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Development, Mechanics and Compositional Uses of Virtuoso Electric Guitar Techniques

ALEXANDER PAUL VALLEJO

A thesis submitted to the University of Huddersfield in partial fulfilment of the
requirements for the degree Master of Music by Research

September 2020

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Abstract

This project explores the history, mechanics and practice exercises of guitar techniques that are considered to be virtuosic as well as exploring how these techniques (amongst others) are used in compositions for either a musical or ergonomic reason.

The history and development of these techniques will be explored throughout this thesis. The EP will be used as a demonstration of techniques and musical songwriting within the guitar centric genre that will be supported within the commentary with references to different artist within the scene. The exercises created are influenced by various sources such as guitar tablature books about exercises and music while applying them to how artists have developed these techniques themselves.

Techniques discussed are sweep picking, tapping and thumping along with different approaches in each. Within each approach there is a learning curve and practice method that needs to be taken into consideration when learning them. In the EP all techniques are used, and their compositional qualities are tested.

New knowledge explored is within the realms of exercises and guidance for each technique. New guitarists have been brought into the world of academia that have not been discussed, such as Jason Richardson, Yvette Young, and Sarah Longfield. I have explored the reasonings behind each technique, whether it is compositional or ergonomic.

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Contents

Copyright Statement	2
Abstract	3
Acknowledgements	4
Contents	5
1. Introduction	7
2. Methodology	10
3. Literature review	12
4. Sweep Picking	17
4.1. Introduction to Picking Techniques	17
4.2 Introduction to Sweep Picking	22
4.3 Sweep Picking History and Development	22
4.4 Current Age of Sweep Picking	25
4.5 Sweep Picking Exercises and Guidelines	29
4.6 Conclusion	35
5. Tapping	36
5.01 Introduction to Tapping	36
5.02 History and Development of Tapping	37
5.03 Shred Tapping	39
5.04 Multi-Finger Tapping	43
5.05 Pianistic Tapping	45
5.06 Multi-Role Tapping	45
5.07 Percussive Tapping	47
5.08 Shred Tapping Exercises and Guidance	49
5.09 Multi-finger Tapping Exercises and Guidance	52
5.10 Pianistic and Multi-Role Tapping Exercises and Guidance	54
5.11 Conclusion	57
6. Thumping	58
6.1 Introduction to Thumping	58
6.2 From Bass to Guitar	59
6.3 Thumping Tone	61
6.4 Thumping Exercises and Guidance	61
7. Commentary	68
7.1 Introduction	68
7.2 Mi Alma	68
7.3 Libre	73
7.4 Una Sola Corriente	77
7.5 Mythos	80
7.6 Dulce Noche	83
8. Conclusion	87
8.1 Findings	87
8.2 Reflections	89
Bibliography	91
Discography	107

List of Figures

Figure 1.0: Bars 5-7 of Jason Richardson's 'Hos Down' (Richardson, 2016)	17
Figure 2.0: Diagram of DWPS and UWPS Retrieved From troygrady.com (Grady, 2020)	18
Figure 3.0: Demonstration of UWPS	19
Figure 3.1: Demonstration of DWPS	19
Figure 3.2: Demonstration of Edge Picking	20
Figure 3.3: Demonstration of Flat Picking	20
Figure 3.4: Demonstration of Snap Picking Movements	21
Figure 4.0: Bar 25-28 of 'Mind-Spun' by Animals as Leaders (Ultimate Guitar, 2020)	27
Figure 4.1: Bar 3-5 of My Transcription of Manuel Gardner Fernandes' Instagram Video (Fernandes, 2019)	28
Figure 5.0: C Minor Three String Arpeggio	29
Figure 5.1: C Major Three String Arpeggio	29
Figure 5.2: C Minor Arpeggio With Hammer-ons and Pull-offs	30
Figure 5.3: C Minor Arpeggio With Alternate Picking	30
Figure 5.4: C Minor Arpeggio With Picked Apex Note	30
Figure 5.5: C Minor Arpeggio With Legato	30
Figure 5.6: Sweeping Exercise One	31
Figure 6.0: A minor Arpeggio	32
Figure 6.1: A Major Arpeggio	32
Figure 6.2: D Minor Arpeggio	32
Figure 6.3: D Major Arpeggio	32
Figure 6.4: Five and Six String Sweep Exercise with Sliding	33
Figure 7.0: Bar 125-126 of Polyphia's 'Nasty' (Polyphia, 2018)	34
Figure 7.1: Bar 21-24 of Richardson's 'Hos Down' (Richardson, 2016)	34
Figure 8.0: Transcription of Eddie van Halen's Eruption Solo	39
Figure 8.1: Transcription of Tapping Section in Kirk Hammett's Solo in 'One' by Metallica (1988)	39
Figure 8.2: Bar 32 of Guthrie Govan's 'Wonderful Slippery Thing' (Govan, 2006)	41
Figure 8.3: Bar 56-63 of Jason Richardson's 'Omni' (Richardson, 2016)	42
Figure 9.0: Parachordal Finger Placement	43
Figure 9.1: Orthochordal Finger Placement	43
Figure 10.0: Extract of Sarah Longfield's Solo in 'Tydes' (Jamplay, 2020)	44
Figure 10.1: Demonstration of Thumb Placement When Tapping	44
Figure 11.0: Analysis of The First Section of 'Covet's Nautilus' (2015)	46
Figure 12.0: Solo Performed by Josh Martin on Little Tybee's 'Left Right' (Ultimate Guitar, 2020)	48
Figure 13.0: Shred Tapping Exercise One	50
Figure 13.1: Shred Tapping Exercise Two	50
Figure 13.2: Pentatonic Tapping Exercise	51
Figure 13.3: Scalic Tapping Exercise in A Natural Minor	51
Figure 14.0: Stacking Exercise in A Minor Pentatonic	52
Figure 14.1: Stacking Exercise in A Natural Minor	53
Figure 15.0: Pianistic Tapping Exercise One	55
Figure 15.1: Pianistic Tapping Exercise Two	56
Figure 16.0: Demonstration of Thumping	62
Figure 17.0: Thumping Exercise One	63
Figure 18.0: Triplet Thumping Exercise on Same String	63
Figure 18.1: Triplet Thumping Exercise With Plucking Fingers with Different Strings	64
Figure 18.2: Groupings of Seven Thumping Exercise	64
Figure 18.3: Groupings of Four With RightHand Fingers Plucking on Different Strings	64
Figure 19.0: Quintuplet Groupings Thump Exercise	64
Figure 19.1: Groupings of Five in Semiquavers Thumping Exercise	65
Figure 19.2: Groupings of Three in Semiquavers Thumping Exercise	65
Figure 20.0: Excerpt of the Outro in 'Woven Web' by Animals as Leaders (Guitar Messenger, 2020)	65
Figure 20.1: Transcription of Intro Section of 'Infinite Regression' by Animals As Leaders	66
Figure 21.0: Bar 1-8 of 'Mi Alma'	69
Figure 21.1: Bar 9-16 of 'Mi Alma'	71
Figure 21.2: Bar 37-44 of 'Mi Alma'	72
Figure 22.0: Bar 9-16 of 'Libre'	74
Figure 22.1: Bar 81-84 of Clean Arpeggios in Second Verse of 'Libre'	75
Figure 22.2: Demonstration of Thumb Placement of Arpeggio One (Bar 81-82 of 'Libre')	75
Figure 22.3: Demonstration of Thumb Placement of Arpeggio Two (Bar 83-84 of 'Libre')	75
Figure 22.4: Bar 99-103 of 'Libre'	76
Figure 22.5: Tapped Scalic run in 'Libre' at 4:36	76
Figure 23.0: Bar 9-16 of Una Sola Corriente	78
Figure 23.1: Bar 33-36 of Una Sola Corriente	79
Figure 23.2: Bar 49-52 of Una Sola Corriente	79
Figure 23.3: Bar 65-68 of Una Sola Corriente	80
Figure 24.0: Bar 13-16 of Mythos	81
Figure 24.1: Bar 20-23 of Mythos	82
Figure 24.2: Bar 42-49 of Mythos	82
Figure 25.0: 1:02-1:29 of Dulce Noche	84
Figure 25.1: 1:35-1:51 of Dulce Noche	85
Figure 25.2: 2:12-2:19 of Dulce Noche	86

1. Introduction

This project will explore playing techniques of the electric guitar and compositions in the context of progressive instrumental rock and metal, along with the historical development of said techniques through a mechanical and compositional perspective. The sociological impact and significances of these techniques will not be discussed in-depth, but only their mechanical and compositional nature. Guitar tones and technology will be discussed to understand how these techniques adjust according to tone and *vice versa*.

Three techniques will be focussed on, which are sweeping, tapping, and thumping. The reason for choosing to research sweep picking is the instant connection it has with virtuosity. Sweeping also has an extensive history that has only had significant mechanical and compositional developments in recent times. Tapping being another technique associated with virtuosity, has developed into various branches of approaches such as shred tapping, pianistic tapping, and multi-role tapping, as will be discussed. Guitarists may focus on one approach to tapping over another, to the point of creating instruments for their particular technique, such as the Chapman Stick. Thumping is a percussive technique that has only recently been introduced to the guitar but has gained immense popularity in the progressive instrumental scene due to its use by artists such as Tosin Abasi, Tim Henson, and Josh Martin.

Although each technique has its brief or extensive historical development, this thesis will be focussing on modern approaches when explaining how to learn said techniques, in some cases comparing them with previous approaches taken by past guitarists. Due to the lack of previous work in contemporary virtuosic electric guitar in academia, this project will give insight into the current state of guitar, and the development and mechanical approach to these techniques. This project may be used as a foundation for others to develop more research into other techniques mentioned but not thoroughly discussed.

Exercises will be supplied as well as additional milestones and habits to look out for when learning these techniques for a natural development to occur with the most ergonomic and comfortable approach possible. This may be too much of a subjective take, but not having mastered these techniques, various approaches will be practiced within the timeframe, which will

then be compared, analysed and adjusted while maintaining a purely objective analytical approach to assess each component of each technique.

Due to the project's practice-based research, an EP has been created to accompany this thesis, which will be discussed in the commentary chapter concerning the creative process and compositional nature of various techniques. The initial plan was to perform the EP, as well as some other pieces of music that impacted the guitar community, along with live demonstrations of how different sounds are achieved with each approach to each technique from a musical context, but due to the Coronavirus pandemic, this has not been possible. During this performance different improvisatory and compositional techniques were to have been explained. The research into how instrumental progressive rock and metal is composed and the physical limitations of the techniques is the basis of my EP.

This project aims to:

- Research different techniques that are used in instrumental progressive rock and metal electric guitar playing.
- Research the history and development of each technique.
- Explain various approaches to each technique.
- Describe the compositional and ergonomic value of the techniques.
- Learn these techniques through different approaches and supply exercises and guidance to aid guitarists when learning said techniques.
- Study artists in progressive rock and metal and compose music influenced by their styles and approaches.

In the current climate of the guitar community, there is a large emphasis on creativity and originality. The guitar community is based on social media such as Instagram, Facebook, and YouTube, where guitarists post music videos, tutorials, and play-throughs. In the current marketing age, these guitarists also use social media to present themselves and their personalities as a marketing strategy on top of music-related content. These guitarists, and fans of guitar-centric music, tend to focus their attention on all guitarists. Still, there is a greater focus on contemporary guitarists, such as Yvette Young, Jason Richardson, and Tosin Abasi. Virtuosity may not seem significant when discussing musicians in the field, but all musicians in the area are considered virtuosic by the community. Daniel Leech Wilkinson says virtuosity has become a problem as it is a level of excellence that surpasses the norm but is expected from anyone

entering the profession' (Wilkinson, 2018). This is true in the guitar community, so much so that anyone 'surpassing' others around them is in danger of being called out for faking videos and performances. Famous internet celebrity and musician Jared Dines challenged Manuel Gardner Fernandes for speeding up a video Fernandes posted on Instagram by saying 'hands don't glitch like that' (Poppis, 2019). This was a minor problem that was easily fixed, even to the point that Fernandes made merchandise with the tag line 'Hands don't glitch like that', but with words coming from a large YouTuber, there can be more implications. Fernandes was not the only musicians to be challenged for faking videos; so was Lucas Mann from Rings of Saturn. Once the video spread, Mann made a 40-minute video. He explained how not a single claim made by Dines was valid, also confessing to losing endorsement opportunities and fans due to the video made by Dines (Rings of Saturn Band Official, 2019). The authenticity of technical virtuosity is under the microscope in the guitar community; once someone surpasses the norm, they will need to prove to their followers that their videos are not fake. Guitarists on Instagram record their playing into a DAW (Digital Audio Workstation) and line the audio with the video. Some may assume that there has been some editing afterwards. Still, there is no way to verify anything unless clips uploaded are entirely live and recorded by a camera's microphone.

One must acknowledge virtuosity in 'feel', self-expression, and the ability to convey emotions in a musical context. 'Feel' concerns itself with; dynamics, timing; vibrato; and rhythm. Although integral for performers, feel will not be discussed at length in this thesis. Mental virtuosity is the ability to divert focus and attention to different aspects of the music as you are performing, whether it is musical elements such as tonality and structure or emotive elements, along with the ability to adapt to situations such as adjusting mood depending on the song or section of a piece of music. Lazlo Stacho argues that mental virtuosity is just as important as technical virtuosity, and both work together to achieve their common goal. As expressed by Stacho, technical virtuosity has been romanticised in films and documentaries, but mental dexterity and mental dexterity training have not been noted. Although this is integral to virtuosity and is part of the musicians' development, it will not be discussed in this thesis. This thesis will only concern itself with technical virtuosity.

2. Methodology

A qualitative auto-ethnographical practice-based approach will be used, where practice will be reflected upon as research (Autoethnography, 2017) when exploring ways of learning and practising techniques. There will also be ethnographical research through material such as interviews, magazine articles and videos. The project is also partly analytical as music will be analysed and transcribed. The approach to practice-based research does not concern itself with aesthetics or romantic views on music-making but purely the mechanical and compositional aspects of these techniques through 'practice as research (insider's perspective)' (Schipper, 2007: 40).

The practice-based segment of this project focusses on the mechanics of the techniques. These techniques are used as compositional tools, which will be explained in the thesis's commentary chapter. New knowledge will be supplied to academia, such as the development of contemporary techniques and information to do with learning these techniques. All approaches to each technique will be practiced and analysed to assess which approaches favour musical and ergonomic attributes such as timbral qualities, effort, intentions and fulfilling the outcome aspect of practice-based research. As a guitarist having experience with some of these techniques and learning others through this project, each approach's critical judgment will help conclude their qualities and which approach satisfies the needs of musical or mechanical attributes a guitarist might want to fulfil.

While still within the influence of practice-based research, an EP has been composed of five tracks acting as the 'artifact of practice' (Harrison, 2011: 225), highlighting most of the techniques discussed. In this EP, the focus was on how these techniques work in a musical context, achieve timbres, and obtain greater ergonomic purpose in situations where other techniques may be the initial approach. These tracks are not purely created for the expression of the techniques used, but music in their own right that are influenced by artists in the genre of guitar-centric music. These compositions are also influenced by the current artists and surrounding genres in the scene regarding structure, harmony, tonality and guitar tones. As Guthrie Govan said about playing the guitar and composing, he would do 'anything to get away from being technical and "shred" just for the sake of it' (Edwards, 2006).

Learning how these techniques have developed and understanding different approaches explained directly by the artists are paramount. The primary sources will entail interviews (published as videos on YouTube and transcriptions in online magazines) which these artists have done throughout their career when referencing these techniques. Along with interviews, educational products released by individual artists will be researched, including video courses such as Yvette Young's and Aaron Marshall's on [jamplay.com](https://www.jamplay.com) (Jamplay, 2020) and guitar exercise books such as Guthrie Govan's *Advanced Technique for Electric Guitar 2*. These sources are the most informative and reliable as these guitarists talk about themselves and their techniques, leaving no blank spaces. Ideally, one would have conducted interviews with these guitarists, but due to financial constraints and inability to contact the musicians, it has not been possible. Alongside these sources, academic texts will be referenced when explaining the history of said techniques.

Practice-based research concerns itself with the outcome, but the focus will be on the process of learning these techniques and how to use them, with information gained from a variety of sources, mainly found in online magazines, guitar tablature books, YouTube videos, interviews, and educational products made by guitarists. Outlining the process of learning these techniques and their compositional value is just as significant as the outcome. In this case, the outcome is the EP and in-depth analysis of the mechanics and practice approaches of these techniques. My contribution is solely the performance and composition, as the recording, mixing, and mastering has been done by a sound engineer.

Within the virtuosic guitar culture in question, most guitarists learn through online videos on YouTube, video lessons made by already established guitarists, and online courses on websites such as [jamplay.com](https://www.jamplay.com). The video lessons and courses usually come with a PDF or Guitar Pro file, which supplements the material being taught. Certain guitarists have had one-on-one guitar lessons, such as Jack Gardiner having had lessons with Tom Quayle. Lessons such as these are still available but only online by those who offer them, usually at a high price point. Although video material is at the forefront of learning the guitar, Tablature books and guitar manuals are still commonly used. Exercise and tablature books are the main inspiration for the approach in explaining the mechanics and ergonomic benefits of the techniques that will be discussed.

3. Literature review

There is currently a lack of academic work that focusses purely on electric guitar techniques' development and mechanics. As a focus on techniques is a new approach to the electric guitar in academia, there is plenty to be brought to light. There are copious amounts of academic research into the history and explanation of classical instruments' techniques, approaches in orchestration, compositional uses, and extended techniques covering contemporary classical and art music, but there is no equivalent to the majority of instruments in popular music.

In *Musicological analysis of guitar solos from the root of rock through modern heavy metal* by James E. Slaven and Jody L. Krout (2016), conclusions arose that the number of 'special techniques' and speed increased through the decades whereas note choices have only had a slight increase. Slaven and Krout also claim that the fundamental way of playing the guitar has not changed since the 1950s. According to Slaven and Krout, certain techniques such as 'vibrato and pitch shifting (pitch bending) have been used in jazz music since the late 1800's' and 'tapping has been in use for centuries as a string instrument technique' (Slaven & Krout, 2016: 246). Although, in a general sense, there is some truth to these statements, Slaven and Krout fail to address that these techniques have adapted, and various approaches have developed. Entirely new techniques have arisen, such as slapping, thumping, and popping. Although they are percussive techniques, they are still used in many melodic solos by artists such as Tosin Abasi, Josh Martin, and Kevin Blake Goodwin. Also, there is no explanation of how and why the speed has increased over the decades.

Academic literature about the topic of the electric guitar mainly concerns itself with the social impact that the instrument, musicians, and techniques have had on the culture surrounding the electric guitar, such as *Running with the Devil: Power, gender, and madness in heavy metal music* by Robert Walser (1993). In the chapter 'Eruptions: Heavy Metal Appropriations of Classical virtuosity', Walser goes in-depth about how classically trained guitarists have been the most influential and virtuosic in the world of heavy metal and rock, with references to guitarists such as Yngwie Malmsteen and Eddie Van Halen. Walser says that virtuosity 'has different social meanings' and does not necessarily have to be tied with 'high culture' such as classical music (Walser, 1993:

89). This book is vital to understanding the development of virtuosic guitarists and will be useful in relating and extending it to the guitarists I will be discussing. This text will also help outline the history of guitarists considered virtuosic, allowing to describe the development and popularisation of the techniques with which they have been associated.

Virtuosity and the electric guitar has been a topic explored by various scholars such as Kevin Fellezs. In the article *Edge of Insanity* (2018), Fellezs explores the meaning of virtuosity and what it represents in the context of black guitarists, focussing on Tony MacAlpine. Although an insightful article on the breaking of stereotypes of black musicians achieving European meanings of virtuosity, it also addresses the meaning of virtuosity and what virtuosity is in the context of MacAlpine as a guitarist with a classical background. This article also gives us an insight into MacAlpine's approach to music. Steve Waksman, in the chapter 'Contesting Virtuosity: rock guitar since 1976' of *The Cambridge Companion to the Guitar*, speaks about Vernon Reid 'announcing his commitment to an improvisatory brand of virtuosity' (Waksman, 2003: 128) as well as mentioning 'virtuosity of sound' (Waksman, 2003: 132) in the segment on the future of virtuosity in guitar and its seemingly inevitable invasion of electronic music, where the guitar will be more of a tool as opposed to the main focus in a musical setting. This opens up many avenues to talk about virtuosity, such as the different branches of virtuosity mentioned and creative virtuosity, as most guitarists are not just performers but also composers. This project will also show that virtuosic guitar playing, although not directly in the middle of mainstream media, still has its role in a large community bound to keep on growing as the main focus and sonic expression of many musicians.

Keeping on the topic of virtuosity, a study conducted by Jane Ginsborg, "*The brilliance of perfection*" or "*pointless finish*"? *What virtuosity means to musicians* explored the meaning of virtuosity through a survey conducted with university music students and professors. Ginsborg asked musicians of all backgrounds and explored their views on virtuosity. However, it was not easy to correlate their views to this project, where this thesis intends to focus more on a specific criterion of people in a niche genre. Virtuosity as a performer, such as in classical music or as a session player in the pop world, is relatively different to its meaning in the world of instrumental progressive rock and metal music due to the focus on creativity and less intense training period

(Wagner, 2016). In Ginsborg's study, the responses to the question about virtuosity characteristics relate to technique, mastery, ease, personal expression and confidence.

Moving away from virtuosity as a topic, there has been research into the technology behind the guitar and how it may affect one's playing. When studying how technology has affected guitar playing, it is vital to be aware of distortion. The analysis in each section of the article *Shredding, tapping and sweeping: Effects of guitar distortion on playability and expressiveness in rock and metal solos* by Jan Herbst (2017a) proves that distortion has made virtuosic techniques and reaching higher speeds more attainable with less effort (Herbst, 2017a). Herbst also points out that techniques such as palm muting; as seen in Andy Timmons' *Groove or Die*, is not only used to make a guitarist's playing cleaner and more fluid as opposed to playing clean, it is also used to reduce unwanted noise (Herbst, 2017a: 238). Following this, a thesis by Matt Shelvock called *The Progressive Heavy Metal Guitarist's Signal Chain: Contemporary Analogue and Digital Strategies* (2014) explores how tones are created and why, in reference to what technique the guitarists are using, although mainly focussed on picking and palm muting. This article, in addition to Herbst, allows us to understand how technology affects the guitarist's approach to the instrument and how a guitarist plays to the producer's and sound engineer's approach. Shelvock 'sees recording practice as musical practice' (Shelvock, 2014: 1) linking to Waksman's 'virtuosity of sound' (Waksman, 2003: 132). In the current climate of electric guitar, tone sculpting is incredibly important to how the public perceive the guitarist: not only does your technical performance and composing have to be substantial, but your tone crafting must also be exquisite. *"Heaviness" in the Perception of Heavy Metal Guitar Timbres The Match of Perceptual and Acoustic Features over Time* by Harris Berger and Cornelia Fales (2005) focusses on the development of distortion and technology affecting the guitar from 1970s-1990s, which supplement the understanding of the development of how technology affected techniques and vice versa, but this topic will not be discussed at length.

There has not been a tremendous amount of research on the mechanics and compositional aspects of electric guitar techniques. George Turner's PhD thesis, *Electric Guitar Performance Techniques: Meaning and Identity in Written Discourse* (2015), explores the history behind the techniques discussed in his research, along with the meaning of virtuosity in reference to these techniques. Although techniques are his main subject, Turner does not discuss these

techniques' mechanical aspects, only historical and sociological implications. Turner mainly focusses on the guitar in the 20th century rather than the contemporary guitar community's current practices. There are other sources such as *Re-casting Metal: Rhythm and Meter in the Music of Meshuggah* by Jonathan Pieslak (2007). Although this text is beneficial in terms of compositional aspects of a band that immensely influenced the progressive music genre, artists in progressive instrumental music have vastly different influences across many genres.

Still focussing on sociological aspects of the guitar, a study that concerns itself with contemporary approaches to the electric guitar is *Extended Range Guitars: Cultural Impact, Specifications, and the Context of a Mix* by Victor Gil (2014). Although focussed mainly on cultural effects, Gil explores contemporary guitarists such as Tosin Abasi and members of Meshuggah when discussing extended range guitars. Gil explores the specification of these instruments and how to incorporate extended range guitars into a mix. Gil explains how these artists approach their instrument from a compositional and musical narrative instead of techniques but still helped compose the EP for this project. There is also a great uprising in women becoming central role models in the guitar community, such as Yvette Young, Lari Basilio and Nita Strauss. *From Tinkerers to Gods: The Electric Guitar and the Social Construction of Gender* by Monique Bourdage (2007) explores why women have not been prominent in the guitar community historically, due to 'masculinisation of technology' and lack of female role models. Although gender is a crucial topic surrounding the guitar, this will not discuss it explicitly. Women who are discussed throughout will not be referred to the fetishised term of 'female guitarist' as has been used in the guitar community historically.

Although not a thesis focusing on the electric guitar, Joshua Cohen's *The Application of Tapping Techniques in Compositions For The Solo Electric Bass* (Cohen, 2016) discusses the technique of tapping on bass, much of which applies to the guitar. Cohen also discusses the compositional outcomes of these techniques and their uses by analysing the music composed for the project. There has been research into classical guitar technique such as *The Development of Right Hand Guitar Technique With Reference To Sound Production* by Gerrit Lukas Roos (2009). There has also been recent research into acoustic guitar techniques, such as *The Making of a Modern Fingerstyle Album: Exploring Relevant Techniques and Fingerstyle History* by Reece Cronin (2018).

There are guitar manuals such as *Progressive Metal Guitar: An Advanced Guide to Modern Metal Guitar* by Rob Thorpe (2019), which references artists and groups such as Judas Priest, Buckethead, Iron Maiden, with only rhythmic interest in bands such as Tesseract, Periphery, and Meshuggah. In *Complete Technique for Modern Guitar* by Joseph Alexander (2019), the techniques spoken about are fundamental and do not focus on contemporary guitarists' techniques, such as hybrid picking, economy picking, and tapping. *Sweep Picking Speed Strategies for Guitar* by Christopher Brooks (2018) focusses on techniques and approaches from past guitarists such as Jason Becker, Vinnie Moore, and Frank Gamble, while ignoring modern guitarists with an advanced sweeping approach such as Jason Richardson and Tosin Abasi. Within these guitar manuals, canonical knowledge is repeated and rarely expanded. In some instances, such as *Creative Tapping For Modern Guitar* by Kristof Neyes, contemporary techniques and musicians are discussed, such as pianistic tapping and Yvette Young.

Overall, most research put into the electric guitar has been focussed on a cultural narrative with the emphasis of virtuosity behind it, along with explorations of tone and technology that make the electric guitar sound and play the way it does. As may be observed, the previous studies looking at techniques were not focussed on the electric guitar. However, it should be noted that most are recent research students, proving that there is now a greater interest in the mechanical and compositional aspects of techniques of instruments in the area of popular music. Most guitar manuals focus on past guitarists and their approaches to techniques but ignore modern guitarists and their influence.

4. Sweep Picking

4.1. Introduction to Picking Techniques

Although there have been academic writings on sweep picking, as discussed in the literature review, they mainly focus on the technique's sociological implications. They do not develop further than in the mid 1980s. This chapter intends to outline the history of sweep picking by explaining different approaches from past and contemporary guitarists. As discussed in the introduction, this chapter will be focussing solely on the mechanical elements of the technique. First, continuing with sweep picking, a foundation must be established within picking itself along with outlined definitions of some terms.

The most common way to use a plectrum on a guitar is to alternate pick. Alternate picking is following a down-stroke with an upstroke and *vice versa*. Although this technique may seem basic on the surface, it can be executed in many different ways. The majority of instructors suggest that the picking action should originate from the wrist and not the elbow or fingers. Throughout the decades, different ways to pick have been created to make the movement more ergonomic, to play faster, to accentuate, and to increase accuracy. The fundamentals of the technique are not virtuosic in themselves. However, they are needed to reach high speeds, for instance, reaching speeds of demisemiquavers at 125 bpm, such as in Jason Richardson's track *Hos Down* (2016) seen in Figure 1.0 below. These techniques include pick slanting, pick gripping, and right hand placement.

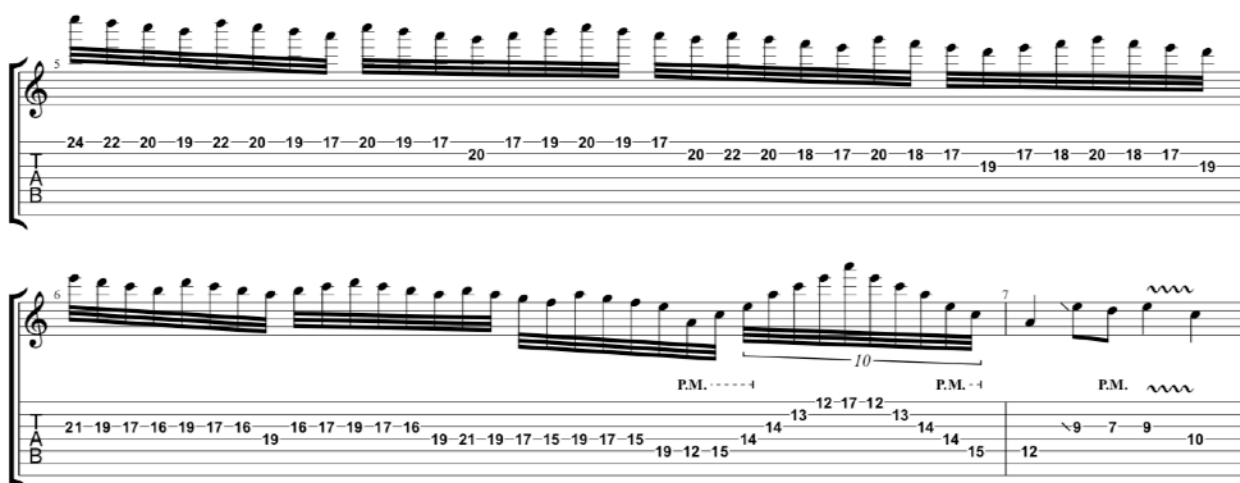


FIGURE 1.0: BARS 5-7 OF JASON RICHARDSON'S *HOS DOWN* (RICHARDSON, 2016)

Slant picking is when the guitarist slants the pick towards themselves (upward pick slanting, also known as UWPS) or away from themselves (downward pick slanting, referenced as DWPS), as seen in Figure 2.0 (Grady, 2020). DWPS 'enables the pick to escape the plane of the strings every time you play an upstroke' (Grady, 2020) and *vice versa* for UWPS. Utilising this technique also allows the guitarist to switch to the opposite type of slant picking easily and allows for greater control in accentuation. Guitarists have different ways of using this technique, such as Nuno Bettencourt, who has his right hand entirely off the guitar, while the majority of other guitarists use their palm to mute the string they are not playing. Pick slanting is the preferred way to pick as opposed to flat-picking. Flat picking is when the guitarist attacks the string with the pick's flat surface without slanting or turning it in any way. Flat picking gives the guitarist less dynamic control and restricts accentuation (Licklibrary - Online Guitar Lessons, 2015). Edge picking is when the guitarist tilts the plectrum to a 45-degree angle, making the edge of the pick attack the string, creating less friction, and allowing the plectrum to glide back and forth and move towards the following string. There are two different ways to edge pick: leading-edge picking and trail edge picking. Leading-edge picking is when the pick is angled away from the guitarist, whereas trail edge picking, the plectrum is angled towards the guitarist.

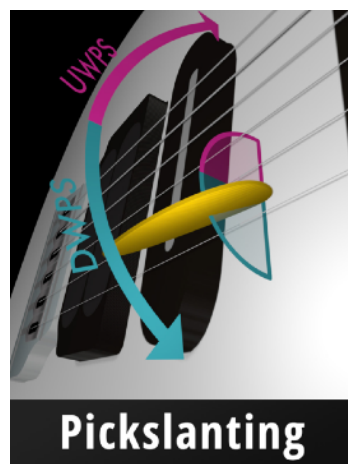


FIGURE 2.0: DIAGRAM OF DWPS AND UWPS RETRIEVED FROM TROYGRADY.COM (GRADY, 2020)

Classic shred guitarists from the 1980s such as Yngwie Malmsteen and Vinnie Moore, stray from flat-picking and instead use a combination of both slant picking and edge picking. Malmsteen uses leading-edge picking at a 45-degree angle as seen in various live play through of

Far Beyond The Sun (Rivera, 2012) and instructional videos such as *Yngwie Malmsteen Lesson - Picking Techniques* (Official Yngwie Malmsteen, 2018). Although challenging to point out, a tell-tale sign of which approach to pick slanting is used can be seen by the wrist's angle and movement, as demonstrated in Figure 3.0 and Figure 3.1.



FIGURE 3.0: DEMONSTRATION OF UWPS



FIGURE 3.1: DEMONSTRATION OF DWPS

Other guitarists such as Vinnie Moore use UWPS and edge picking, as explained by Troy Grady (Grady, 2014) and demonstrated in Figure 3.2. In an instructional video called 'Vinnie Moore - Speed, Accuracy and Articulation' (maibon01, 2011), Moore does not explain how or why he is slanting the pick in any direction, nor do the majority of other guitarists of their time. Another note made by Grady is that Moore does not pick the same way when demonstrating his technique slowly (Grady, 2014). Moore cannot describe and perform his technique at slow speeds which is an example of tacit knowledge, which is 'the unarticulated, implicit knowledge gained from practical experience' (Horning, 2004). Herman Lee from Dragonforce uses DWPS, such as his live performance at a guitar clinic at Dawson's in Reading, England (Silavant, 2010: 0:22-0:39) proved by the angle of his wrist. John Petrucci is another guitarist who uses similar approaches to slanting and angling the plectrum to 45-degrees and explains this by giving the example of

scraping across the strings with the pick angled from the lower string on the bridge to the lower horn of the guitar body (Sam Ash Music, 2016).



FIGURE 3.2: DEMONSTRATION OF EDGE PICKING



FIGURE 3.3: DEMONSTRATION OF FLAT PICKING

Overall, the consensus throughout the history of shred guitar has been to ignore flat-picking (Figure 3.3) due to the friction created, lack of dynamic range, and lack of control in accentuation. Throughout time, the majority of guitarists have used DWPS and some UWPS (depending on their personal preference) with varying angle sizes to create more ergonomic playing. The other aspect of picking used primarily throughout the decades which has not changed is leading-edge picking at a 45-degree angle, so there is enough attack and a reduction in friction between the plectrum and the string. It is important to note that these techniques do not help with speed; they are used to create accuracy and greater ergonomic playing, which may aid in playing faster. Slant picking, edge picking, and speed all come together to create the ideal approach to alternate picking, but the guitarist must slowly practise these techniques to engrain them into their muscle memory; if not, bad habits will form. Edge picking is a great way to create speed and can be greatly exaggerated when applied to techniques such as snap picking. Snap picking is a technique used when the guitarist uses their thumb and index finger on their picking hand to push the pick through the string (as demonstrated in Figure 3.4) and accentuate the note being played. A clear demonstration of this technique is an instructional video for Licklibrary by Andy James (Licklibrary - Online Guitar Lessons, 2013). This technique is not the most popular technique amongst modern virtuosic guitarists, mainly due to the responsibility the thumb and index fingers' already have. According to Guthrie Govan, the index finger and thumb have the responsibility of dynamic control by holding the pick harder or softer, changing the way the pick is slanted and angled, and maintaining a grip to ensure that the plectrum does not slip off (Licklibrary - Online Guitar Lessons, 2015).



FIGURE 3.4: DEMONSTRATION OF SNAP PICKING MOVEMENTS

There are many different ways to pick, such as hybrid picking. Hybrid picking is where the guitarist picks naturally, and finger picks with their middle and third finger (usually helpful when string skipping and performing large intervallic leaps). Examples of this can be seen and heard in the majority of Interval's discography. A classic example would be the ending of the introductory solo of *Cliffs of Dover* by Eric Johnson (Johnson, 1990: 0:17-0:20). Another common way to pick, which is closely related to sweep picking, is economy picking. Economy picking is when the guitarist follows a downstroke (or upstroke) with the same stroke direction on the adjacent string. Economy picking is useful when there is an odd number of notes per string, usually used in runs for greater speed and more efficient movement. Although it may seem to be a great alternative to alternate picking, there is a loss of strength in attack. To successfully economy pick, the guitarist must also exercise Rick Graham's advice on planting. Planting is when the guitarist quickly 'plants' the plectrum on the string they will strike immediately before striking. Planting allows the guitarist to keep their attack on each string equal and trains the guitarist to pick in smaller movements by keeping the plectrum as close to the string as possible without losing any attack (Graham, 2015). Planting is used in practice to develop minimal movements between strokes in order for it to be a subconscious thought for efficiency.

4.2 Introduction to Sweep Picking

As one of the most prevalent, intimidating, and advanced techniques to attempt, sweep picking has been a milestone for most guitarists in the rock and metal scene since being popularised by guitarists such as Michael Angelo Batio, Jason Becker, and many others in the 1980s. Sweep picking is when the guitarist plays a melody or arpeggio, usually, one note per string and two at the apex and root string of the sweep, in a single downwards or upwards motion, while making sure the notes do not overlap. Although there are different ways to play arpeggios, such as Paul Gilbert's string skipping approach (DwaynesGuitarLessons, 2015) and Guthrie Govan's tapping approach (Guitar World, 2011), sweeping is the most common advanced technique used amongst guitarists for arpeggios. There have been many different approaches to this technique by various artists such as Jason Becker, Yngwie Malmsteen and Rusty Cooley. However, current guitarists such as Tosin Abasi have also recently developed sweep picking in reference to sweeping on extended range guitars. Jason Richardson's input changes the way the left hand performs to create a cleaner and more accurate result. Approaches such as what notes should be picked or played legato; different picking angles; and different wrist and forearm movements brought up throughout the history of sweeping for musical or ergonomic reasons will be discussed.

4.3 Sweep Picking History and Development

Sweep picking is not a new technique by any means; it has been used by guitarists such as Django Reinhardt in the 1930's, evident in 'Improvisation' (Reinhardt, 1935), where he uses the technique to ascend three-string arpeggios on a gipsy nylon guitar. The earliest video recording that includes sweeping may be seen on an episode called 'Alabama Bound & Darktown Strutters Ball' of *The Les Paul and Mary Ford Show* in 1957 on American national television (oobleckboy, 2008). Although both Paul and Reinhardt did sweep pick, they did not sweep down the arpeggio. Taking inspiration from both these musicians, Chet Atkins was the next guitarist to give a real example of what would be called sweeping today, where the guitarist goes both up and down the arpeggio while making sure every note is individually heard while avoiding raking (when you 'sweep' muted strings, causing a 'raking' effect) (1964). Soon after, sweeping was first seen in the world of rock from Ritchie Blackmore, as seen in the live performance on Deep Purple's *Wring*

That Neck in 1969 in Belgium (Jewlapijs95, 2007), and by Jan Akkerman from the band Focus in their performance of *Hocus Pocus* in 1973 (Jackson, 2007).

Entering the neoclassical virtuoso guitar movement that was the 1980s, there was a significant development of sweep picking. It could be said that both Akkerman's and Blackmore's attempts at sweeping would be considered messy and lacking 'proper' technique by the standard of the 1980s. When guitarists think of virtuosic sweeping, most will direct their attention to the work of Jason Becker. At the forefront of virtuosic guitarists in the 80's, Becker's technique could be seen as flawless. Becker's right hand approach to sweep picking is to plant his palm near the top of the bridge; in doing so, he gains the ability to mute the lower strings to avoid them being accidentally played. Becker also places his little finger on the guitar's body half an inch away from the high E string for stability and turns his wrist back and forth to play the arpeggios. As seen in his video *AIMM Archives - Jason Becker (1989)* (aimmedu, 2017), Becker utilises both DWSP when heading away from the root of the arpeggio and UWSP back towards the root, which helps create less friction, giving him the ability to 'sweep' through the strings with ease. The turning point of the slanting at the base of the arpeggio may be seen to create inaccuracies by accidentally playing the string below with the turning movement, but this did not seem to affect Becker and can easily be avoided with muting. Becker's left hand approach is to ensure there is enough space between his hand and the neck to allow easy access to the lower strings when playing near the body of the instrument. When watching Becker play, the guitarist may be inclined to place their thumb where Becker is placing his own, but it is not advised as it is all down to physical limitations of hand size. Becker has relatively large hands, which means he can afford to place his thumb towards the top of the neck, but someone with smaller hands may not be able to do that while keeping sufficient space between the neck and their hand.

Another notable name in the world of shred guitarists from the 1980s is Tony MacAlpine. MacAlpine's approach to sweeping differs from Becker's in various ways. When it comes to the fretting hand, their approach is almost identical due to having large hands and aiming for the same objective of only the thumb having contact with the neck. MacAlpine tends to tap towards the end of his sweeping passages, adding another note to the arpeggio. MacAlpine does this by sweeping close to where he will tap on the fretboard to avoid jumping from the bridge to the fretboard each time. However, he does not mute or anchor his palm when sweeping in this way,

potentially subjecting himself to creating unwanted noise on the lower strings with the turning motion when changing the pick's slant. Another aspect of MacAlpine's technique is that he does not use his pick on the way down the arpeggio but instead plays the notes as hammer-ons out of nowhere. When MacAlpine sweeps without tapping, he does anchor his palm on the top of the bridge and bends his wrist to push the pick through the strings to play the arpeggio while similarly using both DWPS and UWPS to Becker. Using both DWSP and UWSP seem to be central to the technique of sweep picking.

Yngwie Malmsteen only uses DWSP, which could be seen as inefficient. Without using both pick slanting directions, Malmsteen performs more exaggerated movements when changing strings, creating more friction when going up and down the arpeggio. Although it is evident that he does sweep pick, for example, his track *Liar* (1986), he refuses to admit so as to avoid a cliché. 'I like to have a smooth – almost like a violin – type of effect. I don't do sweep picking, by the way. People say that. *plays a lick* That's not sweeping, it is whatever note is up ahead' (Ustaer, 2017). He claims that he only does what he needs to play the next note in the arpeggio. Malmsteen also snap picks to reach the higher strings, similarly to Shawn Lane, which has significant disadvantages, as explained in the previous subchapter.

Although these approaches may be slightly different when it comes to the right hand, MacAlpine and Becker hammer-on the second note in any basic arpeggio. Entering the 1990s, Rusty Cooley has a slightly different approach for both the left and right hand. Cooley starts the majority of runs on an upstroke, to then play the third of the arpeggio on the same string with a downstroke, which follows through to other notes. This is similar to the way Paul Gilbert approaches sweeping. When Gilbert sweeps (although not often), he adds notes to the highest and lowest string when repeating the arpeggio, keeping the momentum going by starting on an upstroke (purgatory358, 2007). Cooley's right hand is not entirely anchored on the lower strings as he moves his whole forearm up and down. This is not to mute the notes but to avoid the wrist from performing exaggerated movement to play all strings. Cooley says he will do 'anything... to get away from barring' (Shred Guitar TV, 2019 : 12:17), although he may not apply this philosophy to all arpeggio shapes such as basic five and six string major arpeggios. Instead, Cooley chooses to roll his fingers from one string to the next.

4.4 Current Age of Sweep Picking

At the forefront of shred guitarists in the current guitar community, there is Jason Richardson. Richardson has been named one of the best guitarists of the 2010s by Guitar World Magazine, with their tech editor saying, 'for those who dig instrumental guitar, he's the guy to aspire to' (Bienstock, 2019). With no direct influence from Cooley, Richardson also tries to avoid barring at all costs to make the notes in the arpeggio clear. In Richardson's words, 'it helps a ton in my opinion, with um, just eliminating any possibility of the notes ringing together because the literal definition of an arpeggio is a broken chord, so no notes are supposed to ring together at all. And when you bar or roll your finger, there is always that slight chance that two notes can ring together and that's an interval, not an arpeggio' (Guitar World, 2019: 0:23). He gives the example of accidentally fretting the wrong note, 'I would bar just a little bit too hard and accidentally fret a major third as opposed to the minor' (Guitar World, 2019: 6:06). Just like Cooley, there are times when Richardson admits that there is no ergonomic way to perform a sweep without barring. He justifies this by saying, 'there's pretty much like no like ergonomic like, comfortable way to individually like finger this specific three-string inversion of a major arpeggio, you could but it just like, it doesn't really make sense... it's just like insanely uncomfortable' (Guitar World, 2019: 9:40).

The left hand technique is not the only approach that separates Richardson from other shred guitarists, as the way he mutes the strings with his picking hand, is also innovative. Richardson's approach to his right hand is to keep his hand flat while keeping all his fingers out of the way by tucking them up. Tucking up fingers is used because there is a need for more surface area on the guitarist's palm 'to cover all the strings that you are not playing' (Guitar World, 2019: 4:15). Similarly to the previous guitarists, Richardson mutes the higher strings with his left hand's index finger and mutes the lower strings with his right hand palm and part of his wrist. Richardson does not anchor his wrist but instead moves his forearm up and down to cover the lower strings with his palm, wrist and, in some cases, forearm. Richardson does not perform the root note of an arpeggio with an upstroke but instead prefers to play it with a downstroke while hammering-on the third of the arpeggio (Guitar World, 2019).

There are other ways to perform arpeggios that do not include sweeping. Lucas Mann of the progressive metal band Rings of Saturn says that there is no need to pick descending arpeggio patterns and instead perform them legato, similar to MacAlpine's approach. Hearing this would raise the question, such as, how do guitarists keep all the notes at equal volume, and how is this possible without muting the strings? Most players are usually running compressed, high gain tones through active pick-ups such as EMGs or Fishman Fluences. With the help of technology such as gain and compression, there is no need to worry about being quieter when performing these arpeggios legato. When it comes to muting, Mann admits, as so do many other players, to using a fret wrap (Rings of Saturn Band Official, 2019). A fret wrap is a soft material that one places near the nut of the guitar on the fretboard, which is secured with Velcro around the back of the neck; this in itself mutes the strings that are not being played, which relieves the pressure of muting with both the left and right hand. With this in mind, the guitarist can perform arpeggios without sweeping. This can also be seen in Cooley's performances in which instead of using a fret wrap, he mutes the strings by wrapping his right hand near the nut of the guitar while playing the arpeggios with his left (Shred Guitar TV, 2019 48:40). There are clear disadvantages to both methods: with the fret wrap, there is no way to play open notes without spending time sliding it off the fretboard and onto the head of the guitar, and with Cooley's method, there is too much distance to cover with their right hand to go into passages which use different techniques.

As players of the extended range guitar, Richardson, Cooley, and MacAlpine have focused on low-register sweeping, but not as much as Tosin Abasi. When analysing 'Mind-Spun' by Abasi's progressive instrumental band Animals as Leaders, the arpeggio's root note is placed on the 7th string, as seen in Figure 4.0. With low strings being known for their lack of clarity, there is a greater emphasis on articulating these notes. The way Abasi goes about tackling these arpeggios is similar to Jason Becker's technique, such as pick slanting and resting his palm on his lowest string (8th string). As heard and seen in his playthrough video of the track, Abasi palm mutes the lowest notes in the arpeggios; this gives it more definition, as proven by Jan Herbst (Herbst, 2017).

The image displays four systems of musical notation for the guitar piece 'Mind-Spun' by Animals as Leaders, specifically bars 25 through 28. Each system consists of a guitar staff and a corresponding fretboard diagram. The notation includes various techniques such as slides (sl.), bends (b), and harmonics (H). The fretboard diagrams show fingerings for the guitar and bass staves.

FIGURE 4.0: BAR 25-28 OF MIND-SPUN BY ANIMALS AS LEADERS (ULTIMATE GUITAR, 2020)

The guitarist may see these techniques being used and think, what are the possibilities? As stated before, gain, distortion, and compression are significant factors for why these sweeps and legato passages sound fluid. However, some guitarists have pushed the boundaries and achieved this cleanliness and fluidity with clean tones. Manuel Gardner Fernandes is amongst the infamous Instagram guitarists who broke boundaries and created controversy about the legitimacy of his playing. In many of his Instagram videos, he performs swept arpeggios with a clean tone while keeping all the notes clear and equal in volume. Below is a transcription of a passage, as seen in Figure 4.1, from one of his videos below to demonstrate which notes have been played legato and which have been swept.

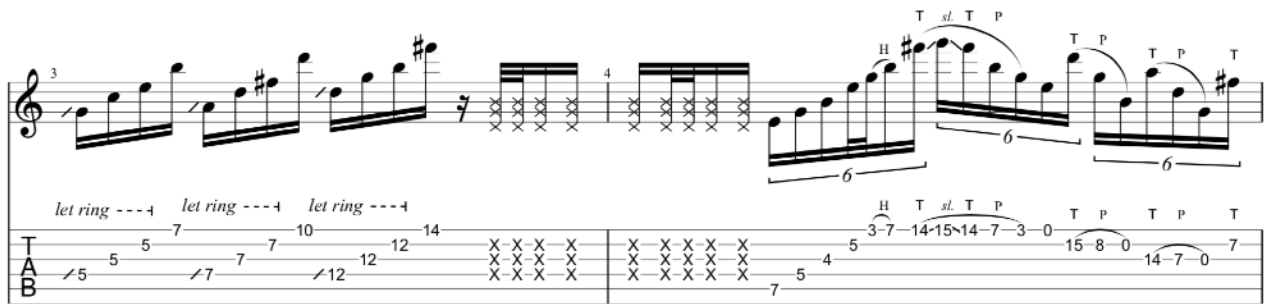


FIGURE 4.1: BAR 3-5 OF MY TRANSCRIPTION OF MANUEL GARDNER FERNANDES' INSTAGRAM VIDEO (FERNANDES, 2019)

Through practising and learning these different approaches to sweeping, focussing on the left hand shapes and then focussing on the sweeping movement was efficient. Richardson suggests the way guitarists should learn these arpeggios is to first to play them all with alternate picking and suggests starting with six and five-string arpeggios instead of the general rule of starting with three (Guitar World, 2019). This is because Richardson also wants the guitarists to get used to fretting each note individually instead of rolling on to the following string, which makes them learn (in some cases, relearn) seemingly unorthodox fingering patterns. Richardson emphasises this aspect of the technique instead of the actions of the right hand (Guitar World, 2019). In most instructional videos by guitarists such as Vinnie Moore, guitarists are told to focus on the right hand and start practising the sweeping motion straight away (although without any direction as to the hand positions, picking angles and slanting). It is also important to note how guitarists shape their hand. If guitarists take inspiration from Richardson in keeping his hand completely flat, they may be uncomfortable at first, and progress may be slow, but they must persevere for maximum efficiency. Another way guitarists may shape their hand would be the generic approach to keep their hand in a fist shape, and as the guitarists move their right hand up and down the strings, they use some of their palm along with a fair amount of their wrist to mute the strings. A final approach described by Guthrie Govan is to 'pre-form' the whole shape, with their fingertips resting on the strings and then 'squeeze each note when required' (Govan, 2002: 35). The problem I encountered with Govan's way of muting is the jumps necessary to add extra notes to the arpeggio. What all guitarists discussed have in common is that the plectrum is tilted to a 45-degree angle towards the lower 'horn' of the guitar to reduce friction when sweeping through the strings and pick slanting changes depending on the direction of the arpeggio.

4.5 Sweep Picking Exercises and Guidelines

Below are the first examples focussing on a C minor first inversion arpeggio and a C major first inversion arpeggio (Figure 5.0 and 5.1). Start alternate picking these shapes at first until the left hand becomes accustomed. As when starting to learn anything new on the instrument, it is advised to start at a slow tempo and gradually increase the speed, along with making sure that there is no pushing or pulling on the tempo, while making sure all the subdivisions are correct in order to achieve rhythmic clarity. Once comfortable with the shape and able to consistently play this arpeggio, guitarists may now start to introduce the right hand's sweeping motion; apply this to all examples and exercises. Ensure that there is enough space between their left hand and the neck so the guitarist can comfortably reach the lower strings. Jason Richardson advises alternate picking arpeggios in this way, so the arpeggio's shape becomes ingrained in their muscle memory.

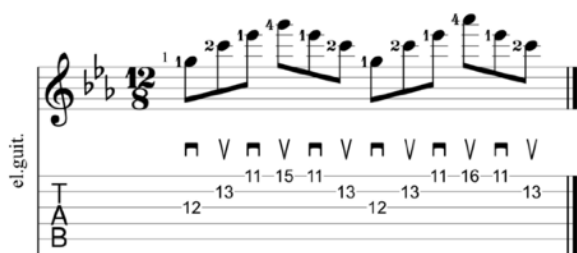


FIGURE 5.0: C MINOR THREE STRING ARPEGGIO

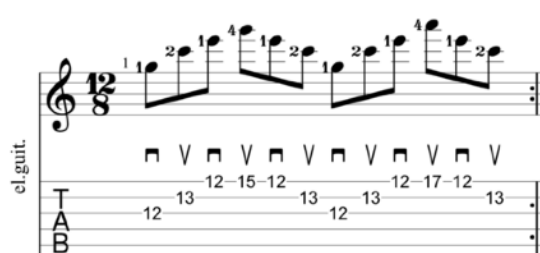


FIGURE 5.1: C MAJOR THREE STRING ARPEGGIO

Through trying out different approaches to the sweeping motion, the conclusion is that the most efficient approach is Richardson's. His technique creates a much cleaner outcome by using the palm and wrist for muting the strings, along with less strain on the wrist as it does not swivel as much as it would when anchored on the top of the bridge. As noted in Figure 5.2 below, the guitarist will be hammering-on and pulling-off the E-G-E and the E-Ab-E on the E string (this can be applied to any shape with two notes on the highest or lowest string in a sweep). By practising Gilbert's approach, which is to alternate pick notes that repeat on the same string, the sense of fluidity desired with sweeping is partially lost due to the plectrum's attack becoming more prominent on the upper notes (Figure 5.3). With the right amount of gain and compression, there is no lack of dynamics when hammering or pulling-off these notes. However, some, such as Govan, decide to accentuate the arpeggio's apex note by picking it to create a 'defined rhythmic feel' (Govan, 2002: 36), as demonstrated in Figure 5.4. The most common techniques used with

three string sweeps is to hammer-on or ‘tap’ the note on the B string (in this case, it would be C, as in Figure 5.5). It is essential to ensure all the low strings that are not being played are muted by the guitarist's right hand palm and higher strings muted by their left hand index finger.

Throughout the accompanying EP, both Figure 5.2 and 5.5 are heard. Although this choice has to do with personal preference, the legato nature of the technique bodes well in pieces that are not strictly on the tempo and in pieces that use 3/4 or 6/8 time signatures such as ‘Dulce Noche’ (Vallejo, 2020). In ‘Libre’, where the rhythmic playing is much stricter, the approach in Figures 5.3 and 5.4 were used for clearly rhythmic definition, supported by the rhythm section. Each approach is valid from a compositional standpoint, but in terms of ergonomics, Figure 5.5 would be preferred as there is less responsibility for the right hand. Figure 5.4 is used for the note clarity gained from individually picking each note when it comes to precision.

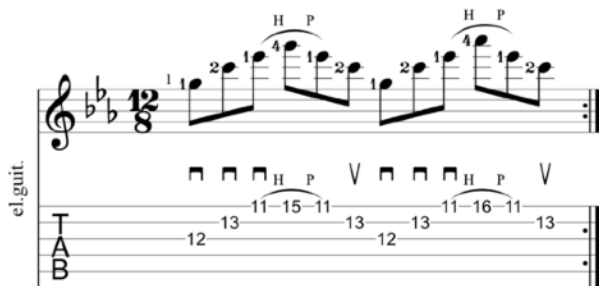


FIGURE 5.2: C MINOR ARPEGGIO WITH HAMMER-ONS AND PULL-OFFS

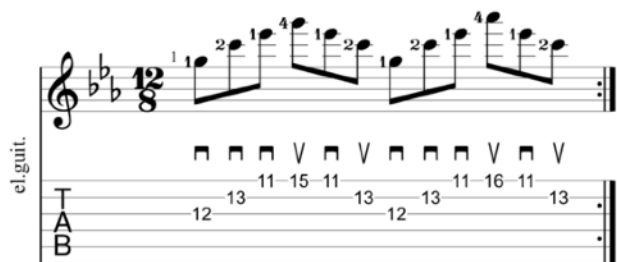


FIGURE 5.3: C MINOR ARPEGGIO WITH ALTERNATE PICKING

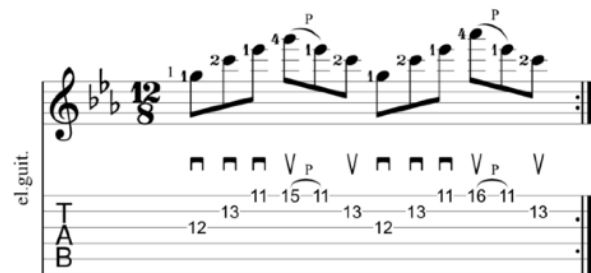


FIGURE 5.4: C MINOR ARPEGGIO WITH PICKED APEX NOTE

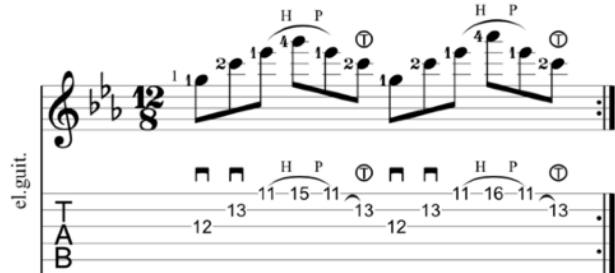


FIGURE 5.5: C MINOR ARPEGGIO WITH LEGATO

Below is an exercise (Figure 5.6) that utilises major, minor, diminished, and dominant seven 3-string arpeggios. The first half of the exercise starts with playing the lowest note of the arpeggios, following a run that lasts half a bar to change the arpeggio's start to the apex note. It is essential to use the four main approaches spoken about in the previous examples above throughout this exercise. Each approach has unique qualities, including alternate picking, selective pick attacks for rhythmic variation, and legato passages creating a smoother texture. First, the exercise would be played with alternate picking until the guitarist's left hand is

comfortable with the exercise, bringing in the sweeping techniques explained earlier. Evidence of these techniques used can be found in the solo of 'The Glass Prison' by Dream Theater (2002) played by John Petrucci, which is merged with small alternate picked phrases; 'Altitudes' by Jason Becker (1988) in which he mainly floats on three-string sweeps but uses five-string arpeggios on occasion, creating a half-time feel; and Rusty Cooley's 'Under the Influence' (2003), which has a whole one minute section dedicated to three-string arpeggios at 163 bpm. In the first sweeping exercise (Figure 5.6), make sure to apply approaches in Figure 5.2-5.5.

Figure 5.6: Sweeping Exercise One. The exercise is written in 4/4 time and consists of five systems of notation. Each system includes a treble clef staff with a melodic line and a three-string tablature staff (labeled T, A, B). The exercise is divided into measures, with fret numbers and string numbers (1-4) indicated for each note. The first system covers measures 1-4, the second covers measures 5-8, the third covers measures 9-12, and the fourth covers measures 13-16. The fifth system shows measure 17, which is a whole note chord on the low strings (frets 13, 14, 15).

FIGURE 5.6: SWEEPING EXERCISE ONE.

Moving on to five and six-string shapes may seem intimidating, but the premise is very much the same. Following Richardson's advice, guitarists should press down on each note individually, even if said notes land on the same fret. Govan's sweeping approach tells us that he prefers rolling his finger from one string to the next, even in five-string, major shapes with three

The musical notation for 'The Wind' by The Beatles is presented in two systems. The first system shows the guitar part (labeled 'cl.guit.') and the bass part (labeled 'TAB'). The guitar part is in 7/4 time and features a melodic line with a trill on the 4th fret of the 1st string, followed by a series of eighth notes. The bass part is in 7/4 time and features a melodic line with a trill on the 5th fret of the 1st string, followed by a series of eighth notes. The second system shows the guitar part (labeled 'cl.guit.') and the bass part (labeled 'TAB'). The guitar part is in 7/4 time and features a melodic line with a trill on the 4th fret of the 1st string, followed by a series of eighth notes. The bass part is in 7/4 time and features a melodic line with a trill on the 5th fret of the 1st string, followed by a series of eighth notes.



FIGURE 6.4: FIVE AND SIX STRING SWEEP EXERCISE WITH SLIDING

When sweeping, it is essential to note that it is not only used for arpeggios but can also be used in runs up and down the neck. Mixing both alternate picking and sweep picking can create intriguing rhythmic ideas similar to hybrid picking. It is vital to practise all approaches to do with picking, hammering-on and pulling-off notes when sweeping due to the freedom and creativity as seen in segments of Richardson's solo in Polyphia's 'Nasty' (2018) (Figure 7.0), and also in his track 'Hos Down' (2016) (Figure 7.1).

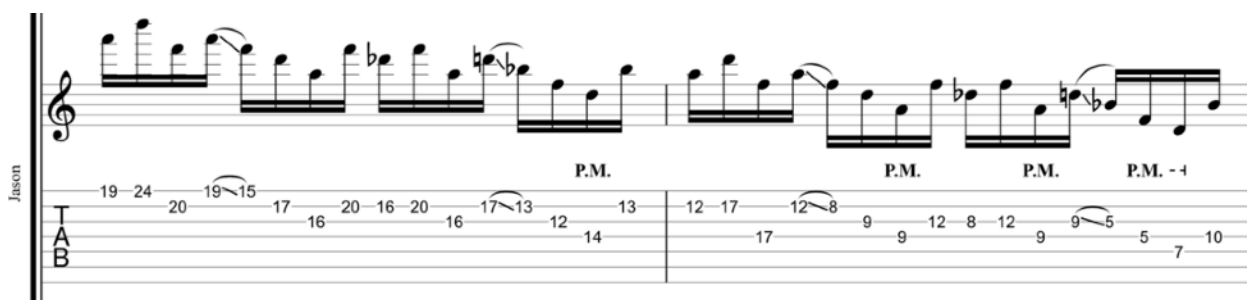


FIGURE 7.0: BAR 125-126 OF POLYPHIA'S NASTY (POLYPHIA, 2018)

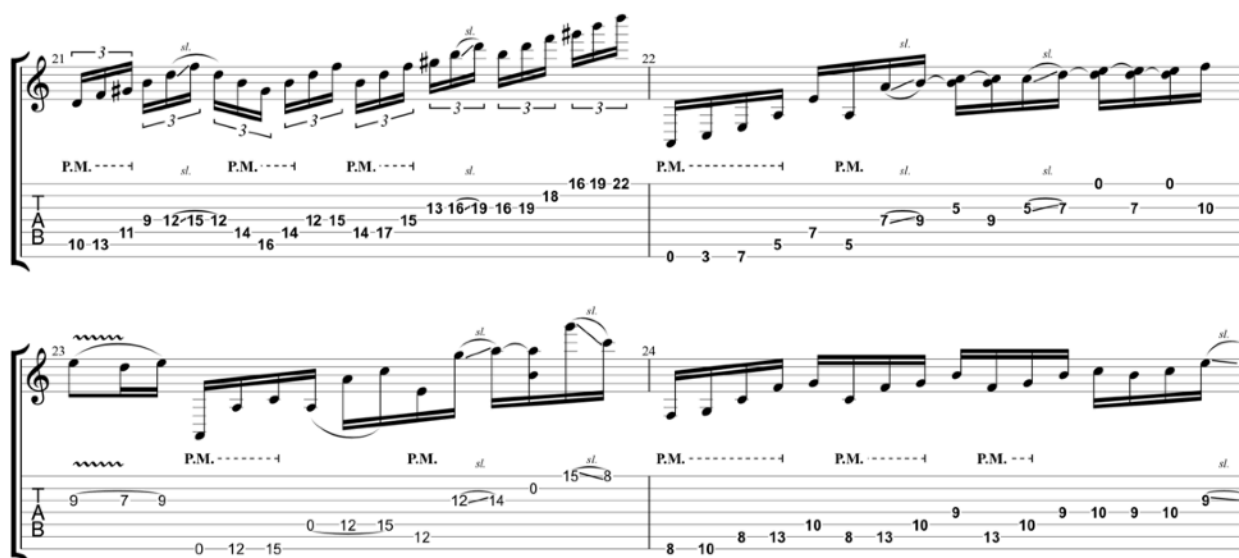


FIGURE 7.1: BAR 21-24 OF RICHARDSON'S HOS DOWN (RICHARDSON, 2016)

Another technique, which is arguably the most popular, is extending the arpeggio with extra notes by tapping, as discussed previously on Tony MacAlpine (for further information on tapping, please refer to chapter 5. Tapping). This can be seen used by most artists in the progressive instrumental genre, even those who are not classified as ‘shredders’ such as Aaron Marshall and Plini. The main approaches to this technique some might find difficult are tapping with the right hand’s middle finger, tapping with the plectrum and tapping with the right hand’s first finger while tucking the plectrum into the right hand. The most efficient way would be to tap with the right hand’s second finger because the guitarist keeps holding the plectrum in the same position, making it very easy to transition between tapping and picking or sweeping. The problem with tapping with plectrums has to do with changing the grip and *vice versa*, which can cause various problems such as inaccurate transitions and an increased chance of the pick slipping. The last option to tuck the plectrum away takes up too much time, and due to the fingers’ excessive movement, it is the least ergonomic approach to this technique. However, when transitioning into a whole passage that is just tapping, it might prove useful if the guitarist is not comfortable with using their second hand or needing to use both their index and middle finger.

4.6 Conclusion

When looking at how sweep picking has developed over the decades, we see that the precise aim is to play fast pianistic arpeggios, with precision and clarity as heard in tracks by the guitarists discussed and 'Libre' and 'Dulce Noche' (Vallejo, 2020). This has resulted in different techniques being used for textural, rhythmic ideas, and patterns. Through practice, trial and error, the best right hand technique would be Richardson's approach to attain the high level of efficiency when muting and having minimal movement when turning the wrist and changing to different slanting positions. The hand position, although uncomfortable, is useful but can also be adjusted to a fist position if the guitarist is willing to sacrifice more of the wrist and forearm to mute the lower strings. The focus of the left hand is to avoid any pair of notes ringing with each other and create a comfortable way to play the lower string higher up on the neck. The best way to avoid notes ringing together is, again, Richardson's technique, as it eliminates any chance of two notes being played simultaneously. Creating space between the left hand and the neck while being comfortable has been the overall aim since the '80s, as seen with Malmsteen, Moore and Becker, so there has not been much change in that area. It is crucial to consider the size of the guitarist's hands and adjust their thumbs position accordingly. Overall, sweeping has been developing over decades and has resulted in the most ergonomic, and cleanest techniques currently possible by contemporary guitarists. While taking this on board, deciding which notes to pick and which to play legato is a personal preference when composing these texturally melodic wavy phrases and sections. It is important to note, however, in the current age of a guitar, the majority of artists in this genre do not dedicate whole sections to just sweeping arpeggio as popularised in the 1980s and 1990s. Instead, it is used more as a flavouring, as most find it a cliché to avoid. There are a few exceptions, such as 40oz by Polyphia (2017), but even then, they are much slower and serve a different compositional purpose. The exercises and guidelines explained in this chapter make sure that those who chose to follow them will not develop bad habits in their technique which may become difficult to correct in later stages of their musical development. Although the approach to the left hand is directly influenced by Richardson, the guitarist may feel free to explore the alternatives, but must make sure their aims keep to those previously described, which is to achieve ergonomic and clean playing.

5.Tapping

5.01 Introduction to Tapping

The action of hammering-on and pulling-off to different notes with the fretting hand is a fundamental technique all electric guitarists acquire through the early stages of their practice regardless of the genre the guitarist wishes to pursue; this forms a basis on which tapping is built. The idea of using hammer-ons and pull-offs on the right hand while in conjunction with the fretting hand on the fretboard is tapping. Hammering-on a note from nowhere is tapping; any sound produced by initially hammering-on a note with either hand is tapping. All fingers may be used, including thumbs, although some may take longer to train than others; some also decide to tap with a plectrum. Within the basic notion of tapping, there are many different approaches to the technique as discussed throughout this chapter. This chapter will explain how different guitarists have adapted their technique to suit their style and to minimise effort by creating ergonomic approaches. There has also been innovation in creating new instruments and version of the guitar explicitly created for the tapping technique, such as the Chapman Stick and, in more recent times, Felix Martin signature guitar (Martin, n.d). In the words of the guitarist of Genesis, Steve Hackett, 'no self-respecting shredder on the face of the earth ignores that (tapping) technique' (Metal Favourites 2019), but as we will soon see, tapping goes beyond just shredding.

In the world of virtuosic guitarists, tapping is vital for most to gain a decent level of proficiency. Guitarists will need to have the ability to play various approaches in different styles, including shredding, percussive, and harmonic playing. As described in the literature review, most academic works found that mentions this topic tends to concern themselves with the likes of Eddie Van Halen and how he popularised the technique, with fewer sources focussing on guitarists such as Stanley Jordan and others who will be mentioned. This chapter will demonstrate how these techniques were created, innovated, popularised, modified, and normalised. The learning and understanding of tapping are paramount to gain a greater grasp of playing the instrument if the guitarists wish to expand their library of techniques.

5.02 History and Development of Tapping

The Turkish folk instrument, the bağlama, which is part of the saz family (meaning stringed instruments), is popular due to its two-handed tapping technique called *parmak vurma*. An interesting notion about this instrument is that this technique was not used on non-metallic strings, which helps estimate when the technique would have been ‘invented’. Before the bağlama, came the *çöğür*, a transitional instrument between the Komuz and the bağlama. The bağlama introduced metal strings in the 16th century, which encouraged tapping, meaning their two-handed tapping technique must have been ‘invented’ soon after using metal strings on the bağlama (Ayyildiz & Parlak, 2018), but there is no set date.

The earliest proof of tapping in western music is Roy Shmeck performing his arrangement of Anton Rubenstein’s ‘Melody in F’ (Turner, 2015), in which he tapped with his right hand on the ukulele as seen in the short film *That Goes Double* released in 1933 (Henabery, 1933). Although not a guitar, there is great significance of tapping being publicised on American national television, regardless of the stringed instrument. The earliest video documentation of this technique is on a classical guitar performed by an Italian doctor called Vittorio Camardese on Italian Television in 1965 (FullConcertsMetal, 2013). Onto the electric guitar, the earliest audio recording was in the 1950s by guitarist Jimmie Webster. The book *The Touch System for Electric and Amplified Spanish Guitar* released in 1952 (Cohen, 2016) proves that the technique had been developing before 1952, but first appeared on record in 1959 in Webster’s album *Webster’s Unabridged* (Webster, 1959), and heard specifically in ‘Fountain Mist’ (MrDjango1953, 2017). Webster was working with Gretsch Guitars which led him to work on new equipment such as the ‘project o sonic sound system’ amongst other products. As Webster was a fan of the DeArmond Model 2000 single-coil pick-ups, DeArmond spoke about Webster’s touch technique when promoting the pick-ups to showcase their sensitivity (Price, 2018). Soon after this there was no evidence of two-handed tapping until 1968.

In the 1991 February issue of *Guitar World Magazine*, there is an interview in which Ritchie Blackmore, of the band Deep Purple, explained that the first time he saw tapping was in 1968 performed by Harvey Mandel of the band Canned Heat at the ‘Whisky A Go-Go’ Venue in West Hollywood, California (Kleidermacher, 2017). Other notable guitarists of the time, such as Randy Resnick from the band Pure Food and Drug Act, also developed the tapping technique in the early

1970s (Resnick, 2020). However, Steve Hackett from the band Genesis was the first to record the two-hand tapping technique on record in the track 'The Musical Box' in 1971 (Genesis, 1971). In an interview with Eddie Trunk, Hackett says that he has not heard of anyone tapping before him, claiming to be the technique's pioneer (Metal Favorites, 2019). The way Hackett thought of the technique was to find the 'easiest way to play that (Toccata in Fugue by Bach) was on one string', using (or in his case, creating) this technique for the sake of efficiency 'creating maximum mobility with minimum of movement' (Metal Favorites, 2019). When asked about his feeling towards Eddie Van Halen popularising tapping and being praised with false claims that Van Halen created the technique, Hackett says that he does not mind as Van Halen has publicly acknowledged that Hackett created the technique (Metal Favorites, 2019).

In an interview with Denise Quan, Van Halen admits that he never claimed to pioneer the technique but instead credits inspiration to attending a live show where Jimmy Page of the band Led Zeppelin used his index finger on his right hand as a capodastro over the neck and behind the fretting hand, while pulling-off notes with the left hand (Zócalo Public Square, 2017). Van Halen swapped around the roles of both hands, leaving the left hand to act as a capodastro and the right hand to hammer-on and pull-off the notes, which brought him into the world of tapping. Van Halen's importance in the world of tapping is unquestionable; he was a figurehead for the technique, inspiring musicians around him and future musicians to take up the technique and mould it in their way. Various attributes come with tapping in the modern era, which, when we look back on the technique's history, are not particularly new. More inclined toward the tapping movement of today, we look at the next influencer, Stanley Jordan.

As opposed to the general reasons of using two-handed tapping for speed, to which both Van Halen and Hackett subscribe, Jordan's approach is vastly different. Jordan would have both hands working independently from each other, giving them different roles. Starting as a classical pianist, Jordan wanted to approach the guitar in the same way (Wall Street Journal, 2011). With a background in electronics, Jordan tried creating an electronic fingerboard that would coincide with a synth. However, his general lack of knowledge on hardware restricted him on the product's actual making, leading him to bring the approach to the guitar. Jordan called this technique the 'touch technique', emphasising that it is a 'technique in its own right' (Panken, 2011). Many guitarists who focus on two-handed tapping are directly or indirectly inspired by artists such as Jordan, and 'shredders' have taken inspiration from Van Halen.

5.03 Shred Tapping

When it comes to tapping, the majority of guitarists would reference the mid section of Van Halen's 'Eruption' (1978), where there is an ascending tapping pattern moving through different arpeggios one or two notes at a time (Figure 8.0). Others may also direct themselves to the infamous guitar solo in 'One' by Metallica (1988), played by Kirk Hammett (Figure 8.1). Although a decade apart from each other, each tapping section in each tune is executed similarly. Their left hands act in the standard way when pulling-off and hammering-on, but their right hands and choice of fingers vary. Van Halen lets go on the plectrum when going into a two-handed tapping section, in some cases throwing his pick into the audience as seen in the live performance of 'Eruption' solo in New Haven, Connecticut (Hazardteam, 2012).

The transcription for 'Eruption' is divided into two systems. The first system, labeled (C#m) and (A), covers measures 21 to 22. Measure 21 is in C# minor and measure 22 is in A major. The second system, labeled (A dim) and (E), covers measures 23 to 24. Measure 23 is in A diminished and measure 24 is in E major. Each system includes a guitar staff with notes, a tablature staff with fret numbers, and a row of tapping/hammering-on (T P H) markings above the staff. The tapping patterns are complex, involving triplets and specific fret sequences.

FIGURE 8.0: TRANSCRIPTION OF EDDIE VAN HALEN'S ERUPTION SOLO

The transcription for 'One' is divided into two systems. The first system, labeled 186 and 187, covers measures 186 to 187. The second system, labeled 188 and 189, covers measures 188 to 189. Each system includes a guitar staff with notes, a tablature staff with fret numbers, and a row of tapping/hammering-on (T P H) markings above the staff. The tapping patterns are complex, involving triplets and specific fret sequences.

FIGURE 8.1: TRANSCRIPTION OF TAPPING SECTION IN KIRK HAMMETT'S SOLO IN 'ONE' BY METALLICA (1988)

Hammett does not let go of the pick in order to transition back into picked passages, choosing to tap the notes with his middle finger on the right hand. Not letting go of the plectrum creates less stability as the guitarist cannot secure their right hand's position by resting their thumb by the side dot inlays. For small tapping sections, extending melodies, arpeggios and runs, not resting the thumb is no problem. However, when it comes to longer passages, guitarists may not have the stability needed to play accurately. The oldest example I could find of pick tapping is Frank Zappa performing *Black Napkins* on *The Mike Douglas Show* in 1976. Zappa uses the plectrum's round edge to tap on the notes for greater accuracy instead of the edge (Zapfra, 2013). Joe Satriani uses pick tapping, such as in Satriani's Guitar World video *Joe Satriani - Betcha Can't Play This!* (Guitar World, 2015). In this video, Satriani points his hand down, using the pick's side and proceeds to tap. The biggest problems with this way of picking are lack of efficiency with the turning of the right hand; changing muting positions due to the wrist movement; the lack of accuracy due to the chances of the pick slipping off either side of the string, and lack of stability as the guitarist can not secure their hand onto the neck. The most common and useful way to single finger tap, or shred tap, would be for guitarists to use their middle finger on their picking hand while not changing the grip on the pick. When holding the pick, it is easier to transition between sections, and the angle of the wrist stays the same. With the above information in mind, we now look at linear tapping across different strings. The first instance of this technique that comes to mind is the arpeggiated run in 'Wonderful Slippery Thing' by Guthrie Govan in his album *Erotic Cakes* (2006). Govan plays a B major seven arpeggio across three octaves in this small transitional segment, as seen in Figure 8.2. However, he takes a tapping approach as opposed to sweeping. The tapping approach removes the pick attack sound of sweeping, as discussed in the previous chapter. This approach also opens up the guitarist to choose between various timbres for the arpeggio; in this instance, it creates a more 'fluid' and 'bubbly' quality. Govan holds on to his pick for the tapped arpeggio and uses his second finger to tap the 5th of the arpeggio. In order to play the arpeggio in the above octaves, Govan string skips from the E string to the D and up to the high E string. There is an option to move the arpeggio shape to the B string, but the jump up to three frets compared to down two seems like a large leap of faith. Travelling to the E or B string also depends on what is coming after the arpeggio; in Govan's case, it would be two descents, starting on a tapped D descending a B minor9 arpeggio, followed by

another Dsus2 arpeggio leading back into the chorus. Through this segment, not a single note is picked; the majority are tapped by the left hand, leaving the right only to tap the notes it needs to, such as the 5th of the arpeggios and the high notes string before the descending arpeggios. As seen in his demonstration video for Guitar World called *Guthrie Govan - Professor Shred #3* (Guitar World, 2011), Guthrie uses the middle finger and keeps hold of the pick. Guthrie can keep a relatively safe muting position using his right forearm on the strings; this also grants stability which lacks when the thumb is not placed on the neck as an anchor (Guitar World, 2011).

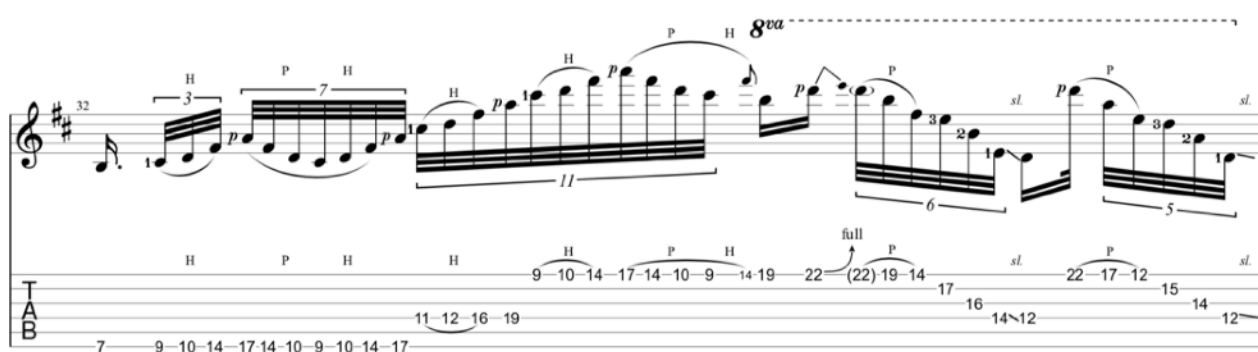


FIGURE 8.2: BAR 32 OF GUTHRIE GOVAN'S 'WONDERFUL SLIPPERY THING' (GTPTABS, 2020)

Moving on forward to maybe a slower but more complex single finger tapping section would be Jason Richardson's 'Omni' (2016). Throughout this tapping riff, the principal finger used on the right hand is the middle finger, with the occasional use of the third when needed, such as in faster segments and when fingering may be too awkward with just the middle finger. In shred tapping, few use the third finger. As described before, tapping in a shredding context is used sparsely. However, in cases such as *Omni*, tapping is used in a melody based context, making it wise to use the third finger for awkward jumps and more ergonomic fingering, such as in the transcription below. Something interesting to note is the lack of fret wrap in Richardson's demonstration of this section in his video entitled *OMNI tapping lick tutorial - Jason Richardson* (Richardson, 2016) and Govan's performance of *Wonderful Slippery Thing* for Lick Library (Lick Library, 2014). The value of shred tapping allows one to play fast passages with ease, and if one wanted a legato passage, shred tapping is one technique that would be incredibly useful. In some cases, it is more ergonomic than picking, such as the tapped melody in 'Omni' (2016) (Figure 8.4).

The guitarists discussed above usually place their right hand fingers parallel to the string, called 'Parachordal finger placement' (Figure 9.0), making it easier to play chordal and rhythmic passages. In contrast, the technique used to play 'conjunct melodies' is called 'Orthochordal finger placement' (Figure 9.1), when the right hand fingers are 'perpendicular to the strings' (Cohen, 2016: 8).



FIGURE 9.0: PARACHORDAL FINGER PLACEMENT



FIGURE 9.1: ORTHOCHORDAL FINGER PLACEMENT

5.04 Multi-Finger Tapping

With the introduction to using an extra finger in shred tapping, it is only natural to move on to multi-finger tapping. In the first instance of multi-finger tapping, both hands share the same role in developing arpeggios, melodies and complex textural passages. As a term for this technique has not been made, it will be referred to as 'Linear Multi-Finger Tapping' in this thesis. This can be seen in many performances by Sarah Longfield, Dan James Griffin, and Josh Martin. For this technique to be executed, notes cannot ring over each other, as Govan explained when demonstrating the tapped arpeggio passage in 'Wonderful Slippery Thing' (Guitar World, 2011). One way to execute this technique would be 'stacking' (Griffin, 2020).

Stacking can be seen used in works by Griffin and Longfield, where the guitarist taps one part of a melody line, scale, or arpeggio with one hand, followed up with the next, then use the previous hand over the second hand used and *vice versa* on the way down. The first example of stacking is the guitar solo of Longfield's track, *Tydes* (Longfield, 2017). As seen in Figure 10.0, Longfield starts by tapping with her index finger on her left hand followed by her right hand index finger striking an A on the 12th fret of the A string, followed by a D on the 12th fret of the D string with her middle finger, then moving back onto the left hand index finger and so on, creating a stacking effect. In Longfield's playthrough of this segment of 'Tydes' (2007) from her Jamplay

course (Jamplay, 2020), she uses a fret wrap while resting her thumb on the side inlays (Figure 10.1). Longfield uses the parachordal finger placement during this segment, creating more stability and accuracy when tapping with the right hand. This is standard protocol for the majority of guitarists that use tapping in this way. However, in comparison to her full play though, Longfield also uses a plectrum and does not have a fret wrap to utilise the open strings in other sections. She holds the pick when performing this tapping section but does so by holding it between her thumb and the index finger's first joint, allowing her still to use her index finger (Longfield, 2017). This stops her from stabilising her hand with her thumb leading to greater chances of decreased accuracy. If this were her default method of performing this technique, the lack of accuracy would not be a problem. However, as seen in her tutorial video and in other playthroughs where Longfield predominantly uses tapping, her preferred method is to rest her thumb on the side dot inlays (Longfield, 2017). In the notation, the letters symbolise the fingers the right hand, i = index finger; m = middle finger; a = third finger; c = fourth finger. The T in a circle represents left hand tapping, and the T on its own represents right hand tapping.

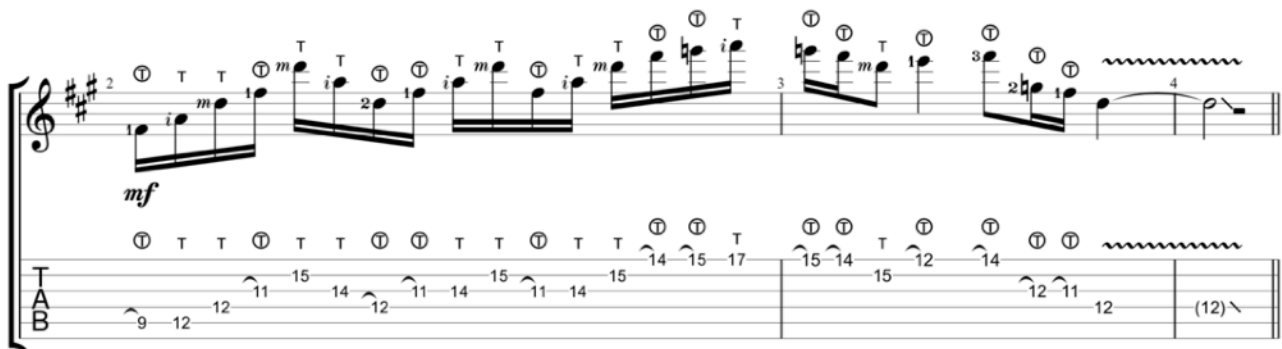


FIGURE 10.0: EXTRACT OF SARAH LONGFIELD'S SOLO IN TYDES (JAMPLAY, 2020)



FIGURE 10.1: DEMONSTRATION OF THUMB PLACEMENT WHEN TAPPING

Linear multi-finger tapping allows the guitarist to play complex juxtaposed melodies with large intervallic leaps more efficiently than picking or just using left hand legato. It may be preferable to pick due to the personal preference on pick attack, but if the guitarist desires a legato approach, multi-finger tapping is the way forward.

5.05 Pianistic Tapping

Pianistic tapping is when each hand is assigned to the role of harmony and melody. Giving each hand their independent roles may cause problems with independence. The majority of drummers and pianists struggle with independence of limbs, and it is no different for guitarists when tapping in terms of building independence in each hand. Stanley Jordan, the innovator of this technique, can be seen utilising it in his famous rendition of 'Eleanor Rigby' by the Beatles at the Newport Jazz Festival in 1986 (Jazz on MV, 2014). Jordan's left hand mainly plays the lower strings with the chords, basslines and, on occasion, creates harmonies with the main melody. Simultaneously, the right hand uses 'orthochordal finger placement', allowing him to play the melodies and solo due to the access given to his fingers with this approach. There are basic forms to pianistic tapping, where the right hand carries the melody and the left holds the harmony. However, they work together instead of having completely independent roles, evident in Rob Scallon's 'For That Second' (Scallon, 2012). This is not considered linear tapping because there are still two roles at hand, even if there are no interweaving passages. Holding onto the frets also pushes it away from the meaning of linear tapping, as with linear tapping, notes must not overlap. Pianistic tapping in Jordan's style requires orthochordal hand placement. Nevertheless, most of the time, the thumb is still placed on the neck for stability, whether using orthochordal finger placement or parachordal finger placement.

5.06 Multi-Role Tapping

Yvette Young is a third of the band Covet. She has been pioneering an approach to the electric guitar where both hands share the responsibility of harmony and melody. As there is no term for this approach to tapping, so it shall be referred to as 'multi-role tapping'. For most of Young's pieces, she uses opening tuning when the guitar's tuning is tuned to an open chord, such as DADGAD (Dsus4 tuning). In Covet's 'Nautilus' (2015), it is evident that this approach to the

instrument takes place throughout, but it is mainly prevalent in the first section. Figure 11.0 below is an analysis of a segment of 'Nautilus' (2015), where the melody is highlighted in green, inner voices in blue and bass movements in red. Bass notes land on the left hand, but that is expected as it has greater access to the lower register as opposed to the right hand, but the rest of the melody and the inner voices are shared. The first note of the melody is plucked by the middle finger on the right hand as seen in the first bar but then is intertwined by both hands in the 3rd beat of the same bar. The index finger on the right hand hammers-on to B in the bass part of the harmony while the middle finger on the left hand is hammering-on out of nowhere to C# in the melody, closely followed by the index finger on the right hand hammering-on to D from that C#. The middle finger on the right hand hammers-on the F# out of nowhere. In the following bar, the A in the melody is played by the middle finger on the left hand, whereas the following F# is played by the left hand. The inner voices, such as the A and B toward the end of the first bar, are played by different hands. In the third semiquaver of the second bar, the right hand is playing both the inner voice (D) and melody (F#) at the same time, while the left hand helps emphasise the inner voicing on the B-string. Tuning used is DADF#AE.

**FIGURE 11.0: ANALYSIS OF THE FIRST SECTION OF COVET'S
'NAUTILUS' (2015) TABBED BY JAMPLAY.COM (2020)**

Parachordal finger placement still applies; it is the universal approach to tapping apart from pianistic tapping, as explained previously. There is no use of fret wraps in any of Young's performances, but that is self-explanatory when looking at the transcription as there is an abundance of open strings that Young pulls off too. Other noteworthy guitarists who apply this approach to their music are Josh Martin and Marcos Mena. As seen in Mena's guitar playthrough of 'Special Berry', multi-role tapping is prominent throughout and percussive techniques such as thumping are used, a technique we will discuss in greater depths in the following chapter (standards, 2020). Mena also uses a cross-tapping technique, which is when both hands cross over each other to reach specific notes that might be unattainable with a traditional approach.

This approach is used in 'Mi Alma' (Vallejo, 2020) from the accompanying EP. Although 'Mi Alma' is in standard tuning, the approach to pulling-off to open strings is still used. In section B of Mi Alma, multi-role tapping is used as both hands are responsible for the inner voices. As Young and Mena also use fingerpicking mixed with multi-role tapping, the approach to the second section in 'Mi Alma' was similar. Although it is fair to assume that multi-role tapping is used in 'Una Sola Corriente' (Vallejo, 2020), this is not the case as in this piece; each hand has a separated role in the first half and one role in the second half.

5.07 Percussive Tapping

Moving away from centralising melodic and harmonic uses of tapping, we now look at percussive tapping. Josh Martin is a figurehead in this world, posting various challenges on Instagram, which encourages guitarists to approach butterfly tapping from a purely rhythmic perspective. Butterfly tapping is when guitarists tap on the frets in different rhythms, usually at a fast pace with staccato to create a 'flutter' effect, hence the term (Little Tybee, 2017). According to Martin, he was not the innovator as he saw the term butterfly tapping used to describe what he was doing in comments of his video performances. As seen in Figure 12.0 below of Little Tybee's 'Left Right', each hand holds a shape and plays a rhythmic pattern between them with staccato (Martin, 2017). Guitarists can train themselves in this technique through drumming techniques called paradiddles (LRLl RLRR) and polyrhythms. When performing butterfly tapping, the guitarist would find it most comfortable to use parachordal finger placement. Butterfly tapping is easier to do with a fret wrap. When performing the staccato effect, the guitarist needs to mute the strings

5.08 Shred Tapping Exercises and Guidance

As a technique used mainly in shred guitar, shred tapping's primary goal is to play at fast speeds with precision. Following this thesis, the guitarists should keep their pick held between the index finger and thumb as standard while using their middle finger to tap. When already picking, guitarists should move the hand down while keeping the wrist and forearm on the strings not being played to mute them. This action also keeps the right hand stable by resting on the string when tapping and provides an easy transition back to picking. In Figure 13.0 below, there are different hammer-on and pull-off patterns for the guitarist's left hand in conjunction with the right hand tapping. Figure 13.1, the right hand changes the fret that is tapping along with adding slides, as it is one of the features used in this genre of music. Although not incredibly common, it is useful to have the ability to perform tapping with this technique. With scalar runs and passages, guitarists should apply the same patterns for hammering-on and pulling-off on each string (Figure 13.2) and later mix them up when confident such as in Figure 13.3. The most challenging aspect when starting to learn tapping is keeping in time with the metronome. As it is a new discipline for a guitarist's right hand to undertake, it is essential to treat it as a beginner, even if they are an experienced player. To develop accuracy in the right hand, the exercise in Figure 13.4 below will help in coordination due to the larger movements and jumps. When tapping in the lower register, it is essential to note that the guitarist must mute the higher strings with their left hand, as described when discussing sweeping. The majority of guitarists who sweep or play at fast speeds on the lower register tend to mute the string; in this case, it is impossible unless aiming for harmonics.

Each of the exercises below, along with the guidelines and advice explained previously allow development for a clean and rhythmically sound approach. Each of these techniques is displayed through the EP in keeping with the stylistic compositions of the genre. Shred tapping is no longer used to promote virtuosity or showcase skill but for a purely musical reason. In 'Libre' (Vallejo, 2020), scalar tapping is used to transition between sections, as described in the commentary chapter. Shred tapping is also used in 'Libre' when descending the arpeggio line at 3:12 as a purely ergonomic approach to reach and play the upper notes at the set speed.

Figure 13.0 shows the first six measures of a guitar tapping exercise. The notation is in 4/4 time. Measures 1-2 feature a sequence of eighth notes with tapping (T), picking (P), and hammer-ons (H). Measure 3 introduces a triplet of eighth notes. Measures 4-6 continue with various tapping and picking patterns, including triplets. The guitar tablature below the staff shows the fret numbers for each note, with some notes marked with a circled 'T' for tapping.

FIGURE 13.0: SHRED TAPPING EXERCISE ONE. EACH BAR IS A DIFFERENT TAPPING PATTERN, FEEL FREE TO FOCUS AND REPEAT ONE BAR.

Figure 13.1 shows the first nine measures of a more complex guitar tapping exercise. Measures 1-3 include slurs and slides (sl.) in addition to tapping and picking. Measures 4-6 continue with complex tapping and picking patterns. Measures 7-9 show further variations, including a final measure with a triplet of eighth notes. The guitar tablature provides the fret numbers for all notes, with tapping notes indicated by a circled 'T'.

FIGURE 13.1: SHRED TAPPING EXERCISE TWO.

el. guit.

12-8-5 13-8-5 12-7-5 12-7-5 12-7-5 12-8-5 12-8-5 12-7-5 12-7-5 12-8-5 12-8-5

FIGURE 13.2: PENTATONIC TAPPING EXERCISE

el. guit.

12-8-7-5 15-8-6-5-13-6-5-3 12-9-7-5 14-10-9-7-12-9-7-5 15-10-8-7-14-8-7-5

5-7-8-15 7-8-10-17 5-7-8-17 7-8-12-19 7-9-10-19 10-12-14-21 12-14-16-19 14-16-18-21

15-17-18-20 17-18-20-22 15-17-19-20 17-19-20-22 20-5-8-17-5-8 17-5-8-15-5-8 14-5-7-12-5-7 12-5-7-10-5-7

10-5-7-8-5-7 8-5-7-7-3-5-8 5-7-10 5-7-12 5-8-15 5-8-17

FIGURE 13.3: SCALIC TAPPING EXERCISE IN A NATURAL MINOR.

5.09 Multi-finger Tapping Exercises and Guidance

For the first technique within the realm of multi-finger tapping, we will delve into stacking technicalities. In the example below, each hand takes the role of performing the arpeggio. The left hand will use the index, middle and small finger, whereas the right will use just the index and middle finger. In the first exercise in Figure 14.0, there is an A minor pentatonic scale that ascends and descends by stacking. It is essential to understand that after releasing a note, it must instantly be muted; if not using a fret wrap, the string must be muted with the finger that was used to tap the note. Figure 14.1 explores groupings of notes in each hand; this exercise will help guitarists gain the ability to use more than two fingers per hand and get accustomed to odd grouping. Guitarists may decide which fingers to use as a personal preference. The standard way to approach these stacking exercises is to use the fingers in order of first to fourth, depending on the leap in-between notes.

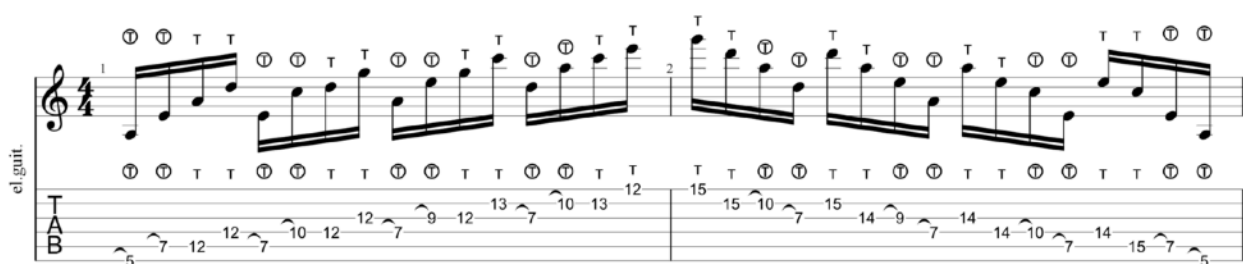


FIGURE 14.0: STACKING EXERCISE IN A MINOR PENTATONIC.

As seen with artists such as Griffin and Longfield, tapping can be played either clean or distorted, both with advantages and disadvantages. Going towards the clean approach, the guitarist must have obtained enough strength in the left hand to attack the note for it to be audible. The same goes for the right hand, especially in the upper register, which can also lead to a lack of control over dynamics. This hurdle can be avoided with compression, but in order to develop, the guitarist must achieve a balanced level of attack in both the upper and lower register without the use of external aids. With a distorted sound, the guitarist cannot attack as hard as they do with a clean sound to achieve a stable dynamic level. Another point to note is muting techniques, especially important when using a distorted sound. As stated before, many guitarists use a fret wrap to avoid unwanted noise, but in this case, guitarists must mute without the use of a fret wrap. Muting strings with the left hand may require the guitarist to rest their finger on the note played gently, and while this is occurring, the rest of the strings must be muted with the index finger to be entirely sure no unwanted sounds comes through. In the case of distortion,

guitarists may need to keep on muting with the index finger if they are hammering-on a note with force, creating vibrations throughout the guitar, leading to unwanted noise if open strings are not muted. With plenty of gain, there is no need to attack with much force. Right hand muting is similar to the previous technique but with more caution. Muting with the right hand will be used on the lower strings when the left and right hand are in the guitar's upper register. With a clean sound, it is possible to avoid unwanted noise with less caution when muting due to the lack of gain, and in some cases, compression.

Stacking is used heavily in 'Una Sola Corriente' (Vallejo, 2020), especially in the second half. Stacking arpeggios help outline different groupings as well as adding extensions to the arpeggio as heard in 'Una Sola Corriente' and exemplified in Figure 14.1 below. Following the advice above, along with the exercise below, one will achieve a high standard in stacking. Each shape in the example may be modified and adjusted to other types of tapping, such as multi-role tapping in 'Mi Alma' (Vallejo, 2020) and pianistic tapping in the second section of 'Una Sola Corriente'.

FIGURE 14.1: STACKING EXERCISE IN A NATURAL MINOR.

5.10 Pianistic and Multi-Role Tapping Exercises and Guidance

As previously described, the biggest hurdle with pianistic tapping is nurturing independence of both the left and right hand, in a similar vein to a pianist or drummer. The guitarist starts training independence between both hands in the exercises below, assigning one hand a bass line and the other a melody. For now, the exercise mixes crochets and quaver notes, but it will only get more complicated as the exercises develop. For the first exercise (Figure 15.0) of this technique, orthochordal finger placement must be used while focussing on muting unplayed strings with the left hand, especially in the lower register. As the right hand is in orthochordal finger placement, it becomes much harder to mute strings with the right hand/wrist. The exercise starts with outlining chords on the left hand in A Major while the right hand plays a melody, which is then followed by the left hand playing skeleton chords while the right hand continues with the melody. If one were to attempt this exercise entirely in parachordal finger placement, challenges would appear. When confident with these exercises, polyrhythmic ideas seem to be the natural progression. In the next exercise (Figure 15.1), there are 3/2, 2/3, 4/3 and 3/4 polyrhythms. It is essential to approach both exercises with a metronome to make sure neither hand is rushing or pulling. In Figure 15.1, at beat four-bar five, there is a temporary switch to parachordal finger placement, which then changes back to orthochordal finger placement in bar six, using the right hand index finger as a pivot.

el. guit.

The musical score is for an electric guitar exercise in 4/4 time. It consists of four systems of music, each with a treble clef staff and a guitar staff. The guitar staff includes fret numbers and tapping instructions (T). The exercise is divided into measures 1 through 16.

System 1 (Measures 1-4): Measure 1 starts with a tapping instruction (T) on the 5th fret. Measures 2-4 continue with tapping and fretting patterns, including notes like C#4, A#4, and m#4.

System 2 (Measures 5-8): Measure 5 begins with a tapping instruction (T) on the 7th fret. Measures 6-8 show more complex tapping and fretting, including notes like C#4, m#4, i#4, and a#4.

System 3 (Measures 9-12): Measure 9 starts with a tapping instruction (T) on the 9th fret. Measures 10-12 involve tapping and fretting, including notes like c#4, a#4, m#4, and i#4.

System 4 (Measures 13-16): Measure 13 begins with a tapping instruction (T) on the 14th fret. Measures 14-16 continue with tapping and fretting, including notes like i#4, m#4, a#4, and m#4.

FIGURE 15.0: PIANISTIC TAPPING EXERCISE ONE

5.11 Conclusion

Through the historical journey, everyday uses and explanations of techniques have moved away from classic approaches such as shred tapping, which is now only used to ergonomically develop arpeggios, increase speed when necessary, and personal adjustments to previous techniques such as Govan's approach with arpeggios. Within the realm of tapping, there are many different techniques and approaches, all with their own compositional and ergonomic validity. Interestingly, the tone used with these techniques is primarily clean or slightly crunchy, such as in 'Nero' by Covet (2020), far away from the insanely gain-driven guitar tone of the late 1970s and 1980s. Each approach may not be directly related, as most guitarists seem to have 'discovered' these techniques by themselves through experimentation and inspirations as young students. With most tapping techniques, each seems to have an essential starting point which can be developed to our imaginations content, except with multi-role tapping. A basic understanding of all other approaches is the first step to attempting multi-role tapping, which could be considered the pinnacle of what tapping is in our current climate. Compositional aspects are mainly textural, allowing guitarists to take complete control of the music, giving us a choice not to use other pitched instruments such as in the band Standards, which only has a guitarist and drummer. Other instruments have been created along with different versions of the guitar to develop this approach to tapping.

6.Thumping

6.1 Introduction to Thumping

This chapter will only be directing attention to one specific technique: thumping. This percussive technique is essential in progressive music, with a short history on the electric guitar but immense impact. There have not been severe adaptations to the technique on the guitar itself. However, it is becoming more and more popular, but now losing its ‘wow’ factor and slowly becoming a technique most virtuosic guitarists, such as Mena and Tim Henson, are now adding to their arsenal. As one of the essential techniques that have taken the guitar scene by storm, it is only fair to discuss thumping in this project. Thumping, popping, and slapping are all percussive techniques from the electric bass guitar and have now been transferred to the electric guitar. The majority of guitarists who use this technique often tend to thump on extended range guitars as the percussive sound is more evident in the lower register; examples would be Jose Macario thumping on his signature nine-string Strandberg Boden guitar (Parazit Noize Extravaganza, 2020) and Tosin Abasi on his Abasi concepts 8-string Larada (Gold, 2018).

Thumping is when the guitarist pushes their right hand thumb through a string in the same way a bassist would slap, but after pushing through, they bring the thumb back up through the string, creating a double thump. After this, they may use their right hand fingers to pluck other notes while keeping their right hand thumping position. The technicalities will be discussed later in the chapter. This technique is used by Josh Martin, Tim Henson, Kevin Blake Goodwin, Javier Reyes, and the main guitarist to discuss, Tosin Abasi. Although thumping, or double thump, has been used on bass in many genres, it has only recently entered the progressive scene. Most notable examples of slap and pop technique used in progressive metal on bass would be Amos Williams of Tesseract utilising the technique throughout their song ‘Messenger’ (Tesseract, 2015), Arif Mirabdolbaghi of Protest the Hero using slap bass in ‘Without Prejudice’ (Protest The Hero, 2013: 3:11-3:30), and Tom Murphy from Periphery slapping and popping on ‘Make Total Destroy’ (Scott’s Bass Lessons, 2019).

The definition of thumping on the electric guitar is slightly different from that on the electric bass. As coined by Joshua Cohen, ‘Double Thumping: when the RH thumb is used similar to a

pick in that it strikes down on a string with the fleshy side, before the neck, and then strikes it again coming up with the nail side' (Cohen, 2016: 11). Cohen's definition of popping will be used throughout the thesis. Cohen's definition of popping is 'when fingers from the RH are used to pull the string away from the bass and then release them so that they smack against the fretboard' (Cohen, 2016: 10). Thumping on the electric guitar also consists of a weaker replacement of 'popping' which is more in line with fingerstyle plucking, similar to classical guitar tremolo technique but with a percussive twist. To further help the definitions of thumping, we take a look at Abasi, who states that thumping is 'where you use your thumb, much like you would use a pick which is an adaptation of what would be slap bass guitar that you can apply to extended range guitar and even traditional guitar' (Guitar Messenger, 2020), a very similar meaning to double thumping.

6.2 From Bass to Guitar

To thoroughly learn the history, one must learn about the origins of slap bass. Larry Graham demonstrates how this technique was developed, which he called 'thumping and plucking' (now known as slapping and popping) (TheColeman87, 2013), claiming to have created it while working with his mother, who was also a musician. For financial reasons, Graham agreed with his mother to remove the drummer from his band and work as a duo (theColeman87, 2013). With only electric bass and piano, Graham tried to find a way to emulate the drum kit that he felt was lacking in his music by using a thump to make up for lack of bass drum, followed up with popping to replace the snare (theColeman87, 2013). After demonstrating his thumping and plucking technique at a gig, Sly Stone, from Sly and the Family Stone, asks Graham to join the band. Graham claims the popularisation of this technique rose with the release of 'Dance To The Music' by Sly and The Family Stone in 1968, which was soon followed by 'Thank You (Falettinme Be Mice Elf Agin)' in 1969, which Graham also claimed to have further popularised the technique (TheColeman87, 2013). After talking about the creation of thumping and plucking, Graham starts a close-up demonstration of the technique. In the demonstration, Graham is plucking (or popping) by almost grabbing and pulling the string with his thumb and index finger, which is quite different from how popping is performed today, which is without the thumb (TheColeman87, 2013).

From Graham onwards, most bassists saw this technique as one that should be part of their arsenal. Speed, aggressiveness, and tone have all been a significant part of the development of slapping and popping, as is demonstrated by Mark King of Level 42, Les Claypool of Primus, and T.M. Stevens. Thumping was popularised by the likes of Marcus Miller and the Wooten Brothers. Inspired by Abasi's past bandmate Evan Brewer from the band Reflux, Abasi started to experiment with the techniques Brewer used, which included slapping, thumping and popping. Brewer was also close friends with Regi Wooten of the Wooten brothers, who has helped him learn and shape his technique and musical approaches (Guitar Messenger, 2020). From here, Abasi took inspiration and brought thumping into the world of guitar and popularised it. It is important to note that Abasi was not the first guitarist to use this technique. Before Abasi, the only other guitarist who can be seen using the slap/thump technique on the guitar was Scotty Mishoe in 1995, who was also inspired by Regi and Victor Wooten and Rey Riendeau (bestguitarvids, 2011). There is no evidence found that could suggest others used the slap technique on electric guitar before Mishoe, but no one has claimed that he was the first to do so, leaving the origin of the transfer of slap techniques to guitar ambiguous.

Double thumping is only one half of the aspect of the thumping technique used by Abasi. Working with and inspired by fellow band member Javier Reyes, Abasi took it on himself to learn fingerstyle approaches to classical guitar, of which Reyes is a student (Thompson, 2014). Through learning the technique, Abasi mixed fingerstyle with double thumping, forming a whole new approach to the instrument. It is important to note that guitarists do not fingerpick in the technique's original sentiment, but instead with a closed fist shape and minimal movements of the right hand's fingers. Thumping is now open to endless possibilities, such as various note groupings and timbral qualities for lead lines. It can be mixed with various other techniques such as hammering-on out of nowhere, which will be discussed shortly. As explained before, thumping, introduced by Abasi, was mainly used with extended range guitars but is now being used on 6-string guitars see in Mena's playthrough of Special Berry (standards, 2020).

6.3 Thumping Tone

Before moving onto the thumping mechanics, guitarists must first dial in a tone needed to help them perform the thumping technique. Abasi covers how to achieve the fundamental tone needed to achieve a decent thump and slap sound on Fractal Audio's Axe-FX, an amplifier simulation software. All that will be explained is in reference to Abasi's workflow in this software. Due to the technique's nature, guitarists must attain a fairly tight sound, and their first step is to adjust the noise gate. Depending on how 'hot' their pick-ups are, guitarists will need to adjust the attack to be as low as possible to keep the guitar's tone coming through; if the attack were too high, the sound would be too 'choked'. Another vital component would be a compressor to keep a steady level of attack and volume. In Neural DSP's plugin Archetype: Abasi (Abasi's own signature amplifier simulation plugin), Abasi supplies a signature compression pedal 'Logos', which I feel is close to perfect when finding the right compressor for a thump tone. After these settings are dialled in, amplifiers are naturally the next step. Abasi likes to blend two amps, one soft crunch 'Marshall' inspired tone, and a Fender Bassman. The reason Abasi Blends these two amps is to gain the attack and punch from the Marshall inspired tone and the clarity of the Bassman, together creating a clear yet aggressive tone, which lends itself to the technique. Most dials are at 12 o'clock apart from the treble in the EQ, which leans towards five past. However, when both amps are blended, Abasi takes out some of the frequency around 500Hz. He goes into a 'Port City Pearl 0S100 cab' from these two amps, but this is only trivial; most cabinets will suffice. About the pick-ups guitarists should use, Abasi suggests working with a single-coil or pick-ups that have a coil-tap option, which have a lower output that compliments the technique with a 'spanky' attack. Although this is Abasi's approach to achieve a thump tone, he urges guitarists to explore and adapt his approach to their liking (Abasi, 2020).

6.4 Thumping Exercises and Guidance

The majority of the mechanical aspects of the technique are explained in Abasi's course on Guitar Messenger, 'THUMP!', leaving the aim to bring this information to academia along with comparing it to personal practice. As explained by Abasi in his 'THUMP!' course, the aspect that should be focussed on the most, as a percussive technique, is learning how to control the attack in order to purposefully accentuate notes to outline rhythmic groupings, as well as keeping a

steady volume when needed (Abasi, 2020). Before attempting any exercises, we must first look at how to shape and move our hand to perform this technique. As Abasi describes, the right hand must be kept in a thumbs-up position while keeping the thumb stiff. The thumb should not be the main centre of motion, as the action of attacking the string comes predominantly from the wrist, as seen in Figure 16.0. When it comes to faster movements, it becomes hard to turn the right hand wrist at fast speeds while attacking hard, which is when one can move the thumb along with our wrist for extra power when striking the string. Below are basic exercises (Figure 17.0) for groups of two only using the thumb. Suppose one has trouble striking the string on the way up, such as the thumb slipping or not attacking hard enough; Abasi suggests growing out the thumbnail, which will ultimately help with these problems, as experienced through personal practice. Make sure to mute the dead notes with the left hand and not allow any harmonics to come out, a technique which Abasi did not explain. The stiffness of the thumb is another problem guitarists may encounter, but through practise, it was found that the discipline of not creating the tendency of moving the thumb may be due to instincts from fingerpicking. It is worth pushing through to achieve a solid foundation for the technique.



FIGURE 16.0: DEMONSTRATION OF THUMPING

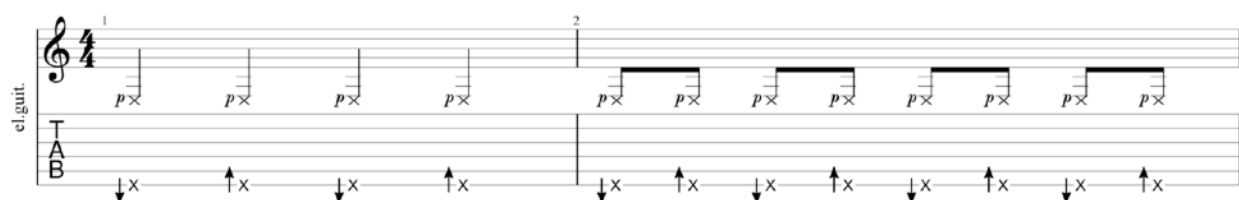


FIGURE 17.0: THUMPING EXERCISE ONE

Guitarists should now introduce fingers on the right hand to the technique. While keeping the hand in a tight thumbs-up shape, it is difficult to learn to loosen their fingers and strike the string with them. Instead of closing their fist tightly, they must create a claw shape between their palm and fingers. When plucking the strings with the right hand finger, it is essential to turn the wrist instead of using the motion from the knuckles for power, stability and attack consistency. Below are groupings of three to seven (Figure 18.0) that use all fingers apart from the little finger on the right hand. Like in any other exercise mentioned in this thesis, make sure to practise slowly, allowing muscle memory to learn the movement's nuances. Abasi tells guitarists to place their hand where their fingertips meet the string while keeping the thumb parallel to the neck. This position keeps guitarists from unnecessarily creating excess movement. Abasi also suggests that if guitarists find these exercises challenging to perform on the same string, they may move their fingers on to the adjacent string, which helps in learning the technique's mechanics and ingraining them into muscle memory. It is important to note that when introducing fingers, they will naturally mute the string before plucking it, creating a 'choked' percussive effect which is the objective.



FIGURE 18.0: TRIPLET THUMPING EXERCISE ON SAME STRING

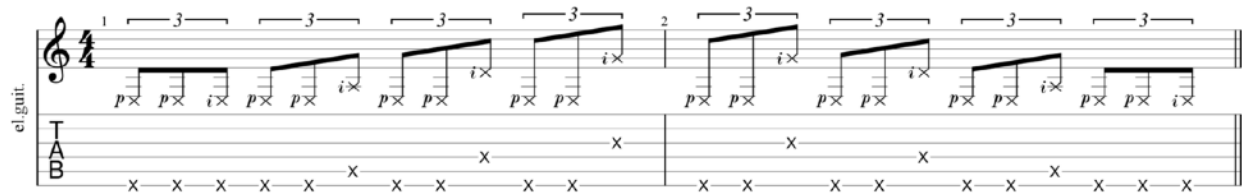


FIGURE 18.1: TRIPLET THUMPING EXERCISE WITH PLUCKING FINGERS WITH



FIGURE 18.2: GROUPINGS OF SEVEN THUMPING EXERCISE

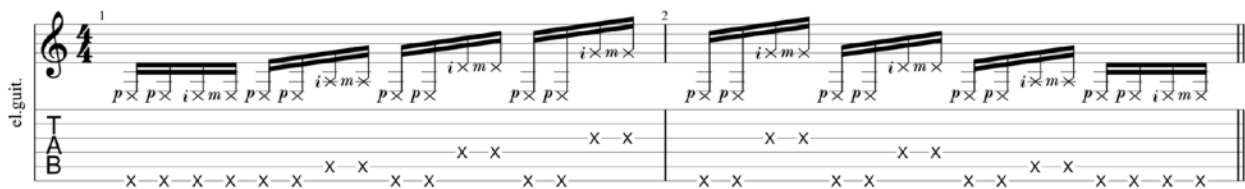


FIGURE 18.3: GROUPINGS OF FOUR WITH RIGHT HAND FINGERS PLUCKING ON DIFFERENT STRINGS

In the exercises (Figures 19.0-19.2) below, guitarists use the third finger of the right hand and shift the first attack of the thump away from the pulse, creating interesting polyrhythms while engraining the movement into their muscle memory through said polyrhythms. These exercises helped create ‘Mythos’ (Vallejo, 2020), allowing for greater creativity when composing the main riff. As will be explained in the commentary, ‘Woven Web’ by Animals as Leaders (2014) directly inspired ‘Mythos’. The approach to the technique was used to create heaviness with syncopation (Beato, 2020). If one were to use a heavier guitar tone and power chords, it would be easier to create heavy riffs without syncopation. In contrast, due to the dry tone used when thumping, it is best to use syncopation to create sporadic heaviness.



FIGURE 19.0: QUINTUPLET GROUPINGS THUMP EXERCISE



FIGURE 19.1: GROUPINGS OF FIVE IN SEMIQUAVER THUMPING EXERCISE



FIGURE 19.2: GROUPINGS OF THREE IN SEMIQUAVERS THUMPING EXERCISE

Notes are added when thumping not only for harmonic context but also for accentuation. A note will usually be played in a rhythmic context when the thumb first strikes, followed by muting such as in ‘Woven Web’ by Animals as Leaders (2014), as seen in Figure 20.0 below, to emphasise when outlining a grouping. In ‘Woven Web’ (Animals as Leaders, 2014), notes are also placed towards the end of grouping for syncopation; the same principle can be applied to the exercises above to add notes when the grouping starts in contrast to the pulse. Using a note to accentuate a grouping is a technique used in ‘Mythos’ (Vallejo, 2020) in both thumped riffs but is more prevalent in the second at 1:00.

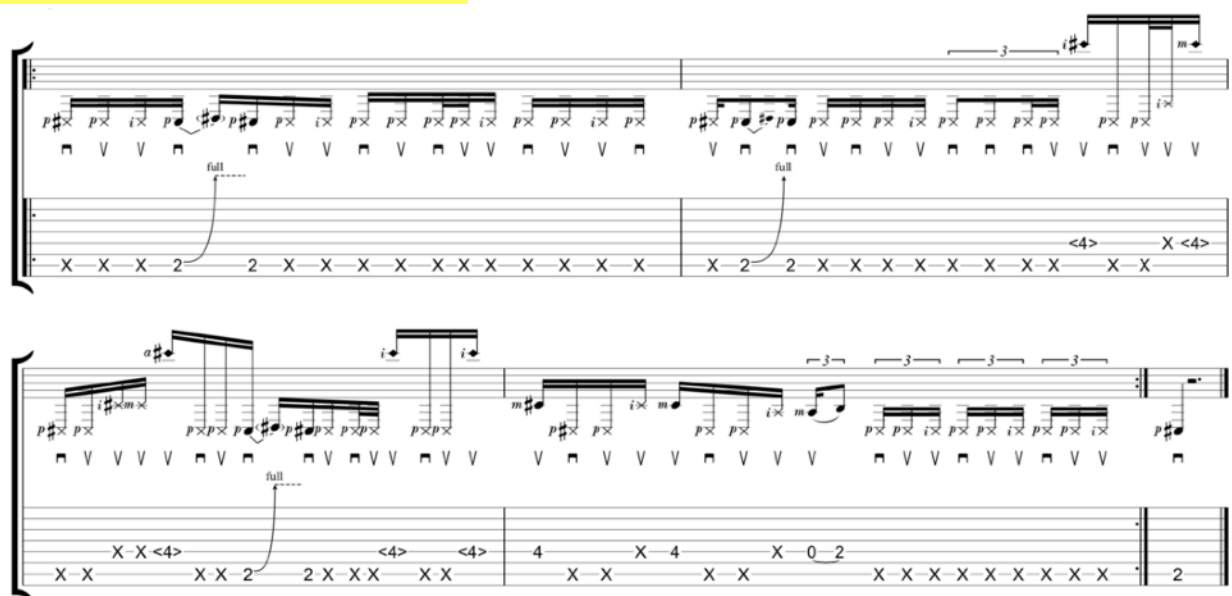


FIGURE 20.0: EXCERPT OF THE OUTRO IN WOVEN WEB BY ANIMALS AS LEADERS (GUITAR MESSENGER, 2020)

In the following example (Figure 20.1), thumping is used in the upper register of the guitar, outlining different arpeggios, creating melodic lines, yet keeping the percussive attack of the technique. Thumping may also be used to keep a percussive pedal going while the fingers perform the music's melodic component. These techniques can be seen in various tracks by Animals as Leaders, such as 'An Infinite Regression' (2011), as seen in Figure 20.1 below.

The image displays a musical score for the intro section of the song 'An Infinite Regression' by the band Animals as Leaders. The score is written for guitar and bass, with the guitar part in the upper register. The key signature is D major (two sharps) and the time signature is 3/4. The score is divided into five systems, each containing a guitar staff and a bass staff. The guitar part features a complex melodic line with many accidentals and a rhythmic pattern of eighth and sixteenth notes. The bass part provides a harmonic foundation with a similar rhythmic pattern. The score includes various musical notations such as accidentals, ties, and dynamic markings. The guitar part is marked with 'el. guit.' (electric guitar) and the bass part is marked with 'b.' (bass). The score is numbered 1 through 15, indicating measures. The guitar part uses a lot of thumping, which is indicated by the 'T' symbol in a circle. The bass part uses a lot of arpeggios, which are indicated by the 'A' symbol in a circle. The score is a transcription of the intro section of the song.

FIGURE 20.1: TRANSCRIPTION OF INTRO SECTION OF INFINITE REGRESSION BY ANIMALS AS LEADERS

As guitarists start to unlock the thumping movement, they can mix it with other techniques such as hammer-ons out of nowhere as discussed in the previous chapter, such as in the example above of infinite regression (Figure 20.1). In the example above, we can see Abasi approaching thumping in the same way he approaches selective picking (Beato, 2020). Abasi first hammers-on the F#5 arpeggio, followed by a 16th note thumping pattern, creating an overall group of six. The arpeggio later develops into a melodic motif. As evident in this particular track, thumping can be a great bridge between rhythmic and melodic ideas.

Newer territories of thumping, such as using the thumb to economy pick notes, are also relevant to the general technique, even if not applicable to most situations due to its 'music box' like sound due to small pinch harmonics created. Apart from this particular use of thumping, there have not been any other notable approaches to the technique's mechanics. Some artists such as Mena and Henson like to exaggerate wrist movement to create a harder attack (Henson, 2020). Moving the wrist much will create bad habits where more effort is needed to play the notes. In contrast, concerted energy and small movements are best, as it is more ergonomic, especially considering that it is thumping alone that is being used. Mixing thumping with other techniques such as tapping, the right hand's claw position may be more open and less rigid than usual. Thumping can not be played with a pick in hand if the guitarist intends to use the fingers, as there is nowhere to hold the plectrum, meaning they must either drop the plectrum, followed by grabbing another, or place it somewhere it can be retrieved again.

Thumping can be used in various approaches, such as creating rhythmic foundations and layers, bridging melodic and percussive parts and as a textural tool. There is no other way to achieve the sounds created by thumping, meaning it is the most ergonomic approach by default. Trying to achieve the same timbre with a plectrum is more complicated. There is a clear difference in the attack with a plectrum, along with losing the short but effective pre-muted notes achieved with the right hand fingers.

7. Commentary

7.1 Introduction

The tracks written for this project are inspired by artists within the genre of progressive rock and metal. Structure, harmony, melody, textures, and production are all influenced by artists in the scene. All techniques discussed in past chapters are being used throughout this EP and other techniques that have not had the chance to be explained due to limited word count will also be used. In each of the tracks, there is space for improvisation as per Nick Johnston, Mateo Asato, Tim Miller and Guthrie Govan. There are two different directions that musicians in the guitar-centric community have taken; improvisation, or no improvisation, which is also reflected in their music production. Due to personal preference, there is space created for improvisation.

7.2 Mi Alma

This track is heavily inspired by Instagram videos of Manuel Gardner Fernandes and the musical avenues taken by Yvette Young. 'Mi Alma' explores natural harmonics in a tight melodic context; pianistic tapping; multi-role tapping; and finger-style approaches throughout this track. Within the mid-section, there is an open space for improvisation while being mindful of using techniques previously discussed. There is no use of a pick throughout most of the track: the only exception is the improvised solo at 1:47.

The main melody that starts the piece serves the function of a chorus (Figure 21.0). The part starts with natural harmonics at the 12th fret supported by a C in the bass outlining a C major 9 Chord with the melody's notes. Qualities of these harmonics are delicate in their own right, and when they are finger-picked, the initial attack is subdued. These harmonics are also left ringing out for the first bar, creating a reasonably wet texture that is cut off when the next bar starts. In the second bar, the left hand fingers are placed on the B minor chord shape to stop the harmonics' ringing which emphasises textural change. In the final beat of bar two, a natural harmonic is played on the fifth fret. Although they are similar to those on the 12th fret, Harmonics on the fifth fret have a sharper and clearer attack. These harmonics are purely for note choice instead of a textural decision, such as the 12th fret harmonics in the previous bar. In bar three, the octaves are strum with the right hand index fingernail, creating a slight raking effect. In bar four,

there is a tapped passage outlining an arpeggio for timbral and ergonomic reasons. The arpeggios were tapped as no plectrum was being used; if one were to play the arpeggio with one hand, it would be much more challenging due to awkward finger placement and dynamic control. If one were to play this passage finger-picked, there would be a lack of consistency with the attack. In bar seven, an Esus2 chord is formed, held during bar eight, where it acts as a capo for the tapping section. In bar eight, tapped notes are pulled-off to notes in the Esus2 chord, giving the melody harmonic context. Due to the close proximity of the tapped notes in bar eight, it was only natural to use parachordal finger placement.

The image displays a musical score for the first eight bars of a piece titled "Mi Alma". The score is written for guitar, with a treble clef and a key signature of one sharp (F#). The notation includes various musical symbols such as notes, rests, and dynamic markings. The score is divided into four systems, each representing two bars. The first system covers bars 1 and 2, the second system covers bars 3 and 4, the third system covers bars 5 and 6, and the fourth system covers bars 7 and 8. The notation includes a variety of musical symbols, including notes, rests, and dynamic markings. The score is written for guitar, with a treble clef and a key signature of one sharp (F#). The notation includes various musical symbols such as notes, rests, and dynamic markings. The score is divided into four systems, each representing two bars. The first system covers bars 1 and 2, the second system covers bars 3 and 4, the third system covers bars 5 and 6, and the fourth system covers bars 7 and 8. The notation includes a variety of musical symbols, including notes, rests, and dynamic markings. The score is written for guitar, with a treble clef and a key signature of one sharp (F#). The notation includes various musical symbols such as notes, rests, and dynamic markings. The score is divided into four systems, each representing two bars. The first system covers bars 1 and 2, the second system covers bars 3 and 4, the third system covers bars 5 and 6, and the fourth system covers bars 7 and 8. The notation includes a variety of musical symbols, including notes, rests, and dynamic markings.

FIGURE 21.0: BARS 1-8 OF MI ALMA

In the first bar of the following section (Figure 21.1), both hands share the role of the inner voices of the chords, such as the first two beats where I outline a C major add9 chord with the melody floating above with the G and D. In the last beat of the bar, both hands share a role in performing the melody, where the left hand plays the D and E and the right hand plays the G. Apart from the repetition of the first two beats of the first bar, each tapping segment falls into the category of pianistic tapping, such as beat two and three of bar 11 and 13. The following distinct section starts at bar 36 but much of the same techniques are still applied in bar 37 (Figure 21.2) where a Csus2 chord is played, which is part of the harmonised melody that follows on the right hand a beat after. This bar utilises pianistic tapping as well as capo tapping in beat three and four. The decision to use both fingerstyle techniques and natural harmonics with tapping is because they complement each other nicely due to the 'flowing' nature of the techniques. The tapping segments in this section are full of hammer-ons and pull-offs which support the 'flowing' and legato inspired texture.

The image displays a musical score for a piece titled "MI ALMA", specifically covering bars 9 through 16. The score is written for a guitar, featuring a treble clef and a key signature of one sharp (F#). The notation includes various musical symbols such as notes, rests, and dynamic markings (e.g., *m*, *p*, *sl*, *let ring*). The score is organized into four systems, each corresponding to a bar number (9, 11, 13, 15). Each system consists of a main staff and a lower staff labeled "T" and "B". The lower staff contains numerical fret positions and bar lines, indicating the fretting for each note. The notation is complex, involving many triplets and slurs, suggesting a technically demanding piece. The overall layout is clean and professional, typical of a published musical score.

FIGURE 21.1: BARS 9-16 OF MI ALMA

FIGURE 21.2: BARS 37-44 OF MI ALMA

In the improvised solo, there is the use of hybrid picking for the octaves at 2:04 to avoid the raking effect that would occur if one were to strum. This is not only for dynamic control but also to match what is happening with the other guitar, which is relaxed. Hybrid picking is also used at 2:27 for the ergonomic purpose of reaching notes that are large intervals away. Hybrid picking allows one to use the pick and fingers' attack as different rhythms within a melodic line, whereas with standard picking, there is no rhythmic diversity. The second guitar is used to support the harmony and rhythm throughout with no notable exceptions apart from the moments harmonies are created. The bass supports the harmony, as expected, but does so with a

predominantly walking bass line. In the song's chorus section, the bass carries its melody which is then built upon in the build-up to the last chorus. The bass drum accentuates parts in the melody and second guitar with not much room for improvisation due to the lack of rhythmic space.

7.3 Libre

'Libre' starts with the chorus, which introduces the main tapping melody. As seen in Figure 22.0, this tapping line uses two fingers on the right hand and all on the left hand. This melody is inspired by the tapping section in Jason Richardson's 'Omni' (2016). Although these lines can be played with a pick, it is much more ergonomic to tap it instead, using linear multi-finger tapping. As a distorted sound is used with ample compression, there was no need to tap with force, and controlling the dynamics was less trouble than first anticipated. When recording this section, a fret wrap was used to ensure that no unwanted noise was created. The majority of the part uses both index and middle finger on each hand, apart from a few exceptions. Due to the technique's nature, each note flows into the next but are juxtaposed in areas of large intervallic leaps. In the last beat of bar one, the left hand jump from C# on the G-string to E on the 12th fret on the high E-string. Such a large jump sacrifices accuracy and creates a harder attack. Suppose one were to use the righthand in orthochordal finger placement for one beat to play those notes. In that case, the attack may not be as powerful, as there are too many notes to play accurately in orthochordal finger placement in a short space of time.

FIGURE 22.0: BARS 9-16 OF LIBRE

In the second verse, there are arpeggiated chords in the background (Figure 22.1). These chords use the thumb to fret a note, as seen in Figure 22.2 and 22.3. Although there are other ways of playing these arpeggios without using the thumb, not all notes will ring out. Although not comfortable, it is the only way to approach them. The left hand thumb was placed underneath the neck to allow the fingers to stretch and arch themselves to their notes without accidentally muting the strings beneath them. The thumb is not popular amongst guitarists, but some, such as Josh Martin, have started introducing the thumb in chords and tapping exercises.

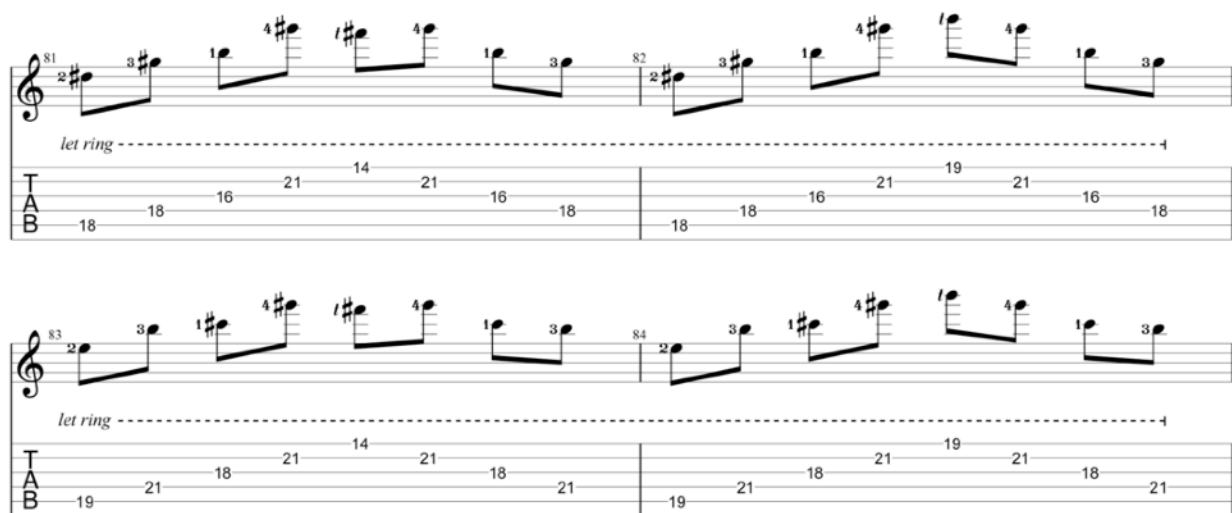


FIGURE 22.1: BAR 81-84 OF CLEAN ARPEGGIOS IN SECOND VERSE OF LIBRE



FIGURE 22.2: DEMONSTRATION OF THUMB PLACEMENT OF ARPEGGIO ONE (BAR 81-82 OF LIBRE)



FIGURE 22.3: DEMONSTRATION OF THUMB PLACEMENT IN ARPEGGIO TWO (BAR 83-84 OF LIBRE)

A short breakdown is placed after the second verse. All the instruments play in unison in this break, apart from some drum fills and guitar lines. One of these lines (Figure 22.4) is a basic three string minor arpeggio followed by tapped notes. Sweeps and fast runs are used at times to link different parts of a track together, much like in Jason Richardson's 'Hos Down' (2016). The tail end of this section uses a pentatonic run with a similar purpose in Plini's 'Every Piece Matters' (2016). These runs are a burst of energy in an agitated but uplifting section of the track. The run ends with the whole ensemble hitting a big chord together for greater emphasis and vibrancy.

FIGURE 22.4: BAR 99-103 OF LIBRE

Throughout the solo, there are various tapping passages. At 4:26, there is the classic use of an 80's approach to shred tapping, although for a short second. Runs and sweeps are used to bridge sections together. At 4:36, it is no different as a tapped scalic passage is used to transition into the following section (Figure 22.5). Unlike the others, this track does not necessarily use all the techniques for a musical or ergonomic purpose, but rather for showmanship, as would have been evident if it had been possible to perform the EP. 'Libre' ('free') is geared towards freedom of expression and self-indulgence.

FIGURE 22.5: TAPPED SCALIC RUN IN LIBRE SOLO AT 4:36

7.4 Una Sola Corriente

In Figure 23.0, we have section B of 'Una Sola Corriente'. Throughout the whole introduction, there is pianistic tapping, with butterfly tapping in bar 14. Although both bass parts and melody are not intertwining, it is still pianistic tapping as the lower notes are ringing under the melody. As per Figure 23.0, it is clear that orthochordal finger placement was used throughout; the only exception is in bar 14 where parachordal finger placement was used. In bar 11, there is a pull-off to a natural harmonic on the 7th fret. It could be possible to play the same note tapped on the 19th fret, but due to the flowing sensation I was aiming for, it seemed natural to play the harmonic. The notes' attack is relatively delicate in this section, and there is no possible way of using a fret wrap, meaning there are many chances of finger slips and unwanted noise. This could have been distributed between two guitars but would not have sounded as consistent, as both melody and harmony lead into each other. This section is in free time, meaning the tempo can be pushed or pulled.

In the latter half of the piece, there are four different tapping passages that all use stacking. In the first passage (Figure 23.1), various arpeggios are stacked in 16th note triplets to initiate the section. The low tempo is used to set the pace for the build-up. As the piece continues and gets more intense, it is matched with tapped septuplet arpeggios, creating an uneven wave of movement behind the orchestration (Figure 23.2). These arpeggios rise and fall within a beat, which also adds to the intensity (quickly moving through the register of the guitar in a short space of time to create urgency) and helps the build-up reach its apex. Once the build-up finishes, the arpeggio/melody hybrid is in demisemiquavers. Although the theme of adding more notes in a short space of time continues, the intensity of the piece does not increase because the rise and fall of the arpeggio/melody spans between two beats and instead create a sigh of relief (Figure 23.3). After this section passes, the intensity of the track lowers by adjusting the instrumentation and using a slow version of butterfly tapping to outline the chords taking place (Figure 23.4).

The image displays a musical score for the piece "Una Sola Corriente", specifically covering bars 9 through 16. The score is written for guitar and bass, with each instrument having a standard staff and a corresponding tablature line below it. The guitar staff uses a treble clef, while the bass staff uses a bass clef. The key signature is one sharp (F#), and the time signature is 4/4. The score includes various musical notations such as notes, rests, slurs, and dynamic markings. Fingerings are indicated by circled numbers 1-4. Technical instructions like "let ring" and "sl." (slide) are present. The tablature lines show fret numbers and include slurs for bends and other techniques. The score is divided into four systems, each containing two staves (guitar and bass) and their respective tablatures. The first system covers bars 9-10, the second covers bars 11-12, the third covers bars 13-14, and the fourth covers bars 15-16. The notation is complex, featuring many slurs and ties, indicating a fast and technically demanding piece.

FIGURE 23.0: BAR 9-16 OF UNA SOLA
CORRIENTE

Figure 23.1 shows the musical notation for bars 33 through 36 of the piece 'Una Sola Corriente'. The notation includes a treble clef, a key signature of one sharp (F#), and a 2/4 time signature. The melody is written in eighth and sixteenth notes, often beamed in groups of three. The bass line is shown on a grand staff with tenor and bass staves, featuring fingerings and natural harmonics (marked 'n').

FIGURE 23.1: BAR 33-36 OF UNA SOLA CORRIENTE

Figure 23.2 shows the musical notation for bars 41 through 44 of the piece 'Una Sola Corriente'. The notation includes a treble clef, a key signature of one sharp (F#), and a 2/4 time signature. The melody is more complex, including sixteenth and thirty-second notes, and is often beamed in groups of seven. The bass line is shown on a grand staff with tenor and bass staves, featuring fingerings and natural harmonics (marked 'n').

FIGURE 23.2: BAR 49-52 OF UNA SOLA CORRIENTE

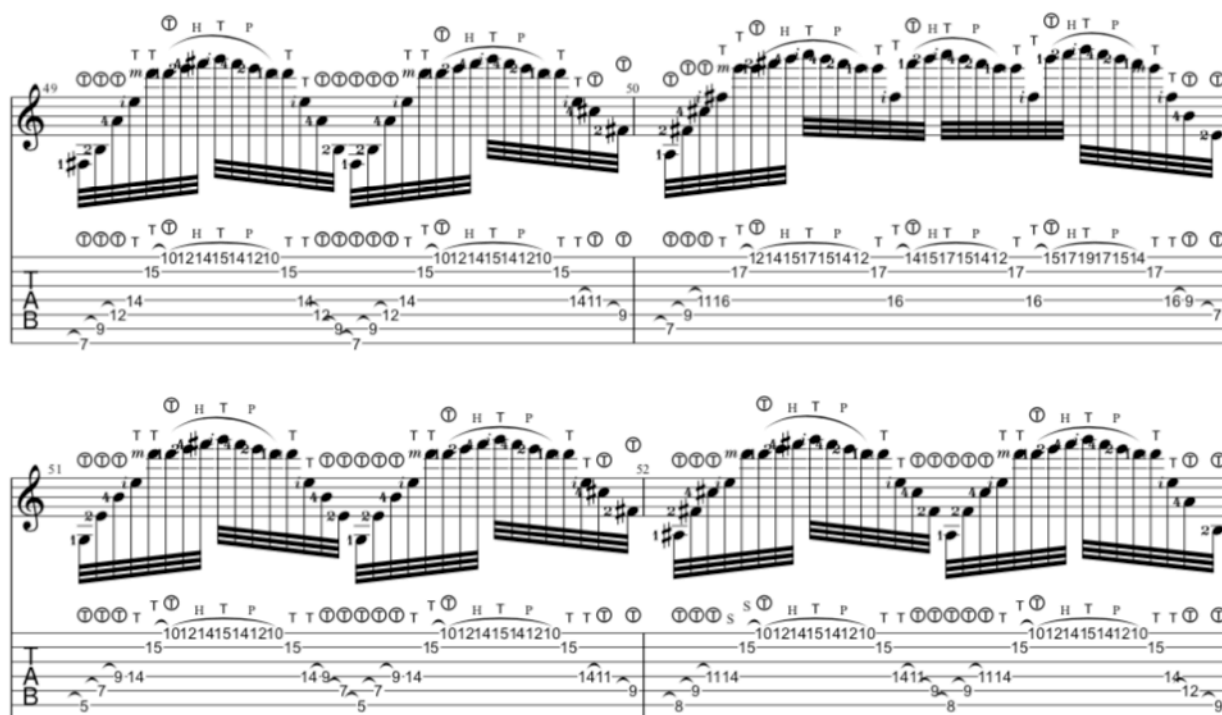


FIGURE 23.3: BARS 65-68 OF UNA SOLA CORRIENTE

Seeing the potential of creating a track that keeps on building up with layers, Caspian, and their track 'Sycamore' (2009) became the main inspiration behind the structure of 'Una Sola Corriente'. Many artists, such as Richardson, Little Tybee, and Thank You Scientist, use orchestral instrumentation, which influenced the use of orchestral arrangement of this piece. The orchestral instruments were not recorded live and are all midi samples.

7.5 Mythos

Animals as Leaders and Mestis influenced the thumping passages throughout 'Mythos'. The main melody is stated in the introduction so it has a stronger impact when it returns. As seen in Figure 24.0, B Lydian is outlined through speed bursts such as beat three and four of the first bar. Although this section can be purely melodic, thumping was used for a dryer texture and greater rhythmic diversity. In Figure 24.1, a syncopated rhythm is created by emphasising a grouping with the downstroke of a thump along with an open string. Although a basic semiquaver rhythm, the emphasis of the rhythm lands outside of each beat. Approaches such as these give greater freedom to the drummer to improvise, as there is only a melody above the rhythmic

foundation of each section. In Figure 24.1, the drummer emphasised the groupings with either the kick drum or snare for a greater attack.

FIGURE 24.0: BAR 13-16 OF MYTHOS

FIGURE 24.1: BAR 20-23 OF MYTHOS

In Figure 24.2, we see the midsection of 'Mythos'. As the other pieces in this EP have not explored odd time signatures or time signature changes, it would be best to explore it in this piece, as it already takes inspiration from music that uses odd time signatures extensively. In this section, the melody is brought back from the introduction, and the harmony that the low part in the guitar during the introduction was implying is developed. Even though the introduction was in free time, there was still a vague idea of rhythmic structure, which solidifies this section.

The musical score for bars 42-49 in 'MYTHOS' is presented in four systems. Each system consists of a musical staff and a guitar tablature. The key signature is three sharps (F#, C#, G#) and the time signature is 3/4. The tablature includes fret numbers (0-8) and techniques like bends (marked with 'b') and triplets (marked with '3'). The text 'let ring' is written above the tablature in the first two systems.

FIGURE 24.2: BAR 42-49 IN MYTHOS

The lead guitar throughout this track, especially during the thumping section, is not as busy as in the majority of the other pieces of music on the EP. The lead guitar's lack of intensity creates a greater focus on the music's rhythmic and harmonic attributes. There are some short bursts of notes throughout, but they are used, as in the previous track, for intensity, such as at 1:52. Each section that only includes strummed chords and a basic melodic line above is created to create anticipation for the following sections, giving them a more significant impact. Again, as in previous tracks, swept arpeggios are used at 0:59 to transition to the following section. During the last solo, there was more focus on bending. This section demonstrates how 'growl' bending can express intense emotions. Although these 'growl' bends are not as common as they once were, some guitarists use them out of personal taste.

7.6 Dulce Noche

After introducing the piece, tapped harmonics are used. Tapped harmonics are when one ‘taps’ the natural harmonic of a note. In this instance, the tapped harmonics outline chords in the second guitar, as seen in Figure 25.0, similar to how Fernandes uses them in his Instagram videos. These tapped harmonics have a similar timbre to bells, with the harsh attack of a harpsichord. Due to the technique’s nature, accuracy is critical and challenging to control when up to speed. As seen in Figure 25.0, the left hand is holding onto the chord shapes while the right hand taps the natural harmonic. In this instance, the index, middle, and third finger of the right hand tap these harmonics. All fingers are used, so there is less movement of the actual hand which may decrease the accuracy.

el.guit

1 AH
let ring

2 AH
let ring

3 AH
let ring

4 AH
let ring

5 AH
let ring

6 AH
let ring

7 AH
let ring

8 AH
let ring

9 AH
let ring

10 AH
let ring

T
A
B

5 <17> 5 <17> 5 <17> 5 <17> 5 <17> 5 <17> 5 <17> 5 <17>
4 <16> 4 <16> 4 <16> 4 <16> 4 <16> 4 <16> 4 <16> 4 <16>
3 <15> 3 <15> 3 <15> 3 <15> 3 <15> 3 <15> 3 <15> 3 <15>

5 <17> 5 <17> 5 <17> 5 <17> 5 <17> 5 <17> 5 <17> 5 <17>
4 <16> 4 <16> 4 <16> 4 <16> 4 <16> 4 <16> 4 <16> 4 <16>
4 <16> 4 <16> 4 <16> 4 <16> 4 <16> 4 <16> 4 <16>

7 <19> 7 <19> 7 <19> 7 <19> 7 <19> 7 <19> 7 <19> 7 <19>
5 <17> 5 <17> 5 <17> 5 <17> 5 <17> 5 <17> 5 <17> 5 <17>
5 <17> 5 <17> 5 <17> 5 <17> 5 <17> 5 <17> 5 <17>

7 <19> 7 <19> 7 <19> 7 <19> 7 <19> 7 <19> 7 <19> 7 <19> 7 <19>
5 <17> 5 <17> 5 <17> 5 <17> 5 <17> 5 <17> 5 <17> 5 <17> 5 <17>
6 <18> 6 <18> 6 <18> 6 <18> 6 <18> 6 <18> 6 <18> 6 <18>

8 <20> 8 <20> 8 <20> 8 <20> 8 <20> 8 <20> 8 <20> 8 <20>
7 <19> 7 <19> 7 <19> 7 <19> 7 <19> 7 <19> 7 <19> 7 <19> 7 <19>
7 <19> 7 <19> 7 <19> 7 <19> 7 <19> 7 <19> 7 <19> 7 <19>

FIGURE 25.0: 1:02-1:29 OF DULCE NOCHE

Section B explores sweep picking, percussive raking, and whammy bar techniques. In the first bar for Figure 25.1, the muted notes are meant to be strummed in a flurry, such as in Fernandes Instagram videos. These flurries of muted strums add a dry percussive sound that breaks the texture and emphasises the movement in the drums. It is important to note that the movements must come from the wrist and not the elbow for these flurries. Following the octave

el guit

1 2 3

4 5 6

7 8 9 10 11 12 13 14 15 16

17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000

85

The next section is mainly hybrid picked. In bar one of Figure 25.2, the octave jump would be tricky to play through string skipping due to potential inaccuracies. As in ‘Mi Alma’, hybrid picking also creates rhythmic diversity of the note attack through the section, creating a more exciting and ‘wavy’ feel to this part alone. Above this part, there is a tremolo-picked part that is used as a textural layer. Tremolo picking can be heard in solos such as ‘Beat It’ by Michael Jackson (1982), but also acts as a textural device.

FIGURE 25.2: 2:12-2:19 OF DULCE NOCHE

There are various runs throughout the solo section, such as a legato scalar run followed by a swept and tapped arpeggio at 3:13 and picked runs at 3:06 and 3:36. These runs can be viewed as unnecessary, but they were created for intensity and to express an ‘outburst of emotion’. The second third of the solo starts with what may seem to be pinched harmonics. These are called ‘semi-harmonics’, where the pinch harmonic is performed, but ‘you don’t completely deaden the fundamental note’ (Ultimate Guitar, 2020). Towards the end of the track, double stops are used (when a guitarist plays an interval, usually a fourth or fifth), mainly for emotional expressivity. These techniques are mainly used in heightened emotional situations when composing or improvising. Having the ability to adapt emotional feelings in conjunction with a piece of music on demand caters for the notion of mental virtuosity (Stacho, 2018).

8. Conclusion

8.1 Findings

Various techniques have been discussed throughout this project, covering different purposes, such as lead playing with sweeping and tapping, polyphonic and ergonomic approaches with tapping, and percussive playing with tapping and thumping. The development of each technique has been outlined within the space allowed. In all explanations of each technique's history, approaches for various musicians have been mentioned and described. The reasoning behind each technique's mechanics within their chapters has been discussed, along with the explanation of their compositional attributes as explained in the commentary of the EP. While learning these techniques, setbacks and progress have been experienced through various learning approaches. These approaches have helped solidify parts of the chapters with the learning process of these techniques and helped create exercises and guidelines that would help the reader if they were to attempt these techniques in their practise. The compositional approach from each artist discussed has been used for inspiration, as is evident in the EP. The EP demonstrates the songwriting within the genre of guitar-centric progressive rock and metal with personal stylistic input.

The overall findings with sweeping are that there has not been any development towards the technique until recently with Richardson's approach. Current guitarists are using sweeping differently by not dedicating entire sections as they would have back in the 1980s and 1990s. The technique's evident development has been outlined, with each figurehead somehow directly or indirectly inspired by each other. The way sweep picking is approached is between guitarists, but there is common ground in prioritising the left hand over the right. There seems to be a generational gap in the approach for the left hand in sweeping when it comes to choosing to bar such as in the 1980s, or not to bar in the likes of Jason Richardson and contemporary guitarists. Within composition, sweeping is used as a burst of reckless energy, for showmanship, or as a transitional tool to bridge music sections together.

Tapping has various approaches; some concern themselves with speed, others with ergonomic attributes, and others with timbre. Tapping was around long before the electric guitar. Within tapping, there is shred tapping, pianistic tapping, linear multi-finger tapping and multi-role

tapping. Within each of these subcategories of tapping, there is a history and regimented approach to learning each branch of tapping.

The thumping chapter concluded that its history is recent on the electric guitar. As a bass technique, there is a clear link between one and the other. The thumping tone is created by blending a crunch and clean sound with a harsh noise gate and cutting frequencies at 500Hz. Learning to thump creates different challenges depending on the guitar's register, but the approach is the same. There are various approaches to using thumping compositionally, as described. The approach to thumping is universal from a compositional and mechanical perspective, leaving little to no space for adaptation.

Structures, harmony, and general songwriting in guitar-centric music are different depending on each artist. Musicians such as Plini and Young through compose their music, whereas Aaron Marshall structures his music with pop structure. Other guitarists such as Nick Johnston leave space for improvisation, and others such as Dan James Griffins use their approach towards electronic influences. Polyphia uses their guitars as a tool for their electronic/hip-hop inspired creations. Overall, the approach to music-making in the guitar-centric genre in progressive rock and metal is vast and has no boundaries for structure, instrumentation, harmony or timbre. There is great importance in the tone used for performances, uniqueness and creativity with musical elements.

The project concludes that techniques have significantly developed, and there are new techniques still being used on the guitar. During the development of each technique, there have been adjustments to the way they are approached. With tapping, contemporary guitarists have been much more adventurous in aspects such as multi-role tapping and rhythmic approaches such as glitch tapping and butterfly tapping. Sweeping has had the most significant development in terms of ergonomics and results in clarity of the execution. This is evident when comparing Ritchie Blackmore, and Jason Richardson. Thumping proves that new techniques are being developed on the guitar, even if inspiration was derived from a related instrument.

Each exercise created outlines how to develop the previously discussed techniques efficiently. As inspired by contemporary guitarists and guitar manuals, the exercises and explanations ensure that bad habits will not be developed if followed. These sections also create a comprehensive view of the stages of learning each technique and in which order they should be practised. The exercises and guidelines sections also explain how different approaches vary in

terms of ergonomics and conclude the most efficient and appropriate way to learn each technique.

Compositional attributes have significantly changed when comparing contemporary guitar-centric music to guitar-centric music from previous decades. Self-indulgence and purposeful expressiveness of virtuosity have significantly diminished, which may be due to the normalisation of advanced techniques. Sweeping, tapping and thumping are used purely from a compositional standpoint, as demonstrated throughout the thesis and in the EP. The exercises and practice approaches explained were crucial to the creation of the EP. Through the exercises, one was able to engage with the nuances and sonorities of each technique fully. An in-depth understanding of the techniques discussed allowed for a variety of compositional approach to be used. Each technique has timbral, textural, and ergonomic approaches, which have influenced the EP in various ways. After experimenting with each approach to learning the techniques discussed, a conclusion arose when looking for the most ergonomic approach with the cleanest outcome. Each exercise and guideline allowed one to achieve a high level of efficiency while maintaining optimum technique. The practice exercises and guidelines helped attain a high level of proficiency needed for the EP to be executed to the standard desired.

8.2 Reflections

Had I been able to revisit this project without time constraints, I would have explored various different subjects. Ideally, I would have gone much further into picking techniques such as economy picking, hybrid picking, selective picking and swy-brid picking. Within these techniques would be explanations in a similar vein to techniques that have been discussed. If the Coronavirus pandemic had not disrupted plans, I would have performed my EP along with other pieces of music from the genre, offering live demonstrations of each technique used. Conducting interviews with musicians studied could have brought the project greater in-depth background information, especially within the chapter of thumping. If word count allowed, I would have liked to explore the meaning of virtuosity within the guitar community and the significance of virtuosity on success of the artist. I would have also liked to investigate thumping at a deeper level, along with going into more depth about other artists such as Javier Reyes, Kevin Blake Goodwin, and Rick Graham.

If I could expand and research on work that has been discussed in this thesis, I would find many potential avenues to explore. There is plenty to research within the guitar community itself;

such as the need for virtuosity without explicitly looking for it; the significance of virtuosity to success; and the role of social media. There are plenty of techniques to explore as stated above, along with other techniques that were once cliché but now are in common practice, such as the use of the tremolo bar. It would be interesting to research how instrumental artists generate income in a climate where streaming services do not pay the artists a living salary, and how their personalities and connections to their fan base are just as important as their music.

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