DEVELOPING A POLYRHYTHMIC IDIOLECT

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A thesis submitted in fulfilment of requirements for the degree of
Doctor of Philosophy

Sydney Conservatorium of Music
The University of Sydney

2017
Statement of Originality

This is to certify that the content of this thesis is my own work and that all the assistance received in preparing this thesis and sources have been acknowledged. This thesis has not been submitted for any degree or other purposes.
Acknowledgments

I wish to thank Chris Coady and Simon Barker for their crucial supervision of this project, and Dave Goodman for his invaluable advice and support.

Sincere thanks and gratitude are due to the musicians who contributed their talent and energy to the improvisations documented here: Max Alduca, Hugh Barrett, Steve Barry, Brendan Clarke, Ben Hauptmann, Brett Hirst, Steve Hunter, Roger Mannins, Matt McMahon, Daryl Pratt, Bill Risby, David Starck and Max Stowers.

I am indebted to Gordon Rytmeister and Pete Drummond for their musical inspiration and friendship. I wish to thank Greg Stott and Mark Sutton whose generosity and studio expertise were of such tremendous help, and thanks are also due to recording engineers Michael Bartolemei, Jono Chosid, Beau Sherrard and Jack Woods.

I have been fortunate to enjoy the musical and intellectual support of many other musicians and colleagues during the 4-year life of this project and my sincere thanks go to all of them, including Joe Chindamo, James Muller, Sean Wayland, Peter Koopman, Alex Bonham, Dan Waples, Carl Morgan, Greg Coffin, Richard Maegraith, Justin Humphries, Nick Freer, Aldren Subijano, Aaron Jantz, Kirsty Beilharz, Bruce Smyth and George Polyhronakis.

This work is dedicated to my wife Leah Gander and son Josh Gander whose patience, sacrifice and support made it possible, and to the memory of my parents Joy and Arthur Gander.
Developing a Polyrhythmic Idiolect

Abstract

This practice-based multi-media study sets out to reveal how procedural methodologies effect transformative change in a polyrhythmic drum-set idiolect, premised on the idea that archetypal variants and phraseological patterning constituting my musical “voice” are, primarily, results of a procedural mind rather than aggregations of replicative ideas acquired from elsewhere. The thesis accordingly sets out a detailed participant-observer study designed to reveal methodological processes and outcomes pertaining to the cultivation of a unique sonic identity. In revealing how structural-organisational processes can evolve personalised ways of manipulating rhythm, this research offers new analytical tools for understanding what improvising drummers do. Two important aims of the study are (a) to effect and document transformative change in my drum-set language through the application of improvisational methodologies, and (b) to reveal these procedures in operation from a participant-observer perspective, thereby showing how sonic identity can be individuated through personal agency and decision-making/selection processes operating within constraints. Original generative methodologies for hybridizing vocabulary and propagating unique archetypal variants – namely, the Iterative Loop Cycle and Transitional Synthesis - are central to this project, which targets six developmental areas: Suspended Primary Pulsation, Densities, Pulse Streaming, Transposing Rhythm, Isochronous Asymmetry and Mixed Rates.
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Drum-Set Notation Key

Figure I Drum-Set Notation Key
PART ONE
Annotated Glossary

**Analog**

*Analog* figures perform the same musical function as their *referent* counterparts, however based on a different subdivision. For example, in Figure II, the two pairs of *referent* eighth-notes (top line) are expressed on the second, third and fourth lines as *analog* pairs of tuplet-based duples.

![Figure II Analog](image)

**Archetype**

In my usage, archetypes are discrete, self-contained units of drum-set vocabulary, following Barker’s focus on “archetypal forms and rhythm/sticking cells”, “archetypal models” and “composite archetypes” (Barker 2015: 21, 26), my study similarly identifies, scrutinizes, manipulates and cultivates drum-set *archetypes* drawn from generic music traditions as well as personalised hybrid archetypes propagated via the procedural methodologies in this practice-led research.

**Axis**

I previously posited the *axis* as a form of a primary pulse (Gander 2006: 46). As discussed in Part 1, Chapter 2, Section 2 of the current study, a pulse axis can align with *strong* beats (“on” axis) and *weak* beats (“off” axis) – or with a cross-rhythmic pulsations generated by dotted note values (producing concurrent pulse streams in a ratio of 2:3) and tuplet-rate pulses (producing pulse concurrent streams in ratios such as 3:2, 5:3 and 7:4).

**Chunking**

The formation (from fragments) of self-contained, composite rhythmic structures analogous to sentences or phrases.
Cognate
Merriam-Webster definition: “of the same or similar nature: generically alike” (http://www.merriam-webster.com/dictionary/cognate).
The “A” and “B” cognates being hybridized in the Transitional Synthesis methodology each are of a kind – that is, each of the two inputs is comprised of specific elements and archetypes of drum-set vocabulary that distinguish it from the other.

Densities
Rapid, tightly packed concatenations of high velocity roll patterning amounting to virtual long tones. They can be subdivided either into metrical time values relative to a gridded isochronous pulse, or articulated according to the durational indeterminacy of phrase pulse in “jazz rubatos” (Benadon 2009: 136).

Extrapolating Tuplets
Derivatives are “virtual tuplets” – asymmetric cognates of “real tuplets” sharing their cardinality and duration – that are derived from standard anchors, which are non-artificial rhythms of conventional phraseology. Being anchored to established rhythmic vernacular, derivatives provide a point of reference for extrapolating “real” tuplets.

Figure III gives two examples outlining the relationship of standard anchors (top line, A and B) to derivatives (middle line, A and B) and tuplets (bottom line, A and B).
Fragment
Rhythmic “fragments” are linguistically analogous to syllables and letters (comprised of morphemes and phonemes) – and therefore chunking represents the formation of composite rhythmic structures analogous to sentences or phrases. Moreover, rhythmic phraseology is not governed by the individual sonorities or “notes” comprising a given improvisation, but by a broad schema of organisational concepts designed to manipulate “replicable chunks of pre-learned material” (see Part 1, Chapter 2, Section 2) of which discrete “notes” are merely subsidiary constituents. This also jibes with Nicholas Cook’s observation (as previously noted [Gander 2005: 14-15]) that

some of [Ornette Coleman’s] notes are not really there at all in the sense of being discrete entities [and] many of them are no more than notional points through which the music passes in the course of its ongoing motion. (Cook 1990:137)

Grid
A grid is the hierarchical infrastructure of subdivisions, meter and pulse frameworks underlying the temporal organisation of rhythmic music. As practitioners such as Krantz (Carlock 2009) and researchers such as Benadon (Benadon 2009: 136) have observed, the term connotes imagery of a horizontally and vertically structured lattice of temporal values.

Idiolect
Idiolect is a linguistic term defined as “the language or speech pattern of one individual at a particular period of life” (Merriam-Webster: https://www.merriam-webster.com/dictionary/idiolect) or “The speech habits peculiar to a particular person” (Oxford: https://en.oxforddictionaries.com/definition/idiolect). Music researchers (Moore and Ibrahim 2005, Moore 2001, Pareyon 2009) have used “idiolect” to describe a performer/composer’s unique sonic identity, or voice. Barker, for example, describes his thesis research as “represent[ing] an attempt to develop a musical idiolect through the use of expressive tools found in Korean traditional music” (Barker 2015: 2).
Internal Modulation

Virtual tuplet “derivatives” based on “standard anchors” are used to modulate tempo and meter, as depicted in Figure IV (below):

Bar A commences at 100BPM with 5-note groupings (in 3-2 configurations). Midway through the bar, 7-note "derivative" groupings (in 4-3 configurations) align with the original 3-2 “standard anchor” periodicities (top line). At B, where the tempo modulates into 140BPM, these asymmetric "derivatives" become 7-note groupings of isochronous subdivisions in 4-3 configurations which are then used to align "derivative" 5-note groupings (3-2). At bar C, with the modulation from 140BPM back to 100BPM, the asymmetric "derivatives" morph into the original 5-note groupings of isochronous subdivisions. In this way, the rhythmic “set-ups” for tempo modulations can be accomplished by means of “derivative” analog tuplets anchored in standard subdivisions. I have conceived this framework as a way to execute improvised modulations such as those deployed by Jeff “Tain” Watts on *Xavier’s Lair* (Marsalis 1993).
Polyrhythm

According to Kolinski, “rhythm may be defined as organized duration [and] metre as organized pulsation functioning as a framework for rhythmic design” (Kolinski 1973: 499) [emphasis added], while Arom points out that “the prefix poly- assumes the simultaneous occurrence of several different events of the same type” (Arom 1991: 205). Elvin Jones simplified the concept as follows:

How would I explain polyrhythmic style to a man in the moon? The poly of that word means “many”, and rhythm of course – it just means “many rhythms”…so that’s exactly what it is. They’re coordinated rhythms. (Jones cited in Gray 1979)

Rate

A subdivisional “rate” equates to the cardinality of partials in the rhythmic slicing of each pulse – that is, the “vertical juliennning of horizontal time” (Benadon 2009: 136). It includes conventional hierarchical values such as quarter-notes (crotchets), eighth-notes (quavers) and sixteenth-notes (semi-quavers), as well as tuplets – or “‘artificial’ groupings” (Chaffee 1976a: 15) – such as triplets (3:2, 3:4 etcetera), quintuplets (5:4, 5:3, etcetera), septuplets (7:4, 7:8 etcetera) and so on.

Suspended Primary Pulsation

Conventionally, time functioning is the maintenance of a steady beat, comprising rhythmic patterning that articulates units of primary pulsation. However, time functioning may also entail withholding audible temporal regulators. Suppressing these fixed structures impinges upon beat induction - “the cognitive skill that allows us to hear a regular pulse in music to which we can then synchronize” (Honing 2012: 1). Absent an audible referent that functions “externally” as a pulse identifier, establishing metric orientation becomes increasingly difficult and, as the verifiable sense of tactus diminishes with less information being supplied to inaugurate and sustain a sense of entrainment. Thus, under Suspended Primary Pulsation, even strictly gridded rhythmic structures can increasingly resemble non-metrical rubato.

Tactus

The fundamental pulse or “beat” as a basic unit of temporal organisation. Historically, the tactus construct pre-dates measures or bars. Arom shows that, as far back as the 14th century,
the notion of measure as it is understood today was still unknown. All extant texts concord in showing that there was nothing but a temporal reference unit which synchronised the parts during performance and indicated the tempo as well. This unit…was called the *tactus*, or 'touch'. (Arom 1991: 180)

**Time functioning**

Chaffee’s term “time functioning” (Chaffee 1976c) is basically congruent with “timekeeping”, which - in musicians’ parlance - indicates maintenance of a steady beat (that is, *tactus*) as the drummer’s primary function within an ensemble. In his abovementioned instructional study, Chaffee evidently deemed the nature of the role *per se* to be so self-evident as to obviate any need for a comprehensive textual definition. However, given the nature of his method and philosophy as revealed in the four volume “Patterns” series, I would posit that by choosing the descriptor “time functioning” he intends a nuanced difference in meaning between this term and “timekeeping” in the sense that *functioning* implies many improvisational rhythmic possibilities, whereas *keeping* may be misconstrued to represent the static repetition of fixed patterning.

Chaffee identifies four kinds of “jazz time” that “outline the basic historical progression that has taken place in jazz time functioning:

- **Straight Time** - Ride cymbal playing the traditional cymbal pattern with hi-hat on 2 and 4…

- **Semi-Straight Time** - Ride cymbal playing the traditional cymbal pattern. Snare drum, bass drum and hi-hat all have free parts.

- **Semi-Broken Time** - In semi-broken time, the hi-hat is again playing the 2 and 4 pattern, but the ride cymbal is varied.

- **Broken Time** - In broken time, there are no ostinatos. The ride cymbal is varied and the other three voices all have free parts. [emphasis in original]

Basically speaking, the direction has been toward a looser, more flexible type of time playing. In other words, rather than developing’ the time through the use of repeated ostinatos in certain voices, it is the result of a mixture of ideas which are constantly changing (Chaffee 1976c: 9).
Drummer Peter Erskine asserts that “everything is timekeeping” (Erskine 2009). As he clarifies in the “expanded intro” on his website:

“Time” is a musical essential. But I chose not to label this pair of videos, originally produced in the late 1980s, as “Timekeeping is Everything.” Rather, I specifically embraced the notion that everything we do in the course of making music should be part of that *rhythmic continuum that provides the pulse and center to any performance* or song. “Time.” So, whether you are playing a simple beat or a fill or solo, time should inform every choice you make at the instrument.[emphasis added] (Erskine 2017)

It seems to me Chaffee's pedagogy and Erskine’s formulation are congruent and complimentary, regardless of different labels, and I use the terms *timekeeping* and *time functioning* interchangeably.

**Time-shifting**

This involves “[displacing] an entire pattern…forward or backwards by a certain amount of subdivisions. It will be the same pattern in terms of note order and structure, but it will be in a different place in the bar” (Harrison 1996: 7). As an improviser, I take this idea to include displaced *orientation* (rather than displaced *patterning* only). Variants of the concept include Garibaldi’s “permutations” (Garibaldi 1990: 21), Weckl’s “backwards playing” (Weckl 1989). and my own “axial displacement” (in Part 1, Chapter 2, Section 2 of this thesis).

**Transposition**

In this thesis, rhythmic *transposition* indicates the recalibration of established rhythmic forms according to a fixed ratio, retaining their original coherence and “internal” structure while occupying an altered rhythmic relationship to the original, underlying pulse and meter.

**Timekeeping**

*(see Time Functioning).*
Chapter 1 - Introduction

This research is premised on the claim that - as a contemporary drummer involved in a wide range of approaches to organising music ranging from through-composed scores to totally free improvisation - the personalised vocabulary of archetypal variants and phraseological structures comprising my idiolect are ultimately results of a *procedural mind*, rather than an aggregation of replicative ideas acquired from elsewhere.

The thesis accordingly sets out a detailed participant-observer study designed to reveal methodological processes and outcomes pertaining to the cultivation of a unique drum-set voice. In revealing how structural-organisational processes can evolve personalised ways of manipulating rhythm, this study offers new analytical tools for understanding what improvising drummers do.

Two important aims of this study are (a) to effect and document transformative changes in my drum-set language through the application of improvisational methodologies, and (b) to reveal transformative process in operation from the perspective of a participant observer. The research is presented in a multi-media format combining narrative text, music notation and rhythmic analysis with audio-visual documents of the author’s improvisations created within the research period of the project. The eBook format unifies these media in one accessible layout, allowing readers easy and simultaneous access to all findings and data.

Explicating details of the drum-set language under examination entails a style of presentation that shares inevitable commonalities with instructional materials, however my purpose is not pedagogical. It must be emphasised that this project is not a drumming tutorial, but an account of how process transforms rhythmic language within an investigation of artistic identity being shaped. It is also not the “reverse engineering” of pre-existing vocabulary. The outcomes presented have been developed and captured exclusively within the four-year period of research, and thus represent new knowledge.

The thesis occupies a methodological, philosophical and ethnographic space between instructional pedagogy and traditional musicological analysis, addressing territory
they each tend to leave unexplored. For example, on one hand, popular instructional DVD’s and online tutorials are generally limited in scope by constraints of time and the commercial requirement to package information in formats accessible by a general audience, thus leaving insufficient room to unpack details beyond practical demonstrations of straightforward concepts (exceptions being large-scale projects such as *Drum Set Technique: History of the US Beat* [Smith 2002], *The Drummer’s Complete Vocabulary as Taught by Alan Dawson* [Ramsay and Dawson 1998] and *The Essence of Afro-Cuban Percussion and Drum Set* [Uribe 1996]). Conversely, musicological scholarship often approaches improvisation research as a kind of cultural anthropology, with written findings unsupported by explicative specimens of researchers’ own performances (exceptions being recent scholarly works such as *Korea and the Western Drumset: Scattering Rhythms* [Barker 2015], and doctoral theses such as *Liminality as a Framework for Composition: Rhythmic Thresholds, Spectral Harmonies and Afrological Improvisation* [Lehman 2012]). The intention behind the current study is that audio-visual documents of my improvisations should serve both as “text” in themselves, and as evidentiary specimens that concretise my arguments by grounding the epistemic framework of this research in practice-based knowledge.

While these data do constitute a creative yield of tangible performance outcomes, they primarily serve to document my own improvisational processes, enabling other practice-based researchers to see, hear and understand procedural steps of specific methodologies being applied. Moreover, by integrating text with notation and audio-visual documents of improvisations - all created by the same researcher - the format of this dissertation affords an opportunity to reveal “insider knowledge” differently than either the informal commentary and analysis of “drum clinics”, or formal academic investigations grounded in third party analyses of ethnographic data.

Performance participation also entails a kind of practitioner-specific knowledge that transcends abstract analysis, because the improvisational decision-making process depends upon real-time experimental *doing* whereby selections occurring within theoretical frameworks ultimately depend on agency and action. We see this reflected in the domain of evolutionary biology, where:

“[a] decision process that generates a decision not connected to an action cannot be selected for via natural selection or learning. (Stevens 2008: 290)
Thinking and doing are both necessary to the kind of practice-led research driving this thesis. However, the very act of inhabiting music in performance recalls a cognitive dilemma identified by C.S. Lewis as “either to taste and not to know or to know and not to taste…”:

- or, more strictly, to lack one kind of knowledge because we are in an experience or to lack another kind because we are outside it. As thinkers we are cut off from what we think about; as tasting, touching, willing, loving, hating, we do not clearly understand. The more lucidly we think, the more we are cut off: the more deeply we enter into reality, the less we can think. (Lewis 1970: 57)

Drummer Vinnie Colaiuta addresses the correlating musical dichotomy by differentiating between mental states that are either in or out of “flow”:

Our ability to control things and analyze things is in direct opposition to a mantra that I have: Thought is the enemy of flow. People ask me, “What do you think about when you’re playing?” The answer is basically nothing. Thought happens in a completely different way out of flow. Out of flow, it’s contemplative and analytical and problem solving. In flow, it’s completely different. It’s like a real-time program running in the background that doesn’t interfere with what’s going on. The ability to adapt in a given moment is beyond the scope of another type of focused thought process. (Bodofsky 2013: 38 - 40)

For myself, as participant-observer, the difference between researching about music performance and researching through music performance parallels this problem, and the integrated modes of investigation presented here go some way toward bridging perceptual and cognitive gaps that accrue on either side of the question.

By way of musical introduction, Video 1 (below) features a compilation of short excerpts from improvisational recording sessions conducted for this project.

[Video 1 Introductory Excerpts]

1.1 Navigating the Thesis

This research project is driven by practical procedure in action, and the eBook format has offered a way to ensure that readers engage with practical components of the study at appropriate moments in the narrative flow. The alternative of offering audio-visuals only as a supplementary package can disrupt this flow, and also tend to weight
the recorded improvisations differently in relation to the written text. That is not the intention here.

Hearing, seeing and reading about these materials in the correct order illuminates, for the reader, how process leads from one thing to another in the same sequence that these events unfolded for the author - and thus it is important to engage with this research in the linear order as presented. The iBook format offers the clearest way to grasp procedural methodologies by ensuring the opportunity to engage with multimedia components at the appropriate time.

It is important to note that these components are not auxiliary materials: the research is practice-based and practice-led, so proper understanding of the “theory” involved depends largely on engaging with them in the right order. The 54 videos - most of which are quite brief - appear at narratively and procedurally specific moments, and therefore viewing them out of sequence diminishes their intended function within the thesis.

Moreover, live footage with on-screen notation conveys a clearer representation of some ideas than written text alone. Therefore, various media are used to communicate complex musical ideas in the hope of enabling a fuller understanding of what is being played and why.

1.2 What the Videos Do, and Do Not, Represent

It is important to view the improvisation videos as documents of “process in action” rather than “creative components” of research, because the creative process is research. As such, the videos record moments of research unfolding: that is, they primarily constitute knowledge, rather than “artistic results”. Additionally however, the drumming in these videos - being geared to specific requirements of the study – does in fact diverge from the more open-ended interactions that would characterise customary “performance”. The improvisations here are constrained both by explicit parameters of each rhythmic area under examination, and by practical limitations of time. Thus we see a decision-making process operating within restrictions that illuminate particular aspects of the research.

Specific videos that model components of drum-set language (Part 1: Videos 2.1 to 2.5, Part 2: Videos 5.1 to 5.8, and Part 2: Videos 10.1 to 10.4) are methodologically
necessary illustrations of certain variants, rhythms, sonorities and/or procedural templates. However, the other 37 videos made for this thesis serve to capture improvisational specimens of rhythmic language in a state of becoming - they are not “demonstrations of material”. These generative improvisations therefore ought not be construed as “performances” in the conventional sense, but as real-time documents of an improviser researching in action. Rather than “performances” or “demonstrations” of the “yield”, they themselves are the yield: outcomes of a practice-led thought process that runs something like this:

“This improvisation is me processing, and the recording captures what is coming out at that moment of processing in order to furnish readers/listeners/researchers with ‘live’ examples of that process taking place”.

The resulting instances of Iterative Loop Cycle and Transitional Synthesis methodology operating across a range of Developmental Areas offer windows into the process itself, and while creative choices made “in process” are no different in principle to creative choices made “in performance”, the research environment constrains decision-making within explicit parameters. In this context, creativity is embedded in the procedural action, actuating selection within research-specific controls.

1.3 Process and Agency

In this study, a prior sonic identity – “idiolect A” - is being re-shaped into an augmented sonic identity – “idiolect B”. We can account for the outcomes that constitute “idiolect B” by documenting the operation of specific methodological processes acting to transform “idiolect A”. The archetypes and variants comprising vocabulary “A” - being organised by a phraseological schema operating within a spectrum of constraints – supply input “raw materials” for idiolectal transformation via my cyclic and synthesis methodologies. Outcomes accumulating in seven specific Developmental Areas constitute new drum-set language emerging here as “idiolect B”.

In this formulation, agency and process converge to transform “A” into “B”, providing an alternative to (1) evolutionary models chiefly grounded in canonical precedent (Brown 1990, Brown 1997, Brown 1976, Hutton 1991, Kofsky 1971,
and (2) reductionist models that assess jazz improvisation through analytic and musicological prisms of western art music (Hodeir 1956, Schuller 1958, Schuller 1989, Schuller and Morrison 1968, Tirro 1974) - an approach that has been termed “notism” (Brownell 1994: 43).

However, the question perhaps remains, how to account for “A”? In other words, what musical antecedents and circumstances formed the vocabulary and phraseology comprising “idiolect A” prior to the commencement of this research? How were the pool of variants, phraseological schema and spectrum of constraints established, and how were they integrated? A truly comprehensive answer would require a separate, retrospective investigation outside the scope of this thesis – and, moreover, while characteristics of “idiolect A” have an obvious corollary with the outcomes theorized here as “idiolect B”, the contents of “idiolect A” are, in one sense, beside the point because the focus of this study remains on process and outcomes - not source materials per se. Thus the thesis primarily aims to address rhythmic transformations that individuate and personalise drum-set language, evidenced by improvisational outcomes constituting “idiolect B”.

That said, an abbreviated account of “idiolect A” would be that it represents the sum total of a career spent performing as a freelance drummer, working with diverse artists, locally and internationally, across a range of genres. My professional trajectory (summarised in Matcott 1997, Hicks 2002, Bryson-Dean 2014 and Corniola 2017) has also been shaped by (a) private and formal study that entailed copying or emulating drummers I had heard on recordings and in person, (b) private practise of related pedagogical methods, (c) undertaking lessons with prominent drummers and (d) formal academic study (Gander 2005). This background placed me in a position to undertake the current project, as evidenced by excerpts of antecedent recordings (McKenna 1993, Sonic Fiction 1997, Risby 2001, Australian Jazz Trio 2011) in Video 1.1.

[Video 1.1 Antecedent Recordings]

My professional history has honed a degree of aptitude for interactive improvisation, and I thus arrived at this research conditioned by experience to trust in the process bassist Gary Holgate calls “play between foreknowledge and the unknown” (Holgate 2014: ii). Nonetheless, I maintain that the procedural methodologies explored here do
not depend on having that kind of background in order to effect transformation of rhythmic inputs – that is, changes yielded as “idiolect B” are not contingent upon characteristics intrinsic to the “raw materials” in “idiolect A”. Put simply, one need not be a seasoned professional improviser for the procedures to manifest transformative effects – following the procedural steps will suffice to elicit personalised modifications.

The following account of Jackson Pollock’s processual trajectory illuminates an analogous paradigm shift whereby procedural thinking in the visual arts comes to supersede mere “image-generation”:

A survey of the archetypal, aggressive, animal, sexual, mythical imagery of Pollock’s work of the early forties…reveals a gathering impetus away from the exploitation of specific (though 'disintegrating') single images…via the agglommeration of image-types…towards a recognition of the priority of the procedures over the results of image-generation. It is in these terms that Pollock progresses from a considerable dependence upon compatible but second-hand imagery…towards an original mode of self-expression in which the notion of the possibility of significance in imagery is by no means betrayed; which itself can be seen as the achievement of a degree of 'self-realization'. (Harrison 1997: 177) [emphases added]

Prioritizing “procedures” over “results” also illuminates the centrality of agency to the improvising musician’s enterprise with direct implications for his/her notions of sonic identity. That is to say, the sonorities that constitute an improviser’s unique musical “voice” – although they draw upon outside sources, past and present - are not merely replicative ideas, but flow inevitably from a commitment to process with the clear intention of “saying something” (Monson 1996). This position counteracts the impulse to simply copy others, or to embed one’s identity within ideological constructs of “authenticity” and “tradition”. Indeed, as has been pointed out (Atkins 2001), neoclassicists and revivalists who insistently and narrowly lay custodial claim to the authentic traditions and spirit of jazz are in fact violating them “by refusing to question the boundaries of jazz as their forebears did”, thereby becoming, in effect, mere archivists or curators of “fossilized museum piece[s]” (Atkins 2001: 270). In linking the idea of a unique improvisational idiolect to procedural thinking, I too am emphasizing the priority of individual agency and process.
1.4 Stacking Process

In building upon work by previous authors, academic music researchers and theorists may be thought of as “stacking text”. That is, each text seeks to add new facets of understanding built upon an extant body of literary knowledge. Conversely, improvising music practitioners stack process. That is, practitioners stack processual methodologies that develop musical vocabulary for deployment in improvisational performance.

To illustrate, we might picture a contemporary musicologist-ethnographer stacking findings and arguments of, say, Ronald Radano, George Lewis, Olly Wilson, Scott Deveaux, Ingrid Monson, Paul Berliner or Ted Gioia on top of earlier studies by Frank Kofsky, Gunther Schuller, Andre Hodeir, Barry Ulanov, Leonard Feather, Norman Finkelstein and Hugues Panassié. By doing so they would position themselves to synthesise new findings in reference to the whole “stack”.

Conversely, a contemporary drum-set improviser might stack the performance processes and methodologies of drummers such as Eric Harland, Bill Stewart, Virgil Donati, Antonio Sanchez, Dave Weckl, Gary Novak, Jojo Mayer, Dan Weiss and Ari Hoenig atop those of Vinnie Colaiuta, Trilok Gurtu, Tony Williams, Billy Cobham, Ed Blackwell, Gary Husband, Famoudou Don Moye, Paul Lovens, Han Bennink, Billy Hart, Roy Haynes, Adam Nussbaum, Ed Soph, Buddy Rich and Joe Morello. The formation and re-shaping of his/her own drumming idiolect is thus informed by drawing together various applicable threads from the whole “stack” (and this includes transcribing recordings, attending concerts and workshops, taking private lessons, reading interviews and working through instructional pedagogies).

The research perspectives of an improvising practitioner and an academic scholar are thus analogous to the extent that both engage in “stacking” with a view to extrapolating new knowledge from a diverse “canon” of contemporary and antecedent works. While this philosophy informs the entire project, clear examples of the stacking model can be seen in Part 2, Chapter 7 (Transposing Rhythm), where “swung” syncopation phrasing is overlayed onto a hybrid stream of timekeeping and soloing archetypes in a specific ratio to the underlying subdivision and meter.
1.5 Copying and Emulating

When one improvising practitioner emulates another’s processes, this constitutes the opposite of replicating their outcomes. On the contrary, committing to “the priority of the procedures over the results” (Harrison 1997: 177) represents a kind of surrender to process that virtually guarantees unforeseeably unique outcomes. An exception, in the case of this project, would theoretically arise if we imagine feeding a “cloned” archetypal specimen through a single pass of the Iterative Loop Cycle (Chapter 3, section 2) under such strict rhythmic and idiomatic constraints that variants generated could deviate only minimally from the original input. In that case, outcome specimens would be unlikely to differ significantly from their predecessor, although this could be remedied in subsequent passes through the relaxation of rhythmic constraints and a corresponding expansion of phraseological scope.

Significantly (as borne out by the artist quotations below), highly individuated practitioners typically start out copying others in order to build vocabulary, later moving beyond imitation to find their own voices. It follows that truly emulating them must eventually rule out cloning because to “play like Tony” or “like Elvin” or “like Vinnie” is not to impersonate them. On the contrary, to “play like them” means to do like them, which entails cultivating an original voice - whereas mere replication of verbatim sonorities amounts to caricature rather than emulation.

Pianist Horace Silver described in an interview (Sidran 1995) how he had identified and cultivated elements of a personal voice emerging from the previously dominant influence of his mentors Bud Powell and Thelonious Monk:

…I said to myself, "Well, I’m gonna find myself, you know. There's something in my playing that's original." Because, you know, when I made my first records with Stan Getz, I could hear a lot of Bud Powell in them. After, when the records came out and I listened back, I could hear a lot of Bud Powell in there. But, then, the second set of records I made was with Lou Donaldson. Those were the records that really made me realize that I had something of my own going, you know, because when I heard those records back, I said "Hey, wait a minute now, I can hear some Bud in there, but there's something else in there that ain't Bud. That's me, you know. (Silver cited in Sidran 1995: 142) [emphasis added]
Silver resolved to study the sonic signature he had identified and commit to cultivating it by physically blocking out other influences:

Lemme, lemma play that over and over and check out what that is, and then try to embellish upon that, you know?” That's when I decided to take all my Bud Powell collection and my Monk records, and all the records and put 'em in the closet, and lock the door, and just work on trying to develop what I heard in those Lou Donaldson records that was Horace Silver. That part of the solo playing that I felt was not Bud but was me [emphasis in original]. (Silver cited in Sidran 1995: 142)

Drummer Mark Guiliana also developed a strategy for editing out non-original ideas from his improvisational process in order to craft a singular drumming identity, thereby achieving a personal style that emulated, by example, the “very singular unique voices” achieved by his musical heroes:

I found it was thinking about what not to do [emphasis added] that led me to unique results...I’d improvise, but I’d tell myself that anytime I play a pattern that reminds me of something else, I have to stop and put the sticks down. Sometimes I’d play for about three seconds before realising, “oh, there’s that Elvin Jones fill again.” Then I’d stop, put the sticks down for a moment and then start again. That exercise allowed me to become more aware of what I’m playing. It’s ok to play things that are inspired by other people but I think when I was younger I was doing it without even realising it. And if you're doing that then you’re not really making your own decisions [emphasis added]. So I ripped a lot of things out of my vocabulary. I’d tell myself that I’m not allowed to play certain things, which left a large void because of what I’d just cut out [emphasis added]. Instead, I was left to fill that space with my own ideas. It forced me to look in the mirror and create something. (Guiliana cited in Hoare 2016: 63)

Drummer Tony Williams similarly achieved his own originality by filling a musical “void” he had perceived as resulting from concepts left unexplored by his early role models:

... I was aware of a need, like if you see a hole, you think you can fill it. There were certain things that guys were not playing that I said, “Why not? Why can’t you do this?” (Williams cited in de Barros 1983: 15)

Prior to this, as he frequently reiterated (de Barros 1983, Ephland 1989, Ferriter 1990, Mattingly 1984, Stewart 1980, Taylor 2009), Williams had spent many formative
years grounding the entire foundation of his drum-set vocabulary in the playing of others:

I would buy every record I could find with Max on it and then I would play exactly like him—exactly what was on the record, solos and everything. I also did that with drummers like Art Blakey, Philly Joe Jones, Jimmie Cobb, Roy Haynes, and all of the drummers I admired. I would even tune my drums just like they were on the record...You must first spend a long time doing everything that the great drummers do. Then you can understand what it means. I've found that not only do you learn how to play something, but you also learn why it was played. That's the value of playing like someone. You just can't learn a lick. You've got to learn where it came from, what caused the drummer to play that way, and a number of things. Drumming is like an evolutionary pattern. (Williams cited in Mattingly 1984: 13)

After so closely studying, emulating and comprehending what these drumming icons were playing - and why - Williams blended their influence with eventual innovations that he was driven to evolve as a way of addressing what he realised they were not playing.

Drummer Jack De Johnette similarly described a widespread formal process of building drum-set vocabulary by initially copying other players – specifically, Max Roach, Philly Joe Jones, Kenny Clarke, Art Blakey, Arthur Taylor, Elvin Jones and Tony Williams (Sidran 1995: 392) - then adapting and personalising their “licks” to form his own style:

…I started checking out the licks. I checked them out thoroughly...there's nobody that really escapes that. You play the licks, you find out how they did it. I think most fun is hearing what they play and then working it out your way, because it comes out different when you try to copy it. But it was an understanding of how that person phrased, how it went, and just see what they felt like. Then I'd say, "Ok, that's good. Now I understand it. Now what happens if I do this?" I add my own thing to that. And so I built upon the knowledge of understanding those licks. Because it's so beautiful, you know, building off of classics. That's a formal kind of study. (De Johnette cited in Sidran 1995: 392)

In this study, I feed archetypes of drum-set vocabulary through methodological processes asking myself precisely the same experimental question: “Now what happens if I do this?”
Drummer Vinnie Colaiuta’s initial development also involved replicating characteristics of other drummers until he eventually began to realise his own unique voice by deliberately short-circuiting those habitual points of reference:

I tried to actually sound like Tony Williams when I played certain things; I tried to play like Steve Gadd when I played other things; I tried to sound like David Garibaldi for other things; and I really got into Billy Cobham for other things, to the point where it just melded together and my own style emerged. I knew that I was sounding a lot like other people and I wanted my own identity. I don't know how it came about because it was so evolutionary but, I knew my style wasn't going to come out by copying somebody else. My brain must have said, 'you're copying this guy. No, go to him. No, don't. Do this, do that', and I came out with myself. (Colaiuta cited in Sofia 1987: 21)

Colaiuta’s musical identity was further consolidated through his collaboration with Frank Zappa, whose music challenged him to evolve ways of dealing with polyrhythm for which he could find no precedent:

When I was playing with Frank [Zappa], I had to find a way. There, I was presented with something different on the drums that I could not rely on my predecessors to show me how to play. I could draw on their influences to play fusion beats and certain licks but when it came to applying polyrhythms, I had to do it my own way. (Colaiuta cited in Sofia 1987: 21)

Recalling Guiliana’s and Williams’ recognition of the need to fill a musical “void” or “hole”, I similarly arrived at this research possessing a composite vocabulary of generic archetypes and phraseology - largely gleaned from others - that I wished to more vividly individuate. The study accordingly sets out to document my search for unique results through the rigorous application - to an existing drum-set vocabulary - of original hybridising methodologies and phraseological constructs.

1.6 Decision Making and Selection

The musical imperative of developing improvisational facility via specificity of intent within constraints has, of course, been articulated before. Bill Evans, acknowledging the scale of “the problem” faced by jazz improvisers, stressed the importance addressing music, even at an elementary level, in ways that are “entirely real, and entirely true and entirely accurate” - as opposed to merely “approximat[ing] the
product” with a surface pastiche of haphazard vocabulary. As Evans he put it, “you can’t take the whole thing” (Evans 1991). In the same vein, Antonio Sanchez rejects facilely and inappropriately “playing some fusion fills on top” of an archetypal clave-tumbao pattern, instead of consciously developing a drum-set vocabulary that integrates Afro-Cuban folkloric percussion language (Sanchez 2008).

Creative work of this kind requires locked procedures - that is, methodologies drawing upon “finite stocks” (Barker 2015, Howard 1991) of resources and subjecting them to decision making processes of improvisational development within clear conceptual parameters. This approach is also paralleled in evolutionary biology, where “non-global” selection is distinguished from:

models of decision making...based on the "economic man" perspective, in which decision makers can access all information relevant to a decision and arrive at optimal inferences via rules of logic and statistics”. (Stevens 2008: 289 - 290)

Accordingly, my own procedures seek to comport with “a perspective emphasizing a more realistic view of tools available to decision makers” – namely, “bounded rationality” – that represents an “alternative to the omniscience and unlimited computational power required of economic man…” (Stevens 2008: 290) [emphasis added].

1.7 Practice Led Research

This work aligns with Nelson’s model of “multi-mode research inquiry” (Nelson 2013) by documenting process and yielding a tangible “product” (in the form of audio-visual recordings of improvisations accompanied by scores), along with “complimentary writing” (Nelson 2013: 26) that outlines the study’s conceptual framework and antecedent influences. This is research where “[p]ractice…is at the heart of the methodology of the project and is presented as substantial evidence of new insights” (Nelson 2013: 26).

Smith & Dean distinguish “practice-led research” from “research-led practice” (Smith and Dean 2009: 20). In my own practice-led work, I found that rhythmic experiments undertaken during developmental practise and recording sessions led to insights that would not have emerged otherwise (in particular, the personal pedagogy proposed in Part 2, Chapter 10). Conversely, academic rhythmic research by various scholars
(Benadon 2006, Benadon 2009, London 2002, Pieslak 2007, Pressing 2002) formed part of a feedback loop that helped me (a) make abstract sense of what I was already doing as I worked through the Developmental Areas in Part 2, and (b) conceptualise language to analyse and report on the sonorities of concrete musical events. Both perspectives were indispensable to the project.

Smith and Dean describe “two different ways of working which are to be found in both creative practice and research: a process-driven one, and a goal-oriented one” (Smith and Dean 2009: 23). However, in my thesis the “goal” and the “process” are virtually equivalent. That is, I start with a goal – to create a textual and audio-visual document of a developing polyrhythmic idiolect – and set about applying improvisational procedures to generate data, “engaging with processes along the way which allow for emergence, and permitting the project to shift in relation to them” (Smith and Dean 2009: 23).

Sullivan points out that “practice-led research in the arts is [now] considered an area of inquiry that is important in its own right” (Sullivan 2009: 47) and whose legitimacy is no longer predicated on “equivalency” with social sciences in terms of methodology and outcomes (Sullivan 2009: 45). He cautions against conflating arts research with social science methodology to avoid “outcomes [that] can be, at best, poor social science and poor art (Sullivan 2009: 46).” He sees practice-led research as:

a viable site for undertaking important artistic, cultural and educational inquiries. If a measure of the utility of research is seen to be the capacity to create new knowledge that is individually and culturally transformative then the potential of practice-led research to open up new realms of possibility is now in full view. (Sullivan 2009: 62)

1.8 Autoethnography

My research model broadly aligns with what Ellis, Adams and Bochner describe as reflexive ethnographies that “document ways a researcher changes as a result of doing fieldwork” and layered accounts that emphasise procedural research “focus[ed] on the author's experience alongside data, abstract analysis, and relevant literature” (Ellis et al 2011: 278). My study also comports with three of Anderson’s five criteria that distinguish analytic autoethnography as “a viable and valuable subgenre in the realist ethnographic tradition” (Anderson 2006: 379).
Primarily, *Complete Member Researcher* (CMR) status indicates “the researcher is a complete member in the social world under study” (Anderson 2006: 379). In my case, this derives from an extensive professional history in the Australian music scene, performing as a freelance drummer since my teens and recording over 60 albums. I have also been the subject of feature stories and interviews in several Australian music publications (Bryson-Dean 2014, Cleary 1993, Corniola 2017, Hicks 2002, Matcott 1997).

Anderson further cites *Analytic Reflexivity*, which “involves an awareness of reciprocal influence between ethnographers and their settings and informants” (Anderson 2006: 382). Accordingly, the musicians who contributed recorded performances and compositions to this study are all colleagues with whom I enjoy ongoing professional contact as performers in the contemporary Australian jazz scene. Freelance jazz musicians belong socially and musically to an interlocking web of collaborative relationships. Some participants have been my bandleaders - in other cases they have been my band members. Frequently we work together as contracted “sidemen” for a third party, and also as fellow academic researchers and educators. Consequently, we possess overlapping understandings of musical language, philosophic outlook and improvisational process.

Thirdly, *Narrative Visibility of the Researcher’s Self* mandates that “the researcher is a highly visible social actor within the written text” (Anderson 2006: 384). As a participant observer squarely "in the frame" of all music performance and analysis in this project, the tone of my reporting cannot derive from a critical position of detached omniscience. On the contrary, my personal perspective is the acknowledged prism through which the data is collected and interpreted.

### 1.9 Academic Identity Constructs

Goodman (2011) points to a relative lack of scholarly research dealing with drum-set praxis conducted *by drummers*, while noting that jazz scholarship in general “tends to fall within the domain of ethnomusicology, which is broadly focused on sociocultural and political factors” (Goodman 2011: 61):

> The art of jazz drum-set performance is a mongrel discipline and resides in possibly the single-most confused and marginalised scholarly, musicological, pedagogical and
practical territory. It is perhaps the least understood of all contemporary music practices, particularly in scholarly circles. (Goodman 2011: 60)

The current study makes a contribution toward remedying this situation, particularly in relation to the role that practitioner-specific knowledge plays in the formation of unique musical idiolects. Nonetheless, academic understanding of how a performer goes about crafting a singular sonic identity in the performance of jazz has undergone significant evolution in recent years. An increasing number of ethnographic scene studies (Atkins 2001, Berliner 1994, Jackson 2012, Monson 1996) have shifted focus from theories that link an individual’s musical voice to the embodiment of cultural nationalism (Baraka 1963) or the rhetorical practices of African-American orality (Baker 1984, Floyd 1991, Gates 1988), to the study of how individuals conceive of their own musical decisions and the impact of these decisions on what they view as their own sonic identity (Atkins 2001, Austerlitz 2005, Jones 2001).

This type of research has, so far, relied primarily on data collected through interviews and field observations of jazz performers. Supported by scholarly precedent from the areas of analytic autoethnography (Anderson 2006, Ellis et al. 2011), practice-led research (Nelson 2013, Smith and Dean 2009, Sullivan 2009) and heutagogy (Hase and Kenyon 2000, Hase and Kenyon 2007), I argue that participant observer analyses are no less valid than those of third party observers in the delineation of sonic identity, and that improvising practitioners “inside the frame” can add valuable insight into our understanding of the processes lying behind the generation of unique jazz idiolects. Indeed, although musical sonorities themselves naturally form part of what constitutes an idiolect, recent research has indicated they are best understood as resulting from interactive and improvisational processes enacted by performers (Barker 2015, Barker 2017, Berkowitz 2010, Dietrich 2004, Jackson 2000, Jackson 2012, Johnson-Laird 2002, Kenny 2002, Norgaard 2011, Sawyer 1999, Sawyer 2000b, Sawyer 2000a).

The aim of the current study is to chart out how polyrhythmic improvisational processes can result in the articulation of a unique sonic voice discernable across a variety of musical settings. The study includes video of recording sessions I undertook from 2014 to 2017. This documentation gave me access to a wide range of process related data for analysis to discern how an original jazz drumming voice may be realised in solo practice and through collaboration with other artists. This
participant-observer research addresses methodological deficiencies in the literature on jazz identity construction by illuminating improvisatory processes underpinning the development of a unique jazz idiolect. Thus the investigation serves to clarify how a personalised sonic identity might be realised by exploring the effects of suspended pulsation, densities, pulse streaming, rhythmic transposition, isochronous asymmetry, and mixed rates (Part 2, Chapters 4 to 9). In contrast with traditional ethnographic approaches, the methodologies in this study generate “insider” data that add significant new insight into the way drum-set improvisers might rhythmically organise themselves, broadening the depth and scope of the standing jazz discourse. This approach may in turn impact the way jazz scholars of the future collect data in relation to improvisatory processes.

1.10 Contemporary Praxis

I conceive of modern drum-set praxis as broadly characterised by two approaches to improvisation: one “live”, where all players perform and interact simultaneously, and one “mechanised”, encompassing on-stage and in-studio integration of digital technology with human performance. My professional practice has incorporated both - indeed I recorded on four “live” albums - Stretch (Clarke 2013), Cosmos (Hunter 2014), One (Pratt/McMahon/Hirst/Gander 2017) and Indonesia-Australia Jazz Connection (Dharmawan 2017) - along with two “mechanised” albums - Foodland (Wayland 2016) and The Unsuspecting (Freer 2015) - during the timeframe of this project. However, the practice-led research undertaken here has also crystalized certain distinctions between the two modes of praxis that I would like to clarify because they have both impacted the development of my polyrhythmic idiolect.

Since the mid-1980s the use of digital sequencers, drum machines and click tracks has become standard practice in many studio recording and live performance contexts. One significant consequence for drummers arising from the impact of this technology on rhythmic organisation has been that accuracy of timekeeping, metric subdivision and interactive synchrony could now be assessed in relation to an ideal standard of digitally “perfect” periodicities. Drummer Steve Smith described this shift nearly twenty-five years ago:

I grew up in a time when the click track wasn't what time was judged by. That has been a relatively new development for the drumming world to be judged by. I grew
up developing what I call "internal relative time," developing a good feel and a good pulse—but it moves around. (Flans 1993: 70)

The new standard, which involved reconciling Smith’s humanly felt "internal relative time" with the perfectly isochronous “time” of digital machines, became established in the 1980s partly due to the widespread influence of prominent studio drummers such as Steve Gadd and Jeff Porcaro. In jazz-fusion circles, Dave Weckl’s seamless integration of the new technology with his drumming in the “Chick Corea Elektric Band” also became highly influential, and the group’s eponymous first recording (Corea 1986) featured Weckl’s:

ability to play between, on top of, around, and along with the machine in a way that pointed to new horizons in the creative use of drum machines. In other words, in this decade in which the machine has become the drummer's most controversial friend/foe, Dave has succeeded in making it his friend—but it is also understood that he can whip his friend's butt. (Potter 1986: 46)

These developments were contemporaneous with the rise of a “neo-classicist” (DeVeaux 1991) jazz movement spearheaded by Wynton Marsalis, itself the subject of well documented and sometimes acrimonious debates which, if nothing else, illuminated an apparent schism between “pure” jazz and “fusion” jazz with certain parallels to my “live” and “mechanised” drumming paradigms.

From mid-1986 onwards, popular drummer-specific publications began tracking developments in technology and praxis flowing from this shift (Wallace 1986, Wittet 1986, Fiore 1986a, Fiore 1986b, Fiore 1987b, Fiore 1987a, Tolleson 1987, etcetera). However, over ensuing years influential scholarly works dealing with jazz (Berliner 1994, Monson 1996), as well as academic theses (Brown 1997, Brownell 1994, Schmalenberger 2000, Schnorr 2014) and journalism in leading jazz periodicals (such as Downbeat and Jazz Times) tended to remain focussed on improvisational practices grounded in the idea of an organic, non-mechanistic model of ensemble interaction using acoustic (that is, non-electronic) instruments. Yet popular instructional drum-set materials have long reflected (and, I would argue, helped shape) the contemporary transformation of drum-set praxis, while formal research addressing its leading proponents (such as Jeff Porcaro, Dave Weckl and Keith Carlock) has only more recently begun to emerge (Artimisi 2011, Broomhead 2012, Floyd 2011, Pieslak 2007, Räsänen et al. 2015) – a long overdue expansion in scope of scholarly enquiry
that acknowledges the technology-related change in modern drumming praxis as a legitimate evolutionary development worthy of academic study.

The issue’s significance for my project relates to a shift in methodological emphasis that emerged during the study: namely, while changes to the idiolect had initially been hypothesised as directly resulting from “live” ensemble interactions with other participants, as my research progressed and recordings were scrutinised, the projected changes largely failed to materialise. That is to say, preliminary “live” ensemble sessions frequently failed to elicit a degree of rhythmic language – in terms of either archetypal variants or phraseological “grammar” - that differed significantly from elements already present in my working vocabulary. Thus I began incorporating solo tracking sessions with pre-recorded accompaniment and/or sequenced backing in order to expand the experimental scope of the seven Developmental Areas explored in Part 2. As a result, the creative outcomes presented here derive from a combination of (a) real-time group improvisation and (b) experimental solo sessions overdubbed onto pre-recorded backings.

The aforementioned man/machine dichotomy begs a question: in the contemporary context, what is improvisational drum-set praxis? If a strictly ensemble-only “live” model no longer suffices, a more comprehensive definition that updates and expands the scope of inquiry is called for: one that accommodates a spectrum of influences reflecting the broader realities of how drummers make music in 2017. Such a model would include the influence of (1) the drum clinic scene (where performing to digitised backing tracks is the norm), (2) the proliferation of instructional DVD’s and books with supplementary “play-along” backing tracks, and (3) a confluence between two recent phenomena: the wide availability of affordable, high quality portable audio-visual recording equipment, and the advent of social media, which together have enabled mass dissemination of self-produced creative content via online self-publishing. These factors have combined to help shift contemporary drumming from a “live-only” improvisational paradigm to a hybrid praxis informed by both “live” and “mechanised” disciplines.

In the case of this research, contrary to expectations that real-time “interplay” between people would suffice to elicit the most fruitful new rhythmic vernacular, it was self-contained experimental “intra-play” between variants and phraseology within constraints that emerged, somewhat counter-intuitively, as a primary generator
of new vocabulary. Thus the study presents data drawn from both approaches, regardless of any perceived ideological or procedural contradictions between “live” and “mechanised” improvisational practice.
Chapter 2 – Idiolectal Mapping

The musical voice scrutinized in this study encompasses both “extant” and “augmented” versions of my drum-set idiolect. The *extant idiolect* is what I brought to the research – the sum of the musical vocabulary and conceptual approaches I had developed before commencing the project. This personalized repertoire of variants and phraseology gradually evolved and coalesced over my years of professional practice and private study, accruing specific combinations of features *prior* to the application of transformative methodologies applied in this study. The *augmented idiolect* encompasses the changes effected by these methodologies, emerging as research outcomes through the Developmental Areas documented in Part 2, Chapters 4 to 9.

To clarify the distinction between my *extant idiolect* and the transformations effected by developmental procedures being applied to it, we must begin by mapping primary characteristics of this drum-set vocabulary. Accordingly, the content and phraseology of my existing drum-set idiolect may be delineated in terms of (1) a pool of variants constituting “finite stocks” (Barker 2015: 28, Howard 1991: 26) of archetypes and patterning; (2) a distinct phraseological schema shaped by genre conventions and rhythmic theory; and (3) a spectrum of organizational constraints - ranging from formal rigidity to formless freedom - that delimit structural characteristics of the rhythmic vocabulary.

It should be noted here that mapping out the broad parameters of my extant idiolect is neither a statistical audit, nor an attempt to exhaustively systematize possible combinations of limbs and strokes (a complete inventory of which would be outside both the philosophical and practical scope of this thesis). Rather, by delineating common archetypal configurations of habitual patterning - along with key conceptual drivers of rhythmic theory operating within organizational constraints - it serves as a necessary precursor to understanding the transformations emerging from the structured improvisational procedures explored in Part 2. Because these seven Developmental Areas will include complex inter-relationships of drum-set vocabulary and metric infrastructure, it is first necessary to itemize and categorize the primary generic archetypes that constitute my *extant idiolect*, along with a theoretical-
conceptual framework of improvisational phraseology underpinning their organization. This chapter establishes elements of vocabulary and rhythmic structures that will be subsequently cross-pollinated to propagate new language, and clearly distinguishing (a) parameters of vocabulary, phraseology and constraints, (b) hybridizing methodological procedures, and (c) developmental outcomes, will serve to illuminate the transformative processes that are the primary focus of this research.

2.1 Pool of Variants

The building blocks of my drum-set language constitute a relatively limited pool of rhythmic resources. These fragments of stickings and rhythmic patterning are the basic vocabularic components, or “raw materials”, comprising the extant idiolect to be developed and augmented.

Foundation strokes comprising my variant pool are based largely on generic archetypes grounded in traditional paradigms of rhythmic organization. However, the pool also functions as a medium for the expression of individualized rhythmic ideas, and the research utilizes raw materials common to many drummers in cultivating a unique drum-set voice via methodological procedures of extended polyrhythmic hybridization (detailed in Part 2, Chapters 4 to 9). Documenting these transformations serves to illuminate the procedural efficacy of methodologies being applied by virtue of the individualized outcomes being produced.

As outlined in Figure 2.1, sticking cells and limb combinations comprising my variant pool can be classified into five patterning/fragment categories - linear patterning, layered patterning, roll fragments, hand-foot fragments, and hand-foot triplet roll fragments – and these elements are recruited to the fundamental drumming functions of timekeeping and soloing. For the purpose of mapping vocabulary, the role of variants vis-à-vis these two functions will remain compartmentalized in the current section in order to identify specific compositional characteristics (such as sticking, accents and orchestration). However, as seen in the Transitional Synthesis and Iterative Loop Cycle methodologies to follow in Chapter 3, base materials applied within a discrete function can - in fact must - be cross-pollinated in order to yield new hybrid archetypes. Furthermore, the time and solo functions themselves will also be interfused.
2.1.1 Linear Patterning

The following linear fragments derive from standard rudimental paradiddle combinations. They are applied here in line with the two-sound level drum-set methodology (Garibaldi 1990: 5-7) for ghosted and accented strokes, whereby paradiddle stickings are adapted and orchestrated to form backbeat groove patterns voiced between the hi-hat, snare-drum and bass-drum. This approach can be applied in the soloing function by re-voicing patterning fragments across the drum-set, and in Video 2.1 we see linear sticking fragments (shown in Notations 2.1, 2.2 and 2.3) being applied to both time and solo functions.

In the sticking notation, right hand parts are represented above the bottom line and left hand parts below it. The letters “R” and “L” indicate which hand coincides with the accentual phrasing configurations on the top line of each example. These top line figures also represent rhythmic syllables in the phraseology (see Chapter 2, Section 2) of the vocabulary being mapped.
Notation 2.1 Outward Paradiddle Fragments

Notation 2.2 Inward Paradiddle Fragments

The phraseological “syllables” of each accented paradiddle configuration in Notation 2.1 and 2.2 conform to a straight eighth-note grid. By contrast, the accent patterning in Notation 2.3 involves a mixture of half-note, quarter-note, eighth-note, dotted eighth-note and sixteenth-note figures. Some of these (2 to 12, and 14) align with both “on” and “off” sixteenth-note axes, and excluding examples 14 to 17 - these rhythms also align with a dotted eighth/sixteenth-note interpretation of swung syncopation (see
“Syncopation” and “Axial displacement” phraseology in section 2 of this chapter).

Notation 2.3 Inward Paradiddle Mixed Phrasing Fragments

2.1.2 Layered Patterning

The following fragments of layered patterning derive from standard rudimental flam combinations, applied here - as with the linear patterning above - using the two-sound level concept integrated with Darryn Farrugia’s “layered grooves” methodology
(Farrugia 2003). In my system, the flam strokes are played either “open” (with an appoggiatura preceding the main accent stroke) or “flat” (with unison left and right strokes). Examples in Video 2.2 demonstrate fragments from Notations 2.4 and 2.5 played in “open” form for soloing application, and in “flat” form as time functioning archetypes.

Phraseologically speaking, rhythmic “syllables” on the top line of Notation 2.4 comprise groupings of 2, 3 or 4 sixteenth-note subdivisions. In terms of sticking language, these are commonplace rudiments: the *Swiss Army Triplet* (1), *Flammed Mill* (2), *Flam Tap* (3), *Pataflafla* (4) and *Flam Accent* (5). However my application “inverts” the flam stickings. Reversing the grace note and accent hands physically accommodates flam orchestration between tom toms and snare-drum for *solo functioning* purposes, while flat-flam unison versions of the same patterning are adapted for *time functioning* between hi-hat (or ride cymbal) and snare-drum.

Notation 2.4 Simple Flam Fragments (Open and Flat)

![Notation 2.4 Simple Flam Fragments](image)

Compound patterning in Notation 2.5 adapts the preceding stickings, either additively (as with numbers 1, 2, 3, 5 and 7) or by combining fragments of different flam rudiments to form accentually asymmetric hybrid rhythms (such as numbers 6, 8 and 9).
2.1.3 Roll Fragments: Double and Single Strokes

I conceive the fragments in Notation 2.6 and Video 2.3 as embellishments of short, accented rhythmic figures formed by drags and 3, 5, 6 and 7 stroke rolls, with which I typically interlace generic syncopated phrasing when improvising. As with notations for linear and layered patterning (above), accentually generated rhythms are depicted on the top line, while sticking options for articulating the roll fragments using either double or single strokes are shown beneath the bottom line.
To emphasize a point reiterated throughout the thesis, this sticking material does not constitute any kind of instructional “how to”. While stickings are clearly integral to drum-set language - being embedded in both the rudimental tradition and the evolution of twentieth century rhythmic vernacular, and therefore worthy of study in their own right - the basic archetypes and sticking frameworks employed in my drumming practice are documented here not as pedagogy, but merely in order to delineate the broad parameters of my drumming vocabulary. This is a necessary precursor to the primary aim of the thesis, which is to illuminate how methodological process can shape a musical idiolect by transforming generic rhythmic language in ways that reflect an improviser’s procedural mind.

Notation 2.6 Roll Fragments: Double and Single Strokes

[Video 2.3 Roll Fragments]

2.1.4 Hand and Foot Fragments: Linear Single, Double and Triple Strokes

Linear hand and foot combinations I commonly use for soloing comprise combinations of single, double and triple strokes as portrayed in Notation 2.7. These basic possibilities are applied around the drum-set in Video 2.4 following an approach outlined in The Next Step (Weckl 1989).
2.1.5 Hand and Foot Triplet Roll Fragments

I use triplet roll fragments to embellish simple rhythmic syllables within improvised solo functioning that blends high, mid and low voicings across the drum-set. The fragments listed in Notation 2.8 blend linear compound stickings together with single or double stroke bass-drum substitutions, played as triplets in 2, 3, 4, 5, and 7 beat cycles. This orchestrated hand-foot system is adapted from works by Steve Gadd (Corea 1993a [1978]), Dave Weckl (Camillo 1988, Corea 1989, Corea 1990), Vinnie Colaiuta (Marienthal 1990) and Gary Novak (Corea 1993b, Corea 1995), and it integrates fragments and extensions of the six-stroke roll with elements of Gary Chaffee’s Group A and B “compound stickings” (Chaffee 1976: 35-46).
Notation 2.8 Hand and Foot Triplet Roll Fragments

[Video 2.5 Hand and Foot Triplet Roll Fragments]
2.2 Phraseology

Vijay Iyer asserts the inapplicability, outside Western tonal music, of the idea of musical “grammar”, based on his findings regarding culturally contingent divergences in “the status of the body and physical movement in the act of making music” (Iyer 1998: 21). It seems clear, also, that “the traditional linguistics-based viewpoint does not suffice in describing the entirety of music cognition” (Iyer 2002: 388). For the purposes of the current study however, I will posit phraseological concepts in this section as having “grammatical” function, in that - taken together - they furnish a systematized organizing principle that delineates metric parameters within which my improvisational processes take place.

If the Pool of Variants constitutes a kind of rhythmic “alphabet” for my extant drumming idiolect - in the sense of being a relatively finite stock of resources, or building blocks, from which rhythmic “syllables”, “words” and “phrases” are assembled to tell a “story” - then Phraseology may be conceived as something like a corresponding “grammatical” framework of rhythm. Four primary driving features of my phraseological “grammar” are outlined in the schema below (Figure 2.2).

Figure 2.2 Phraseological Schema
2.2.1 Syncopation

Traditional Syncopation has been fundamental to the development of my musical idiolect, given its historical role in the evolution of jazz drum-set language. It informs, if only vestigially, even the most rhythmically ambiguous experiments I have undertaken. Accordingly, syncopation stands as the primary conceptual driver in my phraseological schema. We should also note here the ubiquitous pedagogical influence, over nearly six decades, of the book *Progressive Steps to Syncopation for the Modern Drummer* (Reed 1958) - years that have seen significant flourishing in the evolutionary development of drumming. Below (Notations 2.9 and 2.10) - and also in Part 2, Chapter 4 (Notations 7.5 and 7.8) - I borrow from the widely used *Exercise I* on page 37 in the original edition of Reed’s book as a definitive exemplar of syncopation source material.

Notation 2.9 Ted Reed “Exercise I” Excerpt

Notation 2.10 Ted Reed “Exercise I” Excerpt (as Sixteenth-Notes)
In Video 2.6, this source material serves as a framework for short improvisations using vocabulary from the Pool of Variants in Section 1). The syncopation phraseology is applied to both timekeeping and soloing, in straight eighth-note, sixteenth-note and swung eighth-note (that is, triplet shuffle) modes. It should be remembered that neither these nor the other video demonstrations are offered as parts of a “how to” methodology. Such examples are furnished here simply to establish a taxonomy of archetypes and structural concepts that can help illuminate how specific improvisational processes can transform “raw materials” in real time to propagate personalized rhythmic language. In other words, the performances serve to reveal an idiolect being re-organized, augmented and developed.

[Video 2.6 Syncopation Phraseology]

2.2.2 Cyclic Displacement

Cyclic phrasing is a numerically based way of organizing cross-rhythmic periodicities. I typically cycle timekeeping and soloing archetypes in subdivision groupings based on odd numbers (such as 3, 5 and 7) to standard rates (such as eighth-notes, sixteenth-notes, eighth-note triplets and sixteenth-note triplets) in common meters (such as 2/4 and 4/4). While the numerical range of possibilities for cyclic displacement is unlimited, in order to delineate how the concept has shaped my idiolect, the configurations presented are relatively conventional in order to clearly define the concept of cross-rhythmic cycles in reference to primary pulsation, bar lines and meter.

This confluence of rate, pulse and grouping is already implicit in the syncopated rhythmic infrastructure of much popular music (such as jazz, rock and funk). In Part 2 of this study (particularly in Chapters 4, 6 and 7) these elements are manipulated to generate complex and personalized improvisational augmentations of my idiolectal vocabulary.

Notation 2.11 and 2.12 map cyclic phrases (top line) in ratios of 2:3, 2:5, 2:7, 3:4, 3:5 and 3:7 to the primary pulse axis (bottom line) using straight eighth-note, straight eighth-note triplet and sixteenth-note subdivisions in meters of 2/4 and 3/8. Cyclic patternning is extended across bar lines until it resolves back to beat 1 of bar 1 in each example, thereby forming loops of specific numbers of bars with cardinalities corresponding to consequent (that is, the second number) in each ratio - so that, for
example, a cyclic pattern of dotted eighth-notes crossing the pulse in a 2:3 ratio will resolve back to beat 1 after 3 bars; a 2:5 cycle will resolve after five bars, and so on, unless the grouping cardinality is congruent with the top number of the meter signature, in which case the cycles will resolve every bar.

The patterns also resolve fractionally - that is, as short beat loops within a number of primary pulsations matching the consequent. In Notations 2.11 and 2.12, beaming configurations on the lower staff, ratios notated above the top staff, and dotted lines between the staffs all indicate these points of fractional resolution.

Notation 2.11 Cyclic Groupings – 2:x Ratio
Whereas the above notations depict fully resolved cyclic structures, in Video 2.7 cyclic ratios are applied only to units of four bars. This is in order to integrate cyclic fragments - that is, discrete motifs whose beat duration matches the antecedent number in the applicable ratio - with vernacular structural conventions of Western popular rhythm (where events tend to be organized in multiples of 2 and 4). As with the preceding Syncopation phraseology section, I use time functioning and soloing vocabularies here to improvise with materials drawn from the Pool of Variants (Section 1).

[Video 2.7 Cyclic Displacement]

### 2.2.3 Axial Displacement

I posit strong and weak beats as landing on either on or off pulse axes respectively. Thus rhythmic patterning may be “displaced” (Harrison 1996: 10-15, 35-41), or “permutated” (Garibaldi 1990: 21-39) back and forth between these two axes. Drummers such Dave Weckl (Weckl 1990), Virgil Donati (On The Virg 1999) and Vinnie Colaiuta (Colaiuta 1994) are among the foremost exponents of this approach.
Notation 2.12 shows a full grid of sixteenth-note partials correlated with on and off axes, conceived here as “beat grids” in the sense that either axis can function as the organizational framework of orientation for complete beats and patterning structures. Removing even and odd partials from the “1e+a / 2e+a / 3e+a / 4e+a” sixteenth-note counting format translates as “1+/ 2+/ 3+/ 4+” for the “on” beat grid, and “e a / e a / e a / e a” for the “off” beat grid. A Konnakol vocal translation for each quarter-note beat would be “Ta Ka Di Mi” for the full sixteenth-note grid, with “Ta / Di / ” for the “on” beat axis, and “/ Ka / Mi” for the “off” beat axis).

Notation 2.13 Axial Correlation of Full Sixteenth-Note Partial: “On” and “Off” Grids

Notations 2.13, 2.14 and 2.15 show displacement and re-displacement of a standard eighth-note timekeeping pattern moving back and forth between the on and off axes of an underlying sixteenth-note grid. The top staff in each example notates the pattern’s rhythmic partials exactly as performed within the sixteenth-note temporal grid, while groupings on the bottom staff - although notationally “irrational” in a strict metrical sense - are beamed here to represent the way patterning orientation is compositionally conceived in terms of “chunking”. This term refers to the fact that vocabulary archetypes – in this case, an eighth-note/backbeat timekeeping pattern - are fed into a metrical procedure as self-contained, pre-fabricated sonorities - that is, as replicable chunks of pre-learned material.

The pattern chunking here, comprising isochronous straight eighth-note duplets, maintains a fixed relation to the even meter and the even grid, until such time as an odd rhythmic value is introduced to alter this axial orientation. The compound
fragment located on the fourth beat in bar 1 of both examples - having a durational value of three sixteenth-notes, serves this purpose, and functions here as a means for switching axes. The axial displacement concept thus overlaps, at these switching points, with the cyclic displacement concept, fragments of which can be also used to accomplish an axial shift.

Notation 2.14 Displacement ("On" to "Off"): as Performed and as Conceived (Chunking)

Notation 2.15 Displacement ("Off" to "On"): as Performed and as Conceived (Chunking)

The improvisation in Video 2.8 (a transcription of which is shown in Notation 2.15) exploits the relationship between even pattern chunking, odd compound fragments and metric-axial structures, with a total of sixteen axial displacements occurring over a 16 bar form in 4/4 time. The added (although incidental) element of voicing displacement - that is, of low (bass-drum) and high (snare-drum) sounds - is driven here by improvisational choice, rather than any pre-arranged system. Notational groupings are, again, beamed to reflect how patterning chunks are being conceived as they switch axes.
2.2.4 Odd Meter

My concept for odd meter phraseology also employs chunking, and presupposes a vernacular rhythmic infrastructure characterized by archetypal groupings – or “chunks” - of 2, 3, and 4 (and potentially, by extension, 5, 6, 7, 8 or more) notes that can be ordered into looped combinations within specific meter signatures. Self evidently, duple-based configurations of like subdivisions in an even meter - such as groups of four sixteenth-notes in 4/4 (2+2 x 4 =16) - maintain a fixed relationship to “on” and “off” axes, unless and until the introduction of an odd number grouping causes a shift to occur. Adding or subtracting one note anywhere in a series of even note groupings effectively introduces an odd grouping of notes that displaces the axial orientation of subsequent events.

As shown above, cyclic and axial displacements generate cross-rhythmic pulse streaming and “inversions” of the primary pulse. By contrast, the odd meter phraseology outlined here is predicated on rhythmic loops that combine “even chunks” of, say, 4 notes, with “odd chunks” of 3 or 5 notes. I break these chunks down into 2-note and 3-note sub-groupings, in line with the thinking of Vinnie Colaiuta who described his own approach to “odd-time” at Zildjian Day in New York, 1984 as follows:
…all I do is I subdivide it into groups of two and three based on what I’ve heard other people do in the past. (Colaiuta 1984)

I also conceive odd-time as comprising discrete two and three-note chunks, or rhythmic “syllables” - phraseological building blocks to be arranged in composite groupings, such as five (2+3) or seven (2+2+3) notes. Video 2.9 briefly outlines some simple even/odd chunking combinations for organizing timekeeping and soloing archetypes: 44445 (21), 44443 (19), 4445 (17), 4443 (15), 445 (13) and 443 (11). Here, the odd (5 or 3) note-chunks are located last in each sequence as shown in Notation 2.17, and the abbreviated video demonstration merely outlines an introductory organizational template for this system, whereas a detailed exploration of the concept would treat grouping sequences and number values as fully interchangeable.

Notation 2.17 Odd Meter

[Video 2.9 Odd Meter]
2.3 Spectrum of Constraints

Along with variants and phraseology, parameters of my drumming vocabulary can be mapped in terms of “constraints”, or degrees of structural rigidity, on a continuum from maximal to minimal. The constraints transcend function - that is, they apply equally to timekeeping and soloing – with compositional characteristics ranging in flexibility from through-composed etudes, rudimental solos and transcriptions (where every element, including the sticking, is dictated), to non-metrical, un-gridded densities and phrase pulsations of free rhythm unbound by frameworks of temporal organization. Any rhythmic approach located between these poles of rigidity and freedom may, when taken discretely, be characterized as either bound or unbound by constraints that circumscribe its neighbors on the continuum.

Figure 2.3 Spectrum of Constraints

[Video 2.10 Spectrum of Constraints]

Figure 2.3 (above) lists constraint characteristics spanning six degrees of micro and macrostructural flexibility. The first and most “rigid” constraint applies to dictated, through-composed parts that rule out improvisation, while imposing absolute temporal fixity on the tactus-pulse and subdivisional grid. Subsequent degrees - ranging from “semi-rigid”, to “semi-loose”, “loose”, “semi-free” and “free” - gradually dismantle these restrictions, facilitating a gradual escalation of interpretive license in the organization of rhythmic content and expressive timing.

In performance, genre requirements may furnish sound professional or aesthetic reasons for compartmentalizing vocabulary in this way. However, the spectrum is
ultimately an analytical construct - a tool for mapping and codifying rhythmic language – whereas the synergistic interplay between musicians in real-world performance praxis often permits, and sometimes demands, an improvisational cross-pollination of divergent materials that overrides theoretical boundaries used here to demarcate them.

2.3.1 Rigid ("Ryto-Gando")

The maximal constraint on my spectrum – rigidity - removes all compositional-improvisational choice from the performer, confining the scope of individualistic expression to note delivery. That is to say, fully through-composed music rules out improvisation and restricts a performer’s interpretive latitude to the domain of feel, a quality Pressing ascribes to “sensitive rhythmical nuance in note delivery by an individual musician” (Pressing 2002: 287). Iyer similarly stresses feel and expressive delivery as a means for transmitting interpretive individualism:

…even as the tempo remains constant, fine-scale rhythmic delivery becomes just as important a parameter as, say, tone, pitch, or loudness. All these musical quantities combine dynamically and holistically to form what some would call a musician's "feel." Individual players have their own feel, that is, their own ways of relating to an isochronous pulse. Musical messages can be passed at this level. (Iyer 2002: 398)

The musical portrayal of rigidity in Video 2.10 and Notation 2.18 is an adapted excerpt from Ryto-Gando (see Part 2, Chapter 6) embodying this constraint in the form of a through-composed rudimental etude for snare-drum and bass-drum that dictates every element.

Notation 2.18 “Ryto-Gando” Rudimental Adaptation

The inherent inflexibility of this kind of piece is compounded when the drum-set part
is recorded as an overdub – a challenge that introduces two additional “rigidities”. First (and self evidently), a pre-recorded track - being “frozen in time” and therefore temporally fixed in relation to a subsequently overlayed performance – prohibits synergistic interplay between the two because the timing adjustments are all “one-way” responses. That is, because only the overdubbing musician can make them, this inevitably involves re-balancing variables of interaction that would normally apply during live performance. A further element of rigidity emerges with the audible presence on the finished product of metrically “perfect”, digitally generated rhythms, which impose an exacting criterion of rhythmic uniformity upon the drummer, in that computerized rhythms do not “breathe” synchronously with the “participatory discrepancies” (Prögler, 1995) that constitute humanly nuanced expressive timing.

The man-machine dilemma is also implicit in Steve Gadd’s observation regarding the adjustments necessary for moving between subdivisions relative to a fixed point of reference, such as a click track or drum machine:

They’re all adjustments… [and they] don’t stop happening the longer you play. You just are able to make the adjustments more comfortably. But you constantly have to make them…(Gadd 1985)

The requirement to constantly “adjust” applies all the more when overdubbing to match the digital rhythmic articulation of a computer generated replica, as with the bass and melody parts in the example presented here - hence its location at the rigid extreme of my constraint spectrum.

2.3.2 Semi-Rigid (a. “Fried Chicken Interlude”; b. “Fried Chicken Tag”; c. “Arc Bridge”)

The three excerpts illustrating semi-rigidity are examples of generic time functioning overdubs tracked to a digitally sequenced bed in the straight eighth-note and sixteenth-note funk-fusion idiom. My drumming here provides a conventional rhythm section groove-accompaniment, designated semi-rigid because of its temporal conformity with a digital metric grid and improvisational variability within formulaic parameters. Improvisational choices here occur within narrow dynamic and archetypal parameters, and within a digitally fixed temporal framework to which the groove and feel must remain locked. The terms groove and feel refer to what Pressing has described as
a cognitive temporal phenomenon emerging from one or more carefully aligned concurrent rhythmic patterns, characterized by:

1. perception of recurring pulses, and subdivision structure to such pulses,

2. perception of a cycle of time, of length 2 or more pulses, enabling identification of cycle locations, and

3. effectiveness in engaging synchronizing body responses (e.g., dance, foot-tapping).

(Pressing 2002: 288)

While these are indispensible criteria for timekeeping in a groove-based funk idiom, they need not be confined to this specific part of the constraint spectrum. For example, *Fried Chicken Interlude* and *Fried Chicken Tag* are located here because their drum grooves - having been tracked to a digitally sequenced guide prior to the other musicians’ overdubbed improvisations - reflect inherent restrictions imposed by working with digitally sequenced music. However, as Pressing also notes, “a groove is the temporal foundation of readily danceable music” (Pressing 2002: 288) and as such, “groove” is neither necessarily limited to, nor negated by, conformity with digitally programmed time sources. The groove criteria of isochronous pulsation, alignment of concurrent rhythms, cyclical patterning and “danceability” pertain equally, and perhaps more so, to “looser” rhythmic settings where parameters of isochrony are humanly negotiated (rather than mechanistically imposed).

The primary characteristic of semi-rigidity is a metrically self-consistent “gridded-ness” that remains micro-structurally interlocked with the patterning of improvised variants, and these alignments are not compromised by phraseological displacement. Guitarist Wayne Krantz, who employs a similar approach to rhythmic micro and macro structures, describes his trio’s concept for groove and interaction in terms of “horizontal” phrasing over a “vertical” grid:

Something that makes it possible to do all the stuff that we're doing and talking about today is the fact that we have an agreed-upon 16th note. Like we're connected on the grid - that's the kind of vertical connection that we have. But then we've got this horizontal connection on the phrase which is like fours, eights and sixteens within that grid or...on the top of that grid let's say. So we've got it kind of up-and-down and horizontally, this rhythmic connection which makes sense of a lot of… it allows us to experiment *a lot* but still sound like we're kind of together. (Carlock 2009)
Krantz’ distinction between a (horizontal) tactus-pulse and a (vertical) subdivision matrix gives them equal weight. His formulation aligns closest with “semi-rigid” examples (b) and (c) in Video 2.10. By contrast, my “semi-free” constraint (number 5) allows tactus-pulse and related “horizontal” macrostructures (such as bar groupings) to function as elements of formal cohesion within which metrically indeterminate densities are subsumed.

2.3.3 Semi-Loose (“Roger That”)

This excerpt comes from an unrehearsed live duet session with saxophonist Roger Mannins. Rhythmically, the interactive timekeeping accompaniment (phrased in 4 and 8 bar cycles over a harmonically free form) alternates between up-tempo eighth-note jazz patterning at approximately 350 BPM and a corresponding half-time triplet groove of approximately 175 BPM. The scope for expressive timing, being unhampered by tempo restrictions of a click track, allows the tactus-pulse to “breathe” with the ebb and flow of improvisational energy while my rhythmic vocabulary remains within conceptual-aesthetic parameters of post-bop drumming (as per Riley 1997). Hence, the track exemplifies a “semi-loose” combination of metric structure, idiom-specific vocabulary, discretionary rhythmic placement and improvisational spontaneity.

2.3.4 Loose (a. “Circle Work”; b. “Going, going, gone”)

The fourth constraint is portrayed in two video excerpts: Circle Work - a solo improvisation over a bass vamp with sequenced backing - and Going, going, gone which features displaced jazz timekeeping overdubbed onto a “live” bass pass from a prior recording with no digital time reference used. The “loose” constraint represented in both examples by rhythmically fragmented “broken” phrasing is a deconstruction of isochronous uniformity, characterized by Steve Lehman as a “semi-consistent temporal flow that is disrupted repeatedly at short intervals, by the asymmetrical subdivision of the pulse” (Lehman 2012: 38).
The *Circle Work* drum solo exploits a mixture of rhythmic rates, wide tonal intervals and displaced phrasing to create the sense of being both “in and out of time”, although, as the transcription shows, all sonorities have metrically gridded rhythmic values. By contrast, the pulsation and expressive timing of *Going, going, gone*, being free of the digitized tempo constraints imposed by click-track overdubbing, inhabit a looser temporal framework. I would argue that the ability to “loosely” deploy this kind of variegated rhythmic vocabulary in ways that maintain cohesion of pulse and meter depends on an acute sense of *entrainment* - that is, the rhythmic-cognitive phenomenon of “matching our temporal expectations with the onset of events in a perceived environment” (Saull 2014: x), involving “a phase locking of one oscillating system to another” (London 2002: 532). Put colloquially, this means “staying in time”, or “keeping your place”. In my approach, a gridded framework of metric precision is a necessary first step to fluid integration of complex rhythmic language, and I develop this area of vocabulary in reference to a digitally fixed temporal source (as with *Circle Work*) prior to any relaxation of this constraint (as with *Going, going, gone*).

Assuming the role of “soloist” and “timekeeper” establishes a *figure-and-ground* relationship (Tagg 1994, Tsur 2009) between drummer and ensemble, positioning rhythms as either foreground or background material. However, as we move along the scale of “looseness”, fixed isomorphic patterning is suspended, style conventions that
limit expressive choice to “idiomatically compatible” vocabulary are overridden, and
distinctions between soloing and accompanying fade as the nominal roles of
“timekeeper/accompanist” or “soloist/improviser” increasingly overlap. As structural
constraints of idiom increasingly fragment and fall away, conceptual boundaries that
previously served to delineate functional roles and vocabulary begin to seem like
limiting constructs that impede transactional interplay between improvisers.
Saxophonist Tony Malaby describes grappling with the soloist/non-soloist dilemma as
follows:

Tom Rainey [the drummer] has been talking to me about it for years, but it just
wouldn't sink in. He was like 'Don't take a solo; play, but don't take a solo.' And
[pianist] Chuck Marohnic would say 'you're always at the point, man; position
yourself somewhere else.' (Rand, 2003)

A similar conception of what it means to “take a solo” is expressed in Joe Zawinul’s
aphorism apropos of the prevailing improvisational protocols in his group “Weather
Report”: "no one solos, everyone solos" (Russ 2006).

2.3.5 Semi-Free (a. “Third Mantra”; b. “Belco”)

In semi-free mode, audible articulation of pulse as an identifier of temporal regularity
is suspended or even completely suppressed. This facilitates an inversion of the
figure-and-ground relationship between primary pulsation – that is, the tactus (Arom

With periodicities of primary pulsation muted in this way, simple “beat induction”
(Honing 2012) can no longer suffice to tell us “where the time is”. Rather, implicit
temporal continuity must be perceived - or intuitively deduced - through entrainment,
rather than objectively “heard” as an externality. Compositionally, the balance
between “comping” and “timekeeping” materials here is also reversed, so that figures
relative to this “felt-but-not-heard” continuity of pulsation now occupy the perceptual
foreground, while tactus-pulse shifts to the background.

Temporal cohesion in improvised music where tactus - the primary pulse - is
suspended rests upon an understood, though unstated, rhythmic infrastructure (or
“skeleton”) that frames our “immediate perception of time in its relationships with the
sound material” (Grisey 1987: 257-258). In “semi-free” rhythm, primary-pulse
functions as its own referent, rather than emerging as a series of theoretical time points extrapolated from fine-scale metrical increments. This “skeleton” is maintained chiefly at the macro-level – that is, through pulsations of larger note values (such as quarter, half and whole notes), whether stated (or implied) sonically, or silently entrained.

“Looser” iterations of semi-free rhythm merge isochronous pulsation with non-metrical “densities”. These gestural articulations are sonic punctuations of indeterminate rhythmic value that cannot be definitively represented in standard music notation. John Riley relates a story from Jack DeJohnette about "washing machine time" that provides a useful analogy for understanding how metric periodicities and non-metric “densities” can co-exist in the same temporal stream:

[Int] In a laundromat the washers and dryers have windows through which you can see the moving clothes. This motion is caused by the clothes being moved by the regular rotation of the machine's inner chamber, but the clothes never fall to the bottom of the chamber at the same point in the rotation. One time the clothes will be carried 1/4 of a revolution, then they will fall to the bottom. Another time they may travel 5/8s of the way around before they drop. Another time they could travel completely around without gravity pulling the clothes to the bottom. Jack told me that the fixed rate of the rotation of the machine, in real time (seconds), was analogous to the fixed duration of a musical phrase; i.e., one measure or four measures or eight measures, etc., and that he can feel "musical time" in terms of seconds - not just in terms of counting a certain number of beats per phrase. His ideas can fall anywhere in a phrase, just as the laundry can fall at any point in the machine's rotation, without disrupting the musical flow. (Riley 1997: 21)

Under this model, rhythmic cohesion derives from a governing tactus-pulse (in this case, the isochronous rotations of the machine), rather than any mathematically consistent subdivision of intervening spaces - that is, the “clothes” - into ratio-based relationships with either themselves or the “machine”.

2.3.6 Free (“Cazador”)

Grisey theorizes “the skeleton of time, the flesh of time, and the skin of time” in order to illustrate his distinction between “conceptual (or Chronometric) time” and “perceptual (or psychological) time” (Grisey 1987: 239). In playing un-gridded “free”
rhythms, such as the video example for constraint 6 ("Cazador" live with Steve Hunter), I gauge sonic events unfolding in “perceptual” time.

Martin Clayton defines free rhythm as “the rhythm of music without perceived periodic organization” (Clayton 1996: 330). The term “phrase pulse” used here similarly indicates a non-gridded temporal system based on properties other than isochronous pulse, meter or subdivision. Grisey posits a scale of rhythmic periodicity ranging from “order” to zero “disorder” (Grisey 1987: 244). In my spectrum schema, phrase-pulse represents the final stage in a gradual removal of metrical constraints – the stage of free improvisation, which need not, however, preclude all possibility of temporal order or cohesion.

Temporal organization can, in fact, be achieved within what Clayton calls “free rhythm” (Clayton 1996: 330). I argue (as an improviser) that musical sound can be cohesively ordered by means other than regulated pulse or metre as those terms are conventionally understood, whereas Grisey seems to argue (as a composer) for a scale of rhythmic organization regressing from periodicity and order to a rhythmically “smooth” state of entropy and disorder (Grisey 1987: 244). However, as Clayton suggests, “factors other than rhythmic regulation may determine the temporal organization” of music (Clayton 1996: 331). He identifies free rhythm as “the rhythm of music without metre” – or “the rhythm of music without pulse” – while pulse itself is “a regular beat perceived by the listener to fall at equal intervals of time” (described as “categorically equivalent” intervals) “since they need not be exactly equal in practice” (Clayton 1996: 327) [emphases in original].

In terms of Western musicology, perhaps the most crucial distinction between phrase pulse and preceding stages in my spectrum of constraints arises the moment we attempt to represent musical sonorities in notation. Every other stage on the spectrum involves at least some micro and macro metrical structures that can be symbolized within the systems of standard Western music notation. However, the free stage - based as it is on a phrase-pulse that is not synchronously locked to any predictable temporal regulator - may only be graphically represented by means of arbitrarily assigned referents of time value. Absent any objectively agreed yardstick of temporal measurement (other than the chronometric time scale of seconds and minutes) against which we might measure the temporal synchrony of a work, musicologists and performers alike are presented with difficult textual challenge (see Winkler 1997).
Chapter 3 – Methodology

Two methodological procedures used in this study were devised to promote the development of personalized rhythmic vocabulary on the drum-set, and the video examples presented here furnish basic procedural templates for each. The first is Transitional Synthesis, which yields hybrid archetype specimens generated at overlapping points of transition between contrasting elements of vocabulary. The second is an Iterative Loop Cycle that further develops these hybrid specimens through four procedural steps of iteration, selection, transcription and replication.

Whereas process-based outcomes documented in the subsequent Developmental Areas of Part 2, being derived from rhythmically elaborate inputs, generate extensive data pertaining to sometimes highly complex vocabulary, the current section furnishes simplified demonstrations of procedural steps for each model, utilizing conventional drum-set functions and generic vocabulary. This serves two purposes: the first is to define methodological distinctions between (a) input raw materials, (b) processes applied to them, and (c) outcomes generated; the second is to establish procedural templates here in order to save having to reiterate these details later. In other words, this section uses commonplace vernacular archetypes both to model procedure and to obviate the need for revisiting every methodological step applied to the more specialized materials being developed in Chapters 4 through 9.

3.1 Transitional Synthesis

The transitional synthesis model integrates archetypal characteristics of two discrete modes of drum-set vocabulary - time functioning and soloing – in order to generate new hybrid archetypes. By disrupting resolution points of habitual patterning, the procedure synthesizes hybrid archetypes from existing rhythmic language, desegregating “like” and “unlike” elements of vocabulary that otherwise tend to aggregate together and restrict the creative scope of my vocabulary. In its simplest form, the procedure involves an improvisational rhythmic “game” with a binary structure alternating between two sets of cognates, A and B (Figure 3.1).
Even at its most basic level the “game” yields productive outcomes because its “rules” of combination demand rhythmic negotiation - that is, an improvisational act of blending divergent musical ideas to generate compatible adaptations. Working from that syncretistic principle, the content and structure of the process can be modified by feeding new inputs into the mix to suit any number of requirements. For example, the distinct drum-set functions of timekeeping and soloing may be further compartmentalized at the input stage by assigning them specific rates of metrical subdivision, immediately expanding the scope of likely hybrids (as seen in the “Complex Amalgam” [Video 3.3]).

Negotiating transition points between elements ‘A’ and ‘B’ is the key to propagating hybrid archetypes in this synthesis methodology. The abrupt switching between distinct vocabularic modes - formally, then randomly - constitutes an inbuilt constraint that compels the forging of coherent real-time adaptations, and precludes the introduction of any “outside” mediating materials. Solutions to the problem of achieving smooth transition between contrasting ideas are limited by the terms of the “game”, prompting the improviser to evolve workable hybrids from the available options only.

The procedure begins by improvising with elements ‘A’ and ‘B’ in separate blocks of 4 bars. This is repeated in shorter blocks, decreasing from four bar sections, down to two bars, then down to one bar, so that the transition points can recur with increasing frequency. In this way, contrasting modes of function (or rate, or both) begin to overlap and cross-pollinate, coalescing into new instances of hybridized vocabulary. The final stage of hybridization randomly combines input materials over eight bars, yielding a “complex amalgam” of divergent elements. This eight bar ‘A+B’ section is the ultimate focal point of the transitional synthesis methodology because it yields unique process-based hybrid archetypes, from which the most useful specimens may then be selected for further development.
Videos 3.1, 3.2 and 3.3 (below) furnish an operational template of the synthesis process by modeling three basic options for mixing specific rates and functions:

1. Fixed Rate/Mixed Function
2. Fixed Function/Mixed Rate
3. Fixed Function/Mixed Rate (Complex Amalgam)

Each option utilizes the same approach: the integration of specific raw materials via a methodical procedure of controlled cross-pollination designed to yield improvisational hybrids. My primary purpose in presenting these examples is definitional: that is, this section merely outlines a procedural model, rather than instantiating any particular developmental area that might be explored using it. The intention at this stage is to establish concrete steps of a process for synthesizing new specimens of vocabulary from existing rhythmic language.

Accordingly, the input examples chosen are intentionally generic and include elements of contemporary drumming vernacular common to many drummers, and using conventional drum-set vocabulary demonstrates the methodology’s practical utility by distinguishing between inputs, process and outcomes. I reiterate that this distinction is crucial to understanding subsequent Developmental Areas in Part 2, where more complex and abstract input materials serve as my procedural starting point. More complex hybrid outcomes generated there can be properly understood as resulting from the same binary methodological simplicity observable in the following examples.
3.1.1 Fixed Rate, Mixed Function

The first template example mixes time and solo functions at fixed rates of subdivision (Notations 3.1 and 3.2, and Video 3.1). Following the 4-4-2-2-1-1-8 bar form of a sixteenth-note grid, this example alternates between a time functioning backbeat vocabulary derived from linear-layered patterning, and a soloing vocabulary that incorporates linear-layered and hand-foot fragments orchestrated around the drum-set with a mixture of syncopated and cyclic phrasing (see Chapter 2, Sections 1 and 2). These same areas of patterning and phraseology are then reprised over the identical 4-4-2-2-1-1-8 bar form of an eighth-note triplet grid.

Notation 3.1 Mixed Time functioning and Soloing in Sixteenth-Note Rate
Notation 3.2 Mixed Time functioning and Soloing in Eighth-Note Triplet Rate

[Video 3.1 Fixed Rate, Mixed Function]

3.1.2 Fixed Function, Mixed Rate

In the following two examples (Notations 3.3 and 3.4, Video 3.2) the functions (of timekeeping and soloing) remain fixed, while the rates alternate (between subdivisions of sixteenth-note and eighth-note triplet) over the same 4-4-2-2-1-1-8 bar structure.
Notation 3.3 Fixed Time functioning in Mixed Sixteenth-Note and Eighth-Note Triplet Rate

Notation 3.4 Fixed Soloing in Mixed Sixteenth-Note and Eighth-Note Triplet Rate
The above examples all assign elements of generic vocabulary and conventional phraseology as input materials for demonstration purposes, and yet even such relatively impersonal raw materials can already be seen hybridizing (in the final eight bar ‘synthesis’ sections) to yield potential specimens of fresh, signature vocabulary.

Thus far, each example has featured a combination “fixed” and “mixed” elements, enabling a controlled cross-pollination within specific areas of drumset function and vocabulary. Crucially also, this approach has established technical and rhythmic interrelationships between discrete elements of vocabulary prior to the culmination of the process when all inputs are simultaneously combined as a “complex amalgam”. Here fixity is suspended, allowing previously established parameters of function, rate, phraseology and orchestration to overlap experimentally, thereby eliciting uniquely melded prototypes of idiolectal vocabulary.

3.1.3 Complex Amalgam: Mixed Function, Mixed Rate

The skeletal structure of the Complex Amalgam template (Notation 3.5) incorporates all four elements used above (fixed function, fixed rate, mixed function and mixed rate), randomly interchanging them in a 16 bar form, at the same tempo (119 BPM) and in the same “style” (Video 3.3).

Notation 3.5 Complex Amalgam: Skeletal Structure

3.1.4 Selection

The methodologies of Transitional Synthesis and the Iterative Loop Cycle (to follow in Chapter 3, Section 2) primarily work to identify and capture successful instances of
creative improvisation as *specimens* of new rhythmic language to be developed and integrated into my evolving idiolect. On reviewing a recorded improvisation, these sought-after moments often emerge as rare “specks of gold” from amongst predictable restatements of pre-internalized ideas, or “licks”. With these basic data recorded, the next procedural step is to select such a viable *specimen*.

Criteria for selection are listed in Table 5.1. The characteristics are admittedly subjective, in that the ability to verify their presence or absence will almost certainly vary between the different perspectives of *player* (in this case, myself) and *third party listener*. However, as a participant-observer, my selections are also informed by inside information not available to third parties. That is to say, while outside listeners may be in a position to perceive *actual* recorded musical outcomes, they can only speculate or theorize about *intended* outcomes, whereas the improvising performer-researcher has access to both realities and can differentiate accordingly.

Table 3.1: Selection Criteria

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integration</td>
<td>While a given specimen may be “lick”-derived, it should not itself be an irreducible lick but, rather, an integrated hybrid. That is, although any chain of events generating a discrete “specimen” must inevitably combine pre-existing vocabularic fragments, the resulting combination should amount to a discretely integrated coherent utterance.</td>
</tr>
<tr>
<td>Originality</td>
<td>It should be a spontaneous and previously un-played creation - not the mere replication of something already known by rote – and it should reflect my own thinking processes.</td>
</tr>
<tr>
<td>Applicability</td>
<td>It relates conceptually to at least one of the Developmental Areas explored in chapter 5 (Transposing Rhythm, Mixed Rates, Isochronous Asymmetry, Suspended Primary Pulsation, Pulse Streaming).</td>
</tr>
<tr>
<td>Transcribability</td>
<td>a. It should be sufficiently clear to be notated. In metered music, this also entails a self-consistent relationship to some underlying grid of subdivisions.</td>
</tr>
<tr>
<td></td>
<td>Alternately, where the execution of an emerging idea’s first (perhaps experimental) instance is less than optimal then, providing the specimen meets other criteria, it may still be captured, “corrected” and developed.</td>
</tr>
<tr>
<td></td>
<td>N.B. Where the specimen derives from a non-metric or rubato context (as with “Phrase Pulses” or “Densities”, some of which are incompatible with standard music notation) then either arbitrary notational values may be assigned, or non-conventional symbols and diagrams can be used.</td>
</tr>
</tbody>
</table>
From the complex amalgam presented above (Video 3.3), the hybrid specimen selected occurs in bars 7 and 8 of the skeletal form, appearing at the 20:00 second mark on the video. This short excerpt (Notation 3.6) has all the necessary characteristics listed in Table 5.1 as selection criteria.

Notation 3.6 Selected Hybrid Specimen

Once selected, the hybrid specimen may now be further developed through a second methodology, the Iterative Loop Cycle (as outlined in Chapter 3, Section 2). However, as a preliminary step before assigning this (or any) specimen as input material for the Loop Cycle, it must first be replicable. My procedure for replicating a specimen employs two approaches: Serial Amplification and Horizontal Isolation.

3.1.5 Serial Amplification

Serial Amplification (Barker 2015: 29) is an additive method of memorizing patterns, similar to the procedure outlined in the Practicing An Exercise section of Future Sounds (Garibaldi 1990: 19-20). The approach involves replicating small chunks of a given specimen, then progressively lengthening and repeating loops of patterning by adding new chunks to the total pattern, which gradually expands the notation from left to right. Notation 3.7 and Video 3.4 (below) show the progressive steps of serial amplification applied to the selected hybrid specimen from Notation 3.6.
3.1.6 Horizontal Isolation

Horizontal Isolation is a replication procedure I devised for this research to supplement serial amplification at another level of physical co-ordination and compositional awareness. Rather than progressively “amplifying” multi-limb chunks of the specimen, this approach segregates layers of the complete part into ‘‘horizontal’’ combinations of limbs. Isolating the choreography of each hand identifies its discrete (but interlocking) phraseological role within the total pattern. Notation 3.8 and Video 3.4 show separate hand parts of the selected hybrid specimen isolated in relation to the right foot bass-drum part.
3.2 Iterative Loop Cycle

The Iterative Loop Cycle diagram (Figure 3.3) shows stages in a cyclical procedure designed to propagate specimens of original drumming vocabulary that will coalesce in distinct aggregations of rhythmic patterning to be classified and integrated into further improvisations. Extensions to existing vocabulary are generated by feeding input materials through four procedural steps A, B, C and D, transforming them into new archetypes of signature drum-set language. The method also furnishes an account of how improvisational process can change input ‘x’ into outcome ‘y’.

Figure 3.3 Iterative Loop Cycle

[Video 3.4 Hybrid Specimen: Serial Amplification and Horizontal Isolation]
Successful specimens “captured” in a first pass are transcribed, then replicated (Figure 3.4) and recycled. Their reiteration (Figure 3.5) spawns new adaptations that may be further recycled to generate still more variants of the original specimen. Each new variant will thus have stemmed from the replication and modification of its immediate predecessor - which in turn will have had its own antecedent in a preceding pass, and so on back to the very first iteration. Therefore each pass and each step is, in a sense, contiguous with all the others in this generative model. Materials front-loaded at step A determine key parameters (such as meter, tempo, style, function, phraseology, voicing and dynamics) of the specimens captured at step B and then modified over subsequent generations, with new specimens accruing in like categories as “progeny” of the original input.

Figure 3.4 Iterative Loop Cycle: First Pass

3.2.1 Step A: Iteration / Reiteration

A first pass through the cycle begins with the initial iteration of specific input material at step A. The input materials will be specimens of my own improvisations selected from Transitional Synthesis outcomes (or my other recordings in this study). Thus, inputs are ideas that have already been at least partially developed using my existing vocabulary and phraseology (which, together, may be taken to constitute my extant idiolect prior to anticipated augmentation).
It may be noted at this point that commencing a first pass with a specimen of my own drumming is not strictly necessary - it is a preference rather than a methodological prerequisite. The initial conditions at step A do not require any specific material for the model to work, because whatever feeds in at the top of the cycle will inevitably be modified under the influence of my vocabulary and phraseology, which reflect my own improvisational imagination. Thus the characteristics of input ‘x’ are incidental to the model’s observable efficacy in transforming it into outcome ‘y’, and this principle would presumably also apply to other improvisers implementing the same procedures. The focus of this methodology, then, is neither on “inputs” nor “outputs” - as interesting as these may be - but rather the operation of an intervening process impinging upon both.

3.2.2 Step B: Selection

This step involves reviewing the recording of an iteration (from step A) to identify and select useful variant specimens, based on selection criteria differentiating between useful and non-useful material (as outlined in Table 3.1). While an analytical factor applies here – in that sonorities are scrutinized for specific rhythmic (and aesthetic) properties - the task of selecting useful specimens entails evaluation of a recording, rather than analysis of a score. In this sense, subsequent transcriptions of selected material represent musical events already “analyzed”. As pointed out to me by drummer Dave Goodman, my visual scores merely symbolize musical ideas being generated, but are not themselves the materials being analyzed (Goodman 2013).

Furthermore, it should be noted that the selection process is not “global” or open-ended, but takes place within constraints. That is, I am choosing from a limited universe of options and possibilities, bounded not only by the construct portrayed in the previous chapter as a “Spectrum of Constraints”, but also by the impracticability of processing all available information. Rather, my decision making process takes place within what evolutionary biologist Jeffrey Stevens describes as “bounded rationality”. In biological terms, this means that

[n]atural selection as a process does not optimize globally to adapt organisms perfectly to their environments. Instead, natural selection "optimizes under constraints". (Stevens 2008: 287)

The approach adopted in this study parallels Stevens’ idea, in that I focus on viable
hybrid “specimens” emerging from within specific sub-categories of rhythmic language and drum-set vocabulary – not from the total range of “what is possible”, or even “what is available”. Rather, my goal is to cultivate and propagate archetypal adaptations within specific targeted Developmental Areas while drawing on possibilities consistent with the variants, phraseology and constraints outlined in Chapter 2.

3.2.3 Step C: Transcription

Every ‘note’ of a recorded excerpt is scored, including micro-structural elements of rhythmic subdivision, voicing and inner dynamics. Further analysis involves highlighting macrostructures that define the specimen’s phrase architecture. Accurate replication of the selected excerpt (at step D) depends on grasping each discrete ‘note’ as well as the specimen’s overall phraseology. A functional transcription therefore metrically maps individual sonorities while identifying the macrostructural skeleton, and must be accurate at both levels.

3.2.4 Step D: Replication

Prior to the reiteration of any given specimen (by recycling it through a second pass of the loop), this material will have been fully internalized (in step D) at two levels: (1) physical choreography, and (2) audiation, or internal hearing (Gordon 1999, Moses and Mattingly 1984). My procedure for memorizing and replicating captured specimens emulates the additive methods of Serial Amplification (Barker 2015: 29) and “Practicing An Exercise” (Garibaldi 1990), combined with my own Horizontal Isolation of individual limb parts. In Section 1 of this chapter, these procedures were applied to the selected hybrid specimen yielded in a demonstration of the Transitional Synthesis. Having been internalized, that now-replicable specimen may be further developed by passing it through the Iterative Loop Cycle.

The input material initiating a first pass in the sample template demonstration to follow is the 2-bar specimen selected from the Complex Amalgam (bars 7 and 8 - Notation 3.6). Whereas Transitional Synthesis hybridizes archetypes in an experimental process that cultivates synergy between specific sub-categories of vocabulary, the Iterative Loop Cycle is primarily a method for refining or augmenting specific instances of rhythmic language, and while it readily functions as a stand-alone methodology for transforming any kind of input material regardless of origin,
developing a specimen already yielded through Transitional Synthesis also helps establish complementarity between the two methodological templates.

3.2.5 Iteration

In Notation 3.9 and Video 3.5 below, my specimen selected from the complex amalgam is first replicated identically four times. This is followed immediately by six improvised variants that maintain the original’s groove and style. Variant outputs adhere closely to the phrase structure and orchestration of the input, the intention being to propagate coherent archetypal extensions of a specific instance of existing vocabulary, rather than experimentally cross-pollinate contrasting functions and rhythms in search of a viable specimen (as with Transitional Synthesis).

Notation 3.9 Iteration: Input with Variants

[Video 3.5 Iteration: Input with Variants]
3.2.6 Selection
Any of the six variants could have worked, in that they met my criteria of integration, originality, applicability and transcribability (Table 3.1), thus also aligning with the concept of “bounded rationality” (Stevens 2008: 290). However, variant 4 was preferred over numbers 1 and 2 (which adhered closely to the original) and number 6 (which diverged too sharply). Of the others, 4 seemed the most elegant recombination of the original specimen’s elements.

3.2.7 Transcription
The notation below details specific notes (bottom staff) and phraseological macrostructure of variant number 4 in skeleton form (top staff).

Notation 3.10 Variant 4 Transcription

![Notation 3.10 Variant 4 Transcription](image)

3.2.8 Replication
As with the previous example, I learned to replicate the target specimen using “serial amplification” and “horizontal isolation”. These procedures are documented below in Notation 3.11, 3.12 and Video 3.6.
Notation 3.11 Variant 4 Serial Amplification

Notation 3.12 Variant 4 Horizontal Isolation

[Video 3.6 Variant 4 Serial Amplification and Horizontal Isolation]
PART TWO
Developmental Areas

Chapters 4, 5, 6, 7, 8 and 9 of this thesis detail polyrhythmic areas of idiolectal development investigated during the project, with Chapter 10 outlining a personal pedagogical methodology that has emerged directly from the study as an important heuristic avenue of future research. The chapter order of the 6 Developmental Areas broadly corresponds with the Spectrum of Constraints (Chapter 2, section 3), working in reverse from the “freest” (Suspended Primary Pulsation and Densities) to the most “rigid” (Mixed Rates) modes of improvisation. Each of the 6 areas draws upon Iterative Loop Cycle and Transitional Synthesis procedures to generate improvised idiolectal outcomes emerging as new archetypal models and infrastructural templates for future development.
Chapter 4 - Suspended Primary Pulsation

Primary pulsation articulates isochronous timekeeping components of rhythmic patterning, audibly conveying tactus to the listener as construed by the player. This function includes backbeats (in funk) and quarter-note cymbal pulse (in jazz). In the 1960s, jazz drumming underwent evolutionary deconstruction as the traditional ride-cymbal beat and accompanying syncopated snare-drum “comping” rhythms merged into an improvisational rhythmic line distributed between all four limbs described as “broken time” (Riley and Thress 1997). During the same period, the scope for exploring more interactive accompaniment strategies was also expanding. Jack DeJohnette, whose drumming integrates broken and interactive approaches, affirms conceiving the cymbal pulse as a conversational series of rhythmic patterning rather than the traditional static jazz beat, citing his preference for doing rhythms on their own, like an integrated dance between the ride cymbal and hi-hat… [with] dialogues going between the snare drum and the bass drum, or with the cymbal. I'll bounce phrases around the different components of the set. (Mattingly 1989: 20)

DeJohnette also describes dialoguing simultaneously both with his own improvisational drum-set ideas as well as with those of the soloist:

If you took away everything else and just listened to what I was playing, you'd hear a complete composition. There is a dialogue going on between my different personalities – my hands, my feet, and so forth – and then I'm also responding and reacting to the creative input of the people I'm playing with. (Mattingly 1989: 20-21)

The suspension of primary pulsation explored in this chapter further deconstructs this approach by masking audible points of reference that would otherwise metrically contextualise each rhythmic statement. The following recorded examples illustrate a process of dismantling broken-time multi-dialogues that rescinds the drummer’s default role of “timekeeper”, along with the conventional requirement to demarcate tactus, thereby changing the figure/ground relation between rhythm and pulsation by removing the “ground” of pulse while retaining the “figure” of rhythm. Figure/ground relations proposed by gestalt theorists deal with “the characteristic organization of perception into a figure that ‘stands out’ against an undifferentiated background” (Bullock et al. 1977, quoted in Tsur 2009: 238). The phenomenon has been previously
identified in relation to (primarily tonal) music (Tsur 2009, Tagg 1982, Tagg 1994), and my purpose here is to isolate the “figural” components of my polyrhythmic improvisation from their metrical “ground” in pulsation. This promotes the contours of my comping phraseology – including accentual displacements, durational contrasts and the micro-timed nuances Iyer calls “deviations from invariance” (Iyer 2002) – that seem most evocative of non-metrical “free” improvisation. The goal, in essence, is to synthesize what Clayton calls “free rhythm” (Clayton 1996) and create a “virtual rubato”.

Camouflaging the “ground” of primary pulsation – being the reference point from which metrical values of various “figures” can be extrapolated relative to an audible temporal grid – tends to thwart our perception of rhythmic hierarchy. As Brower notes, “when we change the temporal dimensions of a durational pattern, we may also change the listener's interpretation of that pattern” (Brower 1993: 21). Thus it becomes difficult to discern rhythmic hierarchy, or even postulate isochrony – in short, to “know where the time is” - when timekeeping sonorities are suppressed to isolate polyrhythmic comping materials. The resulting facsimile of “free” rhythm is, however, a deception concealing an underlying framework of meter and subdivision, albeit one inwardly understood rather than outwardly sounded.

Despite intentional resemblances to the temporal indeterminacy of free rhythm, these apparently randomized concatenations of improvised surface patterning are, in fact, metrically intended figures with mathematical relationships to a gridded infrastructure. Aligned with the perspective that conceives grid and beat as “non-sounding structural concepts...understood as perceptually salient and mutually interacting” (Benadon 2009: 136), the improvisations presented here aim to synthesize Benadon’s “ungridded rhythm” from specific fixed structures: what Lerdhal and Jackendoff describe as grouping structure – “the listener’s segmentation of the music into units of various sizes” – and metrical structure – “the hierarchy of beats he attributes to the music” (Lerdhal and Jackendoff 1983: 231). This synthesis is an abstraction of the multiple-dialogue broken-time approach that suspends primary pulsation without contravening the aforementioned structural imperatives, and does so in such a way that “certain apparently ill-formed phenomena (such as grouping overlap and elision) can [still] be treated as well-formed” (Lerdhal and Jackendoff 1983: 231).
A spontaneous live duet with pianist Hugh Barrett yielded the two examples presented here as *Steady State* Excerpt 1 and *Steady State* Excerpt 2. While sharing similarities, the excerpts have distinct emphases. Excerpt 1 utilizes space, time-shifts, elision and overlapping to mask isochrony and create the illusion of ungridded non-metrical rhythm. By contrast, Excerpt 2 develops those properties using a more percussive approach (playing with sticks instead of brushes) to articulate fine-grained subdivisional densities, re-dispersing broken-time vocabulary and multi-dialogue figures via a mixture of tuplet rates and modulation ratios. In both cases, primary pulsation is either omitted or rendered ambiguous by means of metric recalibrations, polyrhythmic camouflage and the promotion of what would ordinarily constitute background comping materials to the foreground.

My conception also borrows Michael Carvin’s characterizations of timekeeping as *solid*, and comping as *liquid*. He advocates integration of these elements in order to retain “something floating and something solid – instead of having all solid…or all liquid” (Monson 2009: 55). In these terms, my synthetic free rhythm consists of audible *liquid* “figures”, apparently detached from any “ground” in isochronous pulsation, but which are in fact calibrated to an infrastructure of (inaudible) *solids* – that is, a temporal framework maintaining the internal cohesion between *tactus* and subdivisional hierarchy that metrically gridded timekeeping would normally make explicit.

4.1 “*Steady State*” Excerpt 1: Space, Displacement, Elision and Overlap

This duet improvisation was recorded live in one pass to a click track at 96 BPM. Improvising with the click track in this way has a threefold research purpose: first, it helps ensure all figures are performed with specific rhythmic values and calibrated to a fixed time grid; second, it enables the subsequent verification of a concrete metrical framework underpinning ambiguous surface rhythms; third, reviewing the recording along with the click track and transcription serves to confirm *entrainment* - that is, engaging “attentional paths which facilitate a process of matching our temporal expectations with the onset of events in a perceived environment” (Saull 2014: x). “Listening in” to a composite click-plus-music headphone mix (included in the videos) allows others to entrain from the player’s perspective, with the click track revealing what would otherwise be withheld and obscured: the relationship of primary pulsation to rhythmic figures within a gridded temporal hierarchy.
Excerpt 1 documents the opening 50 seconds of the full *Steady State* take and the excerpt is offered twice in Video 4.1: firstly, in its original captured form (without accompanying information to help identify tempo, meter or rhythmic values) – then, secondly, in an annotated version (with click track and on-screen notation) that reveals the specific metrical interrelationship between surface sonorities and the underlying temporal infrastructure.

[Video 4.1 “Steady State” Excerpt 1]

While the click tempo throughout is 96 BPM, the entire take also maintains a parallel orientation to an underlying half-time feeling characteristic of slow jazz ballads (at 48 BPM). The example below (Notation 4.1) from bars 1 to 4 shows primary masking devices of space, displacement, elision and overlap typical of Excerpt 1.

Notation 4.1 Space, Displacement, Elision and Overlap

The term “space” refers here to a combination of long, ringing cymbal tones and related spacings between drum phrases, as marked in bars 1 and 2. All four bars combine syncopation and time shift displacement as, for example, with the snare-drum phrase that begins on beat 3 of bar 1 and ends at beat 4 of bar 2. This phrase exploits two ways of displacing a twelfth-note rhythm by twenty-fourth-note increments. The resulting figures are analogous to a sixteenth-note triplet (or, double-time) rendering of the classic three-note jazz cymbal rhythm: {{}}/. This configuration occurs three times in displaced form, firstly as: {{}} (bar 1, beat 3), and subsequently as: {{}} (bar 2, beats 1 and 3). I would also count similar figures – such as: {{}} (bar 2, beat 2) and: {{}} (bar 3, beat 1) – as fragments of twenty-fourth-note syncopation
within a grouping of three twelfth-note subdivisions, each instance of which can also be conceived here as the equivalent of one bar of 3/8 time at 288 BPM.

The cyclic phrasing element is implied in bar 3 by a series of figures intended to echo hit points within an asymmetrically stretched 8:6 hemiola figure conceived as beginning on beat 4 of bar 2 and carrying over the bar line to the third beat of bar 3 (Notation 4.2).

Notation 4.2 Asymmetrically Stretched 8:6 Hemiola Figure

Overlap and elision also allow the 5:4 pulse implied by the broken sixteenth-note quintuplet figure (on beat 1 of bar 4) to be temporarily suspended by an intervening variant figure on beat 2, and then resumed on beats 3 and 4. These combined strategies for camouflaging primary pulsation were similarly deployed throughout Excerpt 1 (Video 4.1 and Notation 4.3) and throughout the complete take, with other tuplets and modulations gradually introduced as the interactive multi-dialogue developed.
4.2 “Steady State” Excerpts 2(a) and 2(b): Mixed Rates and Modulation

Excerpt 2(a) (Video 4.2 and Notation 4.4) documents 24 bars of drum-set accompaniment to the conclusion of a piano improvisation begun in Excerpt 1. In this section, rhythmic figures on the drum-set assume more identifiable relationships to a metrical-temporal framework. However, while tempo and meter can be deduced (or at least inferred) from structural markers implicit in the piano phrasing, drum-set modulations and rate shifts continually mask isochrony by obscuring the primary pulse (which, inaudibly, is being automated by the click at 96 BPM).

[Video 4.2 “Steady State” Excerpt 2(A)]
Here, deconstructed broken-time multi-dialoging is deployed using more percussively articulated rhythms than in Excerpt 1 – a contrast accentuated by the change from brushes to sticks. Groupings in bars 1 to 14 and 22 to 24 are scored here as tuplets, however, during the performance these were temporary modulations, effectively played as changing tempos and meters relative to the 96 BPM 4/4 quarter-note click track. The improvised “scrambling” of tempos and tuplet rates recalibrates broken-time vocabulary via ratios of 3:2, 5:4 and 7:4 by interposing eighth-notes and
sixteenth-notes with triplet, quintuplet and septuplet subdivisions of the primary pulse. It is partly this mixture of tempos, groupings and subdivisions - an example of which appears in bars 9 to 12 (Notation 4.5) - that camouflages the underlying temporal grid, even though discrete broken-time archetypes being fed into the shifting framework would otherwise constitute relatively conventional jazz drumming vocabulary.

Notation 4.5 Camouflage via Modulation and Subdivision

4.3 Distribution

Figures 4.1 and 4.2 identify distribution patterns and metronome markings for modulation-based tempo shifts in 19 out of the 24 bars in Excerpt 2(a), along with instances of other single beat subdivisions totaling 36 out of 96 quarter-note pulsations, and the percentages of available metric time they occupy.
<table>
<thead>
<tr>
<th>Modulation Ratio</th>
<th>Tempo</th>
<th>Bar numbers</th>
<th>Subdivision</th>
<th>Beats</th>
<th>% of total beats</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:2</td>
<td>144 BPM</td>
<td>1</td>
<td>Triplet</td>
<td>12</td>
<td>12.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Quadruplet</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>Triplet, Quadruplet</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>Duplet, Quadruplet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5:4</td>
<td>240 BPM</td>
<td>5</td>
<td>Duplet</td>
<td>20</td>
<td>20.8%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
<td>Duplet</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>22</td>
<td>Duplet</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>23</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>24</td>
<td>Duplet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7:4</td>
<td>336 BPM</td>
<td>3</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>Duplet</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
<td>Duplet</td>
<td>28</td>
<td>29.1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11</td>
<td>Duplet</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>12</td>
<td>Duplet</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>13</td>
<td>Duplet</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>14</td>
<td>Duplet</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
As these figures show, 85.5% of drum-set rhythms in *Steady State* Excerpt 2(a) are based on quintuplets, septuplets or modulation ratios of 3:2, 5:4 and 7:4, whereas conventional subdivisions of the quarter-note primary pulse (such as eighth-note triplets, sixteenth-notes and thirty-second-notes) account for only 14.5% of the total.

*Steady State* Excerpt 2(b) continues directly on from bar 24 of Excerpt 2(a), and amounts to a kind of “drum solo” with piano accompaniment. Initially (in bars 25 to 32), manipulations of displaced time-shift phrasing are applied to widely dispersed figures and individual notes at a low dynamic level – an approach that contrasts with more conventional, rhythmically dense, high energy drum solos. The passage also decelerates prior velocities by magnifying the rhythmic values of tuplet-based figures (in bars 36, 41 and 42) to conclude the piece with a durationally expanded reprise of elements established in Excerpt 2(a).

[Video 4.3 “Steady State” Excerpt 2(B)]

<table>
<thead>
<tr>
<th>Subdivision of primary pulse</th>
<th>Bar Numbers</th>
<th>Instances</th>
<th>% of Total Beats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triplet</td>
<td>15, 16, 17, 18</td>
<td>8</td>
<td>8.3%</td>
</tr>
<tr>
<td>Quadruplet / Octuplet</td>
<td>4, 8, 9</td>
<td>6</td>
<td>6.2%</td>
</tr>
<tr>
<td>Quintuplet</td>
<td>15, 16, 18, 19, 20, 21</td>
<td>19</td>
<td>19.7%</td>
</tr>
<tr>
<td>Septuplet</td>
<td>12, 15</td>
<td>3</td>
<td>3.1%</td>
</tr>
</tbody>
</table>
Notation 4.6 “Steady State” Excerpt 2(b): Drum Solo
4.4 Specimens

Two analysis samples from *Steady State* Excerpt 1 (bars 1 to 4) and Excerpt 2[a] (bars 9 to 12) - as per the originals shown below in Video 4.4 - were combined to form an 8 bar composite specimen (Notation 4.7).

[Video 4.4 “Steady State” Original Specimens]

Notation 4.7 “Steady State” Excerpt 1, Bars 1 to 4; Excerpt 2(a), Bars 9 to 12

In the original, bars 1 to 4 were played on brushes and bars 9 to 12 with sticks. In the Video 4.5, this composite material is replicated using sticks throughout.

[Video 4.5 “Steady State” Specimens Replicated]

After internalizing and replicating this composite specimen I continued the Loop Cycle improvisation procedure, capturing new ways to orchestrate the 8 bar rhythmic skeleton (Notation 4.8) of the composite specimen.
Notation 4.8 “Steady State” Specimen Composite Skeleton

Video 4.6 and Notation 4.9 capture two consecutive iterations of this skeleton, each pass employing drum-set orchestration and timbral characteristics consistent with the original improvisation to yield archetype variants based on Steady State Excerpts 1 and 2(a).

[Video 4.6 “Steady State” Specimens – Skeleton Improvisation]
This chapter has served to reveal how suspending the temporal reference sonorities of primary pulsation in an interactive polyrhythmic improvisation can bring to the foreground elements of archetypal phrasing in my idiolect to create a *virtual* jazz rubato.

In the following chapter, metrical and non-metrical interpretations of an identical piece will clarify the idiolectal contrasts and commonalities between mathematically calibrated rhythmic values and *actual* rubato, using gridded and ungridded “densities”.
Chapter 5 - Densities

*Densities* comprise tightly packed groupings of notes (or “rolls”) functioning as “long tones” with durations and temporal properties conceived here as being either *gridded* or *ungridded*. “Gridded densities” are hierarchically subdivided rhythms quantised within a fixed metric infrastructure – what Benadon calls “[t]he vertical juliennning of horizontal time [that] calls to mind a grid in which the smallest unit assembles rhythm and meter from the bottom up” (Benadon 2009: 136). Most of my drumming idiolect is formed within this paradigm, Western music being – as Clayton points out – “almost entirely metred - art music, rock, pop, jazz and other musical genres equally so” (Clayton 1996: 323). By contrast, “ungridded densities” are rolls comprising non-hierarchical subdivisions. These sonic events are manifestations of both “free” rhythm - a context Clayton defines as “the rhythm of music without pulse-based periodic organization” (Clayton 1996: 329) – and of an “organic drumming” (Moses and Mattingly 1984: 44) derived from embodied (rather than mathematical) understandings of the relation between form and duration, in which “two seeming opposites” – namely, “the fixed foundation of a regular beat and the fluidity of microrhythmic variation” - are conflated (Benadon 2009: 136).

The following drum-set improvisations – which interpret and embellish an identical pre-recorded bass line using firstly *gridded*, and then *ungridded* densities – are outcomes of a layered procedure. Although “densities” themselves can be generated any number ways apart from the specific series of procedural steps used in this case, I outline my process here to establish an evolutionary connection between the phraseology of source materials and outcomes.

The bass line (improvised by Brendan Clarke) was initially generated as an overdubbed accompaniment to the *Steady State* improvisation (analysed in the preceding section), and was performed without click track. That is, in his bass performance Clarke is responding exclusively to the (metrically ambiguous) sonorities of *Steady State*, without perceiving them in relation to the underlying click that served as a temporal point of reference for the original improvisation. Once captured, this bass track – with rhythmic surface contours reflecting the *virtual* rubato manufactured in the original performance - was subsequently treated as a separate
entity from the source material, serving instead as a phraseological template for the development of new *gridded* and *ungridded* drum-set densities.

The two videos presented here represent the “stacking” of drum-set improvisations on top of a pre-recorded bass improvisation, which itself has been “stacked” on top of a drum and piano duet – a four stage procedure depicted in Figure 5.1 and outlined as follows: (1) the *Steady State* improvisation generates a simulation of Benadon’s “jazz rubato” (Benadon 2009: 136) through suspended pulse improvisation to a click track at 96 BPM; (2) an improvised bass overdub responds to the drums and piano *only*, with no click track audible; (3) a *gridded* drum-set improvisation is then overdubbed to an excerpt of the captured bass improvisation *with* click track (at 128 BPM); and (4) a non-metric improvisation is synchronised with the phrase pulse of the same bass improvisation.

Figure 5.1 “Gridded Densities” and “Ungridded Densities” Recording Procedure

In order to transcribe the bass part in a format that would allow for a *gridded* (metrical) interpretation, I assigned a relative tempo of 128 BPM (this being a 4:3 extrapolation of the original 96 BPM). Rhythmic placements were then quantised to the nearest rational subdivision of the new quarter-note pulse, resolving to 20 bars of 4/4 time (Notation 5.1).
5.1 Gridded Densities

For the *Gridded Densities* drum-set improvisation (Video 5.1) I used the above bass transcription as a “score”. Conversely, my temporal framework for *Ungridded Densities* (Video 5.2) – being non-metric – relied on the perception of “psychological” rather than “conceptual” time” (Grisey 1987), so that relative durational values of bass notes were mapped in relation to the 40 second total time duration of the excerpt. Thus, the bass notation for *Ungridded Densities* renders identical melodic information in a non-metrical form, with arbitrary rhythmic values approximating short, medium and long note durations (Notation 5.2).

In both improvisations overdubbed onto this bass performance, the drumming aesthetic appears outwardly similar, in terms of my “filling out” bass note durations
with density “rolls” based on a linear sticking system of single and double strokes (see Chapter 2, Section 1 and Chaffee 1976: 34-58). Internally however, as will be shown, these figurations derive from fundamentally different premises of temporal organisation. To make this distinction, we must first examine densities in gridded format as shown below (Video 5.1, Notations 5.3 and 5.4).

[Video 5.1 “Gridded Densities”]

Notation 5.3 “Gridded Densities” Transcription (Bars 1 to 10)
Notation 5.4 “Gridded Densities” Transcription (Bars 11 to 20)

In the above transcription and the excerpts that follow, onset and end points of densities on the top staff are indicated by dotted lines marking their correspondence with bass rhythms and phrases on the bottom staff.
5.2 Loop Cycle in Action

The improvisations here use Loop Cycle methodology to generate multiple, consecutive recorded takes. Recording sessions captured several 15 to 20 minute preliminary passes, each including multiple reiterations of the source material, during which replicable fragments of archetypal vocabulary that would ultimately emerge in the master takes were initially elicited, refined and memorised as specimens for re-development. In the specific case of “densities”, a cyclic procedure of repetition, analysis and reflection evolved alternative ways to view metrically quantifiable drum rolls whereby these “finite” rhythms could become the pathway to a further pass of the Loop Cycle for processing un-gridded density configurations of indeterminate metric duration. Thus we see improvised gridded densities – whose durations are constrained by specific phraseology within a fixed temporal infrastructure - morphing from legato “fills” (Notations 5.5, 5.7, 5.9 and 5.11) into discrete “rolls” (Notations 5.6, 5.8, 5.10 and 5.12). These archetypes constitute a preliminary step towards “embodied” reiteration (through re-orchestration of expanded and contracted sticking cells) as un-gridded surface rhythms (Notations 5.14 to 5.19) within the “psychological time” of phrase-pulse.

There are four gridded densities of relatively long duration in Video 5.1. The first of these (Notation 5.5) stretches over 4 beats between the third triplet partial of beat 2 in bar 3 (F in the bass) and the second note (D on beat 3) of the bass triplet run beginning midway through bar 4.

Notation 5.5 “Gridded Densities” Transcription (Bars 3 and 4)

This figure amounts to a 18-stroke roll comprising cymbal and snare-drum accents linked by unaccented legato double strokes distributed between snare-drum and tom toms (in a quintuplet rate that also preserves the figure’s “long tone” function by mitigating the “metered-ness” that gridded rhythms tend to evoke). The discrete archetype in Notation 5.5 can then be “captured” as a replicable specimen (Notation 5.6).
The second density (Notation 5.7) stretches over 8 beats in bars 5 and 6, beginning on beat 2 of bar 5 (C in the bass). This example also consists of legato single and double strokes dispersed around the kit in sixteenth-note triplet and quintuplet rate, with displaced accent phrasing resolving to beat 1 of bar 7 as a “set-up” to resynchronise with the bass note (A) on the “+” of beat 1.

It should also be noted that textural characteristics connected with the sustain of the cymbal and resonant tuning of the drums combine here with dynamic sticking articulations to magnify the legato continuity of fine scale subdivisions and enhance the overall sense of unbroken duration in these “rolls”. The following 35-stroke density (Notation 5.8) – a sequence linking 5, 7, 9 and 12-stroke roll figures – can be isolated:
The third example (Notation 5.9) is the least “dense” and most explicitly metrical of the four gridded specimens. It stretches over 6 beats, from the bass note (E) on beat 3 of bar 12 to the C at end of bar 13, subdivided in groups of 3 triplets over 2 beats and using legato stickings to articulate accented jazz waltz phrasing.

Notation 5.9 “Gridded Densities” Transcription (Bars 12 and 13)

This jazz waltz figure translates to the following 27-stroke phrase (Notation 5.10), grouped 6, 6, 6, 5, 4:

Notation 5.10 27-Stroke Replicable Specimen

Lastly, Notation 5.11 shows sixteenth-note quintuplet and sextuplet rolls filling the space between cymbal / bass-drum accents to mark the A#/Eb bass note in bar 16, the Ab/Eb in bar 17 and the A at the end of bar 18, again employing legato compound linear stickings throughout.

Notation 5.11 “Gridded Densities” Transcription (Bars 16 to 18)

The above excerpt translates to the following 12-stroke and 24-stroke isolated densities (Notation 5.12):
5.3 Ungridded Densities

Because ungridded densities have no fixed temporal relationships within Grisey’s “conceptual time” (Grisey 1987), their durations do not conform to hierarchical rhythmic infrastructures. Points of synchrony between drums and bass occur here within “phrase pulses” of indeterminate periodicity - not in relation isochronous metric “beats”. Ungridded thinking therefore involves a different kind of entrainment – one contrary to a literalist reading of Honing’s dictum: “Without [beat induction], no music” (Honing 2012).

The phrase-pulse concept for “ungriddedness” aligns partly with DeJohnnette’s idea of “washing machine time” (Riley and Thress 1997: 21)– where clothes form random patterns within the regular rotation of a laundromat barrel – and with Bob Moses’ “organic” approach to movement, whereby rhythm is “influenced more by an organic motion of nature.”

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Basically, music is movement. Every piece of music moves from point A to point B, whether it is a totally spontaneous improvisation or a completely written classical piece. You don't have to move from point A to point B in measured steps, such as quarter notes, 8\(^{th}\) notes, etc. However, you can hold these measured steps in your mind and use them as a framework, while your playing is organic, like real life. Very little in real life is metronomically even... (Moses and Mattingly 1984: 44)

The improvisation that follows (Video 5.2) can be thought of as the movement of “organic” phrase pulses unfolding within “psychological” time.

[Video 5.2 “Ungridded Densities”]
In the earlier gridded improvisation (Video 5.1), densities function as “fills” sandwiched between points of phrase resolution with bass note durations that conform to a finite hierarchy of beats and subdivisions within an isochronous metrical framework. By contrast, the surface rhythms of ungridded drumming are organised in relation to non-metrical phrasing. Absent the constraints of a fixed “grid”, the onset and duration of “densities” are resolved in relation to bass figures construed as phrase-pulse archetypes, rather than as rhythms with rational metric values. As Grisey points out,

[w]ithout a reference pulse we are no longer talking of rhythm but of durations. Each duration is perceived quantitatively by its relationship to preceding and successive durations. (Grisey 1987: 240)

For this reason, ungridded drum “rolls” can occupy long durations without generating undue metric dissonance, because they are bound neither by the “non-sounding structural concepts” of grid and beat (Benadon 2009: 136), nor by the kinds of conventional “time” and “comping” functions that depend on interpreting musical movement in relation to Moses’ “measured steps”. For example, in Notation 5.14 we
see a continuous density idea spanning 5 seconds from 0:04 to 0:09, playing right through the C, D, E, F, G, A, F, G bass run that starts at 0:04:

Notation 5.14 “Ungridded Densities” Transcription (0:02 to 0:09)

The 64 equidistant strokes comprising the passage from 0:04 to 0:09 contrast with the gridded approach adopted at the same point in Video 5.1 (in which the drums double the eight note bass run in bar 4 and 5 then play rhythmically accented rolls up to the A in bar 7). In the ungridded version, consecutive 28-stroke and 36-stroke densities - at 0:04 (with C in the bass) and 0:06 (with B in the bass) respectively – amount to one unbroken duration. Notation 5.15 (below) depicts the five second density from 0:04 to 0:09 as two discrete, replicable phrases: a 28-stroke roll (grouped 5, 7, 10, 6) and a 36-stroke roll (grouped 6, 5, 6, 6, 8, 5).

Notation 5.15 28-Stroke and 36-Stroke Replicable Specimens

Similar densities traverse bass lines throughout the rest of the piece, punctuating unison accents at 0:25, 0:27, 0:29, 0:32 and 0:33, and occasionally contrasting long-tone durations with unison or near-unison references to structural pivot points such as 0:19 and 0:22. The following excerpts show the phrases from 0:09 to 0:19 (Notation 5.16) and from 0:25 to 0:33 (Notation 5.18) with replicable density “specimens” (Notations 5.17 and 5.19).

Notation 5.16 “Ungridded Densities” Transcription (0:09 to 0:19)
This passage yielded a seven second density from 0:12 to 0:19 in three phrases: a 20-stroke roll (grouped 6, 4, 4, 4, 2), a 34-stroke roll (grouped 4, 4, 4, 4, 4, 1, 2, 3, 4, 4), and a 33-stroke roll (grouped 5, 5, 5, 4, 4, 4, 1) (Notation 5.17).

Notation 5.17 20-Stroke, 34-Stroke and 33-Stroke Replicable Specimens

Notation 5.18 “Ungridded Densities” Transcription (0:25 to 0:33)

The above passage (Notation 5.18) yielded an eight second density from 0:25 to 0:33 in four phrases: a 22-stroke roll (grouped 5, 8, 9), a 17-stroke roll (grouped 5, 5, 7), a 25-stroke roll (grouped 5, 5, 4, 4, 4, 3) and a 14-stroke roll (grouped 5, 5, 3, 1) (Notation 5.19).

Notation 5.19 22-Stroke, 17-Stroke, 25-Stroke and 14-Stroke Replicable Specimens

The attempt to elicit and develop idiolectal “densities” in both metric and non-metrical settings illuminates a distinction between two modes of entrainment – one constrained by hierarchic infrastructure, the other negotiated in relation to interactively generated phrase pulse and surface rhythms of indeterminate periodicity. Both modes of pulsation are manifestations of time measurement, which seems to me an indispensable premise of musical organisation, regardless of how fragmentary or negotiable a framework is employed. Clayton likewise expresses “doubt as to how
much music (if any) is completely free of pulsation, even if this pulsation is often indistinct or discontinuous”.

The boundary between metre and periodicity, on the one hand, and free rhythm on the other, may be somewhat indistinct, but the boundary between pulsed and unpulsed music appears even more uncertain. So strong is the urge to perceive pulse in music (and, perhaps, to generate a pulse in performance), that there may be very little music which at no point suggests pulsation. (Clayton 1996: 329)

Part of cultivating the polyrhythmic idiolect involves reconciling my habituation to the timekeeper function – a default that can tend to “box” every idea into a gridded framework – with my desire to form personalized statements outside the constraints of gridded-ness. In this sense, the experimental development of “free” non-metrical archetypes as outlined in this chapter seems crucial to the temporal symbiosis that obtains between these two modes of rhythm entrainment.
Chapter 6 – Pulse Streaming

The musical idiolect under scrutiny in this study primarily comprises a vocabulary of archetypes organised around isochronal pulsation. In other words, pulse is central to my language and most of my musical ideas are based on, or shaped by, the function of regular metrical timekeeping, customarily considered to be “the drummer’s job” on most professional engagements of my experience.

The improvisations in this section explore how interaction between “pulse streams” (Barker 2015, Roeder 1994, Roeder 2001) - or “pulse trains” (Lehman 2012) or “spacings” (Harrison 1996) can be used to organise improvisational drum-set language, incorporating my own personalised formulation of the approach described by Vinnie Colaiuta as “superimposed metric modulation” (Colaiuta 1987) and by Gavin Harrison as “overriding” (Harrison 2006).

Roeder defines pulse as “a series of successive, perceptibly equal timespans, marked off by accented timepoints” requiring at least two equal time spans to activate its continuity, in which “the greater the number of successive equal timespans, the better established” it is (Roeder 1994: 234). This also aptly describes what takes place on the bandstand after a tempo is set and a tune is counted off: the “groove” immediately begins to coalesce around the periodicity of steady, synchronous pulsations, its temporal regularity further stabilizing the longer it is maintained. Part of the drummer’s role in groove-based music involves maintaining this function. However, the inherently polyrhythmic phraseology of Afro-American and Afro-Hispanic music traditions has evolved drum-set “timekeeping” vocabularies that are not one-dimensional. That is, syncopation, beat displacement and beat cycles are integrated with primary pulse in what Mike Longo calls “universal rhythm” (Longo 2011). Rhythmic polyphony deriving from this confluence of structures has also been theorised in Western Art Music terms, as the result of two or more concurrent "pulse streams" created by regularly recurring accents. These pulse streams are considered to be distinct continuities, not "levels" or groupings of each other…[their analysis] involves parsing a texture into pulse streams then interpreting the relations of synchrony that obtain among them… These competing pulses are simultaneously active, and extra metrical accent accrues to the timepoints at which their attacks coincide. (Roeder 1994: 232-234)
In Roeder’s schema, the “musical events occupying those timespans” share characteristics such as pitch, duration, (or “membership in the same series of durations”), timbre, and similarly durational accenting” (Roeder 1994: 234). Much of this theory can be applied to the drum-set by virtue of the four limbs involved and their ability to combine multiple interacting pulses and sonorities. However, the same physical factors that make pulse streaming theoretically transferable from the realm of composition to that of drum-set improvisation also impose inherent limits upon the improvising performer that need not necessarily concern the composer, since these relate to an individual drummer’s level of coordinated inter-dependence. Accordingly, the outcomes presented in this chapter constitute a “snapshot” revealing my vocabulary of drum-set archetypes being adapted to the theoretical interaction of pulse streams within the limits of what I am currently able to execute.

6.1 “When He Goes, We All Go”

In this improvisation (Video 6.1) the bass and piano are playing in 4/4 at a tempo of approximately 170 beats per minute (with no click track) while the drums are playing in a ratio of 5:4 to the original tempo - that is, in 5/4 at approximately 212 BPM – thereby forming a concurrent pulse streaming relationship between the drums and the other two members of the trio.

Notation 6.1 shows how the underlying 4 and 5 beat metric constructs interlock, representing the mental framework that allowed me to reorganise my rhythmic interactions with the group. Adapting the customary “time-and-comping” formula to this ratio-related concurrence between two tempos helped elicit - from an otherwise conventional post-bop drum-set vocabulary - a more personalised sense of cross-rhythmic propulsion and a different perspective on phrase resolution. I have overdubbed a guide vocal count onto the first part of the video in order for listeners to clearly perceive the original quarter note tempo (which is felt as two half-note pulses per bar, so that the “1,2,3,4” count spans two bars while each half-note aligns with the “and” of beat 3 in 5/4).
6.2 “Fried Chicken Modulation”

Where the previous example documented a parallel interplay of concurrent pulse streaming between drum-set and ensemble, the following example examines what might be called intra-play of pulse streams occurring between one drummer’s limbs. Concurrent pulse streaming is built into the structure of Sean Wayland’s *Fried Chicken Modulation* in the form of interlocking rhythmic cycles that combine loops of 3 with 5, and 3 with 7. The instances selected for this study are scored in Notations 6.2 and 6.3, each of which represents one complete rhythmic-harmonic cycle of 3-over-5 and 3-over-7 pulse-streaming respectively.

Notation 6.2 “Fried Chicken Modulation”: Three and Five (Melody/Bass Lines)
These two sections of the composition explicitly portray fundamental cross-rhythmic relationships, and to interpret them on the drum-set I began by programming each stream combination as a recurring loop in duplet rhythm format - that is, in 4/4 time with primary pulsation structures grouped in multiples of two subdivisions, integrated with conventional backbeats. These cycles were looped until they resolved to a downbeat: over a 7-bar 30-beat framework (of 4,4,4,4, 4,4,6) for the 3 over 5 streaming, and over a 10-bar 42-beat framework (of 4,4,4,4, 4,4,4,4, 4,6) for the 3 over 7 streaming. Next, each discrete stream was assigned to a different sound source on the drum-set. Both “3” streams were assigned to the cowbell, with the respective “5” and “7” streams on bass-drum.

Notation 6.4 and Notation 6.5 map these skeleton parts in conjunction with snare-drum backbeats on every second quarter note, which serve to delineate the underlying primary pulsation and two-beat groupings of the metric form. Accents mark the intervals of 15 and 21 subdivisions respectively, these being points of internal resolution that indicate one complete harmonic cycle of loops shown in Notations 6.2 and 6.3.
Notation 6.4 “Fried Chicken Modulation”: Three and Five (Drum-Set)

Notation 6.5 “Fried Chicken Modulation”: Three and Seven (Drum-Set)

These cyclic accents are played as cymbal crashes, alternating between the left hand crash marking the start of each full cycle (of both 15 and 21 eighth-note pulses), and the right hand crash marking the cyclic mid-point at which groupings of 3 and 5 sixteenth-note subdivisions also intersect. These composite streams loop and resolve
four times within each form (denoted by the bracket and text beneath each staff), at which point each total pattern arrives back at its original starting point relative to a two-beat infrastructure of conventional funk timekeeping (after a single bar of 6/4 creating the two extra beats necessary for accommodating a quarter-note downbeat resolution point in the pattern).

I used this framework to interpret the piece by reorganizing archetypes of linear and layered funk vocabulary according to these cyclical interrelationships. Strategies employed here for articulating dynamics, subdivisions, groupings, and permutated displacements drew on the methodologies of some of my favorite drummers (Chaffee 1976b, Farrugia 2003, Garibaldi 1990, Harrison 1996, Harrison 2000, Morgan 1999). Although these players have primarily influenced me as performers, the “inspirational” impact of their artistry upon my own drum-set idiolect also encompasses the influence of techniques promoted by their respective pedagogies, as I believe is evident in the Video 6.2.

[Video 6.2 “Fried Chicken Modulation”]

The specifically improvisational element in this example entails choreography of the left hand on snare-drum. The vocabulary in question comprises ghosted sixteenth-notes woven in and around streams of 3 (on cowbell) and 5 (on bass-drum) with backbeats (on snare-drum) emphasizing beats 2 and 4 in every bar. These ghost notes function to maintain a constant background flow of sixteenth-note subdivisions, and improvisational fluency here requires a degree of patterning “choreography” to accommodate the fixed numeric pulse structures built into the music.

What follows is an examination of how I adapted my sticking vocabulary to negotiate the interaction of backbeats with two concurrent pulse streams (integrated with the two-beat left foot quarter-note / half-note pattern on hi-hat and jam-block). Notation 6.6 shows two transcription excerpts from Video 6.2 – bars 1 to 4 of the 3 over 5 streaming section, and bars 8 to 11 of the 3 over 7 streaming section.
Notation 6.6 Drum-Set: First Four Bars of 3 + 5 Stream and 3 + 7 Stream

3 + 5 STREAM (first four bars)

COWBELL (3) + BASS DRUM (5) + SNARE DRUM (backbeats and ghosted 16ths)

3 + 7 STREAM (first four bars)

COWBELL (3) + BASS DRUM (7) + SNARE DRUM (backbeats and ghosted 16ths)

These detailed *emic* transcriptions contrast with the skeletal *etic* scoring of Notations 6.4 and 6.5 (and Video 6.2) in which template guide scores outline the interlocking periodicity between key streaming structures and backbeats. The complexity of patterning captured in a full transcription such as Notation 6.6 reflects the fact that, by integrating multiple structures, the improvisational application of concurrent pulse streaming “allow[s] for the creation of rhythmic forms that…can only be performed by a single drummer” (2015: 95) [emphasis added].

The phraseological organization of stickings and vocabulary here is attributable to accentual alignment with the 3, 5 and 7 pulse streams as reflected by the notational beaming in the following representation of the identical four bar transcription that highlights cross-rhythmic relationships of the 5 x 3, 3 x 5, 7 x 3 and 3 x 7 cyclic groupings to the bar lines and meter structure.
6.3 Archetypal Models

A clear picture of how drum-set vocabulary is being organized here - and, in particular, how its components interact in maintaining the improvisational flow of left-hand snare-drum subdivisions while negotiating fixed pulse stream structures - emerges when we isolate what Simon Barker calls “archetypal models” in the flow of patterning. Barker defines these models as “primary rhythmic forms, occurring as binary or ternary cells reduced to their simplest form, whilst retaining enough essential information so as to convey the organisation of internal subdivision” (Barker 2015: 26).

The archetypes revealed in the original 4 bar transcription excerpts (Notation 6.6) also include “quaternary” models, and all figures have a maximum value of one quarter-note. Because both passages maintain regular backbeats, we may conceive of any discrete model functioning either as an “embellished downbeat” occupying beats 1 or 3 in the bar, or an “embellished backbeat” occupying beats 2 or 4 in the bar. Each of these examples is collated accordingly here (Notation 6.8 and Notation 6.9) in a two-beat (that is, half-bar) format, with all “downbeat” models being positioned starting on beat 1 (with a rest on beat 2), and all “backbeat” models positioned starting on beat 2 (with a rest on beat 1). The top staff depicts corresponding etic models derived from the original skeleton guides (in Notations 6.4 and 6.5) while the bottom staff isolates emic models from the Notation 6.6 transcriptions.
Notation 6.8 Downbeats and Backbeats (3 + 5)

3 + 5 STREAMING: downbeats

Notation 6.9 Downbeats and Backbeats (3 + 7)

3 + 7 STREAMING: downbeats

3 + 7 STREAMING: backbeats
Four of these archetypal models - A, C, E and M - occur in both excerpts. The rest diverge at the micro-level, yet they share functional commonality, so that all the models within one group are potentially interchangeable, and are therefore generically applicable in contexts other than the specific pulse-streaming composition that has elicited them here. This generic overlap is important to identify because it shows that variants of vocabulary do not themselves constitute any specific schema of phraseology, just as words and syllables do not themselves constitute grammar or syntax.

However, this is not to suggest that individual archetypes lack distinct rhythmic characteristics. On the contrary, the accent-rhythm structures of unary, binary, ternary and quaternary models have specific properties that affect the groove momentum in terms of how they function as “resolution points” (Moses and Mattingly 1984: 12). As Moses describes it, the first “point” in a 4-note grouping functions like an “anchor” in its tendency to “stop forward motion”, while the second is a “contraction” that can propel the music. The third point, being “where the swing resides”, elicits handclapping and finger snapping, while the fourth creates a feeling of “expansion…a stretching, a leaning forward” (Moses and Mattingly 1984: 12). Moses’ conceptualization of one 4/4 bar as an eight-point grid of resolution points is translated here into two beats of sixteenth-notes - that is, half a bar of 4/4, comprising downbeat and backbeat archetypes.

6.4 Other Models

One of the effects of adapting vocabulary to concurrent pulse streaming is the generation of extended archetypal models aligned with the periodicity of streams other than the primary pulse. In the case of Fried Chicken Modulation, the models – all derived from the same 4 bar transcriptions - include figures based on four note groupings (as per the original primary pulse configurations in Notations 6.10 and 6.11), as well as archetypes comprising note groupings of three (Notations 6.12 and 6.13), five and seven (Notations 6.14, 6.15 and 6.16).
Notation 6.10 Four-Note Models

Notation 6.11 Four-Note Models (4 Groups)
Notation 6.12 Three-Note Models

Notation 6.13 Three-Note Models (4 Groups)
Notation 6.14 Five-Note and Seven-Note Models

Notation 6.15 Five-Note Models (4 Groups)

Notation 6.16 Seven-Note Models (4 Groups)

The improvisations in this chapter have generated idiolectal variants within parameters determined by a distinction between *inter*play and *intrap*lay, the former indicating how drum-set language is shaped by parallel cross-rhythmic interactions with other improvisers, while the later involves coordinating voicings, displacements and resolution points within concurrent layers of cyclic cross-rhythms distributed
between an individual drummer’s four limbs. Developing these two approaches through Iterative Loop Cycle procedures has served to reframe elements of my polyrhythmic improvisational phraseology (in *When He Goes, We All Go*), while also yielding distinct new aggregations of archetypal modeling for further idiolectal development (in *Fried Chicken Modulation*).
Chapter 7 - Transposing Rhythm

Rhythmic transposition generates adaptations of existing variants by re-organizing phraseology according to ratio-based displacements of vernacular source material. As with the Pool of Variants and Phraseology improvisations in Part 1, Chapter 2, the source material used in this section is a 16 bar excerpt from Exercise One, the ubiquitous passage from Progressive Steps to Syncopation (Reed 1958) known colloquially as “Page 37”. My purpose in choosing to “transpose” this particular source material was to ground the anticipated polyrhythmic outcomes in a framework of generic jazz phraseology.

The transposition principle, as applied here, is based on “swung” (long-short) interpretations of “straight” duplets, where every second note is played as the third partial of a triplet. This commonplace rhythmic conversion may be expressed, in “transposition” terms, by means of the following examples (Notations 7.1 and 7.2).

Notation 7.1 Framework for 4:3 / 3:4 Transposition

In Notation 7.1 the top staff represents four virtual bars of straight eighth-notes in cross-rhythmic groupings that stand in a 4:3 ratio to the actual common-time metric structure (each virtual bar having its own virtual count of “1+2+3+4+”). This source material is translated on the bottom staff into sixteenth-note cyclic patterning that corresponds, again, to four virtual bars of swung eighth-notes (marked with dotted lines between staffs and numbered brackets above the virtual count on the top staff). The resulting shuffle configuration of long-short durations (\[\text{\textbackslash /\textbackslash /\textbackslash /}\]) creates cyclic patterning in a 3:4 (or 6:8) ratio to the common-time meter that resolves to beat 1 after three actual bars (marked under the bottom staff by the text “ONE, TWO, THREE”).
Notation 7.2 represents the same ratio relationship within a 1 bar loop, by illustrating points of correspondence between *virtual* straight eighth-notes (on the top staff) and long-short configurations of *actual* eighth and sixteenth-notes (on the bottom staff).

Notation 7.2 Transposition Loop (4:3 / 3:4)

It should be noted that in both the above ratio representations, the numeral “4” indicates a *virtual* value, and therefore “4:3” means “four *virtual* bars (or beats) in the time of three *actual* bars (or beats)”, and “3:4” means “three *actual* bars (or beats) in the time of four *virtual* bars (or beats)”. The 5:4 and 7:4 transpositions to follow also adhere to this pattern.

**7.1 Tempo**

The tempo differential between *virtual* and *actual* rhythms may be calculated using the formula \( \frac{t \times c}{r} = T \) where \( t \) is the (*virtual*) tempo assigned to the source material, \( c \) indicates the cardinality of groupings within which pairs of long-short “swung” duplets are to be configured, and \( r \) is the rate of subdivision for one primary pulsation in the *actual* performance meter. For example, transposing 4/4 syncopation rhythms from a *virtual* tempo \( (t) \) of 80 BPM into a 3-note “triplet” swing configuration \( (c) \) performed as sixteenth-notes \( (r) \) equates to a performance tempo \( (T) \) of 60 BPM as follows: \( \frac{80 \times 3}{4} = 60 \). Transposing the identical source material into 5-note and 7-note configurations (as in Videos 7.1 and 7.2 below) follows suit as \( \frac{80 \times 5}{4} = 100 \) and \( \frac{80 \times 7}{4} = 140 \). Hence, the *actual* tempos in the following examples are 100BPM and 140BPM for the five-note and seven-note transpositions respectively, while the *virtual* master tempo of 80BPM for the syncopation source material remains constant throughout all four improvisations.
In order to methodically develop metrically intelligible transpositions of vernacular swing phraseology, source materials and outcomes must be bounded by a practicable range of virtual and actual tempos. In terms of rhythmic cognition, source materials become too slow to function meaningfully as swung syncopation below a certain tempo threshold. Conversely, in terms of hand technique and limb coordination, the transposed actual rhythms on the bottom staff become physically impossible to articulate as archetypal patterning above a certain tempo. Accordingly, my goal here is the transposition and reorganization of rhythmic language within the range of what is vernacularly useful in human performance, as opposed to being merely theoretically possible in an academic sense.

The examples below have virtual-to-actual tempo ratios of 80:100 (4:5) and 80:140 (4:7) respectively. These medium range tempos of 80, 100 and 140 BPM are comfortably within my own range of rhythm cognition and technical execution. The formula \( \frac{t \times c}{r} = T \) allows me to calculate a top tempo for any given source material \( t \) with cardinalities \( c \) of 5 and 7 based on what I already know to be the fastest tempo \( T \) at which I can coherently articulate sixteenth-note rate \( r \) odd-meter improvisations (this being approximately 175 BPM, which translates to 350 BPM where the eighth-notes are primary units of pulsation, as is the case in 5/8 and 7/8). Based on this (actual) performance upper limit of 175/350 BPM, my fastest (virtual) usable tempos for source material would therefore be 140 BPM (when transposing into groupings of 5) and 100 BPM (when transposing into groupings of 7). Conversely, 40 BPM is the slowest tempo at which rhythmic archetypes in the source material remain coherent for me, so the bottom limit for 5-note and 7-note transpositions becomes 50 BPM and 70 BPM respectively. Thus my source material tempo range is between 40 and 140 BPM, with corresponding performance tempos ranging from 50 to 175 BPM, so the full tempo range pertaining to transposed calibrations of syncopated vernacular is 40 BPM to 175 BPM.

I ascribe this range not merely to the abstract constraints of “rhythmic language”, nor to any idiosyncrasies peculiar to myself, but to familiar rhythmic phenomena within the domain Iyer describes as “ecological perception” (Iyer 2002b: 393). He lists correlations between body motion and musical elements, pointing out parallels between breathing and musical phrase lengths (at the low end of a frequency range);
between walking and *tactus* pulse (in the mid-range); between “speech/lingual [and] digital motion” and the “smallest musically salient subdivisions” (in the upper range); and between “[p]honemes, rapid flam between fingers or limbs” and “[g]race notes, deviations, asynchronies [and] microtiming” (at the upper limit). (Iyer 2002b: 393). The transposition performances that follow utilize drumming language with tempo characteristics similarly circumscribed by the ecology of embodied rhythm.

### 7.2 4/4 Groove Vocabulary Transpositions

The metrical basis of the transposition used in Video 7.1 is based on the interrelationship between *virtual* source material and *actual* rhythms (as outlined above). However, in the following examples, one 4/4 bar of source material - that is, 4 *virtual* beats on the top staff – will span 5 *actual* beats on the bottom staff (instead of 3, as above in Notation 7.2). In this transposition of eighth-note source material, each long-short “swung” configuration of a duplet pair transposes into 3-2 accentual patterning of sixteenth-note subdivisions (///) on the bottom staff. Notation 7.3 graphically represents the basis for transposing a framework of source material eighth-note duplets.

Notation 7.3 Transposing Duplets (3-2 Long-Short)

It depicts a pair of straight eighth-notes (A) transposing into quintuplet-based “swung” duplets – that is, a 3-2 long-short grouping of dotted and un-dotted eighth-notes (as sixteenth-quintuplet partials [B]) - which then modulate into the sixteenth-note rate (C). When cycled across the bar line in 4/4 time, these 3-2 sixteenth-note configurations form a cross rhythmic grid of transposed “swung” eighth-note duplets to which conventional syncopated source-material - such as the 4 bar phrases in *Exercise One* (Reed 1958: 37) - can then be transposed, creating 5 bar phrases of sixteenth-notes, as shown in Notation 7.4.
In the “4/4 Groove” improvisation that follows (Video 7.1), source material taken from the first 16 bars of “page 37” (Reed 1958: 37) is transposed into 20 bars (in a 4:5 ratio of virtual-to-actual bars). The source material is accented on the bass-drum and interposed with backbeats on every beat “2” and “4” of a linear/layered sixteenth-note groove at 100BPM. As with subsequent examples in this chapter, the source material virtual tempo is 80 BPM.

[Video 7.1 Syncopation Transposed 4:5 (4/4 groove)]

The drum-set vocabulary here undergoes phraseological re-organisation based on bass-drum accenting of transposed materials on the bottom staff. Standard time functioning archetypes of linear and layered patterning (as outlined in the Pool of Variants - Chapter 2, Section 1) are used here to fill in and around these target points, maintaining a flow of ghosted subdivisions between accents and backbeats. This in itself is nothing new. However, the 4:5 displacement of transposed phrase resolution points (in relation to backbeats and bar lines) results in a particular kind of rhythmic syntax that is, on the one hand, “traditional” – in that its phraseology adheres to
vernacular jazz syncopation at the level of the source material – while evoking, on the other hand, the kind of time-shift displacements and layered structural hierarchies associated with concepts of hypermeter and metric dissonance (Krebs 1999, Roeder 2001, Temperley 2000). Pieslak identifies rhythmic relationships in the math metal compositions of Meshuggah such as “metric superimposition” and “overlay” that parallel interaction of time functioning archetypes and phrase structures in my own process of “transposition”, particularly

where the guitars, bass, and pedal bass drum are based on a large-scale odd time signature and mixed meter while the cymbals (or some other instrument of the drum set, usually a hi-hat) maintain a steady quarter-note pulse that expresses a symmetrical hypermetric structure. (Pieslak 2007: 220)

The same approach taken in Video 7.1 (above) is applied in Video 7.2 (below) in a septuplet-based transposition of rhythmically identical eighth-note syncopation source material. This time, the long-short “swung” configuration of each duplet pair transposes into 4-3 sixteenth-note accentual patterning (|///|//) as per Notation 7.6:

Notation 7.6 Transposing Duplets (4-3 Long-Short)

A transposes into > B modulates into > C 4-3 long-short groupings

Again at the master tempo of 80 BPM, this 4:7 transposition forms cross-rhythmic groupings with a cardinality of 7, as shown by the framework in Notation 7.7. The actual performance tempo will now be 140 BPM.

Notation 7.7 Framework for 4:7 / 7:4 Transposition

[Video 7.2 Syncopation Transposed 4:7 (4/4 groove)]
Notation 7.8 maps out the rhythmic structure for 16 virtual bars of “page 37” syncopation in a 4:7 relationship to the 28 actual bars of groove-based improvisation in Video 7.2.

Notation 7.8 Syncopation Transposed in 4:7 Ratio

The preceding two improvisations established the transposition principle using groove-based vocabulary to re-organise vernacular source materials into “larger, hierarchical arrangement[s] of…hypermeasures” (Pieslak 2007: 220) thereby recalibrating my improvisational framework of syntactic resolution points for the sixteenth-note rate in even meter. The following two improvisations transpose complex hybrid drum-set vocabulary in compound odd-meters.

7.3 Odd-Meter Hybrid Vocabulary Transpositions

In the following Videos (7.3 and 7.4) I transpose the identical source material into compound odd meters, using ratios of 4:5 and 4:7. These improvisations use hybrid groove/solo patterning that blends linear/layered time functioning with hand/foot combinations incorporating tom-toms and cymbals. Because the cardinality of transposed beat groupings (5) corresponds with the meter (5+5/8), rhythmic patterning here resolves internally (rather than cyclically) relative to beats and bar lines, thus also recalling the “hyper-metric” element of Pulse Streaming in When He Goes, We All Go (Chapter 4). With even-meter backbeat reference points removed, metrically consonant single-bar loops effectively promote the virtual tempo of the source material (80BPM) to the foreground, enabling this odd meter transposition to
function (a) as a portal for metric modulation, and (b) as a method for deriving tuplet-based archetypal models from duplet-based patterning.

Notation 7.9 (below) outlines points of correspondence between a virtual eighth-note grid (top staff) and long-short “swung” eighth-notes (bottom staff) subdivided in 3/2 configuration (///). This framework guides my phrasing in the improvisation that follows (Video 7.3).

Notation 7.9 Transposition Loop (4:5 / 5:4)

[Video 7.3 Syncopation Transposed 4:5 (5+5/8)]

The on-screen notation in the first half of Video 7.5 is the same skeleton outline shown in Notation 7.10. It depicts source material on the top staff relative to the placement of each transposed attack point on the bottom staff, with dotted lines bisecting the 5+5/8 compound bar structure to emphasise the correlation between 4 virtual and 5 actual eighth-notes.

Notation 7.10 Transposing Five as 5+5/8 (Skeleton)
The “modelised score” (Arom 1991: 174) represented by Notation 7.10 (above) is a rhythmic skeleton providing a structural outline to indicate metrically how (bottom staff), and phraseologically why (top staff), I organized my improvisational patterning in the way I did. By contrast, the “etic score” (Arom 1991: 174) in Notation 7.11 (below) is a transcription itemising every note played on one specific recorded pass (that is, the particular take captured in the Video 7.3) with the same being true of the scores and video in the subsequent 4:7/7:4 transposition. The second halves of Videos 7.3 and 7.4 each present solo audio of my drum-set improvisation minus the backing track, along with on-screen notation of the “etic” transcription.

Notation 7.11 Transposing Five as 5+5/8 (Transcription)

The hybrid groove/solo vocabulary used here is organized to phraseologically reinforce the (transposed) syncopation source material. The 5-beat rhythmic archetypes being generated constitute abstractions of commonplace elements in swing syncopation – simulacra of the original vernacular – and improvising with them serves to re-inscribe a long established phraseology at the center of the jazz rhythm tradition.

The same process is applied to the same kind of drum-set vocabulary in the following improvisation (Video 7.4), based on a 4:7 framework as per Notation 7.12:
Notation 7.12 Transposition Loop (4:7 / 7:4)

[Video 7.4 Syncopation Transposed 4:7 (7+7/8)]

Again *pace* Arom, the rhythmic structure can be mapped as a “modelised” skeleton (Notation 7.13) with the improvisation scored as a detailed “etic” transcription (Notation 7.14).

Notation 7.13 Transposing Seven as 7+7/8 (Skeleton)
7.4 Deriving Archetypal Models

The transcriptions above are beamed according to subdivision groupings of the 5+5/8 and 7+7/8 compound meters, reflecting the way my phrasing is organised around half-bars of 5 or 7 eighth-note primary pulsations (at the performance tempos of 100 BPM and 140 BPM respectively). However, as mentioned earlier, metric consonance between odd-number loops and transposed source material tends to promote the backing track’s implied tempo - which in both cases is 80 BPM - to the foreground.

The full Notation 7.11 transcription may be reproduced to reflect this modulation into 4/4, with all notations re-beamed accordingly as 4 one-beat (quintuplet) configurations per bar (Notation 7.16), instead of 2 five-beat configurations per bar (as originally played and scored).
This supplementary modulation of the original transposition outcomes allows reverse engineering of improvised vocabulary to isolate new archetypal models (for potential Loop Cycle re-development) such as the following four quintuplet specimens that originated in bar 2 of the improvisation in Video 7.3.

The 7+7/8 transcription from Video 7.4 and Notation 7.14 can be similarly modulated to 4/4 and re-beamed to represent 4 one-beat (septuplet) configurations per bar (Notation 7.17) instead of 2 seven-beat configurations per bar, as originally played and scored – thereby yielding alternative archetypal models derived from the identical bar 2 sample of syncopated source material (Notation 7.18).
The improvisations in this chapter have attempted to re-inscribe the central phraseological foundation of my idiolect, which - as pointed out in Chapter 2, section 2 - is traditional syncopation (as outlined in Reed [1958]). Archtypal models emerging as odd-number grouping and tuplet configurations offer new ways of “chunking” drum-set language to embellish syncopated phrasing, while ratio-based shifts in the relationship between rhythmic templates of virtual source material and actual improvised sonorities open up new possibilities for idiolectal development within a framework completely grounded in the rhythmic infrastructure of jazz tradition.
Chapter 8 - Isochronous Asymmetry

The metric framework of rhythmic vernacular in 20th century Western popular music - such as jazz, rock, or rhythm and blues - generally comprises duple, triple and quadruple subdivisions of the primary pulse (see Pressing 2002: 288-289), and drum-set language evolving within those traditions has developed along similar lines. Accordingly, the default rhythmic idiom of mainstream drumming, especially related to time functioning, has until recently subdivided primary pulse into groups of two, three or four evenly spaced notes. This standardized Western rhythmic gridding also encompasses shuffle and swing grooves, in which uneven pairs of “swung” duplets are conceived and played, if only nominally, as the first and third partials of a triplet grouping (Figure 8.1).

Figure 8.1 Straight and Swung Duplets

In shuffles, this tripletized phrasing recalibrates symmetrical duplets to a new asymmetric grid of swung duplets. In other words, when “swung”, pairs of (written) straight eighth-notes have traditionally been interpreted and played as the first and third partials of an eighth-note triplet.

More recently, drum programmers working in popular electronic forms (such as rap, drum and bass, hip-hop, neo-soul, and associated sub-genres) have utilised digital technology to finesse the micro-timing of “swung” rhythms, either by manipulating the degree of swing applied to “straight” subdivisions, or, by re-gridding the metric infrastructure altogether, recalibrating it to a subdivision of primary pulse other than commonplace two, three and four-note groupings - such as quintuplets or septuplets for example.

Figure 8.2 Duplets: Straight Eighth, Triplet, Quintuplet and Septuplet
Micro-timing possibilities for digitally manipulating subdivisions exploited by electronic programmers are increasingly reflected in the live performance of the prominent drummers developing ways to humanly “reverse engineer” electronically generated micro-timings. My term “isochronous asymmetry” refers to the lopsided regularity that seems central to a new kind of rhythmic vernacular emerging in contemporary drumming.

Attempting to methodically integrate this characteristic into my existing idiolect has illuminated what I take to be distinctions between the metrical paradigms of different musical personalities in the field, where a degree of conceptual divergence between influential players seems apparent. For example, certain drummers – such as Amir “Questlove” Thompson (D’angelo 2000) and Chris “Daddy” Dave (Glasper 2009) - appear to intermittently employ an intentionally un-gridded, seemingly randomized subdivision of pulse that is difficult (and perhaps impossible) to satisfactorily analyse using standard notation. By contrast, others – such as Mark Guiliana (Mehliana 2014) and Jojo Mayer (Nerve 2009) – tend to evoke a more mathematically consistent organizational schema of periodicities. The latter approach is more amenable to conventional transcription and analysis because it generally precludes un-gridded or indiscriminate deconstruction of hierarchical rhythmic patterning, pointing instead toward a systematic recalibration of existing groove language. Predisposition, habituation, acculturation and preference place my own approach broadly in this latter camp, and the work presented here - while drawing on aesthetic features of the former camp - is paradigmatically wedded to, and expressed by means of, strictly “gridded” matrices of subdivision (and hence, also, standardized music notation).

8.1 Recalibration: Grid Transplants

Despite their “lopsidedness”, micro-timed dance grooves tend to retain the overall isochrony and functional characteristics of “straight” eighth-note or sixteenth-note timekeeping patterns (such as bass-drum syncopations, snare-drum backbeats and hi-hat / cymbal pulsations). We may conceive such asymmetric beat structures as a theoretical framework for the recalibration of existing drum-set idioms at the popular level, which can also be translated to a broader range of improvisational practices and stylistic contexts.
Given my own inclination toward “gridded” rhythm, the recalibration process outlined here addresses specific adaptations developed during this research to help me embrace an unfamiliar rhythmic orientation. Internalizing new and irregular distributions of the chronometric elements within pre-established “symmetrical” patterning has involved re-conceptualizing deeply ingrained archetypes of drum-set vocabulary (in addition to some metric fundamentals of time functioning). This chapter accordingly details my procedure for transforming key archetypes and fundamentals of timekeeping vocabulary. However, what follows is not pedagogy, but process: one improviser’s procedural solution to the problem of recalibrating foundational components of idiolect.

8.2 Referent and Analog

I begin by taking a basic eighth-note dance groove as my referent. This ubiquitous duplet-based beat (Figure 8.3) is a standard 4/4 timekeeping pattern in which hi-hat plays even eighth-notes to delineate a symmetrical grid of duple subdivisions with a count of “1 + 2 + 3 + 4 +”. The bass-drum plays on beats one and three, with snare-drum backbeats on beats two and four.

The same beat can be reproduced as an analog that preserves the patterning sequence of the original while recalibrating its timing to an asymmetrical new virtual grid of uneven duplets in long-short sequence, based on quintuplets (Figure 8.4) or septuplets (Figure 8.5).

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**Figure 8.3 Eighth-Note Duplet Referent Groove**

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**Figure 8.4 Long-Short Duplet Referent Groove (Quintuplets)**
The virtual gridding that underpins these recalibrated analogs is designated as either LS5 or LS7, indicating “long-short quintuplet” and “long-short septuplet” format. [Shorthand descriptors used here are as follows: “LS” = long-short; “5” = quintuplet, “7” = septuplet; “duple”, “triple” and “quadruple” indicate the number notes in each grouping; “d” = dotted note. Please see “Re-gridding options: duple, triple and quadruple referents” below for a further explanation]. Both recalibrations effectively transplant the referent from its original context without altering either its compositional sequence or its functional ontology as a basic dance groove.

In both analogs, bass-drum and snare-drum patterning retain their original relation to the primary quarter-note pulse, while the eighth-note hi-hat up-beat – that is, the “+” (or “and”) of each count – is displaced: to the fourth quintuplet partial in Figure 8.4, and the fifth septuplet partial in Figure 8.5. Throughout, the count of “1 + 2 + 3 + 4 +” remains embedded with the pattern as it is transplanted from its actual grid to a new virtual grid. In other words, the count “travels” with the patterning, as does the tempo. However, while a recalibrated analog retains the quarter-note pulse of its original referent, the main difference is that symmetrically gridded referent subdivisions generate a discrete, parallel pulse, whereas asymmetrically gridded analogs express rhythm (comprising long and short notes, rather than isochronous pulsations).

Theoretical rhythmic consequences unfolding from quintuplet and septuplet-based interplay between grid, pulse and function (especially in relation to how numerical ratios involved implicitly facilitate modulations that re-orient our perception of pulse) are no different in principal than those that would arise from recalibrating a referent to the triplet-based shuffle grid, as in Figure 8.1: that is, the resulting shift changes straight eighth-note pulse into long-short duple rhythm. However, triplet-gridded rhythms are already longstanding archetypes in Western popular music, deeply embedded in jazz drumming culture and associated pedagogy, whereas popular
rhythmic expressions based on the conscious manipulation of quintuplet or septuplet subdivisions constitute elements of a relatively new, emerging vernacular. The following procedures show how traditional staples of Western rhythmic vernacular underpinning my own drumming idiolect – namely duple, triple and quadruple groupings – can be integrated with a new, asymmetrically gridded timekeeping framework.

8.3 Re-Gridding Options: Duple, Triple and Quadruple Referents

Notation 8.1 depicts a quintuplet-based recalibration of three traditional referent grids – duple, triple and quadruple – each of which is embedded with a subdivision count that “travels” with the original pattern, designated by abbreviated terms as follows:

In Notation 8.1, the “Referent duple” grid (“A” on the top line) is recalibrated as an “LS5-duple” analog (bottom line). In this abbreviation, LS means “long-short” – indicating the order of note durations - while the numeral 5 means “quintuplet”, indicating the underlying subdivision of the analog recalibration. Thus “LS5-duple” refers to a duplet pair occupying the first and third partials of a quintuplet – in other words, a dotted eighth-note plus an eighth-note within a grouping of sixteenth-note quintuplets.

The “Referent triple” grid (Notation 8.2, “B”) is recalibrated as two analogs. “LS5-triple” (second line) is a rhythm in which the third triplet partial (count “a”) of the referent becomes a fourth quintuplet partial. The first and third notes in this LS5-triple thus correspond exactly with the long-short configuration of LS5-duple, as indicated by retaining “LS” designation. “LS5-triple/d” assigns uniform value to the duration of the first and second notes, which become dotted sixteenths (“indicated by “/d”). This “dotting” has the effect of stretching out the time-values in a rhythm so that it begins to more closely resemble the regularly subdivided pulsation of the referent.

In Notation 8.1 “C”, the standard sixteenth-note grid is recalibrated as an analog rhythm, extending LS5-triple/d by one extra quintuplet partial to make LS5-quadruple/d.
The rhythms of each referent and analog in Notation 8.1 are performed (Video 8.1) in a funk groove context at a tempo of 80 BPM, with the written “grid” part being played on hi-hat, while snare-drum maintains the backbeats and bass-drum the downbeats. This serves to map out basic gridding commonalities for traditional archetypes of Western popular rhythm that have underpinned the formation of my drumming idiolect – namely, straight eighth-notes, eighth-note triplets and sixteenth-notes (shown here as duple, triple and quadruple referents) – in relation to their recalibrated asymmetrical analogs.

[Video 8.1 Referent and Analog LS5]

The long-short analog format established in Notation 8.1 by LS5-duple (“A”) also aligns with the analogs at “B” (LS5-triple and LS5-triple/d) and “C” (LS5-quadruple/d) – that is, all these rhythms have two notes in common: the first and fourth quintuplet partial. This alignment is shown in Notation 8.2.
These two partials constitute a *virtual* grid of asymmetrical duplets and a basic skeletal framework for 2-note, 3-note and 4-note *analog* rhythms. Pairs of even *referent* duples and uneven *analog* duples correspond to each other here in the same way as straight eighth-note and shuffled (“swung”) eighth-note grids that undergird so much Western rhythmic vernacular. The same *referents* may also be recalibrated as septuplet *analogs*: LS7-duple, LS7-triple, LS7-quadruple and LS7-quadruple/d (Notation 8.3).

These similarly align with another long-short rhythmic skeleton - a *virtual* grid based on the first and fifth septuplet partials (Notation 8.4).
The septuplet analogs for 2-note, 3-note and 4-note referents shown in Notation 8.4 are performed in Video 8.2, (again with a funk backbeat groove at 80 BPM).

[Video 8.2 Referent and Analog LS7]

8.4 Inverse (Short-Long) Asymmetric Gridding: Early Upbeats

The two asymmetric recalibrations introduced so far produce “late” upbeats – that is, even eighth-notes displaced to either the fourth partial of a quintuplet (Figure 8.6), or the fifth partial of a septuplet (Figure 8.7).
This results in a long-short configuration of analog duplets, with which subsequent analogs also align as seen above (in Figure 8.3 and Notation 8.4). The other two recalibration procedures in my system are short-long analog configurations in which straight eighth-note upbeats are recalibrated to an inverse (short-long) asymmetric grid, displacing them to the third partial of a quintuplet (Figure 8.8), or the fourth partial of a septuplet (Figure 8.9).

Figure 8.8 Third Quintuplet Partial

Figure 8.9 Fourth Septuplet Partial

Notation 8.5 and Video 8.3 outline short-long configurations for quintuplet analogs.

Notation 8.5 Quintuplet Analogs (Short-Long: Duple, Triple and Quadruple)
Notation 8.6 and Video 8.4 outline short-long configurations for quintuplet analogs.

Notation 8.6 Septuplet Analogs (Short-Long: Duple, Triple and Quadruple)

Notation 8.7 Late Upbeats (Long-Short)

Two gridding options have thus emerged for recalibrating an even eighth-note upbeat from its precise midpoint location between quarter-note pulsations: one producing “late” upbeats, and the other “early” upbeats. The “lateness” and “earliness” of the two kinds of upbeat displacement are graphically represented in Notations 8.7 and 8.8.
Dotted lines in each diagram mark the precise midpoint bisecting each primary quarter-note pulse. These even eighth-note upbeats (+) are shown in relation to three displaced upbeats – late triplet, late quintuplet and late septuplet (Figure 8.7), then early triplet, early quintuplet and early septuplet (Figure 8.8). As can be seen, both the “late” and “early” septuplet analog upbeats are closest in timing to the precise midpoint (+), while the quintuplet analogs are next closest, and the triplets furthest away.

The practical consequence of this mathematical-positional difference is that, because micro-timings of quintuplet and septuplet upbeat analogs are sufficiently close in sound and feel to their even eighth-note counterparts, they enable the application of recalibrated vocabulary in a straight eighth-note context without impeding the overall rhythmic coherence of conventional grooves. This holds for both “late” (long-short) and “early” (short-long) upbeat configurations.

8.5 Technical Recalibration: Rudiments Transposed

With a basic theoretical framework of ratios in place, procedures for recalibrating the metric structure of ingrained idiolectal archetypes cultivate the physical adaptation necessary for integrating new rhythms into my working vocabulary and technical apparatus. The process of modifying longstanding habits of musical memory and patterning seems comparable to changing pronunciation of syllables - if not grammar and syntax - in spoken language, and expressive improvisational fluency on the drum-set depends upon automatic recall of certain sticking fundamentals and rudiments. The syllabic structure of these archetypes therefore needs to be re-fashioned (along with corresponding aspects of hand-foot interdependence). The following is a brief summary of key procedures I have employed for translating some rudimental foundations of drum-set language into a new, asymmetrically gridded format according to long-short and short-long configurations (as detailed above).
Simple rudimental stickings that conform to the *analog* rhythms explored above are mapped out Notation 8.9 with Video 8.5, Notation 8.10 with Video 8.6, Notation 8.11 with Video 8.7 and Notation 8.12 with Video 8.8) Here however, they appear in rhythmically *transposed* relationships to the pulse. In the preceding quintuplet and septuplet examples, the first note of each *analog* figure coincides with the quarter-note primary pulse – that is, they are always “on the beat” – whereas here, they are calibrated to a grid of sixteenth-notes so that quintuplet *analogs* transposed to this format displace from the primary pulse in a 4:5 ratio until resolving back to their starting point after five beats, making a loop of 5/4 time. In the same way, transposed septuplet *analogs* will displace from the pulse in a 4:7 ratio, resolving back to their starting point after seven beats and making a loop of 7/4 time.

Tempos in the examples here correspond to the original 80 BPM of the *analogs* in their previous tuplet form. This translates to a tempo of 100 beats per minute in 5/4 for the transposed quintuplet *analogs*, and 140 beats per minute in 7/4 for the transposed septuplet *analogs*. Presented this way, the speed of the original *analogs* remains identical with the transposed examples. The purpose of this procedure is to verify and consolidate the accuracy of new *analog* rhythms using a standard sixteenth-note subdivision format – one with which I am already familiar – rather than tuplet-based formats, which are far less familiar.

It should be emphasized again that none of this material is offered as pedagogy – the method shown is not a systematically exhaustive “how-to”, although its mode of presentation inevitably overlaps with that of some drum-set instructional packages. Instead, the goal here is to reveal - in theory and practice - procedural steps I have employed to cultivate and integrate new idiolectal vocabulary, also thereby reinscribing foundational elements of rhythmic language. As discussed in Chapter 10, technical analysis relating to this area of drum-set practice is still relatively underdeveloped, with the exception of instructional/research work by drummers such as Simon Barker (Barker 2017) and Aaron Edgar (Edgar 2016), along with popular online podcast-style discussions (such as Johnston 2016). My work seeks, in part, to devise a system that would address this methodological deficiency.
Notation 8.9 Flam Rudiments (Tap, Accent and Paradiddle) Recalibrated: LS5

[Video 8.5 Flam Rudiments Recalibrated: LS5]

Notation 8.10 Flam Rudiments (Tap, Accent and Paradiddle) Recalibrated: LS7

[Video 8.6 Flam Rudiments Recalibrated: LS7]
Notation 8.11 Flam Rudiments (Tap, Accent and Paradiddle) Recalibrated: SL5

[Video 8.7 Flam Rudiments Recalibrated: SL5]

Notation 8.12 Flam Rudiments (Tap, Accent and Paradiddle) Recalibrated: SL7

[Video 8.8 Flam Rudiments Recalibrated: SL7]
8.6 Analog Hybrid Grooves

With fundamentals of rhythmic vernacular recalibrated according to procedures outlined above, the resulting archetype analogs can be integrated “conversationally” into the normal flow of an improvisation on the same basis as other components of drum-set language. My approach combines the re-gridding systems identified above – namely, LS5 and LS7 (which displace up-beats “forward” from the mid-point between primary pulsations), and SL5 and SL7 (which displace them “back”). What follows (in Video 8.9 and Notations 8.14, 5.15 and 8.16) is a series of developmental analog hybrid grooves – again at 80 BPM in a 4/4 backbeat groove context. These outcomes illustrate the gradual integration of various tuplet analogs into my time functioning vocabulary.

[Video 8.9 Analog Hybrid Grooves]

Notation 8.13 Analog Hybrid Grooves (A, B, C and D)
Notation 8.14 *Analog* Hybrid Grooves (E, F, G and H)

Notation 8.15 *Analog* Hybrid Groove (I)
8.7 “Spirograph”

The analog hybrid grooves above form the basis of my interpretation in the following performance of my composition *Spirograph*. This groove improvisation (documented below in Video 8.10 and Notations 8.17, 8.18 and 8.19) integrates materials yielded by the above developmental procedures in a practical, contextual application of the lopsided rhythmic concept I describe as isochronous asymmetry.

Notation 8.16 “*Spirograph*” Transcription (A and B)
Notation 8.17 “Spirograph” Transcription (C and D)

Notation 8.18 “Spirograph” Transcription (E)

[Video 8.10 “Spirograph”]
Rhythmic structures explored in this chapter represent an attempt to integrate into my idiolect certain contemporary changes in popular Western rhythmic culture. In seeking here to assimilate the consciously asymmetric subdivision of pulse used by human drummers to emulate the electronic rhythm programming of hip-hop producers, I have also identified an evident methodological and aesthetic distinction between my own developmental procedures and those of prominent artists in contemporary music culture. This insight has led me to begin building a self-teaching system, or “personal pedagogy”, whereby I can continue to integrate this isochronous asymmetry into my groove patterning on terms that will remain technically and metrically consistent with organisational methods I have used up to this point. The beginnings of this heuristic system, and my rationale for cultivating it, are layed out in Chapter 10.
Chapter 9 - Mixed Rates

Anti-porridge is my adaptation Gordon Rytmeister’s snare-drum etude Ryto-Gando, a unison duet based on the sticking and “artificial” rhythmic grouping systems in Gary Chaffee’s Patterns (Chaffee 1976a, Chaffee 1976b). I initially decided to incorporate this piece into the study to serve as a vehicle for helping me better assimilate tuplet-rate rhythms into my working improvisational vocabulary. Notation 9.1 shows a 16 bar excerpt of the original Ryto-Gando score, including original stickings as per Chaffee’s A, B, C and D systems (Chaffee 1976).

Notation 9.1 “Ryto-Gando” (A, B and C) with Original Chaffee Stickings

Gordon and I first rehearsed the duet adhering throughout to the accented linear sticking system, and we subsequently augmented this through-composed material with drum-set “trades” - that is, fixed-duration “call-and-response” improvisations on the written materials alternating between the two players. The contrasting approaches
entailed different ways of internalizing mixed-rate language that exposed certain gaps in my understanding and fluency. For example, the process of “trading” with Gordon in this context revealed an imbalance between, on the one hand, my ability to replicate pre-composed mixed-rate parts, and my ability to improvise fluently with those materials on the other. Specifically, while my execution of through-composed passages felt rhythmically stable, a degree of dependency on the mechanics of built-in stickings emerged as a barrier to full engagement with the overall rhythmic vocabulary.

Furthermore, I found that while mixed-rate improvisation presented certain technical challenges - as any music might, regardless of rhythmic idiom - assimilating quintuplet and septuplet rate phrasing fluently into my extant idiolect also involved a conceptual leap. My improvisational vocabulary, being mostly derived from vernacular traditions, almost inevitably tended to invoke some kind of idiomatic context into which “foreign” elements (such as mixed tuplet rates) could not easily be integrated. The videos and scores that follow will reveal something of the process involved in addressing improvisational fluency and assimilation of this new rhythmic language.

9.1 Developmental Procedures

Initial rehearsals (over several weeks) involved executing written unisons, and improvising drum “trades”. As mentioned above, this showed that my initial reliance on the stickings – which worked well as a first step in executing tuplet rhythms - was also hampering my ability to “hear” the pre-composed rhythms in the same way I could “hear” improvised rhythms, and I set about trying to correct this imbalance.

My first procedural step involved stripping away all assigned stickings, leaving only the “neutral” skeleton of rhythmic rates and accentual phrasing as per the excerpt shown below (Figure 9.1).

Figure 9.1 “Neutral” Skeleton (Minus Stickings)

From this point, I began applying my own orchestration preferences and problem-
solving strategies to re-interpret the original, and what ensued was a re-engagement with the rhythms using a simplified technical approach that avoided relying on rote stickings. I also began vocalizing the rhythms (a central technique of Chester’s *New Breed* method that I had previously studied [Chester 2006]) while executing them as slow flat flam strokes at 50 BPM. By avoiding pre-learned patterning, I began to get “in between” the *technique* and the *language* without patterning mechanics or velocity-driven rebound strokes “playing the music for me”.

I transferred this concept to the simplest practical sticking strategy for the assigned performance tempo of 80 BPM – namely, alternating single strokes. Absent the mechanical advantages of automated compound stickings, I was forcing myself to “hear” the tuplets – that is, to develop an inward relationship with these rhythms based on “internal hearing” (Moses and Mattingly 1984), and “audiation” (Gordon 1999) in order to outwardly manifest them.

I used Loop Cycle and Transitional Synthesis methodologies to develop performances for the video excerpts presented here, adapting archetypes and variants of my drum-set vocabulary to the rhythmic language of the original composition. In order to integrate through-composed mixed-rate structures with improvisational drum-set elements, it became necessary for me to engage with Ryto Gando on the same terms as any other “lead sheet”. That is, by adapting my own stock of rudiments, groove archetypes, and other patterning fragments (as represented in the Pool Of Variants - Part 1, Chapter 2, Section 1) to the skeletal form of the piece (Notation 9.2) I sought to personalize the navigation of its rhythmic contours, just as I would with other kinds of music encountered in the freelance professional practice.
Adapting my existing vocabulary to this simplified framework facilitated more expressive interpretation, and to further enhance the interpretive process in alignment with conventional practice, I created a melody matching the rhythmic skeleton with a bass part matching the accentual phrasing. The resulting new co-composition, an excerpt of which is shown below (Notations 9.3 and 9.4, Video 9.1), became known as Anti-Porridge.
Notation 9.3 “Anti-Porridge” Section A and B (Melody and Bass)

Notation 9.4 “Anti-Porridge” Section C (melody and bass)

[Video 9.1 “Anti-Porridge” Section A, B and C (Melody and Bass)]

This scored harmonic material now became “the piece” (replacing the Ryto-Gando etude). Like most compositions, it presented me with the twofold interpretive task of (a) rendering stylistically appropriate, functionally coherent accompaniment, and (b)
integrating this accompaniment with a personalized vocabulary, the interpretive parameters of which would necessarily be located along my Spectrum of Constraints (in Part 1, Chapter 2, Section 3). Accordingly, my goal in developing a part for *Anti-Porridge* was to realize a personalized interpretation within genre-specific protocols of style and tradition, consistent with the Variant and Phraseological categories in Part 1, Chapter 2.

Both *Ryto-Gando* and *Anti-Porridge* offered frameworks for generating unconventional new drum-set language. To this end, the recorded examples that follow document the application of three areas of vocabulary - rudiments, timekeeping and soloing - to short excerpts of *Anti-Porridge*, furnishing a methodological demonstration of the procedures outlined above. Each video presents the identical drum-set pass twice: firstly in context, with melody/bass line plus an on-screen rhythm “skeleton”, then in isolation with the melody/bass line muted plus a detailed on-screen transcription.

**9.2 Rudimental Vocabulary**

The aesthetic model for my orchestration of rudimental vocabulary on the drum-set is Steve Gadd’s funky march interpretation to Ed Lemley’s *Crazy Army* (Gadd 1982), with its contrapuntal mixture of flams, rolls and bass-drum punctuations. I developed the 4 bar excerpt in Notation 9.5 and Video 9.2 by tracking repeated improvisations to the melody/bass line backing track, then transcribing successful specimens (as per the selection criteria in Chapter 3, Table 3.1) and assembling them as one passage. I memorized and replicated this transcription as a mini-*etude* (that also appears in Section 3 of Part 1, Chapter 2, as the maximally “rigid” example on my Spectrum of Constraints [Video 2.10]).
Notation 9.5 “Anti-Porridge” (A) Rudiment Vocabulary

[Video 9.2 “Anti-Porridge” Section A (Rudiment Vocabulary)]

While this embellished adaptation of the original Ryto-Gando rhythmic skeleton functions as a “solo” – drawing upon the drum corps tradition of organizing rudimental snare–drum language into orchestrated compositions – it was developed improvisationally as a unison-accompaniment to embellish and punctuate the original piece’s newly added melodic contours. As shown in Notation 9.5 (above), composed accents on the top staff skeleton are rhythmically identical to the bass line (Notation 9.3). In the Video 9.2 performance, these built-in accents are reinforced and embellished with accents, flams and/or bass-drum punctuations. Additional bass-drum punctuations throughout the passage allude to the Gadd’s syncopated funky march embellishments on Crazy Army.

9.3 Groove (Time functioning) Vocabulary

Groove patterning was applied to the Anti-Porridge skeleton to generate new language by re-deploying linear and layered time functioning archetypes (from the Pool of Variants) over a mixed-rate framework, the goal being to develop a semi-composed/semi-improvised drum-set part sufficiently pre-planned to be functionally consistent and replicable, yet not so rigid as to prohibit variation. In contrast with the rudimental etude (above), my groove patterning here stays aligned with the Semi-Rigid constraint (Part 1, Chapter 2, Section 3). That is to say, there remains scope within the skeleton framework to improvise small-scale orchestrations and embellishments on any given pass, while the alternating low-high voicing of bass-
drum and snare-drum (integrated with linear and layered snare-drum/high-hat patterning) maintains the archetypal downbeat-backbeat expectations of groove based time functioning. I used the Loop Cycle methodology to develop each phrase until my sticking choreography meshed with the accented/ghosted groove patterning I was hearing, this being determined in part by the satisfactory allocation of virtual downbeats and backbeats along the grid of shifting rates.

During this developmental process, it became necessary for some instances of patterning to remain fixed. Passages where it seemed unnatural or too difficult to risk an improvised variant were admittedly approached as set-piece interim solutions that need not permanently rule out improvisation. An example of this would be the triplets-within-triplets in bars 6 and 7 (Figure 9.3). I executed this displaced/nested-tuplet passage using Flam Accents and Flam Paradiddle - played “flat” and orchestrated between snare-drum and hi-hat - on every pass.

![Figure 9.2 Triplet Set Piece: Flat Flam Paradiddle](image)

These rudiments functioned as (temporary) default archetypes to “automatically” negotiate difficult rhythmic language at the developmental stage. Conversely, other more familiar figures immediately aligning with existing variants and phraseology were readily re-orchestrated on every pass without disrupting my groove or impeding my execution. This helped illuminate cognitive and technical distinctions between what I could regard as assimilated vernacular, and yet-to-be-integrated foreign vocabulary. Although “foreign” archetypes generally resulted from transposing commonplace ideas into unconventional rates, apart from such purely metrical re-assignments of vernacular archetypes the groove patterning in this excerpt is relatively formulaic (being comprised of downbeats, backbeats, ghosted hi-hat/snare-drum time functioning subdivisions, and punctuated commentary in the form of tom-tom fills, cymbal crashes and bass-drum embellishments).
Notation 9.6 “Anti-Porridge” (B) Groove Vocabulary

[Video 9.3 “Anti-Porridge” Section B (Groove Vocabulary)]

9.4 Solo Vocabulary

In drum-set orchestration terms, this type of improvisation is a hybrid of “soloing” and time functioning vocabularies. Backbeats on the second and fourth beats in every bar are interwoven with soloistic orchestration of linear, layered and hand-foot fragments all strictly adhering to the skeleton grid (on the upper staff). Consequently, two-beat groove archetypes – or, at least patterning strongly suggestive of groove archetypes - tend to emerge from this blend of backbeats and soloing, such as the examples below (Figures 9.2 and 9.3), which occur at the identical point (that is, beats 3 and 4 of bar 9) in both the original (Videos 9.4) and alternative (Video 9.5) versions presented here.

Figure 9.3 Two-Beat Groove Archetype (a)  Figure 9.4 Two-Beat Groove Archetype (b)

By contrast, more “soloistic” patterning is distributed across various voices of the drum-set, as with the following two examples (Figures 9.4 and 9.5) taken, again, from the identical point (beats 1 and 2 of bar 12) in both iterations:
Two versions (Videos 9.4 and 9.5) are presented to exemplify the *Semi-Rigid* constraint applied to fixed parts. That is, while the skeleton (top staff) remains a non-negotiable structure to which every sonority must conform, orchestration choices are constrained only by the aesthetic requirement to use self-consistent, idiomatically coherent archetypal patterning.

**Notation 9.7 “Anti-Porridge” (C) Solo Vocabulary**
I would cite generic and contextual coherence as crucial factors in making this rhythmically convoluted drumming intelligible, rather than merely gratuitously complex. Restricting all improvisation to the archetypal patterns of established timekeeping and soloistic functions, in conjunction with backbeats, imposes a style constraint, on top of temporal conformity with the skeleton grid. This ensures the rhythmic language remains under strict control and the improvisation remains “on topic” while allowing sufficient freedom of orchestration for personalized reiterations of the original piece.
Bob Moses has described the concept of topical variation as follows:

One of the basic rules of any kind of communication is to choose your subject matter. Know what it is that you want to get across. For example, if I were giving a speech, I wouldn’t have a sentence about baseball, and then a sentence about politics, and then a sentence about ice cream. I would choose one topic. Perhaps I would say different things about the topic from night to night. One night I could be very abstract; another night I could be funny; another night I could be sad or serious. But my audience would always know what my chosen topic was, because I would stay with the topic I chose. (Moses and Mattingly 1984: 12)

I found this to be especially salient with regard to developing rhythmic vocabulary for mixed-rate improvisation, where tuplet rates must be clearly articulated and understood as specific gridded rhythmic language in order to remain intelligible within a given idiomatic context. It remains crucial (for me) to deploy these rate-shifts within the constraints of some existing vernacular-idioclastic framework in order to avoid the aesthetic confusion and loss of syntactical coherence that arises from failing to “stay with the topic”.

9.5 Improvising in Mixed Rates with Solo Vocabulary

I found that more fully assimilating mixed-rate language into my idiolect required moving beyond an etude-based approach. The Rigid and Semi-Rigid constraints served a practical developmental purpose in establishing finite metrical properties of specific tuplet-rate rhythms, along with their temporal relationship to pulse and each other. However, integrating this information with interactive processes of “jazz” soloing also required a freer rhythmic format where both orchestration and rhythmic choices could be improvised concurrently in a single real-time utterance. The improvisation shown below (Video 9.6) applies mixed rate vocabulary over an Afro-Cuban clave and tumbao ostinato (Figure 9.6).

Figure 9.7 Clave and Tumbao Foot Ostinato
Combining two primary archetypes of Afro-Cuban folkloric tradition, the clave and tumbao ostinato pattern establishes an immediate stylistic context for the improvisation while imposing certain formal parameters. These include practical considerations, such as the physical limitations of coordinated independence between limbs, as well as theoretical constraints involving mathematical calculations that limit the artistic licence with which rhythmic figures can be “stretched” via nuances of expressive micro-timing.

In the improvisation, despite exercising certain interpretive liberties, I did refrain from consciously deploying any “un-gridded densities”, so that all improvised rhythms had to be based on a subdivision anchored to the same temporal framework as the ostinato. There were, however, specific points of interpretive “stretching” related to a characteristic interchangeability between two ways of interpreting the clave/tumbao,
which – as Hernandez (Hernandez 2000) points out - can be calibrated to grids comprised of either sixteenth-notes or twelfth-notes, grouped 4 x 4 and 4 x 3 respectively (as shown in Figure 9.7).

Figure 9.8 3:2 Clave and Tumbao Subdivisions: 16 Grid / 12 Grid

Furthermore, rhythmic interpretations on the “three” and “two” sides of the 3:2 clave (separated by dotted lines in the diagram) in either version are also interchangeable in the pattern sequence, as are the figures on individual quarter note beats. Thus, quite apart from any improvisation with unusual tuplet rates, a mixture of “conventional” rates (that is, sixteenth-notes and eighth-note triplets) is already implicit in the interchangeable ostinato framework. This is due to the underlying sixteenth-note and triplet infrastructure that can switch from bar to bar, and within single bars, while leaving the note sequence of the total pattern intact (as per examples in Figure 9.8).

Figure 9.9 Two-beat Clave/Tumbao Cells: Sixteenth and Triplet Rate Combinations

Points in my improvisation (Notation 9.8, Video 9.6) where particular rhythms imply a subdivision switch from sixteenth-notes to eighth-note triplets are: beats 3 and 4 of bar 2; beats 1 and 2 of bar 3; beats 2, 3 and 4 of bar 7; beat 1 of bar 8; beats 3 and 4 of bar 13, and beat 1 of bar 14. Interpretive switching between rates is characteristic of an expressively nuanced polyrhythmic interplay implicit in much Afro-Cuban music that notation fails to adequately capture - and which, therefore, ought not be taken “literally”. Nor need these switches necessarily be mathematically congruent with the

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exacting constraints of a “grid” in order to be *functionally congruent* with the idiomatic flow of the patterning. Interplay between triplet and duplet rhythms is a traditional characteristic in much of what is termed “Latin” music, because, as Malabe and Weiner point out the 6/8 feel underlies the African-derived rhythms of Cuba, Brazil, the Caribbean and the United States…[and] in African and Afro-Cuban music the distinction is not sharply made between 6/8 and 4/4, as in Western (i.e. Western European) music. African and Afro-Cuban rhythms are based on repeating phrases and figures and not on time signatures. We are using time signatures to adapt these rhythms to a form we are more familiar with. (Malabe and Weiner 1990: 17)

Taking this as a conceptual starting point helped move the focus of this improvisation away from small-scale metrical gridding, and into the *Loose* and *Semi-Loose* areas of my constraint spectrum. Rhythmic language being overlayed on the clave-tumbao ostinato is a modification of drum-set vocabulary that Antonio Sanchez cites as his adaptation of Batá and Rhumba percussion traditions. He emphasizes the central importance of developing *style-specific* “vocabulary, grammar, syntax, pronunciation [and] accent” (Sanchez 2008), and in the performance below I attempted to observe those parameters in a mixed-rate clave-based improvisation. My approach to this vocabulary also intentionally creates the illusion of being “grid-free”, using figures that cycle or displace across pulse and bar lines while resolving to points within the composite clave/tumbao rhythm. The following excerpt of bars 9 and 10 exemplifies this idea (Notation 9.7 and Video 9.7).

**Notation 9.10** *Clave and Tumbao - Bars 9 and 10*

![Notation 9.10](image_url)

[Video 9.7 Mixed Rates with *Clave* and *Tumbao* – Slow Loop]
“Resolution” points between the clave/tumbao ostinato (bottom staff) and the improvised figures (top staff) are indicated with dotted lines. Note that the clave/tumbao phrasing is adjusted (from triplet eighth-note rate on beats 1 and 4, to sixteenth-note rate on beats 2 and 3) to accommodate intended resolution points with the quintuplet figures. Again, these are functionally (rather than mathematically) congruent rhythms, with sonorities that are virtually synchronous in performance terms, yet whose theoretical points of concurrence are not metrically identical. That is, the figures are sufficiently close in timing that each can be “stretched to fit” the other within the expressive tolerances of this groove idiom.

This “virtual synchrony” is partly facilitated by the way in which mixed rates are being deployed here, which differs markedly from Ryto-Gando/Anti-Porridge in three respects. Firstly, improvisation - being unscripted - relies upon real-time experimentation and problem solving within a creative process, rather than memorisation and replication of pre-composed material. Secondly, this improvisation exploits space and rests, whereas the rhythms in Ryto-Gando/Anti-Porridge use almost no rests so that virtually every given subdivision available within the grouping on any one beat is occupied by a new note (and thus there are no “spaces” as such - only durational contrasts deriving from the mixture of rates). Thirdly, with the ostinato serving as a fixed temporal reference, the displaced and cyclically accentual phraseology of this improvisation places far less emphasis on reinforcing primary pulsation than, for example, the C section of Anti-Porridge, in which the first subdivision of any one-beat grouping in the bar is accented on 27 out of 32 available beats (that is, the pulse is emphasised on average every 3.5 beats), compared with 16 out of 56 available beats in the Clave-Tumbao improvisation (which is, on average, less than every 1.2 beats). The result is a rhythmically freer, less obviously articulated metrical language, although the transcribed score appears deceptively simple alongside what Zappa might have described as the “statistical density” of the Anti-Porridge etude.

The improvisations in this chapter have documented idiolectal development taking place both within a through-composed framework, and through the real-time co-mingling of fixed ostinato patterning with mixed-rate subdivisions. The two contrasting approaches served to illuminate concrete constituents of rhythmic vocabulary common to both approaches, as well as different improvisational and
procedural parameters that apply according to varying degrees of rhythmic constraint. Developmental procedures involving a mixture of Iterative Loop Cycle and Transitional Synthesis also helped crystalize for me how to better maintain syntactical coherence with this rhythmic material in “fixed” etude mode, as well as across more flexible improvisational hybrid modes of timekeeping and soloing.
Chapter 10 - Asymmetry: A Personal Pedagogy

A key insight emerging from this study has involved adaptations of isochronal timekeeping to accommodate the emerging “asymmetry” of popular rhythm inspired by micro-timings of influential hip-hop producers such as J Dilla (Dilla 2004). My future research will involve the development a personal drum-set pedagogy that revises standing educational paradigms to incorporate “artificial groupings” (Chaffee 1976a: 15) such as quintuplets and septuplets with traditional syncopation via points of phraseological commonality I have termed "standard anchors". Expanding on the referent-analog concept (outlined in Chapter 8, section 2), the revised approach would systematically recalibrate time functioning and groove archetypes to integrate these tuplet subdivisions with conventional duplet, triplet and quadruplet rhythmic vernacular using standard rudimental stickings and metric notation.

This chapter forms a logical extension of other Developmental Areas explored in Part 2 (particularly Chapter 8) and is being offered both as personal process and pedagogical outcome. Communicating procedures I have undertaken that may also be viewed through a pedagogical prism represents transference of personal procedural activity into a communicable pedagogical form. These are new procedures that have emerged through the study as a personal heuristic, addressing emerging asymmetries in popular rhythm in terms that are methodologically consistent with my existing infrastructural principles of rhythmic organisation. As with other procedural activity being documented here, the material does not constitute a “how-to”, but offers a way of transforming my rhythmic behaviour that is (a) congruent with other Developmental Areas, and (b) grounded in personal idiolectal research.

To the extent that drumming conventions of twentieth century popular music have habituated drummers to duple, triple and quadruple subdivisions (as evidenced by Porcaro 1988 and Pressing 2002), prevailing technical methodologies have understandably serviced that rhythmic infrastructure, and drum-set pedagogy of the period reflects the cultural pattern. Ubiquitous instructional texts (Stone 1935, Chapin 1948, Reed 1958, Dahlgren and Fine 1963, Latham 1980, Chester 1985, Garibaldi 1990, Riley and Thress 1994) promote sticking and coordination systems that continually reinforce the organization of rhythm in common meters such as 4/4, 2/4 and 6/8, using subdivisions of 2, 3 and 4 as a kind of default setting. On the other
hand, specifically polyrhythmic studies (Magadini 1970, Chaffee 1976a, Harrison 1996, Hoenig & Weidenmüller 2009) tend to frame polyrhythm as a discrete parallel discipline - supplementary to mainstream phraseology - rather than a comprehensive recalibration of rhythmic vernacular. The revised framework I envisage seeks, instead, to blend both approaches by using polyrhythm to reimagine conventional archetypes and transform them into re-gridded, tuplet-based analogs of the vernacular.

The proposed framework is not an attempt to somehow reify “transgressive” rhythmic behavior. It is intended as a logical extension of metric ideas emerging from this research project, having been prompted by changes in popular rhythm culture and the recognition that practical drum-set pedagogies addressing this area have yet to be fully developed. Apart from work by Simon Barker (Barker 2017) - who has a coherent framework in place for integrating tuplet-gridded patterning with conventional even-meter grooves, and Aaron Edgar whose recent installment (Edgar 2016) in a series of short instructional videos published online by Modern Drummer magazine offers a systematic point of entry to this concept - a comprehensive pedagogical exploration has yet to emerge.

Jeff Porcaro’s observation that “the two basic grooves in contemporary music [are] your straight eighths and sixteenth-note groove, and your shuffle groove which is derived from triplets (Porcaro 1988)” remains broadly true nearly thirty years later. Drummers still play these grooves if only as a matter of commercial viability, prioritizing orthodoxy over transgressive ideas with less immediate application, however the orthodoxy itself is also changing. Marcus Gilmore, Amir “Questlove” Thompson and Chris “Daddy” Dave - all of whom successfully deploy micro-timed approaches to time functioning (Iyer 2012, D’angelo 2000, Glasper 2009) that might formerly have been marginalized as “heterodox”, are now among the most celebrated and critically acclaimed drummers in American music. Furthermore, the fact that contemporary pop-dance music increasingly exploits digitally or humanly manipulated micro-timing of commonplace rhythms (thereby generating the lopsided groove concept I have termed “isochronous asymmetry”) itself represents a significant departure from the uniformity and metrical symmetry that characterized drum-set orthodoxy (and commercial studio protocols) for pop-dance recordings in Porcaro’s era.
The evident paradigm shift underway in popular rhythm culture - that increasingly compels drummers (and others) to humanly emulate or “reverse engineer” asymmetrically programmed micro-timing - could also inform a corresponding revision of instructional methodology that cultivates danceable grooves based on micro-structures other than 2, 3 and 4 subdivisions, thereby re-calibrating technical and phraseological systems of an outdated musical economy. The tuplet-based phraseology I envisage would recalibrate time functioning, rudiments, independence and syncopation, effectively “grafting” tuplet analogs of vernacular beat archetypes into a commonplace metrical infrastructure.

Steve Gadd defines “groove” as “an agreement” based on temporally “locking in” with other players (or machines) (Gadd 2012). My intention is to develop a facility with tuplet-based patterning that could actualize “agreements” about “groove” between myself and other musicians who need not themselves be conversant with the mathematical theory or “drumistic” techniques underpinning this system. In my methodology, each analog figure would effectively substitute for a commonplace referent rhythm - such as a configuration of long and short notes sufficiently reciprocative (in micro-timing terms) with some conventional syncopated fragment to stand as its archetypal correlate. In other words, the “substitute” could pass for the “original”, and this functional interchangeability of referent and analog rhythms thus opens the way to sustaining collaborative “groove agreement” between musicians both inside and outside the system.

The following section is a preliminary investigation into a much larger research area. It briefly outlines a personal system for idiolectal development that correlates analog time functioning rhythms with the necessary calisthenics of rudimental sticking language. This represents a personal methodological strategy for the technical-metrical recalibration of vernacular timekeeping archetypes – a heuristic research project that will be ongoing beyond the current thesis, and while some initial outcomes appear here, further outcomes will appear in future studies.

10.1 Technique and Coordination: Groupings Reorganized

Positing a revised pedagogy also presupposes a symbiosis between rhythmic language and execution. Properties that may be theorized as discrete entities for analysis become interdependent in performance. Therefore, aligning technical
apparatus with rhythmic theory requires a methodology for combining sticking permutations with the phraseological schema of a re-calibrated vernacular.

To remain consistent with traditional methods, such a system would comprise single strokes along with compound and flam stickings, beginning with 2 or 4 beat phrases that use quintuplet and septuplet-rate long-short or short-long note configurations to instantiate both grid and phraseology. Physically translating theory into embodied rhythm would rely on preliminary exercises to establish a newly orientated infrastructure for syncopated vernacular phrasing. Such materials would then be adapted for conventional drum-set praxis in order to recalibrate eighth-note/sixteenth-note backbeat funk grooves (as per Farrugia 2003 and Garibaldi 1990) and triplet-shuffle “swing” time functioning in jazz (as per Ramsay and Dawson 1998 or Riley and Thress 1994).

10.2 Analog Phrase Sticking Foundation

The foundation of my recalibration system would involve quintuplet and septuplet sticking combinations accented in long-short (3,2 or 4,3) and short-long (2,3 or 3,4) paired configurations, with each asymmetric pair functioning as the analog to a referent pair of straight eighth-notes (as represented below in Notations 10.3, 10.8 and 10.9 by the virtual count of “1 + 2 +” on the top line skeleton phrase). This mirrors the principle used in jazz to interpret two written eighth-notes as a long-short pair of shuffled eighth-notes, or the first and third partials in an eighth-note triplet subdivision of the primary pulse.

The accents and groupings in the stickings below articulate a two-beat tuplet shuffle pattern. These cells constitute a system of calisthenics intended to align hand groupings with a numerical grid of quintuplet (A) and septuplet (B) subdivisions. Three common stroke types - alternating singles, compound linear, and the flam – are used to establish basic functional patterning. The patterns must be played over a contextualizing ostinato - in this case, a heel-toe swiveling left foot pattern (Notation 10.1) that delineates straight eighth-notes on the hi-hat with the toe while accenting the quarter note pulse on jam block with the heel - in order to reinforce the primary pulse reference and emphasize the main aim of this methodology, which is the recalibration of existing rhythmic vernacular in context. The contextualizing eighth-note foot pattern is shown below, both by itself (Notation 10.1) and also in its
subdivisinal relation to quintuplets (5:2/5:4) and septuplets (7:2/7:4) (Notation 10.2).

Notation 10.1 Left Foot Straight Eighth Pattern

Notation 10.2 Quintuplets and Septuplets Over Left Foot Straight Eighth-Note Pattern

Sticking exercises in the following three demonstrations – Analog Phrase Sticking Foundation (Video 10.1), Low/high Tuplet Voicing Integrating Bass-drum (Video 10.2), and Like-Handed Alignment for 3(6), 5 and 7 Analog Tuplets (Video 10.3) - are performed with this contextualizing left foot ostinato at a common tempo of 80 beats per minute.

All of these two beat cells use three common sticking systems - alternating single strokes, linear compound stickings and flam patterns - to outline the foundational long/short and short/long configurations of accented analog eighth-note phrasing, with groupings represented on the top line by a virtual count of “1 + 2 +”.

Notation 10.3 Analog Phrase Sticking Foundation

[Video 10.1 Analog Phrase Sticking Foundation]
10.3 Low/High Tuplet Voicing: Integrating Bass-Drum

With the phraseological framework in place, low-high voicing coordination integrates hands and feet with high and low sounds. The accent patterning explores permutations of four (analog) eighth-note accents to blend long-short phrasing with low-high voicing in a two beat tuplet-shuffle format. All stickings are alternating single-strokes, with “R” and “L” indicating which part of the sticking that coincides with an accented shuffle analog. The high pitched (snare-drum only) and low pitched (bass-drum and snare-drum unison) analog components are represented respectively above and below the top line. In physical terms, the method also addresses concurring (accented) and opposing (non-accented) relationships between “up” or “down” control strokes as they relate to the coordination of bass-drum/snare-drum unisons.

Notation 10.4 Long-Short Quintuplet
Notation 10.5 Short-Long Quintuplet

Notation 10.6 Long-Short Septuplet
10.4 Like-handed Alignment: 3(6), 5 and 7

The following patterns seek to identify and develop functional congruence between accented long/short and short/long pairs across three rates of subdivision: triplet/sextuplet, quintuplet and septuplet. The accented analog pairs (shown on the top line) are correlated across the rhythmic rates by replicating the alignment of RLLR or RLLR hand accents with both linear (A and B) and flammed (C and D) stickings.

[Video 10.2 Low/High Tuplet Voicing - Integrating Bass-drum]
Notation 10.8 Linear Like-Handed Alignment

A  LINEAR LONG SHORT: RLLR

3(6) tuplet long/short  5 tuplet long/short  7 tuplet long/short

B  LINEAR SHORT LONG: RLLR

3(6) tuplet short/long  5 tuplet short/long  7 tuplet short/long

Notation 10.9 Flammed Like-Handed Alignment

C  FLAMMED LONG SHORT: RLLR

3(6) tuplet long/short  5 tuplet long/short  7 tuplet long/short

D  FLAMMED SHORT LONG: RLLR

3(6) tuplet short/long  5 tuplet short/long  7 tuplet short/long

[Video 10.3 Like-Handed Alignment - 3, 5, 7]
**10.5 Standard Anchors: Extrapolating Tuplets**

My term “standard anchors” indicates commonly used rhythmic intervals that can be used to extrapolate tuplet approximations (called “derivatives”) without needing to mentally process complex, non-vernacular metric calculations. The advantage of this method, at least as a preliminary step towards eventually grasping “legitimate” tuplets, is that it bases the orientation of all groupings on the stability of familiar structures.

The following examples introduce the concept by reprising 5 and 7 note flam stickings from the two-beat like-handed alignment section (above), now moving in a cross-rhythmic relationship to the pulse rather than remaining in fixed alignment with it. The exercise modulates between a tempo of 100 BPM (in 5/4) and 140 BPM (in 7/4), sharing a master tempo of 80 BPM derived from ratios of 4:5 and 4:7 respectively. Bar 1 of the first 5/4 section contains 4 groups of 5 sixteenth-notes in 3-2 (long-short) configuration.

**Notation 10.10 Extrapolating Tuplets (Bar 1)**

In bar 2, the long-short grouping of 3-2 is substituted with 4 dotted notes and 3 triplet notes respectively, occupying intervals of identical duration.

**Notation 10.11 Extrapolating Tuplets (Bar 2)**

At 100 BPM, note lengths in this new long-short (4-3) grouping are sufficiently alike as to approximate those of a perfectly even septuplet, despite the mathematical fact
that a dotted thirty-second-note is fractionally longer in duration than a sixteenth-note triplet. However, from a human performance perspective, played at this velocity they become functionally interchangeable. By correlating the flammed 4-3 groupings to sixteenth-note 3-2 “anchors”, a *virtual* or “derivative” tuplet is extrapolated, and re-imagining these extrapolated seven note groupings as bona-fide septuplets in a ratio of 4:5 across the bar enables us to *artificially* modulate to a new tempo of 140 BPM in 7/4 (Notation 10.12).

Notation 10.12 Extrapolating Tuplets (Bar 3)

Technically of course, this relationship is a fiction. However, for the practical purpose of remaining metrically “anchored” in familiar, rhythmically vernacular territory, it constitutes a workable solution at the introductory level especially considering the overall pedagogical goal of recalibrating conventional phraseology.

Next, the extrapolation process is repeated in “reverse” by substituting the long (4) and short (3) groupings with three triplets and two dotted notes respectively.

Notation 10.13 Extrapolating Tuplets (Bar 4)

Again, although the derivative 5-note grouping is not a mathematically perfect quintuplet (because an eighth-note triplet is fractionally slower than a dotted sixteenth-note), nevertheless this approximation is temporally close enough to anchor these 5-note groups across the bar as 4 *chunks* in a stable 4:7 ratio. This, in turn, facilitates a modulation back to 100 BPM (in 5/4) by re-imagining the extrapolated 5-
note groupings as bona-fide quintuplets. As the procedure is repeated, it also becomes apparent to the ear that the 4:5 and 4:7 groupings are moving at 80 BPM throughout (as mentioned above).

Notations 10.14 and 10.15 (below) set out long-short and short-long configurations, followed by an “internal modulation” version (Notation 10.16) in which 5-note and 7-note groupings are switched within a single bar. All materials are performed here with left-foot jam block playing quarter notes as the primary pulsation in both tempos (Video 10.4).

Notation 10.14 Extrapolating Tuplets: Long-Short
Notation 10.15 Extrapolating Tuplets: Short-Long

Notation 10.16 Internal Modulation: Long-Short
10.6 Groove and Application Framework: Ratio Time Shifts

This area of my personal pedagogy would provide a rigorous, mathematically structured way for cultivating “time-shifts”. Time-shifting, as developed here differs from the concurrent pulse streaming explored in a Chapter 2, in that initiation and resolution points do not always align with strong beats, and cross-rhythmic structures traverse multiple bar lines before resolving back to the original tempo.

Moreover, these “time-shifts” are not modulations per se (although they can obviously be recruited to that purpose), but exist in fixed cross-rhythmic relations to an original tempo and meter that must be entrained throughout. That is to say, this systematic discipline mandates mathematically consistent cross-rhythmic relationships to fixed structures such as tempo, meter and form, and methodologically rules out randomized “parallel” overlaying of accelerandos or decelerandos. To illustrate the principle, Video 10.5 establishes a basic funk-beat framework for time-shifting in ratios of 4:5 (Notation 10.18) and 4:7 (Notation 10.19) over a simple 4 bar form in 4/4 with accompanying chords and bass line that help delineate the structural symmetry of this procedure.
Video 10.6 applies the same process in an improvisational context.

10.7 Analog Beat Foundations

The following quintuplet and septuplet beat examples demonstrate functional application of two-beat funk and shuffle patterns on the drum-set. 4-note analog beats (A and B) have a virtual count of “1 e + a 2 e + a”, while 3-note analog beats (C and D) have a virtual count of “1 + a 2 + a” (the “A” examples being configured long-short, while the “B” examples are short-long).
The procedures outlined above, which constitute the final area of outputs in this thesis, also represent the first steps in a personal transformative methodology for integrating culturally emergent rhythmic asymmetries into my drumming idiolect - an ongoing heuristic that will be expanded in future research.
Conclusions

In this study I have set out to reveal how procedural methodologies - operating in real-time performance research environments across a range of musical contexts and constraints - can effect transformative change in my polyrhythmic drum-set idiolect. As an improvising practitioner, I argued that sonic identity could be shaped, modified and individuated through personal agency and processes of decision-making and selection operating within constraints. I mapped out a stock of raw material “variants” - that is, a pool of archetypal resources broadly constituting the extant drum-set *vocabulary* with which I arrived at the project 4 years ago - along with organisational parameters of phraseology and metrical-temporal constraints that function together as my rhythmic *grammar*. Methodologies cultivated to propagate idiolectal transformations included cross-pollination of rhythmic-archetypal cognates, along with the cyclical development of replicable specimens captured during improvisations. Six specific areas of polyrhythmic development functioned as my experimental territory:

*Suspended Primary Pulsation* explored changing figure-ground relations that result when my “comping” was decoupled from my “timekeeping” and formerly *background* improvised polyrhythmic sonorities were brought to the *foreground*.

*Densities* showed the difference between idiolectal vocabulary generated by improvisationally “filling out” structural spaces that presuppose temporally gridded infrastructure, versus archetypal configurations generated through a non-metrical “phrase-pulse” interpretation of identical source material.

*Pulse Streaming* expanded on my existing cyclic phraseology, differentiating between cross-rhythmic ensemble interplay between performers and the coordination of concurrent cross-rhythmic behaviour between my four limbs as *intraplay*.

*Transposing Rhythm* involved reconfiguring the grouping cardinalities of existing archetypal patterning grounded in traditional syncopation to form new models, whereby ratios applied to *virtual* source material templates yielded
actual improvisation outcomes emerging from newly configured relations between patterning and meter.

The concept of Isochronous Asymmetry turns on a recalibration of gridded infrastructures underlying western popular rhythm, and this chapter afforded an opportunity to integrate rhythmic consequences of a cultural shift whereby groove drummers have used expressive nuances of subdivisional micro-timing to emulate the phraseology of hip-hop drum programmers.

The Mixed Rates chapter afforded me an opportunity to collaborate with drummer Gordon Rytmeister in the development of an etude-based framework for integrating Gary Chaffee’s metrical patterning - a process that yielded new archetypal specimens of rudimental, time functioning and soloing vocabulary. A less constrained version of the same concept was also applied to clave-and-tumbao improvisation, correlating rate mixtures, micro-timings and displacements with the nuanced folkloric characteristics of Afro-Cuban rhythm.

Concurrent with these experimental studies, Asymmetry: A Personal Pedagogy emerged as an ongoing future research project to assimilate the evolving lopsided regularity of popular rhythm into my idiolect by means congruent with my past and present methodologies for rhythmic and technical organisation.

Throughout the study I undertook a series of improvisational recording sessions, interacting “live” with other performers, and overdubbing to pre-recorded tracks of previously captured improvisations or compositions programmed in music software. This work yielded 54 video documents of procedural-performative improvisation research-in-action that constitute a major component of the study’s output, along with over 170 graphic notations and figures to reinforce my data and analyses.

I posed the question: “can one create a series of procedural methodologies that allow for the creation of a new polyrhythmic idiolect through application of transformative process - and, can one document that process in action to reveal its effects?” The study has confirmed this across a range of constraints and contexts, leading to a host of creative outcomes manifesting as both new drum-set vocabulary and augmented idiolectal transformation.
It is my hope that outcomes associated with this study could have potentially fruitful pedagogical implications, but also that people would see how methodologies such as mine in the hands of another practitioner would produce entirely different results, and that these procedures are not instrument-specific so the overall concept remains applicable to improvisers on other instruments and other contexts.

The project also has pointed the way to future research possibilities whereby I will further investigate areas associated with rhythmic “asymmetry”, and continue to developing a personal pedagogy for integrating this concept into my existing technical apparatus and organisational framework.

As a practitioner, documenting decisions about how one engages with process has allowed me to understand my own rhythmic behaviour in different ways that have advanced my practice as a creative improviser – specifically, by augmenting and crystallising transformations in my idiolectal vocabulary, while advancing my understanding of how interplay (between my self and outside sources, including machines) and intraplay (between my own four limbs on the drum-set) can each effect unique idiolectal transformation. Hopefully, the documentary record of this study will also be of benefit to other improvisers.

The significance of video documents in this thesis turns on the fact that knowledge emerging through the study is methodological and performative. The videos allow people to see how decision-making and process constitute the creative act. This is something that perhaps a text-based artefact cannot allow us to fully comprehend because an improviser’s creativity resides in the choices being made as they develop new materials. These will, of course, be used differently in every performance and that remains important in the shaping of idiolectal identity, however the major creative act lies in generating new materials - not only in how they are organised in improvisational performance – and thus the generative methodologies in this study are of central importance to the creative act.
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Appendices

1. Artist Permissions

The musicians whose performance were captured in the audio-visual materials presented here all affirmed the following statement:

>This is to confirm that I am happy for audio-visual performance materials I contributed to Andrew Gander's doctoral research project to be included in his PhD dissertation.

These musicians are Max Alduca, Hugh Barrett, Steve Barry, Brendan Clarke, Ben Hauptmann, Brett Hirst, Steve Hunter, Roger Mannins, Matt McMahon, Daryl Pratt, Bill Risby, David Starck and Max Stowers.
2. Composer Permissions

The musicians whose compositions I used here both affirmed the following statement:

This is to confirm that I am happy for my composition used in Andrew Gander's doctoral research project to be included in his PhD dissertation.

These musicians are Gordon Rytmeister and Sean Wayland.
3. Publication

The contents of Notation 10.8 (Linear Like-Handed Alignment) and Notation 10.9 (Flammed Like-Handed Alignment) in this thesis also appear on page 37 of the following publication: