Strategy in Contemporary Jazz Improvisation: Theory and Practice

By

Thomas Williams

Submitted for the Degree of Doctor of Philosophy

Department of Music and Media

Faculty of Arts and Social Sciences

University of Surrey

Supervisors: Dr. Milton Mermikides and Dr. Jeremy Barham

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Abstract

The ability to improvise is one of the most demanding for a jazz musician, and “one of the most complex forms of creative behaviour” (Beaty, 2015). Jazz musician accounts attest to this, describing how improvisation is fraught by “limitless challenges under tremendous pressure” (Berliner 1994:239). In mastering such a skill, a musician must be able to navigate musical space efficiently, carving out novel pathways through harmonic, melodic, timbral, and structural units of organisation, whilst simultaneously responding to interaction within the ensemble, gestural cues, and constructing a dynamic arc to the improvisation. While the importance of improvisation to a contemporary jazz musician cannot be understated, its inception and development as a cognitive skill is not completely understood. How does a musician learn to improvise? How does a musician form a vocabulary or style of improvising? To what extent is an improviser relying on pre-learned patterns, vocabulary, and schema? Why is it that the majority of expert level improvisers are unable to explain the development of their improvisations? What then are musicians really thinking about when they improvise?

The research conducted draws focus on these issues, providing a new model of the generative mechanisms involved in improvising. Through an in-depth theoretical modelling and analysis of improvisational strategies, and a heuristically led practical study, this thesis addresses how concept based improvisational strategies might be adopted and assimilated. The focus of this study lies in the post-bebop contemporary jazz landscape and aims to demonstrate how strategy based generative mechanisms are developed and used in improvisatory practice.

The theoretical underpinning of this thesis amalgamates recent research in improvisation cognition (including research by Martin Norgaard, Philip Johnson-Laird and Aaron Berkowitz), existing musical treatise, psychological studies and seminal jazz scholarship accounts of improvisatory practice. The second half of this thesis is a practice led inquiry, framed around contemporary jazz fusion guitarist Wayne Krantz and the assimilation of his use of strategy based generative mechanisms.
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Digital Examples – all audio and further portfolio examples can be found here:

https://www.dropbox.com/sh/zy0ubmldlestvf/AACZLpSwWon9IobvCtt6VhSCa?dl=0
**Glossary**

**Audiation** – A technique often used in improvisation, whereby an improviser sings their improvisations (either aloud or otherwise), in an effort to crystallise their ideas, which are subsequently played on their instrument.

**Associative chain generation** – A generative mechanism which involves developing pre-existent material or previously played phrases during improvisation. It may be considered, at least in part, analogous to thematic development.

**Deployment** – The moment an improvisational idea is played, distinct from the pre-cognitive planning stages of the generative mechanism process.

**Explicit/declarative** – Consciously directed knowledge, distilled into understanding for reapplication. This type of knowledge is can be conveyed and drawn upon purposefully.

**Generative mechanism** – The processes underlying improvisation. Generative mechanisms describe the way in which an improviser creates material, be that novel or otherwise. In doing so, it brings forth patterns, uniformities and the lack thereof these aspects where necessary in order to provide insight into the complex cognitive and procedural aspects that happen before, during and after improvisational material is created.

**HIP (Holistic Improvisation Practice)** – The third stage of the practice methodology used in part II for assimilating improvisational strategies. This stage focuses on developing improvisational strategy use in real world contexts, both in the practice room and within ensemble performances. There are no controls or isolation in this stage, instead the aim is to gauge the use of improvisational strategy and the changes observed in the practitioners approach.

**Implicit/procedural** – Experiential and tacitly acquired knowledge, controlled unconsciously and automatically.

**Improvisational Etude** – The second stage of the practice methodology used in part II. It involves applying specific controls and direction to improvisational tasks.

**Knowledge base** – The collective knowledge of an improviser, encompassing their cumulative experiences, skills, understanding and lexicon. An individual's knowledge base comprises both explicit and implicit knowledge types, through which procedural command is developed through extensive practice, to automate many of the cognitive and behavioural actions demanded of an improviser.

**Lick** – A phrase book style musical idea, often played without concern for the coherence of the solo overall.

**Lick assembly generation** – The generative mechanism which involves playing a phrase that is not necessarily appropriate for the context. These phrases or 'licks' may be used to add breadth to a limited knowledge base and are more commonly used by novice improvisers in the absence of strategical plans.

**Proceduralization** – The process by which explicit knowledge is transitioned into implicit knowledge in the pursuit of creating a malleable and automatic knowledge base. Proceduralized knowledge can significantly reduce the cognitive load needed during improvisation, enabling the improviser to direct their attention towards higher level structural organisation of improvisation.

**Referent** – The formal schemata of a specific piece or musical context. The referent carries with it rules of engagement, stylistic norms and the tacit rules of these contexts.

**Strategy based generative mechanism** – A generative mechanism used by improvisers to build strategic maps to guide them through improvisation, by consciously using abstract/higher level plans pre-emptively. Strategies can involve placing attentional emphasis on structure, individual musical parameters (harmony, melody, rhythm, timbre etc.), ensemble dialogue, and metaphoric imagery (i.e. moods, colours, emotive descriptors etc.) among other directives.

**Vocabulary Seed (VS)** – A musical phrase extracted from a recording or transcription which can be used to yield various improvisatory strategies.
Overview

This thesis explores the strategies underlying improvisation with particular relevance to contemporary jazz improvisation. The way in which material is selected and developed by an improviser is here termed a generative mechanism. Of the three generative mechanisms outlined (detailed in part 1), this thesis focuses primarily on those that are strategy based. This is of particular relevance to contemporary jazz improvisational practice where the conventional vocabulary only approach1 is (sometimes directly) rejected, in light of the need for a deeper and more malleable approach.

Background

The impetus for this research came through my own experience as a professional guitarist and teacher specialising in jazz improvisation. There has been an overwhelming emphasis on pedagogical material to focus heavily on the adoption of ‘licks’ (see page 33) for use in a verbatim manner. This trend, along with a generally harmonic/scale led approach, has formed the corpus of instructional material for jazz guitar past to present2. Johnson-Laird(2002) argues that this trend is far removed from the processes actually occurring in improvisation. Obtaining and refining an improvisatory vocabulary is an arduous task and one which is multifaceted, of which licks form only a part of. An approach comprising licks alone is flawed in depth and acknowledgement the aural and practical traditions of jazz widely acknowledged by many great improvisers3. Committing a library of pre-formed phrases to memory is impractical at best (Johnson-Laird, 2002:430), much in the same way it would be for us to communicate with speech, using only pre-written phrases in their exact form. When we first learn to talk we re-use phrases but as we develop we begin to improvise new phrases that are formed as they are spoken in real time and are contextual appropriate. This raises the question, what are the processes improvisers use to turn existing musical material into malleable tools for real-time improvisation?

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1 Using ‘licks’ primarily – pre-existant phrases copied and played over similar harmonic contexts, often with little to no connection to the rest of the improvisation.
2 A search on amazon.com for “guitar licks books” is evidence enough to this, yielding well over twenty thousand various publications.
3 See Carr (1999) and Ratliff (2011) and for insights into the aural practices adopted by Miles Davis and John Coltrane respectively during their early development.
While exploring literature initially, I began thinking about this, about how I improvise, and about how others account for the experience of improvising. My own experience tells me that the prevailing lick based methodology for jazz improvisation is only a small part of a much larger set of abstract choices that I make, mostly unconsciously, when I improvise. I began to see that within particular circumstances I operated using common themes, routes, and pathways. While it was hard to explain the use of particular phrases within my playing, I was often able to identify a more general strategy that I was employing to achieve a specific effect. This phenomenon is widely documented, most particular in the work of Paul Berliner’s seminal ethnographical study *Thinking In Jazz* (Berliner, 1994: 144, 169, 250, 370), and in the findings of Hargreaves et.al (1991), which comprises a study of novice/expert level improvisation cognition. From this point, I decided that an investigation into the notion of improvisatory strategy was of central importance in further understanding the elusive qualities of an improviser’s style and intentions.

Heuristic inquiry was chosen as a methodology, as a way of providing a foundation to practice led research, informed by my experience and knowledge of improvising. The research conducted in the chapter one on generative mechanisms aligned with many of my own experiences of learning and developing improvisation abilities, most pertinently the transformation of explicit to implicit control of materials for improvising. To this end, I found myself concerned with how I could manipulate this process and place myself within the research as a participant. The aim of which was to extrapolate the processes by which an improviser transforms material into strategies; processes which are often left to unconscious control through combinations of traditional aural and formal jazz pedagogy. The results of part II demonstrate how improvisatory strategies can be more effectively developed in practice.

The exploratory nature of heuristic inquiry removes the need for one specific research question. There was no specific goal, as is common in heuristic inquiry. Instead, all aspects of research and inquiry were directed around one central theme: *Development of strategy based generative mechanisms for contemporary jazz improvisation.*

While the results of the inquiry are determined by analysing the exploration of the theme, a number of specific questions and aims were used to keep the research inquiry honed in and around improvisational strategy. These included:
1. Do contemporary jazz improvisers navigate using strategies or particular schema, and if so, to what extent?

2. Can a hierarchy of vocabulary be created to gauge which individual aspects (harmonic devices, sequences, intervals, superimpositions, rhythmic nuance etc.) are more fundamental to a player's sound and thus strategy than others?

3. Can discerning uses of strategy (and generative mechanisms generally) enable analysis to understand more about the processes that happen before, during and after improvisation retrospectively?

4. How are intertextual practices (allusion, commentary, humour, reference) and ensemble interaction incorporated within such strategies and hierarchies?

5. Is there an efficient way for adopting and developing an explicit (as opposed to the prevailing tacit acquisition method) pedagogical methodology for strategy based improvisatory concepts?

6. Can a limited scope of input material (three solo transcriptions in this case) be utilised effectively to heavily augment an improviser's approach?

**Research Aims**

The research aims:

- To show the workings of strategy based generative mechanisms (as part of a wider model of generative mechanisms for jazz improvisation explored) through the perspective of the improviser.

- To show the extent to which an improviser's sound and identity relies on their use and tendencies towards specific strategies by illuminating specific examples of strategy based generative mechanisms across a range of jazz examples.

- To provide a novel analysis methodology which considers strategy based generative mechanisms.

- To show the benefits of leading away from the prevailing 'lick' or vocabulary based pedagogy to a more considered strategic method of improvisation practice.
• To demonstrate how improvisatory strategies are acquired, developed and mastered through a first-hand exploration of a strategically aware pedagogical model, with support from a varied practical portfolio.

The research conducted was intended to inform the reader about the creative methods, learning processes, and performance practices that jazz musicians use, in an attempt to provide a holistic representation of these aspects, within one piece of research. In addition, the second half of this thesis aims to amalgamate theory and practice by demonstrating the core concepts and improvisatory practices as used by the researcher to develop their own improvisatory approach.
Components Outline

Part I - Theory

This section explores and amalgamates literature from jazz scholarship, cognitive perspectives, artist account, and examples of both individual and broader uses of strategy. A new model is synthesised here detailing how generative mechanisms inform improvisational choices and development. Examples of strategy based generative mechanisms are shown in two case studies of improvisational strategy, from a macro and micro perspective. Part I provides a framework and justification for the investigation into the use of strategy based improvising models and considers: How are strategy based generative mechanisms developed and used by contemporary jazz improvisers?

Part II – Practice

Chapters 4-6 are a heuristic inquiry conducted by the researcher. The inquiry explores the theories laid out in part I by means of a portfolio of improvisation recordings, conceptual etudes and documenting of the researcher’s own assimilation of strategy based mechanisms. While not exclusive, the scope of inquiry focuses on the assimilation of the improvisatory strategies drawn from Wayne Krantz’s three
improvisations in chapter 3\textsuperscript{4}. Reflections on the portfolio argue that by considering improvisation through the lens of strategy based generative mechanisms an improviser can direct the development of many of the inherently tacit features underlying the improvisation process, providing an alternative to the prevailing vocabulary based perspective in jazz improvisation pedagogy.

**Chapter Summary**

**Chapter 1 – Strategy Based Improvising and Generative Mechanisms in Improvisation**

This chapter provides an exploration of the three main generative mechanisms used for improvising as set out by Clarke (1988), with a focus on strategy based generative mechanisms in particular. The discussion amalgamates theories of cognition in improvisation, with research conducted by Martin Norgaard and Philip Johnson-Laird placed centrally in the construction of a new model for viewing the generative mechanisms used by jazz improvisers. This model is supported by artist account and experimental studies to argue that expert level improvisers operate on more abstract and unconscious levels during improvisation, delegating low-level vocabulary and syntax to implicit control, while more general strategies are used to direct improvisations.

**Chapter 2 – Strategy Micro – Michael Brecker and Superimposition**

A discussion of strategy based improvisation from the perspective of individual strategies and deployments, demonstrating various possibilities and common strategies. Michael Brecker’s use of harmonic superimposition is used as an example of a harmonic strategy being used to direct improvisation. Brecker was chosen specifically due to abundance of easily demarcated examples of harmonic superimposition strategy.

**Chapter 3 – Strategy Macro – Wayne Krantz and Developing Strategy Over Time**

A discussion of how strategy is used in a wider sense, demonstrating how an improviser’s tendencies towards particular strategies may provide improvisatory identity (or style), and how these can be changed and developed consciously. A comparative analysis of Wayne Krantz’s use of strategy over a period of time is used here to provide an example of one artist’s conscious development and refinement of

\textsuperscript{4} Michael Brecker’s use of harmonic superimposition is also amalgamated, however the bulk of the work shows how Krantz’s improvisatory strategies can be mined, practiced, and assimilated in a carefully considered and efficient method.
improvisatory strategies. Three solos are examined and coded with strategies; these also inform part II. Krantz is chosen as a case study here because of the nature of his improvisational development. While it is untypical for an improviser to accurately describe their process and development, Krantz regularly talks about his development, use of strategy, and the direction of his development, aiding the analyses that accompany this chapter.

Chapter 4: Methodology and Heuristic Study Outline

This chapter discusses the methodologies and reflective models supporting the heuristic inquiry for developing strategy based improvising. Clark Moustakas’ theories of heuristic methodology are explored here along with other relevant literature.

The chapter also draws focus to Aaron Berkowitz’s research into improvisational treatise and his staged methodology for pedagogical assimilation (transposition, variation, recombination, contextualisation (Berkowitz 2010)) as adopted by the researcher, in addition to discussing the relevance of other seminal jazz pedagogies (Crook 1991; Bergonzi 2003; Aebersold 1992). The accompanying portfolio comprises four practical output areas: A) Vocabulary seeds - a musical phrase extracted from a recording or transcription which can be used to yield various improvisatory strategies, B) Improvisational etudes – a series of specifically designed studies used to develop awareness and command of improvisatory strategy, C) Holistic Improvisation Practice (HIPs) - regular records of individual and ensemble practice, D) Studio recording - a final recorded studio session designed to mark the end of the research phase and evaluate the researcher’s development. The methodologies and design of these four output areas and the models used for evaluation are the remainder of the focus of this chapter.

Chapter 5: Analysis and Commentary of Portfolio (see below for portfolio contents)

This chapter provides a discussion of the trends found in the researcher’s own practice as it developed over the course of the study. All four parts of the portfolio are explored, showing examples for each and discussing the researcher’s findings through analysis and reflection. The narrative shows the development of a selection of vocabulary seeds and their transition from explicit to implicit command through improvisatory strategy across the four output areas. In addition, on a larger scale, the effectiveness of the
methodology is discussed considering that the scope and focus of material developed was limited mainly to the three Wayne Krantz improvisations analysed in chapter 3 (see document A1.2 for seed listing).

Chapter 6: Reflection and Conclusions

A final commentary on the findings of the literature, analyses and heuristic inquiry, considering how jazz scholarship and practice may develop to include an explicit understanding of improvisatory strategy.

![Portfolio Components]

Figure 0.2 – Portfolio components

A) **Vocabulary Seeds** – Material relating to vocabulary seeds, containing: a taxonomy of vocabulary seeds used by Wayne Krantz demonstrating their relevance to improvisatory strategy; further examples of Michael Brecker’s use of harmonic superimposition; a documentation of the processing of a vocabulary seed through Berkowitz’s first two stages of assimilation, demonstrating the methodology for engaging with material initially in order to draw out strategy; a similar documentation of the processing of a vocabulary seed mined from the researcher’s own improvisation practices, demonstrating the cyclic possibilities of the methodology.

B) **Improvisational Etudes** A series of 24 improvisational etudes and recordings composed from observed strategy use. These offer a novel way of developing an improviser’s use of strategy and overall improvisatory approach.

C) **Holistic Improvisation Practice (HIPs)** - A collection of recorded holistic improvisation practices (HIPs) and reflections from across the breadth of the study. These demonstrate the researcher’s
interaction with the material and make explicit the improvisatory processes, challenges in practice and
developmental nature of cultivating an improvisatory approach for jazz.

**D) Studio Project** - A trio project recording consisting of original and arranged music, with
improvisations demonstrating the culmination of the researcher’s heuristic study and improvisational
development within the constraints of a live contemporary jazz setting.

All four parts of the portfolio contain audio files, supporting documents, and transcriptions where
necessary.
Part I – Theory
Chapter 1 – Strategy Based Improvising and the Generative Mechanisms of Improvisation

1.1.1 Introduction

How an improviser produces well structured, coherent and identifiable improvisations is central to the study and understanding of jazz practice. Initially, academia focused on using traditional Western music analysis and methodologies to understand an improviser’s craft. More recently interdisciplinary studies drawing on cognition, generative theories, pedagogical understanding, linguistic and computational theories have been used in jazz studies to give a new perspective on an improviser’s ability.

Clarke’s generative model (Clarke, 1988) describes three distinct generative mechanisms underlying the choices made during improvisation. Generative theories are built on the premise that interaction between specific frameworks and rules (in respect to improvisers this includes the improviser’s raw materials, vocabulary, approach, and their knowledge of the contexts they are improvising over) produce continually unanticipated and infinite behaviour. Despite this generative mechanisms are, to some extent, deterministic and can exhibit complex patterns, repetition and organisation, which contribute to the ‘DNA’ of an improviser’s approach. The illusion of free will in improvising, is created by the seemingly infinite possibilities that an improviser may have to direct his improvisations. In reality, the possibilities are more readily guided by a number of non-variable factors including the improviser’s current knowledge base\(^5\), the referent, experience and cognitive ability needed to execute an effective improvisation.

Clarke’s generative mechanisms include associative generation (analogous to motivic development or developing existent material), the lick assembly\(^6\) (recalling phrases and licks from long term memory), and the hierarchical principle\(^7\) (conceptual and abstract choices made consciously about how to direct an improvisation). The choices made by an improviser are also informed by ongoing processes of evaluation and reflection (Johnson-Laird, 2002).

\(^5\) See section 1.1.2
\(^6\) While Clarke (1998) uses the term “repertoire selection” to describe this pathway, Norgaard (2008:9) uses the term “lick assembly” while explaining Clarke’s description. For consistency and clarity, Norgaard’s term will be adopted for the remainder of this thesis, as it draws heavy connotations from the concept of ‘licks’ which is explored in detail early in chapter one and is a concept that is central to the remainder of the thesis.
\(^7\) From this point on, this will be referred to as the strategy-led mechanism.
Strategy based generative mechanisms in jazz improvisation are the focus of this thesis. Part I considers the theory underlying strategy based mechanisms along with analyses of their use. Part II is an attempt at refocusing improvisational pedagogy around strategy based approaches, following the researcher’s development of practice.

Despite the wealth of jazz improvisation pedagogy available, there are none which consider strategy based generative mechanism theories as analytical tools or as novel pedagogical tools for directing practice specifically. By drawing together the foundations laid by Clarke and amalgamating recent research, this chapter aims to provide a more thorough conceptual understanding of how jazz improvisation takes place cognitively, from a musician’s perspective. To give context at this stage, one should think of strategy based mechanisms as analogous to using general and non-specific directions to guide choices. In simpler terms, the improvisation is guided by concept based approaches. For example, an improviser may decide to create dissonance; in doing so they may consider using a harmonic superimposition. The note to note level of awareness of what they play is replaced with this higher level goal or approach, thus allowing the lower level choices to be controlled implicitly and the higher levels explicitly.

1.1.2 An Improviser's Materials

Central to the discussion of the processes which an improviser uses to navigate improvisation effectively, are the raw materials they use to do so. At this point it is necessary to establish these materials in order to understand the following sections. Jeff Pressing’s established concepts of knowledge base and referent will be used exclusively to provide consistency to these materials throughout.

The Knowledge Base

Pressing’s describes the knowledge base, as the collective knowledge of an improviser, encompassing their cumulative experiences, skills, understanding, lexicon and referent. The knowledge base grows with every experience, be that in a performance, pedagogical, practice or simply through listening. It can grow through both explicit and implicit assimilation of materials garnered from these situations. While it is difficult to give a complete overview of all the elements which constitute such an expansive concept, Pressing uses the following descriptions to give example:
Improvisational fluency arises from the creation, maintenance and enrichment of an associated knowledge base, built into the long term memory . . . materials, excerpts, repertoire, subskills, perceptual strategies, problem solving routines, hierarchical memory structures and schemas, generalized motor programs, and more . . . [The knowledge base] encodes the history of compositional choices and predilections defining an individual’s personal style . . .

(Pressing 1998:53-54)

The Referent

When not improvising completely freely, using what is more commonly called standard practice jazz (see section 4.7.2), an improviser uses the referent, which Pressing defines as “an underlying formal scheme or guiding image specific to a given piece” (Pressing, 1984:346). The referent, an integral part of the overall knowledge base, provides “a set of cognitive, perceptual, or emotional structures (constraints) that guide and aid in the production of musical materials” which aids fluency and coherence when improvising (Pressing, 1998:52). Pressing goes on to state that the use of referents increase “processing efficiency” while improvising. More specifically, it can reduce the cognitive load, freeing it up for other processes such as perception, control, interaction, and further guiding principles in improvisation which may help an improviser reach a higher level of achievement (Pressing, 1998:52). To give example a referent may include a theme and variations, the melody, chords, bass line (Pressing, 1984:348). Other examples have been given such as a structure, type of musical material, and constituent events of each section (Berkowitz, 2010:5). More simply, a referent might simply be thought of as a tune, the elements from which it was composed, and the underlying structures which may inform an improviser. As an improviser becomes more aware of the referent, they are more able to direct their improvisations accordingly.

Implicit/Explicit Knowledge and Memory

Finally, it is important to establish the types of knowledge and memory. Berkowitz (2010) suggests that both knowledge and memory can be divided into implicit and explicit categories. He outlines implicit knowledge/memory as that of experiential, non-conscious, automatic, and natural (2010:7). Explicit knowledge/memory is defined as declarative, conscious, directed, and gleaned from tests. The main difference between the two is the conscious state. This distinction is central to this thesis and as such Berkowitz’s terms and descriptions have been adopted and used throughout.
1.2 Jazz Improvisation – Overview of Cognitive Dimensions and Components

While this thesis focuses on a specific part of the understanding of jazz improvisation cognition, it was felt necessary to introduce some core concepts to add context for the less familiar reader. It also serves to show how the impetus for the research grew through the challenging of prevailing ideas and understanding of jazz improvisation, its place in pedagogy and representation.

1.2.1 Defining Improvisation

With the precedent set by previous research on this topic, it is necessary to begin by defining improvisation, or at very least setting a clear boundary for the parameters that constitute it, for the reader to contextualise and relate further writing and concepts. The primary engagement of inquiry in this study is that of contemporary jazz improvisation. It is non-instrument specific, however for clarity and scope the case studies that follow are on pitched instruments and their improvisations over a particular harmonic setting in ensemble format.

There are many issues involved when defining improvisation. For instance, where does it start and end? Does it have to be completely novel to be improvised? How do levels of performer intentionality affect its definition? How much does an improviser rely on pre-formed material? How do you effectively represent an improvisation? How appropriate is standard notation in representing improvisation? At the forefront of these, are the issues of the dichotomy between improvisation and composition and whether improvisation is a product or a process. We will address this first.

Some argue that composition and improvisation are distinctly separate, each supported by a set of cognitive processes that require different and unrelated skill sets. Others argue that composition and improvisation sit on a continuum, sharing many of the same generative mechanisms, albeit with temporal differences.

“The creation of a musical work, or the final form of a musical work, as it is being performed. It may involve the work’s immediate composition by its performers, or the elaboration or adjustment of an existing framework, or anything in between.” (Sadie 1980:31-2)

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8 Larson (2005:242), discusses his own observations of the distinction between composition and improvisation, put forth by many “distinguished writers”.

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This description from the 1980 edition of the *Grove Dictionary of Music and Musicians*, suggests an illusion of permanence and that of a realised product. *As it is being performed* suggests that “*it*” exists temporally before its realisation and performance. There is something far more evanescent about an improvisation, suggested by the inability of many practitioners to convey their understanding of the production of their own improvisations (Berliner, 1994:2). This suggests it is outside the characteristics of the composer's vernacular of work, composition, score, or transcription which may imbue a sense of finality or permanence to the description. Improvisation is a real time event, which does not allow for editing, retrospection or what Sarath calls “expanding temporality” (Sarath 1996:4) and instead focuses on “inner directed temporality”, a concept of centricity and awareness of the present. This is exemplified in the interactive and combinational efforts of a good jazz ensemble, who in order to interact and produce interplay, must focus on the vantage point temporally. Sarath does however suggest that a third temporal conception may be realised in that of “retensive-protensive temporality” (Sarath, 1996:6), bridging the gap between composition and improvisation. This involves projecting into the past or future, allowing previous ideas to be re-worked and developed or for future strategies and plans to be implemented. Sarath suggests that this temporality is shared by both composers and improvisers and is used as a subordinate temporality in both cases to allow greater development. Berliner’s description of improvisation concurs with this, suggesting a number of temporal conceptions are in use, and that the usage levels of each can be ascribed to a continuum:

“*Improvisation involves reworking pre-composed material and designs in relation to unanticipated ideas conceived, shaped, and transformed under the special conditions of performance, thereby adding unique features to every creation.*” (Berliner, 1994:29)

Nettl’s (1974) research calls for the abandonment of the concept of improvisation as separate from composition, also stating that “one way we may perhaps define improvisation is by measuring the degree to which the performer is creatively involved”. Unfortunately, this furthers the complication of defining improvisation, requiring a pre-requisite understanding of what constitutes creativity and also raises notions of the need to be novel to truly improvise. One could argue, as Berliner does (1994: 69), that simply extemporising ornamentations and thematic development is improvising, albeit in a controlled setting, and does not necessarily require less creativity than navigating improvisation in a free jazz setting.
The thematic improviser may rely heavily on associative generation which limits the amount of new material offered, choosing instead to create long elaborations on a limited set of materials. The free jazz improviser may instead deliberately eschew the use of thematic development in favour of using strategy based generation, shifting from one concept to another frequently. The importance of embellishment and motivic development should be remembered however, as it is often a first step in learning to improvise (Berliner, 1994:71).

It is also worth considering what is produced during an improvisation and whether our focus should elucidate the internal workings of improvisation from the perspective of product or as a process. This issue has been a central dichotomy of jazz studies among jazz musicologists for some time. Those who place jazz as a product⁹ place the source as recordings and transcriptions which are accorded the same status Western classical music theorists ascribe to the score, in many ways treating it as the urtext for analytical purposes. Those musicologists tend to focus on features shared with European concert music such as melodic coherence, motivic development, and underlying structure. There are however many issues which point away from this conjecture, such as the over-emphasis on melodic and harmonic taxonomy, structural emphasis and the mitigation of elements less amenable to transcription such as micro timing, ensemble interaction, gesture, and timbre. In addition, there is an overwhelming tendency to create a hierarchy within analysis through viewing improvisation as a product, which in cases can allow the dismissal of integral parts of the mechanisms and subtlety of improvisation as a generative and creative art.

Those who view improvisation as a process¹⁰, argue that improvisation as a performance practice does not derive meaning through analytical methods developed for music that is born through the page. This stance instead seeks to demonstrate and clarify common themes and patterns across many improvisations such as motivic, formulaic, schematic, syntactical, gestural, linguistic similarities, and interactive elements that constitute the generative mechanisms at work during an improvisation. There are of course issues present here too, such as the high level of subjectivity and issues of intentionality that come with a more

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open and wide discourse than that of the former description. The researcher does not wish to arbitrate between these positions however instead draw attention to the issues and complications levelled by both.

A better description which amalgamates these temporal principles is presented by Solomon (who also considers improvisation as a process):

“The fundamental ideal of improvisation is the discovery and invention of original music spontaneously, while performing it, without preconceived formulation, scoring, or content, although this is admittedly a limit case. It is improbable that the limit case of no preconception, either by design or past learning, actually exists. Therefore, improvisation is a matter of degree.” (Solomon, 1986:226).

The second part of the Grove Dictionary of Music and Musicians definition suggests that there are external forces which in part, direct the improvisation of a given performer in order for them to create authentic and well-received improvisations:

“To some extent every performance involves elements of improvisation, although its degree varies according to period and place, and to some extent every improvisation rests on a series of conventions or implicit rules”

Recent research by Aaron Berkowitz, suggests that these conventions can be split into two broad categories 1) stylistic constraints 2) performance/performer constraints (Berkowitz 2010:2). In the former, stylistic constraints are built to position the music culturally and within a particular improvisatory vernacular, allowing for a common ground to be shared among performers and listener. For instance, one can generally identify the more homogeneous styles of jazz more easily than those which blend many elements. The improvisatory style of Charlie Parker is most definitively bebop and requires particular rhythmic and melodic lexicon in order to be realised as such. The improvisatory style of Michael Brecker shares elements of bebop with contemporary jazz, rock, funk and 20th-century music amongst others. It is far easier to position Parker than it is Brecker and while Parker’s improvisations remain close to the
syntactical rules and similar lexicon required in order to remain authentic to the homogeneity of bebop\textsuperscript{11}, Brecker ultimately commands a greater degree of malleability in his use of these elements.

Berkowitz suggests that, with support from Jeff Pressing’s seminal work on cognitive processes used in improvisation, improvisers use formal schemata in the form of structures, abstract ideas, materials and temporal markers to underpin their improvisations and alleviate the severe cognitive load that is produced during improvisation. Pressing describes the many cognitive processes an improviser must navigate during improvisation\textsuperscript{12} revealing that improvisation “is critically shaped by often rather severe constraints on human information-processing and action” (Pressing, 1998:51). Pressing suggests this happens through the use and development of cognitive structures, which he calls the “referent” and the “knowledge base” (1998:53-54). These tools are imbued with an improviser’s collective experience and development as an improviser, including lexicon and syntax; physicality and technical mechanisms; performance etiquette and other essential performance conventions. Despite Pressing’s precise account of these inherent cognitive processes, little work has been done to construct an analysis methodology for improvisations which may draw on these features. In order to gain more understanding of the material an improviser produces, a better understanding of the systematic processes, strategies, and constraints they encounter must be considered.

From these issues, we may arrive at a working definition of improvisation. This may change as research develops, but will provide a foreground to the concept of improvisation when discussed throughout this thesis. A definition of improvisation should focus on its elusive qualities, evanescent nature and acknowledge of the appropriate vernacular of the musicians involved in its performance. Drawing from the above, the following will be used as a working definition throughout:

*Improvisation in jazz is an extemporaneous activity in which performers navigate complex mental processes to produce musical utterances that aim to be at once novel, spontaneous and interesting and also communicative (both to the wider ensemble and audience), well-structured and familiar. The generative mechanisms in jazz improvisation involve: drawing on a range of implicitly held materials and refracting them through various abstract strategies and schema, maintaining a lexicon*

\textsuperscript{11} See Owens (1974) and Martin (1996) for a discussion of Parker’s heavy use and reworking of a particular set of melodic formulae.
\textsuperscript{12} These may include “real time sensory and perceptual coding, attention allocation, event interpretation, decision making, prediction, memory storage and recall, error correct and movement and control.” (Pressing, 1998:51)
of jazz vocabulary and syntactical rules for their deployment, and the ability to develop material in real time to form an original performance. The levels of preconception do not necessarily define improvisation and instead sit on a continuum, perhaps positioned or at least affected, by the stylistic constraints of the setting.

1.3 What is Novel? The Role of the ‘Lick’, Cliché and Stylistic Etiquette

The quest for an original and identifiable vocabulary and style is an ardent characteristic of a professional jazz musician. The reason to include a section exploring the role of the lick is twofold; firstly, one of the main motivations for this research project was drawn from refocusing pedagogy around strategy instead of the overwhelming emphasis on lick based pedagogy. Secondly, as research developed, it became apparent there was an analogous link with Clarke’s description of the repertoire lick assembly generative pathway. As one of three generative mechanisms used by improvisers, the use of licks can be an integral part of an improviser’s toolkit.

‘Licks’ are fixed musical patterns or phrases used by an improviser, often in similar contexts to which they were originally conceived. This might include developing a repertoire of phrases around particular harmonic settings (for example ii V I progressions) or using particular styles or techniques as organisation. Licks can be learned through aural imitation or through secondary sources such as transcriptions. As has been mentioned, the prevailing corpus of jazz improvisation instructional places an emphasis on the importance of learning and reproduction of licks. Licks also form part of an improviser’s knowledge base, as set out by Pressing (1988)13.

There are many academic studies which make reference to the use of licks within improvisation. They are not only referred to as licks (Owens, 1996) but also as events (Clarke, 1988), ideas (Berliner 1994); formulas (Finkelman, 1997), motives (Schuller 1968), figures (Berliner 1994), and melodic patterns (Jost, 1974). Norgaard (2011) draws unity to all of these through the term “learned figures”. Artist vernacular include, tricks, licks, vocab, crips and clichés (Berliner, 1994:102).

For the purpose of this study, the term licks will be used for all instances where pre-conceived melodic phrases are discussed. This term will be used alongside the term vocabulary seed (see part II) when

13 See page 25
discussing the use of licks as raw material for developing an approach and extracting strategy or schematic plans.

One view is that licks are inserted into improvisations note for note (Gushee, 1998; Weisberg et al., 2004). There are many studies which support this by showing a high number of repeated patterns throughout a particular improviser’s body of work (Owens; 1996; Finkelman 1997; Weisberg et al, 2004; Love 2012).

Some licks may be motor generated and derived by the reuse of common finger patterns and positions. As Sudnow experienced, motor-generated ideas can be utilised without “really knowing what they would sound like in detail” (Sudnow, 1993:62). Berliner (1994:81) and Norgaard (2011:117) support the idea that jazz musicians can at times fall back on technique when inspiration is absent. In many ways, motor generated licks allow improvisers a safe option to fall back on in moments where cognitive demand is too great to pursue another generative mechanism. This may also happen in instances where an improviser needs to redirect cognition to larger structural planning demands. Hargreaves (2012) points to this by stating that “The performer who invests time in practice may begin to recognize patterns of redundancy, which no longer require occupation of processing time”. Pressing also proposes that this reduction in novel information allows the musician to redirect attention to higher order thinking skills such as organisation, due to the extreme demands of real-time cognitive processing (1998: 136, 167). Motor generated licks also allow for a greater use of technique. This may happen as pitches become arbitrary within frequently used positions/fingering generated patterns. This allows greater technique and rhythmic demands to be pursued without the added cognitive load that conscious pitch choice brings.

A second view is that improvisers use licks based on more formulaic principles, using structures and rules to construct licks in the moment, based on previous iterations of similar constructions. There could be many possible outcomes on the generation of a lick this way. All however, in principle, would share the same formulaic basis.

Phillip Johnson-Laird shares the second view stating that "A common misconception about improvisation is that it depends on acquiring a repertoire of motifs - 'licks' - which are then strung together one after the other to form a solo, suitably modified to meet the exigencies of the harmony"

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Johnson-Laird, 1991:430). He goes on to say this misconception is untrue for three reasons. Firstly in order to play these licks, someone had to invent them to begin with. In those instances they were not simply regurgitated from memory and leads us to question how does one create a lick? Secondly an analysis of a musician’s body of work will yield many instances where phrases are played only once and thus not carried into the lick lexicon. Thirdly, and perhaps most pertinent to this study, is the maxim that as an improviser’s use of licks increases so does the cognitive load needed to store, access and re-generate these pre-formed materials. In Johnson-Laird’s words, “The labour of committing to memory a sufficient number of motifs to guarantee the improvisation of complete solos is altogether too large to be practicable” (1991:291). A linguistic parallel can be applied to aid this argument. Consider speaking a foreign language using only a phrase book to do so. It may yield useful foundations but in order to converse effectively, the phrases should be malleable in order to fit in any given context. Musical improvisation would also be mostly ineffective and stale when using phrase book style approach exclusively, and may similarly affect ensemble interaction. Jazz musicians are often acutely aware of the limitations of a fixed vocabulary approach and aspire to transcend the use of their knowledge base in order to produce spontaneity and gain improvisatory freedom (Seddon, 2005). To this end there is a general disdain in the jazz community for those who rely on the use of licks as a main improvisatory method for performance. Borrowing too many licks or obvious plagiarism of a musical style is considered bad etiquette as there is “a tacit assumption that improvisations belong to the creators” (Berliner, 1994:101).

Licks do however, have a role in contemporary jazz practice (where used discreetly). In fact, there is an expectation for a certain amount of fragments, phrases, and lexicon to be borrowed from other improvisers and traded within the community as malleable material to be developed and assimilated within another’s approach (Berliner, 1994:101).

Licks can also be used directly however, to evoke intertextual links to previous performances to show appreciation and authenticate the improvisers understanding of a particular domain (Berliner, 1994:103-
Licks can also be used with humorous intent or to cajole, poke fun, create allusions and to position authenticity. It is more than likely that both views set out are in use. Norgaard (2011) argues this through reference to Berliner: “Ideas themselves may be specific or general, or comprise a combination of specific and general properties” (Berliner, 1994:800 cited in Norgaard, 2008). This suggests that a working knowledge base contains procedures for executing licks in both ways (verbatim or partially through the use of formula). There has yet to be a study which compares the frequency of usage by an improviser of these two procedural methods for using licks.

Despite the outlook on their usage, pedagogical approaches often incorporate the use of licks within their methodologies. There is often a deliberate investment of time and effort made by improvisers to build a lexicon of licks, patterns and even full solos (Berliner, 1994:95-105). To do this, improvisers will either use an aural methodology, a transcription or have a peer show them individual licks to add to their mental storehouse. Perhaps the most widely used approach to developing a lexicon is that of practitioner transcription, whereby the improviser/learner uses aural methods to first decipher a lick, often using their instrument to find an appropriate fingering and recreate the lick immediately, before transcribing the lick in notation in a journalistic style (Berliner, 1994). The use of analytical methodologies can then be applied to discover the underlying structure and rules of these licks for development.

Some practitioners seem unaware of how licks manifest, although do acknowledge their existence. “I swear to my students that I don’t improvise anything original, as far as I know. I think it’s all pieces of stuff that I’ve heard throughout the years. Sometimes I can even identify it as it’s coming out of my mouth, and say ‘oh my gosh – there’s Dizzy Gillespie, there’s Oscar Peterson, there’s Joe Morello’” (Bob Stoloff in Wadsworth, 2005:118 cited in Hargreaves, 2012). Bob Stoloff’s (an improviser/educator) conjecture is in line with Pressing’s concept of the knowledge base, suggesting that an improviser’s lexicon consists of cumulative musical experiences.

Licks also provide a way of validating an improviser’s authenticity and credibility within a particular domain or area of jazz. To this end an improviser may at times need to be aware of the expectations on

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15 See Berliner (1994:258)
vocabulary and approach within such a domain in order to do so. Jazz musicians who are aware of the repertory and vernacular to which they intend to converse in, are able to create solid musical connections and conversations which contribute to a cohesion of improvisatory voices in an ensemble (Braude 1994). This in turn can bring new heights to an improvisation and position the improviser and ensemble at a higher level of achievement through audience perception and authentication.

Conversely however, the use of licks is not always appropriate or needed to engage in specific areas of jazz. Free jazz pioneer Ornette Coleman and Derek Bailey for instance, have noticeably less heritage in their improvising. They focus instead on generating new material, continually eschewing the trappings of the heritage of jazz vocabulary, which others may need in order to authenticate them within the jazz community.

Personal clichés and conversational licks form what Braude calls “expressive automata” (Braude 1994). These can form part of a performer’s expressive identity and style (Berliner, 1994:103). An approach to improvising cultivated using particular organisations of common interval patterns, rhythmic groupings, timbral, and physical gestures may provide an improviser with their own voice and allows to them to avoid plagiarism through the borrowing of others lexicon.

The culmination of this development of lexicon would be for the artist level improviser to have others replicate his licks. While outside the scope of this research, this could form part of the galvanisation of homogenous styles identified by a more confined hierarchy of lexicon approval, such as that exhibited in the lineage of appropriate bebop lexicon being drawn from a limited few proponents of the style (Parker, Gillespie, Rollins, Christian). On an individual artist level, their contribution to the domain, may be in part determined by their level of contribution to common lexicon.

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16 Clarke 1988 outlines three generative principles and also argues that the use of a lick based principle for material generation was very prevalent in the bebop era. In addition the work of Owens (1974) supports this too, through showing the large phrase vocabulary exhibited in Charlie Parker’s body of work.
Figure 1.1 – The role of the 'Lick'

The use of licks evidently affects a performer's understanding of improvising and also further enforces the idea that different improvisations and improvisatory styles are situated on a continuum of novelty. In some instances the role of the lick is essential in order to create an authentic voice and appropriate vernacular. In others it is not so essential and may be less of a prevalent feature. The idea of a ‘pure’ improvisation, or one that strives to eschew any pre-conception, is perhaps diverting attention from a far more interesting perspective, which takes account of an individual's rich musical experiences and how they manifest in improvisation.
1.4.1 Generative Mechanisms in Jazz Improvisation

"The world consists of mechanisms not events. Such mechanisms combine to generate the flux of phenomena that constitute the actual states and happenings of the world. They may be said to be real, though it is rarely that they are actually manifest and rarer still that they are empirically identified by men. They are the intransitive objects of scientific theory. They are quite independent of men—as thinkers, causal agents and perceivers. They are not unknowable, although knowledge of them depends upon a rare blending of intellectual, practico-technical and perceptual skills. They are not artificial constructs. But neither are they Platonic forms. For they can become manifest to men in experience. Thus we are not imprisoned in caves, either of our own or of nature's making. We are not doomed to ignorance. But neither are we spontaneously free. This is the arduous task of science: the production of the knowledge of those enduring and continually active mechanisms of nature that produce the phenomena of our world." (Bhaskar 1975:37)

Generative theorists focus on measurable patterns and uniformities. These are thought to be created by an underlying mechanism. It is these mechanisms that are eschewed in strict vocabulary-based analysis. By considering generative approaches to improvisation we may focus on the formulation and transformation of material, rather than the material in and of itself.

These mechanisms are processes which produce patterns and uniformities and are measured in both the presence and absence of these, although these are not always directly measurable. They depend on and describe the choice making capability of individuals, both individually and in social settings.

Figure 1.2 – Overview of generative process (from Pawson, 2007)
This diagram taken from Pawson (2007) shows an overview of a generative process with M depicting the mechanism(s), O as the outcome or event produced, and C as the context. It demonstrates the influence of the context on the decision making of the individual. Section 1.5 focuses on the mechanisms, processes and outputs. A consideration of the interference caused by the context is shown on page 75.

There have been many attempts at describing the way in which generative mechanisms are used by improvisers (Clarke 1988; Kenny and Gellrich 2002; Pressing, 1988; Johnson Laird, 2002; Sawyer, 1999; Toivianen, 2001; Azzara, 1999; Lash, 2003; Love, 2012; Berkowitz, 2010; Burrows, 2004; Weisberg, 2004; Fidlon, 2008; Monk, 2012; Sarath, 1996; Mendonça & Wallace, 2004). This section serves to provide the reader with an overview of generative mechanisms and the processes underlying an improviser’s ability in research past to present.

Clarke’s seminal (1988) work on the generative principles involved in music performance contains one of the earliest accounts of a generative model which stresses the importance of hierarchical mental representations as a means of controlling performance. Clarke ascertains that there are three main generative principles that direct decision making: the hierarchical principle (strategy led generative mechanism); the associative chain; and lick assembly.

Hierarchical Principle (Strategy led generative mechanism)

The first principle describes larger, more abstract structures which guide improvisation. These may be partially constructed beforehand. This overarching principle is used to guide all lower level decisions. Tonal events (E) created in this way are filtered down through the overarching hierarchical structure as shown in fig.1.1, which then fit together on various levels. This principle suggests that an improviser may be able shape or sculpt an improvisatory style based on their use of particular strategic decisions made pre-emptively. Berliner states that expert improvisers work from general designs, ascribing portions of solos to emphasise particular musical aspects for shaping (1994:235).
**Associative Chain**

The second principle or associate chain explains the way an event (E) can be developed. It is analogous to the idea of thematic development or motivic development in jazz\(^\text{17}\), whereby a considerable effort is put into developing existing material in real-time without the need to continually generate new material. Events (E) can be repeated with or without variations and draw from previous figures also, as shown in Fig. 1.1. The modelling and variability of the associative chain has been looked at recently in great depth in a study by Mermikides (2010, Chapter 1).

**Repertoire Selection**

The third principle focuses on the insertion of licks directly from the knowledge base as previously discussed, then connecting them to form longer phrases while still keeping the same lexical structures. These licks are thus connected in a serial manner as shown in Fig. 1.1 The use of licks has already been discussed in the previous section and is appropriate for inclusion in a complete model of the generative mechanisms involved in improvising.

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\(^{17}\) Of which both terms are used synonymously in jazz (Berliner, 1994)
conscious or unconscious direction of the generative principles outlined. In addition Norgaard (2011)18 points out the lack of definition of the “length and the nature of the event (E)” adding that “He describes the event as a low-level musical unit or a pattern that the improviser has memorized, but does not specify its length”.

The hierarchical principle, concerned with the abstract pre-determined strategies used as part of a set of generative mechanisms, is the focus of this thesis, although the use of the associate chain and the lick assembly as generative mechanisms will be discussed where appropriate.

Clarke’s research is in fact preceded by the work of Jeff Pressing, who had already published a number of seminal accounts of the computational, cognitive and generative processes underlying music improvisation. His work is influential, and rarely omitted from a bibliography, due to his highly detailed and insightful cognitive models (Pressing, 1984, 1988, 1998). His major work, Improvisation: Methods and Models (1988), made a notable contribution to jazz research as one of the earliest published cognitive models of improvising. Pressing’s model describes a sequence of non-overlapping “event clusters” or generative episodes which form an improvisation. The “clusters” are represented by three distinct parameters: objects, features and processes. Objects are cognitive constructions such as arpeggios, chords, or scales; features are properties shared by objects such as a chordal function, cadence or metric position; processes are changes to objects/features over time.

Pressing stresses that the triggers generating the clusters are built around strategies or schemata. In doing so, focus is turned away from the individual pitches and rhythm towards higher order goals and directives.

Pressing postulates that in regard to the continuation of clusters, one can either use associative generation or interrupt generation. In associative generation the improviser develops the idea based on its internal qualities and fundamental structures, creative variations and mutations from an original idea. In interrupt generation, the improviser, having exhausted the possibilities of development of the idea looks for new material or an alternative direction. Both have implications for the cognitive processing required for each.

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18 For a more in depth discussion of Norgaard’s work, which is centrally important to this thesis, see page 58
While Pressing’s model provides a thorough and interesting description of the cognitive events that improvisers use to generate material it is compromised by its lack of pragmatism in applications to practice. The changing landscape of jazz analysis and musicology to a more researcher/practitioner symbiosis emphasis is, however, indebted to the conceptual work of Pressing and the discourse it created.

Clarke and Pressing are not the only scholars to have attempted to provide cognitive models of improvisation. Johnson-Laird’s (2002) paper attempts to outline the cognitive processes and demands placed on a performer during improvisation. Johnson-Laird uses his synthesised “NONCE” definition of creativity to do so (2002:419). NONCE contains five assumptions that can define a creative process:

1) Novelty – “The result of a creative process is novel, at least for the individual doing the creating”. It supports the idea that no two improvisations will ever be the same by the very definition of improvisation.

2) Optional – “Novelty for society is optional rather than essential” as someone else may have already had the same idea.

3) Non Deterministic –“It can yield different outcomes when it is in the same internal state and has the same input”. Even if all the all conditions were recreated exactly, the improviser may yet still produce different improvisations each time.

4) Constraints –“The aesthetic values of a culture thereby exert an historical influence on the individual’s creative process”. In reference to style, genre, and personal style, an improviser’s output is informed by the constraints of their domain.

5) Existing Elements – “Creations cannot be constructed out of nothing”. An improviser must have at his disposal raw materials (knowledge base) in order to create.

While the NONCE system does not necessarily explain how the generative mechanism processes in improvisation are used, it does provide insight around the product produced by improvisation.

Kenny & Gellrich’s (2002) study describes three integrated models which form a temporal perspective on improvising. This model comprises generative mechanisms, mental processes, and learning processes. They distinguish the processes as processes of recall and processes of anticipation, which can be made up of short, medium or long term focus decisions in relation to individual generative events.
Kenny and Gellrich also outline a non-conscious ‘flow state’ in which musicians are “able to concentrate solely on what is being created at that particular moment” (2002:124). This may be analogous to the concept of ‘flow state’ put forth by Csikzentmihayli (2008) and more recently Hytönen-Ng (2013).

The results of the study show that the most commonly used processes are that of short term and medium term anticipation, along with flow status. Their findings indicate that an improviser’s decision making process occurs as a series that affects improvisation on a level of individual note choice. This notion is challenged by Johnson-Laird (2002) who argues that improvisational fluency cannot be achieved this way due to the high demand on cognitive systems this would require.

Dominic Lash presents an account of the processes happening before, during and after improvisation. His study uses artist account to objectify his findings. Among the many insights gleaned, Lash presents arguments that suggest that there is an auditory decoding system on an ensemble level which is used to decipher and inform responses to musical discourse and “ongoing musical argument” (Lash, 2003:3). This suggests that subsequent generative mechanisms are informed by such an input system and that such a system must include a type of filtering to discern whether the auditory input requires a response or not.

1.4.2 - Strategy in Practice – The Improviser’s Perspective

Aaron Berkowitz’s 2012 book The Improvising Mind features an extensive multidisciplinary survey of many aspects of the creative cognitive processes involved in improvisation. Berkowitz focuses heavily on pedagogical assimilation of improvisation skills, comparing improvisation treatises and drawing comparison between them. The pedagogical side of Berkowitz’s study will be discussed in part II, however, Berkowitz’s text also aids the understanding of generative mechanisms in performance.

Through interviews with improvising musicians, Berkowitz draws to attention to the “creator and witness” phenomenon (2012:121) which is later articulated as the “balancing between mind and fingers” and the consistent struggle of managing the “explicit intentional declarative knowledge” of an improviser’s intention with the more “subconscious implicit procedural knowledge of the style”. In doing so, an improviser must adopt a reflective process as part of the cognitive system to do this. This is supported by Norgaard (2011) who defines two ongoing processes, “sketch planning” and “evaluative monitoring”, which form the basis of such a self-referential system. Berkowitz’s interviewees provide
validation, explaining that in the moment judgement of material is a way of directing the shape of an improvisation, usually on a more global level (2012:24). Examples of the type of judgements may include appraisal of contour direction, dynamic levels, rhythmic density, and harmonic context. Equally it is common for an improviser to use symbolism to represent particular judgements. Examples might include the use of dark, light, soft, heavy, hot, cold, or other metaphors to shape individual aspects of the improvisation.

Berkowitz also identifies a strategic level which operates at a “different conscious, temporal, and motor level than that of the micro-decisions made at the note-to-note, finger-to-finger level” (2012:123). This strategic level is used to plan the sequence of events, structure, and development of a solo. While other research has had little to say about the expertise level of those who adopt strategy planning, Berkowitz’s study argues, through artist account, that an expert level improviser is far more likely to direct the shape of improvisation on a global level once automaticity and a strong knowledge base has been developed. One of Berkowitz interviewees states that while improvising “you are absolutely beholden to your subconscious” (2012:124). Lack of access to conscious decision making on a note-to-note level is a common phenomenon experienced by many improvisers. Kenny Barron describes “primarily thinking in terms of musical ideas” (Berliner 1994:181). This can, however, lead an improviser towards feeling ill-prepared at times with success attributed to the perception of chance and luck (Berkowitz 2010:125). Chance and luck, in the case of the expert level improviser, play less of a role than the perception of the improviser suggests. As Berkowitz considers, it is of little surprise that his interviewee tends to be “reasonably lucky” most of the time (2012:125) when in command of carefully cultivated knowledge bases. Berkowitz goes on to suggest that the implicit and explicit processes used by an improviser are “subserved by two distinct cognitive systems” (2012:128). This is further supported in other research (Berkowitz & Ansari, 2008; Limb & Braun, 2008).

Cases of musicians affected by amnesia, where performative ability is left unaffected, further support the idea that cognition in performance is generally subserved by different parts of the brain. Oliver Sacks (2007:187) discusses the case of Clive Wearing, a British conductor, performer, and musicologist, who despite having a severe case of both anterograde and retrograde amnesia is still able to perform and improvise to some extent. This is interesting given that Wearing has little in the moment awareness or
memory, of playing piano. Wearing can “sight-read, obey repeat marks within a short page, and understand the significance of a metronome mark... ornament, play from a figured bass, transpose, and extemporize” (Wilson et.al, 1995), suggesting that the internalised knowledge base gained through Wearing’s professional career is accessed unconsciously and delivered through automatised motor procedures which appear to have been unaffected by his condition. This speaks to depth of internalisation of improvisatory and musical performance mechanisms which are imbued at the same level as that of language and movement which often also remain in cases of amnesia.

Other recent studies of musicians with amnesia have shown that ability and skill can be improved despite such a condition (Cavaco et.al, 2012). It is reasonable to suggest that many aspects of the generative mechanisms underpinning improvisation are internalised as non-declarative knowledge, which transition from explicit knowledge, culminating in automaticity. One study (Cavaco et.al. 2012) of an amnesiac musician’s ability to learn new musical material through sight-reading, highlights the importance of the self-evaluative processes postulated by Johnson-Laird (2002). The results, although positive, left listeners feeling that the performance was “robotic” or “machine like” (Cavaco et.al., 2012:7). This could be due to the absence of such self-evaluative processes and the limitations of a solely procedural approach, which may also be hampered by the inability to guide the direction of performance on a strategic level as Berkowitz postulated (2010).

While the Berkowitz’s research provides the foundations for the following discussions, analyses and reapplication of generative mechanisms for improvising, there has also been a number of significant studies which help contextualise and add depth to the understanding of cognitive mechanisms and the abilities of an improviser.

For example, musicologists have applied analytical techniques to pre-existing jazz improvisations to glean insight into the cognitive processes of improvisers, using transcriptions and recordings as source material (Finkelman, 1997; Weisberg et al., 2004). In addition, there have also been qualitative studies which amalgamate artist account with transcription/recordings retrospectively (Monson, 1996; Berliner, 1994; Norgaard, 2011).
There are also a few significant and empirically grounded ethnographical studies which help to illustrate the way an improviser generates material using introspective and quality driven methods (Monson, 1996; Sudnow, 1993; Berliner, 1994; Hodson, 2007). Berliner’s seminal text *Thinking in Jazz* comprising a vast amount of artist interview data, transcription, and analysis is widely accepted as the most extensive of this type of ethnographical research to date. His artist accounts are incredibly insightful and provide a way of objectifying many of the theoretical tenets presented by the cognitive/generative theorists mentioned previously by alluding to specific phenomena as experienced by jazz improvisers. Furthermore, Monson’s work, along with Hodson’s, complements Berliner’s in providing a thorough look at the interpersonal and interactive aspects of the jazz ensemble through the ethnographic and analytic lens.

David Sudnow’s (1993) *Way of The Hand*, attempts an empirically grounded auto-ethnographic study on Sudnow’s own development as an improviser from a novice level. While the issues inherent with Sudnow’s use of language in illustrating key concepts and lack of description of cognitive processes affect the studies rigour, it does provide an interesting introspective approach which may be supported with other grounded theories. In his development Sudnow outlines three distinct areas of development he encountered in his development as a jazz improviser: The first stage makes use of formulas, licks and routines in an explicit and rigid way; in the second stage Sudnow was able to vary these elements and integrate them with one another, suggesting the acquisition of variation ability; the third stage occurred as the formulas, licks and routines became more implicit and flexible, allowing for better shaping of the overall coherence of the improvisation.

Sudnow’s identification of these three stages of improvisatory development may be analogous to already established theoretical models of skill acquisition (see Fitts & Posner, 1967; Proctor & Dutta 1995), which illustrate the transition through a cognitive stage, to an associate stage and finally an autonomous stage. The cognitive stages in all accounts represent the transition of explicit material to its implicit control (Berkowitz, 2010) culminating in “automaticity” (Pressing, 1988:9; Lehmann, Sloboda & Wood, 2007:79). This transition will be discussed further in Part II from a pedagogical perspective.
The significance of automaticity and having an implicit command of improvisatory materials cannot be overstated. It is a much sought after skill which allows for cognitive load reduction and can lead to improved performance practice. The principle of automaticity discussed here is particularly relevant to this study. In the following analyses and heuristic work emphasis is placed on understanding how improvisers might go about developing automaticity procedurally, and what processes guide the use of implicit material in improvisation.

One particularly interesting aspect of Sudnow’s study is his discovery of, what Gordon (1999) calls “audiation ability”, or in Sudnow’s words, “temporal-spatial synchrony” (1993:108). This feature of an improviser’s palette of skills, which involves hearing the ideas as they are manifest on the instrument, is often placed as an apex of an improviser’s skill development (Coker, 1987: 11).

Other Studies

Monk draws on much of the above research to amalgamate into a multidimensional model, postulating that there are five “improvisation brains”: performance, creative, continuation, structural, and temporal. Each of which guides a particular aspect of the improvisatory process.

The ‘performance brain’ controls the physical aspects of improvisation including a three stage process (in a feedback loop) of generation borrowed from Pressing (1984:353). This includes 1) perceptual coding of incoming data, 2) evaluation of possible responses and choice of response, and 3) execution and timing of chosen actions (Monk, 2012:91). Monk establishes this as the platform for the four other processes and likens it to a computer operating system.

The ‘creative brain’ underpins the generation of new material and uses Johnson-Laird’s creative algorithms as a basis.

The ‘continuation brain’ focuses on a Pressing’s understanding of how ideas are developed using associative generation and interrupt generation (Pressing, 1987:21). This ‘brain’ differs from that of the ‘creative brain’ in that it manages the succession of ideas as opposed to the generation of ideas themselves.

19 For detailed explanation of automaticity and its effect of performance practice, see Logan 1985; Moors & De Houwer, 2006; Cohen & Poldrack, 2008.
The ‘structural brain’ guides with the overall structure of ideas and the relation of past and future events. Here Monk draws on Sarath (1996), proposing that a motif can relate either to an “immediate predecessor, or it can result from the accumulation of all passed events”. Monk states that the former is more applicable to jazz improvisation and the latter to classical improvisation. This is a generalisation however, and no more weight is added to the assertion.

The ‘temporal brain’ is used to add retrospection and prospection (Mendonça & Wallace, 2004), in order to position key events and allow planning of climax points, general contour sculpting and awareness of any other temporal considerations, working closely with the ‘structural brain’ process. All processes are interlinked and utilised together as opposed to individually or as part of a sequenced event chain.

Research has also been conducted into how improvisers use temporal cognition to link events created by generative mechanisms (Sarath, 1996; Mendonça & Wallace, 2004).

Sarath (1996) discusses various aspects of temporality in relation to the generation of a musical event which he defines as “the perception of a musical object (sound or silence) and the inference of implications (if any) from that object-perception” (1996:4). He outlines two distinct temporal directionalities, one which comprises a non-linear event chain whereby each event is understood “independent of preceding events” and a second which culminates in an aggregate of all events.

Drawing on Pressing (1998) and Sudnow (1993) as an amalgamation of seminal works of theory and practice in jazz improvisation cognition, Wendy Hargreaves’ 2012 study extrapolates three generative mechanisms and discusses their properties.

The three mechanisms: strategy-generated, audiation-generated, and motor-generated are placed as possible sources of idea generation. Of the three mechanisms, strategy-generated is the only consciously controlled element, with the other two more likely driven by unconscious triggers. Hargreaves also points out that motor-generated ideas, do not need to be audiated first.

The study does not attempt to produce any kind of hierarchy of these mechanisms and how they may be used. It is possible however that such a hierarchy exists and that mechanisms can be nested within each other. For example, an overbearing strategy may guide and shape through the various parameters of the
referent and knowledge base, then produce audiation-generated or motor-generated material from a smaller selection of appropriate materials. Equally, it is possible that an audiation-generated or motor generated-idea could bypass such a strategic mechanism, particularly in instances where an improviser’s skill and knowledge base is not yet sufficient enough to meet the demands of the situation.

It would appear that an improviser must create a coherent balance of multiple generative structures on both a conscious and unconscious level. In order to be efficient and produce a successful improvisation, the improviser must be able to keep a low cognitive load whilst also retaining as much control and flexibility over the output of generative mechanisms.

1.4.3 – Cognitive Efficiency in Improvisation

While it is clear that generative mechanism theories and models may provide an insight into the abilities of an improviser, establishing an empirical understanding of these mechanisms poses a problem. As skill level in improvisation increases, so does automaticity of the procedural knowledge involved. This phenomenon is common in many instances of sensorimotor skill acquisition. One needs only to think of learning to ride a bike, learning to drive, or learning to type quickly and the subsequent difficulty in providing explanation for how to perform these tasks once automaticity has been achieved. It has been argued that as the efficiency of the processes increase, the awareness and sense of control of the individual aspects of behaviours decrease (Fitts & Posner, 1967). In supporting theoretical models of the generative processes in improvisation, artist accounts are more than often affected by this handicap, leading to confusion on improvisational intentionality and procedure.

The irrevocable nature of utterances created in jazz improvisation require that an improviser have in their command, an efficient set of procedures, tools and mechanisms for creating material in real time. These mechanisms rely on maximising cognitive efficiency through keeping a low cognitive load. This may be achieved by transitioning explicit/declarative knowledge into implicit/procedural knowledge, allowing the improviser to focus on more abstract strategic decision making.

So far, it has been established that improvisers draw from a pool of unconsciously held materials, concepts and syntactical rules in order to generate material. As improvisers develop their craft, a unique
vocabulary is formed as part of the “knowledge base”, which is drawn upon and connected using rules and syntax according to the “referent”\textsuperscript{20}.

**Cognitive Efficiency of the Referent**

Mendonça & Wallace (2004) conducted a study to test the thinking processes of jazz improvisers in respect to creativity and temporal planning. The study suggests that improvisers apply more cognitive load in the absence of a referent. They state that “Players will spend more cognitive effort on remembering and planning ahead for a free tune than on a standard” (2004:1), stressing a correlation of cognitive demand with level of structure from jazz standard to free improvisation\textsuperscript{21}. There were significant differences in creative cognition between participating ensemble groups during the free improvisation (2004:4). Therefore, the more conscious attentional focus an improviser has to give towards a referent, the less focus they will be able place on creative pathways and improvisational direction. Outside of free jazz the use of standards is commonplace, so in order to give the same attentional emphasis to creative cognition as in free settings, an improviser must rely on becoming intensely familiar with the common referents, shifting their awareness in this sense towards a more implicit and automatic control.

**Cognitive Efficiency in the Knowledge Base**

An improviser must have at their disposal a suitable set of raw materials by means of a vocabulary. Building a large and malleable vocabulary requires that an improviser gather materials and knowledge, which then must be automatised. There are two ways in which this may occur. Knowledge may be acquired implicitly through exposure and immersion in improvisation, tacit listening, ensemble interaction, and other aural means (Berliner 1994:102). This type of knowledge is often procedural in nature. Knowledge may also be acquired through explicit instruction and testing in consciously directed operations, leading to assimilation of a rule (Ellis 1994:1-2 in Berkowitz 2010). This type of knowledge is declarative in nature.

\textsuperscript{20} See page 25

\textsuperscript{21} This statement is in relation to creative cognition as opposed to temporal cognition for which, through the participant led study, no difference was found in the use of temporal processes from a standard based to free based context
Expert level improvisers are often unaware of choices on a note to note level during improvisation. Instead, their attention is placed on using higher level guiding strategies to create effective improvisations. Therefore, in order to do so, an improviser must work on cultivating their knowledge base for use implicitly.

Anderson’s research echoes this (1999), describing how experts can “acquire cognitive skills enabling them to circumvent the limits of short term memory capacity and serial reaction time”. Anecdotal and introspective accounts from practitioners support this stance (Berliner, 1994; Sudnow, 1993; Hargreaves et.al, 1991). Practitioners often experience a meta-physical sensation of not directly controlling parts of their improvisations, parts which are most likely controlled implicitly.

As improvisers develop their skills and build a larger knowledge base, acquiring new materials for the knowledge base may be done in a more efficient manner, drawing out conceptual schemata of materials rather than smaller units of material. For example, an improviser may find a phrase and choose to extract a rhythmic concept like polyrhythmic placement, instead of decoding the superfluous elements to the phrase (pitch, interval, tone, grouping, texture, contour etc.), all of which may already be in their knowledge base.

Implicitly acquired knowledge can also be made explicit in order to draw out schemata. As Berkowitz states, “the use of written models allows for the direct transmission of what is known and understood, but not necessarily verbally articulable” (Berkowitz 2010:79). What is then made explicit through modelling may then be filtered back into the subconsciously directed aspects of performance.

The importance of drawing out underlying schemata of musical materials is brought to attention by numerous authors (Pressing, 1998; Johnson-Laird, 2002; Berkowitz 2010:29). By assimilating schemata, improvisers are also able to circumvent the need for an unnecessarily large pool of specific vocabulary, which would require an unfeasible cognitive load on working memory.

To summarise, an improviser’s goal is to transition raw materials and smaller units of vocabulary to a point where it can be drawn on implicitly. This allows attention to be focused on directing and shaping the schemata available in their knowledge base. Transitioning declarative/explicit knowledge to
procedural/implicit knowledge and competence is an arduous and slow task however, leaving many novice improvisers feeling incompetent.

**Developing Cognitive Efficiency**

Developing an implicitly held knowledge base requires that the processes, which may at first be explicit and require considerable thought and direction, are made automatic and become implicitly controlled. Hsieh (2009: 54) states, drawing on well-established theories:

> “Declarative memory is believed to be useful in helping diversity in creativity of improvisation. However, an enlarged amount of declarative memory could also slow down the speed of improvisation as individuals would have to spend time in accessing available information”.

Pressing (1998) supports this, suggesting that successful improvisation depends extensively on long-term memory extensively utilised in unconscious automatic processes.

The process of automatization is outlined in Anderson’s (1999) model of learning as “knowledge compilation...A progressive shift from the use of declarative knowledge to that of procedural knowledge, and an increase in automaticity.” Anderson goes on to state that automatization is achieved through two processes; procedurilization and composition. Procedurilization creates “production rules” which can significantly reduce the cognitive load needed to search through long-term memory during skilled performance. Berkowitz echoes the importance of achieving procedurilization, stating that: “The knowledge base formed in this in this way rather than through rote memorisation is thus organised for spontaneous action rather than mere recall. Concepts underlying individual formulas can be organised into higher level categories of musical materials that have particular musical function or that have the capacity to accomplish specific musical-physical goals when improvising” (Berkowitz 2010:54). Berkowitz is referring to the use of a four stage process for achieving procedurilization and validates the use of strategy generation in improvisation as a means of creating more efficient cognitive pathways through abstraction of concepts.

The cognitive economy produced by procedurilization corresponds with the cognitive characteristics of domain experts as defined by Anderson (1999). Anderson points out that a characteristic of expertise is
that experts are more quickly able to internalise knowledge into long term memory, and can more readily use retrieval cues to access this information, within their domain of expertise. Ericsson and Kintsch (1995) echo this explaining that experts do not necessarily have better memory, but become more efficient at accessing and combining the resources of long-term and working memory. Others have suggested a similar combinational memory workload systems, such as Kenny & Gellrich (2002) who describes eight types of cognitive processes involved in improvisation, of which three are different levels of memory (short-term recall, medium-term recall, and long-term recall).

1.5.1 Strategy Based Generative Mechanisms in Jazz

Following the wider review of literature and concepts underlying generative mechanisms for improvising, this section will now discuss the focus of this thesis: strategy based generative mechanisms.

Despite the prevailing pitch/harmony centricity of jazz analysis, the abstract strategic choices that can guide an improviser’s performance play a significant role in an improviser’s ability, especially as their ability develops. In the previous section the existence of such a cognitive process was identified in the work of Clarke (1988) as a “hierarchical principle”, which suggests that improvisers can pre-emptively build strategic maps to guide them through an improvisation. Such a plan controls the deployment of all low-level decisions and also provides a behavioural plan for efficient cognitive loading and “solving the compositional demand of improvisation” (Hargreaves, 2012).

As discussed in the previous section, Hargreaves (2012) suggests that a strategy led generative mechanism is one of three mechanisms utilised by the improviser. Both Hargreaves (2012) and Sudnow (1993) suggest that the emergence of strategy based generation in improvisation is common in intermediate to expert level improvisers. As improvisers gain experience in using strategy based generation more efficiently they being to refine the development, deployment, switching between, and integration of various strategies and other generative mechanisms.

Strategies can involve placing attentional emphasis on structure, individual musical parameters (harmony, melody, rhythm, timbre etc.), ensemble dialogue, and metaphoric imagery (i.e. moods, colours, emotive descriptors etc.) among other variable elements. In an interview, jazz trombonist, Curtis Fuller, describes
“painting pictures”, while other interviewees account for visualising improvisation pathways “graphically” (Berliner 1994: 175).

Pressing (1988) speaks of the “redundancy of description” when describing how the abstraction of low-level decision making allows improvisers “maximal flexibility of path selection, so that whatever creative impulse presents itself as an intention, and whatever attentional loadings may be set up, some means of cognitive organisation and corresponding motor realisation will be available within the limiting constraints of real time processing” (1988:159). What Pressing suggests is that cognitive load can be managed far more efficiently when delegating low-level generation to non-conscious control. The level of cognition occupied by the three main generative mechanisms is heterarchical. An improviser may choose to shift between these and it is perhaps fair to say in light of Pressing’s comments that the speed and control of such a shift would only be aided by the operational system described underpinning a strategy-generated mechanism.

**Participant Study of Emerging Strategic Use in Expert Improvisers**

A study was produced by Hargreaves et.al (1991) to describe the cognitive processes used in jazz improvisation, in relation to strategy usage, by comparing the interview responses of a group of novices and a group of experts after a controlled condition improvisation. The results showed that novices were unable to provide explanation for their approach and instead focused on individual musical parameters such as harmony. A lack of feedback system was noted in the novice’s improvisations, preventing them from changing strategies accordingly and instead “filling in with no plan” (1991:50). The novice’s responses correlated with Sudnow’s (1993) first two stages of development in being; more acutely aware of individual note groupings, phrase and low level routines; having lack of feedback system; and being without automaticity.

The experts on the other hand, were able to identify plans and strategies which emerged prior to playing. These strategies led the improvisers through various approaches, sometimes technical, harmonic, melodic, or timbral. The improvisers often thought of emotive/metaphorical descriptions to direct these aspects, characterised in the interviews by responses such as “It should sound like a cathedral”, “I tried quite consciously to play in a sort of modal style, like McCoy Tyner…but I lapsed back into playing 8ths and
9ths three quarters of the way through”, “I just felt the mood, a kind of sad medieval mood”, and “tried to build up from a slow beginning and put more notes in and make it more interesting and varied towards the end”. Each of these responses suggest an awareness of direction and the presence of responses to a feedback system.

As part of this strategic planning employed by the improvisers and the feedback system governing it, there were instances where motivic development was noted as a strategic choice or perhaps as a switch of generative mechanism. The comments made by the experts, such as “when I played something I liked I repeated it and tried to build on to something else” and “I thought of an idea and things I liked I developed” point to this.

All but one expert used an overall strategic plan. The experts were able to distinguish between rigid and loose strategic adherence and acknowledged automaticity of low level routines (i.e. note-to-note level consciousness, phrasing, intervallic considerations, figures etc.) and their unconscious/implicit control.

**Goal and Concept Led Improvisation**

The use of strategy generation as a part of an effective improvisatory approach is by no means an arbitrary characteristic. Strategy generation provides a way of reducing cognitive load by utilising unconscious/implicit selection of low-level decisions, allowing more emphasis to be placed on pursuing particular goals, focus areas and structural planning.

The grouping of materials into constituent areas appears in many texts. Berliner (1994:162) states that “the discovery of scales and their theoretical relationship to chords constitutes a major conceptual breakthrough with immediate application” going on to describe the conscious intention in which strategies are formulated. Tirro states that “memory recalls, unconsciously and subconsciously, musical events, patterns, and tonal combinations that the improviser has committed to memory. Schemata, or modes, exist in jazz, and these are the patterns, or modifications of patterns which form the framework upon which, or against which, the improviser builds his new composition” (Tirro, 1974:286). Kenny argues that the improviser does not start from complete spontaneity and instead “creates within a learned probability system of stylistic norms that implies a defined goal” (Kenny 1987:40).
Strategy generated ideas can also be produced without the need for prior audiation (Berliner 1994:209, 234). Sudnow describes how he was able to create material without being able to audiate the sound in his earlier stages of development (Sudnow, 1993:62). While it may seem apparent, as Hargreaves notes (2012:360), that strategy-generation has strong implications for students and novices new to improvising, the study conducting by Hargreaves et al (1991) suggests that the use of strategy generation is more common in artist-level experts and in fact novices find it difficult to construct strategy plans. This may be due to novices having a considerably smaller knowledge base, and less understanding of the referent requiring them to place more attentional emphasis on low level material in the early stages of improvisatory skill development.

It may also be the case that expert level improvisers find their ability to utilise strategic directives change as the referent becomes more unfamiliar. For example an improviser who is a grounded in the conventions of bebop may find it difficult to navigate the extended harmonic ambiguities present in modal jazz. Increasing the complexity of individual elements such as meter, harmonic complexity, tempo, phrase structure etc. may also affect an improviser’s distribution of the three generative strategies in place.

Motor or Physical Strategy Engagement

There is also a distinction to be made between motor-produced licks (as part of Clarke’s lick assembly mechanism) which are deployed unconsciously, and a deliberate motor-engagement of a lick as a strategy. In the former, the improviser is accessing a pool of unconscious of finger patterns which can be arbitrarily selected as viable solutions. In the latter, the improviser may choose to focus on a particular physical formation on their instrument, to specifically engage the effect that physical formation brings. Physical strategies such as this may also be used as a means of production for another strategy. For example one could apply a diminished chord ‘shape’ on a guitar and move it symmetrically to enable the improviser to create attentional emphasis on the diminished harmony use as a strategy-generation goal.

Equally, an improviser may use motor-engagement as a strategy. Derek Bailey states that "the spatiomotor mode can be regarded as a legitimate and commonly used mode of thought, used to instigate and to control musical performances, and just as creative as the auditory mode, for creativity in music may often

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22 For example, in the former a guitarist may fall back on a fingerboard position or familiar hand shape unconsciously and out of necessity. In the latter, the guitarist is actively choosing to do so, for a particular effect.
consist of deliberately finding new ways to move on the instrument, which are then... assessed, and further creative acts, guided by the aesthetic evaluation of the resultant novel sonic patterns." (Bailey 1980:257-58). What Bailey describes suggests that an improviser may use pre-learned scales, arpeggios, interval patterns and formations to consciously engage with, or deliberately defer from, in order to achieve novelty. Similarly, Pressing views "the motor enactment of novel combinations of values of array components" as a "common source of behavioural novelty." (Pressing 1998:161)

Practical Examples of Strategy Use

Examples of strategy based generation can be found in other research. Sudnow’s introspective study describes having “nameable places, nameable devices and nameable routes” (1993:124) and also describes building “an increasing mass of solutions” (1993:29).

Love (2012) identifies five “phrasing schemata” and various “melodic schemata” in use by Charlie Parker in order to provide “solutions to the problems of high-speed improvisation” and remain innovative within the harmonic simplicity of the blues.

Hargreaves’ (2012) study shows that improvisers use “sequencing, jumping intervals, repetition with variation” as part of “deliberate strategies”. These can be represented as particular deployments of strategic planning, as they are not in themselves goal descriptive. ‘Jumping intervals’ for example, may be a deployment of a plan such as ‘avoid sounding scalar’, ‘increase harmonic tension’ or they could be reflectively based (through the on-going process filters (Johnson-Laird, 2002)) on a previous event or referent such as ‘mimic interval pattern from the melody’, ‘contrast scalar section’ etc.

Pressing describes the use of perfect fourths, rhythmic displacement and chromaticism as points of emphasis (1998:162-164). He states that “attentional emphasis” can be given to particular elements which will then in turn guide the subsequent chain of events.

Examples of strategy based generative mechanisms are also found in many first person artist accounts. Bass player Art Davis describes how “chess masters study different moves and plan strategies before a match” (Berliner, 1994:234) when suggesting how he might approach improvising.
Strategy based generative mechanisms can also inform pedagogical approaches. Strategies can be drawn from pre-existing improvisations, by means of transcription and analysis of phrases. In doing so an improviser/analyst may take a phrase and consider the concept underlying the phrase that is interesting or valuable to their approach.

In Hargreaves’ et.al (1991) study the frequency of strategy use changes among individual along with preferences for the type(s) of strategy more likely to be explored. Strategies can be transferred and re-applied and although the prevailing corpus of instructional material focuses on developing licks, there are a number of publications which provide insight into strategies for improvising, even if brief (see Aebersold, 1992:45; Bergonzi, 2003; Coker, 1987:50–53; Crook, 1991:100–104). While there is no definitive method for cultivating and developing the use of a strategy based generative approach explicitly, Hargreaves (2012) maintains that it can be taught and provides an example: “the teacher can notate a phrase on the board, explain its components then instruct students to perform it”. Separating components in this way allows for attentional emphasis to be placed on one aspect of the phrase, divorcing unnecessary components which may otherwise distract from the concept or strategy being studied. This is a fairly simplified view of what is an extremely complicated task. One needs only to have experienced teaching improvising to understand the problems met through developing improvisatory skills in students. Despite this, the process of drawing a strategy from a single phrase for immediate re-application is one that lies at the core of the heuristic work and the pedagogical methodology explored in Part II.

1.5.2 Norgaard’s Strategy Based Mechanisms

Martin Norgaard’s (2011) study aims to shed light on the cognitive processes that occur during improvisation by expert level jazz artists, for reapplication in pedagogy. The study positions itself in the realm of cognitive understanding and is similar in many ways to other studies (Azzara, 1999; Burrows, 2004; Johnson-Laird, 1991, 2002; Mendonça and Wallace, 2004; Patel, 2003), however is perhaps the first

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23 Norgaard’s inclusion here, separate to the rest of the literature, is due to its central importance to this thesis and value as recent research
to describe improvisational strategy use in an applied setting since the previous study by Hargreaves et al.

(1991). Norgaard assembles a typography of various musical strategies that can be utilised by the improviser. The participant led, qualitative elements of the research have a firm grounding in the landmark study of jazz improvisation by Berliner (1994).

To discern the strategies used by the improvisers, he employs the use of a two stage method in which he first records various unrelated expert musicians improvising using sets of controls (same piece, form, style, use of jazz standard etc.) and then interviews them while they listen back to the recording and view the transcribed score. He annotates the score with the reasoning behind their choices of musical material at any given point. A shared schemata of musical processes exhibited in all subjects is then presented. This includes four strategies used by the improviser (melodic priority, harmonic priority, lexicon recall, and replaying repeated material) and two ongoing processes (sketch planning - before - evaluative monitoring - after).

His results suggest that there are four strategies and two ongoing processes in improvisation. He defines the strategies as:

1. Idea bank or lexicon recall
2. Harmonic priority
3. Melodic priority
4. Replaying repeated material, with or without development

He defines the two processes as:

1. Sketch planning - including conscious decisions on intensity, register harmonic structure
2. Evaluative Monitoring - decision making - creating contrasts etc., reacting to sound

These processes are similar to Kenny and Gellrich’s model of retrospective and prospective processes, and suggest that continual assessment of output in real time is common. Norgaard describes the sketch planning process as: “one or more musical features of upcoming passages are sketched out by the improviser before the passages’ execution”. Evaluative monitoring is the process by the improviser reflects and assesses the successfullness of their playing. Evaluative monitoring is also recognised by

Norgaard’s strategies can be compared to the three generative mechanisms proposed by Clarke (1988). The “idea bank or lexicon recall” is analogous to the “lick assembly”; the “replaying repeated material, with or without development” is analogous to the associative chain; the harmonic and melodic priority strategies are examples of strategic directives based on specific musical goals. While it is possible, as Norgaard postulates that the “idea bank” and “replaying repeated material” are strategies it is suggestible that these are instead separate generative mechanisms on a heterarchy as defined previously. In other words, these two distinct generative mechanisms can be engaged consciously, as a product of the outcomes of an evaluation process, however they are not in and of themselves strategies for steering improvisation and instead comprise the deployment of mainly implicitly held materials and schemata.

The two “priority” strategies may also not be exhaustive. One could extend this to any musical parameter or specific conceptual category. For example, an improviser could choose to focus on timbral, dialogical, rhythmic, or physical strategies amongst others. Each strategy may then in turn have individual sub-levels of deployments. This might include, for example, a focus on creating polyrhythms within a rhythmic strategy, sequences within a melodic strategy, superimpositions within a harmonic strategy, or any other specific mid-level organisation of musical materials. From here implicit control over low level decisions such as individual note choices, rhythm choices, phrase length, articulation, ornaments, attack velocity etc., may take over.

As Norgaard acknowledges, the study is limited in that it does not account for the effects of ensemble interaction. In addition, Norgaard does not take into account the improvisers individual styles/gestures that will affect how they each approach the referent.

Norgaard’s categorisation is supported by other interdisciplinary research. In reference to Limb and Braun’s(2008) study, Norgaard suggests that the improviser does not have conscious control of all

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24 A recent Neuroscience study of brain activity during improvisation (Limb and Braun, 2008) shows how there are activations and deactivations in various parts of the brain during improvisation. While not conclusive, the study indicates an increase in motor function and an attenuation of the parts of the brain widely acknowledged as responsible for various memory recalling and linguistic processing tasks. While outside the scope of this research, this has serious implications for the value and practical use of
improvisational choices, attributing to the parts of the brain controlling self-referential systems and decision making being less active. This supports not only Johnson-Laird’s (2002) stance that the choices are made due to conditioning over a period of time to rules and practice standards, but also to Csikszentmihalyi’s (2002) notion of ‘flow’ and ‘optimal experience’. A ‘flow state’ for a jazz musicians could mean enter a state of concentration where a higher number of choices in improvisation become innate and subconscious. This state is reflected by professional jazz improvisers: “When I improvise let myself go to the inspiration flow;” (Pressing, 1988). When considering flow states achieved by jazz musicians, one should consider also that a number of parameters may affect the reasoning behind a musician’s perception of flow. Mermikides (2014), in his review of Hytönen-Ng’s book, *Experiencing Flow in Jazz Performance* (2013), describes the issues relating to the attribution of flow states. More specifically, issues arise when discussing the cultural differences between the research participants, the influence of ego, and the potential need an improviser has to lay claim to such an experience, in order to validate themselves as a ‘real’ jazz musicians in a domain which places high value on such an experience. This should be taken into account, as much of the following analyses and interpretation in chapters two & three is subject to the acceptance of a deep awareness of choice, or at least enough to allow choices to become innate, culminating in a musician reaching flow states. While Mermikides draws attention to accounts of high level musicians who have not experienced flow states and dismiss the idea, perhaps the perception of flow and the awareness of what flow really is, it at the crux of this dilemma. Perhaps, an element of what may actually constitute flow, is the ability to move to higher levels of strategic direction, moving towards a point where even global plans (such as those in in the account by Hargreaves et.al (1991)), become implicitly controlled. For those more acutely aware of strategy, pedagogy, and the methodology behind their own development of jazz improvisation this may seem entirely normal. In this case those more aware are likely to avoid the cultural mysticism that sometimes impacts the descriptions of others who have learned more tacitly and through aural methods alone.

Adapting Norgaard’s strategy for analysis purposes will be pursued in chapters two and three, however each instance will require a malleable understanding of strategy-based generative mechanisms based on an

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*a working lexicon for improvisers. In addition (Limb and Braun, 2008) show the activation of a part of the brain (the medial prefrontal cortex) widely attributed to self-referential systems and emotion (see Gusnard et al., 2001; Kelley et al., 2002)*
improviser’s own preferences and individual strategy use, where discernible. This may including using first-hand accounts of their understanding and experience while improvising in addition to mapping out patterns and particularities inherent in their improvisations.

1.6 Delineating Strategy

Whilst studies in jazz and improvisation are more abundant than ever, most analyses in jazz focuses on the theoretical and pedagogical implications of extant improvisations, often with a heavily Western scale/pitch emphasis. Berliner suggests that despite the wealth of material available, as a whole it only scratches the surface of the complexity of improvisation and its underlying processes:

“Despite the importance of all these sources, it seems to me that, taken together, they gave but discrete glimpses into the individual and collective processes of learning, transmitting, and improvising jazz.” (Berliner, 1994:24)

There are studies which have used analytical methodologies to draw insight into the cognitive strategies used by improvisers in a particular improvisation (Finkelman, 1997; Smith, 1983; Weisberg et al., 2004). Berliner (1994) and Monson (1996) both used transcriptions to demonstrate specific cognitive aspects to support their ethnographic studies. Norgaard (2008), also uses transcription and post-improvisation interview reflection, to draw insight into the generative mechanisms being used by the participants.

In order to delineate the strategies being used in an improvisation by using transcriptions, audio, and artist account, an awareness of the tendencies of the improviser should be considered, along with what may be anomalous. In addition, it is important to take account of the domain and genre conventions that encompass the improviser’s style and practice settings. Even with an expert knowledge of the improviser in question, making definitive statements about the intentionality of an improviser in relation to their use of strategy is problematic. This should not deter analysis however, and we should be aware of the analyst’s presence in any delineation or conjecture on the cognitive choices made by the improviser. In some cases artist account may be secure and lead to an irrefutable designation of strategy use. In other areas where explanations are harder to find, we may find value in the interpretation of the analyst,
providing they have an extensive knowledge of the improviser’s own knowledge base and practice generally.

There are, of course, numerous unavoidable issues when assigning strategy descriptions retrospectively. With artist accounts the problems include: individual bias, priming and limitations to an individual’s understanding of the implicit knowledge base and processes being used, all of which can affect the perceptions of the individual. Equally, from an analyst’s perspective, one must be careful not to force categorisation or explanation without justification and clarification. Despite this, it must be considered that delineating strategy is an interpretive and qualitative methodology which requires a high degree of understanding of the domain and knowledge base of the improviser under investigation. It may be reasonable to say then, that because of the highly subjective nature of interpretation in relation to an improviser’s intentionality, a researcher-practitioner’s perspective of their own use of improvisational strategy, may yield a greater depth of understanding.

In chapter four, artist account, transcription and analytical techniques are used to show Wayne Krantz’s use of strategy across a range of examples, suggesting ways in which strategy can be delineated and provide a new analysis methodology using the theories set out in this chapter.

In chapters four and five, the researcher’s own heuristic work demonstrates various ways of delineating strategy in practice. This includes the researcher’s own reflections on improvisations in a variety of different settings and also through the use of improvisational etudes which demonstrate the output of explicitly directed aspects of improvisational strategy.

1.7 Modelling strategy

In this section the previously explored literature will be synthesised to produce novel theoretical models of the generative mechanism systems, processes, and in particular, the strategy led generative mechanism and how it operates within the larger cognitive pathway of an improviser. Each element of the cognitive chain involved in the generation of an improvisatory event will be discussed in turn before an overview is provided. At this point then a magnification of the strategy led generative mechanism pathway, the focus of this thesis, will be explored in greater detail.
The synthesis of improvisational models and theories so far has led to the adoption of three generative mechanisms (first defined by Clarke (1988)), and two ongoing processes as defined by Norgaard (2010).

### Three Adapted Generative Mechanisms

1) Strategy Generation  
2) Lick Assembly  
3) Associative generation

Figure 1.4 – Three adapted generative mechanisms

### Serial Processing of an Improvisational Event

- Sketch Planning
- Generative Mechanism
- Deployment
- Evaluative Monitoring

Figure 1.5 – Serial processing of an improvisational event

#### 1.7.1 Generation of an improvisational event

The model presented below in figure 1.6 represents the modelling of the generation of an improvisational event. An improvisational event could be realised in real terms as a phrase. This phrase does not have a defined length or timescale but is derived by means of generative mechanism as shown. The model shows how Clarke’s three distinct generative mechanisms may work together as part of the holistic cognition of improvisational pathways. The model is built in line with research from Clarke (1988), Johnson-
Laird (2002), Norgaard (2011), and Monk (2012) predominantly, however has grounding in other precursor research work such as Pressing (1998), Berliner (1994), and the previously discussed literature in this chapter.

![Diagram of Generation of an Improvisational Event]

**Figure 1.6 – Generation of an improvisational event**

To begin with, as an improviser engages the cognitive process an initial cognitive stage, sketch planning is engaged. This is drawn from Norgaard’s description of a pre-emptive process which is activated when a musician engages the generation of a new improvisational event. The sketch planning stage involves many elements which may stimulate and provide direction to the generation of an improvisational event. These include acknowledgement and inference from the referent including style, feel, conscious and unconscious decisions on register, tone, contour, and structure among other elements. In addition it is here where the improviser engages their knowledge base to search and select appropriate materials, conventions and syntax to subsequently develop and deploy. This is perhaps why if an improviser has a limited knowledge base or understanding of the referent, this point may lead the improviser down the route of using pre-determined licks, vocabulary, or other simplistic methods (such as playing a scale, arpeggio, or simply the tonic of the harmony, in a mechanical way), to ensure they produce something which will at very least be harmonically consonant, albeit rudimentary in nature and unlikely to be as cohesive or effective as a more informed approach may.
After this initial cognitive engagement, the improviser is directed down a particular pathway depending on the outcomes of the sketch planning phase. There are three generative mechanisms as previously identified by Clarke (1988) as demonstrated in figure 1.6. Each of which will now be discussed.

1.7.2 The Strategy Pathway (I)

The strategy pathway shows the generation of an improvisational event, as the improviser’s knowledge base is refracted through a consciously chosen strategy pathway. The strategies are specific to an improviser’s understanding and formulated through their cumulative improvisatory experiences. An improviser could for example choose to focus on a ‘rhythmic strategy’, ‘pitch strategy’, or any other traditional grouping. As the study by Hargreaves et.al (1992) points out, improvisers can also use even higher levels of abstraction, including non-music specific direction such as ‘mood’, ‘atmosphere’ ‘tension’, ‘angularity’ etc. in order to direct improvisation. Regardless of the level of depth ascribed to a strategy by the improviser, the fundamental principle is that a consciously chosen strategic mechanism is used to guide the generation of an improvisational event with support of the implicitly accessed knowledge base.

We may however, consider the possible structural levels an improviser may engage with in strategy generation (See figure 1.7). Let us consider a theoretical context of a jazz blues in the key of A taking harmonic strategy as an example. Firstly the improviser, once they have engaged the sketch planning phase, decides to direct towards ‘a straight ahead, long ascending line’. A secondary choice may then be applied, such as playing with emphasis on chord tones. The initial strategy allows stylistic constraints brought about by conceptualising ‘straight ahead’, providing the improviser with a filter for the knowledge base. Moving downwards through the schematic hierarchy and depth of strategy description, harmonic priority becomes central to thought. Following this, one specific aspect of harmonic priority, chord tone embellishment, is brought forward. At this point, as the structural levels become closer to the surface of what is happening and implicitly controlled aspects of chord tone led harmonic priority take control. The improviser may now, using their knowledge base, identify A7 (A, C#, E, G), conceptually, aurally (through means of audiation), and tactiley. On the next level down in figure 1.7 the tacitly held syntactical rules (in this case including smaller concepts such as enclosure, beat placement, approach tones, and chromaticism which are inherent in a straight ahead style) and phrase formula are all brought
to focus. These aspects are not consciously controlled by the improviser. At this point the improviser is still thinking of the higher level strategy of playing a straight ahead descending chord tone led line\textsuperscript{25}. At the same time, these harmonic concepts are being structurally recalled through means of the knowledge base, the constituent rhythmic and timbral elements (to give example) which are necessary in the following deployment of the improvisational event are also being tacitly brought out in their various levels through the knowledge base, despite the improviser diverting any attentional focus to them. Removing further structural levels we begin looking at individual notes, groupings, and rhythms, arriving at the musically analogous equivalents of phonemes and morphemes.

\textsuperscript{25} Assuming the musician is operating under this cognitive state, even higher level strategies and structures may be being controlled entirely implicitly without conscious direction.
Figure 1.7 – Generation of an improvisational event using a strategy based mechanism

Our current understanding of human cognition is not yet sufficient to provide a complete picture of such a process, but a simple thought experiment might help provide insight. Consider the above scenario, imagining yourself improvising focusing on chord tone harmonic priority (or better yet, try it out on your instrument or vocally). Think about the level of detail in which you are connected to the phrase. The researcher’s own work and perspectives in part II, along with the many accounts and theories identified in literature suggest that at best we can consciously perceive and control these higher levels. Attempting to
detect, control and monitor every musical parameter in detail is not possible in the moment, and also feels intuitively wrong and inhibiting to do so. Ironically attempting to apply too much control becomes paralysing, and may inhibit awareness, freedom, creativity and musical coherence.

Johnson-Laird (2002:417) articulates this, while explaining the phenomena an improviser may experience when trying to articulate what they were thinking during improvisation: “[musicians] can articulate only a limited answer, because the underlying mental processes are largely unconscious. If you ask yourself how you are able to speak a sequence of English sentences that make sense, then you will find that you are consciously aware of only the tip of the process”

1.7.3 The Lick Assembly Pathway (II)

The lick assembly, circumvents the need for a guiding strategy or directive as followed when using a strategic generation mechanism. In this circumstance, an improviser instead consciously chooses to play a pre-learned phrase verbatim. The use of licks in this way may be used to add breadth to a limited knowledge base. For example, when an improviser is met with an unfamiliar set of chord changes and lack of competence to produce coherent musical phrases that follow the chord changes, they might instead choose a phrase which will work however does not reveal the particularities of the changes or make use of the transitions between them. Material produced this way may not always be contextually appropriate. The resultant output is still subject to the evaluative monitoring stage where an improviser judges the successfulness of the licks placement in the context of the improvisation. The output may then be adopted as part of an associative chain development if the improviser chooses, or, the entire process may be started again.

This pathway also includes the use of motor-generation of licks of fixed nature, whereby by an improviser uses a physical cue, position or other means to instigate a pre-learned physical move. The difference to the strategy based mechanisms is that there is no specific goal or desired effect. Instead, the aim is to produce something which is acceptable within the context of the referent. This is not to be confused with motor-generation where the improviser still maintains a choice of pitch selection within a particular motor schema, albeit often without knowing the auditory consequences (Sudnow, 1993:62).

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26 A stress must be placed here on in the moment perception. The musical ability and depth of knowledge of an improviser may be sufficient to retrospectively identify these elements in a short space of time.
Furthermore, we need to separate the use of lick assembly from the use of licks as reference (quotation, allusion, humour etc.). The latter is in fact a strategy generated use of licks, in the sense that there is a goal i.e. creating humour, mocking a player, adding allusions for the audience. For example if the ensemble provide an allusion to a particular tune or style, an improviser may use a lick as part of a dialogical strategy in order to achieve a particular interactive effect which may then lead to further development. Without this allusion or context, the lick drawn from nowhere, without purpose, would instead be considered as part of the lick assembly generative mechanism.

It is important to stress that there is no intention to create a hierarchy of superiority placing this mechanism as lower in value. It is an important process and allows the improviser to continue playing where inspiration may tail off. It also strengthens the knowledge base by means of the processes an improviser must go through to learn a lick, eventually assimilating its salient qualities. As such, it often provides a way for novice improvisers to begin developing a repertoire. Without an exploration of the vocabulary of others, an improviser may never cultivate the necessary knowledge, syntax, context and particularities to engage in dialogue with the jazz community.

1.7.4 The Associative Chain Pathway (III)

The associative chain pathway exists out of the loop of generative mechanisms for novel material. When adopting associative chain generation, or motif development, an improviser does not need to generate material. The material has already been recalled, adopted and played at this point. During this stage an improviser may adopt a series of developments or mutations based on the source material. This process is cyclic in nature and may continue indefinitely until an improviser chooses to stop and instigate a new generative mechanism. The material that is used as a starting point for associative generation may have been produced in a variety of ways. It could be that novel material generated through strategy generation (I), has then been selected for development or equally that a lick (II) has been recalled played and then selected for development. Interactive elements of ensemble practice become prevalent also, as material may be generated by another musician, or recalled in a less serial, intertextual manner to evoke a previously played phrase. Associative generation is more likely to be used during common ensemble processes such as antiphonal interplay (trading 4s, trading 8s, parody etc.). This is due to the ability of the
ensemble to carry on with the dialogue and the tenet that if you reduce material pool to one particular theme or concept the ensemble can better develop and respond to it\textsuperscript{27}. To provide a linguistic analogy, consider debating a theme. All participants in the debate must be focused on the same theme, listening carefully and responding to each statement directly, in order to remain coherent, not only to each other but also to the audience. Ensemble interaction can of course develop and change theme, however frequent succession of theme or concept without sufficient development may lead to a less coherent ensemble dialogue.

1.7.5 The Deployment Stage

This stage represents the actual delivery of the improvisational event. The deployments are produced after the planning phases happen, by drawing on the implicitly held knowledge base as suggested. While the processes underlying final stage of delivery are complex and deserve a significant amount of attention, they are beyond the remit of this thesis as separate to the generative mechanism processes. Despite this, it is important to acknowledge the existence of such a stage and its presence in literature. Johnson-Laird (2002) argues that “improvisation depends on a principle of algorithmic demands”. These algorithms, which guide the deployment of materials, are based on Darwinian (non-arbitrary), Lamarkian (arbitrary), and combinational selection of materials (2002:420). While arbitrary selection provides the improviser with a range of cohesive and coherent possibilities, the non-arbitrary, chance led deployments, used both in the practice room and in live settings allow the development and evolution of an improviser’s style over a period of time. Equally, unfamiliar settings may see improvisers forced to utilise more non-arbitrary means where a knowledge base is not sufficient enough to provide material. Novel material generated this way, may then be fed back into a practice for assimilation within the knowledge base.

Other research points towards the existence of such a set of algorithms in jazz improvisation. This is exemplified in Hargreaves et.al (1991), who demonstrates that less experienced improvisers find it difficult to access higher level strategies. Instead they often opt for motor generated licks in a neo-Lamarckian fashion, ensuring they have at least some harmonically consonant or ‘safe’ material to play. This is of course, a cursory explanation of something far more complex and further research would

\textsuperscript{27} See section 5.4 for a discussion of the ensemble dialogue created during a recording project by the researcher
benefit from a complete understanding of these algorithms, how they differ, and how they interact with generative mechanisms.

1.7.6 Evaluative Monitoring

In the evaluative monitoring both the referent and knowledge base are drawn upon, this time to evaluate the successfulness of the improvisational event, in relation to the context but also in relation to previous aspects of the improvisation. At this point the improviser may also decide to continue developing the material as part of an associative chain, much similar to motivic development.

Subsequent uses of the sketch planning phase are informed by the evaluation of previously generated improvisational events. This may also include the response to ensemble reactions to previous improvisational events, particularly where ensemble dialogue is being created which may drive the direction of the improvisation along the associative generation pathway to ensure continuity is upheld, allowing the ensemble to further build around a central idea or theme.

The use of retrospection in improvisation has been stressed in literature also. Gioia states that a jazz musician "may be unable to look ahead at what he is going to play, but he can look behind at what he has just played; thus each new musical phrase can be shaped with relation to what has gone before. He creates his form retrospectively" (Gioia 1988:61)

1.7.7 Cognitive Processes Used During the Generation of an Improvisational Event

The five cognitive processes that are used throughout, have been adapted from Monk’s (2012) synthesis of research into the ongoing processes that underpin cognition during improvisation. While Monk and the research he draws from has already been discussed, figure 1.8 attempts to show in what stages of improvisation these cognitive processes may be operating at from the perspective of before, during, and after material generation. The additional information in figure 1.8, is analogous with what Monk talks about as the ‘creative brain’ and the generative mechanism processes. Both the performance and temporal brains are operating continuously, while the syntactical processes happen after generation has occurred and as part of the evaluative monitoring mechanisms.
Figure 1.8.1 – Cognitive and temporal layers involved in an improvisational event

The macro structure displayed below figure 1.8 shows, in a rudimentary way, how structural processes guide the overall assembly of an improvisation and its constituent improvisational events. While the figure shows a serial progression of development, a cumulative structuring is also possible.
1.7.8 Contextual Interference

Generative mechanisms are also affected by contextual interference. The effect of the ensemble on an improviser's choice making is explored further in section 1.10, however is demonstrated succinctly in Pawson's (2007) diagram below:

![Figure 7: Layers of contextual influence.](image)

Figure 1.9 – Layers of contextual influence taken from Pawson, R (2007).

The figure above shows how the outcomes of a generative process are informed by conditions which exist at the moment of choice. Different structural layers of context are shown depicting these contextual influences which affect the decision making processes of individuals.

To exemplify in terms of jazz improvisation, these level of structure can be considered as follows:

The 'individuals' level can be considered as the improviser’s cumulative knowledge base and experience as it shapes and affects the improvisation. ‘Interpersonal relations’ describe the effect caused by the improviser’s relationship with his ensemble, peers, and audience. ‘Institution’ relates to the improviser’s awareness of his place within his particular domain, including the expectations, social practices, and norms which enable him to remain authentic and create dialogue within a specific area effectively. ‘Infrastructure’ may relate to a wider, less domain specific, understanding and causal relationship to the social community and the improviser’s positioning within or outside of this community.

1.8 Representing Strategy

In researching this thesis, and attempting the adoption of new analysis methodologies, finding effective and succinct ways of demonstrating an improviser’s use of strategy has proved problematic. The salient
features of jazz improvisation are in themselves not readily amenable to standard notation. There have been numerous attempts at departing from the centricity of pitch-harmony, of which many are useful methodological approaches to the jazz idiom.28

While the usefulness of transcriptions cannot be undermined in the absence of a better and more available system, it is worth noting that a transcription of a jazz improvisation is the definitive version of something that was never meant to be definitive. A particular performance could influence the way a piece is heard and consequently defined – for example Davis’ *Round Midnight*, or Coltrane’s *My Favourite Things*. There may be different and valid productions of a transcription, judged not by the technical efficacy of Western classical music but instead by its ability to alight on the interesting and elusive elements of the improvisation. Hermann Rauhe states, “The precedence of the sound over the notation, whose relevance in jazz lies solely in assisting the ‘memoria’, must be heeded in all methodological considerations” (Rauhe in Jost, 1994).

Instead of abandoning standard notation altogether (to eschew its standardised pitch-harmony-rhythm centricity), a series of augmentations, special notations and coding have been used in the analyses in part II, along with a multidimensional approach to analysis which takes in aspects of taxonomic, reductive, ethnographical and textural analysis along with aspects of ensemble interaction where appropriate.

Firstly, a colour coding system has been adopted to suggest possible strategic emphasis used by the improviser. This allows entire solos to be reduced to a series of colour blocks, which allow the analyst and practitioner to see to what extent an improviser is focusing on a particular strategy. When used across a series of transcriptions by the same improviser, more improvisational tendencies may be uncovered. Across a wider time period this may also make suggestions about the improviser’s development. Each colour coding system may be produced and tailored individually to the improviser. This may be assigned aurally by the analyst as the tendencies of an improviser become more intelligible.

Secondly, a series of event analyses were produced in respect to the studio recording in portfolio D. These consist of a series of event descriptions and codings as identified by the researcher. They also

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28 Notable examples include taxonomic analysis and syntactical analysis
include where appropriate, statements of intentionality, successfulness, and general evaluation of the event and improvisation as a whole.

Finally, a cursory attempt has been made at providing a way of explaining instances of multiple strategy inference, demonstrating how each strategy may take emphasis over another. The following example demonstrates how a typical bebop phrase, a Brecker inspired harmonic superimposition, and a Krantz inspired rhythmic phrase may hold different attentional emphases.

**Attentional Emphasis of Improvisational Strategies**

![Diagram showing attentional emphasis of improvisational strategies]

1.8.2 – Attentional emphasis of improvisational strategies

The above diagram shows three typical examples. In the first a bebop line, an improviser may be more concerned with the pitch (harmonic and melodic) aspects, during strategy based generation. While physical (such as choosing appropriate fingerings, positions etc.) and rhythmic aspects (due to the often strict rhythmic homogeneity in bebop) are of concern and may inform the generation of a phrase, they demand less attentional emphasis than the aspects of pitch do. The remaining two examples demonstrate how typical phrases played by the improvisers in chapters two and three may be represented, in respect to specific strategies they employ.

1.9 Strategy in the Ensemble

No understanding of improvisation is complete without addressing the context of the ensemble. Ensemble studies in jazz are a relatively new to jazz scholarship, however have gained momentum following the publication of seminal works by Berliner (1994) and Monson (1996). Both studies (which
are grounded in an ethno/socio approach), draw attention to the development of an improviser’s skill set through continual ensemble interaction by looking at various points within the career of a professional jazz musician. Both texts share themes of improvisation as analogous to communication, likening to linguistic models. In doing so, they demonstrate how audience and musician appropriation of what is deemed successful and good in improvisation is often determined by an ensemble’s ability to interact and create interesting dialogue.

The following section will look at the common themes of the tune as a ‘vehicle’, changing ensemble roles, interaction, flow and performer/listener perceptions emerging through the literature, and how they will inform the following analyses and heuristic enquiries.

1.9.1 The Vehicle

The acquisition of a broad repertoire is an essential foundation of jazz practice (Berliner, 1994; Monson 1996). This repertoire is shared collectively among musicians, groups and communities with an expectation that a musician should know these tunes including variants on their structure, harmony and melody. It can often be the case that other musicians will express disdain or disapproval for those who have not learned the repertoire. Traditionally, the repertoire comprised not only compositions from the most revered jazz artists of their time, but also treatments of musical theatre works by these artists through which a wider appropriation was garnered in the jazz community. These tunes are more often referred to as ‘standards’. As jazz styles have diversified so has the repertoire to which a particular jazz community adopts. More traditional based contemporary jazz artists will still use ‘standards’ heavily in their work, while more contemporary jazz artists are less likely to include ‘standards’, and instead favour original compositions or covers of a more closely related homogeneity of style. Once a jazz musician has acquired a suitable repertoire, they can utilise it at jam nights with other musicians and in their own groups. The acquisition of a wide repertoire is an essential part of jazz practice and provides a musician with the tools required for social integration.

The way the repertoire is treated during a performance demands another set of protocols and assumed skillset of the musicians performing it. Monson (1996) states that "it’s not enough for a musician to play

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29 Notable tunes include John Coltrane’s version of My Favourite Things and Miles Davis’ version of My Funny Valentine.
through a tune with only its melody and harmonic structure in mind, as many jazz pedagogy books would have us believe". Others have gone on to further this notion. Hodson refers to this process as “standard practice jazz” (Hodson, 2007). He identifies it as an ensemble performance that contains these key features:

1. Features a rhythm section plus at least one soloist.
2. Musicians each fulfil certain predefined standardised roles.
3. Each performance follows head arrangement.
4. Each is based on a tune consisting of a melody plus harmonic progression.

The tunes usually consist of a lead sheet style format with minimal instructions of only melody and harmony. It is up to the musician to interpret these with an appropriate etiquette in order to produce an effective performance. Kernfield (1995) calls this ‘chorus form’ and defines it as “a sequence of chords tied to a metric scheme”. The vernacular of this format has many synonyms but is most widely acknowledged as the ‘head’. Others include ‘chorus’, ‘tune’, ‘arrangement’, and ‘changes’30. Hodson goes on to say that another equally important part of the definition of a repertoire piece is its phrase structure because the arc of the phrase structure can carry across its feel into the improvisations that follow (Hodson, 2007). It is reasonable then to assume that Hodson would include phrase structure as a key part of ‘standard practice jazz’ also.

The contributing attributes that form the makeup of a ‘standard’, including form, style, phrase structure, harmony, and melody all provide a “frame” for subsequent improvisations and interactions (Alterhaug, 2004; Hodson, 2007). This is analogous to what Berliner writes, describing the tune as a ‘vehicle’ for improvisations (Berliner, 1994:63). If there is such widespread acknowledgment of the effect of the tune on subsequent improvisations, then analysis and understanding of improvisation schemas must take into account these effects.

The work of Gridley (1987), Collier (1975), and Jost (1994) objectifies the opposite definition of ‘standard practice jazz’ in free jazz styles, whereby the goal is a breakdown of the above elements, releasing musicians from any predetermined roles into equality and negating the need for any harmonic/structural

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30 Used more often to imply the harmonic structure only.
framing ascribed by the tune. In positioning these two opposites, which Sawyer (1999) supports by describing the “tension between structure and creativity”, we may build a continuum within ‘standard practice jazz’ to better understand the differing levels of effect caused by a variety of different contexts. With so many variables it is clear that the type of repertoire being performed can have a significant effect on the processes and creativity levels afforded by the improviser. A gauging of this effect has not yet been discussed in research. This may affect the adoption of particular improvisatory schema, as is the concern of this thesis.

1.9.2 Ensemble Roles

The practice of an improviser is one governed by rules and hierarchy. If we are to believe that a continuum exists placing standard practice jazz and a negation of its principles in opposition, it would suggest that there are more influences from the hierarchical structures on the end of standard practice jazz. For instance, the more defined and richer harmony becomes the more constraints each member of an ensemble will have to adhere to.

One example would be to compare two standards with varying levels of definition; for example, Miles Davis’ So What and John Coltrane’s Giant Steps. So What’s limited harmonic makeup means that it is easier for the improviser to be more interpretative and wide ranging with the harmonic possibilities of their improvisations. In addition, the melodic content of the head is very limited and functions more as a kind of riff. The apparent lack of real melodic frame then leaves no effect or conditioning from phrase structures that a more complicated melodic head might. The single chord vamp that frames the tune is an ideal platform for a looser and more individual approach. Giant Steps, on the other hand, presents a heavily prescribed harmony with extremely fast harmonic tempi moving through multiple key centres in a short space of time. For an ensemble to approach Giant Steps, less risk can be taken and more focus must be placed on outlining chord changes continually. The phrase structure of the head also presents a prescription that may affect improvisational choices.

This relates directly to the roles improvisers and ensemble members take on during their performances. Creativity in group improvisation is at the heart of the social constructs that surround it (Sawyer, 1999). Each musician must be aware of the abilities of the other musicians engaged in performance with them.
and be able to react accordingly to what they play. Hodson (2007) acknowledges this stating that interaction is a continual process whereby anything any musician plays can affect the other musicians. The importance of this is stressed by Sawyer (1999):

“Although each member of the group contributes creative material, a musician’s contributions only make sense in terms of the way they are heard, absorbed, and elaborated on by the other musicians.”

The roles assumed by individuals in group improvisation are malleable and continually shifting in nature. Monson (1996) defines the three most basic roles as time keeping, soloing and accompanying (‘comping’). These roles are not fixed and will be traded continually in effective improvising. Each basic role sits on the continuum of creativity and structure, and movements within it require that the supporting musicians follow and react to the changing state of roles. The form and frame of the tune still rests at the heart of this and musicians are often judged on their ability to keep the form in spite of tangential excursions away from it (Hodson, 2007). Despite this, Monson (1996) is right to point out that form becomes “subservient to the band in an improvisatory context” and that keeping the band locked together is more important than keeping form. There is a balance to be had between showing one’s ability to heed the form and context of a tune and playing off it creating unique novel structures and material. This can be seen as a larger scale continuum of creativity/structure that applies to the performance as a whole.

Effective comping is crucial to creating the right perception of a soloist’s improvisations. Monson (1996) uses the term ‘orienteering’ to define the practice of contextualising another’s playing with your own. For example, if a musician wanted to produce harmonic instability and tension by implying chord progressions outside the expected tonality, it is common practice for the musician in the role of accompanist to follow this, abandoning the harmony prescribed by the tune and following the implied harmony of the soloist. This is supported by Hodson (2007):

“Small group jazz will involve a flexible approach to the underlying changes, i.e. substitutions etc. the result is that the harmonic progression from a lead sheet is not a given but may only be a point of departure.”

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31 Which is defined by Monson’s (1996) interviews as both accompanying and complementing
"Each musician has a great deal of leeway in how they interpret the chord symbols on a lead sheet"

The accompanist can also provide platform for the soloist to work off initially. Creating ambiguous harmonies and abandoning prescribed phrase structures, can open more options for the soloist effectively prompting them to move to the more creative side of the continuum. Monson (1996) talks about this process of formal reduction as dropping the ‘anchor’. In contrast to the soloist being prompted to the more creative side of the continuum this stable ‘anchor’ would suggest that the accompanist has put themselves at the structural end of the continuum. It is clear that the area of the continuum both soloist and accompanist occupy at any time affects the overall perception of the performance and the direction the improvisational choices take.

In talking about the processes that musicians use to elaborate on chord changes and develop choices based on their reactions to other musicians around them, Monson (1996) references Noam Chomsky’s “Cartesian Linguistic” model outlining three structural levels of choices. This model suggests a ‘deep structure’, representing the underlying abstract; a ‘shallow structure’, representing the possible realisations and a ‘surface structure’ representing the actual realisations. Applied to improvisation (as has been done by (Perlman and Greenblatt, 1981)), the structural levels can be seen as underlying harmony; range of possibilities for improviser; and actual improvised line respectfully.

This model is applied by Monson specifically to the generation of harmony in an accompaniment role. It can also be seen applied to melodic choices made my soloists as is shown in detail in research by Mermikides (2010), who details the mutations that melodic material can undergo as a result of treatment by an improviser through a conceptual framework called M-Space. M-Space could be viewed as a thorough mapping of the shallow structure as mentioned above.

1.9.3 Creating Identity

As has been shown in previous sections, a refinement of generative processes for creating novel material is essential in creating interesting and effective improvisations, and for creating identity for the improviser. It is imperative that a balance is struck though between novelty and familiarity. Becker (1982)
states that “etiquette is collective social knowledge”. In improvisatory practice, etiquette encompasses many things. The way an improviser approaches standard practice jazz, particular in more homogenous styles, demands that common approaches are used in order to engage the listener in the ‘collaborative emergence’ (Sawyer, 1999) produced by the collective social process that an ensemble is engaged in. To this end this may require playing certain licks, approaches, comping styles and making transparent interactions between musicians to involve the audience in the ongoing dialogue and vernacular. It is with the growing appropriation that aficionados of a particular improviser, band, style, or movement find in common practice that a stylistic identity can be forged. The ongoing tension between creativity and structure should then be taken into account when analysing the generation of improvisational material. More importantly, it is essential to remember that the performance of an improvisation emerges collaboratively through ensemble interactions, audience appropriation and engagement with stylistic tropes which may, on the surface, seem to eschew the development of an original and creative practice.
Chapter 2 – Strategy Micro View: Michael Brecker’s Harmonic Superimposition Strategy

2.1 – Strategy: Micro View

This chapter provides a case study of one improviser's use of a personal improvisation strategy. It does this to explore the depth in which a particular improvisatory strategy, and its lower structural levels, operate. As explored in chapter one, once an improviser selects a strategy based generative mechanism, the improviser then uses varying levels of implicit control to draw from their knowledge base and produce an improvisational event in real time, which is guided from the overall improvisational strategy plan.

Michael Brecker's use of harmonic superimposition has been chosen as a suitable case study for the purpose of demonstrating one use of a harmonic led strategy focus for a number of reasons. Firstly, harmonic superimposition is a concept used in contemporary jazz, which is the main scope of this thesis and of familiarity to the researcher. Secondly, the concept (as used by Brecker) is often used in a clearly demarcated way, making it easier to identify instances where Brecker may be using harmonic superimposition as an improvisatory strategy. Finally, Brecker's use of harmonic superimposition is deeply complex, and has further sub-levels of control and category, which has enabled a taxonomy of Brecker's use of harmonic superimposition to be created and synthesised for a practical reapplication in part II.

Furthermore, Brecker's use of harmonic superimposition forms an integral part of the heuristic inquiry into the researcher's own practice development in part II, and as such the analyses, conceptual taxonomy and background provide the reader with context in respect to this.

The chapter will firstly explain the concept of harmonic superimposition and its relation and position as an improvisatory strategy, following which numerous examples of Brecker's use of these will be identified. Finally a taxonomy of possible harmonic superimpositions will be demonstrated along with a discussion of their possible uses.
2.2.1 – Harmonic Strategies for Playing ‘Outside’

Developing an advanced approach to negotiating harmonic pathways in improvising is a cornerstone of a jazz musician’s development (Berliner, 1994:71). The emphasis on creating and releasing tension has remained across the evolution of jazz styles in the 20th century and its effective employment is cited across jazz studies, pedagogy, analysis and personal artist account as fundamental to a jazz musician’s practice. The diverging nature of harmonic practice in jazz led to the harmonically stable and tonally organised swing and bebop eras moving to freer, less harmonically defined practice in the 1960s led by the work of John Coltrane, Ornette Coleman and their contemporaries (Jost, 1994:17, 19, 32). As Coltrane said himself of 1950s jazz, “Too much modern jazz has become too thick with chords”, also adding that with fewer chords comes more possibilities (Hentoff, 1978: 208). The increased use of chromatics and harmonic ambiguity was not exclusive to 1960s free jazz however and the development of harmonic approach remains a central aspect of the ontogeny of many improvisers across a wide range of contemporary jazz strands today.

![Diagram](image)

Fig 2.1.1 – Difference in harmonic control and directives in bebop and modal jazz eras

In pursuit of an expansion of harmonic approaches, many practitioners adopt harmonic superimposition, a technique where a harmonically stable accompaniment is superimposed over using non tonal phrases as ‘outside’ playing (Berliner, 1994:129). While post 1960s styles of jazz, exemplified by the work of The

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32 See Berliner, 1994; Carr, 1999; Coker, 1987; Coryell, 1998; Lawn and Hellmer, 1996
Brecker Brothers, Weather Report, Marcus Miller, John McLaughlin and Bob Berg among others, were using these outside playing features heavily, the use of outside playing can be traced further back. For example in post-bop and modal eras of jazz (Berliner, 1994: 210, 226; Owens 1996:54) these features included extended chromatic devices other than that of common functional techniques such as enclosure and approach tones.

Thomas Owens (1996) describes Miles Davis’ sound in the mid-1950s as containing clear examples of outside phrases which have “little or no connection with the harmonic structure” (Owens, 1996). The open and often ambiguous harmonies of Davis’ output from this period clearly facilitated these types of chromatic superimpositions and their future development in the work of band members Herbie Hancock, John Coltrane, and Wayne Shorter. Davis’ work became even more chromatic in the following decade, influencing the emergence of jazz fusion bands melding elements of rock/jazz/funk and World music (Berliner, 1994; Carr, 1999; Dean, 1991). Groups such as Weather Report, Mahavishnu Orchestra, Steps Ahead and Return to Forever followed a different route to that of free jazz’s aesthetic of ambiguous unanchored harmony and instead focused on setting up clear tonal and metrical structures to allow the improviser a greater degree of malleability, by means of their excursions away from these structures during improvisation (Dean, 1991). Despite the limitations imposed by these structures, harmonic practices continued to develop away from more traditional based harmony, with improvisers finding ways to superimpose non diatonic chords, scales and chord progressions in their solos to delineate the harmony and create tension, continually alternating diatonic and non-diatonic material as will now be shown.

2.2.2 - Sidestepping

Of the many ways to achieve an outside sound ‘sidestepping’ is perhaps the most basic. It is used to create harmonic tension by playing a tonal phrase either a half step below or above where it would normally be played, creating altered tensions which are then resolved by ‘stepping back’ into key. For

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33 Of which the pioneers of free jazz credit as impetus for their movement (Jost, 1994)
34 See (Coker, 1987; Lawn and Hellmer, 1996; Liebman, 1991) for a discussion of sidestepping.
examples of sidestepping relevant to following analyses of Michael Brecker, see Freedy (2003:58) and Poutiainen (1999:23, 29, 34).

Tonal progressions can also be ‘side stepped’ to create further dissonance; for instance, by taking a common functional ii V I phrase in the consonant key and then moving it to adjacent keys. If played with conviction, the strong pull of these harmonic relationships is enough to give phrases momentum (Lawn and Hellmer, 1996). Sidestepping can be an easy route for students to take when trying to assimilate the sound of outside tonalities, as it does not require an overly advanced understanding of harmony, and for positional led instruments requires only a singular positional shift to achieve the desired effect, removing any prerequisites for extensive theoretical awareness. Berliner echoes this: “Initially, the qualities of logic that define nonthematic formulations can be more difficult to grasp for learners than those presented by motivic treatments” (1996:198). What Berliner asserts is that by using common motives/patterns/sequences and manipulating them, improvisers can have access to an extended vocabulary almost instantaneously and that a conditioning to the sound of foreign tonalities can be sought through this method of accustoming as an initial step, before moving into more complex harmonic superimpositions. Some instruments allow for a more idiomatic and direct approach to this. For example, to sidestep on the guitar a working knowledge of harmony and pitch is not necessary as the musician needs only move his left hand up or down by one fret from his original phrase and play the same finger pattern again. Non positional instruments must adopt new fingerings to support a sidestep modulation.

![Figure 2.1.2 – Demonstration of positional ‘sidestep’ on the guitar (From Williams, 2011)](image)

35 The ii V I is a fundamental progression that makes up larger harmonic prototypes for a substantial amount of traditional jazz standards repertoire (Berliner, 1994: 76-79)
Figure 2.1.2 taken from Williams (2011), shows an example of a typical sidestepping phrase in A minor using a minor pentatonic phrase, shifting up one position, inferring Bb minor pentatonic. The sidestep begins on the 2nd half of measure 2 and returns to the original position to conclude the phrase, emphasising a return to ‘inside’ harmony in the following measure by using the root A. While the notation alone does not allude to a sidestep it is clear in the fingerings below that a positional shift on the instrument has taken place whereby the A minor pentatonic ‘shape’ evident in the first measure and a half has now been moved up by one fret. While a guitar player may think of this shift as outlining Bb minor pentatonic, heard against the A minor harmony, the phrase actually suggests a type of altered dominant tonality with the inclusion of the major 3rd and flattened 9th.

Similarly, Figure 2.1.3 shows a more advanced application of position shifts on the guitar demonstrating how Pat Metheny navigates through various harmonies using finger routes as a guiding technique to continually move ‘in’ and ‘out’ while ascending adjacent positions. Metheny is also using a minor pentatonic shape initially, which is heard as consonant or ‘in’ during positions one and three. The ambiguity of the minor pentatonic allows for placement on any minor chord from the parent key (in this case F minor, G minor and C minor, assuming a parent scale of Eb major) and as such allows an improviser to rework or reuse the same ‘shapes’ continually to produce effective harmonic superimpositions effortlessly.

Many introductory texts including Coker’s *Elements of the Jazz Language for the Developing Improviser* (1997) only venture as far as sidestepping and do not offer any further concepts to developing harmonic superimposition techniques. Liebman (1991), whose own style often contains advanced harmonic
Superimpositions, warns that sidestepping can become predictable with too much use and therefore contributes only a part of what is possible with harmonic superimposition.

2.2.3 - Superimposition

David Morgan (2000), defines superimposition as “the technique by which an improviser plays a melody implying a chord, chord progression, or tonal centre other than that being stated by the rhythm section”. He distinguishes this as an extension of substitution technique.

Superimposition is not to be confused with substitution, where the rhythm section may play an alternate set of chord changes (often to increase harmonic complexity and harmonic tempi) which would direct the improviser’s melodic choices. In superimposition, the rhythm section continues to play the original chord changes or harmony, while the improviser leads his phrases through substitutions of his own choosing despite clashing against the rhythm sections suggested harmony, thus creating a superimposition. To summarise, the aim of substitution is to accentuate the tonality, through extending and replacing chord forms, whereby superimposition aims to override and disregard it, to deliberately clash against the harmony.

Superimposition can be seen as a result of the drive for increased dissonance in jazz without developing an entirely novel melodic vocabulary to do so. Hal Crook describes superimposition as an attribute of modern jazz styles, providing evidence of increased use of bitonality and the intentional outlining of unrelated harmonies (Crook, 1999). It provides the improviser with a more sophisticated way of delineating harmony, by using common patterns and progressions, than sidestepping alone can offer and can be a valued addition to an improviser’s harmonic palette.

In his seminal text, *A Chromatic Approach to Jazz Harmony and Melody*, David Liebman outlines various principles and abstract concepts for creating superimpositions to increase an improviser’s range of chromatic options. The text serves as a guide to organising chromaticism; more specifically the type created by moving “conventional diatonic language with its normal designations” across different tonal centres (Liebman, 1991). By utilising common diatonic conventions, the improviser is able to draw on the strong harmonic pull these structures contain transforming them into useable devices for harmonic

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36 For examples of the practical reapplication of superimposition techniques uncovered in this chapter, see chapter 5.
superimposition. This provides the listener with a familiar and yet simultaneously tense sound, of which
the hidden structures underpinning the phrases are often heard collectively under the surface structure of
‘outside playing’. Liebman’s argument and raison d'etre for his research is that an understanding of the deep
structures and devices used in common tonal organisational methods across jazz is essential in reaching a
more sophisticated level of superimposition than a single tonal shift alone can offer.

The perceived effect a superimposition has is also dependent on its contextualisation within a group, and
the level of support and interaction the improviser has with the rhythm section. A clearly defined
harmonic accompaniment will showcase and pronounce tensions as they are heard against the harmony,
whereas a more ambiguous harmony may allow the listener to become unanchored from the harmonic
ground of the accompaniment and instead follow the harmonic outlines that the superimpositions create.

It may also be the case that in the course of a band’s development, each musician can become attuned to
each other’s tendencies, often supporting an outside line with an appropriate harmonic change. Monson
(1996) refers to this as “re-orientation” stating that “musicians have to trust other musicians to orient and
re-orient themselves in anticipation of the gestures they create”. When this happens, it begs the question
is the material still superimposed or has it instead become part of the new harmonic structure? It is clear
that the harmonic foundation on which an improviser chooses to superimpose is determinant to the
success of the superimposition and the momentum it carries. An understanding of harmonic
superimposition should take into account this duality of listener perception.

2.2.4 - Superimposition and Strategy Led Generative Mechanisms

Harmonic superimposition is a sub-strategy of a harmonic led strategy. In other words, when an
improviser chooses to create a harmonic superimposition, they do so from a harmonically focused
perspective. While the subsequent generation of material will yield phrases which may contain interesting
and complex rhythmic, gestural and timbral elements for example, these elements are not the focus
driving the improviser’s generative mechanisms. These elements are requirements however, to make

37 This can develop to give the impression of a musical ‘ESP’, whereby extended periods of time playing with the same musicians
allows a band to pre-empt the type of harmonic, rhythmic and melodic material an individual musician may be likely to use,
allowing for increased interaction. See (Hodson, 2007)
musically proficient and acceptable phrases. The improviser draws these elements, along with other low level syntactical information from their implicitly held knowledge base.

**Michael Brecker's Harmonic Superimposition Strategy**

![Diagram of Brecker's harmonic superimposition strategy]

**Figure 2.2 – Michael Brecker’s harmonic superimposition strategy**

### 2.2.5 - Brecker's Harmonic Superimposition Strategies

One of the leading proponents of harmonic superimposition since the 1960s has been Michael Brecker. His multifaceted career as a sideman and leader of numerous projects has led him to record on over 700 records contributing to the work of many jazz greats who were involved in the burgeoning chromatic developments of jazz in the 1960s and 1970s and became proponents of the divergent styles of jazz at this time. His own improvisatory style developed through working with these artists, but also as a leader of various groups including *Dreams*, *The Brecker Brothers, Steps Ahead* and the many recordings released under his own name.

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38 Highlights include Pat Metheny, John McLaughlin, Chick Corea, Herbie Hancock and Tony Williams amongst others.
Despite Brecker’s significant contribution and impact on various generations of jazz, there has been little detailed research conducted apart from two theses (Freedy, 2003; Poutiainen, 1999), scatterings of interviews and two published transcription books. Both theses are broad and present excellent overviews of Brecker’s improvisatory style from a holistic perspective however in each superimposition is only touched upon briefly. Freedy’s (2003) analysis driven thesis speaks of harmonic ‘juxtapositions’ however mainly relates these back to scalar explanations. Poutiainen’s (1999) thesis, built from modelling Baker (1988) and Liebman (1991), includes a section on a specific type of superimposition. Poutiainen provides numerous examples of this across Brecker’s oeuvre. He does not however, talk about any other forms of superimposition that Brecker uses or extrapolate the formulaic content within specific examples.

Of the many facets of Brecker’s improvisatory style, his ‘outside’ playing stands out against a highly refined mixture of bebop tradition, highly motivic themes, virtuosic technique and evident homages to his own influences. Many of Brecker’s harmonically driven phrases sound intuitively complex and idiosyncratic. He uses various techniques to produce these phrases. They can be divided into three types:

1) Functional chromatics – as defined by traditional uses of chromaticism in jazz such as enclosure, approach tones and any other device that is used to support the accompanying harmony.

2) Non-functional chromatics – any other form of chromaticism that serves to clash with the accompanying harmony and create tension. Examples include use of parallel scales/modes, symmetrical displacements, side steps, ascending/descending directional chromatics and placement of chromatics on strong beats where otherwise resolution should be expected.

3) Superimpositions – tension caused by superimposing common harmonic structures (chords and progressions) to obscure the accompanying harmony by means of superimposing another. The common harmonic structures, if familiar to the listener, will present a duality of harmony or bitonality which is at once ‘outside’ when heard against the accompanying harmony and at the same time ‘inside’, using common functional harmonic devices to navigate through unrelated key centres. If effective, the strong pull of the functional harmonies will, regardless of key, provide momentum to the phrase.

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39 More specifically, Brecker’s use of superimposition using John Coltrane’s ‘matrix’ progressions more commonly known as the ‘Giant Steps’ chord changes.
These categories are by no means exclusive and a measure of crossover is present when defining a chromatic type. In fact an improviser could utilise all three, simultaneously nesting different chromatic groups within others. For example, an improviser could apply a harmonic superimposition, and at the same time utilise non-functional chromatic structures (within the superimposed keys) which may contain individual instances of smaller units of functional chromatics such as enclosure.

This may suggest that the three groupings identified here could be ordered hierarchically from smallest to largest structural use of chromaticism. This is similar to the way an improviser may order chromatic devices based on their overall transformative effects on harmonic stability. The lower structural groupings are more often used to ‘colour’ or ‘enhance’ the underlying harmony. This does not require a far departure from the ‘inside’ material, which still maintains precedence as the harmonic focus. This changes in the second grouping as the desired effect is to oppose the harmony instead of supporting it. An improviser must utilise new structures with enough conviction to outline a deliberate change to the harmonic stability. The third grouping requires a complete departure from the ‘inside’, forcing the improviser to remove themselves from the key centre, juxtaposing new unrelated keys and modalities with a harmonic topography of their own.

It may also be argued that the third group, superimpositions, is not in fact a chromaticism at all (in an instance consisting of consonant and functional harmonic relationships) however its placement within such a hierarchy can be justified by its utilisation as a device to achieve similar harmonic effects. In reality, for an improviser, the clear distinctions these groupings provide may not be as fruitful and may instead be thought of as a continuum of ‘outside’ devices from minimal to maximal effect. The groupings however subjective, do allow an improviser a more precise way of targeting specific ranges of these effects within the harmonic topographies.

If we are then to consider chromatic usage in terms of a hierarchy, we may also relate this to the hierarchical structures of strategy led generative mechanisms as explored in chapter one. The three divisions of chromatic usage which form part of Brecker’s approach could be subsumed under this. For instance the first, functional chromatics, are low level embellishments which form part of common jazz

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For an overview of common chromatic Breckerisms across the first two categories defined here see (Freedy, 2003; Poutiainen, 1999; Callard 1996a, 1996b, 1996c)
vocabulary and syntax. For the most part these are never acknowledged as a guiding strategy. i.e. an
improviser would not think ‘use enclosures’ as a particularly useful approach to guiding an
improvisation’s direction. Instead, these would be implicitly controlled and part of low level syntax. They
may be considered analogous to a phoneme in terms of level. The second level, non-functional
chromatics, is higher in the hierarchy and may be used when an improviser plans to create dissonance or
‘go outside’. This higher level plan is still without detail however, as the approach is simply to play against
the harmony, which may mean simply moving to an incorrect position, or ‘filling in the gaps’ between
notes that would constitute a normal tonal phrase. The improviser’s plan involves deliberately inverting
harmonically acceptable options momentarily, by any means. The third chromatic approach
superimposition, is more explicit in control, as there are sub levels which contain specific directional
information. For example, an improviser may first choose to create a harmonic superimposition then
decide consciously to use a symmetrical displacement of major triads (as Brecker often does) to achieve
the harmonic superimposition. Further down the level includes the phrases that are played within these
displacements, and further still the individual notes and syntax that create them. The lower the level,
within the hierarchy, the more likely implicit control and knowledge base is operating (see figure 1.7).

2.3 Analysing Brecker’s Harmonic Superimposition Strategies

The following analyses aim to highlight Brecker’s use of harmonic superimposition as an improvisatory
strategy. While he uses this harmonic strategy in many situations, examples have been chosen where
harmonic superimposition has been used on static harmony with relatively ambiguous harmonic content,
to ensure consistency.

Harmonic superimpositions have been identified through a three stage process of listening,
transcription/analysis, rendering superimposition audio. Firstly, any instance where a phrase that sounded
inherently ‘out’ or ‘in’, and was heard to be in some way divorced from the harmonic grounding of the
accompaniment, was noted down. This also included instances of sidestepping, scalar superimposition
from the second grouping of chromatic usage explored in section 2.2, however did not include functional
or ornamental chromatics. Following this each phrase was transcribed and analysed from a harmonic
perspective to determine whether the phrase contained clear use of harmonic structures outside that presented in the accompaniment.

There was found to be varying degrees of ‘out’, from extremely clear use of superimposed harmonic structures, to less defined and more ambiguous examples, all of which constitute Brecker’s strategies of harmonic superimposition.

Once a complete superimposition had been identified, audio was produced to show how the phrases would sound with a harmonic accompaniment matching that of the superimpositions. These audio examples should be followed along with the transcription to fully understand the harmonic implications these phrases produce intuitively.

Before continuing, a note must be made on the notation. A problem arose while transcribing superimpositions due to enharmonics not being observed because of the duality of key, or complete lack thereof. To ensure consistency the researcher has omitted any change to the enharmonics of the material in annotated examples to ensure the material is still considered as heard against the underlying harmony stated in the descriptions. The labelled superimpositions are suggestions and while subjective, provide at least one possible, and hopefully likely, explanation of their derivations.

Finally the five examples below have been chosen to demonstrate the various superimposition types defined in the following section (2.4.2). As a brief preface these include:

**Tier 1 superimpositions** – A superimposition of +/- 1 semitone (sidestep)

**Tier 2 superimpositions** – A superimposition of more than +/-1 semitone

**Tier 3 superimpositions** – A superimposition containing multiple symmetrical shifts

**Tier 4 superimpositions** – A superimposition containing two part symmetry

**Tier 5 superimpositions** – A superimposition containing various combinations of the above

**Functional Momentum Orientation** – A secondary technique whereby a harmonic superimposition can be made stronger by the use of diatonic chord progressions within the superimposed key.
Unfortunately there was not a clear enough example found of Brecker using a strict tier 4 superimposition, however this superimposition type (along with the other four) can be heard in examples in part II (document B.1 and audio tracks B52-57), as demonstrated by the researcher. Further examples of Brecker’s superimpositions can be seen in document A1.3.

**Example 1 – Tier 1 (sidestep) superimposition**

![Figure 2.2.1 - Minsk 2:59 (audio A6.1)](image)

In this example from *Minsk*, Brecker uses a simple yet effective harmonic superimposition to briefly delineate the Db minor harmony. As can be seen, the entire line is based around a Db minor pentatonic, with the exception of beat 3 of measure 2, at which point Brecker uses a C major arpeggio. It is tempting to label this as a ‘sidestep’, due to the brief nature and semitone relationship between keys. Had Brecker have used C minor pentatonic this would be an appropriate conclusion however the use of a major triad suggests a more deliberate approach instead of just shifting material up or down as is common with ‘sidestepping’.

![Figure 2.2.2 - Minsk superimpositions 2:59 (audio A6.2)](image)
This next example is taken from *Escher Sketch*. The accompaniment suggests an overall Ab minor vamp. Brecker begins operating in Ab minor picking out notes from Ab dorian, remaining consonant until the second measure. In the third measure, Brecker uses a descending Bb arpeggio. It is unclear as to the nature of the superimposition as Brecker returns to Ab minor immediately. It is possible though that this Bb could be a way of creating a superimposed modal interchange suggesting that the Ab minor be thought of as aeolian or chord VI instead, invoking harmonic minor from the perspective of the Bb which would act as a V7 in Eb minor (of which Ab minor would be the IV chord). Whatever the case, it is clear Brecker has used a shift of one tone upwards to achieve harmonic delineation here.

The phrase then remains firmly rooted in Ab minor for the following measure and the first two beats of the fifth measure. Brecker then implies an A major in the last two beats of measure 6 (although there is a b6 present too (F) which may suggest A7b13). Initially this seems like Brecker has utilised a semitone shift as his superimposition, however looking ahead may suggest otherwise.

In the last line Brecker begins by outlining a Gb – This could be seen as the parent chord to his Ab dorian thus making this technically consonant in approach and a return to playing ‘inside’. The following two beats of this measure suggest a Gb and a G respectively. The last beat of this measure and the following measure suggest a return to Abm, through implication of Db7, G and Ab minor. The Db7 to Gb is a clear V I progression in the parent key of Gb.
Working backwards shows us that the Db7 could be a tritone substitution for the G in the previous bar. It is possible that Brecker is using this G as a pivot chord for modal interchange with its connection to the following measure as a preceding tritone substitution for the Db7 and its connection to the former measure as chord IV in D major, preceded by a Gb minor or iii Chord. Assuming this explanation holds it may help illuminate the previous A chord in the second line, suggesting that the A is functioning as a V in D major. While the whole line is ambiguous enough to hide a definite explanation, Brecker’s tendency towards tritone superimpositions makes this a possibility at least, suggesting that Brecker is swapping back and forth between Ab minor and D as a more abstract and structural harmonic superimposition.

Figure 2.2.4 - Escher Sketch superimpositions 3:43 (audio A6.4)
Example 3 – Tier 3 (symmetrical movements) superimposition

![Musical notation](image)

Figure 2.2.5 - Rocks 3:26 (audio example A6.5)

Example 3 is from *Rocks* which is based on another harmonically ambiguous F vamp. The bass player mainly plays octaves of the F allowing a platform for Brecker to begin superimposing. Brecker starts in F minor, playing off the 2\(^{nd}\), b\(^{7}\)th, b\(^{3}\)rd and 4\(^{th}\) (still in key) before using a chromatic motif to outline A7 to reach a D major arpeggio in the second measure. He then moves to create a V-I resolution through F7 and then Bb.

The use of minor third shifts, notably between the D-F7, suggests a Coltranian influence in this line. This is a feature common in the harmonic makeup of tunes such as *Giant Steps* and *Central Park West* and is used to suggest parallel major/minor keys. In this instance modulating up a minor third from D – F is the same as playing D major – D minor.

![Superimposition chart](image)

Figure 2.2.6 - Rocks superimpositions 3:26 (audio example A.6.6)

Example 4 – Tier 5 (multiple combinational shifts) superimposition

![Musical notation](image)

Figure 2.2.7 - Night Flight 3:43 (audio A6.7)
Figure 2.3.4, transcribed from Night Flight from the album Back to Back and is based over an F minor vamp. The phrase begins with a rising F minor triad in the 1st beat before descending chromatically in the 2nd and 3rd, still adhering to the F minor tonality. On the fourth beat the phrase implies a typical chromatic bebop figure that suggests an F#7. This identification is supported further by the following two beats of the next measure in which a B major is implied, suggesting that Brecker has utilised a V I progression a tritone away from the F minor Vamp. On the 3rd and 4th beat of this measure Brecker shifts a minor second to the key of C using typical arpeggio patterns outlining C major and G major. The creation of a I V progression in C major is further evidenced by the resolution to a C note in the next measure.

After ascending a G major arpeggio in the first beat of this measure Brecker then returns to the C note and continues ascending, this time through an F minor arpeggio and then hanging on a Bb before continuing the phrase back in F minor.

The finesse in Becker’s approach to superimposition is shown particularly in this third measure. While Brecker may have opted to continue the first beat as a C major exclusively, by switching to the G major he avoided the use of either a major or minor 3rd of F or C, maintaining a harmonically ambiguous position by avoiding the expected C7-F minor resolution. In doing so the tonality of the C chord in measure three is obscured, creating a more subtle use of modal interchange in the following beat. This is emphasised by the extended time spent on the Bb stressing the difference to the B in beat 1.
Example 5 – Harmonic Superimpositions including Functional Momentum Orientation

Example 5 features another phrase from *Slick Stuff* this time based around a Csus vamp. The first two beats of measure two outline F minor pentatonic. We see in this initial part, that the phrase is largely uses 4ths. This is pivotal to how the flow of the phrase is perceived as will be seen later in the analysis.

The 3rd beat of measure two uses a descending chromatic figure. This four note figure appears frequently as can be seen in *Night Flight* (figure 2), *Rocks* (figure 3) and in the previous example from *Slick Stuff* (figure 4). In each of these examples it appears before a significant shift away from the accompanying harmony.

The 4th beat of measure two uses a D7 altered figure by using the 3rd, root and b2nd of D. This could suggest resolution to a G or G minor, however instead the following phrase actually presents us with an A7 (as will be shown). This chordal substitution is perhaps then anomalous or without functional reason. It is however possible that Brecker is not thinking of a specific superimposition and instead intends to use a chromatic enclosure of the E in the following measure. In either case the flow of the line feels supported by this four note motif.

On analysis of last two beats of measure three, the phrase can be identified as C major and F minor respectively. Initially, this might suggest that Brecker is playing on a changing chord quality against the background Csus, however despite the absence of any 7ths it may be suggested that the C is working as a C7 instead. This is possible when considering the C7-Fm V-I relationship. Further support for this is seen in the previous two beats as will now be shown.

The harmonic superimpositions in the first two beats of the third measure are more obscured by the use of 4ths instead of the common triad patterns Brecker often uses. Working backwards in two note clusters however would suggest the following: the B-G as a G7; the A-D as a D major or D7; the B-F# as a G major 7; the E-C# as an A major or A7. This would yield the following progression:
An alternative explanation could be that Brecker is thinking about larger structures and moving in major 2\textsuperscript{nd}/Major 3\textsuperscript{rd} across different key centres; the A7-Gmaj7-D (V-IV-I) in D major, moving down a major 2\textsuperscript{nd} to G7-C (V-I) in C major and finally considering the C as a C7 as previously mentioned C7-Fm (V-I) in F minor (Ab major). This gives us a descending major 2\textsuperscript{nd} movement from D - C major and a major 3\textsuperscript{rd} from C-Ab major.

2.4.1 - Theoretical Completion and Taxonomy of Brecker’s Harmonic Superimposition Strategy

Through the analyses presented in this study it has been shown that Brecker uses a finely tuned system of superimpositions to delineate harmony. Extrapolation of the devices within reveal a tendency towards three tonic and four tonic systems for substitution (Bergonzi, 2003), with the majority of displacements being made through major/minor thirds and also tritone substitutions. These substitutions are derivative of the work of John Coltrane in particular. Coltrane’s system of substitution is the foundation of his compositions and was a direct influence on Brecker’s own development. Hal Galper recalls:

“Mike was really channelling some Coltrane energy on the bandstand back then. We worked all the places in New York over three years, and I remember one critic referring to us as Average White Trane, which I thought was funny. That band was kind of a cult phenomenon of its time. It was very influential in terms of younger players..."
Saxophonist Chris Potter, whose work clearly echoes Brecker’s harmonic approach, also mentions Brecker’s clear development of Coltrane’s harmonic concepts.

“The first thing that grabbed me about Mike’s playing—such a unique sound and the depth of his concept. And when you got into the kind of lines that he was playing I could recognize that he was kind of taking things that Coltrane had done, things that Joe Henderson had done, and just carried it even further in some ways, as far as ways of incorporating false fingerings into his lines and ways of superimposing various other kinds of harmonies on top of the basic harmony.” (Milkowski, 2006)

Brecker himself acknowledges the effect Coltrane had on his development frequently (Dempsey, 1987) and in addition references David Liebman as a core influence for the development of his style:

“Most of what I’ve learned, I’ll have to admit, comes from listening to records and from a few people in New York who really influenced me a lot like Dave Liebman and Steve Grossman. There are some other guys in New York nobody knows about who I think are great. I love the way they play. Bob Berg, a tenor player, is one, and Bob Mover, alto, who’s playing with Mingus now, he’s really good.” (Nolan, 1973)

Brecker’s approach to superimposition is clearly identified through his repeated use of minor/major 3rd key movements and has a distinct Coltranian influence. Brecker’s phrases dispel a lot of rules about creating and releasing tension. His phrases often remain unresolved and rely instead on the harmonic progressions inside to drive their momentum. His approach allows us to augment our definition of effective superimposition as a non-tonal phrase or set of phrases, which outline partially or wholly a forward moving harmonic relationship within themselves that may or may not lead directly from or back to the accompanying harmony.

Jost (1994:32) suggests that the abandonment of functional harmony makes formal patterns obsolete. While he is speaking more specifically about 1960s free jazz and in respect to Coltrane, the evident development of formal patterns as hidden structures used in superimposition displayed by Brecker may
suggest the contrary. Berliner (1994) shows the substantial effort students of jazz improvisation place in assimilating common functional harmony patterns. It is possible then that the abandonment of functional harmony is more defined in the accompaniments provided by the rhythm section and that the ingrained patterns and formulas familiar to the improviser are instead allowed to be developed, morphed and disguised to a point where they no longer appear as functional in the traditional sense although may implicitly be heard as functional.

Overview and Taxonomy of Brecker’s use of Superimposition

Throughout the examples it has been shown that Brecker utilizes minor 2\textsuperscript{nd}, major 2\textsuperscript{nd}, minor 3\textsuperscript{rd}, major 3\textsuperscript{rd} and tritone movements in his superimpositions. The following statements have been produced about tendencies found within the examples

- The frequency of use is larger for tritone and major 3\textsuperscript{rd} movements of which both are more focal and deliberate when used.
- Major 2\textsuperscript{nd} displacements are not often used on their own and often act as a bridging tool in larger harmonic superimposition routes.
- Less complex lines that go ‘outside’ briefly, often do so using mainly minor 3\textsuperscript{rd}, minor 2\textsuperscript{nd} or tritone superimpositions. These types of lines also often spell out the change quite specifically by using triads alone.
- Functional harmony, more common to traditional jazz, is inherent in his superimpositions. V-1, tritone substitution are two common examples.
- Brecker uses modal interchange often to give himself even more routes by changing chord qualities.
- The structure of superimposition in longer, more complicated lines often has a fast harmonic tempi.
- Almost all of the superimpositions are of major nature. Brecker uses the solid harmonic nature of a major triad to aid his conviction when moving through what we hear as intuitively ‘wrong’ superimpositions. This helps to carry momentum (see page 109).
- Brecker does not always resolve his lines in a traditional ‘inside’, ‘outside’, ‘inside’ manner.
• More complex superimpositions often feature heavily obscured or ambiguous harmony in order to disguise the harmonic delineations.

• To obscure a superimposition Brecker uses a combination of scalar, arpeggio and traditional chromatic figures.

Representations of all possible harmonic superimposition shifts in all keys

![Diagram of harmonic superimpositions](image)

Figure 2.3.1 - Model of all possible harmonic delineation pathways

Figure 2.3.1 is a theoretical model of all possible pathways for harmonic superimposition. Each circle represents a 12 tone cycle and the shape within it represents a particular harmonic movement. These start from minor 2nd and move major 7th at the end. This model may be useful for practitioners seeking to assimilate aspects of Brecker’s approach and that of harmonic superimposition generally. Viewing the superimpositions like this also provides an improviser with more harmonic strategies. As a means of directing improvisational practice/analysis to a more considered concept led approach it may be more appropriate to represent the use of harmonic superimposition in this way, rather than traditional notation.
For example:

This phrase contains a harmonic superimposition from Am to F# major. This superimposition could instead be represented like this:

![Harmonic Superimposition Example](image)

This may seem potentially oversimplified, but it purposefully highlights the area of interest within the phrase. This could then be reapplied in both pedagogy and analysis. For instance, an exercise for practicing the use of the harmonic superimposition strategy above may look like this.

![Harmonic Superimposition Exercise](image)

Conceptually, Brecker utilises all but the perfect 4ths in his superimpositions. Rather than completing a full cycle to root Brecker also uses multiple types of superimposition as has been shown throughout the previous examples. By using the model above it is possible to represent the routes Brecker takes in the earlier examples also. The first four examples are represented as follows:

![Harmonic Superimposition Examples](image)

Figure 2.3.2 – Representational pathways of Brecker's harmonic superimpositions

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2.4.2 Hierarchy of Harmonic Superimposition

As Brecker demonstrates, there are varying levels of complexity to harmonic superimposition. The following tier system suggests a method for discerning the type of superimposition being used. The tiers can be nested within one another and are not mutually exclusive however their distinction here serves to show the variance in approach one may adopt in order to achieve a different types of harmonic delineation through superimposition.

Tier 1 – Sidestepping shifts

Sidestepping shifts is the simplest way of implementing a harmonic superimposition, by ‘stepping’ to an adjacent key. A typical sidestep would involve playing above or below the accompaniment by +/- 1 semitone, utilising the same tonal quality as the accompaniment. For example shifting an A minor pentatonic phrase to Bb minor pentatonic.

Qualities of sidesteps may also be changed. For example when shifting from A minor to Bb, the quality of the Bb could be changed. Brecker often does this, favouring a major triad superimposition generally.

It is possible, as Brecker shows, to achieve a sidestep when in a minor key by implementing a major triad superimposition a tone or two tones above the root. In this case the relative major is being invoked (i.e. in A minor, to shift to Ab minor, one could superimpose with B major. To shift to Bb minor, Db major would be required).
Tier 2 – Singular harmonic shifts of more than a semitone

This tier represents harmonic orientation moving to another key centre other than that of the outlining accompaniment or those involved in sidestepping. The harmonic delineation produced is not however directly related to the distance of superimposition movement away from the tonic. That is to say, it is not necessarily the case that the further you move shift away from the key, the more ‘out’ your phrase becomes. This is supported by something Mermikides (2010:63) calls harmonic altitude, which he defines as “the chromaticism of the phrase relative to the harmonic context”. We can draw on Mermikides work to show the relationships each singular key shift presents in relation to Brecker’s common usage of major triad over minor/sus vamp.

There are multiple ways one might explain each singular shift in relation to its position within the key, as part of a larger structure superimpositions, symmetrical displacements and inversions. It also shows how one might approach a minor sidestep by instead using the relative major of each minor sidestep to disguise the shift.

Tier 3 – Multiple shifts of symmetrical nature

Any set of harmonic superimpositions which contain movements of equal intervallic distance. i.e. minor 3rd shifts, major 3rd shifts etc. This would also include changes of direction of modulation/shift.

Tier 4 – Multiple shifts using two part symmetry

A set of two fixed symmetry superimposition shifts. For example, up a 3rd, up a minor 2nd, up a 3rd, up a minor 2nd. Once again, changes of modulation directions are also applicable in this manner.

Tier 5 – Other harmonic shifts

This tier represents other harmonic shifts which may include any combination of the above four tiers or any other non-symmetrical shift.
Functional Momentum Orientation (FMO)

The perception of the listener’s realisation of one of these shifts can be bolstered by the use of functional harmonic progressions from the keys. The denser an FMO is, the more harmonic momentum is carried through the tacit perception of common harmonic progressions. In this case a superimposition may present a duality or bitonality of listener perception; that of the abstract superimposition movement in relation to the underlying harmony and that of the harmonic relationships put forth in the FMOs.

2.5 - Conclusion

The significance of superimposition to the development of a contemporary approach to jazz improvisation is evident. This case study intended to illustrate an analytical methodology for gleaning underlying processes of harmonic superimpositions and in turn create the beginnings of a taxonomy of superimpositions used by Michael Brecker. The information gleaned from such an analysis should allow practitioners to augment their approach to harmonic strategies for jazz improvisation. While this work is by no means exhaustive in its description of the types of harmonic practice favoured by Michael Brecker, it allows a glimpse into the development of a working repertoire of harmonic concepts for contemporary jazz improvisers.
Further research may benefit from extending the scope that has been used, looking at the overall positioning and significance of superimposition to Brecker’s style and idiosyncratic repertory of improvisatory strategies. In addition further study may be aided by mapping harmonic superimposition usage against ambiguity of accompanying harmony, providing more controls for employing these strategies of harmonic superimposition.

The research conducted was inspired and informed by Morgan’s (2000) unearthing of the particularities in Herbie Hancock’s use of superimpositions and could be adapted, as it has been here, to any other improviser’s work. As Morgan concludes, this approach “shifts the focus” of the material from a melodic to a harmonically led perspective where the melodic content of the phrases that constitute the superimpositions become subservient to the underlying harmonic structures. With this in mind, superimpositions can become instantly accessible to any improviser, with their current knowledge base, and allow a development of a rich harmonic approach.

It has been demonstrated that within a particular improvisatory strategy, and sub strategy, in the case of superimposition, withdrawing the conceptual improvisatory strategy allows for a broader understanding of the range of such a strategy as used by the improviser. To this end, once a concept has been established, it can be theoretically expanded or constrained. This has potential for leading practice development and analytical understanding of how an improviser develops and uses improvisatory strategies. The reapplication of this will be demonstrated in part II.
Chapter 3 – Strategy Macro View: Wayne Krantz’s Developmental Improvisatory Strategy Model

3.1 – Strategy Macro View

The previous chapter focused on a single improvisational strategy, considering the way in which multiple strategies work together within an improvisation can reveal particularities about an improviser’s strategic tendencies both in a single instance and over time. As we further abstract strategic levels, we are able to see larger structural strategies or plans that may be taking place within improvisation. Some improvisers, such as those in Hargreaves et.al study (1991), conveyed an awareness of such a pre-emptive cognitive plan or overall strategy for shaping their improvisations.

In this chapter, Wayne Krantz’s use of strategy will be explored from a macro perspective, looking at the strategy based generative mechanisms he tends to favour over the course of an entire improvisation. Krantz is often clear in interviews about his improvisational preferences and approaches, and so it is possible to draw a frame of reference for Krantz’s strategy use. Through a detailed analysis of one particular improvisation, the improvisational tendencies he employs are discussed. The coded strategies/deployments are then used in a secondary analysis, which contains a longitudinal study of Krantz’s development from an improviser with clear understanding of traditional jazz lineage, vocabulary, and approach in his earlier work, to a more rhythmically focused approach, which eschews the bop idiom’s lexicon and trappings almost entirely.

The analyses demonstrate the possibilities an improviser has for directing, augmenting, and completely changing their approach through the adoption of new strategies and their development. Krantz’s use of strategy discussed in this chapter will preface the researcher’s own practical study in part II.
3.2.1 Wayne Krantz’s Improvisatory Approach

Wayne Krantz is a contemporary electric guitarist who fuses elements of jazz/rock/fusion in a novel and idiosyncratic way. More recently, Krantz’s recognition as a formidable force in contemporary jazz guitar has grown with more frequent tours to premier jazz clubs across the globe, growing coverage in guitar/jazz periodicals and a significant shift in the direction of his corpus of music (Krantz, Carlock, Lefebvre, Howie 61 and Good Piranha/Bad Piranha). A veteran sideman of The Brecker Brothers band, Steely Dan and more recently contemporary jazz saxophonists David Binney and Chris Potter, it feels intuitively right to group Krantz in one or more of the many subsets of jazz and that in some way the qualities of traditional, or pure jazz, is akin to that of Krantz’s ‘jazz’.

Krantz’s music is heavily improvised, with an emphasis on group interaction and a more evident timbral control than is normally typical in jazz/fusion styles. His compositions focus on blurring the lines between melody and harmony, relying on an intensely rhythmic construct to carry the improvisations instead of the traditional jazz standard vehicle. Form is present but appears malleable and very indistinct to those unfamiliar with his music.

Krantz has upheld a relatively luddite stance on guitar tone through his use of valve amplification and sparing analogue effects, showing no interest in continually augmenting his sound to reflect the developments of technology, unlike his peers and contemporaries. Considering this alongside Krantz’s own raw and extremely tactile playing style, he appears far more connected with the instrument than other contemporary jazz or fusion guitar players are. As a result, he seems to have created a realignment of the solid body electric guitar whilst maintaining some elements of the semi-acoustic archtop style guitar, which is synonymous with more traditional forms of jazz. This has been a conscious pursuit of Krantz, who once adopted an effect laden sound during earlier years\(^41\).

Krantz’s favoured format of ensemble is also indicative of a want to pursue raw and transparent settings. Throughout his entire output as a band leader, this format has been consistently guitar, bass and drums as

\(^{41}\) More recently, Krantz’s studio albums contain more effects, but are used not only in respect to colouring tone (for example – the use of chorus as standard in many 80’s jazz fusion guitarists’ approach: John McLaughlin, Mike Stern, and Pat Metheny). Instead the effects are used dynamically and become part of the overall timbral strategy approach. Krantz’s effects now include ring modulator, auto-wah and more recently the electroharmonix freeze pedal (used to create infinitely sustaining textures to play over).
a core. The intimacy produced by this adds further to the feel of close connection and transparency. This is contrasting to other electric guitar led contemporary jazz/fusion groups, which generally favour at least a four piece format, forcing the guitar to take on the role of either melodic or harmonic function, divorcing each, and assuming the role the other instrument is not filling. Krantz is anomalous in this sense, as he openly refuses the divorce of these elements, assuming the role of accompanist and melodist simultaneously, akin to how a piano player functions in a standard jazz piano trio.

Krantz’s vocabulary also eludes simple categorisation. There are moments when you would be forgiven for thinking of Krantz as a straight ahead blues/rock player, others when you would conceive him a traditionally schooled jazz ‘lines’ player, and others where his playing is so unique it does not conjure any allusion. The deep rooted tradition of assimilating melodic and harmonic language is held in the highest regards by traditional and purist jazz musicians and whilst Krantz demonstrably ‘paid his dues’ this way initially, he is an advocate of the abandonment of this particular stylistic trait, in pursuit of a freer form of interaction with abstract intervals and rhythms. He has even devised and published his own method of formulating interval palettes, *An Improviser's OS* (Krantz, 2004) which he uses as the basis for pitch choices during improvisation. It is however, strange and perhaps ironic that as this abandonment and segregation has developed throughout his career he has still ascended further into the pantheon of jazz guitarists. Perhaps it is not so much the pursuit of the language itself, but of the development of an intelligent design on its prose that seems to further aid the authenticity of his position in the vernacular of jazz. Krantz’s position in the contemporary jazz scene and ‘guitarscape’ was explored in Williams (2016).

The following analyses aim to bring forth the elusive qualities of Krantz’s unique strain of jazz improvisation and his development away from the bop heritage line playing that encapsulates many contemporary jazz improvisers. Using the concepts and models of generative mechanisms as a lens, Krantz’s favoured strategy led generative mechanisms and their deployments will be discussed. More pertinently, the final comparative analyses in this chapter clearly demonstrates Krantz’s move away from the bop heritage.

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42 Similarly the use of rock and blues inflection seems to be used more to capture the visceral connotations of these styles; raw sounding, bite, energetic and powerful.
The justification for using Krantz as a study for the development of strategy led improvisatory generative mechanisms lies in his own acknowledgment of the use of such mechanisms. Krantz frequently talks about being led by a preference towards rhythmic strategy, inferring that his improvisations are often guided by this.

“At some point I realised rhythm was the most important thing to me” (Berklee Online, 2011. 2:40)

“I think every musician, maybe, has one of the basic elements, whether it’s melody, harmony, rhythm or sound. I think that every musician kinda has one of those four things that is held dear, most central to their musical being. And for me it was rhythm….I identified that it was and when I realised that it was, I just made the decision, now everything that comes out from now on is going to be based in rhythm”. (Berklee Online, 2011. 2:48)

What makes Krantz an excellent case study in this regard is his awareness of his playing tendencies and his conscious efforts to direct his approach. Krantz positions his earlier playing as part of the post-bop heritage of long unbroken 16th note line playing, especially in his role as a sideman earlier in his career. While pursuing the development of his own material, Krantz realised that this style of playing was too derivative to allow him to develop his own voice:

“That’s when I realised that a lot of the more derivative more cliché oriented playing specifically like the whole post-bop thing connecting 16th note lines and that kind of playing was not going to work, so that led me to a more phrase oriented playing.” (LCCM - London Centre of Contemporary Music, 2015. 1:40).

Subsequently his approach moved away from traditional methods, consciously eschewing the use of lexicon in favour of a looser approach, aiming to avoid patterns and clichés in an attempt to move away from the post-bop heritage.

“When I played, like if anything was…anything that sounded derivative, to me or... referred to other people, I would stop playing it” (LCCM - London Centre of Contemporary Music, 2015. 0:45).

His own pedagogical text (Krantz 2004) displays a blatant disregard for the usefulness of a lexicon of licks. Instead he lists all possible (2048) orders of the 12 note series, starting with two note patterns building to twelve. He does this to maintain control over the intervals he uses and so that he can focus on interacting rhythmically and with the music he is creating more freely and without constraint.
To this end a systematic look at Krantz’s use of lexicon would be less than useful here. Instead we must look at how Krantz uses these 2048 sequential patterns as raw material for interacting and creating with, and the strategies he uses to deploy them. This is not to suggest that Krantz is creating continually novel material as he plays but instead that the novel material is used developmentally throughout, reworking phrase structures, rhythms, contours, timbres etc.

The following methodologies and analyses aim to illustrate two things. Firstly, Krantz’s preference for a rhythmic led improvisatory approach, and secondly, how this approach has developed over a number of years.

3.2.2 Adapting and Augmenting Generative Strategy for Krantz

In adapting Norgaards generative strategies to glean the most from the following analyses adjustments were necessary to tailor to Krantz’s approach. A rhythmic strategy (R) was added, in keeping with Krantz’s self-declared rhythmic focus; pitch categories (MH43) were combined as pitch strategy, as Krantz suggests he does not distinguish between them; A physical strategy (P) was added, showing where particular patterns emerge in the fingering of the guitar; a strategy for timbral emphasis (T) was added; a dialogical category (D) was added to show where improvisation is led by interactions of either inter or intra-textual nature, including referencing, allusion, humour, signifier, and antiphony.

Krantz’s use of both associative and lick assembly generative mechanisms are not the focus of the following analysis however will be addressed where necessary.

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43 MH refers to all melodic and harmonic pitch focused strategies
Figure 3.1 – Wayne Krantz’s improvisatory strategy categories
These categories of strategy have been identified and produced retrospectively in line with the findings of the following analyses.

The deployments shown in Figure 3.1 are not exhaustive and are in reference to what has been found in the following analyses, and Krantz’s approach generally.

3.3 - Whippersnapper – Gleaning Krantz’s Strategies

The following examples are taken from Whippersnapper from the live album 2 Drink Minimum. These examples have been chosen to demonstrate some of the particularities of Krantz’s approach in relation to the different strategies mentioned above. In each, there are sub-level strategies and deployments, which have been identified and presented to give the reader a broad understanding of some of the particular features present within this solo, and within Krantz’s approach generally. The full transcription is provided in the portfolio (see document A3.3).

Rhythmic Strategies (R)

Krantz’s improvisational style relies heavily on an emphasis on rhythmic strategies for improvising, with melody and pitch choice often becoming subservient to the rhythm. He is clear about this in many instances:

“Find something you can call your own. For me, it was my rhythmic imagination.” (Krantz, 2011c)

“I don’t talk about rhythm much because it’s my center, always has been” (Krantz, N.D)

“To a large degree it’s the rhythmic idea that determines what I play” (Krantz, 2008c. 10:30)

The clear acknowledgment that Krantz makes of how rhythm drives his improvisational style is absolutely coherent with the strategy breakdown in document A1.2. As can be seen, Krantz is operating with rhythmic focus predominantly, with the other strategies featuring less overall. Krantz takes this acknowledgment even further by stating that:

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44 Care should be taken in the perception of such a categorisation; the strategies serve to represent the improviser’s general leanings to a particular method of improvising at any given time. The material produced, may well contain elements of all strategies. The purpose of the classification however is to narrow the focus, to understand where an improviser may place attentional emphasis at any one time.
"Whatever rhythms I play, don’t start on the guitar" (Krantz, 2011c, 2:50).

This dispels any notion that the rhythms are in any way led physically or harmonically, at least to Krantz’s awareness. This is further evidenced in (Krantz, 2008c) where in many examples he makes of improvising rhythmically, he sings the rhythms before and as he plays them on the guitar.

**Deployment - Broken Lines**

As can be seen in the transcription (Document A3.3), Krantz’s rhythmic strategies rely heavily on long lines of 16th note rhythms:

"The increment of the moment is usually 16th note" (Krantz, 2008c)

"With me it’s cut and dry with 16th notes" (Krantz, 2008c, 7:30)

Krantz’s rhythmic improvisational style is typified by long 16th note lines or phrases, broken up consistently by 16th note rests to create various rhythmic feels and syncopations. Where intent is to be drawn on here, Krantz substantiates his use of such rhythmic devices. He often expresses disdain for long lines of constant notes, more akin to bebop style traditions of jazz improvisation. In doing this he strives to create a rhythmic lattice for the band he is playing with to allow rhythmic pockets or gaps for band members to interact with and fill. In many ways it feels like Krantz intends to employ a real time musical game with the aim of avoiding too many layers of similar rhythmic material, forcing the band to continually think interactively instead of autonomously about what they are playing.

**Deployment – Rhythmic Stretching**

Rhythmic stretching is another feature of Krantz’s rhythmic organisation and a commonly used strategy of his.

![Figure 3.2.1 – Rhythmic stretching 1 (2:57)](image)

![Figure 3.2.2 – Rhythmic stretching 2 (5:28)](image)
Figure 3.2.1 and 3.2.2, show how Krantz often treats his 16\textsuperscript{th} note lines in a more malleable way, reducing or increasing rhythmic density, to reach a larger or smaller rhythmic division. Sudden increases in rhythmic density occur and are used to great effect, as can be seen above. An appropriate and intuitively felt analogy is that of skipping stones on water.

**Deployment – Strict Rhythmic Placement**

Like other aspects of his rhythmic conception, Krantz has a very deterministic view of rhythmic placement. He states:

> ‘When I play….. Everything adheres to the grid’ (Krantz 2008c)

This is mirrored clearly in what we see in the transcription and his acknowledgment of contrapuntal playing. The control over rests and 16\textsuperscript{th} note rhythms is clearly a product of a rigorous practice regime routed in creating straight and syncopated rhythms as Krantz demonstrates frequently\textsuperscript{45}. He is consistent with his use of strict ‘grid like’ rhythmic placement. Krantz does, however, acknowledge where departures from this strict metric feel occur, showing the effectiveness of differing placements:

> “as opposed to a transcription of a blues solo, a lot of 5 over 4 and stuff that includes putting 8 notes over 6… it’s much looser” (Krantz, 2008c)

Krantz is fundamentally aware of beat placement (where other improvisers may not be consciously) and is consistent in controlling it. While he is conscious and deliberate in his grid like approach to controlling rhythmic placement, he states that placement variants must be conscious and that when he plays behind the beat he does so consciously (Krantz 2011b).

The evidence presented above, supporting Krantz’s reliance on rhythmic strategy, is not without its pitfalls. Whilst all the lines are clearly rooted in rhythmic focus, they are not without pitch data (although Krantz does often employ a ring modulator to eschew pitch and focus entirely on rhythmic improvisation). While a hierarchy does seem to exist between rhythmic and pitch subservience, a distinction between how much pitch or rhythm take precedence over one another is difficult to gauge.

\textsuperscript{45} See Krantz (2008a, 2008b, 2008c, 2011a, 2011b, 2011c)
This study maintains a divorce between rhythmic and pitch led strategies however in practice a better classification such as ‘rhythmonic’ may be more fruitful in instances where the disparity between rhythmic and harmonic subservience is at a close or oscillating level.

**Pitch Strategies (MH)**

While Krantz’s playing admittedly revolves around a rhythmic point of origin, Krantz has a rich harmonic and melodic awareness. Like many others, Krantz learned by assimilating the vocabulary of previous styles, most notably bebop to ‘cut his teeth’, an approach common to the development of many great jazz improvisers past and present (Berliner, 1994:112). Berliner explains how jazz musicians depend on a culture of learning and disseminating each other’s melodic vocabulary as a gateway to learning to improvise creatively (1994:37;130). By doing so, it shows understanding and acknowledgement of previous trendsetters and allowed improvisers to add to the styles they played. Krantz followed this culture during his early career, demonstrating a well-studied and traditionally aware vocabulary. Whilst Krantz admittedly had tried to escape the trappings of traditional vocabulary, its emergence during *Whippersnapper* demonstrates the difficulty in completely eschewing previous traits.

**Deployment – Harmonic Superimposition**

![Figure 3.2.3 - Harmonic superimposition (3:43)](image)

As can be seen in figure 3.2.3, Krantz is employing a harmonic superimposition against the static D minor background provided by the bass. In the first two measures (33-34), Krantz is using D whole tone consistently. This is something consistent with the idea of a harmonic approach as opposed to a rhythmic one, with the impetus here to stress tension by augmenting the 3rd, 4th and 5th degrees of the D minor. In the following two measures, Krantz continues with this augmented superimposition however with the addition of a descending chromatic motif in measure 35 from C-G#, B-G#, A#. This particular
descending motif is a definitive feature of the vocabulary of Pat Metheny, someone who Krantz (and countless other contemporary jazz guitarists) acknowledges as an early influence.

Deployment – Traditional Vocabulary

![Image of traditional jazz vocabulary](image)

Figure 3.2.4 - Traditional jazz vocabulary (4:29)

Figure 3.2.4 continues to showcase Krantz’s extensive knowledge of common jazz vocabulary. In measure 61, Krantz sets up a chromatic enclosure to land on the third beat with F♮ which is preceded by Gb and E. A second enclosure can be seen in measure 63, again on the third beat with a G♮ target note preceded by G# and F#. Generally, the makeup of this line could be said to be typically bebop based, with a much more controlled set of rising and falling chord scale arpeggios and also chromatic leading passages as seen in measure 62 (in addition to the enclosures we have seen already).

![Image of traditional/contemporary line](image)

Figure 3.2.5 - Traditional/contemporary line (5:12)

In figure 3.2.5 the bebop and contemporary jazz influences meet. Measure 87 shows a chromatic idea, again typical of bebop styles and in particular guitarist Pat Metheny. Measure 88 suggests a further harmonic superimposition similar to the first example, again utilising an augmented/whole tone idea to create tension against the static D minor tonality.

46 The last 3 beats suggest F major, meaning Krantz is imposing I major, a minor third up from the D minor. Figure 3.2.4 - Traditional jazz suggests this also, with the enclosure from beats 1-2 suggesting that Krantz may favour using the minor chord as if it is its relative major. The discarding of the overriding D Dorian tonality shows that when employing this I major device, Krantz breaks away typically from his free thinking ‘palette’ approach and moves to a more traditional one, now treating the D as a natural minor in order to utilise these more traditional phrases.
Despite Krantz expressing disdain for these stylistic traits which he considers as part of his former playing style, he readily returns to them at times. There are two possible reasons for this:

1) Krantz is still developing his improvisational style away from these types of lines and has, to some degree, utilised pre-learned ideas or vocabulary (excluding the augmented superimposition as this seems clearly intentional, as he returns to it more than once).

2) Krantz is purposefully using this type of vocabulary to align himself with the expectations of the listener to some degree. By doing this and consciously engaging these bebop lines, he is able to position himself to the listener with more authenticity and authority as an improviser within this specific context. It could be perceived that, to the ears of a listener, Krantz is separating himself from a multitude of post 1980s jazz fusion guitarists, whose lines lack the harmonic sophistication and technical command that this type of vocabulary has. In a sense, it allows Krantz to remain positioned as a contemporary ‘jazz’ artist first and foremost as opposed to any other classification.

**Timbral Strategies (T)**

Krantz utilises timbre as a communication device in *Whippersnapper* in two sections, measures 51-56 and measures 65-80 respectively. In both of these sections, Krantz abandons concern for harmonic and rhythmic specifics and chooses instead to focus on density and tonal changes.

**Deployment – Open string use**

![Figure 3.2.6 - Contour/open string use (4:47)](image)
Both of these sections also function as a dialogical signifier for the band to build to a climax. This is achieved by rhythms becoming denser in contrast to the maximum previously achieved density of 16\textsuperscript{th} notes. The contrapuntal nature of the ensemble dynamic changes as well, as the trio become less sympathetic to their position in the mix and more concerned with outdoing each other in terms of dynamic rise. The guitar section is particularly interesting here as open strings are used within the repeating phrases, provide a much wider melodic contour, with a fast oscillation from low to high registers. This is shown above, and demonstrates a method by which Krantz is able to use the unique timbre of the guitar’s open strings to aid with ensemble interaction.

Interestingly, both sections are followed by the only uses of guitar bends in the solo (see dialogical strategies on page 128), which mark the beginning of a new form. By viewing these bends as dialogical signifiers or cues, it is clear to see Krantz uses these long notes as a tool to direct control over the form. This provides an interesting glimpse into use of cues to create form in the moment in the absence of pre-determined structures.

**Physical Strategies (P)**

Krantz defines improvisation as “any spontaneously created music” and “any preconceived music, including all licks, stylistic vocabulary” as composition (Krantz, 2004:7). In addition he also states that “playing patterns generally falls under the category of compositional playing” although is careful to remind us that the distinction is not there to enforce a superiority of the less prepared and that compositional based improvisations are just as valid (Krantz 2004). As can be seen in the transcription, it would appear Krantz leans heavily towards the former as there are few passages that allude to a pre-rehearsed idea. There are however some passages where it is clear that finger routes and physicality take over.

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\footnote{Until this point Krantz had not utilised any rhythmic division smaller than a 16\textsuperscript{th} note. At this point he begins to use constant 16\textsuperscript{th} note triplets and 32\textsuperscript{nd} notes.}
In figure 3.2.7, Krantz appears to have abandoned his strict approach to note choice and limitation and opted for a finger led phrase. This is shown in measure 90 (outlining a 4ths based phrase) and particularly in 91 where he takes a single three note pattern and displaces it down the guitar neck three times into lower positions.

It is often difficult with an instrument such as the guitar to completely avoid common finger routes however this passage does not exhibit enough external focus (harmonic, melodic, rhythmic) to be interpreted as being led from a perspective other than a physical one.

A possible explanation of the employment of these finger routes may be explained using the preceding and following phrases.

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48 Particularly in cases where symmetrical scales and patterns are employed as the shape or finger pattern will remain constant across the guitar neck.
In measure 87 Krantz is using a higher position (XVII) on the neck. Where he concludes in measures 93-96, he is has manoeuvred to position V. The finger displacing position route used in measures 89-92 could be described as a way for Krantz to align himself for the ending, perhaps intentionally using the finger route or perhaps using it because he had strayed too far up the neck in the preceding section. In either case, it is plausible that the use of physicality in this instance is to align himself for the transition back out of the solo in the correct position for the melody (which is also played in position V).
Figure 3.2.9, the concluding phrase, is an extremely typical pentatonic blues phrase in D. This is perhaps the only use of cliché or lick Krantz employs in the entire solo. This use of cliché is less focused on the actual content of the phrase but perhaps the listener’s reception of such a phrase. After an incredibly tense solo with hugely varying intensity and multiple strategic emphases, Krantz chooses to use a phrase that would be familiar with his audience. In doing so, he helps the listener create the transition out of solo and also helps bring the overall dynamic down with the band, allowing more space at the end through use of a minim to mark a new section.

**Dialogical Strategies (D)**

Krantz uses dialogical strategies sparingly in *Whippersnapper.*

In measure 37 Krantz creates an intratextual dialogue, separating his own voice into two. At first glance, it appears to be a repeated motif, based in the D minor (dorian), however the sudden leaps of octave suggest something more.
As can be seen in figure 3.2.11, the two voices are using a call and response pattern. Voice one has been coded above in green, voice two in blue. To begin with, voice one opens the dialogue with a six note phrase. Immediately after, voice two raises the pitch taking the D tonic as the start point for the phrase. Voice one then references this phrase exactly one octave down. Voice two now plays what appears to be the same phrase it played previously. On first glance this appears to dispel the idea of a dialogue, as nothing new has been contributed. Voice one now takes the octave higher than voice one’s last phrase. Voice two now lowers the phrase to the low D starting point that voice one had used in measure 39, now changing the last note to an A (coincidentally the starting note for voice one’s initial statement which until now had not been referenced by voice two), before leading out with a separate answer phrase concluding the antiphonal passage as a typical AAB form led call and response. Upon closer inspection and detailed listening, the tone of voice two’s phrase is different to that of its previous phrase. This is exemplified below with the use of a suggested fingering chart.
The second phrase by voice two, although identical in pitch and rhythm to its first phrase is played at a different position on the guitar. The reason for this may only be to position at a higher point on the neck in order to reach the upcoming phrase that begins in tenth position, however it is possible that Krantz wanted to focus on dialogical interaction within this passage by fixing the phrase and altering timbres. The higher position present in voice two’s second phrase could therefore be just as easily construed as a timbral change to voice two’s first phrase, in an attempt to not lower the pitch, but to change the overall tone the guitar produced, to mimic the lowering of voice one’s proceeding phrase. This change was discerned through the researcher’s own intuitive response as a guitar player and is partly subjective. Had it of been possible to have access to the guitar track solely, a frequency analysis may have been used to objectify this further.

The second display of dialogical strategy is Krantz’s use of guitar bends. During this improvisation as a whole, there are scarcely any notes longer than a quaver. In fact the only time a long note (minim upwards) is used is during a string bend.

![Figure 3.2.13 – Bend signifiers 1 (2:43/4:23/5:02)](image)

Referring to the score (see A3.3) the role of these bends becomes apparent:

1) The first bend is seen at the start of the solo before a long rhythmic strategy section.

2) The second bend in measure 57 is preceded by a timbral strategy section, where intensity is at one of the highest points.

3) The third bend in measure 81 is again where the intensity is at an apex.

Krantz is using the guitar bends as a marker and signifier for both the audience and for the ensemble. In the case of the audience, each time a bend is heard the audience can be heard on the recording clapping 49 apart from the first which could be construed as Krantz’s attempt to prime the expectations of the audience, to expect change when they hear the bend, thus giving them tools to understand the form of the solo better themselves aurally.

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49 Apart from the first which could be construed as Krantz’s attempt to prime the expectations of the audience, to expect change when they hear the bend, thus giving them tools to understand the form of the solo better themselves aurally.
and cheering. This convention is a typical feature of a jazz performance, however usually the listener will only display this appropriation at the end of each improviser’s solo.

As a communicative device for band interaction, it signals the ensemble to return to a more stable harmonic/rhythmic groove, drop the intensity and start to build it again. It is also telling in this case that Krantz chooses to employ the bend at the end of each timbral strategy deployment.

Holistic View

![Strategic Zones in Whippersnapper](image_url)

Figure 3.3 – Holistic overview of strategic zones of improvisation in Whippersnapper

When considering Krantz’s use of strategy, it becomes pertinent to analyse his overall use and development of each strategy. Krantz begins the improvisation with a clear intent of enforcing his trademark rhythmic style and making it the majority focus of the improvisation. Krantz limits the amount of pitch focused strategies to a relatively small amount but enough to showcase his longer more harmonically driven lines. This area may have significance for the authenticity of Krantz’s vocabulary as part of jazz vernacular, in addition to providing a way of breaking up what would otherwise be a 36 measure rhythmic strategy. He continues to use this pitch based strategy approach to further break up longer sections as he develops the improvisation.
Apart from measures 37-41, the dialogical strategy is used solely to mark the start of new forms, and apart from the first, each occurs after a section of timbral strategy. The timbral strategies themselves serve to build tension and seem to signify freer interaction across the band with a higher intensity, each musician overlapping, no longer concerned with playing in the available rhythmic pockets created by each other. As the improvisation develops, Krantz switches strategies more readily using the act of changing strategy as a way of generating more intensity. In the last few measures physical strategies are used, firstly as explained earlier in order to reposition Krantz on the guitar neck, but secondly to reaffirm the listener with more familiar ground (through utilising a common blues cliché) and thus ‘applying the brakes’ to the improvisations extremely heightened intensity.

Viewing the improvisation in this grid is also revealing when thinking of Krantz’s overall use of form. It would appear there are three distinct forms. The first from measure 1-56, the second 57-80, the third 81-96 with each lasting 56, 24 and 16 measures respectively. This length of each of the three forms suggests Krantz favours eight bar partitions when constructing his improvisations, this despite the intuitive feeling that the form is much more complicated and freely articulated. The reduction in length of each form suggests Krantz is well aware of the architecture of his improvisations and uses form length itself as an improvisational tool.

Coding Krantz

Within each improvisational strategy Krantz has a particular set of deployments that he often uses to engage with the strategies. The following tendencies have been identified from the analysis of Whippersnapper;

Rhythmic:
- R1 Close ratio polyrhythmic/elastic feel
- R2 Rhythmic push/pull
- R3 Chord soloing/close harmony moving around
- R4 Long unbroken lines
- R5 Broken 16th note lines
- R6 Sparse lines heavy syncopation
- R7 Increasing/decreasing rhythmic density
- R8 Associative displacements
- R9 Pitchless improvisation – ring modulator, muted strings etc
- R10 Single 16 note displacements within sparser (and typically pentatonic) phrases.
- R11 Open string/diad - bass note interplay
- R12 Rhythmic motifs repetition and treatment
- R13 Imposed swing feel
3.4 - Breaking the Line – Krantz’s Development from Post-Bop Strategies

The following comparative analysis will show how strategies and deployments are varied throughout Krantz’s development and wider career. As mentioned previously, by the researcher’s observation and by
his own admission, Krantz developed a personal approach to improvising that aimed to eschew the traditionalist vocabulary and bebop tinted approach that is evident in his earlier playing. Instead, Krantz focused on directed practice to move towards a deeper rhythmic sensibility far removed from the long unbroken 16th and 8th note lines that captivate post-bop traditionalist approaches. It can be argued that in his more recent work, there is a higher use of intrinsically Krantzian approaches, lowering the use of traditional bebop vocabulary (although not eliminating it).

Krantz’s development is observable, particularly when taking into account his strategic tendencies outlined in *Whippersnapper*. Below is a short analysis of two other Krantz solos, the first from a live recording playing with Randy Brecker’s band (for transcription, see document A3.1) and the second being *Is Something I Don’t Understand Yet* from his suggestively titled studio album *Long to be Loose* (for transcription, see document A3.2).

The live recording with Randy Becker’s band depicts a more lines based approach, with many long unbroken 16th note phrases contrasted with blues rock clichés that feel definitively separate and perhaps unconnected in places. In addition to this, part of Krantz’s influencing lineage can be heard. There are moments when Pat Metheny comes to mind, particular in the phrasing and conclusion of some lines. The glissando in measure 36 has a distinctly Methenian feel to it for example. The long 16th note line phrases in measures 34-36; 42-44; 61-68, feel intuitively traditional, and are very much indicative of Krantz’s earlier playing and approach. The blues rock phrases throughout particularly in measures 23-31 and 54-60 demonstrate a clear influence of blues rock styled pentatonic and blues scale based material reminiscent of a number of members of the blues rock guitar pantheon. In addition the blues rock phrases, based largely on minor pentatonic, are often typically bound to fretboard positions, using cliché patterns that emerge on the guitar due to the positional ‘box’ playing phenomenon that forms the basis of many guitar players approaches. The switches between this and the 16th note bop phrases are jagged and often engage and disengage without lead ins or outs. The intensity in this sense goes from moderate to extreme, a transitional process which Krantz’s more recent work seems to build in stages and sustain through longer periods. There are elements of Krantz’s burgeoning personal style present however, such as is seen in the first 14 measures, with phrases using multiple rhythms and positions with an antiphonal feel. There are no
open strings incorporated into any of the phrases however, as is typical in his style now and for the most part the harmony remains anchored.

While Krantz’s playing here is different in many ways to that in *Whippersnapper*, there are other elements to take into account. This recording is taken from a live show as a sideman and not as a leader. The form is already set, the setting may have been unfamiliar and Krantz may have felt the need over emphasise particular aspects, most particularly the highly virtuosic elements of bebop vocabulary and their use. Despite this however, Krantz’s more recent work as a sideman with David Binney, Chris Potter, and Donald Fagen suggests different. In these instances, Krantz’s playing is far closer in nature to what we see in *Whippersnapper* and *Is Something I Don’t Understand Yet*.

*Is Something I Don’t Understand Yet* contains many features emblematic of Krantz’s individual approach. From the onset we see inclusion of small chord structures used within the solo, often blending with single line phrases to blur the line between harmony and melody. Some of these chord structures have a direct lineage to rock guitar pentatonic phrases, demonstrating that perhaps wishes to engage with raw and less sophisticated rock approaches in his playing. There is also an increased use of open string usage, both in the composed parts that divide this solo and in parts of the solo itself. Sometimes this is used as part of a chord structure to create a more close sounding harmony. In other instances, such as in measures 47-48, Krantz uses the open strings more loosely to create a wide contoured timbral idea, leaving the timbral qualities of the open to strings to ring throughout.

The rhythmic style contains lots broken sixteenth note lines and triplets in places to create a rhythmic intensity and elasticity to his playing, while still adhering to a grid. In addition Krantz appears to be using more associative generation often repeating rhythmic figures and mutating them. As a whole the rhythmic ideas and pitch ideas seem closely tied, with Krantz weaving between focus throughout the improvisation as can be seen in the following diagram. This blending and weaving between these approaches is far removed from the at times jagged shifts in strategy operation that was seen in his improvisation on the Brecker track. There are instances where Krantz’s melodic material seems deliberately limited, using specific interval palettes to improvise; an approach he advocates and describes as essential to his style. This is seen in measures 9 - 11 and measures 28 – 36.
The overall style and approach fits somewhere between the other two examples. There are many emerging Krantzian features to this improvisation along with a heavier emphasis on rhythmic features. Krantz also uses bends here, after pre-composed sections, in two instances as a kind of formalistic device for cutting the solo up and perhaps informing the listener on the position within the improvisation. There is a far less intuitively bop based feel to the chromaticism Krantz uses, which seems less anchored in places and used effectively with syncopations and broken lines. There are some idiomatic features to some of the material he uses, which have a lineage in rock guitar practice, sound, and technique.

Diagrams and Discussion

While the previous holistic view of Whippersnapper, presented an intuitively represented preference of strategies for Krantz, it was unable to demonstrate instances where multiple strategies may be operating and give specific reference to the individual deployments Krantz was using. To combat this deficiency and provide a more robust representation, the coding previously identified was added and placed in a tiered strategy diagram, representing possible preferences and secondary and tertiary strategy uses throughout all three solos:
## Krantz Solo With Brecker

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**Audio Track A1 – 0:12**

**Full Transcription – Document A3.1**
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Audio Track A2 – 02:47  
Full Transcription – Document A3.2

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Figure 3.4 – Comparative strategy/deployment analysis of Wayne Krantz Live with Randy Brecker, Is Something I Don’t Understand Yet, and Whippersnapper
There are distinct differences in the strategies and deployments Krantz employs in each instance. In the former it would appear Krantz’s strategy use is less varied and focused on longer lines and a less idiosyncratic approach. In the latter, Krantz is now adopting more use of dialogical and timbral strategies in his improvisation, whilst also increasing ensemble interaction.

While the coding produced for this methodology is based on the intuition of the researcher to some extent, there are undeniable changes in the way Krantz’s approach has shifted which align directly with his own accounts of his development as an improviser. The methodology relied on scouring a much broader range of Krantz’s material for these changes to be detected, and as awareness of Krantz’s output increases so too will the way in which his improvisations may be interpreted. It has been shown that Krantz has shifted to a more rhythmically guided and varied approach, which eschews many of the former characteristics and vocabulary present in his earlier work. Aside from the observations, a more general taxonomy of Krantz’s approach has revealed many qualities of his approach.

3.5 Conclusion

It has been shown that Krantz’s improvisatory approach, strategies, and tendencies have changed over Krantz’s career. While the differing settings and musical circumstances have influence on this and how Krantz operates, it is undeniable that the approach has changed in line with Krantz’s own desire to change it. While it may seem like an untouchable process held together and realised through intense flow states, a development of approach can clearly be achieved. In order to do so an improviser must re-focus their practice to that end. In Krantz’s case, this meant purposefully avoiding some of his knowledge base and approach, and also focusing heavily on practicing rhythm, timbral, dialogical, pitch, and physical strategies which were of interest to him. A self-awareness of practice is evidently useful in pursuing such a transition of approach, as Krantz demonstrates with his continual practice and reflection against a metronome, continually honing his rhythmically favoured approach as well as applying strict pitch based limitations in order realise new and interesting sounds.

The nature of this, and that of an improvisers craft in general, provides a number of questions. What is the purpose of cultivating a style? Should an improviser’s approach be amorphous and continually developing or should an improviser aim to reach a level of consistency in their work, perhaps in order to
align themselves with the appropriate conventions and requirements of an idiom. While Krantz’s
direction follows the former developmental route, he is also an anomaly. In the contemporary music
world, where the homogeneity that encapsulated jazz sixty years previously is now only a part of the
much wider spectrum of music with roots in jazz and improvised music, the music played by Krantz need
only be defined as that of Krantz’s jazz.
Part II – Practice
Chapter 4 - Methodology for the Heuristic Inquiry into the Development of Strategy Based Improvisation

4.1 Introduction

In this section, I will justify the use of heuristic enquiry and the adoption of Moustakas’ core processes for the basis of this study and outline its constituent components. These comprise an initial discussion of the heuristic process, its background, relevant literature, and relevance to the research conducted. Following this, a review of pedagogical approaches to learning how to improvise will be given culminating in the approach used in Aaron Berkowitz’s *Improvising Mind* (2010). This approach was used as a template for the pedagogical model used to develop an improviser’s strategy based improvising approach.

Finally, the development of each four parts of the portfolio submission will be explored, showing the methodologies, design and application which underpin them. The heuristic work exemplified by the complete portfolio consists of a multi-staged approach to developing material that has been mined from transcriptions (focusing mainly on the three solos presented in chapter 3, along with aspects of Michael Brecker’s harmonic superimposition and additional Wayne Krantz material) with the hope of assimilating the abstract generative strategies for improvising found within. The four portfolio areas are: vocabulary seeds (A), improvisation strategy etudes (B), holistic improvisation practice (HIPS) (C); and a final studio recording session project (D). The reflective and evaluative mechanisms used throughout the heuristic process to create a framework for the research data, will be explored throughout the chapter. The portfolio output and its implications will be discussed in chapter five.

**Beginnings**

Improvisation contains many tacit and implicit mechanisms, as expressed and demonstrated by expert level improvisers (Hargreaves et al., 1991). My own experience of improvising mirrors many aspects discussed by the improvisers in Hargreaves et al.’s study. Most particularly, the identification of distinct stages of ability and conscious awareness, the role and use of vocabulary within these stages and the goal
of implicit mastery which has always been central to my own development. My initial hypothesis was developed around these experiences and focused around the tenet that improvisers rely on different generative mechanisms in their practice and perhaps most pertinently, that as an improver reaches a certain level of ability, more abstract choices become available. Choices such as these often guide the smaller constituent parts of an improviser’s knowledge base implicitly, in a way that is extremely hard to articulate retrospectively.

When I first began researching methodologies for this thesis, I wanted to use strategy as a means of perspective for viewing pre-existent improvisations retrospectively with the view of extracting strategies to be reused in my own improvising. The perplexing issue was, that throughout many years learning to play and improvise jazz, I had developed many tendencies towards specific strategies, albeit unconsciously. This development and control of implicitly held materials and their use was hard to articulate and recount the various stages of change in my ability. The starting point was always hearing a particular phrase that sounded interesting, provoking a response to learn the phrase and find ways of incorporating its essence in my playing. The end result was the realised ability to do this without effort and the feeling that the material was being replayed verbatim.

My concern became documenting and articulating the processes that underlined the transition from explicit material use to its inception as implicitly held and fully integrated part of my vocabulary. I wanted to be able to create a taxonomy of an improviser’s use of particular strategies, particular deployments and also their use of other generative mechanisms. The aim was also to try to reveal some aspects of an improviser’s cognition during improvisation and hopefully illuminate aspects of intentionality, consciousness levels during improvisation, and generative tendencies among other aspects which elude traditional musical analysis methodologies. The outcome was, and remains, to produce an augmented analysis methodology for viewing improvisations retrospectively through the lens of generative mechanisms, and in particular, strategy led generative mechanisms.

Initially, I began by identifying improvisers who demonstrated clear use of strategy led generative mechanisms. Many were identified, based on particular strategies that were observed to be a fundamental aspect of that improvisers approach. These included; Allan Holdsworth’s use of physical strategy through
his use of an idiosyncratic four note per string approach, which produces particular intervallic sequences; Scott Henderson’s use of blues vocabulary as an aspect of his harmonic strategies; Wayne Krantz’s use of rhythmic strategy and his notably distinct approach to breaking typically long 16\textsuperscript{th} note phrases up with rests to create various rhythmic effects; and Michael Brecker’s use of harmonic superimposition as an aspect of harmonic strategy. Using heuristics enabled me to follow an intuitively led categorisation of what these improvisers were doing and form a basis for reapplication in the various portfolio works.

The choice was made to focus on Wayne Krantz and Michael Brecker for a number of reasons. Firstly, I was particularly familiar with their work and had for some time been interested in developing an understanding of their approaches. In addition, there had been little to no research conducted on either player at the time the project was undertaken. Furthermore, they provided ways of demonstrating both a macro and micro view of strategy usage and development. The longitudinal study of Krantz was based on his development from an improviser who demonstrated a clear heritage of bop based playing to a more personal and individual style focused around his rhythmic approach. Uniquely, there was a substantial amount of interview material with Krantz in which he discusses his development in terms which help justify the strategy usage gleaned in analysis (as seen in part I).

The inclusion of Brecker may appear slightly anomalous, as the thesis is for the most part weighted heavily towards Krantz’s approach. Chapter 2 may have benefitted from using a micro strategy focused around Wayne Krantz instead, however there are a number of reasons for the inclusion of Brecker. Firstly, a contrast was sought to demonstrate that it was not only Wayne Krantz that was using strategy as a means of guiding improvisation. Secondly, Brecker’s use of harmonic superimposition is clearly demarcated in his playing and enabled chapter two to present a micro study of one particular harmonic aspect which is commonplace in contemporary jazz. Thirdly, while it was a concern that the scope may be somewhat compromised if widened, it felt appropriate to include such a clearly robust example of one singular harmonic strategy, something that I now feel may not have been achieved as effectively, with its omission and replacement. Finally, my own interest and desire to assimilate aspects of Brecker’s harmonic approach, became validated by the heuristic methodology, given my passion and immersive time spent with Brecker’s material during the early stages of the thesis. Despite these concerns, Brecker’s presence in the portfolio, and inquiry generally, is proportionally equal and relevant to his earlier inclusion in part I.
To begin with, the case studies chosen were appropriate and amenable enough to use in conjunction with the generative model outlined in chapter one. The Wayne Krantz track *Whippersnapper* showed very clear demarcation of differing strategies. The first reading of Krantz’s improvisation on *Whippersnapper* produced a colour coding system intended to show where Krantz was shifting strategic focus. It was also used to verify that Krantz operates predominately from a rhythmic led approach, one which he directly cites as centre for him (See Chapter 1). While the coding system was able to show that there were clear shifts of strategic approach occurring, it became apparent that the manner in which they were being identified was not objective enough from an analytical point of view to be able to make statements on intentionality, cognition and ultimately what Krantz was thinking as he produced this improvisation. Despite this, it felt intuitively correct to label Krantz’s approach in *Whippersnapper* this way, however clearly required a framework of methodology that acknowledged this intuitionally and tacitly led understanding. At this point it was decided that in order to make conjecture about the subjectivity of intentionality, cognition, and improvisatory approach relating to strategy led generative mechanisms, research needed to take account of the my own expertise and practice base as a contemporary jazz guitar improviser. This required that the researcher adopt the role of active participant, as a part of a heuristic inquiry, enabling my own expertise and knowledge to be used to help substantiate and justify such an interpretative and subjective methodology.

The intuitive labelling of an improvisers approach should be understood as an interpretation, one which can provide perspective and direction for which practice can be developed. It may be the case that another’s interpretation may vary, although care has been taken to ensure the justification for labelling was based on shared musical practices that other improvisers would recognise. Varying interpretations will provide different directions for practice to be developed and may lead individuals to varying understandings and approaches, all of which are valid. The results produced throughout the practical side of this thesis in the development of an improvisatory practice are a culmination of not only the understanding and development of the improvisatory approaches analysed in order to assimilate a particular players approach, but also my own experience and approach cumulatively.
4.2.1 Heuristic Inquiry

Developed by Clark Moustakas, initially in his book *Loneliness*, published in 1961, heuristic methodology aims to illuminate the nature and meaning of the phenomenon being studied through self-study, exploration and discovery of the researchers own experience.

“*Heuristic methodology attempts to discover the nature and meaning of phenomenon through internal self-search, exploration, and discovery. Heuristic methodology encourages the researcher to explore and pursue the creative Journey that begins inside one’s being and ultimately uncovers its direction and meaning through internal discovery*” (Douglass & Moustakas, 1985).

Heuristic inquiry is deeply rooted in tacit and implicitly led knowledge acquisition, focusing primarily on the subjective and creative nature of the researcher’s relationship with the phenomenon, as well as the creative pathway and direction of the researcher’s development of understanding of the phenomenon. It is an open ended research methodology which does not focus on the testing of hypotheses, instead placing value in the qualitative and subjective, encouraging the researcher to be led by their intuition and tacit knowledge. As such, “heuristics is concerned with meanings, not measurements; with essence not appearance; with quality, not quantity; with experience, not behaviour” (Douglass & Moustakas, 1984:42). Despite the open-ended nature of heuristic inquiry, it still requires a disciplined and thoroughly rigorous approach, methodology, and consistency to be adopted by the researcher, along with passionate and in depth pursuit of the phenomenon. As such, human experience is a central aspect of the heuristic process, and the researcher is required to have a direct experience of the phenomenon being investigated (Moustakas, 1990) in order to discover its essence.

Heuristic research is significantly different from other methodologies; it places the researcher within as a participant. Self-directed, self-motivated, reflective and unfixed directionality are all tenets of the process. Furthermore, heuristic methodology is one of a deeply personal nature, which facilitates the production of a narrative drawn from the processes of inquiry and reflection. It is through the dissemination of this narrative that the central questions of research are drawn, and from which further stages of knowledge incubation and distillation are used to make explicit the processes by which the researcher’s tacit
understanding and abilities are developed. As Moustakas writes: “in every learner, in every person, there are creative sources of energy and meaning that are often tacit, hidden, or denied” (Moustakas, 2001).

The suitability of such a methodology for this thesis can be summed up as the focus on the transformative effect the inquiry has on the researcher’s own experience as discerned through introspective means. In this context, the effect the inquiry had on my development as an improviser both within the timeframe of this study and moving forward as a practitioner. The discernment and illumination of this effect and the inherent processes within improvisation are the central focus of this inquiry.

4.2.2 Heuristic Concepts

There are core processes involved in heuristic inquiry as outlined by Moustakas (1990: 15-27) which form the basis for the approach. These include:

- Identifying with the focus of the inquiry – developing a personal relationship with the research question and immersing oneself within.
- Self-dialogue – a central aspect of heuristic inquiry, allowing the “phenomenon to speak directly to one’s experiences”.
- Tacit knowing – underlying and precluding intuition, tacit knowledge can guide the researcher and the direction of the inquiry.
- Intuition – an essential part of the heuristic process providing a bridge between the explicit and implicit.
- Indwelling – the process of conscious and deliberate attention towards the experience.
- Focussing – by means of sustained attention in order to draw out meaning.
- Internal frame of reference – it must be acknowledged that the research sits upon the researcher’s own frame of reference and not an external one.

In addition to outlining core processes, Moustakas identifies seven phases of heuristic inquiry (1990:27-37) which are used to structure research and provide a framework to build validity and rigour in the research. These are now summarised:
Initial Engagement

This initial phase requires that the researcher discover an interest of intense concern, which holds important meanings for the practice and personal and compelling implications. The research questions emerge during this phase and require disciplined commitment in order to reveal the underlying meaning.

Immersion

Here the research question is lived and the researcher absolutely immersed in it; anything connected with the initial question becomes part of the immersion material. According to Moustakas, the researcher becomes one with the topic and question, and must “live the question” (Moustakas, 1990:27).

Incubation

This involves a retreat from the intense, distancing the researcher from immersion allowing the expansion of knowledge through tacit and intuitive development to clarify and extend understanding.

Illumination

The illumination phase is a process that occurs naturally when the researcher is open and receptive to tacit knowledge and intuition. It involves synthesising fragmented knowledge or new discovery.

Explication

This involves a full examination of what has been made explicit in consciousness. Organisation and a comprehensive depiction of the core themes is required.

Creative Synthesis

This is the amalgamation of data, components, and core themes into a narrative account, report or thesis of creative work demonstrating the discernment of processes central to the research questions.

Validation of the Heuristic Inquiry

Through continual review of the data, the researcher must check whether the results of the inquiry and synthesis embrace sufficient meanings and match the data accurately. The validation processes can also
involve the discussion and feedback of the results through dissemination of findings with co-participants and others.

While my own experience of these stages was not always direct and guided, there was a similar progression through the research as observed retrospectively. Initially, as previously mentioned, the research area and questions were born out of my own desire to understand the processes, materials and levels of control an improviser uses to navigate improvisational space, from the perspective of both analyst and practitioner. Wide reading around the processes that govern improvisational methods, cognition and generative mechanisms led me to a central theme of improvisational strategies. This informed the focus for my own incubation and immersion phases, aiding the development of analyses, theories, models and practical work built around the understanding of improvisational strategies.

As it became clear that improvisational strategies were becoming more validated, both in the literature explored, analyses and initial engagement with practical reapplication, a development practical portfolio was built. The portfolio demonstrates the various stages of an improviser's development of material from explicit to implicit control. This, along with my theoretical accounts and analyses, became my creative synthesis stages in Moustakas’ terms. The final stage, and the focus of chapter five, is my own validation process, which through reflective processes, analyses and re-integration with literature and models developed in chapter one, completes the narrative of this heuristic engagement.

4.2.3 Developing Research Questions for Heuristic Inquiry

During the initial phase of immersion, I began by listening extensively to Wayne Krantz and Michael Brecker, in addition to other improvisers, aiming to listen with awareness of the generative mechanism and assimilation theories explored in chapter one. I was listening specifically for patterns, favoured techniques, approaches, ensemble interaction, intensity, form, and above all whether I could intuitively identify and group particular passages or phrases as belonging to a specific strategy or strategy subset. Instances where lick assembly and associative chain mechanisms were in use were noted too. When looking at Brecker, I was eventually able to recognise his use of harmonic superimpositions. These were compiled into a catalogue of occurrences, which were then transcribed and analysed to mark any
particular harmonic movements Brecker was making during his superimpositions and to build a
taxonomy of his use of harmonic superimposition.

While looking at Wayne Krantz it became apparent that there was a mixture of interesting strategies being
employed. These strategies were used consistently across Krantz’s recorded output, with a clear
development in place and continual refinement and focus on rhythmic led approaches and strategies. At
this initial point, I was also transcribing and learning the Wayne Krantz improvisations verbatim,
attempting to emulate his approach generally without a specific methodology, by means of practicing to
metronome, backing tracks, in an ensemble, and live performance settings.

While listening, I was also continually developing my literature base, focusing around generative
mechanisms, cognition in improvisation, assimilation, and pedagogical approaches to improvisation, in
order to create a frame of reference for listening and practice. My entire improvisatory approach was
refocused to be aware of generative mechanisms and employing more abstract directives whiles
improvising, eschewing the practice methodologies that I had been used to. These included the deliberate
practice of scales, chord tone target exercises, isolated technique practice, practice of licks, and isolated
vocabulary practice. Through this initial immersive process, I was able to identify some key themes and
questions that would form the basis and direction of the inquiry.

Moustakas outlines the definitive characteristics of heuristic questions as aiming to reveal the essence or
meaning of a phenomenon of human experience; to discover the qualitative aspects rather than the
quantitative dimensions; involving a deeply personal and immersive position; and without prediction or
deterministic of causal relationships. The research question should be clear and provide in simple
concrete terms, a direction for investigation to illuminate the experience of the researcher, through
“careful descriptions, illustrations, metaphors, poetry, dialogue and other creative renderings rather than
by measurements, ratings or scores” (Moustakas, 1990:42)

In formulating questions it is suggested that the researcher follow these steps (Moustakas):

- List all aspects of interest or topics that represent curiosities or possible areas for exploration.
  This should be personally led.
- Create subthemes of related topics.
- Set aside subthemes with assumptions that imply causal relationships.
- Draw out a basic theme or question taking into account feasibility, personal interest, and practicality of investigation.
- Formulate the question in a way that specifies clearly and precisely what you want to know.

The overall goal of heuristic methodology is to use open ended methodologies to help reveal phenomena more completely than it does in ordinary experience.

My initial list of topics and inquiry directives included some of the following:

- What strategies does a particular player prefer?
- How do you discern strategies retrospectively through transcription and dissemination of existing recorded improvisations?
- To what extent do strategy led mechanisms form a part of a particular improviser’s approach?
- Can I develop my awareness of strategy in my own improvisations?
- Are some strategies easier to assimilate?
- Can I develop my overall use of strategy mechanisms?
- Can I extract strategies and reapply them?
- What approaches do I use already when improvising?
- Is Berkowitz’s methodology suitable for development of a post-bop improvisatory style?
- How does being consciously aware of strategy affect my soloing form/ability/authenticity/successfulness?
- Can I make the processes of strategy led improvisation explicit?
- Is it possible to implement a practice regime to include strategic development?
- Does the inclusion of a more strategic based improvisational style benefit my command of pre-established and non-established vocabulary? If so to what extent?
- Is it possible to absorb a player’s a stylistic traits through development of strategy led generative mechanisms?
• Can the results of this development of practice be gauged?
• How can the successfulness be justified and documented?
• Does it even need to be ‘successful’?
• At what point does proficiency occur? Do a certain amount of criteria need to be met in order to validate proficiency? What are these criteria? How do they relate?
• Does a strategic based methodology require a certain kind of pre-existent skill set, vocabulary or other pre-requisites?
• Is the process of developing strategy led improvisatory practice exhaustible by any means?
• How does it affect the use of other generative mechanisms in improvising?
• Does experience and specialism restrict/influence your ability to utilise any strategic concepts?

A few trends emerge from these themes. Firstly, it was clear that an investigation into strategy led generative mechanisms is part of the core of the inquiry and of particular interest. More specifically, it appeared that there was a need to know not only how these mechanisms were being used, but also how they can be developed explicitly with the aim of a rigorous methodology, such as that presented in Berkowitz’s Improvising Mind (2010). The themes also draw attention to the problem of validating the results of such an inquiry, raising issues of what the data produced should consist of, what timespan the inquiry should be conducted, in addition to numerous external factors from the researcher’s previous practice and how that affects the output. A further theme can be identified that seeks to draw out templates from pre-existing material from other improvisers in order to be developed heuristically. This aspect can be seen as an explicit adaptation of the implicit processes that underlie the core of many traditional jazz heritages, involving the learning and dissemination of material aurally and its development into a more personal style. It is the processes that underlie the developments that are of interest, and how we can make them explicit, to develop a less implicitly led and perhaps more guided approach to developing an improvisatory approach and style.

In practical terms, these themes suggested the requirement of a deliberate and conscious manipulation of strategy based mechanisms in the researcher’s own practice. This would involve aspects of mining strategies from existing transcriptions, practicing these aspects in a thoroughly rigorous, and procedural
way to draw out the underlying schema for reapplication as an abstract strategic deployment. Some form of validation process would be required to assess the ongoing development, with a number of reflective methodologies employed to generate explicit descriptions of the improvisational processes as they are being used and retrospectively.

In drawing together these themes, a singular question was arrived upon in order to direct the inquiry:

*Can the development and deployment of strategy led mechanisms in improvisation be made explicit, in order to consciously direct improvisatory style and approach?*

### 4.2.4 Challenges of Heuristics

While the heuristic methodology has many advantages, it also has limitations which must be acknowledged. Firstly, the open-ended nature of heuristic methodology can also provide the researcher with a limitless scope in the absence of a specific hypothesis, due to the lack of restraint or control. The creative freedom afforded to the heuristic researcher must then be tempered with continual reflection and boundary evaluation to ensure the research remains focused. In this instance, many closely related research areas had to be deferred as areas of research for the future. For example, while this thesis focuses specifically on strategy based generative mechanisms as part of a three mechanism model (see chapter one), the other two mechanisms are less focal in the research. In addition, the scope of case studies and examples could have been further reaching, incorporating a wider range of contemporary jazz improvisers, but the level of depth required in a single analysis was sufficient to demonstrate this as unpractical.

Heuristic methodology is demanding due to the nature of the dual role of researcher/practitioner. At times it was hard to focus on the processes and experiences in question, being at once a fully active participant engaged in mainly tacit and implicitly led improvisation practice which demands a level of flow and sub consciousness, whilst simultaneously trying to make explicit the processes both during practice tasks and retrospectively.

Thirdly, the results and understanding of the research produced rely on an acceptance of the subjective nature of the researcher’s own understanding of the processes being described. While heuristic
methodology is careful to exclude specific questioning or hypotheses it is hard to remain unbiased, especially when dealing with taxonomic systems in the case of the improvisatory strategies being discussed. In particular, objectifying the intentions of an improviser’s output retrospectively was increasingly difficult, as despite the presence of a clear model and coding system, it was impossible to escape all levels of intuitive and subjective labelling, even in the auto-analytical sections of the researcher’s own material. In addition, the analyses were interpretive, and provide one perspective which may differ through another’s interpretation. Though, the shared theories, musical understanding, and practice led processes of those who are engaged in this domain should not lead to wildly different interpretations.

The validation process is a lengthy and arduous task requiring multiple readings of data in order to identify themes and meaning in the material produced. The time constraints of a formal PhD submission were exacerbated by the need to produce a large amount of transcriptions, recordings, analyses and keep a coherent narrative. Equally, it was necessary to interrupt research phases and reflect regularly, so as not to produce an artificial experience, bolstered and in some way affected by the academic nature of this study, different to that of an improviser developing an approach through the methodologies without explicit declaration of knowledge. Knowing when to stop generating data (in the form of seeds, etudes, HIPS, and ensemble recordings) was a difficult aspect to control. Rather than try to reach a specific amount of material, a time period was applied instead. At the end of this time period, all further practical output was stopped. This was done in an effort to produce a natural development of the researcher’s processes, as opposed to an artificially led set of practice documentation led by a need to fulfil a quota of work or specific amount of entries. This was difficult in practical terms, as it meant the following validation process had to have many stages of mining and refinement to uncover a narrative between the materials produced which effectively demonstrated the concepts explored within part I.

4.3 Pedagogical Review

To begin the heuristic inquiry, a review of literature relating to improvisation pedagogy was carried out. While Berkowitz’s model was chosen as a general model to be adopted in this thesis, other methodologies were considered and inform the research. The following literature review draws focus on pedagogical
methods which describe ways of directing practice, which may assist in the developing the command of
strategy based improvising techniques and approaches.

4.3.1 Strategy and Pedagogy - Current Pedagogy of Improvisation

Generally, the available corpus of instructional material for jazz improvisation is focused on western tonal
elements of harmony, pitch and rhythm. Kenny and Gellrich (2002) declare the chord-scale formulaic
method to be the “most widely practised method of teaching jazz improvisation in Western education.”
(2002:126). Many tacit, yet integral elements of improvisation (such as time feel, interaction, intertextual
allusion, and reference) are often ignored completely in favour of discussing these concepts which are
amenable to transcription.

There is an abundance of jazz based pedagogical material which lays focus on the learning of licks as a
predominant source of building an improvisatory repertoire. Many books, primers, online resources, and
UK and US periodicals\(^{50}\) provide endless reams of licks ‘in the style of’ or as direct transcription as useful
marketing tools to attract students who wish to instantly augment their own vocabularies. While this
method of showcasing licks can be useful and can preserve the aural tradition of collecting vocabulary
from artists and sharing amongst the community, it also divorces the material from its context and is left,
in many cases, without explanation of how the concepts underpinning the licks may be adopted in a
holistic sense. This is not meant as a devaluation of the material itself, however many students may find it
harder developing the material into a malleable knowledge base, when presented with licks to use
verbatim.

One of the earliest and most widely used approach was outlined in Aebersold’s (1992) *How to Play and
Improvise Jazz*\(^{51}\). In building a methodology for practice Aebersold’s book offers many points outside of
demonstrating common vocabulary, showing disapproval for lick and pattern based rote memorisation
and warning of the dangers of sounding like a “machine”. He builds a dichotomy between what he calls
“right brain/left brain” differences\(^{52}\), stressing that the most successful musicians are those who can
balance both sides of which he attributes scales, chords, patterns, and licks on one side and spontaneity,

\(^{50}\) Some notable periodicals include Guitar World, Guitar Techniques, Total Guitar, Guitar Interactive among others. There are
in fact companies whose marketing strategies rely solely on the acquisition of licks, such as UK based resource, Lick Library.
\(^{51}\) This is also similar to David Baker’s *How to Play Bebop* (Baker, 1988).
\(^{52}\) Although this simple dichotomy is not supported by scientific evidence.
creativity, imagination, and chance taking on the other. He asserts that for integration, material must be practiced in all keys and tempos. Like many others, he ascribes a high importance to building audiation techniques.

Aebersold’s text makes reference to the automatization of material through rigorous practice, however does not provide a specific means of breaking away from practicing fingerings and common patterns or provide a timeframe for when to expect automatization to occur, instead stating that “eventually, you will just begin improvising because you will already know the scales and chords”. The transition from explicit to implicit knowledge is a common theme across many jazz instructional texts (Dobbins 1994:9; Liebman 1991:10; Crook 1991:11). A recent PhD study on the vocabulary of the contemporary jazz ‘New York scene’ places a three to six month timeframe on assimilation and mastery, through results garnered through a heuristic study conducted by an expert level improviser (Mcknight, 2012). Another improviser, interviewed by Paul Berliner referenced numerous months as a timeframe for assimilating and performing phrases from a John Coltrane solo (Berliner, 1994:114).

However, even in this early jazz improvisation text Aebersold makes clear that having a “sense of direction” to your solos is imperative, showing a wider awareness of broader global strategies and how they function in improvising. It is then reasonable to argue then, that practice and development of existing vocabulary (through aural or transcription means) precedes an improviser’s command, mastery, and malleability of material and concepts. While the general corpus of instructional material provides such existing vocabulary, rarely do the texts go further than providing a harmonic framework for where the vocabulary should be used and instructions to transpose the material into all twelve keys. This leaves a chasm between the initial engagement of the material, and the implicit control and malleability required by the improviser to create fluent and interesting improvisations in real time. In terms of generative mechanisms, this places a clear emphasis on the ‘lick assembly’ generative mechanism, leaving the extraction of conceptual schema and strategies needed for the ‘strategy-generation’ mechanism to one side.

53 For other artist accounts of the importance of learning phrases in all keys see Berliner (1994: 98;115)
There are, however, a small number of texts which address the deficiency in vocabulary acquisition and deployment methods for strategy generation in improvisation. Jon Damian’s book (2001) provides various abstract and metaphorical exercises for improving aspects of improvisation such as phrasing, dynamics, contour and articulation. Damian’s methods mirror the way expert improviser’s plan and structure their improvisations as was found in Hargreave’s et.al study (1991) promoting the development of an improvisatory awareness beyond that of individual instances of vocabulary. In addition, Damian talks of having different “focus” points (2001:9) demonstrating how an improviser might pursue development in one particular area, and ultimately be able to direct improvisations through these focal strategies. He does not make reference to use of strategy as a more or less fruitful approach.

Furthermore, there have been a number of recent and seminal advances in pedagogical approach, placing emphasis on furthering methods for effective improvisational navigation through more abstract strategic considerations. Crook (1991) and Bergonzi (2003), two similar approaches, present typographies of various deployments of targeted areas for practice development. For example, Crook lists “topics of improvisation” including rhythmic density, melodic curve, displacement, phrasing placement, and pacing among a long list of materials that one can focus individual practice on. It seems logical, that if an improviser is focusing on various changing strategies to improvise, then we might look retrospectively upon these improvisations with the same focus when approaching analysis of improvisations.

When considering the role of pedagogical texts and explicit instruction materials for jazz improvisation, it is also important to consider that there are many tacit elements of the improvisational process which escape articulation. Smith draws light to this:

“The basic tonal materials that make up the musical vocabulary of the art lend themselves readily enough, it seems, to systematic and written instruction. But the ability to create fully formed expressions with that vocabulary is learned only by hearing and imitating those fluent in the language, and by using the language under the time constraints imposed by the actual performance” Smith (1983:87).

A holistic approach to developing a wide and malleable improvisatory vocabulary then requires an approach more far reaching than that provided by Aebersold, or the prevailing lick based pedagogy may
provide alone. Instead, pedagogy should direct improvisers through tasks and treatments of material to ensure complete assimilation and usability in an improvisatory practice.

McKnight’s 2012 thesis, provides an author led practical inquiry into the refinement of a creative method for contemporary jazz guitar improvising. More specifically, three methodologies are provided: a contextual review, a personal review and a practice methodology.

The contextual review is used to identify an artist’s lexicon which is of enough interest and merit to warrant further development and exploration.

The personal review is similarly structured, however “facilitates the explanation of one’s own improvisational vocabulary/approach as a finite number of stylistically significant techniques”, to identify interesting vocabulary and ideas that are produced during the researcher’s own improvisations, through the careful review of recordings.

The practice methodology McKnight employs is formed from his own practice experience and work with a number of pedagogical texts. Abstract improvisatory concepts are drawn from which melodic cells are created and then processed through a series of transpositions (chromatic, diatonic, modal, and varied harmonic settings). Practice then concludes with “natural and rhythmic” variation.

McKnight is clear in acknowledging the cyclic and expansive nature of these processes, which may produce countless new cells to further develop. The portfolio of recordings and cell developments provided with the thesis demonstrates the development of this process clearly and also shows the magnitude of material needed in a developing improviser’s workload, to cultivate a unique vocabulary.

During the course of my own research, while being aware of McKnight’s work in a cursory sense, I chose specifically to focus my practice methodology and processes on the literature review conducted in part I, most particularly the work of Berkowitz (2010). This was to provide continuity with the literature and theory underlying this thesis and as a natural development in testing the theories outlined. In doing so, I created a parallel methodology to McKnight’s work, by drawing the methodologies from Berkowitz and the findings of the literature review in relation to model of generative mechanisms produced in part I

54 While a more in depth knowledge was gained from attending his lecture at the International Guitar Research Centre in 2016, and subsequent access to his thesis
of this thesis. McKnight’s research offers a much needed and valued support to this study, demonstrating practically, the effects and success of many principles which are outlined in the literature review and synthesis in part I.

The parallels can be seen when looking at the identification, isolation and development of the vocabulary seed, which can be seen as analogous to McKnight’s cells. The practice methodology also has been realised in similar ways. As Berkowitz’s treatise identify various stages, these run analogously to McKnight’s use of modulation and variation. The identification and stepwise process provided in McKnight’s thesis for identifying material to be developed, which is set out with rigorous methodology, has provided a retrospective way of labelling the processes which I initially carried out tacitly. As such the modelling of the steps for identification and grouping of vocabulary seeds presented, owe a debt to McKnight’s research in inspiration and construction. In short, the explicit nature of McKnight’s methodologies were valuable in providing a consistent framework to work from, and although they were used retrospectively for labelling purposes within this thesis, they should be regarded as a concise methodology which may save the developing improviser considerable time, providing focus through the explication of what is usually a solely intuitive process without conscious design.

Despite the similarities however, this thesis provides a different focus. It aims to prove the existence, use, and development of abstract improvisational strategies as devices in and of themselves, as demonstrated in the conceptual etudes produced. It also provides further insight into the way these strategies, and the vocabularies underpinning them, are present as part of a larger schema of generative mechanisms used as identified by Clarke. McKnight’s cells focus on rhythmic and harmonic information, while this thesis shows the extension of such concepts to timbral, dialogical, and physical strategies, demonstrating that an improviser may develop his approach beyond harmonic and rhythmic emphasis alone.

**4.3.2 Developing the Knowledge Base and Available Strategies**

As previously discussed, it would appear then that the development of procedurilization, automatization and cognitive optimising, are characteristics of expert level improvisers. What remains to be discussed is how one might most efficiently go about achieving procedurilization and automaticity of improvisatory
materials through a deliberate practice methodology. Furthermore, by extension, how one might go about transitioning explicit knowledge garnered through analysis and pedagogical materials into implicitly held knowledge to augment an improvisatory ability and approach?

In *The Improvising Mind*, Berkowitz (2010) identifies, through close examination of pedagogical treatise for improvisation, a specific methodology one might use in order to effectively transition explicit material into the banks of the implicitly held knowledge base. This four stage process involves: transposition, variation, recombination, and contextualisation.

**Transposition**

In order to begin assimilating material and underlying conceptual frameworks, material must first be transposed and practiced in all 12 keys. This is a common process used in music pedagogy for many tasks such as learning scales, arpeggios, chords, progressions, and interval patterns amongst other constructs and is not specific to the study of improvising. The aim of which is not only to create an abstraction of the harmonic concepts in a key neutral fashion, but also to enable motor and auditory familiarity.

In addition to practicing material in all 12 keys, material may be modulated to different tonalities. While Berkowitz does not state this, modulation of the material to other tonalities may also be considered a transposition (as opposed to a variation), as the underlying conceptual architecture remains the same.

**Variation**

Once material has been practiced in various keys and tonalities, variations may then be explored. This may involve a variety of transformations from slight to substantial, however the underlying conceptual framework must remain as part of the same genus as the original material.

The knowledge base formed in this way, rather than through memorisation or verbalised explanations, is organised for spontaneous action rather than mere recall. Concepts underlying individual formulas can be organised into higher level categories of musical materials with specific goals - i.e outside sound, fretboard position, rhythmic effect etc. This ensures the underlying schemata of the material remains flexible for
improvising. Berkowitz stresses the importance of this, stating that if variations were to be learned as individual and unique then “the vast numbers of them would prove staggering in its demand on the memory. This could paralyze the improviser in performance rather than aid her/him.” (Berkowitz, 2010:51)

Other improvisational cultures exhibit the same organisational characteristics consistent with the cognitive theories Berkowitz draws light to. Berkowitz discusses Parry and Lord’s (Berkowitz, 2010:27) landmark study on South Slavic epic singing, describes how in their improvisations, the traditional Slavic performers use variations based on formulas to produce lengthy improvisations. It was found that the abilities were not a product of verbatim memorisation.

Variations are also style specific, and an improviser may find through the variation process, acceptable and unacceptable variations. This may in turn, lead an improviser to understand more about stylistic etiquette and enable them to direct their improvisations more precisely when seeking a particularly authentic or novel sound. By engaging with such a process it is reasonable to suggest then, that an improviser’s listening abilities will be improved enabling them to more easily identify and group other materials that may belong to the same or similar genus of improvisational strategy.

**Recombination – Etudes**

Berkowitz states that “a further step in organizing the knowledge base for spontaneous performance involves learning how its elements (and their underlying schemata) interrelate to create the linear flow of improvised music in time. The pedagogical strategy used to achieve this goal is recombination” (2010:55). Berkowitz goes on to describe etudes and preludes, produced as part of the improvisational treatise he analyses, as combinational material to learn the ways in which individual instances of musical vocabulary may be placed together, the vast possible of variations they may provide and also the conventions of musical syntax required to improvise fluently.

Practicing etudes/preludes bridges the gap between the practice of autonomous and isolated instances of vocabulary. Varying pathways could also be conceived and outlined for the student in this process to
allow them to choose their own path and begin creating connections between the non-fixed material practiced in previous stages, training the improviser in “the art of musical rhetoric” (Berkowitz, 2010). Learning pre-existing solos verbatim can serve this purpose also, and forms an integral part of improvisational development. Jazz trumpeter, Art Farmer, describes learning solos note for note as part of the process of “getting your vocabulary straight” (Berliner, 1994:95-96). It is in fact common practice to learn entire solos to glean ideas, as has been done by many prolific jazz improvisers (Beliner, 1994; Kernfeld, 1995; Owens, 1996).

Recombining materials through recombination or contextualisation (see below) processes provides improvisers the chance of directing abstract improvisational strategies and testing the variations and limitations provided by prototypes.

Contextualisation

The development of a tacit understanding and control of style within improvising requires that an improviser immerse themselves in the style they are attempting to emulate and/or augment. This final pedagogical stage includes reapplying the material in performative settings. In doing so, an improviser is able to apply their newly augmented approaches, within ensembles, and to audiences in live performance.

“The player internalises not only a musical tradition but inevitably also absorbs the tastes and preferences of his or her reference group – respected predecessors, peers, audiences and critics” (Csikzentmihayli cited in Berkowitz 2010:75)

4.3.3 Linguistic Analogies for Pedagogical Understanding

One common theme shared across academic, pedagogical, and artist accounts of the improvising process is a comparison to linguistic modes of communication. Leonard Bernstein’s influential series of lectures for example drew musical parallels with phonology, morphology and syntax.

55 This has been documented by many practitioners. One particularly strong example is present in the case of seminal jazz guitarist Wes Montgomery, who began his career performing Charlie Christian solos verbatim before forging his own iconic style.
Many linguistic theories of learning support Berkowitz’s rationale for a multi-procedural approach to developing improvisatory lexicon and ability. Many authors cite second language attrition (the decline of second language skills) as a common phenomenon when learning a new language. The decay in knowledge or forgetfulness, may be countered by ensuring the learner adopts a more intense and rigorous approach (De Bot & Weltens 1991:43; Weltens & Cohen 1989). Learners must reach a “critical threshold” level (Neisser 1984), for knowledge to resist decay, to ensure knowledge becomes automated and increase its chances of remaining in memory (Schöpper-Grabe 1998: 241). With this in mind, it is understandable that learning and playing licks verbatim, yields far less to an improvisatory approach in the long term, than if the underlying schemata of the lick is extracted, manipulated and practiced rigorously in many ways.

Gardner (1982: 519-520) states that the process of second language attrition is divided into three points in time:

Time 1 - second language learning begins.

Time 2 - language instruction terminates.

Time 3 - assessment of language competence.

The time from time 1 to time 2 is the acquisition period and refers to the onset of learning to its end. Between time 2 and time 3 is referred to as the incubation period in which no training or language usage takes place (1982: 520). In relation to jazz pedagogy the analogy is apt, with accounts of improvisers suggesting that it may take a considerable amount of time before the newly learned vocabulary manifests in spontaneous improvisation.

Through these pedagogical strategies, Berkowitz maintains that successful assimilation of improvisatory material can be achieved. It is simply not enough, as Pressing stresses, to internalise material, it must also be “enriched”, in order for it to become instantly available and suitably malleable (Pressing, 1998:53). By

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56 In addition to these, several writers have examined the generative processes in reference to principles of linguistic theory (Culicover, 2005; Perlman & Greenblatt, 1981; Velleman, 1978).
57 See De Bot & Weltens (1991:43)
58 see Berliner (1994:114)
passing prototypical material (concepts, phrases, preludes) through these processes, an improviser may build a rich improvisatory vocabulary, approach and command of the conceptual strategies underpinning the material. Berkowitz arrives at this conclusion:

“The student knowledge base can thus be converted from an inventory of memorized formulas into a richly interconnected system of improvisational possibilities readily accessible for instance and creative execution in the moment of spontaneous performance” (Berkowitz, 2010:79)

4.4.1 Portfolio Data Components Overview

In order to make explicit the processes by which an improviser assimilates improvisatory vocabulary and command of generative mechanisms, it was necessary to create multiple stages of practice that took the researcher from initial interest of an improvisatory concept, as identified aurally through immersive listening, to implicit mastery and command of these concepts. These linear stages of practice activity included identifying the material, transcribing the material, extracting seed phrases, developing seed phrases, producing etudes and ultimately testing the application of the material yielded in various improvisatory settings. This linear process of practice activity is a rigorous, explicit extension and unfolding of the practice methodologies that improvisers may use tacitly. Its purpose was to clarify a particular methodology and progression of events a practitioner may encounter during their learning of improvisatory approaches and extrapolate the process to serve as a template for future development of improvisatory strategies. In all stages, introspective and reflective mechanisms were needed to create an explicit methodology and test its validity.

4.4.2 Process for Mining Analysis Material

Immersive Listening

During the first stages of research, while the literature review on jazz improvisation cognition was being completed, an initial period of immersive listening was conducted. This focused mainly around Wayne Krantz’s recorded output as a centre for the theory to be applied to, however listening on a more general level to other jazz artists was approached with the same ideology.
While listening to the improvisations, particular care was taken to avoid thinking too much around specific pitch configurations and their relationships to harmonic context. Instead, focus was placed on thinking about the improvisations in terms of abstract concepts, using more value based descriptions for what was unfolding. The idea was to adopt the schematic descriptions that the expert level improvisers in Hargreaves et.al (1991) study were using. For instance, a particular rhythmic idea may have been labelled as jagged, broken, dense, or sparse. A harmonic idea may be labelled as inside, outside, wide, or close etc.

This also included thinking about the overall structure, intensity, style, and personal aspects that defined the improvisation. Furthermore, the idea was to listen and identify uses of the three generative mechanisms as identified in part I. This included identifying instances where motivic development was in play, where clear use of licks were present, where technique and physicality may have been a factor and creating an overall assignment of potential strategic categories from which material may have been generated.

**Identifying Material**

Musical instances that were of interest to the researcher were initially identified through aural means by three selective processes. Firstly, repeated immersive listening enabled the researcher to construct an intuitive understanding of the improvisations being studied, on a holistic level. This consisted of listening to a solo multiple times and making notes on particular passages and assigning a loose identification. Initially instances of associative chain use (by means of motivic development, reference to the melody etc), or clear lick assembly use (which required the researcher’s tacit knowledge of the style and the improvisers personal style, gleaned from the initial immersive phase of listening), were negated in favour of instances where the researcher felt the improviser was displaying characteristics of strategy led generative mechanisms. While this is subjective, the intent was not to definitively argue the generative mechanisms the improviser may have used to produce the material (although a criteria for selection included acknowledgment of a high probability of strategy based approach), but instead argue its validity as a means of producing strategy led mechanisms from its development by practitioners. This enabled the researcher to evaluate the usefulness of the improvisation for dissemination into practical development. It also enabled the researcher to develop a broader understanding of how the improviser was constructing...
their solos and made identifying trends across improvisations an easier task. This technique was used mainly in the development of the longitudinal study of Wayne Krantz’s development of strategy described in chapter one and would be of use to anyone wishing to develop an understanding of how strategy based mechanisms develop across a period of time.

Secondly, a mining technique was used, whereby the researcher listened back through the improvisations with a specific goal of identifying a particular strategy or strategy deployment in operation. This technique was particularly useful when attempting to demonstrate a micro view of improvisational strategy, and was used primarily while gleaning the material for Michael Brecker’s use of harmonic superimposition. This enabled the researcher to apply strict criteria when listening and ensure that the material was coherent across all examples found. In the case of Brecker, this consisted of listening for any instances where the harmony was clearly delineated in a key other than that of the one underlying the accompaniment and was further refined to identify instances where outside harmony triads and progressions were identified. This technique is therefore of use when trying to identify a particular aspect of an improviser’s approach to one strategy or deployment within that strategy, however does not provide insight into the improviser’s use of that strategy on a more holistic level or how it might interact with other strategies, or other generative mechanisms.

Thirdly, a free listening technique was used, whereby any particular instance of interest to the researcher was identified. This was particularly important in maintaining a personal approach to the inquiry allowing the researcher to be subjective and find material that resonated with them. The material found was selected by looking for novel instances, where a strategy identification could be applied, that sparked interest in the researcher and with desire to assimilate for their own use. This approach was perhaps the most similar to the aural approaches used traditionally by jazz improvisers, who focused on particular phrases and licks by which they then practiced and developed, metamorphosing into unique and personal vocabulary and approaches.
4.4.3 Portfolio Material

Selected Transcriptions

Transcriptions were produced of both entire solos and individual phrases that appealed to the researcher. An appropriate fingering was applied, at which point the material entered the first stage of assimilation, through imitative practice. Transcriptions were also subject to categorising and labelling, based on their potential strategic uses.

In order to highlight strategic generative mechanisms in play as they were identified intuitively, a colour coding system was introduced to represent the improviser’s possible point of strategic origin. In doing so care was taken to ensure that the coding system was understood as an interpretation of the researcher’s understanding of the material. It was often the case that certain material or phrases had multiple strategic leanings, and in such cases a hierarchy was created from the researcher’s perspective as to the importance of each aspect as identified through personal preference.

While strategic coding of transcriptions like this remains to some extent subjective, the coding itself drew on the holistic approach of the improviser being studied, along with their own admission of strategic leanings to ensure the salient properties that of personal improvisatory identity of the improviser be brought forth. While the coding is by no means definitive in its attempt to describe the use of strategy by an improviser, the holistic experience garnered through heuristic interaction with the material and relation to existing research and artist account provides at least some objective justification for providing such a coding. It is however entirely possible, due to the nature of the heuristic process that another researcher may experience different results and subsequently different coding’s, due to the nature of their own improvisatory knowledge base and desire to explore different aspects of interest to them.

In some instances, particular aspects of interest were transcribed with other elements removed. For example, a particularly rhythmic led idea may have been transcribed using only rhythmic notation. A particular harmonic superimposition in the case of Brecker, may have been reduced to show the superimposed triad. It may also be appropriate when using transcriptions to use not only reductive annotations but also additive representations, such as contour lines, intensity graphs, timbral coding with relation to guitar effects, pickup use, or attack.
For the most part, the three transcriptions used for the comparative analysis of Wayne Krantz’s approach, remain the focus of the heuristic inquiry, in order to limit the scope of the study. Despite this there are other examples which have been included, from Krantz’s other works, and are included where appropriate.

Vocabulary Seeds (Portfolio A)

Once transcriptions had been produced, specific seed phrases were extracted from larger transcriptions for development and assimilation into an improvisatory approach. I have defined the term ‘Vocabulary Seed’ (VS) as a term for identifying any phrase(s) or musical utterance that can be used as a starting point for vocabulary augmentation and development. A VS is partially synonymous with the concept of a lick, phrase, or musical idea.

A VS however, may not just be a phrase, but could be any musical event whereby elements of rhythm, intervallic relationship, effects, interactive device, or otherwise noteworthy musical features are detected (aurally or by transcription study) by the practitioner as representative of an idiosyncratic feature of a particular players style or a particular style generally. This may be a single musical event or a series of related events which constitute the feeling of style, personality or strategy that constitute part of a musical identity or defining improvisatory approach. While a VS may feature different musical elements in its construction, the limiting of a VS focus may help to concentrate and direct the efforts of the practitioner in order to successfully augment strategy generation mechanisms and directives. The sixty main VS used for this study can be seen in document portfolio A1.2.

Improvisational Etudes (Portfolio B)

24 improvisational etudes were designed and developed with the aim of providing an improviser with a series of possible starting points for developing abstract improvisation strategies. These included a range of focus points and are accompanied by the researcher’s own examples of how one might practice these.

Holistic Improvisation Practice documents (HIPs) (Portfolio C)
Holistic Improvisation Practice documents (HIPS), consisting of the researcher's documentation of
improvising over a range of settings from isolated practice to a click track, with backing tracks and with
ensembles in live contexts were produced throughout the course of the study.

**Studio Recording of a Jazz Fusion Trio**

Towards the end of the research project, a final documentation of the researcher's improvisatory
approach was documented through the recording of an original project, featuring improvisations in a
variety of contexts. This was done to gauge the successfulness of the pedagogical methodology used,
looking at the inception of new vocabulary, strategies, and approaches drawn from Krantz and Brecker.

This process was felt necessary as it enabled the researcher to do multiple things that individual practice
could not. For instance, compositions were chosen and tailored to promote improvisatory freedom and
to provide a suitable vehicle for the improvisatory approaches being applied. Ensemble interaction was
also observable at this point, demonstrating the effect this has on strategy use. In addition, reflective
practices were able to be used in a live setting, consisting of a dynamic ensemble, where focus and flow
were easier to explore and maintain unlike the controlled settings of isolated practice.

**Reflective Practice**

Across the whole process a variety of reflective processes were used and documented. Most notably were
the use of think aloud protocols, during controlled improvisatory practice and the use of retrospective
reflection immediately after improvising practice. The methodology and literature underpinning these
processes is explored in section 4.9.

A detailed breakdown of the methodology for extracting and developing a 'seed' phrase, composing an
etude, production of HIPS and the methodologies used for reflection will now be explored in detail.

**4.5.1 Methodology for Extracting a 'Vocabulary Seed' (VS) Phrase**

When selecting material to be extracted for processing, a number of defining features had to be identified.
Firstly, a general strategy would be identified for augmentation e.g. harmonic approach, rhythmic
approach, textural approach, etc. Narrowing a search focus enabled a more efficient way of combing through individual or multiple improvisations to find useable material. Secondly, the material selected was chosen for its emblematic representation of a particular improvisatory deployment or overall strategy specific to the improviser’s unique approach. Thirdly, the material selected had to be of particular personal interest to the researcher, in line with Moustakas’ (1990) criteria for ensuring a personal and passionate connection with the heuristic study.

As argued in part I, by focusing on more abstract constructions of strategy and schema, one may be able to create and craft a novel improvisatory approach in a way that galvanises and develops implicit control of material.

4.5.2 Creating a Vocabulary Seed

The VS in the following examples were all mined from using the following extraction method, which was inspired partly by McKnight's research (2012). This created a similar linear chain process to extract material from an existing improvisation in an explicit way, adding rigour to what is often done intuitively and aurally:

1. Selection of source material
2. Evaluate significance/value to improvisatory style
3. Group into category estratégico
4. Create any sub-groupings where necessary
5. Transcribe VS (if source is aural)
6. Evaluate harmonic context
7. Create appropriate fingering
8. Analysis relevant to strategy
9. Extract strategic model
10. Compile audio for reference
11. Record and group VS
4.5.3 Developing the Seed Phrase

In order to best assimilate the salient features of the VS into a working vocabulary, this augmented practice model has been refined combining various aspects of Berkowitz’s findings and practice methodologies suggested by other jazz pedagogical texts such as those found within Crook (1991); Aebersold (1992); Bergonzi (2003).

Stage 1 – Imitation

It was appropriate to become familiar with the material in its original form and context. This involved practicing the phrase, initially with the aid of transcription, before memorising and bringing to full speed along with the record. In some cases, this forced the researcher to develop technique in unfamiliar areas, which often required the fragmentation of the seeds into smaller component parts for practice purposes. In terms of physicality, sometimes the fingerings and position of the seeds were familiar. In other cases, where unfamiliar or complicated pathways on the fretboard were present, it took longer to develop proficiency. A nuanced approach to learning the seed phrases was taken, whereby an appropriate tone, rhythmic feel, and overall articulation was pursued to as accurately as possible recreate the phrase.

This process was often carried out during the extraction method for the VS. Care was taken to practice the seed at various speeds and positions where physicality allowed. The transparent nature of this process has made redundant the need to include audio documentation in an attempt to remain succinct.

Stage 2 – Harmonic Modulation

In this stage, the initial VS material was modulated through various modalities and practiced in each. Modulations were initially taken through common chord types and scales that would be encountered in standard practice jazz scenarios and contemporary settings. These included Maj7, Maj7#11, Min7, Min(maj7), Min6, 7, 7(altered types). The seven major, melodic minor, and harmonic minor modes were used in addition to common practice symmetrical scales such as diminished and whole tone.

Where the focus of a VS was harmonic strategy, this stage was not necessary as the underlying schema for investigation and assimilation was tied to relationship between pitch and harmony. In this case the material was instead practiced in different keys, positions and moved on to the following stage. For the
following examples in chapter five, each modulation of a VS was also transcribed. Practical settings used by improvisers may not be as exhaustive as this and may follow a more pragmatic and goal oriented way of modulating material to fit a new harmonic setting only when needed. However, the purpose was to provide maximum exposure to the underlying structures and strategy base from which the VS was being drawn and developed through.

Modulating the VS was a practical necessity in order to realise the potential of underlying structures in each VS. By repurposing for different chord types, the defining nature of the phrase was often brought forth. This was sometimes identified as a contour, a particular intervallic combination, the rhythmic information, the technique required to play the VS or by extension the timbral effects produced a particular technique, and any other significantly emphasised musical aspect. While it was often the case that it was a combination of these things that gave the VS its quality and allure to the researcher, modulation (and the subsequent variation stage) provided a way of testing the categorisation of improvisational strategy by means of substitution. For example, if a VS was initially identified intuitively as a particular rhythmic strategy, changing the rhythm in various ways allowed the researcher to test the categorisation and ensure the VS appropriate placement within a particular strategy.

Stage 3 – Variation

In this stage the VS material is re-worked based on the overall strategy and any other appropriate stylistic features. The goal is to emphasise the salient qualities of each different permutation of the VS in respect to the strategy being augmented. For the following examples in chapter five each variation of a VS was also transcribed, for the same reasons mentioned above.

Varying the VS allowed the material to begin integrating with the researcher’s own knowledge base and current improvisatory vocabulary. While the goal was to provide variation to the aspect being focused on, i.e. rhythmic variations for rhythmic strategies, a non-rigid approach was taken to ensure the researcher’s creativity was unhindered. The aim was to produce multiple related variations that were felt to be connected under the same strategic deployment concept, but of interest and value to the researcher in practical terms rather than arbitrary variations.
For the most part, these variations were produced by improvising variations around the VS firstly and then transcribing the results. In some cases however, the variations were deliberately manipulated by means of notation firstly in order to produce novel variations that may not have been realised with the researcher’s improvising alone. Both methods were used in the attempt of galvanising the underlying concept as part of the researcher’s own improvisatory practice.

As mentioned previously, variation was also essential in formulating boundaries to what level of change could be applied before the concept was lost. In some cases material allowed significant manipulation, whilst in others only small changes were permissible before the value of the material became too diluted.

Stage 4 – Recombination

For this stage, combinational improvisation strategy etudes were composed and practiced.

4.6 Improvisational Etudes – Conception and Use

As part of the process of developing and improving an improviser’s ability to direct and control improvisation using strategy generated mechanisms, an improviser can also practice improvising using specific strategies rather than individual deployments or seeds that may hold the strategies tacitly.

For example rather than playing this phrase (figure 4.1), an improviser could instead practice improvising with stretching or malleable rhythms without specific reference to the seed itself. This can be achieved by keeping closely to the rhythmic groupings used within the seed phrase, or expanding it to a wider range of
rhythms contained within the improviser’s knowledge base. It may be the case that the improviser chooses to restrict the rhythmic groupings also, focusing on unfamiliar or difficult rhythmic changes. Furthermore, the idea of rhythmic stretching may not even be limited to quantised rhythms and may prove valuable as a way of practicing playing in front or behind the beat. There is also no need to keep the melodic or pitch content the same allowing the improvisation to be practiced across a range of settings.

This procedure of returning to a less specific mode of practice, allowing for a larger use of the improviser’s complete knowledge base to be used in a more ‘real’ way (i.e. in a performance, not a practice room) can be seen as analogous to Berkowitz’s recombination stage (Berkowitz, 2010). Berkowitz states that improvisation relies on the ability to combine elements large and small (2010:56). The treatise examined by Berkowitz present various composed versions of cadenzas to give examples for improvisers. The interlinking material providing various pathways to the improviser also demonstrates, in regard to the composer of the cadenzas, a “window into their own knowledge bases of implicit idiomatic interconnections” (2010:63). The cadenzas provide insight for the improviser, in a way that still leaves them relying on their own analysis to draw out the similarities and differences between variations in order to then create their own. It is perhaps inevitable then, that there will be a degree of priming associated with this way of demonstrating improvisatory concepts, linked with the composer’s knowledge base.

Building on Berkowitz’s treatise, a set of 24 improvisational strategy etudes were composed which will now be explored.
24 Improvisational Strategy Etudes Outline

**Rhythmic Etudes**
1. Elastic rhythms
2. Line breaking 1: playing 16th note lines inserting rests
3. Line breaking 2: unbroken to broken to sparse.
4. Pure rhythm: phrase to pure rhythm
5. Rhythmic motif 1: fixed rhythmic ideas
6. Rhythmic motif 2: fixed rhythmic ideas with displacements.

**Pitch Etudes**
7. Open strings 1: adding open strings
8. Open strings 2: Inverted pedal use
9. Open strings 3: motifs and variations,
10. Lines 1: contrasting idioms: bop to rock
11. Lines 2: Harmonic looseness
12. Palette soloing: using restricted intervals
13. Palette soloing 2
14. Palette soloing 3
15. Close/wide harmony
16. Brecker’s harmonic superimposition 1
17. Brecker’s harmonic superimposition 2

**Dialogical Etudes**
18. Quotations 1: using intertextual references and allusions
19. Quotations 2: using intratextual references and allusions.
20. Markers: using Bends

**Timbral Etudes**
21. Dynamic panning
22. Technique allusions

**Physical Etudes**
23. Licks: inserting licks
24. Symmetry: displacing phrases
The compositional process used to produce the 24 improvisational etudes in the portfolio involved first drawing together a variety of possible strategies as starting points. Rather than randomly designating possible strategies, of which there may be an infinite amount, the 24 etudes were based around some of the particularly interesting features of both Krantz’s and Brecker’s approaches. As Brecker’s study only discusses one harmonic strategy in particular, there are a small number of etudes relating to his approach to harmonic superimposition. The other etudes were composed around Krantz’s observed strategy use. These improvisational strategy etudes have been designed specifically in relation to the improvising tendencies and features of both Krantz and Brecker\(^{59}\). The study on Brecker was specifically limited to one aspect of his harmonic approach and yielded an insight into his use of harmonic superimposition and can be seen in etudes 16 and 17. The remaining etudes come from a range of particularities seen in Krantz’s playing across the comparative analysis shown in part I, along with other phrases of his, as identified by the researcher.

The etudes were designed to allow improvisers to target specific aspects of their use of strategy. Unlike the improvisational treatise that Berkowtz (2010:56-63) discusses, the etudes produced aimed to avoid any priming through use of explicit material as demonstration. The design of the etudes had to allow to the improviser to focus on the strategy and not be led by existing material. To this end, a systems diagram based approach was used allowing the strategies to transcend their original context and be utilised in a variety of different settings, rather than an isolated one. Berliner echoes the importance of acquiring a repertory of etudes (more often than not, recorded solos from artists the performer is aspiring towards) and their place within improvisatory skill development (Berliner, 1994:98).

As such there are no specific rhythmic, harmonic or melodic information in the scores. The etudes are instead a set of instructions for practicing specific improvisatory strategies. (see portfolio B.1).

The etudes bear some resemblance to approaches taken by Crook, Bergonzi and Aeberold in their pedagogical materials. Crook sets out “practice topics” (Crook 1991:297) along with a choice of settings for practicing various aspects such as syncopation, articulation, phrase lengths, and chord tone soloing.

\(^{59}\) It must also be noted that some of the etudes listed defy easy categorisation and may fit into more than one strategy grouping. For instance open string based pitch strategies could also be grouped as timbral strategies given the particular tonal qualities that come with the use of open strings.
among others. Crook’s list of topics is set out to provide improvisers with an idea of what to practice and not specifically how to do so.

The recordings included in the portfolio are the researcher’s own interpretation of how to use the etudes. The form of each is however malleable and should be approached as such by the improviser to target specific aspects of interest to them.

There are a variety of approaches improvisers can take when using the etudes. Firstly, the etude can be practiced without an explicitly identified starting phrase. This is a looser approach and encourages the material more familiar to the improvisers approach and knowledge base to be brought forth. The goal is to practice the specific strategies instead of concern being placed on specifics of phrases.

Secondly, an input stage can be added. This is more akin to the improvisational treatises discussed by Berkowitz (2010:56-63) and means using specific material or pre-determined phrases as starting points for the improvisation. Within this, the vocabulary seeds from which the etudes were ultimately realised from were often used as starting points. This is particularly useful when trying to assimilate a particular player’s style more closely, and adds further use to the stock of licks and phrases an improviser may encounter. How they are treated however, is determined by the etudes direction.

The overall purpose and yield of these etudes, is to encourage conscious direction of improvisation using more general strategic principles. These may turn into more emotive directions also, as the improvisers in Hargreaves’ et.al (1991) study showed, guiding the improvisation through use of goals based around imagery such as light, dark, heavy, dense, thin, wide, close, humorous, serious, burning, pushing, or pulling etc.

The etudes do not prescribe specific pitches, rhythms or otherwise but instead instruct the improviser to improvise in a particular way using controls and variants around strategies. For example, the first rhythmic etude rhythmic stretching, asks the improviser to either compress or stretch their rhythm use:
The way this is interpreted is entirely up to the improviser. A stretch may be interpreted as moving to a
different rhythmic grouping (i.e. quaver to crotchet), but it could also be interpreted in terms of smaller
rhythmic nuances such as beat placement or larger rhythmic ideas such as moving from semi quavers to
crotchets by means of ‘stretching’ the rhythm, moving through various smaller stages of rhythmic
lengthening.

The etudes lend themselves to the exploratory approach of heuristic study. The etude audio in portfolio C
demonstrates the researcher’s interpretation of these etudes after a period of practice and trial & error.
Despite this, the audio is not indicative of an overly polished or perfected approach. It was important to
include examples of the etudes being practiced. For the most part these were pursued using a free
approach, designed to capture the in progress/practicing stages another improviser might experience, and
consequently the audio does not necessarily provide exemplars, meaning at times there may be mistakes,
lack of flow and a less coherent feel. More on the challenges and outcomes of this will be discussed in
chapter 5.

Were another individual to design their own etudes, using the same conceptual methodologies, it is
entirely likely that different focus would be made, based on their own interests and desired output. In
addition, if improvisers other than Krantz and Brecker were used as case studies, an entirely different set
of strategies and concepts may have be conceived.

Stage 5 – Contextualisation.

While the other stages provided ways of developing individual aspects of strategic mechanisms for
improvising by assimilating and developing pre-existing material in the way of the VS, the aim of this final
stage was to allow complete integration with the researcher’s implicit knowledge base, free of constraint
over a variety of typical improvisatory settings.
While the heuristic inquiry did not set out any specific goals or hypotheses in relation to the outcome of developing an improvisatory approach to strategy generation, instead focusing on the phenomena within the approach and experiences of the researcher, a need to investigate the outcomes in as close to a non-artificial or overly academic way was identified. To this end, regular audio recording documentations of practice, both in individual and live performance settings were conducted.

4.7.1 Holistic Improvisation Practice Documents

Holistic improvisation practice documents (HIP), were produced regularly to gauge the effect of the previous stages of VS development. This was not limited to any particular format, however could comprise any contextual practice of improvisation that is performance based (as opposed to the practicing of individual elements of improvisatory practice) i.e. improvising to a backing track or click; studio recording sessions of improvisations; and any live performance improvisations, with or without an ensemble. A distinction was made between isolated practice settings (individual practice, click track, backing track) and performance settings (rehearsals, live performance, studio recording). The HIPs consisted of a recording of the practice session along with reflections on what was played.

In determining the successfulness of the augmentation of the researcher’s improvisatory practice through the previous stages of assimilation, a number of objective observations were desirable when analysing the HIPs. For instance, presence of any previously worked on VS were noted where identified. This could include direct quotations, variations or far removed but clearly linked material. The focus was placed on the implicitly manifesting material, as opposed to that created through conscious recall, in the case of the lick assembly. In addition, the production of a variety of HIPs enabled comparative analyses of the overall development of the researcher’s practice over a period time, demonstrating changes in tendencies, preferences, quality of improvisation, use of techniques, and shifts in prevailing generative mechanisms.

While the main aspect of inquiry was the assimilation of the materials developed in the practice methodologies as mined from existing improvisations, a secondary concern was the overall tendencies in improvising practice in relation to generative mechanism preference and whether there had been a notable change over the course of the inquiry.
There was also a further use to the HIPS that were produced. A HIP can also be fed back into the VS system cyclically to extract new vocabulary seeds which in turn was developed in the same way to produce new material from the researcher’s own novel improvisations. The duality of an improviser’s want to develop his own voice and remain within the tradition can be maintained by augmenting vocabulary in this way. This is shown in chapter five, through the researcher’s own development of novel material generated through the process.

4.7.2 HIPs - Individual Practice Settings

Care was taken to deliberately leave time between practicing a VS and creating a HIP in the attempt of reducing any short term memory recall priming in favour of discussion of implicitly created material which has been absorbed into the knowledge base.

In practice, jazz musicians often use jazz standards, or short chord progressions that form the basis for these standards, as tools to practice improvising over. For instance the ii V I progression is a crux of bebop. Other progressions have become synonymous with the tune or composer they were first taken from, such as rhythm changes or Coltrane changes. This enables the improviser to develop suitable pathways for navigating common harmonic and rhythmic situations. In developing HIPs for an isolated setting, care was taken to practice improvising material in a variety of settings where appropriate. In doing it was the researcher’s aim to make the VS more malleable. It became apparent that there was a continuum of complexity that existed across various settings which should be taken into account when looking at how an improviser behaves. For instance, the rhythmic idiosyncrasy in Wayne Krantz’s playing, which often features mainly over unanchored harmonic vamps, may not be as amenable to use over something as harmonically bound as Coltrane changes.

Through the inquiry, a Common Situational Spectrum (CSS) was produced that may serve as a variable platform for developing jazz improvisation skills through. In defining the CSS the following instances of harmonic and rhythmic complexity were suggested as typical to encounter, and are useful to develop skills over.
Figure 4.3 – Common situational spectrum (CSS)

Whilst the CSS provides a wide and rich variety of settings to develop improvisational skills and practice the deployment of improvisational strategy over, there are instances where certain strategies are not appropriate or amenable. This is especially true in cases where a strong stylistic precedent is inferred by the type of setting.

For instance, in the case of Krantz (who himself practices mainly over a click track with no harmony), developing skills over settings which are more harmonically traditional or contain denser chord changes, is less than fruitful as the open harmonic nature of many of his pieces negate this. While the practicing jazz musician may wish to gain grounding in all of these in order to develop a broader knowledge base and approach, it is often the case that an established artist or improviser begins to homogenise within an area of this spectrum, when creating their own style. For the most part, the material mined in this inquiry was based on similar settings to those used by Krantz, such as static harmonies and vamps, drones, ambiguous harmonies, and unanchored harmonies. Attempts were made at times to develop material for use with more traditional harmonies (See audio C16-18).
While outside the scope of this research, an investigation into an improviser’s changing strategic tendencies over the full CSS, would provide further insight into the role of stylistic etiquette and the effect produced by limiting or expanding controls within improvisation.

The frequency of isolated setting HIPs produced, while initially fragmented, were based on an average of one per fortnight minimum, during the inquiry’s main research period, which lasted 12-18 months. In some instances this was far more frequent, however this was of no concern as the aim was not to control the frequency as would be done in an objective methodology based study but to explore the developing trends as they emerged.

The advantage of having isolated settings for improvisation practice allowed the researcher to focus on developing and controlling strategy based mechanisms in improvising. Since strategy generation can be directed consciously, thinking and steering the improvisation through abstract pathways without losing flow (as can happen when focusing on lower level material generation on a note to note level), it was possible to control, monitor and evaluate the use of strategy.

In an isolated setting, the HIPs were accompanied by two methods of reflective documentation. Firstly, a think aloud protocol where by the researcher verbally commentated on the improvisation as it unfolded, focusing specifically on strategy, evaluation and holistic development of the improvisation in real time. Secondly, a post improvisation reflective model was used to retrospectively analyse and note particularities and general observations, again relating to strategy and the development of the improvisation. Both methodologies produced data to substantiate the analyses of the researchers improvisations, both on an individual level and as data for comparative analysis of the researchers overall development, including the successfulness of VS assimilation. These methodologies are explored further in section 4.9

4.7.3 HIPs Performance Settings

Live ensemble practice HIPs, in the form of live performance, rehearsals and studio recordings, were also produced and a similar retrospective reflection model was used to produce data to evaluate the successfulness of VS assimilation. Trends, particularities or general observations about strategy use, as
engaged by the researcher, were also noted. It was felt this was imperative to the study, as it represents the
final and ultimately most important stage of an improviser's development.

Performance settings differ from isolated settings in that all controls and practice objectives are removed.
The aim is for the improviser to play freely as would be typical, to allow for performance flow to be
developed. The recordings produced were then subject to reflection, in which the researcher was able to
note particularities relating to strategy and development of the improvisation retrospectively. Performance
settings are also affected by ensemble interaction, which requires the improviser to focus on the dynamic
changes to rhythm, harmony, groove, texture and feel. These aspects were also considered during
reflection.

The frequency of live ensemble HIPs, was less controlled, and consisted of instances whereby the
researcher was involved in rehearsals and live performances that provided appropriate improvisatory
settings to engage with the material. For the most part this consisted of recordings of a jazz fusion jam
night which the researcher ran and also the rehearsals and subsequent studio recording of the original
project produced for this heuristic inquiry. While the researcher was engaged frequently as a performer in
other settings that were heavily improvisation based, such as a gypsy jazz ensemble and various traditional
jazz ensembles, the directive of these ensembles and stylistic requirements were too far removed from the
material being developed to be of use. Despite this there were instances where crossover occurred and
places where vocabulary that was perhaps more stylistically ambiguous was observed in use in these other
ensembles.

4.8 Studio Recording – Design and Approach

Towards the end of the research period, a studio recording session was undertaken to further document
the researcher's developing improvisatory practice and its integration within a live ensemble. This was
done for a number of reasons. Most particularly, the aim was to produce a snapshot of the researcher's
practice at the end of the research period, for comparative purposes, looking at the development and
realisations of the strategies and materials which had been developed in the other parts of the portfolio. It
also provides a unique chance to see how ensemble interaction affects the use of improvisational strategy.
The ensemble used was a contemporary jazz trio comprising drum kit (Alessio Barelli), electric bass guitar (Tom Kenrick) and electric guitar (Tom Williams). This particular trio was less traditional, as the repertoire arranged and composed could be described broadly as jazz/funk fusion. This meant the use of effects on the guitars were more focal and the material was less constrained by any single stylistic vernacular.

Both the drummer and bass player were approached with an offer to produce a small set of recordings, which were to be heavily focused on the improvisations within. Neither of these two players had performed with the researcher prior to the commencement of this project. This was to ensure that during the documentation of the rehearsals and final studio session, development of band dynamic and interpersonal rapport could be observed. At high levels, this kind of interpersonal rapport can be described as a kind of musical extra sensory perception (ESP), and demonstrates that through playing together for a period of time, musicians come to know the particularities of their approach, as accompanists, soloists, and during improvisational trading, which can lead to musicians being able to support the ideas of the other more effectively and sometimes with almost pre-emptive precision. The rehearsals took place over a period of around three months, although they were distantly spaced, culminating in four rehearsals leading up to the studio session.

The material selected was the Wayne Krantz piece *Is Something I Don’t Understand Yet*, an Oz Noy piece *Steroids*, and an original composition *Outburst*. Each song was recorded with a number of takes. This enabled reflection to take into account comparative analysis between different takes, and to allow more opportunity to track the improvisational processes.

The first piece, *Is Something I Don’t Understand Yet*, has multiple solo sections, some of which are short and of prescribed length, and some which are open ended. Between each, there are composed sections which connect the piece. The inclusion of this piece was specifically to remain within the stylistic context established by Wayne Krantz, as he has been the main focus for the analyses, case study and practice led elements of the thesis, during which the researcher identified and assimilated a number of his improvisational strategies.
The second piece *Steroids*, is a typical dominant 12 bar blues jazz/rock/funk piece. This was included specifically as it was a blues. The conventions used to improvise on this form are different to the other two pieces, which have relatively static harmonic solo sections.

The final piece *Outburst* features a relatively short head, before moving into a very long open solo section loosely based around A minor, although the instruction was given to avoid outlining any particular tonality and to just A as a tonal centre. The solos were completely open in form however the order was prescribed as guitar solo – bass solo – bass/guitar trading. The inclusion of the trading section here was used to observe the effects of ensemble interaction within an improvisation, and its significance in relation to improvisational strategy.

**4.9.1 Reflective Processes**

While there is no specific goal or objective to this heuristic inquiry, the focus has been on giving introspection to the holistic development and deployment of an improvisatory vocabulary, and its underlying strategic schema, from its inception to its mastery and use as part of an improvisatory approach. For this, specific reflective models have been adopted to support the inquiry.

During the HIPs produced to demonstrate the use of generative mechanisms and the deployments which constitute them, both reflection in action and reflection on action, as defined by Schön (1984) have been considered. Reflection in action involves reflecting during an activity, thinking while doing, engaging with problems, and acting immediately with little chance to take time. Reflection on action involves a retrospective process of thinking about something that has happened after the event, what would be different if the task were to be repeated and also allows for longer periods of introspective thought. Both of these two reflective types have been adopted through the use of think aloud protocol and self-reflective modelling methodologies.

**4.9.2 Think Aloud Protocol**

HIPs produced in isolated settings, were accompanied in some instances by the use of think aloud protocols. Think aloud protocols are data gathering methods requiring the participant to talk freely while performing a task. The participant is required to talk about what they are thinking, doing and also provide
evaluative feedback as it unfolds. The aim of such a method is to make explicit the tacit knowledge held by the participant in order to execute the task.

Think aloud method is useful for those who want to aid research into cognitive processes (Someron et.al, 1994:11). It aims to combat the deficiencies that may arise from retrospective memory recall when explaining cognitive actions, knowledge use and strategies used by someone while they complete a task, as many experts and specialists are capable of doing the task, not explaining it. In addition, research has shown in many experiments that data obtained by retrospection is not always valid (Nisbett & Wilson, 1977). By asking a participant to think aloud and freely as they complete the task, provides a “direct method to gain insight in the knowledge and methods of human problem-solving” (Someren et.al, 1994:1). This produces data which can then be coded and categorised to draw out fundamental themes and emerging cognitive processes involved in completing the task.

In respect to this thesis, the research into the theoretical underpinning of the cognitive processes and mechanisms in improvisation allowed for a targeted approach to be adopted. To this end, a schema of relevant concepts was drawn together. The think aloud protocols were considered in respect to the three generative strategies defined in part I, the researcher’s understanding or awareness of strategy, a description of the improvisational event, and evaluations of improvisational events.

There were apparent flaws in this method from the onset. For instance, the pace of improvisation and material generation may leave multiple gaps in data, where the method wasn’t able to keep up with the generation and development of improvisational events. Research has shown (Ericsson & Simon, 1980) that the think aloud protocol doesn’t necessarily detract from a participant’s ability to perform, however it is reasonable to assume that there is some effect, which may be greater or fewer depending on circumstance which cannot be avoided. This may also affect an improviser’s ability to reach a ‘flow’ state, as has been previously defined as a commonly desired improvisational goal experienced by many. To this end the researcher was careful in ensuring the think aloud protocols should not take precedence over improvisational ‘flow’ and cohesion. Following on, biasing was a factor, which potentially affects the participant’s behaviour. Care was taken to note where biasing may have affected the direction or
interpretation of the improvisation. Finally, in ensemble settings, think aloud protocols are not practically suitable and were therefore avoided.

4.9.3 Post Improvisation Reflective Models

To combat the deficiencies in think aloud protocols, a further reflective model was used retrospectively both to aid the think aloud protocols, and in ensemble settings replace it. The reflective model used comprised a synthesis of both Gibbs’ (1988) and Johns’ (1995) models. Neither of these models are arts-domain specific however and consequently an adaption was necessary to produce a reflective model that was aware of theoretical backgrounds concerning improvisatory practice and cognition garnered in the first part of this thesis.

Gibbs (1988) reflective cycle is a direct methodology which encourages a clear description and evaluative analysis to make sense of the experience:

![Gibbs Reflective Cycle Diagram](image)

Figure 4.4 – Gibbs reflective cycle

John’s (2000) model of structured reflection requires both looking in (paying attention to thoughts and emotions, writing down anything significant in relation to the processes used) and looking out (considering the situation, issues, aesthetics, goals, achievements, personal feelings, influencing factors).
John’s model was used to widen the considerations of the reflection, and provide a more considerate approach to reflection based on John’s adoption of Carper’s (1978) use of aesthetics, personal, ethics and empirics adding a fifth pattern ‘reflexivity’ (Does this situation connect with previous experiences? How could I handle this situation better? What would be the consequences of alternative actions? How do I now feel about this experience?).

Both models were amalgamated through the use of a set of questions used to provide a consistent framework for reflection, however free reflection without leading questions was also observed to ensure any particularities outside the set questions were brought forth. Typical reflective question examples included:

General Reflective questions:

- What do I know about the experience?
- What qualities stand out?
- What tendencies do I have in my improvisation?
- How does this relate to literature?
- What feelings and thoughts do I have after the improvisation?
- What is good?
- What is bad?
- What is the conscious state (Implicit/Explicit)?
- Are there time and space factors?

Specific questions relating to strategy led mechanisms:

- Were strategies identified?
- Were they new or have they been seen before?
- Do they link with study?
- If so how?
- To what extent were you thinking about strategies?
- Was the use of strategy ‘successful’?
The combination of both the thinking aloud protocols and reflective models were used in an effort to produce a more thorough analytic auto-ethnographical account of the researcher’s development of improvisatory practice in relation to generative mechanisms used in improvisation, and as a clear framework for writing oneself into research. This combinational use of a two stage reflective model has been discussed as a valid and useful approach in research:

“Thinking aloud-retrospection: think aloud protocols or behavioural observations during a session are used to obtain a retrospective protocol on pauses in the think aloud sessions or on fragments of think aloud that are incomprehensible, very incomplete or very odd” (Someren, et.al. 1994)
Chapter 5 – Analysis and Commentary of Portfolio

This chapter provides a discussion of the trends found in the researcher's own practice as it developed over the course of the study. To begin with, an examination of the identification and development of vocabulary seeds used for informing improvisational strategy is shown, demonstrating how the three Wayne Krantz improvisations first introduced in chapter three, were broken into smaller conceptual strategies. Following this, the development and practical applications of improvisatory strategy has been shown in the form of a collection of improvisatory etudes, practice recordings (HIPs) and a final recorded project.

The portfolio as a whole, represents a complete development cycle of an improvisatory approach from mining initial phrases (seeds) from recordings and transcriptions to be used and re-worked in various stages, showing the complete assimilation of approaches to improvisatory strategy and specific vocabulary groups. The processes outlined are normally part of a less formal methodology used by improvisers in the aural traditions of jazz as argued by Berliner (1994). The reapplication of the processes used by the researcher in a heuristic fashion is discussed through the use of recordings and reflections, as was set out in the previous chapter. The portfolio demonstrates various strategies mined from the two case studies of micro and macro strategy use (Michael Brecker and Wayne Krantz), with an emphasis on the three Krantz improvisations in particular, and clearly demonstrates an approach for assimilating improvisatory strategy which could be applied similarly to other improvisers.

5.1 Developing the Vocabulary Seed (Portfolio A)

It is typical for a jazz musician to develop their own improvisatory craft from studying the improvisations of others. This is done by listening to recordings, copying phrases, establishing the setting for which they were used originally and trying to imitate before developing the material. The first stage of copying and imitating phrases (sometimes entire solos), has been widely documented by jazz improvisers past to present (Berliner 1994: 112, 141). The process of development that follows is not very well understood or documented. While some pedagogical texts give suggestions such as modulating to other keys and practicing over different settings/tunes (which typically follow a pitch-harmony centred analysis), there is
little available research or accounting of the processes by which improvisers go about transitioning material from explicit cell like phrases to raw malleable material, controlled by improvisational strategies.

More recently some improvisation pedagogy, including work by Crook (1991) and Damian (2001) advocate using improvisational tasks, which aim to restrict the improviser to one concept at a time. These may include exercises such as:

- Improvise on beats one and two only.
- Improvise then rest, then improvise then rest (repeat).
- Improvise with a restricted note choice.
- Improvise with a prescribed intensity placements.
- Improvise using only chord tones.

The possibilities are endless, and can be tailored around any specific goals or weaknesses. The use of these restrictions provides a way of directly developing one aspect of improvisational awareness. It is important though to also reintegrate with ‘free’ improvisation to ensure the aspects are realised in a holistic sense. This approach has been part of the researcher’s own approach for some time and informs the way in which the material produced for this thesis was practiced as will be detailed below.

In attempting to recreate and make the process transparent, the term vocabulary seed has been adopted (as explained in chapter four), in an attempt to reposition the material being used away from the trappings and connotations of loaded terms such as lick, phrase, crip etc. Seed, in this sense, is used to emphasise the developmental potential of the material being processed.

In relation to improvisatory strategy, vocabulary seeds could be seen as analogous to low level linguistic constructs, such as phrases, words, phonemes or smaller. They are an example of a particular strategy, which is determined by the improviser/analyst. In part I, the term deployment was introduced as a description for these constructs. The aim of part II and the heuristic study in general, was to reverse this process, finding effective methodologies for developing strategy led improvisation by extracting strategies from deployments found in the work of Krantz and Brecker. The core of VS used for this study can be seen in document A1.2. Figure 5.1.1 shows possible strategic inferences taken from a Wayne Krantz seed:
Throughout the study, continual experimentation, processing and reflection have been used in order to make explicit the elusive processes underpinning the acquisition of high level improvisatory skill by means of strategy manipulation. Processes of modulation and variation formed the core of the development of the seed phrases.

During modulation a seed phrase was refracted through various modulatory possibilities. These can either correlate to the underlying focus of the seed cell or negate it. For example, a melodic seed may be modulated through various common harmonies to expand the usability of the seed in a verbatim sense.
Rhythmic seeds could be modulated through various rhythmic and metric modulations, again to further the understanding and controllability of the seed. Equally however, standard practice in jazz often places harmonic proficiency as a central requirement. It was often the case that the most fruitful of modulations were those of harmonic nature, enabling the researcher to use the phrases over various common harmonic settings. Figure 5.1.2 shows the potential modulations of a harmonic driven seed phrase:

![Figure 5.1.2](image)

**Modal Modulations**
- Modes of major, melodic minor, harmonic minor, and harmonic major

**Chromatic Modulations**
- +/- 12 semitones
- Can be practiced using circle of 5ths/4ths

**Progression Modulations**
- Functional
- Non-functional
- Common repertoire progressions

**Harmonic Modulations**
- Chord type: major, dim, aug, dominant, altered dominant etc.

During the variation phase, the part of the seed carrying the emblematic features of the strategy being pursued was manipulated. For example, in a rhythmic strategy seed focused on rhythmic ‘stretching’, variations are created using those aspects of rhythmic stretching which first piqued the interest of the improviser. This could mean re-ordering the rhythmic stretching components, changing groupings, adding/removing rests, moving placements, elongating the ‘stretching’ or diminishing it among other aspects central to the idea of rhythmic stretching. By manipulating variations in this way, an improviser is able to draw a clearer set of boundaries for how far they producing subtleties or extremities of the strategies being used. Figure 5.1.3 shows the potential variation techniques of a rhythmic stretching led strategy:
The following example (and further examples in portfolio document A2) show the development of seeds, taken from Wayne Krantz’s *Whippersnapper*. Each seed was first modulated, in a multitude of ways to firstly develop understanding of the underlying structures of each, using common modulations to develop the usability of the seed in a verbatim sense, across a range of regularly occurring jazz harmonies and settings. These modulations are not exhaustive, but along with the accompanying audio serve to demonstrate the traditional methodologies often used in pedagogical texts, expanding the use of imitation.

Following modulations, the seed could then be varied in accordance with the strategy being assimilated. For example, a rhythmic led strategy requires rhythmic variation, to determine the boundaries for variation and create an awareness of the possibilities for change within the phrase. In a rhythmic example, the pitches may become completely arbitrary and so may be changed without effect, although there may be cases where it is appropriate to keep the pitch unchanged or at least similar.

Like the modulations, the variations used in the examples below are not exhaustive and merely represent the researcher’s own interpretation and exploration of the material at the time of writing. The way a
variation is created may be down to the individual improviser, equally it is possible that controlled
variations could be used, establishing a core of fundamental variation techniques applicable to each
strategy. The variations below were, for the most part, created through improvisation and
experimentation, and all were produced on the instrument firstly. Some further thoughts for
consideration:

1) The identification and grouping of vocabulary seeds is done in a subjective manner, and it is up to the
improviser to decide how small/large a seed need be. There are no requirements or set formula for
demarcation of seeds, other than an identification of an interesting musical aspect.

2) When considering an improvisatory strategy, each seed may have multiple interpretations as identified
by the analyst/improviser. Where one might find the rhythmic information interesting, another may focus
on the melodic, timbral or physical aspects of the seed. This is, again, determined subjectively.

3) When developing and practicing the seed phrases, it may be the case that the output is not initially
realised in general improvising outside the practice room. This is normal however. Some accounts predict
a gestation period of around three months for optimum assimilation when practiced rigorously (see
McKnight 2012). The researcher found this to be a relatively accurate measurement, however some seeds
and concepts were more easily developed than others and were found to be useable almost instantly.
There are many other cognitive mechanisms at play here, including priming and short term memory
recall. An in depth study of the time gestation of improvisatory assimilation is beyond the scope of this
study, especially due to the lack of rigidity as an inherent feature of the heuristic methodology. This could
be an area of interest and further development for analysts.
Example 1 – Wayne Krantz Rhythmic Strategy: Syncopated 16th Note Playing

Example one shows the development of vocabulary seed 5 (VS-WK5). This is a rhythmic strategy based seed taken from Whippersnapper. The fingering is included to demonstrate the positions being used.

This phrase is particularly emblematic of Krantz’s rhythmic style, in particular the sparser syncopated approach. It is played over a D minor harmony, features chromatic passing tones, and feels intuitively ‘angular’ as far as the rhythmic feel is concerned.

Measures one and three are almost analogous in pitch and contour creating an antiphonal effect when paired with subsequent measures. Measure three takes an even more syncopated approach by anticipating the second note (now played as a diad), and widening the interval leap showing a development of the first measure, further emphasising the angularity.

The final measure also avoids placements on the beat and like the second measure, uses closer intervals. The addition of the b5 here is yet another utilisation of deliberate yet subtle dissonance.

The phrase’s heavy manipulation of rhythmic syncopation feels intuitively fundamental to the construction of this line. Even where harmonic elements provide interesting departures, they seem to do so in support of and to bring attention to the rhythmic structures.

Practicing this phrase was particularly difficult. The switching between on the beat phrasing, to a 16th note behind the beat phrasing in particular, took numerous attempts to clearly articulate.
Modulations

The modulations produced demonstrate the phrase being used over varied harmonies. This could be extended to any chord type or progression that keeps the essence of the seed intact and still directly relatable. In all the modulations, the pitch, contour, and rhythm were kept the same to further imbed the sense of angularity that was felt.

Figure 5.2.2 – Modulation: major 7 chord type (audio track A4.1)

Figure 5.2.3 – Modulation: 7#11 chord type (audio track A4.1)

Figure 5.2.4 – Modulation: altered dominant chord type (audio track A4.1)
Variations

While the aim of the modulations was to introduce the rhythmic led phrase to various other harmonic settings, without changing the structure of the seed, the aim of variation was instead to develop the seed into new phrases whilst keeping them under the banner of the strategy being pursued. In this instance, that meant ensuring the new phrases still had a sparse syncopated rhythmic feel based around displacing 16th notes. In addition, using contrasting elements such as unbroken 16th note lines helped to emphasise the sparse feel when used. The variations below provide only a small number of the possibly limitless variations that could be created. Across the variations, increasing rhythmic density was used to test the how much density could be added before the feel was lost. Some variations include use of open strings in line with other features of Krantz’s playing that were being explored at the time. The penultimate variation also demonstrates using an even less dense rhythm, to further emphasise the rhythmic feel.
Figure 5.2.7 – Variation: further adding material to increase rhythmic density. Open string and diad use (audio track A4.2)

Figure 5.2.8 – Variation: subtle additions to increase rhythmic density (audio track A4.2)
Figure 5.2.9 – Variation: harsher additions to increase rhythmic density (audio track A4.2)

Figure 5.2.10 – Variation: further rhythmic density increase nearly obscuring syncopation (audio track A4.2)
Figure 5.2.11 – Variation: complete obscuring of syncopation with small harmony clusters to give maximum intensity (audio track A4.2)

Figure 5.2.12 – Variation: addition of a 3 note rhythmic sequence in mm:2 demonstrating an placement of a second rhythmic strategy (sequences) within a larger one (broken lines/syncopation) (audio track A4.2)

Figure 5.2.13 – Variation: decreased rhythmic density (audio track A4.2)

Figure 5.2.14 – Variation: further decreased rhythmic density (audio track A4.2)
Figure 5.2.15 – Variation: formal reordering of rhythmic cells (audio track A4.2)

The example above (and in portfolio document A2) shows only a small selection of possibilities for development of improvisatory material, through the considerations of strategies for improvisation. In the first example alone it has been shown how one small idea was developed using particular mechanisms and techniques to yield a substantial amount of useable material:
Fig 5.6 - Overview of the expansion possibilities from example 1
Further examples of seed development have been included in the portfolio (see document A2)

The challenge for the improviser lies in identifying suitable material and being able to effectively develop and practice modulations and variations to increase the population of not only their vocabulary of improvisatory phrases, but their vocabulary of improvisatory strategies. In doing this, an improviser may be able to develop a more malleable approach capable of tailoring phrases in real time to create musical coherence and narratives far beyond the possibilities of the stringing together of individual phrase vocabularies.

The development of material in such a manner creates an awareness of strategic generation and allows improvisers to focus on planning and shaping improvisation as a whole. It also provides a way of isolating emblematic aspects of style and identity that can be drawn from the phrases and improvisers being analysed. The process need not be exhaustive and may be tailored to the interests and direction of the improviser’s own choosing.

The researcher’s experience using the practice methodology with the many seeds mined from Wayne Krantz (see portfolio A1.2) has revealed the qualities of practicing and developing materials in this way:

1) It is not guaranteed that the material practiced will assimilate easily or at all. Some seeds had very strong implications on the researcher’s improvisatory approach even from initial engagement of practice. Others, even after creating and practicing many variations, had little observable effect and were not detected in following improvisations. That being said, it is perhaps unfair to dismiss the validity based on observable effects. For instance, practicing the example above may have led to a deeper intuitive and implicit control of rhythmic nuance.

2) The assimilation time did vary between seeds, however seemed to correlate at least partially with the researcher’s own interest in the specific strategic category or output. For instance the use of open strings as an instantaneous way of sounding like Krantz, became a fixture from first identifying the feature. Similar things happened with close harmony playing, harmonic superimposition and using heavily syncopated and broken 16th note lines, all of which had not been a regular part of the researcher’s approach before the study.
3) Some strategies are more readily assimilated. Timbral and dialogical strategies were perhaps the easiest to assume control over as these seemed far more conceptual and thus required less development in terms of skill and application. Melodic/harmonic and rhythmic strategies were a lot harder to develop. For instance, using bends as a dialogical marker for ensemble use is as direct at it sounds, provided you know how to bend a string. Using rhythmic stretching on the other hand proved difficult as it required the testing and practicing of many unnatural feeling rhythms, which required new skills and knowledge be developed to allow a greater malleability in variation. The same spread of difficulty may be observed within a strategy also. Some melodic/harmonic concepts, such as chord tone soloing may be easier to develop for improvisers who have worked on this approach to some degree before (most jazz improvisers will be more than familiar and versed in this), whereas a technique such as harmonic superimposition requires the improviser to get used to the new sounds, the techniques involved in creating them, and the effective phrasing and placement of the technique to make it musically coherent.

4) The methodology can tailor an approach directly and consciously. Should an improviser already have an idea of a particular ‘sound’ or style they wish to emulate, they can choose appropriate seeds to focus on. This builds a dynamic vocabulary which has boundaries within an idiom, as set by the seeds they choose to develop. For example, should an improviser wish to become a proficient bebop player, they may choose melodic/harmonic strategies as a core principle for development, focusing on chord tones, chromatic enclosures and altered harmony embellishment, whilst also practicing using only 16th note or 8th note unbroken lines.

5.2 Improvisational Strategy Etudes

The 24 improvisational strategies set out in chapter four were practiced and developed to give example of how they might be used, and what they might produce, in relation to the researcher’s own improvisatory approach.

24 Improvisational Strategy Etudes Outline

5. **Rhythmic Strategy – Rhythmic Motif 1:** Fixed rhythmic idea soloing.
6. **Rhythmic strategy – Rhythmic Motif 2:** Fixed rhythmic improvising with displacements.
7. **Pitch Strategy – Open strings 1:** Adding open strings to widen intervals.
8. **Pitch Strategy – Open strings 2:** Inverted pedal use.
9. **Pitch Strategy – Open strings 3:** Motifs and variations, adding open strings and diads.
10. **Pitch Strategy – Lines 1:** Contrasting idioms: bop to rock.
11. **Pitch Strategy – Lines 2:** Harmonic looseness: transitioning from scalar/key based ideas to chromatic to unanchored chromatic playing.
12. **Pitch Strategy – Palette soloing:** Using restricted intervallic choices while improvising.
13. **Pitch Strategy – Palette soloing 2:** using and alternating between multiple intervallic choices.
14. **Pitch Strategy – Palette soloing 3:** Integration of palette soloing using other intervallic constructs (symmetry, superimposition, pentatonic, arpeggio, or scalar).
15. **Pitch strategy – Close/wide study:** Alternating between close and wide harmony use.
16. **Pitch Strategy - Brecker’s harmonic superimposition 1:** Using T1, T2, T3, T4, and T5 shifts.
17. **Pitch Strategy - Brecker’s harmonic superimposition 2:** Free use of shifts adding in functional momentum orientation.
18. **Dialogical Strategy – Quotations 1:** Using intertextual references and allusions.
19. **Dialogical Strategy – Quotations 2:** Using intratextual references and allusions.
20. **Dialogical strategy – Markers:** Using bends as intensity and form markers.
22. **Timbral Strategy – Technique allusions:** Using specific idiomatic techniques or negating.
23. **Physical Strategy – Licks:** Inserting licks using pattern based procedures.
24. **Physical Strategy – Symmetry:** Displacing phrases in various symmetrical movements.

Recording these etudes was done without constraints, to promote creativity and complete malleability where necessary. For the most part, this was achieved in two ways. Firstly, each etude was recorded three times (with or without a metronome). The best of the three, as chosen by the researcher, was included in the submission. Following this, a secondary set of recordings were produced, demonstrating the strategy in use over a backing track, some of which are included in the portfolio. In retrospect, a further stage could have been added, demonstrating their use within a live ensemble, which would have yielded greater development of dialogical and ensemble dependent strategies. In an effort to remain concise, this stage was omitted, although could provide an interesting development for research in the future. The full set of improvisational etudes and recorded examples are contained portfolio B.

The following examples demonstrate three of the improvisatory etudes outlined in the portfolio and discuss the recorded output, reflections and implications of each.
This etude focuses on developing rhythmically broken lines, with heavily syncopated feels. It was adopted as this was found to be one of the main concepts used by Wayne Krantz in his approach, and is particularly useful if trying to move away from more traditional jazz line styles which favour long unbroken and constant 8th/16th note phrasing. Conversely, an improviser who finds it hard to maintain
longer unbroken phrases may use this develop their longer lines too, by placing an emphasis on that as 
the primary strategy. As can be seen in the above diagram, the instructions for improvising include 
alternating between playing long unbroken rhythmic groupings lines, and adding rests/breaks to the lines 
to create a contrasting rhythmic feel. The two types of dotted lines represent a moderately broken 
rhythmic feel and a more heavily sparse rhythmic feel with even more line breaks and rests.

Etude 3
Audio track B8

While the etude prescribes five different ways of developing this strategy, audio track B8 demonstrates its 
use in a free sense, allowing the improviser to use each of the three differing rhythmic feels as they like.
The transcription in Figure 5.7.2 shows the first section of the audio track, which clearly demonstrates the 
demarcation between these rhythmic feels. As can be seen, the unbroken section lies mainly in measures 
2-4, with the broken feel continuing from measure 5. Measures 10, 13 and 14 demonstrate an even 
sparser approach. See audio B7-9 for more examples of how these strategies might be used.
The etude above, demonstrates a way of placing focus on interval space and perceived awareness of close and wide harmony use in improvising. Each of the three prescribed exercises offer a different type of manipulation and control level. In the first, the improver should create a contrasting close and wide feel in terms of intervallic relationships. This might mean playing particularly scalar/sequentially during the former and using much wider intervals in the latter. The choice of width is up to the improver. The
second example attempts to build in to, and out from, close/wide alternations of pitch. The focus in this may lie in gradually building or lowering the interval spacing used as focus within lines or ideas. The third example continues this concept, however offers three differing levels of distance to work with, some of which are approached gradually, and some suddenly. It is important to note that with all the etudes, there is no timeframe, metre or phrase length which must be adhered to complete the etude, however should an improviser wish, they could impose this for further control.

This transcription shows the first twelve measures of audio track B48, an example of exercise 1 of the pitch etude discussed above. Measure 9 marks the change of the interval focus to a wider focus. For more examples of this and the other examples see audio tracks B48-51.
Example three – Dialogical etude (Audio track B58, B59, B60)

Etude 18: Quotations 1
Using intertextual references and allusions

Figure 5.7.5 – Using quotations etude

In this etude, the improviser uses a quotation (as defined by the quotation types in the key above) in one of three ways; direct quote; partial quote/development; concept abstraction (i.e – interval set/rhythm).
Audio tracks B58-60 demonstrate this in use. In each of these audio tracks used for examples the following phrase, a common phrase often known as ‘the lick’ is used.

![Figure 5.7.6 – ‘The lick’.

Audio track B58, demonstrates improvising as normal, with a focus on placing the quote at various points. The focus of development here should be finding ways of building into and out of the placement of the quote, to create coherence. In practice, the use of a quote has many purposes as explained in the etude key. Placing it in what may seem an inappropriate place may also be valid, if the aim is to create humoristic dialogue within the ensemble and audience. Quotes may also be used directly, as a sign of appropriation for another improviser or ensemble member among other dialogical functions. Audio track B59, shows the development of the quote varying the rhythm, modulating, adding repletion or filtering through another device such as superimposition (see B59 - 0:34). Finally, Audio track B60, shows the development of the quote away from the initial, which may involve further variation/expansion to the point where the original quote may not be recognised.

The examples above, and the remaining 21 etudes/accompanying audio in portfolio B, offer a novel way of practicing improvisational strategies. Omitting pitch and rhythmic data allows the improviser to use their own knowledge base to develop strategies, as opposed to being primed with another’s vocabulary, which may be unfamiliar and obscure the focus of the exercises. Another improviser using these etudes is likely to produce vastly different improvisations, than those given as examples, based on their own knowledge bases. The etudes do not mean to devalue the normal methods for learning jazz improvisation, in particular the vocabulary and syntax needed to converse within the idiom, but instead aim to provide a more robust way of developing phrasing, idea generation, and development by means of improvisation strategy. While the etudes presented in this portfolio focus on individual strategies and development of specific deployments of these, etudes could of course be designed using multiple

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60 The ‘lick’ is a common 7 note motif, which is used heavily across many styles and improvisers and as a recurring melodic feature. Within the jazz community it became humorous to use ‘the lick’, after videos were released showing this wide use from everyone from Dave Brubeck, John Coltrane and Michael Brecker, to Christina Aguilera, and popular television/film scores.
strategies creating a type of improvisational ‘assault course’. At a higher level an improviser could also practice global plans for constructing improvisations as whole. For instance, an etude could direct the improviser to direct density or intensity using novel ways of representation to be interpreted as the improviser sees fit. Further study could include testing this by presenting a group of different improvisers with the same etudes and comparing the results.

5.3 Holistic Improvisation Practice

During the study, regular practice recordings were taken. While this process yielded hundreds of hours of practice material, a selection has been included within the portfolio (see portfolio C) to demonstrate the range and variety. Due to the size of the portfolio, an analysis of each of the included recordings would be cumbersome and would shift focus from the general development of strategy and improvisatory approach. The reader may use this portfolio to get a sense of the various stages of practice and development of material as carried out by the researcher, in addition to forming a wider understanding of the researcher’s style and approach. Some integral themes and observations will now be discussed.

Individual practice was documented by means of recording improvisation practice regularly. This ranged in detail and goal from specifically directed improvisation, using controls drawn from the improvisational etudes or vocabulary seeds mined throughout, practicing within a particular harmonic context, or practicing freely without any constraint.

Practice often included the development of specific seeds using a range of approaches. Further to the seed development outlined in section 5.1, improvising with the intention of integrating the seed was carried out extensively (see tracks C4-C6). Track C1-C3 demonstrate how specific strategies can be used to transform other phrases. In this case, a Wes Montgomery phrase is developed using a Krantz inspired rhythmic feel and the use of open string textures. Refinement of this process over time made it easier to develop real time abstraction and development of a strategy or concept during improvisation practice (See tracks C7-8).

Track C9-C14 demonstrates the use of a taking the more general approaches to rhythmic strategy used by Wayne Krantz (broken rhythmic phrasing and heavy syncopation), applying this to a more traditional functional harmony (ii V I), expanding the possibilities for the strategy beyond the contexts found in
Krantz’s approach. Further practice was undertaken to develop strategies and concepts and their use in different contexts including playing over standards *All Blues* (track C15), *All of Me* (track C18) and *Stella by Starlight* (track C16-17).

Generally, individual improvisation practice focused on developing specific strategies gleaned and practiced through the earlier seed and etude stages, in a more coherent and holistic manner. Portfolio C demonstrates a range of harmonic and rhythmic strategies and their practice development, along with a range of regularly recorded free improvisation practices. As was set out in the previous chapter, reflective methodologies were used to review the successfulness of the improvisations, however think aloud protocols were also used in an attempt to describe the thought process and direction consciously experienced by the researcher (see track C40).

Gigs were also recorded where possible. To keep continuity, it was necessary to limit the material in the portfolio to contemporary jazz/jazz fusion based music, as the other musical scenarios the researcher operates in (straight ahead jazz, gypsy jazz etc.) were incoherent to this narrative. The strategies and approaches mined and developed in the work of Krantz and Brecker in chapters two and three, are realised more readily in similar contexts. Other musical contexts did not afford the same creative expression to be able to use these, however some elements, such as the use rhythm and superimposition had an obvious impact on the way other contexts were approached and conceptualised too.

Tracks C47-C59, recorded at a jam night, demonstrate a range of approaches to various common standards. These were all recorded at different times and as such the variety of approaches reflects this, as the researcher’s approach developed. For example, in tracks C47-52, the approach is very dense, very linear, straight-ahead in nature, and mostly devoid at the Krantzian approaches being practiced at the same time. Despite regular practice, the concepts mined and practiced in the rehearsal room, were still very cursory in nature, and seemed to disappear altogether in live performance. There are some fragments which begin to emerge however, such as a harmonic superimposition device which became a thoroughly integrated part of the researcher’s approach as will be shown (see audio track C49, 01:48; C52, 0:55).

Track C55, recorded one month later, and demonstrates some new emerging approaches. The inclusion of diads or larger chordal ideas are present, sometimes with open string inclusion, a concept worked on
thoroughly in the seed development and etude stages (see C55, 0:03; 0:54). In addition to this use of harmony led strategy, the close voicings favoured by Krantz also started to appear (C55, 01:15).

Furthermore, a range of other strategies were beginning to emerge, such as the beginnings of more broken lines and syncopation (0:15; 0:35), wider interval focus (0:40; 0:49), and harmonic superimposition (0:34; 01:08). While these aspects were emerging, the solo was still for the most part held together with an overly linear/traditional approach.

The remaining tracks C53-54 and C56-59, recorded again months later, show even more integration of concepts mined and developed in the earlier stages of the methodology. This culminates in Track C53, Hottentot, which shows a far more angular approach, regularly incorporates open strings (02:22; 02:30; 02:41; 02:57; 03:31; 03:35), broken lines (throughout), quotations (04:22), chordal improvisation (02:57; 03:32; 03:36), outside harmony/unanchored harmony (02:26; 02:30; 02:40; 03:26), and superimpositions (02:49; 03:34). In addition to this there is far more rhythmic strategy focus throughout. While long 16th note lines do still dominate, they are now far more broken, moving closer to the rhythmic feel favoured by Krantz. This culminates towards the end of the solo, with the addition of the ring modulator. There are also multiple instances where the ensemble effectively responds to some of the rhythmic figures used by the researcher (03:04; 03:38; 04:23).

Finally, tracks C60-C65, show the rehearsals for the studio recording. These were recorded far later in the year than the previous tracks, and as such exhibit a much heightened sense of the concepts pursued in the previous stages.

5.4 Trio Project (Portfolio D)

5.4.1 - Background

Recorded in May 2016, a final documentation of practice was created in the form of a studio recording session. The ensemble consisted of a trio (electric guitar, electric bass, and drum kit). The three pieces recorded were loosely based around contemporary jazz fusion, as was detailed in chapter four (see section 4.8). The purpose of this project was to identify the effect of the research and practice conducted by the researcher. It was above all, exploratory in nature and no specific controls were put in place. The pieces each feature different platforms for improvising and enabled the researcher’s use of strategy in real time.
to be examined retrospectively, with a clearer view on intentionality than was possible looking at the work of others. Each of the three pieces were recorded with three or four takes for comparison, and as a whole demonstrate a number of features and observations:

- The researcher’s use and tendencies of improvisatory strategy.
- The researcher’s use of pre-existing vocabulary.
- The identification of derivative phrases mined from Wayne Krantz’s seed phrases.
- The identification of novel phrases, evaluated as appropriate for cyclic processing (TW seeds).
- The effect of ensemble on improvisatory strategy.
- The use of other generative mechanisms in places.
- General tendencies of the researcher’s improvisatory approach.
- Specific cognitive events where realised, and conscious/unconscious awareness.
- Successfulness and evaluative process within the improvisations.

5.4.2 Event Analysis of Project Audio

Time-event based analyses of *Is Something I Don’t Understand Yet* Solo 1 (Audio track D2), *Steroids* (Audio track D5) and *Outburst* (Audio track D8) were created. These demonstrate the first stage of post recording reflection.

The following analyses represent a small selection of the recorded output in portfolio D. For succinctness, the track *Whippersnapper* is used as an example, although reference is made to the other tracks where necessary in the general discussion that follows in section 5.4.3. Further event analysis for tracks D5 and D8 can be seen in portfolio document D2. The included tracks were chosen by considering what the most successful take was, the level of understanding obtained through reflection, and whether the take included enough interesting material to discuss. Again this is not, nor should it be, the role of an analyst to create a hierarchy of quality. All of the selected takes exhibit interesting elements and represent a wider holistic approach when considered together. The novel TW seeds mined in the examples below are not exhaustive, and have also been compiled with transcriptions and descriptions in portfolio (document A3.4 – Tom Williams’s seeds).

The analyses below are also subjective, and formed out of a reflective description and evaluation of the improvisations as they unfolded. To do this, notes were made about the successfulness and general thoughts on the improvisation from a variety of perspectives, almost immediately after the take had been undertaken.

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61 Considering phrases and material which are the researcher identified as part of vocabulary, before this study was undertaken.
recorded, whilst listening back. Following this, during the next phase of analysis, the descriptions and notes were expanded. Each event/phrase is defined by the researcher’s own interpretation and understanding of events. In each instance what felt to be the guiding strategic principle was used as prefix (for example (strategy>deployment>sub-deployment) etc.). If it was felt that an event or phrase had multiple interpretations or strategic inferences a secondary/tertiary identification was added. In addition, a colour coding or letter identification was added where necessary following each event: Green: directly relating to a seed in portfolio A (see A1.2); blue: novel TW seed phrase; red: pre-existing knowledge base lick or phrase.

The identification of links between Wayne Krantz seeds (VSWK1-60 – see portfolio A1.2) and the improvisations recorded during this project was paramount to assessing the successfulness of the methodology. As the event analyses were constructed notes were made on the phrases that felt intuitively familiar, or those which had clear lineage to the vocabulary seeds worked on initially. The vocabulary seeds were revisited, before a second review of the audio took place, to identify further uses of these phrases. The process is not exhaustive or definitive, however does provide a number of coherent examples which demonstrate the development of material from initial inception to use in this recorded project.

The TW seed phrases were identified as novel phrases that can be seen as amalgamations of Wayne Krantz seeds, the researchers own knowledge base and other external impetus. These can be seen as having mutated beyond being malleable variations on previous seeds, and are instead now unique entities of their own, worthy of isolating, analysing and recycling through the same methodologies to expand and develop the interesting features inherent inside them, as identified by the researcher.

Finally, the event analyses, descriptions, and coding were all compiled into the graphical representations, which are constructed using the same format as originally used for the comparative analysis in chapter 3. The graphical representation for Is Something I Don’t Understand Yet is shown in figure 5.8, giving indication of how the abstraction of the improvisations to strategies and deployments was achieved.
Is Something I Don’t Understand Yet analysis (audio track D2)

### Section 1

- **0:17 – mm 1-2** - *(Pitch strategy>scalar>pentatonic)* begins with minor pentatonic, brief open string addition, moving up to chordal stabs.
- **0:22 – mm 3** - *(Pitch strategy>close Harmony)* – let ring chord builds. Krantzian feel (A – VSWK45 – Audio track A2:02:57)
- **0:24 – mm 4** - *(Rhythm strategy>fixed rhythm>sextuplets & blues rock strategy>harmonic>pentatonic)* minor pentatonic descending sextuplet sequence.
- **0:26 – mm 5** - *(Rhythm strategy>fixed>polyrhythm>4:3 & pitch strategy>open string use & physical strategy>contrary motion shape)* polyrhythmic 4:3 fixed rhythm pattern using contrary motion shapes with open strings ‘inside’ (TW1)
- **0:28 – mm 6** - *(Pitch strategy>line playing & partial chromatic use)* Freer chromatic descending line (unbroken rhythm).
- **0:30 – mm 7-8** - *(Pitch strategy>open strings for wider harmony)* Chordal idea with open strings, into Krantz feel ‘pull off’ phrase (A – VSWK58 – Audio track A2:04:29).

### Section 2

- **0:53 – mm1-6** - *(Pitch strategy>chordal>fourths)* fourths style chord phrase moving outside harmony, slowly building to a staccato ending.
- **01:08 – mm 7-8** - *(Pitch strategy>blues rock>pentatonic & pitch strategy>open string diads)* pentatonic/blues into open string let ring harmony.
- **01:11 – mm 9-12** - *(Rhythmic strategy>broken line & pitch>wide intervals, pitch>open strings)* starts with a triplet (common TW), into broken line, rhythmic led, rising into wider interval jumps, another triplet at 1:15, then adding open strings – successful at building tension and rhythmically ‘stable’.
- **01:21 – mm 13-15** - *(Pitch strategy>harmonic superimposition)* starts with harmonic superimposition, Major triads descending m3rds (Eb-C) (B). *(pitch Strategy>chordal & dialogical strategy>intratextual reference)* Phrase carries on with a chord phrase referencing the staccato part earlier (A – unidentified, but feels particularly familiar/Krantzian).
- **1:26 – mm 16** - *(Pitch strategy>line playing (unbroken)>bop heritage)* dorian led descending phrase with some chromatics, unbroken (bop heritage).
- **01:28 – mm 17-18** - *(Pitch strategy>chordal & pitch strategy>blues rock>pentatonic)* chordal building references rhythm at 1:03, followed by pentatonic descending phrase.
- **01:32 – mm 19-20** - ascending minor 7b5 arpeggio (pre PhD lick).
- **01:37 – mm 21-22** - *(Pitch strategy>chordal>close harmony)* chordal, using close harmony references rhythm at 1:03, followed by close harmony motif.
- **01:41 – mm 23-24** - *(Pitch strategy>scalar focus with functional chromatics)* descending dorian centred line with chromatics, then ascending. Unbroken rhythm.
- **01:46 – mm 25** - *(Dialogical strategy>form marker)* bend signifier (VSWK1/15/21/59).
- **01:47 – mm 25-26** - *(Pitch strategy>blues rock>pentatonic)* pentatonic line.
- **01:50 – mm 27-28** - *(Pitch Strategy>open string use & Physical strategy>contrary motion shape)* (TW2) contrary motion, open string shapes for 2 measures.
- **01:53 – mm 29-32** - *(Timbral strategy>open strings>string skipping)* Wayne Krantz inspired timbral strategy, used with antiphonal phrasing, developing intensity towards end. (VSWK19/20/58)
- **02:02 – mm 33** - *(Dialogical strategy>form marker)* Bend signifier (VSWK1/15/21/59).

#### Section break

- **02:03 – mm33 – 34** - *(Pitch strategy> line playing)* chordal hit – into descending chromatic phrase.
- **02:06 – mm35 – 36** - *(Pitch strategy>note palette)* pitch palette focus – R, b3, b5 loosely.
- **02:10** - *(mm37-39)* - *(Pitch strategy>scalar superimposition using fixed interval pair…. Also a physical strategy>two part positional shifts>+1+2+1+2…)* moving 6ths, at first to incorporate b5, then
continuing for harmonic superimposition of a half whole symmetrical movement. (TW3).

- **02:17** – mm 40 - *(Pitch strategy> blues rock)* blues rock pentatonic phrase to finish.

**Section 3**

- **02:19** - mm1-2 – Composed.
- **02:23** – mm3-4 - *(Rhythmic strategy>broken line)* phrase triplet start, into broken line playing, triplet rhythm returns at 0:27, register change.
- **02:28** – mm 5-6 - *(Rhythmic strategy>broken line)* chordal high part – broken line playing, triplet returns at 02:29.
- **02:33** – mm7-8 - *(Pitch strategy> blues rock & contrasting idioms, considering previous lines)* blues rock pentatonic descending line, finishing with close harmony diads.

**Section 4**

- **02:37** - Mm1-2 - Composed.
- **02:41** - mm3-4 - *(Timbral strategy>open strings & pitch strategy>wide intervals)* again phrase begins with triplet rhythm, open strings, moving up register with wide interval strategy (mm 4 repeats rhythmic/contour of mm3 while ascending - associative chain), intensity increasing. (A) (TW4).
- **02:46** – mm5-7 - *(pitch strategy>note palette)* Dominant palette focus – R, 3, 4, 5, b7.
- **02:50** – mm 8 - root – 3rd alternate.
Figure 5.8 – Strategy coding of studio project recording – *Is Something I Don’t Understand Yet*
By drawing from the above analyses and reflections, an understanding of the effectiveness of the methodology can be seen. It is evident that strategy based mechanisms are in use, many of which directly relate to the strategies drawn from Krantz’s solos discussed in chapter 3.

5.4.3 Observations and Reflections

Reflecting using both Gibbs and John’s (2000) models of reflection, has given introspective and illuminating perspectives on this final project, its relation to the previous portfolio elements and thesis as a whole. A series of considerations informed the following sections reflections, which highlights some of the most focal aspects of the project in terms of what happened, how I felt about the improvisations, my awareness and lack of awareness of the processes as they unfolded, and evaluations of the tendencies arising from comparisons of approach.

Generally, due to the sheer quantity of material generated and subsequent analyses and reflections, only a small portion are included, although all the audio recorded is included in portfolio D. The reason for this is twofold. Firstly, a complete analyses of everything played, would require multiple analysis methodologies, transcriptions, and reflections. The sheer volume this would occupy would alone obscure the point of this study, which is to evaluate whether the pedagogical methodologies outlined in chapter 4, are capable of allowing an improviser to augment, improve and direct their use of improvisatory strategy and approach. This is shown both above, in the event analyses, and below in the reflections, considering examples which clearly demonstrate these aspects. Secondly, as has been stressed throughout this thesis, the process by which an analyst/improviser goes about identifying and developing improvisatory strategies is, to an extent, interpretive. The decision to include the complete audio recordings, both of this project and the HIPs recordings, was to allow the reader to form their own relationships, observations and analyses through listening and allowing elements which felt intuitively important or guiding, to be brought forward. A separate reading of the audio by another individual may produce another set of interesting vocabulary seeds/strategic approaches, which resonate with that reader’s evaluation of the improvisations, different from those presented.
**Tendencies and Strategy**

The above analyses and project audio reveal a number of tendencies in my improvisations. It was evident that there were many phrases being played which had direct correlation to the seeds mined and developed in portfolio A (as discussed in 5.1).

Like Krantz, there seems to be an overall dichotomy of rock/blues pentatonic style playing vs a more linear/traditional jazz inspired approach (see 5.4.2). There are many instances where typically ‘bop’ or jazz heritage playing is contrasted with minor pentatonic lines with typical blues/rock phrasing. This dichotomy can exist in both large and small forms, both from a sectional and individual phrase perspective, respectfully.

My own development is grounded in a contemporary approach, with blues/rock forming the foundation I built and explored around. To this end, many of the blues/rock phrases feel typically less taxing, in terms of cognitive demand and facility. At times this may present in physically led phrases, and is for the most part unconsciously controlled other than the initial engagement, whereby I engage ‘safer’ or more familiar focus that comes with this. Initially, I considered this as unimaginative in terms of approach and that it perhaps signalled a weakness in my ability to develop new material, instead falling back on old patterns, phrases, and the pentatonic textbook many contemporary guitar improvisers are imbued with.

Reflecting though, in many ways this process is integral to a coherent and strong improvisation. Where I use this type of playing which is perhaps ‘safer’, in the sense of being less susceptible to error, easily controlled and more easily enabling flow, it seems to act as a buffer, enabling my improvisations to continue and develop coherently, without interrupting flow.

Perhaps it is the case that we all have knowledge bases with centrally held material that affords us the ability to continue generating material. Even where these moments of flow take over and seem to realign the strategies being used, the overall coherence of the improvisation does not necessarily end up broken, sometimes with earlier material, themes and concepts being revisited and developed after these episodic breaks or buffers are used. Considering the alternative, without my reliance on a solid foundation of acceptable and palatable strategies, such as the pentatonic led blues/rock material, I may end up with a less stable output with continual gaps in flow, which prevents larger scale global plans and strategies from
being realised, such as the building of intensity, dynamics, harmonic altitudes (Mermikides 2010) etc. That being said, the impetus behind developing an approach, may be entirely based on realigning new strategies and approaches to take the place of those which may be identified by the improviser. I may for example, choose to consciously avoid pentatonic led blues/rock phrases altogether, in an attempt to at least soften my reliance on them as strategic buffers. For me at least, it demonstrates in my playing that I do have a reliance on certain strategies, which are often commanded implicitly and guided instead by a drive to progress the solo, affording me time to assess and evaluate the direction I need to move towards, in order to do so. This presents a possibility that every improviser has an internal hierarchy of preference, stability and control they may engage through the use of particular strategies in order to help maintain flow where necessary, even if that means falling back on strategies which may seem at times less inspired or developmental.

Some of the seeds had been assimilated completely, and often used as platforms for improvising around. Notable examples include the closely voiced chord voicing (VS-WK45 – Audio A2 -02:58) which appears continually across all three pieces (see audio D1 – 02:51, 03:43; D2 – 0:22, 01:36; D5 – 01:33; D8 - 03:04); the timbral/physical led phrase mined from Krantz (VSWK14 & 19 - Audio A3 -04:18, 04:47), used in various ways (see audio D1 - 04:15, 05:27). These seeds are examples of phrases which are now being used within my own approach in a malleable way, but are still recognisable and relatable to the original phrases mined.

On a higher level, many of the concepts underlying the strategies uncovered in the Wayne Krantz analyses and seeds have also been absorbed. For instance, the use of ambiguous and heavily chromatic broken 16th note lines; the dialogue between bop/traditional jazz based lines and rock heritage playing; and the blurring of chordal/single line playing to a more integrated approach all now feature as available strategies.

Most pertinently though, the use of open strings, a relatively unique approach very much part of Krantz’s identify, has been adopted heavily. This is presented in many ways, the use within linear playing, chordal playing and often as a way integrating a particular timbral effect. The trio format of this project, lent itself
well to the development and use of open strings in a variety of approaches, enabling a way of making the
harmony and overall texture thicker.

The harmonic superimposition concepts mined from Brecker now appear regularly in my improvisations.
While these are still at a rudimentary stage in comparison to Brecker’s used of them, certain strategy
deployments are continually revisited. Some of these are shown in the preceding event analyses, but
further examples can be found across the alternate audio takes for this project and across the HIPs audio
generally.

Not all strategies reached the same level of integration and control as others however. For example the
use of harmonic superimposition identified in VS-TW7 (see portfolio A3.4), used multiple times
throughout the recordings, is for the most part quite static in construction and tends to follow the same
starting point, following a physically led pattern for the most part, and is in all instances descending and
similar sounding. On reflection, while this deployment of a harmonic superimposition is effective, it is
still in a cursory stage, and would benefit from being developed through the processes outlined in this
study. This cyclic processing is shown in section 5.4.4 below.

In addition dialogical strategies, such as the use of bends as formal markers (first identified in Krantz –
VS-WK1, 15, 21), have also been adopted, as can be observed in audio track D2 (01:46, 02:02). During
track D1 (04:48), a type of chordal punctuation is used to mark the sectional break. It is difficult to know
in retrospect whether this was done entirely intentionally, however the need to establish a clear
demarcation between sections was felt during improvisation and at very least, this provides a further way
of developing dialogical marking strategies/deployments. Intratextual referencing is used too, where a
phrase, idea or concept is continued from earlier in the solo (see audio tracks D1 – 03:48 (2 note motif
referencing 03:39); D2 - 01:21 (referencing chordal staccato phrase developed in mm1-6 – 00:53)).
Furthermore, elements of dialogical humour were used through the use of a common phrase (often
referred to as ‘the lick’62) in multiple instances. It was first used briefly in track D1 (04:43), however
appears again in audio track D9 (02:08), used multiple times, and combined with harmonic
superimposition (sidestep displacement), to overstress the humour. It was used once again during the

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62 See page 206
guitar and bass trades in Outburst (track D9 – 08:54), played multiple times to engage dialogue with the bass, although unsuccessfully (During recording it was noted by others, with humour, that the phrase had been played multiple times). The effects of this and other dialogical material in respect to ensemble interaction will be discussed separately below.

During the initial engagement of this study, I was unsure of what the outcome would be, or if there would be any discernible traits that would help qualify and quantify the methodology used. I was quite concerned with my ability to assimilate and sound like Wayne Krantz, adopting his vocabulary, approaches and tendencies within my own practice. While there were many elements of the output that demonstrated a clear and what might considered successful end to the assimilation of Krantz’s approach, there were many elements which aligned themselves differently. One particular aspect was my developing approach to rhythm. In many ways, I was able to absorb and apply many of the rhythmic strategies gleaned from Krantz. The rhythmic stretching was incorporated; the broken rhythmic feel was applied to longer lines; rhythmic displacement was used, as was the overall approach to fluctuating rhythmic densities and pure rhythmic pitchless improvisation. Despite this, evaluating and coding my own improvisations, the rhythmic elements did not bear the same nuance and foregrounding presence as Krantz’s playing does. This was, and still is an aim, for my improvisational development, and there are perhaps a number of reasons why the level of rhythmic led strategies is weaker in my own development.

Firstly, my approach was wide reaching, and contained a vast amount of material, uncontrolled in size and open to what felt intuitively right to explore. By Krantz’s own admission, rhythm is at the forefront of his approach and creative pursuit. His practice focuses heavily, and often solely, on this aspect, and has been developed over a much longer period of time, in a more controlled manner. Secondly, as many other aspects of strategy development were being developed, there were many other interesting approaches to absorb in relation to pitch, timbral, dialogical, and physical strategies, which in addition to broadening the methodological approach, further limited the time available for developing such a rhythmic nuance.

Moving forward, limiting the scope of the methodology to rhythmic led strategies only may help curate the deeper level of rhythmic control I felt was not as realised.
In general, the improvisations included are very dense, with all kinds of strategies and approaches. One aspect which was not explored in the improvisational etudes was playing sparsely with a rhythmic led approach exclusively. This now seems prevalent for future development.

On the whole, the variety of strategies used tended to differ depending on the context. The static and open contexts of *Is Something I Don’t Understand Yet* and *Outburst* seemed to provide a greater platform for development and variation. The 12 bar blues form piece *Steroids*, was led more by a pitch based precedent. On reflection, there was pressure in this setting, to make the changing harmonies more pronounced, which perhaps explains this. In order to be ‘interesting’, focus was often placed on using advanced harmonic principles typical of this style, such as the adoption of Lydian dominant as a focus over the IV chord, altered scale over the V chord and continually need to reinforce the chord tones. This led to a more linear approach overall, with what seemed like less experimental and varied rhythmic and timbral ideas as is seen in the other pieces.

On reflection, an area of practice development I will focus on, will be the development of rhythmic strategies over a greater range of harmonic contexts, with the blues as a starting point. This may be symptomatic of the limits of this study, relating to the development of the seeds, etudes and hips over mostly static harmonies. In addition, for the most part, the contemporary jazz/fusion contexts I find myself most drawn to, are those with ambiguous and open harmonies, as these allow for greater use of concepts such as harmonic superimposition.

The reflection process demonstrated many tendencies that I was completely unaware of also. For example, I often start a phrase or line with a triplet rhythm, creating what now feels like a rhythmic ‘push off’. While this can be effective at times, providing an interesting platform to bounce off, it also feels overused, like a twitch response in part. Revealing aspects like these enable an improviser to consider how they might control, develop or remove aspects of their approach altogether. To this end, I have reversed the process of knowledge acquisition, to make what was seemingly undetected and cognitively automatic/implicit, now explicit. It may now be appropriate to develop this aspect, perhaps finding ways to manipulate the triplet rhythm, elongate its use, displace it, or practice improvising consciously without
it. The rhythmic effect caused by this rhythmic ‘tic’, is one that may also now be engaged consciously as a strategy, evoking the particular improvisational approach/identity as recorded during this project.

Even as my approach changes through continual development, subtle nuances like this which may form a part of an improvisational identity, need not be forgotten or eschewed, but instead logged as a useable strategic approach from which to draw from. For established and expert level improvisers of high repute, engaging an earlier identity trait in this way, may take on more significance and meaning, through the appropriation of an audience familiar with their development and stages, using it to invoke nostalgia, reference and humour.

There were also instances where clear and direct use of the lick assembly pathway was used. As has been mentioned, certain strategies, such as the harmonic superimposition (VS-TW7) given above, produced very similar lick like phrases, which have not yet moved past explicit use. Furthermore there were notable instances of phrases which appear in my playing before this study, which have similar constructions and are also restricted in their malleability. An example of this can be found in track D3 – Is Something I Don’t Understand Yet alternate solo 2 - 01:52, where I play an ascending major 7 arpeggio, using a combination of a sweep picking and economy picking. This phrase in particular was easily recognisable as it feels engaged, in so much as I tend to think ‘play that phrase’, before it is used.

In addition to the lick assembly pathway, associative generation was observed also. Often, rhythmic motifs would be copied, while the pitch or contour of a phrase was changed. This can be seen in track D2- Is Something I Don’t Understand Yet alternate solo 1 - 02:41, where the rhythmic and contour of measure 3, is repeated during measure 4 in a higher register. The individual pitches and harmonic implications of the phrase are to some extent irrelevant at this point. The generative mechanisms employed, firstly involve a strategy based generation of material during measure 3, to create a timbral led phrase (open strings/wide interval – derivative of VS-WK58). An evaluation process would then have enabled the phrase to develop through associative generation in the following measure, as the initial phrase was successful. The associative generation used in measure 4, did not require any new input material, and continued what was started in measure 3, by simply moving the phrase up in register, to increase intensity and give contrast to the previous phrase. The associative generation event in this sense was led in a physical way, given that
the pitches/harmony were not focal, and the goal was instead merely to move the phrase ‘up’, when considering the guitar fretboard.

Other instances in which associative generation are used can be found throughout the recordings (see audio track D1-02:58 (within a phrase, copying of contour); D3-01:32 (larger fourths led harmonic development, returned to and developed after a single note line is played), however it is fair to say that the chains of development are mostly short, and rudimentary in construct. My approach generally, features less material development and a larger reliance on the use of strategy/knowledge base application; a polar difference to the approach of someone like Sonny Rollins63. While at this stage I have not ascribed any meaning or value to this, it may provide insight and explanation into approaches aesthetic generally, perhaps explaining the overly dense feel of the improvisations as a whole.

This study was primarily concerned with the development of material from explicit to implicit control in respect to strategy based generation, and so little work was carried out developing associative generation approaches. Perhaps then, associative generation may be used to temper an already large/dense approach, by reducing the amount of new material generated and concentrating on finding creative ways to develop material over longer periods.

Ensemble interaction was greater in Outburst (Track D8), which significantly affected the approach and strategies adopted for improvising, and the cognitive awareness of these. For the most part this included monitoring and responding to rhythmic and harmonic devices set up by the bassist. For instance the bass introduces a rhythmic figure at 06:37, which is returned by the guitar at 06:41. This is continually revisited and developed until 06:56. At 06:53 a second motif is introduced by the bass, interrupting the guitar which was still developing the first motif by displacing it by a semitone. The success in this, lay in the guitar picking up the new motif preventing the dialogue from stopping altogether. The new motif is similar to the theme from another Wayne Krantz piece Whippersnapper which had been rehearsed (track A3). This was picked up and the guitar plays motif/theme from Whippersnapper (06:56-07:03), developing the motif while ascending. There is a slight return to the first motif in the bass at 07:09, however this is abandoned in favour of moving to a slightly more relaxed time set of phrases, cued by the guitar phrase at

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63 Rollins’ approach is explored in detail in Gunther Schuller’s seminal analysis of Blue 7, (Schuller, 1958) demonstrating how Rollins’ approach can be distilled down to a number of finite ideas which are developed across the space of a solo.
07:08, which built into a dialogue of bent pitches on both the guitar and bass. Between 07:06, there seems to be a communal strategy of playing in the rhythmic pockets left by the other player.

To this point most of what had been played on the guitar was done so in a responsive way in reaction to what the bass was playing and vice versa. Because of this, everything played felt explicitly controlled. There is also far less relation to the newer material in the researchers knowledge base garnered through the vocabulary seeds in portfolio A, suggesting that the lexicon of the knowledge base becomes less important during this type of exchange, with evaluative and reactionary processes taking precedence. In this situation an improviser must have a command of aural skills and knowledge of relevant improvisatory syntax capable of decoding what is going on in the other voice being traded with, in order to produce a coherent and interesting dialogue. In Pressings terms, each new phrase being responded to (in this case the bass), becomes a type of referent, which must be analysed, decoded, and responded to in real time.

The dialogue is interrupted at 07:29, with a drum fill signalling a new phrase structure. The bass discontinues dialogue at this point, despite some possibilities to latch on to the 4th interval phrases produced by the guitar at this point. During this period, 07:29-07:50, more involved phrases begin to emerge in the guitar playing when it is realised that dialogue has been interrupted. This consists of a chordal led phrase, followed by some bop heritage influenced and blues/rock phrasing. The bass supports this however, by remaining relatively static in the background without adding in any conflicting motifs or ideas. The culmination of this lies at 07:45, where a harmonic superimposition is played by the guitar – A phrase that appears often in these recordings, developed from Brecker’s approach as already discussed. The bass begins to introduce a rising 4 note motif at 07:51, and after three repetitions the guitar picks this up, continuing the strategy, playing the motif twice ascending as the bass does, responding to the bassist’s decision to end the phrase by doing the same. The next four measures from 07:57 are used by both the guitar and to build tension and build towards the end of the solo by again discontinuing the dialogue and developing phrases individually. Again, as with the previous break in dialogue, the type of phrase being played here felt implicitly controlled and drawn from the knowledge base without the need to consider the interaction with the other player.
Finally, at 8:04 intensity builds through the use of a chordal led approach, culminating in a contrary motion ending, with the bass descending chromatically while the chordal approach of the guitar ascended. This, along with the changing patterns and intensity of the drum kit ends the interaction and provides cue for the solo to end. In summary, it would seem that the more invested in ensemble interaction an improviser becomes, the more explicit awareness takes control, restricting access to the full knowledge base and approaches, in order remain coherent with the ensemble.

The process and conditions of this recorded project enabled me to demonstrate a snapshot of my improvisational processes and tendencies at the end of heuristic inquiry. Through multiple reflections, an understanding of the successness of the improvisations, both in terms of constituent phrases/concepts and the improvisation as a whole was considered. In relation to what I considered my normal improvisational approach this demonstrated that the meticulous development of vocabulary seeds developed through the use of the methodology set out in this and the previous chapter, had augmented aspects of my approach in terms of strategy and vocabulary.

5.4.4 -TW Seeds

During review of the audio produced for portfolio D, a number of novel phrases were identified (TW seeds). Some of these seed phrases can be seen as direct amalgamation and synthesis of concepts mined from the original vocabulary seeds in portfolio A, filtered through my own knowledge base and approach.

The novel seeds drawn from this process were transcribed and documented, as can be seen in portfolio A3.4. The analysis and development of one of these novel seeds is shown below. It demonstrates how the methodology used throughout is cyclic, allowing continual redevelopment and refinement of an improviser’s practice by isolating particular strategies and developing them.
Example 1

Figure 5.9.1 - VSTW14 – Outburst (Audio track D8 – 02:30) descending min7b5 arpeggio, interval set focus/physically led
Figure 5.9.1 is one of many novel seed phrases identified in the improvisations from portfolio D. It can be considered novel as it is not directly attributable to other phrases held within the researcher’s knowledge base (as qualified by the researchers own intuition and feeling when reviewing the phrase). That being said, some elements within the phrase are more familiar, such as the use of min7b5 arpeggio at the end of measure one; a common device used by the researcher when navigating minor harmonies in this context. Furthermore, the broken rhythmic style could be ascribed to the development of Wayne Krantz’s rhythmic approach as developed throughout this study. On reflection, the rhythmic strategy was the strategy guiding the development of this phrase, at least initially. The interesting feature that seems unique, and piqued the interest of the researcher, was the physical led aspect the phrase produces and the consequences on interval pattern this creates.

Firstly, to understand the nature of this, one must understand the nature of typical jazz guitar positioning on the fretboard. For the most part when navigating in a positional based sense on the guitar, an improviser will use a position to align 4-5 frets of span, enabling them access to all intervals as they move vertically from one end of the fretboard to another. While this can aid an improviser by providing a very clear way of navigating the fretboard, it can limit some of the intervallic possibilities. The seed phrase VSTW14 widens this by one fret, producing a five fret span, moving into a more horizontally focused perspective of the fretboard. As can be seen in measure one, the first four descending notes are placed at the 12th fret moving to the 8th, followed by a string change and a further 12th fret to 8th fret movement. What is interesting is the interval produced not only by the movement down from the 12th to the 8th fret (Major 3rd), but also the interval produced by changing string (Minor 2nd). Focusing on this physical led shape and moving to different positions, as is done in measure two produces a kind of two part intervallic symmetry between the major 3rd and minor 2nd intervals. It is at once led by the intervals and the sound produced, but the overriding strategy here is one of physical nature, keeping the fretting hand producing the same intervals as it moves. In some ways it felt precursory to approaches held by improvisers such as Allan Holdsworth and Brett Garsed, who use a more horizontal perspective to move around the neck instead of the more traditional positional focus.
While is necessary to consider this phrase in terms of the minutia described above, the aim being to further abstract in order to glean a more malleable strategy. There are multiple ways this strategy could be developed:

- Physical led>fixed fret distance
- Physical led>fixed fret distance across strings
- Physical led>beyond positional fret span focus
- Interval led> two part 3rd/2nd movements
- Interval led> two part wider/close movements

This list could be developed indefinitely, providing a multitude of ways of developing strategies from the one single phrase. As demonstrated earlier in this chapter and in chapter four, the methodology for developing a seed requires a modulation phase, variation phrase, and further work on contextualisation (etudes/improvisation practice). These phases are demonstrated below.

Figure 5.9.2 VSTW14 Modulations (audio A5.1)
To demonstrate, the use of this seed and its development in improvisation an audio file is included in the portfolio (audio A5.3). This was produced after practicing the modulations and variations and developing them further than the examples above, using harmonic superimpositions, symmetrical movements of the phrase, broken rhythmic uses, open string integration, functional and non-functional style chromatics and a range of phrasing possibilities. This is by no means exhaustive, and in fact demonstrates a small range of what might be possible when using the methodology.
This final stage enables an improviser to start the entire methodology again, recycling material which has been born through the final “contextualisation” of materials (Berkowitz, 2010). This demonstrates the cyclic nature of this methodology, and its potential to yield and direct an infinite amount of results. To conclude a summary of the development of one improvisational strategy, its assimilation and the development of new novel material as developed above is shown on the following page.
Identification and Assimilation of Wayne Krantz's Broken Rhythmic Line Strategy

**Imitation**

Initial Seed - VSWK5 - Wayne Krantz rhythmic strategy: syncopated 16th note playing

**Variation**

Variations

**Contextualisation**

VSTW14 - Demonstrating integration of aspects of broken line playing and syncopation use

**VSTW14 Strategy Inference**

Strategy Generation

- Rhythmic Strategy
- Mix Strategy
- Physical Strategy

Further evidence of phrase assimilation and development can be found in Portfolio C and D.

VSTW14 becomes new seed phrase and can be developed and assimilated based on any of the above strategic outcomes.
Chapter 6 – Reflections and Conclusion

6.1 – Summary of Work

By considering improvisation through the lens of strategy based generative mechanisms, this thesis has demonstrated many of the elusive aspects of the improvisational processes that a contemporary jazz improviser cultivates. These processes (in particular the abstraction of cognitive focus from low to high level hierarchical command of materials) are often acquired tacitly, as many aspects of jazz and contemporary music practice often are. As has been shown, this is often due to the inability of an improviser to convey such a complex set of processes, which are used rapidly and controlled implicitly.

The aim of this thesis was to shed light on these processes while considering strategy based generative mechanisms, as prompted by the understanding that expert level improvisers use abstract strategies to guide their improvisations, using plans and goals and scarcely thinking on a note to note level of control. The work produced in chapters one to five, and the accompanying portfolio allow us to give perspective on many of the issues that surround the understanding, practice and pedagogy of improvisation. This chapter will reiterate the findings of this thesis, considering the initial research areas outlined in the introduction, and provide a full summary of the novel contributions, output, understanding, and potential for future research in this area. Acknowledging the research and experiential artist accounts of improvisational strategy many questions were raised. These included:

1. Do contemporary jazz improvisers navigate using strategies or particular schema and if so to what extent?

2. Can a hierarchy of vocabulary be created to gauge which individual aspects (harmonic devices, sequences, intervals, superimpositions, rhythmic nuance etc.) are more fundamental to a players sound and strategy than others?

3. Can discerning uses of strategy (and generative mechanisms generally) enable analysis to reveal more about the processes that happen before, during and after improvisation retrospectively?
4. How are intertextual practices (allusion, commentary, humour, reference), and ensemble interaction incorporated within such strategies and hierarchies?

5. Is there an efficient way for adopting and developing an explicit (as opposed to the prevailing tacit acquisition method) pedagogical methodology for strategy based improvisatory concepts?

6. Can a limited scope of input material (three solo transcriptions in this case) be utilised effectively to heavily augment an improviser’s approach?

Theory - A thorough literature review was conducted focusing around improvisational processes and in particular strategy use in improvisation. In doing so key texts were drawn together and amalgamated to produce a novel model of the generative mechanisms used in improvisation, showing how three distinct pathways provide a process for an improviser’s choices. The strategy pathway was the focus of this thesis, however the way in which the other two pathways interact and form an overall approach is considered and shown in numerous examples throughout the literature review, analyses and practical reapplication.

Analyses – To demonstrate how strategies might be used and also developed, two analytical studies were created. The first on Michael Brecker, demonstrated an isolated use of one particular improvisatory strategy, harmonic superimposition. It was shown how this higher level concept allowed Brecker to maintain a malleable and integrated approach to harmonic superimposition, by cultivating a set of movements for superimposing other key centres. It was also shown that by utilising his knowledge base and in particular his strong understanding of functional harmony principles, these could be used to further support the superimpositions (functional momentum orientation). The second study on Wayne Krantz demonstrated how an improviser might direct their strategy use and cultivation based on explicit command. In this case it was shown, through artist account, transcription and analysis, that Krantz was able to eschew many of the trappings of his traditional approach in favour of a more rhythmic and novel contemporary jazz approach. Both studies benefited from the use of new representational systems designed to focus on improvisational strategy.

Pedagogical - Having shown an analytical application of the concepts and model drawn in chapter one, a four stage methodology for developing the assimilation and development of improvisatory strategy was developed. This was then used as part of a heuristic investigation into how improvisatory strategies may
be extracted, developed and controlled based on the material mined from Wayne Krantz and Michael Brecker.

**Portfolio** – In support of the heuristic inquiry, a portfolio of works was produced documenting the various stages of pedagogy, providing the reader with a clear pathway for developing improvisatory strategy.

The entire thesis consists of a serial understanding, development and reapplication of strategy based generative mechanisms.

In summary the most significant output can are listed as follows and will be discussed accordingly in the next section:

- Model of the generative processes used in jazz improvisation.
- Model of the strategy based pathway and the hierarchy of control.
- Strategy based analytical model with novel representations and coding.
- Strategy concept isolation – Michael Brecker’s harmonic superimposition taxonomy.
- Synthesised pedagogical model for contemporary jazz improvisers.
- Seed based concept.
- Improvisational etude framework.
- Self-analytical practice tools.
- Significant and previously unavailable transcriptions of Wayne Krantz and Michael Brecker.
- A large audio portfolio demonstrating the assimilation and manipulation of strategies for improvisation.

**6.2 - Summary of outcomes**

_Generative Mechanism Model and Strategy Focus_

Drawing from research, it was shown that strategy based generative mechanisms can account, at least in part, for the cognitive processes an improviser engages with in order to improvise effectively. Strategy based generative mechanisms (one of three generative mechanisms), were shown to be used more
regularly by expert level improvisers. Strategies can be used on many levels, from more global strategies for an improvisation (considering direction, mood, intensity and other highly abstracted concepts) to lower level strategies (such as choosing to engage in harmonic superimposition as a means of creating tension). An improviser may have a set of strategic preferences, garnered through time spent practicing and developing materials. The model produced in chapter one demonstrates how these levels of strategic direction may work considering high and low level strategies, the processes which are engaged pre and post generation, and also how strategies interact with other generative mechanisms. The model has implications not only for jazz research and the theoretical understanding of improvisation, but also for the understanding of improvisation and creativity more generally.

Applications for Analysis

In light of new perspectives and understanding of jazz improvisation, it is appropriate that new methodologies are used to highlight the aspects of improvisation of which traditional methodologies cannot. When considering strategies, an improviser’s output can be understood on a more general level, allowing analysis to avoid getting lost in the minutia of note to note consideration. Strategies can be considered on an individual level and also holistically in relation to an improviser’s tendencies and development. Combined with artist account and an understanding of the improviser’s domain, the analyst can begin to consider the intentionality, tendencies, and processes underlying an improvisation. The methodology developed within this thesis sought to add strategic information to transcriptions by means of the use of colour coding for more general strategy categories (rhythm, pitch, timbre, dialogical, physical) and reference coding to provide a more general description of an improvisational event or phrase. It became evident during this project that this is an area that needs significant development. In future, jazz analysis and transcription should garner new ways of representing not only singular uses of improvisational strategy, but also ways of representing ensemble cohesion levels, plurality of meaning, instrument specific physicality, relation to the improviser’s output as a whole, relation to the domain grammar as a whole, and also retrospective considerations (the approval/disdain of an improviser, success, ‘flow’ areas).
Brecker’s Harmonic Superimposition Strategy

The taxonomy of harmonic superimpositions used by Brecker, and its theoretical completion through the five tier system shown in chapter two, provides much needed insight into the techniques that underpin advanced harmonic superimposition. Jazz practitioners and analysts alike may find this useful in understanding and recreating a core technique of contemporary jazz. Furthermore this taxonomy demonstrates how an improviser may move beyond note to note considerations to a more concept led practice tool. While harmonic superimposition was the focus here, other strategies may benefit from being explored in a holistic fashion similar this, in order yield a deeper understanding and use.

Pedagogical Methodology for the Assimilation of Improvisational Strategy

The four stage methodology (1 – Seed mining, manipulation and variation 2 – Improvisational etudes 3-Holistic improvisation practice 4 – Recontextualisation and delivery) has been shown to be an effective way of assimilating improvisational strategy. While the inquiry herein used material from Wayne Krantz and Michael Brecker as an input to draw out and assimilate many of their tendencies, this methodology can be used when assimilating any improvisational material, and enables the improviser to develop a more malleable set of strategies to direct improvisation.

Seed Concept of Strategy Mining

The process of mining seeds as outlined in chapter five has been shown to be effective. The established procedure for identifying, extracting and developing a seed beyond its specific musical information to more abstract strategies can be taken away and reapplied in other settings.

Improvisational Etude Framework

The design and implementation of the improvisational etudes, included in the portfolio demonstrate clearly how we might direct practice to consider strategy without using any standard notational input. These system diagrams rely on the improviser accessing their knowledge base or using material currently focal in their practice to focus on larger goals and concepts. The accompanying audio demonstrates these in use clearly and shows the effectiveness of considering strategy directly in improvisational practice.
Furthermore these etudes could be useful for compositional purposes and also as unique representation aids for analysis.

Development of Improvisational Strategy Audio Portfolio

The audio portfolio demonstrates a clear progression from initial seed mining to delivery of materials in real contexts. Material was extracted from the earlier analyses and processed through the pedagogical methodology, producing a large amount of original recorded work (from the practice room to the studio and live performance) which in itself provides evidence of the assimilation of targeted improvisational strategies.

Development of a Cyclic Approach to Directing Improvisational Strategy

Perhaps most importantly, what the thesis represents as a whole is the complete description and documenting of one ‘cycle’ of strategy assimilation. It demonstrates and encourages the way in which an improviser can efficiently and explicitly direct their practice, something that has often been accepted as a tacit and undeterminable outcome of practicing more conventionally, using vocabulary, scales, and technical exercises. Furthermore it shows how with each new cycle, brand new material can be yielded and provide a platform for the next cycle of practice development. This is shown in the final creation of the TW seeds in chapter five. This methodology allows improvisers to be selective and consider which aspects of their playing they wish to improve, augment or otherwise imbue, and which elements to be phased out or made less focal.

6.3 - Reflections and Investigation Aims Revisited

This thesis was successful in the following aims:

- To show the workings of strategy based generative mechanisms (as part of a wider model of generative mechanisms for jazz improvisation explored) through the perspective of the improviser.

- To show the extent to which an improviser’s sound and identity relies on their use and tendencies towards specific strategies, by illuminating specific examples of strategy based generative mechanisms across a range of jazz examples.
• To provide a novel analysis methodology which considers strategy based generative mechanisms.
• To show the benefits of leading away from the prevailing 'lick' or vocabulary based pedagogy to a more considered strategic method of improvisation practice.
• To demonstrate how improvisatory strategies are acquired, developed and mastered through a first-hand exploration of a strategically aware pedagogical model, with support from a varied practical portfolio.

The entire thesis, from the development of a theoretical understanding of improvisational strategy, to the final stages of heuristic inquiry, provides evidence that considering strategy based mechanism in improvisational theory and practice is essential in developing a richer understanding of the inner workings of such a hugely complex skill. The research enabled the development of new vocabulary, strategies, and approaches, which were shown to be realised not only in practice room settings, but also in live performance settings typical of a contemporary jazz improviser.

Over time playing through the transcriptions, developing seeds, etudes and practicing a variety of different things, a further abstract strategy was revealed on reflection. In many ways ‘play like Krantz’ became a top layer and guiding strategy, as the lower levels, such as rhythmically broken lines, open strings, and palette harmony selection all became subconsciously controlled and drawn on.

During my approach to practicing in a more explicit and directed way, focusing on individual strategies during the HIPs and etudes, and indeed their application to various improvisatory settings, this top layer was not yet realised.

However, during the studio recording (and ensemble HIPs), less of what I was playing was as inherently Krantzian. The material in this instance felt more personal. Despite this there were many Krantzisms with clear lineage to the work/practice conducted, as well as many untraceable aspects of vocabulary and strategic approach.

I thought I was trying to become Wayne Krantz. I was not. In fact it is impossible, it would seem, to eschew the trappings of my cumulative experiences, approach, knowledge base, failings, aesthetic values
and individuality, all of which existed prior to undertaking this study. On reflection, my aim of sounding like Krantz and assimilating his approach entirely was slightly misplaced. I do not think I would want to sound like Krantz completely. Despite maintaining a purposefully tunnelled vision during this inquiry, the broader areas of my improvisation were still observable, and while in places I was successfully able to imbue my approach with many of Krantz’s approaches and sensibilities, I could not adopt his approach without compromise.

The processes and development of this study have revealed that in a relatively short space of time you can heavily augment, direct and prime your use of improvisatory strategy by means of careful and meticulous planning, developing, and explicit processing of any improvisers style.

It is unlikely you will end up turning into that improviser completely, when using these processes of abstract strategic development (a fear of many developing and expert improvisers who do not want to be considered as plagiarists), for you too would have to journey the same transformative processes that those improvisers did, developing a similar knowledge base, experiences and cumulative musical development.

At a high level of experience and ability, our differences in the development of the aspects which feed improvisatory practice and ability are just too different to enable a complete identity theft. That is not to say you cannot purposefully direct your improvisations with a strategy that is dominated by sounding like a particular player. There may indeed be professional situations where this is called upon.

Some homogenous styles may be linked more closely, because of the limited range of improvisers being studied in that particular homogeneity of community. This may in part be the reason why so many contemporary jazz improvisers have such vastly different approaches and strategies at their command. Krantz’s position and appropriation within the jazz ‘guitarscape’ reveals that there are many other elements present in an improvisatory approach, other than just vocabulary, which enable him and others like him to continue interacting in the wider jazz community. The ability to command improvisatory strategies and navigate improvisation in such a malleable and interactive way, may contribute significantly to this appropriation, and provide insight into what many can easily label as jazz, yet find so much difficulty in explaining why.
Ironically, a player can be scolded for direct quotes and overtly trying to copy, but assimilating the strategic approach and direction of another improviser can instead lead to acclaim and appropriation. A number of realisations have been made through careful reflection:

- I can now target specifically weak areas of my improvisation and augment those with new approaches and strategies.
- I can create identity strategies which may shift my overall approach more in line with that of another, however in such cases I am still bound to a degree by my own knowledge base and cumulative improvisatory approach, and musical experiences.
- I can assimilate the strategies of others, and by extension their approach, in an efficient and controlled manner which in this instance has been shown to be faster and more direct than other improvisation pedagogy alone may achieve.
- Of most interest I believe, are the changes in my approach and cultivation of Krantzisms for improvisation. By looking at just three recorded solos (with some small exceptions), it has been shown that an improviser may not need to pour over entire discographies to extract the essence of an improviser’s craft and approach.

Adopting strategy based generative mechanisms as a way of directing pedagogy, provides an efficient and novel way of developing improvisatory practice without the need to traverse a never ending amount of pedagogical materials, transcriptions and isolated vocabulary use.

Developing improvisatory strategy, also cultivates an intensely introspective environment towards improvisation and its development. By means of operating at higher levels of consideration, directing improvisations in ways that practicing licks and phrases alone cannot, an improviser may develop acute evaluative skills, leading them to be more critical, personal, and aesthetically driven towards how they want to sound. These evaluative skills themselves are at the heart of the improvisational process, as was shown in part I, through the discussion of the ongoing processes expert improvisers make during improvisation.
6.4 – Further Research

While this thesis, provides a platform for improvisational strategy, there are multiple directions for developing research further. To begin with, the methodologies used in this thesis could be applied to other improvisers, to create a global taxonomy of strategies and preferences, which may provide insight into the workings of not only individual improvisers but their groups, styles, and domains.

While it was not attempted within this research, practice led research could consider adding in controls to test the use of strategies, such as those identified in this thesis. In doing so, we may be able to find out more about many of the central concepts identified within this thesis such as: strategy integration timeframe; the effect of longer incubation periods for strategies; taxonomies of ensemble strategies; the relationship between individual strategy use inside and outside of an ensemble; how vocabulary can become stylistically emblematic; how strategy use changes across a continuum of common situations in jazz.

While this thesis focuses on contemporary jazz improvisers, there is no reason a reapplication to other disciplines, be that business, art, drama or other, could not be explored.

6.5 – Coda

The understanding of the cognitive processes an improviser engages in, should be paramount to the continued understanding of improvisation and jazz practice generally. Analysts and practitioners should be more aware of these processes, and in doing so, may reach a much greater understanding of their field and craft. It is hoped that this research will provide a much needed platform, to continue the understanding of what is often heard rather than explained, felt rather than understood, and absorbed rather than taught.
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**Discography**


