

Hybrid Percussion Technique: Its Application in Solo
Percussion Performance.

Recordings and an Exegesis.

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Abstract

This performance-based study presents the development of a new technical approach, termed here Hybrid Percussion Technique (HPT), and its application to the solo repertoire for five main percussion instruments — snare drum, timpani, marimba, vibraphone and multiple percussion. First, six basic motions adapted from the elliptical Moeller stroke are identified, and how they can be used to play the forty snare drum Rudiments is discussed. Second, these basic motions are applied in simple form, in combination or extended form to snare drum and timpani works, including the Philidor and Carter Marches. Third, the technique is applied to the remaining instruments (marimba, vibraphone and multiple-percussion) by adapting the strokes to include lateral motions to accommodate the increasing spread of instruments in performance, ranging from wrist rotations, to elbow, shoulder and full body-leading and incremental strokes. The results of the research are documented in four folders which include recordings of works such as Xenakis's *Rebonds b* and *Psappha*, Schwantner's *Concerto for Percussion and Orchestra*, Zivkovic's *Ultimatum I* and Abe's *Variations on Japanese Children's Songs*. An exegesis provides commentary on the study's outcomes and includes one additional folder with selected video excerpts from the repertoire to illustrate the discussion.

Declaration

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in my name, in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission in my name, for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

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I acknowledge the support I have received for my research through the provision of an Australian Government Research Training Program Scholarship

Andrew Wiering

Signed

Dated.....23/12/2019.....

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Format of the Submission

The submission consists of two parts:

Part A comprises audio/visual performances on four folders (totaling 240 minutes of recorded music). The musical results of the investigation are documented on these discs. The first four folders contain the repertoire organised by instrument. The fifth folder presents excerpts of the recordings to illustrate the techniques to show the progressive development of HPT and its application across the repertoire.

Part B establishes the context of the research and the research questions that underpin the project. The technical and interpretational issues of the recorded music are critically explored, and commentary on the strategies and solutions discovered during the recording process are discussed.

The recorded music is the focal point of the contribution, and the commentary is designed to illuminate the Hybrid Percussion Technique applied to the selected repertoire. With this in mind, the reader may wish to listen to the performances first to get an overall impression of the technical and artistic approach. Examples of specific techniques identified in the exegesis commentary have been collated in folder 5 for easy access when reading the exegesis.

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Track 10	Akira Ifukube (1930 – 2001): Lauda Concertata for Marimba and Orchestra (1976). Andrew Wiering with the Adelaide Symphony Orchestra, conductor: Arvo Volmer	28:40
Track 11	Keiko Abe (*1937): Wind in the Bamboo Grove (1987)	7:00
Track 12	Keiko Abe: Variations on Japanese Children’s Songs (1987)	7:51
Track 13	Leigh Howard Stevens (*1953): Rhythmic Caprice (1989)	7:52
Track 14	Keiko Abe: Itsuki Fantasy for Six Mallets (2001)	7:20
Track 15	Nebosja Jovan Zivkovic (*1962): Ultimatum 1 (1995)	9:14
Track 16	Takayoshi Yoshioka (*1955): Suite “No. 2” for Solo Marimba, Prelude Into The Dawning Day (1991)	3:40
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Track 18	Emanuel Sejourne (*1961): Katamiya (1997)	3:21
Track 19	Matthias Schmitt (*1958): Ghanaia for Marimba Solo (1997)	8:01
Track 20	Nebosja Jovan Zivkovic: Les Violons Morts (1994)	4:02
Track 21	Keiko Abe: Prism for Solo Marimba (1997)	3:22
Track 22	J. S. Bach: BWV 478, Chorale: Come Sweet Death	3:40
Track 23	J. S. Bach: BWV 999 Praeludium in C moll	2:30

Folder 3**Vibraphone**

Track 24	Ney Rosauro (*1952): Bem Vindo for Solo Vibraphone (1993)	8:33
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Track 26	Gerhard Windbacher (*): Samba für Vibrafon (1999)	3:50
Track 27	Emmanuel Sejourne: Bee 2 for Solo Vibraphone (1989)	2:23

Folder 4**Multiple Percussion**

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	II. In Memoriam: Misterioso	
	III. Ritmico con brio	
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Part B
Exegesis

Introduction

Percussion instruments have been used in ancient rituals and wars across the centuries. They remain integral to music-making in the 21st century. The shift from percussion as part of military, folkloric and community activities to other roles can be seen in scores such as *March* by the Philidor Brothers from 1683 and more recently in Stravinsky's *The Soldier's Tale* of 1918, which is generally regarded as the first significant solo percussion part. Today they are used in a wide range of styles from simple body-slaps of Brazilian fire dances, timpani heard in symphony orchestra concerts, marimba recitals or virtuosic elaborate multi-percussion concerti. The term 'solo percussion' is relatively new. With the creation of works for solo percussion and orchestra such as the Milhaud Concerto (1929) and later unaccompanied works such as Xenakis's *Psappha* (1976), the term has gradually become more widely used. In the context of this research, the term 'solo percussion' refers to compositions for an individual performer, a soloist with orchestral accompaniment, as well as ensemble pieces containing prominent percussion parts.

The work of the modern solo percussionist is varied, demanding expertise across the myriad instruments of the percussion family. The careers of Keiko Abe and Evelyn Glennie as recital and concerto soloists since the 1960s and 1980s respectively, have contributed to establishing the place of the percussionist firmly on international concert stages as a soloist. Indeed, their pioneering work along with numerous other percussionists as composers, arrangers and commissioners of music has legitimised the art form as a viable, standalone profession. Solo percussionists tend to either focus on one major instrument such as the marimba, as with Keiko Abe, Nancy Zelstman or Leigh Howard Stevens, or they encompass the entire range of instruments, as is the case with Evelyn Glennie and Nebosja Zivkovic.

In percussion, numerous instrument-specific techniques are applied across the range of major instruments. In particular, the different instruments require many individual kinds of strokes that are frequently unique to a given instrument; and each of these requires extensive learning to master for performance. This study aims to develop a unified technical approach to playing the main solo percussion instruments. However, the techniques cannot be applied in isolation, they must be used while taking into account interpretational, notational, compositional and arrangement considerations as

well as set-up requirements, which were investigated through performance in this submission.

The five main solo percussion instruments include snare drum, timpani, marimba, vibraphone and multiple percussion. This study examines the playing techniques of these instruments from a broad perspective. While some percussion sources do mention commonalities between techniques, for example, Cook's *Teaching Percussion*¹, Moore's *Drumstick Control*² and Queen's *Next Level Rudimental Snare Techniques*³, it is seldom the focus of teaching method books. (Jeff Moore mentions what he coins "transfer value" in his book *Drumstick Control*⁴.) It was most likely because, until relatively recently, percussionists were not expected to master all of these instruments in the orchestral situation. Training for orchestral timpanists, for example, focussed around the mastery of timpani and the snare drum until the early 20th century. The study of keyboard percussion could almost be avoided because the symphonic repertoire did not require it. Works were present, but the repertoire for timpani, snare drum, bass drum and cymbals was far more prevalent. Notable early examples of marimba parts are Grainger's *In a Nutshell* (1908/16)⁵ as well as Korngold's *Symphony in F#* (1947-52). The vibraphone appeared for the first time in Alban Berg's Opera *Lulu* from 1937⁶ and a solo marimba concerto appeared for the first time in the 1937/40 *Concertino for Marimba and Orchestra* by Paul Creston⁷. It took a further seven years for Darius Milhaud's Concerto for Marimba and Vibraphone to appear in 1947⁸. It took many more years for compositions actually featuring vibraphone or marimba to enter the repertoire, therefore it was unnecessary to devote a lot of time to their mastery when seeking work as an orchestral player. The early lack of orchestral repertoire for marimba and vibraphone did not stop soloists like Vida Chenoweth (who premiered the Creston Concertino) and later Keiko Abe emerging as unaccompanied marimba and concerto soloists.

¹ Gary Cook, *Teaching Percussion*, (New York, NY: Schirmer Books, 1997)

² Jeff Moore, *Drumstick Control*, (Van Nuys, CA: Alfred Publishing Co., 2009)

³ Jeff Queen, *The Next Level Rudimental Snare Techniques*, (Texas: Mark Wessels Publications 2004)

⁴ Jeff Moore, *Drumstick Control*, (Van Nuys, CA, Alfred Publishing Co., 2009)

⁵ James Blades, *Percussion Instruments and Their History*, (London, Faber and Faber, 1970) p. 477

⁶ Ibid. p. 409.

⁷ Ibid. p. 408.

⁸ Ibid. p. 417.

By comparison, the timpanist was afforded high-standing in the orchestra over other players; Blades, for example, argues that “Pride of place is given to the timpani.”⁹ He goes on to cite Gordon Jacob:

A conductor is always thankful for the presence of a really reliable timpanist. His part in the orchestra is so telling and individual, especially in modern works, that he is looked upon as an important soloist...¹⁰

Thus, it has been only recently that the remaining percussion instruments have gained similar respect as the timpani, most likely due to the increase in both scoring for percussion and player ability.

The aim of this study is to investigate techniques from these many percussion instruments, identify strokes and motions that may be synthesised into a unified technical approach, and apply them globally to the five main groups of percussion instruments. These synthesised motions form the Hybrid Percussion Technique (HPT). HPT is adapted and developed from the elliptical Moeller Stroke. Moeller technique was selected because it uses the fingers, wrist and arm making it easily adaptable to many technical applications. This is in contrast to other techniques, for example, DCI style drumming, which focuses only on one of those limb sections at a time. HPT is then applied in the performance of complex repertoire via recordings of significant works by Abe, Bach, Miki, Schwantner, Xenakis, Zivkovic and others.¹¹ These were chosen because they represent a broad cross-section of what the modern solo percussionist may typically play in a concert.¹²

Genesis of the Project and Methodology

When performing at the Adams International Percussion Festival and other University and festival appearances, percussion students and colleagues have sought performance practise information from this researcher about technically difficult standard solo percussion pieces. This interest prompted me to document the process of preparing the repertoire for performance. One of the biggest challenges in learning new percussion repertoire is the obstacle of technique, which, when mastered, allows for interpretational freedom. The HPT grew from the idea that the performer might be

⁹ James Blades, *Percussion Instruments and Their History*, (London: Faber and Faber, 1970) p. 348

¹⁰ Gordon Jacob, *The Elements of Orchestration*, (London: Herbert Jenkins 1962) p. 69

¹¹ See Appendix 1: List of Recorded Works by Instrument

able to reduce the amount of technical practice by finding underlying basic motions hidden in the rudiments. The motions were discovered while playing Rudiments and on two separate playing surfaces which highlighted their component parts through phase-shifting. As my hands went out of phase within a Rudiment, completely different patterns emerged. Then, by applying phase-shifting to all of the Rudiments systematically, it became clear that the 40 Percussive Arts Society Rudiments (The PAS 40) are made up of variations of six fundamental motions. The PAS 40 are re-notated in this document (see Appendix 2) to show where the motions are present in their underlying structure. It was found that by re-notating the Rudiments to reflect the six motions, many problems could be solved in the performance of snare drum repertoire.

After discovering that the snare drum Rudiments could be played using very few movements, the process was extrapolated to the broader percussion family. In other words, strokes originating from the snare drum might be used across the main instruments and the idea of general applicability of a motion became part of the process of this investigation. In order for this concept to work, the basic motions are adapted to the physical differences of the other instruments; lateral motions are added to the strokes used on timpani, marimba, vibraphone and multiple-percussion to accommodate the greater distances needed to play these in comparison to the comparatively smaller snare drum. The strokes, their inversions, combinations and variations, are then demonstrated in the recordings of the selected repertoire.

This is an example of the iterative process that is part of the practice-led research employed here. Thus, the iterative approach to practice-led research begins by developing interpretation, performing the repertoire, reflection (which may lead to alteration of technique or other components) and then back to a revised interpretation of the repertoire. More specifically, the research employs a four-fold performance-based method:

The **first step** establishes a set of six snare drum strokes that form the basis of HPT. These are: single, double and triple-strokes as well as Moeller duplet, triplet and extended Moeller strokes.

The **second step** identifies how the Percussive Arts Society's 40 International Snare Drum Rudiments can be executed using HPT. These are then notated with guidelines

that show where the six strokes are embedded in each Rudiment in simple or combined form.

Therefore the **third step** is to adapt HPT to instruments other than the snare drum. This covers timpani, vibraphone, marimba and multiple percussion. This is achieved by incorporating lateral motions such as body-leading, sweeping strokes and incremental strokes to accommodate the greater span of the other percussion instruments.

The **fourth step** is to apply HPT to the performance of selected solo percussion repertoire spread across the five main percussion instruments.

These steps are a process of discovery based on practice and performance, that forms an integrated approach to playing solo percussion. It requires decisions relating to articulation, phrasing, instrument layouts, sticking-patterns, notational conundra, technical and interpretational issues. The outcome of the process is demonstrated in the selected works presented in the recordings, but can be adapted to the preparation of professional performances of the broader percussion repertoire not discussed in this submission.¹³

Works in this investigation¹⁴ were selected on the basis of their standing in the profession, and the frequency of their selection in international solo percussion competitions and solo recital programmes. Each work shows the application of HPT at varying levels as well as issues relating to interpretation, notation, instrumentation, set-up and arrangement. The works were recorded either live or in the studio depending on the performance opportunities that arose during candidature. The recordings consequently document the development of the technique as it matured during the research process. Therefore, some recordings from the early stages of candidature demonstrate the initial development of the HPT. The opportunities to perform with associate artists such as the Adelaide Symphony Orchestra (Ifukube's *Lauda Concertata*), the Tasmanian Symphony Orchestra (Schwantner's *Percussion*

¹³ For a full discussion of practise-led research see, for example, Candy, L. and Edmonds, E. A. *Practice-Based Research in the Creative Arts: Foundations and Futures from the Front Line*, (Cambridge, Massachusetts: MIT Press, Leonardo, 2018) p. 63-69

M. E. Doğantan-Dack, *The art of research in live music performance*, (Middlesex, RNCM: Music Performance Research, 2012) p. 34-48

Concerto) and Kristian Chong and Caroline Almonte (Bartok, Sonata for Two Pianos and Percussion) were also influential on repertoire selection.

Review of Resources

Myriad resources inform the performance of individual percussion works. Firstly, percussion textbooks are usually dedicated to learning a single instrument, reflecting the historical approach to teaching percussion. Examples include Goldenberg's *Modern School for Snare Drum*¹⁵, Stevens' *Method of Movement for Marimba*¹⁶, Goodman's *Timpani Method*¹⁷ and Burton's *Four Mallet Studies and Introduction to Jazz Vibes* tutor books.^{18 19} In particular, timpani method books by experts such as Richard Hochrainer²⁰, Saul Goodman²¹, Vic Firth²² and Jacques Delécluse²³ only consider timpani strokes without looking at what can be considered the relationship between timpani, marimba strokes or other percussion instruments. By comparison, Cook's *Teaching Percussion*²⁴, presents instructions for many percussion instruments but the instruments are still treated separately. Nevertheless, insights about the close relationships between strokes for different percussion instruments do emerge.²⁵

Secondly, approaches to snare drum technique are explored in seminal texts such as *Modern School for Snare Drum*²⁶, *Stick Control for the Snare Drummer*²⁷, *Accents and Rebounds*²⁸, *The Moeller Book: The Art of Snare Drumming*²⁹ and *Master Studies*³⁰. In each of these texts, differing approaches to grip, wrist, finger and arm movement are presented. Joe Morello focuses on free-rebound and Morris Goldenberg on wrist strokes while Sanford Moeller's is primary source for the so-called Moeller technique and is the primary resource for the elliptical Moeller gross

¹⁵ Morris Goldenberg, *Modern School for Snare Drum*. (London: Chappell and Co. Inc., 1955)

¹⁶ Leigh Howard Stevens, *Method of Movement for Marimba*. (New Jersey: Marimba Productions, 1979)

¹⁷ Saul Goodman, *Modern Method for Tympani*, (New York: Mills Music Inc., 1948)

¹⁸ Gary Burton, *Four Mallet Studies*, (Glenview, Illinois: Creative Music, 1995)

¹⁹ Gary Burton, *Introduction to Jazz Vibes*, (Glenview, Illinois: Creative Music, 1968)

²⁰ Richard Hochrainer, *Wiener Schlagwerkschule, Übungen für Pauken*, (Vienna: Doblinger, 1958)

²¹ Saul Goodman, *Modern Method for Tympani*, (New York: Mills Music Inc., 1948)

²² Vic Firth, *The Solo Timpanist*, (New York: Carl Fischer, 1968)

²³ Jacques Delécluse, *Vingt Études pour Timbales*, (Paris: Alphonse Leduc, 1968)

²⁴ Gary Cook, *Teaching Percussion*, (New York: Schirmer Books, 1997)

²⁵ These method books aim to provide instrument specific exercises and etudes, newly written repertoire, or look at the instruments in their historical context rather than giving examples of how to play the solo percussion repertoire. This does provide an opportunity for this author to observe similarities between stroke types of different percussion instruments and correlate these to the performance of the repertoire.

²⁶ Morris Goldenberg. *Modern School for Snare Drum*. (London: Chappell and Co. Inc., 1955)

²⁷ George Lawrence Stone, *Stick Control for the Snare Drummer*, (Chicago: Ludwig Music Publishing Co., 1935)

²⁸ George Lawrence Stone, *Accents and Rebounds*, (Randolph Mass.: George B. Stone & Son. Inc., 1961,) Preface

²⁹ Sanford A. Moeller, *The Moeller Book, The Art of Snare Drumming*. (Chicago Illinois: Ludwig Drum Co., 1956)

³⁰ Joe Morello, *Master Studies*, (New Jersey: Modern Drummer Publications, 1983)

motoric arm strokes on which HPT is based. Moeller himself states that the techniques are a collation of numerous civil war drumming styles that he observed, stating that he “...has not invented any new system of drumming or discovered any mystic hitherto unknown way to make a roll.”³¹

Despite its legacy to modern drumming technique, the book itself only presents a small insight into the application that these strokes might have for the drum-set or any wider percussion instruments. Importantly, the modern representation of the technique is outlined more comprehensively in later method books that demonstrate adaptations of the technique. These include, *Exercises for Natural Playing*³², *It's Your Move – Motions and Emotions*³³ and *Rudimental Secrets*³⁴. These books document additional uses of the Moeller stroke including snare drum patterns and their applicability to the drum set. Dom Famularo, in *It's Your Move*, divulges his own stick-height based variants of the Moeller stroke named Low, Half and Full Moeller, designed for distinct volume levels. This book also applies Moeller strokes to Rudiments that are in turn used to perform beats on drum-set. He comments that Moeller and what he calls the ‘Free Stroke’ can work together. In contrast, Jeff Queen’s *Next Level Snare Techniques*³⁵, considers multiple methods, but only briefly mentions finger strokes and then introduces what he calls ‘Adapted Moeller’³⁶. This is his variation of Moeller technique in which rudimental drummers can use the whipping motion to gain high speeds when executing the Rudiments he lists with low to high stick heights. Rudimental drumming with wrist and full arm strokes as well as exercises and patterns are the focus of the rest of the book.

Thirdly, a comprehensive examination of snare drum techniques presented in Swiss master drummer Jojo Mayer’s video: *Secret Weapons for the Modern Drummer*³⁷ is relevant to this study. It contains demonstrations of most stroke types and their applications in drum-set performance. All the snare drum or drum-set textbooks considered, no author has combined these techniques into an overarching approach to

³¹ Sanford A. Moeller, *The Moeller Book, The Art of Snare Drumming*. (Chicago Illinois: Ludwig Drum Co., 1956) Introduction

³² Dave Weckl, *Exercises for Natural Playing*, (New York, NY: Carl Fischer, 2004)

³³ Dom Famularo, *It's Your Move – Motions and Emotions*, (Coram, NY: Wizdom Enterprises, 1996)

³⁴ Peter Bachmeyer & and Wolfgang Höllerer, *Rudimental Secrets*, (Manching: Edition DUX, 2006)

³⁵ Jeff Queen, *The Next Level Rudimental Snare Techniques*, (Texas: Mark Wessels Publications, 2004)

³⁶ Jeff Queen, *The Next Level Rudimental Snare Techniques*, (Texas: Mark Wessels Publications, 2004) p.16

³⁷ Jojo Mayer, *Secret Weapons for the Modern Drummer*, (Briarcliff: New York, Hudson Music/New Magic Communications, 2007)

playing solo percussion. I see the Moeller stroke as a starting point for this because it uses the main limb sections from the outset, fingers, wrists and the rest of the arm. Other techniques use one or two of these only (French timpani technique uses mainly finger with some wrist, DCI mainly wrist and forearm). It is conceivable that the Moeller could be used as a basis with elements of the other techniques added to it to make a hybrid. This points towards the possible development of an integrated snare drum technique, and supports the possibility of a Hybrid Percussion Technique.

Finally, recent important method books that address percussion instruments individually such as the marimba are: *Method of Movement for Marimba*³⁸, *Hauptsache Mallets*³⁹, *Four-Mallet Marimba Playing*⁴⁰ and *Ideo-Kinetics: a Workbook for Marimba Technique*⁴¹. These texts focus on detailed grip analyses and instrument-specific stroke descriptions. General marimba patterns and exercises are also provided. *Four-mallet Marimba Playing* shows these exercises in context: both in analyses of repertoire that existed prior to the book's publication and in short pieces that were written or commissioned specifically for Zeltsman's book.⁴¹ Specific 6-mallet technical advice is found in Timothy Jones's extended mallet dissertation⁴², which offers a comprehensive survey of the six-mallet grips and the possible strokes. It is notable that this dissertation documents the only extended mallet method where each mallet is independently moveable, which is known as the Gronemeier Technique. Also of note in regard to six-mallet marimba performance is Zefferino Nandayapa's *Método para Marimba*⁴³, which chronicles a number of technical possibilities including patterns, musical figures and possible chords with corresponding exercises as well as compositions by Nandayapa. By comparison, Rebecca Kite's biography of *Keiko Abe*⁴⁴ is distinctive as it gives an historical background to Abe's work and insight into the imagery that inspired her compositions rather than adding to the plethora of technical workbooks. A number of dissertations are also available which examine the performance of Abe's compositions - Juan

³⁸ Leigh Howard Stevens, *Method of Movement for Marimba*, (New Jersey: Marimba Productions, 1979)

³⁹ Peter Sadlo, *Hauptsache Mallets*, Musikverlag (Erzhausen: Zimmerman, 2003)

⁴⁰ Nancy Zeltsman, *Four-Mallet Marimba Playing*, (Milwaukee: Hal Leonard Corporation, 2003)

⁴¹ Gordon Stout, *Ideo-kinetics: a Workbook for Marimba Technique*, (New Jersey: Keyboard Percussion Publications, 2001)

⁴² Timothy Jones, *A Survey of Artists and Literature Employing Extended Multiple Mallets in Keyboard Percussion*, (University of Nevada, Las Vegas: 2003)

⁴³ Nandayapa, Zeferino, *Método para Marimba*, (México City: Consejo Nacional para la Cultura y las Artes, 1998)

⁴⁴ Rebecca Kite, *Keiko Abe: A Virtuoso's Life*, (Leesburg, Virginia: GP Percussion, 2007)

Santos' *Performance Guide*⁴⁵ and Alex Stopa's *Eastern Influence in the Japanese Aesthetic in the Music of Keiko Abe*⁴⁶ provide detailed compositional analysis and interpretative advice for large scale Abe works.

In addition to marimba scholarship, vibraphone specific information is found in *Four Mallet Studies*⁴⁷, *Introduction to Jazz Vibes*⁴⁸, *Vibraphone Technique: Dampening and Pedaling*⁴⁹ and *Contemporary Mallet Method*⁵⁰. The latter book contains a comprehensive list and descriptions of vibraphone pedalling techniques. Pedalling techniques also appear in short etudes throughout Friedman's *Vibraphone Technique* book, coupled with advice about where to employ the techniques in the more substantial compositions at the end of his book. Burton depicts his vibraphone specific grip photographically in *Four Mallet Studies* and contributes copious exercises to aid the player in gaining facility, particularly in patterns steeped in Jazz harmony.

By contrast, there are comparatively fewer method books dedicated to multiple-percussion. *The Percussionist's Art*⁵¹ is rare because it views multiple-percussion as an art form unto itself, and almost never addresses percussion instruments singularly such as the marimba. Schick explores issues such as the notation and meaning behind the scores, highlighting the thinking behind his interpretations of immensely difficult multi-solos. In a chapter Schick contributed to *Encyclopedia of Percussion*⁵² prior to writing his own book, he describes how composers were intrigued with

...the ability of the percussion instruments to produce an enormous number of sounds in the hands of relatively few players. This vitality logically led to the idea of multiple percussion, where sonic diversity could be multiplied by asking a single player to perform on two or more percussion instruments⁵³

⁴⁵ Juan Manuel Alamo Santos, *A Performance Guide and Theoretical Study of Keiko Abe's Marimba d'Amore and Prism Rhapsody for Marimba and Orchestra*, (University of North Texas: 2008)

⁴⁶ Alexander Stopa, *Eastern Influence in the Japanese Aesthetic in the Music of Keiko Abe*, (University of Nevada Las Vegas: 2013)

⁴⁷ Gary Burton, *Four Mallet Studies*, (Glenview, Illinois: Creative Music, 1995)

⁴⁸ Gary Burton, *Introduction to Jazz Vibes*, (Glenview, Illinois: Creative Music, 1968)

⁴⁹ David Friedman, *Vibraphone Technique, Dampening and Pedaling*, (Boston, Massachusetts: Berklee Press Publications, 1973)

⁵⁰ Jerry Tachoir, *Contemporary Mallet Method, An Approach to the Vibraphone and Marimba*, (Hendersonville, Tennessee: Riohcat Music, 1991)

⁵¹ Steven Schick, *The Percussionist's Art – Same Bed, Different Dream* (Rochester, NY: University of Rochester Press, 2006)

⁵² John H. Beck (Editor), *Encyclopedia of Percussion*, (New York and London: Garland Publishing, 1995) p. 257

⁵³ Ibid.

An important percussion encyclopaedia is Blades' *Percussion Instruments and Their History*⁵⁴, which is focussed on the first appearances of the instruments in the orchestral repertoire rather than playing techniques.

Other multiple-percussion books include the *The Contemporary Percussionist*, co-authored by Michael Udow and Chris Watts,⁵⁵ and Reginald Smith-Brindle's *Contemporary Percussion*⁵⁶. None of these cover technical interrelationships between instruments. It should be noted, however, that it was never the intention of these method books to do so. They provide newly written pieces, as is the case with Udow/Watts, or discuss the instruments in their historical context, as in the Encyclopedia edited by Blades, rather than give examples of how to play the repertoire. Only in the snare drum section of *Teaching Percussion* by Gary Cook⁵⁷ and in the introduction to *Drumstick Control* by Jeff Moore⁵⁸ is there any mention of the interrelationship between snare drum strokes and other percussion techniques. However, these do not explore the adaptation and combination of snare techniques and motions into a Hybrid Percussion Technique for all percussion instruments, but they do show that some research supports this direction of inquiry. Therefore, this is the point of departure for this investigation.

Organisation of Thesis

The submission is divided into two parts.

Part A presents five folders. The first four folders contain the repertoire organised by instrument. The fifth folder presents excerpts of the recordings to illustrate the techniques to show the progressive development of HPT and its application across the repertoire.

Part B examines the development and application of Hybrid Percussion Technique in recording solo repertoire for Folder. **Chapter 1** outlines the standard snare drum grips and strokes and shows how they can be combined. It also provides details of tensions in grips that affect articulation. **Chapter 2** demonstrates six basic motions that can be executed using the HPT. **Chapter 3** shows how the 40 Rudiments of snare drumming

⁵⁴ James Blades, *Percussion Instruments and their History* (London: Faber and Faber, 1975)

⁵⁵ Michael Udow and Chris Watts, *The Contemporary Percussionist, 20 Multiple Percussion Recital Solos* (Delray Beach, Florida: Meredith Music Publications, 2000)

⁵⁶ Smith-Brindle, Reginald, *Contemporary Percussion*, (Oxford University Press: 1970)

⁵⁷ Gary Cook, *Teaching Percussion*, (New York, NY: Schirmer Books, 1997)

⁵⁸ Jeff Moore, *Drumstick Control*, (Van Nuys, CA: Alfred Publishing Co., 2009)

can be performed using only combinations of these motions. The performance outcomes and assessment of the HPT are detailed in the case studies found in **Chapter 4**. The **Conclusion** reflects on the Hybrid Percussion Technique and its application to performing solo percussion repertoire.

Chapter One

Foundations of Hybrid Percussion Technique

This chapter establishes the foundations of the HPT. The first element of percussion technique discussed here is grip, because holding the sticks and mallets is vitally important to the technique for all percussion instruments. The German and French grips and variations between their two extreme hand positions are described. An intermediate version of these is shown as an effective way to play complex patterns. The second element of technique discussed is stroke. Stroke types are listed and a combined approach to their execution is offered, namely the Hybrid Stroke. Thus, this chapter shows how grips and strokes form the basis of Hybrid Percussion Technique.

1.1 Grips

Percussionists generally agree that the snare drum is the starting point for technique before branching out into playing other percussion instruments. It forms an excellent basis for timpani, the keyboard percussion instruments, multiple-percussion and even drum-set playing.⁵⁹ In Morris Goldenberg's seminal text, *Modern School for Snare Drum with a Guide Book for the Artist Percussionist*, he states:

In order to become adequately prepared, he should get thoroughly acquainted with the instruments of his profession. He should experiment first with his basic instrument, the snare drum, and then proceed to the other instruments of the percussion family.⁶⁰

Sound is the ultimate musical goal and technique is a means to this end. In the context of snare drumming this is usually referred to as the rudiments. Goldenberg continues:

Descriptions, definitions and sketches are purposely omitted from Part I of this book because of the author's awareness of differing, though equally valid methods of teaching the rudiments. The goal of rudimental teaching is stylized facility. It is the *sound* that counts, not the way one gets it. This conception applies to all percussion instruments, not just the snare drum.⁶¹

Goldenberg is commenting that different techniques exist and any of these can be chosen to produce the desired sound. Having an integrated approach to technique should, by extension, streamline interpretative devices for phrasing and articulation.

⁵⁹ The latter is beyond the scope of this investigation.

⁶⁰ Morris Goldenberg. *Modern School for Snare Drum*. (London: Chappell and Co. Inc., 1955) p. 2

⁶¹ Ibid.

The HPT seeks to combine a range of techniques into a cohesive approach applicable to the percussion family. This begins with holding the sticks, which can be achieved a number of ways. There are two extreme grip positions in drumming; the first is German Grip, with the palms parallel with the drum-skin, the second is French Grip, where the palm is perpendicular to the surface; all the others degrees in between these two extremes is are also possible wrist positions. The main grips discussed in this chapter are listed in table 1.1.

Table 1.1 Grips

German Grip	The back of the hand is parallel to the playing surface
French Grip (alternatively, <i>continental grip</i>)	The palms are perpendicular to the playing surface
Hybrid Grip.	The palm angle of the Hybrid Grip is halfway between the German and the French Grips, namely at an approximately a 45 degree angle to the playing surface
Traditional Grip	Grip where the left hand holds the stick in webbing thumb and forefinger and through middle and ring fingers in an underhand fashion. The right hand holds the stick in German, French or Hybrid Grip
Matched Grip	When both hands have an identical hold on the sticks using German, French or Hybrid Grip. Distinct from Traditional Grip
Open Moeller	This is a variation where the forefinger's grip is relaxed from the shaft, as a result the middle finger opposes the thumb at the fulcrum
Viennese Timpani Grip	The timpani mallet is grasped between thumb and middle finger with the forefinger held away from the mallet shaft

Gary Cook, in his influential book, *Teaching Percussion*, outlines what he deems to be a good all- purpose grip and establishes "...some areas of correctness about the grip"⁶², paraphrased below:

⁶² Ibid. p. 41

1. Be sure the stick is being held loosely at the determined pivot point between the thumb and index finger...and there is space between the thumb and the side of the hand.
2. Be sure the thumb is kept on the *side* of the stick directly across from the index finger...
3. Be sure the *tip* of the *index finger* curls slightly around the stick...and is not pointed...
4. Be sure the middle, ring, and little fingers only *support* the stick and do not grip it tightly into the palm...
5. Be sure the back of the stick lies under or slightly outside of the wrist...one's natural hand size will determine this placement⁶³

These are general guidelines for stick grip, and even within the third point, in which the curling of the finger around the stick is mentioned, there is still scope to alter or develop this guideline to accommodate Open Moeller Grip or German Grip proper. This makes it an excellent starting point for grip variation. Point four does not however accommodate for Moeller's original grip where the little finger grasps the stick chiefly at the butt, thus changing the fulcrum, nor does it accommodate the Viennese timpani grip or its close relative the Open Moeller Grip. It forbids the middle finger from providing anything more than support.

German Grip

The sticks are held between thumb and forefinger, with the palms flat and the thumbs side on. (see Fig. 1.) The palms and drum skin are parallel to one-another and the main impetus for the stroke is from the wrist. The sticks should form an upside-down V shape when the player grasps the sticks in this manner, with their elbows kept slightly away from their torso.

French Grip

The sticks are held between thumb and forefinger but with the thumbnail facing upwards. The palms are perpendicular to the playing surface and the fingers are mainly used to execute the stroke. The elbows are often closer to the player's torso because of the perpendicular position of the palms, and rather than forming an upside-down V, the sticks are almost parallel to one another. (See Fig. 2.)

⁶³ Ibid. p. 42

Traditional Grip

Matched Grip is where both hands grasp the stick in the same manner: between thumb and forefinger as opposed to traditional grip where the stick rests in the webbing between the thumb and forefinger (see below) in the left-hand while the right hand grasps the stick conventionally. It is important to develop a grip that can be used for playing these stroke types without major grip changes mid-performance. The snare drum and drum set are the only instruments where the Traditional Grip is commonly utilised and Matched Grip is an equally viable grip on these instruments.

Matched Grip

Much has been written over the years about the use of Matched Grip versus Traditional grip: articles appearing in *The Instrumentalist* with some frequency⁶⁴ address this detail. Matched Grip is the default grip for use with HPT in this thesis because it aids in the delivery of uniformity of sound. This is because there is symmetry between the hands with this grip making easier for the player to emulate the trajectory of each hand. Playing with identical motions is a step towards creating identical sounds in each hand which aids precision and control of the sounds one wishes to produce. The superior transferability of Matched Grip above Traditional Grip from the snare drum to timpani, keyboard and multiple percussion playing makes it ideal as an all-round grip for use within the HPT.

Hybrid Grip

Finger strokes are normally executed using French grip while wrist and arm strokes are usually performed using German Grip. To facilitate the simultaneous use of both of these stroke types, an intermediate grip is utilised. The position halfway between the German and French Grips is termed here 'Hybrid Grip' (see Fig. 3). In the Hybrid Grip neither French Grip (thumb on top of stick) nor German Grip (thumb on the side) are favoured; rather one where the wrist position is halfway between the two is adopted. While German Grip has the palm parallel to a flat drum-skin, and French has the palm perpendicular, Hybrid Grip forms an approximate 45-degree angle to the playing surface. Hybrid Grip facilitates the combination movements of many

⁶⁴ John P. Noonan, *Snare Drum Stick Grip*, (Northbrook, Illinois: The Instrumentalist, Nov-Dec 1946); Jack McKenzie, *Same Grip with Both Hands*, (Northbrook, Illinois: The Instrumentalist, May 1961); Neal Fluegel, *A Likehand Grip for Holding Snare Drum Sticks*, (Northbrook, Illinois: The Instrumentalist, Jan 1961)

techniques that were previously unable to be combined because of their grips. For example, finger strokes are difficult to perform with the German Grip, but are easily executed with the French Grip. They are however, entirely possible with the Hybrid Grip. Wrist strokes can prove uncomfortable in the French Grip because of the pressure the stroke can place on the radius ulna. Wrist strokes come naturally to the German Grip, but not so using French Grip, again, these are possible using the Hybrid Grip. When this grip is coupled with a combinatory stroke consisting of simultaneous finger, wrist and arm motions, the foundations of a ‘Hybrid Percussion Technique’ are apparent.

Some have suggested naming the Hybrid Grip the ‘American Grip’⁶⁵. The renowned performer and educator Professor Leonhard Schmidinger and other esteemed colleagues in Europe espouse this grip. It would therefore be unfair to name it after just one of the many countries in which it has developed. The company website of the highly regarded author, performer and educator, Vic Firth, claims it as American:

For drum-set or mallet percussion instruments, you may wish to slightly turn the hand clockwise (pointing the (right (sic.)) thumb to the 10 O’clock position), which allows for easier movement from one surface to another. This is called the ‘American grip.’⁶⁶

If there were a grip deserving of the title ‘American Grip’, perhaps it would be that of Sanford A. Moeller, which he observed and recorded from the military drummers of the American Civil War. In the November-December 1946 issue of *The Instrumentalist*, John P. Noonan outlines his ‘*Orthodox Rudimental Grip*’ in which,

The middle finger curled around the stick into the palm to retain the stick in this position with the remaining fingers curled loosely about the stick⁶⁷.

However, according to the Wikipedia entry on Matched Grip:

The American grip is a hybrid of the French grip and German grip. The palms of the hands typically are at about a 45-degree angle, and both the fingers and wrist are used to propel the stick. This grip is considered a general-purpose grip by percussionists because it combines the power of German grip with the

⁶⁵ Mark Wessels, <http://vicfirth.com/education/beginner_lessons/gripping_the_sticks.pdf> (Accessed 12 December, 2012)

⁶⁶ Ibid.

⁶⁷ John P. Noonan, *The Instrumentalist, Snare Drum Stick Grip*, (Northbrook, Illinois: Nov-Dec 1946)

finesse of French grip. It is used to play everything from snare drums to xylophones.⁶⁸

It is noted here as a hybrid grip and praised for its versatility within this article, which further advocates it as the grip of choice for percussionists and points towards a possible Hybrid Technique. Hybrid Grip is a truly utilitarian grip and it would make sense to name it as such.

Less Common Grips

Open Moeller Grip

A further important aspect of grip is the pivot point, or fulcrum, of the stick. The fulcrum is the point on the stick where it pivots and rebounds most readily. In regard to fulcrum, Cook warns against:

Any such approaches that do not allow the player to *see* the pivot point and finger placement around the stick are fine for supplemental instruction but should not be the primary method...⁶⁹

Within the main grip types, there is room for variation in regard to which fingers grasp the stick at the fulcrum. The point of best rebound is usually between thumb and forefinger, but can be adjusted to thumb and middle finger. Interestingly, in Moeller's book he grasps the back of the stick between pinkie finger and the butt of his palm. This will be referred to as Open Moeller Grip. The Open Moeller Grip and Viennese Timpani Grip can be counted as the aforementioned“ approaches that do not allow the player to *see* the pivot point” but are “fine for supplemental instruction”. One must here assume the exception is made for these less common but advanced techniques.

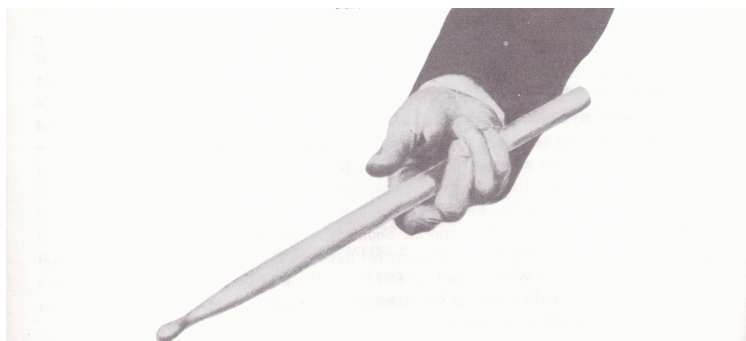


Figure 1. Open Moeller Grip.⁷⁰

⁶⁸ Wikipedia article, *Matched Grip* http://en.wikipedia.org/wiki/Matched_grip (Accessed 12 December 2012)

⁶⁹ Gary Cook, *Teaching Percussion*. (New York, New York: Schirmer Books, 1997) p. 41

This was used for older drums with animal skins that were slung to the side in conjunction with left-hand traditional grip. The right-hand grip bears a striking resemblance to the Viennese timpani grip.



Figure 2. Viennese Grip.⁷¹

Viennese Grip. This timpani grip is almost identical to Open Moeller Grip, but the middle-finger and thumb pinch the stick, placing the fulcrum in a different position again. The common factor is that the index finger is not the tensioning digit in both of these grips, which results in more open tones than the Germanic counterpart. This owes to the fact that the index finger and thumb usually grasp the stick firmly in German Grip and that lends itself to precise staccato sounds; the relaxed position of the index finger in this grip creates legato sound.

With the basic grip guidelines in mind, and after reviewing the main grip types, the Matched Grip coupled with an average palm angle set between the German and French grips emerges as an ideal Hybrid Grip for use in executing Hybrid Strokes.

⁷⁰ Sanford A. Moeller, *The Moeller Book, The Art of Snare Drumming*. (Chicago Illinois: Ludwig Drum Co., 1956) P. 4

⁷¹ Hochrainer, Richard, *Percussion Anthology: A Compendium of Percussion Articles from the Instrumentalist*. (The Instrumentalist, 1984) P. 397. Originally published, February 1972, English translation, Harrison Powley.



Figure 3. German Grip. (Author's own collection.)



Figure 4. French Grip. (Author's own collection.)



Figure 5. Hybrid Grip. (Author's own collection.)

1.2 Strokes

A percussionist requires many stroke types to successfully interpret music. The spectrum between staccato and legato and the full dynamic range must be considered and a fundamental stroke type selected for its delivery. The HPT uses the Moeller stroke as its foundation; it was selected for its adaptability. Other motions and stroke types can be easily added to the Moeller motion, leaving room for the incorporation of free-rebound, finger strokes, standard wrist strokes and arm strokes. The Moeller stroke uses these three parts of the arm simultaneously whereas other strokes generally use them individually. Variations of grip, tension and relaxation on impact with the playing surface, and direction of stroke all affect timbre and dynamics. These variables are also adjustable within the framework of the basic Moeller stroke. The concept behind Moeller strokes is to create a motion that provides speed, endurance, power and extreme differentiation between accented and unaccented notes in one fluid motion. The previous three stroke types can be incorporated into a Moeller-based motion to form a Hybrid Stroke.

Table 1.2 Categories of stroke according to body part used

Body Parts	Stroke Type	Description
Fingers (wrist and elbow joints static)	Finger Strokes	Movement with static wrist and arm position with the thumbs flat in French Grip. The fingers propel the stick with it pivoting at the apex of the thumb and forefinger
Wrist Strokes (finger and elbow joints static)	Wrist	The stick is lifted and dropped by an up and down motion pivoting from the wrist. The wrist is either in German or Hybrid Grip position.
Wrist with loose fingers (elbow joints static)	Free Rebound Strokes	Wrist or finger strokes that rebound back to the up position
Forearm (elbow is the pivot)	Full Arm Strokes DCI / Marching	Follow a straight up and down trajectory from the main pivot point, the elbow
Combination of finger, wrist, elbow and shoulder	Moeller Strokes	An elliptical motion that consists of one accented note followed by one or more tap strokes that are played during the upstroke. Ranges from wrist with slight elbow motion to full arm movement (fingers, wrist, elbow and shoulder are all in motion)
Combination of finger, wrist, elbow and shoulder	Hybrid Stroke	Combination of finger, wrist, elbow and shoulder with elements reduced or increased to suit musical context

Jeff Queen describes Moeller as ‘one motion for multiple sounds’.⁷² He goes on to write:

This one burst of energy can be used to create numerous sounds, making Moeller a very efficient way to play.⁷³

The efficiency and accent differentiation of the Moeller Stroke owes to the fact that during the preparatory motion of an accented note, one or more unaccented notes are played. Similarly, when the accented note is impacting the drum skin the wrist is already bending in preparation for further unaccented notes. (Vid. 1: Basic Moeller motion) This means there is little wasted energy in the motion. Whilst one motion is taking place, another is being prepared. John Riley supports the use of Moeller in a recollection of lessons he took with Joe Morello:

He taught me that drummers use three groups of muscles: the arm, the wrist and the fingers. Most playing is done with the wrist, the arm is used for power, while the fingers are used for low-volume speed...Eventually everything is integrated. The key was, and still is, to allow the sticks to rebound naturally.⁷⁴

When the Hybrid grip is adopted, it allows finger, wrist and arm movements to be incorporated into the elliptical Moeller motion. This is why a Moeller Stroke is the ideal basic motion for a Hybrid Stroke; it already involves the three main limb sections and the extent that each of these elements is used can be reduced or increased depending on the dynamic, tempo or timbral requirements of the music. The adjusting of elements and the incorporation of French style finger Strokes and Free Rebound Technique transform the basic Moeller motion into a Hybrid Stroke. (Vid. 2: Hybrid grip and Moeller motion)

A combinatory motion is desirable for speed, power, endurance and dynamic variation. This is in stark contrast to a DCI/marching style arm stroke or a standard wrist stroke; in DCI drumming when an accented stroke is played followed by a soft note, a lot of energy is used to keep the rebound down to perform the tap stroke. Jeff Queen details how he controls the rebound in his DCI style snare drumming:

⁷² Jeff Queen, *The Next Level Rudimental Snare Techniques*, (Texas: Mark Wessels Publications, 2004) p. 16

⁷³ Ibid.

⁷⁴ John Riley, *The Jazz Drummer's Workshop*, Advanced Concepts for Musical Development, (New Jersey: Modern Drummer Publications, 2004) p. 56

When you strike the head with a stick, it will want to rebound...In order to play with defined heights (especially in the case of accent/taps), you must absorb the rebound to keep the stick from bouncing back up.⁷⁵

Tension in the grip is used to achieve this, and thereafter a separate preparatory motion is necessary to execute another stroke. In Hybrid Strokes the hand and therefore the tip of the stick move away from the drum-skin during the upstroke. The Moeller Stroke inherently harnesses the natural rebound and uses it to aid the speed of the upstroke rather than absorbing the energy of the rebound in the fingers, wrist and arm. This is better for the health of the players' hands because they are not absorbing the energy of the stroke on impact, instead it this energy is channelled into propelling the upstroke. The Hybrid Stroke uses the identical principal, but changes the extent to which the arm, wrist or finger is employed. This also benefits the player's endurance: if the energy of the rebound is used to execute the upstroke phase, as opposed to the player lifting the stick themselves, then they should be able to play for longer with less exertion. That said, DCI strokes can be incorporated into the Hybrid Technique in order to achieve notes with shorter sustain and more attack properties if that is required musically. It is useful for individual staccato notes on various instruments and, conceivably, some Rudimental patterns might be better served by the downward tension inherent in the stroke (Vid. 3, *Track 4, Scud Attack*). The incorporation of other techniques into a predominantly Moeller based stroke is a hallmark of the Hybrid Technique.

LIBRARY NOTE:

This figure has been removed to comply with copyright.

Ex.1: Hurley, Scud Attack, bars 17-20

The ergonomic benefits of *not* absorbing the shock of a large rudimental snare drum stick rebounding from a drum skin, as evidenced in Hurley's *Scud Attack* (Vid. 4) and *Phantom of the Phield* (Vid. 5), are important for the player's continued occupational

⁷⁵ Jeff Queen, *The Next Level Rudimental Snare Techniques*, (Texas: Mark Wessels Publications, 2004) p. 13

health, something that Moeller himself recognised approximately one hundred years ago.⁷⁶

HPT synthesises the Moeller stroke with elements of finger-strokes, free-rebound, wrist-strokes and arm-strokes. An example of the superimposition of a specific stroke onto the Hybrid Grip within the framework of Hybrid Stroke is the finger snaps, as used in French Strokes. Firstly, French finger strokes are usually played with a completely static wrist position and the fingers action the stick so that it pivots between thumb and forefinger in the French grip and further propulsions of the stick take place with the assistance of the middle, ring and pinkie fingers flicking the butt of the stick. (Vid. 5: Finger Strokes) George Lawrence Stone professes the use of what he calls ‘finger bounce execution’ in his second tutor book *Accents and Rebounds*:

The routines in which accents and rebounds are combined are particularly adaptable to the development of *finger bounce execution*, a style so effective in modern soloing, in which at speedy tempos sticks are manipulated by finger action.⁷⁷

Stone is suggesting finger strokes and bounced doubles be combined. This already points towards a combination of techniques, because finger strokes are most often used for speedy single strokes at low volumes in: Repetitive actions like a single stroke roll-played softly...using the fingers.⁷⁸

Even though finger strokes are most commonly played with French Grip with little to no arm movement, to play double strokes, it is necessary to involve more of the wrist and arm. This necessitates a turn of the wrist away from French grip towards the German Grip, which provides greater range of motion. The use of the wrist and arm in conjunction with the fingers consequently helps achieve dynamic evenness in both notes of a double stroke. By using the Hybrid Grip, both finger strokes as singles and double strokes with finger snaps are possible. (Vid. 6: Double strokes with finger

⁷⁶ Early in the 1900’s, Sanford Moeller realized that one reduces and ultimately eliminates tension by distributing the “load” of repetitive motions among several muscle groups. The Moeller stroke incorporates the arm, wrist, and fingers into one flowing action, and is perfect for playing flowing accents within a single-stroke roll. Once you’ve mastered the Moeller stroke, you make the motion and the stick almost plays itself.

John Riley, *The Jazz Drummer’s Workshop, Advanced Concepts for Musical Development*, (New Jersey: Modern Drummer Publications, 2004) p. 56

⁷⁷ George Lawrence Stone, *Accents and Rebounds*, (Boston: George B. Stone & Son. Inc., 1961) Preface

⁷⁸ John Riley, *The Jazz Drummer’s Workshop, Advanced Concepts for Musical Development*, (New Jersey: Modern Drummer Publications, 2004) p. 56

snaps). The amalgamation of these techniques and grips is an essential aspect of Hybrid Strokes and a step towards HPT. Hybrid Percussion Strokes, (HPS) are a Moeller stroke synthesised with elements of finger-strokes, free-rebound wrist-strokes and marching style arm-strokes. Particular elements are used to a greater or lesser extent when applied to Rudiments or other musical situations to achieve musical directives. In order to play combinations of these techniques as one synthesised stroke, the grips that are native to each technique were adapted into a Hybrid Grip that works well for each type of stroke.

In this research, the broader grips and techniques that have been identified to work effectively for snare drumming also work for all round percussion. Outside of these mainstream techniques, other grips, stroke styles and method books all point to fundamental similarities in sound production. The result of this process has been one of identifying manoeuvres that are common to many of the various schools of thought on percussion technique and Six Basic Motions have been identified in the Handbook (see Appendix 1). This details how the Hybrid Stroke can be applied to the Rudiments of drumming before its broader application to other percussion instruments. It also shows where the strokes appear as inherent building blocks of the rudimental patterns. The further application is demonstrated in practice in the recorded repertoire.

An aggregate of strokes stemming from Moeller, finger strokes, and free-rebound snare drum techniques were mostly used in the recordings in this submission. Finger, wrist and arm-strokes however can and must still be used individually in performance, but generally a combined motion where the amount of each of those three stroke types is added or subtracted to the basic Moeller stroke was favoured for this submission. The percentage that each of these limb sections is varied on Hybrid Strokes depends on the musical application. The reasons for altering the elements of the stroke included: striking different playing surfaces and instruments, the use of difference accoutrements, timbral effect, dynamic differences, articulation and considerations of tempo. Table 1.2 categorises stroke types in the HPT by the main part of the body used in its delivery. These are ordered progressively from fingers through to a combination of wrist, elbow and shoulder.

During preparation of the repertoire, the Hybrid Stroke was applied firstly to snare drum repertoire that is composed primarily from the 40 PAS Rudiments. This is evident in the Performances of Reifeneder's *Crossover for snare drum*, Marty Hurley's *Phantom of The Phield* and *Scud Attack*. (Audio tracks 1, 2 and 3 respectively). The strokes used to negotiate snare repertoire were thereafter adapted to show their application across the other four of the five solo percussion instruments including timpani, vibraphone, marimba and multiple percussion.⁷⁹ The viability of an all-purpose Hybrid Percussion Technique is determined by the success of the stroke's applicability across all instruments. The Hybrid Technique and how it developed alongside the six basic motions, will now be discussed in more detail.

⁷⁹ These instruments include: snare drum; timpani; multiple percussion; marimba and vibraphone.

Chapter 2

This chapter identifies and discusses the six basic motions and how they can be executed using HPT. It then sees how they are applied to the 40 PAS snare drum Rudiments and more generally to the snare drum repertoire.

2.1 Six Basic Motions

Traditional movements such as single double and triple strokes as well as Moeller movements are grouped under the heading of *the six basic motions* because together they are core to the delivery of the HPT.⁸⁰ The Moeller stroke can be categorised into Moeller motions (duplet, triplet and extended Moeller), and placed alongside standard single, double and triple strokes. These can be executed using Hybrid Strokes with the various elements (finger, wrist, arm motions) incorporated to a larger or lesser degree depending on the application. Therefore, the six basic motions of HPT are: Single Strokes; Double Strokes; Triple Strokes; Moeller Duplets; Moeller Triplets; and Extended Moeller Strokes. The standard PAS 40 Rudiments for snare drum can be grouped according to these motions. Before examining how the Rudiments fit into the table and are then applied to instruments, it must be demonstrated how each individual movement can be executed using Hybrid Technique. (Vid. 7-12: six basic motions respectively) In the first instance HPT was used to perform solo snare drum repertoire. It is recommended that the reader view the snare drum pieces in their entirety as they contain almost all of the Rudiments⁸¹. Folder 5 contains the Vid. excerpts of the techniques. These have been made to aid faster perusal of the techniques under investigation.

Subsequent chapters will show how this can be applied and adapted across the percussion family.

The execution of the six motions is now described.

1) Single Strokes (Vid. 7)

⁸⁰ Percussionists commonly talk about strokes in ways that incorporate not only the core rudimental strokes but also the methods by which they are delivered according to a given technique. For example, double strokes can be played with finger strokes. Similarly, Moeller strokes can be used to achieve double strokes.

⁸¹ The exceptions being the Flamacue, Triple Ratamacue and Flam Paradiddle-diddle.

The single stroke in its basic form is shown in Musical example 1.1. These can to be played using finger, wrist or arm strokes and with French, German or Hybrid Grip depending on the musical situation.



Ex. 2: Wiering, Handbook

Depending on the required sound, single strokes can be produced using more or less of the limb sections of the hybrid stroke: wrist strokes, finger strokes or arm strokes. Factors such as quality of tone, dynamics, speed and timbre govern which to use. For example, the single stroke played using only wrist movement can be performed with either little to no rebound to create an abrupt staccato sound or as a completely freely rebounding stroke for legato effect.

2) Double Strokes (Vid. 8)



Ex. 3: Wiering, Handbook

Double strokes can be performed in many ways:

- a) Playing a wrist stroke and allowing the second note to bounce with natural rebound, bounced doubles or free rebound;
- b) Using a finger stroke followed by a finger snap to achieve the second note;
- c) Playing a wrist stroke and a finger snap (to make for an equal or louder second note);
- d) An arm stroke then a wrist and finger snap combined on the second note.

Moeller talks about the differences between the bounced and the snapped doubles in his book, advocating the snapped double stroke for evenness of tone:

...let us take a ball. We drop it to the pavement and it bounces and bounces until it comes to rest. Each successive bounce has hit the pavement lighter than the one before it. This kind of bounce is NOT the one used in drumming. Take the ball again and throw it to the pavement and each time it bounces tap

it back to the pavement with the hand so that it strikes with the same force for an indefinite number of times. Keep it bouncing. This is the kind of bounce that is used in drumming. It is a bounce that is controlled...you will never drum by letting the sticks fall on the head.⁸²

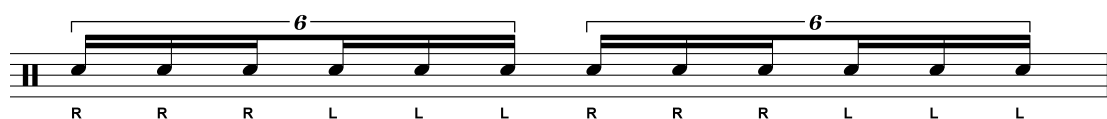
The governing principle of free rebound strokes is allowing the sticks fall on the head. It is however highly likely that the forced second note of the double stroke roll purported by Moeller came about because only natural drum skins were available during the civil war and these may have provided less rebound than modern synthetic head. The player had to force the second double due to minimal rebound offered by such skins. It is conceivable that with the advent of synthetic drumheads a free rebound technique could be adopted more successfully.

3) Triple Strokes (Vid. 9)

Triple strokes fall into two types, namely, triple-stickings and accented triple-stickings.

Triple-stickings: the delivery of triple stickings is made possible by either:

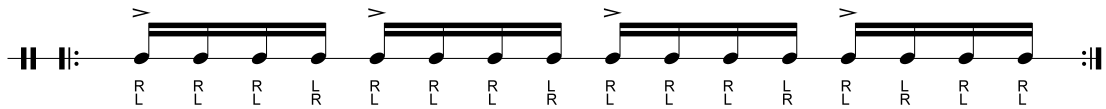
- a) Allowing the stick to bounce three times in a single wrist motion;
- b) Dropping the stick twice and then snapping the fingers against the stick for the third note of the triplet;
- c) Playing a Moeller triplet where the accented part of the motion is reduced in volume by reducing its height.



Ex. 4: Wiering, Handbook

Accented Triple-stickings: An accented triple sticking comprises three notes of usually equal dynamic, but can also comprise an accent and two ghost notes. The stroke can be performed using an initial wrist stroke - with a higher preparatory motion when marked with an accent - followed by a bounced double and a finger snap or any of the combinations described previously for executing double strokes.

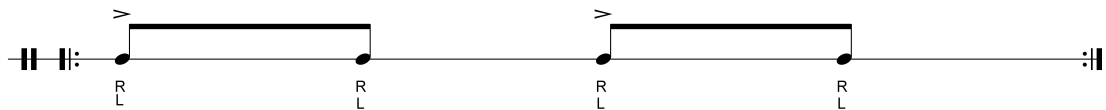
⁸² Sanford A. Moeller, *The Moeller Book, The Art of Snare Drumming*. (Chicago, Illinois: Ludwig Drum Co., 1956) p. 19



Ex. 5: Wiering, Handbook

4) The Moeller Duplet (Vid. 10)

The Moeller Duplet consists of one accented note and a preparatory stroke in which one tap stroke is performed.

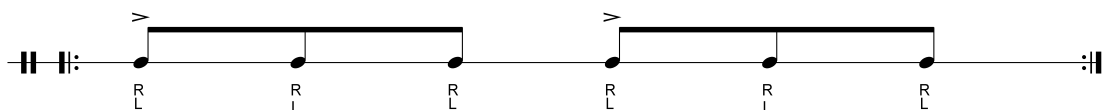


Ex. 6: Wiering, Handbook

The objective of this stroke is to create a single motion in which two notes are performed - one accented and one unaccented. The unaccented (ghost) note is played during the preparatory upstroke of the accented note. The act of playing one note during the upstroke of another is like circular breathing for drummers. This creates an efficient stroke that aids endurance as well as enhancing the dynamic difference between loud and soft notes. These exercises, as with all drum Rudiments, should be performed starting with both the left and right hand.

5) The Moeller Triplet (Vid. 11)

The Moeller Triplet consists of one accented note and a preparatory stroke in which two tap strokes are performed.

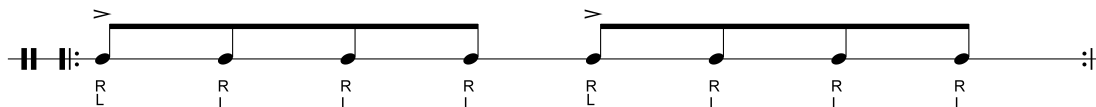


Ex. 7: Wiering, Handbook

The Moeller Triplet is governed by the same principles as the Moeller Duplet, except that there are two unaccented notes to be performed during the preparatory upstroke. This motion may prove easier to learn because there is more time to bend the wrist in preparation for the accent due to the additional unaccented note.

6) Extended Moeller Strokes (Vid. 12)

Extended Moeller Strokes consist of one accented note and a preparatory stroke in which three or more tap strokes are performed.



Ex. 8: Wiering, Handbook

There is necessarily more time to bend the wrist in preparation for the next accented note. When many ghost notes are present, the player should gradually spread the lifting motion over all notes. In long chains of unaccented notes, standard single strokes can be used instead and the hand can make the preparatory lift at the end of the phrase. Tempo determines how quickly one lifts for the next accent.

The Hybrid Stroke is a combination of all the major stroke types, but is based around the Moeller concept; the key is to reduce or increase any element of the six motions as the situation dictates. Oftentimes the hand movement used to execute one Rudiment is almost identical to the movement used when playing another Rudiment, merely with rhythmic displacement. This was the guiding principle in re-classifying the Rudiments into new groups. This process resulted in the creation of the Handbook. By applying the six motions to a given Rudiment, either individually or in combination with one another, the amount of rudimental practice that is necessary can be reduced and the presence of basic motions and patterns from which the Rudiments are built become apparent.

2.2 The Six Basic Motions of Hybrid Percussion Technique applied to the 40 Snare Drum Rudiments and Repertoire

The PAS 40 Rudiments are widely accepted as the standardised set of patterns for snare drumming. Mastering the rhythms is an important milestone towards proficiency on the snare drum and having solid technique for the rest of the percussion instruments. Thom Hannum gives an overview of snare technique on the Pearl Drums website and includes the following advice:

Any good snare drummer has a knowledge of the 40 International Drum Rudiments. These patterns use all the basic strokes plus single, double, and

triple beats and are a great way to improve stick control and expand your musical vocabulary for solos.⁸³

All 40 Rudiments are contained within the chosen snare drum works in this submission and are found in much of the repertoire recorded for other percussion instruments in varied forms. It has been found that certain basic movements are common to many of these Rudiments.

When practising the Rudiments on two different sounding playing surfaces (in this case the right hand was on a standard practise-pad and the left on a mesh-headed practice pad), I made the realisation that each hand is actually playing one of the six basic motions. When playing Four-Stroke Ruffs and Flam Taps in this manner I realised that they comprise interspersed double strokes and rhythmically offset Moeller triplets respectively. (Vid. 13: Four stroke ruffs and flam taps) Similarly, while playing Paradiddles on different surfaces, it became clear that they comprise interwoven Extended Moeller Strokes. (Vid. 14: Paradiddles.) In a double-stroke roll, both hands play two notes per wrist stroke, and in a Swiss army triplet, each hand also plays a double stroke per wrist stroke. In the Swiss Triplet, they are rhythmically interspersed rather than consecutive. (Vid. 15, Double strokes morphing into Swiss army triplets), These discoveries formed something of a “Eureka moment” in the research process. I subsequently applied the process to all 40 Rudiments to discover which patterns were at their cores. It was found as part of the preparation for the performance of the solo repertoire, that the separate pad technique (normally used to highlight differences in volume between the left and right hands), showed where each of the fundamental motions was hidden in the Rudiments. As part of this process, each Rudiment was dismantled and re-notated with dashed-lines to indicate where the motions were found within the patterns. By mastering the six motions then shifting certain phases of the motion from their original form, the player might master all 40 snare drum patterns more quickly. These have been represented diagrammatically:

Single Stroke Four (Ruff)

The Ruff is best performed as a series of double strokes dropped out of phase so the right and left sticks become interwoven.

⁸³ Thom Hannum, *Basic Snare Drum Technique*, Percussion Resource Library, <<http://pearldrum.com/media/education/basic-snare-drum-technique.pdf>>, accessed Dec 2015

Single-stroke four (Ruff)

R.H doubles

L.H doubles

Interwoven double strokes

Ex.9: Wiering, Handbook

Flam Taps – Moeller duplet / triple-sticking

The Moeller duplet motion is useful in executing the accented and unaccented portion of the flam tap. The grace note on the same hand following the tap stroke makes for a triple sticking, therefore this rudiment is a combination of Moeller duplet and triple sticking.

R.H doubles

L.H doubles

Interwoven double strokes

R.H Moeller duplet

L.H Moeller duplet

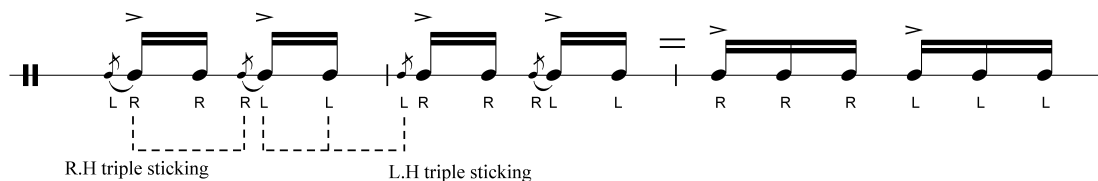
Flam tap

(>)

(>)

Ex.10: Wiering, Handbook

The flam tap is really a phase-shifted triple sticking.



Ex. 11: Wiering, Handbook

Swiss Army Triplets

The accented portion of a Swiss army triplet is identical a Moeller duplet. When the player reduces the volume of the accents, the motion of the triplet is identical to a double stroke.

Double Stroke Open Roll



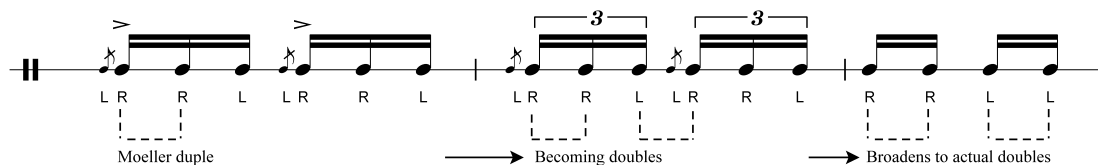
Ex. 12: Wiering, Handbook

Five Stroke Roll



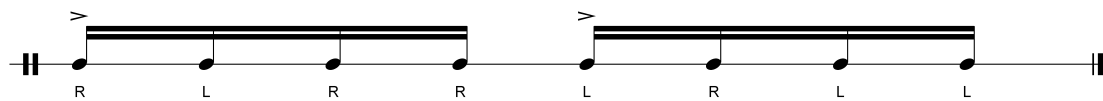
Ex. 13: Wiering, Handbook

The tap stroke of the hand that plays the accent is the down stroke of an inverted Moeller duplet. A double is added to this tap.



Ex. 14: Wiering, Handbook

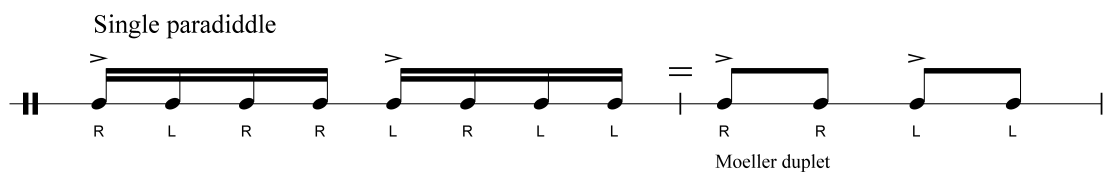
Single Paradiddle



Ex. 15: Wiering, Handbook

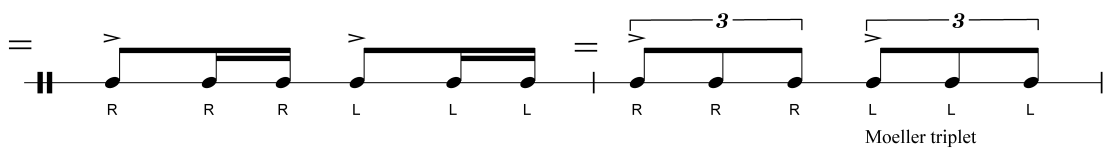
There are many ways this Rudiment can be broken down making it a hybrid of single, double, and triple strokes, as well as Moeller duplet, triplet and extended Moeller motions.

Single Paradiddle as a Moeller duplet



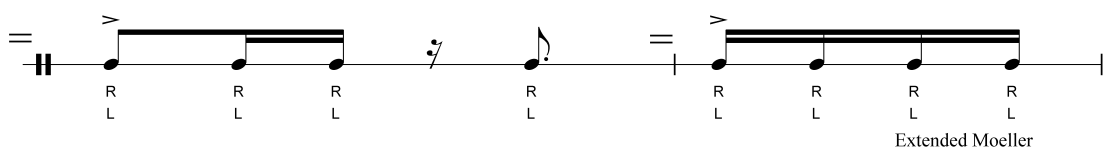
Ex. 16: Wiering, Handbook

Single Paradiddle as a Moeller triplet



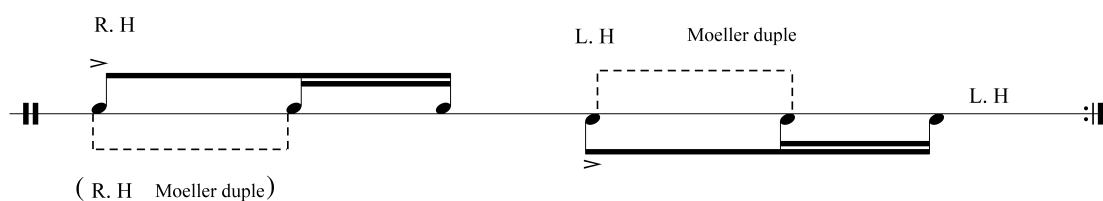
Ex. 17: Wiering, Handbook

Single Paradiddle as extended Moeller



Ex. 8: Wiering, Handbook

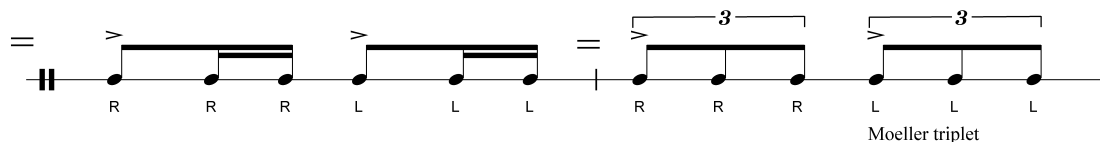
Moeller Duplet with a bounced double on the tap stroke



Ex. 19: Wiering, Handbook

If we observe just one hand, it is clear that three strokes must be per hand, per beat. This can be achieved using either the Moeller triplet motion or a triple stroke or a hybrid of both.

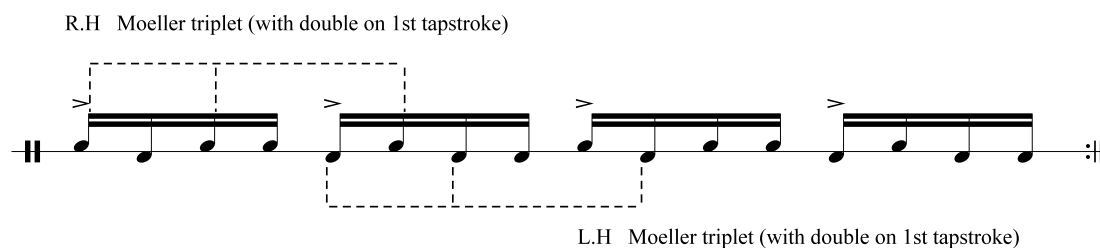
Triple-sticking



Ex. 20: Wiering, Handbook

The Moeller triplet motion can also be found in the paradiddle. The middle note of the triplet can be bounced to play the full rhythm.

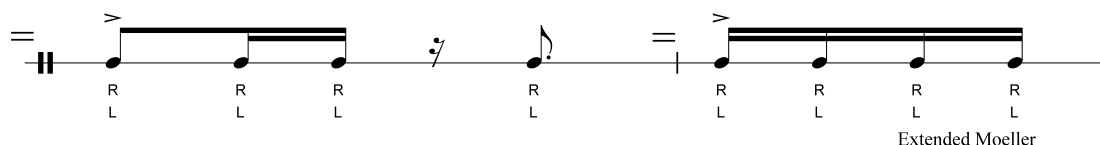
Moeller Triplet



Ex. 21: Wiering, Handbook

If we extend the view of the Rudiment to cover two beats, then it is apparent that the opposing hand must play its own three-note figure while the other hand plays another tap stroke to fill out the Rudiment. The motion is then classified as extended Moeller.

Extended Moeller



Ex. 22: Wiering, Handbook

For the complete 40 PAS Rudiments, see Appendix 2.

The identification of the basic motions contained in each Rudiment led to a re-classification based on the six basic motions where each Rudiment has been assigned

a category according to the movement best suited to its execution (see Table 2). A number of Rudiments fall into more than one category because movements are combined to facilitate certain patterns.

Table 2.1
Distribution of the 40 Rudiments into the six basic motions

Roll Rudiments

Single Strokes	Double Strokes	Triple Strokes	Moeller Duplet	Moeller Triplet	Extended Moeller
4 Stroke Ruff	4 Stroke Ruff	Single Stroke 7		Single Stroke 7	Single Stroke 7
Single Stroke Roll	Double Stroke Roll	Triple Stroke Roll			
	5 Stroke Roll		5 Stroke Roll	5 Stroke Roll	
	6 Stroke Roll		6 Stroke Roll		
	7 Stroke Roll		7 Stroke Roll	7 Stroke Roll	
	9/10/11 Stroke Rolls			9/10/11 Stroke Rolls	
	13 Stroke Roll				13 Stroke Roll
	Double Stroke Roll				

Diddle Rudiments

Single Strokes	Double Strokes	Triple Strokes	Moeller Duplet	Moeller Triplet	Extended Moeller
		Paradiddle	Paradiddle	Paradiddle	
				Double Paradiddle	Double Paradiddle
			Paradiddle Diddle	Paradiddle Diddle	Triple Paradiddle

Flam Rudiments

Single Strokes	Double Strokes	Triple Strokes	Moeller Duplet	Moeller Triplet	Extended Moeller
		Flam Tap	Alternating Flams	Flam Taps	Flam accent
		Flam Paradiddle-diddle	Flam Paradiddle-diddle	Flam Paradiddle-diddle	Flam Paradiddle
	Swiss Army Triplet		Swiss Army Triplet	Pataflafla	Single Flammed Mill
		Inverted Flam Taps		Inverted Flam Taps	
				Flam Drag	Flam Drag

Drag Rudiments

Single Strokes	Double Strokes	Triple Strokes	Moeller Duplet	Moeller Triplet	Extended Moeller
	Drag				
			Alternating Drags	Alternating Drags	
			Single Drag Tap	Single Drag Tap	
				Double Drag Tap	Double Drag Tap
		Lesson 25	Lesson 25		
				Drag Paradiddle	Drag Paradiddle
				Drag Paradiddle #1	Drag Paradiddle #1
Single Strokes	Double Strokes	Triple Strokes	Moeller Duplet	Moeller Triplet	Extended Moeller
					Drag Paradiddle #2
				Single Ratamacue	Single Ratamacue
					Double Ratamacue
					Triple Ratamacue

Table 2.2 shows the pieces and respective bar numbers where the Rudiments appear.

The snare drum solo pieces were selected because of the high number of Rudiments present. It can be seen that six basic motions have been used in their delivery. The formative elements of the HPT are demonstrated in the snare recordings.

Table 2.2 Rudiments as they Appear in the Repertoire

	Scud Attack Bar No.	Crossover Bar No.	Phantom of the Phield Bar No.
Rudiment			
Single Stroke Roll		2	
Single Stroke Four (Ruff)		1	
Single Stroke Seven	40	27	
Buzz Roll	39		
Triple Stroke Roll	50		
Open Stroke Roll			40
Five Stroke Roll			41
Six Stroke Roll			41
Seven Stroke Roll	21		41
Nine Stroke Roll		18	
Ten Stroke Roll			25
Eleven Stroke Roll			29
Thirteen Stroke Roll		23/24	
Fifteen Stroke Roll		31	
Seventeen Stroke Roll		9/29	
Single Paradiddle	Page 3		42
Double Paradiddle	Page 3		
Triple Paradiddle	Page 3		
Paradiddle-diddle	Page 3		
Flam	70	4	
Flam Accent			50
Flam Tap	33		
Flamacue			***
Flam Paradiddle	29	13	46
Single Flammed Mill			61
Flam Paradiddle-diddle			***
Pataflafla			11
Swiss Army Triplet	52		
Inverted Flam Tap			50
Flam Drag	18		
Drag	70, 8		
Single Drag Tap			1
Double Drag Tap			71
Lesson 25			78
Single Dragadiddle			37 (flam added)
Drag Paradiddle #1			68
Drag Paradiddle #2			68
Single Ratamacue			72
Double Ratamacue			72
Triple Ratamacue			***

The next chapters show how these six basic types of movement are directly applicable to timpani strokes, two, four and extended mallet percussion as well as multiple percussion playing.

The snare drum requires little to no lateral movement because it has a single flat playing surface. The exception is Reifeneder's *Ländler*, where it is inverted and the snare wires are played. All other percussion instrument categories require both up and down motion as well as lateral motion for the performer to navigate effectively around the instrument. This applies to sideways arm motions on timpani and vibraphone. It also extends to leaning to move up and down the marimba or facilitate larger spaces in multiple percussion set-ups. A further extension still is the incorporation of footwork for especially large manoeuvres.

As sonically diverse as the snare drum can be, when playing in the normal striking position on the drum, it is essentially a staccato sounding instrument. Applying snare drum techniques to other instruments however demands the ability to create different articulations. The need for lateral movement and timbral variation on other instruments led to the adaptation of the elliptical Hybrid Stroke to incorporate lateral motion. The question of adapting the stroke to facilitate such motion and how it would sound on other instruments was addressed by performing repertoire representative of the solo percussion genre. Elements of lateral motion such as body-leading, lateral wrist movement, elbow and shoulder leading and incremental playing were born from this examination and the application of HPT to the wider musical sonic palette.

The snare techniques can be applied across the remaining range of solo percussion instruments by slightly altering the movements to suit each musical situation. Typically, lateral motion must be applied to the larger playing surfaces of the other instruments, such as timpani. This is discussed in chapter four. First, however the important issue of articulation must be addressed.

Chapter 3

Hybrid Percussion Technique and Articulation on Timpani

This chapter discusses combinations of grips and finger tensions adapted from snare drum technique to timpani and outlines the resultant articulations.

3.1 Timpani and the Affect of Grip on Articulation

The timpani are the logical starting point for a discussion on articulation because so many sonic variations are possible on their large diameter skins. Grip tensions, the action on the stick or mallet before, after or at the point of impact with the skin influence sound. Whether a finger is loosely gripping the stick, or the degree that any extreme palm position is used (facing parallel or perpendicular to the playing surface or anywhere in between) influences the speed, fluency, feel and sound a given movement will achieve. For example, the elliptical fundamental stroke can be altered with different finger tensions to achieve different sound qualities. For legato, German Grip can be played with the fingers loosely against the shaft. For marcato, the fingers can be tightened and for staccato they are wrapped firmly around the stick. If all fingers except the middle finger and thumb are grasping the stick loosely, this is Open Moeller. The name relates both to the sound and the fact that the loose grasp of the thumb and forefingers make the hand look open rather than clenched. When grasping the stick in the Viennese Grip, we alter the quality of sound and feel to create a very open sounding legato sonority.

The first and most important sound a timpanist must execute is the legato stroke. The grip created by holding a timpani mallet between thumb and middle finger is conducive to legato strokes because it swings at the altered pivot-point more loosely than when held between thumb and forefinger. This works perfectly with the Viennese Grip or Hybrid Grip. Legato sound can be obtained when the Viennese Grip is combined with the downstroke phase of a Moeller stroke.

The German Grip with the forefinger and the thumb is the most useful for executing intricate rhythmic passages on snare drum and indeed any instruments to be played with two-mallets or sticks. It is also adept at playing powerful articulate strokes.

This Viennese timpani grip was taught by one of the foremost proponents of the Viennese Timpani style, Prof. Leonhard Schmidinger. He concurrently taught Moeller technique for the snare drum. Jeff Queen identifies four factors that contribute to sound production on a drum, and it could be argued that these apply to any percussion instrument:

1. Height of stroke; 2. Speed of stroke; 3. Pressure in the grip; 4. The bead's angle of impact on the head⁸⁴

It is useful here to consider these factors in relation to the timpani. Variations of grip, tension and relaxation and direction of stroke all impact timbre and dynamics, and these variables are all adjustable within the framework of the Hybrid Stroke. The viability of a Hybrid Stroke presented itself on observation of the similarities between the downstroke of the elliptical Moeller motion on snare drum and the legato Viennese timpani stroke. Moeller strokes are represented photographically in *The Moeller Book*, showing a loose forefinger grip almost identical to the thumb and middle-finger grip that Richard Hochrainer demonstrates. It can be found in the photographs of the article in *The Instrumentalist*, *The Beat* (See figures 4 and 5). Hybrid Grip and the aforementioned Hybrid Strokes can therefore be readily applied as timpani strokes

French grip stems from timpani playing native to France, as the Viennese grip is native to the timpanists of Austria. The hallmarks of the minimalist French timpani technique are the stillness of the body, arms and to some extent wrists, whilst the fingers do most of the work, flicking the mallet shafts to produce sound. The thumbs rest atop the mallets with wrists turned ninety degrees outwards from German Grip. It is particularly useful for the conservation of energy in performing fast single stroke rolls. As with the snare drum, the French timpani grip requires finger strokes and the Viennese Grip must be turned slightly (in the direction of Hybrid Grip position) to accommodate these strokes should they be necessary for rapid passage-work.

⁸⁴ Ibid. p. 13

The combination of the Moeller downstroke phase with Viennese grip aids the length of tone by allowing the mallet head to rebound freely on impact, thus allowing maximum resonance and reduced mallet attack sound. Even though the standard Moeller strokes and a Viennese timpani stroke both have their own specifically designed grips, these strokes can still be performed successfully with the Hybrid Grip. (Vid. 16: Viennese vs. Moeller strokes)

This same legato stroke can be applied back to snare drumming. By loosening the grip on a Moeller stroke on a snare drum, the sound should have less attack, despite the staccato nature of the instrument. (Vid. 17)

Combinations of grips and finger tensions and the resultant articulations are outlined in table 3.1

Table 3.1: Grip and Finger Tensions - Articulation Table (Vid. 18)

Grip	Finger Tension/Fulcrum	Articulation
German	All fingers tight, staying near drum-skin on impact	Staccato
German	All fingers tight, rebounding from drum-skin on impact	Marcato
French	Thumb and forefinger tight; fingers snapping and staying near drum-skin on impact.	Staccato
French	Thumb and forefinger tight; fingers snapping and rebounding from drum-skin on impact.	Marcato
Open Moeller	Thumb and Forefinger loose, ring and pinkie fingers grasping	Legato with enhanced head weight (effectively lengthening the stick by moving fulcrum to base of stick)
Viennese	Thumb and middle-finger grasping, other fingers off of stick	Very open and long-sustaining legato

In order to lower the dynamics of the notes in the articulations table, the ellipsis can be gradually reduced and moved towards pure wrist and finger strokes. The softer the dynamic directives in the music, the smaller the limb section used. In general, finger strokes are used for pianissimo playing, wrist strokes are used for mezzo-piano to forte, and arm strokes are added to the basic wrist motion to attain forte dynamics and above. (Vid. 19: German grip single strokes moving to French grip single strokes.)

Stick Positioning and Fulcrum

One can change the knuckle that grips the stick in order to attain either more control or more power. This is done with the forefinger in German Grip or middle finger in Open Moeller. By gripping with the first, front-most knuckle, more control is achieved. By using the second, middle knuckle, more power is created. The attack sound of the stick or mallet on impact with the instrument can also be altered. Generally, tighter grips create shorter sounds and looser grips, more legato. The wrists may also be angled anywhere on the spectrum between the flat Germanic, through to the French Grip with the thumb pointed all the way up, or halfway between with the Hybrid Grip for various effects. The grip and tension variations change the feel and sounds one can derive from a drum. The angle of trajectory that the stick approaches, strikes, and then leaves the playing surface affects the sound minimally. This is called the “flight-path” of the stick. In the interest of uniformity of sound, vertical strokes are generally played. Elliptical Strokes, Lateral and Incremental Strokes are all arm motions native to HPT that can be added to the basic wrist stroke to navigate instruments other than the snare drum.

Vid. 20: German grip to French Single Strokes, provides a demonstration of single strokes being performed with the grips moving gradually between German and French.

Vid. 21: German grip to open Moeller, provides a demonstration of a moving fulcrum exercise where the index finger relaxes, the fulcrum moves towards the middle finger and thumb, then moves back again. The videos clearly demonstrate the change in sonority as a result of the grip and fulcrum alterations. The grip types one can use with Hybrid Technique and how these impact dynamics and articulation are shown in the recordings; an examination of the effect both lateral movement (body leading,

incremental playing) and sticking have on phrasing, and where examples of these are found in the repertoire on other instruments is shown.

When strokes are played with two mallets in a hand on marimba, vibraphone, or multiple percussion ⁸⁵ the same loosening of grip can be utilised for legato effect. In order to create a more staccato articulation, pressure in the grip can simply be tightened either immediately before or on impact. This means the forefinger must be re-introduced to the grip, as it affords an inherently tighter grip than the thumb and middle-finger combination of the original Moeller and Viennese timpani grips. (Vid. 22: Abe, *Wind in the Bamboo Grove*, block chord section.)

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Ex.23: Abe, *Wind in the Bamboo Grove*

(Vid. 23: Xenakis, *Psappha*, tightening of grip for staccato effect.)

One can also move away from the elliptical Moeller stroke towards the straight up and down motion of DCI marching strokes in order to create staccato sounds. The DCI strokes also imply through gesture short sounding notes. (Vid. 24: Carter, *March*, right hand staccato, left hand, legato.)

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Ex. 24: Carter, *March*

The various gradations in between these two extremes are also possible. Articulation is determined by the height of the preparatory stroke and the velocity with which it is

⁸⁵ See Xenakis's *Psappha*

dropped or forced towards the instrument. This, coupled with the tension, or relaxedness, of the grip before, during and after impact with the drum skin, affects the rebound, timbre, length of note, dynamics and overall quality of the resultant sound.

These differences in grip and stroke are evident in the recording of Elliot Carter's *March for solo Timpani*. In the opening bars the Viennese grip coupled with the Moeller downstrokes are applied to the legato melody notes of E and B in the left hand. The right hand employs a firmer grip and more linear strokes⁸⁶ to play a staccato bass ostinato of C and G on the 29" and 32" timpani. (Vid 25: Carter, both hands in the same style.) These variations of grip are further displayed in the section where both hands play in the same style, as in Vid. 25 where each hand is playing legato, and then in Vid. 25, where the articulate nature of the stroke is aided by firmness of grip, despite already being staccato due the butt of the mallet striking the skin. Smaller motions are needed for softer dynamics, larger motions, somewhat obviously, for louder notes. However, when both fast and loud playing is called for, the inherent speed of the fingers, and the loud volume of wrists and arms, can be combined. The roll section at bars 72-74 of *Rebonds b* shows this combination (Vid 26).

In general, long legato notes necessitate a more relaxed grip with a smooth, rounded motion whereas marcato strokes or patterns require more grip tension and sharp strokes. The gestural affects of such strokes are conveniently commensurate with the desired sonic result. The recording of J.S. Bach's G Major Prelude for Violoncello, played on marimba shows such gestural playing. (Vid. 27: Bach Violoncello Prelude.) Given that various stroke types create different tonal qualities, finger, wrist and arm-strokes can be incorporated into one motion and the Hybrid Stroke can use all these elements at once or in various combinations. When these different tones are desired, the element that affects any given tonal quality is increased whilst the others may be reduced.

There are also numerous cases that demonstrate the use of HPT in Reifeneder's *Crossover for Solo Snare Drum*, especially in the third movement in which lateral

⁸⁶ Meaning straight up and down DCI style strokes less rounded in movement and sound than Moeller strokes.

movement on the upturned snare drum is introduced as well as the dynamic variations of the first movement that are achieved by changing playing position as per the score directives. (Vid. 28.) This is a relatively rare event in snare drumming where lateral motion is actually a requirement. It is when this lateral movement is added to the usual up and down strokes for snare drum that we can see further development of the stroke for its use on other percussion instruments.

3.2 Application of the Hybrid Technique to Timpani, Vibraphone, Marimba and Multiple Percussion

A fundamental set of finger, wrist and arm movements that can be applied across a wide range of instruments has been developed under the moniker of the ‘Hybrid Stroke’ which contains six basic motions. This provides a constant set of movements for consistent tone-production. Hybrid Strokes form the cornerstone of an approach to playing the remaining instruments of the five solo percussion categories because they can be adapted to work on these other instruments. This is despite the physical differences of the instruments and the addition of multiple mallets in each hand.⁸⁷ HPT is highly transferrable to the native mallet grips and instrument specific movements, as well as the differing sensibilities of other playing surfaces. It also aids spatial awareness around quite differently shaped instruments by providing a consistent movement that can be programmed into muscle-memory, hence improving note accuracy as well as saving practice time. The convenience of a replicable stroke that can be moved from one instrument to the next without too much alteration means beating points should also be struck more accurately.

Navigating the large diameters of four or more timpani is a stark contrast to a 14 inch snare drum. When applying HPT to timpani, a new element must be considered: lateral movement between drums. The Hybrid Stroke is useful in executing figures of different timbre, articulations and dynamics. It does so in an efficient manner because it is based on Moeller Strokes. The Moeller stroke bears a stark resemblance to the Viennese timpani playing style in both grip and stroke type. Viennese timpani playing necessarily elicits a very open sound from the timpani because the Viennese drums are traditionally skinned with Goat skins which are naturally darker sounding than the more widespread calf skins. This open Viennese sound is achieved by large vertical

⁸⁷ These are: vibraphone, marimba, timpani, multiple percussion.

movements along with a relaxation of the mallet at the point of impact. These movements also lend themselves to being moved laterally around other instruments because in Viennese timpani playing, the performer gets used to making broad sweeping motions in order to effectively move from one drum to the next whilst maintaining an open sound. (Vid. 29: Viennese timpani playing, sweeping motions on Timpani.) The distances of timpani are so great these same motions can easily be truncated to fit onto marimba and vibraphone repertoire and to accommodate for multiple percussion solos. HPT developed out of an amalgamation of the Hybrid strokes with Viennese timpani strokes, which were then applied to marimba, vibraphone and multiple percussion music.

Chapter 4

Extending Hybrid Percussion Technique with Lateral Motion

Keyboard percussion instruments require not only vertical strokes but also horizontal movement to move around the bars, and, on an even larger scale, timpani require this same lateral movement. Multiple percussion repertoire and drum-set often go beyond the one flat surface of these instruments also. There is a need for sideways bodily movement to be added to the Hybrid Stroke. This can be achieved by the use of one or a combination of further movement types: Body-leading, Lateral Wrist Motions, Elbow and Shoulder Leading and Incremental Strokes. This discussion demonstrates how HPT is transferable from snare drum to the other percussion categories.

4.1 Extension of Hybrid Percussion Technique: Body-leading, Lateral Wrist Motions, Elbow and Shoulder Leading and Incremental Strokes

After addressing the effect of grip on articulation, lateral motion is incorporated into a stroke that has so far been restricted to vertical elliptical motion on a single playing surface. This is necessary due to the wider playing surfaces of these instruments compared to the snare drum. The addition of lateral motion is not only needed to efficiently move between the larger skins of the timpani and other large percussion instruments, but also to execute dynamics, articulation and phrasing. Adding sideways motions adds fluidity to strokes and gives the player the option of creating legato phrases. This occurs when the arm sweeps across the instrument and plays the notes as they occur within the one motion across the keyboard or series of drums. Being able to play a series of unaccented notes whilst playing an upstroke means wider dynamic range can be achieved because Hybrid Strokes allow greater physical differences in stroke height; being able to play multiple notes in single-sweeping motions means there are additional phrasing and articulation options available to the player than one individual stroke for each note affords. The efficient way energy is used in the Hybrid Stroke means endurance should be greater as well.

Body-leading

Body-leading is a movement similar to the two-mallet keyboard technique where the mallet heads are kept from striking one another by adopting a right-angled position

between left and right hand. This grip naturally creates a stance where one shoulder and elbow are further forward on the keyboard than the other. The pronated shoulder can lead the body around the instrument in the direction a musical passage requires; in general terms, the right arm should lead when moving left to right on timpani or executing ascending scales on keyboard percussion. Likewise, the left-shoulder should lead when moving right to left or when playing descending passages on keyboards. An example of shoulder-leading, primarily to move the body in advance of the mallets from one timpano to the next to transition smoothly, is evident in the *March*. (Vid. 30.) In this example, the sticks are playing on one drum whilst the shoulder leads to the next instrument thus reducing the preparatory time for the elbow, hand and wrist by positioning some of the body in advance. The movement in advance of the actual striking of the next drum saves a lot of time; it is analogous with the upstroke of Hybrid Stroke in which tap strokes are performed, except it occurs laterally. Noteworthy is the point where the seventh semi-quaver is played by the left hand and the right shoulder leads in preparation of the first note of beat two.

This can be further applied to playing with two or more mallets on keyboards. Two-mallet application is shown in the final three bars of Abe's Prism.

(Vid. 31: Abe, *Prism*, closing bars.)

Jerry Tachoir points out that sticking can also be used to keep the mallets from hitting one another mid-air:

A strong awareness should be present to avoid entanglements with our four mallets, and as we play more and more certain sticking patterns will surface and become permanent and will re-occur as the situation arises.⁸⁸

The purpose of the shoulder-lead is to cut down time spent transitioning between drums, sections of a keyboard instrument or multi percussion instrument collections, as well as avoiding mallet collision. It occurs when the player moves their body in advance towards another drum whilst still playing the current drum, hence reducing the time spent physically moving between areas. This follows the basic principle of a Moeller stroke: to play a stroke whilst preparing for the next one. One might think of

⁸⁸ Jerry Tachoir, *Contemporary Mallet Method, An Approach to the Vibraphone and Marimba*, (Hendersonville, Tennessee: Riohcat Music, 1991) p. 14

it as a lateral Moeller stroke. It can be added to the Hybrid Stroke to make it multi-directional. This can involve:

- 1) Lateral wrist motion / sweeping motions. (Vid. 32: *Darvaza 3*.)
- 2) Elbow lead. (Vid. 33: Xenakis, *Rebonds b*)
- 3) Shoulder lead. (Vid. 34: Xenakis, *Rebonds b*)
- 4) Whole body lead (Vid. 35: Schwanter *Concerto, cadenza*)

Lateral Wrist Motion is exemplified in the author's recording of Keiko Abe's *Prism* for solo marimba. Juan Manuel Alamo Santos writes of this motion in his doctoral dissertation on Performing Abe's music.

Example 48 shows another motive used by Abe in *Prism Rhapsody*. This passage presents another performance issue because of the large intervals in the right hand...To avoid unnecessary motion that creates accuracy problems, this passage should be played using a horizontal motion to reach the high C rather than the traditional vertical up and down motion. Also instead of using only your arm to reach the high G and C the performer must rotate the wrist to compensate and make the arm movement shorter and quicker. This will help the performer make this passage less awkward and improves the performer's accuracy. This type of technique (horizontal motion) could be applied to other passages like mm. 88-96 in *Prism*.⁸⁹

(Vid. 36: Abe, see Track *Prism*. 88-96.)

In this example, Alamos has identified the same lateral arm and wrist motion as Dennis Chambers in *Serious Moves*.⁹⁰ Alamos terms it 'horizontal motion'. Lateral Wrist Motion is where the performer moves the hand in one sweeping motion and plays two or possibly more notes with fine motoric twitches or miniature downstrokes as the hand moves across an instrument. This technique can be applied to all manner of keyboard percussion instruments, and, if the instruments in a setup are spaced accordingly, to multiple percussion pieces. It may also be used sparingly to get around difficult timpani passages. 'The Sweep' is phrase coined by observers of Dennis Chambers playing drums as described in his book, *Serious Moves*. It is set out in a transcription of an interview between him and the editor, Dan Thress:

Then there was this thing called "The Sweep" - that was what Baltimore drummers called it when they saw me do it. It goes like this, it's just alternating between the snare drum and the floor tom, It sort of sounds like a

⁸⁹ Juan Manuel Alamo Santos, *A performance Guide and Theoretical Study of Keiko Abe's Marimba d'Amore and Prism Rhapsody for Marimba and Orchestra*, Dissertation prepared for the Degree of Doctor of Musical Arts, University of North Texas, 2008. P. 44

⁹⁰Dan Thress, *Dennis Chambers: Serious Moves*. (Cmp Media/Manhattan Music, Miami, 1992) 22

paradiddle, with the bass drum in there. And then I wanted to add other drums, like the tom-toms, which got a little more involved.⁹¹

The lateral wrist movement is useful in tipping the wrist between the playing position near the rims of the timpani swiftly as well (Vid. 37: Lateral wrist movement, Philidor *March*.) or between any other two percussion instruments that lie very close together. Lateral motion can be observed in *March* by Elliot Carter. (Vid. 38.) In fact, the further the instruments are apart, the larger the limb section that must be used and the more the elbows and shoulders must be incorporated. Lateral wrist motion is particularly suited to scalar passages on marimbas and vibraphones; elbow-leading for medium distance leaps on instruments; and shoulder-leading for moving distances between timpani and other similarly sized instruments.

It should however be noted that when performing at soft dynamic levels, smaller limb sections are usually used to achieve the dynamic. This is evident in bar 26 of the Carter *March* (Vid. 39), a good example of lateral wrist motion. The neighbouring edges of the timpani can be used to make performing such figures easier and these positions on the drums are closer than the usual beating spots. These devices can then be combined to make one all-encompassing lateral stroke as well.

4.2 The Affect of Sticking on Phrasing and Articulation

A further aspect of the shoulder-lead and incremental playing is that of sticking. Sticking affects the articulation of a phrase. Although hand-to-hand sticking is promoted in beginning tutor books such as *Primary Handbook for Mallets*, the author, Garwood Whaley, points out the usefulness of double strokes in sticking patterns here:

Doubling – repeating a stroke with the same hand – should be avoided unless it provides: (1) a technical means of playing an otherwise difficult passage or, (2) a desired phrasing.⁹²

Changing alternating stickings to include doubles, and in rare instances triple-stickings, can help achieve ultimate facility around the keyboard, as well as influencing the articulation from staccato to legato. Simply choosing hand-to-hand sticking as the default *modus operandi* does not take phrasing into proper consideration. The sticking of a passage should be considered to obtain the desired

⁹¹ *ibid*

⁹² Garwood Whaley, *Primary Handbook for Mallets*, Meredith music, USA 1980, P. 3

phrasing as well as make the line playable. Jerry Tachoir talks of a similar concept in his *Contemporary Mallet Method*:

The main reason for these sticking ideas as opposed to the alternating fashion is to eliminate excess arm motion from register to register and establish a smooth flowing line...The object is to try to have a smooth sound as if all the notes were played with one mallet.⁹³

Double stroke examples are pronounced in Ney Rosauero's *Bem Vindo* for Solo Vibraphone. (Vid. 40: Double strokes, *Bem Vindo*) Incorporating double-strokes into the phrase means the hands can play on white notes and black notes almost exclusively, thus eliminating crossing of arms or mallet heads striking each other, achieving a smoothness of line. Further double-stroke stickings are employed later in *Bem Vindo* to obtain the speed and smoothness of phrase called for in the score. In this example, multiple incremental notes are played during one sweeping motion in the C minor melodic lines at (Vid. 40). The efficacy is demonstrated by the round phrasing the incremental strokes achieve. This is in stark contrast to the use of traditional hand-to-hand sticking, which is also possible as a method of executing these lines, but the effect would be more marcato than the score demands. It is also important to use half-peddalling where these double strokes fall, to ensure the resonance of each bar blends into the next to assist the legato effect. The separation of hands is exemplified in the whole-tone melodies in bars 8 and 17, and the chromatic passages in bars 81- 86 of *Bem Vindo*. (Vid. 41)

A similar concept for sticking choices in scalar passages is outlined again by Jerry Tachoir in his contemporary mallet book.⁹⁴ Some of the stickings would be better represented if they took into account playing scales over a single octave. The one octave stickings are necessarily different to playing over two octaves because the hands have to change direction at a different position on the keyboard. A further example of this is found in David Friedman's *Midnight Star* for solo vibraphone. (Vid. 42: Demi-semiquaver sweeping runs.)

⁹³ Jerry Tachoir, *Contemporary Mallet Method, An Approach to the Vibraphone and Marimba* (Rioheat Music, Hendersonville, Tennessee) 1991, P. 11

⁹⁴ See Jerry Tachoir, *Contemporary Mallet Method, An Approach to the Vibraphone and Marimba*, (Hendersonville, Tennessee: Rioheat Music, 1991) p. 14 -20.



Ex. 25: Friedman, *Midnight Star* bars 39-40

4.3 Incremental Strokes

Incremental Strokes are achieved when this concept of two or more notes is extrapolated to include more than just double strokes to include three or more notes from one next area of an instrument to another in the space of one arm stroke. It can be viewed as the Hybrid Stroke being extension of the extended Moeller Stroke. This broadly sweeping motion with multiple increments creates a super legato sound with relaxed grip and can achieve marcato with a tightening of the grip. It can be used in conjunction with any of the body-leading techniques described earlier. This is particularly useful in keyboard percussion pieces where extended scalar passages or ostinati are required. The first note and the last note can be actively visualised while the notes in the spaces along the way will be filled using kinetic memory if practised properly. The application of the concept is visible in the marimba lines from the first movement of the Schwanter percussion concerto. (Vid. 43.) It is also useful for broad sweeping motions across timpani, drum-set⁹⁵ and multiple-percussion. (Vid. 44a: Sweeping motions, Carter March.) See also, Ford's *Composition in Pink, Grey and Blue*. (Vid. 45.) This is also helpful when memorising music: the muscle memory can take over for all notes between the first and last note of a figure and the brain only needs to remember a series of broad target areas.

Sticking considerations are particularly important in the first movement of the Schwanter concerto where the marimba parts are performed on the live recording as legato as possible, putting incremental playing technique to further use. During the second movement on vibraphone, traditional hand-to-hand sticking was employed and the result is therefore more marcato as per the score directives. (Vid. 46:)

⁹⁵ An in depth examination of the uses of Hybrid Strokes in drum-set performance is beyond the scope of this treatise.

Cross-sticking

Other methods of playing intricate patterns include cross-sticking. It is usually to be avoided (especially on timpani) because sound quality is affected when the crossing over of the mallet-shafts⁹⁶ impedes stroke heights. This can however be a form of incremental stroke. The drum-set technique known as ‘the sweep’ is also a useful tool here. The same turn of the wrist used in the sweep is used, but in this case it not only crosses from one drum to the next, but it also crosses over the other hand’s mallet

Ordinarily, double stickings are audible on any percussion instrument (unless one spends adequate time perfecting finger snapped doubles as previously discussed) but because the player is moving between instruments in this sweeping stroke the weakness of the second double stroke is less noticeable. In regard to mallet percussion sticking, Garwood Whaley states:

Sticking – Generally, all strokes on mallet instruments are alternated (i.e., LRLR or RLRL). To eliminate cross sticking ascending passages usually begin with the left hand and descending passages with the right.⁹⁷

The same shoulder-lead and sweeping strokes used for lateral movement on the timpani can be used again in conjunction with Hybrid Strokes to perform keyboard percussion and multiple percussion phrases. It manifests itself in the repertoire at the following points: Schwantner: *Concerto for Percussion* Movt. 1, marimba passage. (Vid. 47.) In fact there is even the need for lateral movement in some snare drum pieces. In Reifeneder’s *Crossover for Solo Snare Drum, II. Laendlich* (00:48 – 00:60) the performer is called upon to play on the snare upside-down with the snare wires supported by a third snare drum stick on the rim of the resonant head. This new playing surface requires left and right movement; the video recording of this work demonstrates that this is aided by lateral hybrid strokes. (Vid. 48: *Laendlich*)

The gross motor skills of wrist, elbow and shoulder leading can be coupled with snare drum techniques to navigate tricky keyboard percussion playing situations, particularly scalar passages, that require the utmost speed and accuracy. Incremental playing is a term coined in this submission to describe the playing of numerous notes within one sweeping motion. It is an extended form of lateral Hybrid Strokes.

⁹⁶ Ibid.

⁹⁷ Garwood Whaley, *Primary Handbook for Mallets* (Milwaukee: Meredith Music Publications/Hal Leonard, 1980) p. 3

4.4 HPT and Lateral Movement Applied to Keyboard Percussion Repertoire

In the opening section of Keiko Abe's *Variations on Japanese Children's Songs* the initial chord is struck with a hybrid legato stroke. The left-hand is then put on auto-pilot to play incremental strokes to render the ostinato whilst the right hand plays two-note chords using a legato Hybrid Stroke. Some coordination is required here because techniques that were previously only used one at a time are now combined. (Vid. 49: Coordinating multiple techniques, *Children's Songs*). The works of Abe often challenge the marimbist and her composition *Wind in the Bamboo Grove* is no exception. (Vid. 50 Incremental strokes.) The bass ostinato can be performed by both hands moving contrapuntally using incremental strokes with the elbows leading in towards one-another while the right hand periodically leaves this figure to reach into the upper register of the marimba to pick out fragments of a melody using sweeping motions. (Vid. 50)

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Ex. 26: Abe, *Wind in the Bamboo Grove*, bars 14-15

The last five bars of *Wind in the Bamboo Grove* contain four-note block chords. These are variously accented and unaccented and can be performed using very large Hybrid Strokes. One can go beyond the normal combination of finger, wrist and arm motion to include strokes coming down from above shoulder height. In the recording, the player's whole body lifts in order to exact full body weight on the marimba bars. The Hybrid Stroke is taken to a new extreme in this example. (Vid. 51: Large hybrid strokes.) In Abe's *Prism* the elbow-lead technique helps move through descending sequences and at extreme tempi of the symmetrical, prism-like, patterns. (Vid. 52: elbow-lead technique)

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Ex. 27: Abe, *Prism*, page 2, system 2

Moeller duplets are present in the Schwantner Concerto's third movement with two mallets per hand from bars 65 to 76 and HPT is necessary to execute the accented four-note chords on the strong beats of the bar and the off-beats are akin to the Moeller duplet and triplet patterns strokes on a snare. Here the hybrid version of these strokes is used because of the lateral movement from outside in for both hands. (Vid. 53 Schwantner III., Moeller duplets and triplets on marimba.)

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Ex. 28: Schwantner, Concerto for Percussion and Orchestra, bars 63-67.

Similar usage of the Hybrid Stroke occurs in Matthias Schmitt's *Ghanaia*. In track 19 the shuffle rhythm lends itself to an adaptation of a Moeller triplet stroke (with the second note replaced by a rest). This technique borrowed from drum-set playing is an effective way to portray the West African influenced rhythms.

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Ex. 29: Schmitt, *Ghanaia*, bars 51-52

The melodic line that answers this block chord of the Schwantner Concerto groove at bar 77 requires incremental strokes to render the marked slurs, but this is made particularly difficult because each melody note is doubled. The combination of a left to right sweeping action as the melody ascends followed by a right to left sweep as it descends is aided by wise sticking choices; the doubled notes must be played with one hand per bar using snapped doubles to maintain evenness of tone but at when the phrase turns around, two single strokes can be used to get the correct hand back on the beat. An alternative approach to this section would be to use single strokes exclusively, but the danger would be that the mallets might become tangled. The slurs

would also not be easily realised because single strokes with two mallets in each hand bring about a prominent marcato effect. (See: Track 30, 20:55)

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Ex. 30: Schwantner, Concerto III., bars 77-81

The phrasing that is called for in the xylophone solo at bar 129 is achieved using wound mallets combined with incremental strokes that can be realised by using two sets of Hybrid strokes playing triplets interspersed between hands and one set of Moeller duplets per hand with the accents smoothed out. (Vid. 54: Shoulder lead and Moeller Duplets and Triplets interspersed). This passage should be treated similarly to the legato melodic material on marimba with two-mallets in the opening movement of the same concerto.

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Ex. 31: Schwantner, Concerto I., bars 16-18

In this case a constant shoulder-lead position was maintained to avoid any mallet clashes as this figure winds around itself precariously. To achieve the marcato of the two bars prior to each of these legato phrases, one must adopt a tenser German grip on impact with the bar, relaxing this for the legato sections. Adopting a loose index finger grip will exaggerate the effect. The drum sections of this work can also be played with broad sweeping strokes covering the large setup. This creates the effect of incremental notes much like on marimba (Vid. 55: Broad sweeping strokes covering large setup). This very same approach can be shifted to the *almglocken* section of the work at 16 – 27 of the second movement. The Swiss cowbells are arranged chromatically like a keyboard and smooth phrasing can be attained by using HPT in such a way, even on such a foreign object as cowbells. The Hybrid Techniques have many and varying uses in solo percussion performance. The opening of the second movement whilst slow and *Misterioso* can be given dramatic effect by the use of lateral movements with a full body lead to move between the vibraphone in the first 4

beats of bar one to the roll on the suspended cymbal in beats 5 through 8. (Vid. 56: Gestural HPT, Schwanter Concerto II., *Misterioso*.) This motion fills in the silence with fluid gestures that may otherwise be potentially less interesting. Some of the appeal of the hybrid stroke is extra-musical; it enhances the live performance by showing the listener what they are listening to because the movements are commensurate with the sounds they elicit. In general, long legato notes are accompanied by long flowing arm motions, loud marcato notes are achieved by straight up and down arm gestures with abrupt wrist motions on impact with the instruments.

Such gestures are evident in the recording of Bach's Prelude for Violoncello in G Major (transcribed for marimba). It shows an even larger sweeping motion in the left hand from G2 to D3 on the marimba in the opening bars which is accompanied by a combined shoulder and elbow lead. This adds to the gestural effect reminiscent of the original bowing of the 'cello. The sticking chosen (1, 2, 3, 2, 3, 2, 3, 2, 1) also reflects the bowing moving across the 'cello strings in an arc and the phrasing is influenced commensurately. This helps realise the slurs present in the original score. (Vid. 57: Shoulder and elbow lead combined.) In J.S. Bach's BWV 999 *Praeludium* for Lute solo, the right-hand plays simple repeated melody notes whilst the left-hand makes very large sweeping motions with elbow and shoulder-leading to create a legato bass melody whilst also moving up the keyboard to complement the right hand melody. (Vid. 58: Sweeping motions.)

In Abe's *Itsuki Fantasy for Six-Mallets* we see more vertical Hybrid Strokes particularly because the Hybrid Stroke with lateral movement is very difficult to adapt to six-mallet playing. (Vid. 59: 6-mallet lateral movement limitations.) This is also the case in the five-mallet playing of Rosau's *Bem Vindo* for solo vibraphone. (Vid. 60: 5-mallet lateral limitations). So some limitations to the usefulness of HPT are recognised here. Thankfully in the case of the vibraphone the use of the pedal can help smooth out the legato lines and the low-pitched resonance of the marimba also helps blend the notes. The Moeller Duplet and Triplet strokes can be hybridised to render the difference between accented and non-accented block chords on the marimba in lines 1 and 2 of page two of *Itsuki Fantasy* and the left hand does successfully use incremental strokes to navigate the typical Abe bass ostinato in the

last line of page 1, despite the three mallets being grasped. (Vid. 61: Moeller duplet and triplet in block chords on marimba.) The right hand, when playing the sporadic melody over the bass line, also uses three, four or five note phrases that are executed using incremental sweeps across the keyboard. These do however weave backwards and forwards, so a wrist sweep must also be added to the mixture of strokes to facilitate the backward and forward nature of the melodic material. A truly hybridised method of playing develops due to the musical demands of such music.

The Sejourne vibraphone solo *Bee 2* has a melody in the upper stave with a countermelody posited in the lower stave. The hands must cross in order to play these block chords. In particular, the right hand moves to the lower register of the vibes to aid the left hand in the four note chords, and a smooth legato motion is required to play the line expressively. Firstly, the right hand can play the first three double stops in one incremental stroke and the left hand will join the last of these with the bass note. Whilst the bass note rings on, the right hand can lead inwards with the elbow to reach the low register. Once it has struck the chord with the left hand it must again sweep upwards to play the upper melody once more. This creates a perpetual motion in the right hand that is reflected in the unbroken sound of the vibraphone bars. (Vid. 62: *Bee 2*. Subtle stroke combinations) The Hybrid Stroke the right hand makes in this perpetual motion rises upwards in preparation and falls down to strike the bars. The necessary lateral motion between block chord in the bass and upper melody means the Hybrid Stroke is at its most complex, not just moving up and down in an ellipsis like a Moeller stroke, but creating a simultaneous left to right movement. The inclusions of simultaneous lateral motions to the Hybrid Stroke in this recording shows the continued development of HPT as a concept.

In similar fashion to the Bach 'cello prelude, combined shoulder and elbow-leading is found in Friedman's *Midnight Star* (Vid. 63: Combined elbow and shoulder leading). This, coupled with adept pedalling, creates a very smooth legato sound. The right-hand uses both sweeps and incremental strokes to play the double stops in sixths at section A of the work. (Vid. 63: sweeps and incremental strokes)

Further use of the lateral motions of HPT on vibraphone is shown by a motion similar to Abe's pieces where the left hand ostinato is countered by a right hand upper register melody. An example is found in Windbacher's *Samba für Vibra-Solo*. The

left hand plays a chromatic bass ostinato as the right hand plays the constant E on the offbeat. In between its accompanying function in the bass, the right hand must venture into the vibraphone's upper register to pick out single melody notes. This is only possible with the use of a combined shoulder and elbow-lead to get to the high notes, followed by a sweep when the melody falls down, and incremental strokes to move between neighbouring melody notes. While this is going on, the left-hand must use a Hybrid Stroke to achieve the difference between the notes with staccato dots, which are treated as miniature accents. (Vid. 64: further lateral motion). There are many uses for HPT in this excerpt.

By contrast, in the opening to *Bem Vindo* by Ney Rosauero, the bulk of the melodic material calls for mallet dampening to create a clean line because the vibes pedal is depressed for long periods. This leaves little room for the sweeping strokes. One can make gestural lateral movements between the "call" of the opening long melody note and its "answer" in the bass chord, but as soon as these ideas are filled out with moving quavers or quavers triplets, the possibility to execute the lateral Hybrid Stroke is limited by said dampening. This is one area where the Hybrid Stroke has some limitations. (Vid. 65: Vibraphone dampening and limitations of HPT) Another area where the Hybrid Stroke is less effective is when two loud accents are played in a row by one hand, but the simple work around is to use standard wrist strokes or the DCI arm technique.

HPT is again very useful during the *Vivo* section in the Rosauero. (Vid. 66: Sweeping and incremental strokes.) At this point, the repeated figure winds around itself and a sticking pattern of 1, 3, 2, 3, 2, 4, 2, 3 in tandem with incremental strokes and a general sweeping action are necessary to achieve fluid sound and movement. It is recommended to use half-peddalling during the section where the ostinato plays alone, then to add more pedal at the precise moment of impact when the melody notes enter in the upper register.

Bar 33 - 40 of the Schwantner Concerto (Vid. 67: Staccato vertical strokes.) uses no pedal on the vibraphone, which creates a staccato sound. To enhance this affect, the performer can use a more straight up and down stroke type than the elliptical Moeller variant of Hybrid Technique. This is another example where elements of the stroke need to be reduced or increased to suit the musical situation. To successfully strike the

rapid octave figures of this section of the work however, one must still employ incremental strokes. The opening runs of Zivkovic's *Ultimatum* for Solo Marimba show the incremental strokes as they fall over almost the full range of the marimba. (Vid. 68: Incremental strokes.)

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Ex. 32: Zivkovic, *Ultimatum*, bar 1

This sort of incremental playing is based on hybrid strokes formed with the idea of extended Moeller strokes in mind but as the hands move between natural and accidentals bars on the instrument a new impulse is given (much like an unaccented extended Moeller stroke). It was found that the final recorded tempi in this piece closer to the highly difficult prescribed tempo with the use of HPT. This was an improvement to when I attempted performing *Ultimatum* without HPT some ten years earlier. *Rhythmic Caprice* by Leigh Howard Stevens runs up and down the instrument constantly, much of the time with the shafts of the mallets striking the edges of the bars. The piece would present a perfect opportunity to make the runs using incremental strokes, however the hand position required to strike the edges poses an added difficulty to the performer. I found when coming out of the crouched position to play on the bars normally that the HPT was much easier to apply. (Vid. 68b: Edge striking limitation. *Rhythmic Caprice*.)

4.5 HPT Applied to Multiple Percussion Repertoire

Aside from sections from the Schwantner Concerto already discussed, Ford's *Composition in Blue, Grey and Pink*, *L'histoire du Soldat*, *Sonata for Two Pianos and Percussion*, Xenakis's *Rebonds b* and *Psappha* round out the multiple percussion works under examination in this submission. The relationship between snare drum

technique and playing multiple drums, like for example in Ford's *Composition in Pink Grey and Blue*, is immediately recognisable. (Vid. 69: Finger snapped doubles, Ford, opening.) The opening twelve bars of this piece comprise accented and unaccented notes, so the Moeller duplet, triplet and extended Moeller strokes must be employed. When these figures move around the setup, so too must the performer's wrists, elbows and arms. This should happen in anticipation of and during the difficult passages, utilising the now familiar body-leading motions. The extent that body leading is used is governed by the size of the drums, their proximity and the distance the players' arms must travel. From bar 14 onwards, the line is duplicitous and thus requires two kinds of stroke. The left hand plays the lower notes with finger strokes to achieve uniformity of sound in this author's set up of the work, leaving the right hand to play a melodic theme on the higher pitched drums above it. The right-hand was purposefully not used to aid the left hand because I found that my left hand was fast enough to play the figure on its own and one-handed playing often aids evenness of tone. Also the separation of the hands accentuates their different roles – one accompanying, the other rendering the melody. This gives the right-hand time to prepare to deploy full legato strokes with a relaxed forefinger adaptation of the Hybrid Grip to ensure maximum power and resonance whilst the left holds time with a Hybrid Stroke comprising of wrist and finger strokes. Bars 18 -21 in the right hand require especially fast sweeping strokes to play the grace note and the main note between drums in time. The sheer speed of the notes at bar 41, where the first metric modulation occurs, requires incremental strokes where quick finger snaps pick out notes as the arms hover over the setup. This is in contrast to an elbow and shoulder lead used in conjunction with wrist and finger snapped double strokes in the tremolo section for ultimate speed and volume. (Vid. 69b: Combined elbow, shoulder and whole-body lead, Ford, tremolo section.)

Xenakis's *Rebonds b* has a very similar tremolo section to Ford's *Composition*. The rolled section at bars 54-56 requires the body to lead the way around the instrument. Playing the double strokes using wrist and finger strokes combined to create two notes of equal volume in conjunction with elbow and shoulder-leading to get around the setup is the best way to join these phrases seamlessly. (Vid. 70: Wrist and finger strokes combined, triple stickings, *Rebonds b*.)

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Ex. 33: Xenakis, *Rebonds b*, bar 54-56

This interpretation is in contrast to many professional recordings where buzz rolls are employed in a manner where each hand presses a buzz roll for each 16th note, moving disjointedly from one drum to the next. This buzz roll interpretation creates a gap between each 16th notes which is not present in the score. The recorded interpretation seems to hold more tension via the continuous roll at one of its highest points of the piece compared to the relaxation which occurs via the interrupted roll version.

In Bar 1 of *Rebonds b*, the bass drum to tom-tom phrase can be joined smoothly using sweeping strokes with an elbow-lead. This creates the impression of a V-I cadence. When this first stroke on the bass drum is to be played softly, it masquerades as the tap stroke of a Moeller hybrid. The double-accented note on the tom-tom is the downstroke phase of the motion. This is a prime example of where the Hybrid Stroke previously examined as a snare drum technique must be adapted to include sideways motion. To move from the 28-inch bass drum to the 16 inch tom-tom, the shoulder and elbow have to play a part in preparing the first note as well as moving laterally to the next instrument. The use of a Hybrid Stroke has clearly been developed to be applicable across the four other solo percussion instrument groups to form HPT. Without the consideration of more than one striking surface it is essentially only useful on the snare drum.

A closer look at the combined wood block and drum sections of *Rebonds b* poses problems. One still uses the Hybrid Stroke to get around the setup, but the unplayability that is often a feature of Xenakis's solo instrumental writing (not just for percussion) can only be addressed by alteration of the score or invention of instruments. In the excerpt of *Rebonds b*, between bars 68 - 72, the percussionist is presented with the problem of having to perform a roll which moves around the lower

woodblocks whilst the incessant semi-quaver figures previously stated on the top bongo continue on the upper woodblock with interspersed drags. Tremoli are normally performed with two hands unless multiple sticks are employed, as is the case with keyboard percussion, which is not viable here. Kuniko Kato came up with a novel solution to the problem, which is to arrange the woodblocks strung up horizontally like marimba bars and then use mandolin rolls to play the one-handed rolls on the edge of each bar. The drawbacks associated with playing with four mallets permanently in the hands and the imprecise nature of the mandolin roll, speaks against this interpretation.

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Ex. 34: Xenakis, *Rebonds b*, author's own re-notated score, bars 68-70

The execution of both of these figures individually (i.e. if both hands were available for the execution of the musical lines separately) provides absolutely no problems for the accomplished percussionist. Here however, it is necessary to perform them simultaneously, one hand per line. There are a number of methods by which one may achieve this, some more desirable than others, but all of which worthy of inclusion:

1) Rolling with the one hand in the mouth of the woodblocks. This method presupposes that the mouth of the woodblocks are large enough to accept the tip of the drumsticks. It has the disadvantage that transitions between woodblocks are difficult and noisy. Also, the other, non-rolling, hand must perform the drags without the assistance of the left hand, which necessitates the use of one-handed triple stickings (three notes played in rapid repetition by one hand) - which is not easy at tempo.

2) Rolling with one hand between the bottom of one woodblock and the top of another. (Reportedly employed by Sylvio Gualda). The disadvantages associated

with this solution are similar to the abovementioned in that it is difficult to move the rolling hand between the woodblocks when, instead of being caught in the mouth, it is caught above and below two woodblocks. This is not an ideal situation, because it produces two different pitches. These pitches are also elicited by striking the woodblock at the back and top of one woodblock and the bottom and front of the other, perhaps the worst place to strike them in regard to richness of tone. The other option, is the implementation of an extra set of woodblocks upside down and underneath the primary woodblocks to combat the aforementioned issues. One of the secondary attractions of this work is that it utilises comparatively few percussion instruments, making it easily transportable, and this solution negates that aspect. Also having double woodblocks makes the execution of the other sections of the score more difficult to play.

3) Perform the rolled notes on the woodblocks in the conventional area on the woodblock but assign them an arbitrary value of demi-semi-quavers; when performed at speed, this will give the illusion of a tremolo. The rolling hand is uninhibited to move to the upper woodblock to aid the hand performing the semi-quaver patterns with the drags. Unfortunately, for the time that the roll-hand moves to the aid of the semi-quaver hand, the roll is necessarily neglected. One argument is that given the speed, the roll will not be missed by the listener and that the notes played previous to the movement of the roll-hand to assist with the drags on the top woodblock will provide enough sonority to carry the sound given the fast speed and rapid return movement to the woodblocks to be rolled on. This argument is also true of the following example. One might also apply the use of a triple sticking with the hand playing the upper woodblock while continuing the roll on the other woodblocks. One can make use of the stepwise configuration of the woodblocks as seen in the recorded performance and which shows the use of incremental strokes

4) Perform the rolled notes as the second and third parts of a triplet, the semi-quavers on the top woodblock always representing the first note of the three. The two notes of the triplet make up the roll on the lower woodblocks as well as the drags, whereby the notes of the roll are once again neglected by the roll-hand moving to assist the semi-quaver-hand. The natural flow of the drags is greatly assisted by this possible solution in that the triplets are already in use as the rolled notes.

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Ex. 35: Xenakis, *Rebonds b*, author's own re-notated score, bars 68-70

It should be noted that at the time of recording, this section was performed as described in EX. 35 (Track 29: 04:42), more recent live performances by the author favour the version set out in Ex. 34.

5) The most recently possible solution to this problem has come about due to the invention of a formerly unavailable uppermost woodblock; the *Drag Block* is fitted with two extra ridges which act as playing surfaces upon which the percussionist may perform a downward glancing stroke (much like sweeping stroke) as part of a Hybrid Stroke to execute a one-handed drag landing on the normal playing surface of the woodblock for the main semi-quaver note, all with the one hand. The rest of the patterns can be performed as demi-semi-quavers as in example 3.

While the hybrid technique adds to the manoeuvrability around multi percussion works, it cannot fix all of the problems inherent in this area of solo percussion performance. Xenakis's *Psappha* from 1976 also has some virtually unplayable aspects to it. Like the tremolo section between measure marking 2023 till 2176. The score calls for the soloist to play 2 or 3 strokes per note. This seems to be beyond the limit of human capability with two mallets or sticks. The conventional approach is to drop down to two mallets, and perform all the rolls as single strokes instead of doubles or triples. The only workaround that I have found to stay true to the score is to keep four mallets in hand, and use marimba-style ripple rolls around the *Psappha*

setup. This method works theoretically, but at times one stroke per note is played to give the impression of tremolo much like in the *Rebonds b* tremolo around the drums. The four mallets being held in this recording allow the artist to reach out for individual drum hits whilst still rolling. The roll is normally interrupted in order to achieve these notes. This recording shows this aspect of the score, the uninterrupted version of the roll, for the first time by using the ripple roll adapted from marimba performance. (Vid. 71: *Psappha*, nipple roll.) Aside from the section between 2023 and 2176, the rest of the piece is within the limits of playability, especially if one sets up the instruments in close proximity to one another. All aspects of HPT come into play in this composition:

The opening theme uses Moller duplets, DCI style arm strokes for continuous accents, Moeller Triplets and Extended Moeller between MM 00 and 20 all with four mallets in the hands. When the wood block section arrives at MM 275 the incremental playing of the marimba must be used on a small scale to rock back and forth between the two woodblocks and the larger wooden *simantra*. At 1440 both hands work independently between wood and metal instruments and must for themselves sweep around their own microcosm of instruments in figures that are not unlike the incremental playing used to perform Abe's *Variations on Japanese Children's Songs*. Double and triple strokes all occur in their unaccented form throughout the work and longer passages for one hand on one instrument also exist. These types of phrase are particularly apparent at MM 1290 to 1410.

From 740 to 1190 massive Hybrid Strokes must be employed to achieve the extreme dynamic, and the double stroke figures at 840 and 900 require lateral strokes in either hand deployed in contrary motion. Empty space in this dramatic section of the piece could be filled with gesture to fill the void, but sometimes no gesture at all is also a gesture. In this recording, for example, long silences between 990 and 1190 have great importance to the drama of the work. When this silence is broken by *fff* strokes, and the aim was to have the gestures match the extreme contrast to the nothing that came before them. *Psappha* is the logical end to the treatise on the Hybrid Stroke as it features so many aspects of the Hybrid Technique: Single, Double and Triple Strokes, Moeller Duplets, Triplets and Extended Moeller can be used in many areas of this work, as can incremental playing, body lead techniques and various sticking combinations to effectively interpret Xenakis's masterpiece. Many of the techniques

also find their limitation in sections of Psappha; where for example an incremental strokes, or sweeping between instruments, or HPT appears helps in one section of the piece, there are others where sheer hand speed, coordination and hard graft in the practise room are the only solution to the technical difficulties presented when learning and performing the work.

The possibility of the Hybrid Percussion Technique became particularly apparent when moving between instruments smoothly in the Schwantner Percussion Concerto with The Tasmanian Symphony Orchestra in 2010, where I realised that I was automatically transferring techniques associated with the snare drum across other instrument sets. The performance of this composition was later documented on film with Bob Hower and the Elder Conservatorium Wind Band. The process was recorded on video primarily to demonstrate the HPT in action. Between the recordings of these two major multiple percussion works, many works for various instruments were recorded applying the HPT with mixed results. Due to the exegesis limitations not all pieces recorded are discussed in detail, nevertheless they demonstrate how the HPT might be applied through performance.

Conclusion

The aim of this thesis was to develop an overarching technique in order to aid solo percussion performance and apply it to repertoire for the five main percussion groups. A highly adaptable technique was necessary to deliver solo percussion repertoire on the many different percussion instruments. The process of developing the Hybrid Percussion Technique has now been documented in this study through the recorded performances and exegesis.

The HPT based on the elliptical Moeller stroke was discussed in Chapter 1. The six basic motions initially applied to the performance of the PAS Rudiments for solo snare drum included single, double and triple strokes, Moeller duplet, triplet and extended Moeller. These were examined and synthesised to make a utilitarian stroke - the Hybrid Stroke. Importantly, the Handbook with its graphic re-notations as discussed in Chapter 2 presented new insights into the delivery of fundamental strokes of percussion performance. The next step, as reported in Chapter 3, was to apply them systematically to repertoire for timpani, vibraphone and multiple percussion. Finally, as Chapter 4 demonstrated, by adapting the strokes to include lateral motion to accommodate the increasing spread of instruments, the HPT was shown to assist the challenges of delivering the solo percussion repertoire for the modern performer. Furthermore, it shows how the HPT that takes one motion for the production of multiple sounds, can form the basis of a technique that does not rely on individual strokes to play every single note.

The performance of HPT in the recorded repertoire encompasses music for snare drum that ranges from marching style drumming in Marty Hurley's *Scud Attack* and *Phantom of the Phield* to more classical snare drumming in Wolfgang Reifeneders' *Crossover*, which shows the Hybrid Stroke in its early stages. Timpani works such as Bartok's *Sonata* and the Carter March highlight how these strokes can be used to achieve differing articulations and phrasing. Lateral motions are introduced to facilitate movement around the larger diameter drums. Repertoire for marimba such as Abe's *Variations on Japanese Children's Songs* and *Wind in the Bamboo Grove* show the adaptation of the strokes to include lateral movements to negotiate the instrument as well as to enhance phrasing ideas. Lateral movements like incremental strokes are used to aid speed and accuracy in rapid passage-work in the marimba

solos *Rhythmic Caprice* by Stevens and *Ultimatum* by Zivkovic. In vibraphone works such as *Midnight Star* by Friedman and *Bem Vindo* by Rosauero sweeping strokes are used to execute lines swiftly and without tangling hands when moving across the keyboard.

The application of HPT in the performance of the repertoire shows the potential range of variation of its delivery. In some instances it was vital to the success of the performance, such as in elbow and shoulder leading in virtually every bar in *Rebonds b*, to barely needing to implement it when recording *Les Violons Morts*. HPT does not remove the need for basic technical training for individual instruments and does not necessarily save the amount of practise time as originally predicted. It can supplement basic technique in order to add fluidity, ergonomic motion and different sonic choices through the elliptical shapes of the movements and incremental strokes. Furthermore, it also presents an extension of the basic individual techniques of the five main percussion instruments by focussing on finger, wrist, arm and shoulder collectively rather than seeing them as separate elements. Future applications of the HPT might include a comprehensive adaptation to multiple mallet keyboard percussion in 5 or 6-mallet marimba playing. The Handbook may also provide a systematic set of exercises to perform the PAS 40 Rudiments in a more pedagogically focussed manner in studio teaching.

The performances also show how subtle grip variations before, during and after impact with the instruments cause vastly differing articulations. For example, the wide dynamic range required in the selected works is achieved by stroke differentiation coupled with these alterations to grip. In addition, incremental playing was introduced in order to assist legato phrasing and facility around the timpani, keyboard and multiple percussion instruments. Sticking choices and their effect on phrasing were also investigated and their combination with body-leading techniques demonstrated. Shoulder-leading, elbow-leading, lateral wrist motions and their combinations were used to efficiently move between the larger skins of the timpani and other large percussion instruments, but also to execute dynamics, articulation and phrasing. Adding sideways motions created a smoothness of motion that helped achieve legato phrases, especially when arms were swept across the instrument to play the notes as they fell within the one motion across the keyboard or series of drums. Being able to play a series of unaccented notes whilst playing an upstroke

meant wider dynamic range could be achieved because Hybrid Strokes allow greater physical differences in stroke height; being able to play multiple notes in single-sweeping motions meant there are additional phrasing and articulation options available to the player than one individual stroke for each note affords. The ergonomic movements used in the Hybrid Stroke meant endurance was also felt to be greater.

The lateral motion inherent to HPT aids gesture as well as facility around the instruments. First, HPT can also be applied to intricate sections of the repertoire as well as an overall approach to grip, strokes, articulation and phrasing. For example, when staccato sounds are required, the accompanying gesture of HPT is abrupt in stroke and tightening of grip or when a *molto legato* direction is called for, the arms move in an ellipsis with a sweep across the keyboard, the visual sight of which enhances the perception of the sound it creates. This is particularly evident in the works of J.S. Bach included in this thesis. Second, the broad sweeping nature of many of the lateral strokes also means one can play multiple instruments in a multi-percussion setup or marimba bars within one gross motoric stroke. The technique has helped to reposition my relationship between me and my instruments by subtly changing the beating spots to allow me to sweep across playing areas. For example, I previously played straight up and down the length of the marimba, but with HPT I use more arc-like motions sweeping around the bars hopefully creating aurally and aesthetically pleasing gestural motions for the audience.

Challenges for the modern percussionist remain and continue to increase. The Hybrid Percussion Technique as developed and its principles applied in solo percussion performance in this study provides one approach to address such future technical challenges.

PHD Appendixes

Appendix 1: Summary of Recorded Repertoire by Instrument

	REPERTOIRE		
Instruments	Composition	Composer	Durata
Snare	Crossover for Snare Drum I. Militaerisch	Wolfgang Reifeneder	1.20
	II. Laendlich	Wolfgang Reifeneder	2.10
	IV. Temperamentvoll, Ausgelassen	Wolfgang Reifeneder	2.50
	Scud Attack	Marty Hurley	2.45
	Phantom of the Phield (Audio)	Marty Hurley	2.50
Timpani	March for Two Pairs of Kettledrums	Philidor Brothers	5.42
	March for Timpani	Elliot Carter	2:36
	Sonata for Two Pianos and Percussion	Bartok	33.28
Marimba	BWV 1007, Prelude, Suite Nr 1, 'cello	J.S. Bach	2:38
	Lauda Concertata (Audio)	Akira Ifukube	28.40
	Wind in the Bamboo Grove	Keiko Abe	7.00
	Variations on Japanese Children's Songs	Keiko Abe	7.51
	Rhythmic Caprice	Leigh H. Stevens	7.52
	Itsuki Fantasy for Six Mallets	Keiko Abe	7.20
	Ultimatum I	Nebosja J. Zivkovic	9.14
	Prelude Into The Dawning Day	Yoshioka Takayoshi	3.40
	Etude Nr. 1	Andrew Wiering	2.16
	Katamiya	Emmanuel Sejourne	3.21
	Ghanaia	Matthias Schmitt	8.01
	Les Violons Morts	Nebosja J. Zivkovic	4.02
	Prism	Keiko Abe	3.22
	BWV 478, Chorale: <i>Come Sweet Death</i>	J.S. Bach	2.47
	BWV 999 Praeludium in C moll	J.S. Bach	2.06
Vibraphone	Bem Vindo	Ney Rosauero	8.33
	Midnight Star	David Friedman	6.41
	Samba	Gerald Windbacher	2.50
	Bee 2	Emmanuel Sejourne	2.23
Multi-percussion			
	Composition in Blue, Grey and Pink	Andrew Ford	4.30
	Rebonds b	Iannis Xenakis	6.32
	Concerto for Percussion and Orchestra	Joseph Schwantner	29.40
	Psappa	Iannis Xenakis	15.22
	Darvaza 3	Nicholas Denison	18.31
		Total Durata:	238.5

Appendix 2: The Handbook. The 40 PAS Rudiments Divided Into Six Basic Motions.

Roll Rudiments

Single Stroke Roll



Single Stroke Four (Ruff)

The Ruff is best performed as a series of double strokes dropped out of phase so the right and left sticks become interwoven.

Single Stroke Seven

R.H extended Moeller

R.H triplet Moeller (accents smoothed out)

L.H triplet Moeller (accents smoothed out)

L.H extended Moeller (accents smoothed out)

Multiple Bounce Roll Rudiments

Multiple Bounce Roll (Buzz Roll)

Buzz/Multiple bounce roll

Triple Stroke Roll

R R R L L L R R R L L L

Double Stroke Open Roll Rudiments

Double Stroke Open Roll

R R L L R R L L R R L L R R L L

Five Stroke Roll

Five stroke roll

The tap stroke of the hand that plays the accent is the down stroke of an inverted Moeller duplet. A double is added to this tap.

R.H = inverted Moeller duplet (or interrupted triple sticking as inverse Moeller triplet)

Six Stroke Roll

The six stroke roll can be played in a duplet or triplet feel at will. Inverted Moeller duplets are at the core of the Rudiment when double strokes are applied to the taps.

Triplet-ised version

R + L Moeller duplets interspersed

Six - stroke roll

Inverse Moeller duplet

Seven Stroke Roll

Similarly, a seven stroke roll can be played as an inverted Moeller duplet and doubles applied to the taps.

Seven stroke roll

Moeller duplet inverted

Nine Stroke Roll

The nine stroke roll can be played using an inverted Moeller Triplet again with doubles added to the tap strokes.

9 stroke roll

Moeller triplet (inverse)

Ten Stroke Roll

The ten stroke roll is formed using an inverted extended Moeller stroke with doubles.

Eleven Stroke Roll

The same procedure applies for the remaining long rolls; double strokes are performed, then the inverted Moeller strokes are used to prepare for the accented stroke at the end of the roll. This applies for 11,13,15 and 17 stroke rolls and longer.

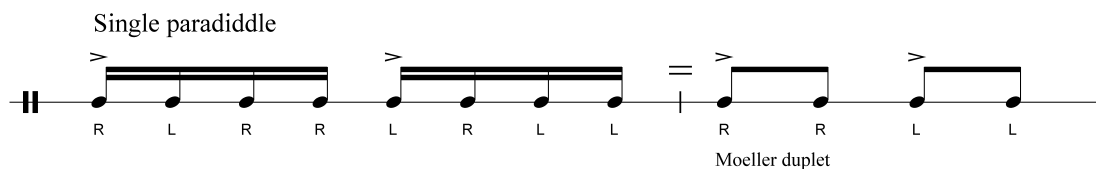
Thirteen Stroke Roll

Diddle Rudiments

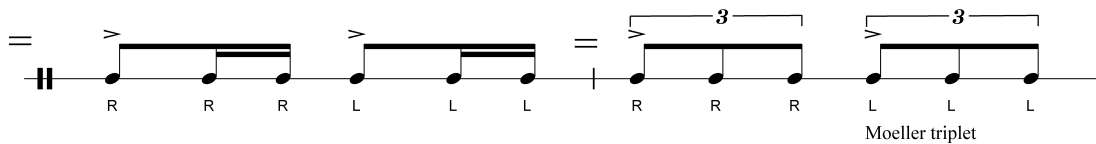
Single Paradiddle

There are many ways this rudiment can be broken down making it a hybrid of single, double, and triple strokes, as well as Moeller duplet, triplet and extended Moeller motions.

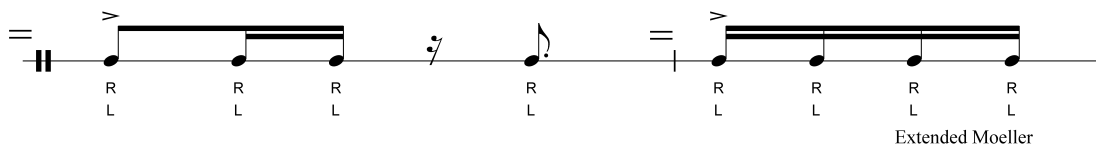
Single Paradiddle as a Moeller duplet



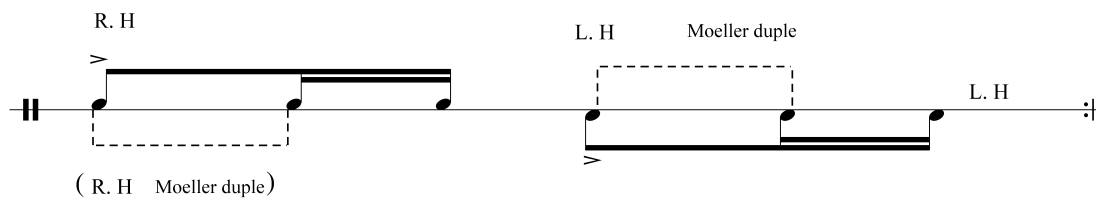
Single Paradiddle as a Moeller triplet



Single Paradiddle as extended Moeller

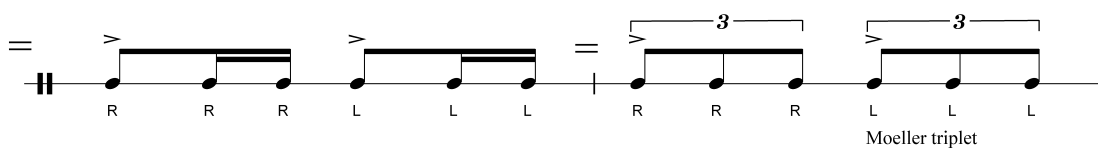


Moeller Duplet with a bounced double on the tap stroke



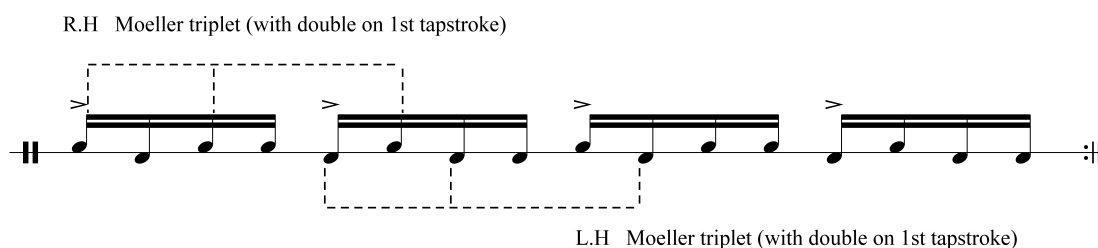
If we observe just one hand, it is clear that three strokes must be per hand, per beat. This can be achieved using either the Moeller triplet motion or a triple stroke or a hybrid of both.

Triple-sticking



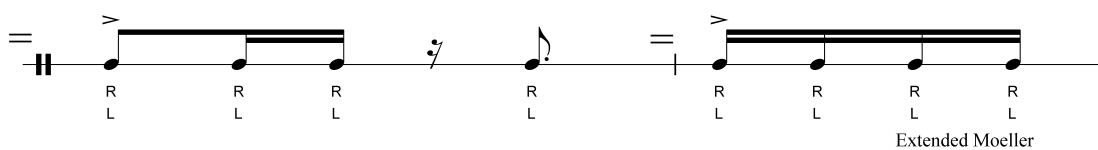
The Moeller triplet motion can also be found in the paradiddle. The middle note of the triplet can be bounced to play the full rhythm.

Moeller Triplet



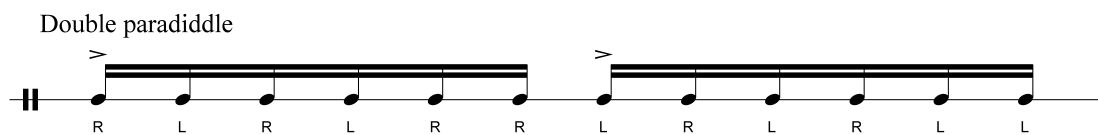
If we extend the view of the Rudiment to cover two beats, then it is apparent that the opposing hand must play its own three-note figure while the other hand plays another tap stroke to fill out the Rudiment. The motion is then classified as extended Moeller.

Extended Moeller



Double Paradiddle

The double paradiddle involves right hand and left hand Moeller triplet motions intertwined.



L.H Moeller triplet (inverse)

R.H Moeller triplet with double on last tapstroke OR Extended Moeller

The image shows two musical staves. The first staff contains a triplet of six notes with stickings R, L, R, L, R, R. A dashed line above it indicates an 'L.H Moeller triplet (inverse)'. The second staff contains a triplet of six notes with stickings L, R, L, R, L, L. A dashed line above it indicates an 'R.H Moeller triplet with double on last tapstroke OR Extended Moeller'. Both triplets start with an accent (>) on the first note.

Triple Paradiddle

The extended Moeller stroke is used in one hand while the other plays triple stickings to create a triple paradiddle.

Triple paradiddle

R.H extended moeller with double on last tapstroke

The image shows two musical staves. The first staff is titled 'Triple paradiddle' and contains two groups of triplets. The first group has stickings R, L, R, L, R, L, R, R. The second group has stickings L, R, L, R, L, R, L, L. Both groups start with an accent (>) on the first note. The second staff is titled 'R.H extended moeller with double on last tapstroke' and contains two groups of triplets. The first group has stickings R, L, R, L. The second group has stickings R, L, R, R. Both groups start with an accent (>) on the first note. Dashed lines above the second staff indicate the 'R.H extended moeller' stroke.

Single Paradiddle-diddle

The paradiddle-diddle is an asymmetrical Rudiment in which the accented hand plays an phase-shifted Moeller triplet where the third note is pushed closer to the second. The non-accented hand can use Moeller duple with a double stroke added, a triple sticking or the Moeller triplet with the accent smoothed out to execute its part of the uneven figure

Paradiddle-diddle

The image shows a musical staff titled 'Paradiddle-diddle'. It contains a triplet of six notes with stickings R, L, R, R, L, L. The first note has an accent (>). The staff ends with a double bar line and a repeat sign (//).

Contracted/crunched R.H Moeller triplet
or
Moeller duplet with a double

L.H Moeller with double on final tapstroke
or
Triple sticking contracted/crunched
or
Moeller triplet with accent smoothed out

Flam Rudiments

Alternating Flams

Alternating flams consist of Moeller duplet motions; the main note is the accented portion of the duplet and the grace note is the tap stroke.

R.H Moeller duplet

L.H Moeller duplet

Alternating flams

L R R L = R R L L

L R R L = R R R L L L

R.H Moeller duplet, in triplet feel

etc.

R.H extended Moeller (L.H vice versa)

Flam Taps – Moeller duplet / triple-sticking

The Moeller duplet motion is useful in executing the accented and unaccented portion of the flam tap. The grace note on the same hand following the tap stroke makes for a triple sticking, therefore this rudiment is a combination of Moeller duplet and triple sticking.

R.H Moeller duplet

L.H Moeller duplet

Flam tap

L R R

R L L

The flam tap is really a phase-shifted triple sticking.

R.H triple sticking

L.H triple sticking

Flamacue

The Flamacue uses both the inverse Moeller duplet motion on one hand followed by a Moeller Triplet on the other to create this asymmetrical pattern.

Inverse Moeller Duplet

Moeller Triplet

Flam Paradiddle

The flam paradiddle can be performed using an out of time extended Moeller stroke or an accented single stroke with a triple stroke, the third of which is the grace note.

Flam Paradiddles

R.H extended Moeller

L.H extended Moeller

Single Flammed Mill

The single flammed mill is two double strokes separated by a single stroke on the opposing hand, or it can be played using the motion of an extended Moeller strokes.

Single flammed mill

R.H. extended Moeller L.H. extended Moeller

Flam Paradiddle-diddle

The flam paradiddle-diddle consists of triple stickings in its last three notes (on the Left hand in example), a Moeller duplet with a double on the second tap (on the right hand in the example) and a Moeller triplet motion to create the last two taps, and the grace note of the next portion of the figure (observing all of the left hand notes of the Rudiment).

R.H = 1) Triple sticking
2) Moeller triplet
3) Moeller duplet + double on last tapstroke

L.H triple sticking

Pataflafla

The pataflafla uses a Moeller triplet that is out of phase.

Pataflafla

R.H Moeller triplet, jagged rhythmically

Swiss Army Triplets

The accented portion of a Swiss army triplet is identical a Moeller duplet. When the player reduces the volume of the accents, the motion of the triplet is identical to a double stroke.

The diagram shows a sequence of rhythmic patterns on a staff. The first pattern is a Moeller duplet with notes L, R, R, L and an accent on the first note. The second pattern is a triplet with notes L, R, R, L, L, R, R, L and accents on the first and fourth notes. The third pattern is a triplet with notes R, R, L, L, R, R, L, L and accents on the first and fourth notes. Dashed boxes and arrows indicate the relationship between these patterns: 'Moeller duplet' is shown under the first pattern; 'Becoming doubles' is shown with an arrow pointing from the first pattern to the second; 'Broadens to actual doubles' is shown with an arrow pointing from the second pattern to the third.

Inverted Flam Tap

This Rudiment can be play by using the inverted Moeller duplet motion.

The diagram shows a sequence of rhythmic patterns on a staff. The first pattern is an inverted Moeller duplet with notes L, R, L, R, L, R and accents on the first and fourth notes. The second pattern is an inverted Moeller triplet with notes L, R, L, R, L, R, L, R and accents on the first and fourth notes. Dashed boxes and labels identify the patterns: 'Inverted Moeller Duplet' is shown under the first pattern; 'Inverted Moeller Triplet' is shown under the second pattern; 'Inverted Moeller Triplet' is also shown above the second pattern.

Flam Drag

The flam drag consists of Moeller triplets in the hand that plays the accent while the other hand uses an inverted extended Moeller stroke.

The diagram shows a sequence of rhythmic patterns on a staff. The first pattern is an inverted extended Moeller stroke with notes L, R, L, L, R, R, R, L and accents on the first and fourth notes. The second pattern is a Moeller triplet with notes L, R, L, L, R, R, L, L and accents on the first and fourth notes. Dashed boxes and labels identify the patterns: 'inverted extended Moeller' is shown above the first pattern; 'Moeller Triplet' is shown below the second pattern.

Drag Rudiments

Alternating Drags

Alternating drags show a Moeller duplet motion. The accent can be reduced (if the Rudiment is notated without an accent) in the same way as a Moeller triplet motion can be played without an accent to create triple stickings.

L L R R R L

Moeller Duplet with double

The remaining drag Rudiments can be analysed in the same way as their drag-less namesakes. These Rudiments simply require double strokes to create the drags at the beginning of each pattern.

Single Drag Tap

L L R L R R L R

Inverted Moeller Duplet plus double

Double Drag Tap

L L R L L R L R R L R R L R

Lesson 25

Inverted Moeller Duplet

Single Dragadiddle

Moeller Triplet with added double on accent

Drag Paradiddle #1

Inverse Moeller Triplet plus double,
or Inverse Extended Moeller

Moeller Triplet plus double,
or Inverse Extended Moeller

Drag Paradiddle #2

Inverse Extended Moeller plus doubles

Extended Moeller plus doubles

Single Ratamacue

Musical notation for Single Ratamacue. The staff shows two measures. The first measure contains a triplet of eighth notes (L, L, R) followed by a dotted quarter note (L) and an eighth note (R). The second measure contains a triplet of eighth notes (R, R, L) followed by a dotted quarter note (R) and an eighth note (L). A bracket above the triplet in each measure is labeled '3'. A fermata is placed over the final eighth note of each measure. Below the staff, the footings are: L L R L R L for the first measure and R R L R L R for the second. A dashed line connects the first three footings (L L R, L, R) of the first measure to the text 'Inverted Moeller Triplet plus double'.

Inverted Moeller Triplet plus double

Double Ratamacue

Musical notation for Double Ratamacue. The staff shows two measures. The first measure contains a triplet of eighth notes (L, L, R) followed by a dotted quarter note (L), an eighth note (R), and a dotted quarter note (L). The second measure contains a triplet of eighth notes (R, R, L) followed by a dotted quarter note (R), an eighth note (L), and a dotted quarter note (R). A bracket above the triplet in each measure is labeled '3'. A fermata is placed over the final eighth note of each measure. Below the staff, the footings are: L L R L L R L R L for the first measure and R R L R R L R L R for the second. A dashed line connects the first three footings (L L R, L L R, L) of the first measure to the text 'Extended Inverted Moeller plus doubles'.

Extended Inverted Moeller plus doubles

Triple Ratamacue

Musical notation for Triple Ratamacue. The staff shows two measures. The first measure contains a triplet of eighth notes (L, L, R) followed by a dotted quarter note (L), an eighth note (L), and a dotted quarter note (R). The second measure contains a triplet of eighth notes (L, L, R) followed by a dotted quarter note (L), an eighth note (R), and a dotted quarter note (L). A bracket above the triplet in each measure is labeled '3'. A fermata is placed over the final eighth note of each measure. Below the staff, the footings are: L L R L L R L L R L for the first measure and L L R L R L for the second. A dashed line connects the first three footings (L L R, L L R, L) of the first measure to the text 'Extended Inverted Moeller plus doubles'.

Extended Inverted Moeller plus doubles

Table 2. Distribution of the 40 Rudiments into the six motion categories**Roll Rudiments**

Single Strokes	Double Strokes	Triple Strokes	Moeller Duplet	Moeller Triplet	Extended Moeller
4 Stroke Ruff	4 Stroke Ruff	Single Stroke 7		Single Stroke 7	Single Stroke 7
Single Stroke Roll	Double Stroke Roll	Triple Stroke Roll			
	5 Stroke Roll		5 Stroke Roll	5 Stroke Roll	
	6 Stroke Roll		6 Stroke Roll		
	7 Stroke Roll		7 Stroke Roll	7 Stroke Roll	
	9/10/11 Stroke Rolls			9/10/11 Stroke Rolls	
	13 Stroke Roll				13 Stroke Roll
	Double Stroke Roll				

Diddle Rudiments

Single Strokes	Double Strokes	Triple Strokes	Moeller Duplet	Moeller Triplet	Extended Moeller
		Paradiddle	Paradiddle	Paradiddle	
				Double Paradiddle	Double Paradiddle
			Paradiddle Diddle	Paradiddle Diddle	Triple Paradiddle

Flam Rudiments

Single Strokes	Double Strokes	Triple Strokes	Moeller Duplet	Moeller Triplet	Extended Moeller
		Flam Tap	Alternating Flams	Flam Taps	Flam accent
		Flam Paradiddle-diddle	Flam Paradiddle-diddle	Flam Paradiddle-diddle	Flam Paradiddle
	Swiss Army Triplet		Swiss Army Triplet	Pataflafla	Single Flammed Mill
		Inverted Flam Taps		Inverted Flam Taps	
				Flam Drag	Flam Drag

Drag Rudiments

Single Strokes	Double Strokes	Triple Strokes	Moeller Duplet	Moeller Triplet	Extended Moeller
	Drag				
			Alternating Drags	Alternating Drags	
			Single Drag Tap	Single Drag Tap	
				Double Drag Tap	Double Drag Tap
		Lesson 25	Lesson 25		
				Drag Paradiddle	Drag Paradiddle
				Drag Paradiddle #1	Drag Paradiddle #1
Single Strokes	Double Strokes	Triple Strokes	Moeller Duplet	Moeller Triplet	Extended Moeller
					Drag Paradiddle #2
				Single Ratamacue	Single Ratamacue

					Double Ratamacue
					Triple Ratamacue

Table 3. Rudiments as they appear in the repertoire

	Scud Attack	Crossover	Phantom of the Phield
	Bar No.	Bar No.	Bar No.
Rudiment			
Single Stroke Roll		2	
Single Stroke Four (Ruff)		1	
Single Stroke Seven	40	27	
Buzz Roll	39		
Triple Stroke Roll	50		
Open Stroke Roll			40
Five Stroke Roll			41
Six Stroke Roll			41
Seven Stroke Roll	21		41
Nine Stroke Roll		18	
Ten Stroke Roll			25
Eleven Stroke Roll			29
Thirteen Stroke Roll		23/24	
Fifteen Stroke Roll		31	
Seventeen Stroke Roll		9/29	
Single Paradiddle	Page 3		42
Double Paradiddle	Page 3		
Triple Paradiddle	Page 3		
Paradiddle-diddle	Page 3		
Flam	70	4	
Flam Accent			50

Flam Tap	33		
Flamacue			***
Flam Paradiddle	29	13	46
Single Flammed Mill			61
Flam Paradiddle-diddle			***
Pataflafla			11
Swiss Army Triplet	52		
Inverted Flam Tap			50
Flam Drag	18		
Drag	70, 8		
Single Drag Tap			1
Double Drag Tap			71
Lesson 25			78
Single Dragadiddle			37 (flam added)
Drag Paradiddle #1			68
Drag Paradiddle #2			68
Single Ratamacue			72
Double Ratamacue			72
Triple Ratamacue			***

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