x	x	x
5 E <sup>b</sup> 0	x															x	x					x	x	x
6 A <sup>Δ</sup> 5/A <sup>b</sup>	x															x	x	x				x	x	x
7 D <sup>b</sup> 7#11	x																		x	x	x			
8	x																		x	x	x			
9 B <sup>b</sup> m <sup>Δ</sup>	x	x	x	x		x																		
10 A <sup>b</sup> m <sup>Δ</sup>	x	x	x	x		x																x	x	x
11 B <sup>b</sup> m <sup>Δ</sup> A <sup>b</sup> m <sup>Δ</sup>	x	x		x								x										x	x	x
12 D <sup>b</sup> 7/B <sup>b</sup>	x				x														x	x	x	x	x	x
13 E <sup>b</sup> 0	x																x					x	x	x
14 A <sup>Δ</sup> 5/A <sup>b</sup>	x																x	x	x		x	x	x	x
15 G <sup>b</sup> m <sup>Δ</sup> /D <sup>b</sup>	x				x														x	x	x	x	x	x
16 B <sup>7</sup> #11																x	x	x				x	x	x
17 B <sup>7</sup> #11/F <sup>#</sup> B <sup>7</sup> #11																x	x	x	x	x	x	x	x	x
18 E <sup>Δ</sup> C <sup>#</sup> 0	x											x	x	x		x	x				x			
19 B <sup>7</sup> #11/F <sup>#</sup> B <sup>7</sup> #11													x	x		x	x							
20 Em <sup>Δ</sup>									x				x	x	x	x	x				x			
21 A <sup>7</sup> b13								x	x		x	x	x											
22 G <sup>7</sup> #11								x	x	x	x	x	x											
23 A <sup>7</sup> b13 G <sup>7</sup> #11	x							x	x	x	x	x	x											
24 F <sup>7</sup> #11			x	x	x	x		x																
			x	x	x	x		x																

Continued on next page

Row	B <sup>b</sup>	D <sup>b</sup>	F	A	C	E <sup>b</sup>	G	B	D	F	A	C <sup>#</sup>	E	G	B	D <sup>#</sup>	F <sup>#</sup>	A	C <sup>#</sup>	E <sup>#</sup>	A <sup>b</sup>	C <sup>b</sup>	E <sup>b</sup>	G	
Bar	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
25	B <sup>b</sup> m <sup>Δ</sup>	x	x	x	x	x	x																		
26	A <sup>b</sup> m <sup>Δ</sup>	x		x	x	x	x	x	x	x	x											x	x		
27	B <sup>b</sup> m <sup>Δ</sup> A <sup>b</sup> m <sup>Δ</sup>	x							x	x	x	x	x	x	x		x					x		x	
28	D <sup>b</sup> 7/B <sup>b</sup>	x											x	x	x	x									
29	E <sup>b</sup> ∅	x																				x	x	x	x
30	A <sup>Δ</sup> 5/A <sup>b</sup>	x																				x	x	x	x
31	G <sup>b</sup> m <sup>Δ</sup> /D <sup>b</sup>																				x	x	x		
32	D <sup>b</sup>																				x	x	x		
Chromatic playing in bar 32																									

**Naima (CD1: track 4)**

Excerpt 1, 0:51-2:15

The twenty-four note row

'Backwards' ←      → 'Forwards'

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Transition into row - extended reharmonisation of cadence, moving gradually 'backwards' through row, leading to head and pitches 1-5 in bar 7.

Original melody / harmony

DA<sup>#5</sup>/B<sup>b</sup> (A<sup>bA</sup>)

3 3 3 3-6 3 3 3

3 4 4 3

(A<sup>bA</sup>/B<sup>b</sup>) (G<sup>bA</sup>) (E<sup>A</sup>)

3-6/7 23-2 19-22

6 5 4 5 4 3 5 4 3 ... 3 2 5 4 6 4 2 24 22 20 21 19

7 7 3 23 19 21

(D<sup>A</sup>) (C<sup>A</sup>) (B<sup>bA</sup>) (A<sup>bA</sup>) (D<sup>bA</sup>/E<sup>b</sup>)

15-18 11-14 7-10 3-6 1-4/5

18 16 15 14 12 10 8 6 4 3 5 6 3 4 5 2 3

17 15 11 13 11 9 7 7 5 3 3 8<sup>b</sup> 5 1 3/5 1

Playing melody via row (continued 'backwards' movement), to bar 10

(D<sup>bA</sup>) (B<sup>A</sup>) (A<sup>A</sup>) (G<sup>A</sup>) Jump through row (A<sup>bA</sup>)

1-4 21-24 17-20 13-16 3-6

4 3 2 1 24 23 22 20 16 5 6 16 5 4 4

21 21 19 18 17 15 14 13 5 3 3 6

From this point bar lengths and tempo are variable.

(D<sup>bA</sup>) 1-4 (E<sup>bA</sup>) 5-8 (E<sup>bA</sup>) 5-8 (D<sup>bA</sup>) 1-4

Right hand moves 'forwards' through row, left hand moves 'backwards'

5 2 1/4 6 8 5 8 5 8 5 8

7 5 7 4 7 3 1 3 24 4 3



13

(F<sup>Δ</sup>) 9-12  
(B<sup>Δ</sup>) 20-24

(Em<sup>7</sup>) 12-16  
(A) 17-19

Right and left hands rejoin positions in the row, then move alternately 'backwards' and 'forwards' through row, targeting pitches 1-5 at bar 21.

15

(A<sup>Δ</sup>) 17-20  
(C<sup>♯</sup>m<sup>7</sup>) 18-20  
(Bm) 14-16  
(Am<sup>7</sup>) 10-13  
(Bm<sup>7</sup>) 14-17  
(Am<sup>7</sup>) 10-13

Row subdivided into scales. 'Forwards' / 'backwards' movement stabilises with pitches 1-7 in bars 19-20.

17

(D<sup>Δ</sup>) 15-18  
(A<sup>Δ</sup>) 17-20  
(G) 13-15

F Major scale 6-12  
B<sup>b</sup> Mixolydian scale 2-8

19

E<sup>b</sup> Mixolydian scale 1-7  
A<sup>b</sup> Major scale 1-7

21

(D<sup>b</sup>Δ/E<sup>b</sup>) 1-4/5

Excerpt 2, 3:21-4:35

Use of row for reharmonisation of head in bars 1-6, and gradual movement through row targeting melody notes in bars 8-14 (important melody notes in boxes).

①

(A <sup>Δ</sup> )	(G <sup>Δ</sup> )	(F <sup>Δ</sup> )	(G)	(A <sup>Δ</sup> )	(G <sup>Δ</sup> )	(F <sup>Δ</sup> )	(G <sup>Δ</sup> )
17-21	13-16	9-12	13-15	17-21	13-16	9-12	13-16

⑤

(A <sup>Δ</sup> )	(G <sup>Δ</sup> )	(F <sup>Δ</sup> )	(E <sup>bΔ</sup> )
17-20	13-16	9-12	5-8

From this point bar lengths and tempo are variable.

The line traces a path forwards and backwards through the twenty-four note row from this point, connecting the important (boxed) melody notes.

⑧

(left hand)

⑩

⑫

**T.T.T.T. (CD1: track 5)**

The twenty-four note row

← 'Backwards'      'Forwards' →

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

The 'underlying harmony' of *T.T.T.T.* contains its own forwards and backwards movement through the row, in groups of four pitches ( $G^\Delta$ ,  $F^\Delta$ ,  $E^{b\Delta}$  etc.) This existing movement through the row, usually outlined by the left hand, is used to either support (excerpt 3) or contrast (in excerpt 2 and parts of excerpt 1) the melodic development of the row in the right hand.

**Excerpt 1, 2:00-2:13 (opening of second chorus of improvisation)**

Maintaining a 'distance' of four pitches between left and right hands and 'backwards' movement through row - to bar 5.

①  $G^\Delta$   $F^\Delta$   $E^{b\Delta}$   $D^{b\Delta}$

Segments alternating between two positions in the row - one starting at 3-6 (overlined), the other starting at 17-21 (underlined).

⑤  $C^\Delta$   $B^{b\Delta}$   $A^{b\Delta}$   $G^{b\Delta}$

⑨  $B^\Delta$   $A^\Delta$   $A^{b\Delta}$

**Excerpt 2, 2:27-2:44 (opening of third chorus of improvisation)**

①  $G^\Delta$   $F^\Delta$   $E^{b\Delta}$   $D^{b\Delta}$

Modal grouping of pitches 17-23

⑤ C<sup>Δ</sup> B<sup>Δ</sup> A<sup>Δ</sup> G<sup>Δ</sup>

Outlining chords, C<sup>Δ</sup> and B<sup>Δ</sup>

'Jump' through row, then 'forwards' movement in groups of four (in contrary motion to underlying harmony's 'backwards' movement through row).

Another jump, then continuation of forwards movement

⑨ B<sup>Δ</sup> B<sup>Δ</sup> A<sup>Δ</sup> A<sup>Δ</sup>

Reversal of direction, to backwards movement (now in contrary motion to underlying harmony's 'forwards' movement)

⑬ (8) G<sup>Δ</sup> A<sup>Δ</sup> B<sup>Δ</sup> D<sup>Δ</sup>

Excerpt 3, 4:00-4:14 (end of solo)

Movement 'forwards' through row, mirroring underlying harmony

'Jump' through row, again mirroring underlying harmony

① G<sup>Δ</sup> A<sup>Δ</sup> B<sup>Δ</sup> D<sup>Δ</sup>

Movement 'forwards' through row, mirroring underlying harmony

⑤ C<sup>Δ</sup> D<sup>Δ</sup> E<sup>Δ</sup> F<sup>Δ</sup>

⑨ B<sup>Δ</sup> C<sup>Δ</sup> C<sup>Δ</sup> D<sup>Δ</sup>

Modal grouping of pitches 10-15

## APPENDIX 2

### Transcriptions related to row-based chords

APPENDIX 2A	<i>T.T.T.</i> (CD1: track 12).....	114
APPENDIX 2B	<i>PGR</i> (CD1: track 13).....	116
APPENDIX 2C	<i>Brazilia</i> – solo (CD1: track 3).....	122
APPENDIX 2D	<i>Brazilia</i> – trio (CD3: track 3).....	124
APPENDIX 2E	$2 + 2 + 2 = 3$ (CD4: track 1).....	126

**T.T.T. (CD1: track 12)**  
 Excerpt 1, 1:24-1:37 (solo chorus 5)

The twelve-note row

Interval cell - minor 2nd, minor 3rd

Interval cell - perfect 4th, major 2nd

Analysis of these excerpts shows that application of row-based chords was generally unsuccessfully in consistently presenting the chromatic total (only one of the five four-bar sections shown here presents the chromatic total - this is the four-bar section applying 'changes' based ideas). Interval cells derived from the row were applied during row-based chord improvisation.

Evans' original harmony, to bar 5

Piano

①  $Gm^A$  4:3  $Cm^7$   $Fm^7$   $Bbm^7$   $Eb7\#11$   $Am^7$  3:2  $D7b9$

Pitch Fields Complete

Transition to row-based chords...

⑤  $G^A$   $Eb11$  Arpeggiate  $Db$  triad  $D^bA\#5$  Interval cell - minor 2nd, minor 3rd

No E

'E' not played

⑨ Arpeggiate  $Em$  triad  $Em^7$  3:2  $Fm^7$  Interval cell -  $C^Ab9$  minor 2nd, minor 3rd

No A

'A' not played

Excerpt 2, 2:05-2:19 (solo chorus 8)

①  $G^A$   $Bb7_{sus4}$   $A7\#9$  3:2 3:2 3:2 Complete

Interval cell - perfect 4th, major 2nd - used in right hand to end of excerpt. Combined with chord stranding idea from Lutoslawski - groupings of 'white notes' and 'black notes' on keyboard.

⑤  $D^{11}$  3:2 3:2  $Eb^{11}$  3:2 3:2  $D^bA\#5$  3:2 3:2 3:2 3:2 'White notes' 'Black notes' 3:2 'E' and 'B' not played No E No B

⑨  $Em7$  3:2 3:2  $Fm7$  3:2 3:2  $CAb9$  3:2 3:2  $G^{va}$  3:2 'White notes' 'Black notes' 'White notes' 'C#' and 'F#' not played No C# No F#

**PGR (CD1: track 13)**  
 Excerpt 1, 1:11 - 2:15 (opening of piano solo)

Row-based chords for piano solo

Except where indicated, all six bar sections present the chromatic total.

① Ebm^A A^A

Piano

Bass

⑤ F^A#11 'A^b' not played in bars 1-6 Ebm^A

⑨ A^A F^A#11

⑬ Ebm^A A^A



17 F $\Delta$ #11 E $\flat$ m $\Delta$

8<sup>m</sup>

21 A $\Delta$  F $\Delta$ #11

8

25 E $\flat$ m $\Delta$  A $\Delta$

8

*loco*

29 F $\Delta$ #11 E $\flat$ m $\Delta$

'B' not played in bars 25-30

8

33 A<sup>Δ</sup> F<sup>Δ</sup>#11

8va

37 E<sup>b</sup>m<sup>Δ</sup> A<sup>Δ</sup>

(8)

41 F<sup>Δ</sup> E<sup>b</sup>m<sup>Δ</sup>

(8)

45 A<sup>Δ</sup> F<sup>Δ</sup>#11

loco subito gliss.

49  $E^b m^{\Delta}$   $A^{\Delta}$

*gliss. end subito*

53  $F^{\Delta} \#11$   $E^b m^{\Delta}$

57  $A^{\Delta}$   $F^{\Delta} \#11$

61  $E^b m^{\Delta}$   $A^{\Delta}$

Excerpt 2, 4:14 - 4:44 (opening of bass solo)

Row-based chords for bass solo - transposed inverse of row for piano solo

Except where indicated, all six bar sections present the chromatic total.

⑨ E<sup>Δ</sup> D<sup>bΔ</sup>

'D' and 'A' not played in bars 7-12

8<sup>va</sup>

⑬ B<sup>bΔ</sup>#5 E<sup>Δ</sup>

B<sup>bΔ</sup>#5 E<sup>Δ</sup>

⑰ D<sup>bΔ</sup> B<sup>bΔ</sup>#5

Finger trill

8<sup>va</sup>

Finger trill

⑳ E<sup>Δ</sup> D<sup>bΔ</sup>#11 B<sup>bΔ</sup>#5

'A' not played in bars 19-24

⑧

'A' not played in bars 19-24

⑧

**Brazilia - solo (CD1: track 3)**

The twelve-note row

Interval Cell 1 (IC 1)      Interval Cell 2 (IC 2)      Interval Cell 3 (IC 3)

$E^b m^7$  (or  $E^b m^A$ )       $G^{11}$        $A^A$

**Excerpt 1, 2:10-2:20**

First movement to A major during improvisation, and use of interval cell 3.

① IC 3      IC 3      ② IC 3      IC 3      IC 3      IC 3

$A^A$       ( $G^{\#7}$ )       $A^A$        $A^7$

④  $F^{\#}$       ( $F$ )       $B^b7$        $E^7$        $E^b m^7$

**Excerpt 2, 2:51-3:15**

Harmonic movement in left hand, more use of interval cells. Bars 7-11 annotated in figure 2.8.

① IC 3

$E^b m^7$        $A^b7sus^4$        $A^A$       ( $F^{\#m^7}$ )       $Fm^7$

8<sup>vb</sup>

④ IC 2      IC 2      IC 2      IC 2      IC 2

$A^b7sus^4$        $B^7sus^4$        $E^7$       ( $F$ )       $A^b$

(8)

⑦

(F#m7) GII Fm7 E7 F#m7 AΔ Bb+7

⑩

Bm7 E7 Ebm7 8vb

⑬

(8) 8vb Bb7 Ebm7 8vb

**Brazilia - trio (CD3: track 3)**

1:57 - 2:45 (piano solo excerpt)

Twelve-note row from A section

Interval Cell 1 (IC 1)      Interval Cell 2 (IC 2)      Interval Cell 3 (IC 3)

Twelve-note row from B section

Interval Cell 4 (IC 4)      Interval Cell 5 (IC 5)      Interval Cell 6 (IC 6)

① D<sup>Δ</sup>

Piano

Bass

③ E<sup>b</sup>m<sup>Δ</sup>      Reordering of IC 4      C<sup>Δ</sup>      Modal use of IC 4

Cyclic permutation of IC 2

⑦ A<sup>Δ</sup>      IC 3      IC 3      IC 3      A<sup>b</sup>m<sup>Δ</sup>      Modal use of IC 4



11

Reordering of IC 4

F<sup>7</sup>sus<sup>4</sup>

Reordering of IC 5

D<sup>Δ</sup>

Cyclic permutation of IC 4

15

Cyclic permutation of IC 4, last interval 'stretched'

E<sup>b</sup>m<sup>Δ</sup>

Fragment from IC 1

Cyclic permutation of IC 5

C<sup>Δ</sup>

Cyclic permutation of IC 5

IC 2

19

A<sup>Δ</sup>

IC 2

IC 2

IC 2

IC 2

A<sup>b</sup>m<sup>Δ</sup>

From IC 4

From IC 4 - inverted

IC 3 'Stacked'

23

F<sup>7</sup>sus<sup>4</sup>

D<sup>Δ</sup>

Reordering of IC 2

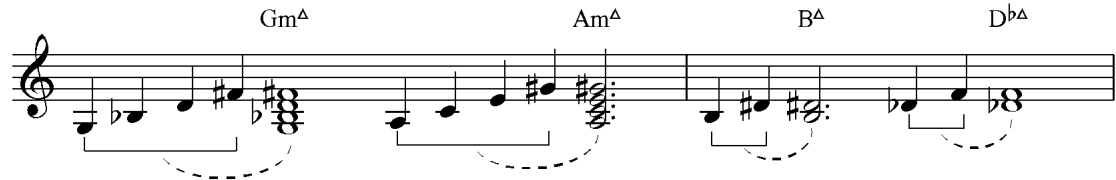
(E<sup>b</sup>m<sup>Δ</sup>)

**2 + 2 + 2 = 3 (CD4: track 1)**

The twelve-note row (closely derived from the row of Alban Berg's *Violin Concerto*).



Segmentation of the row, verticalisation of segments, and derivation of row-based chords.



**Excerpt 1:06-2:17**

Thirteen of the twenty two-bar sections present the chromatic total. Every four-bar section presents the chromatic total with the exception of bars 29-32 (no B<sup>b</sup>). C, F, and B<sup>b</sup> are each omitted in two of the two-bar sections - this is most likely because these pitches, along with E<sup>b</sup>, do not feature in the repeated bassline. The consistent presentation of the chromatic total, even without the use of the left hand in the piano, shows successful use of row-based chords.

① Gm<sup>A</sup> Am<sup>A</sup> B<sup>A</sup> Gm<sup>A</sup> Am<sup>A</sup>

Piano

Bass

④ B<sup>A</sup> D<sup>bA</sup> Gm<sup>A</sup> Am<sup>A</sup> B<sup>A</sup> D<sup>bA</sup> 'C' not played

⑦ Gm<sup>A</sup> Am<sup>A</sup> B<sup>A</sup> D<sup>bA</sup> Gm<sup>A</sup> Am<sup>A</sup>

⑩ B<sup>Δ</sup> D<sup>bΔ</sup> Gm<sup>Δ</sup> Am<sup>Δ</sup> B<sup>Δ</sup> D<sup>bΔ</sup> 'C' not played

⑬ Gm<sup>Δ</sup> Am<sup>Δ</sup> B<sup>Δ</sup> D<sup>bΔ</sup> 'F' not played Gm<sup>Δ</sup> Am<sup>Δ</sup>

⑯ B<sup>Δ</sup> D<sup>bΔ</sup> Gm<sup>Δ</sup> Am<sup>Δ</sup> B<sup>Δ</sup> D<sup>bΔ</sup>

⑰ Gm<sup>Δ</sup> Am<sup>Δ</sup> B<sup>Δ</sup> D<sup>bΔ</sup> Gm<sup>Δ</sup> Am<sup>Δ</sup>

22 B<sup>Δ</sup> D<sup>bΔ</sup> 'F' not played Gm<sup>Δ</sup> Am<sup>Δ</sup> B<sup>Δ</sup> D<sup>bΔ</sup>

25 Gm<sup>Δ</sup> Am<sup>Δ</sup> B<sup>Δ</sup> D<sup>bΔ</sup> Gm<sup>Δ</sup> Am<sup>Δ</sup>

28 B<sup>Δ</sup> D<sup>bΔ</sup> Gm<sup>Δ</sup> Am<sup>Δ</sup> B<sup>Δ</sup> D<sup>bΔ</sup> 'B<sup>b</sup>' not played

31 Gm<sup>Δ</sup> Am<sup>Δ</sup> B<sup>Δ</sup> D<sup>bΔ</sup> 'E<sup>b</sup>', 'A<sup>b</sup>' and 'B<sup>b</sup>' not played Gm<sup>Δ</sup> Am<sup>Δ</sup>

34 B<sup>Δ</sup> D<sup>bΔ</sup> Gm<sup>Δ</sup> Am<sup>Δ</sup>

36 B<sup>Δ</sup> D<sup>bΔ</sup> Gm<sup>Δ</sup> Am<sup>Δ</sup> B<sup>Δ</sup> D<sup>bΔ</sup>

39 Gm<sup>Δ</sup> Am<sup>Δ</sup> B<sup>Δ</sup> D<sup>bΔ</sup> Gm<sup>Δ</sup> Am<sup>Δ</sup>

42 B<sup>Δ</sup> D<sup>bΔ</sup> Gm<sup>Δ</sup>

## APPENDIX 3

### Transcriptions related to interval cell development

APPENDIX 3A	<i>A Love Supreme: Acknowledgment</i> (CD3: track 4).....	131
APPENDIX 3B	<i>Amy's Suite: Stand Up</i> (CD4: track 2).....	136
APPENDIX 3C	<i>Amy's Suite: I Feel</i> (CD4: track 4) .....	140

**A Love Supreme: Acknowledgment (CD3: track 4)**

Excerpt 1:22-3:20

Interval cell:  
Prime (P)                      Inversion (I)                      Retrograde (R)                      Retrograde  
Inversion (RI)

Alternate interval cell: only used in 'Prime' and 'Retrograde' form in this excerpt.

Derived twelve-note row - one possibility

Interval cell 2:  
Prime (IC2 P)                      Retrograde (IC2 R)

Left hand chord voicings used in this excerpt:  
'Cell stacking'

'Cell multiplication' (of Prime, by factor of 2)

Piano

Bass

Interval cell analysis not applied to bass part. Bass usually plays the standard interpretation of 'Prime', and occasionally transposes this down a semitone towards the end of the excerpt.

④

⑦

10

IC2 R Cyclic Permutation P P

13

R R P Cyclic Permutation 'Cell stacking' voicing

16

RI RI I RI Cyclic Permutation Cell multiplication voicing

18

RI I RI Cyclic Permutation RI Cyclic Permutation

21

RI RI RI RI RI I Cyclic Permutation Cyclic Permutation Cyclic Permutation



24

P P P P P

27

P P P

29

Tritone relationship between cells

P P P P P P 8va P

31

(8)

Cyclic Permutation R

Cyclic Permutation R Cyclic Permutation

33

I RI R

35

R R R I  
Cyclic Permutation

'F Minor' playing - reference to cell is coincidental →

38

41

P P

43

R R RI  
Cyclic Permutation

R I

45

P P P P I

Complete statement of derived twelve-note row

Ped. Cont.

48

I P P R I P P

51

53

55

57

R R Cyclic Permutation Stacked interval cells P

**Amy's Suite: Stand Up (CD4: track 2)**

Excerpt 1, 4:22-5:33 (opening of piano solo)

Interval cell multiplication:  
by factor of 5  
(I x 5)

Interval cell:  
Prime (P)      Inversion (I)      Retrograde (R)      Retrograde Inversion (RI)

The musical score is presented in four systems. The first system shows the interval cell multiplication: Prime (P), Inversion (I), Retrograde (R), and Retrograde Inversion (RI). The second system, labeled 'Interval Cell Use', shows the piano accompaniment in 4/4 time, with a  $D^7$ ish chord and interval cells P, P, and P. The third system, starting at measure 7, shows a piano accompaniment with interval cells P and P, and a triplet of eighth notes. The fourth system, starting at measure 13, shows a piano accompaniment with a triplet of eighth notes. The fifth system, starting at measure 19, shows a piano accompaniment with interval cells P and P. The sixth system, starting at measure 25, shows a piano accompaniment with a  $D^b7$ ish chord and interval cells P and P.

31

35

39

43

47

53

57

Musical notation for measures 57-60. Treble clef with eighth-note runs and 'RI' markings. Bass clef with eighth-note accompaniment and triplets.

61

Musical notation for measures 61-64. Treble clef with eighth-note runs and 'RI' markings. Bass clef with eighth-note accompaniment.

Excerpt 2, 6:19-6:52

① (Db<sup>7</sup>ish)

Musical notation for measures 1-4. Treble clef with eighth-note runs. Bass clef with eighth-note accompaniment.

⑤

Musical notation for measures 5-8. Treble clef with eighth-note runs. Bass clef with eighth-note accompaniment.

⑨

Musical notation for measures 9-12. Treble clef with eighth-note runs. Bass clef with eighth-note accompaniment.

⑬

Quote loosely derived from *Blues in the Corner* 1 x 5

Musical notation for measures 13-16. Treble clef with eighth-note runs. Bass clef with eighth-note accompaniment.

17

Etc.

LH

21

25

29

D7ish

Excerpt 3, 8:13-8:21

①

(D7ish)

P

RI

P

⑤

P

RI


3

3

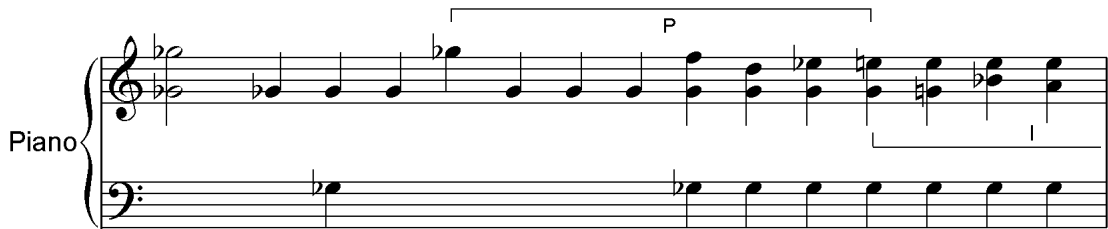
### Amy's Suite: I Feel (CD4: track 4)

Excerpt 1:21-2:30

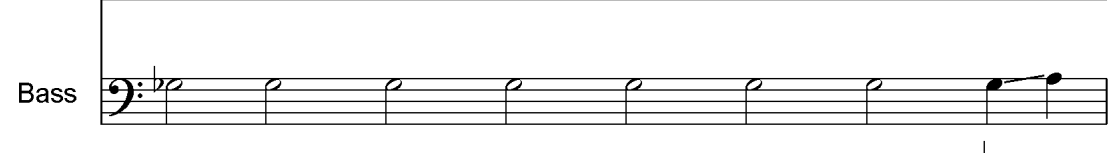
Interval cell:  
Prime (P)                      Inversion (I)                      Retrograde (R)                      Retrograde  
Inversion (RI)




Piano



Bass



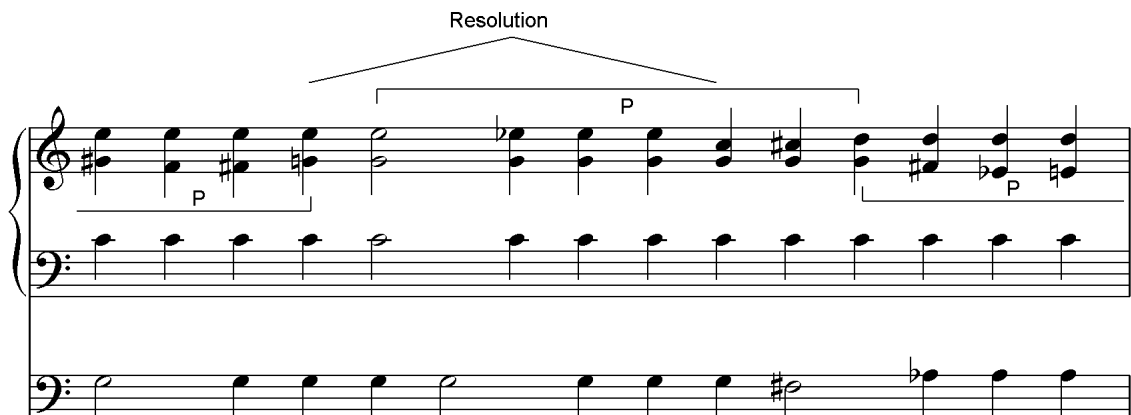
Resolution



(3-note section of I - cyclic permutation)

I - cyclic permutation

Resolution



(Cyclic permutation and slight re-ordering of P)



Resolution

P

R

(3-note section of P)

I - cyclic permutation

This system consists of three staves. The top staff is in treble clef and contains a sequence of chords. A bracket labeled 'Resolution' spans the final two chords. A bracket labeled 'P' spans a three-note section in the middle. A bracket labeled 'R' spans a single note. The middle staff is in bass clef and contains a sequence of notes. A bracket labeled '(3-note section of P)' spans three notes. A bracket labeled 'I - cyclic permutation' spans the final two notes. The bottom staff is in bass clef and contains a sequence of notes.

P

P - cyclic permutation

This system consists of three staves. The top staff is in treble clef and contains a sequence of chords. A bracket labeled 'P' spans a three-note section. The middle staff is in bass clef and contains a sequence of notes. A bracket labeled 'P - cyclic permutation' spans the final two notes. The bottom staff is in bass clef and contains a sequence of notes.

Resolution

P

This system consists of three staves. The top staff is in treble clef and contains a sequence of chords. A bracket labeled 'Resolution' spans the final two chords. A bracket labeled 'P' spans a three-note section. The middle staff is in bass clef and contains a sequence of notes. The bottom staff is in bass clef and contains a sequence of notes.

## APPENDIX 4

### Transcriptions related to chord stranding by registral significance

APPENDIX 4A	<i>Winter Song – Song III – solo</i> (CD2: track 2) .....	143
APPENDIX 4B	<i>Winter Song – Song III – trio</i> (CD2: track 6).....	144
APPENDIX 4C	<i>Stranded Chord Blues</i> (CD4: track 7) .....	149

**Winter Song - Song III - solo (CD2: track 2)**

Excerpt 0:52-1:45 (opening section of improvisation)

Annotated in figure 3.12, showing effective exposition of the twelve-note chord

The musical score is presented in six systems, each with a circled measure number and chord annotations above the staff. The notation includes treble and bass clefs, a 4/4 time signature, and various musical symbols such as triplets, slurs, and accidentals.

- System 1:** Measure 1 is annotated with  $E^{b\Delta}/G$ . Measure 2 is annotated with  $B^{\Delta}$ . Both measures contain triplets.
- System 2:** Measure 3 is annotated with  $E^{b\Delta}/G$ . Measure 4 is annotated with  $B^{\Delta}$ . Measure 5 is annotated with  $D^{\Delta}/F^{\#}$ . Measure 5 contains a triplet.
- System 3:** Measure 6 is annotated with  $B^{b\Delta\#11}$ . Measure 7 is annotated with  $D^{\Delta}/F^{\#}$ . Measure 6 contains a triplet.
- System 4:** Measure 8 is annotated with  $E^{b\Delta m^{\Delta}}$ . Measure 9 is annotated with  $B^{\Delta\#9}$ . Measure 10 is annotated with  $E^{b\Delta}/G$ . Measures 10 and 11 contain triplets.
- System 5:** Measure 11 is annotated with  $B^{\Delta\#9}$ . Measure 11 contains a triplet.
- System 6:** Measure 13 is annotated with  $C^{\Delta}/E$ . Measure 14 is annotated with  $A^{b\Delta}$ . Measure 15 is annotated with  $C^{\Delta}/E$ .

**Winter Song - Song III - trio (CD2: track 6)**

Excerpt 0:46 - 3:23 (complete improvisation section)

Bars 25, 33-34, and 39-40 annotated in Figure 3.13, showing exposition of four-part chord in ensemble. Diamond noteheads in this transcription indicate use of pitches from the twelve-note chords. See the 'Winter Song - Song III Practice Version - notated chords' in Appendix 7 for the twelve-note chords. Bar 1 of this transcription corresponds to section 'B' on the chart in Appendix 7.

The musical score is presented in two systems, each containing a Piano part (treble and bass staves) and a Bass part (bass staff). The time signature is 4/4.

- System 1:**
  - Piano:** Treble clef, 4/4. Chord:  $E^b\Delta/G$ . Features diamond noteheads and triplets.
  - Bass:** Bass clef, 4/4. Features triplets.
- System 2:**
  - Piano:** Treble clef, 4/4. Chords:  $B^\Delta$  and  $E^b\Delta/G$ . Features diamond noteheads and triplets.
  - Bass:** Bass clef, 4/4. Features triplets.
- System 3:**
  - Piano:** Treble clef, 4/4. Chords:  $B^\Delta$  and  $D^\Delta/F^\sharp$ . Features diamond noteheads and triplets.
  - Bass:** Bass clef, 4/4. Features triplets.
- System 4:**
  - Piano:** Treble clef, 4/4. Chords:  $B^b\Delta^\sharp_{11}$  and  $D^\Delta/F^\sharp$ . Features diamond noteheads and triplets.
  - Bass:** Bass clef, 4/4. Features triplets.

⑧ Ebm<sup>Δ</sup> B<sup>Δ</sup>#9

Musical notation for exercise 8, measures 8-9. Treble clef with triplets. Bass clef with triplets and a flat sign.

⑩ Eb<sup>Δ</sup>/G B<sup>Δ</sup>#9

Musical notation for exercise 10, measures 10-11. Treble clef with eighth notes. Bass clef with eighth notes and a triplet.

⑫ C<sup>Δ</sup>/E

Musical notation for exercise 12, measures 12-13. Treble clef with triplets. Bass clef with triplets.

⑭ A<sup>bΔ</sup> C<sup>Δ</sup>/E

Musical notation for exercise 14, measures 14-15. Treble clef with triplets. Bass clef with triplets and a glissando marking.

⑯ A<sup>bΔ</sup> B<sup>Δ</sup>/D# G<sup>Δ</sup>#11 8va

Musical notation for exercise 16, measures 16-18. Treble clef with triplets. Bass clef with triplets and an 8va marking.

19  $B^{\Delta}/D^{\#}$   $Cm^{\Delta}$

*loco*

21  $A^{\flat\Delta\#9}$   $C^{\Delta}/E$

23  $A^{\flat\Delta\#9}$

*gliss.*

25  $(C+/F+/B^{\flat+}/E^{\flat+})$

*8va*

Bass diamond noteheads from this point refer to either ensemble twelve-note chord, or the specific 'bass register' arrangement of this chord (see chart in Appendix 7)

27 *loco*

29 (C+/F+/B<sup>b</sup>+/E<sup>b</sup>+) *subito* *loco*

31 *loco*

Time and meter dissolve here.  
Rhythms from this point are approximate.

33

35

(37) (C+/F+/B<sup>b</sup>+/E<sup>b</sup>+) 8<sup>va</sup>

(8) *loco*

(39) 8<sup>va</sup> *loco*

(41) E<sup>+</sup>/G<sup>#</sup>



**Stranded Chord Blues (CD4: track 7)**

Excerpt 1:13-1:48 (opening of piano solo)

Bars 11-16 annotated in Figure 3.14, showing use of twelve-note chords.

Piano

Bass

F7sus4

3 3 3 3 5

④

B<sup>b</sup>7<sup>b</sup>9

3 3 3

⑦

F7sus4

G<sup>o</sup>

C7alt

3 3 3 3 3 3

⑩

F7sus4

F7sus4

3 3 3 3 3 3

13 B<sup>b</sup>7<sup>b</sup>9

16 F7sus<sup>4</sup> (D7<sup>alt</sup>)

19 G<sup>o</sup> C7<sup>alt</sup> F7sus<sup>4</sup>

## APPENDIX 5

### Transcriptions related to chord stranding by complementary chords and scales

APPENDIX 5A	<i>Silver Moon – Song IV – solo</i> (CD2: track 3).....	152
APPENDIX 5B	<i>Silver Moon – Song IV – trio</i> (CD2: track 7) Piano solo excerpt.....	154
APPENDIX 5C	<i>Silver Moon – Song IV – trio</i> (CD2: track 7) Bass solo excerpt.....	157
APPENDIX 5D	<i>1 + 1 = 1</i> (CD4: track 8).....	159

**Silver Moon - Song IV - solo (CD2: track 3)**

Excerpt 1:53-2:46 (solo chorus 2)

Generally effective exposition of twelve-note chords, but restricted left-hand.

Am7/E<sup>b</sup>m7/A

Am7/E<sup>b</sup>m7/A

Dm7/A<sup>b</sup>m7

F<sup>#</sup>m7/Cm7

Gm7/D<sup>b</sup>m7

A<sup>b</sup>m7/Dm7

Am7/E<sup>b</sup>m7

Dm7/A<sup>b</sup>m7

Edim<sup>8</sup>/E<sup>b</sup>dim<sup>8</sup>/E

Edim<sup>8</sup>/E<sup>b</sup>dim<sup>8</sup>/E

17 Edim<sup>8</sup>/E<sup>b</sup>dim<sup>8</sup>/E

8<sup>va</sup> 5:6 15<sup>ma</sup> 7:8

19 Bdim<sup>8</sup>/F<sup>#</sup>07 Adim<sup>8</sup>/G07 Gdim<sup>8</sup>/A<sup>b</sup>07 Fdim<sup>8</sup>/A07

45 4:3 3 4:3 3 4:3 3 4:3 3 4:3

23 E<sup>b</sup>dim<sup>8</sup>/B<sup>b</sup>07 Am<sup>7</sup>/E<sup>b</sup>m<sup>7</sup>/A

3 3

**Silver Moon - Song IV - trio (CD 2: track 7)**

Excerpt 1:36-2:23 (piano solo, chorus 2)

Bars 1-4, 9-12, and 13-18 annotated in Figures 3.15, 3.16 and 3.17 respectively, showing exposition of the twelve-note chords.

Am<sup>7</sup>/E<sup>b</sup>m<sup>7</sup>/A

Piano

Bass

④

gliss.

⑦

Dm<sup>7</sup>/A<sup>b</sup>m<sup>7</sup>

gliss.

⑨

F<sup>#</sup>m<sup>7</sup>/Cm<sup>7</sup>      Gm<sup>7</sup>/D<sup>b</sup>m<sup>7</sup>      A<sup>b</sup>m<sup>7</sup>/Dm<sup>7</sup>      Am<sup>7</sup>/E<sup>b</sup>m<sup>7</sup>

gliss.

⑪ Am<sup>7</sup>/E<sup>b</sup>m<sup>7</sup>/A

4:3

3

3

3

⑬ Edim<sup>8</sup>/E<sup>b</sup>dim<sup>8</sup>/E

3

3

3

3

3

⑮

3

3

3

3

3

⑰

3

3

3

3

3

3

3

3

3

3

4:3

19  $Bdim^8/F\#07$

Musical notation for exercise 19, featuring a grand staff with a treble clef and a bass clef, and a separate bass clef staff below. The notation includes a key signature of one sharp (F#) and a bass line with quarter notes. The top staff contains a melodic line with eighth notes and triplets.

20  $Adim^8/G07$   $Gdim^8/A^b07$

Musical notation for exercise 20, featuring a grand staff with a treble clef and a bass clef, and a separate bass clef staff below. The notation includes a key signature of one flat (Bb) and a bass line with quarter notes. The top staff contains a melodic line with eighth notes and quintuplets.

22  $Fdim^8/A07$   $E^bdim^8/B^b07$

Musical notation for exercise 22, featuring a grand staff with a treble clef and a bass clef, and a separate bass clef staff below. The notation includes a key signature of two flats (Bb, Eb) and a bass line with quarter notes. The top staff contains a melodic line with eighth notes and quintuplets.

24  $Am^7/E^bm^7/A$

Musical notation for exercise 24, featuring a grand staff with a treble clef and a bass clef, and a separate bass clef staff below. The notation includes a key signature of one flat (Bb) and a bass line with quarter notes. The top staff contains a melodic line with eighth notes and triplets.



**Silver Moon - Song IV - trio (CD2: track 7)**

Excerpt 3:53-4:40 (bass solo, chorus 1)

Bars 4-6 annotated in Figure 3.15, showing exposition of the twelve-note chords.

Am<sup>7</sup>/E<sup>b</sup>m<sup>7</sup>/A

Piano

Bass

④

3 3 3

⑦ Dm<sup>7</sup>/A<sup>b</sup>m<sup>7</sup> F<sup>#</sup>m<sup>7</sup>/Cm<sup>7</sup> Gm<sup>7</sup>/D<sup>b</sup>m<sup>7</sup>

3 3 3

⑩ A<sup>b</sup>m<sup>7</sup>/Dm<sup>7</sup> Am<sup>7</sup>/E<sup>b</sup>m<sup>7</sup> Dm<sup>7</sup>/A<sup>b</sup>m<sup>7</sup>

3 3 3 3 3 3

Edim<sup>8</sup>/E<sup>b</sup>dim<sup>8</sup>/E

13 *8<sup>va</sup>*

*loco*

*8<sup>ub</sup>*

3

16 (8)

3 3 3 3 3 3 3 3

19 Bdim<sup>8</sup>/F<sup>#</sup>07 Adim<sup>8</sup>/G<sup>0</sup>7 Gdim<sup>8</sup>/A<sup>b</sup>07

*8<sup>va</sup>*

3

22 Fdim<sup>8</sup>/A<sup>0</sup>7 E<sup>b</sup>dim<sup>8</sup>/B<sup>b</sup>07

3 3 3 3



17  $B^b m^7$   $D^b$  Pent or  $D^b$  Blues/ $D^b$   
or  $A m^7/D^b$

$D^b$  Pentatonic continues, some use of  $b7$  and  $b3$  from  $D^b$  Blues

$D^b$  Pentatonic - some use of chromatic approach notes

21

3 3

25 G Blues

3 3 3 3

$D^b$  Pentatonic with  $b7$  from  $D^b$  Blues

3

28

A Dorian, with some chromatic approach notes

31

$D^b$  Blues

3

34 D<sup>b</sup> Pentatonic mixed with D<sup>b</sup> Blues

Am<sup>7</sup> or G Blues/Am<sup>7</sup>  
or D<sup>b</sup>pent/Am<sup>7</sup>

A Dorian - some use of chromatic approach notes

38

A Dorian

G Blues

42 (8)

A Dorian

G Blues

D<sup>b</sup> Pentatonic

46 Am<sup>7</sup> or G Blues/Am<sup>7</sup>  
or D<sup>b</sup>pent/Am<sup>7</sup>

B<sup>b</sup>m<sup>7</sup>

B<sup>b</sup> Dorian

B<sup>b</sup> Dorian

## APPENDIX 6

### Charts for CD 1 (Serialism Concept Development)

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Tr. 2.	Miles' Mode – solo (Coltrane/Dolphy).....	165
Tr. 3.	Brazilia – solo (Coltrane).....	166
Tr. 4.	Naima (Coltrane).....	167
Tr. 5.	T.T.T.T. (Evans).....	169
Tr. 6.	Hanging on for the Ride.....	171
Tr. 7.	4 Rainbows.....	173
Tr. 8.	Softly Does It.....	175
Tr. 9.	Block-Out.....	176
Tr. 10	Rhythm-a-Bling.....	177
Tr. 11	Kinda Kooky.....	178
Tr. 12	T.T.T.....	178
Tr. 13	PGR.....	180

**APPENDIX 6**  
**Charts for CD 1 (*Serialism Concept Development*)**

NOTE: Appendix 6 is included in the print copy of the thesis held  
in the University of Adelaide Library.

## APPENDIX 7

### Charts for CD 2 (Chord Stranding Concept Development)

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Tr. 2.	Winter Song – Song III (solo).....	185
Tr. 3.	Silver Moon – Song IV (solo).....	188
Tr. 4.	Diggers – Song I (trio).....	190
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Tr. 6.	Winter Song – Song III (trio).....	194
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Tr. 7.	Silver Moon – Song IV (trio).....	199
Tr. 8.	The Bell-Ringer – Song V.....	201
Tr. 9.	You Against the World.....	203
Tr. 10	All of You (Cole Porter).....	206



**APPENDIX 7**  
**Charts for CD 2 (*Chord Stranding Concept Development*)**

NOTE: Appendix 7 is included in the print copy of the thesis held  
in the University of Adelaide Library.

## APPENDIX 8

### Charts for CD 3 (Chris Martin Trio play A Love Supreme)

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Tr. 5.	<i>Resolution</i> .....	212
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Tr. 7.	<i>Psalm</i> .....	214

**APPENDIX 8**  
**Charts for CD 3 (*Chris Martin Trio play A Love Supreme*)**

NOTE: Appendix 8 is included in the print copy of the thesis held  
in the University of Adelaide Library.

## APPENDIX 9

### Charts for CD 4 (*Triptych – 1 + 1 = 1*)

Tr. 1.	2 + 2 + 2 = 3.....	216
	<i>Amy's Suite</i>	
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Tr. 2.	<i>Stand Up</i> .....	219
Tr. 3.	<i>Get Rollin'</i> .....	223
Tr. 4.	<i>I Feel</i> .....	226
Tr. 5.	<i>Hanging on for the Ride</i> .....	227
Tr. 6.	<i>Billy's Bridge</i> .....	229
Tr. 7.	<i>Stranded Chord Blues</i> .....	232
Tr. 8.	<i>1 + 1 = 1</i> .....	234

**APPENDIX 9**  
**Charts for CD 4 (*Triptych – 1 + 1 = 1*)**

NOTE: Appendix 9 is included in the print copy of the thesis held  
in the University of Adelaide Library.

## APPENDIX 10

### Notes and general comments on recordings and recording methods

This appendix provides information on the CD recordings in the current submission, including choice of instrumentation, recording method, mixing and editing. The first two recordings (CDs 1 and 2) were 'concept development' recordings. The tracks from these two recordings were rearranged according to concepts employed, in CD 1 (*Serialism Concept Development*) and CD 2 (*Chord Stranding Concept Development*). The third recording (CD 3 – *Chris Martin Trio play A Love Supreme*) was a 'live' presentation of results from the research. The final recording (CD 4 *Triptych – 1 + 1 = 1*) was a 'studio' presentation of results from the research. The recording method and recording quality for each CD reflects these circumstances—the quality is lower for the 'concept development' recordings, slightly higher for the 'live' recording, and of professional quality for the final recording.

#### Recording session 1

Solo piano was chosen for the first stage of concept development, and was the instrumentation used for most of the first recording. Two tracks from this recording use a piano / vocal duet (CD1: track 6 and CD2: track 9). This particular instrumentation was an ensemble I was working with at the time, as part of an exploration of 'lyric-based' compositional technique, inspired by Paul Grabowsky's work on recordings with Shelley Scown (Scown 1997) and Dorothy Porter (Grabowsky 2004).

The recording took place at EMU (Electronic Music Unit, the University of Adelaide) on 23-24 January 2006. Sound was recorded digitally to ProTools, and all mixing was also done in ProTools. The sound engineer for the session was Silver Moon. Two piano microphones were used, and a vocal microphone was used in the same room. A vertical baffle was placed between the piano and vocal microphone, situated to allow visual communication between pianist and vocalist. The track from this microphone is used at a low volume level for most of the tracks from this session, providing a reverb effect. Problems with 'spill' between the voice and piano microphones meant that the tone of the piano was adversely affected while the vocal microphone was turned up, so in post-production the level of this microphone was pulled back when the vocals were not in use. As a result, in the tracks employing vocals, a gradual change in piano tone can be heard at the conclusion of the 'head in' and before the 'head out'.

There was one significant edit on this recording. In the first take of *Miles' Mode* (CD1: track 2) the first thirty seconds of piano performance was not recorded due to technical issues. This was the best take of this piece, with the most successful use of techniques from the research. In order to use this take, an appropriate point to begin was chosen and the first (incomplete) recorded phrase was deleted. As the sustain pedal had been used extensively in the introduction, the first note of this new 'opening' phrase emerged from a chord held by the sustaining pedal (obscuring the attack on the note), and a slight volume jump was used to simulate the attack expected for the first note in a phrase. Very little time was spent mixing this recording (approximately half a day) and this recording was not mastered. Tracks from this recording feature on both CD 1 (*Serialism Concept Development*, tracks 1, 2, 5, 6, 7, 12) and CD 2 (*Chord Stranding Concept Development*, tracks 1, 2, 3, 9).

## **Recording session 2**

The second recording aimed to apply the techniques developed in the research in an ensemble context. The application of techniques within diverse ensemble situations was not the focus of this research. The familiar instrumentation of piano, bass and drums allows for some interaction

between piano and bass, and for typical jazz ensemble sounds, but avoids the complexities associated with the use of a lead instrument, and questions of how this instrument should engage with the theoretical concepts. This instrumentation (piano, bass drums) was used for all ensemble recordings in the submission. The piano trio playing on this recording is 'Triptych'. This was my main 'contemporary jazz' performance ensemble in the years 2002-2005. There was only very limited rehearsal time before this recording, with two ensemble rehearsals in the week before and two rehearsals with piano and bass only in the month before the session.

The recording took place at EMU (Electronic Music Unit, the University of Adelaide) on 21 September 2006. This was a concert in two sets, with a studio audience of about twenty people. Sound was recorded digitally to ProTools, and all mixing was also done in ProTools. The sound engineer for the session was Silver Moon. Only four microphones were used—two room microphones to record the group, and two piano microphones for reinforcement as needed. This limited possibilities for mixing and adjusting levels after the performance, and the spill of drums and bass into the piano microphones adversely affected the sound quality. Like the first recording, this session was intended as 'concept development', and as such these problems with recording quality were considered to be insignificant. There are no edits on these tracks, apart from the removal of applause and spoken introductions. Very little time was spent mixing this recording (only two hours) and this recording was not mastered. Tracks from this recording feature on both CD 1 (*Serialism Concept Development*, tracks 3, 4, 8, 9, 10, 11, 13) and CD 2 (*Chord Stranding Concept Development*, tracks 4, 5, 6, 7, 8, 10).

### **Recording session 3**

The third recording was intended as a 'live' presentation of the research. The repertoire centred on John Coltrane's exploration of serialism and related techniques, but a saxophone was not used in order to place more emphasis on the piano as the lead voice, and to avoid the difficulties associated with introducing another player to serial techniques. The trio used on this occasion was not a regular working group. The two players were selected based on their affinity for the music to



be performed and their rapport with my own playing. There were two group rehearsals in the two weeks before the concert.

The recording took place on 18 June 2007, at the Wheatsheaf Hotel (Adelaide) as part of the 'Hipnote Autumn Sessions' concert series, with a live audience of approximately eighty people. Live sound was managed by Martin Jones, and the recording engineer was David Grice, with all recording and mixing being done digitally with ProTools. The microphone placement was as follows:

- Two piano microphones (placed under the open piano lid)
- Three microphones on drums (bass drum, two overheads)
- No microphone on bass (recorded via DI)
- Two room microphones

There was some digital processing performed after the recording by David Grice, especially to remove clicks and pops from the bass sound. There were no edits on this recording, other than the removal of applause and spoken introductions to pieces, and it is not mastered.

There was one significant performance mistake in this concert—the intro to *Giant Steps* (the very opening notes of the concert!) is played incorrectly. This track would be removed or edited for commercial release, but is maintained in this submission because the rest of the track shows important developments in application of serialism, compared with the solo version of *Giant Steps* recorded eighteen months earlier. CD 3 (*Chris Martin Trio play A Love Supreme*) presents this recording session in its entirety, in the original order of performance.

#### **Recording session 4**

The fourth and final recording session was intended as a 'studio' presentation of the research. The ensemble chosen for this recording was 'Triptych' (the same band as used for recording session 2).

This session had to fit around tight touring and performance schedules for the other two players, and there was time for only one day of rehearsal in the studio. In the week prior to the session players had been sent charts for all the pieces, and CDs with home-recorded piano parts to assist in preparing the repertoire. The session was initially billed as a recording for the ABC (Australian Broadcasting Corporation) radio program 'JazzTrack', and therefore consists entirely of original material and includes some tracks of five to seven minutes duration.

The session took place on 25-26 September 2007 in ABC studios, Adelaide. Recording engineers for the session were Wayne Baker and Kevin Roper. All tracks were recorded digitally to ProTools. For this recording, the drums were in a separate room, with the piano and bass placed in an orchestral studio. There was visual contact between all three players, and headphones were used during recording. Microphone placement was as follows:

- One Left / Right stereo piano microphone (placed under the open piano lid)
- Seven microphones on drums (bass drum, snare, hi-hat, floor tom, high tom, two overheads)
- Two microphones on bass (one near fingerboard, one near sounding holes) and a DI (used sparingly in mix)

The CD was mixed and mastered in ABC studios on various dates in November and December 2007 by Kevin Roper and Wayne Baker, with the assistance of Peter Dowdall. The final mixing and mastering was done by Peter Dowdall in his home studio in December 2007. There are no edits on this recording, with the exception of the 'fade out' at the end of the final track. *Amy's Suite* (tracks 2-4) was recorded in two parts—*Stand Up* (track 2) was recorded separately to *Get Rollin'* and *I Feel* (tracks 3, 4). The beginning of track 3 is placed to create a 'two-bar break' between *Stand Up* and *Get Rollin'*. Due to the use of the ABC's recording facilities and engineers, and Peter Dowdall's expertise in mixing and mastering, this is the recording of the highest quality in this submission, and I am grateful for their generous assistance. All of the tracks on CD 4 (*Triptych: 1 + 1 = 1*) are from this recording session, with the order decided by 'Triptych'.

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