Clara Vilanova Vinadé

How Do We Learn a Piece by Heart?

Strategies, experience and reflections

Written reflection within degree project
The sounding part of the project is the following recording:

Clara Vilanova – Sonata n.1 op.120 in F minor for clarinet and piano by Johannes Brahms (Exam concert)
Abstract

The present work consists of a research of the process of memorizing a music score and performing it with its main goal being to understand which is the better and the most efficient process of learning and memorizing it. The piece that has been chosen for this project is Sonata n.1 op.120 in F minor for clarinet and piano by Johannes Brahms.

The project is based on two methods and some strategies made by psychologists and musicians that suggest to do a theoretical analysis of the piece and afterwards, define some points (cues) that will help the musician to remember. The work consists in to apply these strategies in the practice sessions, in lessons with teachers and in concerts and observe if they have been successful. This paper concludes with the results of the practical part and with a discussion about them and about the experience to play the piece.

Resumen

El presente trabajo consiste en una investigación sobre el proceso de memorización de una obra musical, con el objetivo de entender cuál es la mejor y la más eficiente manera de aprenderla y memorizarla. La obra escogida para este proyecto es la sonata para clarinete y piano n.1 op. 120 en Fa menor de Johannes Brahms.

El proyecto está basado en dos métodos y algunas estrategias elaborados por psicólogos y músicos, en los que sugieren realizar primero un análisis formal de la pieza y después, definir unos puntos de referencia que ayudaran al intérprete a memorizar la pieza con mayor facilidad. Se muestra cómo se aplican estas estrategias en las sesiones de estudio individual, clases con profesores y en concierto, y se valorará si han funcionado. Este trabajo concluye con una opinión sobre los resultados de la parte práctica y sobre la experiencia de tocar la pieza.
INTRODUCTION

Nowadays, and thanks to neuroscientific advances, we are able to understand how we learn things, how our brain gives order to our muscles in order to play an instrument and how we remember lots of information, for example. In this research, we will go a bit deeper on this last part. We will see, on a basic level, which processes our brain does in order to store the music we learn and how a musician is capable to reproduce it afterwards. According to the theories and methods that some neuroscientists, psychologists, teachers and musicians have investigated during their careers, my work will consist in putting these strategies into practice and be aware of how it affects my daily life practice of the instrument in a short and in a longer period.

To be a bit more concrete, the following work about memory and how to learn a piece by heart is divided in three main parts:

The first part consists in a bibliographical research of various articles and books that talk about the memory, of which we will see the ones that have a musical approach based on neuroscience. We need to understand how the musicians’ brain works in order to remember all the music that is played. Also, it contains a little research on human’s brain, in particular, in our memory and how it works. In this part, the focus will be set on which memory processes our brain does, even if we do not realize that we are learning something, because since we were born, most of the things that we learn during all our lives are learned and assimilated in a non-voluntary way.

In the second part, you will find a description of two methods and some other strategies I have found followed by an explanation of how I have applied them in the learning of the Sonata n.1 op. 120 for clarinet and piano in f minor by Johannes Brahms. These methods are written by piano players or piano teachers that have done some research on his/her students, so they
are mainly focused on how to learn a piano piece. Nevertheless, their ideas and principles can be transposed to any other instrument because the main issue is not how we practice the instrument but how we practice the music.

Having studied and understood the functioning of our memory and after trying some methods and strategies that are likely to help musicians to learn music by heart, the goal for the third part is to be able to play by heart the chosen piece, Sonata n.1 op.120 in f minor by Johannes Brahms and record it. The reader will find my experience and discussion about the learning process.

And why has this idea come up to me? During all my years of clarinet practice and music studies in college, you can count with only one hand the times I have played a piece by heart. Since this project is an artistic research, I would like to take advantage of it and try to improve this skill with the purpose to experience if it is true that it brings the musician more benefits than disadvantages. For instance, some musicians say that it makes the player to perform the music freely and with more expressivity, or to have a better communication with the audience. Even they say that one can experience this “flow state” because you are very concentrated in making music and nothing else will distract you… We will find out how this process was for me.

After this brief introduction, here comes the main research question: how can we learn a piece by heart? But this question can also originate others questions such as which are the best methods to learn to play by heart? Does it feel better to play by heart than with the music?
The goals I want to achieve by solving these questions are as follows:

- To play Sonata n.1 for clarinet and piano by Johannes Brahms by heart on the day of my exam concert, which will be the sounding part of this project
- To learn how to memorize a piece
- To work on with some effective methods and strategies for memorization proven by other professionals
- To observe the sensations and results from playing by heart
- To be able to decide by myself if it works better for me to play by heart or with the sheet music
- To develop this skill for future performances
THE FUNDAMENTALS OF MEMORY

Let’s start with some basic knowledge that is good to know when reading this work and before trying any type of strategies or methods. So, what is memory and how does it work?

According to psychology-professor Kenneth Higbee (1977) memory is not just a thing or a tangible structure that can be seen or touched but is a more abstract word that refers to different processes that happen in our brain. Even if it is not possible to locate memory as an individual thing in our brain, there are some parts of it that have more importance in certain types of memory. It has been known that if these structures, like hippocampus or basal ganglia, are damaged by mental illnesses it can alter our memory process and perhaps lose much of it (Casafont, 2015). Thanks to these memory processes, we are able to remember names, numbers, facts, smells, experiences, people, places, landscapes, sounds, music… Therefore, memory is the function and the capacity of our brain that allow us to store information.

In his book Your memory: how it works and how to improve it (1977), Higbee defines the memory as a process of remembering with these three main stages: 1) Acquisition or encoding, which is learning the material, in the first place; 2) Storage, which is keeping the material until is needed, and 3) Retrieval, which means finding the material and getting it back out when needed. He also translated this process onto an easier way to remember and he named as “Three Rs of remembering”: Recording, Retaining and Retrieving.

But what happens if this process does not function accurately? If so, that can be one reason to understand why we forget things. Sometimes, we forget very simple series of numbers or names of the people we just met for the first time, but instead we can remember the entire lyrics of songs we used to sing during our childhood. How can that be possible?
Apart from these three stages, there are also two important concepts that we should know in order to understand why that happens. These are the short-term memory and long-term memory.

**Short-term memory**

Continuing with professor Higbee (1977), he describes short-term memory as the one that refers to how many items can be perceived at once, how much of these items can someone retain and remember. He says that it has a rapid forgetting rate, approximately 30 seconds or faster, and that it has limited capacity. In average, most people can retain information only about 7 items at a time. Items, in this case, means for example digits or names, something not too big.

Despite this, there is a technique called *chunking* that intervenes in short-term memory. It will make us to include more items at a time in the things we want to remember, and it will be very useful for musicians that want to play by heart. A chunk would be a group of small items that have something in common and make us putting them in the same group or category. As Imreh & Caffin (1996) say in their article, new memories are constructed out of chunks of knowledge already in memory. In addition, advanced performers can memorize more rapidly than a novice because the expert has more of the necessary building blocks (chunks) already in memory. The experts will not see individual pieces, but configurations of pieces, and that will make it easier and faster to remember. For example, if someone asks us to remember the following notes C-E-G-C-G-E-C it will be easier if one can associate this series as a C major ascending and descending arpeggio rather than note by note.
Another example of chunking music can be to associate the following progression of notes as a C major and G major arpeggios, again, or as a harmonic I-V-V-I function, knowing that this is a typical harmonic accompaniment form in classical music.

![Fragment of Mozart piano Sonata no 1 in C major K. 279, 1st mov.](image)

**Long-term memory**

On the other hand, we have long-term memory. It refers to the memory that is stored in our brain for a longer period of time. It differs from short-term memory in the following features: its capacity of storage is virtually unlimited; it may present some problems when retrieving information from it, but it is more difficult to disrupt.

As Higbee (1977) explains, many psychologists believe that LTM is formed by different types of memory. One common view divides them into three: procedural, semantic and episodic. But others include here also declarative memory.

As we have seen before with short-term memory, if we want that the thing we are memorizing lasts for a longer period of time or even forever we should store it in our long-term memory. How? The main way to do it is through repetition, but if we want that this knowledge can be available and accessible in a future it has to be coded and categorized in properly. There is a lot of literature which provides us different ways of coding information for making easier to transfer it to LTM and then, easier to recall. Later on, we will focus on some of them, especially the ones that works best with music.

To make all these processes clear, we can see easily how do they work in the following diagram.
There is another important way to send information from STM to LTM and this is through emotions. The Catalan scientist David Bueno, PhD in Biology and Genetics Professor at the University of Barcelona explains in a speech of the project *Aprendemos juntos* (Learn together) that emotions are crucial for any type of learning. Without emotions the brain does not remember that well as if emotions were connected with the new information or learning. Emotions are preconscious patterns of behavior that are generated in the amygdala. They are generated without us being aware of them, and until they manifest we do not realize that we have that emotion. They are rapid reaction patterns: they allow us to react without thinking in front of a possible threat or chance to survive. Our brain values the immediacy that allows survival and as they are crucial for that, our brain interprets any type of learning that is involved or linked with associated emotions as something much more important that the rest of the learnings. Therefore, the brain stores very well all learning that involves emotions, and the rest, as they are not important for survival, it does not consider necessary to make that big expenditure of neural resources to remember it (Bueno, 2018).
So, in our practicing and performing we should not forget about emotions, especially, the positive ones. As we have seen, they can also be helpful in the memorizing process.

**Memory and learning**

According to Dr. Casafont (2015) learning means acquiring new information that we can transform into knowledge and keep it in our memory system. David Bueno (2018) said that anything we learn is stored by our brain in a certain pattern of connections. Those connections made by our brain are the most important, and everything we learn in the future will modify them, because in there is where we have our memory. Therefore, he says that learning means physically changing our brain because we do new connections. He maintains that the higher number of these connections when learning and the more areas in our brain involved in that learning, the better we will remember and we will be able to use it when needed with more efficiency. Besides, he adds that in case we learn new information about something we already know, the formed pattern of connections will not be completely new. This is because our brain has a system to detect if there are any other connections previously established and they will be activated and will be added the new knowledge.
METHODS

In this second part of the project we will see some literature that has been already written about topics like “music and memorization” or “how to memorize” or “best strategies”, etc. Essentially, I have come across with some scientifically-based articles written by some music teachers, mainly pianists but working together with psychologists. I have chosen three of them which I think they are the ones that have a clearer and specific method to follow and which I am going to summarize below.

1. Gabriela Imreh and Roger Chaffin

“Understanding and Developing Musical Memory: The Views of a Concert Pianist and a Cognitive Psychologist.” (Imreh & Chaffin, 1996/97)

Gabriela Imreh is a Romanian pianist and piano teacher who after 20 years of performing and around 15 years of teaching has experienced both the devastation of memory lapses and the feeling of performance flawlessly in herself and with her students. Once, she attended to a lecture on expert memory given by professor of psychology Roger Chaffin and after that, they started to work together on a research trying to answer the questions that always arise regarding memorization, such as “How do we do it?” “What if memory fails?” “How can I improve?”.

In this article, they explain some principles of memory and their application to music performance, and also a case study trying to memorize the third movement of Italian Concerto by J.S. Bach which reflects this application. She tells us how she learned the piece and how she put in practice the same way of working with her students. The method she used is as follows:
1. Structural analysis of the piece defining its framework and memorize it.

2. Identifying the memory cues organizing the music into micro-levels; groups of scales, arpeggios, chords, rhythmical patterns, etc. which are familiar to all performers from years of training. These small blocks of information that will help to remember will be the so called **chunks**. Imreh has defined three levels of cues:
   - **Basic**: “conceptual cues for each familiar pattern of notes, fingerings and places that posed technical difficulty”
   - **Interpretive**: “phrasing dynamics, tempo and use of pedal. Include all of the points that I could remember thinking about during my work on the piece, every place that I had made a decision or worked during my practice.”
   - **Performance**: “the basic and interpretive cues that I marked that would still be of vital importance to think of at performance time […] they include a number of the most crucial basic and interpretive cues and the expressive cues that represent the different emotions I wanted to convey during the performance”.

3. Set a performance deadline and work from backwards. At least four weeks before the deadline the piece should be well memorized.

   (Imreh & Chaffin, 1996)
2. Jeanine M. Jacobson

“Memorize And Remember” (Jacobson, 1992)

Jeanine Jacobson is an associate professor of music at California State University in Northridge, where she teaches piano and piano pedagogy. In her article, she starts with presenting a quite common scenario: a pianist seems to have memory lapses in her performance, so she finally ends it being embarrassed. She wonders what problems can be there to get to this point. Then, she explains memory and learning principles, why do we forget, and finally, she proposes an application for these memory principles into piano study. Jacobson suggests some elements that have to be in consideration when trying to memorize a piece, because they can aid or impede the intellectual process: attention should be paid to logical musical patterns; new material has to be associated to the knowledge we already know; we have to divide the material in chunks and rehearse each one enough to be able to memorize it in the STM, then rehearse it again for it to stay in an intermediate memory bank and finally rehearse it again later in the same day to make sure that it will be stored in LTM.

After those advices, she proposes an initial memory procedure which consists in:

1. To have a structural plan of the piece and from this information, divide it into short logical learning units.
2. To find logical cues that will help us to remember the units we set.
3. To rehearse the learning units as many times as necessary.
3. Other tools for memorization

When we want to perform a piece by memory we can not rely in one type of memory only because the stress under the moment of performance can make us feel insecure. According to pianist and teacher Graham Fitch (2012) muscular memory tends to be “easy come-easy go” and the stress can make our mind play tricks that can cause memory lapsus, which sometimes can be really dangerous in a long-term perspective for the self-confidence of the musician.

In order to check in which type of memory the new content that we are learning is being stored we have the following tools, which have been adapted by me for the clarinet practice:

- **Swapping Hands**

  “It is both educational and fun (if not a little frustrating) to play the left hand music with the right hand, and vice versa. Because you are recreating the sounds using different muscles, you will be relying solely on your aural/analytic memories. I usually recommend doing this slowly and hands separately. It can be done hands together (in other words, with crossed hands), but this can be very hard to coordinate. Do it sparingly and very slowly, perhaps only for problem places.”

  *(Fitch, 2012 in Practising the piano)*

This is the explanation of how this tool should be use in the piano practice but since with the clarinet is impossible to do that, I suggest that the student (in this case, me) can play the melody with another instrument, for example, the piano. The aim of this exercise is that if we play with another instrument, we can not rely on the muscle memory because, of course, your muscles are going to work in a different way on the clarinet than on the piano and then you will have to rely on the aural or analytical memory.
- **Transposing**
  To test your memory, transposing the music is a good exercise. It is not necessary to use all twelve keys or to transpose the entire piece, it is enough with two or three keys and only for the sections that are especially problematic. This practice will help in understanding the harmonic functions and the patterns of the music in general that one may miss or take for granted in the original key, according to Fitch (2012).

- **Stopping practice**
  This strategy consists in deliberately interrupting the playing, so that means that you are also interrupting the muscular memory. Then you stop, and it is important that your hands should be taken away from your instrument, as this can make sly use of the muscular memory. During this little break, you can imagine the next section of the music according to your analysis of the piece, or in the contrary, do something completely different that will interrupt the music mental flow, such as count, read or check your phone if you want to really challenge your mind, and then start again from when you stopped or from the beginning of the next section. Repeat this exercise as much as you need.

- **Tracking**
  Divide the music into sections like tracks in a CD (in my case the sections will be the same as in the structural analysis that I did) and you have to be able to start from the beginning of any of the tracks. These exercises can have some variants:

  1. Like “Stopping practice”, stop deliberately your playing and then start again in the next track and so on. But try to always stop in different places.
2. Start playing track 1 and when you arrive in track 2, stop playing and just imagine it with vivid detail. Without losing the tempo and focus, continue playing track 3 when it is due, and then imagine track 4 and so on. Next time you do this try not to play the tracks you already played and not to imagine the ones that you have imagined before, so start the opposite way.

3. Play your last track (let’s say it is track 10) and then go back and play track 9 and 10 together, then play track 8, 9 and 10, etc. Until you reach the beginning.

4. Play tracks in a random order.
EXPERIENCE

Both Imreh & Chaffin and Jacobson have in common that the musician has to have a clear plan of the piece, that means to have a structural analysis of the piece and if needed, subdivided in smaller learning units. And that was the first thing I did with Sonata n.1 for clarinet and piano by Johannes Brahms.

1. Analysis Brahms Sonata n.1 in F minor

The structural analysis of each movement of this piece does not follow any specific method of analysis or any rules. I have chosen the way I thought it would be easier for me to memorize the structure according to the way I learned to do this kind of structural analysis of a piece. As you can see in Appendix 1, the main pattern I am using is similar to a classical sonata form structure and adapting it to this music, but of course, I am aware that I am not analyzing classical sonatas and the form can vary. I use this type of analysis just because it is the easiest way for me to do it, based on the knowledge that my brain already knows.

Brahms Sonatas n.1 in F minor and n.2 in E flat Major are well known also for pianists, and they are a main piece in their repertoire and in the chamber music repertoire in general. We can not forget to mention the importance of the melodic treatment that is given to the piano part. Of course, we are not skipping the harmonic function of the piano, and specifically its importance in Brahms compositions and romantic period in general, but we are not going to point it out because it is already an inherent characteristic of the instrument.

In the case of the Sonata in F minor we find melodies that can be identified as the main voice or main melody, mostly in the 3rd and 4th movement, but also in the other two movements, even though these moments there are a bit shorter. In addition, we can find this kind of melodic-contrapuntal
accompaniment that consist in complementing the clarinet voice or answering or creating a dialogue between the two instruments, and not only be there just supporting the clarinet part with a rhythmic and harmonic accompaniment.

Following from this perspective, I would like to mention that I am aware that I can find a lot of basic or interpretive cues in the piano part also, most of them regarding these melodies I just talked about. I used some of them and I could also have found more, but then, this analysis would have been much deeper and longer, and probably it would have taken more time than what I had for memorizing them. I save this as an option for future performances and ways of working on how to practice by heart, but the following process of defining the cues was, most of the time, being focused on the clarinet part.

2. Defining cues and notes of the process

During the months of March and April I have started defining the cues in all of the four movements of the sonata. Following these lines, the reader can see a summary of the notes that were taken during these days of practicing and observe the results.

*Note 1 (March 22\textsuperscript{nd} -23\textsuperscript{rd})*

Starting with the first movement, one of the **basic cues** was to find the important notes at the beginning of each section and having them really clear in my mind. Sometimes it could be confusing because there are some sections that are repeated but transposed, so I need to know in which order each new key appears.
Example:

- **B theme exposition**: starts with note F (in the clarinet part)

  ![Figure 2: Excerpt First Movement, bars 35 to 52](image)

- **B theme development**: starts with note C, and then it repeats but changes to a diminished fifth. After some bars, it starts again with note Ab, but the rhythm is different.

  ![Figure 3: Excerpt First Movement, bars 87 to 109](image)

- **B theme recapitulation**: is the same as in the exposition but starting with note A

  ![Figure 4: Excerpt First Movement, bars 152 to 171](image)

*Extra cue: the B natural in first bar second line shows me that the notes in the 2 bars after are all natural.*
Another kind of basic cues that I had in mind is the harmony. I must know which arpeggios I am playing, and I have to know when they repeat if they appear in another inversion.

For example, in bars 29, 30, 34 and 35.

Bar 29: D major
Bar 30: Eflat major starting with the 5th
Bar 34: Ddim7 starting with the 3rd
Bar 35: Ddim7 starting with the fundamental

Also in bars 62, 64 and 66. The same melody happens in the recapitulation but everything is transposed a 5th down (changing the tessitura in some places in the recapitulation of these bars).

Interpretive cues: I know the music of the 1st movement really well, so I already have the dynamics, expression, crescendo, etc. in mind. It is quite automatic because it is my own interpretation of the music, and I am trying
to express the meaning that I found in it, so it’s not that I have to overact.
It’s like if I was singing.

Note 2 (March 24th) Group lesson

Today I played just the first movement in front of the class and the teacher. I had good feelings regarding the memorization process and the work I did with this movement but, on the other hand, I felt that there was so little communication between me and the audience, and it was difficult to be aware of other aspects like the quality of the sound.

I would say that the next step for working in the first movement is to play the melody with another instrument (Swapping hands strategy) because I want to check the aural and analytic memory. For the moment, I think that muscular memory is fine, automatic, analytic memory is in progress but is going ok, and then I need to try the aural memory.

2n mov. (individual practice session): I’m following the same strategies but I add a new one: to find the differences between the sections that are similar. I think it’s easier to do it in this movement because it is the shortest and it’s not complex in terms of structural analysis.

Note 3 (March 31st)

4t mov: Today I had rehearsal with the pianist. We played the movement 3 times and I tried to play it by heart the third time. It was the first rehearsal I ever did with piano for this movement. For the first two times I wanted to look at my part but then I felt quite confident and I tried without. I could see that the most technically difficult places didn’t work. They must be very automated in my “fingers” so, if the so-called muscular memory is not helping, the mistakes will happen.
Note 4 (April 6th)

2n mov: Still basic cues, based on the “Find the difference” game: in the development, I need to know the keys of the arpeggios (first E flat starting with Bb, then D flat starting with Ab so a major second down). I need to memorize also the length of the long notes and I found a cue for this, which is: in the bars 24 and 26 (both with up-beat) the arpeggios are short, and the following E flat note is long (half note + quarter note). After some bars, the same arpeggios again are longer (more notes), and the following E flat note is shorter (quarter note + eight note).

Figure 7: Excerpt Second Movement, bars 22 to 36

Interpretive cues: I need to know where I have to breath in the first section.

Note 5 (April 7th) Rehearsal with the pianist

3r mov: The first time we played I tried to play all by heart but there were some wrong notes or insecurity in some accidentals because I wasn’t very focused.

Interpretive cues: I must remember all the slurs, articulations, accents, dynamics…

Performance cues: I need to remember that in the second repetition of the development I chose to make some differences of expression. For instance, taking more time in bars 73-74 and bar 79, since it’s the second time that I play the same music, and in the score it says espressivo, so I have to make a difference.
4t mov: I still need to work better on the first step of the method (structural analysis) and remember each section and the global structure of the movement. Maybe this movement is easier in terms of notes, but I have to work better on the final part (Intro + A). I think this movement is also easier in terms of musicality and expression, so it will be easier to remember the interpretive cues, but we still need to do more work together with the piano and decide how we shape the movement.

Better technique in one difficult passage, so it was not a problem for my memory now, but I still will work more on it. I don’t trust it if it only works for one day or rehearsal.

*Note 6 (April 9th)*

I have played the clarinet part of the 1st and 2nd movement on the piano to check the aural and analytic memory. With this exercise, I could see that I really need to know all the accidental and enharmonic notes and the distance between intervals and which function/relation has in the melody or harmony. I wasn’t sure of them when I was playing on the piano because I can not rely on my muscle memory there, so instead, I need to learn the music paying more attention to the music theory details (harmony, intervals, keys…)

Kind of the same happened with the length of the long notes and of course it was more difficult because I didn’t have the piano part to rely on, but I need
to do the same kind of work like with the accidental notes, and be aware always of the beat, and in which part of the bar they start or finish.

It was a little distracting to hear the same notes I have written in my part sounding a 2\textsuperscript{nd} down, because I was playing my part on the piano without any transposition. What happened there was that when I had to think or sing the piano part, I mean the parts that the pianist plays alone without the soloist, instead of keep singing with the sounding-key I imagined or sang, again, the sound in the real key, so that means one 2\textsuperscript{nd} down.

\textit{Note 7 (April 12\textsuperscript{th}) Rehearsal with pianist}

3\textsuperscript{rd} mov: \textbf{Basic cues}: I still have to remember better the differences between two similar parts in the first section: bars 9 to 16 (where the piano has the melody and the clarinet the accompaniment melody) compared to bars 29 to 32 (the piano has the same melody but it’s only four bars and then it develops to a new thing).
Interpretive cues: I still need to remember the crescendos, accents, sforzando, etc.

Performance cues: the new ideas in the second repeat of the development (B-C, bars 73-74 and bar 79) and in the recapitulation (take a little bit more time since in the score it says *teneramente*) are established and I remember them, but I still need to find a more organic way of playing them, but this is matter of practice and not of memory.

4th mov: I know the structure of the whole movement better. I need to check and practice a bit more carefully some bars that are a little bit tricky technically because today they didn’t work very well in the rehearsal. Also, I have to work on the rhythm (basic cues) in both clarinet and piano parts and the dialogue that is established between us in some bars in the thematic transition in big section n. 2.

For next rehearsals, interpretive cues regarding articulation and dynamics have to be better memorized.

I think that the performance cues in this movement will come a little bit late, just some days before my exam. I think we need more time for shaping this movement together and discuss about the musical idea.

Today we put into practice the tool “Stopping practice” without meaning it, because we were stopping in the middle of the movement and talking about the playing, deciding new ideas, starting again at different points of the piece… I think it was not a problem. I did the rehearsal without my part, but
after a while I took it because it was easier and faster to have the bar numbers as a reference of the parts of the movement that we were talking about. But when it was time to start again from a random point it was not difficult for me to remember it and be in the flow of the music again.

Next step: play with the piano (Swapping hands) the 3rd and 4th movement, in order to practice the aural memory.

**Note 8 (April 14th) Rehearsal with piano and “play through” recording**

It was the first time I played through the whole sonata without score. In general, I felt really good and confident. Technically, almost everything worked (except some bars) and I only had one obvious memory lapse if you know the piece (if someone doesn’t know it, maybe they don’t realize, because I was playing notes that were in the piano part, so it didn’t sound bad or empty).

The problems or things to improve are the following:

- Being focused for 25 minutes it’s hard to do, and I could feel how I in the 4th movement I was unfocused. It was dangerous for the memorization. I was trying to force myself again to be in the moment, in the music. At the end, I did quite good but maybe in another moment or in front of people it is going to be more difficult to get back to the flow. This is dangerous also because the 4th movement is the one which I have worked for a shorter period of time and because it is the last one, so I will be more tired, both physically and mentally.

Also, I was a bit unfocused in some parts of the other movements, but it was for a shorter period of time and it was easy to come back.

- The basic cues are almost fine, but I still find it hard to remember all the interpretive and performance cues. I listened to the recording carefully and
checked with the score in order to find still some points and some cues that are still not very convincing, and after that I will work extra on them.

Note 9 (few days before the concert)

During these last days of April and one week before the concert I was playing the whole sonata in the lessons with my teacher and the pianist and also in the group lesson we use to have every week in front of the other people from the class. The general sensation is good and I feel quite secure. There are basically no memory mistakes if I am focused enough. Only in one of the “play through”, in just one very short moment in the first movement my mind was blank in one of my resting bars and then I panicked a bit because I thought I did not know what was coming next, but suddenly, I came back to the “reality” and was able to continue playing. Honestly, I don’t know how I did it, it seemed quite automatic and unconscious to me. After this experience, I will study the cues of this particular section again.

The only thing that is making me feel a bit worried is that it seems that I am playing the piece on autopilot. That is because I know very well the music and I feel technically secure but I do not like to trust only on this. Therefore, I have decided that during these last days before the concert I will study again the structural analysis of each movement and all the cues that I defined. I think these will help me to have again the rational and analytical thoughts of the music and feel that I know where I am all the time and what is coming next.
DISCUSSION

After some weeks of practicing Brahms Clarinet Sonata n.1 in F minor, with the main goal being to learn the complete piece (four movements) by heart and being able to perform it in a concert or exam or recording, I can say that following the methods and strategies suggested by professors, psychologists and pianists (Gabriela Imreh, Roger Chaffin, Jeanine Jacobson and Graham Fitch) I was able to memorize the music and play it by heart.

From my experience, I can say that the order of the process of memorization has sense and is logical. First, we did the structural analysis of each movement. It was very useful to know all the time in which point of the movement I am. Therefore, you can have a clear picture of the “story” of the music in each movement that will help you to communicate it. After that, was the time of finding the cues. I think the division that these authors made of the three types of cues is also very logical and goes well with the process of learning a piece and the steps of performance. Most of the strategies of memorization that the methods suggest and the other tools are helpful for learning the notes and rhythm, that refers to the basic cues. For the interpretive and performance cues I find that it is a little bit difficult to practice them in that way so I tried to find other strategies. Basically, I tried to remember where the dynamics, articulation, character signs, breathings, etc. were written and have a clear picture of the score in my mind. But if you know the music and you feel its flow it becomes very automatic to be expressive and where to give more emphasis, where is the tension and where to release it.

After some days of practice according to these methods I would say that, at least in my case, the muscle memory predominates. For me, it is the type of memory that has been trained the most, so during these months of research I realized that is the one with the fastest response time. If I can control my
nerves under a performance situation (concert, recording, etc.) it is not supposed to fail so I can trust it quite a lot but if I am unfocused it can fail. Muscle memory helps for knowing the notes and make your fingers going directly to the right keys of the clarinet in the precise moment. It helps me also to not hesitate with the technique when there are some accidentals and enharmonic equivalents notes, which sometimes can be a little bit confusing in the analytical memory’s point of view.

On the other hand, analytical memory works and it’s helpful for knowing in which moment of the piece you are and for knowing what is coming next, but for notes and technique, muscle memory is faster. And for the aural memory, I could say that to listen to the music, listen to it with the score, listen actively and visualizing the structural analysis and the cues I defined in my mind was so helpful.

In the moment of performance, I feel quite safe. If I am focused and feeling the flow, I think the music works and I should not have problems. I also think that playing with the piano, in this case, it is very helpful for the memory because in case of a lapse of memory, the pianist can continue playing because he plays with the score and then it is easier. It is also very important and useful to know the piano part and the notes of its melody because sometimes my melody and my entrances are an answer or a continuation of what the piano is playing, so it is very helpful.

I did also some work on my own apart from these methods, which was based on mental solfeggio so when I was in the train, bus or wherever I was trying to reproduce the music in my head and singing it with all the notes and trying to visualize the rhythm.
And to conclude, I think it is important to know the opinion from my clarinet teachers and from the people that were listening to me. All of them said that it seems that I am very secure with playing by heart and that is not a thing the listener will worry about when they are listening to me. That is one of the most rewarding comments I can receive to understand that the work I have done was worth it and that I could achieve my goals. I can say now that I feel much more free when I am playing without sheet music. I am able to connect deeply in the music without sacrificing the rational and technical part of the playing. I think that this is a very good balance.

After this project, I am really looking forward to learn a new piece by heart again because I don’t see it now as a stranger or difficult challenge. Analyzing the score and memorizing it is a new aspect that we can add to our daily individual practice sessions and work on this, giving the same value that we give to other aspects such as intonation, rhythm, sound quality, technique, etc.
REFERENCE LIST


APPENDIX

1. Structural analysis

1\textsuperscript{st} movement

<table>
<thead>
<tr>
<th>Exposition</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intro piano</td>
<td>A (clarinet)</td>
<td>A+ (piano)</td>
<td>B*</td>
<td>C</td>
</tr>
<tr>
<td>1-4 bars</td>
<td>5-25</td>
<td>25-37</td>
<td>38-52</td>
<td>53-76</td>
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</table>

Development (which starts with the same theme as B* in the Exposition but transposed a 4\textsuperscript{th} down)

<table>
<thead>
<tr>
<th>A</th>
<th>B (key change)</th>
<th>C</th>
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<tbody>
<tr>
<td>90-99 (starts with C in the clarinet part)</td>
<td>100-115</td>
<td>116-135 Subdivided in 16 + 4 (transition bars)</td>
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Recapitulation

<table>
<thead>
<tr>
<th>A (theme)</th>
<th>Transition 1</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Transition to coda</th>
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Coda

<table>
<thead>
<tr>
<th>A</th>
<th>A’</th>
<th>Theme</th>
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</thead>
<tbody>
<tr>
<td>214-218</td>
<td>219-226</td>
<td>228-23</td>
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</table>

2\textsuperscript{nd} movement

<table>
<thead>
<tr>
<th>A</th>
<th>Transition 1</th>
<th>A</th>
<th>Transition 1</th>
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<tbody>
<tr>
<td>A 1-4</td>
<td>11-12</td>
<td>A 13-16</td>
<td>21-22</td>
</tr>
<tr>
<td>B 5-10</td>
<td></td>
<td>C 17-20</td>
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<table>
<thead>
<tr>
<th>B</th>
<th>Transition piano 41-48</th>
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<tbody>
<tr>
<td>A 23-26</td>
<td>A’ 31-34</td>
</tr>
<tr>
<td>B 27-30</td>
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A’

<table>
<thead>
<tr>
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<th>A</th>
<th>Transition 1</th>
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<td>49-52</td>
<td>59-60</td>
<td>A 61-64</td>
<td>69-70</td>
</tr>
<tr>
<td>B' 53-58</td>
<td></td>
<td>C 65-68</td>
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CODA

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<tr>
<th>71-74</th>
<th>75-81</th>
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### 3rd movement

#### Exposition

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>A’</th>
<th>: B</th>
<th>A’+ continuation</th>
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<tbody>
<tr>
<td>1-8</td>
<td>9-16</td>
<td>17-28</td>
<td>29-46</td>
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#### Development

<table>
<thead>
<tr>
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<th>A</th>
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<th>C</th>
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<td>89-90</td>
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#### Exposition

<table>
<thead>
<tr>
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<th>B</th>
<th>A’ + continuation</th>
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<tbody>
<tr>
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<td>107-118</td>
<td>119-136</td>
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### 4th movement

#### 1

<table>
<thead>
<tr>
<th></th>
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<th>A</th>
<th>“Bridge”</th>
<th>A+ cont.</th>
<th>B</th>
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<td>1-8</td>
<td>9-16</td>
<td>17-24</td>
<td>25-41</td>
<td>42-46</td>
<td></td>
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</tbody>
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<tr>
<th></th>
<th>Intro</th>
<th>A</th>
<th>“Bridge”</th>
<th>A+ cont.</th>
<th>Thematic transition</th>
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#### 3

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<th>C</th>
<th>B</th>
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<tr>
<td>119-141</td>
<td>PIANO</td>
<td>142-162</td>
<td>163-173</td>
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#### 4

<table>
<thead>
<tr>
<th></th>
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<th>“Bridge” Variation</th>
<th>A+</th>
<th>Coda</th>
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<tbody>
<tr>
<td>174-191</td>
<td>192-199</td>
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<td>209-220</td>
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