OPEN/CLOSE:
THE CONTROL OF LENGTHS OF SOUND PRODUCED BY A DRUM SET

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DECLARATION

I declare that the research presented here is my own original work that has not been submitted to any other institution for the award of a degree. Ethical approval has been granted for the study presented in this thesis from the Sydney University ethics Committee. Participants were required to read an information statement and sign a consent form prior to the collection of data.

Signed: 

Date: 30/07/16
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ABSTRACT

Open/Close is the concept of gaining greater control of the lengths of sounds produced by a single stroke using drum sticks on the drum set (open referring to long, and closed referring to short). The primary focus of this study is to develop the necessary techniques to spontaneously lengthen and shorten sounds produced on the drum set in an interactive musical environment, creating a deeper awareness and control of the sounds produced on the drum set. The use of long and short sounds is a primary element in music making, however in the traditional approach to playing the drum set this element is commonly overlooked, largely due to restrictions emerging from the physical construction of the drum set and an absence of related techniques and instructional guides.

Research appearing in these pages focuses on investigating all available evidence relating to the closed stroke (commonly labeled dampening techniques, muffling techniques, muffled stroke or dead stroke when discussed in relation to Marimba, Vibraphone and Timbale) as the primary technique-based method for the shortening of sounds on the drum set. Since there is limited published evidence on the closed stroke available, especially relating to the application of this technique on the drum set, further evidence will be obtained through research into selected video examples.

This study includes a brief history of the evolution of the drum set, an explanation of how drums/cymbals produce sound, along with discussions regarding the preparation of the drum set through the use of dampening methods and devices to provide pre-determined control of length of sound produced on the drum set.

This study will also present my personal developmental processes associated with my adaptation of existing closed stroke techniques, and the development of my own technique for producing closed strokes on the drum set. I will also offer an investigation into original and/or existing methods for performing long notes on the drum set such as the buzz tail, sizzle stroke, push stroke, as well as the preparation of the drum set in order to create a greater contrast between open and closed notes.

In addition, this study offers a range of developmental practices associated with incorporating Open/Close into rhythmic phrases and drum set runs applicable to a wide variety of musical contexts.
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CHAPTER 1

Overview

Introduction

The inspiration for this study into the concept of Open/Close began from a personal pursuit to be able to create beds of sound on the drum set. Initially, my approach involved experimenting with a variety of different methods to produce long sounds and continuous textures on the drum set in order to generate beds of sound that could be layered and overlapped, creating momentum or flow within a solo or ensemble setting.

For a period of time leading up to the study of Open/Close, I had been listening to a substantial amount of minimalist electronic music. I became fascinated with the feeling that was created by the music of artists such as Brian Eno and Jon Hassell, and was inspired to try and emulate a similar feeling on the drum set. I had also been listening to and absorbing the influence of improvising percussionists such as Tony Buck, Tony Oxley, Paul Lovens and Burkhard Beins, who for me were able to achieve this feeling with their unique playing styles.

I initially followed a similar path to drummers mentioned above, using various preparations, both commercially available and found objects, along with extended techniques to try and recreate these ideas, however after some time I began to feel detached from this approach, realising that without the use of these objects and extended techniques I could not create the intended feeling on the drum set. So I began the process of gradually limiting the use of preparations and returning the focus to the bare essentials, the use of conventional techniques on the drum set with conventional implements such as the stick, brush and mallet.

This led to the decision to try and create long sounds on the drum set from single stroke without the use of any preparations, and although I was still drawn to the flow that can be created by the use of preparations, I wanted to exhaust the possibilities of conventional drum set techniques. I felt that making a conscious decision to work on the concept of the control of the length of sound produced on the drum set for a few years, without deviating back to my previous approach, would allow myself the opportunity to thoroughly investigate the possibilities within these pre-determined parameters.

In the process of eliminating the use of objects and extended techniques I began looking back into the work of some of my favorite jazz drummers who, for me, demonstrated an awareness of lengths of notes appearing in their playing, including drummers such as Paul Motian, Joey Baron, Jim Black and Ted Poor. I realised that a lot of the jazz drummers that had been hugely influential to my approach on the drum set employed the use of techniques to alter lengths of sound on the drum set. In response, I began practising
and applying this approach in as many musical settings as I could (within reason) however it wasn’t too long before it became apparent that I had thrown my drumming out of balance, I needed contrast!

More specifically I lacked the fundamental control of short notes and, because my drums were tuned open (with no dampening whatsoever), I needed a physical technique that allowed for spontaneous control of drums whilst still having access to long sounds. Enter the closed stroke (the shortening of the length of sound produced by the drum through the use of technique to physically restrict the drum's/cymbal's natural decay).

Since this point I have been investigating methods and techniques in order to develop as much control as I possibly can over the lengths of sound produced on the drum set. I have found that the ability to control lengths through the use of technique, especially on drums that are tuned open, has opened up new possibilities in regards to spontaneously controlling the sonic space that I occupy in an ensemble along with the development of a new vocabulary of sounds from which I draw upon in jazz/improvised music settings.

**Purpose**

The purpose of this study into the techniques and application methods of Open/Close is to bridge the gap between the original conceptual idea of the control of lengths of sound produced on drum set and the act of making music, thus integrating Open/Close into my unique voice on the drum set. This study is not a demonstration of a my individual musical approach to playing the drum set but more the documentation of the history of existing techniques and the processes associated with the personal development and adaption of existing and new techniques in regards to obtaining greater control of the length of sounds produced on the drum set.

Through investigative research into available published material and video evidence, I will prove that Open/Close is a valuable tool that can be employed in one’s approach to modern drumming, and that is worthy of documentation and further study. I will also document my personal practical investigations into the development and application of the timbale muffled stroke along with documenting the development of my own version of a closed stroke, the “natural closed stroke”. Since the concept of Open/Close encompasses all methods of generating or controlling lengths on the drum set from a single stroke I will also include documentation of several alternate single stroke techniques such as the buzz-tail stroke, the sizzle stroke and the push stroke, which are all as integral to the concept of Open/Close as the closed stroke.

The following research and investigations will only focus on the use of drum sticks and mallets and will not include the use of the brushes (specialty drum stick constructed of a fan of metal or plastic bristles connected to a drum stick style handle). It is also worth stressing that this study will not look into any variations of the drum roll as a means of creating long sounds on the drum set as most drum rolls are constructed of multiple strokes requiring the use of both the right and left hand. This also rules out any comparisons between the concept of Open/Close and open or closed rolls.
This study aims to offer a greater understanding of the use of pressure in the physical application of closed strokes as well as an overview of basic knowledge to assist in a deeper understanding of the physical workings, and outside variables, associated with creating a personalised approach to drum set technique.

Description of Methods

Research

The following research sets out to prove that there is a lack of published evidence into the instruction of techniques associated with the control of note lengths on the drum set, in particular the closed stroke. This will be achieved by research into available published information and video evidence relating to the application of the closed stroke played on the timbale, vibraphone/marimba and drum set.

My research has made it clear that although there is a reasonable amount of published evidence for the closed stroke on the vibraphone, marimba, and timbale, there is little directly related published evidence of the application of closed strokes to the drum set. There is however, a substantial amount of video evidence to support the history of the application of the closed stroke on the drum set. Video evidence will be used to provide visual instruction into the application of the closed stroke on a drum set and as documented evidence of the concept of the control of note lengths on the drum set.

The literature review in Chapter Two contains four sections:

Section 1) Snare drum

Section 2) Drum set

Section 3) Timbale

Section 4) Mallet percussion

In general, tutor books associated with the above percussion instruments provide only limited written instruction with little to no instructional images relating to the physical act of playing a dead stroke or any other dampening stroke. There are no published theses that exist discussing the instruction and application of closed strokes on the drum set or mallet dampening on the vibraphone/marimba, with the exception of mere mentions in several papers, such as: *A Performance Guide to the Music and Solo Improvisational Style of Dave Samuels*, (Mason, 2009), *Three New Works for Solo Percussion and Live Electronics*, (Wier, 2015), *Musical and Technical Challenges in Selected Vibraphone Works of Ney Rosauro*, (Scott, 2015), *The Performance of Contrapuntal Music on the Marimba and Vibraphone*, (Walter, 1984). The references to dampening techniques in these papers are short discussions regarding the use of specific dampening techniques for a specific composition. Unfortunately there are no theses that discuss the control of note length or muffling techniques on the drum set to any degree.
Chapter Three will provide necessary background information including a brief history of the drum set and a basic understanding of the construction and workings of drums and cymbals. These sections will focus on providing general knowledge of the drum set to aid in the comprehension of concepts and developmental processes discussed in Chapter Five.

The documentation of video evidence in Chapter Four represents a portion of the large body of audio/visual evidence available from a selection of world renowned drummers, documenting their musical application and individual approaches to the physical act of playing a closed stroke. There is also documentation of video evidence from world renowned drummers showing the inspiration for this study into the concept of Open/Close, discussing their individual approaches to creating beds of sound and the greater control of lengths of sound produced on the drum set.

The information obtained through the research into video evidence is invaluable to this paper, especially in regards to guidance through the developmental processes undertaken by myself. These documented videos are proof of the existence of an awareness of note lengths and the individual techniques utilised for the control of note lengths on the drum set by multiple world-renowned drummers.

*Developmental Processes*

Chapter Five will further discuss the concept of Open/Close, looking closer into the practical research undertaken by myself over the last few years, from both practice and performance settings in the jazz/improvised music field. This chapter will discuss developmental processes and the processes associated with the integration of the closed stroke with existing drum set techniques to create new conceptual and technical possibilities to be used in conjunction with a modern drum set vocabulary. These discussions will be aided by a selection of short videos, documenting various developmental processes undertaken by myself as well as the documentation of associated techniques integral to the concept of Open/Close.

Chapter Five will contains three primary areas of focus:

- The closed stroke
- Associated techniques
- Application

Research outcomes appearing in Chapter Five represent results emerging through a highly intensive three-year developmental period of practical research into the creation of functional techniques associated with the concept of Open/Close and the integration of this concept within a modern drum set vocabulary.
Video Demonstrations

All original video examples will be recorded in a controlled environment. The space, drums, cymbals and sticks will remain consistent for all recordings included in this study, along with the audio/video equipment used and its placement in the space. There will be no editing to any sonic aspect of the audio recordings.
Snare drum

In the process of researching drum set techniques, it is important to first investigate the published evidence relating to snare drum techniques, as these form the basis upon which drum set technique is structured. Although similar techniques are used for playing the snare drum and the drum set, the physical differences of the drum set requires slight alterations to the traditional snare drum approaches. Examples of these differences such as the playing position (sitting instead of standing), use of drums, cymbals and pedals simultaneously, requiring the use of any combination of limbs at any given time, movement between playing surfaces and the difference in rebounds caused by the difference in drums, cymbals and sticks used. This creates the need for a hand grip that is more flexible and tailored depending of the approach of the individual practitioner.

Instruction into the playing of the snare drum has evolved tremendously in the last two centuries since the first snare drum tutor book *The Art of Beating the Drum* by Samuel Potter was published in 1817 (Strain, 2002). There is now a abundance of quintessential snare drum tutor books available to instruct practitioners of the snare drum/drum set such as *Stick Control* (Stone, 1963), *Accents and Rebounds* (Stone, 1961), *Master Studies* (Morello, 1983) and the *Podemski Snare Drum Method* (Podemski, 1940). These books and their authors are all prominent figures in the documentation, development and education of snare drum technique yet not one of these books offers any direct evidence of the use of closed strokes on the snare drum, or the use of any related dampening technique. The information in these books predominately deals with introductory through to advanced snare drum techniques such as the fundamental strokes, stickings, rudiments and rolls, as well as presenting various exercises for developing better rhythm, dynamics and speed. In *Wrist Twister, A Musical Approach to Snare Drumming* (Bailey, 1999) there is again no mention of the closed stroke, however there is a substantial amount of written instruction regarding the rebound of the stick,

...you’re going to allow the stick to rebound off the playing surface. You don’t want to trap it in the hand by the fingers underneath the stick or in the fulcrum area. If either if those elements is tight, the stick will have no freedom to rebound. (Bailey, 1999)

This quote from Bailey could possibly explain why techniques such as closed strokes are not commonly discussed in these contexts because they work against the general approach to snare drum technique, which is traditionally structured around the use of rebound from the drum.
The physical act of playing a closed stroke requires leaving the stick in the drumhead after it is struck so as to dampen the ring of the drum, therefore working against the natural rebound of the drum. The choice to not use the rebound means that the practitioner has to physically return the stick to the up position for the following stroke rather than utilising the rebound and momentum from the down stroke to assist in returning the stick to the up position, ready for the next stroke. The closed stroke requires the practitioner to hold the stick in the drum head as long as possible to dampen the ring of the drum which delays the up stroke to the last possible moment, affecting the speed in which the following stroke can be applied, due to limited preparation time.

Borrowing from the terminology of our brass-playing colleagues, rolls are our long tones. It’s the only way a percussionist can play a sustained sound of on the snare drum, or any percussion instrument, for that matter. (Bailey, 1999)

The quote above also from Bailey, presents a more traditional interpretation of playing long notes on a drum, however the application of a roll on a drum does require continuous strokes from both hands. This limits the possibilities in regards to layering sounds and the use of non linear patterns with the hands, as both hands are required to execute a roll.

In terms of documented instruction into the workings of different hand techniques, the article The Evolution of Snare Drum Grips (Strain, 2002) presents a thorough timeline of the evolution snare drum grips over the last 200 years, documenting the evolution of the two fundamental grips in use today, matched grip and traditional grip. Although there is no reference of techniques associated with closed strokes, Strain does document several different finger positions and fulcrum variations from the evolution of both grips, both of which are relevant to the development of closed stroke techniques and will be discussed further in Chapter Five of this study.

Drum Set

Published evidence in regards to closed strokes on the drum set is scarce, and any mention appearing in the limited available published evidence is usually without instruction. Any mention of closed strokes in relation to their application on the drum set is primarily in the context of an adaption of Afro-Cuban rhythms from the timbale to the drum set, yet there is no available explanation into the physical instruction or development of the stroke for application on the drum set. A published example of this is in The New Method for Afro-Cuban Drumming (Branly, 2004), where Branly includes a picture example of muffled stroke (closed stroke) along with a brief explanation of the use of the this stroke on the drum set.

..A technique used by many timbaleros that can be applied to the drum set. Pressing the index finger onto the stick as you strike the head muffles the drum sound. (Branly, 2004)

This seems one of a handful of pieces of published drum set related evidence of a closed stroke and offers little instruction into the physical workings of this technique, and fails to explain how to integrate closed strokes with open strokes. In addition, there is no mention of the fact that this is a timbale related technique or that timbales are a different style of drum to drums that make up a drum set. Timbales are single-headed drums, while the drum set is made up of double-headed drums (Figure 2.1), and timbales use
non tapered sticks whereas the drum set uses tapered sticks (Figure 2.2). These attributes make a difference to the application of the closed stroke and this can be seen in the various comparisons documented in Chapter Five of this study.

Figure 2.1, Image of timbale and a snare drum

Two early drum set tutor books that have maintained their relevance to the present day, *Advanced Techniques for the Modern Drummer*, (Chapin, 1948) and *Progressive Steps to Syncopation for the Modern Drummer*, (Reed, 1958), and are possibly the two most important drum method books, especially for up and coming jazz drummers. However, both of these books fail to make mention of closed strokes, or any strokes at all for that matter. In my experience, it is common for drum tutor books to offer no specific instruction into the physical techniques involved with the use of all four limbs to play the drum set.

It should be noted that many books have no direction whatsoever, and that methods written for drum set players have only in recent years begun to illustrate the various positions the hand might assume (i.e., thumbs up) when performing on the ride cymbal, as apposed to the snare drum (Strain, 2002).

Modern jazz drum set books such as *The Art of Bop Drumming* (Riley, 1994) and *Beyond Bop Drumming* (Riley, 1997) also make no mention of closed strokes or any strokes in general for a matter of fact however in terms of note lengths there are exercises in
Beyond Bop Drumming to suggest that the use of note lengths on the hi-hat is a standard approach to the jazz drumming tradition. Similar exercises can also be found in The Drummers Complete Vocabulary as taught by Alan Dawson (Ramsay, 1997), however the way in which these exercises are presented suggest the use of associated long and short notes in terms of rhythmic placement rather than the production of different lengths of sounds. apart from the "Roy Haynes Special". This exercise uses a stick shot for short notes and a unison buzz for the long notes which creates two contrasting lengths of sound. This exercise is a documented example of a trademark lick (musical phrase specific to that particular musicians vocabulary) and probably the closest related example in a jazz drumming context in regards to the concept of open/close.

The above mentioned books are all quintessential in the instruction of jazz drumming to students and professional musicians alike, however they only provide limited instruction into the use of closed strokes and very little on the control of the lengths of sound produced by the drum set. When there is mention of closed strokes, as in Branly, it is assumed that the technique of applying a closed stroke is common knowledge, as though closed strokes were one of the basic strokes of drumming. This seems to be a common misconception in the limited published evidence, showing the need for further research into the instruction and application of closed strokes through an analysis of video evidence. The same can be said in regards to the discussion and instruction into the use of contrasting lengths of sound on the drum set with the majority of published evidence suggesting an application in terms of rhythmic placement where the length of the sound does not change but rather the space around the sound changes due to the rhythmic placement within the pulse.

Timbale

A muffled tone or dead stroke on a timbale is actually one of the fundamental strokes and is therefore well documented in tutor books, video and audio. In the timbale tutor book The Art of Playing Timbales (Rendon, 2001), Rendon offers a clear picture example of a muffled stroke and explains the use of the this stroke in relation to the vocabulary of the timbale.
A muffled tone is produced by pressing the stick against the head (Rendon, 2001).

Although there is no specific technical advice on playing this stroke, Rendon does give a photographic example of a muffled tone. The technique photographed in Rendon’s book is the same as the image displayed in *The Essence of Afro-Cuban Percussion & Drum Set*, (Uribe, 1996). The technique demonstrated in Figure 2.3 has been reproduced to match the images of the muffled stroke displayed in both these books, demonstrating the use of the index finger on top of the stick.

Although Uribe’s book mentions the use of the muffled stroke in both the timbale section and drum set section of his book, he neglects to include any form of instruction apart from the image supplied in the timbale section.

**Mallet Percussion**

The majority of published evidence relating to dampening techniques appears in material associated with mallet instruments, specifically the marimba and vibraphone. ‘Mallet dampening’ techniques are considered to be one of the more modern techniques and are useful for shaping phrases on mallet instruments. The closed stroke is especially prevalent on the vibraphone due to its association within the jazz idiom. Below is a short quote from the foreword of Friedman’s book *Vibraphone Technique: Dampening and Pedaling* expressing the possibilities of dampening techniques:

> The newly discovered possibilities of dampening and pedal techniques are certainly the most important additions to vibraphone skills. With these techniques, the flexibility of the instrument, both in phrasing and multi-line playing is greatly improved and, most importantly, the expressive freedom of the player is increased tremendously (Burton as quoted by Friedman, 1973).

Friedman offers clear descriptions of several dampening techniques such as the description below of mallet dampening, also known as a closed stroke:

> Mallet dampening is accomplished by striking a note, and dampening (pressing the head of the mallet on the bar so as to stop the vibrations) it with the same mallet while another mallet strikes the next note (Friedman, 1973).

Friedman discusses the application of these dampening techniques in musical settings, such as playing a melodic line over a sustained chord, which would be an impossible feat without mallet dampening, as well as altering the harmonic function of chords played without raising the pedal. The application of these techniques can be heard in the playing of jazz vibraphonists Gary Burton and David Samuels, both of whom were innovators in the development of mallet dampening techniques.

In Douglas W. Walter’s PhD dissertation, *The Performance of Contrapuntal Music on the Marimba and Vibraphone* (1984), Walter discusses the necessity for such techniques in relation to performing contrapuntal music, especially on the Marimba. Walter explains how there is much music written for the Marimba that does not take into account the length of ring naturally produced by the bars,
which causes brief moments of dissonance. Walter’s dissertation also includes similar descriptions of mallet dampening techniques to those of Friedman’s, although he also utilises the hand in the act of mallet dampening:

Dead Sticking – Keeping the head of the stick on the bar after the bar is struck. This action muffles the bar immediately and creates a short, dry sound (Walter, 1984).

Mallet Dampening – Stopping the bar from vibrating by pressure from the hand or mallet head (Walter, 1984).

Further recognition of mallet dampening techniques can be found in Robert Anthony Paterson’s dissertation Sounds that Resonate, Selected Developments in Western Bar Percussion During the Twentieth Century (Paterson, 2004). In addition to dead strokes/mallet dampening, Paterson provides a more exhaustive list of available mallet dampening techniques such as ‘slide dampening’, ‘touch-tone dampening’, ‘adjacent note mallet dampening’, ‘gradual dampening’, ‘delayed dampening’, delayed dead stroke dampening’ and ‘mallet head buzz dampening’. The last four techniques may be applied to the drum set conceptually but technically will need to be adapted, some more than others, with the main concerns being the use of pressure/tension.

Figure 2.4, Image of mallet and drum stick showing different pivot points (Marked in red)

Paterson also offers a substantial discussion exploring the physical performance characteristics of using different mallets for different dampening techniques. Here he offers examples such as the affect of different mallet shaft lengths, explaining that the longer the shaft, the more flexibility and therefore the more rebound one receives as compared to a shorter shaft offering less flexibility and therefore less rebound. Paterson’s observations on mallet shaft length are similar in regards to drum sticks however the added variable of the taper of a stick does slightly alter the outcome as compared to a mallet. For reference Figure 2.4 has been included showing an image of a mallet and a drum stick, marking the pivot point on each stick.

Walter also states that the differences in rebounds in relation to the use of drum sticks rather than mallets when applying closed strokes to the drum set makes a direct application inadequate for drum set performance (Walter, 1984). These considerations are
primary in the development of Open/Close technique because closed stroke will involve eliminating rebound without the use of too much pressure.

In *An Introductory Guide to Vibraphone: Four Idiomatic Practices and a Survey of Pedagogical Material and Solo Literature* (Cheesman, 2012), Cheesman describes some of the most common extended techniques for the vibraphone, presenting a more detailed description of a closed stroke along with the notation.

A dead stroke on a vibraphone bar is achieved by allowing the striking mallet to remain on the bar after the initial contact. This motion does not allow the bar to resonate, which in turn creates the “dead” sound. Deane primarily uses the dead stroke to articulate a pitch without duration that often succeeds an altered pitch. The dead stroke is notated with a (+) below the note. This stroke can be achieved on any mallet instrument but the sound produced is unique to the particular instrument (Cheesman, 2012).

Finally, in *Musical and Technical Challenges in Selected Vibraphone Works of Ney Rosauro* (Scott, 2015), Scott describes the use of dead strokes as the:

Proper sound on the staccato notes. The desired effect eliminates any extra ringing of the bars (Scott, 2015).

The documentation of dead strokes or mallet dampening techniques as applied on the marimba and vibraphone does provide many conceptual similarities to Open/Close drum set techniques, however the techniques utilised for the application of these techniques on mallet instruments is considerably different to the application of these techniques on the drum set. There are several differences between the two instruments such as the use of mallets as apposed to sticks and the way both instruments produce sound. The short demonstration in Video 2.1 aims to demonstrate these differences through the comparison between the use of mallets and sticks on a drum set and xylophone.
CHAPTER 3

The Drum Set

A Brief History*

The drum set as we know it today assumed its basic form in the 1940s, with the basic drum set remaining the same to this day. The origins of the drum set can be traced back to the late 1890s with the rise of the traps-drummer, a single performer who, out of logistical and economic necessity, replaced multiple percussionists to become a musical jack-of-all-trades. In this period, the trap drummers utilised many techniques in order to play an array of instruments such as the technique of “double drumming”, which allowed the traps drummer to play the bass drum, snare drum and cymbal at the same time. Double drumming remained a relevant technique up until the 1920s, with more traditionalist drummers continuing up until the 1930s.

In *A History and Analysis of Jazz Drumming to 1942* (Brown, 1976), Brown provides an excellent description of double drumming:

> The bass drum was placed to the right of the performer with the snare drum directly to the left and behind the bass drum. The snare-drum head was slanted at a sharp angle to the bass drum, which allowed easy movement from one instrument to the other. The drummer would play the bass drum with his right drumstick, using either the bead of the stick though for variety, he might strike the bass-drum head with the butt of the drumstick—especially if he wanted to present a showy display of his technical ability (Brown, 1976).

Following on from double drumming came probably one of the most influential innovations in this period, the invention of the bass drum pedal. Originally there were two main designs, the overhanging pedal and the floor pedal (Figure 3.1).

Regardless of its popularity, the overhanging bass drum pedal was awkward and clumsy to use, especially for bright tempo pieces (Brown, 1976).

The use of the overhanging pedal was eliminated around 1920, largely due to William. F. Ludwig’s floor pedal design patented in 1914, which became the basis for design of the modern day bass drum pedal (Figure 3.2).

*(Due to conflicting evidence from sources in regards to exact dates, and since this study is focusing on the control of lengths of sound produced on a drum set and not the history of the drum set per se, this study will not claim to document dates of events but rather give approximate periods in which they occurred.)
During the development of the bass drum pedal the traps set continued to accumulate new sounds and additions including whistles, bird calls, cow bells, tuned percussion such as timpani, chimes, marimba and bells along with instruments brought into America by Chinese Immigrants such as: Small Chinese cymbal (Bo), large gong (Da Luo), woodblock (Ban), temple blocks (Mu-Yu), and the first tom-tom (bangu), usually a thick painted pigskin drum head tacked on to a red painted wooden shell (Hartigan, 1995).

Figure 3.1, Image of an early design bass drum pedal

Figure 3.2, Image of a modern bass drum pedal

The next innovation was the invention of the hi-hat stand in the 1920s, originally known as the snowshoe sock pedal.

Its construction was simply two cymbals mounted between two foot shaped boards with a spring hinge. The player slipped his foot into a toe strap (hence the term ‘Snowshoe’) and could either execute a ‘crash’ or ‘chick’ sound depending on the attack (Falzerano, 1994).
The initial designs were short lived until the release of the popular design of the *lowboy*, (Figure 3.3). The basic design of the lowboy is quite similar to the modern hi-hat stand (Figure 3.4), apart from the fact that it was only about 20cm high. The lowboy was quickly superseded by the hi-hat stand, and it is rumored that the hi-hat stand was actually developed by drummer Papa Jo Jones out of necessity. The hi-hat stand is simply a higher version of the lowboy bringing the hi-hat cymbals to a height that they can be played by the drummer with sticks as well as by the use of the foot on the foot pedal. By 1928 the Leedy, Slingerland and Ludwig drum companies were all listing hi-hat stands in their catalogues along with the lowboy.

Figure 3.3, Image of a lowboy hi-hat stand

Figure 3.4, Image of a modern hi-hat stand
I punched holes in my tom-toms with an icepick, as Zutty told me, until they were pitched just right (Krupa cited by Williams, 1967).

This quote from Krupa explains how drummers dealt with tuning Single tension double headed drums, with a thick hide head tacked on the bottom until the mid 1935, when the Slingerland drum company greatly changed the face of drumming with the release of the stripped down drum set. Designed with help from Krupa, the Slingerland drum set was stripped of the sound effects or traps so popular at the time and featured tom-toms with tunable top and bottom heads, also know as double tension drums.

Another major innovation in this early period was the trend towards the use of larger European cymbals, predominately from Turkey. Since in the early 1900s, drummers had predominately employed the use of Chinese cymbals and German made silver cymbals called clanger cymbals, which were around 10 inches in diameter, mounted on the bass drum hoop, and struck by the beater on the bass drum pedal. The switch to the use of larger cymbals evolved with the movement of the statement of pulsation from the snare drum to the hi-hat cymbals, and eventually, with the innovation of Bebop in the 1940s, to the ride cymbal by drummers such as Kenny Clarke, gradually fading out the use of Chinese cymbals and other small effect cymbals.

It is not necessary to discuss every innovation relating to the drum set since the 1940s as from this point on there was not a great deal of change to the basic array. There was however two more innovations that are of importance to this study, the development of the internal muffler and the plastic drumhead. The internal muffler pictured on the following page is a modern version, which is still similar in design to the first internal muffler invented by Emile Boulanger in 1900. As pictured in Figure 3.5, the internal muffler is basically a small round felt pad brought in contact with the underside of the drumhead through the adjustment of the tone control knob from the outside of the drum. External mufflers were also quite popular earlier on, especially for use on the bass drum as pictured in Figure 3.6.

Figure 3.5, Image of modern internal muffler
Lastly, the innovation of the synthetic or plastic drumhead had been in development since the late 19th century, however it was not until the 1950s that a viable material with suitable attributes was discovered. The material was a polyester film called Mylar, a heat-resistant film developed by Du Pont in World War 2. Finally, after years of failed attempts, Remo Belli, with the help of chemist Sam Muchnick, delivered the first plastic head called the Remo Weather king drum head (Figure 3.7), in 1957. By the 1960s most drummers had made the switch to plastic heads, leaving the inconsistent and temperamental calfskin drumheads (Figure 3.8), a thing of the past.
Drums - A Basic Understanding

This section aims to provide a basic understanding of the construction of a dual tension double-headed drum (DTDH) drum and a basic description of how a drum works to aid in the explanation of sound production from a DTDH drum.

The construction of any drum starts off with a cylindrical drum shell (Figure 3.9), usually constructed of several plies of wood. In the case of a DTDH drum, both the top and bottom edges have bearing edges (Figure 3.10) cut into them which is the point of contact between the drum head and the drum shell. The internal and external angles used in the bearing edge alone can determine many attributes of the drums timbre and projection but also are responsible for the position of the high point of the bearing edge which greatly affects the sustain and tuning range of the drum. In general a sharper bearing edge will produce more attack, a greater
sustain, and more harmonic overtones, whereas a rounded bearing edge will produce a warmer tone with more stick impact, less sustain and fewer overtones* (Unknown, 2014).

The batter drumhead (top head) is then tightened over the top bearing edge using metal or die cast hoops, which are attached to the shell by tension bolts which screw into the lug casings that are attached to the drum shell. These steps are the same in regards to how the resonant drumhead (bottom head) is mounted.

![Figure 3.10, Image of bearing edge](image)

The diameter of the drumhead is attributable to pitch range produced by a drum, a smaller diameter drum will never be able to produce the low pitches that a large diameter drum and a large diameter will never be able to produce the high pitches that a small diameter drum can.

The strike region, (physical position where the practitioner strikes a drum, (Figure 3.11) is a factor in the resulting sound achieved from the drum. The practitioner can change the balance of fundamental and overtones by altering the strike region; strike closer to the center of the drum (red) to project more of the fundamental note of the drum, however striking closer to the drum’s edge (yellow) will produce more overtones and a less present fundamental. It should be also noted that certain overtones will become more audible than others depending on the energy/velocity behind the stroke. The fundamental note is most excited by striking the drumhead dead center where it has the largest up/down movement or excursion. Higher pitch resonances generally have peak activity away from the drumhead center point, so respond more when the head is struck off-center (Roberts, 2015).

The rise in popularity of the STSHD (Figure 3.12) in the 1970s is largely credited to American drummer Hal Blaine. Hal was the drummer for the Wrecking Crew, a collective of Los Angeles based session musicians who worked with the famous producer Phil Spector. During this period, Blaine pioneered the use of the single tension single-headed tom, creating a unique sound that would start a trend for years to follow. Two of the reasons behind his decision to use single headed toms were:

Better sonic isolation —with the bottom head off the drums, you could get the mic right up into the drum and catch the stick’s attack, while better isolating the tom from the other drums (Jarrett, 2014).

A more ‘melodic’ approach to playing—many times in the studio the drums were tuned so that they were in the song’s key, and accentuated specific runs or fills to pair up with other instruments – hence the term ‘melodic toms’ (Jarrett, 2014).

Apart from the introduction of single headed tom, the 1970s saw several significant advancements in audio technology such as the
innovation of multi-track recording along with the introduction of new techniques such as close miking. These advancements in audio technology put every aspect of the sound of a drum set under close scrutiny, exposing every flaw in the instrument as well as the tuning abilities of the practitioners. To counteract this, studio and live sound engineers began dampening the drums with tape, and removing the resonant heads, so that the drums produced fewer overtones and more of a one-dimensional sound compared to that of a DTDHD (Nicholls, 1997).

*Dual Tension Double-headed Drum (DTDHD)*

All DTDH drums (Figure 3.13), apart from the snare drum, are constructed as explained at the beginning of this section apart from the snare. The snare drum differs slightly in construction because of the addition of a snare wire (Figure 3.14) and the snare bed (Figure 3.15). Contact between the snare wire and the resonant drumhead adds a metallic buzz to the drum's sound and can be switched on and off with the “throw off” (snare on and off switch). The amount of snare buzz depends on the strand count (Figure 3.16) of the snare wire, the tension of the resonant head and the tension of the snare wire. Snare drum shells also feature a ‘snare bed’, which is an indentation cut into the bearing edge on the resonant side of the drum where the snare wire crosses the shell. The addition of the snare bed in the resonant side bearing edge allows the snare wire to have maximum contact with the resonant head (Johnson, 1999).

In general, the addition of the resonant head to the underside of the drum adds a level of complexity to the way in which DTDH drums create sound. Striking the batter head of the drum sets off a reaction from the resonant head, which in turn affects the batter head, creating a relationship that alters the fundamental tone and the overtones of both drumheads. The relationship between the two heads is referred to as ‘coupling’, and physically occurs in one of two ways, the transfer of energy through the air between the two heads (acoustic coupling), and the transfer of energy through the shell (mechanical coupling). In About drums, John Roberts offers the following overview of acoustic coupling:
Figure 3.14, Image of the resonant drumhead side of a snare drum, showing the snare wire

Figure 3.15, Image of snare shell pointing out snare bed (yellow circle)

Figure 3.16, Image showing snare wires with different snare count
One relatively simple mechanism to inspect is the acoustic coupling directly through the air path between the two heads. When the top batter head is struck dead center, it bows inward and compresses the air inside the drum. This momentary pressure increase pushes down on the bottom resonant head, moving it down in the same direction. As the top head swings back up, due to the restoring force of it’s spring compliance, it generates a reduced internal pressure, sucking the bottom head up with it. At the fundamental (lowest) note resonance, these two heads move up and down together as a single connected system. The mass and tension of both heads influence the pitch of this combination fundamental note. Changing the tension of the bottom head will shift the fundamental pitch of the top head because they both vibrate together (Roberts 2015).

**Dampening Devices / Methods - Drums**

Commercially manufactured dampening devices, both internal and external, have been available to drummers since the early 1900s. The basic designs of these dampeners have remained relatively unchanged, with the favoring of external or internal dampeners following current trends of the times. Numerous do it yourself dampening methods have also been in use since the late 1960s (approx.) and continued to be used to this current day.

**Internal and External Dampening Devices**

The dampening devices pictured in Figures 3.17-3.21 are designed to eliminate unwanted overtones and shorten the resonance of individual drums within the drum set. The majority of devices are applied externally to the batter head, with exception of internal dampeners, which are usually manufactured and installed by the drum manufacturer.

Until the late 1980s, internal dampeners were standard feature on professional quality drums, with some manufacturers even installing dual dampeners in their drums for both the batter and resonant heads (as seen in Figure 3.22).

*Figure 3.17, Image of internal dampener - Floor tom*
Figure 3.18, Image of external tom/bass drum dampener

Figure 3.19, Image of commercially available bass drum pillow

Figure 3.20, Image of commercially available dampening rings
Do it yourself dampening devices shown in Figures 3.23 – 3.27 work on the same principals as commercially manufactured devices and, in some cases, such as the use of pillows or felt strips, were in use long before a comparable commercially manufactured device was available.
Figure 3.24, Image of towel application for the dampening of the floor tom

Figure 3.25, Image of wallet application for the dampening of the snare drum

Figure 3.26, Image of felt strip application for the dampening of the bass drum
Drumheads

Drumheads are a vital component in the production of sound from a drum and there are numerous references to the drumhead being responsible for up to 80% of sound production (Seymour, 2010). The selection of drumheads used on a particular drum is largely responsible for the tone, resonance, timbre and attack of that drums sound.

In 1982 the drumhead company ‘Remo’ proved this by developing a pre–tuned system where the drumheads were pre-tuned and retained tension by themselves. PTS drumheads were capable of producing the sound of a drum on their own, without a drum shell (Nicholls, 1997).

Controlled drumheads are designed to control the amount of overtones in the overall sound of the drum, produce a more focused fundamental pitch, alter the resonance of the drum, and in some cases can even extend the tuning range of the drum, especially lower frequencies. This is achieved through methods such as the use of thicker film, multiple layers of thin film and built in dampening rings. One such example is the ‘Coated controlled sound' by Remo pictured in Figure 3.28, a coated single ply synthetic

Figure 3.27, Image of pillow application for the dampening of the bass drum

Figure 3.28, Image of Remo Coated Controlled Sound drumhead
head with a black dot in the center to help eliminate unwanted overtones and enhance the lower frequencies of the drum.

The wide selection of drumheads now available offers a vast range of options for the control of a drum’s tone, resonance, timbre and attack, making the use of controlled drumheads an integral component of the modern drum set sound. Certain combinations of drumheads used on double-headed drums have helped practitioners achieve further control of their drums in what can sometimes be an elusive understanding of the complex relationships between the batter head and resonant head of a double-headed drum.

Cymbals - A Basic Understanding

Today, cymbal companies such as Zildjian, Sabian and Paiste produce a large range of cymbals, all with their own unique timbre, pitch and tone. These days, along with drumheads and drum sets, cymbal manufacturers respond to ongoing musical developments, changing attitudes, and current approaches to studio and live sound with the development of more controlled products.

The Zildjian cymbal company is a great example of the evolution of cymbals, having been in existence since 1623. Originally based in Constantinople (Istanbul), Zildjian set up its first foundry in the United States in Quincy, Massachusetts in 1929. This was the beginning of a new era for Zildjian, arriving in America at a pivotal point in jazz history. Under the direction of Avedis Zildjian, and followed closely by Armand Zildjian, the Zildjian company became a major contributor towards the evolution of the drum set, working with renowned musicians of the times such as Gene Krupa, Chick Webb, Papa Jo Jones, Buddy Rich, Louie Bellson, Elvin Jones and Vinnie Colaiuta, producing innovative cymbals that were pivotal to the evolution of popular music. As a result of years of developmental research, cymbal manufacturers such as Zildjian now have the knowledge to emulate tonal and timbral characteristics in the production of their cymbals (Zildjian, 2016).

Presently, Zildjian produces seven different series of drum set cymbals and three series of band and orchestral cymbals. The characteristics that define a series of cymbals begins with the choice of alloy to be used in the construction of the series. The majority of quality cymbals include b20 bronze, an alloy made up of a combination of 80% copper and 20% tin, that offers the widest frequency range. However, there are several other alloys used such as b8, b10 and b12, which are made up of 92% copper/8% tin, 90% Copper/10% tin, and 88% copper/12% tin respectively. A general guide for sound characteristics associated with different alloys may be understood as a higher percentage of tin producing a warmer, lower-pitched sound, and a lesser percentage of tin resulting in a brighter more cutting sound (Brennan, 2011).

Apart from the choice of alloy used in the production of a cymbal, it is processes such as lathing and hammering that give the cymbal its real tonal and timbral identity.

The alloy is only one part of the sound, it provides a certain sound potential, and beyond that the overall sound of a finished cymbal is the result of the craft skills: hammering patterns, tempering, different lathing techniques (Christian Wenzel cited by Brennan, 2011).
On the *Cymbalutopia* website of Australian cymbal smith Craig Lauritsen, we find some cymbal making parameters and resulting effects on the cymbal:

Tension – The greater the overall tension in a cymbal, the faster the response, the greater the sustain and level of wash.

Diameter – Larger diameter = lower tessitura (voice), slower response, wider spread, longer sustain.

Weight – Heavier weight = higher tessitura, greater volume, slower response, longer sustain, fewer overtones, narrower frequency range, more stick definition.

Profile – Higher profile = higher tessitura, dryer, less overtones, less spread, slower response, more stick definition.

Taper – Greater taper (change of thickness from bell to edge) = slightly lower tessitura, faster response, shorter decay, slightly more overtones.

Cup or bell – The bell acts as an amplifier of sound as well. Larger bell = greater volume, faster response, more overtones (Lauritsen, 2016).

**Dampening devices / Methods - Cymbals**

Although no commercially available dampening devices for cymbals exist, there are various do it yourself methods commonly used by practitioners to control the amount of overtones in cymbals such as the application of cloth tape. Depending on the practitioner, the amount and placement of the cloth tape can be quite random however some practitioners will locate the problem areas of the cymbal responsible for the overtones and apply cloth tape in these spots (Video 3.1).

**Video 3.1, Comparison of cymbal with and without the use of gaff tape for dampening purposes**

Another simple method is to dampen the cymbal by the amount of clamp tension applied to the felts through the tightening of the wing nut on the cymbal stand (Video 3.2).
Installing rivets in a cymbal or hanging a small chain will affect the length of ring generated by that particular cymbal. The weight of the rivets or chain slightly alter the movement of the cymbal after it is struck, slightly dampening the cymbal while the sizzle sound created by the addition of the rivets or chain bouncing on the vibrating cymbal both mask overtones and create more length. However, depending on the velocity of the stroke, the rivets can have the opposite affect on the length of sustain of the cymbal. Video 3.3 demonstrates that if a cymbal with rivets is not struck hard enough, the rivets will actually stop the sound due to their weight physically choking the movement of the cymbal and shortening the decay.

*The results shown in Videos 3.1-3.3 show the affect of the cloth tape, extra felts, tilt angle and rivets on this particular cymbal and will vary depending on the characteristics of the individual cymbal.*
The Basic Drum set

The basic jazz drum set (Figure 3.29), labeled for future reference throughout the research into Open / Close.

Figure 3.29, Labeled image of a standard jazz drumset

(A) Snare Drum (B) Bass Drum (C) Rack Tom (D) Floor Tom (E) Hi-hat Cymbals (F) Crash/Ride Cymbal (G) Ride Cymbal

Basic Techniques for Playing the Drum Set

A basic understanding of the physical techniques used to play the drum set is a necessity in this research in order to discuss the application of closed strokes by drummers appearing in the video examples, and also to discuss the necessary adjustments to the basic techniques in order to successfully apply closed strokes to the drum set without the use of tension.

Basic Hand Technique

Traditional grip*, (Figure 3.30) is made up of two separate grips, ‘orthodox grip’ in the non-dominant hand and American grip in the dominant hand. Video 3.4 is a short demonstration of tradition grip, showing the function of the fingers and wrist demonstrated on the snare drum followed by a short drum set demonstration.

*(Please note that this is just my personal interpretation of this grip and not to be taken as instruction.)
Basic Foot Technique

Video 3.5 is a short demonstration of the two main foot techniques utilised on the drum set, the heel up technique and the heel down technique. These techniques can be used on either pedals and mixed and matched at the practitioner’s discretion.
Influential Drummers

The development of Open/Close has primarily been influenced by the individual conceptual approaches from a small selection of drummers who work within the jazz or improvised music field. As mentioned in the introduction, the initial inspiration came from drummers such as Paul Lovens, Tony Oxley, Tony Buck, Gerry Hemmingway, and Burkhard Beins who are all involved in the European improvised music scene.

The table of video evidence below represents examples of conceptual approaches and extended techniques employed by the improvising musicians mentioned above.

Table 4.1, Influential Improvising Drummers

<table>
<thead>
<tr>
<th>Clip / Accessed</th>
<th>Artist/Title/Date/Performance location</th>
<th>Link</th>
<th>Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C01 06/12/16</td>
<td>Burkhard Beins with Bertrand Denzler, 2012, Live at Quiet Cue, Berlin - Germany.</td>
<td><img src="https://www.youtube.com/watch?v=9gB0hFleksw&amp;t=180s" alt="Link" /></td>
<td>4.26 - 5.26</td>
<td>Use of sustained texture based techniques on the drum set</td>
</tr>
<tr>
<td>C02 06/12/16</td>
<td>Tony Buck with The Necks, 14 avr. 2016, Collège des Bernardins - Paris.</td>
<td><img src="https://www.youtube.com/watch?v=0hDdEYWzGAQ" alt="Link" /></td>
<td>0.30 - 1.00</td>
<td>Use of sustained texture based techniques on the drum set</td>
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<td>C03 06/12/16</td>
<td>Tony Oxley with Derek Bailey, 1995, Knitting Factory, Brooklyn - NYC.</td>
<td><img src="https://www.youtube.com/watch?v=AmjaeOpAQOk" alt="Link" /></td>
<td>0.13 - 2.08</td>
<td>Use of prepared drum set and body motions</td>
</tr>
<tr>
<td>C04 06/12/16</td>
<td>Paul Lovens with Thomas Lehn, 2017, Mulhouse - France</td>
<td><img src="https://www.youtube.com/watch?v=bf_DpfmuCk4" alt="Link" /></td>
<td>2.05 - 3.09</td>
<td>Use of prepared drum set and body motions</td>
</tr>
<tr>
<td>C05 06/12/16</td>
<td>Gerry Hemmingway, Solo for Trapset, 2013, Roulette, NYC.</td>
<td><img src="https://www.youtube.com/watch?v=aXrlIjwbnE" alt="Link" /></td>
<td>0.00 - 4.10</td>
<td>Use of open and closed stroke techniques on the drum set</td>
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</table>

Brief overview of conceptual and technical influence in clips from Table 4.1:

- The use of sustained texture based sounds (Table 4.1, C01, C02).
• Preparation of the drum set and use of extended techniques, creating variation in the lengths of sound (Table 4.1, C03, C04).

• Single brush roll and single mallet roll (Table 4.1, C02).

• Sounds created through friction between conventional and unconventional objects (Table 4.1, C01).

• Use of closed strokes (Table 4.1, C05).

• Use body motions in order to strike multiple sounds in one movement, creating continuous sounds or longer phrases (Table 4.1, C03-C04).

The concept of Open/Close was also greatly influenced by several musicians in the jazz field, in particular drummers such as Paul Motian, Joey Baron, Jim Black and Ted Poor. All the aforementioned drummers have distinctive approaches to jazz drumming, including an awareness of note lengths as seen in clips appearing in Table 4.2.

Table 4.2, Influential Jazz Drummers

<table>
<thead>
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<td>Paul Motian with the Keith Jarrett trio, 1970, Germany</td>
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<td>3.18 - 3.36</td>
<td>Use of closed strokes on drum set</td>
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<td>C07 06/12/16</td>
<td>Paul Motian with the Keith Jarrett trio, 1970, Germany</td>
<td><a href="https://www.youtube.com/watch?v=xdrQpEYmhoQ&amp;nnohtml5=False">https://www.youtube.com/watch?v=xdrQpEYmhoQ&amp;nnohtml5=False</a></td>
<td>16.47 - 22.48</td>
<td>Awareness of note lengths/use of space</td>
</tr>
<tr>
<td>C08 06/12/16</td>
<td>Joey Baron solo, 2013, Roulette, NYC.</td>
<td><a href="https://www.youtube.com/watch?v=OTMCA0dZoFY&amp;nnohtml5=False">https://www.youtube.com/watch?v=OTMCA0dZoFY&amp;nnohtml5=False</a></td>
<td>17.51 - 17.55</td>
<td>Use of closed strokes on drum set</td>
</tr>
<tr>
<td>C09 06/12/16</td>
<td>Joey Baron solo, 2013, Roulette, NYC.</td>
<td><a href="https://www.youtube.com/watch?v=OTMCA0dZoFY&amp;nnohtml5=False">https://www.youtube.com/watch?v=OTMCA0dZoFY&amp;nnohtml5=False</a></td>
<td>24.11 - 24.15</td>
<td>Use of closed strokes on drum set</td>
</tr>
<tr>
<td>C10 06/12/16</td>
<td>Jim Black with Malamute, 2015.</td>
<td><a href="https://www.youtube.com/watch?v=XgoYMZpumI">https://www.youtube.com/watch?v=XgoYMZpumI</a></td>
<td>5.00 - 6.20</td>
<td>Use of closed strokes on drum set</td>
</tr>
<tr>
<td>C11 06/12/16</td>
<td>Ted Poor with Root 70 &amp; Strings, 2014, Live at Jazzahead, Bremen, Germany</td>
<td><a href="https://www.youtube.com/watch?v=dsVT6Q2NjlE&amp;nnohtml5=False">https://www.youtube.com/watch?v=dsVT6Q2NjlE&amp;nnohtml5=False</a></td>
<td>6.01 - 6.24</td>
<td>Use of closed strokes on drum set</td>
</tr>
<tr>
<td>C12 06/12/16</td>
<td>Ted Poor with Joris Roelofs Trio, 2011, Jamboree, Barcelona.</td>
<td><a href="https://www.youtube.com/watch?v=1JjW3moVt_0&amp;nnohtml5=False">https://www.youtube.com/watch?v=1JjW3moVt_0&amp;nnohtml5=False</a></td>
<td>6.20 - 8.20</td>
<td>Use of different lengths and closed strokes on drum set</td>
</tr>
</tbody>
</table>

Brief overview of clips from Table 4.2:

• Use of closed strokes (Table 4.2, C06,C8, C9, C10, C11,C12).
• Use of long sounds (Table 4.2, C07)

• Integration of open and closed strokes in linear phrases (table 4.2, C06, C09, C10, C11, C12).

Figure 4.1, Image of a stick shot

**Stick Shot**

The search for relevant video evidence in regards to the origins of the closed stroke brought to light similarities that exist between the closed stroke and the “Stick shot” pictured in Figure 4.1.

Depending on source and context, the stick shot can be labeled a stick on stick rim shot, stick up on top of a stick, stick shot or just simply a rim shot. To avoid confusion this stroke will be labeled a stick shot for the duration of this study. The stick shot is a standard technique for use most commonly on the snare drum in corps style drumming, jazz drumming and orchestral music.

The stick shot is a standard part of the jazz drummer’s repertoire. Typically it is played by pressing the tip of the left stick into the drumhead and striking the shaft of the left stick with the shaft of the right stick. Pushing the stick into the head deadens the overtones and mutes the drum while still allowing for a rimshot effect. This technique is popular with jazz drummers because it allows for the dynamic effect of a rim shot but at a much lower volume. By varying the pressure on the head and where the stick is struck, the tone of the rimshot can be altered substantially (Pickering, 2012).

Below are two slightly different descriptions of the execution of a stick shot, the first of which is the technique more commonly used in the context of jazz drumming.

...placing the tip of the left-hand drumstick in the center of the drum and, with this stick at a forty-five degree angle to the drumhead, striking its shaft with the right-hand stick (Brown, 1976).
A rimshot is executed by holding one stick down with the tip touching the center of the head and the shaft touching the rim, and then striking it with the other stick. This takes half a second to get into position and slightly dampens the head, so only rhythms slow enough to be executed with one hand are possible (Solomon, 2016).

The physical nature of this stroke may be more suited to use with traditional grip although it is possible with matched grip as evidenced by drummer Bill Stewart. There are slight variations on a stick shot in regards to the activity of the left or non-dominant hand, although from video evidence in Table 4.3 it seems that the stick shot variation and tap sticking variations are the two primary versions commonly used in jazz.

**Stick Shot:**

Video 4.1, Demonstration of stick shot showing similarity to dead stroke

Stick shots are performed by striking the right stick on top of the left stick while the left stick is on the drum and rim simultaneously

**Stick shot variation:**

A common variation of the stick shot is performed by holding the left stick above the rim rather than resting the left stick on the rim.

**Tap sticking:**

This effect is basically the same as stick on stick however, the snare drum is struck at various intervals between the stick on stick movements (Wanamaker, 1981).

The placement of the tip of the left-hand drumstick in the center of the drum and the muting of the drum that results from this is the link to the dead stroke. It is one of the two sounds that are created by the use of the stick shot variation and tap sticking (Video 4.1).
The selected video excerpts in Table 4.3 demonstrate the use of the stick shot variation and tap sticking by jazz drummers from the bebop era to the present. Also in Table 4.3 is a short instructional video by Steve Fidyk (C20) demonstrating the stick shot and exercises for its application in the jazz drumming lexicon.

Table 4.3, Stick Shot Examples

<table>
<thead>
<tr>
<th>Clip / Accessed</th>
<th>Artist/Title/Date/Performance location</th>
<th>Link</th>
<th>Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C15 06/12/16</td>
<td>Roy Haynes with the Chick Corea trio, 04/12/82 at the White house, Washington D.C.</td>
<td><a href="https://www.youtube.com/watch?v=8OlyVXXWh_wc">https://www.youtube.com/watch?v=8OlyVXXWh_wc</a></td>
<td>8.57 - 9.03</td>
<td>Stick Shot Variation</td>
</tr>
<tr>
<td>C16 06/12/16</td>
<td>Jeff &quot;Tain&quot; Watts Date and location unknown.</td>
<td><a href="https://www.youtube.com/watch?v=MiZMiAMHR4o">https://www.youtube.com/watch?v=MiZMiAMHR4o</a></td>
<td>8.00 - 9.02</td>
<td>Stick shots and tap sticking</td>
</tr>
<tr>
<td>C17 06/12/16</td>
<td>Dan Weiss Excerpt taken from My Music Masterclass.</td>
<td><a href="https://www.youtube.com/watch?v=6aT8xYcEnMc">https://www.youtube.com/watch?v=6aT8xYcEnMc</a></td>
<td>0.00 - 1.32</td>
<td>Stick shots and tap sticking</td>
</tr>
<tr>
<td>C18 06/12/16</td>
<td>Steve Fidyk from Modern Drummer Magazine, 04/06/13.</td>
<td><a href="https://www.youtube.com/watch?v=aKdNf0lFMTQ">https://www.youtube.com/watch?v=aKdNf0lFMTQ</a></td>
<td>0.00 - 2.34</td>
<td>Stick shots and tap sticking</td>
</tr>
<tr>
<td>C19 06/12/16</td>
<td>Bill Stewart with Peter Bernstein and Larry Goldings, 03/12/13 at the Widder bar - Zurich</td>
<td><a href="https://www.youtube.com/watch?v=VVUel_bm_Ww">https://www.youtube.com/watch?v=VVUel_bm_Ww</a></td>
<td>7.08 - 7.15</td>
<td>Stick shots and tap sticking</td>
</tr>
</tbody>
</table>

Closed Strokes

The video excerpts in Table 4.4 represent a selection of examples from renowned jazz drummers from the bebop era and beyond. These clips show the evolution of stick shots and tap sticking into a version of the closed stroke by some of the great jazz drummers.

Table 4.4, Evolution of the Stick Shot

<table>
<thead>
<tr>
<th>Clip / Accessed</th>
<th>Artist/Title/Date/Performance location</th>
<th>Link</th>
<th>Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C20 06/12/16</td>
<td>Art Blakey Excerpt taken from Great Drummers part 2</td>
<td><a href="https://www.youtube.com/watch?v=LW1ykj5x7BE&amp;nohtml5=False">https://www.youtube.com/watch?v=LW1ykj5x7BE&amp;nohtml5=False</a></td>
<td>9.30 - 9.34</td>
<td>Dead strokes - Cymbals</td>
</tr>
<tr>
<td>C22 06/12/16</td>
<td>Mel Lewis Excerpt taken from Great Drummers part 2</td>
<td><a href="https://www.youtube.com/watch?v=LW1ykj5x7BE&amp;nohtml5=False">https://www.youtube.com/watch?v=LW1ykj5x7BE&amp;nohtml5=False</a></td>
<td>6.08 - 6.28</td>
<td>Dead strokes - drums</td>
</tr>
<tr>
<td>C23 06/12/16</td>
<td>Shelly Manne Excerpt taken from Great Drummers part 2</td>
<td><a href="https://www.youtube.com/watch?v=LW1ykj5x7BE&amp;nohtml5=False">https://www.youtube.com/watch?v=LW1ykj5x7BE&amp;nohtml5=False</a></td>
<td>3.13 - 3.23</td>
<td>Dead strokes - drums</td>
</tr>
<tr>
<td>C24 06/12/16</td>
<td>Pete La Roca Excerpt taken from Great Drummers part 1</td>
<td><a href="https://www.youtube.com/watch?v=yTeGnURIUD8&amp;nohtml5=False">https://www.youtube.com/watch?v=yTeGnURIUD8&amp;nohtml5=False</a></td>
<td>8.42 - 9.29</td>
<td>Dead strokes - drumset</td>
</tr>
<tr>
<td>C25 06/12/16</td>
<td>Dannie Richmond Excerpt taken from Great Drummers part 1</td>
<td><a href="https://www.youtube.com/watch?v=yTeGnURIUD8&amp;nohtml5=False">https://www.youtube.com/watch?v=yTeGnURIUD8&amp;nohtml5=False</a></td>
<td>5.40 - 5.50</td>
<td>Dead strokes – Drumset comping</td>
</tr>
</tbody>
</table>
Further Dead Stroke Examples in a Non-Jazz Context

The video excerpts in Table 4.5 show the application of closed strokes by drummers better known for their work as studio/backbeat drummers.

Table 4.5, Closed Stroke Examples - Studio/Backbeat Drummers

<table>
<thead>
<tr>
<th>Clip / Accessed</th>
<th>Artist/Title/Date/ Performance location</th>
<th>Link</th>
<th>Time</th>
<th>Technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>C25 06/12/16</td>
<td>Steve Gadd Excerpt taken from Steve Gadd In Session, 1985</td>
<td><a href="https://www.youtube.com/watch?v=tXLOAyFxBql&amp;nohtml5=False">Link</a></td>
<td>11.14 - 11.29</td>
<td>Dead strokes - Drumset</td>
</tr>
<tr>
<td>C26 06/12/16</td>
<td>James Gadson with Bill Withers live from 1972</td>
<td><a href="https://www.youtube.com/watch?v=EqCNIhJzc2c">Link</a></td>
<td>0.04 - 0.24</td>
<td>Dead strokes - drums</td>
</tr>
<tr>
<td>C27 06/12/16</td>
<td>Bernard Purdie live at the groove Workshop, Japan</td>
<td><a href="https://www.youtube.com/watch?v=C2rkmlcrlfM">Link</a></td>
<td>1.58 - 2.02</td>
<td>Dead stroke - Cymbal</td>
</tr>
</tbody>
</table>

Dead Stroke Instructional Video

The video excerpt in Table 4.6 is actually a youtube instruction video explaining the dead stroke (closed stroke). Unfortunately, this video doesn’t really show how to apply this stroke and explain anything in regards to the musical use of such a stroke.

Table 4.6, Dead Stroke Instructional Video

<table>
<thead>
<tr>
<th>Clip / Accessed</th>
<th>Artist/Title/Date/ Performance location</th>
<th>Link</th>
<th>Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C28 06/12/16</td>
<td>Felipe Torres Excerpt taken from Feli’s flip of the week #18, 10/02/10</td>
<td><a href="https://www.youtube.com/watch?v=yLVsYmECBXU">Link</a></td>
<td>0.00 - 3.22</td>
<td>Dead strokes - Drumset</td>
</tr>
</tbody>
</table>

Closed Strokes - Mallet Percussion

The video excerpts in Table 4.7 are selected demonstrations of the use of dampening techniques applied to the vibraphone.

Table 4.7, Closed Stroke Examples - Mallet Percussion

<table>
<thead>
<tr>
<th>Clip / Accessed</th>
<th>Artist/Title/Date/ Performance location</th>
<th>Link</th>
<th>Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C27 06/12/16</td>
<td>Gary Burton Masterclass, 2011, Boston Symphony Hall</td>
<td><a href="https://www.youtube.com/watch?v=raxpggRbJnc">Link</a></td>
<td>0.00 - 2.00</td>
<td>Mallet dampening techniques</td>
</tr>
<tr>
<td>C28 06/12/16</td>
<td>Ed Saindon Clinic, 05/07/09, Paris Music Conservatory - Paris</td>
<td><a href="https://www.youtube.com/watch?v=HDW0FuV4kyl">Link</a></td>
<td>0.00 - 4.44</td>
<td>Mallet dampening techniques</td>
</tr>
</tbody>
</table>
Closed Strokes - Timbale

The video excerpts in Table 4.8 are selected demonstrations of the use of dead strokes applied to the timbale.

Table 4.8, Closed Stroke Examples - Timbale

<table>
<thead>
<tr>
<th>Clip / Accessed</th>
<th>Artist/Title/Date/Performance location</th>
<th>Link</th>
<th>Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C29 06/12/16</td>
<td>Changuito Excerpt taken from Giovanni Hidalgo &amp; Changuito Conga Master - Tipico Jam</td>
<td><a href="https://www.youtube.com/watch?v=AhXrBlUDGRI">https://www.youtube.com/watch?v=AhXrBlUDGRI</a></td>
<td>6.10 - 7.45</td>
<td>Dead strokes - timbales</td>
</tr>
<tr>
<td>C30 06/12/16</td>
<td>Changuito Excerpt taken from Documental La Historia Del Songo Changuito</td>
<td><a href="https://www.youtube.com/watch?v=e0BMLzFOnF8">https://www.youtube.com/watch?v=e0BMLzFOnF8</a></td>
<td>40.00 - 40.32</td>
<td>Dead strokes - timbale technique applied to drum set</td>
</tr>
</tbody>
</table>
The concept of Open/Close has consistently evolved throughout this study due to a constant growth in knowledge, understanding and ability gained through personal research and practical experimentation. Each time I hear a different approach I am looking for a way to physically apply it, just as when I discover a new technique I work towards a way to musically apply it.

Regardless of whether the techniques discussed in this chapter are existing techniques or a new technique developed by myself, they have all undergone an adaption process in order to help create a personalised approach to the application of Open/Close on the drum set. The discussion of techniques in this chapter should not be interpreted as definitive techniques for the application of Open/Close, but rather a summary of the personal developmental processes I have gone through thus far. The techniques presented in this chapter are my personal interpretations of techniques and are not intended to be an instructional guide for other practitioners, especially in regards to the video demonstrations included in this chapter which have been included for the purpose of extra clarity, and aiding in the explanation of the physical application of these techniques on the drum set.

Chapter Five contains three sections:

Section 1: Closed strokes

Section 2: Associated techniques

Section 3: Application

Figure 5.1, Image of left/right hand labeling fingers and areas of hand

*For reference I have included Figure 5.1, a labeled image of the human hand to aid technical discussions appearing in this chapter.
Closed Strokes

*Muffled Stroke Technique - Timbale (right hand)*

The technique used for muffled strokes by *timbaleros* (Figure 5.2) is the most compatible technique for the application of closed strokes on the drum set. Research into published (Chapter 2, Pg 10) and video evidence (Chapter 4, Table 4.8) has shown that the most common version of this technique involves the use of index finger on top of the stick, transferring extra weight into the drum to prevent the stick from rebounding, which in turn muffles (dampens) the sound of the drum after it is struck.

Figure 5.2, Image of timbale muffled stroke

The *timbale* technique is an effective method that requires little alterations in order to be applied to the drum set. However, as seen in the short comparison in Video 5.1, this technique is more effective when used on a STSH drum because there is only a batter drumhead to control in comparison to the DTDH drums (that make up a drum set), which has a batter and resonant drumhead.

Video 5.1, Comparison between effectiveness of dead stroke on SHSTD/DHDTD with drumstick

A few years before I began the development of Open/Close, I ran into some trouble associated with tension, posture and the balance of the body while playing the drums. Even though I had been utilising the timbale muffled stroke throughout this period, I initially
decided to avoid investing time into the personal development of this stroke, largely due to the perception that this technique required the use of tension (index finger pushing down on top of the stick).

As a result of my skepticism towards the use of this technique, I began investigating an alternate technique before investing time into developing a better understanding of the timbale technique. However I do not regret the order of events as the process of developing an alternate technique eventually brought me back to the timbale technique, with a greater understanding of the how to apply the timbale muffled stroke without the use of tension.

Closed stroke – Orthodox grip (left hand)

Unfortunately I could not find any published instruction on the use of closed strokes with orthodox grip, however there is an extensive amount of video evidence of the use of the closed stroke by countless jazz drummers, partly due to its lineage from the stick shot (Ch 4, Pg 37-39). However the physical approach to the execution of closed strokes with orthodox grip is much more natural than compared to matched grip simply because orthodox grip utilises the index and middle finger on top of the stick. This creates a natural clamp, with the thumb, ring and pinky underneath (Chapter 3, Figure 3.31), allowing the use of additional downward pressure without alterations to the technique. The demonstration in Video 5.2 shows the application of a closed stroke with orthodox grip, proving the effectiveness of this technique without modification to the standard orthodox grip.

Video 5.2, Demonstration of dead stroke with orthodox grip

Developing an Alternate Technique

The decision to develop an alternate closed stroke was driven by the lack of existing knowledge and the fact that there is no specific drum set technique. For me this seemed like a perfect opportunity to try and develop my own technique that would work together with my existing technique and approach to playing the drum set.

Initially, the idea of developing my own technique for the application of closed strokes wasn’t daunting, mainly because I had never thought of what was involved. Up until this point I’d never really thought about how my hand works and further more the different
roles my fingers could take on. This is not to say that I never worked on technique, more the fact that I have never really taken the time to investigate the variety of options. The gathering of more knowledge in regards to a greater personal understanding of how my hands/wrists/arms work for me has been one of the great rewards of this study, sometimes getting off track and taking the long way around enables you to see things you wouldn’t have seen if you followed the well travelled path.

*Natural Closed Stroke – Dominant Hand*

In developing the natural closed stroke I was very aware of creating a technique that would produce a similar physical feeling to my personal approach to the drum set technique. For me this means holding the sticks right at the back so they fall into the drums, using big open strokes where possible, and an open grip on the stick so that I am barely gripping the stick at all.

Throughout the process of developing the natural closed stroke I was constantly monitoring the unnecessary use of pressure. On several occasions earlier on in the development process, I grew impatient and began using unnecessary pressure in order to achieve a more satisfying result. This became a reoccurring problem, so after a certain point I decided I needed to relax my goal from completely stopping the buzz to producing the smallest amount of buzz possible with the focus being on eliminating all unnecessary pressure. This decision to focus on minimising the buzz rather than aiming for no buzz at all meant I could take my time and investigate more thoroughly how to use different fulcrums, stick weight and body weight to the full extent before adding in any pressure. It has also allowed the grip to stay relatively close to my standard grip which has made moving between open and closed strokes a lot easier. This was something I had previously struggled with in regards to the integration of the timbale muffled stroke into my playing as the use of the finger on top of the stick hindered the use of my open grip because of the preparation needed during the down stroke.

Video 5.3, Demonstration of my ideal approach to a dead stroke, (natural closed stroke)

Video 5.3 demonstrates the application of natural closed strokes on the snare drum. Even though this approach is not yet fully developed to the point where I can claim it as a fully functioning technique I feel that this demonstration is a good representation of the development process thus far.
Further demonstrations in Video 5.4 show the natural closed stroke in the form of taps, half strokes and full strokes respectively. There are two examples of closed strokes in each stroke height followed by two standard strokes for comparison. Although there is some stick buzz in this demonstration, the main point of this video is to show the subtle changes in the grip as the stroke becomes larger and how the preparation for the natural closed stroke effects these changes.

In my drum set technique when the strokes become larger I allow my grip to open up during the up stroke, utilising the weight of the stick to continue the momentum of the stroke. The energy from the up stroke is then redirected into the down stroke, where the weight of the stick again creates momentum, added to the dropping feeling. During the course of the down stroke my fingers gradually close over the stick once again, and at the point of impact the body motion and stick momentum unite to effortlessly strike the drum. This physical approach and natural momentum described above is important in terms of my connection to the instrument and is a feeling I am trying to recreate in the development of the natural closed stroke technique.

Fulcrum

The fulcrum is the pivot point of the grip, the point that determines how the weight of the stick is distributed. When the stick is held as far back as possible without the fingers loosing contact with the stick (Figure 5.3), the rebound achieved is significantly less than if your fulcrum was closer to the drumsticks natural pivot point. I found that one way to consistently achieve as little rebound as possible without any physical interference was to move the fulcrum back as possible and to have almost no grasp on the stick, especially after the strokes contact with the drumhead, allowing the energy from the stroke to naturally dissipate (Video 5.5).

Following up on Walter’s statements in regards to different mallet shaft lengths, I investigated holding the sticks further forward with the fulcrum past the pivot point of the stick and found that it did indeed create less rebound. This is due to the weight of the stick being behind the fulcrum eliminating pretty much all the stick weight in the stroke. Although this does make it easy to play closed strokes I wanted to wanted to avoid transitions such as relocating the fulcrum because at the end of the day I wanted a technique that would allow for spontaneous movement between open and closed strokes.
Investigating the fulcrum also brought to light the effect of the stick choice, especially in terms of getting as much weight into the stick past the fulcrum as possible. In the process of developing the natural closed stroke a lot of my practice was with heavier drumsticks than I would normally use in order to get more weight from the stick. I found that the use of heavier sticks helped me relax my stroke and not feel the need to add pressure as I did with lighter sticks. The weight of the stick is also dependent on the size of the taper, which is a feature of drumsticks unlike timbale sticks which have no taper at all. A taper is the thinning down of the drumstick towards the bead or tip of the stick which means a loss of wood mass from the tapered area of the stick.

In Figure 5.4 there are two contrasting examples of drumsticks, which are a drumstick with a short taper (top) and a drumstick with a long taper (bottom). The wood mass lost due to tapering the stick alters how the weight of the stick is distributed and therefore moves the pivot point past half way towards the back of the stick. This gives a drumstick with a longer taper such as the example in Figure 5.4 a lighter feeling, making the stick bounce back more readily than a stick with a short taper. To achieve the same feeling with the stick with the shorter taper like the example in Figure 5.4, the practitioner would have to move their fulcrum closer to the pivot point of the stick (Figure 5.5) however then they would loose their leverage.
The feeling of more weight at the front of the stick can also be created by the use of a longer stick, as seen in comparison to a standard length sticks in Figure 5.6. The extra length of top stick (black and white) in Figure 5.6 creates more leverage, which counteracts some of the weight loss sustained due to the tapering of the stick.

Figure 5.4, Image showing sticks with different tapers

Figure 5.5, Image of stick with short taper held with the fulcrum closer to center of the stick

Figure 5.6, Image of different length sticks available
I have also spent a substantial amount of time investigating the variables outside of the physical technique of the closed strokes that could aid in limiting the amount of rebound before reducing the amount of physical intervention necessary in order to hold the stick in the drum at the moment of contact. Variables include the angle in which the tip of the stick strikes the drum, the different strike areas on the drum and the tuning of the drum set. I found that the angle of the stick at the point of contact with a drum or cymbal determines the physical size of the contact area. Video 5.6 demonstrates the effect that two contrasting angles between the stick and the cymbal have on the size of the contact area and how this affects the outcome of the stroke.

Video 5.6, Demonstration of two contrasting stick contact angles played on a cymbal

The effect of the different strike areas on the drum also has an effect on the outcome of closed strokes, as demonstrated in Video 5.7. This is also a variable in the application of closed strokes on cymbals, however the relationship is much more complex and more dependent on the sonic characteristics and manufacturing techniques of each individual cymbal.

Video 5.7, Demonstration of different strike areas on a drum and how it affects the effectiveness of the closed stroke

The movement of the cymbal can also be troublesome when applying closed strokes as the cymbal is mounted via a hole in the center. The holding of the closed stroke into the cymbal creates movement however with practice this can be embraced and you simply learn to move with the cymbal. Alternatively, one can adjust the tilt angle of the stand and the tension created by tightening
the felt washers to limit the movement of the cymbal, however this effects the sustain of the cymbal, as discussed in the cymbal dampening section appearing in Chapter Three.

I also experimented with different tuning methods and drumhead tension to alter the rebound and resonance of the drum in order to make the natural closed stroke more effective. An example of this is putting an in-tune drumhead out of tune by simply detuning a few tension bolts thus restricting the resonance of the drumhead. This is demonstrated in Video 5.8 with three short demonstrations showing the application of a open stroke to an evenly tuned drumhead followed by the application of a open stroke to the same drums with several lugs detuned, and finishing with the drum evenly tuned at the same pitch as the drum with the detuned lug to prove that the effect on the overtones is due to the uneven tension and not the difference in pitch.

Video 5.8, Comparison of tunings, in tune, one lug out, in tune same pitch as one lug out

Tuning each drum to have the longest note possible also helps create greater contrast between open and closed strokes (Video 5.9).

Video 5.9, Demonstration of tuning drums in order to more contrast between long and short

More recently I have begun exploring various different finger combinations for the natural application of pressure in order to completely stop the buzz with a natural closed stroke. These are the combinations of fingers that are transferring the extra weight into the stroke without the use of tension. Two examples of combinations that have proved successful are:
• The use of the thumb, index finger and pinky with the index stretched forward but on the side of the stick (Figure 5.7). The inspiration for this was the timbale technique, but by stretching out the index finger along the side of the stick instead of on top I was trying to prevent possible stress to the index finger. The function of the index finger on the side was to act as more of a guide, with the large contact area between the index and the stick, helping to deaden the vibration of the drumstick and limit the amount of buzz. The pinky's role in this combination was to act with the thumb and middle finger to create a less flexible fulcrum.

Figure 5.7, Image American matched grip (right hand), with the index stretched along the side rather than on top

• The use of the thumb and pinky (Figure 5.8) restricts the sticks movement with little pressure because of the creation of a wide fulcrum. This combination is great for playing the cymbals or if the drums are low in height as it allows the wrist to stay in a natural handshake position. There is very little interaction from the other fingers in this combination.

Figure 5.8, Image of use of thumb and pinky to create wide pivot point
Natural Development of the Timbale Muffled Stroke

As mentioned earlier in this chapter, I have been utilising the timbale muffled stroke on and off for quite some time but it wasn’t until I began analysing these techniques as part of this study that I realised that my version of the muffled stroke had naturally evolved. My approach to playing this technique had changed largely because I had developed a better understanding of the physical workings of this technique.

My current understanding of timbale muffled stroke technique now involves the slight addition of pressure distributed evenly between all the fingers, with the ring finger and pinky finger playing an equal role in stabilising the stick so that there is no need for the application of excessive pressure to be transferred through the index finger to push the stick into the drum in order to shorten the note (Video 5.10). The result is a surprisingly similar grip to my standard dominant hand drum set grip with the addition of the index finger on top of the stick. Whether or not this is the correct physical approach to playing a timbale muffled stroke I am unsure. However, for me it is now a functioning technique that I can use without tension.

Developing the Orthodox Grip Closed Stroke

The left hand grip technically never changed as I usually hold the stick right at the back as can be seen in Video 5.5 where I demonstrate my traditional grip. I did however discover some slight variations shown in, such as turning the wrist in so that the back of the hand is now facing up rather than the palm. This creates more downwards pressure as the inwards rotation of the wrist causes a slight rotation at the elbow joint, which in turn slightly alters the distribution of weight from the elbow (Video 5.11).

Furthermore in Figure 5.9 you can see when the wrist turns inwards the wrist assumes a similar position to American matched grip, with the back of the hand facing upwards but with the fingers forward instead of underneath. This variation allows the index and middle finger to naturally extend further over the stick allowing the stick to rest in the second finger joint as compared to the first finger joint before the wrist was turned in. Moving the stick closer to the knuckle joint allows the stick to be seated on the more
fleshy area of the index and middle fingers, utilizing slightly larger finger muscles.

Video 5.11, Demonstration of change in weight distribution due to turning wrist in (elbow view)

Figure 5.9, Image of wrist turned inwards and fingers extended further over stick creating more downwards weight

Associated Techniques

I have also been working on associated drum set techniques since I first starting experimenting with the idea of the Open/Close. These techniques are either developed extended techniques, conceptual ideas, by-products from developmental processes, or existing techniques taken from other instruments in the percussion family.

Buzz Tail

The buzz tail or mallet head buzz dampening as used on mallet instruments (Video 5.12) is a subtle technique, which is most effective at low volume settings. It is a technique for creating a textured long sound on the drum set from a single stroke, similar to the buzz stroke however instead of the buzz coming from the rebound of the stick, the buzz comes from the vibrations of the drumhead or cymbal. A comparison of the two buzz strokes (Video 5.13) is included to clarify the difference between the two strokes, with a demonstration of buzz strokes with the right and left hand followed by a demonstration of the buzz tail with the right and left hand.
Even though I had been using the buzz tail technique before I began this study, the further development of this technique was partly due to the many failed attempts at creating an alternate closed stroke technique. So in essence it is actually an enhancement of the unwanted buzz that kept occurring during the development of the natural closed stroke.

In order to enhance the buzz, it is necessary for the slight application of pressure at the point of contact between the drum stick and the drumhead so that the stick does not rebound but at the same time is allowed to buzz because of a partial release of pressure once the stick has settled. The effectiveness of the buzz tail hand technique can be enhanced depending on the strike area of the stroke, the tuning of the drum, the amount of pressure put into the stroke, the angle of the drum stick to the drumhead and the timing of the partial release of pressure. In have tried to demonstrate some of these variables in Video 5.14 however they are quite subtle.

I also dedicated a fair amount of time to the development of the buzz tail on the bass drum (Video 5.15). Although the application is different because of the use of the bass drum pedal instead of a stick, the approach is still the same. I experimented with variables of the bass drum pedal, such as the adjustment of the spring tension and beater height on the bass drum pedal, which effects the strike
area and the leverage of the pedal achieved through the foot position on the pedal board. I also found the use of a plastic beater enhances the buzz effect between the bass drum head and the beater, and produces more volume than with the use a felt beater.

Video 5.14, Demonstration of different strike areas in relation to the effectiveness the buzz tail

Video 5.15, Demonstration of a buzz tail on the bass drum

_Sizzle Stroke_

This technique, although similar to the buzz tail, was actually developed much earlier when I found the need to create long, textured sounds on the hi-hat. I have always been active in freeing up the role of the hi-hat in a jazz setting and in this particular instance I was inspired by Paul Motian’s use of his sizzle cymbal. Motian’s use of the sizzle cymbal allows him to play less while simultaneously creating big cushions of sound for the other musicians to play off, especially in a ballad setting.

During the writing of this study I discovered the sizzle stroke is actually a standard technique used on the crash cymbals in both marching and orchestral settings and is documented in many books such as Frank Epstein’s *Cymbalisms: A Complete Guide for the Orchestral Cymbal Player*, (Epstein, 2007).
Although the concept behind the techniques of buzz and sizzle strokes are similar, the technique used to play a sizzle stroke is
different to that of a buzz stroke because of how the hi-hat stand works. Unlike the hands that drop the sticks into to the drums or
the bass drum pedal that swings a beater into the bass drum head, the hi-hat stand works by the pedal controlling the top hi-hat
cymbal. Pushing down the hi-hat pedal causes the top cymbal to move downwards with the movement of the pedal until it comes in
contact with the bottom hi-hat which is stationary sitting on a cymbal felt on top of the hi-hat cup. It is at this point of contact where
you can continue you on one of three paths:

- Allow the weight of your leg to continue depressing the pedal until the hi-hats are clamped close under the weight of your leg,
  performing a closed stroke.

- Divert the weight of your leg into your heal or hold back the weight of the leg to allow the spring in the hi-hat stand to push the
top cymbal in the air again to perform an open stroke.

- Go into a hold position rather than letting the motion continue, using a controlled amount of weight to hold the cymbals in the
  sizzle stroke position.

The amount of weight needed in the hold position in the act of a sizzle stroke depends on several variables in regards to the setup of
the hi-hat stand. These variables are the amount of spring tension, amount of gap between the two hi-hats when there is no weight
applied to the hi-hat pedal board (which also determines the amount of travel in the hi-hat pedal), the physical weight of the hi-hat
cymbals and the amount of tension placed on the cymbal through the adjustment of the clutch felts.

Video 5.16 demonstrates these three different techniques for producing variations of lengths of sound on the hi-hat cymbals with
the use of the hi-hat pedal.

Video 5.16, Demonstration of the three different hi-hat strokes
- open, close and sizzle
In Video 5.17 I have adjusted the amount of gap between the two hi-hat cymbals to enhance the results of this technique. I find that setting the hi-hat gap quite large so that there is around two inches of travel left when the hi-hats are in the rest position allows for a greater range of textural variation and dynamics within the hi-hat sizzle stroke.

The large gap also makes it possible to utilise the hi-hats as separate cymbals without the worry of unwanted contact when using closed strokes or push strokes on the top hi-hat cymbal (Video 5.18).

**Push Stroke**

The push stroke is an extended technique that involves physically pushing into the cymbals rather than striking them. This technique activates the sound of the cymbal without the focused impact from the tip of the stick resulting in the cymbal *speaking* slower. There is also a noticeable difference in the balance of overtones being emitted from the cymbal with the absence of the focused impact. Variations include using the shoulder, tip or butt of the stick to *push* the cymbal and also the contact area.

During experimentation with the use of push strokes, I found that the way in which the cymbal was mounted on the cymbal stand
had great affect on the range of sound achieved from the cymbal. As discussed earlier in this chapter and in Chapter 3 variables such as tilt angle and the tightening down of felts does affect the fullness of sound achieved from the cymbal. This is especially evident with the use of this technique because the action of pushing the cymbal means that it is going to swivel on the stand and anything that gets in the way of the cymbal swiveling is going to inhibit the movement and vibration of the cymbal, dampening the sound. I found the best way to mount the cymbals for this technique was with the cymbals mounted flat with only a small felt (or no felt) under the bell of the cymbal with no top felt or wing nut. This is demonstrated in Video 5.19 where I improvise using of a variety of push strokes on both ride cymbals and the hi-hat.

Video 5.19, Short improvisation demonstrating the use of different push strokes on both rides and hi-hat cymbals

Application

This final section discusses the application of Open/Close, including the use of the techniques discussed above as an approach to solo and ensemble playing. Again, this is not an instruction guide for the application of the techniques associated with Open/Close but rather just documentation of my personal experiences in the process of applying Open/Close in both practice and performance. In my final recital I aim to demonstrate a more complete approach, which will include amongst others, several of the approaches discussed below in solo and ensemble musical performances.

One of the earlier approaches I experimented with, and currently still work on, is using the open and closed sounds to express the idea of different note lengths in ‘linear’ lines. An example of this is taking a linear pattern such as the four limb pattern in Video 5.20, and experimenting with adding closed strokes (as demonstrated in Video 5.21). The addition of closed sounds to this pattern provide contrasting note lengths, adding another dimension to help shape the linear line.

I have also been developing the idea of using the closed strokes to play the different note lengths in a given rhythmic passage. An example of this idea is for one to play the first line of notation appearing in page 38 on Syncopation for the Modern Drummer, (Figure 5.10) and using closed strokes for the quavers and open strokes for crotchets (Video 5.22). This idea is quite difficult to execute, especially when trying to make the crotchets and quavers last for their full rhythmic value.
Video 5.20, Demonstration of linear pattern between all four limbs

Video 5.21, Demonstration of linear pattern between all four limbs with the addition of dead strokes

Figure 5.10, Notation of first line from page 38 in *Syncopation for the Modern Drummer*
Working through phrases across different drums/cymbals with open and closed notes is another idea I have been working on. I started by practicing different orchestrations of two note combinations using an open stroke and a closed stroke with a variety of rhythmic models, whilst overlapping open sounds with closed sounds or close together as flams (Video 5.23). I have used this practise method to catalogue short runs that I felt sounded good for use as material in building longer lines. I found the mixture of open and closed strokes within a run added shape to the line, while creating variations in sound from each individual drum/cymbal.

Video 5.23, Demonstration showing the use of two note combinations mentioned above

Similar to the idea in Video 5.23, I have also experimented with coupling two sounds together, focusing on getting the attack from one stroke and the note length from another. I have found with this idea, the challenge was achieving the right dynamics so that the closed stroke was slightly louder than the open stroke. Both strokes need to be perfectly together so that the result is a single sound made up of the attack of one drum/cymbal with the ring of another drum/cymbal (Video 5.24).
This idea can be taken one step further to create ‘stacks’, which may be considered similar to coupling, however ‘stacking’ can involve the use of up to four limbs. This means combinations of long and short notes orchestrated in a stack, similar to a chord on the piano or on mallet percussion (Video 5.25).

In the approach to application of Open/Close in a solo setting I have been adjusting the tuning of my drums to have the longest notes possible and using cymbals that have strong notes or complex overtones so that I have access to extremes in terms of contrast between long and short notes (as can be heard in the video examples in this chapter).

I have also been finding it easier to get away from existing solo drum vocabulary commonly associated with jazz/free jazz drumming by tuning the drums to create textural sounds rather than pitches. This helps avoid strong reoccurring pitches coming from the drums and allows me to more easily focus on improvising with lengths and texture. I have been experimenting with this approach in ensemble settings and have found it to be very dependent on the instrumentation of the ensemble and the musical context. This way of tuning the drums was most successful in contexts where a less structured approach was employed, and where each instrument
was free from an obligation to fulfill a role as such, compared to say a standard jazz piano trio where there may be pre-conceived roles.

In an context such as a jazz piano trio, I began utilising the alternate methods such as those discussed earlier in this chapter to creating long sounds without affecting the role of the bass in particular. Over time, I gradually re-introduced longer sounds on the drums, however they became more textural and less pitch related through the use of a variation of tuning methods so as not to interfere with the other instruments.

The use of long sounds or textures in this context allowed me to create small beds of sound which meant I was able to play broken ideas, starting and stopping, without feeling like I was loosing momentum from the drums. This is particularly useful in more open ensemble settings where the ensemble is not clearly stating the pulse, or in a ballad setting where I could employ this technique as another way of creating momentum in place of repetitive traditional jazz brush patterns.

In terms of practising the application of Open/Close in a more open setting, I found that playing along with minimal electronic or sound scape music to be quite a useful substitute. I would use the music to create a bed of sound so I could experiment using the idea of Open/Close over the top without feeling the need to reference a consistent pulse to achieve momentum. I have always found this way of playing intriguing, playing broken phrases in rubato time or playing off unrelated pulses without the feeling of being led towards a collaborator’s pulse. Ideas for the application of Open/Close mentioned can be applied utilising any combination of Open/Close techniques such as the closed stroke, open stroke, buzz stroke, sizzle stroke, push stroke, pre-existing techniques such as the stick shot, rim click, and adaptable additional mallet dampening techniques such as those mentioned in Chapter 1, page 8 to create an alternate approach to the drum set.

The variety of musical possibilities emerging through developmental processes and practices discussed in this chapter will be the focus of the recital accompanying this thesis.
Conclusion

Through the research and personal investigation into the concept of Open/Close this study has demonstrated that it is possible to control the lengths of sound produced by the drum set through the use of techniques discussed here. The extensive research appearing in this study into existing dampening techniques from the larger percussion family has produced what I believe to be the first documented history of the use of these techniques on the drum set, which will be an invaluable resource for further research into the control of note lengths on the drum set.

My personal aim for this study was for me to investigate and develop the necessary technical skills to the point where I could employ sonic possibilities of Open/Close in my music performance practise, thus integrating the concept into my individual voice on the drum set. This will be presented in my final recital which is the final step in this study, presenting Open/Close as part of my individual approach to playing the drum set in both a solo and ensemble setting.

My hope is that the evidence documented in this paper will inspire others in the pursuit of the control of lengths of sound produced by the drum set, offering a template for further practise-based research into the development of extended techniques associated with drum set performance and the expansion of expressive possibility on that instrument.
Bibliography


