The Musical Memory of Classical Guitarists

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Design of the study

According to the latest (2021) NWU Humanities yearbook, pp. 209, The Doctor of Music in Music Performance comprises two phases:

- Phase 1 consists of two concert performances that are assessed separately and do not count towards the final mark of the degree.
- Phase 2 consists of an artistic research process, which involves research and artistic work that is assessed as a whole.
- Phases 1 and 2 are treated separately and only the creative work presented in phase 2 is integrated with the written work and considered as part of the research project. (Concert programmes for phase 1 are included in ADDENDUM E.)

In phase 2, I presented two lecture recitals in which I integrated the findings of the research project with my own artistic practice. Video recordings of the lecture recitals were posted online and the links to view the presentations can be found on p.125. The lecture notes for these presentations can be found in ADDENDUM F. The lecture recitals should be considered as part of the research process and contribute to the assessment of the whole project.

Abstract

The main intention of this basic qualitative study was to develop a conceptual understanding of how professional guitarists describe their musical memory, in an attempt to explain what musical memory is from a guitarist's point of view, the guitarist's experience of musical memory, and the guitarist's understanding thereof.

I personally struggled with committing sheet music to memory and wanted to investigate how professional guitarists approach this subject, which has not yet been comprehensively studied from a guitarist's perspective. The problem driving this study was that classical guitarists all use different personal and situational methods and sources to learn how to play without sheet music. The experiences of professional classical guitarists have not been considered in much detail in research, and I was interested in their respective voices and opinions. Classical guitarists do not necessarily agree on which method is best for this, and the process of musical memory does not seem to be properly understood.

Data were collected through live online interviews conducted with 12 professional concert guitarists, purposely selected for their impressive musical memory. The data were analysed through coding and by means of the qualitative data-analysis software ATLAS.ti 8.

The findings revealed that remembering for the purpose of performing without sheet music is dependent on the quality of the learning processes involved and the understanding thereof. A conceptual model was identified in which the main themes that emerged, Pre-Learning; Active Learning; Performance: preparation, alterations, and learning; Understanding; and Remembering were described and understood. The model includes a continuous, circular process which refers to the learning process post-performance. It centres on how a performer's understanding changes how the re-learning of musical compositions then takes place.

In my quest and investigation to understand musical compositions in more depth or in its entirety, for me personally that led to a stronger, more secure memory of musical compositions and confidence in a performance situation. Now after completion, I am convinced that this study can be beneficial for professional performers, music educators and students of the classical guitar. It can also contribute towards research on musical memory, as it extends the scope of the scholarly literature.

Keywords

- Basic qualitative research
- Guitarists
- Musical memory
- Committing sheet music to memory
- Playing without sheet music
- Phases of learning
- Understanding
- Remembering

Opsomming

Die doel van hierdie basiese kwalitatiewe studie was om ’n konseptuele begrip te ontwikkel van hoe professionele klassieke-kitaarspelers hulle musikale geheue beskryf, en om sodoende ’n beskrywing te kan gee van musikale geheue vanuit ’n kitaarspeler se perspektief, die kitaarspeler se ervaring van musikale geheue, en die kitaarspeler se begrip daarvan.

My persoonlike worsteling met die memorisering van musikale komposisies het my daartoe genoop om ondersoek in te stel na hoe professionele kitaarspelers dit benader, aangesien die onderwerp nog nie breedvoerig bespreek is vanuit ’n kitaarspeler se perspektief nie. Die probleem wat hierdie studie gerig het, was dat klassieke-kitaarspelers almal verskillende persoonlike en situasionele metodes en bronne gebruik om te leer om sonder bladmusiek te speel. Die ervaringe van professionele klassieke-kitaarspelers wat verband hou met musikale geheue is nog nie in veel diepte ondersoek nie, en ek was geïnteresseerd in hulle onderskeie stemme en menings. Klassieke-kitaarspelers stem nie noodwendig saam oor wat die beste metode hiervoor is nie, en dit blyk dat die proses van musikale geheue nie goed verstaan word nie.

Data is ingesamel deur lewende aanlyn onderhoude te voer met 12 professionele konsertkitaarspelers, wat doelbewus geselekteer is vir hulle indrukwekkende musikale geheue. Die data is ontleed deur middel van kodering en met behulp van ATLAS.ti 8, ’n kwalitatiewe rekenaarprogram vir die ontleding van data.

Die bevindings het onthul dat geheue vir die doel van uitvoering sonder bladmusiek afhanklik is van die gehalte van die leerprosesse wat betrokke is, en die begrip daarvan. ’n Model is geïdentifiseer waarbinne die hooftemas wat na vore gekom het, beskryf en verstaan word. Die hooftemas word beskryf as: Voor-Studie, Aktiewe-Leer; Uitvoering: Voorbereiding, aanpassings en leer; Begrip en Herroep of Onthou is beskryf en verstaan. Die model sluit ’n aanhoudende, sirkulêre proses in wat verwys na die leerproses ná-uitvoering. Dit wentel om hoe ’n uitvoerder se begrip en verstaan verander en die herleer van musikale werke dan plaasvind.

As gevolg van die ondersoek na ’n beter begrip oor musikale geheue het daartoe gelei dat kitaarspelers ’n sterker, meer stabiele musikale geheue kan ontwikkel en sodoende met meer selfvertroue kitaaruitvoerings kan aanpak. Na afhandeling van die studie is ek oortuig dat professionele kitaarspelers, musiekopvoeders en klassieke-kitaarstudente sal baatvind

hierby. Die studie kan ook bydra tot navorsing oor musikale geheue, omdat dit die bestaande literatuur oor die onderwerp aanvul.

Sleutelterme:

- Basiese kwalitatiewe navorsing
- Kitaarspelers
- Musikale geheue
- Berging van bladmusiek
- Uitvoering sonder bladmusiek
- Fases van leer
- Verstaan
- Onthou

Table of Contents

CHAPTER 1 ..... *1*
INTRODUCTION *1*
1.1 Introduction *1*
1.2 Significance of this study *8*
1.3 Purpose statement and research questions *9*
CHAPTER 2 ..... *10*
LITERATURE STUDY *10*
2.1 Analytical strategies *10*
2.1.1 Guitarists' perspectives 11
2.1.2 General research 12
2.1.3 Summary 15
2.2 Motor Repetition *15*
2.2.1 Guitarists' perspectives 15
2.2.2 General research 18
2.2.3 Summary 19
2.3 Visualisation *19*
2.3.1 Guitarists' perspectives 19
2.3.2 General research 21
2.3.3 Summary 22
2.4 Audiation or aural memory *22*
2.4.1 Guitarists' perspectives 23
2.4.2 General research 23
2.4.3 Summary 24
2.5 Other memory strategies and combinations *25*
2.5.1 Guitarists' perspectives 25
2.5.2 General research 26
2.6 Models of practicing/ memory *27*
2.7 Conclusion *32*
CHAPTER 3 ..... *33*
METHODOLOGY *33*
3.1 Research paradigm and approach 33
3.2 Participants 35
3.3 Role of the researcher 35

3.4 Data collection **36**
3.5 Data analysis and coding **38**
3.6 Ethics **39**
3.7 Standards of validation and evaluation **40**
3.8 Lecture recitals **41**
CHAPTER 4 ..... ***42***
CROSS-CASE ANALYSIS ***42***
4.1 Superordinate theme 1: Learning ***47***
4.1.1 Value of performing from memory **47**
4.1.2 Learning complications and learning to deal with memory issues **54**
4.1.3 Phases of learning **60**
4.1.3.1 Pre-learning 60
4.1.3.3 Learning from performances 79
4.1.3.4 Post-performance learning 83
4.2 Superordinate theme 2: Understanding ***86***
4.3 Superordinate theme 3: Remembering ***94***
CHAPTER 5 ..... ***98***
RESULTS DISCUSSION ***98***
5.1 Recapitulation of research, problem, purpose statement and research questions **98**
5.2. Evaluation of results **98**
5.2.1 Phases of learning **99**
5.2.1.1 Pre-learning 99
5.2.1.2 Active learning 104
5.2.1.3 Performance preparation, performance alterations and post-performance learning 113
5.2.2 Understanding **117**
5.2.3 Remembering **120**
5.2.4 Final Conclusion **123**
5.2.4.1 Recapitulation of main research question 123
5.2.4.2 Conceptual framework of research 123
5.2.4.3 Questions that still need to be answered (future research) 125
5.2.4.4 Limitations 126
5.2.4.5 What I have learned as a guitarist 126
6. SOURCES ***129***
ANNEXURES ***133***
ADDENDUM A ***133***
Biographies of participants **133**
1. Tal Hurwits (Israel/Germany) 133
2. Victor Villadangos (Argentina) 133
3. Goran Krivokapíc (Montenegro/Germany) 134
4. Pavel Steidl (Czech Republic) 135

5. Derek Gripper (South Africa) 135
6. Sergio Assad (Brazil/USA) 136
7. Eduardo Fernandez (Uruguay) 137
8. Martin Oser (Switzerland/South Africa) 138
9. Johannes Möller (Sweden/China) 139
10. Thibaut Garcia (France) 139
11. Avril Kinsey (South Africa) 140
12. Enno Voorhorst (Holland) 141

ADDENDUM B 142

Within-case analysis of interviews 142

1. Tal Hurwitz 142

2. Victor Villadangos 144

3. Goran Krivokapíc 145

4. Pavel Steidl 146

4. Derek Gripper 148

5. Sergio Assad 149

6. Eduardo Fernandez 151

7. Martin Oser 152

8. Johannes Möller 153

9. Thibaut Garcia 156

10. Avril Kinsey 158

11. Enno Voorhorst 160

ADDENDUM C 163

Participant letter: 163

ADDENDUM D 165

Interview Questions: 165

ADDENDUM E 167

Practical Programmes with Programme notes: 167

ADDENDUM F 173

Lecture-Recital notes: 173

Table of Figures:

FIGURE 1: MODEL OF PRACTISING BY SUSAN HALLAM (1997) 28
FIGURE 2: JENNIFER MISHRA'S (2005) MODEL OF HOW MUSIC IS MEMORISED FOR PERFORMANCE 30
FIGURE 3: DEVELOPMENT OF SUPERORDINATE THEMES 42
FIGURE 4: PRE-LEARNING 100
FIGURE 5: ACTIVE LEARNING 105
FIGURE 6: COMBINING METHODS 111
FIGURE 7: PERFORMANCE: PREPARATION, ALTERATIONS, AND POST-PERFORMANCE LEARNING 113
FIGURE 8: UNDERSTANDING 117
FIGURE 9: REMEMBERING 120
FIGURE 10: HOLISTIC VIEW OF MUSICAL MEMORY 124

The Musical Memory of Classical Guitarists

CHAPTER 1

INTRODUCTION

1.1 Introduction

The intention of this study is to develop a conceptual understanding of how professional guitarists describe their musical memory, thereby explaining the experiences and understandings of musical memory from a guitarist's point of view. Being a classical guitarist, I have always been intrigued and inspired by classical guitar players who perform entire recitals from memory. From my experience, some performers play everything flawlessly without the use of sheet music; or if they make mistakes or have a memory lapse, it is covered up quickly, and the audience finds it hard to recognise.

Learning to play without notated sheet music requires memorisation strategies that involve encoding and storing visual, auditory and kinaesthetic information so that it can be recalled at will for and during a performance (Ginsborg, 2017, p. 82). Therefore, memorising strategies in music are those processes that musicians use to develop muscle, kinaesthetic or motor memory, methods for recalling visual and auditory information, and methods for enhancing or establishing conceptual or analytical memory (Ginsborg, 2004, p. 124). These processes or strategies refer to all the different known methods of learning to play without sheet music, such as block memorisation, overlap memorisation, backwards memorisation and sight memorisation or visualisation (Glise, 1997, p. 90). Other general known ways of memorising also include memorising in small sections or phrases, memorising at very slow tempos, beginning-to-end repetition, and working with mnemonic reference points, as suggested by Hubert Käppel (2016, p. 233).

In constructing musical memory[1], storage and recall can also affect the outcome of musical memory, in addition to encoding, such as the emotions or feelings of the performer or the

[1] In this study musical memory is understood and will be described as a holistic process that begins from the moment when a music composition is heard for the first time, studied, and then committed to memory until it is performed, or recorded, and kept active after performance. to memory until it is performed. Although musicians typically call the process of learning to play without the sheet music "memorisation", this process will be labelled "playing without sheet music" in this study, to avoid

physical environment in which the recall takes place (Mishra, 2010, p. 18). Ginsborg (2017, p. 89) mentions that performers must be flexible to the challenges of the audience, hall, and other aspects of each performance environment. Even considering these factors, when performing from memory, a musical composition is still being adapted and changed by the performer during and after a performance, which suggests that consolidating musical memory continues through being developed and adapted.

Glise suggests that when classical guitarists perform without sheet music, they intend to recall the sound, the fingering and position of the hands and body; or in some cases they may try to envision the actual page of music (Glise, 1997, p. 97). Although this is a good summary of how many classical guitarists understand their musical memory, Glise does not refer here to the emotional state or the performer's environment; thus, a holistic view of musical memory is not considered. It is vital for classical guitarists to understand the complete process of acquiring, consolidating, and sustaining musical memory and systematically investigating the actual process, rather than relying on conventional descriptions of memorisation, because they may be misleading (Mishra, 2010, p. 17).

Problem statements

The problem driving this study is related to issues of performance.

1. In performing works without sheet music and observing the challenges my students face, I have experienced many failures, such as memory lapses, fear of performing without sheet music, and a lack of confidence. I never learned how to commit sheet music to memory consistently, and I primarily relied on performing musical compositions from muscle memory. Sometimes I used block or overlap methods, as suggested by Anthony Glise (1997, pp. 90–97), with the result that some sections were more securely memorised than others because I would play one bar or phrase more often than other sections. The focus was concentrated on committing the sheet music to memory rather than on developing musical memory as a whole. As a result, I wanted to understand a musical composition in depth or in its entirety, which led to a more secure memory of a particular musical composition. Therefore, this motivated me to pursue this study. Today, many performers rely on technology such as hands-free page-turning devices, and do not need to play without sheet music anymore. The fact

confusion with the broader definition of musical memory proposed here. "Musical memory" will be used to refer to a broader process of storage and recall that spans the entire learning process.

that many professional performers refuse to perform without sheet music, however, is another reason that motivated this study.

2. A further aspect informing this study is the lack of sufficient research and the deficiencies and gaps in the literature regarding musical memory for classical guitarists. Musgrove Stetson (2017, p. 17) also points out that there is a lack of research in these fields; that there are no studies on how to play without sheet music exclusively for the classical guitarist; and that the subject has been mentioned only briefly in guitar journals and some other publications. Classical guitarists all use different methods and popular sources, such as online articles, blogs, or online videos to learn how to play without sheet music. It seemed that many professional performers learned to commit sheet music to memory through methods passed down from generation to generation by word of mouth; they learned from their teachers; and they learned through trial and error. The result is that all performers learn in different ways, and some methods are more efficient and effective than others. Classical guitarists do not necessarily agree on which method is best and the process of musical memory does not seem to be properly understood.

3. The experiences of professional classical guitarists related to musical memory in research has not been considered in much detail and as the researcher I am interested in their voice and respective opinions.

Literature relating to the problem

Jennifer Mishra, one of the foremost scholars on musical memory, compiled and analysed 185 articles on the pedagogy of memory in music, of which the earliest dates back to 1872 (Mishra, 2010). In this compilation, Mishra observed that about 60% of the articles focused on keyboard instruments (piano and organ), 13% on other instruments and only 11% on strings and guitar combined. Many articles, however, were instrument non-specific (16%), which emphasises that committing musical compositions to memory is a process rather than a specific method. The purpose of her research was to identify trends in pedagogical writing on committing music to memory to determine whether thinking on this topic and techniques has changed during the last 100 years (Mishra, 2010, p. 5). The pedagogical literature she studied, is a rich source of prescriptions for musical memorisation. Very seldom have new methods been devised or adopted, and many current ideas were also presented in the past (Mishra, 2010, p. 17). Mishra points out that the repetition of ideas in the pedagogical literature implies

that all agree about the best way to learn to perform without sheet music without further study. However, in spite of access to all this knowledge and available research, musicians continue to struggle to play without sheet music, and memory continues to fail inexplicably in performance (Mishra, 2010, p. 17).

It is my experience that the nature of how a musician's memory is developed, is holistic and includes all aspects of music, such as remembering or recalling coordinated movement, musical structure, sound, dynamics, and tone colour. Visual aspects or images involve, among others, recalling what the left and right hands play on an instrument and what the sheet music physically looks like. Other elements include the emotional ideas or feelings and stylistic interpretations associated with seeing the sheet music in one's mind. In other words, the musician's memory can be described as a holistic musical memory. Mishra (2010) observed that there were only a few isolated attempts towards the broad psychological understanding of human memory in musical memorisation. For this reason, and also due to the scope of the intended research, this study will not review the literature or investigate the research conducted within memory psychology. Only the musical literature and experience of guitarists will be explored and described.

Research on new methods of playing without sheet music frequently focuses on aspects of mental imaging, which refers to the visualisation of music and mapping. Many scholars address these topics in their research, for example:

- *Mapping music* (Shockley, 2001) can be described as an effective strategy for learning and memorising music more efficiently and effectively: "The unique ingredient is diagramming the main features of a musical composition and using this diagram as a 'map' for learning the music" (Shockley, 2001). Thus, *mapping* refers to diagramming the melody, harmony, or other elements of work on a piece of paper; and this "map" is then used "to improvise on the music and build your mental blueprint of the sheet music" (Shockley, 2001). Mapping is also being done by studying a score away from the instrument.

- *Musical imagery* (Godøy & Jørgensen, 2001) or *auditory imagery* from musical notation (Brodsky et al., 2003) has traditionally been described as the deliberate use of imagination by musicians; and as the ability to imagine sounds even when no audible sounds are present. Musicians' use of imagery involves sounds, physical movements applied when performing, and the emotions a musician wishes to express and convey in performance (Hargreaves, Miell, & MacDonald, 2012). The term

"musical imagery" is defined as our mental capacity for imagining musical sound in the absence of a directly audible sound. By employing this capacity, we can therefore recall or create new sound through our "inner ear" (Godøy & Jørgensen, 2001).

- *Mental practice* (Lim & Lippman, 1991; Theiler & Lippman, 1995b) can be described as practising without a musical instrument, in a process where musicians visualise the notes to be played. Mental practice can be done with or without sheet music.

My study will add a professional guitarist perspective to the above-mentioned studies on mental imaging and practicing and it will explore how the process of visualisation or imaging for a guitar differs from the process for other instruments.

Roger Chaffin, a cognitive psychologist, conducted an in-depth research project on the process of learning a composition to the point of playing it without sheet music (Chaffin & Imreh, 2002). The goal of this study was to ascertain whether the principles of expert memory that were developed through the study of other kinds of expertise would apply to the musical memory of a concert pianist (Chaffin & Imreh, 2002, p. 248). Gabriela Imreh videotaped her practise sessions as she learned the third movement, Presto, of the Italian Concerto for a CD of works by J. S. Bach (Imreh, 1996). One of Chaffin's findings in this project was that conceptual memory is essential in musical performance (Chaffin & Imreh, 2002, p. xii). One of the main challenges for Imreh was integrating "hands and head" (p. xiii). She was playing the notes accurately, but her mind (conceptual memory) needed the practice to keep up with the rapid pace of the performance. They discovered that the solution was using performance cues or features of the music selected for attention during a performance, such as tricky fingering or specific critical phrasing. Chaffin found that because the pianist used an organised retrieval method and practised the use of retrieval cues, the principles of conceptual and expert memory – which were developed to be applied for memory in chess games and digit strings – also apply to concert pianists (Chaffin & Imreh, 2002, p. xv).

Although the use of conceptual memory and memory cues are essential for performance on any instrument, my study will not involve a case study of professional guitarists where their practice sessions will be observed, for example, to determine whether their reported method to commit music to memory corresponds to their actual practice. Instead, I used two practical lecture recitals in order to monitor the processes of musical memory practically as I apply it myself.

Performing without sheet music can be a very daunting prospect. Memory failure, however momentary, can have catastrophic consequences for a performer's self-confidence. The musician does not need to have experienced such failure to be frightened of forgetting, which may well contribute to more generalised performance anxiety (Ginsborg, 2004, p. 123). Some major challenges musicians need to deal with during their performance career include, "coping with the consequences of early specialisation, social isolation, practice volume, identity foreclosure, teacher relationship, burnout, injury, psychological pressure, and perfectionism" (Pecen *et al.*, 2018). These conditions can have a huge impact on their performance (Pecen *et al.*, 2018). Gembris *et al.* (2018) also refer to orchestral musicians' struggle with musculoskeletal problems, hearing disorders and stage fright. There is enough evidence to show that performing music is stressful – even when sheet music is used – considering the adverse effects of these psychological challenges, health conditions and performance anxiety. The stress level is raised even further when the musician attempts to perform without sheet music.

My study will explore methods to gain confidence and will show that being confident in a performance reduces performance anxiety. For example, the more a performer understands and internalises a musical composition, the more confident that performer will be in a performance situation. This study will also show that confidence comes from the successful repetition of concert programmes, and that it is also important to learn how to deal with memory failure in performance and to be prepared for any given performance scenario.

Most pedagogical literature specifically written for classical guitarists has focused on traditional conventions of learning to play without sheet music. This literature describes effective methods to learn to perform works without sheet music. Book authors who devoted entire chapters, columns, or sections to these approaches, include Glise (1997), Provost (1992), Isbin (1999), and Käppel (2016), to name a few. These pedagogical books rely mainly on the authors' personal experiences and do not necessarily reflect the results of systematic research. Hubbert Käppel suggests combining different memory training methods (2016, p. 234) in order to combine visual, cognitive and muscle memory. He also refers to extremely slow practice as a helpful aid for learning to play without sheet music; and to mental training that entails practising and studying a musical composition with or without the sheet music but without an instrument, to visualise the notes played on one's instrument. Other pedagogical sources, which are not included in this research, include a wide variety of short online and classical guitar magazine articles, podcast interviews with well-known performers, and individual discussions in master classes and educational settings. This research mainly focused on scholarly articles and publications regarding the topic.

My research will complement this knowledge base of pedagogical literature in the field of classical guitar, but also in the field of musical memory in general. The videos of the two lecture recitals enrich this study and aim to reach a wider audience through popular online video platforms.

A recent study closely related to this research is Federico Musgrove Stetson's doctoral essay titled "Music Memorization for the Classical Guitarist" (2017). His purpose was to create an index of all the techniques for playing without sheet music used by classical guitarists and to identify the most successful ones to create an efficient music memorisation method for classical guitarists (Musgrove Stetson, 2017, p. 8). He discusses all the techniques for playing without sheet music used by other instrumentalists (mainly pianists), and the work of academic scholars on musical memory. He also focuses on visualisation and mental practice in general (Musgrove Stetson, 2017, pp. 9–17), conducts interviews with well-known classical guitarists on musical memory and proposes a method for players to approach performing without sheet music.

My study will relate to Musgrove Stetson's work and will add to it, but it will also differ from it in various ways. Firstly, I interviewed 12 different classical guitar performers who are specifically known for their impressive musical memory: they included European, South American, and South African concert guitarists. Musgrove Stetson interviewed fewer performers and they were mostly USA based; and although many of them were from Europe, they resided in the USA. Secondly, my interviews were conducted and approached differently in terms of the content of the interview questions and analysis of the responses. My focus and interview questions focused more on the nature and understanding of musical memory as a holistic concept, rather than on the skills and processes of learning to play without sheet music. *Holistic conceptualisation* refers to all the technical, practical, and psychological factors integrated into the process and practice of musical memory. Musical memory will therefore be described as a broader process of storage and recall that spans the entire learning process, for example:

- Hearing a musical composition for the first time.
- Beginning to study a new musical composition.
- Studying and learning a musical composition.
- Committing a musical composition to memory.
- Processes of memory during learning.
- Technical aspects of memory.

- Psychological aspects of memory.
- Practical aspects of memory during a performance.
- Environmental aspects of memory.
- Aspects of memory after a performance.

All performers differ and play different kinds of musical repertoire; therefore, the general conclusion is that there cannot be only one learning method to play without sheet music that works for everyone. My research question is also different, and I hope that my research findings will point towards a clear and more approachable way to understand musical memory.

1.2 Significance of this study

This study will be of interest to guitarists playing in a competition or examination, where students are always encouraged to perform without sheet music. Most participants in international guitar competitions must play all works from memory, except for some set works that are given a short period before the competition. I am confident that a clear description of musical memory will lead to a better knowledge and understanding of the process, which can influence the teaching of others more effectively.

This study can be beneficial for professional performers, music educators and students of the classical guitar. It will also be useful for research on musical memory, as it extends the scope of the scholarly literature. I hope to achieve an in-depth understanding of musical memory that can fill a void in classical guitar literature or establish a new line of thinking. This study could contribute towards creating an ideal resource for understanding musical memory.

I also want to promote heightened awareness among classical guitar players to understand that playing works without sheet music enhances performance. This can be a good, fearless, and viable practice. This heightened awareness might generate insights that could lead to improvements in practice through exploring, describing, and explaining a clear and more approachable way to understand musical memory; in turn, this will hopefully lead to more successful musical performances.

1.3 Purpose statement and research questions

Purpose statement

The purpose of this basic qualitative study is to develop a conceptual understanding and description of the ways that 12 professional classical guitarists describe and explain their musical memory.

Musical memory is understood as a broader process of storage and recall that spans the entire learning process before, during and after a performance. Musical memory does not only refer to the process of learning a musical composition to be performed by memory, but also to the stages prior and after the performance.

A secondary purpose as to apply the findings of the research project to my own memory process, and I reflected on this process in two lecture recitals after the conclusion of the research project.

Research question

What conceptual framework can be developed from the ways that 12 professional guitarists understand and describe their musical memory?

Sub-questions

Creswell (2013) explains that procedural sub-questions may be posed for each chapter to underline the emerging themes, display the context of the research, and to reveal what caused the phenomenon of interest. As such, I pose procedural sub-questions to guide the various parts of the study.

a. How can the literature on musical memory that was written by classical guitarists be understood, compared, and aligned with regard to other existing literature on the topic?
b. How do 12 professional classical guitarists describe and understand musical memory?
c. What would be an appropriate conceptualisation of the processes that classical guitarists describe with regard to developing musical memory based on the existing literature and their descriptions of musical memory as a phenomenon?
d. How can I apply the theory of seeing musical memory holistically to my own memory process?

CHAPTER 2

LITERATURE STUDY

Chapter 1 served as introduction to this study, discussing the significance of the study and formulating the purpose statement and research question. Chapter 2 will discuss relevant literature in the form of a scoping review. Each section of this review is structured and compiled based on how classical guitar pedagogical authors and well-known performers view and approach each memory strategy from their own experiences (thus, from their guitarist perspectives). This is followed by a discussion and comparison of research conducted by respected non-guitarist researchers in musical memory (general research). The following procedural sub-question is addressed in this chapter:

- How can the literature on musical memory that was written by classical guitarists be understood, compared, and aligned with regard to other existing literature on the topic?

Most pedagogical literature explicitly written for classical guitarists has focused on traditional learning conventions to play without sheet music. Traditional learning conventions can be understood as different strategies, such as analytical strategies, motor repetition, visualisation, audiation, and other methods or approaches. These processes or strategies refer to all the different known learning methods to play without sheet music. The rest of the chapter is devoted to discussing these strategies sequentially. At the end of the discussion, I will introduce two models that have been developed by researchers: one of the musical practicing processes and another of the memorisation process. These will be used to integrate the discussion of the various strategies or processes that guitarists describe.

2.1 Analytical strategies

Analytical or intellectual memory is required for a thorough understanding of a musical composition, which mostly entails theoretical aspects. Analytical learning also involves remembering historical elements, such as musical periods and stylistic information, the story behind a musical composition, the expressive intentions of a composer, and the cultural context of a composition.

2.1.1 Guitarists' perspectives

Most classical guitar pedagogical authors first discuss analytical strategies as the preparation work to commit a musical composition to memory. Provost (1992) suggests that "to commit a musical composition to memory, guitarists need to know the different sections of the composition, right-hand fingerings, left-hand fingerings, harmony, dynamics, and sections as isolated units" (Musgrove Stetson, 2017). Analytical strategies refer to formal sheet music analysis and compositional and structural awareness. Classical guitar pedagogical authors who discuss analytical thinking include, for example, Provost (1992), Isbin (1999), Kopfstein-Penk (1992), and Bonell (2012).

Carlos Bonell describes analytical memory as an "association phase", as it entails "finding relations, patterns, and harmonic connections between the notes" (Bonell, 2012). Bonell describes the "association phase" as the third and final phase, and not the first phase as most of the other authors do. Rational and general perspectives are stored in one's cognitive memory – this includes formal and harmonic analyses, harmonic progressions – chord or chord symbols for the guitarist, intervals, and individual notes. Other elements are, for instance, large-size forms such as sonata, the construction of fugues and fugue-oriented passages, meter changes, the number of measures or dynamic markings. According to Käppel, cognitive memory "can be used to support your motoric memory" (Käppel, 2016, p. 233). It is therefore beneficial first to analyse a musical composition structurally or harmonically to commit it to memory.

Many professional guitarists agree that musicians must understand the compositional and harmonic structure before committing them to memory (Musgrove Stetson, 2017). For example, Pablo Sáinz Villegas begins by analysing the structure of a musical composition to understand the different parts and incorporate the musical idea he wants to convey through his interpretation (Musgrove Stetson, 2017, p. 33).

Musgrove Stetson observes that through analysis, a network of associations is created that will increase the capacity of musical memory. The objective of analysis is not for a guitarist to actively think about the structure of the musical composition during a performance but to create the associations and "mind maps" needed for faster learning and a deeper understanding of a musical composition. Musgrove Stetson suggests dividing the analysis phase into two phases, namely score analysis, which refers to traditional harmonic or Schenkerian analysis and motor analyses. He describes that motor analyses consists of

analysing the music and deciding what fingering is most appropriate for each section. This is a less formal analysis which refers to logical fingering choices and anchors for key sections or phrases.

2.1.2 General research

A theme explored in Mishra's pedagogical literature that resonates with current psychological thinking, is the use of cognitive analysis to aid memorisation. Mishra (2010) defines analytical memory as the "cognitive interpretation of patterns in a musical work" (Mishra, 2010, p. 12). Mishra has found that 75 percent of the reviewed articles mention practice to help develop analytical memory. Mishra observed that there were only a few isolated attempts to understand human memory in musical memorisation. She points out that in psychology, a more "concept-driven" perception of memory has supplanted the sensory memories (aural, visual, and kinaesthetic). This idea advocates an analytical or conceptual approach to musical memory. She also indicates that analytical memory for memorisation may be much more informal and not necessarily a formal theoretical analysis.

Musgrove Stetson is of the opinion that all musicians must understand the compositional and harmonic structure of a musical composition, while Rebecca Shockley describes a system called "mapping" (Shockley 2001), which involves notating music by using images and where memorisation is based on the awareness of musical patterns and structure. To enhance analytical thinking, Shockley suggests studying the score away from the instrument. Dakan and Dvorak (2014) identified numerous similar memory techniques and phases, which they described in detail. These techniques can be applied to all instruments. The analytical memory strategy suggests analysing patterns, form, harmony, melody, and musical detail.

The cognitive scientist Roger Chaffin's research also shows a cognitive structure that musicians create while practising with the intention to perform their task from memory, Chaffin and Imreh (1997, p.315). This emphasises the importance and refers to an informal analytical approach known as a "practice features and performance cues memory retrieval scheme". Chaffin and Imreh (1997, p. 315) conclude that "pianistic memory appears to be based on the use of a highly practised retrieval scheme which permits rapid retrieval of information from long-term memory". Some authors also refer to these memory cues and "retrieval schemes" as *mapping* or as using mind maps, similar to Mishra's (2010) description of an analytical or conceptual approach to musical memory.

Chaffin explored practice features and performance cues in a series of longitudinal case studies (Chaffin & Imreh, 2002). He describes practise *features* as those features in the musical score to which the musician attends whilst practising; and *performance cues* as those features that are "consciously registered" while performing (Ginsborg, 2017, p. 84). In each study, similar memory phases are used, although some refinements have been added. For the analysis of practice behaviour, audio and video recording has been used. Practice features are described as:

- Structural (section and phrase boundaries, also emotional and narrative descriptions).
- Basic (fingering, pedalling, breathing, according to the instrument or voice).
- Interpretive (the musician's perception of the composer's intention, e.g., tempo and dynamics).
- Expressive (how the musician's interpretation is communicated to the audience, e.g., yearnful or joyful).

A process of "retrospective memory" is set in place by a performer, taking note after each performance of those features used as performance cues, and of any other thought or emotions they may have had whilst performing as well. A study of practice behaviours can then be conducted by analysing these practise features and performance cues. Chaffin conducted a few of these studies, including working with pianist Gabriela Imreh, cellist Tânia Lisboa and pianist Cristina Capparelli Gerling, among others.

The authors included in Mishra's (2010) study also encouraged musicians to add mental landmarks or memory cues in a musical composition which would serve as backup starting points if memory failed in performance. These points refer to the beginning of a new phrase or section. It is also suggested that when memory fails, the performer should begin at the next phrase or reference point and not return to the previous one – in doing so, a performer eliminates the risk of having the same memory failure at a particular spot.

Working with Chaffin and others, Ginsborg (2017) further investigated the development of shared performance cues in a series of multiple case studies. Performance cues were once understood as:

> a subset of practice features retained as landmarks for recall; the remainder were thought to be discarded as no longer valid or meaningful or assimilated during the process of automatisation to free the musician to give an expressive, communicative performance (Ginsborg, 2017, p. 85).

Practice features can resurface in different performances. A musician creates new insights whilst performing, which enhances spontaneity; while the environmental context of a different concert hall and the response of the audience are also considered and can also serve as memory retrieval cues.

Ginsborg (2017) furthermore shows that performance cues are essential for determining long-term memory recall. She recorded all her practise sessions and rehearsals. After a public performance, she deployed retrospective memory by notating phrases, sections, and performance cues in the score. Over five years, she wrote out the vocal part from memory six times. Her memory recall was better at locations where she marked feelings and emotions and worse at cues where the pronunciation of words occurred. She explains that “the purpose of recall may be as influential on strategy and subsequent performance as the performer’s original conception of the music to be learned and memorised” (Ginsborg, 2017, p. 86). Ginsborg shows that musical genre and freedom of interpretation affect memory and recall. She also mentions that the demands of each instrument must be considered and that, for example, different body movements and gestures suggest different performance cues for memory.

Ginsborg (2017, p. 81) emphasised the difficulty of separating analytical, kinaesthetic, visual and auditory approaches: “None can be implemented without one or both of the others, and without drawing on representations or ‘schemas’ stored in long-term memory.” She further explains that to visualise or imagine the sound of the music away from the instrument (auditory approach), the score or sheet music must be a meaningful reference to the performer, representing sounds that can be played and heard. To achieve this purposeful meaning, an analysis or “encoding” of the music is firstly required. Ginsborg also refers to experienced musicians who rely on a cognitive analysis. She emphasises that the awareness of compositional structure enables the musician to divide the music into short sections to be learned and memorised (Ginsborg, 2017, p. 83). She also describes it as creating a “framework for recall”, as a musician’s perspectives on compositional structure of the works they are memorising do not necessarily have to reflect those of a composer’s or musicologist’s analysis or identification of musical features. According to Ginsborg (2017, p. 80), the views of Leschetizky, Curtis and Hughes confirmed that “analytic pre-study” Rubin-Rabson (1937, p. 1), improved recall following memorisation, as did learning the musical composition in small sections and mental practice.

2.1.3 Summary

The perspective of most guitarists is that the score and left and right-hand fingering of work must first be set in place, analysed, and studied before the next phase of motor repetition begins. Most authors report that analysis is essential, but less emphasis is placed on how a guitarist should approach analytical strategies. The range of options given in music studies in general for musical analysis is comprehensive, but in guitar literature there is not enough division between formal and informal analysis, and some questions were raised, for example, what type of analysis is considered necessary to commit a work to memory?

General research has shown that analytical strategies for memory consists mainly of an informal approach to analysis. The optimal approach for musicians would be to create an awareness of the structure, phrases, mental landmarks, performance features and cues of a composition. Therefore, a complete formal theoretical analysis is unnecessary for the goal and purpose of committing work to memory. Instead, an informal analysis which concerns relations, connections, and patterns is appropriate and often employed. Such an analysis could also be made with the instrument in hand.

2.2 Motor Repetition

Learning an instrument, musical composition or committing work to memory is in many cases dependent on and influenced by repetitive movements. Kinaesthetic memory, also known as *motor* or *muscle memory*, involves physical movement and the sensations related to motion. For example, the tactile sensation of touching an instrument, which may not involve actual playing, is considered an aspect of motor memory. It also includes the proprioceptive awareness; “proprioception is the unconscious awareness of body position. It tells us about the position of our body parts, their relation to each other, and their relation to other people and objects”.[2]

2.2.1 Guitarists’ perspectives

Motor repetition is one of the most common and widely known methods or strategies of committing music to memory. Muscle memory is perhaps the most critical aspect of playing from memory, but it is also the most complicated topic in the literature of musical memory and

[2] https://occupationaltherapyot.com/sensory-integration-proprioceptive-activities/

has received the most criticism throughout history. For example, Pablo Sainz Villegas states that “Relying on muscle memory is very dangerous, and is, in fact, the cause of most memory slips” (Musgrove Stetson, 2017, p. 80). Muscle memory in this case refers to where a musical composition is committed to memory through repetition only, without awareness of the notes or structure of a musical composition. In general, the biggest problem with this approach is that when musicians have a memory lapse, they might not be able to recover on the spot, because there might be a lack of notational and analytical understanding of a musical composition.

Motor repetition is not necessarily a less effective, wrong method or phase, but it must be used mindfully, together with studying the structure and notes of the music. Motor repetition strategies can be described as beginning-to-end repetition, block memorisation, overlap memorisation and backwards memorisation. This is usually done by working in small chunks or sections and repeating a phrase or section over and over. Almost every classical guitar method book or author discusses motor repetition, such as Kopfstein-Penk (1992), Glise (1997), Isbin (1999), Bonell (2012) and Käppel (2016). Bonell (2012) describes his first phase of memorisation as “reflex”, where *reflex* refers to muscle memory, which happens automatically after motor repetition.

Glise (1997) discusses block, overlap, and backward memorisation. Block memorisation is when a student looks away from the sheet music and plays as far as they can, confident and sure of all the correct fingering and dynamics. Before memorisation occurs, a student must read the music well. The written page must not be left too soon, otherwise many errors creep into a musical composition (Glise, 1997, p. 89). Glise suggests that one of these methods should be applied and a student must find the best method for himself. These same methods can also be used to learn a new musical composition.

- A performer must play from memory until he can play no further.
- Address the problem spot by consulting the music.
- Play over the spot, repeating several times.
- Continue from slightly before the problem spot.

Glise suggests that it saves time not to go back to the beginning of the musical composition. However, this method can be problematic in the sense that some sections could be more securely memorised than others and Glise therefore identified the overlap method as the most effective method for memorisation or learning a new musical composition:

- A performer starts by repeating a bar or a phrase (which is ideal from a musical standpoint) until it is committed to memory.
- Do the same with the second measure or phrase.
- Then the first and second measure or phrase together.
- When the third measure or phrase is securely memorised, the performer does the same with the second and third until the end.

Backwards memorisation follows a similar pattern as the overlap method, but begins with the last measure or phrase first, then work backwards. This method eliminates the threat of transition problems, and no time is wasted by playing over areas that have already been memorised. The advantage of this method is that the further a performer plays in a musical composition, the more secure and familiar he will be with the sheet music. Backwards memorisation has proven to be a very successful method, especially with students who have difficulty (Glise, 1997, p. 91). Glise claims that backwards memorisation combined with the overlap method is by far the most productive approach when a great deal of music must be memorised in a short period.

Sheer repetition combined with visualisation is described by Denis Azabagic as “thinking photographically” (Musgrove Stetson, 2017, p. 59). Azabagic teaches his students that by “just repeating, repeating, practising … things simply sink in”. He mentions that some sections take longer than others and might require the performer to pay closer attention to them and more time working with the score. However, Azabagic also mentions that motor repetition is not sufficient alone: “Maybe more than memorising the music was maybe a process of reinforcing the fact that what I had memorised and tried to make sure of what I have”. In other words, Azabagic first uses motor repetition and then a method such as visualisation to reinforce what he has memorised. His statement can also imply that reinforcement of motor repetition is a phase that needs more emphasis. Jason Vieaux’s also points out that there is no substitute for repetition when it comes to the initial “goals of clarity, comfort, and consistency (‘the 3 Cs’) if you want precision first and right away, which one should”. (Musgrove Stetson, 2017, p. 87). Vieaux begins a new musical composition by working with small music segments; after this, he combines them into phrases or “larger bits of music, with a great volume of repetitions”. From this approach, we can see that Vieaux does not engage in the beginning-to-end repetition straight away and that it is more beneficial to work in small sections, as Glise (1997) also suggested. Pablo Sáinz Villegas also describes motor repetition as the second phase of memorisation. Although he is aware of the dangers of muscle memory, he uses it as a reinforcement to his advantage. He notes that “this stage involves a high amount of repetition to engage and reinforce muscle memory” (Musgrove Stetson, 2017, p. 34). Like Azabagic, he

reinforces his muscle memory by engaging in the third and next phase of his method, visualisation. Musgrove Stetson concludes that “it is imperative to understand that the muscle repetition phase refers to a very focused practice session where both hands are completely analysed and controlled, leaving no movements to chance or intuition” (Musgrove Stetson, 2017, p. 42). Musgrove Stetson is of the opinion that performers should strive to perfect repetition by playing a section perfectly several times because even mistakes are registered by repetition.

Left- and right-hand isolation for guitarists, as described by Musgrove Stetson, is as helpful for guitarists as for keyboard players for reinforcing memory. On the left hand, performers should focus on small and efficient movements. The right hand should know what strings to pluck, and the guitarist must have a clear picture of how many notes are played on a string (Musgrove Stetson, 2017, p. 43).

2.2.2 General research

The reliance on kinaesthetic memory formed due to rote repetition is particularly unreliable because rote or motor repetition “produces memory for ‘associative chains’ such that the end of one passage cues recall for the beginning of the next, rather than ‘content-addressable’ memory, which is more reliable” (Ginsborg, 2017, p. 82). The positive result of “content-addressable” memory is that when a performer experiences a memory lapse, he does not go back to the beginning of the musical composition, section, or phrase, but continues and starts at any location of the musical composition at will. Ginsborg encourages and supports the simultaneous deployment of all memory strategies available to musicians and observes that the “formation of mental and physically embodied representations via analytical and kinesthetic methods provides invaluable frameworks for recall” (Ginsborg, 2017, p. 83). Here it is emphasised again that motor repetition should always be used in combination with other methods.

Palmer and Meyer compared conceptual and motor learning on musical performances between adult and child pianists and explain that experienced musicians rely more on conceptual melodic relations (analytical learning) and children and novice musicians on motor learning and body and hand movements (Palmer & Meyer, 2000). Eckart Altenmüller agrees that performing music requires the “integration of multimodal sensory and motor information” (Altenmüller, 2012). He also emphasises that sensory-motor skills are usually automated by

many repetitions, whereas aural skills, which refer to audiation, are refined through a broad spectrum of listening experiences (this will be discussed later).

2.2.3 Summary

Guitarists' muscle memory obtained by motor repetition is a crucial phase of the memory process because it is impossible to perform a musical composition by heart without the use of muscle memory. The muscle memory cannot judge whether the information is good or bad, correct, or wrong, however, and it is therefore emphasised that performers should not register mistakes or wrong fingerings by repetition. It is also very difficult to reverse incorrect muscle memory.

Motoric memory, gained by motor repetition, functions unconsciously. Through repeated phrases, measures, difficult passages or other elements, sequences of motion become automated. These sequences can be recalled without conscious control, assuming that initial practising and repeating occurred when one was in an attentive and conscious state of mind. The motoric memory switches on immediately when a performer encounters fast and tricky passages. Käppel warns that the motoric memory is quite vulnerable during slower passages and should be supplemented by one or more memory areas (Käppel, 2016, p. 233). The answer to building good muscle memory is to focus on the quality of practice. This can be reinforced by good informal analysis of the score and fingerings, slow practice and working in small sections. Most authors agree that integrating different memory strategies is critical.

2.3 Visualisation

Mental training is something that athletes in professional sports training have employed for quite some time, because in some sports, excessive training is impossible and can even be harmful (Käppel, 2016, p. 235). Therefore, mental training in music entails practising and studying musical compositions with or without the sheet music but without an instrument. Mental training often involves visualising the notes played on one's instrument.

2.3.1 Guitarists' perspectives

Mental practice is the ability to see and hear the musical composition away from the guitar, Provost (1989) emphasises the importance of mental practice and suggests that it is one of

the most important techniques that can be used and that it should be part of daily practice (Musgrove Stetson, 2017). According to Kopstein-Penk, visualisation on a guitar involves visualising what the fingers and score look like while performing (Musgrove Stetson, 2017) or imagining the hand movements as seen by the performer and not a visual image of the score (Isbin, 1999). Isbin explains that one must be able to see each finger placed on the frets mentally, and she argues that the last image is sent to the brain before a sound is produced.

Glise (1997) calls visualisation "sight memorisation" and explains that the music must be studied away from the instrument, while imagining the position, fingerings, and sound. He says it amounts to simply sitting down with the sheet music and memorising it as one would a poem or a theatre script (Glise, 1997, p. 91). The result is that a performer will hear what he will play before it is played. Glise's approach of imagining the sound can also be considered a method of audiation, as will be discussed later. Denis Azabagic acknowledges that he paid more attention to memorisation during his participation in competitions than for his concerts (Musgrove Stetson, 2017). To thoroughly memorise a musical composition, he engages in visualisation. Like Isbin's, his visualisation technique consists of mental imagery of his hand movements, especially the left hand. (Azabagic, 2003, p. 11). Azabagic hints that visualisation is the most efficient way to memorise music. He argues that after motor repetition, the fingers become the leaders, and the brain takes a secondary role, whereas it should be the opposite: the brain should have the lead, and the fingers should follow. Azabagic uses visualisation to strengthen his muscle memory and emphasises that "this is what I do when I want to make sure that I memorised the music well" (Musgrove Stetson, 2017).

Most of Musgrove Stetson's interviewees identify visualisation as an effective method that they apply regularly. One of Stetson's participants, Meng Su, engages in visualisation while listening to recordings of herself (Musgrove Stetson, 2017, p. 30). Some of the conclusions in Musgrove Stetson's research were that the more a performer engages in visualisation, the easier it becomes. Irina Kulikova's experience in visualisation has allowed her to learn new music much faster compared to physical practice alone (Musgrove Stetson, 2017, p. 63). Another of his participants, Pablo Sáinz Villegas, identified a time of day that is optimal for visualisation – right before going to bed at night (Musgrove Stetson, 2017, p. 34). He also prefers to visualise in the dark, with all the lights switched off. Some of the other participants mention that they visualise their music while doing other activities, such as cooking or waiting at airports.

Hubert Käppel describes the visual memory as the written music and all the performer's details and the sequence of movements in the left hand on the fingerboard (Käppel, 2016, p. 234).

Käppel argues that entire movements and musical compositions, including all the sequences of movements for both hands, can be played through in one's mind. For this, musical and technical preparation is needed. This preparation occurs in the analytical and repetition phases. Käppel describes reading a score without one's instrument as follows:

- While reading the score, go through the movements of both hands and fingerings in your mind.
- The tempo should be slower than the actual tempo.
- Play through difficult passages several times (mental repetition).

The advantage of mental practice is that one's hands can rest, although this type of practice demands a higher concentration level. In contrast to athletes, instrumentalists have the added element of sound, which has to be imagined in the inner ear (Käppel, 2016, p. 235). This is easier to realise with a piano that has only a single key for each note. The range on a guitar is much smaller (three and a half octaves): there are three to five options for playing the same note on different strings, offering varying tone colours. Therefore, a guitarist should also visualise the tonal development and how it should sound when it is performed. For these reasons, Käppel argues that the "Leimer-Gieseking" method from the 1930s, which described the mental rehearsing of a composition without the instrument, is unsuitable for guitarists. Käppel prescribes that "in mind preparation" should occur at the end of the study phase of a musical composition. It should be strictly avoided shortly before a performance, especially on the day of a performance, to prevent minor memory lapses.

2.3.2 General research

Musical pedagogues and authors began advocating kinaesthetic visualisation in the 1940s (Mishra, 2010). This refers to visualising one's instrument with one's eyes closed and mentally playing a piece. Mishra reviewed some of the articles that warn that "over-reliance" on kinaesthetic memory can result in memory instability. Lim and Lippman concluded that physical practice with an instrument lead to the best performance. When practising mentally, subjects were encouraged to use visual, acoustic, and kinaesthetic imagery. Theiler and Lippman (1995) compared the effectiveness of various mental practise regimens in music performance. For guitarists, "mental practise and continuous physical practise also produced more remarkable results. It was concluded that mental practice might facilitate cognitive coding and help to create optimal levels of attentional focus and arousal" (Theiler & Lippman,

1995). According to these sources, mental practice and physical practice seem to be more or less equally effective.

A few of Mishra's (2010) authors believed that visual memory is an inborn skill, such as photographic memory. Most authors, however, argued that visual memory could be learned and developed, at least for portions of a musical composition, and deployed mentally by visualising the score's notation. The visualisation of hand patterns for pianists, guitarists and percussionists was also encouraged (Mishra, 2010, p. 12). Ginsborg (2017) agrees that visualising the musical score can be a good strategy for musicians, but she points out that it is impossible to use eidetic or photographic memory at a single glance unless the score is meaningful to the musician (Ginsborg, 2017, p. 81). In order to make the score "meaningful", analytic pre-study is required.

2.3.3 Summary

Visualisation is viewed by most authors and guitarists as an efficient strategy of committing music to memory. Not all musicians use visualisation, and it is a strategy that can be omitted entirely when music is being committed to memory and when performing without sheet music. Most guitarist-performers will emphasise that visualisation is critical for ensuring that a musical composition is adequately committed to memory. All the guitarists' perspectives and general research that were mentioned in the above discussion, advocate visualisation, but there is no or very little research on how to learn or approach visualisation. It is therefore a skill that needs to be explored, described, and developed systematically before a performer can start to visualise a complex work.

2.4 Audiation or aural memory

Audiation or *aural memory* refers to the phase of remembering the sound of a musical composition. The term *audiation*, coined by Dr Edwin E. Gordon in the 1970s, refers to the comprehension and internal realisation of music, or the sensation of an individual hearing or feeling sound when it is not physically present. Gordon (2012) often explained that "audiation is to music as thinking is to language".

2.4.1 Guitarists' perspectives

Hubert Käppel (2016) defines *auditory memory* as the musical and emotional memory which is responsible for interpretation and expression. It is the part of one's memory where dynamic sequences, tonal colours, rhythmic precision, changes in tempo and emotional "side effects" are stored (Käppel, 2016, p. 234). Käppel explains that if one's motoric memory fails one, one's auditory memory can continue and "sing" the musical composition – one's inner ear hears the continuation. Like Käppel, most authors suggest combining different areas or phases of memory training, such as visual, cognitive and muscle memory.

Another general aspect of aural memory involves singing, such as singing the notes or phrases, singing the fingering, and singing first before playing. Provost (1992) recommends that a performer must sing the melody, bass line and middle voice and then play a musical composition from beginning to end.

2.4.2 General research

As explained in the introduction, musical memory starts the first time a musical composition is heard – Ginsborg (2017: 89) refers to this as *prospective memory*. Recalling what a musical composition sounds like while performing, can therefore be considered as aural memory. To practise or strengthen aural memory, imitation must take place, for example playing by ear, playing with a recording, or listening to a model (Dakan & Dvorak, 2014).

Singing or humming is considered a strategy for developing aural memory. Mishra (2010) describes audiation as "thinking through the sound of the piece". After the 1980s, performers were encouraged to listen to recordings, live performances, or recordings of their own practise sessions (Mishra, 2010, p. 11). Playing silently in the air or on a desk and playing with the eyes closed are two strategies that are suggested to enhance aural memory, as these strategies shift attention to the sound of the piece and the feel of the muscles.

Audiation is a process of assimilating and comprehending, and "not simply rehearing music momentarily heard performed or heard in the past" (Gordon, 2012). Gordon explains that "sound itself is not music", but sound becomes music through audiation. In other words, the music must be taken in or internalised and understand fully, in a process through which thought, or sound is assimilated to perception. Audiation also takes place when music is heard in one's mind whilst reading notation, composing, or improvising. This process of audiation

only takes place after the sound has been perceived through hearing. Gordon describes different types of audiation:

- Listening to familiar or unfamiliar music.
- Reading familiar or unfamiliar music.
- Writing familiar or unfamiliar music from dictation.
- Recalling and performing familiar music from memory.
- Recalling and writing familiar music from memory.
- Creating or improvising unfamiliar music while performing or in silence.
- Reading and creating or improvising unfamiliar music.
- Writing and creating or improvising unfamiliar music.

Learning “by ear” is typical for musicians in oral traditions such as singers. Ginsborg (2017) describes the skill of audiation as the “ability to imagine what notated music sounds like” (Ginsborg, 2017, p. 75). Likewise, as shown in visual memory, Ginsborg notes that imagining the sound away from the score and instrument can be very useful, “but the equivalent of eidetic memory for music – the skill of reproducing a work heard only once or twice – depends on the size and availability of the listener’s stored repertoire, which may be in the form of visual, kinaesthetic as well as auditory representations” (Ginsborg, 2017, p. 81). Ginsborg refers to the “photographic ear” of jazz musicians and the “phonographic memory” of DJs, with their vast knowledge of music across different genres, to recognise and identify music drawn from short excerpts. The use of aural memory thus relies on the previously stored knowledge of a musical genre. Michiko Nuki (1984) observed that piano students who used a “visual strategy” had better memory recall than students who used kinaesthetic or hybrid approaches. In this study, their “visual strategy” was confused with an auditory approach. They used the singing technique of solfège, which is designed to improve audiation and interval recognition.

2.4.3 Summary

The phase of aural memory and audiation from guitarists’ perspective has not been explored as broadly as other phases. Available research has shown that audiation is a process of transferring thought or sound to perception and understanding. It has been found that audiation takes place almost automatically and according to Ginsborg (2017) it is difficult to separate it from other approaches. On the topic of aural memory, it is shown that singing melodic lines and phrases can be a significant aid when committing works to memory. A performer can recall the sound and pitches of the notes whilst performing and even think

ahead of the following notes or phrases, aurally speaking. As with visualisation strategies, aural memory is a skill that can be learned and developed.

2.5 Other memory strategies and combinations

According to Mishra (2010), memory methods are rarely used in isolation; and most performers use at least two combined strategies. Some of the authors included in Mishra's (2010) study discussed and advocated the combination of four methods for memorisation stability (Mishra, 2010, p. 9). Most authors mentioned in this study agree with Ginsborg (2017) that "auditory, visual and kinaesthetic strategies are in truth inextricably tangled, since our experiences of hearing, listening and performing music involve embodied cognition" (Ginsborg, 2017, p. 89). Just as a productive and positive result of motor repetition goes together with an analytical approach, visual memory and audiation are connected. Ginsborg pointed out that early pedagogues emphasised analysis and mental practise and that visual, auditory, and kinaesthetic learning styles can be seen as twentieth-century educational approaches. Case studies provided new insights in retrospective memory, which increases spontaneity and long-term memory recall.

2.5.1 Guitarists' perspectives

Other strategies for committing a musical composition to memory, include working with mnemonic reference points, as suggested by Hubert Käppel (2016, p. 233). He also concludes that the ultimate proof that one has learned a musical composition perfectly by heart, is one's ability to write it down from memory, including all the dynamic markings and fingerings. Käppel describes this as a very time-consuming and painstaking but gratifying process.

Some authors suggest combining a four- or five-part phase to strengthen all the different memory types: muscle memory, mental kinaesthetic memory (the memory of physical sensations of playing), visual and aural memory, and analytical memory (Kopfstein-Penk, 1992, p. 31). Pablo Sáinz Villegas uses a four-phase strategy for committing music to memory, in which the first three phases are analysis, motor repetition and visualisation. The last phase consists of visualising a mental canvas where all the sections of a musical composition are laid out and where the performer can then "zoom in and out from all the sections, and he can even assign different colours linked to their emotional content or intention" (Musgrove Stetson, 2017, p. 35).

2.5.2 General research

Most of the authors included in Mishra's (2010) study support the view of slow practise, and some also address the issue of being focused and concentrated while memorising. Practising at a very slow tempo is seen to depend less on muscle or kinaesthetic memory. Mishra (2010, p. 12) also points out that slow playing may develop and enhance analytical memory. To automate motoric movement in mind, performing at a slow pace may force unconscious muscle movements into consciousness, but ultimately the musical composition must be performed at tempo with a certain amount of automaticity.

Another alternative view that is presented in Mishra's findings is that many of the authors she considered, agree that performers should begin committing sheet music to memory early in the learning process. Memorisation should not occur after a musical composition was technically learned (Mishra, 2010, p. 13): memorisation must be integrated into learning a musical composition and not take place only before a performance. Some of these authors encouraged the distribution of memorisation over time. In order to determine a strategic difference in memorisation between musicians who memorised quickly and those who required more time, Mishra (2002) compared four different memorisation strategies: holistic, additive, segmental, and serial strategies. The faster memorisers favoured the holistic or additive strategies, whilst the slower memorisers favoured the segmental and serial strategies (Mishra, 2002). The early memorisation research of Rubin-Rabson (1940) is based on the psychology of musical memorisation. This research advocated a segmented strategy, though some participants suggested a balance between holistic and segmented strategies. These strategies refer to the motor repetition phase and are similar to overlap methods, in that they entail working in segments of memory cues.

The authors studied by Mishra (2010) also addressed the performer's preparation for a performance, and most of them emphasised the importance of either a formal or informal dress rehearsal or practise performance. Imreh and Chaffin (2002) support the idea of an informal dress rehearsal, because recreating a situation similar to the one that the performer last remember will result in more reliability of memory. They also found that the memory cues are changed when there is an audience present (Chaffin & Imreh, 2002).

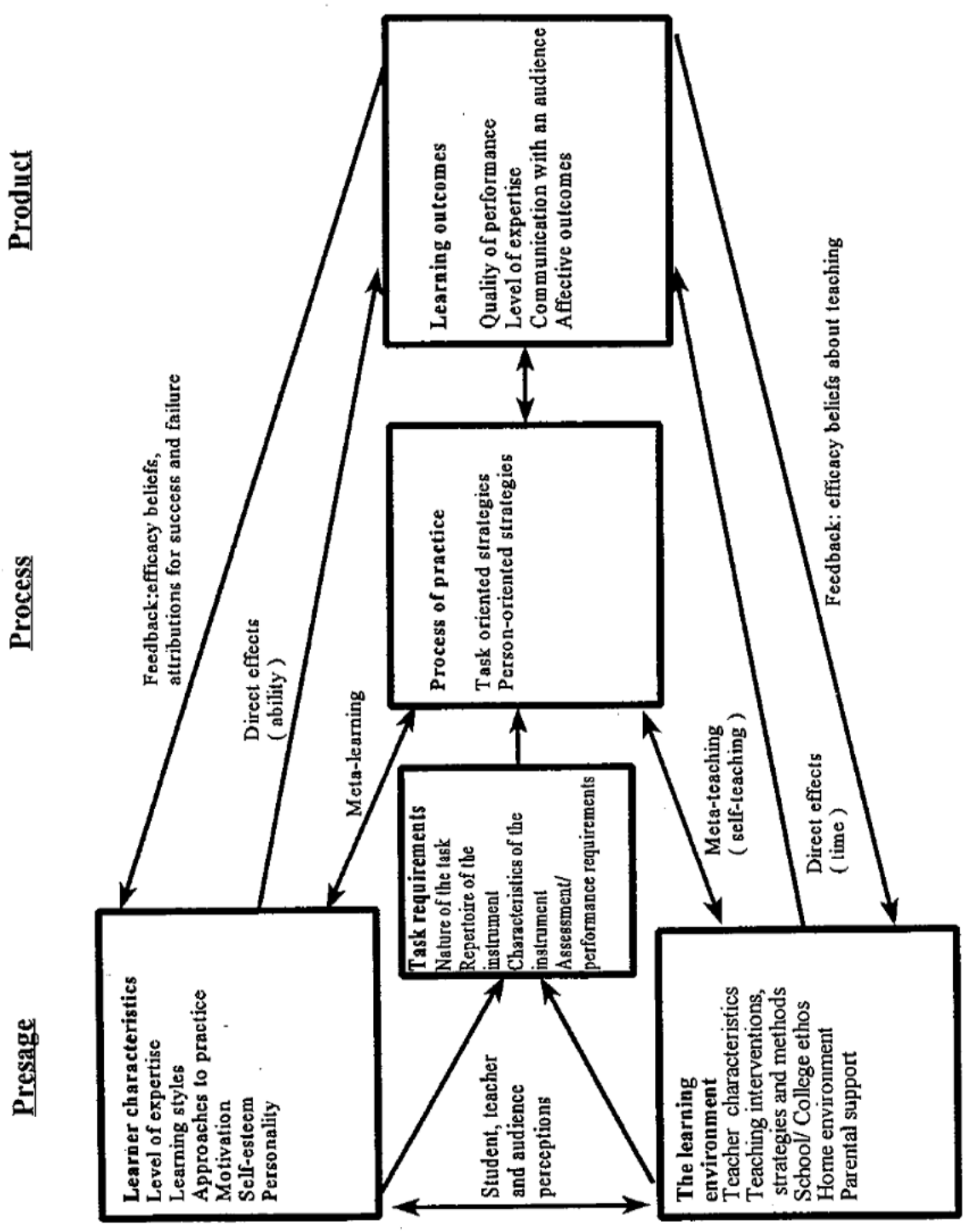
Many of the authors in Mishra's study suggest that the performer can check his memory by writing out the notation of a musical composition by heart. Ginsborg (2009) investigated the

use of body movement as an aid to memorisation. She discovered that beating a pulse ensured rhythmic accuracy and can be used for conducting for metrical representation and gestures. According to Ginsborg (2009), once a musical composition was committed to memory, it “underpinned [the performer’s] communication of semantic meaning both musical and verbal”. Ginsborg (2017, p. 82) also refers to previous research that has found that body movement is an essential aspect of developing muscle memory for the automating of performing, which refers to the goal of performing music without conscious thought.

2.6 Models of practicing/ memory

I have identified two models of practising or memory that have a similar concern to that of this study. The first, by Susan Hallam (1997) (Figure1), was developed to give an overview of the process of practising. The second, by Jennifer Mishra (2005) (Figure 2), was developed to explain the process of musical memory.

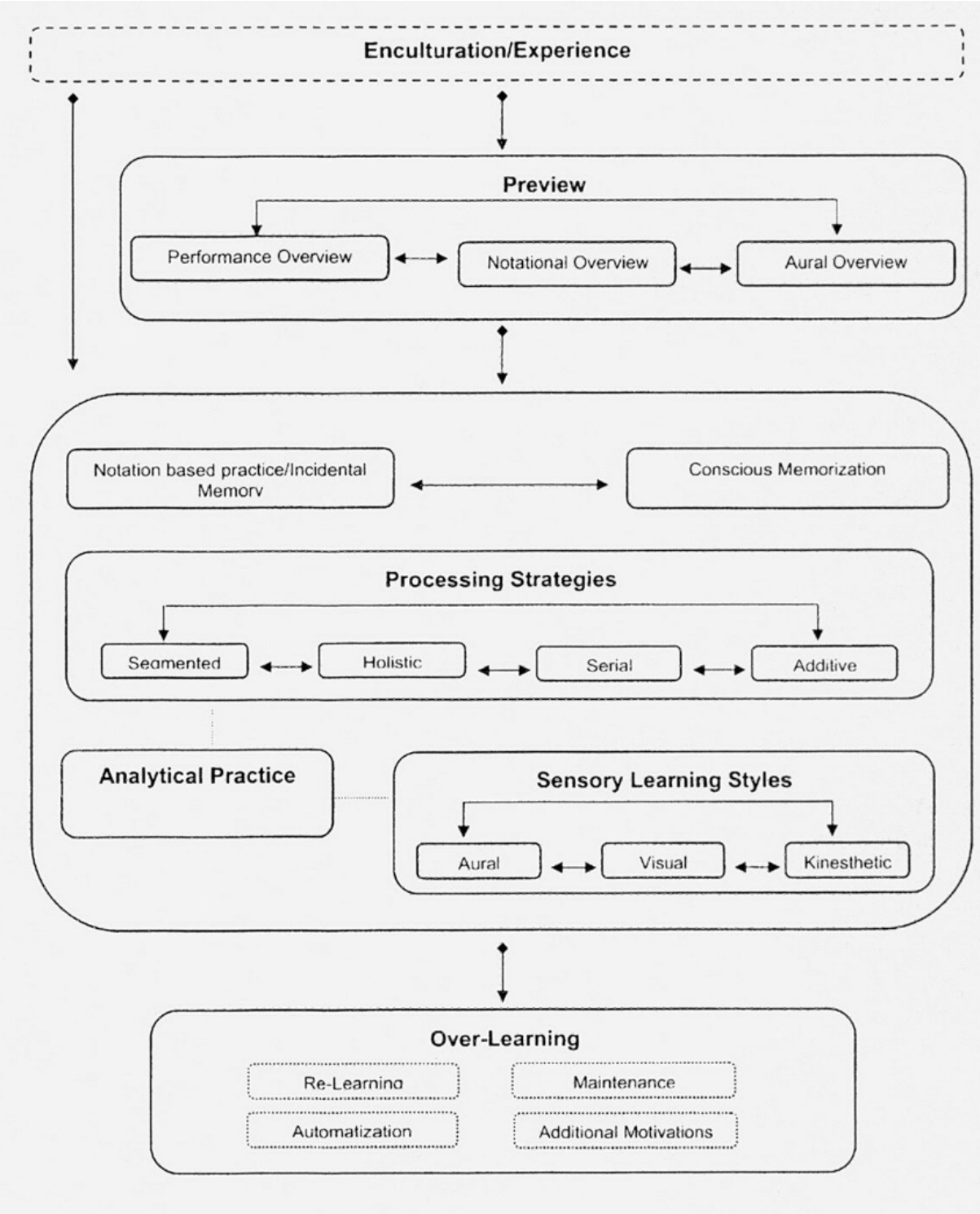
Figure 1: Model of practising by Susan Hallam (1997)



Susan Hallam's *Model of practising* (Figure 1) (Hallam, 1997) is divided into three main headings or processes: *presage, process* and *product*. By *presage* Hallam refers to the conditions that exist before the practising event – the characteristics of the learner, the requirements of the task, and the environment in which the task is to be completed. *Learning characteristics* would be the level of expertise, learning styles, approaches to practice, motivation, self-esteem, and personality. *Task requirements* include the nature of the task, repertoire, and characteristics of the instrument. For Hallam, task-oriented strategies would, for instance, be the difficulty of the musical composition to be learned, and the person-oriented strategies and different personal approaches that each performer will use to learn a musical composition. Hallam also refers to *the learning environment*, which include aspects like teacher characteristics and family support, as well as similar pre-learning considerations. *Process* refers to the learning phases, such as analytical, visual, and aural strategies, or what Hallam describes as task- and person-oriented strategies. *Product* is the outcome of learning, the quality of performance, level of expertise, communication with an audience and affective outcomes.

In Hallam's model, *learning outcomes* include the quality of performance in concerts, the level of expertise attained and the degree of communication with the audience. Hallam's model can be described as linear, and the aim is the final product, which is the learning outcomes. However, in Figure 2 it also includes arrows pointing back to the *Presage* phase, which suggests some kind of circular process.

Figure 2: Jennifer Mishra's (2005) model of how music is memorised for performance



Mishra's model (Figure 2) describes how music is committed to memory for performance. In her model, the process of committing music to memory appears to comprise three stages: *preview*, *practice*, and *over-learning*. Mishra's model shows that enculturation and previous experience are very important for informing the memorisation process. Mishra's enculturation process is similar to Hallam's *Presage* phase, referring to conditions that exist before active learning commences. Under the heading of *Preview* in the model, Mishra further explains this process as *performance overview*, *notational overview,* and *aural overview*: these can also be considered as *task requirements*, as Hallam explained. In her discussion of the model, Mishra also says that the amount of time and effort expended during each stage is a matter of individual preferences, performance goals, task difficulty, training, and ability. These ideas also correlate with Hallam's learner characteristics and task requirements. Furthermore, the stages and the subdivisions are flexible and not necessarily sequential or indeed compulsory for all performers. These pre-learning considerations, therefore, vary for each performer's preference and motivation. In Mishra's model, the practice stage is divided into *notational practice* and *conscious memorisation.* She discusses the four most explained memorisation strategies (aural, visual, and kinaesthetic memories, the sensory styles) as well as an analytical learning style, which corresponds to the discussion presented above and the understandings developed by the guitarists. Four *processing strategies* are discussed: *holistic*, *serial, additive*, and *segmented*. Mishra's different strategies also refer to different skills or strengths inherent to each performer.

Mishra's model describes the *over-learning stage*, which is divided into re-learning, automatisation, maintenance rehearsal and additional motivations (Mishra, 2005). Mishra's *over-learning stage* can be compared to Hallam's *Product,* which is the outcome of learning, the quality of performance, level of expertise, communication with an audience and affective outcomes. Mishra considers part of pre- and post-performance learning as over-learning. Her model perhaps also suggests an ongoing cyclical, interactive process, the preview and practice phases feeds back to the enculturation process, indicated by the arrows pointing in both directions.

Mishra describes analytical practice as a separate standing aspect in the *practice stage*. *Conscious memorisation* and analytical practice suggest an additional depth, understanding and meaning to the musical compositions that have been learned and the sheet music that has been committed to memory. The conceptual ideas about musical memory from the perspective of guitarists, as discussed in this chapter, mainly discusses *processes of practice* (Figure 1) and *sensory learning styles* as described by Mishra (Figure 2). These processes

and learning styles refer mostly to aural, visual, and analytical approaches in learning, for example. In guitar literature, not as much attention is given to all the other aspects or processes described by Hallam and Mishra.

Hallam and Mishra both consider the pre-learning process, which Hallam calls to *presage*, and to which Mishra refers as *enculturation*. The active learning phase is addressed by both, but Hallam talks about a *process*, whereas Mishra sees it as analytical practice and sensory learning styles. Hallam refers to learning outcomes as a *product*, while Mishra uses the term *over-learning*. Hallam's model also refers to *practicing* and Mishra's model to *memory*, but the two are very closely related. Mishra's model treats the memory process as circular, where re-learning is evident and where the process – or at least a part of the process – repeats.

2.7 Conclusion

The above literature review showed that the perspective of most guitarists' perspectives, which is presumably based on their experiences, corresponds well with the general research in each memory strategy or method. It is important to note that each source has a different goal and assumption and cannot necessarily be compared directly. The pedagogical and research material is based on a narrow band of artistic practice. In my opinion there are many ways to relate, but the guitarist's perspectives mostly seemed to be experienced-based and focused on the learning process. The bigger process is not discussed in any detail, which leaves a lacuna in the guitarist literature. The topic of musical memory – specifically for guitarists – adds value for guitarists and researchers and therefore requires much more research and research-based experiments in musical memory to be conducted. This issue will be addressed in the next chapter.

CHAPTER 3

METHODOLOGY

Thus far, I have established the need for this research project (Chapter 1) and given an overview of current research and practice, culminating in an overview of the process of developing musical memory (Chapter 2). In Chapter 3 I will discuss the procedures used in this study to conduct research: the research paradigm and approach, data collection, data analysis and coding, ethics and standards of validations and evaluation, the role of the researcher, and the lecture recitals.

3.1 Research paradigm and approach

For the specific phenomenon of the study, which is the musical memory of classical guitarists, I have chosen a basic qualitative approach to conduct research. Qualitative research focuses on social life and can represent a multiplicity of views. Its goal is to describe, discuss, explain, and understand, and not to primarily prove a hypothesis or resolve a problem in numerical or statistical terms (Saldaña, 2016).

Quantitative studies, on the other hand, attempt to measure, focus on variables, use many cases, employ statistical analysis, and the researcher is typically detached (Neuman, 1997, p. 14). Neuman (1997, p. 14) explains that “most quantitative data techniques are data condensers, they condense data to see the big picture … Qualitative methods, by contrast, are best understood as data enhancers”. In mixed-method research, both approaches are incorporated in an expanded design. I have decided on a qualitative approach, however, because of the nature and goal of the research, which is to search for subjective meaning and understanding from the participant’s viewpoint, thereby enhancing the data. The models in Merriam’s, Saldaña’s and Neuman’s descriptions of a qualitative approach were employed in this research. According to Neuman (1997), the main differences between quantitative and qualitative research approaches is that qualitative approaches construct social reality and cultural meaning, focus on interactive processes and events, use few cases, use thematic analysis, and involves the researcher.

Basic qualitative research primarily has a social constructivist paradigm. Social constructivism is an interpretive framework through which individuals seek to understand their world and develop their meanings corresponding to their experience (Creswell, 2013). In a basic

qualitative study, descriptive data of the phenomenon are collected and analysed. Words and pictures rather than numbers are used to convey data about a phenomenon. An investigative strategy was followed to produce a richly descriptive final product (Merriam, 2002). Merriam points out that the researcher is the primary instrument or mediator for data collection and data analysis in qualitative research. The research aimed to understand, and then expanded this understanding through communication: By processing the data immediately; clarified and summarised material; checked with respondents for accuracy of interpretation; and explored unusual or unanticipated responses (Merriam, 2002, p. 4).

Merriam (2002, p. 6) describes the characteristics of basic qualitative research as being concerned with how individuals learn, experience, and interact with their social world and the meaning this has for them, from an interpretive perspective. Merriam argues that a qualitative researcher is interested in understanding how participants interpret a situation or phenomenon. The strategy is inductive, and the outcome is descriptive. Basic qualitative research can be considered as seeking to discover and understand a phenomenon, a process, the perspectives, and worldviews of the people involved, or a combination of these (Merriam, 2002, p. 6). My study fits precisely into this model of basic qualitative research: the phenomenon of my research is musical memory. I explored what the processes entailed and searched for the perspectives and worldviews of the people involved, and the outcome of the research is richly descriptive.

A basic qualitative approach is more explorative and a better way to explore musical memory in guitarists than other research approaches such as a case study, ethnographic study, or phenomenological study. A case study is an intensive description and analysis of a phenomenon or social units such as an individual, group, institution, or community. Merriam (2002) describes an ethnographic study as conducting fieldwork and observations. It refers to an attempt to account for the beliefs, values and attitudes that shape the behaviour of a particular group of people. Phenomenology is a qualitative research method that is used to describe how human beings experience a particular phenomenon. Phenomenological studies can also be described as philosophical observations of unusual people or events. Phenomenologists are interested in showing how complex meanings and philosophical descriptions are built out of simple units of direct experience (Merriam, 2002, p. 7). This study is not phenomenological, however, because it is not philosophical. It is neither an ethnographic study, for it does not explore any culture, nor a case study bounded by time and place. Instead, the focus of interest is the subjects' musical memory and how they describe and use it and ultimately form a theoretical or conceptual understanding of musical memory as a whole; and their lived experiences that are associated with the phenomenon.

3.2 Participants

This study involved 12 purposely-selected participants. Purposeful sampling is a research technique where participants are selected because they are expert informants on the phenomenon being studied (Creswell, 2013). To purposefully select participants or sites (or documents or visual material), Creswell explains that qualitative researchers select individuals who will best help them understand the research problem and the research questions. Purposeful sampling is widely used in qualitative research to identify and select information-rich cases related to the phenomenon of interest (Palinkas et al., 2015).

The participants I have selected for this study are mainly from the group of international guitarists whom I have met and knew personally. I believed that they were comfortable answering my questions in the interviews, which positively affected my data-collection process. All participants are well-known international concert guitarists, purposely selected for their impressive musical memory and experience with developing musical memory. There are two South African participants, one from Argentina, one from Uruguay, one from Israel, one from Brazil (who resides in the USA) and the rest are from Europe. Most of these concert artists have performed concerts all over the world and are also respected educators. Please refer to ADDENDUM A for the biographies of all the participants presented in this study. The participant letter (see ADDENDUM C) describes the nature and procedure of the study and specified that participation was entirely voluntary and that the study would not pose any risks for the participants. I fully informed all research participants by email, I gave a clear and detailed description of the project and obtained written permission and consent from all participants who agreed to participate in the study, as prescribed by Oliver (2010). The participant letter was sent via email and signed after an interviewee agreed to be interviewed and before each interview commenced.

3.3 Role of the researcher

I am a professional classical guitarist and teacher, based in Pretoria, South Africa. I am actively involved in promoting the classical guitar in South Africa through projects such as organising local guitar competitions. As a soloist, I have travelled abroad to attend and participate in international competitions and festivals, and I also attended many master classes in countries such as India, Argentina, Germany, and the USA. Through these travels

and festivals, I met many fellow classical guitar enthusiasts or colleagues, some of whom have also become friends and role models.

In the problem statement in Chapter 1, I briefly mentioned some of my own experiences regarding musical memory and the issues that arose from them. I have seen that most performers, competition participants and concert artists perform works from memory at international guitar festivals and competitions. I have also experienced many well-known concert guitarists who do not perform from memory, however, but prefer to read the score in concert. None of the many lectures and technical workshops that I have attended, dealt with issues regarding memory either. I asked some professional guitarists what methods they use, and I received a range of different answers concerning various approaches. One of my most interesting personal experiences in this regard was at a concert in Kolkata, India (2010), where the well-known Czech guitarist Pavel Steidl (who is also one of my research participants) performed. A power outage occurred, and all the lights went out; it was pitch dark. Steidl simply continued playing without interruption, and the most beautiful romantic guitar music came out of the darkness. These experiences affected, formed, and strengthened my notion that performing works without sheet music is better. Although I believe that it must be possible and comfortable for a performer to memorise works, I prefer to read the score and have the sheet music available in a performance, rather than not being at ease about performing from memory. One of my approaches in committing sheet music to memory is still to have the sheet music in front of me when I perform, even after I know it by heart. I use sheet music as a map, highlighting reference points or performance cues, as suggested by Chaffin (2002): I do not read and play every note from the sheet music, but see where a following phrase or section begins.

In this research, some instances of bracketing[3] (Bertelsen, 2005) were implemented where I used some of my own experiences and perspectives in the field to obtain data from my subjects but aimed to be objective in my knowledge and only to act as a mediator when I analysed and described the data (Husserl, 1964).

3.4 Data collection

In qualitative research, the data are typically collected through interviews, observations, or document analysis (Merriam, 2002, p. 6). In phenomenology and basic qualitative research

[3] Bracketing: A process whereby one establishes a distance from previously held theories and assumptions in order to become a non-participating observer (Bertelsen, 2005).

interviews, the researcher tries to understand something from the subject's point of view and to uncover the meaning of their experiences (Kvale, 1996). Data collection can be viewed as taking a series of interrelated steps to gather relevant information to answer the researcher's research questions (Creswell, 2013).

I conducted in-depth semi-structured interviews with willing participants. This entails an interview approach in which I responded to and asked further questions about what I heard from the interviewees rather than rely solely on the planned questions, as described by Rubin and Rubin (2012). Research subjects should be informed about the purpose of the investigation and the main features of the design (Kvale, 1996). My question prompts in the interview draws on my knowledge and experiences regarding musical memory. All interviews were audio-recorded with two digital recording devices, and I personally transcribed them to text, word by word. Transcription took place directly after each interview and took about three to five hours for each transcription. ADDENDUM D contains a list of the interview questions.

I conducted 12 interviews in total. First, I began with a test interview with my former guitar lecturer from the University of Pretoria, Abri Jordaan. This 15-minute interview was the shortest of the interviews, and I realised that I had to elaborate on my interview questions and approach. The next interview was in person with Martin Oser, whilst the rest of the interviews were all online via Zoom, Skype, or WhatsApp video calls. The average time per interview was about 40 minutes, with the longest interview (with Tal Hurwitz) being 75 minutes and the shortest (with Eduardo Fernandez) being 25 minutes. I experienced some problems in my interview with Victor Villadangos, as I had to make use of a Spanish interpreter. I felt that although all the main ideas were explained correctly, certain essential additional information could have been lost. I also experienced problems with my recording of this interview and could not retrieve the information properly. In most of the interviews the first language of the interviewee is not English, and in transcribing these interviews one must be very careful to transcribe the correct meaning of sentences. Nevertheless, the interviews seemed to work very well, I understood all participants clearly and all questions were answered in a very professional manner.

In retrospect, however, it would have been better to first identify all the willing participants and then to book appointments with each participant before starting any of the interviews. When I began the interviews, I was still in the process of identifying professional guitarists to interview, and I had no idea who would be willing to participate or how many interviews I would do in the end. Initially I had seven participants in mind, of whom only three (Goran Krivokapic, Tal Hurwitz, and Victor Villadangos, all whom I know personally) agreed to be interviewed. Finding

a suitable time for the interviews was not very easy, and some interviews took place very late at night due to time differences. One participant postponed several times and eventually we had to cancel the interview due to time constraints. I contacted more than 30 professional guitarists, including many female guitarists, to participate in this study, but very few were interested in participating. In the end this study exceeded my expectations, however, as some world-renowned performers such as Pavel Steidl, Sergio Assad, Eduardo Fernandez, Johannes Möller, Thibaut Garcia, Enno Voorhorst, Avril Kinsey and Derek Gripper agreed to be interviewed.

3.5 Data analysis and coding

Once data have been collected, they must be turned into evidence (Hofstee, 2006, p. 117). In basic qualitative research, the data are inductively analysed to identify the recurring patterns or common themes that cut across the responses (Merriam, 2002, p. 7). In this study, a rich, descriptive account of the findings was presented through the transcription of interviews. All the data in the form of audio recordings of interviews have been processed and transcribed from dictation before they were available for analysis (Miles *et al.*, 2013). The first findings to be discussed, related to the literature that framed the study. These data were turned into information or evidence to be analysed through coding processes, in accordance with the seven data analysis steps of Miles, Huberman and Saldaña: preparing the data, organising data, read-through, coding, organising categories and themes, representing data, and forming an interpretation of the data. *Preparing* the data refers to transcribing, formatting, and labelling. In this specific study it entailed transcribing the data. According to Miles, Huberman and Saldaña's guidelines for analysing data, when direct recordings are processed, the recording is transcribed into text. They caution that this process is fraught with possible slippage and that it depends on the transcribing person's knowledge and skill. I did all transcribing personally, to avoid any misguided interpretation of data. Markle, West and Rich (2011) also advise that the task of transcribing should not be relegated to others (such as professional transcribers) as they may lack familiarity with the study's participants, research setting and theoretical foundations. I used the information gathered to answer my research question, which is focused on developing a theoretical understanding of how classical guitarists view their musical memory.

Coding was used as an analytical tool, by means of the qualitative data analysis computer programme Atlas ti.8. Excellent research rests mainly on the proficiency of coding, and therefore a researcher who uses qualitative analysis, must learn how to code well and quickly

(Strauss, 1987, p. 27). Saldaña describes coding as providing “a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and evocative attribute for a portion of language-based or visual data” (Saldaña, 2016, p. 3). Coding is thus a data condensation task that enables the researcher to retrieve the most meaningful material, assemble chunks of data that go together, and further condense the bulk into readily analysable units (Miles et al., 2013). The researcher codes according to the purpose of the study and its research questions. A code represents and captures a datum’s primary content and essence. The many different coding forms depended on the type of data I received and my personal preference for coding type. In this study, I used descriptive coding as a starting point, which worked particularly well. Descriptive coding assigns labels to data to summarise the essential topic of a passage of qualitative data in a word or short phrase. Topics are then indexed and categorised in an inventory. This method is beneficial and effective for studies such as mine, which use interview transcripts as data (Miles *et al.*, 2013, p. 8). Although there are many other possible coding types – such as values coding or in vivo-coding, among others – none of these was as suited to my research as descriptive coding, although I was flexible to adjust my coding type in case descriptive coding did not work well.

The transcribed interviews for this study were analysed using a within-case analysis design (the complete within-case analysis can be observed in ADDENDUM B). The complete transcribed interviews are also available on request. A within-case analysis was used initially to develop a stand-alone description of each participant’s main topics that were discussed. Through deeper analysis based on the results of the within-case analysis, I gained a stronger understanding of the topic.

3.6 Ethics

The study adhered to the ethical procedures and guidelines of North-West University, based on approval by the Arts Research Ethics Committee (AREC) on 29/10/2019, ethics number NWU-01491-19-A7. Ethical issues, such as informed consent, confidentiality and consequences should be considered with any qualitative interview process. Participants in this study were not exposed to the possibility of harm outside of average daily risk. No sensitive topics were discussed, and the participants were not exposed to topics removed from their expertise. All information gathered was treated as confidential and was used purely for educational use. Data were analysed and transcribed and will be stored at North-West University for five years. With sensitivity to ethical considerations, all participants in my proposed research were treated with friendliness, dignity, and respect. I did not insist on topics with which the participants seemed to be uncomfortable; I did not manipulate or coax them

into giving the answer I wanted (for example, by asking leading questions); I strived to be non-threatening; I avoided being over-empathetic; and tried to build trust.

3.7 Standards of validation and evaluation

It is challenging to develop validity standards in qualitative research because of the necessity to incorporate rigour, subjectivity, and creativity into the scientific process. Cope (2014) points out that a distinction can be made between primary and secondary validity criteria in qualitative research, with credibility, authenticity, criticality, and integrity identified as primary validity criteria, while explicitness, vividness, creativity, thoroughness, congruence, and sensitivity are identified as secondary validity criteria.

In this study, I followed a synthesis of approaches using the four primary criteria:

- Credibility: the results of this study were an accurate interpretation of the meaning that the participants expressed.
- Authenticity: participants' different voices were heard, in that their individual views were expressed.
- Criticality: a critical appraisal was made of all aspects of the research.
- Integrity: the investigator was self-critical of his own methods and views.

In accordance with Creswell's (2013) validation strategies, I engaged with the participants to gain their trust and to check for misinformation. I wrote a detailed and thick description of the participants' views, which will allow the reader to make decisions regarding any transferability of findings. According to Howe and Eisenhardt's (1990) evaluation criteria model, the data collection and analysis were driven by the research questions and the analysis techniques that were applied in a technical sense; and furthermore, the researcher's assumptions were also made explicit, including the researcher's subjectivity.

3.8 Lecture recitals

The two lecture recitals provided me a way to present my research results and the insights that I have gained as a guitarist. The lecture recitals also added a personal aspect and deeper value to the study. They combined my research results and practical work and gave me an opportunity to experimentally apply my research results to my own practice as a guitarist.

The first of two lecture recitals focused on the encoding process of committing a musical composition to memory, which involved the phases of learning and understanding. I wanted to present my research results in a practical way to show and describe how I, as a guitarist, approached, learned, and understood each of the 5 preludes composed by Heitor Villa-Lobos.

I performed these musical compositions that I had learnt by heart; and displayed the interaction of the conceptual model derived from the research results.

The second lecture recital focused on the topic of remembering. It involved the performing of a selection of the 12 etudes by Villa Lobos, nos. 1, 2, 7, 11 and 12, that had been learnt by heart; and discussing how I recall or remember these etudes. Remembering depends on the quality of the encoding process. It is evident, integrated, or an interactive part in each of these processes. Performance preparation, alterations, and post-performance learning as well as understanding were also addressed in more detail. Links to recordings of the lecture recitals can be found on p. 123. The initial lecture recital notes are available in ADDENDUM F.

CHAPTER 4

CROSS-CASE ANALYSIS

Chapter 4 will discuss the research findings through the framework of a cross-case analysis comparison to identify what each participant's views has in common, as well as what attributes were unique about each view. The following procedural sub-question is addressed in this chapter:

- *How do 12 professional classical guitarists describe and understand musical memory?*

The transcribed interviews of this study were each analysed using a within-case analysis design (ADDENDUM B). Each participant gravitated towards a few main topics; **these topics led to minor (subordinate) themes which support the three emerged superordinate themes**. The superordinate themes discussed in this chapter are Learning, Understanding and Remembering.

Summary of superordinate themes

See Figure 3 for a graphic display of the main topics, verbatim quotations from the interview transcripts[4] which was compiled and discussed in the Within-Case Analysis (ADDENDUM B); and how the superordinate themes derived and developed from that.

Figure 3: Development of superordinate themes

[4] These references, for example 1:143, refers to the transcribed interviews analysed through Atlas ti.8. The first number indicates which interview and the second number the place within the interview.

Participant:	Main topics discussed:	Verbatim Quotations:	Superordinate theme derived:
Tal Hurwitz	Secure Memory	1:143 ¶ 4, Quotation in Tal Hurwitz interview transcription.docx I have a few different ways to memorize, and I know that if one does not work the other will cover for it	Understanding
	Imagining the music	1:207 ¶ 15, Quotation in Tal Hurwitz interview transcription.docx I made a few experiments with my students, starting only even by one bar, look at the bar, imagine how it sounds like, now you imagine the fingerings, imagine the right and the left hand. Repeat this 10, 20, 30 times in your mind. Repeat it after you decided your fingerings and you know how the music sounds. Repeat it, visualize how you play it ten times and then play it. And it works every time in one try.	Understanding/ active learning
	Understanding structure	1:173 ¶ 26, Quotation in Tal Hurwitz interview transcription.docx When you understand the structure, you can very quickly dive in and dive out. When you are in control of the structure it is less fragile, I think.	Understanding and Remembering
	Fingering	1:156 ¶ 17, Quotation in Tal Hurwitz interview transcription.docx Once you master those movements, you connect it with the music and then you can achieve things much, much quicker. So, when I look at a musical phrase, I immediately imagine a few scenarios or a few ways to make fingerings, I know what will work for me and what will not be so guitaristic and what will not work. I take these few options that will work and now according to my musical taste I will choose the fingering that expresses the musical idea that I have.	Understanding
Victor Villadangos	Time Value	2:46 ¶ 13, Quotation in Victor Villadangos interview transcription.docx the first step is that you have to make sure that you have enough time to study a piece before you perform this new piece.	Pre-learning
	Visual and aural memory	2:20 ¶ 15, Quotation in Victor Villadangos interview transcription.docx The last type of memory that I use is singing the notes and imagining what it sounds like in my head. A nominal memory, using it to remember the names of the notes, singing the notes in solfa. When I sing these notes, I don't sing them out loud, I sing them in my mind, because it is sometimes impossible to sing every note out loud. It is a lot easier to sing it in your mind.	Active learning and Remembering
	Secure memory and confidence	2:60 ¶ 44, Quotation in Victor Villadangos interview transcription.docx Looking back at last year I played a concert series of 25 concerts. At the first concert I still felt nervous, by the fifth concert I was a whole lot more confident and by the 20th concert I knew I have done it so many times and I felt a 100% confident.	Performance: Preparations, alterations and learning
Goran Krivokapic	Analytical thinking, understanding and practice methods	3:48 ¶ 39, Quotation in Goran Krivokapic interview.docx For me what really works is really understanding, analysing a piece, understanding what you are doing, having no doubts about what you want to do interpretation wise, then also having no doubts about your fingerings and then once you do that, you see the piece as a whole, that's then very hard to forget I think, like that.	Understanding
	Visualisation and secure memory	3:23 ¶ 13, Quotation in Goran Krivokapic interview.docx That's visualizing the fingerings, well when I speak about visualization it's also not only fingerings, it is also the harmonies, the functions, off course the dynamics, so everything really that is written in the score and everything that you think of to build your interpretation on, so everything that you want to think about also when you play.	Understanding and remembering
	Perception change	3:45 ¶ 36, Quotation in Goran Krivokapic interview.docx You also see the reaction of the audience, you can kind of hear it the way they hear it also. If you take different parts, you can just hear the silence in the audience also, you can hear the attention in some parts, or you can hear sometimes a bit more noise and those I think are very, very important parts. And that's how you remember.	Performance: Preparations, alterations and learning
Pavel Steidl	Concentration	4:54 ¶ 71, Quotation in Interview- Pavel Steidl.docx You need to be really concentrated, and you cannot concentrate for too long, you can be concentrated 40 minutes, 30 minutes, maybe 20 minutes. It is better that you practice in the small periods but concentrate on what you are doing	Pre-learning
	Visualisation	4:26 ¶ 19, Quotation in Interview- Pavel Steidl.docx Then you can start to practice without the guitar, without the instrument, it is very important how to practice without the instrument, just with the score; ; without the score and just with the instrument.	Active learning and Remembering

		Our brains can analyse and comprehend complex details and musical ideas subconsciously through visualisation.	
	Associations	4:33 ¶21, Quotation in Interview- Pavel Steidl.docx I also pushed my students so far to dance the music, to dance, to move in the passages of the dances of Bach or make your own language. You don't need to sing it, but to speak it, and it also works, it works very well. If you know what you are doing, if you connect the music with the language, it is fantastic. If you connect music with the movements, like a conductor does, it's fantastic. If you imagine colors like a painter, it's fantastic. These things can be very useful for a musician, I am not really a scientist, I prefer to use these natural things of our humans, what is the language, what is the movement.	Understanding
	Aural memory	4:37 ¶28, Quotation in Interview- Pavel Steidl.docx I am using a lot of language and a natural feeling for the intervals, that is also something important. What you feel if you sing the fifth or different intervals, or intervals which are the tension, it's everything, it's again the singing. I think also that if you learn by memory things that you can sing them, that you can sing the phrases.	Remembering
Derek Gripper	Analytical thinking	5:5 ¶12, Quotation in Interview Derek Gripper.docx What you are looking for are the impulses, the physical impulses, which I suppose could be called phrasing.	Active learning and understanding
	Muscle memory	5:7 ¶14, Quotation in Interview Derek Gripper.docx So, the way I've been memorizing it has just been to play it, and you play it intelligently, it's not like practicing where you sort of do this repetitive physical work so that you can get it right or remember it, you're playing it that you can find those impulses and those phrases.	Active learning
	Natural learning	5:38 ¶60, Quotation in Interview Derek Gripper.docx If something is unnatural it means that they are doing something, their subconscious mind is doing something that's stopping the natural process. It is like digesting a meal, and your body is not digesting it, you have to ask what am I doing that is stopping that happening.	Pre-learning
Sergio Assad	Audiation and analytical thinking	6:14 ¶11, Quotation in Interview- Sergio Assad.docx So, this thing of knowing harmony is very important, not the name of the chords, I don't mean that, the name is nothing, it has actually to do with sounds at the back of your mind and that supports anything that you are doing with your fingers.	Active learning and understanding
	Focus on strength	6:15 ¶11, Quotation in Interview- Sergio Assad.docx My sense of harmony is very well developed and is better than the one that my brother has, because he never worried about harmony that much. His memory is really fantastic, but he based his memory on fingerings, shapes and stuff like that, I don't do that, it's not shapes or fingering, it's more aural, it's more what I hear.	Pre-learning
	Perception change	6:48 ¶45, Quotation in Interview- Sergio Assad.docx And we learned that way, that actually music is a live thing, you cannot froze the interpretation of the music. Things can be phrased in many, many, many different ways, many different ways, and they all can be good. If you learn that, you'll never play a piece the same, every time is going to be different.	Performance: Preparations, alterations and learning
Eduardo Fernandez	Analytical thinking and fingering	7:5 ¶13, Quotation in Interview Eduardo Fernandez.docx Then I would start to study it basically line by line, until you understand everything that is going on musically. This makes it a lot easier to memorize, because you are using always the same fingerings, so the physical part is covered there, you develop a very clear idea of what you want musically, which also helps. I find that if you understand the structure and the phrasing.	Active learning and understanding
	Associations	7:11 ¶16, Quotation in Interview Eduardo Fernandez.docx I think it helps also if you can learn the piece with some depth in the sense of assigning some kind of meaning to every phrase, making up a story, this helps, you feel after this phrase the next comes logical because it comes from this and that in the first phrase, or it is a variation of the first phrase. Anyway, you can establish a link and it will help, but I think it happens basically automatically when you play the piece many times	Remembering
	Using the score	7:34 ¶52, Quotation in Interview Eduardo Fernandez.docx Well, I think I said things already, but I think it is really also of value, people should not be afraid or ashamed of playing with the score, sometimes it is really, absolutely unavoidable to play with the score if you play some kind of contemporary music or if you play some pieces which are repetitive with little differences here and there. I don't think it should be so important, I personally don't care if I go to a concert if they play from memory or from the score, it doesn't matter to me.	Pre-learning

Martin Oser	Associations, concentration and values	10:19 ¶ 21, Quotation in Interview Martin Oser.docx You have to associate things with the harmonies and the movement of your hands. You must make associations with things, then it goes quicker, you must put it in context with something.	Pre-learning
	Analytical thinking and secure memory	10:14 ¶ 19, Quotation in Interview Martin Oser.docx If you must find a way to it, it doesn't go so fast, then you start to think, why doesn't you memorize so easy, then you start to analyse. You analyse, this part goes so and so, and then it goes like a text. I had once a piece from Fernando Sor, I learned it in one week, I like this piece very much, boom it went in, nobody asked me how you memorized it, I loved this piece. If you play Alfred Uhl or Frank Martin, they are good composers, but you have to think of the music. Then you have to analyse, it's a different process.	Active learning and understanding
Johannes Möller	Using the score	9:38 ¶ 27, Quotation in Interview Johannes Möller.docx or you can play with the music which can be very charming, it depends on how you read. I think the key is to not, it has to be more of a screening, not staring into it, the thing for me is that the music stand is there, it's quite low, flat, it becomes almost invisible for the audience, and I keep other stuff on there, like nail files, a Capo maybe; and then I will play from it, and I can see fairly well, but I'm not staring and I'm not reading all the time.	Pre-learning
	Practice methods	9:16 ¶ 16, Quotation in Interview Johannes Möller.docx This goes with everything, it really comes down to detail and practicing, isolating individual problems or individual passages, for me it always comes down to that.	Active learning
	Fingering	9:20 ¶ 16, Quotation in Interview Johannes Möller.docx and find the good fingering solutions early, because that is what you rely on, good fingerings, it has a tremendous effect on the final performance, and it also helps for the memory in a way because you have looked over it with more detail.	Active learning and understanding
	Visualisation	9:21 ¶ 19, Quotation in Interview Johannes Möller.docx You can yes, just try to play a whole piece in your mind, it's kind of a challenge for your concentration, to completely feel everything, try to imagine the hands and the sound, you can do it with sections. I think we subconsciously do it already, but if you consciously try to do it, it becomes enforced and it's very good. It goes in your mind subconsciously all the time, so, we're already doing it.	Active learning
	Perception change	9:63 ¶ 41, Quotation in Interview Johannes Möller.docx By the time we go to stage, it's not just sort of something we improvise, it's an interpretation, we present an interpretation. Interpretation sometimes is maybe confusing, it's almost as if we're diluting it, interpretation is not quite the right thing, interpretation is reality. So, in a way we're trying to adopt, we're trying to bring out the music, it's not like oh he's trying to interpret, no we're trying to really presents the notes, that's really what's it about, for me at least	Performance; Preparations, alterations and learning
	Own Compositions	9:66 ¶ 43, Quotation in Interview Johannes Möller.docx If I had a memory lapse with my own compositions it's much easier, I could dwell on it a little bit. I can do improvisation, it's not that I don't like it, I don't have an interest doing that, improvisation is kind of searching, I am more interested in composition than improvisation. Improvisation is great I suppose, it's kind of like composing, it's a lot about theory anyway, especially stylistic.	Understanding
Thibaut Garcia	Performance values and connection	11:20 ¶ 8, Quotation in Interview Thibaut Garcia.docx Last year I went to some concerts in Paris, there is a place called Chamber Music Centre, they organize chamber music concerts, but everything is by memory, everything, like quintet, quartet, trio. It was the first time I think I felt something more in chamber music, for example it was the first time I've seen a string quartet playing by memory and it was like, it was not the same at all, it was so much better. So, for me playing by memory is musically the best we can do, I feel always frustrated for example, when I play in guitar duo, I am trying now with my duo partner to learn everything from memory, because we think it is important.	Pre-learning
	Practice methods, visualisation, and concentration	11:17 ¶ 56, Quotation in Interview Thibaut Garcia.docx To me the most important thing about memorizing is the way you are focused, this is the secret, for example, I realized that if I try to memorize something and I am not 200% focused, I learn only a bit, but when I am 200% focused, I learn a lot and the difference is huge. This is about our will, about the concentration on the score and on the music.	Active learning and understanding
	Confidence and perception change	11:13 ¶ 42, Quotation in Interview Thibaut Garcia.docx I always feel that memory always work on stage if you are confident, and you're relaxed. When you start to be a bit stressed and nervous, then you can fail with the memory. It's all about confidence, I think we are scared about being confident, because we feel we are losing the	Performance: Preparations, alterations and learning

		attention and the intensity, but actually it is the opposite; if you are confident, it will be easier, and it will sound better.	
Avril Kinsey	Using the score	12:4 ¶ 6, Quotation in Interview Avril Kinsey.docx I, on most occasions has have a kind of score put very low down as a reference, perhaps more to the overall feeling of the program as opposed to reading from the music, I know each of the pieces and I might glance at the score here and there, but it's more a sense of security.	Pre-learning
	Analytical thinking, understanding structure and fingering	12:7 ¶ 15, Quotation in Interview Avril Kinsey.docx The main process is to really go in depth into the music, if it's very complex I might actually play the parts on the piano, just because it's without getting involved with fingerings and it gives you a sense of objectivity. When I did my master's degree, I had to go through a lot of different guitar compositions, I find that I can extract the musical ideas much quicker on a piano, as with a guitar you got to work out all the fingerings and you got to decide where to play it and so on. I definitely think a lot of analysis before, understanding the composition completely, all the sections and phrases, the melodic lines, the chord structure. As a composer myself I am intrigued to how the composer's worked anyway, I will think like a composer when I am exploring a piece for the first time, I get intrigued at how and why that works and where does that come from, why did he invert that motive and so on. I tend to approach it like dissecting a piece like a composer, so a lot of analysis; when I feel I got a full understanding of the piece then I would explore fingerings a lot.	Active learning and understanding
	Associations	12:21 ¶ 36, Quotation in Interview Avril Kinsey.docx If you're so involved in the music, one thing that I do for memorizing is I build up stories to the music; I find that if you have story to any piece of music, like a beginning, middle and end of the story, or depending on the style of the music, that helps one to be less concerned about the details, because all the details you would have worked out beforehand; what you really want to do in the moment, you get into the atmosphere of whatever the piece is.	Remembering
	Muscle memory, secure memory and values	12:12 ¶ 19, Quotation in Interview Avril Kinsey.docx You should be able to use visual and aural, you should be able to sing the melodies, you should be able to understand what the chords are, the key, the transition, the shape of the phrase and the counter phrase; all of these things can work well if you use them all.	Pre-learning
Enno Voorhorst	Connection, music education and confidence	13:20 ¶ 28, Quotation in Interview Enno Voorhorst.docx So, it is more, when I am trying to play, that I play with passion and play beautiful dynamically and that the music really speaks than that I focus on mistakes.	Pre-learning
	Analytical thinking, audiation and visualisation	13:10 ¶ 17, Quotation in Interview Enno Voorhorst.docx Now what I do is, when I memorize, I really go into the analysis of the piece, so I know which harmony is there, I am much more realizing what the music is about, much more about phrasing, harmonies, following the melody, tonality; so, the musical background is much more important, the harmony I'm playing is very important.	Active learning and understanding
	Associations	13:27 ¶ 43, Quotation in Interview Enno Voorhorst.docx This is also what I learned from my research with the brains, the more associations you make, the better it is in your memory; so if you only have one association for the fingerboard for example, it's not much, but if you also know the harmony, the melody, also the muscle memory, all these things together makes that you know it really well, there's always new things that you don't see.	Remembering

4.1 Superordinate theme 1: Learning

This section on learning is divided into three sub-headings. The first section will show and describe the *value of performing* from memory for the participants. Most of the participants hold performing from memory as an important value, given that they have enough time to learn a musical composition, they prefer performing musical compositions from memory. Some participants also described when they would prefer and how to approach reading the sheet music in a performance situation. The participants regard connecting to the music and the audience also as an important attribute or value and feels that performing from memory helps to find this connection. The second section will deal with *learning complications and learning to cope with memory issues*, such as exceptions for not committing a musical composition to memory, memory issues and the handling of memory-related problems. The third section will deal with *phases of learning* that involve: *pre-learning,* for example, concentration that is required for learning; then follows a *variety of learning approaches*: memory methods and suggestions; the use of muscle memory, analysis, visualisation, aural or combined methods; also including *learning from performances* and *post-performance learning*.

The section on learning processes contains more information than the sections that follows, which mainly describe understanding and remembering. In the learning processes section, the value of learning before, during and after a performance is also addressed, which gives the research a much broader and more holistic scope. The participants used the processes of learning as a basis to commit music to memory – this is not necessarily the actual process of memorisation, but a process that can be controlled by the performer.

4.1.1 Value of performing from memory

Hurwitz always performs from memory unless he must perform a new work that he did not have enough time to learn (1:157). Hurwitz says that if a child is taught memorisation skills from the age of eight, he will learn and develop the skill in this way. Children learn much quicker, but “adults, we are much more mechanical, we always compare things to what we already know and then we try to manage somehow when we learn something” (1:190). For Villadangos, the first step in learning is to make sure you have enough time to study a musical composition (2:46). Villadangos also says that feeling comfortable performing from memory takes many years of constantly persisting (2:43) (with reference to persistence in memory). In this perspective, a performer should keep committing musical compositions to memory, keep

performing, and not give up when that gets difficult. After many years of consistently memorising and performing from memory, a performer becomes more comfortable in performance, and the process of committing a musical composition to memory becomes less complicated.

Krivokapíc notes that he feels much better performing from memory than performing from the sheet music (3:1). He will almost always play without the sheet music, unless he had a short time to learn a musical composition and was therefore under time pressure, or unless it is a highly complex musical composition to memorise (3:8). Gripper feels that reading the score in a performance situation does not work – he has not read a score in a concert for about ten years, and when he did read and play from a score many years ago, he felt like that it did not work (5:1). Gripper aims to dissolve the distinction between playing from memory and not playing from memory by thinking about performance in such a way.

The Assad brothers were trained to memorise musical compositions from an early age (6:1). Assad mentioned that they were “sort of obliged and even forced” (6:4) by their teacher to memorise their musical compositions from the beginning since they were very young: “She would give us the score, to my brother and myself, and say you come down next week, but you do not play or look at the music” (6:4). From those days it became the norm for them to play without the sheet music, and it became their mindset. Sergio Assad agrees with Hurwitz that when you learn like a child, “you have more probability of learning something well” (6:38). There were musical compositions that they did not have the time to memorise, but if they have enough time and play a work constantly, they will work to play it without reference to the sheet music (6:7). Assad says that if they keep a musical composition in the repertoire, they will typically memorise it. For Möller it is the norm to memorise in competitions or certain situations like a concerto, “because of the culture, we kind of associate it that we should do it” (9:42).

The conclusion derived from the analysis of the data suggests that performing from memory is part of the performer’s mindset. Performers find it easier to commit music to memory if they had learnt to do so as a young performer and then continued to learn in this manner. The following section will discuss a set of different values identified as significant for the participants. Although all music performers make their own decisions, this research indicates that these are aspects that all music performers must consider, mostly before learning can commence, such as time consideration, bigger connection to the music, connection to the audience, using the score and using technology. These facets include some of the reasons, values and motivations on which performers base their decisions to commit music to memory or not.

Time consideration

Some participants mentioned the period needed to memorise a musical composition. Depending on the degree of difficulty and the length of a musical composition, the Assad brothers need about 15 days to two months to memorise a work (6:9). Garcia agrees that the difficulty of a musical composition plays a role in how long it takes to learn and memorise: "I have been working on this piece for two or three weeks now because it is a tough piece to memorise because it is never the same and it is contemporary, and the scordatura[5] is different" (11:10). He says that if he practises and works on this musical composition very seriously every day, he would hopefully be able to perform it by heart in another two weeks. Voorhorst notes that to feel comfortable that he knows a musical composition very well, it will on average take about a month's work to memorise it; but musical compositions such as a Bach fugue usually takes longer, even up to half a year: "I can play it already in a few weeks perhaps. However, to be sure that I know everything, I must repeat it many times, so playing the piece is the beginning, then repeat, repeats, repeat until I feel sure" (13:22).

Bigger connections

Some of the reasons performers offer for preferring to perform without sheet music, are that the connection to the audience or music is better, and they feel freer than when they are performing from sheet music. Connecting to the audience and connecting to the music are two distinct dimensions of performance. These two ideas are integrated and manifest first by a performer being more connected to the music through performing musical compositions by heart; and thereafter, a memorised performance will connect with the audience at a deeper level. All the participants agree that a memorised performance gives better performance results.

Connection with the audience

Gripper also wants a deeper connection with the audience and feels that a music stand interferes with that: "What I am trying to do is having an honest interaction and honest communication with them, that is the bottom line" (5:16). Oser agrees that if you are always looking at the music, your concentration on what you are doing decreases, and it loses some

[5] *Scordatura*: the technique of altering the normal tuning of a stringed instrument to produce effects.

of the musical intention or connection (10:2). Kinsey also believes that a performer builds a better audience relationship when there is no sort of music stand between the performer and the audience, and "you become more subjective so that you can play more from a pure sense of yourself, a more honest performance" (12:2). Kinsey asserts that performing on this level has more value and that one can be much freer if one can perform well from memory well; one can become more sensitised to finer details, like how the audience responds, there is a finer set of communication going on; and the performance venue becomes more of a sacred place (12:3). Voorhorst concurs with this and says that he likes performing from memory much more because it gives him a better connection to the audience: "I also feel better when I play, when I play by heart, I know the piece well, and I feel freer to follow my thoughts" (13:1).

Connection to the music

Hurwitz (1:149), Gripper (5:3) and Garcia (11:20) agree that performing ensemble music from memory will result in a more extensive connection to the music. Garcia described a chamber music concert which he attended and where all the chamber performers played from memory, with an optimal result:

> There is a place in Paris called *Chamber Music Centre*, they organise chamber music concerts, but everything is by memory, everything, like quintet, quartet, trio. It was the first time I think I felt something more in chamber music; for example, it was the first time I have seen a string quartet playing by memory, and it was like, it was not the same at all; it was so much better (11:20).

Garcia believes that playing by memory is musically the best a performer can do. Garcia can feel that when he plays chamber music and uses sheet music, it is not the same as when you play without sheet music (11:2). Performing from memory focuses your attention on the music, rather than putting energy and focus into reading the sheet music. Krívokapic says about performing from memory that "if you do need to look at the score then there is a part of your focus which needs to be on the score" (3:59). If your focus is not on the sheet music, then you could probably apply that energy to something else, and it also means that there is no barrier (the music stand) between you and the audience (3:2). He also feels that if a performer performs a musical composition from memory, he will know it well. Assad believes that playing with sheet music before your eyes involves other parts of the brain, and that it is different from playing without sheet music (6:54). Garcia describes playing by memory as essential and he thinks that "playing by memory is musically necessary" (11:1). When he performs musical compositions solo from memory, he feels completely free: "it is like having another dimension

to what you are doing" (11:3), and the connection to the music is better. Voorhorst also experiences the music stand as a barrier between him and the audience, and he also feels that if he can play a musical composition by heart, he knows it so much better (13:4).

Using the score

Most participants prefer to use the score when performing chamber music, except Oser and Voorhorst, who most of the time play any musical composition without the sheet music. For Hurwitz, committing chamber music to memory depends on what level the performance should be. He will commit chamber music to memory if it seems necessary for a certain quality of performance (1:149).

Some active members of a professional guitar duo, such as Krívokapic, Assad and Möller, report that when they perform duos with another guitarist, they will almost always commit their repertoire to memory. Kinsey thinks playing without the sheet music is good if you are just playing duos and working together a lot (12:6).

Assad points out that chamber musicians always play with the sheet music in front of them:

> when you are making chamber music; you are not doing by yourself everything, like when you have to control every aspect of the piece like you know the harmony well, you know the melody well, and you are linked, it is easier to memorise; you are playing just a part or a portion of it (6:40).

Assad further notes that most people playing trios and quartets use sheet music because it is harder to memorise those parts. Möller also rarely plays without the sheet music if he plays with a violin or a flute (9:13), whilst Kinsey (12:6) and Möller (9:12) both feel that the risk of playing without the sheet music is much bigger in the case of chamber music: when two or more people play together, you have to know the other player's part as well (9:12).

Voorhorst relates his experiences of performing with an oboe player:

> … most of the pieces I play from the score, but some pieces we have played for a long time, so these pieces I have memorised, but it is not really that I have practised it, it just happened, so I played it so long that I just do not need the score anymore (13:7).

He says that even if a musical composition is committed to memory, the sheet music is always there, and he can quickly correct himself if a mistake occurs. Steidl also uses this approach and sometimes has the sheet music available for a sense of security in chamber performances (4:13), even if he can play his part of the ensemble from memory.

Although the participants placed big emphasis on committing music to memory for the purpose of building a deeper connection, using the sheet music when performing can have excellent results. In some cases, the result is optimal, and some participants are of the opinion that playing without the sheet music can be overrated. Steidl believes that playing from the sheet music means using more of your brain, but that the quality of performance should not be affected by reading: “I heard so many great musicians playing from the score, and I have seen so many bad musicians playing from memory” (4:42). For him, it is about searching for the proper harmony in a performance: “There must be a certain point of harmony, and it must not be devastating for your brain”. In other words, musicians should not make too big an issue of playing from memory – whether playing from the sheet music or not, a performer should be comfortable in a performance (4:42).

Fernandez argues that musicians place too much importance on memorising. They should not make the process more complicated than it already is, and memorisation should happen naturally: “I do not think it should be so important. I do not care if I go to a concert, and they play from memory or the score; it does not matter to me” (7:34). Fernandez also believes that a performer should not be afraid or ashamed to use the sheet music. Möller says that reading the sheet music can also be excellent, and in some cases if you are less secure about your memory, it produces a better result (9:4). Reading the score may sometimes be inconvenient – if a musical composition has several pages, for instance, the constant paging can interrupt a performance. However, when musicians read music in works with different movements, Möller does not experience it as a negative aspect; and if they would turn the page of the sheet music only for each movement, it is better for the presentation (9:6). In musical compositions such as Baroque suites, a movement consists of two to three pages only, and this would make it possible to turn a page only between each movement as Möller suggests.

Möller has not found that reading disturbs the performance particularly, but when he decides to use sheet music, he keeps the music stand very low, rather like a flat surface, so that it does not block him: “It has to be more of a scanning of the score, not staring at it, and not reading all the time” (9:8). The music stand should be almost invisible to the audience and the placement of the music stand is very important. You can also use a decorative music stand, but how you deal with it, is crucial (9:41). When Möller is reading the sheet music, it looks as

if he is looking at his left hand, but he warns that you should not look too much at your hand. You should look over the strings so that you can see the sheet music also (9:39). On most occasions, Kinsey also has a music stand on stage with her, and she will also position it relatively low. She uses it more for a sense of security and she does not read the score all the time (12:4).

Using technology

Technology such as electronic hands-free page-turning devices can be used and has certain advantages. Steidl has used an iPad a lot in recent years: “The iPad is fantastic, when I was travelling ten years ago I had so big, kilograms of the sheet music with me, now I have one iPad, and there is everything” (4:56). Steidl mentions, however, that he is slowly returning to the roots of playing by heart and studying. Although he approves of the technology, he warns that a performer should not use the technology to his own detriment: “I think we still have to learn the pieces by memory, it is essential” (4:56). Möller never uses an iPad as an aid but can imagine that it may be a beneficial tool when performing longer works or complex modern musical compositions (9:8).

Voorhorst discusses how the famous concert guitarist David Russell approaches reading:

> The last time I saw him, now he plays from an iPad, he does not play by heart anymore, but the iPad is on stage, and you hardly see it, with his foot he can turn pages, so it goes well, and for him, it is also perfect, when you get older, your memory does not work that well (13:3).

Voorhorst mentioned that with Russell, the iPad is hardly visible and does not disturb the flow of a performance. It is essential to remember that David Russell and other performers, such as Elena Papandreou, who uses the sheet music often, have excellent sight-reading skills. David Russell and Elena Papandreou were not available for interviews in this research, but both responded in e-mails. Papandreou said that the reason guitarists do not use the score that much, could possibly be “because they cannot sight-read well enough”. Möller confirms that using the score depends on how well you read (9:7).

4.1.2 Learning complications and learning to deal with memory issues

The following section deals with complications in learning and with learning to deal with memory issues. The first part of this section will highlight some of the exceptions or the reasons why a performer would choose not to commit a musical composition to memory. Complications with encoding a musical composition can arise either from the composition or from the situation of the performer. The second part of this section will highlight how participants deal with memory issues in performance. For example, complications that arise in the performance may impede the recall of the performer. In such cases, the performer either has to improvise or skip a section in the performance.

Learning complications

Complications that may arise in learning a musical composition include, according to Hurwitz, that if a musical composition gives you instructions all the time, you need to actually read, to understand or to follow a particular pattern that you cannot memorise, “like playing three bars, then five bars the same, then eight bars. For example, Leo Brouwer’s *La Espiral Eterna*: You can change the order of the bars; you can improvise. In those kinds of cases, maybe it is better to have your eyes on the score, not to forget any detail” (1:147). Hurwitz argues, however, that for the music itself, “if the music is made out of notes, only notes, I think there should not be, or I have not come into a scenario where I thought I just have to have the score in front of me”, unless he learned a new musical composition that he did not feel comfortable playing by heart yet. Steidl recommends that reading from the sheet music will be better if there are musical compositions which you must learn in a short period and have to play in one or two weeks. He describes a situation where he did not try to commit a particular musical composition to memory:

> I played a piece once by Phillip Houghton, and there are so many essential things like how to change colours that it is almost; the score almost looks like art itself because he was also a fantastic painter. It is almost every second that you have to change the colour; you have to do many things, change the dynamic, change the tempo, and it is pretty difficult to memorise it (4:9).

Assad will not memorise a musical composition for only one performance, but if he keeps a composition in his repertoire, then he will memorise it (6:8). Fernandez gives a few reasons

for not consciously trying to memorise something; for instance, such as musical compositions that are challenging to memorise:

> Because you might have the exact figure repeated with minimal variants (in Sor, for example, this happens a lot), or some kinds of contemporary pieces could also be; when you have to measure seconds, it is not so easy (7:2).

He will play with the sheet music in those cases, but otherwise, he will try to commit those musical compositions to memory. Möller says that sometimes it just makes no sense to memorise a musical composition because it is so complicated, "where it is filled with a lot of detail and variation, maybe it favours to read" (9:9).

Möller also does not take risks if he does not feel comfortable: "I do not want to feel uncomfortable, and I do not want to risk having that get in the way of the performance. But when I have new compositions, even if I wrote them myself, I tend to read, definitely" (9:46). Whenever there is a risk or he feels uncomfortable, he will put the sheet music in front of him without feeling embarrassed about reading. Oser prefers to commit musical compositions to memory unless – like Hurwitz also explained – there are instructions from the composer (10:5). Kinsey believes that it is good to play from memory unless you have extreme anxiety (12:1). Musical compositions by J. S. Bach she would prefer to have the score available, not so much with contemporary music:

> I am pretty comfortable with contemporary because you can put your imagination into what contemporary music is doing. Most people listening understand how J. S. Bach should sound, if you tend to go the rails that it would sound incredibly like it is not Johann Sebastian's music that you are playing. So, in Bach, it is more this kind of mathematical music, with all the parts, especially a whole suite or a prelude and fugue where you got different voicings, and so on, it is good to be able to highlight where all the voicings come in and you do not want to miss anything of that (12:5).

Voorhorst responds that when there is a melody, and he has an affinity to a particular musical composition, and he can follow it, he would always commit sheet music to memory:

> Even with modern music or Barrios or Bach, I memorise everything. There was once a composer from England, he wanted me to play a piece, and this was called *mathematical system*, or something like this, that was the title, and this was so

> complex, every bar was different, the rhythm went on, and all the notes were different, so for this music, it is just too much work to memorise (13:6).

When an exception like this occurs, Voorhorst will use sheet music. The analysis suggests that aspects of a musical composition that makes committing sheet music to memory complicated, includes multi-meter time signatures, bars that shift, musical compositions which sound improvised, no consistency because of variations, or intricate fingering.

Krívokapic explains that in a duo combination, when a part is already memorised, it becomes complicated when they shift or add material to the other part, in order to bring out the top part, or sometimes one of the parts are too complex, and they will rearrange the sheet music. They will perhaps change the notes or the fingering (3:31). Assad mentions that when the position of the notes on the guitar fretboard shifts, he can get lost because then the notes are out of their usual place:

> The thing with playing the guitar is complex because you have different scordatura. When I apply different scordatura, the notes are not in their spots anymore. I am used to notes where they are, for instance, C on the third fret, fifth string; if that is shifted somewhere else, I have a problem with that. I have played many pieces where I use different scordatura, you know, fifth string [A] down to G#, sixth string [E] down to C# or down to B, then the notes are displaced on the fingerboard, if I get lost in a concert, for instance, then I do not know where the notes are because the notes are out of place (6:28).

Garcia agrees that a musical composition with a different scordatura complicates the learning process:

> … because the guitar you know is not the same, all the habits you have are different, all the notes and positions shift. Also, this piece [he is learning now] uses many harmonics; we do not know the harmonics everywhere on the guitar, so sometimes it needs time (11:11).

For Möller, the real challenge is committing complex musical compositions to memory (9:48). Möller says that in musical compositions by J. S. Bach or other Baroque music, it is more difficult to memorise: “there is no consistency, because of all the variations, which makes it harder to memorise, each unit has to be memorised in its own, uniqueness” (9:31).

Steidl (4:45), Fernandez (7:16) and Möller (9:50) all observed that memory issues in performance happen when you are tired or use your brain too much, or when you lose concentration. For Krívokapic, some of the most significant issues of memory in performance are confusing parts, repeating something wrong or skipping sections:

> When there is a piece in a Rondo form, the first theme goes to the part in between; sometimes, I confuse those parts in between. It also happens in places with cadences, and after the cadence comes a different part, you continue with a different part (3:27).

Möller experienced similar performance issues when a section was repeated wrong: “That happens to me sometimes, I skip a section, perhaps a repetition or I jump, or I play a concert, and I forget one piece, it is a kind of the wrong turn somewhere” (9:33).

Gripper suggested that memory lapses are unnatural and have a cause (5:37), and each performer should personally figure out what that cause could be. Voorhorst noted that memory issues could also be psychological, such as a memory incident that happened in the past: “If you have one piece where you once made a big mistake, this is also in your memory, and it can be that you are on stage and suddenly you get afraid at this moment, and it comes back again” (13:28).

Dealing with memory issues in a performance

Most participants agree that in case of a memory failure in performance, a performer should continue to the following reference point, sequence, or part, but should not stop the music. Krívokapic advises that you should try to go on in a way that will not affect the flow of the musical composition so much, and a performer should not go back and play over the same problem spot again: “I would not like stop, and then try to go back and repeat it and make it perfect, right, that is something I would not do” (3:28). Krívokapic never had the problem that he had no idea where he was in a musical composition. When he realised that a memory issue was about to happen in a performance, he would somehow try to keep it all together by continuing from the next performance cue (3:29). Steidl will also not stop but will try to continue by improvising or play from the following part: “I will immediately jump somewhere else, or I will start to make a little cadenza or something like that, improvising to the moment where I can continue” (4:43).

Gripper revealed that he does not care too much about memory issues, but that he will improvise (5:14) and not try to prove that he knows the music. Assad very rarely has memory

issues, but he remembers an incident when he was young and performed with his brother in São Paulo:

> It was a Bach piece, a fugue, I cannot remember exactly, and I had a memory gap, and then we restarted the piece and then when the place is coming back, I was trying to put all my concentration there, but I was so nervous that I had the problem again, so we had to jump to the next piece (6:32).

He then did a mental study of this musical composition to be ready for the next concert. For Assad, that the problem is when you cannot remember the sequences of a musical composition: “if you cannot remember what comes next, then you have to go back to the paper, take a look, and then go back and play it again” (6:32). He also recommends having performance cues where playing can continue. Assad says that minor errors can happen, but a performer should not miss the sequences of a musical composition: “if something does not go well because the fingers are not well placed, but that does not disturb the flow, it should not disturb the flow, you know what is coming next” (6:47).

When a memory issue occurs, Fernandez will also improvise. Unlike the other participants, however, he would stop the music and just begin again in some cases. He knows the music very well, and again, a memory issue happens when one loses concentration, so he is confident that when he plays over the same place where he made an error, the same mistake would not happen again: “I would stop and begin again, because it does not help to go to the next spot, I mean you have to think of the audience” (7:18). Fernandez perhaps means that he does not want to let his audience down because they have paid to hear a musical composition performed as the composer had written it.

Möller handles memory issues by improvising or jumping to the next part, but he cautions that when you begin to improvise, the critical aspect is to stay in key (9:32). He will avoid stopping and starting over. Möller finds that it is easier to get away with memory issues in his compositions:

> I can dwell on it a little bit. I can do improvisation; it is not that I do not like it; I do not have an interest in doing that; improvisation is kind of searching; I am more interested in composition than improvisation. Improvisation is great, I suppose; it is like composing; it is a lot about theory, especially stylistic (9:66).

Oser will always try to think a few tones ahead: “What I learned to do is to always think in advance what sections and phrasings are coming next, and my ears should work for that also, not the fingers, the fingers must go after the ears” (10:22). He feels that a performer should should know in their minds what the music composition should sound like, and a performer should be able to continue from any point in the music if he knows every note in a musical composition.

For Garcia, after many years of an active performing artist, the thought of having a memory problem in a performance situation is still his biggest fear:

> I do not know why; I know that my fingers work, I know that I know the music. If it happens, there is always this “if” that makes you scared, yes sometimes it happened that I had problems with memory; you have to continue with what you know (11:9).

Kinsey will first try to calm herself down and not start panicking. She will also try to improvise in the moment “while I am doing that my brain is working out where to continue with the next section” (12:19). She will furthermore avoid going over that same problem spot again, and she will try to carry on and pretend that nothing went wrong. Similar to Assad and Oser, Voorhorst is not bothered too much about memory issues, as he knows the music, the melody and harmony very well and can therefore easily resolve minor memory errors:

> I know that I can fix it; then I take another note that also fits well, and I know the next chord; so perhaps people who know the piece well would notice, but ordinary people will not know that something went wrong (13:19).

Conclusion

The reasons given by performers for choosing not to commit a musical composition to memory, are closely related to complications in learning a musical composition. These reasons for using sheet music are very individual, which implies that what is problematic for one performer, may not be an issue for another performer. This section identified some of the difficulties that prevent performers from memorising a musical composition. These issues include, among others, aspects that complicate committing a musical composition to memory, composers, periods, or specific styles of music that are difficult to understand or to memorise, and very particular scenarios where the participants experience memory issues in learning or performances. Performers also discussed reasons why memory problems occur, such as performance anxiety, a lack of concentration, or music not properly learned. They furthermore

described how they learned to deal with memory-related issues; and in most cases, memory issues during a performance are handled by improvising or jumping to the next part.

The above section sought to provide an understanding of the reasons why musicians choose to perform from memory and the values involved in their decision to play from memory or not. It also explored the difficulties and problems that musicians face before and during the learning process, and with executing a performance by heart, given the challenge of dealing with memory issues in a performance. In the next sections, the focus will shift to the learning processes, which involves the principal and most extended section of the research.

4.1.3 Phases of learning

This section on the phases of learning is divided into four smaller categories. The first section, pre-learning, involves aspects and approaches which need to be considered or decided on before learning a musical composition begins. These aspects include having a positive attitude towards learning, concentration that is required for learning, relaxed unpressured learning, natural learning, and the decision for each performer to focus on their strengths or – in other words, to choose the memory or learning method which is their best virtue. The second section will deal with a variety of learning approaches and practices which takes place after pre-learning is completed. This section will discuss various methods of memories as described by the participants of this research. Most participants will, for instance, begin studying work by finding suitable fingering solutions, the use of muscle memory, analysis, visualisation, aural or combined methods, and aspects that involve musical composition to be performed from memory. The third section will focus on a holistic approach to musical memory and will show how performers learn from performances and how concert situations contribute to learning and the continuing of learning. The learning of a musical composition continues after a performance, and the fourth section will consider post-performance learning, which includes debriefing after a performance or learning from making recordings.

4.1.3.1 Pre-learning

Positive attitude towards learning

Voorhorst studied with David Russell in many master classes and claimed that Russell was always thinking about memorisation, also on having a positive relation towards learning and that encouraged him a lot.

> Also, what I learned from him is to be always positive, so when you practise, have a good feeling, enjoy what you are doing, and do not get nervous; when something is difficult, do not think it is difficult, start working and do your job (13:18).

Like Russell's thoughts regarding a positive feeling towards your work, some of the participants also mentioned that the emotional connection you have with a musical composition plays a role in learning it; for instance, you will learn a musical composition quicker by positively relating to it. Oser explains, however, that some musical compositions do not "fit you as you wish". There are so many complex things that go through your body that makes you think that you cannot remember a musical composition or a specific part of it; "then I found out there is also a psychological problem, the feeling you got with a piece, for instance, Spanish music goes in like nothing, some of it is very easy like Rodrigo or Moreno-Torroba, it just goes down like water". If you love a musical composition; you will learn it quicker. Kinsey agrees that there might be some musical compositions with which you have a closer affinity than with others, and "it is always good to play pieces which you have a close affinity to, the performance is going to come off better if you have a choice in the matter" (12:26). Thus, you sometimes have to play repertoires that you do not like.

The first important aspect of pre-learning is to approach the learning of a new musical composition with a positive attitude and to enjoy what one is doing, and not to ponder on thoughts that the musical compositions in question are too challenging to learn. In a development phase, where students still receive tuition, the music teacher helps by choosing a suitable repertoire for each student. A good music teacher will not choose works that are too difficult for their students, and when a musical composition is very complex, it means that the music teacher has confidence in the student to learn and perform that musical composition excellently. Therefore, performers should always try to have the mindset that nothing is too hard to learn; they should maintain a positive attitude and believe in themselves and their ability to learn the music. Believing in yourself as a performer is an essential aspect of pre-learning. Performers ideally should be able to choose musical works for which they have an affinity: the participants felt that performers learn and commit a musical composition to memory more quickly when they enjoy playing and when they love the music they chose. In a performance situation, works that the performer loves playing also sounds better. As Kinsey mentioned, however, all performers sometimes have to play works they do not like. Works are harder to memorise and perform if they do not have a clear relation to a specific musical composition or style.

Concentration required for learning

The participants reported that before a musical composition can be studied, the conscious decision to concentrate, learn with attention, or focus on what you are trying to learn, is a requirement for productive study. Steidl likes to achieve the feeling of being empty, not thinking about anything else and just letting the music happen during a performance (4:1). Concentration during the process of practising is critical: “What happens on stage is the mirror of what happens in the room where you are practising” (4:50). Steidl also refers to this concept as having a “big concentration” when practising (4:53), because one needs to fully concentrated, and you cannot concentrate for too long. You can be truly attentive for 20-40 minutes, and it is therefore better to practise for short periods and to fully focus on what you are doing. Assad confirms that “if you are learning something, you have to learn with a lot of attention” (6:35). He says that if we are not entirely concentrated, we do not learn well, and that it is not necessarily productive to study eight hours a day (6:37). Oser sees learning a musical composition as “learning with your full understanding, your feelings and skill” (10:7). To learn with your complete understanding, feelings, and skill, it is necessary to focus hard on what you are trying to learn. Garcia regards the most critical thing about memorising as being the way you are focused. If he tries to memorise something and he is not “200% focused”, he will learn only a bit, but by being “200% focused”, he learns a lot, and the difference is enormous: “this is about our will, about the concentration on the score and on the music” (11:7).

A lot of work and preparation are needed in order to perform from memory and to be free from the score to focus on the music in a performance situation. Being consciously attentive while learning and committing a musical composition to memory is a critical factor in this process.

Relaxed, unpressured learning

Krívokapic, Steidl, Gripper and Fernandez emphasised that performers would learn more quickly when they take their time; when they are relaxed and under no pressure, practising slowly; and when they are not consciously trying not to memorise a musical composition. Krivokapíc notes that looking for shortcuts and trying to memorise a musical composition as quickly as possible, creates a lot of tension (3:51). This kind of pressure makes it harder to memorise something, but “if you kind of think that you have all the time in the world and go and approach the piece this way you will have the best result in the shortest time” (3:54). Krivokapíc has experienced that if he is under pressure to learn a musical composition, it takes longer to learn. However, if he then, for example, takes the same musical composition and

spends one hour with a student when they are extremely focused and do not feel any pressure and can work on it for many weeks, he can find fingering or a solution that he could not find for weeks, and everything suddenly becomes less complicated (3:55). It is essential for him not to take shortcuts, but rather to try to understand everything.

One should not force oneself to memorise consciously, according to Gripper, who says that if he is sitting and practising, and he is saying to himself: “I am trying to achieve here, I am trying to practise, I am trying to memorise; then we create a lot of mental disturbance and tension, trying to do that” (5:10). He observes that if one instead does not “try to do that”, but completely inhibits the intention to commit sheet music to memory and instead just plays the musical composition, the results will be more significant, without the unnecessary tension. Fernandez concurs that one should study a musical composition as if one has infinite time to learn it, and never worry about some deadline, because that never helps (7:21). He usually studies a new musical composition for a very long time before he performs it. Steidl points out that when learning, it is essential to keep things simple and to practise slowly. He says it is fantastic to play with slow bodily movement, and to imagine the following notes in slow motion: “I start to practise very slow, very slow and it work” (4:24). This implies that working in this way requires rigid self-discipline, energy, and motivation.

The analysis of the data suggests that relaxed learning involves taking one’s time, being relaxed and comfortable, and trying not to force or consciously commit musical compositions to memory. The participants of this study claim that when a performer is relaxed and learning with attention, the result will be optimal.

Natural learning

For most participants, memorisation happens by itself when they are not consciously trying to remember. According to Krivokapíc, “usually it just happens naturally in a way this memorisation, so I do not think of it”. Krivokapic discusses the example of systematic practising, “how you practise are that you practice each part and each variation separately and then you just practise the connections in between them, and it memorises itself; so, there is nothing concrete, but it is in a way very specific” (3:11). Steidl believes that one has to let one’s natural intuition guide one when learning a new musical composition: “to start from your intuition is very important” (4:17). Gripper claims that we all can commit sheet music to memory straight away; he also says that memorising is a natural occurrence (5:19). Gripper thinks the reason some people cannot memorise, is that they *think* they cannot: “they think that memory is something that they have to do, and they create all these complicated things

like visualising the score" (5:20). He does not think specifically about memorisation – if someone would ask him advice on the issue, he would not have tips on memorising. He will have tips on how to think about performance that would make memorisation something that did not exist, however (5:34). Because memory is a natural occurrence, one cannot help but remember something:

> like one cannot help to get a song stuck in one's head, to get a song stuck in your head, you did not have to visualise it first, it just got stuck, and you cannot get rid of it. I find the same thing; if I am playing a piece of music, it just goes round and round in my head, even when I am not playing it; it encodes itself into you anyway; there is nothing much to do about it. Try to play a piece of music every day, try not to remember it; good luck (5:24).

Gripper also suggests that if memory is not happening naturally or if it happens with much effort, one has to work out why this is the case: "Why is this thing that should be happening in a normal situation … Why is it not happening?" Gripper explains that if something is unnatural, it means that the musician is subconsciously doing something that is blocking the natural process (5:36).

Fernandez also does not place excessive focus on committing sheet music to memory: "If you focus on something you are making it more complicated than it is; I think it should happen naturally" (7:15). He also does not think of it as memorising, but only as learning a musical composition. It is part of studying, and not a separate process to be able to play something without the sheet music, but "then it would supposedly be called memorised" (7:20).

Oser differs from Gripper and reckons that it depends on how you react to a new musical composition. Some musical compositions are internalised naturally (10:8), but other, more complex musical compositions, requires more of an effort to commit to memory. By consciously trying to commit sheet music to memory, Oser feels that you have to use another method of learning, such as analysing or visualising the sheet music. For him it depends on the difficulty of the musical composition.

Thus, although it is important to be focused and relaxed while learning, natural learning is also about a natural intuition that you need to trust to guide you. This intuition can possibly be explained as some sort of free-thinking style, when a performer lets his mind led him to learn and practise on whatever he wants to work at that moment. Opening to your intuition is about

paying attention and listening; it is about practising and learning to trust yourself and receive signals.

According to the participants, ideal learning means to keep the process or practise sessions effortless. When a performer has a positive attitude or an affinity towards a musical composition, natural learning is also more easily recognisable. Natural learning also refers to a state of mind where the subconscious mind is not obstructing the learning process. Examples of such obstruction include having personal or negative thoughts, feelings, or perhaps a subconscious mental block that does not allow you to commit sheet music to memory. Natural learning seems to be connected to the repetition of musical compositions, repeatedly playing until it becomes committed to memory by itself. It is important to note that natural learning does not refer to motor repetition and muscle memory only, but it is also connected to concentration, relaxed learning and understanding, as explained in the above section.

Like Oser mentioned, when a musical composition cannot be memorised effortlessly and naturally, one must find another learning method. Most participants agree that everyone is different and learn musical compositions in different ways. Therefore, all performers must first find their strength. For some, natural learning comes easily; for others more effort in learning is required.

Focus on your strength

Hurwitz and Assad discussed in more detail how all performers should focus on their strengths and natural abilities. Hurwitz believes that one should discover what he is strong with and develop his strength instead of developing his weakness (1:181):

> I think there are different ways, different strengths, different ways of memorisation. Some guy is very good with musical memorisation; some guy is very good with mechanical memorisation; another guy has terrific visual memory, he can just look at the score one time, close his eyes, and see the score in his head. Maybe he does not hear anything in his mind; he just sees the notes and plays them (1:204).

Hurwitz said that each performer should understand with which method of committing sheet music to memory he is comfortable and successful and should secure that with other memorisation methods. For Assad, one's strength is the result of one's tendency: "let us say, you have some tendencies to, as a musician, like your harmony or your logic to melody, your

logic to form or whatsoever" (6:11). Sergio Assad's sense of harmony is very well developed, whereas his brother Odair focuses on fingerings and shapes; he uses more visual memory of his hands. Assad says that most people who play music by ear can play a huge repertoire and massive musical compositions. The Brazilian player Yamandu Costa, for instance, learns fast and can play any musical composition from memory. Assad ascribes to a fundamental knowledge of harmony and a perfect knowledge of harmony by ear. Costa knows where the notes are, and he can play around them, if necessary, "He has a huge repertoire, you can ask him to play that piece which he has not played for years, and he is going to play it" (6:53). Costa has trained himself for many years to perform music in such a way.

The decision for each performer to focus on his strength is an integral part of pre-learning. For one performer, it might be to start by analysing a musical composition first; others will try just to use motor repetition. The result for each performer to focus on his strength is that learning will become less complicated. In the following section, this variety of approaches and memory methods will be discussed in more detail.

4.1.3.2 Variety of learning approaches

Finding suitable fingering solutions

For most participants, deciding on a proper fingering is the first step in learning a new musical composition. However, Hurwitz uses a different approach and will first imagine the music, then do the fingering. He often hears guitarists describe their own process as "first I learn the piece, I make the fingering, then I put feelings and music inside, first, I learn, then I practise very slowly, then I decide what kind of musicality I want to put inside" (1:186). He finds this routine ridiculous, and he will first focus on musical aspects. Hurwitz, similarly, says that musical expression and fingering are connected. His approach will be to look at a musical phrase, then immediately imagine a few scenarios or a few ways to make the fingering. He knows what will work for him and what will be less idiomatic for a guitarist: "According to my musical taste I will choose the fingering that expresses the musical idea that I have" (1:156).

Krivokapíc recommends that once you have experimented with a few different fingering solutions and decided which one to use, you should stick to that fingering; otherwise, it can still be quite confusing for the memory if you do not know or have not decided yet which fingering you want to use, or if you use a different fingering every time (3:16). He also says that deciding on a proper fingering is a big part of learning a musical composition and committing it to memory.

Fernandez explains that fingering depends on the musical composition that one is learning; if he is learning something he has never seen before and wants to prepare it for a concert as quickly as possible, for instance, he will start carefully fingering (7:4). Like Krivokapíc, he also indicates that memorising comes more quickly if you always use the same fingering (7:6). Möller says that, in a way, the first step is to begin with fingering solutions. He spends quite a lot of time with that and looks at all the possibilities, and in that way, he already has a clear picture of what he needs to do. Then you can use your methods, like taking certain sections and practise slowly with a metronome, and "isolate the real problems and find the good fingering solutions early, because that is what you rely on; good fingering has a tremendous effect on the final performance" (9:18). Like Krívokapic, he has also found that fingering helps the memory because it means that you have learned a musical composition with more detail. With regard to fingering, Möller notes that "you have to think it over and over again, try different ones, and then eventually, this is the one, and it is memorised, then you remember it" (9:71). He believes that when you do not remember a musical composition, the reason usually is because your fingering is not good or not so clear, or it is confusing in the right hand, especially.

Kinsey also explores a lot of different fingering solutions, depending on the tempo. She says that with a slow musical composition you can practise with certain kinds of styles and techniques. With a fast musical composition, you must sometimes change your right-hand fingerings, and "if you can do it beautifully and it is speaking beautifully, the music is coming out well with the fingering you have chosen, then it is fine" (12:9). Kinsey says she never follows exact fingering provided in musical compositions, but constantly questions them. A specific fingering might suit the person who set the fingering in specific editions, but it might not suit the performer. Hurwitz had a similar response towards given fingerings in publications (1:199). He sometimes finds it nonsensical that publications offer fingering solutions for complex musical compositions, because a serious performer will continually adapt or change the fingering to adjust it to his style and interpretation. Hurwitz points out that the suggested fingering can be problematic because each fingering solution gives a different musical interpretation (1:199).

Krívokapic described how choosing a proper fingering for a musical composition is a big part of learning and committing work to memory. A musician's memory can quickly get confused if the same fingering is not used every time a musical composition is played; therefore, once a performer decided which fingering to use, they should stick to that. Finding good finger solutions early when starting to learn a new musical composition is a crucial aspect for all

participants of this research, and as Möller emphasised, good fingering in a musical composition will have a tremendous effect on the final performance.

The next section focuses on analysing a musical composition. This also involves understanding, but in the following paragraph, analytical thinking is discussed in terms of learning processes and approaches. The following section will show that by analysing a musical composition, it becomes less complicated to learn the notes within the structure.

Analytical memory

Krivokapíc will learn a musical composition by analysing it. He will first examine the structure and learn it part by part (3:13). Most participants, except Hurwitz and Kinsey, begin with the fingering. After Steidl has done fingering, he will look at the form of the musical structure – to him, the form is fundamental to understand a musical composition. Gripper says he thinks of playing like reading. Just as one reads literature, one reads the score, and tries to make sense of the musical composition: “It is not analysis by looking or by thinking, but analysis by playing” (5:4). While he is playing a musical composition for the first time, he is analysing, and he is looking for physical impulses. These movement-based bursts can also be referred to as *phrasing*.

Assad says that he thinks “a basic knowledge of music theory and harmony plays a huge role in memory” (6:12). In the course of teaching some of his students, he realised that they had studied harmony, but did not know harmony well: “They know it on paper, but cannot apply it to reality, like if I ask them to harmonise any simple song, they cannot” (6:13). Assad emphasises that knowing harmony is essential. He does not refer to the name of the chords, but “it has actually to do with sounds at the back of your mind, and that supports anything that you are doing with your fingers” (6:13). In other words, you must be able to translate what you hear in your mind to the guitar. After Fernandez has completed making very careful fingering of a musical composition, he likes to study a musical composition line by line, “until you understand everything that is going on musically” (7:5). Fernandez finds that if you understand the structure and the phrasing, memorising becomes less complicated. Garcia also observes that in the learning process of a musical composition, understanding the music is very important: “If you understand the harmony and the structure, it will be easier to learn the piece, because to you it will make more sense or if you understand the rhythmical structure” (11:18).

Kinsey says she does much analysis before fingering or anything else. She will first try to thoroughly understand the musical composition, the sections and phrases, the melodic lines,

and the chord structure (12:7). Voorhorst tries to go into the analysis of a musical composition. He knows the harmony and the structure: “I am much more realising what the music is about, more about phrasing, harmonies, following the melody, tonality” (13:10). Similar to Assad, Voorhorst places much emphasis on knowing the harmony and the melody. The musical background is also significant to him for a complete understanding of a musical composition (for instance, the style of the music).

The goal of analysing a musical composition is to understand it better, and when a musician understands the music or what they are learning, then learning and memory become less complicated. The issue of understanding through analysis will be discussed in more detail in the next section.

Learning in small sections

These participants agree that starting to learn a new musical composition in small sections and then building more extensive sections, are more effective for memorising than working with big sections. Steidl suggests that when you start to learn a musical composition from memory, it is better to work with small sections (4:20). Gripper compares learning in small sections to phrasing, and calls it “movement-based bursts”:

> I am looking for the things that can become, where I have many notes, that can become one movement; so, then you start to build these bigger and bigger pieces, but it is all movement-based, so finding the first burst of movement, the second burst and so you are reading the score for that, to read these movements; and as you do that and you explore it more as you play it (5:6).

Gripper has found that after working in this way, he can play a musical composition without the sheet music quite quickly.

Fernandez explains that memory works in “chunks” – if you make a block, it is easier to commit to memory (7:8). For Möller, it comes down to detail and to isolate individual problems or individual passages. He will work with sections and sees longer sections as being comprised of shorter, smaller sections: “Some of them are more difficult, some sections might be more rhythmically complicated, and there are different ways to approach it” (9:17). When a section is very fast or technically very demanding, he resorts to a more methodical way of learning it, and he will practice more slowly in scale passages: “Say we can only learn small segments, that memory is based on links of many small segments; you know 2+2=4, 4+4=8, it becomes

longer sections" (9:28). He compares this to building Lego blocks, where you can add the blocks together, and the small sections become part of a bigger whole (9:76). For him the key is to memorise in small bits.

Muscle memory

In general, muscle memory, gained by constant repetition of musical repertoire, is needed for musicians to make music. Steidl defines *good muscle memory* as being in a state where you know the music so well that it can just stream automatically without the performer needing to think about the notes, but that it still relies on combining your learning process with other methods of learning, such as analytical thinking or visualisation. Steidl says that "it is a state where you do not need to use your brain, you can just feel the sound and the tension, hearing the sound and knowing where each tension resolves to; it is everything automatically, you leave it, it happens" (4:3). This does not mean that he does not concentrate or focus in the moment, because brain activity such as emotions, aural tensions and movement is still involved. It is a state where the performer has programmed his brain beforehand, like a computer, and the music streams automatically.

Steidl also tries to use his muscle memory, but he combines muscle memory with visualisation. He describes this as using his "third eye" (4:39). Steidl says he has the best experience to learn a musical composition from the end and work backwards: "The mechanism is already wakened up, that is already something because the muscles they also have memory, the muscles, they have learned already" (4:22). Again, Voorhorst studied with David Russell, he reported that Russell thought playing without the sheet music is a considerable risk, because when you are on stage and you have a memory issue, this is the biggest mistake you can have, and you feel terrible. These mistakes usually occur by relying on one's muscle memory only. Voorhorst also noted that Russell was always thinking, "how can I have my memory better". Like Steidl here, Russell had excellent ideas on memorisation, for example, starting at the back and first memorising the end before studying towards the beginning, because you play the beginning many times. He said that moving towards something you know well, is always much easier. For example, when you go by car to a place you do not know, the final stage of your journey is difficult, but returning home is much more manageable. Likewise, when following the learning method from the end, the further you progress in the composition, the less complicated it gets. Starting at the beginning was a mistake that many people made: they start at the beginning, and they know the beginning very well, but not the ending.

For Gripper, memorisation is a natural process. It is not just about muscle memory, but about repeating intelligently and analysing a musical composition as he is playing through. This is also how building good muscle memory can be described:

> … the way I have been memorising it has just been to play it, and you play it intelligently; it is not like practising where you sort of do this repetitive physical work so that you can get it right or remember it, you are playing it that you can find those impulses and those phrases (5:7).

Gripper adds that if you think, "I will try to memorise this now, it takes much longer, because you do that thing where you are kind of thinking, trying to remember". Gripper (5:8) finds this approach counterproductive and describes it as "mental noise". When an internal voice tells us that we have to memorise something now, "there are all these conscious directions given to the body, there is an immense amount of noise, and that noise creates an immense amount of physical tension; and in this state of physical tension, it is uncountable" (5:41). This "tension" to which he refers, is unpleasant and stressful; and he describes it as "uncountable" because there can be so much unmeasurable noise and tension that your body's response and the response of the audience will be negative. Gripper describes this result as that "it is difficult to move, and it is difficult to remember and difficult to think, and it is difficult to respond to the environment appropriately" (5:41). He particularly does not use the memory method of visualisation. The idea is to keep mindfulness out of his memorising and to let the body take over (5:12): "My whole project is to trust the muscle memory, which most, I think, musicians do not like, they do not like that insecurity of having to trust their body; so, they want a visualisation of the score, or a visualisation of some things that they can remember it" (5:12). He feels that "it is all these other things that people are doing in their heads like visualisation that makes it difficult for them to remember" (5:18). For him, the ideal is that you play, and for him that works "phenomenally well" (5:40). Significantly, Gripper does not refer to mere muscle memory, but to playing intelligently and with understanding, meaning that he uses some sort of practical, embodied analysis while he is learning a musical composition.

To obtain a good muscle memory, Fernandez's strategy is to start repeating a musical composition many times only after he has done careful fingering and analysis: "Usually you begin to feel everything is logical at some point, and then it is a short road to memorising it" (7:9). Most participants agree that to build reliable muscle memory, it should be combined with analysis or visualisation. Muscle memory is not just about a mindless repetition of a musical composition until you know it by heart, however, and Kinsey will for instance take tiny sections and repeat them over and over until they are flowing (12:9). She uses the rule of thumb that

“if I can play a section five times in a row, 100% perfectly, it just about sticks”. She uses repetition in a lot of different ways, and like the other participants she will also not rely on muscle memory alone, but she will combine her muscle memory with understanding or an analysis of the music. To her, relying on muscle memory alone is the least reliable way to memorise a musical composition (12:13).

Using muscle memory alone to learn a musical composition has the negative effect of memory issues in performance. The most significant complication here would be performing from memory and having no idea where you are in a musical composition. Therefore, using muscle memory alone is not reliable. Hurwitz cautions that using only motor repetition will have the negative outcome that the fingers will dictate the sound, and not the brain. He stresses that you should first have a clear idea of how you want the music to sound (1:162). Hurwitz began combining memorisation methods after an incident in a competition: “I started playing and was very nervous, after about one or two minutes I suddenly had a blackout, and I just stopped playing because I was so nervous, I just stood there, and I did not know what to do” (1:193).

Möller explains that it is problematic to learn sections that are too long: “The mistake is to memorise too long sections, then you rely too much on muscle memory flow or something” (9:75). Consequently, he prefers to memorise in small sections. Kinsey refers to the author Gerald Clickstein:

> He has written some quite good things on the mental processes of music, and so on; he talks about the slow pace and fast pace; playing fast means you use more muscular memory, and by playing slowly, you are very much more conscious of everything (12:9).

Most participants agree that you cannot rely on muscle memory alone when learning or performing a musical composition. In their view, muscles do not only work apart from the brain, but function in an integrated approach to musical memory.

Visual memory

Most participants in this research engage in visualisation at some point as part of their learning and revising strategies. Visualisation is also sometimes referred to as *mental practice*. *Visualisation* refers to a variety of different strategies and includes everything needed for interpretation. Steidl explained the different ways that visualisation can be done (4:28):

- without the instrument, just with the score
- without the score and without the instrument (this is what he refers to as visualisation)
- without the score, just with the instrument

Hurwitz does much mental practising before going to sleep or while travelling; he also does it for revision just before concerts (1:168). He has found that visualisation takes much more energy than just playing and it also takes more motivation and more concentration, but by persisting in visualisation, it becomes routine and easier to do (1:191). His memory strategy is mainly about visualisation. What he calls “imagination”, however, is not just about visualisation but also about audiation combined with analysis and fingering. Hurwitz explains his learning process when teaching students how to visualise:

> Starting only even by one bar, look at the bar, imagine how it sounds like, now you imagine the fingerings, imagine the right and the left hand; repeat this 10, 20, 30 times in your mind; repeat it after you decided your fingerings and you know how the music sounds; repeat it, visualise how you play it ten times and then play it, doing this works every time in one try (1:207).

Hurwitz emphasises that playing the guitar is different from playing the piano, which makes visualisation harder: “On a piano you have all the notes just right in front of you, on a guitar you are dependent on different positions” (1:180). Hurwitz also believes that technical issues can be solved through visualisation and imagining a problematic passage (1:214). Garcia confirms that technique practise can be mental as well (9:26). Villadangos visualises the physical movement of his hands and the movement of his fingers, and he has a clear picture of where his hands and fingers should go (2:53). If Krívokapic cannot visualise a musical composition, he experiences a lack of confidence, and issues might arise regarding which fingering to use (3:22). He tries to visualise both the fingers and the notes:

> I heard many times this kind of impression that people visualise the score, the notes or if you visualise the fingers, for me, if I think of fingers I think of the notes as well; I do think of both, I know which notes I play at any moment, I know which notes it is and what sound it makes, but I do not necessarily think of the paper with the printed score on it (3:25).

For Krívokapic, likewise, the issue is not only fingerings but also the harmonies, the functions, and the dynamics, “so everything that is written in the score and everything that you think of to build your interpretation on, so everything that you want to think about also when you play”

(3:23). Krivokapíc does visualisation by going through different parts and either figuring things out (even sometimes fingerings) in his head or just going through parts and practising if he needs to (3:19). If he has to learn something very quickly and is under time pressure, he will try to go through the whole musical composition in his mind.

Steidl indicates that all these ways to practise mentally are essential, and with much concentration he can visualise his left and right hand (4:40). Steidl observes that you can be doing something like walking in nature after visualising a musical composition and may suddenly see and hear the music in your head and expression will come out: “You are playing, you are dancing the movements, expression is coming out; this is also something beautiful I imagine, to work without an instrument or to work without a score, it is fantastic” (4:32). Assad explains mental practising as when you play the whole musical composition in your brain, without using the fingers actually: “If you can playback a piece in your brain, from easy to complex pieces, it is a way of helping you to remember” (6:33). In his opinion it helps a lot because you must concentrate. He explains that it feels like you are playing physically on your instrument, knowing everything you are using and all its sequences.

Möller says visualisation is excellent and very recommendable: “It is kind of a challenge for your concentration, to completely feel everything, try to imagine the hands and the sound, you can do it with sections” (9:21). Möller explains that we subconsciously visualise already because it goes subconsciously in our mind all the time, but if we consciously try to visualise, the visual picture in our mind becomes reinforced (9:22). Möller does visualisation by thinking about the fingers or the position on the fretboard and believes you do not need any guitar to practice – you can practice just with the score in your hand (9:27). Like Möller Garcia learned to visualise through touring a lot: “I realised that when you tour, you do not have time to practise, because you do not have time to practise, you have to find another way to practise, that is just mentally” (11:7). He now learns mentally half the time, and on the instrument half the time. Kinsey views visual memory as when you see the fingerings and play the entire score in your head. She remembers doing visualisation on the train before her lesson as a child: “I will practise the piece in my head, see all the fingerings and practise the piece in my head; by the time I got to the lesson I will just sit down and play the piece” (12:14).

Voorhorst completed a Master’s degree on the brain and memorisation and found that playing mentally use about 80% of the same brain activity as playing physically: “The brain activity is almost the same when you think about a piece and when you are playing it, I think it is 80 or 90% the same, so you can practise, just by thinking” (13:15). To him, engaging in mental learning feels like playing. Voorhorst differentiates between mental learning and visualisation,

where mental learning entails thinking of a musical composition (without his instrument), and if he finds a mistake, he realises that he did not know the exact harmony on the spot. He wants to know all the harmonies, and he then takes the guitar and see what they are. Visualisation, on the other hand, for him entails simply sitting with the score: “When you get to the next page you see, okay this is the next page, so you have the page a bit in your mind”. He points out, however, that visualisation happens automatically when you practise a musical composition (13:17), and he therefore prefers to use the term *mental learning*.

This section on visualisation presented the opinions and views of the participants in this research. Voorhorst described how visualisation happens automatically when he sees a music page or his hands while playing all the time. The term *mental learning* is perhaps a more accurate term for the broader concept of visualisation. Mental learning can be done in various ways, for example without the instrument, just with the score, or without the instrument and the score. Other participants described visualising their fingers or notes and the shapes on the fretboard. For participants such as Hurwitz, visualisation or imagining the music first, before motor repetition of a musical composition occurs, is the key to optimal learning. Visualisation or mental learning seems to be one of the most challenging memory skills to develop, because it requires a lot of concentration, patience, and perseverance. For musicians who can master the skill of visualising a musical composition, however, the result of their memorised performances would be optimal.

Aural memory, singing and audiation

Villadangos, Steidl and Oser explain that singing the notes and focusing on the tension of the intervals result in more significant learning and in an aural memory that is more easily stored in the long-term memory. Hurwitz strongly encourages developing your inner hearing, he says that if you can develop an inner hearing, you can enjoy it just as much, if not more. Hurwitz tells the story that someone asked Brahms: what is the best version of your second symphony you have ever heard? Brahms answered: “the one in my head when I finished the score” (1:185). Villadangos says that the final type of memory that he uses is to sing the notes and imagine what it sounds like in his head. He calls it a “nominal memory”, which is used to remember the names of the notes, to sing the notes using solfege: “When I sing these notes, I do not sing them aloud, I sing them in my mind because it is sometimes impossible to sing every note out loud. It is a lot easier to sing it in your mind” (2:20).

Steidl uses language and develops a natural feeling for the intervals, which is something essential for him too:

> You feel if you sing the fifth or different intervals or intervals, which are the tension, is everything; it is again the singing. If you learn by memory things you can sing, you can sing the phrases (4:37).

He is not singing using solfege, but mostly singing the notes or singing the rhythms themselves.

Assad learned music by ear since he was a child: “I had that knowledge because I heard music all the time, people played the guitar, and you know, the harmony, I knew the chord resolutions, I knew them without knowing because I would hear them all the time” (6:2). Assad believes that this is part of the process of memorising and remembering a musical composition. For him, it is not remembering shapes and fingerings, but it is aural – it is what he hears (6:17).

Voorhorst believes in hearing the melody and he tries to follow the melody and the harmony. This helps him to remember:

> First, when I have the piece, I try to sing in my mind how the piece goes and because I know how it works on the guitar, I can translate what I have in my mind, so the song that I have in my mind, I translate that to the guitar (13:12).

When he is practising, he first has the melody in his mind. He sees the sheet music and sings the melody, and then he translates the melody to the guitar. Voorhorst finds that this way is much more reliable than what he did before. He describes it as similar to what jazz guitarists do: “They know what they are going to play, they just improvise, and the guitar follows their thought”. The late Roland Dyens was a very good friend of Voorhorst’s; and Voorhorst described an occasion where Dyens was going to perform a concert the next day and wanted to play a special encore. Voorhorst suggested the national anthem of Holland and sang it to Dyens. By using the melody only, Dyens, an excellent improviser, played a fantastic arrangement by heart the next day, with added harmonies and a walking bass line. In his preparation he only had the melody in his mind (13:13). Voorhorst notes that you must know the guitar fretboard very well in order to be able to do this.

Hearing and recalling what the music sounds like, are a part of the learning and memory processes. For Assad, it is aural: he remembers the sound, and it is what he hears. Voorhorst

also focuses excessively on the melody and the harmony and claims that this is the most reliable way of committing a musical composition to memory.

The following section will concentrate on how some of the participants secure their memory by combining different memorisation methods.

Combining methods

Hurwitz reports that because he “covers a few sorts of memory” (meaning a few different methods to memorise, which also refers to the different strategies of committing music to memory), he does not feel very vulnerable having to play from memory (1:142). Hurwitz describes the different types of memory: “You have the musical memory of how the music sounds like, you have the visual aspect which you can remember how the score is looking like, and you have the mechanical which lets your fingers play” (1:195). He describes the mechanical memory as a powerful kind of memory and as the strongest which most people have:

> The best way to prove that [the mechanical memory of the fingers] is to tune your guitar differently, put the guitar completely out of tune and then play a piece, you will see that you can play the piece through, your fingers going, but the piece sounds completely different.

Hurwitz knows that if one method or memory type does not work, the other methods will back up his memory if a memory issue should arise in performance. Again, to rely on this backup system of memory failure in performance, the quality of learning approaches is emphasised.

Villadangos will combine an analytical approach with audiation, such as singing the notes. He says that all types of memory work together by doing that (2:55). In a concert, he was once disrupted and made a mistake, and because of his technique of singing the notes, he played the melody an octave lower in the moment (2:58). He knew the notes but could not recall the correct pitch. Steidl says that when memory issues arise in performance when you start to rely on your visual memory and think where to place the next fingers (4:44), this can only be done by combining different methods when learning a musical composition.

Assad referred to a similar incident where he had a huge memory lapse in the early days of their performing career, just before they had to perform a big concert that would take place in New York. He talked to a friend, who said, “That cannot happen to you in New York, you got

to do something about it." What he did, was mental memorisation of the musical composition for that particular issue because they were scheduled to play that work, and that secured his memory (6:30).

Assad also mentioned that the most challenging part of memory is learning a musical composition with different tuning, because his main strength is to remember the notes. Once the guitar is in another tuning, he does not know where the notes are:

> That displace, or put the notes out of place, in that aspect I have to use this device that I never use which is memorising the fingering, the shapes of the fingers because the notes are out of place (6:45).

When this occurs, Assad must combine another method while learning for his memory to be secure. He will then, for instance, try to visualise the fingers of his left hand to avoid memory failure.

Fernandez identifies three aspects to think about when committing sheet music to memory:

> One is a physical movement of the fingers, which does not help for memorising, unless in exceptional pieces; then you have the visual part, the score, and then you have audio, the music. It all goes together, really, the audio, visual, and physical parts" (7:10).

He explains that muscle memory, visual memory and aural memory are linked and goes together in learning. This does not necessarily refer to combining different methods in learning, but it is just a statement that enforces the concept that one type of memory cannot work very well without the other.

Like Oser, Möller also indicates that his memorising strategy depends on the difficulty of a musical composition. If it is not very difficult, his strategy will be less rigid, but if it is a more complex or a very long work, different learning strategies must be used (9:15). Kinsey says that all these things can work well if you use them:

> You should be able to use visual and aural, you should be able to sing the melodies, you should be able to understand what the chords are, the key, the transition, the shape of the phrase and the counter phrase (12:12).

This section on combining learning methods shows that if one area of memory fails in a performance situation, another method can be used to overcome the memory lapse. Hurwitz combines aural, visual, and analytical memory learning methods. Villadangos uses aural memory in combination with analytical memory learning methods. Steidl uses the different memory methods when learning a new musical composition, but when he performs, he trusts his muscle memory; if problems arise in a performance, he will rely on his visual memory to cover that. Assad relies on different memory methods in cases such as where a composition is in another tuning or if he has a particular issue that needs to be addressed. For some participants, the memorising strategy depends on the difficulty of the musical composition.

The next section will deal with what participants learned from performance situations. Musical compositions keep evolving and are shaped through how the audience reacts or how the acoustics of a venue influences a performance. The memorised conception of a musical composition is also affected by it.

4.1.3.3 Learning from performances

Most participants agree that the best way to make sure you learned a musical composition well, is to do a pre-performance, for instance, to perform in front of friends and family before a formal performance. Krivokapíc says one's brain works much harder during a performance than during practising: "Some things just come out in a performance and then you place them, next time, those things stay stuck in your mind" (3:41). One also learns what will work, how to deal with different parts on the spot, and to see how it works best. It is part of practising and learning a musical composition. Fernandez concurs with this and says that the experience from a performance makes you listen so hard because you go deeper into a musical composition. He says that the next performance will be different because you noted something that you could do better: "It is a question of accelerating the process, not changing it." It is therefore possibly a way to learn a musical composition faster and to "accelerate the process" of learning a musical composition (7:25).

Möller points out that no matter how much you practise, performing is different (9:25). For Garcia, the stage is the best school for improving a musical composition:

> Every time you play on stage, you can feel what works, what does not work, how is the feeling of the hall, how are the feeling and the reaction of the audience; it is like a crash test so that you can fix the things after (11:14).

Every time after a concert, he debriefs by considering what was good and what was not good enough. Garcia experienced that making recordings is an even better way to learn the musical compositions that you play well:

> At the end of three days of recording, I play differently, and it is so much better; when you work with an artistic director, that person is your ears, listening behind the mic; so, he is telling you many things, many details, it is the best way to practise (11:15).

Garcia emphasises that he has never learned as much as during a recording. Kinsey has a similar view, and explains that with recordings, you would go into a different mindset:

> You become more involved with all the little squeaks and sounds that you would hear on a recording; you become aware of other kinds of detail; this also shows whether you can focus on the technical details and let go in the moment of the performance (12:16).

She says that it is a good idea to make recording only for yourself before a performance. A published recording should only be made once you have performed several times and got feedback from the audience:

> From that sort of state where you can say I am comfortable with this, my audience is comfortable with this, this is communication at best, then you can go and do a published recording (12:17).

There may be many variables in a concert situation, such as acoustics, the audience, and possible amplification. These variables change a performer's perception of a musical composition, and you must adjust their playing according to these unforeseen complications. Hurwitz (1:198) and Villadangos (2:64) agree that some things can only be tested in a concert situation. Even if they know the musical composition well, they have no idea what the variables are, what the venue will sound like, or how their bodies are going to react. Krívokapic refers to the reaction of the audience:

> You can kind of hear it the way they hear it also. If you take different parts, you can just hear the silence in the audience. Also, you can hear the attention in some parts, or you can sometimes hear a bit more noise, and those I think are essential parts (3:45).

Krívokapic also says that one remembers a musical composition by associating these variable performance experiences with specific musical compositions or musical passages. Gripper observes that every performance is different: “For me a performance is when you take the piece and the audience, the day and the sound and all those things and you see what happens with those variables” (5:31). One has to use all the given variables and change their performance accordingly: “The question I ask is what will this piece sound like in these circumstances, how will this piece respond to the set of circumstances” (5:32).

Assad describes the acoustics of a venue in detail:

> You got to play according to the acoustic environment; the acoustics of the place you are playing in, for instance, there are dry and there such as dry acoustics, and there are warm acoustics. In a warm setting, you can rely on that thing to help you sustain a note or sustain a chord, so if you are in a dry place, you do not have that luxury, so you have actually to play shorter; you have to make things more compact. There are places where the range of dynamics is wide so that you can play pianissimo. When the acoustics of a place is narrow [with a low roof], you have to play everything strong because if you play subtle, nobody will hear (6:49).

According to Assad, there is no one way of playing a musical composition: you must adjust to the venue where you are playing. He also says that acoustics has nothing to do with memory, but that memory is only one aspect of music-making, and they all work together:

> The other aspects will involve your performance itself, the way you deal with dynamics, the way you deal with rubato, some places help you make wide rubato’s; you can take more time; some places you cannot, you have to narrow more your speech, you just have to make things more closed to each other (6:49).

Möller agrees with Assad:

> The acoustics can be different, making a big difference, there can be more reverb in the room, then generally you have to play things slower; when there is no reverb you have to go on, you have to respond to that room (9:57).

Möller also talks about the complications in performance when he had to perform amplified with a sound system:

> It depends a bit on the sound system and how wide you take the dynamics, the contrasts; with an excellent system, you can go very low, handle some stronger contrasts, and sometimes keep it more in one level. If you play unamplified in a smaller room, you can play more pianissimo; when it is a bigger room, maybe you have to sacrifice a little bit the softer dynamics (9:58).

These types of situations and differences are always present and never the same in a way. Voorhorst concludes and says that how your audience reacts affects his perception of a musical composition:

> Sometimes I have a piece and think this is a great piece, and then the audience would not like it that much, but other pieces much more, that is sometimes just a surprise, or I would think a piece is not so interesting, and the audience will like it very much (13:25).

Voorhorst has experienced that after a few concerts, you will know if a musical composition is working or not.

This section on learning from a concert situation emphasised that performers gain confidence from performing a musical composition or performance programme before the actual recital. From pre-performances, performers still learn and develop a musical composition further. There might be specific technical aspects that need to be addressed, or perhaps a performer would change a musical interpretation because it did not work as well in performance as in a practice room. Garcia explained how debriefing after a concert helps him learn and see what was good and what was not, and to improve his next concerts. The audience's reaction also needs to be considered, as Krívokapic described how all the sounds and silences from the audience affect how you perceive a specific musical effect and how a performer remembers a musical composition. Voorhorst mentioned that the response of the audience is essential to know if a composition works or not. A performer might like to perform a musical composition, but that same composition might be hard to play if the audience disapproves of it, and it could make the performer feel uncomfortable during its performance.

Being uncomfortable in performance can lead to being stressed and can have a detrimental effect on a performer's memory. The opposite argument is also true: if the audience enjoys a musical composition, the performer feels relaxed and can also enjoy the performance more, by trying to perform it even better.

It is also essential to learn from making recordings. Garcia said he never learned as much as during a few days of professional recordings. Afterwards, you know those musical compositions so much better. Kinsey also discussed recordings and suggested making home recordings before doing a published or professional recording. To regularly record yourself on audio or video at home will have a similar learning advantage for a performer as doing a pre-performance before a concert. From these recordings, a performer can learn, see, and hear his playing objectively and learn how to change his playing.

Post-performance learning, which is discussed below, is closely related to learning from performances. Some topics mentioned above fall in both categories, for example debriefing after a concert or learning from recordings. This learning process involves how a musician's perception of a musical composition can change after a performance.

4.1.3.4 Post-performance learning

The final learning process is the one that takes place after a performance. One's perception of a musical composition can change because of many factors – a performer may for example have a different focus or intention for a musical composition for every performance, and different things can be emphasised in different performances to achieve better performance results. Krívokapic is of the opinion that you consciously or subconsciously change your performance:

> Performance makes you change aspects of a piece; whenever you play something, you remember the last time you played it; you grow in your performance every time and understand it better (3:39).

According to Krívokapic, when you perform a musical composition, you will subconsciously always refer to the last time you performed or practised that work and then you change your performance accordingly.

Steidl likes to perform a musical composition as if he is performing it for the first time: "It does not matter if you have played it 100 times, the music should be revived again and again" (4:48). Steidl explains that somehow the feelings and the expressions that you have change, but the essential elements like the notes, structure, harmony, and melody stay the same. Gripper says that there can be a specific focus for a particular performance:

> Another time it may just be wholly relentless and just be going as a kind of constant pulsing, but inside that, there is all this rhythmical freedom in terms of accents, or it could be the interaction of both. Different things are emphasised in different performances, and different performances will also make you find different things (5:30).

The Assad brothers had a very intuitive teacher, and she tried to develop their intuition. They would go for a lesson, and she would programme the interpretation of a musical composition by saying, “Play this section here, make a crescendo, get to fortissimo and do subito piano.” They would go home and work on those aspects. The following week she would change everything and do the exact opposite; she was constantly changing. They learned that one could not freeze the interpretation of a musical composition, but that compositions can be phrased in many ways, and they can all be excellent (6:48). As a result of learning in such a way, they never play a musical composition the same way, but perform it differently every time. There may be a different focus or intention for a musical composition for every performance and different aspects are emphasised in different performances.

The performer’s perception of a musical composition changes when the feel more comfortable performing a musical composition. They can for instance be freer with interpretation. Möller describes how certain musical aspects sometimes set in when he feels very comfortable in a performance situation:

> You get in that mood, mainly if you have performed the piece a few times; certain things can sit in there very well, you are very sure about it, it is compelling, like a rallentando or something, you do it, and you do it very firmly (9:55).

Möller also elaborates on dynamics and interpretation. For him, the word *interpretation* is not quite accurate, because it is more about bringing out the value or the essence of the music: “It depends on the style, of course, but somehow, it is about some kind of tradition of bringing this out; we acknowledge this as fine art or fine proportion or its historical value” (9:64). He tries to present the notes or musical ideas and to do whatever it takes to bring out the music, the sound, and the expression.

Summary

This section mainly focused on changes in perception. These perception changes included that every performance will be different, that different musical aspects will be emphasised in different performances, and that musicians grow in their perception and understanding of a musical composition. Likewise, in the previous section it was pointed out that when an interpretation or perception of a musical composition changes, it dramatically affects how that composition is learned and remembered. When committing a musical composition to memory, a musician also memorises the interpretation, the phrasing, the dynamics, and the musical ideas. Changing any of these aspects during or after a performance also involves altering the memory to adapt to these changes.

The research participants first described the value of learning, their motivation for performing from memory, the complications and exceptions associated with learning, and having to deal with memory-related issues in performance. Thereafter they described in detail the processes of learning, which included concentration required for learning, time involved, memory methods such as muscle, visual and aural memory, different learning processes or approaches for studying a musical composition, learning to deal with variables in a performance situation, and continuing to learn after a performance or a recording by debriefing and adapting accordingly. To view musical memory holistically therefore involves the learning process before, during, and after a performance.

Understanding a musical composition is associated with all these learning processes in many ways. This will be discussed in the next part of the chapter.

4.2 Superordinate theme 2: Understanding

The analysis suggests that if a musician understands the intrinsic musical structure of a musical composition, better learning and stronger memory may be achieved. Sometimes, the understanding of a musical composition is entirely neglected during the learning process. When the understanding of a musical composition is prioritised, however, deeper learning may be achieved, and this will make learning a musical composition less complicated. The following section will therefore focus on the participants' perception of understanding a musical composition. First, the participants' views of analytical thinking and understanding of the musical structure will be discussed. This will be followed by a detailed explanation of learning, thinking compositionally and creatively, making associations, and understanding the instrument-body relation to obtain a deeper connection with the music.

Analytical thinking

Hurwitz explains that the more you learn music, the deeper your understanding of musical structure will be, with reference to harmony and polyphony: "The deeper you understand it, the faster you can memorise pieces" (1:205). He does not regard classical music of the common era as complex:

> There are only a few basic moves harmonically and then many variations on those moves and precisely on the cadence; the most basic one will be tonic, subdominant, dominant, tonic, and many endless variations on this, suspensions, secondary dominants (1:205).

Hurwitz says that one has to understand these progressions very well and approach music as a language in order for one's memorisation capacity to improve. Music can be seen as a language because you start to see connections, such as progressions and sequences: "Once it is a language you do not anymore need to think of it in any mechanical way, it is a language, you understand the move or the story, the grammar" (1:205).

Krivokapíc advises that a performer should analyse precisely what he is doing. You must analyse a musical composition and the harmonies: "If you build your interpretation, you analyse where you want to go louder, why you want to do it and which is a high point of the phrase and where are the appoggiaturas and obstructions" (3:12). By analysing in such a way, a performer can develop an interpretation. It is not just one note or one chord to the next, but

one has a complete picture, which will increase one's memory's stability. Krivokapíc has found that understanding a musical composition helps him with the memorisation process:

> Analysing a piece, understanding what you are doing, having no doubts about what you want to make interpretation wise, then also having no doubts about your fingerings and then once you do that, you see the piece as a whole, that is then very hard to forget I think, like that (3:48).

Garcia differentiates between learning and understanding: "If you learn, you do not necessarily understand, but if you understand, you necessarily learn" (11:19). He compares it to a history lesson at school: if you learn the text, but you do not understand it, you will forget it; but if you understand its purpose, learning becomes less complicated.

In the previous section on learning processes, analytical strategies were discussed in terms of learning a musical composition. In this section on understanding, it is shown how analytical thinking is used for the purpose of understanding a musical composition. Below, the focus is on seeing and understanding the structure of a musical composition in more detail.

Understanding musical structure

With reference to analytical thinking that leads to understanding, Hurwitz was very impressed by the skill of his composition teacher. His teacher had a holistic memory, which mainly refers to musical structure (analytical memory) and inner hearing (aural memory), and could play and remember any musical composition:

> One day I came to him, and I ask him could play; I just heard Don Giovanni the day before, could you play me the piece? He played the opening; I was really amazed how he could do it with all the inner polyphony and everything; I wanted to test him and asked could you play it in f# minor? And then he did the whole thing in f# minor (1:179).

According to Hurwitz, "he had just such a perfect relative hearing, and it is not only hearing, but also much more than hearing actually" (1:182). His teacher had an understanding of form and musical structure "since he saw the form so clearly and he can control the harmony and polyphony at such a high level, he could do it" (1:182). Assad confirms this and emphasises that we should know how aural and analytical memory are connected. He always remembers the notes, but it depends on the process of how one learns. If he stops performing a musical

composition for some time, he no longer remembers it (6:25). Assad uses his aural memory to remember how the music sounds:

> My muscle memory, the thing that people call muscle memory, the fingers, I am not guided by that, so I need to remember the sound; I remember the sounds, and sometimes I do not remember the exact sound, but I know where the harmonies imply" (6:25).

Assad combines his aural memory (remembering what it sounds like) with musical structure (what the harmony implies and what the notes and the musical structure are). He has a complete understanding of a musical composition – not only the musical structure but also control of the sound.

Hurwitz discussed the advantages of musical structure and analytical memory in more detail. He is very pessimistic about perfection in music and learning music note by note. He feels that the massive 'competition culture' in the classical guitar world has the negative result that guitarists are listening to music note by note (1:174): "They forget the connection of why we are playing music" (1:81). When he was younger, he always played in competitions and always tried to play perfectly:

> That was a mistake, there is no such a thing as perfect, a robot can play perfect, but human beings are not perfect, but what you do have to have, is the storytelling, the control on the structure, on the form, and then you are not vulnerable anymore to never miss a note (1:174).

For Hurwitz, playing every note does not work, because it involves too much information and is too much to handle. Instead, he prefers approaching a musical composition as a musical structure because gives more control and leads to a deeper understanding. For him, there is no limit to how deep one can understand a musical composition:

> They say, for example, that Mozart saw the Linz Symphony when the apple fell or something like that, he just saw the symphony in a glimpse of a second in his head, and he wrote the symphony straight to the parts because he knew at once how the whole thing sounded like" (1:152).

According to Hurwitz this is due to an extreme level of seeing the music and structure. He feels that one should approach musical compositions like a structure and gain an

understanding thereof. He compares musical structure to storytelling and calls this a *linear* approach as opposed to a *vertical* approach. Hurwitz claims that learning the music vertically can result in mechanical interpreting:

> I know for a fact that many guitarists and many musicians, not only guitarists, learn vertically; they learn that they take a note and another note, and then they have a phrase; then they take a phrase and another phrase, this is too fragile (1:172).

Hurwitz, who is also a composer, notes that it is typical for a composer to approach a musical composition as a structure: “When you understand the structure, you can very quickly dive in and dive out; when you are in control of the structure it is less fragile” (1:173). He sees this as the highest level, which he describes as a “composer kind of level; that you can watch a piece and you see it as one, through the structure, the harmony, the form, the phrasing” (1:210). Again, the idea is expressed that understanding a musical composition has no end. Hurwitz gives examples of pianists who approach music as a musical structure, such as Gregory Sokolov and Daniel Barenboim, and he believes that this way of thinking about a musical composition result in a less mechanical way of interpreting the music.

Voorhorst furthermore reports that when he is trying to play, “I play with passion and play beautiful dynamically and that the music speaks than that I focus on mistakes” (13:20). He also does not focus on playing the music note by note or think of perfection, but rather plays with passion and focuses on bringing out the music out. Voorhorst points out that if you focus too much on playing every note perfectly and on not making mistakes, you can get nervous (13:21).

Some of the participants, such as Krivokapíc and Steidl, also compared understanding structure to literature. Hurwitz suggests that no one would even notice that you missed one or two notes if your music were flowing like a story (1:1170). Krivokapíc said that understanding structure is similar to when you try to memorise lines from a book or a poem: “If you just go word by word, like that, it is not easy, but if you are reading it with understanding, you can get how the connections work, and you can get through whole parts much easier” (3:49). The result will be that a musical composition can be memorised in much less time and that you will remember the music for an extended period.

Thinking compositionally and creatively

Some of the participants who are also composers, agree that a deeper understanding of a musical composition is achieved when you can understand the structure as one of your own compositions. Möller describes a similar scenario as Hurwitz: “I know the building process, I know the structure, I know why the structure is that” (9:68). By the time he has finished a composition, he knows most of the work and will be able to perform it from memory. Oser agrees that a performer should make a musical composition his own: “Imagine that you composed the piece yourself” (10:6).

As a composer herself, Kinsey is intrigued by how a composer works: “I will think like a composer when I am exploring a piece for the first time, I get intrigued at how and why that works and where does that come from, why did he invert that motive and so on” (12:7). Kinsey will approach learning a musical composition to understand it. First, she will play the parts on a piano to extract the musical ideas more quickly. Only after doing much analysis and thinking – as a composer would do – she will start with the fingering. She says that not getting involved in the fingering too quickly gives her a sense of objectivity and distracts her from extracting the musical ideas first (12:7). When Kinsey analyses a musical composition when learning it for the first time, she thinks about it like a composer, and the role will change from composer to performer once she knows and understands the musical composition completely. She feels that the two roles are very different (12:23). The more you understand a musical composition in terms of structure, depth, and detail, such as fingering, the easier it becomes to learn or to commit to memory.

Similar to Kinsey, Hurwitz recommends first analysing and imagining the music rather than starting with fingering. He thinks that it is the wrong method to add musical thoughts after doing fingering (1:186), Hurwitz will first imagine what the music should sound like and then find a way to realise it; and not the other way around. He believes that we choose our musical fingering according to our musical taste:

> In Bach works, for instance, we choose to finger according to the articulation we want, and every articulation will have another fingering; it is not possible to play everything legato, you have to follow your musical wish, and according to that, you choose your fingerings (1:160).

One’s intended musical interpretation and fingering solutions are connected and work together during a performance on a guitar: “Every fingering is another expression; fingering is one of

the biggest arts of playing the guitar" (1:161). A good fingering solution results in musical expression and a deeper understanding of a musical composition.

Making associations

Steidl claims that making associations through dance movements, language, making up a story or imagining colours can help you understand and remember specific passages better. It also helps the performer to play melodic lines and particular articulations more cleanly. He has urged his students to dance the music, to move in the passages of Bach's dances, or to speak the notes and to connect the music with language (4:33). To connect music with movements, or to imagine colours like a painter, is what a conductor does. The conductor imagines colours like a painter. This is not a scientific or an analytical approach but a natural way to remember.

For Fernandez, the more detail there is and the more you can structure what you are learning, the less complicated the process becomes, and "the more depth you give to the music in terms of emotion and structure and logic" (7:35). Fernandez wants to learn and understand a musical composition in all possible dimensions: "I do not think a piece is learned when you can play one note after the other. I do not think you have a piece until you have all of its parameters, including dynamics, accentuations, articulation, in place" (7:27). He admits that learning a musical composition takes much time and involves an immense amount of detail, but he also points out that this detail helps you remember a musical composition because it has colours and depth (7:28). Fernandez suggests that it also helps if you can learn a musical composition in some depth in the sense of assigning some meaning to every phrase, thereby making up a story: "you feel after this phrase the next one comes logically, because it comes from this and that in the first phase, or it is a variation of the first phrase" (7:11). It will help if you can establish a link, but he thinks this happens automatically when you play a musical composition many times.

Möller agrees that this process of detailed learning needs more emphasis: "I suppose that if you really memorised it very deeply and in detail, that is maybe the more important process" (9:2). Möller finds that if one has studied a musical composition with much detail, it tends to become memorised by itself:

> I think the more, the richer it is, the more connections in the brain you make, the stronger is your memorisation and your interpretation, it is so strong, so strongly wired, you cannot do it wrong, it could not be different or something like that (9:72).

Adding detail can be anything from understanding the structure, fingering solutions, or making associations to knowing the background and style of a musical composition.

Oser also believes that you must make associations to enhance your understanding and that you must identify with the music: “You have to associate things with the harmonies and the movement of your hands; you must make associations with things, then it goes quicker, you must put it in context with something” (10:3). Oser agrees that learning or memorising a musical composition is not only about learning the notes, but “it is also associations with the music, with the harmonies, with the rhythm, with the conception of the composition” (10:12).

Kinsey explains detailed learning as searching for what the composer wants or considering the period the music is written in (12:8). Voorhorst confirms that the more associations you make, the better it is in your memory:

> if you only have one association for the fingerboard, for example, it is not much, but if you also know the harmony, the melody, also the muscle memory, all these things together make that you know it well, there is always new things that you do not see (13:27).

Some people use their visual memory to make such associations, while others find it easier to do so by ear.

Understanding the instrument-body relation

Some of the participants explained that a more profound connection to the music could be obtained by having a good knowledge and understanding of your instrument; and that the more knowledge we gain, the easier memorisation of new repertoire can be. According to Hurwitz, you first have to capture a basic understanding of the fingers and the guitar, which requires approaching the guitar technically. Hurwitz does not believe that there is a thing called *technique* – but there is a thing called *music*. He believes that they come together, “but I do believe you have to understand the mechanism of the guitar, you have to know there are certain movements that work and there are certain movements which are not so idiomatic for your body” (1:155). A firm understanding of your body and your instrument will accelerate the process and improve the quality of learning.

The human brain can analyse and comprehend complex details and musical ideas subconsciously through visualisation. Steidl suggests that if you know a musical composition, have learned it, and have visualised it, your brain will subconsciously begin to analyse the things you did not understand (4:30). Because this automatic analysis by the human brain can also happen during sleep, he feels it is important that performers should visualise the musical compositions they are learning. This will help them to obtain a better understanding of a musical composition and a deeper connection with it.

Möller confirms that a musical composition subconsciously enters one's mind all the time:

> In terms of musical ideas, it is excellent to have the music apparent in your head, let us say with just the sound or theoretically, what is the theory behind, what are the chords, the harmonies, what is going on, different voices or whatever (9:25).

Möller notes that visualisation as well as audiation helps to make decisions for interpretation: "It helps tremendously with artistic choices if you can imagine how we want it to sound and then execute it or try to execute it according to our needs" (9:26). Garcia says that once you understand how your fingers work, your brain becomes the control centre, "if you are practising mentally, feeling your fingers, watching the guitar neck, and listening at the same time, then you are practising" (11:8). Thus, it is the moment when you have a complete understanding and control of your body, brain, and instrument.

Summary

This section focused on understanding and explained how analytical thinking leads to a deeper understanding of a musical composition. In the previous section – on learning processes – analytical strategies were discussed in terms of learning a musical composition. In this section on understanding, it was indicated how analytical thinking is used for the purpose of understanding a musical composition. This section showed how an understanding of the structure of a musical composition leads to a deeper connection with the music. The participants considered it as vital to study a work in detail, to understand it and to make associations and connections. All the aspects of the different learning processes – visual, tactile, aural and body movement – are brought together for a better understanding of a musical composition. When the understanding of a musical composition is achieved, it results in a stronger memory and better recall. In the final part of the cross-case analysis, remembering will be discussed.

4.3 Superordinate theme 3: Remembering

Remembering a musical composition is closely associated with the learning processes and the understanding thereof. The information stored in a performer's body entails the intellect understanding, body movement patterns, and the emotional state of the performer. This section discusses how the research participants descriptions of how associations help focus their thoughts on performance and how audiation or inner hearing helps them to remember. It will also explain how confidence comes from repetition and how this reduces fear in performance situations and leads to a more stable performance.

Inner hearing

Some of the participants' views are that inner hearing can be as enjoyable as physical hearing and that using your inner hearing can result in faster learning and better recall of musical data. Villadangos describes that "the great thing about singing the notes is that coming back to a piece maybe after ten years, you will pick it up again from memory very quickly" (2:56). After a period of remembering the music and being able to perform a musical composition by heart, it will become more quickly to repeat it. This is possible if you can learn to sing the notes and if you rely on your aural memory. Villadangos relates how he recently had to once again play a musical composition that he has not played in years: "without playing, just by looking at the score and singing it in my head and visualising my hands on the guitar, I was able to play it again from memory" (2:57). Steidl also claims that singing the notes and focusing on the tension of the intervals results in more significant learning and in an aural memory that is more easily stored in the long-term memory (4:37).

Associations help focus

When Fernandez performs, he does not look at his hands while performing, but he appears to be looking at the audience. Fernandez explains that he is not looking at anything specifically, but if he looks at his hands, he can get lost in the physical movements of his fingers. It is also difficult to focus on everything simultaneously, and he therefore has to choose something else on which to focus while performing. He has experienced that making associations helps the memory a lot. Fernandez says that the more detail one can add to the music, the more it helps one to remember. He indicates that you remember best the things by which you are moved (7:29). Consequently, if you can associate something emotional with the phrasing, it will help your memory.

One of the approaches that Kinsey follows to commit sheet music to memory and to help her to recall, is to construct stories in her mind. She finds that having a story for any musical composition – with elements like a beginning, a middle and an end of the story – helps you to be less concerned about the details, because the details have been worked out beforehand. Kinsey wants to get into the musical composition's atmosphere, for example, in the way she did for one of her compositions, *Modjadji (the Rain Queen)*. For this composition she visited the Rain Queen and experienced the drumming in the bush with the local African people, and in her composition, she relives and recreates that atmosphere (12:21). For her musical composition *Mokoro*, she visited the Okavango Swamps, camped on the riverbank, and swam with the crocodiles; then, when performing, she is in that place again. To be 100% involved in one's music, she says that one must try to use your imagination and to be submerged in your own story. Another aspect of association that Kinsey uses, is dancing (12:24). She used to do jazz dancing, which is still quite strong in her visualisation process. Instead of a story, she will sometimes do a whole dance in her head, as it helps to follow that in her imagination while playing. It is a freeing kind of process, and one does not think of fingers or anything else. She says that it also helps her with memory.

In the previous section, associations were discussed in terms of understanding. The participants indicated that it is vital to study the work in detail, to understand it and to make associations and connections for a better understanding of a musical composition. In this section of the chapter, associations are discussed in terms of how they help the performer with focus and recall. When a deeper understanding of a musical composition is gained through associations, it leads to a stronger memory and better memory recall.

Confidence comes from repetition

The participants described how being confident can help a performer to remember and to reduce fear of memory failure in a performance situation. You can gain confidence by performing a programme many times, keeping some older repertoire in your programmes, and constantly performing your repertoire in front of familiar people in a relaxed setting before a formal performance. Hurwitz will always try to change the programme he is preparing: "I try to keep some pieces from a previous programme and add some new ones" (1:197). He will never try to perform a completely new programme but will always begin a performance with repertoire with which he feels comfortable, and he will then test the new repertoires. In this way he builds his confidence. Villadangos thinks that is a good idea to perform in front of friends and family as much as one can, and to use those occasions to try out new musical

compositions that you have learned before a formal performance (2:42). Villadangos performed a completely new programme during one of his tours. At the beginning of the tour, he was still nervous when performing, but after a few performances, he gained confidence:

> Looking back at last year I played a concert series of 25 concerts; At the first concert, I still felt nervous, by the fifth concert I was a whole lot more confident and by the 20th concert I knew I had done it so many times before and I felt a 100% confident (2:60).

It takes much time to feel confident performing from memory, and a performer needs to perform as much as possible. Möller concurs with this: “If you have memorised something and play it three or four times in a performance, then you feel more comfortable” (9:51). Krívokapic notes that any performance is also a preparation for the next performance: “It is practising, when you play a concert, you do practise then immediately for the next time as well” (3:43).

Assad points out that constantly playing your repertoire also helps with memory: “Pieces that they constantly play never have memory gaps, it is very rare” (6:27). For Möller, it no longer makes sense to read the repertoire that he has played for years and know by heart (9:47).

Garcia feels that memory recall always works on stage if you are confident and relaxed. It is when you start to be stressed and nervous that your memory can fail you: “It is all about confidence, I think we are scared about being confident because we feel we are losing the attention and the intensity, but it is the opposite” (11:13). He suggests that if you are confident, the performance will be more effortless, you will remember or recall the music better and the performance will overall sound better.

Kinsey does not believe in performing before the music has “lived” in her for some time:

> Not under six months, not an entirely new musical composition, old repertoire you can pick up again quickly, but not a new repertoire. It is something about the music living in you for an extended period; somehow, your brain is processing things when you are not always working on it (12:10).

Kinsey says that a performer cannot simply speed up or force that process.

When Voorhorst has a new musical composition ready, he will first record it and then perform it in front of his family or friends, this gives him confidence for an important concert. Usually

about 75% of his programmes is made up of a repertoire that he has played for a long time, and like Hurwitz, this also helps him feel more confident when performing (13:24).

Conclusion

The participants describe the issue of *remembering* as better recall of the music that has been learned. By making associations, by connecting musical phrases or musical structure to language, dance forms or other non-musical ideas, it is possible to achieve a better recreation of the music. The more detail a performer can add to a musical composition, the more connections can be made, and this makes it easier to recall the music. It was shown that performance fear is detrimental to a performer's musical memory recall and that one way to deal with fear, is to be confident. Confidence in a performance reduces fear and leads to better recall.

The participants did not elaborate as much on the issue of remembering as on the different phases of learning, for example. The process of remembering and recall can be seen as an automised process which cannot be controlled, while the learning process can be controlled and adapted. The phases of learning, together with gaining a deeper understanding of a musical composition, are the only ways to aid the recall process.

CHAPTER 5

RESULTS DISCUSSION

This final chapter will evaluate the findings by including an integrated discussion of existing literature, which is aimed at displaying how this conceptual framework was conceptualised. As a result of considering the superordinate themes that were discussed in Chapter 4 in the light of the research literature, the superordinate themes are reorganised and renamed as Pre-Learning; Active Learning; Performance: preparation, alterations, and learning; Understanding; and Remembering.

5.1 Recapitulation of research, problem, purpose statement and research questions

The main intention of this study was to develop a conceptual understanding of how professional guitarists describe their musical memory, in order to explain musical memory from a guitarist's point of view, as well as guitarists' experiences and understandings of the phenomenon. The purpose was not to suggest a method for approaching musical memory. Rather, this study aimed to understand and describe musical memory as a holistic process that begins when a musical composition is heard for the first time, studied, committed to memory for performance, and reflected upon after a performance. Thus, the description and understanding of musical memory of the participants is a broader process of storage and recall that spans across the entire learning process.

5.2. Evaluation of results

While the learning process or phases of learning was not a principal focus of the initial design of the study, participants repeatedly returned to this process in their discussion of memory. In their view, remembering and understanding phases depend on the quality of the learning phases and the processes involved. This chapter will evaluate the findings by including an integrated discussion of existing literature, aiming to display how a conceptual framework was conceptualised.

In Chapter 2 I discussed two models of memory and practicing in the literature that have a similar concern to that of this study. The first, by Susan Hallam (Chapter 2. Figure 1), was developed to give an overview of the process of practising. The second, by Jennifer Mishra

(Chapter 2. Figure 2), was developed to explain the process of musical memory. Although these two models are circular – referring to arrows pointing back to the beginning of the processes – the layout of both models are linear. I therefore aimed to build a circular model to present a more graphic display of the memory process. I will be discussing my finding specifically in relation to these two models.

In this chapter I will also refer to two recent publications in guitar literature to present, evaluate and compare my research findings: firstly, the DMA research essay of Musgrove Stetson, *Music Memorisation for the Classical Guitarist* (2017) and secondly *The Bible of Classical Guitar Technique* by Hubert Käppel (2016). The discussion of my results, together with the models of memory and practicing and the work of Stetson and Kappel, will lead towards developing a conceptual model for understanding the musical memory of classical guitarists.

5.2.1 Phases of learning

The participants outlined all the phases of the learning processes, and based on the analysis of their discussion, learning may be divided into the following phases:

1. **Pre-learning** involves pre-understandings about several aspects of the learning process and musical memory. It describes, for example, what the *value of performing* from memory is for the participants and *complications in learning*, such as exceptions for not committing a musical composition to memory; memory issues and handling memory-related problems; and learning *processes* that involve the concentration that is required for learning.
2. The process of **active learning** was identified, where memory methods include the use of motor repetition that results in muscle memory; analytical approaches; visual strategies; audiation or combined methods; and all other aspects that involve learning a musical composition that must be performed from memory.
3. **Performance preparations** and **performance alterations** were addressed. The emphasised the value of **post-performance learning**.

Each of these phases will be discussed in more detail below.

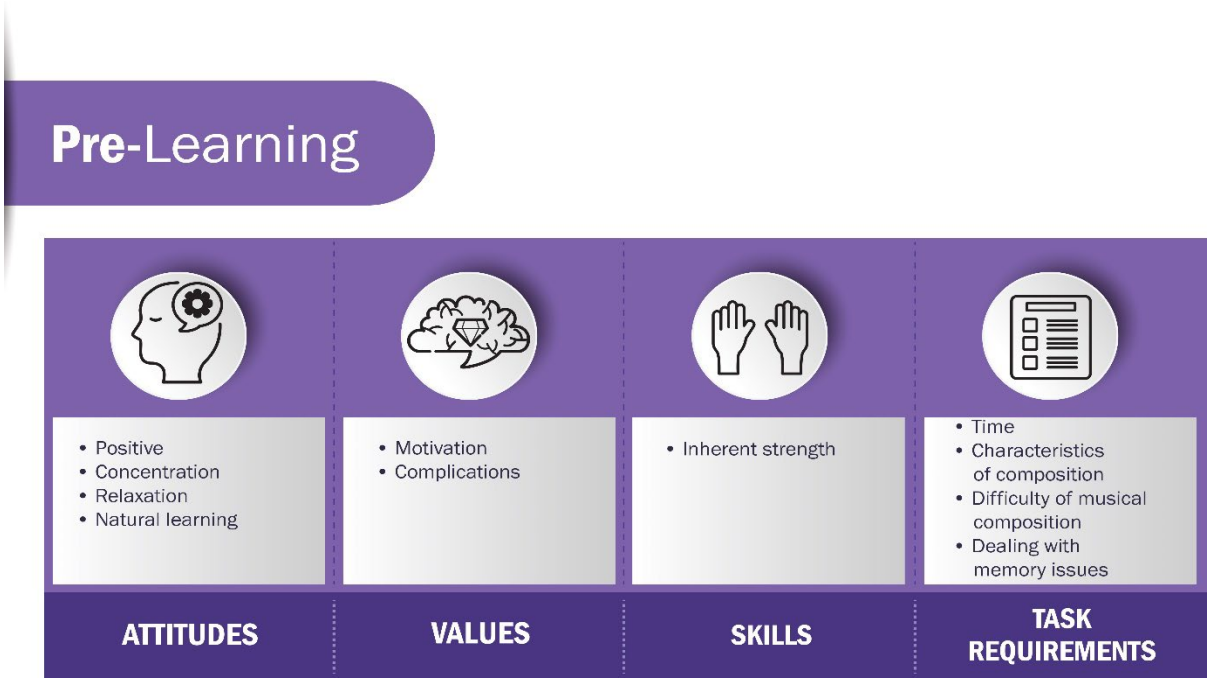
5.2.1.1 Pre-learning

Pre-learning involves aspects and approaches which need to be considered or before attempting to learn a musical composition. The research aimed to categorise these aspects in

four main ideas: *Attitudes*, *Values*, *Skills,* and *Task requirements* (see Figure 4). Attitudes include having a positive attitude towards learning, the concentration required for learning, and relaxed and natural learning approaches. Values that were discussed, included time consideration; the amount of time needed to commit a musical composition to memory; the motivations for the participants to choose to commit a musical composition to memory or not; and how dealing with complications in learning can be considered as a personal value because each difficulty can be addressed in multiple ways.

Skills involve aspects such as each performer's decision to focus on his inherent strength, and hence to choose a memory method or to combine methods that work best for them. Task requirements include the participants' view that each musical composition is unique and that there consequently is no set method or formula to commit a musical composition to memory. A more complex musical composition would for instance require a more rigid approach to commit to memory than a simpler composition. Task requirements also include the characteristics of a musical composition, its difficulty level, and its approachability.

Figure 4: Pre-learning



Attitudes

With regard to attitudes in pre-learning, I have concluded from the data that being consciously concentrated while learning and committing a musical composition to memory can improve

learning productivity. All of Musgrove Stetson's research participants also emphasised concentration as a crucial aspect of their learning methods (Musgrove Stetson, 2017, p. 44).

Results from several studies suggest that self-regulating regarding music learning may develop as students gain experience. For a professional musician, self-regulatory factors include practising, concentration, and the ability to organise time (Hallam, 2001). Similar to this study's focus and discussion of the notion of being concentrated while learning, Madsen and Geringer investigated attentiveness, selection of practical procedures, the amount of practice time, and the use of a "distraction index". They found that subjects who used the distraction index exhibited more on-task behaviour, suggesting that the ability to concentrate is vital for effective practice (Madsen & Geringer, 1981).

According to the participants of this research, natural learning means being relaxed and not consciously trying to learn. They reported that a positive attitude towards the musical compositions one is trying to learn – before starting to learn it – will reduce the energy, time and effort learning requires.

Käppel (2016, p. 237) has determined that relaxation techniques will help to reduce stress both before one's playing and on stage. Extreme stage fright is always accompanied by a negative tensing of the muscles. Käppel suggests various solutions for this, such as Autogenic training, the Alexander technique, the Feldenkrais method, Dispokinesis, Yoga and Tai-Chi, as well as medically oriented breathing and muscle relaxation techniques. According to him, it does not matter which method you choose, but simply addressing the "tension-release" issue will contribute to controlling stage fright.

Participants highlighted the need for a relaxed approach to learning. The fact that several studies have considered different ways to induce relaxation, such as beta-blocker medication or hypnotherapy, is an indication of the importance of this aspect for the learning process for many musicians (Parncutt & McPherson, 2002). Musicians may use approaches like the Alexander technique, or other relaxation techniques like bodily relaxation, breathing techniques and the release of various kinds of tension (Wan, 2016). The findings of the research that are cited here, confirm what participants highlighted in the interviews: when a performer is relaxed, learning with attention, and not consciously trying to commit a musical composition to memory, the result will be that a musical composition is naturally learned.

Values

All the performers in this study attach great value to committing a musical composition to memory and performing without sheet music, and they invest considerable time in accomplishing it. They feel that playing without the sheet music helps them connect to the music and the audience more efficiently. There are, however, situations when sheet music is necessary; for instance, it is sometimes impossible or impractical to do commit a musical composition to memory due to time constraints or complications in the music. Using the sheet music in performance depends a lot on how well one reads. The opposite argument has also been presented, namely that if one is not reading and looking at the sheet music all the time, one can apply that energy somewhere else or for something different, like the interpretation or sound production.

Some participants regard reading the music as a value and sometimes prefer to read the music. Technology, such as hands-free page-turning devices, has both advantages and disadvantages. There are many reasons why performers will choose not to commit a musical composition to memory. Some participants will avoid committing specific styles or a particular composer's musical compositions to memory. These values also involve Hallam's learning characteristics (Figure 1), as well as the enculturation process in Mishra's model (Figure 2).

Skills

Participants emphasised that every performer develops his way of memorising, and each performer should find his inherent strength, determine which skill is his strongest, which method of memory works best for him, and then combine that with a measure of other methods to enhance his memory. In recent research, Ginsborg encouraged the simultaneous deployment of all memory strategies available to musicians, since the "formation of mental and physically embodied representations via analytical and kinesthetic methods provides invaluable frameworks for recall" (Ginsborg, 2017, p. 83). This confirms that one needs to find one's inherent strength – each performer is different and has to learn differently, but each musical composition is also different and requires a different learning approach.

For Hallam, task-oriented strategies would for instance pertain to the difficulty of the musical composition to be learned and person-oriented strategies the different personal approaches that each performer will use to learn a musical composition. These ideas are similar to what the participants of this research described: performers are all different, with different inherent

strengths, and their approach to learning a musical composition depends on the difficulty of the composition.

Task requirements

Some participants also indicated that the time needed to learn a musical composition depends on its difficulty, and therefore each performer needs to choose the correct repertoire at the appropriate level of difficulty. Käppel (2016, p. 237) confirms these notions in his discussion of "the selection of your repertoire", where he points out the perils of choosing a repertoire that is too difficult. He refers to Bach works in particular, where performers expect too much of themselves:

> Aside from not preparing the piece in its entirety and the problems involved in developing a coherent interpretation, they are not up to the extreme technical demands required by the piece. The result is a nervous performance full of technical mistakes and memory laps, including attacks of stage fright.

Käppel emphasises that this is only one example of the wrong choice of repertoire.

Similar to Hallam's task-oriented strategies (Figure 1), the participants revealed that task requirements can be considered before learning and committing a musical composition to memory. Weighing the task at hand is always a factor to be considered when starting to learn. This implies that musicians already have a good knowledge or understanding about the musical composition they will be learning, and that a type of pre-analysis already has taken place. Mishra's preview (which involves performance overview, notational overview, and aural overview) also involves the consideration of task requirements (see Figure 2).

Dealing with memory issues is also a task requirement. When an issue arises in learning or performance, each performer needs to know how to address that issue and how solve the task at hand. All the participants discussed how they handle these issues.

Conclusion

In their discussion of task requirements, the participants did not touch on assessment requirements. Hallam argues that part of the initial process of practising is to be aware of the requirements posed by the task. Hallam's model has the student in mind, whereas something like dynamics in the interpretation of a musical performance are different for professional

performers. In my study, participants also highlighted the importance of considering the nature of the task. Since all participants are professional guitarists, they discussed their own experiences and preferences, rather than the practice learning environment and teacher characteristics. The participants did not elaborate on self-esteem or personality traits as Hallam did.

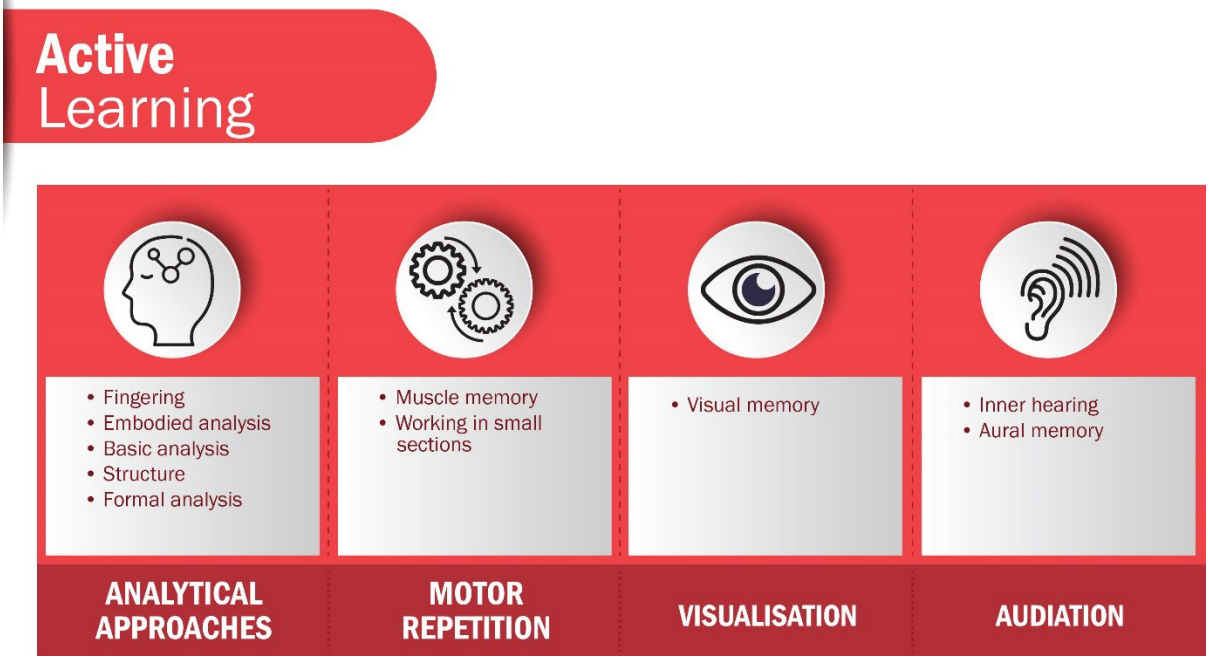
In Mishra's model (Figure 2), and particularly the sections on *Preview: performance overview*, *notational overview*, and *aural overview*, it is clear that more focus and attention are given to the learning process. This research reveals that personal characteristics such as concentration and relaxation are also included in this process. Complications in learning and time consideration before learning are considered as well. *Pre-learning* also involves these personal attitudes, values, skills, and task requirements.

5.2.1.2 Active learning

The following section on active learning discussed various learning approaches, processes and all the methods of memories described by the participants. After the cognitive processes of pre-learning are considered, the process of active learning begins. Most participants will begin studying their work by doing careful fingering, which is one aspect of using an analytical approach. After all aspects of an analytical approach had been followed, most participants will continue by using motor repetition, employing visual strategies, and audiation or combining all or some of these methods. Other aspects that involve learning a musical composition to be performed from memory will be approached differently by each performer. Figure 5 offers a visual illustration of the different active learning approaches.

Musgrove Stetson (2017) believes that although several participants used different words to describe their active learning processes, most of the memorisation techniques are similar or overlap. Findings in this study regarding active learning corresponds well with the findings reported by Musgrove Stetson as well as general learning on practising and memorisation.

Figure 5: Active learning



Analytical approaches

Analysing a musical composition is closely related to the next component of the research, namely *understanding*, but analytical thinking is viewed here in terms of learning processes and approaches. Discussing analytical approaches as *understanding* involves seeing a musical composition as a structure and making associations to understand and remember it better.

Fingering

Although most participants start by considering the fingering options, some participants do not begin to learn a musical composition by doing fingering. Instead, before starting to explore the fingering of a musical composition, they first look for the musical interpretation or expression of a composition or a musical phrase and then choose their fingering solution according to that. This approach of starting by analysing the structure is similar to Musgrove Stetson's (2017) suggested method. Musgrove Stetson's second stage of "motor analysis" comprises fingering and placing anchors in key sections and knowing exactly which fingering to use in difficult passages.

Starting with structural and phrase analysis is an approach for a deeper understanding of musical interpretation, as some of the participants revealed earlier that musical expression and fingering are connected. The fingering one chooses dictates the interpretation of a phrase, and therefore they find it essential to first determine the expression before doing fingering.

Hubert Käppel wrote very informatively on the topic of fingering techniques for guitarists (Käppel, 2016, pp. 218–228) and discusses the general rules of fingering, similar to what my participants revealed about how fingering affects a performer's interpretation. In an introduction to this topic, he gives a short description of the problems and complexity one will encounter in the fingering technique. The participants also described fingering as an essential part of learning and committing sheet music to memory.

Analysis

Once suitable fingering solutions have been identified, most of the participants will begin by analysing a musical composition, because they then find it easier to learn the notes within the structure. Musgrove Stetson's (2017) proposed method, however, suggests beginning with an analytical approach, and not with fingering. Furthermore, he does not refer to a Schenkerian analysis, but to thinking about the structure and phrase analysis and to creating the associations and mind maps needed for faster learning and deeper understanding. Käppel (2016, p. 233) concurs with this and claims that "your cognitive memory can be used to support your motoric memory". It is therefore beneficial to first analyse a musical composition structurally or harmonically to commit it to memory.

The participants also explained that musical compositions could be analysed while playing, and that embodied analysis then occurs. Similarly, Musgrove Stetson also found that one does not need a formal degree of analysis of a musical composition. Rather, an underlying understanding of the musical structure and an elemental knowledge of music theory and harmony are needed for the goal and purpose of committing a musical composition to memory.

Motor repetition

Most participants agree that one cannot only rely on motor repetition when learning, or only rely on one's muscle memory when performing a musical composition. Muscles do not

function separately from the brain, but rather the whole body or person is involved in remembering music.

Some participants consider it as a very effective method of learning to divide work to be studied in small sections. When work is learned in small segments, a performer will most likely use motor repetition by playing that segment repeatedly. Musgrove Stetson (2017) refers to the third stage as “muscle repetition” and emphasises focused practice sessions where both hands are analysed and controlled, and no movement is left to chance or intuition. Sections are not necessarily played several times, but perfect play is repeated several times. It is also vital to practise very slowly and to isolate the left and right hands. Ginsborg (2017) describes reliance on kinaesthetic memory formed due to rote repetition as particularly unreliable. Rote or motor repetition “produces memory for ‘associative chains’ such that the end of one passage cues recall for the beginning of the next, rather than ‘content-addressable’ memory, which is more reliable” (Ginsborg, 2017, p. 82). To build good muscle memory one needs muscle memory in combination with understanding and intellect. Participants of this study agree that muscle memory is reinforced by informal analysis of the score and fingerings, slow practice and working in small sections.

Visualisation

The participants gave a clear description of their views of visual memory. Voorhorst explained that visualisation happens naturally when one sees the sheet music or one’s hands while playing all the time. He prefers the term *mental learning* for the broader concept of visualisation. The discussion further described various ways how mental learning can be take place, such as without the instrument and only with the score, or without either the instrument or the score. Other participants described visualising their fingers or notes and shapes on the fretboard. Visualisation or mental learning seems to be one of the most challenging learning strategies to develop because it requires a lot of concentration, patience, and perseverance. The participants who contributed to this section believe that when visualising a musical composition can be achieved, the result of their memorised performances would be optimal.

Steidl expresses an interesting view that is not found in the existing literature, namely that after one had visualised a musical composition, one may be doing something entirely different, like walking in nature, and suddenly see and hear the music in one’s head, and give expression to it: “You are playing, you are dancing the movements, expression is coming out; this is also something beautiful I imagine, to work without an instrument or to work without a score, it is fantastic” (4:32).

A different argument is put forward by Gripper, who notably does not use visual strategies. For him, the mind should be kept out of memory and the body must be allowed to take over (5:12): “My whole project is to trust the muscle memory, which most, I think, musicians don’t like; they don’t like that insecurity of having to trust their body. So, they want a visualisation of the score, or a visualisation of some things that they can remember it” (5:12). He feels that “it’s all these other things that people are doing in their heads like visualisation that makes it difficult for them to remember” (5:18).

Literature indicates that mental practice can be done with or without sheet music. (Lim & Lippman, 1991; Theiler & Lippman, 1995). Mental practice can be described as practising without a musical instrument, in a situation where musicians visualise the notes to be played. Musgrove Stetson describes visualisation as the fourth stage in his method. He explains it as mental visualisation of both hands away from the instrument and as something that should be practised before going to bed while the brain assimilates information more efficiently: “Science has shown that engaging in motor imagery facilitates motor planning, increases control of musical elements such as timing and timbre, and enhances memory” (Musgrove Stetson, 2017, p. 43). One of his research participant’s, Kulikova, has found out that by visualising music she can learn more music in less time. Musgrove Stetson furthermore argues that through visualisation it is possible to effectively retrieve information during a performance. By being able to create a mental picture of all hand movements, the performer’s brain will always be one step ahead, sending instructions to the fingers, and not figuring out what the next movements are.

There is a big tendency towards visualisation or mental practice in most classical guitar pedagogical books and articles on memory. Mental training is something that athletes in professional sports training have employed for quite some time; as in some sports, excessive training is impossible and can even be harmful (Käppel, 2016, p. 235).

Ricardo Iznaola’s book *On Practicing* (Iznaola, 2000, pp. 16–20) discusses some steps and experiments for approaching visual strategies. Iznaola recommends visualising in smaller sections, starting only with a short musical composition or segment, similar to Möller’s suggestion of working in small segments. He also advises that regular practice should not be mixed with visualisation practice, and that visualisation should be applied to new material. When a performer tries to visualise or hear a whole musical composition at once, it can be demotivating, as the task may seems too difficult at first. My research showed that learning to use mental strategies from a young age will also be beneficial and that visual and

audiation skills will also be easier to obtain when more accessible works are being learned. If someone considers himself to be an advanced performer but cannot visualise a work, for example, he should try to visualise a beginner musical composition, and then increase the difficulty level until he can use visual strategies at an advanced level.

Audiation

Edwin Gordon's book explains that "Sound itself is not music. Sound becomes music through audiation. Audiation is the process of assimilating and comprehending (not simply rehearing) music momentarily heard performed or heard in the past" (Gordon, 2012). Learning "by ear" is typical for musicians in oral traditions such as singers. Ginsborg describes the skill of audiation as the "ability to imagine what notated music sounds like" (Ginsborg, 2017, p. 75).

Some participants have found that singing the notes and focusing on the tension of the intervals result in better learning and in an aural memory that is more easily stored in the long-term memory. Käppel (2016) explains auditory memory as the ability to hear without playing the instrument. He suggests memorising a musical composition and accompanying deep emotional sensations, especially every nuance of the dynamics. The reward will be that the musical composition is deeply engraved in your memory and more readily available to perform.

Voorhorst also believes in hearing the melody. He tries to follow the melody and harmony, which helps him remember. Voorhorst considers this as much more reliable way to remember a musical composition. Assad learned music by ear since he was a child: "I had that knowledge because I heard music all the time, people played the guitar, and you know, the harmony, I knew the chord resolutions, I knew them without knowing because I would hear them all the time" (6:2). He considers this as part of one's process of memorising and remembering a musical composition. He does not remember shapes and fingerings, but his memory is aural, and it is what he hears. Steidl describes an exciting view of using language. He developed a natural feeling for the intervals and does not sing using solfege, but he mostly sings the notes or the rhythms themselves.

Käppel (2016) pointed out that auditory memory belongs to the musical and emotional memory. The musical and emotional memory is the memory responsible for interpretation and expression. Dynamic sequences, tonal colours, rhythmic precision, changes in tempo and emotional "side effects" are stored. Singing is another general aspect of aural memory, such as singing the notes or phrases, singing the fingering, and singing first before playing. Provost

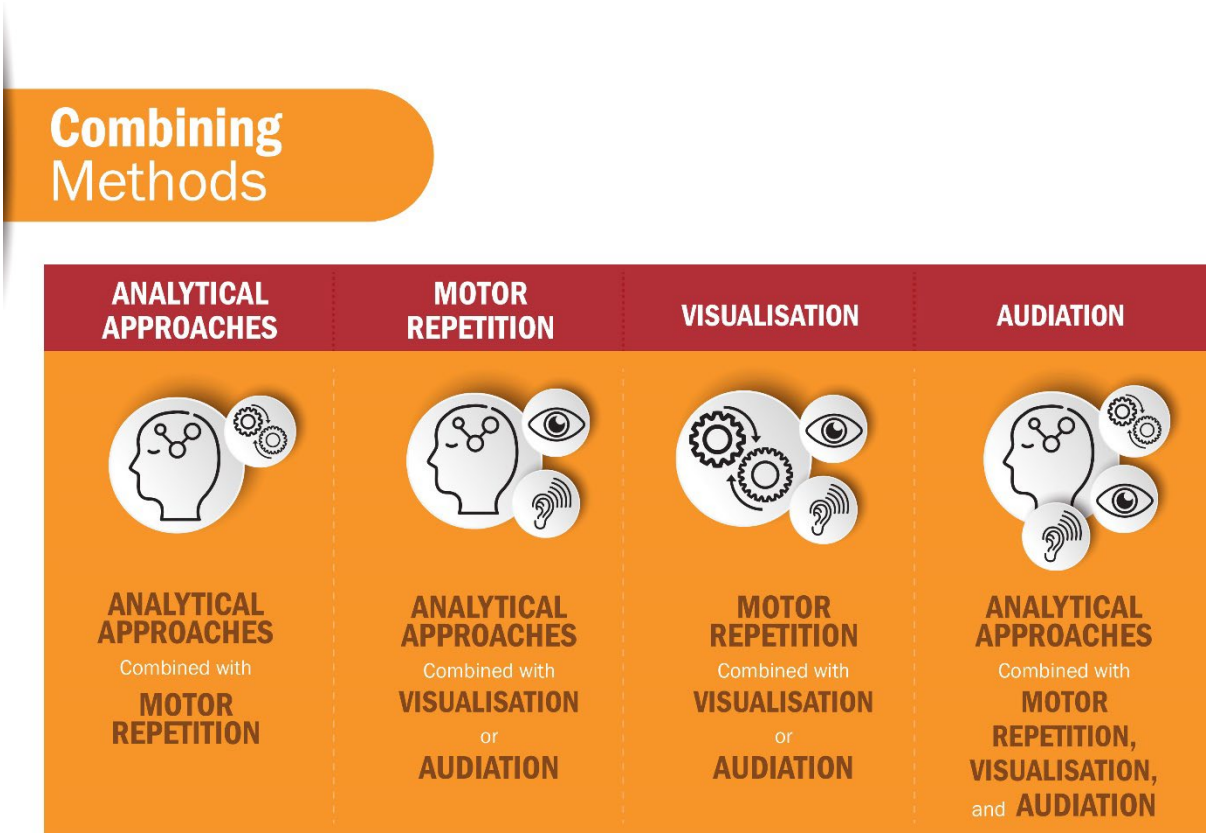
(1992) says a performer must sing the melody, bass line and middle voice, and then play a musical composition from beginning to end. Käppel and Provost concur with Steidl and Voorhorst and recommend singing melodic lines and phrases to aid one's aural memory. Käppel, like Steidl, connects musical and emotional memory to interpretation and expression. Assad, however, knows what harmony should sound like and is highly focused on what he hears.

The conclusion of the relation between the literature of Ginsborg (2017) and some of the participants of this research is that learning by ear is still an extremely reliable way to learn and recall sheet music. It is not only a commitment in singing and hearing the melodies, but also the harmonies. Audiation can result in a state of deep learning when it is performed correctly and with understanding.

Combining methods

The participants indicated which learning combinations they use most. Villadangos, for instance, uses aural memory combined with analytical memory learning methods. Steidl uses the different memory methods when learning a new musical composition, but when he performs, he trusts his muscle memory; and if problems arise in a performance, he will rely on his visual memory to cover them. Assad relies on different memory methods in cases such as where a composition is in another tuning or if he has a particular issue that needs to be addressed. Figure 6 visually displays the different ways of how methods can be combined

Figure 6: Combining methods



Hurwitz (1:214) described visualisation, or imagining the music first, before motor repetition occurs, as the key to optimal learning. Hurwitz's memory strategy is mainly about visualisation, but what he calls "imagination" is not just about visualisation. It is also about audiation combined with analytical approaches and specific attention on fingering. Hurwitz also believes that technical issues can be solved through visualisation and imagining of a problematic passage.

Similar to Hurwitz's contributions, Ginsborg (2017, p. 81) notes that imagining the sound away from the score and instrument can be very useful, "but the equivalent of eidetic memory for music – the skill of reproducing a work heard only once or twice depends on the size and availability of the listener's stored repertoire, which may be in the form of visual, kinaesthetic as well as auditory representations". Ginsborg (2017, p. 81) underlined the difficulty of separating analytical, kinaesthetic, visual, and auditory approaches: "None can be implemented without one or both of the others, and without drawing on representations or 'schemas' stored in long-term memory." She encourages and supports the simultaneous deployment of all memory strategies available to musicians and argues that the "formation of mental and physically embodied representations via analytical and kinesthetic methods

provides invaluable frameworks for recall" (Ginsborg, 2017, p. 83). Here it is emphasised again that motor repetition should always be used in combination with other methods.

Mishra wrote that memory methods are rarely used in isolation but that most performers use at least two combined methods. Some of the authors included in Mishra's (2010) study recommends the combination of four methods for memorisation stability (Mishra, 2010a, p. 9).

Conclusion

The active learning phase described in this research is similar to Musgrove Stetson's (2017, p. 41) research findings, where he aimed to create a method for memorisation and suggested five stages:

1. Score Analysis
2. Motor analysis
3. Muscle Repetition
4. Visualisation
5. Environmental variation

In the final stage, Musgrove Stetson added *environmental variation*, where it is suggested that students should practice in different environments to reduce or eliminate any distractions caused by environmental changes while performing. Although this research also addressed environmental variation in the next part of performance preparation, it is not considered as an active stage of learning on its own, but rather as part of the performance preparation and performance alterations of dealing with different environments, venues, and acoustics.

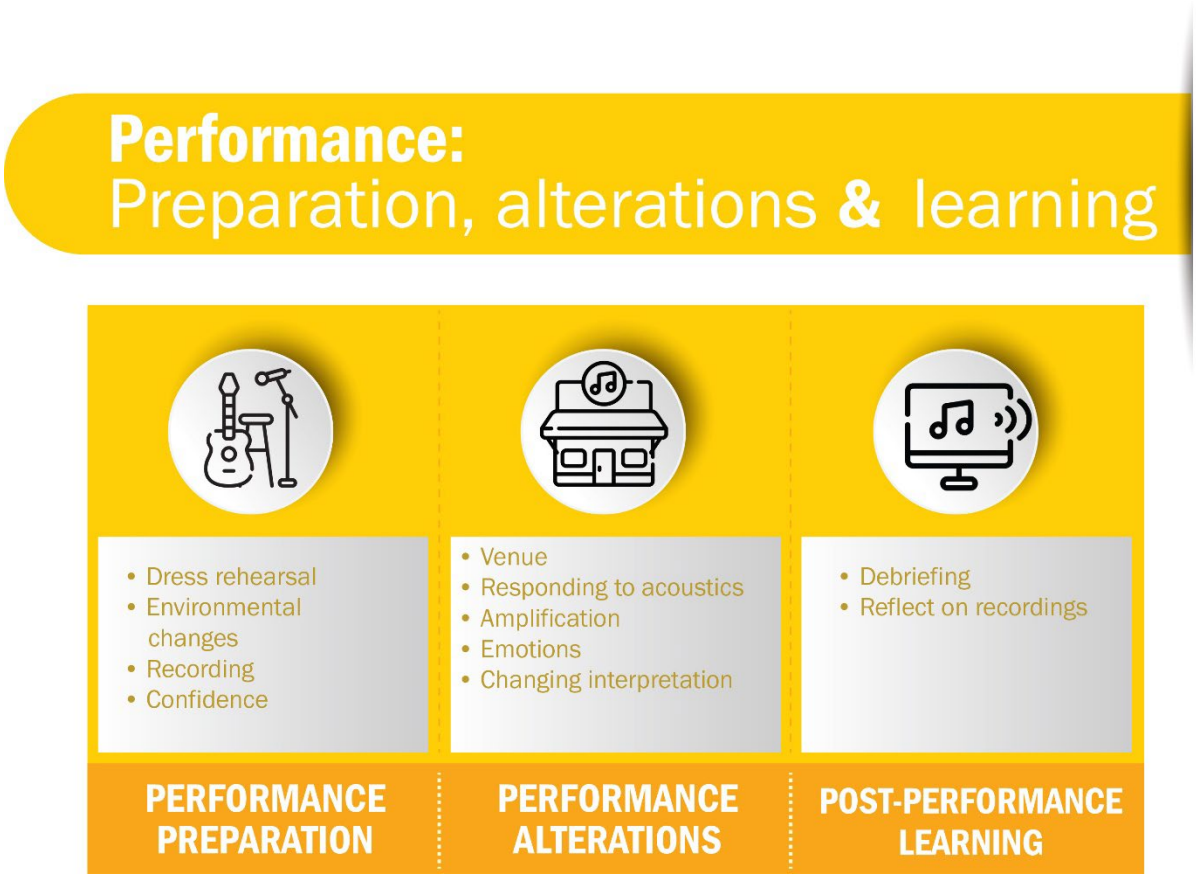
As in Hallam's model (Figure 1) description, the participants viewed task- and person-oriented strategies as part of the pre-learning process under task requirements, and not as part of the learning process or *practice process*. Participants of this research favoured the main memorisation strategies as showed in Mishra's model (Figure 2) (aural, visual, and kinaesthetic memories, the sensory styles) rather than *processing strategies*.

Deciding which memorising strategy to employ depends on the difficulty of the musical composition and the memory method, skill, and memorisation capacity of everyone. Not all performers should use the same learning strategy all the time. When one memory area fails in a performance situation, another method used in combination during the encoding process will prevent total memory failure. That will lead to a more confident, enjoyable performance and reduce the fear of memory failure.

5.2.1.3 Performance preparation, performance alterations and post-performance learning

Figure 7 shows how learning continues after the pre-learning and learning phases, and how learning continues after the performance and leads to a deeper understanding. Seeing musical memory holistically means observing the learning process before, during and after a performance.

Figure 7: Performance: Preparation, alterations, and post-performance learning



Performance preparation

The participants agree that the best way to check that one has learned a musical composition well is to do a pre-performance before a formal performance. Some participants suggested a dress rehearsal while performing their musical compositions from memory for friends and family. This will also lead to more confidence for performing from memory.

Käppel (2016, pp. 236–237) wrote about performance training that the most important form of preparation is to perform regularly. He suggests performing in front of peers with whom you meet weekly, in the best case under someone's supervision, to play for each other in turn, or to play in public as much as possible. Similar to what my research participants suggested, Käppel also suggests making recordings of oneself. He points out that microphones make musicians nervous and records absolutely everything – even heavy breathing or gasping. Performing preparation by recording can be tremendously helpful as a substitute for playing in front of people.

The authors discussed by Mishra addressed preparing for a performance in similar ways to these ideas, and most of these called for either a formal or informal dress rehearsal or practice performance. Imreh and Chaffin (2002) also support the notion of an informal dress rehearsal and says that recreating a situation similar to the one you last remember, will improve your memory.

Performance alterations

The participants described how a concert situation contributes to learning. A venue can be different for each performance, for example, and performers must know how to respond to that environment. Performers must adapt their playing according to the venue. In a dry environment, a guitarist must play all the notes shorter or slightly faster; and in a warm environment a performer can play slower, more legato and vibrato, because the sound is sustained. With a delicate instrument such as the guitar, it is crucial to understand these venue differences and to practise beforehand to be prepared for different acoustic scenarios. Belgian classical guitarist Raphaella Smits notes that musical interpretations are informed by acoustic environments as much as they are by strictly musical factors:

> How the sound is moving inspires you in a certain way. So, if a concert hall has a lot of echoes, it will be necessary to make the articulation very accurate. If you did the same in a dry hall, it would sound horrible. However, if one always plays legato in an over-reverberant hall, it will become unclear even in the very rapid passages. These things do contribute to the inspiration of the moment. So, it is not only the inspiration of oneself or the composer; it is also the inspiration for what surrounds one (DeRoche 2005, p. 74).

Some participants also pointed out that when performing with amplification through a sound system, a performer's sound is much louder and different than the sound produced while

practising. There could be more reverb, a wider range of options for dynamics from very soft to very loud, or even much deeper bass notes. Amplification of the classical guitar is a much-discussed subject, with many online articles, and discussions on how to approach it.[6]

Post-performance learning

The participants agreed that every performance would be different, that different musical aspects will be emphasised in different performances, and that musicians grow in their perception and understanding of a musical composition. They explained that musical interpretation could be different each time and that there is no set way of interpreting music – there can be many ways, and all can be good. Nevertheless, it is important to bring out the music, musical ideas, and expression, and to show the composer's intentions.

The literature showed that in constructing musical memory, various factors could affect musical memory, such as the emotions or feelings of the performer or the physical environment (Mishra, 2010a, p. 18). Ginsborg (2017, p. 89) stresses that performers must be flexible to the challenges of the audience, hall, and other aspects of each performance environment. Even considering these factors when performing from memory, a musical composition is still being adapted and changed during and after a performance, suggesting that consolidating musical memory continues through being developed and adapted.

Conclusion

Similar to Hallam and Mishra's models of practicing and memory, this research emphasises the ongoing cycle of learning and the fact that learning does not end at the final product. The process continues and performers are learning all the time, remembering all the time, and continue to learn during, from and after a performance. It is important to note that over-learning happens before a performance, when a performer learns a musical composition for a

[6] For example, a very interesting recent article on amplification by John Warren may be found at https://classicalguitarmagazine.com/amplification-and-classical-guitar-the-search-for-natural-colors/. A question that arose from this study, which could be explored in further research, is not so much how to amplify a classical guitar well, but how amplified playing alters one's memory when performing. This problem centres on how a musical composition is heard and perceived when it is played amplified, how that changes the interpretation of a musical composition that has been learned, and how it affects the performer's memory.

performance, is ready for performance long in advance and knows the composition well but continue to learn it even more. What Mishra describes as the over-learning phase entails more than the over-learning of a musical composition. Automatisation refers to the over-reliance on muscle memory when performing musical compositions for an extended period. In this research, performance and re-learning are seen as part of the ongoing, interactive learning process. When re-learning and automatisation take place, it remains important to reinforce that process with a deeper understanding to prevent memory failure due to muscle memory reliance.

It may be concluded that memorised pre-performance activities lead to more confidence in performance. Concert situation variables such as venue differences, amplification, personal emotions, and freedom of interpretation affect a performer's musical memory, and each performer needs to deal with those variables accordingly. The aural memory or perception of a musical composition can be greatly affected by acoustics and amplification. When an interpretation or perception of a musical composition changes, this change dramatically affects how that composition was learned and remembered. For instance, when committing a musical composition to memory, musicians also learn the interpretation, the phrasing, the dynamics, and the musical ideas. When they decide during or after a performance to change any of these aspects, they must alter their memory and adapt to these changes. Another important aspect is to debrief after performances or reflecting on recorded material and to reflect on what was good and which areas could be improved or work well when learned in another way. As a result, musical memory is in flux – it is affected by each performance, and therefore never complete, never at an end, and perhaps always becoming.

5.2.2 Understanding

When learning with understanding, the memory process is set in motion, mainly by employing analytical strategies. The participants revealed how the analysis of a musical composition leads to the understanding thereof. They also explained how musical form and aural memory are connected and described how musical structure can be compared to literature. The participants felt that it is crucial to study a composition in detail and to understand and make associations and connections, which will be discussed more thoroughly in the next section, on remembering. Remembering is an aspect that is evident in each phase of the learning process. The process of *understanding* is illustrated in Figure 8 below.

Figure 8: Understanding

Analytical memory

Hurwitz explained that the more one learns music, the deeper one's understanding of musical structure will be. This refers to harmony and polyphony, or how harmonies and different voicings flow and connect, and the direction towards which they move. Analysis here can be seen as a flow-based understanding of a vertical level, and not the horizontal aspects of a theoretical approach. Hurwitz says that performers' memorisation capacity will improve if they understand these progressions very well and approach music as a language. Krivokapíc suggests that performers should analyse what they are doing, analyse a musical composition, and analyse the harmonies. By analysing in such a way, a performer can build an interpretation, and it is not just a matter of one note or one chord to the next. Instead, one has a complete picture of how harmonies, melodies, and sections are related to each other and how they flow from one to the next. This way of thinking will increase a performer's memory stability. Garcia differentiated between learning and understanding: "If you learn, you do not necessarily understand, but if you understand, you necessarily learn" (11:19).

To recapitulate some aspects discussed by the participants earlier, Hurwitz was very impressed by the skill of his composition teacher, who had a holistic memory – this mainly refers to musical structure (analytical memory) and inner hearing (aural memory). In his recollection, his teacher could have played and remembered any musical composition. According to Hurwitz, his teacher understood form and musical structure. Assad combines his aural memory (which is remembering what the music sounds like) with musical structure (which knowing what the harmony implies and what the notes and the musical structure are). He aims for a complete understanding of a musical composition, and not only the musical structure but also control of the sound. Some of the participants, such as Krivokapíc and Steidl, also compared understanding structure to literature. Hurwitz said no one would even notice if you missed one or two notes if your music were flowing like a story. Krivokapíc remarked that understanding structure is similar to when one tries to memorise lines from a book or a poem: "If you just go word by word, like that, it is not easy, but if you are reading it with understanding, you can get how the connections work, and you can get through whole parts much easier" (3:49). The result will be that memorisation of a musical composition will take less time and that one will remember the music for a more extended period.

This section made the importance of understanding the flow and connections in the structure of a musical composition evident. It discussed a holistic approach to a musical composition, through combining an aural memory with an analytical memory. Hurwitz expanded on this topic and tries to discourage musicians against learning music note for note and against

striving for perfection. In his approach to a musical composition, he would instead try to see the complete picture. Many of the research participants are also respected composers of the classical guitar, such as Hurwitz, Assad, Möller and Kinsey. As composers, they will always approach a musical composition as a structure or as a whole, and they also encourage performers to learn a musical composition in such a manner.

Participants of this study agree with Ginsborg's claim that "auditory, visual and kinaesthetic strategies are in truth inextricably tangled, since our experiences of hearing, listening and performing music involve embodied cognition" (Ginsborg, 2017, p. 89).

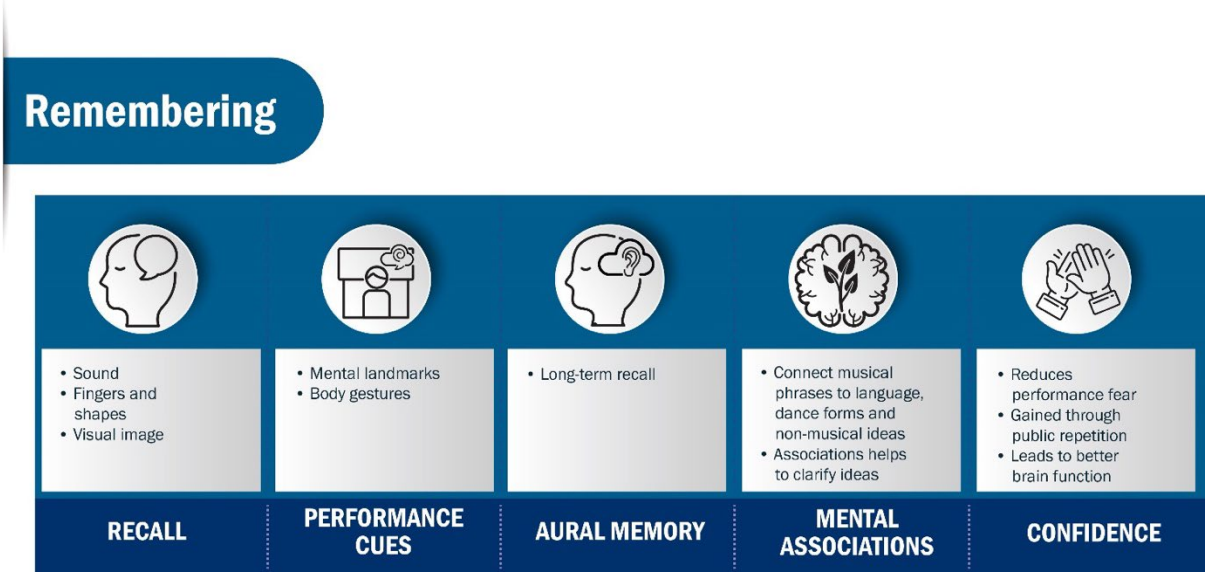
Mishra's model (Figure 2) shows that the understanding phase and learning phases are interweaved and cannot be seen as separate processes. Again, the practice phase feeds back to the enculturation phase and suggests the ongoing, circular process. In Hallam's model (Figure 1), there is no mention of understanding or a deeper level of learning. Mishra's *practice stage* aspect of *conscious memorisation* can also be considered as the understanding process of this research.

This research claims that while learning without understanding is possible, understanding without learning is not. Evidence of this claim is that the learning process continues to another more profound level, namely understanding. Not all musicians understand what they are learning. The goal and purpose of analytical thinking is to understand a musical composition better and see the complete picture, for example how harmonies and different voicings flow and connect, and the direction towards which they move. Understanding a musical composition is about the connection between the notes, phrases or sections and different movements in musical compositions, and there should be a comfortable ease of flow between all these aspects. By thinking and formulating one's thought direction in such a way, a mechanical way of interpreting is prevented, and a performer's memorisation ability is increased. It is essential to approach a musical composition as a composer because a composer will first find the musical structure of a musical composition. A true understanding a musical composition can also set different performers apart.

5.2.3 Remembering

When performing from memory in a performance situation, the performer draws on intellectual understandings; kinaesthetic, proprioceptive, and tactile memories; emotional states; movement and flow between musical ideas and elements; and also, environmental factors such as the venue and the audience's reaction. All these multiple informative aspects stored in their bodies entail the intellect, understandings, body movement patterns, and the emotional states of performers. Remembering a musical composition is closely associated with learning and with understanding it; and the learning process is interconnected and circular. The process of *remembering* is illustrated in Figure 9 below.

Figure 9: Remembering



Recall

The recall of all formed musical conceptualisation is dependent on the quality of the encoding process. While it would be possible to differentiate the process from the product, the moments in the process when the result of learning is displayed in public could be understood as the product. Since the process is ongoing, however, the product can improve even more when the processes of post-performance learning and re-learning takes place. This, in turn, will lead to an even deeper and more mature understanding. Glise (1997) observed that when classical guitarists perform from memory, they intend to recall the sound, the fingering and position of the hands, or in some cases, the sheet music.

Performance cues

Except for Gripper's motion-based ideas about music that is divided in sections and linked to movement, the participants did not discuss memory cues and mental landmarks that help them remember extensively. Gripper's motion-based ideas can be seen as a form of performance cues. Some participants discussed learning in sections and phrases and connecting these sections, which is similar to deliberately using memory cues and mental landmarks. Voorhorst discussed using mental landmarks or mnemonic reference points, as also suggested by Käppel (2016) in Chapter 2.

In contrast, the authors included in Mishra's (2010) study encouraged musicians to add mental landmarks or memory cues in a musical composition which would serve as backup starting points if memory failed in performance. These points refer to the beginning of a new phrase or section. It is also suggested that when memory fails, a performer should begin at the following phrase or reference point and not return to the previous one. In doing so, a performer eliminates the risk of having the same memory failure at a specific spot. Chaffin explored practice features and performance cues in a series of longitudinal case studies (Chaffin & Imreh, 2002). This refers to an informal analytical approach known as a "practice features and performance cues" memory retrieval scheme. According to Chaffin and Imreh (1997, p. 315), "Pianistic memory appears to be based on the use of a highly practised retrieval scheme which permits rapid retrieval of information from long-term memory." Ginsborg (2017) also showed that performance cues are essential in determining long-term memory recall. She recorded all her practise sessions and rehearsals. Ginsborg explained that musical genre and freedom of interpretation affect memory and recall. She also mentions that the demands of each instrument must be considered and that, for example, different body movements and gestures suggest different performance cues for memory. Again, the thought process of flow and connection is applicable here, and the connection between the notes, phrases or sections and different movements in musical compositions should be considered. There should be a comfortable ease of flow between all these aspects. Memory cues are not static elements in our minds, but there is a relation and an essential development of the connection and flow in a musical composition. This can be seen as the role of understanding in the remembering process.

Aural memory

The participants revealed that the use of aural memory results in a better long-term memory recall, as mentioned earlier and as confirmed by Ginsborg (2017). As with performance cues,

aural memory is built upon a processual remembering of events – one aspect flows and connects towards another. In developing Schenkerian hearing and performing, Pierce explains that for many musicians, envisioning structural levels are very stimulating, and their ears are turned sharply towards a distinctive hearing style: “Numerous graphs published by Schenkerians have nuanced elegance suggesting that they have been arrived at by a back-and-forth combination of score study with just a hearing style” (Pierce, 2010).

Mental associations

Some participants described how mental associations and connecting musical phrases or musical structure to language, dance forms or other non-musical ideas can also result in a better recall of musical data and even a deeper understanding. The more detail a performer can add to a musical composition, the more connections there are, making it easier to recall. These associations also help play melodic lines and particular articulations more cleanly.

Confidence

The participants also revealed that being confident in a performance situation reduces fear and leads to a better recall of musical data. Some participants explained that confidence is gained through the repetition of concert programmes. This understanding of memory recall implies that work, which is adequately encoded, will be more easily recalled. Confidence is also essential for a performer’s memory and brain to function optimally.

Conclusion

Hallam’s model (Figure 1) suggests that the final phase (*product* and *learning outcomes*) is similar to the remembering phase described in this research. As Hallam’s arrows in the diagram indicate, the product feeds back to *presage* once again and indicates the ongoing learning process. Mishra’s model (Figure 2) does not discuss a final product or remembering phase, but similar to this research also implies that in all aspects of learning, remembering is evident. Remembering is not only seen as a final product of learning, but it is interactively part of the whole process, for, in each phase of Mishra’s model, learning, understanding, and remembering is evident.

5.2.4 Final Conclusion

5.2.4.1 Recapitulation of main research question

The main research question for this study was formulated as follows:

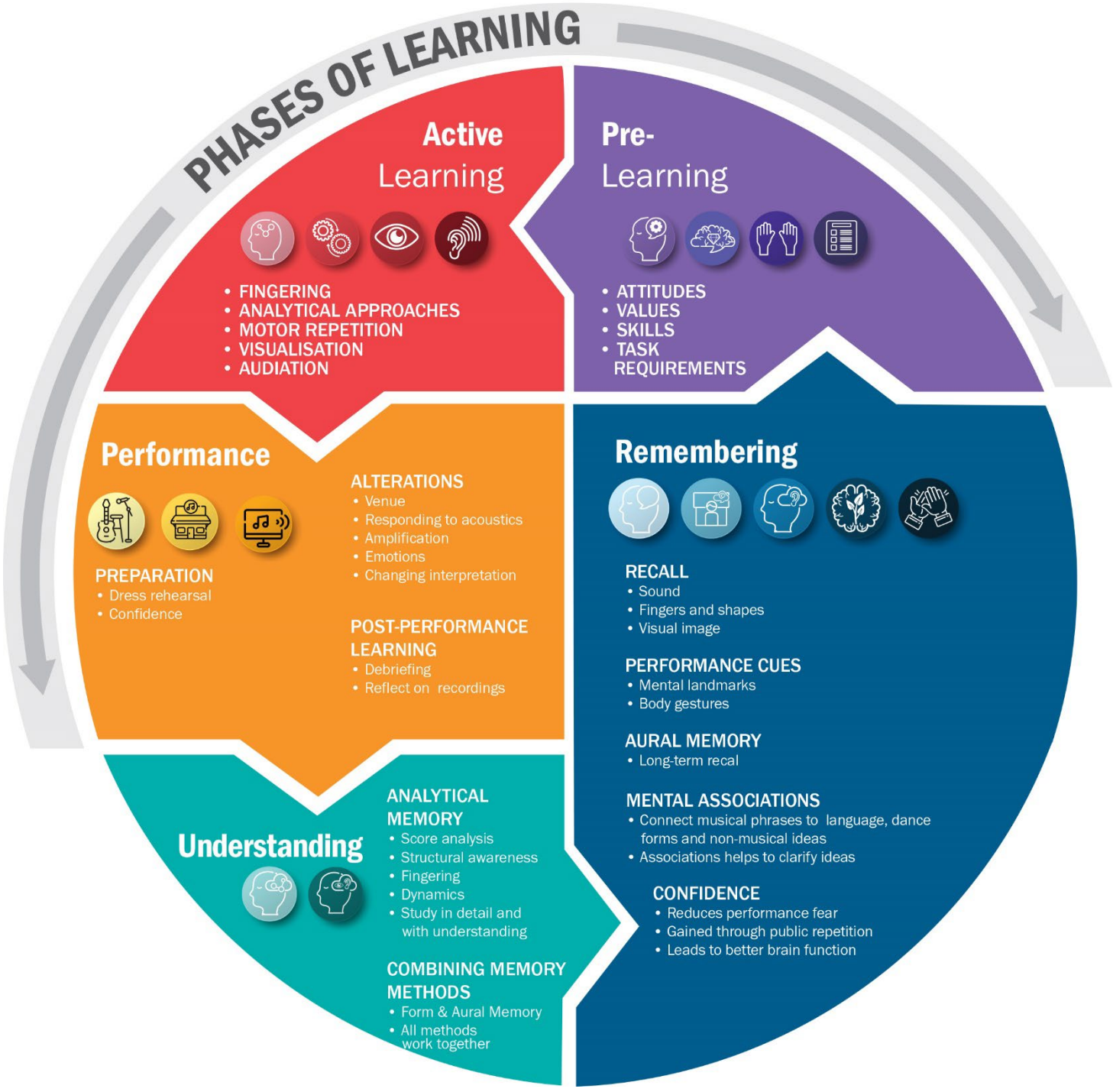
What conceptual framework for describing musical memory can be developed from the ways that 12 professional guitarists understand and describe their musical memory?

5.2.4.2 Conceptual framework of research

The main explorative focus of the research question was to develop a conceptual framework of how musical memory is understood and described by professional guitarists. This framework, which I have just discussed in part, and which I have called a *Holistic view of musical memory* (Figure 10), resulted from the cross-case analysis of this study.

This main framework is divided in three subcategories and can be understood as **phases of learning, understanding**, and **remembering**. Pre-learning; active learning and performance preparation; alterations; and post-performance learning are all part of phases of learning discussed in the foregoing sections. In the previous chapters, phases of learning were described as learning *processes* and not as a phase. A *phase* implies that one aspect follows another in a sequential process. It is therefore a more accurate term than learning *processes* since the learning processes can be divided into phases. I do not consider understanding and remembering as separate phases, but rather as processes which depend on each other. They are considered as simultaneous, interrelated processes, and not sequential processes. Remembering is an evident, integrated, or interactive part in each of these processes. For example, understanding leads to remembering, learning phases lead to remembering, remembering strengthens understanding, and the processes implies a back working a cycle. The diagram in Figure 10 indicates an integrated, circular, ongoing process.

Figure 10: Holistic view of musical memory



The following sub-question was addressed in this chapter:

- What would be an appropriate conceptualisation of the processes of guitarists in developing musical memory based on the existing literature and their descriptions of musical memory as a phenomenon?

This research showed that the process of remembering is evident in all phases of the encoding process. This may also be viewed as a circular process.

To recapitulate: the interaction between *phases of learning*, and the processes of *understanding,* and *remembering* is displayed and visually explained in Figure 10. These central themes are interconnected, as the phases of learning are associated with understanding; and remembering is the result of the learning phases. Finally, the primary purpose is to remember and thus to achieve better performance results.

5.2.4.3 Questions that still need to be answered (future research)

The main research question and sub-questions have all been answered more comprehensively than was expected before this study commenced. A conceptual framework of how professional guitarists understand and describe their musical memory has been formed in terms of the main structure of the cross-case analysis. This framework involves phases of learning, understanding, and remembering, as illustrated in the *Holistic view of musical memory* in Figure 10.

Subsequent research could involve case studies of professional guitarists' methods of learning and memorising a musical composition; of how musicians make connections and regulate flow between musical sections; and of how understanding is developed. Their thinking and working processes could also be followed through recording their work over a period.

A model may also be created for different types of performers, as one performer might have a strong analytical memory, while another has a strong visual memory. Such a model can differentiate between different types of performers, personalities, or the different kinds of music they learn. When a musical composition is learned, it may for instance be found that visualisation and muscle memory methods work only for modern compositions, whereas Baroque and Classical works may require a higher level of analysis to commit a musical composition to memory. When a particular personality type model can be developed, it might be helpful for musicians to work from the knowledge of which type of memoriser or learner

they are and what methods should be implemented to develop those memory skills, based on their strengths and weaknesses.

5.2.4.4 Limitations

The participants of this research were all professional guitarists, and not high school, college, or university level musicians. The participants only discussed aspects that directly pertained to them as professionals; unlike Hallam's model (Figure 1), where, for instance, the *learning environment* that includes student-teacher and parent perceptions was included.

5.2.4.5 What I have learned as a guitarist

The final sub-question was addressed in this part of the research:

- How can I apply the theory of seeing musical memory holistically to my own memory process?

The two lecture recitals provided me a way to apply and present my research results and what I have learned as a guitarist. In accordance with the results chapter of this research, the first lecture recital focused on the encoding process of committing a musical composition to memory, which is described as phases of learning and understanding. The quality of learning and learning processes affects the outcome of remembering, which in turn is dependent on the quality of the encoding process. The second lecture recital showed the processes of remembering or recalling a musical composition learned from memory.

Links to video recordings of the two lecture recitals

Lecture recital I took place on October 23, 2021, at North-West University, School of Music and Conservatory.
Link: https://youtu.be/kCxC9_tLzqg

Lecture recital II took place on February 12, 2022, at North-West University, School of Music and Conservatory.
Link: https://youtu.be/cHhckefGu4s

Initially, I was looking for a research topic that would help me as a performer; and the idea of musical memory is very close to my heart. I prefer performing from memory, but I also feared

performing from memory. I intended this to be a research project to discover how professional guitarists describe their musical memory and learn from their experiences.

What I learned from this research project was, firstly, a more profound knowledge of research skills. A new world of learning experiences opened for me through attending well-guided research seminars at the North-West University, through the guidance of my supervisor, professor Albi Odendaal, and through access to research tools such as computer programmes to which I was introduced. By reading, writing, and forming my interpretations, my language skills have developed and by doing interviews with 12 professional guitarists from around the world, my social and communicative skills also progressed.

What I learned as a professional guitarist, is that musical memory should not be feared. Although I sometimes thought that some of my participants possess superhuman powers to be able to regularly perform countless recitals by heart, I discovered that they are human beings and have memory skills that can be broken down into the holistic musical memory approaches they follow.

I learned that a positive mindset and a good attitude towards a musical repertoire before learning commences, result in better learning. I have learned that being relaxed, being under no pressure, and working as if I have all the time in the world, are productive strategies. I have also learned to set my mind on smaller goals each day and to practise in a time-specific, achievable, measurable, and intelligent way. I have found that it is more productive to work in shorter sessions but to concentrate and learn with attention. I further learned that making or finding good fingering solutions is an important element of committing musical compositions to memory and that musical expression is related to fingering.

Understanding a musical composition is the most critical aspect I explored in this research: understanding everything that is going on musically, technically understanding the music through analytical thinking, understanding the musical structure, making associations, and understanding the instrument-body relation. When performers learn with understanding, they remember better. My research also gave me a better grasp of aspects about which I did not know much, such as visual strategies, imagining the music and audiation. I learned that motor repetition that results in muscle memory could have negative consequences, but that motor repetition used with a mindful learning approach results in productive learning. I further learned the importance of approaching musical memory holistically from pre-learning to post-learning. Post-performance learning proved that one can still learn and develop a musical composition further after a performance. The research showed how a performance situation has many

variables and how that affects a performer's perception of musical composition. I discovered that making regular recordings of my playing is an essential part of learning, as it is important to critically listen to and evaluate those recordings.

As a performing guitarist, I found that the quality of my memory and my memory learning skills have improved tremendously. I used to be much more anxious in previous performances when I had to perform from memory; and I would rely a lot on my muscle memory. By truly understanding the musical compositions I am playing, I can see the structure and memory cues in my mind, I know the melodies and sing them in my mind, and I visualise my hands, fingers, and parts of the score. I make associations and try to add as much detail as possible to musical phrases. I regularly apply suggestions made by my participants, such as imagining the music or working in small sections. All these methods combined help me personally to memorise musical compositions better.

From these memory-learning methods, I believe that my memory skills and my skills as a performer have improved a lot. I learned that even when performers read from the score, their musical memory is being used all the time, because performers recall in their mind what the music should sound like and what fingering to use. These memories have been ingrained through motor repetition. A performer might not be able to play a musical composition without the sheet music, but in his mind, subconsciously, he knows the music very well.

The lecture recitals also added a personal touch and deeper value to the study. I hope that the results of this research will have as much benefit for other guitarists as well.

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ANNEXURES

ADDENDUM A

Biographies of participants

Below, brief biographies (based on promotional material) of all the participants in this study are presented.

1. Tal Hurwits (Israel/Germany)

An exceptional classical guitarist and composer, Tal Hurwitz has garnered international acclaim in concerts and competitions worldwide [7]. Continuing in the grand classical tradition of the composer/performer, he is dedicated to furthering the technical and musical possibilities of the guitar. Hurwitz holds two bachelor's degrees and a master's degree in music, obtained while studying under some of the world most renowned pedagogues, first in Israel with Joseph Urshalmi and then in Europe with Costas Cotsiolis, Marco Tamayo and Carlo Marchione.

Hurwitz's constant drive to progress has led to an extensive performance career across Europe, North America, South America, and the far East. Additionally, Hurwitz has won prizes both as a performer and composer in numerous international competitions, including the Sinaia international guitar competition, Romania, the Thailand international guitar competition, the Naxos international guitar competition, and the Boston guitar composition competition for his guitar sonata, to name a few.

2. Victor Villadangos (Argentina)

Born in Buenos Aires, Victor Villadangos received the degree Profesor Superior de Guitarra from the Conservatorio Juan José Castro in Buenos Aires under the tutelage of Professor María Herminia Antola de Gómez Crespo [8]. Since 1980, Villadangos has performed extensively, both as a soloist and in chamber music ensembles, in all the major concert halls

[7] http://www.savarez.com/tal-hurwitz

[8] https://www.naxos.com/Bio/Person/Victor_Villadangos/1739

and theatres of Buenos Aires and in more than one hundred different cities in the interior of Argentina. Abroad, he has been featured in concerts in Italy, Germany, Belgium, Luxembourg, Austria, Sweden, Norway, United States, Canada, Brazil, Chile, Uruguay, and Japan. His recordings, including the production of numerous solo CDs and one with the Cuarteto de Cuerdas de la Universidad Nacional de La Plata, are testimony to his prolific work as a recording artist, and among others also feature world première recordings of numerous works.

From 1990 to the present, Villadangos has presented master classes and seminars throughout Argentina, including Tucumán, Salta, Jujuy, Santa Fe, Corrientes, San Luis, Puerto Madryn, Mendoza, San Juan, Mar del Plata, Colón, and Victoria (Entre Ríos) as well as in Frankfurt, Iserlohn (Germany) and Brazil. He is professor of guitar at the Conservatorio Juan José Castro and Conservatorio Manuel de Falla de Buenos Aires. He was awarded the Diploma al Mérito from the KONEX Foundation for his artistic endeavours and accomplishments.

3. Goran Krivokapíc (Montenegro/Germany)

Goran Krivokapić is one of the leading guitarists on the current international guitar scene, and he is setting new standards with his technical virtuosity and his characteristic interpretations of old and new repertoire [9]. He won his first international competition at the age of 14. He continued to win 18 more, including two of the most prestigious guitar competitions – Guitar Foundation of America (GFA) in Montreal, Canada, and Dr Luis Sigall International Competition of Musical Performance in Viña del Mar, Chile, both in 2004. Two Golden Guitar awards followed at the annual International Guitar Convention in Alessandria in Italy – in 2005 as the best young guitarist of the year and in 2006 for his debut CD. Since then, he has performed all over Europe, North and South America, Asia, Africa, and Russia, appearing at such prestigious halls as the Concertgebouw in Amsterdam, the Tchaikovsky Hall in Moscow, Lubkowitz Palace in Vienna, and Auditorio Conde Duque in Madrid. As a performer, lecturer and adjudicator, Goran Krivokapić is a frequent guest at many international festivals. Krivokapić has presented lectures on Bach, master classes and workshops at various universities.

[9] https://goran-krivokapic.com/biography/

Goran Krivokapic's musical focus is on developing new works for classical guitar, mainly through his transcriptions from the Baroque and Classical works and collaborating with contemporary composers such as Dusan Bogdanovic, Gerard Drozd and Hendrik Hofmeyr. Drozd and Hofmeyr have dedicated several of their solo and chamber music work to him. As a chamber musician, he is part of the Montenegrin Guitar Duo, together with Danijel Cerovic. Their performances have been highly acclaimed by both audiences and critics, who praise their historically informed performances of J. S. Bach's English Suites in a new, fresh approach on two guitars.

4. Pavel Steidl (Czech Republic)

Pavel Steidl was born in Rakovnik in the Czech Republic. Since he won first prize at the Radio France International Competition in Paris in 1982, he has become one of the most widely celebrated soloists of his generation [10]. He has studied with such guitarists as Milan Zelenka and Stephan Rak in Prague. In 1987 he decided to emigrate to the Netherlands.

After years of studying and drawing inspiration from many different artists, Pavel Steidl has created his style, which is the authentic way of interpretation of 19th-century guitar music on period instruments, but simultaneously with a contemporary and cutting edge inclusive of world music elements. Pavel Steidl also composes musical compositions himself and performs them in concerts.

He has played in more than 40 countries worldwide, including Canada, the USA, China, India, Japan, Europe, South and Central America. The readers of the Italian guitar magazine Guitart voted him as Guitar Player of the Year 2004.

5. Derek Gripper (South Africa)

South African guitar maestro and violinist Derek Gripper was born in Cape Town, South Africa, on 14 November 1977 [11]. Gripper began his musical training on the violin at the age of 6. After studying classical music in Cape Town for the following 13 years, he began to look abroad for musical inspiration. This exploration took him to India, where he studied South Indian music.

[10] http://www.pavelsteidl.com/indexen.html

[11] https://www.derekgripper.com/about

Gripper started to focus on the guitar on his return home, trying to find a new direction for the instrument. He was attracted to multiple layers in the Music of Olivier Messiaen and the African-influenced structures of Steve Reich, and the guitar arrangements of the music of Johann Sebastian Bach.

Derek Gripper's exploration of Malian music has created a new form of classical guitar music formed out of Africa's most fertile musical traditions. After a series of ground-breaking albums that redefined South African music, Gripper began to integrate the music of other composers into his performances. His long-time attraction to the music of Brazilian composer Egberto Gismonti led to a project to transcribe this musician's guitar music, recorded together with his compositions in *The sound of water* (2012). His ninth album, *One night on earth: Music from the strings of Mali*, was recorded in a single all-night session and released in late 2012. The album interprets the kora compositions of Malian virtuoso Toumani Diabaté on solo guitar.

Gripper's most recent works include transcriptions and improvisations focused on the work of African composer and performers such as Madison of South Africa, Ali Farka Touré, Ballaké Sissoko, Salif Keita and Fanta Sacko from Mali, and Amadu Bansang Jobarteh from the Gambia, as well as his original compositions based on the Music of the Western Cape of South Africa and beyond. Derek Gripper's album, *Libraries on fire*, demonstrates his ability to speak the language of the *jelis* (oral historians or praise singers).

6. Sergio Assad (Brazil/USA)

Sergio Assad is best known as the older sibling in the Duo Assad (with Odair Assad being the other half of the team) [12]. The duo is described by many as the most pleasing pairing of guitarists currently before the public. The two have also appeared under the Assad Brothers name. Sergio has given many solo concerts, often playing his compositions, which make up a relatively substantial output of mostly guitar music, the bulk of which is scored for one, two, or four guitars. Sergio Assad began making regular concert tours of the Americas and Europe with his brother from about 1969. He has compiled an extensive discography, both as a soloist and with Odair, and the recordings have appeared on various labels, including EMI, Naxos, Nonesuch, Sony, and Gha. The Assads' repertory includes many standards (as

[12] https://assadbrothers.com/biography/ and https://music.apple.com/us/artist/se-rgio-assad/932650299

transcriptions), including J.S. Bach, Scarlatti, Debussy, Gershwin, and contemporary and popular Brazilian and Latin Music.

Sergio Assad was born in Brazil on 26 December 1952. His father was a mandolin player who served as his children's first teacher. Sergio would later study for seven years with virtuoso guitarist and Segovia student Monina Tavora.

In 1969 Sergio and Odair Assad won a prize at the Bratislava International Rostrum of Young Interpreters, and then in 1973 earned first prize at the Brazilian Symphonic Competition. The pair was quite active on the international scene in the 1970s, and as their reputation grew, an impressive list of composers turned out compositions for them, including Terry Riley, Astor Piazzolla, Radamés Gnattali, Nikita Koshkin, Roland Dyens, and Jorge Morel. In addition, YoYo Ma, Gidon Kremer, Dawn Upshaw, and Nadja Salerno-Sonnenberg performed with them.

Though Sergio Assad resides in Chicago and Paris and Odair in Brussels, the brothers continue making regular concert tours, occasionally with sister Badi, also a guitarist. Sergio joined the faculty at the San Francisco Conservatory of Music in September 2008.

7. Eduardo Fernandez (Uruguay)

Eduardo Fernández is recognised as one of today's leading guitarists [13]. Born in 1952 in Uruguay, he began studying the guitar at age 7. His principal teachers were Abel Carlevaro, Guido Santórsola and Héctor Tosar. After winning prizes in several international competitions, the most notable being the 1972 Porto Alegre (Brazil) and 1975 Radio France (Paris) competitions, he won the first prize at the 1975 Andrés Segovia Competition in Mallorca (Spain). His New York debut in 1977 won critical accolades, as he was described as "A top guitarist ... Rarely has this reviewer heard a more impressive debut recital on any instrument" (Donal Henahan, The New York Times). Fernández has returned to the USA almost every season since then, playing with prestigious orchestras and giving recitals, always to great acclaim from critics and audiences. His London debut in Wigmore Hall (1983) also had a significant impact and led to his signing an exclusive recording contract with Decca, a label for which he made 18 recordings (solos, and with the English Chamber Orchestra and the

[13] https://www.edufernguitar.com/biography

London Philharmonic) that cover a broad section of the repertoire, from Bach to contemporary works. He has a vivid interest in historical instruments, and he often plays the repertoire of the 19th-century on a period guitar.

Eduardo Fernández is also active as a teacher, having taught several years at the University's School of Music in Montevideo, where he is now a fellow-researcher and very much in demand for master classes and lectures all around the world. He has written a significant book on guitar technique, *Technique, Mechanism and Learning* (published by Chanterelle Verlag, Heidelberg, and a Spanish edition by ART Ediciones, Montevideo); a book of essays on Bach's lute music, published in 2003 by ART Ediciones; and several articles in leading guitar publications. Currently, he is preparing a work on the first generation of 19th-century guitarist-composers.

8. Martin Oser (Switzerland/South Africa)

Martin Oser, born in 1955, commenced his music studies at the Music Academy of Basel with Konrad Ragossnig and the Music Academy of Zurich with Walter Feybli [14]. He also obtained a Diploma in Performing Arts at the Conservatoire Nationale in Paris and studied at the Music Conservatory Geneva with Maria Livia Sao Marcos, and he has participated in many master classes. Since 1980 he has performed extensively as a soloist and chamber musician in Switzerland and abroad.

Oser is active as an arranger of several different kinds of works for guitar and other instruments, for example, his arrangement of songs from Mary Poppins for the children's orchestra. Oser served as a jury member in the Swiss National Competition for young musicians from 1999-2016, and he taught guitar at various music schools in Switzerland and canton Baselland until 2018. He is also responsible for developing Guitar Graded Exams for five music schools in Baselland. He is the author of a 5-book guitar course intended to bridge the gap between beginners and intermediate players using complementary exercises. He has formed many highly successful guitar quartets, duos, and trios: from 1992 to 2008, all the guitar ensembles he taught were first-prize winners at the canton Baselland; and he has also made various CD recordings with his students.

[14] music@martin-oser.ch

9. Johannes Möller (Sweden/China)

Since 2018 Johannes Möller has been the Ambassador of ZhengAn Guitar in China, which is the most significant investment of its kind in guitar history [15]. ZhengAn is a city in Guizhou that has made guitar manufacturing and guitar culture its highest priority. The city has encouraged hundreds of guitar manufacturing companies to set up their production there. Currently, about five million guitars are produced there every year. A concert hall dedicated to the guitar and a guitar museum, as well as a 99-meter guitar tower, are under construction.

In 2010 Johannes was awarded the first prize in the International Concert Artist Competition Guitar Foundation of America (GFA), which is widely considered to be the world's most prestigious classical guitar competition. Johannes currently performs close to a hundred concerts per year and has a large following in China, Europe, Australia, and North and South America. An engraving of his name appears on the walls of the Concertgebouw concert hall in Amsterdam, as a recognition of excellence by the Vriendenkrans Concours.

Johannes acquired his skills in both performance and composition at an early age and in an accessible setting, and this provided him with the highly characteristic and idiosyncratic style that many listeners worldwide have come to admire. It clearly was an instinctive urge to create that drove this course, and these beginnings set Johannes up to become an icon of 21st-century music-making.

10. Thibaut Garcia (France)

The Franco-Spanish guitarist Thibaut Garcia was born in 1994 in Toulouse, where he began learning the guitar at the age of 7 [16]. He then won the guitar prize in the class of Paul Ferret. At the age of 16 he was admitted to the Conservatoire National Supérieur de Musique et de Danse de Paris, in Olivier Chassain's class, and at the same time also benefited from the guidance of Judicaël Perroy.

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[15] https://johannesmoller.com/about

[16] https://www.thibautgarcia-guitarist.com/biography

At the age of 16, he was awarded the first prize at the Ana Amalia competition in Weimar, Germany. Since then, he has won the first prize in several international competitions – notably the Guitar Foundation of America at Oklahoma City, USA, in 2015, the José Tomas at Petrer, Spain, in 2014, and the International Competition of Seville, Spain in 2013.

From September 2016, he has been on tour in the USA and Canada, where he has given over 60 recitals during the entire season. In 2017 Thibaut Garcia was appointed BBC New Generation Artist, which allowed him to perform solo concerts and concertos with orchestras in the UK. That year he notably made his debut in London's Wigmore Hall. In 2016, he signed an exclusive contract with Warner Classics/Erato for his recording projects, with the first release of Leyendas. His second album, *Bach inspirations*, was released in the Northern Hemisphere in the fall (September) of 2018.

11. Avril Kinsey (South Africa)

Dr Avril Kinsey is a commissioned composer and internationally acclaimed concert guitarist [17]. As a writer, she was awarded the WGSA Muse award in 2020 for the best feature film screenplay in an unproduced category. She received a master's degree in Music (cum laude) from the University of Cape Town (UCT), and in April 2018 she was awarded the degree Doctor of Music in Composition by the UCT, for her 93-minute portfolio of scores. Kinsey is the founding director of the Cape Town Academy of Music, the Cape Town International Guitar Festival, and the Avril Kinsey Classical Guitar Competition. Over a thousand performances of her African-inspired compositions for classical guitar have been performed to critical acclaim worldwide. Her orchestral works have been performed by the Cape Town Philharmonic Orchestra and the KZN Philharmonic Orchestra.

She lectures at the Cape Town Academy of Music in guitar (classical), piano, voice, and theory and composition. Her international pre-university certificate courses on practical musicianship, entrepreneurship and song writing, and her music education streams have helped students bridge the gap between school music, university and pursuing a professional music career. She has presented guitar talks and master classes at the Royal Academy of Music (UK), Trinity College of Music London, Volterra Project (Italy), Hermoupolis Guitar Festival (Greece), Mannes School of Music and Julliard in New York.

[17] https://www.avrilkinsey.net/biography/

Kinsey is a researcher and published author with several published articles in Soundboard (USA) and Classical Guitar Magazine (formerly the UK, now the USA). She has authored and composed three music books and made several recordings. Her best known (and internationally acclaimed) publication is *Guitar music from Africa*, published by Art Music and Ashley Mark publishing. Her guitar compositions are published by Art Music, while the Southern African Music Rights Organization has commissioned and sponsored her compositional and teaching work. She was awarded several prestigious awards for her research and music education work, including a lifetime achievement Astris award.

12. Enno Voorhorst (Holland)

Enno Voorhorst studied with Hein Sanderink, Hubert Käppel (Musikhochschule Köln) and David Russell [18]. In 1987 he won the first prize at the international guitar competition in Hof, Germany, followed by several prizes, including the Dutch guitar prize at the Amsterdam Concertgebouw in 1992 and the first prize at the Seto-Ohashi competition in Japan in that same year. He has regularly performed in the most prestigious concert halls in Holland, and he presents concerts and master classes throughout Europe, Asia, and America.

His first CD, with works by Agustín Barrios Mangoré (Sony 1994), received critical praise and was the prelude to an international career. Rico Stover, an acclaimed expert on the music of Barrios, described this CD Agustín Barrios Mangoré as “the best I have heard so far”. The CD Bach-Pärt-Desprez (2015) contained original adaptations for solo guitar, and *Classical Guitar Magazine* wrote that “this is a fabulous CD and a must for every CD collection”. His latest CD (Cobra Records 2018) is dedicated to the French composer and guitarist Roland Dyens. Besides selected solo works, Voorhorst recorded the Concerto Métis together with The String Soloists. Enno Voorhorst teaches at the Royal Conservatory in The Hague and, in addition to solo concerts, performs regularly with oboist Pauline Oostenrijk and with viola player Mikhail Zemtsov in the Duo Macondo.

[18] https://www.ennovoorhorst.com/biografie/?lan=2

ADDENDUM B

Within-case analysis of interviews

1. Tal Hurwitz

Secure memory

Tal Hurwitz is very optimistic about playing from memory if he has enough time to commit a musical composition to memory. He covers a few ways of memorising to secure his memory; if one does not work, the other will cover it. He believes that reading the score leads to a mechanical way of interpreting and playing from memory enables you to connect more to the music, making way for a deeper connection and a more musical interpretation. Using visual memory saves time, and the connection to the music is stronger. Playing from memory is a preference, with exceptions of works with a lot of written indications and ensemble music, depending on what level, although he believes the connection to the music is stronger when performing ensemble music memorised. To be covered mentally means visualising to prevent failure in performance; the way to secure your memory is to combine different methods of memorisation. Everyone should focus on their strengths and natural abilities; not everyone memorises in the same way, so each one should understand what he is strong with and cover with the others.

Imagining the music

Hurwitz has a very secure way to memorise, which gives him much confidence for performance. He defines it as imagining the music, which is a combination of visualising and inner hearing. He concentrates way more on visualising and imagining the score rather than physical playing; he explains that by starting to visualise the score bar by bar 10, 20, 30 times, then widening the process to phrases, more extensive sections, and later a whole piece, memorising is much more effective. Hurwitz visualises everything, from left- and right-hand fingering and imagining how it sounds and how it should sound. He also claims that this method is a way to be very focused and concentrated while practising and saves much time. For instance, when one sits and imagine the music without an instrument, one can think of nothing else except the music; when one practises with an instrument, their minds are sometimes thinking of other things, not the music; so, when one sit with their instrument, after imagining the music, they try to execute what they have just internalised, they will not be thinking about other things. Imagine the music, then play it, do not play it and then imagine it; we have to let our brain guides us, not our fingers. When one is trying to sound like their

imagination, then they are making a significant improvement. First, one should develop an inner hearing of what they want the music to sound like; also, think of the tempo and the intensity. Through imagining the music well, it is possible to have perfect playing every time. It takes much more energy, motivation, and concentration, but by persisting in it, it becomes routine.

Understanding structure

Hurwitz believes that seeing a musical composition as a whole is how composers see it, seeing the harmony, understanding the structure, the form and the phrasing, and hearing the musical composition in one's mind; there is no end to how much one can understand a musical composition. He suggests learning and linearly performing music, like telling a story, covering minor errors, not learning the music note by note. He advocates learning a musical composition's structure, which will create an analytical memory and give more control over a musical composition and more confidence in performance, rather than focusing on the perfection of playing every note. He gives examples of great pianists such as Gregory Sokolov and Daniel Barenboim, who approach music this way. Barenboim, for example, uses visualisation and structure with the result that his music sounds like philosophical thoughts, not playing just notes. Hurwitz says that the massive competition culture in the classical guitar world has a negative result: guitarists listen to music note by note, striving for perfection; understanding structure prevents mechanical interpreting and enhances memory. He is also very impressed by the skill of his composition teacher, who has a holistic memory; this refers to knowledge of musical structure (analytical memory) and inner hearing (audiation). Inner hearing can be as enjoyable as physical hearing and sound, and it results in faster learning.

Fingerings

Memorisation requires a technical understanding of your instrument, understanding the mechanism of the guitar and the movements of your hands and body; he does not separate technique and musicality. Hurwitz explains how a technical understanding and one's choice of fingerings result in a more significant musical effect; the connection between guitar fingerings and musical interpretation also produces a more profound musical expression. Having an understanding and a good knowledge of one's instrument leads to faster learning. The repertoire he is working on in his current project are constantly evolving; to change interpretations, he has to change fingerings, as each fingering gives a different interpretation. Publications also provide fingerings, but because each fingering gives a different interpretation, this can also be problematic. He also believes that doing visualisation very slowly can solve technical issues and fingering problems. The correct working methods can also result in quicker and deeper learning. It is, for instance, the wrong method to add musical

thoughts after doing the fingering; the correct method will be first to imagine the sound then do the fingerings. One's fingers, body and mind react differently in a concert situation; therefore, some things can only be tested in a concert situation.

2. Victor Villadangos

Time value

Victor Villadangos prefers to play from memory if he has enough time to study a musical composition. He does not play ensemble works memorised. He is very confident in his methods of memorising: he always first makes sure that he has enough time to study a musical composition; he says that it takes many years of playing to be comfortable playing from memory. Doing proper preparation for performance and taking your time eliminates fear and nervousness for playing from memory. By memorising the most challenging and technical parts first, he saves much time memorising. The next step is analysing a musical composition and understanding its structure, analysing the harmony, intervals, and textures. He understands all types of memory well and says, for instance, that all musicians use motor memory, but it is very time-consuming.

Visualisation and aural memory

Villadangos uses a type of visualisation where he visualises his hands, fingers, positions on the neck of the guitar and the movements, and he also does this very slowly. By analysing a musical composition first, it is easier for him to learn the notes within the structure. He also combines it with audiation by singing the notes in his head (in solfege) and hearing what it sounds like; he does not sing them out aloud, as it is easier to sing it in his mind. He claims that singing the notes produces an aural memory that is more easily stored in the long-term memory.

Secure memory and confidence

Villadangos believes that the way to secure memory effectively is to combine different methods. Using audiation, combined with a block memorisation method, he can secure his memory, and he knows that it is secure when he can sing through a whole musical composition in his mind. Performance anxiety and other memory-related issues are dealt with by using reference points (analytical thinking) and relying on his aural memory; this gives him confidence that his memory is secure. By performing a programme many times, you become more confident each time you perform it. Playing in front of people, especially a new memorised programme, will gain confidence for your next big performance in a relaxed setting. He is optimistic that memory can be understood and notes that even if we know everything,

our bodies can still react differently in a concert situation; therefore, we cannot predict how our bodies will react.

3. Goran Krivokapíc

Analytical thinking, understanding structure and practice methods

Goran Krivokapíc feels that playing by memory makes him feel and look freer, and the connection to the music and the audience is stronger; he also feels that if you memorise a musical composition, you know it well. For him, memorisation is not a separate process from learning a musical composition; it usually happens naturally when you are not consciously trying to remember.

He explains that knowledge of the musical structure and analytical thinking makes your memory more secure. He starts to learn a new musical composition analytically by first looking at its structure, then learning it part by part; he explains that practising each part separately, and understanding the connections between them, means that a musical composition is memorised naturally. Practice the connections in the musical composition for the sake of technique, interpretation, contrast and differences; try to understand what you are doing using analysis and being clear about your interpretation; try to see the complete picture; focus on understanding, analysing, clarity of interpretation and fingering and seeing a musical composition as a whole; then it will be tough to forget. He compares it to literature; when you try to memorise lines from a book or a poem, doing so word by word is not easy, but you can grasp how the connections work and get through much more quickly if you read with understanding. Practice each theme separately and create contrasting moods; when you practice your interpretation like this, you are also memorising the music simultaneously. You should also stick to one fingering once you have decided; fingering can confuse your memory; it is a big part of learning a musical composition and memorisation. By taking your time, being relaxed and under no pressure, not consciously trying to memorise, you will learn quicker. It is essential not to take shortcuts in memorising; approach a musical composition as if you have all the time in the world to learn and memorise it; looking for shortcuts creates tension.

Visualisation and secure memory

For Krivokapíc, visualisation often takes place subconsciously; it entails going through different parts and figuring them out, sometimes also figuring out the fingering in his head; or it could just be going through parts and practising if he needs to, especially under time pressure. If he needs to learn something very quickly, he tries to go through the whole musical composition in his mind, and if he gets stuck somewhere, he has to consults the sheet music.

He knows that once the musical composition has been visualised completely, he can play it by heart and secure its memory. If he cannot visualise, he feels a lack of confidence and issues about which fingering to use might arise. Visualisation includes all aspects of the performance: fingering, harmonies, functions, dynamics, score indications and everything you need for interpretation, hence everything that you need to think about when you play. When he visualises, he thinks of the fingers and the notes; he knows which notes he plays at any moment and what sound they make; he does not necessarily think of the printed score. He also does some concert visualisation; he visualises the venue and performance in advance, what he wants the performance to be like, or how he wants it to go. Doing this, seeing a place in your mind where you will perform and visualising your performance going well creates a positive mindset and confidence, decreasing performance anxiety.

Perception change

After a performance, one's perception of a musical composition can change because of many factors. Krivokapíc says that whenever you play something, you remember the last time you played it; he also says that you grow in your performance every time and in your understanding of it. You learn from every performance; there are things you cannot learn while just practising. When performing, subconsciously, you will always refer to the last time you performed or practised that musical composition. Your brain works harder during a performance than during a practise session; those things really stay stuck in your mind, and then you also learn what will work, you learn how to deal with different parts on the spot, and you see what works best. It is also kind of practising when you play a concert; you do practise then immediately for the next time. You change your performance accordingly, consciously or subconsciously; performance makes you change many aspects. The reaction of the audience and the sounds they make, and also the silences shape a performance. You kind of hear it the way they hear it also; if you take different parts, you can just hear the silence, hear their attention in some parts or sometimes a bit of noise. You associate these effects with pieces, and that is also how you remember them.

4. Pavel Steidl

Concentration

Pavel Steidl prefers to play from memory; it gives him the feeling of being empty, not thinking about anything else and just letting the music happen. He likes to let the music stream through him and to get to that stage where you do not have to use your brain, where everything happens automatically, and you can just feel the sound and the tension. However, to achieve

this level of performance, where your muscle memory is secure, takes much hard work, energy, concentration, and persistence. He emphasises that the preparation for this level of playing is a lot of work and concentration. What is very important is how focused you are in following the process; what happens on the stage mirrors what happens in the room where you are practising. It would help if you were focused, but you cannot concentrate for too long – 40 minutes, 30 minutes, maybe 20 minutes. It is better that you practise for shorter periods but concentrates on what you are doing.

Visualisation

Steidl explains the many different ways of how visualisation can be done: practice without the instrument and just with the score; practice without the score and the instrument; without the score and just with the instrument – all of these ways are very important to him. By concentrating very hard, he can visualise his left and right hand simultaneously; he was never sure that this was possible, but it is, and so that is what he does now. Our brains can analyse and comprehend complex details and musical ideas subconsciously through visualisation. The expression also comes out naturally through visualisation; when you are moving, walking in nature, and suddenly the music comes to your mind, you play, dance the movements, and express expression.

Associations

Steidl says that making associations through dance movements, language, making up a story or imagining colours can help you remember specific passages; it also helps play melodic lines and particular articulations more cleanly. He has pushed his students so far as to dance the music, move in the passages of Bach's dances, or make their language. Not to sing, but to speak the notes, to connect music with language. To connect music with movements is what a conductor does or imagine colours like a painter; this is not a scientific or an analytical approach but a natural way to remember.

Aural memory

Steidl claims that singing the notes and focusing on the tension of the intervals results in more significant learning and in an aural memory that is more easily stored in the long-term memory. He uses much language and develops a natural feeling for the intervals, which is essential for him too, "What you feel if you sing the fifth or different intervals or intervals which are the tension, it is everything, it is again the singing. I also think that if you learn by memory things that you can sing them, that you can sing the phrases". He is not singing using solfege, but mostly singing the notes or singing the rhythms themselves

4. Derek Gripper

Analytical thinking

Derek Gripper learns by analysing a musical composition while playing it. He thinks of this as reading; just as you read anything, you read it and try to make sense of it; this can be seen as analysis by playing, not analysing by looking or thinking. What you are looking for are the impulses, the physical impulses, which also could be called phrasing. The way he memorises is to play, but to play it intelligently; this is not like practising where you sort of do this repetitive physical work to get it right or remember it; you are playing a musical composition so that you can find those impulses and those phrases. You think of it like phrasing in a way, looking for the things that can become, where there are many notes to become one movement. Then you start to build these bigger and bigger sections, but it is all movement-based. So, finding the first burst of movement, the second burst, you are reading the score for that. Moreover, as you do that, and you explore it more as you play it, you find very quickly that it is possible to play a musical composition without the score.

Muscle memory

One of Gripper's main points focus is to keep the mind out of memory. He does not consciously try to remember something; when he has a memory issue, he lets the body take over and rely on good muscle memory, and he develops a good muscle memory by learning musical composition intelligently. Because he wants his mind explicitly out of his memory, he does not practice something like visualisation; he says that it is all these other things that people are doing in their heads that make it difficult for them to remember things. For Gripper, the ideal form of playing is simply that you play; he compares this to an Irish fiddler who has been playing tunes from memory for years or a child prodigy who played effortlessly when he was young, but as he grew up, he started to question the way he remembers things. The difference is that when he was young, he was not thinking but responding to the music; now, there are all these conscious directions given to the body, an immense amount of noise, which creates physical tension.

When Gripper thinks, "I am going to try to memorise something now", it takes much longer because you do that thing where you are kind of thinking, trying hard to remember, and that does not work for him. Gripper explains his thought on muscle memory: "Sitting and playing the piece means, sitting in front of the score and, adding to that visual stimulus, that is all; and finding how that becomes a physical thing; and because it is so physical, those physical movements goes into your hands very quickly, actually because there is nothing else, there is

just that visual impulse and then these physical reactions, so just two simple things happening". Gripper claims that as a result, your muscle memory is swift because muscles remember very quickly depending on how well practised you are; here, we can see that he tries to simplify things by just focusing on the physical movements that go into the hands, trusting his muscle memory.

Natural learning

For Gripper, memorising happens naturally when he is not consciously trying to remember. He compares this to a song that gets stuck in one's head; you do not have to do things like visualisation to remember a song; it just goes round and round in your head, even when you are not playing it; it encodes itself into you; if you play a musical composition, with understanding, every day, it is hard not to remember it. Gripper does not specifically memorise or have tips on memorising, but he does have much advice regarding performance that would imply that memorisation does not exist; for him, it is a natural thing. If memorisation does not come naturally, you have to figure out why. Why is this thing that should be happening regularly not happening? Something like a memory lapse is very unnatural; if something is unnatural, it means that the performer is doing something, their subconscious mind is doing something that's blocking the natural process.

5. Sergio Assad

Audiation and analytical thinking

Sergio and his brother Odair Assad grew up in a musical family. They constantly learned music by ear; they heard music all the time, people around them played the guitar and became familiar with the harmony and the chord resolutions. For Sergio, having all this knowledge is a big part of memorising. His aural memory is based on audiation (an inner hearing), on what he hears while playing. Most people who play music by ear can play a huge repertoire, he explains; for instance, the Brazilian guitarist Yamandu Costa learns very fast and plays everything is by ear; he trained himself to do that, for years: "It is a real knowledge of harmony and a perfect knowledge of harmony by ear; he knows where the notes are, and he can play around them if necessary". Here we can see the connection between analytical harmony and aural harmony. In Sergio Assad's words: "a very good and solid knowledge of harmony helps, that is what I think".

Basic knowledge of music theory and harmony plays a massive role in memory: “This is one of the problems that you have, “I see in the course of teaching some students of mine, I realise that they have studied the harmony, but they do not know harmony well. They know it on paper, but they cannot apply it to reality like if I ask them to harmonise any simple song, they cannot.” Knowing the harmony is very important; it is not about the name of the chords but has to do with sounds that support what you do with your fingers. Assad says that over time memorising things becomes easier because you know better, you gain more knowledge of harmony; for instance, it is a process that you continue to keep doing until it gets better.

Focus on your strength

When Sergio and Odair started to learn seriously, they were kind of forced by their teacher to memorise their musical compositions; they had to come to the next lesson, knowing their work by heart, and so it became the norm for them to play without sheet music. “If you rely too much on the paper, never really try or force yourself to memorise, you will never become good at it”. According to Sergio Assad, the way he and his brother memorise are very different, as each one developed his way of memorising things. He says that this is due to a musician’s tendencies, sense of logic to harmony, melody, or form, or whatever. Sergio Assad’s sense of harmony is very well developed, whereas his brother, who also has a fantastic memory, bases his memory on fingerings, shapes, and such. Again, for Sergio, it is more aural; it is what he hears, he remembers notes, he remembers the sound; he is not guided by muscle memory or by his fingers. Sometimes he does not remember the exact sound, but he knows what harmony implies. His memorising is very secure because he never has memory gaps for musical compositions he plays constantly – this is very rare. The only real problem he will have with memory is a scordatura (a different tuning); then, the guitar shifted, and notes are no longer in their usual spot. If he were to get lost then, he would not know where he is because his main strength is knowing what the notes are. To address this issue, he has to rely on other aspects of memory, such as memorising the fingering or the shapes of the fingers.

Perception change

Sergio and Odair had a very intuitive teacher, and she tried to develop their intuition. They would go for a lesson, and she would programme the interpretation of a musical composition by saying, “play this section here, make a crescendo, get to fortissimo and do subito piano”. They would go home and work on those aspects. The following week she would change everything and do the exact opposite; she was constantly changing. They learned that you could not freeze the interpretation of a musical composition; that can be phrased in many different ways, and they can all be good; this affected them that they continued never to play a piece the same way – every time it was different. You can have a different focus or intention

for every performance; different things are emphasised in different performances. You also have to adapt according to the acoustic environment; for instance, “there are dry acoustics and warm acoustics. In a warm acoustic, you can rely on that thing to help you sustain a note or sustain a chord, so if you are in a dry venue, you do not have that luxury, so you have actually to play shorter, you have to make things more compact. There are places where the range of dynamics is extensive so that you can play pianissimo. When the acoustics of a place are narrow (low roof), you have to play everything strong because if you play subtly, nobody is going to hear”. Memory is one aspect of music-making; the other aspects involve the performance itself, the way one deals with dynamics or rubato. Some places or venues helps you to make wide rubato’s; you can take more time, but you cannot; you have to narrow your expression and make things closer in other places.

6. Eduardo Fernandez

Fingerings and analytical thinking

Eduardo Fernandez does not think of memorising a musical composition; he learns it, and if he can play without the sheet music, it would supposedly be called memorised. For him, memorisation is part of studying, not a separate process. First, he will start to learn a new musical composition by doing very careful fingering; this makes it a lot easier to learn and memorise, “because you are always using the same fingering, so the physical part is covered there; you develop a very clear idea of what you want musically, which also helps”. After Fernandez has completed careful fingerings, he will start studying a musical composition line by line, or in memory chunks or blocks, until he understands everything going on musically: “I find that if you understand the structure and the phrasing, it is a lot easier”. After he understands the structure and phrasing, then he will play the musical composition many, many times; usually, he begins to feel that everything is logical at some point. Learning a musical composition includes dealing with all its parameters, not just the notes but also dynamics, accentuations, articulation and structure. It takes so long to learn a musical composition because there is such a lot of detail, but this detail also helps you remember.

Associations

Fernandez says it also helps if one can learn a musical composition in some depth in the sense of assigning some kind of meaning to every phrase, making up a story: “you feel after this phrase the next one comes logically, because it comes from this and that in the first phase, or it is a variation of the first phrase”; If one can establish a link this will help, but he says that he thinks this happens automatically when one plays the musical composition many times.

Some people use their visual memory to make such associations, while others find it easier to do so by ear. When Fernandez performs, he does not look at his hands or anything; he says that one tends to get lost in performance because one can get lost in the physical movements of the fingers; it is also difficult to focus on everything simultaneously. He has to choose something, therefore making associations of some kind helps the memory a lot. Fernandez says that the more detail one can add to the music, the better this helps one to remember, “I have a hypothesis that the more detail and the more you can structure what you are learning, the easier it is; the more depth you give to the music in terms of emotion and structure and logic, this will help. I can say it works for me”. He says that we remember best the things we are moved by; therefore, if you can associate something emotional with the phrasing, that will help memorisation.

Using the score

Fernandez gives a few good reasons for not consciously trying to memorise something; for instance, some musical compositions are challenging to memorise because you might have the exact figure repeated with minimal variants (in Sor, for example, this happens a lot); or some kinds of contemporary musical compositions could also be; when you have to measure seconds, it is not so easy. He will play with the score in those cases, but otherwise, he will try to memorise. In ensemble music or duos, he will always use the score. Fernandez says that performers place too much importance on memorising; they should not make the process more complicated than it should happen naturally. One should not be afraid or ashamed to use the score, “I do not think it should be so important. I personally do not care if I go to a concert, and they play from memory or the score; it does not matter to me”.

7. Martin Oser

Associations, concentration, and performance values

Martin Oser believes that playing by memory gives him the feeling that music comes from the inside, from his heart, not from the sheet music or somewhere else. He says that one must make associations, you must identify yourself with the music: “you have to associate things with the harmonies and the movement of your hands; you must make associations with things, then it goes quicker, you must put it in context with something”. If one always reads from the score, they cannot identify with the music, as their focus is somewhere else. When one learns, it should be with their complete understanding, feelings and skills: “learning a piece, memorising a piece is not only learning notes, but also associations with the music, with the harmonies, with the rhythm, with the conception of the composition”. Oser believes that if you

love the musical composition you want to play, learning them by memory comes more quickly, one must relate positively to a musical composition. Oser says that a good performance is not just about a memorised performance; there are many aspects; one has to listen to it as a whole: Could one hear the deeper intention of the music? Were the players together? Did the musician understand the music and phrasing? Did the audience enjoy it?

Analytical thinking and secure memory

Oser believes that one must make a musical composition one's own; think of it as if you had composed it yourself; you must understand try structure. Some musical compositions are naturally committed to memory; they are absorbed, but he would start to analyse if this does not happen. Using other methods such as visualisation of the fretboard and fingers or singing the notes gives him the security that he knows a musical composition well; writing out the sheet music by heart is also helpful for him to remember. He also tries to listen to himself while playing, focusing on hearing the music; when one plays chamber music, it is essential to listen to the other players and know their parts.

8. Johannes Möller

Using the score

Johannes Möller says reading sheet music can also be excellent, and in some cases, if you are less secure about your memory, it produces a better result than playing from memory. Reading may be inconvenient somehow; some musical compositions have too many pages and paging a lot can interrupt a performance. In some cases where there are different movements, for example, he sometimes finds that if one reads, it is not a wrong thing, and if you change only for each movement, it is a better feeling for the presentation. It also depends a lot on how well you read, how good your sight-reading is. Möller does a bit of both, reading and performing by memory; he says that sometimes it makes no sense to memorise because something is so complicated and filled with a lot of detail and variation, then maybe it preferable to read from the score. When he decides to read, he keeps the music stand very low, a more flat surface, not blocking him. It has to be more of scanning of the score, not staring at it, and not reading all the time. The music stand should be almost invisible to the audience; it is all about the placement of the music stand; he has not found that it disturbs the show particularly. One can also have a decorative music stand, but it is how you deal with it. He never uses an iPad as an aid, but he can imagine that it may be a beneficial tool for longer works or complex modern scores. When he is reading, it kind of look as if he is watching his

left hand, but he warns that you should not look too much at your hand; you should look over the strings so that you can see the sheet music.

Practice methods

Möller believes that the more critical process of studying a musical composition is detailed learning, to memorise very deeply and in detail. He has found over time that if one has studied composition with much detail, it tends to be memorised automatically, “I think the more, the richer it is, the more connections in the brain you make, the stronger is your memorisation and your interpretation; it is so strong, so strongly wired, you cannot do it wrong, it could not be different or something like that”. For Möller, it comes down to detail and practising, isolating individual problems or individual passages and dividing a musical composition into sections, as even longer sections are made up of short little sections. Some sections might be more rhythmically complicated or very fast; then, he will deal with those sections differently; for instance, practice scale passages very slowly.

Möller believes that practice in small segments is very effective, “Say we can only learn small segments, that memory is based on links between many small segments; you know 2+2=4, 4+4=8, it becomes longer sections”. He refers to a book called Talent is overrated; it is about taking small steps to deal with challenges, it is about the challenge, but not too much challenge. Möller says that memory works that way too; you cannot memorise too many notes at once, and even if you can, then you must immediately link them into segments: “we isolate many things, let us say tremolo, it becomes a technique for us, it does not count as four notes or making an arpeggio, that is memorising, you see it on the paper, you do not even have to, that is already a segment for you; or scale segments, those are already memorised, or chord progressions, arpeggio patterns can already be memorised”. Möller believes that memorising in small bits is the key; then you can do it quickly too in a way, so half a bar becomes one bar: “the mistake is to memorise too long sections, then you rely too much on muscle memory flow or something”. He would sometimes just memorise a bar or half a bar at a time; he says you can also repeat it a lot, then you automatically memorise it. It is about memorising small bits, then you add those together, and they become a lot – “It is like Lego”. He focuses on doing everything in smaller parts and doing it slower; he says if you think realistically and take 20 minutes, you can do four bars in 20 minutes, wholly memorised, or 30 minutes, but only four bars. Then you can do eight bars in 40 minutes; then, you can quickly end up with a very high-level memorised performance in a few days or a week, depending on how long the musical composition is.

Fingering

The first step for learning a new musical composition for Möller is always coming up with good fingering, and he spends quite a lot of time on that and looking at the possibilities. Doing this already gives him a clear picture of what he needs to do; he says that “you have to find the good fingering solutions early because that is what you rely on”. Good fingerings have a tremendous effect on the final performance, and it also helps for memorising in a way, because you have looked over the score with more detail: “fingerings help with memorisation; you have to think it over and over again, try different ones, and then eventually, this is the one, and it is memorised, then you remember it”; Möller also says that if you do not remember something, it is because your fingering is not really good or not so clear, or it is confusing in the right hand, especially.

Visualisation

Möller says he thinks that we subconsciously visualise all the time, but if we can consciously try to visualise, it becomes reinforced, and that is an excellent thing. He would just try to play a whole musical composition in his mind: “it is kind of a challenge for your concentration, to completely feel everything, try to imagine the hands and the sound; you can do it in sections”. Möller says that it is excellent to have the music apparent in your head regarding musical ideas. With just the sound or theoretically – what is the theory behind the music, what are the chords, the harmonies, what is going on, different voices and so on: “that helps tremendously I think with artistic choices if you can imagine how you want it to sound and then execute it or try to execute it according to your needs”. Möller sees practising technique, which is another process, also as something that can be done mentally. When you visualise or can think of your fingers or the fretboard, you do not need your guitar for that, or you can just sit with the score. He recommends this highly.

Perception change

Your perception of a musical composition changes when you feel more comfortable performing it; you can, for instance, be freer with interpretation. Möller says that sometimes certain things set in, you get in that mood, especially if you have performed the musical composition a few times; certain things can sit in there very well, you are very sure about it, it is compelling, like a rallentando or something, you do it, and you do it very firmly. Möller also mentions that the acoustics of a venue can vary widely; that makes a big difference. There can be more reverb in the room; then generally, you have to play slower; when there is no reverb, you have to go on, you have to respond to that room. Sometimes you play amplified; it depends a bit on the sound system and how wide you take the dynamics, the contrasts; with an excellent system, you can go very low, handle some stronger contrasts, and sometimes

keep it more in one level. If you play unamplified in a smaller room, you can play more pianissimo; when it is a bigger room, maybe you have to sacrifice the softer dynamics a little bit. So, there is always these situations and differences; it is never the same in a way. Möller also talks about dynamics and interpretation; he says that the word *interpretation* is not quite accurate; it is more about bringing out the value or the essence of the music: “it depends on the style, of course, but somehow, it is about some kind of tradition of bringing this out; we acknowledge this as fine art or fine proportion or its historical value”. Möller intends to present the notes or musical ideas to do whatever it takes to bring out the music, the sound, the expression.

His own compositions

Möller plays many of his own compositions; he says that it is easier to get away with memory issues in your works; you can dwell a bit on a section or improvise, but he would not be entirely happy because it would sound like a lousy composition or a wrong structure. Möller can improvise, but he is more interested in composition: “it is not that I do not like it, I do not have an interest in doing that; improvisation is kind of searching, I am more interested in composition than improvisation; improvisation is great I suppose, it is kind of like composing, it is a lot about theory anyway, especially stylistic.” Möller says that studying your works can make them easier to remember; if he is writing and working on a musical composition, by the time he is done with it, most of it has been memorised; he likes to think that if he plays a musical composition, he should ideally know it as well as he would know with his own compositions: “I know with my ones, I know the building process, I know the structure, I know why the structures are what they are”. Sometimes when he is writing a musical composition, he changes it a lot, which can be very confusing and also a risk: “it can also be a danger, because once you make some choices, they also stick in your memory, and you remember why, why I went to that expression”.

9. Thibaut Garcia

Performance values and connection

Thibaut Garcia believes that playing by memory is musically necessary; he can feel that when he plays chamber music by reading the score, that the experience is not the same as when playing without. He says that playing by memory makes him feel completely free; it is like having another dimension to what you are doing. He talks about an organisation in Paris that hosts chamber music concerts, Chamber Music Centre, and everything is played by memory;

this was so much better, hearing these concerts; the connection to the music was stronger. For him, playing by memory is the best we can do as guitarists.

Practice methods, visualisation, and concentration

When Garcia starts to learn a new musical composition, he first reads through it but immediately tries to interpret it: “I think it allows you to already have ideas, like spontaneous ideas about the music”. It is also essential for him to have fun with the piece; this is something that we often forget – to have fun when we read a piece for the first time, but this is “super important” to Garcia. He will then try to master a musical composition “technically speaking”; simultaneously, he will also read and gain information, like what inspired the composer, and he will analyse the musical composition a bit. Understanding the music is very important, including the harmony and rhythmical structure. After he understands the music structure and has mastered the technique, he will try to learn it by memory – “so first musically speaking, then technically speaking, then learn it by memory”. To Garcia, the most critical thing about memorising is the way you are focused; this is the secret, for example, “if you try to memorise something and are not 200% focused, you will only learn a bit, but when you are 200% focused you will learn a lot, and the difference is huge”; it is about our will, about the concentration on the score and on the music. Garcia concludes by sayIng, “There is a difference between learning and understanding something; if you learn, you do not necessarily understand, but if you understand, you necessarily learn”. He explains that this is like when you learn something like history; if you learn the text but do not understand it, you will forget it, but it will be easier to learn if you understand its purpose.

Garcia uses visualisation a lot; he learned to do so because of his touring; when he is touring, there is not so much time to practice; you have to find other ways, which are often done mentally. He says that he practices mentally half of the time and uses his instrument the other half. Once you understand how your fingers work, playing mentally is much easier – your brain is the control center. If you are practising in your mind, feeling your fingers, seeing the neck of the guitar, fingers and shapes and listening at the same time, then you are practising.

Confidence and perception change

Garcia feels that memory always works on stage if you are confident and you are relaxed; it is when you start to be a bit stressed and nervous that your memory can fail you, “It is all about confidence. I think we are scared about being confident because we feel we are losing the attention and the intensity, but it is the opposite”. He says that if you are confident, the performance will be more accessible and sounds better. Garcia sees the stage and making recordings as some of the best schools for learning a piece well; after three days of recording,

he plays differently and so much better. “When you work with an artistic director, that person is your ears, listening behind the mic; so, he is telling you many things, many details, it is the best way to practice. I think I have never learned as much as during a recording session”. Garcia says that every time you play on stage, you can feel what works, what does not work, what the feeling is in the hall, and the audience’s reaction; he tries to make a debrief after every concert.

10. Avril Kinsey

Connection and using the score

Avril Kinsey believes that performing from memory is important because you build a better audience relationship, and the connection to the music is stronger, “you can play more from a pure sense of yourself, a more honest performance”. Kinsey says she feels freer and more sensitised to finer details, like how the audience is responding; there is a finer communication going on.

On most occasions, Kinsey has a music stand there, putting it relatively low; it is more for a sense of security; she will not be reading the score all the time. For especially Bach works, she prefers to have the score at hand, but she is very comfortable with contemporary works because most of the audience will not know the music that intimately, but with Bach, most people understand how it should sound, so if you go off the rails with that, it would be very obvious.

Analytical thinking, understanding structure and fingerings

For Kinsey, the primary process is to go into the music in depth; she might even try the parts out on a piano first to extract the musical ideas more quickly; fingerings on the guitar first hinder her from getting to the musical score. She does much analysis before understanding a composition completely, including the sections, phrases, melodic lines, and chord structures. As a composer herself, she thinks like a composer and approaches a piece that way; she wants to know “how and why that works, where does that come from, why did he invert that motive and so on”. Kinsey always works to understand what she can bring to the music, what the composer wants, what the period of the music is, and to understand the music completely.

After going through all of this, she will then start to explore a lot of different fingerings. She differentiates between slow and fast musical compositions; she will work a lot on the right-hand fingerings in a faster section. She knows that when the music is coming out beautifully,

then the fingering choice has been good. Kinsey will always question the fingering in a publication; it might not suit her or her students to play it exactly as suggested. When Kinsey performs and something goes wrong, she will always question the fingering.

Associations

One of the things that Kinsey does to memorise is to build up stories in her mind; she finds that if you have a story for any musical composition, like a beginning, a middle and an end of the story, that helps to be less concerned about the details; the details have been worked out beforehand. Kinsey wants to get into the atmosphere of the musical composition; for example, in some of her compositions, Modjadji, the rain queen, she visited the rain queen and experienced the drumming she did in the bush with them; she relives and recreates that atmosphere. For her musical composition Mokoro, she visited the Okavango Swamps, camped on the riverbank and swam with the crocodiles; then, when playing, she is in that place again; she says that the way to be 100% involved in your music is to try to use your imagination and be very much into your own story. Kinsey believes in being a bit of an actress when performing; when she learns a musical composition, she thinks like a composer; when she performs after analytical thinking has been done, she approaches it with all of her performance creativity; the two roles are very different.

Another aspect of association that Kinsey uses is dancing; she used to do jazz dancing, which is still quite strong in her visualisation process. Sometimes instead of a story, she will do a whole dance in her head, she says it helps to follow that in your imagination while playing; it is a freeing kind of process, you do not think of fingers or anything else; she says that it also helps her with memory.

Muscle memory, secure memory, performance values

Kinsey advises performers to work with small sections to memorise and play all the sections repeatedly until they are flowing. Kinsey has a motto that that if you can play a section 100% five times in a row perfectly, then it just about sticks; she used to learn this way when she learned to play the piano and used to time herself repeating each bar and work out how long it would take her to learn a musical composition, a fugue for instance. Kinsey says that one should be able to use visual and aural memory, to sing the melodies, to understand the music; the way to secure your memory is to combine different methods, not just rely on muscle memory alone – she says that is perhaps the least reliable way to memorise. The guitarist Ernesto Bitetti advised her once to write out the score from memory, but she has never done that and sees it as a bit extreme.

Kinsey concludes by saying that one should understand the styles of music they are playing; if one plays an avant-garde musical composition, they should know the musical language; they can listen to more music of that kind, try to understand it better, try to get more inside of that style. For instance, if it is a Renaissance work, try to look at paintings or read books about that period and re-experience living in those times to understand the historical context a little better. One has a closer affinity with some musical compositions than with others, but the performance is not about us; it is about the music; if we do not like a musical composition, we should still draw on our acting skills and try to play it well and with understanding; it is our job to become the role, even if it is not close to who we are as a person.

11. Enno Voorhorst

Connection, music education and confidence

Enno Voorhorst prefers playing from memory because it gives a better connection to the audience; he also feels that he plays better because he knows the musical composition better and are freer to follow his interpretational thoughts. He says that it seems to him that there is a kind of barrier between a performer and the audience when one uses the score, as if they are not connected to the music, although he admits that this is just a thought he has. There is no musical composition that Voorhorst cannot memorise; if there is a melody, and he likes the musical composition, and he can follow it, then he can memorise it.

Voorhorst is very much influenced by David Russell, with whom he had many master classes. Russell was always thinking about memorisation; he was always active and interested in it. Nowadays, Russell performs with an iPad, but you hardly see the iPad, and it works very well for him. For Russell playing from memory is a considerable risk, it is the biggest mistake you can make on stage, and you always feel bad about it. Russell had some excellent ideas about memorisation, which are generally known, such as starting at the back and then studying towards the beginning. What Voorhorst also learned from Russell is always to be optimistic, so when practising, have a good feeling, enjoy what you are doing and do not get nervous; when something is difficult, do not think of it as complex, start working on it and do your job.

When Voorhorst performs, he focuses on playing with passion, playing dynamically beautifully so that the music speaks, rather than focusing on perfection and not making a mistake; this gives him much confidence for performing because he knows how to handle a mistake, he knows the harmony and melody very well, so he will take the following note, or another note that fits well. When he has a new musical composition ready, he will first record it and then

play it for his family or friends; this gives him much confidence for an important concert. Usually, about 75% of his programmes are made up of repertoire that he has played for a long time, and this also helps him feel more confident when performing.

Analytical thinking, audiation and visualisation

Voorhorst memorises nowadays is different from what he did before; in the past, he played a musical composition many times and looked at his fingers, how the hand used to move, e. g. you will find position one then position nine. What he does now is to analyse; he knows the harmony, phrasing, he follows the melody, and the musical background also plays a much more significant role. Now he focuses a lot more on the melody; he will try to hear the melody and follow the harmony. First, he will try to sing the melody in his mind; he will see the sheet music and just sing the melody to hear how the musical composition goes; then, because he knows how the guitar works, he will translate that melody to the guitar, so the song he has in his mind, transfers to the guitar. Voorhorst believes that this way is much more reliable than what he did before; he says it is similar to what jazz guitarists do: “they know what they are going to play, they just improvise, and the guitar follows their thought”. The late Roland Dyens was an excellent friend of Voorhorst’s; Dyens was going to perform a concert the next day and wanted to play a lovely encore, so Voorhorst suggested the national anthem of Holland and sang it to Dyens. By using the melody, only Dyens, an excellent improviser, played a fantastic arrangement the next day with added harmonies and a walking bass line; his preparation was only to have the melody in his mind. Voorhorst notes that you have to know the guitar fretboard very well in order to be able to do this.

Voorhorst also does much mental practice; to him, it feels like playing, seeing his fingers in his mind’s eye, and hearing the music. In his research on the brain, he found that when doing mental practice, your brain activity is about 80-90% the same as when doing physical practice; so, you can practice just by thinking.

Associations

Voorhorst says that the more associations you make, the better the music is in your memory: “so if you only have one association for the fingerboard, for example, it is not much, but if you also know the harmony, the melody, and also the muscle memory, all these things together make that you know the music well, but there are always new things that you do not see”. Voorhorst also mentions memory athletes; they have competitions worldwide and what they can learn in a short period is incredible, for instance, the names and order of 30 decks of cards in one hour. Voorhorst investigated how they do it and found that they use something they can easily remember, like faces, a story, pictures, or a familiar route, for instance, the route from

their house towards school, then they will put objects on this route which they can easily remember. They will associate familiar things with unfamiliar details because doing this makes it easy to remember. Voorhorst says that similar to this, musicians use song to remember; it is straightforward for us to remember a melody, then we have to translate that melody to the guitar and remember additional details such as harmonies. The melody is the familiar association, and you should know every chord you play, what notes each chord is made up of; one has to make it easy for the mind, perhaps leaving aside all the attention to the fingerings and shapes and follow the melody.

ADDENDUM C

Participant letter:

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Date: 2020

The musical memory of classical guitarists

Dear Participant,

The following information is provided to help you to decide whether to participate in my research study. You should be aware that you are free to decide not to participate or to withdraw at any time.

I am currently planning a Doctoral degree in music at North-West University, under Dr Albi Odendaal. This study aims to develop a theoretical understanding of how classical guitarists view their musical memory. The findings of the study will be compiled in the form of a mini dissertation. The final aim of the study is to publish these findings as an article in an accredited academic journal.

I want to do an online video-call interview. We will arrange a date and time to suit your schedule. The interview will likely be approximately an hour in length. The interviews will be audio-recorded, but these recordings will only be used as a tool for analysis by the researcher and will not be distributed.

Our meeting will be to seek your views on memorisation. I will transcribe the audio recordings and analyse the information from the interviews. After the interview, I would like to discuss my final analysis to hear whether you feel that I have accurately represented your views.
Do not hesitate to ask any questions about the study either before participating or during the time that you are participating. I would be happy to share my findings with you after the research is completed. Your name will be associated with the research findings, and your identity as a participant will be made public.

Please sign your consent with full knowledge of the nature and purpose of the procedures. A copy of this consent form will be given to you to keep.

Date:
Signature of participant:
Thinus Boshoff (Principal Investigator)

ADDENDUM D

Interview Questions:

1. **Please tell me how you feel about performing from memory?**
    b. As a concert guitarist, do you always aim to play from memory, and why is it important to you?
    c. Are there some works/ composers that you never play memorised?
    d. Do you also play ensemble music memorised? How is it different from performing solo?
2. **Can you describe how you learned your most recent piece (from starting the new work to performing it in concert?)**
    a. Do you ever study a piece without your instrument?
    b. Do you ever use mental or visualisation methods to memorise? How can you learn to visualise?
    c. Can you tell me more about what affects your concentration when you are memorising?
    d. Which existing pedagogical literature or person/ teacher influenced your memory processes the most?
    e. Is there any literature/ source you would recommend regarding musical memory?
    f. What other advice or tips can you suggest to other guitarists/ students when memorising?
3. **Please tell me about when it did not go well-performing from memory; what happened, and how did you handle it?**
    a. How do you solve a memory lapse or other memorisation problems that might occur on stage?
    b. Please tell me about something that happened in or before a concert or a competition. Something that did not work or turned out as planned.
4. **Can you tell me about a musical composition which you are busy memorising at the moment?**
    a. How long have you been working on it?
    b. How long do you think will it take before you are ready to perform it?
5. **Think of your last, most recent concert, can you tell me what you experienced performing from memory, how did it go?**
    a. What were you thinking about while you were performing?
    b. How did your memory feel?

c. When thinking of the most recent work that you have memorised and performed, how did your most recent performance affect your perception of the piece?
d. Will you perform that same piece differently next time you play it?

6. **In your opinion, do you believe there is an ideal process concerning music memorisation?**
   a. Do you think we can understand music memorisation in its entirety, grasp its complexity completely?
   b. To conclude, do you have any other thoughts you would like to add regarding memorisation?

ADDENDUM E

Practical Programmes with Programme notes:

Practical Programme I:

1. *Suite No. XIV*…….…… Sylvius Leopold Weiss (1687-1750)
   i. *Allemande*
   ii. *Courante*
   iii. *Angloise*
   iv. *Sarabande*
   v. *Minuet*
   vi. *Passacaglia*

2. *Suite Española, Op. 47*……..…… Isaac Albéniz (1860-1909)
   i. *Granada (Serenata)*
   ii. *Cadiz (Cancion)*
   iii. *Asturias (Leyenda)*
   iv. *Sevilla (Sevillanas)*

3. *Sonata Giocosa*……. Joaquin Rodrigo (1901-1999)
   i. *Allegro Moderato*
   ii. *Andante Moderato*
   iii. *Allegro*

Programme notes:

Sylvius Leopold Weiss (1686-1750) was one of the most renowned German lutenists during the lifetime of J. S. Bach. Weiss's father and brother were both court lutenists at the Palatine chapel in Düsseldorf. For the most part of his life Weiss lived and worked in the service of the Saxon Elector Frederick Augustus I in Dresden. He became renowned for his playing and compositions all over Germany as well as during travels with his court to perform in Prague, London and Vienna. Weiss met J. S. Bach around 1738, when the Leipzig Cantor came to Dresden. Weiss wrote well over 800 pieces for lute, more than any other composer, including some 60 solo "sonatas" (really suites in the Baroque manner, consisting of a prelude and a

series of stylized dance movements), several concertos, lute duets and numerous independent pieces.

The *Suite in D major*, arranged for guitar by Victor Villadangos, includes three movements that were standard in the Baroque suite: a noble *Allemande*, a lively *Courante* and a dignified *Sarabande.* The *Angloise* was a spirited English country dance whose steps were reflected in heavy downbeat accents. The *Minuet* was originally a fast peasant dance from south-western France, but it became statelier and more measured by the 18th century; here you can also hear the use of notes *inégales*,[19] which is the practice of playing equal written notes unequally. The Suite concludes with a spacious *Passagaille* (i.e., passacaglia), which is a composition similar to a chaconne, typically in slow triple time with variations over a ground bass.

Isaac Albéniz (1860-1909) began his musical career at a very young age as a pianist, performing in "honky-tonk" bars all over South America and the United States. His compositions are influenced by Hispanic folk idioms inspired by songs and dances from his native Spain. His most famous work is the *Suite Española, Op. 47*, composed for piano. The suite consists of eight movements, the first four of which were published in 1886. In a new edition which appeared in 1918, four more movements were added to this popular suite. The suite was arranged and adapted for guitar by many different arrangers, and today it is perhaps even more popular and charming played on a guitar than a piano. Even Albéniz himself said to the guitarist and composer Francisco Tarréga, that some of his music sound better on a guitar. The four selected movements from the *Suite Española, Op. 47* that will be performed today were all arranged for guitar by the Cuban guitarist Manuel Barrueco.

The opening tribute to the city Granada, identified by its subtitle as a serenade, recalls with its wistful melody and for the most part simple harmonies, the imitation of a serenade singer accompanying himself on the guitar. Another city in southern Spain is portrayed in the movement *Cadíz.* The typical changes between the minor and major imitate the earnest singing of flamenco singers. The *Leyenda* (legend) from the northern Spanish region Asturias, often played on its own, has a striking Moorish colouring, especially in the middle section. In the region of Asturias, it rains often; in this composition you can hear the imitation of the falling rain, in the middle section the rainstorm calms down but then it begins again. The portrait of a

[19] In music, **notes inégales** (unequal notes) refers to a performance practice, mainly from the Baroque and Classical music eras, in which some notes with equal written time values are performed with unequal durations, usually as alternating long and short. The practice was especially prevalent in France in the 17th and 18th centuries.

city that follows, Sevilla, is akin to the sevillanas, the flamenco dance of the gitanos in triple time and with a pronounced energetic rhythm. This composition uses a different scordatura (tuning) on the guitar; the sixth string E is tuned down to a D and the fifth sting A is tuned down to a G, which gives it a very interesting sound.

Joaquin Rodrigo (1901-1999) is one of the most nationalistic composers of the Spanish tradition in the 20th century. He lost his sight when he was three but showed a pronounced aptitude for music from an early age. His most famous work, the *Concierto de Aranjuez*, for guitar and orchestra was premiered in 1940. He has also composed a ballet, a zarzuela, an opera, numerous orchestral works, music for the cinema, many songs and solo numbers for piano and guitar.

Although Rodrigo did not play the guitar, his passion and love for the guitar has left a legacy of brilliant colour and depth, exploiting all of the orchestral and timbral possibilities of the guitar, which is seen as one of the most intimate of all musical instruments. The *Sonata Giocosa* is no exception with its playful rhythms and transparent yet delightfully conversational voicing.

Practical Programme II:

1. *Chaconne*……...Johann Sebastian Bach (1685-1750)
Arr. Carlo Marchionne

2. *Rossiniana No. 5* (Op. 123) ……..……. Mauro Giuliani (1781-1829)

3. *Rêverie, Op. 19* (Nocturne)……...Giulio Regondi (1823-1872)

4. *Sonata No. 1*…….……. Leo Brouwer (1939 -)
    i. *Fandangos y Boleros*
    ii. *Sarabanda de Scriabin*
    iii. *La Toccata de Pasquini*

Programme notes:

The *Partita No. 2* (BWV 1004) in D minor is one of three partitas for unaccompanied violin that Bach wrote around 1720, while he was director of music at the court of Anhalt-Cöthen, north of Leipzig. The *Chaconne* is one of the most sublime musical compositions Bach ever wrote. The *Chaconne* has initially been a slow Spanish dance in triple time, which emphasised and usually began on the second beat of the bar. Its eight bars – usually four bars that are repeated – were the perfect basis for instrumental variation. Bach's *Chaconne* in D minor has a set of multiple variations in which a short, repeated chord pattern is decorated with changing figures and elaborations. It is speculated that Bach wrote the *Chaconne* in a state of grief upon returning from a trip to discover that his beloved wife had suddenly passed away.

Many transcriptions of the *Chaconne* have been made for the guitar by guitarists like Andrés Segovia, Abel Carlevaro, Manuel Barrueco and Koonce & DeRome. For today's performance, a recent transcription (2018) by Carlo Marchione will be used. In this radical version Marchione added many more bass notes but respected the original violin bows and phrasing. He chose a "HIP-approach" (Historically Inspired Performance) for the transcription, which he described as follows:

The spirit of transcription in the time of Bach was, in fact, completely different than nowadays; there was not the mania of purity of transcribing one to one; the piece was adapted to the instrument for which the composer transcribed it. More than transcription, one should speak

of arrangement, re-composing. Because of all these reasons, the basses, for instance, were added not because of their excellent playability (on the contrary, sometimes they are pretty challenging to play) but because they adhered to the Chaconne bassline, which is sometimes in the notes and sometimes is just implicit. Besides this, the completion of the harmony was based on the inner logic of the music but also on the studies by the German musicologist Helga Thoene
about the unheard chorales in Bach's music, this produces harmonies in some passages that are different from the ones one can find in other transcriptions.

Mauro Giuliani was one of the most celebrated guitar performers and composers of the early nineteenth century and one of the guitar's most influential personalities. Born in Bisceglie, Italy, Giuliani studied counterpoint, the cello and the flute, but the guitar became his principal instrument early on. Due to the lack of performance opportunities and Napoleonic upheaval in Italy, Giuliani embarked on a successful tour of Europe and was dubbed the "Paganini of the Guitar". In 1806, he settled in Vienna, where he was regarded as the city's guitar movement leader. Giuliani's achievements as a composer were numerous. His 150 compositions for guitar with opus numbers constitute the nucleus of the nineteenth-century guitar repertoire. He composed extremely challenging musical compositions for solo guitar and works for orchestra and guitar-violin and guitar-flute duos.

Giuliani's "Rossiniane" are a virtuoso variations cycle for the guitar based on themes by Rossini. Each set is called "Rossiniana", and collectively they are called "Rossiniane". With the triumphs of Rossini's operas such as Tancrède and the Barber of Seville between 1813-1816, Rossini began riding a wave of renown across Europe that inspired composers such as Liszt, Chopin, Schubert, and Paganini to model musical compositions on favourite airs from his operas. Giuliani, who met and perhaps even concertised with Rossini in Rome in the early 1820s, published six such fantasy variations for solo guitar (Op. 119-124). Some of Rossini's themes included in the Rossiniana no. 5 include *Andantino mosso* from Tancrède, *Andante sostenuto* from Cendrillon, and *Una voce poco fa* and *Allegro* from the Barber of Seville.

Giulio Regondi was an Italian child prodigy and great guitar virtuoso of the 19th century. Regondi and his father arrived in London in 1831 and achieved financial success until about 1835, when Regondi's father left his son alone in London with no money. Regondi overcame this trauma, became a resident of London, and continued to earn a living as a very successful performer on both the guitar and the newly invented concertina. Regondi's compositions were lost to posterity for decades, but his compositions were eventually rediscovered, edited by Simon Wynberg, and published in 1981. Rêverie, Op 19, subtitled *Nocturne for guitar* is a

compendium of guitar techniques fused into a complex exploration of emotion. After an initial Larghetto, which acts as a kind of prelude, a short *più mosso* section, characterised by rapid arpeggios, leads up to the main body of the work: a moving, passionate extended tremolo section features one of Regondi's most plaintive melodies. Immediately afterwards, the middle part introduces the familiar guitar texture of a bass melody accompanied by chords in the treble, moving up to a climatic grouping of chords high up on the fingerboard. A final tremolo section follows, this time slightly modified from the previous melodic statement. Graham Wade rightly says that "This composition is not only a technical tour de force but also an example of the nineteenth- century guitar at its most intensely expressive."

Leo Brouwer is a Cuban composer and one of the most innovative composers of the last century. His compositions range from solo guitar works to concertos and film scores. His prolific output for guitar has developed through various styles, including the avant-garde, Cuban nationalism and neo-romantic.

Sonata No. 1, composed in 1990, is dedicated to Julian Bream and was premiered in 1991. As in much of Brouwer's music, the work is in three movements, and the thematic material is brief. Brouwer said that "It is elemental, and the principal characteristic is the interaction, cross-relation and superimposition of different worlds and epochs." Much of the unity of this Sonata is derived from an eight-note motive found in the seventh bar. The first movement, *Fanadangos y Boleros*, opens with a *Preámbulo* section, followed by a *Danza* in which Brouwer merges features of the famous Spanish baroque fandango with the bolero's Cuban love song (and dance). Above the coda, he writes "Beethoven visits Padre Soler". (Soler is the composer of the well-known Fandango for harpsichord.) Moreover, in it he quotes very briefly from Beethoven's Sixth Symphony, *The Pastoral*. The second movement, *Sarabande de Scriabin* opens with a three-note ostinato. A melodic element from the *Preámbulo* is superimposed above it but assumes an entirely different harmonic guise. Furthermore, by tuning the low E-string of the guitar to F, the composer has created a movement of unusual colour and texture. There is nothing evident of the Russian composer Scriabin, however, apart from the atmosphere and harmonic flavour. The last movement, *La Toccata de Pasquini*, is in a form frequently used by Brouwer. It is a harp-like moto perpetuo, a continuous cycle in which the melodic strand from the *Preámbulo* makes a final appearance, together with the call of the cuckoo used by Pasquini in his famous Toccata. Brilliant figurations and arabesques give way to a brief restatement of the slow movement before the opening of the Toccata is heard again.

ADDENDUM F

Lecture-Recital notes:

Lecture-Recital 1: The Musical Memory of Classical Guitarists

Learning a musical composition from memory and understanding thereof.
Presenting 5 Preludes by Heitor Villa Lobos

1. Performance of Villa Lobos Prelude No. 1
2. Introduction: Main intention of study
    - To create a conceptual understanding of musical memory
    - To describe what is Musical Memory from a guitarist's perspective
    - This is not a method, but a holistic view that shows the process of musical memory from beginning, extending to after performance reflection.
    - I would like to present my research results in a practical way to show and describe how, I as a guitarist, approached, learned, and recall each musical composition to be performed by heart; and displaying the interaction of a conceptual model derived from the research's results.
    - Participant introduction and slide with photos of each

3. Results
    - Main framework of research: Learning, Understanding and Remembering (LUR).
    - This first of two Lecture Recitals will focus on the encoding process of committing a musical composition to memory which is Learning and Understanding.
    - The quality of learning and learning processes involved affects the outcome of remembering. Remembering is dependent on the quality of the encoding process.
    - Show diagrams used in Results chapter.

4. Showing Holistic Framework:
    - This holistic framework, which resulted from the research, can be understood as phases of learning, understanding, and remembering. Each phase is dependent on another, they are considered as simultaneous, interrelated

processes, not sequential processes. Remembering is evident, integrated, or an interactive part in each of these processes. For example, understanding leads to remembering, learning phases leads to remembering, remembering strengthens understanding, the processes circulate back to each other. The diagram indicates an integrated, circular, ongoing process.

5. Learning (Divided in three sub-categories)

5.1 Pre-learning

- Value of performing from memory
- Exceptions or reasons for not committing a musical composition to memory
- Complications/ handling of memory issues
- Learning processes:
    a) Concentration required
    b) Attitude
    c) Relaxation
    d) Natural learning
    e) Inherit strengths
    f) Time

5.2 Active Learning

- Memory methods involved
- Motor repetition that results in muscle memory
- Analytical approaches and fingering
- Visual strategies
- Audiation
- Combined methods
- Learning during performance:
    a) Pre-performance dress rehearsal/ pre-recording
    b) Concert venue: Respond to acoustics/ amplification
    c) Interpretation: Adapt spontaneously

5.3 Post-performance learning (Also to be discussed more thoroughly in the second lecture recital).

- Debriefing:
    a) Response from audience.
    b) What was good and what not?

c) Reflection on recording of performance.

- Learning from making a professional recording
- Perception changes:
    a) Change interpretation
    b) Change fingering
    c) Altered memory, re-learning takes place

6. Understanding
    - Analytical memory:
        a) Score analysis
        b) Structural awareness
        c) Fingering
        d) Interpretation: Dynamics/ Colour
        e) Study in detail and with understanding
        f) Associations

    - Combining methods:
        a) Musical form and aural memory are connected
        b) All methods work together

7. Performance: (Performance with slide show in background)
    - 5 Preludes for guitar solo.
    - Practical illustration of musical examples.
    - How did I learn each musical composition and get it performance ready?
    - What memory approach did I follow?
    - I used a different memory approach to learn each Prelude, showing each focus point.
    - Number of hours to learn each musical composition.

Lecture-Recital 2: The Musical Memory of Classical Guitarists

Remembering a musical composition learned from memory
Presenting a selection of 5 Etudes from Villa Lobos' 12 Etudes for Guitar (Nos: 1, 2, 7, 11 and 12).

Introduction:
Previously observed from the first Lecture Recital:

- Main framework of research: Learning, Understanding and Remembering (LUR).
- This first Lecture Recital focused on the encoding process of committing a musical composition to memory which were Learning and Understanding.
- The quality of learning and learning processes involved affects the outcome of remembering. Remembering is dependent on the quality of the encoding process.
- This second lecture will focus on the process of Remembering a musical composition learned from memory.
- Remembering can be defined as the recall of musical data stored.

1. Recall: What do Guitarist's recall when performing

- Sound
- Fingers
- Visual image of sheet music or fingers
- Patterns

2. Performance Cues:

- Mental landmarks that are associated with musical structure and phrasing
- Body gestures
- Performances cues are used when memory issue arise or helps structure our mind for better recall
- Mnemonic reference points

3. Aural Memory:

- Results in better long-term memory recall
- The use of melody lines to remember
- Aural memory and musical form are connected

4. Mental associations:

- Connect musical phrases to language, dance forms or non-musical ideas
- Associations helps clarify musical ideas

5. Confidence:

- Confidence leads to better recall and better brain function
- Reduces performance fear
- Confidence is dependent on the quality of learning methods used.
- Confidence is gained through memorised public rehearsals.

6. Post-performance learning
    - Debriefing:
        d) Response from audience.
        e) What was good and what not?
        f) Reflection on recording of performance.
    - Learning from making a professional recording
    - Perception changes:
        d) Change interpretation
        e) Change fingering
        f) Altered memory, re-learning takes place

7. Performance:

- Performing selection of 6 Etudes from Villa Lobos' 12 Etudes for Guitar (Nos: 1, 2, 7, 11 and 12).
- Practical illustration of musical examples.