Memorization: Survey and Application with Special Emphasis on the Left Hand

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UNIVERSITY OF MIAMI

MEMORIZATION:
SURVEY AND APPLICATION
WITH SPECIAL EMPHASIS ON THE LEFT HAND

By
Deyana Ilieva Valchinova

A DOCTORAL ESSAY

Submitted to the Faculty
of the University of Miami
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MEMORIZATION:
SURVEY AND APPLICATION
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Deyana Ilieva Valchinova

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Memorization plays an important role among music performers, especially pianists, since pianists are expected and encouraged to give performances, exams, and juries from memory. Memorization is not often addressed by pedagogues, and students seldom approach memorization with specific techniques and strategies. More importantly, the chief reason for memory slips as well as poor understanding of the music material is not discussed in depth: the left hand. The need for this study stems from the importance of focusing on the left-hand memory, and how to develop practical and sound memorization habits for it. Furthermore, the purpose of the essay is to survey and select approaches appropriate for left-hand memorization. Discussing and reviewing these approaches leads the discussion to finding suitable ways for understanding the left-hand material in its varied forms. The selected memorization strategies are applied to musical examples showcasing the different left-hand arrangements. In chapters two and three the essay surveys a number of important authors on the topics of memorization and Expertise Theory. Additionally,
the different components of memory are presented and explained: visual, aural, kinesthetic and analytical.

The fifth chapter of the document discusses memorization methods which include creating a map modeled after Rebecca Shockley’s musical maps, a hierarchically structured scheme created after Rogen Chaffin and Gabriela Imreh’s model, and most importantly introducing six different memorization categories created by the author. These categories include examples with left-hand chords that share notes with the right hand, examples with hand-alternating passages, and more. With these categories the author aims to inspire teachers and performers to approach memorization with helpful strategies, mindful techniques, and to achieve a comprehensive grasp of the musical material.
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CHAPTER I
INTRODUCTION

Memorization is a part of every individual’s life, but it carries considerable importance for music performers, especially pianists. It is a rare occurrence, at least today, to witness a pianist giving a solo or concerto performance with the music in front of them. The present age expects every piano performer who wants to be taken seriously, and to be respected, to deliver solo concerts entirely from memory. It is true, however, even though not extremely common, that some pianists nowadays choose to perform with the score. The present paper will offer memorization strategies which can be applied both by performers who wish to memorize, and by those who wish to use the score. The memorization strategies which will be put forth aim to develop a thorough understanding of the musical material, and therefore increase the pianist’s knowledge of every aspect of the studied composition.

The reasons for choosing to play by heart are many. Having knowledge of the music in one’s mind instead of relying on the musical score allows for flexibility of expression, and complete focus on the hands and ear. If the musical material is fully internalized and comprehended, there is complete control of the information stored in the memory. Above all, conscious and detailed memorization leads to an in-depth and complete grasp of the music material. Even if the pianist chooses to use the score on stage, following the strategies which will be explained in this paper will increase the knowledge of the compositions studied. Furthermore, as Gabriel Imreh and Roger Crawford point out, no pianist today could have a successful career without highly
developed memorization skills,\textsuperscript{1} for it is widely accepted that solo pianists will appear on stage confident and ready without any score in sight. Additionally, every known higher education music school requires solo piano repertoire to be memorized. Even though the above points on the expectation of having the score memorized may seem unfair, they are facts which cannot be ignored. Aside from the professional necessity to memorize, there are additional advantages to playing from memory. Many scholars agree performing from memory can help the performer communicate more freely, and allow a more direct connection with the audience. Moreover, after a certain while the score becomes an obstacle to a satisfying performance. For some, having to continuously look at the notes on the piano stand, and then back down at the hands, can cause even more problems than playing without the score. Furthermore, there is greater freedom when one has the ability to control the instrument without the aid of the music. Not to mention it has been proven that audiences of skilled musicians prefer memorized performances over non-memorized ones.\textsuperscript{2}

When did this memorizing fashion begin? Not that long ago performing without the score was regarded as poor taste.\textsuperscript{3} Despite the fact many artists such as Wolfgang Amadeus Mozart himself knew their music extremely well and often did not even look at


\textsuperscript{2} Aaron Williamon, “Memorising Music,” in \textit{Musical Performance}, ed. John Rink (Cambridge: University Press, 2002), 114-118. A study was done by Aaron Williamon where a cellist performed Bach cello suites in memorized and non-memorized settings, and the former performances were rated higher by the public.

the notes while performing, they always had their score in front of them. Therefore, it is not surprising the audience was in shock when Clara Schumann appeared on stage without her music in 1828. The trend was later taken on by Franz Liszt and several other pianists of the 1800s. Even then, it took the critics time to adjust to this new custom. For a while they would dismiss performances from memory; on other occasions, the audience would consider playing from memory merely as a fascinating spectacle. For instance, in 1870 Hans von Bülow’s memorized performances were considered impressive due to his memory skills, but not due to his sensitivity as an artist.

Playing by heart holds a significant role for the performing musician, especially for the pianist, while this is concurrently one of the most often attributed reasons for performance anxiety. This leads to the need of the current study.

With roughly 170 years of memorized performance being in vogue, it is no surprise that there exists a substantial amount of literature written about memorizing piano music. However, the problem is that very few writings discuss strategies for the major cause for memory slips in piano performance: the left hand. As renowned pianist Josef Lhévinne claimed, left hand is “one of the chief offenders of inaccuracy,” so he rightfully recommends separate practice “as if there is no right hand in order to give the left hand independence and character.”

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5 Ibid.
6 Ibid., 220.
8 Ibid., 36.
It is common for pianists to be listening to the right hand while playing from memory, all the while the left hand is only going through the motions. The high pitched melodic lines in the right hand are quickly and easily memorized. However, the left hand teaches itself to primarily follow the dominant right hand while lacking any memory independence of its own. The natural tendency of such automation is encouraged by many teachers in the interest of achieving quick results, or in an effort to stabilize a performance rendition close to the performance date. Consciously or subconsciously, teachers and students alike may feel that the ability to put hands together quickly is a sign of talent. Additionally, since automatic execution is indeed a necessary component of compositions ready for performance, many would not consider the hidden risks involved in fusing left hand and right hand material early before separate components are individually comprehended and digested. Mechanical assimilation of the material does not only lead to poor memory skills, but it also causes a lack of true independence of the hands.

While memorizing hands-separately is often recommended, the truth for most pianists is that this method is not applied to every repertoire piece being memorized due to lack of urgent need felt by the pianist. Even when hands-separate memorization is used, it is easy to rely on the aural memory of the right-hand material to cue the left-hand passages. Therefore, memorizing the left-hand material as if it were its own autonomous entity is not achieved nor deemed necessary. Avoiding true understanding and knowledge of the left-hand material further prompts poor musicianship and misinformed interpretation of the entire music material.
The memory challenges in the left hand are chiefly a result of the manner with which the left-hand material is treated by the pianist: with lack of material comprehension and proper attention. Whether the left-hand material involves harmonically simple chords, *alberti* bass, or the most harmonically, structurally and melodically complex passages, it needs to be perceived and studied by the performer as a musical, technical, and topographical body in itself, before coupling it with the right hand. Therefore, the left-hand memory ought to be exceedingly stable, so the left hand can then become an equal partner to the right, and furthermore assume the role of the memory anchor when it is called for. To summarize, there is a need for a study that focuses on the importance of the left-hand memory, and how to develop practical and sound memorization habits for it. Thus follows the purpose of the present paper.

The purpose of this essay is to survey and select approaches appropriate for left-hand memorization. Discussing and reviewing these approaches will lead the discourse to discovering suitable ways for understanding the left-hand material in its varied forms. Aside from examining left-hand material where the right hand is seemingly dominant, the study will also inspect situations where material is shared between the two hands, and where separate-hand memorization should follow after first understanding the relationship between the hands. The selected memorization strategies will be applied to musical examples showcasing the different left-hand arrangements. This particular application will serve as an example of a memorization process to be further used and explored by pianists who come across similar issues, and who can benefit from the proposed strategies. Understanding which music material requires the highest focus, at what point the focus requires shifting, and how to appropriately group material to be
stored in the memory, will play an essential role in developing a well-grounded and comprehensive memorization technique for the left hand, and consequently for the entire music material.

To conclude the introduction of the present document, one cannot simply repeat a musical composition a hundred times and hope it will stick. Going through the motions and having no strong anchor to rely on in the music leaves the performer only to luck and automatic physical memory. What happens when there is a long passage and the memory breaks in the middle? As pianist Janina Fialkowska affirms: “But if you go completely blank and it’s a long passage, you face the horrors.”9 It is safe to assume that nearly every pianist has “faced the horrors” at one point or another. In order to avoid such headaches, the performer ought to be cautious and approach memorization intelligently.

The following Chapter II presents a summary of the main types of memory and their significance: visual, aural, kinesthetic, and analytical, followed by a short account of subject studies. More specific surveys of subject studies and additional writings will be given in the literature review in Chapter III, from which useful information will be extracted, and applied to selected musical examples. Chapter II further discusses other components of memory: the sensory store, short-term memory, and long-term memory (which includes declarative and non-declarative memory).10 The chapter continues to Expertise Theory. This theory presents the way experienced professionals learn the material in their particular domain of expertise. It aids in clarifying the crucial difference

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in the organization and processing of stored information for the purpose of continuous
improvement by the “experts.” Therefore, the purpose of the following chapter is to
familiarize the reader with the functions of the separate memory categories, and the role
of Expertise Theory in memorizing.
CHAPTER II

TYPES OF MEMORY AND EXPERTISE THEORY

The goal of the present segment is to deliver a broad spectrum of the constituents of memory, researchers’ analysis and conclusions on the functions of these components, and the role they play in the process of memorization. It is imperative for the reader to be familiar with the basic memory units, so that the development of the argument is followed fluently as it dissects the necessary memorization process into these elements in further chapters. Furthermore, an introduction to Expertise Theory will describe its relevance to the current topic. Additionally, witnessing a vast picture of writings by scholars on memory will further highlight the pressing issue on memorization and how different writers attempt to solve it.

The majority of the music memorization writings list at least four types of memory: aural, visual, kinesthetic, and analytical. Aural memory helps musicians hear the composition inside their mind and anticipate upcoming musical events. Visual memory creates images of the page as well as the keyboard topography inside the mind. Kinesthetic memory helps the automatic execution of the music physically. Analytical memory focuses on the importance of form, key relationships and examining the musical structure in a logical and systematic way. While any one of the above types of memory do serve as memorization strategies to a greater or lesser degree depending on the individual as well as the composition in question, the visual memory is predominant among musicians, thus warranting further discussion.

Visual memory is primarily presented as seeing the music score in the mind’s eye. Even without the so called, “photographic memory,” the visual memory enhances
pianists’ structural memory due to its ability to provide a sense of the placement of musical materials on a specific location of the printed page. Furthermore, visual memory underlines the necessary knowledge and understanding of the keyboard topography. The topography of the keyboard differs from simply visualizing the printed score. Awareness of the topography helps the mind visualize the placement of white and black keys, which gives the pianist a tool for remembering the topographical structure and “feel” of each chord and passage.

A number of scholars have conducted subject studies to evaluate the significance of the above discussed types of memory. Studies, including those done by Grace Rubin-Rabson,\(^\text{11}\) stress the importance of analysis in music memorization. This is because the use of any form of analysis economizes the memorization process by the enhancing of retrieval cues. Others conclude that the visual memory is the most influential in music, and propose strategies for strengthening it. One researcher shows an innovative approach to solidifying visual memory. Rebecca Shockley writes on “mapping” music which involves studying the score and drawing a map with symbols proposed by the writer and with ones chosen by the individual while focusing on the most important features of the music. A more detailed description of Shockey’s method will be discussed in Chapter III, because these maps will further serve as tools for macro-level organization of the chosen musical examples in Chapter V. Some dissertations study strategies such as music mnemonics and performance cues. These encompass all of the types of memory discussed above, and propose specific and highly detailed recommendations for

memorization. The recommendations will be reviewed more in detail in Chapter III, and later implemented as left-hand memorization strategies in Chapter V.

Apart from visual, aural, kinesthetic and analytical memory, there are additional components of memory distinguished by the duration of stored information. These components are the sensory store, short-term memory, and long-term memory. The sensory store temporarily holds environmental information perceived by the senses—for example—visual, tactile, and auditory. The sensory-memory is extremely short, and it is sometimes considered to be a component of the process of perception. It is nevertheless an integral step for storing information in the short-term memory. Short-term memory (which includes working memory) retains new information and relates it to past, present and predicted future events. Short-term memory can retain an average of seven items at a time, and similarly to sensory-memory but perceived at a conscious level, it disappears quickly unless there is conscious effort made to retain it. Short-term memory is a necessary step before storing information in the long-term memory. Long-term memory, on the other hand, contains procedural knowledge of “how to,” semantic knowledge (knowing facts), and episodic memory (details of events in one’s life). This type of memory can be subcategorized as declarative (or explicit) and non-declarative (or implicit), depending on whether it can be verbalized or not. Declarative memory relates

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13 Ibid.


15 Dubuc, “Memory and Learning.”
to those things which can be described in words, whereas non-declarative is associated with activities which do not require words (such as riding a bike, or walking).\textsuperscript{16} Another relevant concept to memorization is Expertise Theory.

Expertise Theory is concerned not only with musicians, but others with refined skills, such as athletes and chess players. Expertise Theory encompasses the already formulated types of memory, but in the hands of the experienced professionals. It deals with long-term memory, and how experts memorize based on years of experience (through chunking of small meaningful groups). Such experience leads to mental maps that include global and lower level representations of the music. Skilled performers also use retrieval schemes which are hierarchically ordered, so they could recall the encoded information suitable for the particular material, and the learning context.\textsuperscript{17} The superior ability of experts to select relevant information already encoded in the long-term memory, and to apply it in a logical manner to the working memory, allows them to better adapt to new circumstances and evaluate their own performance.\textsuperscript{18} Expertise theory is therefore useful for general recommendations on solidifying and refining the long-term memory process, which will be discussed in the following chapters. Another crucial aspect of this theory is deliberate practice. Deliberate practice bears significance among novices as well as experts. Every practice session needs to be goal-oriented with the highest amount of concentration possible. Such discipline will allow the pianist to strive

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\item Dubuc, “Memory and Learning.”
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for better results with each repetition, thus making such repetition not an exercise in
massed practice, but a continuous, cumulative effort towards improvement. Expertise
Theory and its several components will be applied to approaches on left-hand memory in
Chapter V. A more thorough investigation on the above elements is given in the
Literature Review chapter of the current study. Thus, the following chapter will be a
critical review on existing literature on the topic of memorizing piano music.
CHAPTER III
LITERATURE REVIEW

The subject of memorizing has been deliberated for over a century. In order for the current paper to deliver a deeper understanding on the approaches scholars and performers have taken on memorization, the present chapter will put forth reviews of writings on the different components of memory, their application, and relevance to the topic of left-hand memorization. The reviews include books, articles and dissertations written by a variety of performer-pedagogues and researchers. The chapter also includes reviews of subject studies conducted on experienced as well as unexperienced musicians in order to showcase the response individuals have on varied memorization methods.

It is important to note that the current study does not include scientific studies on memorization and its effects on the brain. The reviewed sources are selected by the author of this paper as relevant to left-hand memorization for their musical, and technical approaches.

The first category of literature reviewed pertains to strategies suggested in writings by performer-pedagogues. These writings are worth investigating for the purpose of knowing the way in which pianists have tackled memorization in the first half of the twentieth century. These pianists have had successful careers as performers and pedagogues, therefore a broad survey of suggestions related to memorization is valuable regardless of whether they are based on personal experience and insights, or on findings as a result of empirical study. These accounts will be analyzed in order to extract any information that could be applied to left-hand memorization, including accounts both conflicting as well as consistent.
The topic of memorization has not escaped the attention of legendary concert pianists and pedagogues. Although we look for useful advice from these extraordinary musicians, while some of their accounts on memory are valuable, others are only enough to satisfy our curiosity. Pianist Alfred Brendel would learn a piece by heart as early as after playing it only a couple of times. Other performers’ memorizing would be as detailed as knowing the page numbers of the score by heart. Taking the process even further, performers would study the musical and formal structure of their pieces, and use the knowledge as a memorization tool. Practicing slowly and consciously noting phrases, cadences and form, were retrieval schemes used by pianist Alicia de Larrocha.

Recommendations on “silent practice,” to develop aural memory, were offered by Ruth Slenczynska: “Without pitch or timbre to distract, weaknesses can be discovered and corrected. Greater responsibility is placed on the inner ear, the active hands, the internal musical experience; new depth is brought to performance.”

Alberto Jonás, a performer and pedagogue, expands on memorization and the different components requiring attention. One of his recommendations includes careful and clear comprehension of the material from the very beginning. The sequence of events in learning a composition, for him, is: impression, perception, comprehension, retention. If the first of this chain is secure, then the rest will also be. Although the mentioned pianists’ accounts on memorization are based simply on subjective opinions and advice, they are relevant to the present topic of memorization.

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Piano Playing with Piano Questions Answered (1920) is an early account on technique and memory by celebrated pianist Josef Hoffman. Internal visualization and hearing are key topics in the author’s discourse on memorization. Hoffman recommends that the pianist begins the memory training process with a short piece. The initial stage should include analyzing the form and texture of the composition, followed by playing the music several times. After familiarizing themselves with the structure, the pianist should proceed to studying the music in their mind—trying to visualize and hear the music mentally, and filling any gaps by only looking at the score. The next step would be to move on to the keyboard and try to play the piece by memory. If the memory fails at a certain spot, it is important to practice that particular section, and not move forward until the memory is secure. Hoffman makes an interesting point regarding other factors which can affect the memory such as the environment in which the memorized work is practiced. According to Hoffman, the pianist unconsciously associates the studied piece with the room in which it is being practiced, which can lead to sudden memory lapse when the environment is changed.\textsuperscript{21} Therefore, as Hoffman concludes, the work ought to be practiced in as many different locations as possible, so the mind does not get startled when the piece has to be performed in a completely new setting. Despite the fact Hoffman does not review hands-separate memorization, he does briefly mention hands-separate practice in the Piano Questions section of his book.\textsuperscript{22} In this same section Hoffman advises memorizing one phrase a day. Additionally, the author mentions that as


\textsuperscript{22} Ibid, 52.
long as the musician takes interest in what they are playing, the memory will come.23 The author’s point bears a great deal of truth; one’s interest in the material provides motivation, which offers a smoother process of memorization. However, even if the motivation is there, the memory which comes more strenuously, is the memory which lasts for a longer time than the one which comes easily, which has been proven in more recent scientific inquiries. Hoffman calls such quick memory “mobile.”24

Another writing concerning memory and visualization is Piano Technique by Walter Gieseking and Karl Leimer.25 According to the authors, studying the composition away from the keyboard can ensure a perfectly secure performance, and this could be achieved in a very short time.26 Gieseking was notorious for memorizing away from the piano. The quick absorption of material also depends on systematic logical thinking, or “reflection,” as the authors call it. Further recommendations include that every pupil, even the very beginners, must be instructed to memorize short phrases at each lesson. The similarity of this recommendation to Carl Czerny’s in his Letters to a Young Lady on the Art of Playing the Pianoforte (1851) is striking.27 On the other hand, except for pieces to be publicly performed, special exercises, and Bach compositions, Gieseking and Leimer consider memorization unnecessary.28 This argument is intriguing. Since there is no rule

23 Hoffman, 115.
24 Ibid., 116.
26 Gieseking and Leimer, 11.
27 Carl Czerny, Letters to a Young Lady on the Art of Playing the Pianoforte, 1st American ed. (New York: Firth, Pond & Co, 1851).
28 Gieseking and Leimer, 11.
to state memorization is required for each studied composition, it makes sense that memorization should be exercised constantly, but it does not need to be applied to every piece to be played, allowing for time to be exposed to a larger repertoire which is also important for a developing musician.

In a different source, Basic Principles in Pianoforte Playing (1924), Josef Lhévinne declares the left hand is the primary reason for memory slips, which supports the purpose and need of the present study. The author guides the pianist to not memorize measures, but phrases, which is another way of directing one’s attention to the musical structure. In his own way Lhévinne recommends deliberate practice: “Do not think you have been practicing if you have played a single note with your mind on anything else.”

Master School of Modern Piano Playing and Virtuosity (1929) by Alberto Jonás has a lengthy section devoted to memorization. In his discourse he regards memory as having two components: remembrance and recollection where remembrance brings back thoughts without having to force it, and recollection brings back memories consciously and purposefully. Among Jonás’ recommendations are ones for successful retention of the memorized material. He advises the pianist the following steps for retention: practicing the memorized piece once a day the first week, then every other day during the second week, then twice the third week, and finally once a week for six weeks. This way, according to the author, the memory of the first memorized performance will be strengthened, and refreshed continuously. With such practice the composition will be

29 Lhévinne, 44-45.
30 Jonás, 217-249.
31 Ibid., 222.
32 Ibid., 242.
remembered for many years. It is important to note that such frequent refreshment may cause the physical memory to take over. In order to avoid such a habit, the author of the present paper recommends continuous application of chosen retrieval cues which will be discussed in further sections of the chapter.

Another early account is written by James Francis Cooke (1948). In his book, *How to Memorize Music*, entirely dedicated to memorization, the author presents specific steps on the process plus recommendations by known musicians including Harold Bauer, Maurice Dumesnil, Rudolph Ganz, Henrich Gebhard, and Howard Hanson among others. Cooke presents eighteen steps to memorization. None of these steps include detailed descriptions, but some do touch upon separate-hand memorization, and having the ability to write the whole score down by memory, but not in order (writing different measures of the composition in a shuffled order until the whole composition is on paper).33 This laborious activity would prove that the pianist knows the score to its smallest detail.34

The following is a source significant for its discussion on different memory categories including ones added by the author himself. In his chapter “Memory” in *Playing the Piano with Confidence: An Analysis of Technique, Interpretation, Memory and Performance* (1964), Gerald D’Abreu includes explanations of about eighteen aspects of memorizing piano music. These types include partial memory (knowing certain landmarks in the music), muscular memory (knowing the piece mechanically), aural memory (anticipating what the next sound should be), photographic memory, and

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concentration (organizing impressions and observations in one’s mind). It is important to note that in the section about photographic memory, D’Abreu discusses how photographic memory is not fixing the impression of the printed page in one’s mind, but it is instead remembering transformations of the printed music into shapes and fingerings on the keyboard. This he also calls “keyboard memory.” Categorizing keyboard memory as photographic memory is rather controversial, because when one thinks of “keyboard memory,” one associates it with the topography of the instrument. Additionally, photographic memory is more often considered as imagining the music score in one’s mind, but D’Abreu openly disagrees with this notion. D’Abreu proceeds with: analysis (noticing comparisons and differences within the music), memorizing melodically (or memorizing hands separately), memorizing parts (or separate voices within a polyphonic passage), and memorizing harmonically (or chord progressions). Even though the author mentions separate-hand memorization very briefly, his recommendation on memorizing the intervallic relationships in melodic lines is relevant to the present topic of left-hand memorization. D’Abreu then goes into discussing memorizing twentieth-century music (studying intervals and searching for familiar harmonies), memorizing away from the keyboard (studying the score), memorizing before practicing (for unexperienced readers), memorizing in sections, and memorizing as a whole. The author discusses memorizing before practicing for novices, since it is common for beginners to memorize immediately without understanding the score, due to lack of the ability to both read the music and play the correct notes. D’Abreu regards such memorization as false, for pianists need to improve their reading first before

memorizing. There is truth to this statement since the player ought to first understand the music, the score markings, articulation, and dynamics, then be able to execute all of the above while looking at the score, and then commit it to memory. It is often the case that memorization occurs almost immediately without regarding all of the details in the score, which can lead to misinformed interpretation. However, experienced pianists who read well, should strive to internalize all of the information on the page as soon as possible. Furthermore, D’Abreu regards memorizing as a whole as preferable to section memorization. The author of the current document recognizes that understanding, and solid memory of the whole work are necessary, but section memorization is just as crucial. Both the macro and micro levels of the composition must be fluently and comprehensively studied and paid attention to during the process of memorization.

D’Abreu rightfully declares that all of the above types of memory need to be synced in order to have a well-rounded memorization technique. Additionally, according to D’Abreu, there is no need to be analyzing and overthinking during performance (doubting the memory by thinking back of a mistake or thinking ahead of a difficult passage). Going further with D’Abreu’s recommendations, if the performer is relying on the muscular memory unconsciously, on the aural consciously, and on the photographic memory in the form of cues and landmarks while being in the moment, then the mind would be occupied with what is important, and not with past or future perils. D’Abreu also adds that being in the moment is achieved not by avoiding thinking of irrelevant concerns, but by solely focusing on the interpretation of the music. D’Abreu’s conclusion is to the point, except there need to be more elements to rely on than just interpretation. This will be discussed in the reviews on Expertise Theory. Despite the fact that
D’Abreu’s memorization recommendations are brief and lacking detail, they provide a valuable and logical base for the study on music memorization. D’Abreu’s writings do not bring up the left hand (except for mentioning separate-hand practice briefly), but his memorization categories will be a helpful asset for the present paper.

In the chapter “Memorising Music” in Rink’s *Musical Performance: A Guide to Understanding* (2002), Aaron Williamon offers insights on audiences’ response to memorized performances, and why memorized performances are preferred over non-memorized. The discussion also relates a concise and informative historical account on memorization, plus an overview of Expertise Theory. The chapter then offers several research questions related to the efficacy of memorized performances: “Does performing by memory offer absolute freedom of expression?”; “Do memorized performances present the most direct psychological connection with the audience?”; “If memorized performances indeed provide the above advantages, do these advantages outweigh the extra hours of practicing spent to accomplish this task?”; and “Does musical training affect the ability to distinguish between memorized and non-memorized performances?” 36 These questions are answered with an experiment on a cellist who was video-recorded performing three preludes from Bach’s cello suites 1, 2, and 3 in different settings—memorized, non-memorized, memorized without a stand, memorized with a stand, and non-memorized with a stand that was not visible to the audience. The results were: memorized performances do offer freedom, but not absolute freedom; audiences rated memorized performances higher, regardless of whether there was a stand or not; memorized performances administered more forward connection with the audience,

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36 Williamon, 114.
especially an audience of musicians; the extra time spent memorizing was proven to be worthwhile. As Williamon concedes, there are certain limitations to the study such as the fact that the cellist was not an esteemed performer; and that video-taped performances may have impaired the communication. He also mentions that atonal music might be highly “cumbersome” (since it would have to be studied note by note) for memorization, and therefore it could be more advantageous for the performer to avoid memorizing music of this kind. While this task is indeed difficult, with a reliable memorization method, the author of the present study concludes that there would be a solution for memorizing any musical composition, provided appropriate preparation time is available.

Williamon’s chapter further presents an interview conducted to study memorization methods of seven concert pianists. The one thing they all employed as a strategy was learning the structure of the music. The chapter is also a practical reference for the principles of Expertise Theory summarized by Williamon. These principles will be discussed in greater detail in a separate literature review. As a conclusion, the chapter on memorizing music by Williamon is a useful source for information on audiences’ response to memorized performances, and a concise reference to Expertise Theory. The chapter’s brief overview of the different types of memory and of the historical background of memorized performance is practical as well. The chapter lacks detail on each of the discussed subjects, but it is a compact account on memorization nevertheless.

A source which will be key in this dissertation on left-hand memorization is *Mapping Music: For Fast Learning and Secure Memory* (2001) by Rebecca Shockley. Shockley’s book begins with outlining the importance of theory skills and improvisation in the process of learning a musical composition. Theory knowledge provides
understanding of the intervallic, chordal, and harmonic structure of the music material (in other words, having the basic knowledge for analyzing a composition). Improvisation is an aspect of the learning process which, as Shockley relates, is closely linked to the “ability to fake.” According to Shockley this ability gives additional confidence to the musician, and greater understanding of the music. Additionally, this skill will enable the performer to handle situations where memory fails because the understanding of the overall harmonic and melodic function, and the skill of improvisation, will act as a safety net. Further necessary skills according to Shockley are playing by ear, sight-reading, transposition and harmonization. Students with a good ear who are accustomed to relying on auditory memory to learn pieces often lack decent sight-reading skills. Transposition (which is based on highly developed intervallic reading, and inner hearing), and harmonization fluency are key to developing sight-reading. The core of Shockley’s research is based on the organization of musical maps. Memory organization is not only applied to music, but to lectures as well. Taking notes during a lecture in a way that is condensed and subject to each individual’s understanding of the material is proven to help the learning process. Further, in taking notes, one’s understanding and memory of a material would be increased if the notes include visual imagery. These mind maps are different from a regular outline. They would consist of key words arranged visually on the page to support the recall process. The maps would also include colors, images chosen by the student, and abbreviations. “Chunking” (finding patterns, and creating meaningful groups to improve learning) is another element discussed by Shockley. All of

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38 Shockley, 5.
the above introductions lead to musical mapping, which is the objective of Shockley’s research. As the author explains, mapping music involves studying the score and drawing a map while focusing on the most distinct features of the music. Such features include the melody (drawing it with dots and dashes, contour lines or arrows), the phrase structure (aligning measures and phrases, and drawing horizontal lines as a basic grid for the map), rhythm (drawing with dots and dashes), harmony (chord symbols), repetition and contrast (repetition signs or the word “same” can be used to indicate this feature), and other patterns (this could include finger numbers, articulations, or anything that the pianist finds helpful).39 The book goes into many examples of maps for beginner, intermediate and advanced repertoire. These maps are exceptional tools for the present paper. They not only develop creativity, and visual associations, but also increase the analytical skills of the pianist. The maps will play a central role in the present paper’s macro organization of the left-hand memorization approach which will be discussed in chapters IV and V.

The following section will examine writings on Expertise Theory, and their relevance and application. Expertise Theory is a topic that has been discussed among a number of scholars including K. Anderson Ericsson, Walter Kintsch, Roger Chaffin, Gabriela Imreh, Rita Ariello, Aaron Williamon, Topher Logan, and Kristen Begosh. As Ericsson and Kintsch state, expert-performance is the result of thousands of hours of deliberate practice and knowledge of the particular subject. It is important to note that expert-performance is not an inborn ability, but the result of numerous hours of practice, plus added discipline and persistence. This level of competence is not transferrable from activity to activity, but it is developed over time within each discipline.

39 Shockley, 7-9.
Experts’ abilities in the domain of memorization are far beyond those of beginners. Roger Chaffin and Gabriela Imreh discuss the three principles of Expertise Theory as components of skilled memory in the chapter “Memory and Performance” in *Practicing Perfection: Memory and Piano Performance*. The chapter offers clear definitions of the principles, and their application to the memorization of a specific piece by pianist Gabriela Imreh. The first principle states that the knowledge experts have of their field allows them to encode new information in already formed chunks of stored information in the memory. In music such chunks are arpeggios, chords, scales, harmonic progressions and phrases. These groups are stored in the long-term memory, therefore experts are able to automatically recognize such organizations and apply them to new situations. Due to the years of experience and attained knowledge, experts are able to think in larger chunks than beginners do, remember greater amounts of information in a shorter amount of time, and make quick decisions when encountering difficult situations. Imreh recorded her memorization process of the *Presto* in Bach’s *Italian Concerto*. In the first stage of recognizing familiar patterns, apart from using her knowledge of familiar chunks, Imreh also relied on standard fingerings which are linked to these chunks. Additionally, she had to create non-standard fingerings which required effort in memorizing and conscious command for retrieval. Recognition of meaningful

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42 Chaffin and Imreh, 198.

43 Ibid., 199.
groups and appropriate fingerings will be one of the approaches incorporated to left-hand memorization in further chapters of this paper.

According to the second principle, the expert needs to create a hierarchically organized retrieval scheme in order to form cues associated with the new information. As Chaffin and Imreh mention, the formal structure of the piece is an already designed hierarchic structure from which cues can be extracted. These cues later serve as a tool for retrieving the acquired information. An example of retrieval scheme is given by Chaffin and Imreh where Bach’s *Italian Concerto* is sectionalized into movements, sections, subsections, and bars.\(^4^4\) The scheme includes expressive, interpretive, and basic performance cues. The chart describes a retrieval scheme for one of the sections in the *Presto*. As the authors describe, the section unfolds into a subsection, which unfolds into a measure, which unfolds into several performance cues. At the bottom of the chart are seen the notes to which these cues refer.\(^4^5\) In the second stage of memorizing the *Presto*, Imreh noticed her practice was affected by the serial order of the material. The effect the serial order had on memory resulted in superior remembrance of earlier material to that of later material, which led to the conclusion that later material requires more repetitions. Other aspects that needed attention were the “switches” within similar sections, and how additional practice was required for securing these switches. As Chaffin and Imreh define, these switches happen at the point where a similar section appears more than once in the score, but with deviations in the music material.\(^4^6\) More specifically, the switch

\(^{44}\) Chaffin and Imreh, 199-200.

\(^{45}\) Ibid., 200.

\(^{46}\) Ibid., 206.
occurs at the moment where the decision of which path to take is made. This decision, as the authors affirm, requires conceptual knowledge, since the auditory and motor memory are unable to always make the switch automatically. Thus, beginning at these points in the music allows them to serve as retrieval cues. Therefore, switches and section boundaries played a major role as retrieval cues for Gabriela Imreh. Serial order and its consequences will be discussed in a later review.

The third principle of Expertise Theory states that retrieving stored knowledge from the long-term memory is a time-consuming process. Consequently, the more these retrieval schemes are practiced, the faster the expert can access the stored information. Imreh had difficulty retrieving information from the long-term memory during her process of memorization, especially when she increased the tempo of the composition. The problem was not so much the tempo of the music, but keeping track of Imreh’s place in the music, while focusing on the performance cues at such a rapid speed. Imreh further recorded her recollection process two years after her performance of the concerto. She realized that the serial memory still played a role in the retrieval, since earlier sections were remembered more easily. Imreh also related that she “re-chunked” material in the final polishing stage, which was not a process mentioned in Expertise Theory. In this final stage she focused on expressive cues, so she could direct her attention to the emotions she wanted to express in her playing. This way she created a new level of expressive cues which resulted in Imreh’s reworking of the material in order to access the retrieval scheme. It is a fact that memories linked to emotions are more easily

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47 Chaffin and Imreh, 206.

48 Ibid., 234.
remembered than the ones devoid of emotion.\textsuperscript{49} However, the author of the present paper is convinced it is crucial that these emotional cues are controlled, so that the emotions are not the only thing left to support the memory. It often occurs that performers are so deeply engulfed in the particular emotional state, that the hands are automating, which can easily lead to a memory lapse once this emotional trance is over. This naturally leads to the conclusion that the particular emotion needs to be practiced repeatedly to its full extent, so when performed on stage it does not trip the pianist, while ensuring that memory retrieval is equally secure without emotional cues by testing from time to time.

Discovering emotional cues, and deliberately and constantly practicing them, plus rehearsing without any emotional cues for those who use them too often, will be a part of this paper’s objectives.

Building upon the study by Roger Chaffin and Gabriela Imreh is another account on expertise memory and performance cues, given by Roger Chaffin, Topher Logan, and Kristen Begosh in the chapter “Performing from Memory” in the \textit{Oxford Handbook of Music Psychology}. As discussed in the previous review, the serial order of information played a significant role in Gabriela Imreh’s recollection of the music material. Chaffin, Logan and Begosh call such serial order associative-chaining. Associative-chaining occurs where a measure or group serve as a cue to the next measure or group, and the next measure or group serve as a cue to the one after, and so on and so forth. The danger presents itself when the chain breaks, and the performer has no knowledge of what comes next. Thus, it is imperative that not only the beginnings of sections are secure, but that the

performer can begin at any given point after creating a “content-addressable” memory process, conforming to the series of cues discussed previously. The performance cues break the associative chain, and the content can be accessed at more than one point. Thus, combining content-addressable information and associative chaining offers more than one type of memory association. The serial order ought to be present, however, and the sections within this order need to hold meaning for the performer, so if the memory breaks, there is still enough information to hold it together. The above recommendations and conclusions will be adapted in further chapters.

A related topic to deliberate practice is “mindful learning,” as described in Ellen J. Langer’s book *The Power of Mindful Learning*.50 As Langer notes, mindful learning is classified as creating new categories, being open to new information, and being aware of more than one perspective. Langer’s book relates an experiment conducted on beginning level piano students. The students were being presented with simple scale exercises and instructed to either learn the exercises with repetition, or with mindful strategies. The group who relied on mindful learning were told not to learn by rote memorization, but rather to change their learning style every few minutes, and not rely on a singular pattern. The mindful group was supposed to pay attention to the context, and any feelings or thoughts the students might be experiencing in the moment. The group who was told to aim at changing their patterns and learning style constantly, performed with higher creativity, and enjoyment than those who were only advised to practice repetition, and thus the mindful group was rated as more competent than the other group.51 From this


51 Langer, 27.
result it can be deduced that to reach a level of expert-performance, one must apply a focused and constantly adapting learning strategy to the task at hand. Sheer repetition may produce a short-lasting result, but concentrated and intelligent absorbing of the material will give long-lasting results. The following section organizes studies on the different memory components, and the subjects’ responses to these experiments.

Experiments to test the efficacy of various memorization approaches have been executed by a number of music scholars. Understanding these studies and their results provides information on memory and how each of its elements functions on the human mind. On several occasions studies are executed on inexperienced pianists, while other times the subjects are experienced professionals. Regardless of the level of the examinees, all of the studies reviewed benefit the topic of memorization. The following section reviews selected studies which investigate different types of memory, and their importance for the subjects; the studies also offer tactics on solving memorization problems.

One of the early examples of this category of studies on music memory was conducted by Grace Rubin-Rabson (1937). She selected four different methods to compare in her experiment on analytical presudy. These methods included studying the score with a given outline, studying the score with the subject’s own outline, memorizing at the keyboard without any presudy, and listening to the musical piece four times while following the score (which would precede each of the three other methods).\textsuperscript{52} The subjects who participated had at least four years of piano training, and at least one year of theoretical training each. The compositions used were from sixteen to twenty-six

\textsuperscript{52} Rubin-Rabson, 18.
measures long. Rabson’s study concluded that having initial study of the composition away from the keyboard proved undoubtedly superior to the ones where the subjects proceeded immediately to the keyboard. The subjects were not experienced pianists, but even so the study offers support on analytical prestudy and its benefits for the musician. In her conclusion Rabson suggests that such a strategy would be immensely beneficial for the efficiency of memorizing more difficult compositions.\(^{53}\) An important final point Rubin-Rabson makes is that the number of years of playing the instrument does not necessarily correlate in a direct ratio to the time it takes to memorize a new composition.\(^{54}\) Therefore, care and intelligent work on memorizing is required of novices and experts alike.

A study by Lawrence Naai-lei Lo (1976) concluded that visual memory is key in memorizing, especially in the four-part harmony hymns chosen for the study.\(^{55}\) This study was conducted on class piano students at Indiana University, Bloomington. The music chosen for the experiments included six sixteen-measure excerpts of four-part blocked style piano writing with simple harmonies. The training lasted two weeks with four fifteen-minute sessions twice a week. Lo approached visual memory with studying the score followed by internal visualization. The control group was given one page of general instructions on memorization, whereas the experimental group was given a

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\(^{53}\) Rubin-Rabson, 43.

\(^{54}\) Ibid., 44.

second page of specific instructions on visual memorization, including trying to imagine
the score with eyes closed after studying it with eyes open. After the experiment was
finished, both groups were asked to provide comments on their learning experience, and a
majority of the experimental group declared that their memorization was improved, while
a much smaller percentage of the control group related such an outcome. This study has
the limitation of examining only one type of music figuration taken from rather simple
compositions. Regardless, the study offers practical results pertaining to the importance
of visual memory and creating methods to solidify it.

The following study contains valuable information and concepts that are helpful
to the present topic. In his experiment, Charles Edward Nellons studied the effects of
“blocking” on selected piano literature (1974). Despite the fact that this study was also
conducted on non-major piano students, the findings of the undertaking are note-worthy.
Nellons used two groups of piano students where one group was given a regular
unmarked music score, while the other was given a score with indicated memory blocks.
The study lead to the finding that the subjects who used the blocking method completed
the task more quickly, and needed fewer repetitions than the students without the blocked
score.

Nellons divides blocking into several different categories which include tone
patterns defined by the outer interval of the group (indicated as 5TP, 8TP, etc.);\textsuperscript{56}
harmonic patterns and interval patterns in complex passages; scales and arpeggios;

\textsuperscript{56} Charles Edward Nellons, “An Experimental Investigation of the Effect of Blocking on the
Memorization of Selected Piano Literature” (Mus.Ed. diss., The University of Oklahoma, 1975), 31,
accessed October 22, 2017,
harmonic blocks (an aural concept);\textsuperscript{57} and abstract blocks (up or down patterns, black key or white key patterns, interval patterns).\textsuperscript{58} Regardless if these categories are relatively simple, they provide a fair foundation for further exploration on the subject of blocking. It is evident that blocking can be expanded to include additional subcategories derived from the abstract category. These subcategories can be specific to each piece as will be the case with the music examples studied in this paper.

Eugene Lee Schlabach conducted a study involving the role of auditory memory in memorizing piano music.\textsuperscript{59} He chose twenty-four college pianists to learn four short uncomplicated pieces of music. The methods used for memorizing included studying the score while listening to a recording of the composition, followed either by listening to a recorded aural and visual analysis of the piece, or just aural analysis, each presented by the examiner; and studying the score followed by examining a visual analysis of the score. The last method used contained solely physical practice without any prestudy.\textsuperscript{60} Three weeks later there was a relearning session comprised exclusively of hands-on practice at the keyboard. The study’s findings proved that any form of analysis contributes to faster, more efficient memorization. The subjects who studied the analysis of the compositions showed greater accuracy and stability with their memorization work.

\textsuperscript{57} Nellons, 44.
\textsuperscript{58} Ibid., 45.
\textsuperscript{60} Schlabach, 24.
This study confirms the necessity of analysis, and development of dependable auditory memory in order to attain a stable memory base.

A valuable study was conducted by Chenyin Li. The chapter, “An Introduction to Memory” in Li’s *Piano Performance: Strategies for Score Memorisation*, is useful for an overview of basic knowledge about memory, including the typical categorization of memory into four types: sensory memory, short-term memory, working memory, and long-term memory. Some of the information contained in this section will be extracted for the fourth and fifth chapters of the current paper. More importantly, Li discusses mnemonics which are the primary focus of the study. Mnemonics are a helpful tool for organizing information in the long-term memory, and also for retrieving it more easily.

An example of a mnemonic is the method of loci which uses an internal image of a familiar space where the objects or ideas needed to be remembered are mentally placed. The types of music mnemonics summarized in Li’s paper are comprised of “inner speech” music mnemonics (in music it concerns the use of solfege systems, beat counting, word and verbal connotation), kinesthetic music mnemonics (finger patterns); key note music mnemonics (voice leading, harmonic progressions); imagery music mnemonics (imagery of the music page, hand motion, hand positions, gestures); interval music mnemonics (based on the intervals between the notes); and relative music mnemonics (notes shared between left and right hand). Using music mnemonics as the

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62 Li, 16.

63 Ibid.

64 Ibid., 45.
primary aspect of the research, Li conducted a study involving two undergraduate and three postgraduate piano major students. They were instructed to study and memorize two short piano works while keeping a diary. The diaries had to discuss practice time, recording the steps of the memory process used, identifying the most difficult to memorize passages, and any general impressions of the study and noticeable benefits for the pianists’ memorization process. At the conclusion of the study, the pianists involved in the study resorted to mnemonics in their efforts to memorize the pieces. They used tactics such as solfege, marking fingerings on the score and using them as a memory tool, intervallic mnemonics, visual mnemonics of hand positions, emotional memory, rhythmic mnemonics (not previously mentioned by Li), and aural mnemonics. These strategies employed by the subjects were an aid to their memorization process, and were likely to offer the pianists more secure public performances. The mnemonics proposed by Li bear resemblance to the blocks previously discussed by Nellons, which include interval and harmonic patterns, scales and arpeggios, among others. The concept behind these groups and patterns, whether they are called mnemonics or blocks, is similar. They can all be categorized as meaningful chunks already stored in the memory (arpeggios, scales, etc.), then further expanded into more complex mnemonics to suit the specific musical selection.

Li’s research offers a list of memorization tools that require further exploration and application. Although the subject study does not offer a proof of a solid performance after using the mnemonics, the pianists were successful in memorizing the given compositions. The tools presented by Li are a valuable asset for the present paper, and

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65 Li, 95.
will be directly used as one of the strategies applied to left-hand memorization of the selected music examples in Chapter V.

Alexander Soares’ thesis takes Chenyin Li’s a step further. Soares’ *Memorisation of Atonal Music* (2015) delves into the memorization of atonal music in depth. The goal of this study is to determine useful strategies and performance cues for memorizing atonal compositions. Due to the language of atonal music, and its usual lack of familiar harmonies, Soares searches for memory methods to fit music devoid of familiar harmonies. The author uses himself (a skilled concert pianist) as the case study of different memorization approaches in the first five chapters of the thesis. Soares records his practice sessions up to his performance of Messiaen’s *Oiseaux Exotiques* (specifically the cadenza). The study includes recording of verbalized comments, annotated scores, and learning stages (sectional practice, and re-approach: coming back to a piece which has already been learned). Performance cues analyzed through charts and recorded comments include formal analysis and emotional cues. The study has the limitation of researcher and study subject being the same person. Nevertheless, this study is valuable due to its unique approach and extended memorization analysis of atonal music, which can be applied to different types of music and left-hand memorization. In the third chapter of the paper, Soares mentions the cues used by Li, and expands them to fit his purpose. Due to the atonal nature of the composition and its high level of difficulty for memorization, the cues proposed by the researcher are summarized and presented in great detail (intervallic, hand shape and fingering, piano shapes and patterns, voice leading, verbal association, rhythm, active encoding of a memorization cue vs. awareness of a
specific feature in the music). In chapter four Soares applies the cues from previous chapters to a few other contemporary pieces to determine the effectiveness of the cues used in the previous chapters. He develops further techniques, including large scale memory strategy (large-scale motifs, large-scale harmonic structures, individual cues). In the fifth chapter Soares studies long-term memory through the process of relearning a piece by Boulez (Douze notations pour piano) in the span of seven years. The author discovered that the technical aspects of the piece were more difficult to recall over time, but the conceptual framework was significantly intact. Soares was able to recreate Ginsborg and Chaffin’s study result which declared that studying sections and phrases would increase the probability of effective recall. The sixth chapter is used to examine the memorization approaches of three different skilled concert pianists. They were able to choose an atonal piece and annotate the score while memorizing it; the study was then followed by an interview held by the participants with little intrusion by the researcher to avoid bias. The cues used by the pianists were largely similar to those used by the researcher. Cues included sectional practice, analysis, hands-separate practice, and any harmonic relationships, hand shapes, or intervals. One pianist spaced practice sessions in timed frames which included periods of rest to achieve better results in the end. Another pianist used synesthesia as a method of memorizing. The importance of retrieval cues in studying atonal music proves true in Soares’ study. Regardless that Soares’ research was

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67 Soares, 186.

68 Ibid.
based on exploring atonal memorization techniques, the research and cues used are a rich foundation for building memorization techniques for the left hand. All of the above techniques and more can be applied to left-hand memorization.

An incredibly valuable dissertation on music memorization is authored by Silvia Atmadja.\(^{69}\) Her annotated bibliography gives an overview of writings in English on the subject of piano memorization in the form of articles, books, and theses from the 1980s until the beginning of the twenty-first century. This bibliography is tremendously beneficial for surveying the resources that are available in the time period Atmadja explores, and it gives an exceptional summary of the writings available to pianists on memorization. The author herself clarifies the delimitations of her research in that it is directed towards musical and psychological findings, but not scientific studies on memorization and the brain.\(^{70}\) Despite this, Atmadja’s work is highly relevant to the present study and its search for practical left-hand memory solutions. Each of her summaries is followed by a short biographical account on the writer of the particular work, which makes Atmadja’s document even more constructive and useful to any research on the topic of memorization.

All of the above accounts on memorization hold research, opinions, findings, and theories which will serve as the foundation of the present study. Strategies for left-hand memorization derived from the above sources will be applied to the chosen music examples in Chapter V.


\(^{70}\) Atmadja, 2.
CHAPTER IV

METHODOLOGY

The present chapter will put forth the methodology which will be used to conduct
the study on left-hand memorization in the following chapter. The preceding chapters
offered an overview of the different memory components, and a broad survey of the
existing literature on memorization. Following the purpose of this essay, the survey
presented in Chapter III will act as a tool for selecting relevant and practical techniques
for left-hand memorization. These techniques will be applied to varied types of left-hand
material requiring different approaches and treatment for the purpose of secure memory.
A critical point in the study will be to select appropriate music examples to demonstrate
the memorization process. The selection of music examples will be based on exploring
different left-hand materials from the standpoint of the memorization process, and
examining stylistically varied compositions. Some of these examples will introduce
instances where separate-hand memorization alone is not recommended, while others will
showcase the necessity of focusing on the left-hand material to strengthen the memory.

Apart from material shared between both hands and material where separate-
hand memorization is not ideal, right-hand memorization techniques will not be discussed
in detail. This paper will stress the urgency of focusing on the left hand, to avoid the
usual path of directing one’s attention chiefly to the right hand, and to strengthen the
memory from an angle hardly studied in the existing literature. Following the selection of
appropriate musical examples will be the application of memorization steps extracted
from the literature survey in Chapter III. Some of these steps will include Shockley’s
maps, and Soares’ and Li’s cues and mnemonics. For the purpose of having a broad
visual representation and global structural view of the music material, a map will be drawn of both the right-hand and left-hand material modeled after Shockley’s maps. These maps will include section distinctions, phrase outlines, harmonic labeling (where appropriate), and other distinct features of the music that stand out. Further methods will include exploration of meaningful chunks and blocks within the chosen music material for quicker and secure storing in the memory, and identifying music mnemonics, as well as performance cues. Music mnemonics, as proposed by Chenyin Li, will include inner speech mnemonics (using solfege syllables, beat counting or verbal connotations), interval music mnemonics, and relative music mnemonics (for notes shared between the hands). The following chapter will additionally discuss the appropriate application of performance cues to the proposed music examples in the form of basic, interpretive, and emotional cues. Examples of cues will also be extracted from Alexander Soares’ dissertation, plus additional cues appropriate for the music chosen. Performance cues will include fingerings, hand-shapes, aural cues, and rhythm, among others. Once the cues and mnemonics are determined, a hierarchically structured chart, as proposed by Chaffin and Imreh, will be created for the chosen example.

All of the above methods will aim to expand the knowledge, understanding, and memory strategies of the left-hand material as presented through selected music examples. The final chapter will offer a summary of the previous chapters.
CHAPTER V

APPLICATION OF LEFT-HAND MEMORIZATION STRATEGIES

The current chapter will present musical examples which will showcase a variety of challenges for left-hand memorization. The goal of this chapter will be to examine these examples and offer thorough and practical strategies for their memorization. If the performer were to follow the given suggestions and create a habit of employing such strategies in all appropriate repertoire, then they would have a smoother and confident performance devoid of unnecessary memory struggles. Just as recommended in previous chapters, after being familiar enough with the music, the pianist should begin memorizing the pieces as soon as possible. Therefore, the techniques discussed below must all be done from memory.

I. Examples of Blocked-Chord Left Hand with Small Changes from Chord to Chord

In the following segment the reader will be introduced to instances of blocked-chord memorization in the left hand where the changes are subtle from chord to chord and require detailed attention and memorization techniques. Without clear awareness of voice-leading, finger movement and interval relationships, the memory could fall into the traps of automatic physical memory. Physical memory is one of the necessary components for a strong memory foundation, however relying on it entirely can lead to errors. The upcoming examples offer strategies to go beyond automatic physical memory.

The first examples of this group are taken from Lowell Liebermann’s Piano Sonata No. 3, Op. 82, from which several more examples will be extracted in the following sections. The piece was written in 2007 and it includes a variety of left-hand
figurations with twenty-first century harmonies and melodic lines. Example 1 (*Adagio con molto rubato*) is a slow section following the first movement of the sonata.

Example 1. Liebermann *Piano Sonata No. 3*, Op. 82, *Adagio con molto rubato*, mm. 1-4 with LH fingerings suggested by the author.

The first thing for the pianist to focus on is writing down the finger numbers for the chords in the LH. In any piece of music, once the notes are more or less controlled physically, it is important that the fingerings are decided upon, and the pianist is working on the memory as soon as the physical understanding has improved since the initial sight-reading stage. Furthermore, in order to devise the most comfortable and reliable fingering, the tempo of the musical selection (especially for faster repertoire) has to be up to speed when the fingering is being decided, and the interpretive choices should not be far from the final version. These fingerings could take minor adjustments in more polished stages, but they ought to be almost finalized as soon as possible in order for the memorization to be productive and dependable.

At first glance, one notices that the first two measures are identical and made of a three-note chord followed by a four-note chord while the second two are three-note chords each. There are several points to direct the mind to, which should all be done by memory for solidifying:
1. Visually follow the F sharp from the first to the second chord as well as decide on the appropriate connective physical motion between the two since the first F sharp is with the second finger and the other is with the fifth finger (Ex. 1.a).

Example 1.a. Liebermann *Piano Sonata No. 3*, Op. 82, *Adagio con molto rubato*, mm. 1-4. Follow visually the common F sharp between the chords because of the change of finger from 2 to 5.

2. Notice the interval and fingerings of the first F sharp in the first chord to the A sharp in the second. It is necessary to start lifting the fourth finger in preparation for the A sharp in the second chord (Ex. 1.b).

Example 1.b. Liebermann *Piano Sonata No. 3*, Op. 82, *Adagio con molto rubato*, mm. 1-4. Begin lifting the fourth finger while holding the first chord in order to prepare for the A sharp in the second chord. Observe the interval between the F sharp in the first chord and the A sharp in the second.

3. In all four measures, follow the thumb as the melodic line (Ex. 1.c).
Example 1.c. Liebermann *Piano Sonata No. 3*, Op. 82, *Adagio con molto rubato*, mm. 1-4. Follow the thumb in the LH as the melodic line.

![Musical notation](image1.png)

4. In measures three and four, be aware of the intervallic movement within each voice since in those two measures the chords consist of three notes each (Ex. 1.d). The intervallic movement is similar between the chords, but not identical. Subtle changes such as whole step vs. half step movements must be observed (i.e. F sharp to E, a whole step, and then E to F natural, a half step in the middle voice of the three chords starting from the down beat of m.3 going to the down beat of m.4).

Example 1.d. Liebermann *Piano Sonata No. 3*, Op. 82, *Adagio con molto rubato*, mm. 1-4. Follow the voice-leading between each of the marked chords.

![Musical notation](image2.png)

5. Solidify the skeleton of the chords by practicing the outer intervals alone (Ex. 1.e).
Example 1.e. Liebermann Piano Sonata No. 3, Op. 82, Adagio con molto rubato, mm. 1-4. Practice the outer intervals of each chord by memory.

6. Understand the rhythm division and relationship between the similar rhythms by practicing the quarter notes alone while mentally “playing” the half notes, and vise-versa. Playing by memory in this fashion will assist the mind in separating the LH material into two layers: quarter notes vs. half notes. This way the jumps will be eliminated and the focus will be directed towards the voice movement between the separate layers. Similar results can be achieved by accenting either the quarter notes or half notes only.

7. Practice the chords in a fast tempo for quicker mental and physical grasp of the slow music. This would also help in conveying a longer musical line.

8. Notice the F sharp in the RH in the same beat as the one in the LH (m.1), and the Ds and F naturals in the RH in the second beat, which are also a part of the LH chord (m.1). This is a cue which would be added later after the LH is solidified on its own (Ex. 1.f).

Example 1.f. Liebermann Piano Sonata No. 3, Op. 82, Adagio con molto rubato, mm. 1-4. Observe the common notes between the LH chords and the RH melody.
The second example from the movement *Lullabye* in the same sonata has many of the same issues as the first (Ex. 2).

Example 2. Liebermann *Piano Sonata* No. 3, Op. 82, *Lullabye*, mm. 9-12 with fingerings suggested by the author.

Again, the segment should be practiced slowly as well as quickly. In both examples 1 and 2, the chords from one measure to the next must be followed through voice-leading and topography, not just the ones within the measures. With example 2, consider the following:

1. Follow the individual voices even more closely than in Example 1 (Ex. 2.a), and practice them alone by memory (top-top; middle-middle; bottom-bottom).

Example 2.a. Liebermann *Piano Sonata* No. 3, Op. 82, *Lullabye*, mm. 9-12. Isolate the separate voices in the LH and practice by memory.

2. Just as in point 6 in the previous example, separate the chords into two layers (the first chords in every measure vs. the second chords) in order to compare and contrast the voice movement between each layer. With a separation like this, the mind will not be busy with many chords, but only with the relationship of two
layers. Another layer of security would include noting the relationship between the end of one measure to the beginning of the next, both for intervallic analysis and subsequent physical automation (Ex. 2.b).

Example 2.b. Liebermann *Piano Sonata No. 3*, Op. 82, *Lullabye*, mm. 9-12. Practice the end of one measure to the beginning of the next.

Example 2.c. Liebermann *Piano Sonata No. 3*, Op. 82, *Lullabye*, mm. 9-12. Pay attention to the A-C interval between the first three chords marked, as well as the intervallic difference between the third and fourth chords.
4. Analyze the movement between chord voices in groups of two, instead of all three, to notice the intervals outlined within the chords. Examples of these intervals (Ex. 2.d) are comparing the top two notes of each chord (in m.1 the intervals move from a m3 to a M3 in the top two voices), then the bottom and middle notes (in m.1 the intervals move from a P4 to a m3 in the bottom and middle notes), then the outer two (in m.1 the chords move for a m6 to a P5 in the outer two voices).

Example 2.d. Liebermann *Piano Sonata No. 3*, Op. 82, *Lullabye*, mm. 9-12. Practice the three note chords in the LH with different voice combinations to notice the intervallic changes between each group.

5. Pay attention to how the RH in mm.3-4 is grouped into one slur, while the LH is still slurred in groups of two. By following the two-measure slur in the RH the pianist would notice the relationship between the top voices in each hand. In m.3 the top voice in the LH is going up a half step the same way the top voice of the RH is moving up a half step (Ex. 2.e). The top voices in each hand are then moving down a half step from the last beat of m.3 to the first beat of m.4 (Ex. 2.e). Furthermore, by blocking beats 1 and 2 of the top voice in the RH in m.4, and beats 3 and 4, the pianist would notice these are two minor thirds moving a whole step down. The LH top voice in m.4 also moves down, but a half step instead of a whole step (Ex 2.e).
Example 2.e. Liebermann *Piano Sonata No. 3*, Op. 82, *Lullabye*, mm. 9-12. Notice the relationship between the LH and RH voices.

**II. Examples of Left-Hand Chords that Share Notes with the Right Hand**

Although the next category of examples is also concerned with chordal memorization, the difference in this case is that the left hand is seemingly largely dependent on the right hand material because of the many shared notes between the hands. Regardless of this dependence, the urgency of knowing the left hand on its own still exists. Even though the two hands help each other with the memory, the attention still tends to steer towards the right hand material. This is why knowledge and understanding of the left hand is necessary for a strong memory foundation. Example 3 is taken from the movement *Dona Nobis Pacem* of Liebermann’s *Piano Sonata No. 3* (Ex. 3).

Example 3. Liebermann *Piano Sonata No. 3*, Op. 82, *Dona Nobis Pacem*, mm. 1-4 with fingerings suggested by the author.

The pianist should pay attention to the following as memory strategies:
1. Hold the repeating notes while playing the changing ones (Ex. 3.a). This should be done initially with hands together to discover the physical and topographical differences and similarities as well as for the top line to sound as legato and melodic as possible. Following this step, the pianist should decide on comfortable fingerings.

Example 3.a. Liebermann *Piano Sonata No. 3, Op. 82, Dona Nobis Pacem*, mm. 1-4. For practice hold the repeated notes while playing the changing ones.

![Example 3.a.](image)

2. Compare the intervals of the RH top line and LH bottom line (Ex. 3.b). The intervals are deceptively similar, but there are instances where they change, and those instances need to be examined closely. For example: m.2 RH top line B to D, and LH bottom line D to A sharp, a m3 as opposed to a dim4 (or topographically a M3). Similarly, from m.2 to m.3, the RH has an aug5 (or topographically a m6) from C to G sharp in the top voice, as opposed to the LH bottom interval of a P4 from B to E.

![Example 3.b.](image)
Example 3.b. Liebermann *Piano Sonata No. 3*, Op. 82, *Dona Nobis Pacem*, mm. 1-4. Compare the intervals between the two hands.

3. Follow the direction in the outer voices. In the first slur (the first two measures) the motion is contrary, while in the second slur it is parallel (Ex. 3.c).

Example 3.c. Liebermann *Piano Sonata No. 3*, Op. 82, *Dona Nobis Pacem*, mm. 1-4. Notice the change in the motion between the outer voices of each hand.

4. Play one voice while singing the other with solfege syllables or letter names to increase the aural sensitivity and pitch awareness. An example of such an activity would be playing the LH only and singing the RH top and vise-versa.

5. Practice in a quick tempo just like the previous examples, to develop stronger physical memory.

In Example 4, taken from the movement *Tema con variazioni* of Prokofiev’s *Piano Concerto No. 3*, Op. 29, the issues are the same as the above. Only here the text is thicker, the tempo is more rapid, and the repeated notes change more frequently (Ex. 4).

Follow the steps below for securing the memory of this excerpt:

1. Practice only the LH top note and the RH top note while holding the repeated notes (Ex. 4.a). Furthermore, practice holding the repeated note while playing the shared notes in both hands (LH top note and RH middle note: Ex. 4.b). Since the notes shared between the hands are in different voices, it is possible that the pianist would skip the step of combining the LH top voice with the RH middle voice. Skipping this step may hinder the physical and topographical understanding of the passage, and therefore it is crucial to be studied thoroughly.


2. Play with different rhythms by memory which will contribute to understanding all of the inner connections from note to note. Accenting every other note and changing the note being accented will also make these connections stronger. The memory and physical connection from the off-beat notes to the on-the-beat notes is much weaker than the one from the on-the-beat notes to the off-beat notes. The rhythmic and accent variety will strengthen these connections and will help create a smooth and polished line.

3. Since the example is staccato, practice it legato to benefit the music line and physical placement of the fingerings. Playing legato would involve practicing the bottom voice in the RH with one of its top voices (the bottom repeating note will be held) together with both voices in the LH (bottom repeated one will be held).

4. Note the changes within the sequence outlined in the excerpt. The interval between the eighth notes in the third beats of each measure is different (in m.1 it is a major third, while in m.2 it is a minor third: Ex. 4.c). During this change there is also a topographical shift in the LH where the arm must move the fingers further towards the fallboard in order for the thumb to reach the F sharp on beat 3 in m.2 (Ex. 4.c).
Example 4.c. Prokofiev *Piano Concerto No. 3*, Op. 26, *Tema con variazioni*, mm. 179-180. Observe the marked intervallic changes in the RH and the topographical change in the LH.


5. Use the fingerings as a memory tool to strengthen the physical memory.

Following the finger numbers as a memorization tool can strengthen the awareness of the distance between each interval.

In Example 5, from Ravel’s Waltz No. 8 in his *Valses nobles et sentimentales*, the added difficulties come with the grace notes and the uncomfortable interval distances from chord to chord. In the selected section, the right hand is constructed of three-note chords as opposed to the four-note chords in the left hand (Ex. 5). There is also an added layer of the pedal bass notes in the left hand.

Example 5. Ravel *Valses nobles et sentimentales*, VIII, mm. 9-10 with fingerings suggested by the author.

![Image of Ravel's Waltz No. 8 in *Valses nobles et sentimentales*, VIII, mm. 9-10 with fingerings]

The following steps will ensure stable memorization:
1. Practice quickly as well as slowly like any of the other examples.

2. Practice the bottom two voices of LH and RH with the correct fingerings simultaneously, and note the additional voice in the LH and its movement (Ex. 5.a). The top voices of each hand are identical, so analyzing the inner voices will give greater understanding of the material.

Example 5.a. Ravel *Valses nobles et sentimentales*, VIII, mm. 9-10. Practice the bottom two voices of each hand together while considering the extra note in the LH.

3. Practice the outer intervals to solidify the frame of the chords.

4. Practice by memory without the grace notes and only find their location to teach the hands to measure the distance. It is crucial for both hands to move towards the grace note in m.2 because both are included in executing the notes. RH must move faster since the distance is larger (Ex. 5.b).

Example 5.b. Ravel *Valses nobles et sentimentales*, VIII, mm. 9-10. Move both hands towards the grace notes in advance.
5. Pay attention to the tilt of the hands to help smoothen the connection between these chords. Especially for the RH, it is important to let the angle of the tilt shift from chord to chord which would make the otherwise very uncomfortable intervals (that are too close together) more comfortable. Noticing this and making adjustments for each hand, then practicing different combinations of fingerings in that position/tilt is rather important. If done without the tilt, the physical memory will be faulty because the final outcome and the isolated practice will not be connected to what needs to happen physiologically.

6. Notice the broader context to make one see that these strategies can be employed for the majority of the piece. In the next few measures following the presented example, there are added notes in the RH (a B natural in m.3, beat 3), as well as an A natural in both hands in beat 3 in m.3 (Ex. 5.c). The A natural compared to what came before and what comes after serves as a performance cue structurally.

Example 5.c. Ravel *Valses nobles et sentimentales*, VIII, mm. 9-12. Notice the added B in the RH, as well as the A natural in both hands which was not present in the previous measures.

Both memory categories above portray musical instances where the two hands are highly interdependent, and where small intricate differences play a major role for the
memory. If these details are not practiced in the manners explained above, the mind will only follow the “obvious” notes, and the rest of the notes could trip the mind, which could trip the hands, which could inhibit the entire performance. Compositional styles such as the ones above are not uncommon in classical piano music. With these strategies, the current paper aims to enable the pianist to be as watchful, detailed and as present as possible in all that occurs in music.

III. Examples of the “Switches” in Sonata-Allegro Form

The following category deals with understanding the theory and form behind sonata-allegro form, and how it is relevant to left-hand memorization. With the next few examples the paper will be examining the similarities and differences at the moment where the material changes in the Recapitulation as compared to the one in the Exposition. In sonata-allegro form the second theme in the Exposition is usually in the dominant key, whereas in the Recapitulation the second theme occurs in the original, tonic key. A great deal of the time this change in tonalities in the second theme, as well as relying too much on the physical memory without the necessary careful analysis of the differences that lead to the different tonal areas, cause confusion and memory lapses in performers. The moment when the material of two similar sections in the music changes is what Chaffin and Imreh called the “switch,” as explained in Chapter III.\(^{71}\) It is important to note that if the switches in music are not studied thoroughly and the memory is not secured, it is extremely likely a memory gap could occur.

The first example is Beethoven’s piano sonata in E minor, Op. 90, first movement (Ex. 6 and Ex. 7).

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\(^{71}\) Chaffin and Imreh, 206.
Example 6. Beethoven Piano Sonata in E minor, Op. 90, first movement, Exposition, mm. 35-38. Transition from Theme I to Theme II.


In this particular movement the switch occurs in the transition from the first to the second theme. The LH topography plays a great role in this particular situation. There are several memorization strategies to consider:

1. Note the chromaticism in the LH, consisting of ascending half steps as seen in Ex. 6.a; practice the B flat as if it were in the same octave as the two preceding notes to give a clearer picture of the voice leading and eliminate a memory lapse caused by a leap if B flat is considered a new start, isolated from the previous chords.

Additionally, the mind should note the implied B-flat major harmony in the LH B flat note. This harmony is spelled out through the following B-flat major scale in the RH. For practice, the B-flat chord could be supplied in the LH, so the ear can get accustomed to this new harmony.
Example 6.a. Beethoven Piano Sonata in E minor, Op. 90, first movement, Exposition, mm. 35-38. Note the chromaticism in the LH and practice the B flat in the lower octave.

2. Following the step above, the pianist would now only practice the jump from the A octave to the B flat (Ex. 6.b). This would occur by arriving at the B flat sooner and stopping there without depressing the key. This would ensure the spacing is mastered and the hand is fully comfortable with the distance. There is another A in the RH which would be discussed as a cue later.

Example 6.b. Beethoven Piano Sonata in E minor, Op. 90, first movement, Exposition, mm. 35-38. Practice the jump to the B flat without depressing the key.

3. In Example 7, where the switch is, notice how the LH goes to a widely spaced F-major chord instead of a B flat. In the case of the F-major chord, the LH should follow the thumbs of the preceding octaves (and not the bass) going a third below, to the fifth finger on F of the following chord (Ex. 7.a). During the rest which precedes the chord, the fifth finger would be preparing for the change in position. The LH would then practice only the top voice of the three-note line (G sharp-A-A in the higher octave) while hovering on top of the remainder of the notes (Ex.
7.b). Following this, the LH would then practice only the fifth fingers of the three chords (Ex. 7.b). All of the above would be done by memory to ensure the hand is aware of all of the topographical movements within the group.

Example 7.a. Beethoven Piano Sonata in E minor, Op. 90, first movement, Recapitulation, mm. 178-181. Follow the thumbs of the octaves to the fifth finger of the F-major chord.

Example 7.b. Beethoven Piano Sonata in E minor, Op. 90, first movement, Recapitulation, mm. 178-181. Practice the fifth fingers alone, then the thumbs alone.

4. After securing the LH material, rehearsing the RH and its cues for the LH is necessary. In Example 6 the second chord in the RH (A-minor 6/4) plays a role in cuing the upcoming B flat in the LH. If the mind is aware that the note after the A-minor 6/4 for both hands is a half-step above the middle note of the RH chord (A to B-flat), then even though the LH and RH B flats are in higher octaves, the cue will prepare the mind for both B flats (Ex. 6.c).

![Music notation]

5. Observe the cuing in Example 7 which is more elaborate. The A in the A-minor 6/4 in the RH directly cues the A in the following F-major LH chord (A to A). They are even in the same octave. If the mind is triggered by this note by recognizing it as the “same,” then it would know it is a switch: instead of the B flat coming up, the open F-major chord is to come. It is also helpful to play the F-major arrival in both hands, while making sure to associate the open sound during the mental cueing as just described, and to recognize the A which remains the same, while its function changes from the root of an A-minor chord to the third of an F-major chord (Ex. 7.c).

Example 7.c. Beethoven Piano Sonata in E minor, Op. 90, first movement, Recapitulation, mm. 178-181. Follow the common A between the marked chords, and recognize its function in each chord.

![Music notation]

6. Awareness that it is an F-major chord with a C in the middle may become the cue to trigger the mind to remember the high C in the RH which is played together
with the LH chord. Just like in Ex. 6 the LH B flat prompts the RH one, the same way the C in the LH F-major chord prompts the one in the RH (Ex. 7.d).

Example 7.d. Beethoven Piano Sonata in E minor, Op. 90, first movement, Recapitulation, mm. 178-181. The LH C in the F-major chord cues the RH C.

![Example 7.d. Beethoven Piano Sonata in E minor, Op. 90, first movement, Recapitulation, mm. 178-181.](image)

Examples 8 and 9 are derived from Mozart’s piano sonata in C major, KV 330, first movement. In this case the switch occurs in the second theme in both the Exposition and the Recapitulation. In the Exposition the material stays in G major, whereas in the Recapitulation it modulates back to C major. The switch occurs in mm.3-4 in both examples.

Example 8. Mozart Piano Sonata in C Major, KV 330, Allegro moderato, Exposition, Theme II, mm. 21-22.

![Example 8. Mozart Piano Sonata in C Major, KV 330, Allegro moderato, Exposition, Theme II, mm. 21-22.](image)


![Example 9. Mozart Piano Sonata in C Major KV 330, Allegro moderato, Recapitulation, Theme II, mm. 108-109.](image)
For stable memory follow these steps:

1. Know what happens harmonically during both examples in order to compare and contrast. In Example 8 the LH is resolving from a V6/5 of G to a I of G in mm.3-4. In the fourth measure of Example 8, the LH keeps the same pattern of a broken G-major chord while the RH also follows a G-major chord outline. Following the F-sharp bass note in m.3 resolving to the G bass note in m.4 would be a reliable memory strategy (Ex. 8.a).

Example 8.a. Mozart Piano Sonata in C Major, KV 330, *Allegro moderato*, Exposition, Theme II, mm. 21-22. Follow the F sharp in the LH which leads to the G in the next measure.

![Example 8.a](image)

2. In Example 9, after an identical start of the phrase, notice how the LH changes to a broken V4/2 chord in C in m.4. Targeting the F natural at the beginning of m.4 is crucial, because if the mind does not immediately say “F natural as a modulation to C,” it is quite likely that the hand would resolve to G major as in the Exposition (Ex. 9.a). A paramount memorization strategy is juxtaposing the two examples (Ex. 8 and Ex. 9) starting from measure 1 of each, but also playing only measures 3-4 of each example one after the other. The F natural in Example 9 must also cue the three additional thirds in the RH in m.4 (the thirds at the end of the measure). These thirds do not occur in Example 8, and therefore the mind must be fully alert once hearing the F natural in the LH as the cue (Ex. 9.b). This
F natural is a cue which will be later used as an example of creating a hierarchical retrieval scheme modeled after the one done by Chaffin and Imreh, explained in Chapter III.\textsuperscript{72}


![Example 9.a. Mozart Piano Sonata in C Major, KV 330, \textit{Allegro moderato}, Recapitulation, Theme II, mm. 108-109. Pay attention to the F sharp in the LH leading to an F natural: the switch.](image)

Example 9.b. Mozart Piano Sonata in C Major, KV 330, \textit{Allegro moderato}, Recapitulation, Theme II, mm. 108-109. The LH F natural cues the thirds in the RH.

![Example 9.b. Mozart Piano Sonata in C Major, KV 330, \textit{Allegro moderato}, Recapitulation, Theme II, mm. 108-109. The LH F natural cues the thirds in the RH.](image)

All of the above suggestions on how to approach the switches within a sonata-allegro form are applicable to any music material within a composition which appears to be almost identical, but which can cause memory trouble because of the small delicate differences. It is critical that the performer follows the above steps for identifying the discrepancies within similar sections, because the mind is not always able to automatically make the switch on the spot without conscious rehearsal of the proper cues. Therefore, ample memorization preparation is necessary in order for the mind to not

\textsuperscript{72} Chaffin and Imreh, 200.
panic, but to be completely aware of the similarities and differences between the sections, with mental and physical cues rehearsed at the right moments during the flow of music.

IV. Examples with Alternating-Hand Passages

The next set of examples demonstrates instances with alternating-hand passages. The hands do not play simultaneously, but when executed well there is a continuous line which sounds as if one hand is at work only. In cases such as these, most pianists neglect left-hand alone memorization because the hands are so dependent on each other, and without one hand the other appears incomplete and illogical. The tendency to overlook left-hand alone memorization in such cases poses the threat of poor sound production and technical inaccuracies. Additionally, if the mind does not create pathways of secure memory in the left hand and the memory fails, the right hand may or may not be able to continue because it is used to only practicing together with the left. In examples such as these, first, the two hands should begin playing together for making fingering decisions. Shortly after, however, the music material should be memorized with the aid of the strategies below (Examples 10 and 11 are taken from Prokofiev’s Piano Concerto No. 3, Op. 26, first movement, and the first five strategies pertain to Example 10):

1. Practice LH with RH thumbs only (Ex. 10.a). Do so both in quick and slow tempo. The fingers of the RH top notes should hover on top of the respective notes, but playing the thumb first will ensure smooth melodic line. Do so by memory.


2. Repeat the above step, but this time with hovering on top of the RH thumbs while playing the top notes (Ex. 10.b).


3. Practice the LH by itself while internally hearing the RH. This way the hand and mind can focus on the LH material while still paying attention to the “silent” RH material.
4. Practice the LH on its own without hearing the RH, but definitely keeping the rhythm as if the RH were playing.

5. Sing the melodic line with solfege in tempo to ensure the mind can think as fast as the fingers can move. An even greater challenge would be posed by using solfege and singing only the LH in tempo with the correct rhythms as if RH were playing.

Example 11 differs from Example 10 with its topographical shifts in the LH and the varied direction of the RH broken octaves.


The following steps should be taken for stable memorization:

1. Sing the LH alone with solfege in rhythms for quickness of mind.

2. Practice the RH alone while singing the LH with solfege for secure aural memory of the LH material.

3. Practice the RH as blocked octaves while playing LH to secure the octaves in RH.

4. Play the LH with RH fifth fingers only to ensure LH is secure no matter which voice in the RH is playing (Ex. 11.a).

5. Play LH with RH thumbs only for the same reason as point no. 4 (Ex. 11.b).


6. Isolate the RH thumbs while playing the LH notes which are played between the thumbs, and also isolate only the RH fifth fingers while playing the LH notes between them. These two strategies will ensure understanding of the topographical interaction between the hands (Ex. 11.c).

Example 11.c. Prokofiev *Piano Concerto No. 3*, Op. 26, *Andante-Allegro*, m. 211. Isolate RH thumbs with the LH notes in between, then isolate RH fifth fingers with the LH notes in between.
7. Play the RH broken octaves without changing their direction to focus on the LH, thereby eliminating effort in remembering the RH changes. This way the LH would be confident in its accuracy and it will not depend on the RH subtleties.

Adhering to the recommendations above would make the memory of such figurations smooth and fully informed rather than solely physical and sporadic. If the mind can follow the left hand as its own entity as well as a member of the right hand, the pianist would be able to battle memory lapses if they occur. This type of alternating hand writing is frequently encountered in classical music. The above recommendations would give security and peace of mind to the performer because such sections in music can easily get out of control if not attended to properly.

V. Examples Consisting of Left-Hand Material with Implied Layers

The fifth category in the present chapter will examine musical selections which demonstrate left-hand material consisting of implied layers that need to be memorized separately. Breaking down such passages into separate layers of voice leading or voices will clarify the structure, and will also provide a number of memory strategies. Without this step, the left-hand material may seem as abstract and devoid of logic. This kind of surface understanding can lead not only to poor musical and physical execution, but also to solely physical and possibly unreliable memory lacking any deeper comprehension of the music development. This category is similar to the first category which was concerned with the small changes from chord to chord. Both categories have implied layers, only the layers in the current category are not found in the form of blocked chords.
but they are only implied within a melodic series of notes, and thus more difficult to detect.

The goal is to break down the different layers of the left-hand material and develop techniques for stable memorization in the examples presented.

Example 12 is taken from the *Molto adagio con rubato* movement of Liebermann’s *Piano Sonata No. 3*, Op. 82.

Example 12. Liebermann *Piano Sonata No. 3*, Op. 82, *Molto adagio con rubato*, mm. 1-3 with LH fingerings suggested by the author.

The following steps will provide stable and reliable LH memory:

1. After becoming familiar with the LH notes, finger numbers and rhythm, practice the LH in quick tempo for quickness of mind and hand movement.

2. To temporarily eliminate the jumps in the LH and have a clearer sense of the line, practice the LH material with both hands. For example, in the first measure (Ex. 12.a) the LH would play the first, second and fourth notes, and the RH would play the third note (F sharp).
Example 12.a. Liebermann *Piano Sonata No. 3*, Op. 82, *Molto adagio con rubato*, mm. 1-3. Practice LH with both LH and RH.

3. Avoid the large intervals in order to focus on the note names entirely, and to exclude the jumps. This time it would be done in the LH itself by playing the notes in closer position. For instance, in the first measure the F sharp would be played in the same octave as the second F. The same would happen with the G sharp in the second measure. In the third measure the D sharp would be placed in the same octave as the B, and then the C natural and F natural would also occur in the same octave (the C natural would be a step and a half below the preceding D sharp, and the F natural would be a whole step above the D sharp: Ex. 12.b).

Example 12.b. Liebermann *Piano Sonata No. 3*, Op. 82, *Molto adagio con rubato*, mm. 1-3. Place the notes in the LH in close position.

4. Segregate the material into several voice lines. The first line would be comprised of the low bass notes: F-F-C-B (m.1 note 1; m.2 notes 1 and 4; m.3 note 1: Ex.
12.c). Practice this layer by itself while keeping the rhythm and hearing internally the rest of the notes. Practice it also by playing the layer and singing with solfege the rest of the notes which would be “silent” at the moment. This practice would not only solidify the memory of the voice leading, but also create a more musically directed line.

Example 12.c. Liebermann Piano Sonata No. 3, Op. 82, Molto adagio con rubato, mm. 1-3. Practice the LH bass layer.

5. Practice the next voice line comprised of F-F-F sharp (m.1 notes 2 and 4; m.2 note 2) the same way as the previous voice line (Ex. 12.d). Additionally, after isolating these notes from the rest, the pianist would add them together with the previous line while imagining or singing with solfege the rest of the notes.

Example 12.d. Liebermann Piano Sonata No. 3, Op. 82, Molto adagio con rubato, mm. 1-3. Practice the second layer in the LH.
6. Isolate the third voice line, then add line 1 while singing with solfège the rest, then add line 2 while using solfège for the remaining notes. The third line is composed of F sharp-G sharp-D sharp (m.1 note 3; m.2 note 3; m.3 note 2: Ex. 12.e).

Example 12.e. Liebermann *Piano Sonata No. 3*, Op. 82, *Molto adagio con rubato*, mm. 1-3. Practice the third layer in the LH.

7. Follow the previous steps until all lines are added together. The remaining line consists of C-F, or the last two notes in m.3 (Ex. 12.f). Even when all the notes are played, the mind should be remembering the separate voice lines for smoother voicing and for memory stability.

8. Aim to solfege the whole line from memory once all of the voice lines are mastered. Even if it feels impossible for the voice to sing such a line, the mind should be at least picturing the jumps while singing with solfege the notes in closer position.

9. Prepare the LH for the jumps (i.e. note 2 to note 3 in m.1) by getting to the further key before it is supposed to sound. Even though this is a rather slow piece, the LH must be prepared for all of the jumps in advance to avoid any mistakes. The pedal will naturally help with the legato.

Example 13 in the same category is taken from Rachmaninoff’s *Rhapsody on a Theme of Paganini*, Op. 43. In Variation XVII the left hand is comprised of several voice layers while seemingly having one melodic line only. These layers need to be examined just like the ones in Example 12. The music moves in eighth notes with quarter notes held on certain occasions. Although a slow-passed piece, this variation should be practiced quickly like the previous slow examples.

Example 13. Rachmaninoff *Rhapsody on a Theme of Paganini*, Op. 43, Variation XVII, m.6 with fingerings by the author.

With this example the left hand requires a thorough investigation and dissection to understand its complexities and voice-leading movement. Following this examination,
the player ought to compare and contrast left with right hand for the many, but not
cOMPLETE similarities between the two hands. The following steps will assist in mastering
the left-hand memorization and understanding its correlation to the right hand without
losing its independence:

1. Follow the steps of Example 12 on separating the voices in the LH, and then
   combine them in groups of 2 and 3. The separate layers in the LH are as follows:
   a) Layer 1: B flat, B flat, B flat, A natural (notes 1, 4, 7, 10: circled red in Ex.
      13.a).
   c) Layer 3: D flat, E double flat, D flat, C sharp (notes 3, 6, 9, 12: circled
green in Ex. 13.a). In this case the D flats and C sharp are enharmonic
   equivalents, so it will be more helpful for the mind to think of them as the
   same note. E double flat is enharmonically equivalent to D, and therefore
   it would be more practical to think of it as a D when memorizing.

Example 13.a. Rachmaninoff *Rhapsody on a Theme of Paganini*, Op. 43, Variation XVII,
m.6. Separate the LH layers, then combine them in groups of 2 and 3.

2. Practice the notes in different groups and rhythms. The rhythms would include
   stopping on different notes while playing the rest quickly. Example: stopping only
   on the bass notes while moving in fast tempo through the rest. This will ensure
physical accuracy as well as emphasizing the different voice lines discussed in point 1.

3. Block notes to physically feel the topography and not think of each note as separate from the rest. Different blocking combinations include playing the bass note separately and blocking the two eighth beats following each bass. Example: note 1 plays alone while beats 2 and 3 are blocked together (Ex. 13.b). Another blocking combination would include combining the bass note with the one right after it. Ex: notes 1-2, 4-5, 7-8, 10-11 are played together while the rest are separate (Ex. 13.c). With these groups the fingers and the eye will be accustomed to the topography of the passage.

Example 13.b. Rachmaninoff *Rhapsody on a Theme of Paganini*, Op. 43, Variation XVII, m. 6. Block the marked groups while playing the bass notes alone.

![Example 13.b. Rachmaninoff *Rhapsody on a Theme of Paganini*, Op. 43, Variation XVII, m. 6. Block the marked groups while playing the bass notes alone.](image)

Example 13.c. Rachmaninoff *Rhapsody on a Theme of Paganini*, Op. 43, Variation XVII, m.6. Block the marked groups while playing the rest of the notes alone.

![Example 13.c. Rachmaninoff *Rhapsody on a Theme of Paganini*, Op. 43, Variation XVII, m.6. Block the marked groups while playing the rest of the notes alone.](image)
4. Fully understand the differences between the LH and the RH in order to memorize effectively. Example: the first two notes in each hand are B flat and F, but they are inverted. As a result, the F plays together with the B flat (Ex. 13.d). This is obvious for the eye, but for the memorizing mind it has to be crystal clear. Later occasions also include notes which are shared between the hands, but they occur with a half a beat difference. Example: the second half of beat 2 in the RH is a G flat, which also occurs in the LH hand but a half a beat later (Ex. 13.d). The end of the measure is similar to the beginning. The excerpt ends with E natural and C sharp in each hand, but here the notes are also inverted (Ex. 13.d).

Example 13.d. Rachmaninoff *Rhapsody on a Theme of Paganini*, Op. 43, Variation XVII, m.6. Pay attention to the marked notes which are inverted between the hands, and the ones which are shared, but occur on different beats.

5. Notice the several moments where both hands do play the same notes at the same time. These shared notes could act as a cue for either hand. An example of such notes is the D flat at the first half of beat 2 (Ex. 13.e). The RH is playing a third (D flat-F), and the LH plays just one D flat. The same occurs at the second half of beat 3 (Ex. 13.e) where the hands share an E double flat (D enharmonically).
Example 13.e. Rachmaninoff *Rhapsody on a Theme of Paganini*, Op. 43, Variation XVII, m.6 Use the indicated shared notes between the hands as cues.

The third example in this category (Example 14) is taken from Variation V in the second movement of the Prokofiev’s *Piano Concerto No. 3*. This excerpt is similar in its construction to Example 13. The left hand is comprised of several voice lines which require thorough understanding and awareness. Just like Example 13, the following example calls for a full independence in the left hand prior to coupling it with the right, for both memory’s sake and technical accuracy. Both hands have a number of similarities and existing cues which will be examined after understanding the left hand in its independence. Example 14 is more complex compared to Example 13 with the larger jumps and topographical shifts. The following will introduce steps appropriate for secure memorization and understanding of the music material:

1. Practice hands together for a period of time long enough to decide on comfortable fingerings. The example given provides fingerings suggested by the author.

2. Notice the existing voice lines in the LH. The accented notes are line 1, and the staccato notes are line 2. The same is true for the RH (Ex. 14.a).


3. Begin memorizing the LH by practicing the voice lines separately. While playing one (by memory), hear the other. Also, while playing one, *solfège* the other. Do this step for aural recognition and anticipation.
4. Recognize the common notes between the two voice lines when putting the lines together in the LH. The first chord D-E-G-D contains the notes D and G which are present in the 3 staccato notes following. In beat 3 of m.1 the notes F and A are present in the three staccato notes following in the LH. Noticing these shared notes will give cues to the mind when solidifying the LH memory (Ex. 14.b).

Example 14.b. Prokofiev *Piano Concerto No. 3*, Op. 26, *Tema con variazioni*, Variation V, mm. 147-149. Follow the shared notes between the two layers in the LH as indicated with the different colors.

5. Pay attention to the bass note in the LH and its changes. It is a D almost all of the time, except in m.2 on the second half of the third beat where the LH jumps to a single A, then back to the accented line. This A will serve as a cue signaling that the pattern has changed. The previous groups include an accented chord followed by three staccato notes, but in the case with the bass A, there are three accented chords with just one staccato note in between (beats 3 and 4 in m.2: Ex. 14.c).
Example 14.c. Prokofiev *Piano Concerto No. 3*, Op. 26, *Tema con variazioni*, Variation V, mm. 147-149. Notice the indicated change of pattern. Use the LH A as a cue that the pattern has changed.

6. When memorizing the sets of staccato notes in m.1 and m.2, recognize the harmonic differences between each. In m.1 the first group D-G-D is an outline of a G-major chord, while the second group D-A-F is an outline of a D-minor chord (Ex. 14.d). In m.2 the three-note group is an outline of a G major chord, however this time it is D-B-G, not a D-G-D as in m.1 (Ex. 14.d). Formulating this kind of analysis and triggering cues such as “D-minor,” “G-major,” or “wider G-major” for example, will group the music in meaningful chunks instead of a larger number of individual notes, which is in line with the learning strategies of experts as discussed before.

7. After understanding the LH structure, study the RH voice lines the same way as the LH ones: break down the music into the separate lines; find the relationships between the lines; notice where the pattern changes occur.

8. After studying the RH by itself, understand the similarities between the RH and the LH. The accented voice line is almost identical in both hands except for the first chords in m.1 and m.3. The RH has an E-G-D chord while the LH plays an extra note in a similar chord: D-E-G-D. This kind of difference is important for conceptual memory and physical memory, because of the difference in finger numbers and position of each of the hands. The LH uses finger numbers 5-4-2-1 which require a bigger stretch than the 1-2-5 in the RH (Ex. 14.e), unless one decides to take the LH D with the thumb of the RH.

Example 14.e. Prokofiev *Piano Concerto No. 3*, Op. 26, *Tema con variazioni*, Variation V, mm. 147-149. Recognize the differences between the chords in each hand.

9. Target the differences between the hands concerned with the pattern changes occurring in each hand. In beats 1 and 2 of m.1 and m.3 the two hands play the same pattern of an accented chord followed by three staccato notes. It is important for the pianist to note that in the second half of beat one the LH is playing a bass D, but the RH is playing an E (Ex. 14.f). In the second half of beat 2 and in beat 3
of m.1, the two hands are not playing the same type of voice line. The LH has three staccato notes while RH plays three accented notes. Having a cue of the RH ascending with a more melodic line, while the LH is jumping to the bass D, will avoid any confusion (Ex. 14.g). A pattern change occurs in beats 1 and 2 of m.2. The LH continues with the one accented note followed by three staccato notes pattern, while the RH changes the pattern into accent-staccato-accent-staccato note pattern. This new pattern is accompanied by added jumps in the RH. In order for the mind to cue this new pattern, the focus should be directed to the RH E in the second half of beat 1 in m.2. By noticing this E the mind will automatically know there is a pattern change in the RH (Ex. 14.h). When the music continues to m.3 the pattern in the RH returns to its original. The RH E in the second half of beat 1 in m.3 will again cue the mind to return to the pattern from m.1 (Ex. 14.i).

Example 14.f. Prokofiev Piano Concerto No. 3, Op. 26, Tema con variazioni, Variation V, mm. 147-149. LH and RH play the same pattern in the marked beats. Notice how RH jumps to an E, while LH jumps do a D within the pattern.


10. For spatial, note and physical accuracy, as well as quickness of mind, practice the LH in rhythms as discussed in Example 13.

The above category showcases musical moments where the LH is constructed of several layers, each of which needs proper attention. The given analysis and memorization strategies offer ways of understanding the depth and intricacies of each of the examples provided. When the mind considers as many pathways to memorization as possible, then the memory and comprehension are well-grounded.

VI. Contrapuntal Examples with Several Independent Voice Lines

The sixth category of left-hand memorization challenges involves contrapuntal musical examples constructed of at least three voices. In these examples every voice is a separate melodic line which requires understanding on its own. However, beyond understanding each line separately, for complete memory accuracy, the mind has to be fully aware of how these voices interact between the hands and within each hand physically. This next section will aim to inspect each voice in the contrapuntal texture, their relationship to each other, and the relationship between the left and right hands. With this kind of texture, hands-together practicing must occur first in order to decide which hand plays which voice, and to decide upon the most appropriate fingerings. Following this, separation of the voices will provide understanding of the separate components of the texture, and finally, practicing hands separate with all the notes that need to be played in one hand, however musically unsatisfying it may be, will provide the most reliable memorization.

The first excerpt is taken from Bach’s Fugue in B-flat minor, BWV 867 (Example 15).
Example 15. Bach, Fugue in B-flat minor, BWV 867, mm. 27-28 with fingerings suggested by the author.

Here are the steps to follow for secure memorization:

1. Separate the three voices in the marked measures and memorize them one by one after understanding hands-together execution of the excerpt and the distribution of the voices (Ex. 15.a). Always use the correct fingerings when separating the texture, and if the voice is moving from one hand to the other, use the appropriate hand when needed.

Example 15.a. Bach, Fugue in B-flat minor, BWV 867, mm. 27-28. Notice the different voices as indicated.

2. Practice the voices in pairs by memory in order to be able to place the isolated voices in the proper musical context. The pairs should include all possible combinations: top-middle, middle-bottom, and top-bottom (for three-voiced texture). When practicing voices alone and in groups, the pianist must consider which voice holds the subject, and play the voices that do not hold
the subject a little lighter. In this case, the top and middle voices have the subject in *stretto* while the bottom voice holds supporting material (Ex. 15.b).

In this example the two E flats in m.1 belong to two different voices, one of which holds the subject. Therefore, the two E flats should not be played with equal strength in order for the mind to follow each line accordingly (the first E flat belongs to the bottom voice which does not hold the subject: Ex. 15.c).

Example 15.b. Bach, Fugue in B-flat minor, BWV 867, mm. 27-28. Recognize which voices hold the subject.

Example 15.c. Bach, Fugue in B-flat minor, BWV 867, mm. 27-28. The two E flats indicated should be played differently because one holds the subject, and the other does not.

3. Group the voices as discussed in point 2, but this time play one physically, and sing the other using *solfege* to increase the aural awareness.
4. When practicing hands separate, be able to play each hand as if it is its own entity, but also be able to hear the hand which is not playing (Ex. 15.d). This will ensure independence of the hands, as well as active interdependence.

Example 15.d. Bach, Fugue in B-flat minor, BWV 867, mm. 27-28. Notice the distribution of the voices in each hand.

5. Considering the following cues when playing hands together:
   
a) Between the last two beats of m.1 and the first beat of m.2, there is parallel movement between the hands—they are moving in parallel tenths. The LH’s first two notes do not belong to the same voice, but this interval relationship between the hands should still be considered for memory stability and understanding of the relationship between the hands (Ex. 15.e).

Example 15.e. Bach, Fugue in B-flat minor, BWV 867, mm. 27-28. Follow the marked section as a memory cue.
b) The G flat in the first beat of m.2 in the LH cues the G flat an octave higher in the RH on beat two in the middle voice of the same measure (Ex. 15.f).

Example 15.f. Bach, Fugue in B-flat minor, BWV 867, mm. 27-28. Regard the G flat in the LH as a cue for the G flat in the RH.

\[
\begin{aligned}
\text{Example 15.f. Bach, Fugue in B-flat minor, BWV 867, mm. 27-28. Regard the G flat in the LH as a cue for the G flat in the RH.}
\end{aligned}
\]

\[
\begin{aligned}
\text{Example 15.f. Bach, Fugue in B-flat minor, BWV 867, mm. 27-28. Regard the G flat in the LH as a cue for the G flat in the RH.}
\end{aligned}
\]

c) Similarly to b), the RH A natural eighth note on beat two in m.2 cues the A natural on beat three in the LH in m.2 (Ex. 15.g).

Example 15.g. Bach, Fugue in B-flat minor, BWV 867, mm. 27-28. The A natural in the RH cues the A natural in the LH.

\[
\begin{aligned}
\text{Example 15.g. Bach, Fugue in B-flat minor, BWV 867, mm. 27-28. The A natural in the RH cues the A natural in the LH.}
\end{aligned}
\]

d) The two eighth notes, A natural and B flat, in the RH, cue the two eighth notes in the LH on beat four in m.2, G natural and F. They do not contain the same note names, but the rhythm is identical, useful for triggering the mind to remember the LH set of eighth notes (Ex. 15.h).
Example 15.h. Bach, Fugue in B-flat minor, BWV 867, mm. 27-28. The eighth-note rhythm in the RH cues the eighth-note rhythm in the LH.

![Example 15.h. Bach, Fugue in B-flat minor, BWV 867, mm. 27-28. The eighth-note rhythm in the RH cues the eighth-note rhythm in the LH.]

e) Similarly to a), there is another parallel movement between the hands: the last two beats in m.2 contain a parallel movement between the middle and bottom voices. The RH is playing F and E flat in the middle voice, while the LH is playing A natural and G natural. The G natural is a part of a two eighth-note pair, but the above parallel sixth movement should still be noted in the mind as a cue (Ex.15.i).

Example 15.i. Bach, Fugue in B-flat minor, BWV 867, mm. 27-28. Follow the parallel movement marked as a cue.

![Example 15.i. Bach, Fugue in B-flat minor, BWV 867, mm. 27-28. Follow the parallel movement marked as a cue.]

The second excerpt is taken from the movement *Lullabye* in Liebermann’s *Piano Sonata No. 3* (Ex. 16). At first glance, the selected measures have the exact same issues as the ones in Example 2. The reason the following example is listed in this category is not only because of its contrapuntal nature, but because of the issue of physical discontinuation in each hand created by the eighth notes which need to be shared between
the hands. The example is further complicated by the fact that the LH chords are quite abstract and challenging to memorize already, without the distraction of having to play some of the intervening eighth notes. Similarly to previously discussed examples, this excerpt ought to be first studied hands together for appropriate fingering decisions and fair smoothness of the voice lines. Once the hands are comfortable enough to play together, they should be taken apart and memorized in detail.

Example 16. Liebermann *Piano Sonata No. 3, Op. 82, Lullabye*, mm. 13-16 with suggested fingerings by the author.

Here are the steps to follow for memorization:

1. Play the LH chords separately. When working on the LH chords alone, the pianist should practice:
   a) In a fast tempo for quick location of each chord, voice movement, and fingering.
   b) Every voice line individually and across at least two measures: top, middle, bottom.
   c) Groups of two notes found in the chords: the outer intervals only, as well as the top two only, and the bottom two only.
   d) The two groups of measures separately, noting that the first chords in mm.1-2 are the same, and the first chords of mm.3-4 are the same.
Therefore, the movement from the similar chords to the contrasting chords must be studied. In m.1 the first inversion A-flat major chord moves down a step, but not in every voice. The top moves down a whole step, the bottom down a half step, and the middle note repeats. Even though the middle note is spelled differently in the second chord, the mind has to follow its topographical placement, which is that of a repeated note (Ex. 16.a). In m.2 the A-flat chord moves up a half step in the bottom voice, an augmented second in the middle (again, think of the topography, which makes it a minor third), and an augmented second on the top (a minor third topographically). Continue the same line of thought when practicing the second set of measures.

Example 16.a. Liebermann *Piano Sonata No. 3*, Op. 82, *Lullabye*, mm. 13-16. Notice the intervals between the voices of the identical LH chords going to the following chords. Notice also that the intervals are spelled according to their topographical placement.

e) Be mindful of the legato when practicing the LH chords alone.

Because of the chordal structure, and the added voice from the RH which will be discussed shortly, the LH has to physically lift some fingers and not others. For instance, in m.3 the first inversion G-minor chord moves to a root position D-flat minor chord. The G-minor chord is also playing a B flat eighth note on beat two as a part of the RH
bottom voice. Because of this B flat, the LH has to let go of its thumb to play the B-flat eighth note while holding the rest of the notes (Ex. 16.b). Even when the B-flat eighth note is not being played for practice, the fingers should still do the lift. Additionally, for legato purposes, the middle voice in the G-minor chord should be held while the others are lifted in order to get to the D-flat minor chord (Ex. 16.b). The pedal will naturally help sustain the notes that are being lifted for the remainder of their indicated duration. Follow this recommendation for the rest of the excerpt. The above legato suggestions are based on fingerings proposed by this paper’s author. Fingerings can be subjective, and would depend on each pianist’s comfort.


2. Notice the corresponding motion between the top voice in the LH chords and the RH top voice. In mm. 1 and 3, both hands are moving down, but the RH top voice is moving by a half step, and the LH top voice is moving by a whole step. In mm. 2 and 4, both hands are moving up a minor third (Ex. 16.c).
Example 16.c. Liebermann *Piano Sonata No. 3*, Op. 82, *Lullabye*, mm. 13-16. Compare the movements between the top voices of each hand. Notice that the intervals are indicated topographically.

3. Practice the RH top voice alone, then add the bottom voice with LH playing the notes it is designed to (i.e. in m.1 LH plays the Gs on beats 2 and 4). Also practice RH alone without the LH completing the line of eighths, but only with keeping the rhythm as if they are actually playing (Ex. 16.d).

Example 16.d. Liebermann *Piano Sonata No. 3*, Op. 82, *Lullabye*, mm. 13-16. Practice the indicated RH by itself, as well as with the Gs which are played with the LH.

4. Practice combinations of different voices: LH with the bottom RH voice; LH with the top RH voice.

5. Practice LH alone with the inclusion of the notes it shares with the RH bottom voice. When doing this, it is important the rhythm is kept, and the eighth notes from the RH bottom voice are played at the right time. Internally counting the eighth note beats would help this kind of activity.
6. Notice the interval relationship between the eighth notes which the LH plays from the RH bottom voice. In mm.1-2, they are Gs and a B (m.1: G on the second and fourth beats; m.2: G on the second beat, and then three notes—B,G,B at the end of beat three and all of beat four). In m.3 there is a B on beat two, and in m.4 there is a B on beat two and a B flat on beat four. So, the sequence of all of the above eighth notes for four measures is G, G, G, BGB, B, B, B flat (Ex. 16.e). Keeping this structure in mind will help the mind prepare not only for present, but also for future music events.

Example 16.e. Liebermann Piano Sonata No. 3, Op. 82, Lullabye, mm. 13-16. Follow the note pattern of the LH notes shared with the RH bottom voice as a memory device.

The third excerpt in this category (Example 17) is derived from the third movement of Prokofiev’s Piano Concerto No.3.

Example 17. Prokofiev Piano Concerto No. 3, Op. 26, Allegro, ma non troppo, mm. 201-204 with suggested fingerings by the author.
Another contrapuntal example, this musical selection is constructed of three distinctive voice lines. In order to be aware of each voice’s development, and to have a full grasp of the role of the LH compared to the RH, here are the steps to take for lasting memory:

1. Practice each voice line separately to get a comprehensive understanding of the material’s construction: practice the LH arpeggios alone, the middle voice alone (which is transferred from the RH to the LH in m.1 and m.3), and the RH top line (stems pointing up) alone (Ex. 17.a).

Example 17.a. Prokofiev *Piano Concerto No. 3*, Op. 26, *Allegro, ma non troppo*, mm. 201-204. Separate the individual voice lines, and practice them from memory.

2. Group the separate lines in pairs, to discover the relationship between each line of pair. The groups would include: combining middle and top lines; middle and bottom; bottom and top. When practicing in divisions such as these, it is very important to keep the fingerings consistent to those chosen when playing hands together. If the fingerings are not kept consistent, then the memory will not stick, because, with every change of fingering, the mind will perceive each repetition as new material.

3. Practice the LH alone and the RH alone. When practicing the LH alone, notice the chords outlined within the arpeggios, and how they are spaced. For instance, in m.1 the LH outlines an E-major chord. The intervals, however, are
not equally distributed. The outer interval in the first three beats is a minor tenth, between the second three beats an octave, and between the last three beats a major sixth (Ex. 17.b). Knowing these intervals, as well as groping the notes according to the most comfortable fingering combination, will give memory security. Fingering combinations would include: in m.3, for example, the LH would group the first three eighth beats—fingers 5-2-1; then the next four beats (4-7)—fingers 5-2-1-2; then the last two beats (B to D) with fingers 1-5 (Ex. 17.b). These groupings are the most comfortable topographically if the pianist chooses the fingerings suggested by the author.

Example 17.b. Prokofiev Piano Concerto No. 3, Op. 26, Allegro, ma non troppo, mm. 201-204. Notice the harmony in the LH and the outer intervals in every group of three beats in m.1, as well as the finger grouping in m.3.

4. Practice the LH in different rhythms, and stop on various beats to solidify the topographical connection between each note.

5. Practice the RH alone. When doing this activity, one must be able to play the RH on its own without relying on hearing the LH, nor on the cues it gives when it takes over the melodic line in mm. 1 and 3. After the RH is secured on its own, the mind should then be able to hear the melodic line in the middle voice, even though it is not entirely played by the RH (m.1 G sharp, m.3 G natural: Ex. 17.c).
Example 17.c. Prokofiev *Piano Concerto No. 3*, Op. 26, *Allegro, ma non troppo*, mm. 201-204. Practice the RH alone while hearing the melodic line played by the LH.

6. Use *solfege* for the melodic line when practicing any of the other two lines alone.

7. Compare the measures which are similar in material, but not at all the same, and play them back to back. Measures 1 and 3 have the same idea, but in different keys. The LH, for example, is centered on E major in the first measure, and G major in the third (Ex. 17.d). The RH begins mm. 1 and 3 with the note B, but in m.1, it moves to play chromatically moving chords beginning with an E-major chord (which can be linked with the LH E-major arpeggios), and in m.3 the RH moves to chromatic chords starting with a G-major chord (linked with the G-major arpeggios in the LH: Ex. 17.d). In mm.2 and 4, the LH is outlining an E-minor harmony with the arpeggios, but differently in each measure. It is important to note the D sharp in m.4 which does not belong to the E-minor chord outline. It is a note that is shared between the LH and the RH at the same time (Ex. 17.e). The direction between each of these groups of three notes is important to compare as well. In mm.1 and 3, the LH is moving in the same direction when putting the two
measures side by side. However, in mm.2 and 4, the first two groups of three notes do not move in the same direction.

Example 17.d. Prokofiev Piano Concerto No. 3, Op. 26, Allegro, ma non troppo, mm. 201-204. Compare the harmonies in the LH within the first and third measures and notice how they correlate with the RH.

The RH also undergoes changes between mm.2 and 4. In m.2 the bottom voice consists of three notes from the melody: G (beats 1-3)-F sharp (beats 4-5)-E (beats 6-9). In m.4 the bottom RH voice consists of two notes from the melody: G (beats 1-5), and E (beats 6-9). It is important to note not only the note difference, but also the rhythm (Ex. 17.f). The top voice in RH begins the same way (but in different registers) with a G from the melody followed by an A sharp and a B in the top voice. However, following this similarity, the material, intervals and direction undergo a change. Beats 4-6 in m.2 are a tied B eighth note going to a D sharp quarter note, while in m.4 they are a D eighth note
going up half a step to a D sharp quarter note (Ex. 17.g). The final note in these beats is the same (beats 5-6), but it is crucial to know the rhythmic and intervallic differences. Beats 7-9 in m.2 move upward (E-G-A sharp), while in m.4 they move downward in different intervals (G-E-G: Ex. 17.h). Discovering these changes will make a world of difference to the mind, ear, eye and hand. These exercises are effortful, but because of the effort, the memory will remain intact.

Example 17.f. Prokofiev Piano Concerto No. 3, Op. 26, Allegro, ma non troppo, mm. 201-204. Compare the note and rhythmic differences in the marked section of the melodic line in the bottom voice of the RH.

Example 17.g. Prokofiev Piano Concerto No. 3, Op. 26, Allegro, ma non troppo, mm. 201-204. Notice the note and rhythmic differences in the marked section of the melodic line in the bottom voice of the RH in the second and fourth measures.

Example 17.h. Prokofiev Piano Concerto No. 3, Op. 26, Allegro, ma non troppo, mm. 201-204. Notice the change of intervals and direction in the last three beats in the RH top voice in the second and fourth measures.
The above categories described showcase a variety of musical situations that typically pose memory challenges. The selection of examples provides as large the range of musical writings as possible and solutions for their memorizing. When these examples are seen as exercises, similar approaches can be applied to any composition under study.

VII. A Musical Map of Page 1 of Ravel’s *Valses nobles et sentimentales*, III

Following the discussion on the above excerpts, the current paper will present an example of a structural map, modeled after the maps by Rebecca Shockley discussed in Chapter III. Maps such as these will provide a visual path of the musical composition being studied, as well as a structural guide. With these maps the pianist can mark cues, repetitions, differences in the music, and any significant features which will help the pianist’s memory. While making such a map for an entire piece under study may be a daunting task, the act of making a map, even of a small section, would aid in learning the mental process required along the way. The map in this paper is an example of a music map of the first page of Ravel’s Waltz III from his *Valses nobles et sentimentales*, created by the author of the document.

The first page of the waltz can be divided into five sections: A, B, A’, B’, C (Example 19).
Example 19. A musical map of the first page of Ravel’s *Valses nobles et sentimentales*, Waltz III.
The A section is constructed of four measures, or two measures which repeat. This is indicated with the repeat sign and the “Repeat 2x,” modeled after Rebecca Shockley’s maps. In this map the direction of the melody is indicated with arrows, and the rhythm is jotted down with floating notes. When the rhythm repeats, it is indicated as “same rhythm” as done by Shockley. Because the RH melody in the top voice is almost always accompanied by an additional interval, these intervals are indicated as C2 (a second built on C), B6 (a sixth built on B), D2 (a second built on D), etc. These indications are also following the examples by Shockley. The melodic intervals are written as M2 (major second), m3 (minor third), etc. Clustered chords are marked a little more specifically. The one in m.2 (DEB) is expressed according to the already familiar interval of the second (D2) plus an added B on the top to show the difference with the preceding measure. The LH has an E-pedal point in the beginning of each measure which is also recorded on the map.

In the B section the rhythm changes in the first two measures with the hemiola in between the measures. The interval in the RH in the second beat of the first measure is marked as an F6, or a sixth built on F natural. In the score it is actually written as a diminished seventh built on E sharp. For topographical ease, the map spells the enharmonic equivalent of E sharp, and records the interval as a sixth, rather than a diminished seventh. The LH continues with the E-pedal eighth notes, but the melodic intervals following each E are different, and these changes are indicated. For instance, in

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73 Shockley, 71.
74 Ibid.
75 Ibid.
the first measure of section B the eighth notes in LH create a M3 (a major third), and then
the quarter note is made of a D2 (a second built on D). There are other indications such as
the tritone created by the two eighth notes in the second measure in section B in the LH.
The rhythm comes back to normal in the third measure of this section, and in the fourth
measure the RH ends with the indicated G-major chord on the last beat.

The A’ section in the chart shows the changes and differences with the A section.
It does not indicate as many music details as A does, because the contrasts are what needs
to be remembered and noted. The LH in A’ changes to a lower register with a pedal point
of a low E (Low E indicated) followed by single notes (intervals between notes also
indicated). The RH differs in that the third beat chords are larger than those in section A.
The top voice and melody are the same, but the differences are marked as C2 over D3 (a
second over C above a third over D), and as a B-minor chord in the second measure. The
section repeats twice as did section A.

The B’ section gives another comparison of differences and similarities, but this
time with section B. The RH top voice is the same, but the chords are fuller than those in
section B. For instance, the second chord in the first measure of section B’ is the same as
the one in section B, but with an added G sharp in the middle (marked as “G sharp in the
middle” on the chart). It is important to note that the bottom notes of both the first, the
second, and the third chord in the RH are taken by the LH. This is physically more
comfortable, and it also leaves the RH with less differences from section B. As a result of
the LH taking the bottom notes of the RH’s chords, the RH has one additional note in the
second beat of m.1 (explained above), one additional note in the first beat of m.2 (A in
the middle), and two additional notes in the third beat of m.2 (marked as Bb2, or a second
built on B flat). There is also an extra D3 on the bottom on beat three in m.3 that is entirely played by the RH. The LH in the B’ section consists of the low E which is not written down since it is a repetition from the previous section, and there are also double notes which are indicated accordingly.

Section C changes the character from the previous sections with its smooth flowing slurs and lack of third beat staccatos. The RH phrases are grouped into three beats within the slur. The sequence moves down in the first three measures, and then comes back up in the fourth measure to repeat the three measures of the sequence again. The direction of the movement is indicated with big arrows, and the repetition of the section is marked with “same as C m.1,” etc. The LH is no longer centered on the Es, and the harmonic intervals which form the music material in the first two measures are written as A5 (a fifth on A), D5 (a fifth on D), and the melodic materials as P5 (perfect fifth), etc. For quick recognition, the RH chords are spelled out as G major with an E on top (m.1), D major with a B on top (m.2 beat one), and so forth. Figured bass notations can replace this, if preferred. Thinking of the chords as a regular triad with an added note creates a clearer path for the mind, than trying to create a theoretical analysis.

The map constructed for the third waltz of Ravel’s set is just one example of how this kind of visual aid can recreate the form, structure, gestures, and repetitions in a musical composition. Creating this kind of map helps one know the musical form and the score much better than just looking at the page and trying to remember it note by note. Every map is different, the same way every musical composition is different. As Shockley pointed out, the performer can decide what is worth noting on the map, and
indicated it in the way they see fit. For example, on the map in this paper, notating the chords as two intervals stacked on top of each other or notating a regular triad with an extra note on top, was an idea created by this paper’s author.

VIII. A Hierarchically Organized Chart of the “Switch” in the Recapitulation of Mozart’s Piano Sonata in C Major, KV 330, Allegro moderato

The next section is dedicated to a hierarchically organized retrieval chart modeled after Chaffin and Imreh’s scheme discussed in Chapter III. As previously explained, the second principle of Expertise Theory relates that expert memory calls for a highly-organized retrieval scheme with cues to be used for newly-encoded information. Often times, this retrieval scheme already exists through the formal structure of the piano composition. In the current paper the example of a retrieval scheme is constructed for a small section of the piano sonata in C major, KV 330 by Mozart (Example 20). Creating a retrieval chart for a sonata-allegro composition such as this one would be a very reliable tool for remembering the similarities and changes within the structure of pieces of similar nature. This sonata was previously discussed in this chapter in terms of the switch in the Recapitulation of the first movement in the piece. Currently, this switch (the moment in the Recapitulation where the material modulates to the tonic, rather than staying in the dominant key as in the Exposition) will be represented through a retrieval scheme which would be useful in remembering newly-learned material, especially when memorizing the intricacies of the sonata-allegro form structure.

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76 Shockley, 7.
77 Chaffin and Imreh, 200.
78 Ibid, 199.
79 Ibid.
Example 20. The Recapitulation in *Allegro moderato* in Mozart’s piano sonata in C major, KV 330, with the highlighted section of one measure before the switch, and the switch itself, mm. 108-109.

The retrieval chart of the switch is subdivided into several levels starting from the largest to the smallest (Example 21). The beginning and larger levels pertain to: the
Movement of the Sonata (Allegro moderato), the Section (Exposition), the Subsection (Theme II), and the Bars (3 and 4). The measures in Theme II are six in total, but for the cues only the third and fourth measures are used. The fourth measure is where the important cue of the switch is, but the third measure leads up to it, so it is helpful to include that in the chart as well. In the Expressive Cues, the third measure is recorded as “change of character” due to the sudden dynamic change, and measure four as “unexpected tension of a new dominant chord” due to the appearance of a new harmony. The Interpretive Cues are only used for the third measure because it is where the sudden dynamic change occurs: “subito mezzoforte.” In the Basic Performance cues the third measure is indicated as “strong” due to the dynamic contrast from the previous music material, but measure four is recorded as “emphasize the new harmony.” The fourth measure’s dynamic is the same as the third measure’s, but the abrupt change in harmony requires additional musical emphasis. Next comes the Basic Features which refer to the harmonic structure of the measures. The third measure outlines a V65 in G major with the F-sharp bass indicated on the chart, and the fourth measure outlines a V42 in C major with the F natural in the bass indicated on the chart. The bass notes are crucial for the next level of the chart. The Interpretive Features of the third measure indicate: “The F sharp in the LH preparing for a chromatic descend in the next measure.” It is paramount that the mind starts preparing for the path which the bass is going to take starting from the third measure. This way the switch will be an event which is planned in advance. The interpretive feature for the fourth measure is “a complete surprise different from the Exposition.” This feature is important because the mind must compare the two sections and understand where the switch is, and exactly what is different about it. The final level
on the chart presents the important notes to which all of the cues lead. In the third measure the note is F sharp in the left hand, and in the fourth measure the note is F natural in the left hand. This F natural also cues the three thirds in the right hand at the end of the measure which do not occur in the Exposition.


![Mozart Piano Sonata in C Major KV. 330](chart)

The above example of a retrieval chart would aid the memory especially in the instance of learning how to differentiate the material in the switches in sonata-allegro
form. Creating such cues and seeing them would strengthen the memory, and provide another layer of security. Writing out the entire chart is not of the main importance, but it is crucial that the pianist goes through the process explained above, and organize a retrieval scheme of performance cues such as those explained. The process would not only enhance the memorization process but also bring much greater mental clarity of the structure, resulting in more coherent interpretation.

The current chapter has offered several different memorization strategies, which were applied to several stylistically varied compositions. The chapter aimed to be as specific as possible with its recommendations, so the reader could grasp the importance of noticing every complexity that the music contains. The left hand and the attention it requires were identified with each example, and detailed memorization strategies were then disclosed. The right hand’s role and connection to the left hand were discussed along with appropriate strategies for memorization. Following each example’s comprehensive memorization study, the chapter continued on to present a musical map modeled after Shockley’s maps, and a retrieval cue scheme modeled after the one presented by Chaffin and Imreh. The map aimed to showcase a visual representation of the structure of the composition discussed. This representation would enable the pianist to understand the connections between each music material, and the similarities and differences within the sections, which would strengthen the understanding and memorization of the piece as a whole. Consequently, the retrieval scheme’s goal was to enhance the memory of the switches in sonata-allegro form, especially when they are initially being memorized. The cues in the retrieval chart proposed hints which would be created by the performer in order to guide them through the tricky spots in the music. It is important to mention that
larger structure memory schemes are better employed earlier in the learning stage of a piece.\textsuperscript{80} Motor and auditory memory are not "content-addressable," so the use of maps, structure, and labeling makes them more "content-addressable."\textsuperscript{81} The structural map and retrieval scheme were suggested at the end of this chapter as supportive strategies to the main focus of this study, but it is not to suggest that this step should follow the detailed work of smaller sections. All of the strategies proposed in this chapter gave as exhaustive as possible the models for memorizing contrasting left-hand figurations.


\textsuperscript{81} Chaffin, Logan, and Begosh, 135.
CHAPTER VI

CONCLUSION

This paper has been an exploration of memorization techniques, of the function and importance of the left hand during the process of memorization, as well of its function in complete understanding of the material. After an overview of the literature on the topic, and an explanation of the different types of memory and relevant components of Expertise Theory, the paper discussed excerpts from musical compositions of five stylistically different periods. The purpose of this discourse was to analyze and apply as many strategies for memorization as possible in different settings, while stressing the importance of separating the left hand and devoting detailed attention to it.

Memorization is a topic which is not often addressed in detail by performers or teachers. It is usually the case that most students rely entirely on their assumptions of what memorization consists of, or in other words letting the fingers learn the notes as a result of multiple repetitions. Advanced players devise their own strategies, but even those can be personal and often not fully explained if shared at all. There is not a single recipe for reliable memorization to all, but the fact remains that the left hand is regularly the reason for memory slips. The right hand should not be ignored as shown in this paper, but the left hand is definitely ill attended to by most people for a large portion of the time in preparing a piece for performance. Lack of focus on the left-hand material leads to poor understanding of the entire music material, and to an uninformed interpretation. If the left hand is always grouped with the right hand, then the knowledge of the music is not complete. Aiming to memorize the left hand as its own entity increases the depth with which the performer experiences the musical composition. Even though every performer
is different with a unique understanding of the musical material, there are fundamental fields which need to be covered. Those include the visual, aural, tactile, and structural aspects of each composition. These ought to be applied not just to the whole material, but to each hand separately, especially the left. As mentioned in previous chapters, separate-hand practice should take place after appropriate fingering is chosen during hands-together practice. Additionally, memorization should occur as soon as the material is comfortable enough for the pianist, following the sight-reading stage of learning, and not left as the last step of the learning process. Connecting these memory systems would allow some of the more implicit memory systems (aural, physical, as well as personal) to be content-addressable, and therefore more flexible.\textsuperscript{82}

Chapter V of the paper explored the fundamental aspects of memory and through them created detailed memorization strategies. These strategies are examples of the variety of ways a musical composition can be digested and memorized. The more strategies given to a musical selection, the stronger the memory, because additional retrieval cues, each using different parts of the brain, can act as backup systems for when one system fails. The memorization steps described in this document combine the different aspects of memorization: physical, visual, aural, and analytical. From using finger numbers as a memory tool, to singing with solfege, to creating maps and charts, the author aimed to show how all of the memory systems need to be connected and used simultaneously so the mind could rely on them under pressure during a live performance. Regardless of how many memory systems are utilized during the preparation of a work for performance, the challenge is to ensure all systems are integrated and accessible when

\textsuperscript{82} Chaffin, Logan, and Begosh, 135.
needed. More implicit memory systems such as physical, aural, and even personal memories can become more “content-addressable”\textsuperscript{83} and therefore more reliable and integrated when tied to explicit memory. Whether it is solfège, theoretical analysis, finger-number awareness, grouping by hand, visual aid of a map, labeling within a retrieval scheme, or any other logical organization, these strategies work by enabling the performer to have the command over all memory systems exercised during the course of the learning process. Having the complete knowledge of the separate memorization aspects, and using them as a whole, will provide the performer with a thorough grasp of the music material.

It is the hope of the author that students, teachers, and performers alike would gather useful information from this paper to solidify their memorization process, and to develop solutions and strategies on their own based on the ideas put forth in this document. Above all, the author’s ambition is that piano students would always approach memorizing a piano composition intelligently and with a plan in mind. More importantly, it is hoped that piano pedagogues will think through each composition being assigned, and offer memorization strategies to the developing students. In considering repertoire assignments, piano teachers should become accustomed to considering the level of complexity for memorization (and therefore proper digestion) of the material just as much as they would consider the technical and musical merits and challenges of the piece. If the students are given guidelines early on, and if they are encouraged to build upon these strategies and create their own tactics, their understanding of the material and therefore their musicianship will improve. Additionally, students who are instructed in

\textsuperscript{83} Chaffin, Logan, and Begosh, 135.
such a way would not need to develop any fear of memory slips, because memorization would become a meaningful part of learning the piece completely. Even when memory slips do occur, it would not be seen as a mysterious event where the student feels helpless, but it would be regarded simply as something that can be improved with closer attention and scrutiny of the music material. If memorization is ingrained in the educational system as a regular, everyday activity, with requirements and rules as with practicing scales for instance, then it would no longer be the elephant in the room. Additionally, memorizing ought to be practiced and observed by the teacher at the time of the lesson, even if only for ten to fifteen minutes at some point in their development, preferably early on. This would form a habit in each pupil, and would transform memorization from an abstract concept, to a regular exercise as part of the thorough digestion of the composition as a whole. In addition to memorization strategy practice, the pupils should be instructed to practice in different rhythms and in different groups of notes as discussed in Chapter V. This form of activity, although often thought of only as a strategy for improving technical control, would create tactics for better mental organization of the material at hand.

It is important to note that in this day and age, a number of pianists are opting to performing with the score. This paper is offering memorization strategies to those who desire to strengthen their memory, and not to be doubting their abilities when on stage. However, the ones who wish to use the score when performing, can take this document as a study on the importance of close examination of the left hand material and how devoting time and effort to it will enhance the overall musical understanding and interpretation. Understanding the memorization strategies in this paper will also lead to
improved technique in the left hand due to the time spent working on the left hand material and comprehending its structure and challenges. It is the author’s hope that these processes will free up pianists from technical and memory hurdles, and allow them to more readily immerse themselves into being one with the music during performance.
BIBLIOGRAPHY


