

**Exploring the efficacy of deliberate practice and memorisation
skills in the process of learning Debussy's *L'Isle joyeuse*: A
practice-led study**

by

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Abstract

The purpose of this practice-led study is to explore advanced pianists' process of learning new repertoire. The study draws on accounts by professional pianists and pedagogues as well as on case studies of the learning process in musicians. The study also draws on literature on practice and memorisation. It incorporates the author's own documented process of learning Claude Debussy's *L'Isle joyeuse*. Audio recordings and journal entries from each practice session during this learning process were transcribed and a description of the learning process is presented here.

The process is divided into four stages. The first stage is initial learning, becoming familiar with the score and working out fingerings. A subsequent first revision of the score constitutes the second stage with the goals of solidifying the execution of technical elements and rhythmic accuracy. The third stage is a second revision of the score with the goal of committing the music to memory and further improving technical execution. The fourth stage is aimed at polishing the piece with the goals of bringing the piece up to performance tempo, incorporating interpretive and musical elements, and further solidifying memory recall and technical execution of the music.

The results are discussed and compared with the literature. The study found that an effective learning process reflects K. Anders Ericsson's principles of deliberate practice and expert memory. It found further that practice strategies which introduce contextual interference into the process could be beneficial, as could also concentrated, musical slow practice. Other beneficial techniques include mental practice in order to strengthen memorisation.

Keywords: Claude Debussy, *L'Isle joyeuse*, deliberate practice, musical memorisation, memorisation strategies, memory systems, piano practice, practice strategies, the piano repertoire learning process

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Chapter 1

Introduction

1.1 Background to the study

Over the course of my life, I have dedicated many hours of practice to the improvement of my musical and technical skills and to learning repertoire. It is therefore frustrating when a performance does not proceed according to plan. During my final undergraduate recital, I experienced several memory lapses during the programme. Considering the amount of time spent preparing for the recital, I was disappointed with my performance.

While working with my postgraduate piano lecturer, it became clear that my practising was not yielding optimal results and that it ought to be adjusted. An exploration of the literature on the subject revealed that structure is an important characteristic of effective practice. I brought more structure into my practising by dividing the music into sections, practising with a greater level of cognitive awareness of the content of the music, and starting, among other things, to memorise the music early in the learning process. With time, I could perform from memory with greater confidence and assurance than before.

Various definitions of “practice” have been put forward. Pedagogical sources touch on the different components involved in practice. Sándor (1981:183) defines practice as “that phase of learning in which we acquire motion habits through repetition. Other stages of learning include “the readings of the piece, the searching for its meaning, and its memorisation”. Gát (1958:73) emphasises the importance of balance between repetition and emotional content in practice and that repetition should never be carried out without attention. Gát (1958:74) believes that repetition without attention reduces the intensity of the emotional content in the music, while too much emphasis on the emotional content leads to an “ecstatic” way of playing. Scientific researchers have proposed broader definitions of “practice”. Hallam (in Jorgensen & Lehmann, 1997:1) defines practice as “that which achieves the desired end-product, in as short a time as possible, without interfering negatively with longer-term goals”. This implies that practice is a multi-faceted process and requires considerable metacognitive skills (Jorgensen & Hallam, 2009:265).

It is a process that involves not only physically practising a piece of music, but also learning it through a complex sensory system on a cognitive level. Further, committing the music to memory also forms part of this process in the case of solo pianists. All of these aspects of the process are connected. The subject of this study is referred to as the “repertoire learning process”. For the purposes of this study, this process encompasses practice and memorisation as key aspects of repertoire learning for pianists.

This study explores the literature on the learning process followed by an account of my own learning process relating to Claude Debussy’s *L’Isle joyeuse* (1904). This piece was chosen because its performance duration (approximately six minutes) allows for precise documentation and analysis, it has a clear formal structure, and it appears often on the performance licentiate list of examination boards. Based on the findings of this study, recommendations are suggested to other pianists as to how they may improve their own learning processes. Of particular interest to this study is the research by Chaffin, Imreh and Crawford (2002), in which pianist Gabriela Imreh’s learning process for a new piece of music is documented and analysed in detail. Imreh’s participation in the research as the performer points their research in a practice-led direction.

The present study is valuable for several reasons. The ability to perform reliably from memory is an important but demanding aspect of a solo classical pianist’s career, yet the process of learning repertoire is still poorly understood. Performing from memory is required at most universities and conservatories for students specialising in performance. A memorised performance is generally viewed as superior to one that is played from sheet music. Performance from memory often requires the recall of thousands of notes in a single performance without the aid of sheet music. Despite the importance of memorised performance, I have seen pianists perform with varying levels of success at the tertiary level. Further, I have personally encountered few pedagogues who actively incorporate practice and memorisation techniques as part of the learning process into their teaching.

1.2 Aim of the study

The aim of this study is to explore the process of learning new piano repertoire at an advanced level. As the learning process consists of several different but connected cognitive and physical activities, the literature on practice and memorisation is essential to the study. Further, I draw on my own experiences as a pianist and my personal learning process of *L'Isle joyeuse*, which is documented as part of this study. My learning process is analysed and considered with the information discovered in the literature, with particular reference to the work of Chaffin et al. (2002). From the analysis, it is determined how my own learning process could be improved and recommendations are offered to other pianists.

1.3 Research questions

The main research question is:

- How can a reliable repertoire learning process be followed to realise a secure memorised performance of Debussy's *L'Isle joyeuse*?

The main research question can be divided into the following secondary questions:

- What does a reliable repertoire learning process at an advanced level entail, according to the literature?
- What process did the author follow while learning Debussy's *L'Isle joyeuse*?
- How can the author's repertoire learning process be improved in relation to literature?
- How could improvements in the author's learning process inform the learning process or other advanced pianists?

1.4 Literature overview

The relevant literature used in this study includes accounts by professional pianists and pedagogues on the learning process and case studies of the learning process followed by musicians. Scientific literature on practice and memorisation is also considered.

First-hand accounts by professional pianists were drawn from collections of interviews conducted by Cooke (1917), Mach (1980 & 1988) and Wallick (2013). The writings by pedagogues Matthay (1932), Gát (1958) and Sándor (1981) were also reviewed for their perspectives on the learning process.

Several case studies of the learning process of individual musicians were particularly valuable to the present study. These include studies by Miklaszewski (1989), Nielsen (1999), Chaffin et al. (2002) and Chaffin, Lisboa, Logan and Begosh (2009).

A key figure in the literature on practice is K. Anders Ericsson, whose research focuses on expertise and human performance. His research has shown that expert levels of performance do not stem from innate “talents” but are rather the result of a variety of factors, including, most importantly, sustained and correct practice (Ericsson, 2008). Ericsson has developed the theory of deliberate practice as a framework that can be applied to any domain, including music (Ericsson, Krampe & Tesch-Römer, 1993), whereby almost any individual can reach an expert level of skill (Ericsson & Poole, 2016).

Research on practice strategies was also reviewed. Gebrian (2017) details how practice can exploit the concept of contextual interference, which leads to better learning. Fitch (2002) describes the various approaches to slow practice.

Key sources on musical memorisation include the writings of Chaffin, Logan and Begosh (2009) and Engelbrecht (2014). Ericsson & Kintsch (1995) formulated a model for expert memorisation consisting of three principles. The case studies mentioned above also provide insights into the process of memorisation.

1.5 Ethical considerations

This study does not involve or affect any participants aside from the author, thus, there are no human ethical issues that require consideration. The score for *L'Isle joyeuse* is freely available in the public domain and no special permission is required to use it. All the data collected for this study, including audio recordings, journal entries and transcripts, are stored securely in the author's personal cloud storage and will be retained for a period of 15 years. The data is available on request.

1.6 Delimitations

- The study investigates aspects of piano-playing only in the Western classical tradition.
- The study investigates issues related only to advanced pianists (university level or higher).
- It is not the aim of the study to investigate the acquisition of musical skills in beginner pianists.
- This study does not investigate aspects of performance unless they are of relevance to the learning process.

Chapter 2

Methodology

2.1 Introduction

This chapter outlines the research approach and the research design, as well as the methods employed in collecting, analysing and interpreting data. It includes a description of the practice-led nature of this study.

2.2 Research approach

This study follows a qualitative research approach with elements of interpretive and performative paradigms.

Qualitative research “attempts to collect rich descriptive data in respect of a particular phenomenon or context with the intention of developing an understanding of what is being observed or studied” (Maree, 2007:50). Its focus is “to understand, explain, explore, discover and clarify” an area of inquiry, often using deductive rather than inductive reasoning (Kumar, 2014:132). A qualitative approach is appropriate when the researcher requires a complex and in-depth understanding of a problem and when there are variables involved (and interactions between variables) that are not easily quantified (Cresswell, 2013:48). In the repertoire learning process, many of the variables involved, such as the technical difficulties of specific passages and cognitive processes of memorisation, are difficult to quantify. This study is better suited to a qualitative approach.

The artistic practice of piano-playing has a central role in the research process of this study and the aim is to expand knowledge of the practice. It thus falls under artistic research. Artistic research has traditionally conformed to established methods of scientific research and has had to make use of established scientific methods where artistic practice itself does not play a significant role. According to Doğantan-Dack (2015:171), this is because artistic practice is not a widely recognised research method:

This is largely due to the fact that expert music-instrumental knowledge that drives artistic performance making is not commonly recognised as a valid methodological tool that could give rise to novel musical insights and signification. At best, performative parameters are brought into an analytical undertaking in order to confirm what the analyst has already discovered through score-based analysis.

Researchers in the arts, however, have begun moving towards performance-based methods. Whereas scientific research involves formulating a hypothesis and testing it under specific conditions as part of a theory, artistic research is based on the “explorative potential of possibility, actualization and recognition” (Burke & Onsman, 2017:4). This suggests that the process of artistic research should be determined by the artistic practice and may change during the course of the research. Borgdorff (in Burke & Onsman, 2017:7) argues that “artistry qualifies as research if its purpose is to expand our knowledge and understanding by conducting an original investigation in and through the creative process”. Further, he believes that artistic research should be heuristic, meaning it “involves self-search, self-dialogue, and self-discovery” (in Burke & Onsman, 2017:7). In Doğantan-Dack’s (2010:196) research into pianistic *cantabile* playing, the piano was at the centre of the research, and “acted as a tool for exploration and discovery”.

The data collected in this study (recordings and journal entries) provide no definitive conclusions on their own. To yield meaningful results, interpretation is required within the context of the artistic practice. This study therefore has elements of an interpretive paradigm. Interpretation from a variety of subjective viewpoints is crucial to understanding an area of inquiry and knowledge and is “always mediated through the researcher” (Tracy, 2013:40–1).

This study contains elements of a performative paradigm, as audio recordings of my learning process form an important part of the research process. The performative paradigm is described by Haseman (2006:102) as a third category of research distinct from qualitative and quantitative research, although it is aligned with many of the values of qualitative research. He argues that the performative paradigm is the most appropriate for research into all forms of artistic practice, as it is based on the artistic practice being studied. Performative research often involves non-numerical forms of data other than text. Haseman (2006:102) refers to such data as “symbolic data”, which can include music, sound and images. The audio recordings of my learning process, which were collected for this study are symbolic forms of data and play an important part in the research process.

2.3 Research design

This study follows a practice-led research design, as I draw on my own experiences of the artistic practice for the research. According to Candy (2006), research is practice-led when the outcome of the research is new knowledge of the artistic practice. It is distinguishable from practice-based research, where a new artistic work is the outcome of the research. Crispin (2015:60) states that, in artistic research, “the researchers are not only themselves artists, but also use artistic practice as an integral part of the research that they conduct” and that the artistic practice may play a role at any stage of the research process.

According to Board (in Smith & Dean, 2009:47) practice-led research is similar to other research in the arts in that it involves the formulation of research questions and problems, but “the research methods, contexts and outputs then involve a significant focus on creative practice”. Board also states that the goal of such research is to contribute new knowledge through creativity and practice.

This study is practice-led for several reasons. My personal learning process plays a key role in the study, particularly in the data collection and interpretation, where recordings of the learning process are collected and analysed. Further, my experiences as an artist inform the study at every step of the process. The focal point of the study is the process of learning piano repertoire and the results lead to new knowledge in the practice.

2.4 Data collection

Part of the data used in this study is in the form of written sources, particularly the descriptions of the learning process by Miklaszewski (1989), Nielsen (1999) and Chaffin et al. (2002). In addition to examples of the learning process found in existing literature, I draw on my experiences as a pianist and my process of learning Debussy's *L'Isle joyeuse* to gain insights into the process. In order to document the learning process, I kept a practice journal describing my aims at the start of each practice session, reflections at the end of each session, and other relevant information.

Most of the practice sessions dedicated to Debussy's *L'Isle joyeuse* were audio recorded so that the sessions could be referred to at any time. During each session, practice activities were verbally described where necessary and formed part of the

recordings. The point at which the learning process was considered complete (for the purposes of this study) was when the piece could be played securely from memory with sufficient confidence to perform it in front of an audience.

2.5 Data analysis and interpretation

Data was collected from the audio recordings of each practice session and their corresponding journal entries. The text from the journal entries, including date, time and duration, was transcribed into electronic format. Each of the practice recordings was transcribed including a detailed transcription of the content of each session and a verbatim transcription of spoken comments. This included the specific bars practised, the number of repetitions, the speed of practice, the practice and/or memorisation techniques used, and other pertinent information. Once each session had been analysed, it was possible to view the process holistically and to determine the development of the learning process over the course of practice.

The results of my own learning process are then discussed in relation to the literature. In particular, the work of Miklaszewski (1989), Nielsen (1999) and Chaffin et al. (2002) are of relevance. Aspects that are considered in the discussion of the results include:

- structuring of practice sessions
- development of the learning process
- memory systems used
- strategies used to facilitate practice and memorisation, and
- dealing with technical difficulties.

2.6 Conclusion

In this chapter, the research approach and research design were explained, as well as the methods for data collection, analysis and interpretation. This study follows a qualitative research approach, with elements of interpretive and performative paradigms. The research design is practice-led. Data was collected from my personal process of learning *L'Isle joyeuse* and subsequently transcribed, analysed and discussed in relation to the relevant literature.

Chapter 3

Literature review

3.1 Introduction

The literature review discusses literature pertaining to the accounts by professional pianists and pedagogues on the learning process, case studies on the learning process for musicians as well as research into practice and memorisation. Strategies followed during practice are also discussed, as well as K. Anders Ericsson's theories of deliberate practice and expert memory.

3.2 Accounts by professional pianists and pedagogues on the learning process

In this section, some of the accounts by professional pianists and pedagogues will be discussed. In searching for literature on the process of learning new repertoire, the first step was to search for first-hand accounts and opinions of the process from professional pianists and pedagogues. Of particular interest here are collections of interviews with pianists, including Cooke (1917), Mach (1980, 1988) and Wallick (2013). The writings by the famous pedagogues Matthay (1932), Gát (1958) and Sándor (1981) are also considered.

Although dated, Cooke's (1917) collection of interviews includes those with some giants of the instrument, such as Rachmaninoff, Godowski and Sauer. While most of the interviewed pianists did not discuss the learning process, some did. When it comes to practice, Fanny Bloomfield-Zeisler says that practice should always be concentrated (Cooke, 1917:92). She recommends that one should not practice for more than two hours at a time, and four hours of concentrated practice per day is sufficient for most students. She recommends playing through a new piece once or twice before beginning to memorise it, then selecting the most difficult passages for special attention. She emphasises the importance of slow practice and practising small sections at a time, particularly at the beginning of the learning process. She recommends learning each section mentally before practising it and occasionally memorising a piece in sections from back to front. She also emphasises the importance of practising all aspects of the music correctly from the start to prevent mistakes from becoming ingrained and listening intently while practising. Lastly, she

says that it is important to “put away” a piece several times in the learning process before performing it, to let the mind “digest” what has been learned.

Emil Sauer (Cooke, 1917:237) also stresses the importance of concentration during practice and the importance of regular daily practice as opposed to sporadic practice every few days. Xaver Scharwenka (Cooke, 1917:261) believes that pianists should spend more time on mental practice.

According to Ernest Schelling (Cooke, 1917:267), the process should begin with a preliminary study of the piece away from the keyboard in order to gain an overall understanding of the music. He mentions that an understanding of the structure of a piece is important for interpretation and that the first priority is to learn to execute the correct notes with the correct fingering, thereafter, attaining the desired touch and tempo. Regarding memorisation, he said that it should be a combination of visual, aural and muscle memory.

Elyse Mach conducted interviews with several major concert pianists of the 20th Century which were published in two volumes (Mach, 1980, 1988). As stated in the preface, Mach wanted to let the pianists speak freely. The interviews were open-ended and she rarely prompted or interjected during each interviewee’s responses.

The interview with Alfred Brendel reveals some details of his learning process (Mach, 1980:26). When starting a new piece, Brendel prefers to approach it with a sense of “naiveté”, becoming acquainted with the piece as the process develops rather than studying it beforehand. He does not believe that one should slow the tempo during practice. Rather, he advises practising short segments of the music at a fast tempo, a system which he believes may be useful for memorisation (although he states that memorisation comes naturally to him).

For John Browning, there is no “secret formula” for learning a new work—it is simply a matter of repetition (Mach, 1980:43). Regarding memorisation, he mentions that he does not have a “photographic” memory, but rather knows the “sequences” of the music, suggesting a cognitive element of memorisation. He also states that the music should be given a chance to “lie quietly for a while, simmering, as it were, until it feels just right for performance (Mach, 1980:43)”.

Alicia de Larrocha (Mach, 1980:58) spoke about her approach to learning repertoire. She does not like practising a score from beginning to end, preferring to study the

music first to identify difficult passages. Finding correct and suitable fingerings is a very important aspect for her, one that cannot be addressed away from the keyboard. She also encourages slow practice as she can better work on finer details, and it helps to reinforce memory. For memorisation, she relies on structural elements of the music and less on visual memory. She prefers not to use practice techniques designed to exclude one form of memory, such as practising with fingers above the keys to exclude the aural aspect, as this feels unnatural to her. Rudolf Firkušný also recommends slow practice (Mach, 1980:86) in order to prevent mistakes from becoming ingrained, and to focus on the movement of the fingers.

Misha Dichter discusses the quantity of his daily practice throughout his life: twelve hours in his youth, six hours in periods when learning new repertoire, and four hours when travelling (Mach, 1980:63). He discusses his “system” for learning new music, particularly for memorisation (Mach, 1980:65)—he uses formal and harmonic structure as an aid in memorisation, taking note of intervallic relationships and other details to chunk the music into “blocks”. Before beginning to learn a piece, he will play through the music several times to gain an overall understanding of the piece and identify passages which require specific attention.

Although he does not describe specific details of his learning process, Vladimir Horowitz (Mach, 1980:116–7) mentions some of his thoughts on practice. He believes that each pianist should have his own method, and that true technique lies in being able to produce a variety of different sounds.

For Jorge Bolet (Mach, 1988:28–9), the first priority when learning a new piece is accuracy of notes, achieved by means of slow practice. He emphasises mental practice, stating that most of the memorisation takes place away from the keyboard: “Yet when it comes to memorising the music, I do perhaps ninety-five to ninety-eight percent of it away from the piano.” Further, most of his technical and interpretive problems are solved away from the keyboard: “But I never solved a major mechanical or interpretive problem at the keyboard, only away from it.”

Youri Egorov (Mach, 1988:59–60) carries out slow practice and *pianissimo* practice in his concert preparation in order to focus on evenness of tone. When it comes to memorisation, he makes no deliberate effort to memorise. “I prefer to sit and play

just what comes naturally to my mind. Then all at once I put the score aside and try to play the piece. And there it is!”

Janina Fialkowska (Mach, 1988:65) mentions her use of visual and harmonic memory, and what she describes as “digital” memory (memory for chords and their fingerings). She says that, although memory lapses are inevitable for any pianist, she is never completely lost in the music when it happens.

The interview with British pianist Stephen Hough took place early in his career. He describes some of his techniques for practising certain technical difficulties (Mach, 1988:136). For practising unison octave passages, he suggests practising them another octave apart, in altered rhythmic patterns, cross-handed or in another key, encouraging pianists to be creative with their practice techniques: “There are times when you just have to be inventive and experimental with all of this. And if something doesn’t work, if you find the rhythms are not helping at all, then drop them. I don’t think that there are any hard-and-fast rules about it” (Mach, 1988:136). He also likes to practise with his eyes closed to remove the visual aspect from playing. In doing so, “you make the other one develop more strongly, because it has to overcompensate” (Mach, 1988:136).

When it comes to the issue of quantity of practise, Garrick Ohlsson tends to do so for three to four hours a day when he has performance commitments, rarely more (Mach, 1988:185). He would be satisfied with two hours if there were no performance commitments. He believes that you should “[practise] with your head rather than just your rear end on the piano bench” and when you do practise that way, “three hours is a great long time, and you can do a great deal” (Mach, 1988:185).

Contemporary pianists are more forthcoming in their accounts of the learning process, providing further insights into the finer details. More recent sources include Wallick’s (2013) interviews with several pianists he met during his time in New York. Further, in an article titled *The Practice of Practising*, Stephen Hough (2014) offers recommendations for effective piano practice. These more contemporary accounts are described below.

Wallick (2013) conducted interviews with eight professional pianists whom he met during his time at the Juilliard School. The interviews reveal five commonly-used practice methods employed by the subjects:

1. Hands separate practice: All eight pianists mention this technique, though not all report using it. Some find great value in this technique as a tool for securing memory and for becoming more aware of the details for each hand. "One of the main problems with this technique is that it can take a long time to learn a piece" (Wallick, 2013:95).
2. Rhythm practice: This technique involves practising a specific passage with altered rhythms, most commonly using dotted rhythms, or breaking the passage into groups of three or four notes and stopping on one note of the group. Most of those interviewed find great value in rhythmic practice for improving the fluency of technically difficult passages. Only one interviewee is opposed to rhythmic practice, stating that it makes her ear stop listening as the work becomes purely technical.
3. Metronome practice: When considering practising with the aid of a metronome, the pianists give mixed responses. "It seems that half of the pianists are interested in the benefits of metronome work, and the other half are completely opposed to its use. They admit that there is certainly a decline in the musical level when one plays with a metronome, but many of these pianists still feel the technical gain is worth the temporary un-musicality of their metronomic exercise" (Wallick, 2013:101).
4. Slow practice: Although the pianists make few comments on practice, many pointed out the importance of slow practice while maintaining the intensity of fast playing. Slow practice serves technical as well as musical practice goals (Wallick, 2013:101).
5. Playing through: While playing through a piece does not amount to actual practice, it forms an important aspect of the learning process. The pianists stress the importance of balancing segmented slow practice with complete run-throughs at speed. It is a valuable tool for testing how secure a section is when played in context (Wallick, 2013:102).

In an article for *International Piano Magazine*, Stephen Hough (2014) gives further insights into his learning process. Hough quotes his teacher, Gordon Green, who

said, "In practice a perfectionist, in performance a realist". Hough's own take on this idea is:

In practice an engineer, in performance a pilot. Nuts and bolts in a plane are incomparably important, but when you sit at the cockpit of a Steinway concert grand your eyes need to look ahead not underneath. The purpose of practising is so that we (offstage as engineers) make sure that we (onstage as pilots) are completely free to fly to the destination of our choice.

Hough outlines the following key points for effective practice:

1. Study: "Relish the task, whether beginning to learn a piece or whether revising one long familiar. Examine the score like a rabbi poring over a rare parchment."
2. Finger: Hough strongly recommends writing in the fingerings when starting a new piece. It aids memory and speeds up the early stage of learning.
3. Dissect: "We need to know what might go wrong in a performance and why. There is no such thing as a difficult piece. There are merely moments in pieces which are problematic."
4. Slow: Hough advises against mindless slow practice. It should always be done with awareness of every aspect of playing. He particularly likes to practise using the "half and half variety":

For example, in a semiquaver passage I will play four notes at performance tempo then four notes at exactly half the speed then reverse the groups. It can sometimes be useful to do this with eight-note groups." In doing so it "focuses the mind quickly from one reflex to another.

5. Audience: Hough cautions against practising as if in a performance, but at the same time against getting stuck in "practice mode":

But the second, more subtle danger is not to get stuck in a practising mode. This is related to mindless slow practice. All the focus when in the practice studio should be how we will play when in the concert hall. If something comes apart, don't stop immediately. Guide the skidding wheels around the crashing corner for another meter or two, despite the sparks and screeches. A common student scenario: music flying along; train wreck; a second of silence; start at point of accident; continue. The point where things broke down is the fragile spot, the dodgy seam. It needs sufficient overlap of material to be strong. Go back before the mistake and practise beyond the mistake then the mistake itself will be more safely repaired. Otherwise the very stopping and starting becomes a reflex, an ingrained repetition of breakdown.

6. Mind:

As important as it is to have strong fingers muscles, tendons, joints loose and lithe, we need a strong mind too. Strong in concentration, on and off stage; ever striving for improvement, but relaxed when none seems to take place. The mind's clear vision is not a stare: it needs to be able to focus near and far with flexibility and wisdom.

The writings by prominent piano pedagogues were also taken into consideration, including those of Matthay (1932), Gát (1958) and Sándor (1981).

Tobias Matthay briefly touches on the subject of practice in *The Visible and Invisible in Piano Technique* (Matthay, 1932). He advises against mere repetitive practice, emphasising the importance of awareness during practice. He believes practice “consists in your trying to *find out all about that passage*; all about it musically and technically, the how of it—every note of it, for the sake of the Whole” (Matthay, 1932:122). For Matthay, listening intently is integral to good practice:

It implies consideration of *every note* before it is sounded and hearing how it actually does sound. It means you must alertly *notice*, must find out, must analyse how and when each note should sound and how it does sound (Matthay, 1932:122).

Gát (1958) cautions against the overuse of repetition in practice:

The fading of the emotional content as a result of repetition involves the danger of the technical work becoming an aim in itself. If the emotional content loses its intensity, it can easily happen that we practise something entirely different from what is required by a good performance (Gát, 1958:99).

At the same time, he cautions against placing continual emphasis on the emotional content of the music, as this may lead to an “ecstatic” way of playing (Gát, 1958:99). He also emphasises the importance of attention during practice:

Practising always requires full attention from the aspect of motion, too, and the whole body must be in readiness. Every thought and movement must be at the service of tone production: this task cannot be entrusted to the arms or the fingers only. *We have to feel responsible for each tone*. In practising, too, our movements will be right only if each tone is felt by us to be important and if we concentrate on each tone with all our power.

He states further that correct practice comes down to the correct distribution of time spent practising and having a variety of music to work on. He recommends that we divide our practice into sessions of 25–40 minutes at a time with breaks in between (Gát, 1958:103). When it comes to variety, he recommends varying the practice of a piece (e.g., practising the different voices of a fugue individually) and having music from a variety of different style periods to practise (Gát, 1958:104).

Gát dedicates an entire section of his book to slow practice. He distinguishes between slow practice and merely slowing the tempo. When slow practising, “enlargement and exaggeration of the respective details must be considered as a technical principle” (Gát, 1958:105). In emphasising the technical aspect of playing, slow practice may negatively affect the tone production, but, for Gát, this is a

“necessary evil” that should nevertheless be kept to a minimum. Slow practice serves the following purposes (Gát, 1958:105):

1. Facilitating memorisation
2. Automatising of movements, and
3. Correction and perfection of swing-strokes for each note (which includes the development of control and velocity).

Sándor (1981) dedicates a chapter each to the subjects of practice and memorisation, with some overlap between them. He stresses the importance of conscious practising when learning new repertoire, as this facilitates memorisation and makes the process more efficient (Sándor, 1981:183–4):

If we read a text mechanically, without concentration and without being aware of its content, we may never memorise it, no matter how many times we go through it. On the other hand, if the text is given to us to be memorised, and if we read this text with total concentration on its meaning, we may be able to memorise it after just a few readings. The difference between the mechanical and the conscious approach is quite striking; the number of repetitions needed to ingrain habits is infinitely smaller when we concentrate.

Sándor (1981:184) does not recommend the use of varying rhythmic patterns as a practice technique, as this “tends to make practice mechanical, and when patterns with dotted notes are used, the short notes usually don’t receive sufficient time and attention”. He also recommends slow practice as a tool for learning the correct movements, but only for as long as it is required for any given passage. Further, he makes the point that, when practising consciously, we should allocate the correct amount of time to each note (no more or no less) rather than practising an entire piece at the same speed. This will result in an uneven tempo, but then no time is wasted practising easier passages at an unnecessarily slower tempo (Sándor, 1981:186). He advises taking short breaks every twenty minutes or so in conscious practice (Sándor, 1981:187).

Sándor (1981:190) also recommends the use of mental practice together with conventional practice. He stresses that it requires “intense concentration—an activity that is strenuous but efficient and fast working”. It requires awareness of every technical movement required for each passage.

Sándor (1981:193) also includes some of his ideas for memorisation. He recommends memorising a piece later in the learning process “at the point when it is almost completely prepared”. He lists four elements of memorisation which should

each receive conscious attention during practice. The role of each varies among individuals, but each musician usually has two which are more prominent. The four elements are (Sándor, 1981:194–5):

1. Visual memory: memory by sight including memory of the position of a passage in the sheet music or, in some cases, “photographic” memory by sight alone.
2. Acoustic memory: retention of music by ear. It aids in the recognition of harmonies and musical structures.
3. Motoric memory: “It is the memorization of all the motions executed while making music” (Sándor, 1981:195). This is an important element of memorisation as it guides a performance. It is typically learned automatically through repetition, but it is not reliable on its own.
4. Intellectual memory: memory for harmonies and formal structure.

While the first-hand accounts by professional pianists and pedagogues are valuable, there are certain difficulties in gathering data from such sources. Pianists, especially those from the older generation, are inclined to “[draw] a veil over the details of how their magic is produced” (Chaffin et al., 2002:30). There is also a great degree of variability between the learning processes of individuals, especially at the professional level. There may be aspects of the learning process which they do not mention, aspects they feel are self-evident, are unaware of, or too shy to mention. The focus of the following subchapters will be on scientific literature on the learning process.

3.3 Case studies of the learning process in musicians

Among the most valuable sources on the learning process are case studies documenting the learning process of individual musicians. These include the work of Miklaszewski (1989), Nielsen (1999), Chaffin et al. (2002) and Chaffin, Lisboa, Logan and Begosh (2009). In these studies, advanced or expert musicians were recorded during the process of learning a new piece of music. In each study, the researchers worked with their subjects to analyse the process and provide a model for repertoire learning based on their findings. They offer valuable insights into the ways their subjects prepared for performances, using not only the accounts by the performers but also the researcher’s perspective.

The most detailed study of its kind is the work of Chaffin et al. (2002), in which the pianist Gabriela Imreh records and documents her entire learning process while practising the third movement from Johann Sebastian Bach's *Italian Concerto*. The authors then analyse and discuss the data in detail. I believe the success in their research lies in the fact that Chaffin and Crawford (who are both experienced psychology researchers) co-authored the research with Imreh (a professional pianist with no background in research). Imreh not only acted as a subject but also participated in the analysis of the data. The research was therefore informed not only by the 'outsider' perspectives of Chaffin and Crawford, but also by the 'insider' perspectives of Imreh.

Chaffin et al. (2002) divide Imreh's learning process into four stages: 1) examination of the score, 2) segmented practice, 3) putting segments together and 4) maintenance. Throughout the learning process, Imreh focused on specific aspects of playing, which changed as the learning process progressed. These are referred to as "dimensions" and ten have been identified (Chaffin et al., 2002:166). These ten dimensions are divided into three categories: basic, interpretive and performance dimensions.

The basic dimensions involve the physical aspects of playing: fingering, technical difficulties and familiar patterns. Interpretive dimensions involve the shaping of the musical character of the piece: phrasing, dynamics, tempo and pedalling. The execution of these dimensions becomes largely automatic with practice. The performance dimensions are made up of the technical and interpretive dimensions that require special cognitive attention during performance. The performance dimensions are those which guide a performance and consist of basic, interpretive and expressive dimensions.

In the study by Miklaszewski (1989:107), a volunteer piano student documents his practice sessions in the initial stages of learning Debussy's *Feux d'Artifice*. Several observations are made from the recordings of his practice. First, the subject's division of the musical material into segments for practice is similar to the musical structure of the piece. Where musical textures were more complex, the music is divided into smaller segments. Second, as the learning process progressed, fragments selected for practice become longer, except for the more difficult material. Third, the subject alternates between slow and fast tempos. He often plays a

particular segment and then stops to evaluate his performance, then takes action to correct the problem. This suggests a trial-and-error method of working. Finally, the subject indicates his practice goals. His overall goals remain stable. They are to create an internal representation of the music and to be able to play through the piece without interruption. Short-term goals are flexible and related to the practice of particular fragments.

Nielsen (1999) studied the learning processes of two organ students as they prepared a complex piece for performance. In this study, Nielsen aimed to pay attention to the students' own understanding of how they learnt a piece and viewed practice as "cognitive problem solving" (Nielsen, 1999:275). He commented on the holistic nature of the process:

This study shows able students' use of learning strategies to select relevant problem areas, to join parts of the piece as a whole and to relate auditive 'pictures' beyond the score to the performing of the piece. In addition, they used strategies to sort the learning material. An important contribution to this study is that the theory of learning strategies developed in reading, mathematics and similar learning areas where the cognitive aspects predominate, can be used in a learning area where motor performance is crucial. (Nielsen 1999:289)

Chaffin, Lisboa, Logan and Begosh (2009) conducted a study on the learning process of a cellist, with the aim of identifying the principles of expert memorisation. In an approach similar to Imreh's learning process, the cellist dedicates much of her practice to creating a hierarchical retrieval scheme made up of performance cues. As with Imreh, the types of performance cues that receive attention change as the learning process develops. A striking difference between the cellist's learning process and that of Imreh is that the cellist focuses on technical difficulties towards the end of the learning process, whereas Imreh deals with such issues early in the learning process. The authors believe that such differences may be due to differences in learning style, and that the overall learning processes of expert performers remain largely the same.

Although there are individual differences in the way subjects learnt music in the studies mentioned above, there are several aspects that recur in the results. All the studies show that the subjects divide their music into sections and structure their practice according to these sections. They also make use of specific strategies to address problem areas. Further, the content of practice changes over the course of the learning process. These findings show the characteristics of Ericsson's principles

of deliberate practice employed in musical practice (to be discussed in the next subchapter), namely that practice must be structured, must be determined by goals, and must adapt.

3.4 Practice

In this section, scientific literature on the subject of practice will be reviewed. Literature pertaining to the characteristics of effective practice will be discussed with special reference to the theory of deliberate practice by Anders Ericsson (2008), followed by some of the strategies used in musical practice.

3.4.1 Deliberate practice

Hallam (in Jorgensen & Lehmann, 1997:181) defines practice as “that which achieves the desired end-product, in as short a time as possible, without interfering negatively with longer-term goals”. Jorgensen (2004) views practice as “self-teaching”, an act of learning whereby the motor systems are relevant.” According to these definitions, practice may be viewed as the part of the learning process which involves, though is not limited to, some form of physical activity.

Anders Ericsson has published several works on the nature of expert performance and his research on the subject spans three decades. He has investigated the acquisition of skills in various fields, including sports, chess and musical performance, to uncover what distinguishes experts from non-experts. His research has led to the development of his theory of deliberate practice (Ericsson & Poole, 2016).

There is a common belief that the speed at which one can develop a skill is determined by innate “talents”, which give some individuals a predisposition for developing certain skills (Howe, Davidson & Sloboda, 1998). However, research has shown that excellence is determined by a combination of factors, including habits, opportunities, individual preferences, training and practice (Howe et al., 1998). Many researchers agree that the single most important factor for reaching the highest levels of performance is that of practice (Ericsson & Poole, 2016; Lehmann & Ericsson, 1997; Harnum, 2014). Research that concludes anything to the contrary is rare, such as study by Rostron and Bottril (2000) which concludes that differences in the proficiency of pianists studied is the result of differences in mental capabilities

and not quantities of practice, although they acknowledge that their study is limited in its findings.

While the quantity of practice is an important factor, quality is equally, if not more important. In a study of 22 pianists with varying levels of skill, Williamon and Valentine (2000) found that the content of practice sessions is a greater determinant of success than the quantity of practice. Even musicians who are already experts can further their skills without limit (Lehmann & Ericsson, 1997). In the study by Rostron and Bottril (2000), the differences in proficiency found in their subjects could be attributed to the quality of their practice (which was not considered) rather than to their innate capabilities.

In an overview of the research on expert performance, Ericsson (2008) points out that, prior to the 1980s, it was believed that the level of an individual's expertise was based largely on their accumulated knowledge, their experience, and perceptions of peers. Researchers in the 1980s started to find numerous empirical examples in which experience, the extent of their education and peer recommendation were unrelated to the success and quality of an individual's work. Ericsson proposed that research into expertise should be redirected to focusing on how expert performance can be reproduced. He found that experience in itself does not lead to improvements in a skill once the individual has reached an acceptable skill level. Rather, it is when individuals consistently push themselves slightly beyond the current level of their abilities that a skill is continuously improved. Further, evaluating one's own proficiency for a certain skill and setting goals accordingly are essential components of effective (deliberate) practice.

Deliberate practice has the following four characteristics: 1) It has well-defined, specific goals; 2) It is focused; 3) It involves feedback and; 4) It requires getting out of one's "comfort zone" (Ericsson & Poole, 2016). Ericsson, Krampe and Tesch-Römer (1993) distinguish practice from other activities like work and play and believe that practice requires effort and is therefore not inherently enjoyable. Harnum (2014) differs and defines practice as any activity that increases one's musical ability whether it be for enjoyment or not. However, he agrees that not all activities are as effective as deliberate practice. He also believes that practice can and should be enjoyable.

The first characteristic is encountered before a practice session begins. Harnum (2014:50) emphasises the importance of setting specific goals. These include immediate goals (one for each practice session), short-term, long-term and ultimate goals. Goals should be determined according to one's strengths and weaknesses and must be adapted according to feedback (Miklaszewski, 1989). Having specific goals ensures that practising is always purposeful.

The second characteristic concerns practice itself. Deliberate practice must be focused, structured and motivated by the aim of improving performance (Ericsson et al., 1993:368). Specific activities should be devised in order to overcome weaknesses or to achieve the goal set for each session.

The third characteristic is evident immediately after practice. It involves evaluating the preceding session relative to one's goals. This will determine the goals for the next session of practice and ensure that the nature of the practice is always changing.

The fourth characteristic of deliberate practice is that it should constantly be adapted. Constant variation in practice is more beneficial than mere repetition (Gebrian, 2017). Practice should always take place just outside of the "comfort zone" in such a way that it remains challenging. According to Ericsson (2008:991), expert performers should always seek out new ways of heightening their skills to avoid automaticity and the "arrested development" to which it leads.

Ericsson, Krampe and Tesch-Römer (1993) propose a framework in which expert performance is the result of an individual's acquired characteristics resulting from extended sessions of deliberate practice: "We view elite performance as the product of a decade or more of maximal efforts to improve performance in a domain through an optimal distribution of deliberate practice."

They review the existing research that supports their framework. Within this framework, the role of innate characteristics is downplayed, as it has an effect only on factors such as an individual's activity levels. They found no studies to support the idea that expert performance itself is determined by innate or inherited characteristics, except for certain sports in which performance can benefit directly from certain physical characteristics (e.g., basketball, for which physical height is advantageous):

Only a few exceptions, most notably height, are genetically prescribed. Instead, we argue that the differences between expert performers and normal adults reflect a life-long period of deliberate effort to improve performance in a specific domain (Ericsson, Krampe & Tesch-Römer, 1993:400).

In music, physical characteristics are less indicative of success. Pianists with large hands, for example, may have the advantage with certain repertoire where large chords are played (such as music by Rachmaninoff) but pianists with smaller hands can, in many cases, manage such repertoire if they make the necessary adjustments during practice. They might even have the advantage over pianists with large hands with other repertoire, such as the sonatas by Mozart where a lighter touch is required. Certain physical limitations can be overcome with sustained practice: “Many anatomical characteristics, traditionally believed to be fixed, can adapt and change in response to intense practice sustained for years” (Ericsson et al., 1993:400). While characteristics such as hand size do remain static, a pianist can increase the size of the chords that he can manage through regular stretch exercises.

Although sustained deliberate practice is an essential factor if an expert level of performance is to be attained, Ericsson et al. (1993:400) note that there are other constraints that must be overcome:

It does not follow from the rejection of innate limits on acquired performance that everyone can easily attain high levels of skill. Contemporary elite performers have overcome a number of constraints. They have obtained early access to instructors, maintained high levels of deliberate practice throughout development, received continued parental and environmental support, and avoided disease and injury.

Lehmann and Ericsson (1997:54) emphasise the importance of consistent, long-term practice rather than practice with only short-term results in mind:

Mere repetition and experience lead to more fluent performance, but by themselves do not lead to the mental representations that experts employ (e.g., the difference between rote memorization and more complex internal representations of a piece of music that allow experts to adapt to different performance problems). The close association between extended training and performance with the associated specific physiological, psychomotor, and cognitive adaptations provides strong evidence for the acquired nature of skills. Thus, explaining high level performance solely in terms of innate talent might mislead parents and teachers to settle for short-term successes rather than to support and foster the covert and (admittedly) slow emergence of superior skills and representations.

3.4.2 Practice strategies

During the learning process, musicians make use of a variety of strategies in order to address specific problem areas in the music and there is a great deal of individual variation in these strategies. This section will discuss some of the strategies that have been described in the literature.

Gebrian (2017) describes three practice strategies. The first is blocked (or fixed-order) practice, which involves practising one section extensively before moving on to the next and then practising it again only in the next session. Interleaved practice involves alternating systematically between sections within the same session. Random practice is a strategy whereby sections are practised in no particular order. The interleaved and random practice strategies, while they are more challenging, result in better learning and more efficient retrieval afterwards (Abushanab & Bishara, 2013). This is based on the concept of contextual interference, the learning phenomenon whereby constantly switching between related but different tasks results in enhanced skill acquisition. Gebrian recommends a combination of these three strategies in practice.

Abushanab and Bishara (2013) conducted a study comparing the results of participants who learnt a piece of music either through fixed-order practice, or random-order practice. In an initial recall test, the fixed-order participants performed better, while, in a test two days later, the random-order participants performed better. The study found that fixed-order participants had a greater illusion of competence for future performances, believing that a future performance piece would be recalled better than it actually was. This study shows that introducing contextual interference into one's practice routine through random-order practice, i.e., changing the order in which sections are practised, is more beneficial for long-term memory retention.

Another strategy commonly employed by musicians is that of slow practice, which is described by Fitch (2002:111) as "basically *conscious* practice". It is a useful technique not only for the initial stages of learning, but for the refining and maintenance stages. It involves greatly reducing the tempo of the music, giving one enough time to think ahead and evaluate one's playing. Practising at a variety of tempos, not confined to slow, is beneficial, as it provides the variation necessary to exploit the concept of contextual interference.

Fitch (2002:107) emphasises the importance of slow practice not only in the early stages of the learning process, but throughout:

Slow practising is as much a tool for refining and for maintaining, as for the initial note learning (when accurate, up-to-speed playing is often simply not possible). It is very much an on-going procedure, one that we use right up to the day of the performance.

Fitch categorises slow practice into four areas:

1. Slow and mechanical: This is “basically technical practice, a way of forming and strengthening the conditioned reflexes.” Fitch cautions against using this form of slow practice too often (Fitch, 2002:109).
2. Slow and musical: “It is more a musical process than a technical one, where we attend to quality of sound, every single detail of phrasing, articulations, tonal gradations, chord balances, pedalling, length of notes, dynamic shadings, and so on” (Fitch, 2002:109).
3. Slow yet fast: “In this particular type of practising, it is the tempo that is slow (the slower the better) and the motions that are fast (the faster the better, provided these are done without jerkiness). This process is especially useful in passages where the hands move quickly from one position to another, where we need to build in speed and precision in measuring these distances” (Fitch, 2002:110).
4. Little bits fast: Here, one practises small segments at speed, taking every aspect of performance into consideration (“the proper dynamic/expressive range, feeling, energy, as well as tempo”). The segment can start small, only a few notes, gradually adding more notes. By changing the stopping places each time, the stops will not become habits. Eventually, these small segments will become whole sections. He also recommends practising at a tempo faster than will be required in the performance so that the final tempo will be more effortless and secure (Fitch, 2002:110–1).

3.5 Memorisation

Performing from memory is a relatively recent development in the Western classical tradition. In contrast with modern conventions, Beethoven and Chopin disapproved of their compositions being performed from memory by their students (Engelbrecht, 2014:50–1). It was only in the late 19th century that memorised performance became commonplace, with the precedent set by Franz Liszt and Clara Schumann. Pianists

experience the greatest scrutiny among instrumentalists if they perform with the aid of sheet music (Engelbrecht, 2014:50).

This section will focus on literature on memorisation. The organisation of memories will be discussed, followed by the different memory systems, Ericsson's theory of expert memory, and, finally, strategies followed in memorisation.

3.5.1 Retrieval cues and organisation of memories

Chaffin, Logan and Begosh (2009:352) define the term "memory" in terms of two distinct forms of memory, which will be defined in this section: *content-addressable* memories and *associative chains*. The distinction between these two forms has to do with the way in which individual memories are organised in the brain and the retrieval cues used for recalling them. It is therefore necessary first to understand the concept of retrieval cues.

Retrieval cues are specific thoughts that lead to memories being recalled (Chaffin et al., 2002:71). Cues can be thoughts about the musical and harmonic structure, expressive, technical and musical aspects of the music, or they can take the form of physical movements which lead to the automatic recall of another movement. Retrieval cues can be seen as an "indexing system" for memories. The type of cue associated with each memory determines whether it is content-addressable or part of an associative chain.

Associative chains are memories which can only be recalled sequentially. Here, each segment of a memory acts as a retrieval cue to the following segment and each segment is dependent on the previous one. The retrieval cues involved with chain memories typically relate to movement. These cues are learned spontaneously and are based on motoric and auditory systems of memory (Chaffin, Logan & Begosh, 2009). This type of memory organisation is often formed naturally, without deliberate effort, as a by-product of practice, and it is therefore the most common. Memories organised in this way are useful, as they can be recalled with a degree of automaticity. However, this type of memory organisation is unreliable, because failure to recall one segment would break the chain, resulting in total failure of memory (Engelbrecht, 2014).

When there is a deliberate effort to memorise, content-addressable memories are formed. A memory is content-addressable when it does not rely on a specific

sequence to be recalled (Chaffin, Logan & Begosh, 2009). In order to organise memories in this way, the creation of retrieval cues is required where each cue is *not* related to its preceding segment. Thus, any part of the music can be recalled whether in or out of sequence. The creation of additional and redundant retrieval cues helps to both strengthen the retrieval of memories and further reduce the risk of memory failure.

The concept of content-addressable memory is an important aspect of the way in which expert musicians memorise reliably and is described in detail by Chaffin et al. (2002). The key to reliable memory recall is the integration of content-addressable memories and associative chains.

3.5.2 Memory systems

Musical performance involves a variety of cognitive and bodily systems. The most relevant systems are auditory, motor, visual, emotional, structural and linguistic. Each system creates its own imprints in memory and provides the possibility for retrieval cues (Chaffin, Logan & Begosh, 2009).

Auditory memory is the ability to hear a melody in one's head. Hearing the music as it is played guides a performance, providing retrieval cues and allowing the performer to determine whether the performance is on track and facilitates more efficient encoding (Chaffin Logan & Begosh, 2009:355; Finney & Palmer, 2003; Lim & Lippman, 1991).

Motor memory involves the automatic execution of movements and sensory feedback from the muscles, joints and touch receptors. It is learned unconsciously through the repetition of movements, not through deliberate cognitive effort. Motor memories are formed as associative chains, because they must be physically carried out to be recalled unless other forms of retrieval cues are also involved (Chaffin Logan & Begosh, 2009:355).

Visual memory involves knowledge of the score (used particularly in the initial stages of the learning process) and spatial imagery of the hands on the keyboard, used in the later stages of the learning process (Chaffin, Logan & Begosh, 2009:356). Some musicians report having 'photographic' memory, a particularly robust visual memory. This should not be understood to be mental 'pictures' of the sheet music. Rather, they are subjective images created in the mind according to how the material was

understood. For those with poorer visual memory, spatial memory of the sheet music (such as knowing where a passage exists in their sheet music) forms part of visual memory.

Emotional memory makes use of expressive elements in the music to create retrieval cues. Chaffin, Logan and Begosh (2009) have observed that musicians find it more difficult to retrieve music from memory when asked to play without expression.

Structural (or analytical) memory is the organisation of music into sections and subsections usually determined by the compositional characteristics of the piece.

Linguistic memory includes mental instructions which a performer uses to point to other retrieval cues (Chaffin et al., 2002).

The visual, emotional, structural and linguistic systems are all used to create content-addressable memories, while the auditory and motor systems form associative chains (Chaffin, Logan & Begosh, 2009). The use of a combination of systems is the key to more reliable recall from memory (Engelbrecht, 2014).

3.5.3 Theory of expert memory

Through his research into the psychology of expertise, Ericsson has formulated a model for expert memorisation consisting of three principles (Ericsson & Kintsch, 1995), and further research has shown that the same principles apply to musical performance (Chaffin et al., 2002:197):

1. Encoding of new material should be meaningful, making use of existing knowledge to organise the material into larger chunks. In music, these include familiar features such as scales, chords and arpeggios.
2. A retrieval scheme should be established with which to organise the chunks. The formal structure of a piece of music provides a meaningful scheme for performers.
3. Prolonged practice is required to increase the speed of retrieval.

Ross (1964) and Williamon and Egnér (2005) found that awareness of compositional structure is an important feature of retrieval schemes in pianists. Further, the complexity of a composition affects the time required to memorise a piece (Mishra, 2008). For Imreh (in Chaffin et al., 2002:203), the complexity of the *Italian Concerto* influenced the learning process. She pointed out that the piece contained very few predictable patterns, which complicated the learning process. As such, she had to

create predictable patterns by other possible means, here through her choice of fingering. This relates to Ericsson's first principle, mentioned earlier in this chapter, that of organising the music into chunks.

Chaffin et al. (2002) emphasise the importance of a well-organised retrieval scheme. Their analysis of Imreh's process when learning the third movement of the *Italian Concerto* found that she makes use of a hierarchical scheme for memorisation. Each level of the hierarchy groups together the cues in the level below it. The highest levels consist of structural cues (movements, sections, subsections and bars). The next level contains expressive cues, then interpretive cues, followed by basic cues. The lowest level represents individual notes. This scheme shows that Imreh relies on a variety of different memory systems for memory retrieval. In doing so, she creates many redundant retrieval cues, which increase her ability to recall a memory in the event of one cue failing. This is consistent with the second principle of expert memory.

Imreh's practice later in the process was concerned with strengthening the established performance cues to increase the speed of retrieval, which is consistent with Ericsson's third principle of expert memory. Imreh, however, takes this strengthening a step further into what the authors refer to as "rechunking" (Chaffin et al., 2002:234), the reorganisation of performance cues. She began to re-evaluate her retrieval cues, replacing those she had created in the earlier stages of learning (cues concerned mainly with technical and interpretive aspects of playing) into higher level cues (cues linked with expressive aspects).

Imreh had difficulties later in the learning process of the *Italian Concerto* due to its complexity. Her practice during this stage was, as before, organised according to the formal structure of the piece. However, the structure is such that there is no musical material that is repeated 'verbatim'. At each reoccurrence of musical material, there are subtle differences. She refers to certain points in the score as "switches", different sections which are similar but with slight differences which lead to different areas in the score. She had to pay particular attention to those points and used these switches as a specific kind of retrieval cue (Chaffin et al., 2002:208).

Another study by Chaffin (2007) documented Imreh when she learnt Debussy's *Clair de Lune*. The main goal of the study was to see whether Imreh's practice reflected

the third principle of expert memory, that is, extended practice of a retrieval system. The results showed that retrieval practice was the most “striking” feature of her learning process (Chaffin, 2007:391):

Even in the limited two-week time frame within which the pianist learned *Clair de Lune*, there was abundant evidence of retrieval practice: in the starts and stops during practice, in the hesitations during practice performances, in the pianist’s comments, and in the rate/tempo ratio. The pianist saw memorization as her main challenge and actively worked at it from the outset.

Although her learning process for *Clair de Lune* lasted only two weeks, as opposed to ten months for the *presto* of the *Italian Concerto*, the two learning processes were very similar, following the same four stages of practice as described by Chaffin et al., (2002), as well as Ericsson’s principles of expert memory.

3.5.4 Memorisation strategies

In order to create secure memories for music, effective strategies must be followed during practice to establish and strengthen retrieval cues. In this section, some of the strategies for memorising music described in the literature will be discussed. As memorisation and practice are interwoven processes, there will be some overlap with what has been described in the chapter on practice.

Two commonly-used memorisation strategies are the holistic and the segmented strategies. When the pianist is following a holistic strategy, a piece is practised repeatedly from beginning to end. The segmented strategy involves focusing on smaller sections and combining them into a whole. Researchers have found varying degrees of efficiency between these two strategies: O’Brien (1943) found that the segmented method led to more efficient memorisation, while Mishra (2011) found the holistic strategy to be most efficient instead. Musicians often use these two strategies alternately (Miklaszewski, 1989; Chaffin et al., 2002). When the structure of a piece is more complex, the size of these segments tends to decrease (Chaffin et al., 2002; Miklaszewski, 1989; Nielsen 1999).

The serial and additive strategies have also been identified and are related to the holistic and segmented strategies respectively (Mishra, 2011:61). In the serial strategy, practice begins at the start of the piece and continues until an error occurs and the piece is restarted. With the additive strategy, practice begins with one segment which is gradually increased in length until the segment encompasses the entire piece.

Yet another strategy is that of random-order practice, in which the pianist alternates randomly between two or more segments. Abushabab and Bishara (2013) found that randomising segments results in better memory retention, as opposed to practising in a fixed order.

Engelbrecht (2015) recommends the use of strategies that exclude one or more memory systems to 'test' the others. One such method is that of mental practice, the cognitive practice of a physical skill without executing the physical movements (Lim & Lippman, 1991). The goal of mental practice is to exclude the motor system from practice so that one may focus on the strength of one's cognitive memories (Gebrian, 2017). This is recommended because the motor system is largely automatic and is not reliable on its own for retrieval. Excluding the motor system during practice helps to reduce one's dependence on it.

Although the motor system is excluded in mental practice, research has demonstrated that it can lead to the same changes in the brain as physical practice, specifically in the motor cortex (Schwenkreis, Tom, Ragert, Pleger, Tegenthoff & Dinse, 2007). Lim and Lippman (1991:30) found that mental practice is less effective than physical practice but that mental practice could be improved with the addition of auditory feedback, listening to a recording of the practice session: "In an absolute sense, it appears that mental practice was not very effective. The present data showed a consistent advantage of mental practice with listening over mental practice alone". Reducing the tempo of a fast piece to a very slow tempo is another way of excluding the motor system as the movements involved differ at slower tempos. Yet another method of excluding the motor system is to attempt to write out the score by hand.

Lisboa, Chaffin & Demos (2015:12) conducted a study investigating the efficacy of recording one's thoughts while memorising music, in an 18-year-old pianist preparing for a Grade 7 ABRSM piano examination. In this study, the pianist's teacher followed an indirect approach to teaching performance cues. By recording her thoughts during practice, the subject discovered performance cues independently, and found those that worked for her: "As it turned out, Maria's [performance cues] did not differ in kind from those of her teacher, although they did reflect the different level of her musical understanding." Her performance cues were used primarily for issues relating to

expression, interpretation and basic technique. Their use as retrieval cues for memory was largely incidental (Lisboa, Chaffin & Demos, 2015:12):

By reminding the musician of such goals in the midst of performance, [performance cues] serve as retrieval cues. This result is, however, incidental to their main purpose. Sometimes, of course, memory itself may be the goal. If memory for a passage has been unreliable, a deliberately placed [performance cue] may solve the problem. Such deliberate use of [performance cues] to solve memory problems appears, however, to be the exception rather than the rule.

3.6 Conclusion

In this chapter the relevant literature was discussed. The initial discussion focused on the accounts by professional pianists and pedagogues. Commonly mentioned themes were the importance of focused practice and the use of slow practice. Case studies of the learning process in musicians were discussed, which showed that musicians make use of the formal structure of a piece to divide their practice and that the content of the practice was adapted over the course of the learning process. Literature on practice was discussed with reference to Ericsson's theory of deliberate practice and several strategies that can be used during practice. Finally, literature on memorisation was discussed, including the role and formation of retrieval cues with reference to Ericsson's theory of expert memory and the strategies followed to strengthen the retrieval cues.

Chapter 4

Results

4.1 Introduction

This chapter provides a description of my process when learning *L'Isle joyeuse*. Learning took place over a period of 14 weeks from 1 August to 8 November 2018, during which 34 practice sessions at the piano were documented totalling 18 hours and 47 minutes of practice. All of the sessions except for 1 and 15 were audio recorded. This learning process can be divided into four stages:

1. Initial learning (sessions 1–7)
2. First revision (sessions 8–13)
3. Second revision (memorisation) (sessions 14–24)
4. Polishing (sessions 25–34)

4.2 Initial learning

The first stage of my learning process amounted to initial learning and took place during the first seven sessions, with a total duration of 3 hours and 20 minutes. During this stage of learning, the aims were to work out fingering and to become acquainted with the piece. I would often play small segments repeatedly, trying out different possibilities for fingerings, until I had settled on the most suitable fingering, which were immediately marked in the score. In each session, I would put the smaller segments together into a larger segment, playing it repeatedly to become familiar with the feeling of the passage under the fingers, first hands separately and then together. The initial learning was primarily focused on the basic technical aspects of playing—fingering, accuracy and rhythmic precision—while musical and interpretive aspects were rarely given consideration.

This stage of the process is characterised by section-by-section practice. For each session, a specific section of the music to focus on was allocated and I would move on to the next section only once I was satisfied with the fingering and could play it hands together at a slow tempo. Overall, the tempo was not consistent and often yielded when necessary to help in gaining a feeling for the technical patterns.

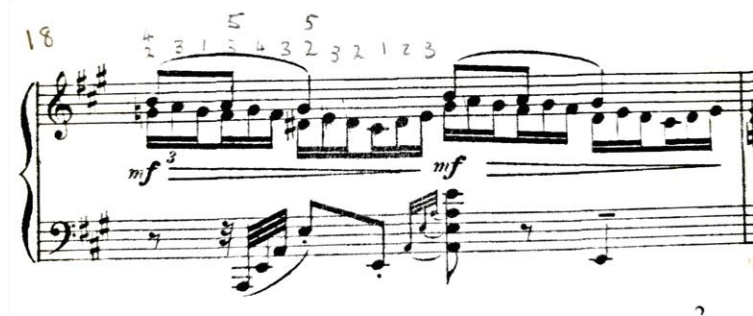
The first session (20 minutes) was not a practice session as such, but was rather a session for analysis, when the aim was to understand the structure of the piece. This session was not recorded. I listened to a recording while following the score to evaluate the technical aspects involved in playing the piece. My initial impressions were that memorisation of the piece might be difficult because of its modernist tonal language based on the whole-tone scales. I also felt that the various polyrhythms (e.g., mm. 6–94) would be difficult to learn, although that turned out not to be the case later in the learning process.

I came to the following structural analysis in this session:

- Introduction: mm. 1–8
- A theme: mm. 9–66
- B theme: mm. 67–159
- A theme: mm. 160–219
- B theme: mm. 220–243
- Coda: mm. 244–255.

In the second session (40 minutes), I worked out the fingering for mm. 1–27. Smaller segments were practised consisting of only a few bars at a time, hands separately, and were eventually combined into a larger section with a hands-together play-through at the end. During the session, I commented that the piece is “not based on traditional major and minor scales. It seems to be quite chromatic and more whole-tone based. I think that’s what’s making it so difficult to find suitable fingerings.” Specific areas where fingering was problematic include the transition from m. 11 to m. 12 (see ex. 10) and the right hand in m. 18. For the former, it was sufficient simply to lift the hand into the next bar. In m. 18, the 16^{ths} interrupt the typical fingering for double-note thirds and the following solution was found:

Example 1: C. Debussy, *L'Isle joyeuse*, L. 106, m. 18



Session 3 (30 minutes) followed a hiatus of two weeks, which was due to other commitments taking up my practice time. The session began with a recap of the section worked on previously (mm. 1–27) to check whether the fingerings were suitable and to work on the hand co-ordination. I worked through mm. 28–66 in the same way as in the previous section, concluding the session with two hands-together play-throughs of that section. I commented in the journal entry that I was “quickly finding [formal] structure on the micro-level, i.e., repeating motives and phrases, and sequential patterns. This piece is very logically and clearly structured.” Bars 36–51 required an extended time span, owing to the hands overlapping, as did mm. 62–63, where the material is divided between the hands.

Session 4 (17 minutes) was dedicated to mm. 67–98. After learning the section hands separately, I played it through twice, paying special attention to co-ordination between the hands owing to the unusual polyrhythm (5 semiquavers in the left hand against 3 quavers in the right hand) (ex. 2). The polyrhythm is complicated by dotted rhythms and tied-over notes in the right hand. Although it seemed complicated at first, I quickly became accustomed to the rhythm. I think of the two rhythmic patterns here as two separate ideas, the right hand as a singer and the left hand as the accompanist. The former requires a clearer, more defined touch, and the latter a less defined touch so that the melody will be on the ear.

Example 2: Bars 66–74

Session 5 (46 minutes) began with a recapitulation of the previous sections, further focusing on the next section from mm. 99–159. This section proved to be technically difficult, owing to areas where the hands overlap (e.g., mm. 105–8, ex. 3) and the rapid patterns in the right hand. Here, the left hand should be on the ear with a light touch in the right hand which, in some areas (indicated in ex. 3), necessitates that the hands overlap with the right hand above. This overlapping inhibits the movement of the left hand making it difficult to apply enough weight to have the melody on the ear. Bars 145–6 were problematic for the left hand because of the repeated C, which interrupts the rotation movement employed there (ex. 4). With slow practice at different tempos attending to the precise movements involved, I found that it helps to make the movements as small as possible. This section was practised in several segments, namely, mm. 99–114, 115–126, 127–144 and 145–159, at a variety of tempos to become accustomed to the technical aspects.

Example 3: Bars 103–106

Example 4: Bars 143–147

Session 6 (18 minutes) was a recapitulation of the section I had previously worked on. I commented in the journal entry that I was not yet sufficiently confident about technical aspects of that section. It was played through it several times, hands together. I pointed out that mm. 148–153 were “difficult to learn because of the different layers that make up the texture. I had to become accustomed to which layers were tied over and which were struck again [at the start of] each bar. The same thing happens on pp. 10 and 11–12.”

Example 5 shows this layering of texture in mm. 152–153, while ex. 6 shows the same texture treated slightly differently in mm. 174–175. In ex. 5, the right hand’s lower note (B-flat) is tied over the bar line, while the left hand’s upper note (F-sharp) is struck again on the first beat. In ex. 6, it is reversed—the right hand must strike the lower note (F-sharp) again in the next bar, while the left hand’s upper note (G-natural) is tied over the bar line. There are many such slight variations in these two sections on pp. 10 and 11, which were the source of considerable confusion during the memorisation stage. The solution was to create specific retrieval cues to differentiate between the two sections. This specific area and its retrieval cues are discussed in more detail in chapter 5.5.2.

Example 5: Bars 152–153

Example 6: Bars 174–175



Session 7 (27 minutes) was the last of the initial learning stage. I worked through the new sections at mm. 160–185, 186–219 and 219–255 in the same way as in the previous sections. Bars 166–181 required special attention owing to the overlapping of hands and mm. 220–243 required particularly slow practice because of the thick chordal texture (ex. 7).

Example 7: Bars 221–225

4.3 First revision

The next stage of the learning process was the first revision. This stage took place between sessions 8 and 13 for a total duration of 2 hours and 5 minutes. The aims during this stage were attention to rhythmic accuracy and making sure that the notes were technically more secure. Practice during this stage was characterised by slow practice alternating with up-to-speed practice, and practising of small segments (particularly where the material is technically challenging) with many repetitions. I worked through the piece again section-by-section as in the previous stage. Individual sessions were not long, at the most 30 minutes. I did not leave many comments during this stage as the practice was mostly mechanical and I did not feel the need to explain what I was doing.

In session 8 (25 minutes), mm. 1–27 were revisited with a focus on rhythmic accuracy. I noted that co-ordination between hands is challenging from m. 9, owing

to the quick rolled chords in the left hand which required slow practice (ex. 1, p. 35). The left-hand chords in m. 14, which overlap with the right hand, also required special attention (ex. 8). The difficulty here, apart from the stretch, is that each chromatically descending pairs of 8th notes is indicated as a two-note phrase which can be played with the thumb alone. The technical solution is to slide the thumb down, although the pedal can also assist with the legato. There were five play-throughs of this section at varying tempos, with stops to work on small segments where the rhythm could be more precise.

Example 8: Bar 14

Session 9 (21 minutes) was dedicated to mm. 28–66. The first segment went up to m. 51, which was practised hands separately at first. It was followed by mm. 52–66 hands together, then a played-through of the whole section from m. 28 with stops where necessary to practise problem areas slowly. One such area was mm. 61–3 where arpeggio-like material is divided between the hands. That segment was played at a slow tempo to become familiar with the changes in harmony on each beat. There was slow practice from m. 52 to get the following section more precisely in time without interrupting the rhythmic flow. Here it was necessary to become accustomed to the rapid changes in register and overlapping of hands. I ended off the session with a play-through from the beginning to m. 66.

Session 10 (21 minutes) was dedicated to mm. 67–114. First, mm. 67–98 were played through four times, making sure of the correct notes for the chords of the B-theme and the correct placement of the chords the context of the polyrhythm. Practice continued with mm. 99–114 at a slow tempo with four play-throughs, stopping to practise the right hand alone where the technique could be improved.

Session 11 (22 minutes) began with mm. 115–144. This section was played through five times, focusing on the co-ordination between hands, with slow practice where the placement of notes was not sufficiently precise. This was followed by mm. 145–

159, which was first practised hands separately, then hands together for five play-throughs to develop automaticity. The session concluded with three play-throughs of that entire section to further develop automaticity.

Session 12 (23 minutes) covered a large portion of the music, starting with mm. 160–185. The segment at mm. 170–181 required special attention, once again because of the layers of texture (ex. 5, p. 38), moving on to mm. 186–199. The segment in mm. 196–199 required hands-separate practice for the wide chords in the left hand and the unconventional harmonies (ex. 9). The difficulty here is that my hands cannot stretch wide enough for the 10th. As such, it is required that I break the chords, first playing the lowest note and then the remaining two of each chord in quick succession. This segment would require repeated attention later in the learning process. Bars 216–219 also received hands-separate practice. The session ended with a play-through of mm. 160–219.

Example 9: Bars 192–202 (mm. 196–199 in brackets)

The image displays a musical score for piano, specifically Example 9, which covers bars 192 to 202. The score is written in G major and 4/4 time. It is divided into two systems. The first system shows bars 192 to 202, with bars 196 to 199 bracketed. The second system shows bars 198 to 202. The music features complex textures with multiple layers of notes and chords, including wide intervals in the left hand. The score includes dynamic markings such as *p* (piano) and *sf* (sforzando), and various articulations like slurs and accents.

Session 13 (13 minutes) was the last session at this stage of the learning process. It began with hands-separate practice of the chordal passage in mm. 220–243, followed by mm. 244–255 concluding with three play-throughs from m. 220 to the end. This session served to as a recap of the last two pages and to further develop automaticity.

4.4 Second revision (memorisation)

Once I felt technically confident about the piece, the next goal was to commit it to memory. The piece was by no means mastered technically at this stage—technical work would continue for the remainder of the learning process. The second revision, or memorisation stage, took place between sessions 14 and 24. Sessions were longer during this stage, ranging from 22 minutes to 1 hour 7 minutes with a total duration of 6 hours 37 minutes. Practice during this stage was characterised by segmented practice with many repeats to reduce dependence on the score gradually. I focused on creating a cognitive understanding of the content of the piece, seeking out patterns, recurring material, harmonies and structural elements of the music, with which to build a mental image of the piece to aid recall.

In session 14 (30 minutes) I returned to the beginning of the piece, working through it section by section. Beginning with mm. 1–20, it was further divided into small segments of between 2 and 6 bars. I would start practising each segment by following in the music, while making a deliberate effort to absorb the musical content, including rhythmic patterns, melodies and harmonies, gradually taking my eyes away from the score and allowing my memory to lead playing. I would often, if required, retroactively check certain areas in the score while playing: “Instead of looking ahead as you would when sight-reading, I sort of looked behind, to check memory”. The session ended with a successful memorised play-through of mm. 1–20.

Several elements were identified in this section to aid memorisation. The left hand has the same figure in every bar of mm. 7–18, except for mm. 12–14 (ex. 8, p. 39). It was also noted that, in m. 14, the same harmony is transposed a whole tone higher in each beat, changing the pattern only on the fourth beat in the right hand to lead into the next bar (ex. 8, p. 39). In mm. 17–18, it was further noted that the right hand also proceeds partly in whole tones, but the quick triplets make it more difficult to memorise. Here, it helps to identify the descending double-note thirds in the right hand (ex. 1, p. 35), and to see the rest of the notes as embellishments. Executing these two bars with an even, defined touch necessitates finger strength and independence which was improved through repetition and practice on a variety of rhythmic patterns.

Session 15 was not recorded due to a technical issue with the recorder (± 30 minutes). It consisted of two slow play-throughs of the piece, with the score, aiming to get the piece more comfortable technically.

Session 16 (22 minutes) began with a recap of the previous section. I commented on getting “stuck in a loop” at m. 16 where, instead of proceeding to the next bar, I went back to m. 10. This is an example of what Imreh refers to as a “switch” (Chaffin, Imreh & Crawford, 2002:95), a point where repeated material diverges from its previous appearance in the score. Similarly, I tended to play octave Es on the first beats of mm. 9–10 in the left hand, where there should be a rest. This is owing to the later appearance of that motive (mm. 15–16) where there the octave Es are present in the score. Such areas where repeated material varies slightly from its previous appearances rendered the memorisation somewhat difficult. In order to solve this problem, I identified and memorised the precise location of diverging points. Examples 10 and 11 show the location of the above-mentioned diverging points (switches) during the A-theme.

Example 10: Bars 8–12 (diverging point indicated)

The image displays two systems of musical notation for piano. The first system, labeled '8', shows the beginning of the A-theme. The right hand (RH) starts with a half note G4, followed by quarter notes A4, B4, and C5. The left hand (LH) has a half rest in the first measure, then plays a rhythmic pattern of eighth notes: G3, A3, B3, C4, D4, E4, F4, G4. A large black arrow points to the first measure of the second system, labeled '10'. In this system, the RH continues with a melodic line of eighth notes: G4, A4, B4, C5, B4, A4, G4, F4, E4, D4, C4, B3, A3, G3. The LH continues with the same rhythmic pattern as in the first system. The instruction 'p léger et rythmé' is written above the RH staff in the first system. The piece is in G major (one sharp) and 3/4 time.

Example 11: Bars 14–17 (diverging point indicated)

I stumbled during the passage in the opening bars owing to uncertainty of the notes. Here it was noted that the rapid motive is made up of augmented triads descending in semitones, which made it more logical and easier to memorise (ex. 12).

Example 12: Bars 1–2 (augmented triads indicated)

Measures 21–27 proceeded in the same way, with identification of familiar patterns in the music to aid memorisation. I commented that the left hand from m. 21 is “rhythmically confusing” due to the tied notes, the triplet pattern, and the placement of the left hand in the context of the right hand (ex. 13). In m. 25 (ex. 14), it was noted that the right hand in this passage is made up of a C-sharp minor harmony in second inversion (indicated with a square bracket in the example) followed by B a minor chord also in second inversion (indicated with an arrow in the example, while the left hand plays an unconventional ascending arpeggio, which takes place within a 4-against-3 polyrhythm with the right hand. In m. 26, it was noted that memorising the contour of the passage aids in recall (ex. 14).

Example 13: Bars 20–23

20 Debussy — L'isle Joyeuse

piu p *pp*

un peu en dehors

22

Example 14: Bars 24–26

24

25

mf *dim.*

26

pp

Session 17 (26 minutes) proceeded from m. 28 and covered the section up to m. 66. It was further divided into smaller segments. In considering mm. 28–35, it was noted that the right hand is made up of descending broken thirds, departing from the whole-tone harmony of the previous sections. In mm. 36–51, the left hand is based on quartal harmonies, while mm. 40 (moving to G major) and 48 (moving to B-flat major) are also important switches to remember (ex. 15).

Example 15: Bars 36–51 (diverging points indicated)

The following segment, mm. 52–66, was not difficult to memorise. Bars 59–63 required some extended practice owing to the arpeggio in mm. 62–63, which is divided between the hands. Here, it was noted that the harmony is altered by one note with each repetition of the arpeggio (the altered notes are marked in ex. 16). The session ended with several run-throughs of that entire section of mm. 28–66 to settle the fluency of recall until it had been successfully memorised.

Example 16: Bars 60–63

Session 18 (50 minutes) began with a recap of mm. 1–66. Thereafter mm. 67–98 were committed to memory. I noted several features that are important for memorisation here. There is a switch in m. 95, which corresponds with m. 79 in the previous repetition of that material. There is also an inner melody from m. 75. The session ended with a successfully memorised play-through of that section.

In session 19 (44 minutes), the bars allocated for memorisation were 99–120 and 121–144. There is yet another switch here, in m. 115, where the music leads harmonically to G major (instead of G-sharp major as in m. 105). In m. 114, the figure in the right hand differs slightly from the previous appearances (e.g., m. 110) and requires different fingering. At m. 123 it was noted that the following four bars are mostly the same as the previous eight, except that the left hand differs in m. 123 and the last note of m. 126 is an octave higher than in the previous appearance of that figure. Bars 127–136 form a sequential pattern of the previous section but are transposed a semitone higher. At m. 137, the right-hand figure is extended into a segment which forms a hemiola, as the rhythm does not correspond with the meter (ex. 17). The session ended with a successful memorised play-through of mm. 1–144, although I was still slightly uncertain of the section at m. 67. That section was revisited in session 23.

Example 17: Bars 135–138 (hemiola indicated)

The image shows a musical score for Example 17, covering bars 135 to 138. The score is written for piano (p) and is in G major. The right-hand part features a complex melodic line with a hemiola pattern in bars 137 and 138, where the rhythm is 2/4 over the 3/4 meter. The left-hand part provides a steady accompaniment. The lyrics 'cre - - - - - scen' are written below the staff.

Session 20 (43 minutes), began with the segment at mm. 145–159, which was memorised after several repetitions. It was followed by work on mm. 160–185, where I commented on difficulty in memorising owing to slight differences where material is repeated (ex. 5 and 6, p. 38):

In terms of memorisation, what's difficult here [mm. 166–179] is just knowing when the G-natural in the right hand must be played again. Every time it coincides with the first beat, which sounds simple enough, but the melody, it doesn't really sound as though it fits in with the meter, so I must just remember where the left hand fits in with the right hand. And now in m. 179 it doesn't get struck again, the lower note of in the right hand. And I'm probably going to get confused because on the previous page it

does the opposite; there it gets struck on the first beat every time. But now it's the left hand's upper note that is struck again [m. 152–153]. Then I have to hold [the right hand's lower note] through for a tie. It's very confusing.

That section was established more securely in memory in this session.

In session 21 (43 minutes), mm. 160–185 were more securely established in memory after several play-throughs, alternating between looking at the sheet music and playing with closed eyes. Work on mm. 186–219 followed with some difficulty in mm. 196–199 (ex. 9, p. 40) due to the wide chords in the left hand. Practice proceeded with m. 220 to the end. There was some uncertainty regarding recall of mm. 248–251 owing to the different layers of texture which are out of phase with one another rhythmically. The pattern of the outer layers corresponds with the first beat of each bar, whereas the inner layer (repeated C-sharps) forms a hemiola pattern which corresponds with the first beat of every second bar (ex. 18 with C-sharp circled).

Example 18: Bars 246–251

From session 22 (39 minutes) I returned to the start of the piece, beginning to revise it systematically to the end to secure memory recall, also refining technical aspects where necessary. In this session, attention was given to mm. 1–66, 67–98 and finally 99–114, with starts and stops where necessary. Several smaller segments were practised slowly: mm. 10–11, 14, 21–24 and 105–108. I relied predominantly on motor memory, checking in the score only where necessary.

Session 23 (1 hour 7 minutes) was less organised than previous sessions. Specific segments were worked on and then playing often continued aimlessly past the

segment and there were many starts and stops. It began with a recap of mm. 67–114 with several play-throughs. Playing yielded at mm. 105–8 to deal with the technical difficulties in the right hand and the co-ordination. Bars 115–44 required several repetitions and some slow practice for technical purposes. Practice then proceeded to mm. 166–185, with the aim of securing memory recall requiring slow practice. A play-through of mm. 186–255 followed.

After several repetitions of mm. 186–255 to improve automaticity, and more slow practice of mm. 196–9, it was possible to attempt a complete play-through of the piece without looking at the score. There was a stumbling point during this play-through in mm. 99–114 owing to a memory lapse—the problem was caused by right-hand pattern in m. 114 which differs from its appearance in m. 110. The score had to be checked in several places (mm. 21–22, 59, 160–165 and 166–181).

Session 24 (24 minutes) was the last part of the memorisation stage and consisted of several play-throughs of the entire piece. During the first play-through, I followed in the score with many stops and inaccuracies. The second play-through was more successful. There were stumbling points at mm. 14, 22, 64, 105, 126, 129, 196 and 248 due to memory uncertainties, but two further slow play-throughs were more successful. The piece was not up to speed at this stage.

4.5 Polishing

By this stage of the learning process, I was generally confident about playing the piece from memory and the primary focus shifted to having the piece performance-ready. The polishing stage began the rounding-off process and consisted of sessions 25–34 with a total duration of 6 hours 45 minutes. Work on technical aspects continued where necessary, further strengthening memorisation. The focus was on getting the piece rhythmically correct and up to speed, then focus shifted to working on interpretive and musical aspects. Practice continued with the score open, with a deliberate effort to allow memory to take over during the practice sessions.

In session 25 (30 minutes), starting from the beginning working systematically to m. 147, the attention was focused on musical aspects in certain places. Among them was execution of the precise dynamic indications in mm. 12–14 and 36–51 including sudden changes in dynamics which require precise control of weight on the keyboard. Further, achieving the desired balance from m. 19 was challenging. I

wanted the upper texture (16^{ths}) to be as light and even as possible and the whole-note G-naturals slightly more on the ear to sound “bell-like”. This would serve as a desirable accompaniment to the theme in the left hand. Shaping of the longer musical lines in mm. 67–98 was also given attention. Focus was also directed at having the rhythm more precise, practising small segments slowly where necessary. The following sections were frequently played to improve technique and balance: mm. 28–66, 67–98, and 99–114 (slowly and hands separately). It was noted that m. 148 required more work in the following session to solidify recall of the multi-layered texture.

Session 26 (44 minutes) started at m. 148 and continued to the end of the piece. Bars 148–181 were allotted considerable time to make more sense of the material from an analytical perspective. Several more play-throughs of mm. 186–255 followed. A mistake became apparent which had been learnt incorrectly in the previous stages—on the third beat of m. 239 in the right hand, the B-flat in that chord was mistakenly learned as a C. This was promptly corrected and knowing what the correct chord sounds like meant that the error could be identified should it recur. Bars 196–199 once again required slow practice due to the wide chords in the left hand. The session ended with a complete play-through from beginning to end, now completely from memory. The piece was still not up to speed, but memory recall was now secure.

In session 27 (46 minutes), the goal was to improve technically problematic areas and have them rhythmically more precise and technically fluent. Practice began with the segment at mm. 9–11, employing slow practice in various rhythmical patterns, first hands separate and then together. Bars 17–18 were practised in much the same way.

The leaps in the right hand in mm. 15–16 were also problematic due to the *acciaccatura* which necessitates a rapid leap of an octave. By extended the leap at to two octaves for practice purposes, its accuracy was improved. Bars 17–18 also required slow practice on different rhythmic patterns. After a play-through of mm. 11–66, there was some focus on the segment of mm. 28–35 with attention to balance and creating longer musical lines. The leaps in mm. 52–66 necessitated further slow practice.

The session proceeded with three play-throughs of mm. 51–98 and segmented work continued with mm. 99–114. Bars 112 and 105–108 required some slow practice as there were still some technical errors and uncertainties. Practice continued with the section from mm. 115–141. Bars 115–122 were practised slowly for technical purposes, particularly for mm. 125–127. This was followed with slow practice of mm. 178–185 with a focus on evenness. A play-through of the rest of the piece from m. 186 revealed that there were no problems in particular at this stage, with the exception of mm. 196–199 which was again practised slowly and hands separately. The end of this session commented that my playing of the piece was “already getting better, particularly all those technically challenging bits”.

The aim in session 28 (48 minutes) was to polish the piece further in preparation for a lesson the following day. Attention was given to smaller details such as dynamics, phrasing, balance and rhythmic precision. Improving the overall flow of the piece was also given attention, aiming to have segments lead seamlessly into one another. To begin with, there was section-by-section work in large segments: mm. 1–66, 99–140 and 141–end. Where necessary, practice was stopped to work on finer details, including dynamics, balance and phrasing, particularly up to m. 52. I commented that I was not yet satisfied with the second page as well as the section from m. 99 (particularly mm. 196–199) technically. There was still some slow practice of mm. 11–14, 17–18, 196–199 and pp. 7–8. Memorisation of mm. 145–185 also required further consolidation due to the similarities and differences in those sections.

Session 29 (41 minutes) was further preparation for a lesson later that morning. It started with a complete memorised play-through to evaluate which areas required attention. The result was satisfactory except for some note uncertainties on p. 10. The segment at mm. 148–181 was revisited to refresh memory recall with some slow practice. Several complete play-throughs followed with attention to dynamic and articulation indications which had previously been overlooked. These include several *subito piano* indications in the opening bars (ex. 12, p. 43) and in mm. 12–13 (ex. 18, p. 51). Further, there are unusual dynamic indications in mm. 17–18 (ex. 1): In m. 17, the markings indicate that the dynamics should decrease from *mezzo forte* to *piano* and then softer. The following bar's markings differ slightly, beginning with *mezzo forte* getting softer and then returning to a (*subito*) *mezzo forte* and then softer again. The segment at mm. 36–51 also has specific dynamic indications which required

attention. The very specific dynamic markings by the composer pose certain difficulties. There are wide contrasts such as a *pianissimo* in m. 36 which becomes *mezzo forte* in m. 40. This requires that m. 36 is as light as possible but with great control so that the contrast is more pronounced in m. 40. The following bars proceed in a similar fashion yet one must leave enough room to build to the *forte* in m. 52.

Example 19: Bar 12



Further, attention was given to balance in several areas: mm. 21–24 (ex. 13, p. 44), where the right hand requires a light touch so that the left hand is on the ear, mm. 67–98 (ex. 2, p. 36) where the left hand should be lighter, and mm. 148–181 (ex. 6, p. 38), where the inner layer of texture should be on the ear. After several additional play-throughs from beginning to end, I felt that the piece was ready for a lesson.

Session 30 (28 minutes) took place several days after the first lesson on the piece. The lesson provided some new insights into the piece's interpretation and several ideas to consider. Chief among them are the three different kinds of motives in the piece, each with a different character and requiring a different touch:

1. a folk-like motive with dotted rhythms (e.g., m. 9¹⁻²), requiring a more direct and clear touch;
2. Impressionistic textures with triplet figures (e.g., m. 20) requiring a light, even touch; and
3. Romantic chordal passages (e.g., mm. 67–98) requiring a rich sound.

Another suggestion was that the opening trill should “come out of nowhere” and should be more rapid. Here the advice was to start the trill mentally before playing. Further, the left-hand motive in m. 8 can should have a lighter, more Impressionistic touch.

In this session, attention was given to applying the above-mentioned ideas throughout the piece. The fingering of the opening trill was revised, opting to trill with the 1st and 3rd fingers instead of the 2nd and 3rd as it can be played more rapidly in this way. There was some slow practice of mm. 9–24 to implement the new ideas on touch and make the dynamic changes in mm. 17–18 clearer. The touch in m. 25 was also improved—the advice from the lesson was not to begin each one with an accent.

There was work on the section from mm. 67 to render it more flowing with longer musical lines. Increasing the speed helped with this, as it was still slightly under tempo. Further advice here was to use more pedal to create a richer, fuller sound. Bars 121–122 were practised slowly as there was a stumbling point during the lesson. The session concluded with a complete-playthrough to recap the work done in this session.

Session 31 (39 minutes) was composed of several play-throughs of the entire piece yielding where necessary to work on small segments where improvements could be made. The piece was almost up to speed at this point. Many of the same segments from previous sessions necessitated attention, including the opening bars (improving the trills and dynamics), m. 11 (slow practice of the right hand), mm. 17–18 (improving touch), mm. 21–24 (improving balance), m. 25 (improving phrasing), mm. 26–51 (improving dynamics) and mm. 67–98 (attaining longer lines, faster speed and richer sound). Bars 145–157 required some slow practice as there was some uncertainty of the correct notes here. The session ended with a complete play-through, stopping only at m. 174 where there was also some uncertainty.

Session 32 (56 minutes) proceeded similar to the previous session. Specific aspects worked on were the trill in the opening bars, touch and technique from m. 7, slow and rhythmic practice of mm. 17–18, and segmented practice of mm. 196–199.

Rather than beginning the next play-through from the beginning, playing started at m. 63, thereafter returning to the beginning and stopping to repeat segments which could be better executed. Next, a play-through continued as far as m. 114, again stopping regularly to replay specific segments. Once improvements made on these segments was satisfactory, a final complete play-through commenced albeit with some errors and uncertainties on pp. 10–11.

Session 33 (19 minutes) was preparation for another lesson later that morning. The focus here was on complete play-throughs to evaluate my rendition of the piece in its entirety. I stopped only in select places, including mm. 17–18 (slow practice) and mm. 166–225 (paying closer attention to balance and accuracy). At the end of this session I felt that I could play the piece at a high standard:

I'm quite happy with how it went now. There aren't really any places I'm particularly concerned about. I think technically it's quite secure under the fingers. My memory is fine and I'm starting to get a good feel for the sound and texture. So I think I'm quite close to having this piece rounded off quite well.

In session 34 (54 minutes), the aim was to further round off the piece and implement the ideas from the second lesson. The session started with a complete play-through without stops to identify areas that required refinement. Specific aims for this session were:

- improving the interpretation of the different characters in the first two pages;
- improving the balance wherever the triplet figure forms part of the texture;
- improving the texture, balance and dynamics in mm. 36–51;
- improving technical proficiency in mm. 99–159;
- playing the opening trills more rapidly;
- ensuring that the piece does not sound fragmented.

The remainder of this session proceeded in a segmented but structured manner, working on specific sections in sequential order. Segmented practice began with mm. 1–27, stopping to work on mm. 17–18 (dynamics) and paying attention to the triplet figure from m. 9 where the tempo had been rushed. The next section was mm. 28–66, where, again, attention was given to maintaining the tempo. In mm. 52–58 the tempo was particularly inconsistent. The trills were rushed while the third beats of mm. 54 and 58 were lengthened. The following section, mm. 67–98, did not require any specific attention. Bars 105–114 were practised slowly, gradually increasing the tempo with each repetition. Unnecessary accents in the left hand of mm. 105–108, particularly on the 32nd-notes, came to attention and were eliminated which improved the rhythmic structure of that segment. This change was applied to other segments where the same motive is present e.g., mm. 145–147. The following section as far as m. 219 proceeded successfully, as did the last two pages. The session concluded with a complete play-through of the entire piece.

4.6 Conclusion

This chapter described my process while learning Debussy's *L'Isle joyeuse*. Practice was divided into four stages. The first stage, that of initial learning, was aimed at working out suitable fingerings. The second stage, the first revision, was aimed at improving technical proficiency and rhythmic accuracy. The third stage, the second revision, focused on committing the piece to memory and creating a retrieval scheme. In the final stage, that of polishing, practice was aimed at strengthening technical proficiency and memorisation, bringing the piece up to the desired tempo, and working on musical and interpretive elements to round off the piece.

Chapter 5

Discussion

5.1 Introduction

This chapter discusses the results of my learning process in relation to the literature. In particular, it discusses the extent to which Ericsson's theory of deliberate practice and expert memory are reflected in my learning process and my use of practice strategies to strengthen technical proficiency and memorisation.

5.2 Analysis of *L'Isle joyeuse*

Although I came to a rudimentary meta-analysis of the piece at the start of the learning process, the analysis by Samson (1977:38) provides insights into the tonal construction of the piece. In his reading of the piece, it is structured into three sections: exposition, development and recapitulation. His analysis reveals that tonally, it is characterised by the relationships between the whole-tone scale, the Lydian mode and the diatonic major scale, with "the Lydian mode functioning as an effective mediator between the other two". Although the work is firmly tonal, its central tonality (A major) emerges unambiguously only in the recapitulation.

Exposition, mm. 1–98

Bars 1–6 form an introduction in a whole-tone context. The first subject appears in m. 9 in the context of the Lydian mode on A. However, the G-natural inflection leads it back to a whole-tone context in m. 21, where a new motive is introduced. The following bars up to m. 66 serve as a transition via the Lydian mode to the second subject in A major where added D-sharps lend ambiguity to its tonality.

Development, mm. 99–159

The middle section serves as piece harmonic contrast to the outer sections, using motives from the preceding section as well as new material. It begins with a section built around an E tonal centre with rapid figurations in the right hand. From m. 117, an altered version of the second subject is presented in a whole-tone context, building up to a C major chord in m. 141. The remainder of the development is built from fragments of motives presented in the preceding section, emphasising the other transposition of the whole-tone scale which is absent in the outer sections. The

rapidly increasing harmonic movement is abruptly interrupted by a *fermata* after m. 159.

Recapitulation, mm. 160–255

The return of the first subject in m. 60 (now in the same mode as in the first section) marks the start of the recapitulation. The music progresses through whole-tone and Lydian-based sections, culminating in m. 220, where the second subject returns in an altered form, now clearly in A major without the D-sharp (Lydian) inflections.

The coda (from m. 244) interrupts the tonal clarity, bringing back the trills and runs from the introduction in a whole-tone context. A tremolo based on the Lydian mode on A is followed by quick grace notes leading to octave As in the highest register of the piano (m. 254), clearly returning to a tonality centred around A. An arpeggio (using the added-sixth harmony from the left-hand in m. 67) closes the piece ending on the lowest A. The tonal movement in the coda, from the whole-tone scale (mm. 244–251), through the Lydian mode on A (mm. 252–3), closing with a tonal centre of A (mm. 254–5), reflects the overall tonal progression of the composition.

The analysis by Samson is similar to the one to which is presented in the first practice session except the development was read as an extension of the B-theme. My initial analysis roughly determined the way in which the material was divided for practice purposes, with further divisions within structural sections. Bars where playing often started and stopped are: 8, 20, 27, 35, 51, 66, 98, 114, 126, 144, 159, 181, 195, 199, 219, 243 and 255. These divisions occur in areas where there are clear changes in structure, texture, harmony or technical patterns.

These main structural divisions have been marked in the score (see Appendix) as well as suggested fingerings and pedal indications. It should be noted that these fingerings will not necessarily work for all pianists depending on individual differences in the size of one's hands, stretch distance and personal preferences.

Regarding pedal indications, the use of careful half-pedalling and half-damping should also be utilised in performance. Pianists should also take into consideration the acoustics of the venue—an environment with greater reverb may require a cleaner use of the pedal while drier acoustics will necessitate fewer pedal changes.

5.3 Deliberate practice

One of the most important themes that emerged from the literature review is the theory of deliberate practice formulated by Ericsson (Ericsson et al., 1993). The theory rejects the belief that expertise is the result of innate “talents” which only some individuals possess. Instead, his theory puts forward a framework for effective practice as the path to improving a skill. Deliberate practice has the following four characteristics: 1) it has well-defined, specific goals, 2) it is focused, 3) it involves feedback, and 4) it requires going outside of one’s comfort zone. In this section I will examine my learning process and discuss the extent to which each of these characteristics is evident.

5.3.1 Setting goals

The first characteristic formed an important part of my learning process. Several goals guided the learning process in all stages and were recorded in the practice journal. The long-term goal was to have the piece at a suitable standard for performance, for which it would have to be at the correct tempo, securely memorised and technically comfortable while showing an understanding of the interpretation, musical aspects and stylistic characteristics of the piece. While the long-term goal remained fixed, medium- and short-term goals were flexible and changed during the course of the learning process. Medium-term goals defined the focus of each stage of the process, while short-term goals dealt with specific segments of the music that required attention in each session.

In the initial learning stage, the goals frequently mentioned in the journal were to work out fingerings for specific sections and to check the fingerings of sections that had been previously worked out. Apart from deciding on fingering, a further goal was to be able to play the piece hands together. In each session, new material was attempted hands together (at a slow tempo) as soon as possible, concluding with a recapitulation of the entire section that had been worked on, often adding previously-learned material.

In the second stage (first revision) the goal was to have the piece “under the fingers”, paying attention to rhythmic accuracy and technically challenging areas in the music. I commented in the journal entry for session 8 that I wanted to “start getting the notes more securely under my fingers and rhythmically correct”. This remained the goal

throughout this stage of the process. Spoken comments reveal that further attention was given to co-ordination between hands and hands-separate practice where needed. At the end of the second stage I remarked: “Now that I have got a feel for the piece hands together, I will start committing the music to memory (session 13).”

In the third stage (second revision) the focus shifted to memorising the piece and the goal was to be able to play it through without the sheet music. Throughout this stage, a deliberate effort was made to absorb the material on the cognitive level, gradually reducing dependence on the score: “Now I will take it a few bars at a time and practise with a focused approach to the content. Then I will alternate playing with and without looking at the music.”

Now that a basic technical understanding of the piece was established and it had been committed to memory, the goal shifted to rounding off the piece in the fourth and final stage of practice (polishing). There was still some work to be done in consolidating the basic elements of the learning process, including memory, technical proficiency, tempo and accuracy, but more attention was being given to incorporate previously overlooked interpretive, musical and stylistic elements into practice. As this stage progressed, less time was spent on the basic elements and more on those previously overlooked elements. This can be seen when comparing the content of session 25 with that of session 34.

In session 25, the goal was “to get it more in time, to get the notes more accurate, especially this section [mm. 7–11] and again where it has the jumps [mm. 15–16].” Memory recall still required a great deal of attention, particularly for the sections starting at mm. 148 and 166: “I still get confused by that section and I need to check it again. Same thing goes for m. 166.” At the same time, practice started focusing on musical elements: “I practised with the book open, but I was trying as far as possible to let my memory lead the playing, just looking at the book for finer details like dynamics and things like that, which I’m starting to focus on a little bit more now. But my main focus is to get the technical aspect of it correct (session 25).”

By session 34 the focus had shifted almost chiefly to musical elements, while basic elements received less attention:

I want to get the character better of the opening two pages. Then I want to get the texture better when I have this theme [m. 21] just to get those triplets softer. Then I want to get this section [m. 36–51] a bit better structured as far as the texture is

concerned, balance. And then the development from m. 99 can be better technically. It needs to be more fluent up to bar 159. I think that's what I want to focus on now. And to get the trill very fast at the beginning.

Another thing I need to work on is getting different sections, or segments, [so] that they don't sound fragmented. [Although] this piece is written in little fragments, it mustn't *sound* fragmented.

5.3.2 Concentrated practice

The second characteristic of deliberate practice is that practice must be focused, structured and motivated by the aim of improving performance.

I made a deliberate effort to focus my attention throughout. This is an important part of the way I learn, because I try to engage with the content cognitively from early in the process rather than mindlessly learning the notes. In the initial stage, apart from focusing on the correct placement of the fingers and technical execution, attention was already given to the identification of patterns, harmonies and structure in the piece as preparation for memorising it. In the journal entry for session 3, I remarked that I was “quickly finding structure on the micro-level, i.e., repeating motives, phrases and sequential patterns. This piece is very logically and clearly structured.” The learning process shows that it was clearly structured throughout. The initial learning, first revision and then the revision stages were approached section-by-section. During these stages, each session was allocated specific bars for attention. Practising only proceeded to a new segment once the previous one had been satisfactorily learnt according to the short- and medium-term goals. During the polishing stage, the structure was less defined as there were more complete play-throughs, with frequent stops to work on specific problem areas as they arose.

5.3.3 Feedback

The third characteristic of deliberate practice is feedback and evaluation—being aware of one's progress in relation to one's goals and adjusting practice where necessary, which I implemented in my learning process.

In session 6, for example, I was not sufficiently satisfied with my learning of mm. 99–159 during the previous session and chose to give that area more practice time before moving on. In the earlier stages, I would often recapitulate sections that had previously been learnt to ensure that the fingering was suitable. In session 5, for example, fingering was revised in m. 100 when that section was recapitulated:

Going over mm. 99–103 a second time, I have changed the fingers slightly. The first time round I would have used a 5th finger on the C-sharps in m. 100, but now I've found it's easier to start the motive with the 4th finger.

Another example of the role of feedback as far as fingering is concerned is that of the opening trill. During the initial learning, my decision was to play the trill using the 2nd and 3rd fingers as this makes it easier to have the correct fingers for the run that follows the trill. Later in the process, after the first lesson on the piece, I decided to change the fingering in order to execute the trill more rapidly. Subsequently, I opted to use the 1st and 3rd fingers instead for most of the trill (session 30), reverting to the 2nd and 3rd fingers on the last notes of the trill to have the correct fingers for the following run. Playing it this way satisfied both the desire to play the trill more rapidly and the need to end the trill with specific fingers.

Feedback also played an important part in the memorisation stage. Here, I would often “test” my memory recall, beginning or ending a session with an attempt at a memorised play-through of the piece. Session 18, for example, began with two complete play-throughs and several areas were identified as areas where my recall was uncertain:

Since it's been a while since my last practice session, I just want to check my memorisation of what I've done before. So I'm just going to play maybe one or two times with the music first, then play memorised just to test myself.

Ok, I can more or less remember, just this section [mm. 36–51], I must just remember that the first time goes to G major [m. 40].

Similarly, feedback was a characteristic of the polishing stage. In session 34, for example, I was dissatisfied with the texture and balance in mm. 105–108 and was able to improve that segment by identifying the causes of the problem:

I think the problem with m. 105 was that I wasn't putting the [rhythmic] accents in the right places. I was putting accents where there shouldn't be. I was putting accents on the 32nds in the left hand, also the lowest G-sharp of the right-hand arpeggio must actually not have an accent because it overlaps with the left hand and then it sounds mushy.

5.3.4 Adaptation

The fourth characteristic of deliberate practice is that it should constantly adapt. This is evident in my learning process in several ways. As previously discussed, the goals were not fixed throughout the learning process. There were medium-term goals which lasted for several sessions before being altered. Each session had a specific set of bars as its goal and the goals for each session were determined by my

progress in the previous session. On a smaller scale, specific practice strategies were selected when there were difficulties with certain segments. In session 27, for example, the use of slow and rhythmic practice on a variety of rhythmic patterns improved my technical proficiency and balance in mm. 17–18. In the same session, the accuracy of the leap in mm. 15–16 was improved by extending the leap to two octaves for practice purposes.

5.4 Practice strategies

Several practice strategies emerged from the literature review. Those which relate to the structuring of practice include blocked, interleaved and random-order practice (Gebrian, 2017). Strategies that aim to improve technical proficiency are slow practice and its variations (Fitch, 2002), hands-separate, rhythmic and metronome practice as well as playing through (Wallick, 2013). Other strategies, such as mental practice, which aim to improve memory, will be discussed later in this chapter.

5.4.1 Structuring of practice

The structuring of my learning process was largely blocked (or fixed-order) practice whereby one section is practised extensively before moving on to the next. My practice typically proceeded in a linear fashion, particularly in the first two stages where sections were learnt sequentially, moving on to the next section only after extensive practice. The learning process continued similarly to the end of the polishing stage, although here it was not as rigidly blocked. Session 34, for example, sounds disorganised. Instead of practising one section and then leaving it completely, bars were added to sections or taken away in a (seemingly) unordered fashion. In this session, practice started with mm. 1–27, after this proceeding to mm. 21–27. This segment was extended into mm. 21–66 later moving on to mm. 105–114, extending it to m. 165, then 174, and thereafter to the end. This is similar to the additive strategy described by Mishra (2011:61).

According to Gebrian (2017) the strategies that result in better long-term learning are interleaved practice, whereby one alternates between sections, and random-order practice, during which one changes between segments of the music at random. Practice according to these strategies is difficult, as the mind must switch focus from one task to another, a concept known as contextual interference. Although the initial

learning may be more difficult in this way, research has shown that it facilitates better long-term learning (Abushanab & Bishara, 2013).

Despite the benefit to long-term learning that contextual interference strategies provide, Gebrian (2017) does not recommend practising only with the interleaved or random-order strategies. Instead, she recommends that practice should begin primarily with blocked practice to solidify a skill thereafter gradually introducing contextual interference through interleaved and random-order practice. My learning process was largely made up of blocked practice and incorporating contextual interference only later in the process to a limited extent. My learning process could therefore have benefited from more random-order and interleaved practice in the earlier stages.

5.4.2 Slow practice

Most of the pianists whose accounts were studied in the literature mentioned using slow practice regularly as part of their learning processes. Alfred Brendel is the only one who prefers not to slow the tempo during practice. Instead, he practises small segments at speed which, according to Fitch (2002), is just a variation of slow practice. Fitch (2002:110) stresses the importance of slow practice and cautions against mechanical or mindless slow practice, as does Hough (2014). Fitch maintains that

ninety-nine times out of a hundred, this slow practice should be very musical. There are very few instances in which slow mechanical practice is beneficial. Musical slow practice is the key.

His views are echoed in the accounts by Matthay (1932) and Sándor (1981).

Slow practice was used regularly in my learning process, persisting in almost every session throughout the process. Fitch (2002) defines four variations of slow practice: 1) slow and mechanical, 2) slow and musical, 3) slow yet fast, and 4) little bits fast. Regrettably, I did not elaborate sufficiently on the exact nature of my slow practice during the learning process. From my recollections and taking the content of practice sessions into account, I can determine which variants of slow practice were used in each session. My learning process included all four of these varieties in varying the proportions at each stage.

The first stage consisted mostly of slow mechanical practice. Here, technical aspects enjoyed the most attention while aspects such as phrasing, touch and other musical

elements received little to none. While working out fingerings, I would occasionally practice “little bits fast”, as it is important to try out fingerings at speed. The purpose of slow and mechanical practice differed depending on the goal for a specific segment. In mm. 11 and 17–18, the goal was to improve independence of the fingers in the right hand and slow practice helps to build speed and control in such areas. It is also useful in segments where co-ordination between hands is problematic—in m. 25, the four-against-three polyrhythm necessitated slow practice to become accustomed to the exact rhythmic placement of the right hand’s notes in between those of the left hand.

In the second stage, where the goal was to get the notes more “under my fingers”, slow practice continued. Here, slow practice was of the “slow yet fast” variety, which means that the tempo was slow while the movements were fast. I would lift my fingers higher off the keys and exaggerate every movement in order to solidify the technical patterns.

During the next stage of the learning process, where the goal was to memorise and reduce dependence on the score, slow practice remained important and served a specific goal. I often played through segments or larger sections slowly with closed eyes attending to the confidence of my memory recall. Here, slow practice served to improve memorisation.

During the polishing stage, and occasionally in the memorisation stage, slow practice became more musical, although there was still a substantial amount of mechanical slow practice when technical aspects were the goal (e.g., mm. 196–9 in session 26 and mm. 17–18 in session 27). It was only from session 28 onwards that my practice time became devoted largely to the musical dimensions of playing, particularly when it came to dynamics, balance, phrasing and texture. From session 30 onwards, which took place after the first lesson, I had new ideas for the interpretation of the piece. Here, slow practice served to achieve the desired touch, although slow practice with technical aims was still used frequently.

Considering the emphasis by Fitch (2002) and others on slow practice being musical, I believe my learning process could have been more effective had I paid attention to the musical elements in my slow practice from the start. Although my

slow practice was not completely without musical attention at any stage, there were details that I had overlooked until the polishing stage.

5.4.3 Further practice strategies

Other strategies that emerged from the literature are hands-separate, rhythmic and metronome practice, as well as playing through a piece in its entirety. The subjects in a study by Wallick (2013) had these strategies in common, although each individual showed varying degrees of preference for each strategy.

The literature review revealed generally favourable views on the use of rhythmic practice. Wallick (2013) found that most subjects favoured the use of rhythmic practice as an effective way of improving their technical fluency in difficult passages. Hough (2014) encourages pianists to devise creative ways of practising problematic passages, including the use of varying rhythmic patterns. Gát (1958) also recommends rhythmic practice. Sándor (1981) is opposed to rhythmic practice as he believes it might make practice mechanical.

I made use of rhythmic practice on the occasions when improving the technical proficiency for specific segments, particularly fast ones, was desired. In my learning process, it was always done hands-separately. Example 19 shows the rhythmic variants that used. The method of adding dotted rhythms was common, as can be seen at a) and b) in the example. Another variant is to pause on a specific note in each group shown by c)–f) in the example. While practising in this way, I employed a strong, deliberate touch with exaggerated finger movements.

Example 20: Patterns followed in rhythmic practice

The image shows musical notation for Example 20, illustrating six rhythmic practice patterns (a) through (f) on a treble clef staff in 4/4 time. The notation consists of two lines of music. The first line contains patterns a), b), and c). The second line contains patterns d), e), and f). Pattern a) shows a sequence of eighth notes with a dotted eighth note. Pattern b) shows a sequence of eighth notes with a dotted eighth note. Pattern c) shows a sequence of eighth notes with a dotted eighth note, followed by a half note. Pattern d) shows a sequence of eighth notes with a dotted eighth note, followed by a half note. Pattern e) shows a sequence of eighth notes with a dotted eighth note, followed by a half note. Pattern f) shows a sequence of eighth notes with a dotted eighth note, followed by a half note.

Together with slow practice, hands-separate practice was carried out at every stage of my learning process. None of the accounts by professional pianists mention hands-separate practice, except for Wallick's (2013) study, in which some of the

subjects reported using it. One subject maintained, however, that it slows the learning process down. Miklaszewski (1989), Nielsen (1999) and Chaffin et al. (2002) all documented hands-separate practice in their subjects' learning.

Hands-separate practice is a helpful strategy for isolating one hand to allow for closer attention to technique. There are many areas in *L'Isle joyeuse* where the hands each have differing rhythmic patterns or textures at the same time. It was necessary first to practice such areas hands separately, putting them together only once they had been mastered hands separately. These areas include mm. 8–19, 21–24, 67–98, 144–157 and 166–181. At such points, co-ordination between the hands is problematic, so it is essential to have those passages securely under the fingers separately before attempting them hands together.

When it comes to using the metronome during practice, the literature revealed mixed opinions. None of the professional pianists mentioned metronome practice. The subjects in Wallick's (2013) study were divided, with some saying that it leads to mechanical playing, while others were willing to take advantage of the technical benefit it can provide despite the temporary mechanical playing it can lead to. Imreh made use of a metronome (Chaffin et al., 2002), as did one subject in the study by Miklaszewski (1989). Metronome practice was absent from my learning process as I did not believe at any stage that it was necessary. I was confident enough practising technically difficult segments without a metronome. Further, the style of this piece is not well-suited to metronome practice as this would inhibit the direction of the Impressionistic lines.

5.5 Theory of expert memory

Ericsson's theory of expert memory (Ericsson & Kintsch, 1995) suggests three principles that characterise effective memorisation: 1) meaningful encoding of new material, 2) creation of a retrieval scheme and 3) prolonged practice to increase the speed of retrieval. My learning process shows the application of these three principles.

5.5.1 Meaningful encoding

The first principle can be seen in the first, second and third stages of my learning process. At the outset, I examined the score and came to a macro-structural analysis of the piece. This is important as awareness of compositional structure is an

important aspect of effective memorisation, according to Miklaszewski (1989) and Chaffin et al. (2002). Although I did not specifically elaborate on it during the learning process, I had already begun to identify some compositional elements in the first stage, such as sequences, repetitions, harmonies, scales and arpeggios in order to further group the material into larger chunks.

This chunking continued in the memorisation stage as I identified further compositional elements which were useful for memory purposes. I explained, for example, that mm. 14 and 17–18 could be chunked according to the whole-tone-based harmonies (session 14), and m. 25 by identifying the harmonies in the ascending motive. I also started to identify specific retrieval cues during this stage, by this means showing evidence of the second principle of expert memorisation.

5.5.2 Retrieval scheme

In the literature review, two distinct kinds of memories emerged: associative chains and content-addressable memories. In associative chains, each segment is dependent on sequential recall of the previous segment of the music. Associative chains are typically formed spontaneously, using the motor and auditory systems. Content-addressable memories are not dependent other segments. These types of memories require a deliberate effort to create a reliable retrieval scheme. The memory systems involved here are the visual, emotional, structural and linguistic systems.

Associative chains were formed at the outset of my learning process by means of repetition. This is an inevitable result of practice and it helps to develop automaticity in playing, although a break in the chain means that playing must restart from the beginning. In preparation for memorised performance, it is essential to create a retrieval scheme made up of content-addressable memories which are not dependent on context for recall. This was the focus of the process from the memorisation stage onwards.

The most important retrieval cues for me are structural cues, areas where the music changes into a new texture, motive, theme or section. Bar 7, for example, marks the start of the exposition, an important structural cue. The trill is continued but now a new motive is introduced in the left hand. In m. 19, the texture changes with ascending and descending whole-tone triplets and the introduction of a new theme in

the left hand. Other structural cues are found in mm. 17, 28, 36, 52, 64, 67, 99, 105, 109, 125, 141, 144, 148, 160, 166, 182, 186, 296, 200, 220 and 244. Playing can begin playing at any of these points from memory without having to rely on the preceding segment.

Switches, areas where repeated material diverges from previous appearances, were also important cues in the process. On the micro-level, the structure of the piece lends itself to the formation of switches, as much of the material is repeated in two-bar segments, with the second appearance often ending differently. The first switch was identified in m. 16 (analogous to m. 14). There are many more switches in the score: mm. 27 (analogous to m. 25), 31 (25), 48 (40) 60 (55), 95 (79), 115 (105) and 127 (123).

In other areas, fingering was an important retrieval cue. In session 17, I remarked that “I must remember to start with the 3rd finger on the E in the left hand” in m. 28. Similarly, in session 19, I commented that “I must remember [in m. 112] when I go from the thumb to second finger [in the first beat], that I don’t go to the fourth finger as in the preceding phrase.”

In session 17, a specific sequence of notes was identified as a retrieval cue. In mm. 62–63, where the arpeggio figure is altered slightly on every beat, the altered notes are as follows: “The A becomes a B, then [m. 63] there’s a G-natural which becomes a G-sharp, then B-natural becomes a B-sharp.” Being familiar with the pattern in which the harmony is altered in m. 63 serves as a useful retrieval cue. In session 18, the inner melody from mm. 75 was identified as a cue. I also noted the change of register in m. 83: “This section, an octave higher, [begins] like m. 67.” In session 19, the left hand was identified as a cue where it differs from a previous appearance of that motive: “Basically from m. 109 to m. 114 it’s just the same thing twice, only the left hand changes a bit. Same harmonies, only the left hand has a staccato harmonisation.”

At m. 137, the repeating motive in the right hand was identified as a cue: “Just knowing how many repetitions of that is confusing. It’s sort of like a cross rhythm, rather, the left hand and right hand are in different rhythmic phases”. Here, aural feedback guides playing: “I have learned to hear when I’ve played enough repetitions, of that motive and I need to move on to m. 141.” Similarly, in m. 186

there are three repetitions of the octave motive in the left hand before the right hand begins playing in m. 188.

The texturally similar sections in mm. 148–157 and mm. 166–181, dealt with in session 26, were a source of confusion during the learning process. They were particularly challenging to memorise as they are similar in texture but with slight, unintuitive differences. The solution was to identify several specific retrieval cues, particularly two important switches which are similar but slightly different.

From m. 148, the inner layer of texture (B-flat) is struck on the first beat for the following four bars. Bar 152 marks a crucial retrieval cue when the right hand moves up an octave. Here, the right hand's inner B-flat is now tied over, while the left hand gains an inner note (F-sharp), which is played on the first beat for two bars.

Starting at the analogous section from m. 166, (albeit in a different tonal area), the treatment of the inner layer of the right hand (G-natural) is the same as the previously-mentioned section. It continues in this way until m. 174, which is, as with m. 152 in the previous section, an important retrieval cue. This cue in m. 174 is similar in texture to m. 152, but with several key differences. The treatment of the inner layers is now reversed: the right hand's inner layer (G-natural) is played on every first beat while the left hand's inner layer (D-sharp) is tied over. This section proceeds sequentially, ascending in whole tones, until m. 182. Identifying these key retrieval cues was my solution to the problem of recalling these two sections accurately.

As the learning process proceeded, retrieval cues relating to interpretive and musical features were identified, starting with session 29. The first two pages have very specific dynamic indications. The dynamics in the opening bars are as follows: mm. 1–2 there is a *crescendo* but in mm. 4–5 (where the motivic material is the same as that in mm. 1–2), there is a *decrescendo* at the end of each bar. Further, the dynamics in mm. 12–14 are unusual, as there is a *crescendo* in the second beat leading to a (*subito*) piano on the third beat. Bars 17–18 have similar dynamic indications except for the third beat of m. 18, where it is marked *mezzo forte*. The dynamics in mm. 36–51 also formed a retrieval cue, as they are very specifically indicated.

After the first lesson, I had some new ideas about the character of the piece. The three different characters of the different motives present in the piece each formed an interpretive retrieval cue. The motive in m. 9 (right hand) and its later appearances are “folk-like” while the section from m. 67 and its re-appearance from m. 220 are more Romantic in character. Further, the triplet motive found throughout the piece (e.g., m. 21) is more Impressionist in character and requires a lighter touch. Keeping these descriptions in mind—“folk-like”, Romantic and Impressionist—serves as a cue to certain interpretive elements during performance.

My learning process shows that I created a retrieval system based on a variety of different memory systems, including structural, auditory, motor, visual and emotional systems. My retrieval cues show that I use a hierarchical system like that of Imreh (Chaffin et al., 2002), with structural cues (sections, subsections and bars) representing larger segments at the top of the hierarchy, interpretive cues (dynamics, expression and sound) below that, and basic cues (movements, fingerings and individual notes) at the base.

5.5.3 Increasing speed of retrieval

The third principle of expert memorisation is that of increase the speed of retrieval through prolonged practice. The literature review revealed several practice methods aimed at increasing the speed of retrieval. All these methods involve the exclusion of one or more memory systems, which helps reduce reliance on only one memory system.

The third principle can be seen in the memorisation and polishing stages of my learning process. As soon as retrieval cues were identified for a specific section, I would attempt a play-through of that section from memory, occasionally combining it with the previous sections. This method allows one to evaluate the progress and certainty of one’s memorisation while at the same time strengthening retrieval cues. There were frequent stumbling points during these play-throughs, but they serve to make one aware of the specific segments which require more attention. During the polishing section, segments became gradually longer while still paying attention mainly to technical and structural retrieval cues until session 29. Thereafter, interpretive and musical cues became more prominent. By session 29, the piece was practised in its entirety rather than in segments. In the last sessions of the learning

process, memorisation was no longer particularly problematic, aside from a few uncertainties at mm. 145–57 and 166–81.

One method of excluding one or more memory systems is mental practice and it takes place away from the piano, where one visualises playing through the piece. Here, the motor system is excluded so that one can focus on strengthening cognitive memories. This was not used during my learning process. It was found not to be very effective in the study by Lim and Lippman (1991). Writing out the score by hand is another method that also excludes the motor system, which was also not evident in my learning process.

Recording one's thoughts during the learning process has been found effective in discovering and strengthening retrieval cues (Lisboa, Chaffin & Demos, 2015:12). Although not a typical aspect of my learning process, it was an important element in the present in the form of journal entries and verbal comments during each session.

5.6 Conclusion

This chapter presents a discussion of the results of my learning process in relation to the literature. My learning process reflects the principles of deliberate practice and expert memorisation. The process could be further enhanced with the use of musical slow practice throughout and strengthening memorisation by using mental practice.

Chapter 6

Conclusion

6.1 Introduction

The aim of this study was to explore the process for pianists when learning new repertoire, drawing on the relevant literature and on my own learning process relating to Debussy's *L'Isle joyeuse*. This study examined the literature on the learning process and related subjects, including practice and memorisation. The learning process was documented over a period of 14 weeks in 34 practice sessions totalling 18 hours and 47 minutes of practice, from when the score was first read until the work was ready for performance.

In the preceding chapters, the methodology, relevant literature and the results from the learning process were discussed. Further, a discussion of the results in relation to the literature was presented. The study was practice-led following a qualitative research approach. The learning process was documented by means of journaling and audio recordings, which were subsequently transcribed. The literature review examined first-hand accounts by professional pianists and pedagogues as well as scientific literature. It revealed several key themes in the learning process, namely K. Anders Ericsson's theories of deliberate practice and expert memory, practice strategies, as well as the role of retrieval cues in memorisation. *Practicing Perfection* by Chaffin, Imreh and Crawford (2002) emerged as a key case study on the repertoire learning process. My own learning process was divided into four stages and was discussed according to the key themes which emerged from the literature review.

6.2 Addressing the research questions

Before addressing the main research question, it is necessary first to address the secondary questions.

6.2.2 Secondary questions

What does a reliable repertoire learning process at an advanced level entail, according to the literature?

The literature revealed several key features of a reliable repertoire learning process. The accounts of professional pianists and pedagogues showed several common

themes, among them the importance of slow practice and concentration during the learning process. Case studies of musicians found that the formal structure of the music plays a significant role in the way the music is divided for practice, with more complex areas of the music being divided into smaller segments. These sources point to K. Anders Ericsson's theory of deliberate practice as an effective framework for the learning process. Deliberate practice incorporates the following principles: 1) it has well-defined, specific goals, 2) it is focused, 3) it involves feedback and 4) it requires departing from one's "comfort zone".

The literature also points to Ericsson's theory of expert memory as a framework for reliable musical memorisation. Expert memorisation is based on the following principles: 1) meaningful encoding of material, making use of existing knowledge to chunk the music into larger segments, 2) the formation of a retrieval scheme using several memory systems, and 3) prolonged practice to strengthen the retrieval scheme and increase the speed of recall.

What process did the author follow while learning Debussy's *L'Isle joyeuse*?

My learning process took place over a period of 14 weeks and 34 practice sessions. The learning process is divided into four stages: 1) initial learning, 2) first revision, 3) second revision (memorisation), and 4) polishing.

In the initial learning stage, the aims were to work out fingering and to become acquainted with the piece. This stage began with an analysis of the piece and was characterised by section-by-section practice, working through the piece systematically, and starting with smaller segments which were eventually combined. By the end of this stage, the piece could be played hands together at a slow tempo.

The first revision stage was aimed at developing automaticity and technical proficiency when playing the piece. This stage is characterised by slow practice alternating with up-to-speed practice and small segments played with many repetitions.

During the second revision stage, the aim was to commit the piece to memory. A deliberate effort was made to identify features in the music that could be used to 'chunk' the material. Practice here was largely segmented. Dependence on the score was gradually and by the end of this stage the piece could be played without the score.

The polishing stage was focused on bringing the piece to the performance level. This involved consolidating technical proficiency and memorisation for the piece as well as attending to interpretive, musical and stylistic elements. Earlier during this stage, practice was still mostly segmented and focused on technical issues. Towards the end of this stage, practice consisted of complete play-throughs, attending mostly to musical issues.

How can the author's repertoire learning process be improved in relation to the literature?

When comparing my learning process with the literature, it was found that my learning was effective and reflected the principles of deliberate practice and expert memory. I found that I could further optimise my learning process by incorporating certain strategies and making better use of slow practice.

A recurring theme in the literature is that practice should never be mindless or mechanical. Even slow practice should always be musical. In my learning process, slow practice was largely mechanical, focusing mainly on technical issues and retrieval cues. It was only towards the end that I used slow practice specifically for the purpose of improving the musical aspects. To improve my learning process, I could incorporate musical slow practice from the start. The structuring of my learning process was largely linear, in the form of blocked practice. The literature revealed that incorporating interleaved and random-order methods in addition to blocked practice would introduce contextual interference, which leads to better long-term learning.

I could further optimise my learning process by incorporating specific strategies for strengthening my memory for the music. Memorisation took place at the piano, so retrieval was linked to the unreliable motor and auditory memory systems. In order to strengthen other more reliable systems, I could make use of methods which exclude the motor and auditory systems, such as mental practice and attempting to write out the score.

How could improvements in the author's learning process inform the learning process of other advanced pianists?

From the results of this study, it is evident that a learning process which follows Ericsson's principles of deliberate practice and expert memory is an effective and

reliable way of learning new repertoire. Pianists should always practice with concentration and should set specific goals which adapt as learning progresses. During the learning process, pianists should identify patterns in the music to enable chunking of the material into larger segments in order to create a retrieval scheme, which should then be maintained and strengthened with further practice.

Practice should be structured according to the formal structure of the music and segments should be practised using a combination of blocked, interleaved, and random-order practice methods. Useful practice methods to be employed during the learning process include slow, rhythmic, hands-separate and mental practice. Slow practice should never be purely mechanical.

6.2.3 Primary question

How can a reliable repertoire learning process be followed to realise a securely memorised performance of Debussy's *L'Isle joyeuse*?

A reliable learning process for *L'Isle joyeuse* is one which follows Ericsson's principles of deliberate practice: 1) it has well-defined, specific goals, 2) it is focused, 3) it involves feedback, and 4) it requires leaving one's "comfort zone." In order to use these principles, practice should have short-, medium- and long-term goals. Practice should always be focused, constantly evaluating progress and setting new goals. Where memorisation is required, Ericsson's principles of expert memory should also be followed: 1) chunking the music into larger sections according to existing knowledge, 2) creation of a retrieval scheme, and 3) extended practice to increase the speed of retrieval.

When approaching the piece, it is recommended that the pianist divides the score into sections for practice purposes. These divisions can be determined according to formal structure as well as by selecting areas which have similar technical patterns. Next, the piece can be worked through in sections, beginning with decisions regarding fingering and developing automaticity. From early in the process, it is advisable to identify patterns in order to chunk the music and create retrieval cues. The remainder of the learning process should be aimed at strengthening the retrieval cues and improving technical proficiency and automaticity. Practice should never be

mechanical. Rather, attention should be given to musical and interpretive details throughout.

Strategies that are beneficial for improving technical proficiency are slow practice, rhythmic practice and hands-separate practice. Strategies that can be used to strengthen memorisation are mental practice and attempting to write out the score. Practice should be structured using a combination of blocked, interleaved and random-order practice to introduce contextual interference.

6.3 Limitations of the study

This study examined only my personal learning process. The findings cannot necessarily be generalised to all advanced pianists, as every individual has a unique way of learning repertoire.

In this study, I was simultaneously the subject and the researcher. There are certain advantages in conducting research in this way, chief among them being that I could describe my learning process from the insider's perspective. Although I made every effort to be objective during the research, a third-person perspective on the data would have been more objective.

While I made every effort to describe my practice throughout the learning process, it was often difficult to articulate my thought-patterns precisely, given that the learning process consists of many interrelated processes. Further, certain aspects of the learning process which I did not take note of at the time required elaboration. There were also times during the learning process when my comments were incomplete. There were areas where I had to rely on the audio recordings of my practice as well as on my own recollections to describe the content of a session.

My learning process was affected to a limited extent by the recordings taking place in every session. Being aware of the recording, I paid special attention to learning the music effectively and with concentration in each session. I was less likely to aimlessly play through sections and my practice was more structured than usual.

6.4 Conclusion

This study provides a rare insight into the learning process of an advanced pianist in the emerging context of practice-led research. It shows that Ericsson's theory of deliberate practice offers an important framework in the development of expert skills and that it also applies to the process of learning new piano repertoire. I was intrigued by the extent to which my learning process reflected the principles laid out by Ericsson as I had only recently become aware of his work. Other pianists could benefit greatly from employing these principles in their own learning simply by fostering awareness and deliberate effort during their practice. Since the learning process varies among individuals, further research is required to determine aspects of the learning process that apply to all advanced pianists and to discover how individuals could adjust the learning process to suit their unique learning styles.

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List of examples

1. C. Debussy, *L'isle joyeuse*, L. 106, m. 18, p. 36
2. Bars 66–74, p. 37
3. Bars 105–6, p. 38
4. Bars 146–7, p. 38
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Exposition
Debussy
L'Isle Joyeuse

1 3 2
Quasi una cadenza 1 4 5 3 5

3

simile

5

Tempo: Modéré et très souple

pp

3

5

simile

8

p léger et rythmé

simile

Debussy — L'isle Joyeuse

10

p

12

p

14

Retenu - - Tempo

poco cresc.

p *più p*

16

p *più p*

mf *p*

simile

18

mf *mf*

p

20

Debussy — L'isle Joyeuse

Musical score for measures 20-21. The piece is in G major (one sharp) and 3/4 time. Measure 20 features a piano (*p*) dynamic with a melodic line in the right hand and a bass line in the left hand. Measure 21 features a pianissimo (*pp*) dynamic with a similar texture. The French text "un peu en dehors" is written below the bass line in measure 21.

22

Musical score for measures 22-23. The texture continues with a melodic line in the right hand and a bass line in the left hand. Measure 23 shows a change in the bass line's rhythmic pattern.

24

Musical score for measures 24-25. Measure 24 includes fingerings (3 1 4 2) and a mezzo-forte (*mf*) dynamic. Measure 25 includes fingerings (2 4 5, 5, 3, 2, 1) and a *dim.* (diminuendo) dynamic marking.

26

Musical score for measures 26-27. Measure 26 includes a piano (*pp*) dynamic and fingerings (6, 6). Measure 27 includes a mezzo-forte (*mf*) dynamic and a *dim.* (diminuendo) dynamic marking.

28

Musical score for measures 28-31. Measure 28 includes a piano (*p*) dynamic and fingerings (4, 3, 1, 3, 5, 2, 2, 1, 2, 2). Measure 29 includes fingerings (2, 1). Measure 30 includes fingerings (2, 1). Measure 31 includes fingerings (3, 1, 2) and a *dim.* (diminuendo) dynamic marking.

32

Debussy — L'isle Joyeuse

36

40

44

48

52

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56

8

Musical notation for measures 56-59. The right hand features a melodic line with a fermata over the eighth measure. The left hand provides a harmonic accompaniment with chords and moving lines. A dynamic marking of *f* is present.

simile

60

Musical notation for measures 60-63. The right hand has a complex melodic passage with fingerings 3 2 1, 5 3 1, 3 2 1 2 4, and 1 2 4. The left hand has a steady accompaniment. A dynamic marking of *f* is present.

64

Musical notation for measures 64-67. The right hand has a melodic line with a fermata over the eighth measure. The left hand has a steady accompaniment. A dynamic marking of *p* is present.

Un peu cédé. Molto rubato

66

Musical notation for measures 66-68. The right hand has a melodic line with a fermata over the eighth measure. The left hand has a steady accompaniment. A dynamic marking of *p* is present. The instruction *p ondoyant et expressif* is written below the right hand. Fingerings 2 1 3 2 3 2 3 1 2 are shown for the right hand.

69

Musical notation for measures 69-72. The right hand has a melodic line with a fermata over the eighth measure. The left hand has a steady accompaniment. A dynamic marking of *p* is present.

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75

Musical score for measures 75-80. The piece is in G major (one sharp). The right hand features a complex texture with chords and arpeggiated figures, while the left hand plays a steady eighth-note accompaniment. Dynamic markings include *piu p* at the beginning. Fingering numbers (5, 4, 3, 2) are visible in both hands.

81

Musical score for measures 81-86. The right hand continues with chordal textures, and the left hand maintains the eighth-note accompaniment. Dynamic markings include *p* and *p o cresc.*. Fingering numbers (5, 4, 3) are present in the left hand.

87

Musical score for measures 87-92. The right hand features a more active melodic line with chords. Dynamic markings include *mf*, *p*, and *piu p*. Fingering numbers (5, 4, 3) are visible in the left hand.

93

Musical score for measures 93-98. The right hand continues with complex textures. Dynamic markings include *mf*. Fingering numbers (6, 2, 1, 3, 2, 3) are present in the left hand. A first ending bracket labeled 'A' is shown at the end of the system.

Development
a Tempo

99

Musical score for measures 99-104, the beginning of the Development section. The right hand features a rapid, flowing melodic line with many accidentals. Dynamic markings include *p* and *mf*. Fingering numbers (3, 1, 2, 5, 1, 2, 1, 2, 4, 5, 4, 2, 1, 3, 1, 2, 4, 5, 4) are extensive in both hands.

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103

Measures 103-106. Treble clef, key signature of two sharps (F# and C#). Measure 103 starts with a piano (*p*) dynamic. Fingerings include a 5th finger in the right hand and 2, 3, 2, 1 in the left hand. Measure 104 continues the melodic line. Measure 105 features a *pp* dynamic and a 3-1-5-3 fingering. Measure 106 has a 4th finger fingering. A slur covers measures 103-106.

107

Measures 107-110. Treble clef, key signature of two sharps. Measure 107 has a piano (*p*) dynamic. Measure 108 has a 4th finger fingering. Measure 109 has a 5th finger fingering. Measure 110 has a 4th finger fingering. A slur covers measures 107-110.

111

Measures 111-114. Treble clef, key signature of two sharps. Measure 111 has a piano (*p*) dynamic. Measure 112 has a mezzo-forte (*mf*) dynamic and a 1-2-1 fingering. Measure 113 has a piano (*p*) dynamic and a 5-4-5 fingering. Measure 114 has a piano (*p*) dynamic and a 3-1-2-5-1-2-5 fingering. A slur covers measures 111-114.

115

Measures 115-118. Treble clef, key signature of two sharps. Measure 115 has a pianissimo (*pp*) dynamic. Measure 116 has a piano (*p*) dynamic. Measure 117 has a piano (*p*) dynamic. Measure 118 has a piano (*p*) dynamic. A slur covers measures 115-118. The instruction *p expressif et en dehors* is written below the bass line.

119

Measures 119-122. Treble clef, key signature of two sharps. Measure 119 has a piano (*p*) dynamic. Measure 120 has a piano (*p*) dynamic. Measure 121 has a piano (*p*) dynamic. Measure 122 has a piano (*p*) dynamic. A slur covers measures 119-122.

123

pp

7

127

pp

8

p *expressif et en dehors*

131

p

135

p

cre - - - - - scen

139

do - - - - -

f

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143

Musical score for measures 143-147. The system consists of two staves. The right staff is in treble clef with a key signature of one sharp (F#) and a common time signature. It begins with a forte (*f*) dynamic and contains a melodic line with various ornaments and slurs. The left staff is in bass clef and contains a bass line with slurs and fingerings. The instruction *p poco a poco animé e molto cresc.* is written across the middle of the system. Fingerings are indicated as 3, 1, 3 in the right hand and 5, 2, 5, 4, 1, 5, 2 in the left hand.

148

Musical score for measures 148-151. The system consists of two staves. The right staff is in treble clef with a key signature of one flat (Bb) and a common time signature. It features a melodic line with slurs and ornaments. The left staff is in bass clef and contains a bass line with slurs and ornaments. The instruction *p poco a poco animé e molto cresc.* is written across the middle of the system. Fingerings are indicated as 3, 1, 3 in the right hand and 5, 2, 5, 4, 1, 5, 2 in the left hand.

152

Musical score for measures 152-155. The system consists of two staves. The right staff is in treble clef with a key signature of one flat (Bb) and a common time signature. It features a melodic line with slurs and ornaments. The left staff is in bass clef and contains a bass line with slurs and ornaments. The instruction *sempre cresc.* is written across the middle of the system. Fingerings are indicated as 5, 3, 5, 4, 2 in the left hand.

156

Musical score for measures 156-159. The system consists of two staves. The right staff is in treble clef with a key signature of one sharp (F#) and a common time signature. It features a melodic line with slurs and ornaments. The left staff is in bass clef and contains a bass line with slurs and ornaments. The instruction *f* is written at the beginning of the system.

Recapitulation

160 Plus animé

Musical score for measures 160-163. The system consists of two staves. The right staff is in treble clef with a key signature of one sharp (F#) and a common time signature. It features a melodic line with slurs and ornaments. The left staff is in bass clef and contains a bass line with slurs and ornaments. The instruction *mf* is written at the beginning of the system. Fingerings are indicated as 2, 3, 5 in the left hand.

166

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Musical score for measures 166-169. The piece is in G major (one sharp) and 3/4 time. The right hand features a continuous eighth-note melody, while the left hand plays a steady eighth-note accompaniment. A piano (*p*) dynamic marking is present at the beginning of the system.

170

Musical score for measures 170-173. The right hand continues with eighth-note patterns, and the left hand maintains the accompaniment. A piano (*p*) dynamic marking is present at the beginning of the system.

174

Musical score for measures 174-177. The right hand continues with eighth-note patterns. The left hand accompaniment includes a fingering of 5 in the first measure. Dynamic markings *poco a poco cresc.* are present. A fermata is placed over the first measure of the left hand.

178

Musical score for measures 178-181. The right hand continues with eighth-note patterns. The left hand accompaniment includes fingerings 4 and 2 in the third measure, and a fingering of 2 in the fourth measure. A fermata is placed over the first measure of the left hand.

182

Musical score for measures 182-185. The right hand features a melodic line with a fermata over the first measure. The left hand accompaniment includes a forte (*f*) dynamic marking. A fermata is placed over the first measure of the left hand.

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186

Musical score for measures 186-191. The system consists of two staves. The upper staff is in treble clef with a key signature of two sharps (F# and C#). It features a melodic line with slurs and fingerings (2, 4, 2, 4, 2, 4). The lower staff is in bass clef with a key signature of two sharps, featuring a bass line with slurs and fingerings (5, 4). The dynamic marking *pp subito* is present. The word *Simile* is written below the bass staff.

192

Musical score for measures 192-197. The system consists of two staves. The upper staff is in treble clef with a key signature of two sharps. It features a melodic line with slurs and fingerings (4, 4, 4). The lower staff is in bass clef with a key signature of two sharps, featuring a bass line with slurs and fingerings (5, 3, 5). The dynamic marking *p* is present. The word *simile* is written below the bass staff.

198

Musical score for measures 198-202. The system consists of two staves. The upper staff is in treble clef with a key signature of two sharps. It features a melodic line with slurs and fingerings (1, 4, 1, 4, 1, 4). The lower staff is in bass clef with a key signature of two sharps, featuring a bass line with slurs and fingerings (5, 3, 5). The dynamic marking *p* is present.

203

Musical score for measures 203-206. The system consists of two staves. The upper staff is in treble clef with a key signature of two sharps. It features a melodic line with slurs and fingerings (4, 5, 1). The lower staff is in bass clef with a key signature of two sharps, featuring a bass line with slurs and fingerings (2, 5, 1, 4, 7). The dynamic marking *mf* is present.

207

Musical score for measures 207-211. The system consists of two staves. The upper staff is in treble clef with a key signature of two sharps. It features a melodic line with slurs and fingerings (5, 3, 1, 4, 2, 5, 3). The lower staff is in bass clef with a key signature of two sharps, featuring a bass line with slurs and fingerings (2, 5, 4). The dynamic marking *f* is present.

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212

mf

216

f *più f* *ff*

Un peu cédé

très en dehors

221

ff

226

ff

231

ff

236

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Musical score for measures 236-241. The piece is in G major. The right hand features complex chords and arpeggiated figures, with some notes marked with fingerings (5, 3, 2, 4, 5). The left hand plays a steady accompaniment of eighth notes. Dynamics include *piu ff* and *ff*. There are several accents and slurs throughout the passage.

242

Coda Tempo: très animé jusqu'à la fin.

Musical score for measures 242-245. The right hand has a melodic line with slurs and fingerings (2, 3, 2, 1, 2, 1, 2, 1, 2, 1). The left hand continues with eighth-note accompaniment. Dynamics are marked *ff*. The tempo is indicated as *très animé jusqu'à la fin*.

246

Musical score for measures 246-251. The right hand features a series of chords with slurs and fingerings (5, 4, 3, 2). The left hand has a simple accompaniment. Dynamics are marked *ff*.

249

Musical score for measures 249-251. This system shows the continuation of the previous system, with the right hand playing chords and the left hand playing eighth notes. Dynamics are marked *ff*.

252

Musical score for measures 252-255. The right hand has a melodic line with slurs and fingerings (2, 3, 4, 5, 1, 5, 4, 1, 3). The left hand has a simple accompaniment. Dynamics are marked *fff*. A marking *Syn bassa* is present in the left hand.