GYÖRGY LIGETI’S DÉSORDRE: MUSICAL CHAOS ACHIEVED WITH ORDER

BY

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Chapter I: INTRODUCTION

Perfect Sincerity, Perfect Simplicity, Perfect Achievement

"Perfect sincerity plus perfect simplicity equals perfect achievement," said the great pianist, Josef Hofmann. Where sincerity cleanses the soul and plants a seed for further growth in every facet of life and art, dishonesty in one’s art creates the exact opposite. The first step to being an honest musician is to work honestly, as Hoffman so simply put it. An honest work ethic should be established in us from childhood by our first teacher. It is important to know what constitutes an honest work ethic and how to put those ideals into practice when learning a new musical composition in order to achieve great results in performance. In this essay, I will demonstrate how this can be achieved within the context of learning Ligeti’s first Étude, Désordre.

Allow me to first explain why musical sincerity is so difficult to achieve by describing a scenario which every performer has experienced. Imagine that you have just performed a recital. You, the performer, have a certain idea of how you played. You might be pleased or disappointed with your results, and you are seeking another opinion to validate your own feelings. Meanwhile, backstage, there are people ready to greet you and tell you how wonderfully you played. They will soon tell you that the concert was wonderful and that you are very talented. I believe there are no words in the English language more harmful for a growing musician than, “You are so talented.” How often we hear this!

We are all talented in different ways. Therefore, this statement means nothing. This statement, although flattering, is misleading for the performer. Everything is
achieved with work, and the statement gives an incorrect evaluation of why the recital was successful or unsuccessful. It takes the attention of the performer from evaluating what kind of work he did from the first minute he started working on the piece until the day of the recital, and encourages the performer to think that it was blind luck, talent, or divine intervention that accomplished the task. An uninformed evaluation can be detrimental to the growing artist. We have all experienced this in one form or another.

Music is a very sophisticated art form. Therefore, one who studies music should also aspire to be sophisticated. Being sophisticated will allow him not to let the comments of the audiences, teachers, or the music critics confuse him. This is not to say that the audiences, the teachers, or the critics are wrong in their commentary, but music is so complicated that no words are going to clearly reveal to the performer what he so desperately needs; a justification for the path he took that led him to the performance. One has to constantly ponder upon the information he gathers from the comments, and in time, put the puzzle together.

The Willingness to Make Mistakes on the Path to Greatness

Vladimir Horowitz once said: “It’s better to make your own mistakes than to copy someone else’s.”¹ I believe Horowitz, just like Hofmann, knew how important it is to be honest within your own work, and for Horowitz, the first step of the lifelong journey of being a sincere musician was not being afraid of mistakes. Is it not true that it is extremely important to implement trial and error into our growth as musicians without

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being distressed by failures? These failures reveal much more to us about where we stand in our accomplishments than comments such as, “You are talented,” or, “Well done.”

On the surface, Hoffman’s comment seems simple, but as you can see, acquiring perfect sincerity to achieve perfect results is a lifelong journey. Hoffman is inviting us to take a journey, which requires the willingness of making mistakes and learning from the mistakes, so that at the end, we can achieve perfect results.

We live in a society in which mistakes are considered close to criminal. We are trained to be afraid of making mistakes. Our creativity suffers as an after effect, and when our creativity suffers, our individual voice suffers as well. Everything in music is becoming more standardized, and for the lack of a better word, controlled. Since the rise of the industrial revolution, the rise of the machine age, human creativity has been repressed and has been suffering in the arts. Technology seems to have brought us together, but in truth, we are losing our individuality, our inner artistic voice, by the constant comparisons and standardized evaluations.

Growing up in the 1990s in one of the worst neighborhoods of Yerevan, Armenia, I did not have the opportunity to listen to a single piano recital in the 15 years that I lived there. In the music school which I attended, composers such as Mozart and Beethoven were being taught. Their musical language was so foreign to me that my teacher, who lacked the skill to teach me their language, recommended that I listen to and imitate recordings of famous pianists for every piece that I was assigned. This is exactly the opposite of what Horowitz encouraged musicians to do! What should a musician do in this situation? I will explore a four-step learning process in the next chapter, which will answer this question.
Imagine that you are a student in a prestigious conservatory. Your teacher has assigned you Ligeti’s *Désordre*, a piece that is rarely played in concert halls, and you do not know how it sounds. What is the first step you will take? Will it be a search on YouTube with hopes to find several performances, and see if you like the piece and how it sounds? Will you sight-read the piece at the keyboard the first chance you have? Or, will you first read about this *Étude* and the life of the composer before sitting in front of the piano? Depending on how you answer this question, you will become a different pianist and a different musician. Your performance will also be vastly different depending on which path you take while learning this piece. Regardless of what the composition might be which you have chosen to learn, I believe that there are four fundamental steps to follow.

Firstly, you need to gain knowledge about the composer and the composition. Many pianists fall into the trap of trying to show everything they can do with one piece. However there is no single composition that will showcase everything that a pianist might want to express. What is important to understand is what the composer is trying to express with the particular piece you are about to learn. Reading as much as possible about the composer and the composition will give you critical clues on what the message of the composition might be, and how it fits with other works of that genre and other compositions of that time period.

The second important step is to structurally disassemble the composition and analyze the details that make up the core of the composition. The great pianist and
composer Sergei Rachmaninoff once said that during his practice, he continuously and tirelessly worked at disassembling and reassembling the musical compositions that he had to perform. Rachmaninoff said that every time he disassembled the work, he could more clearly see the function of each part.

The analysis should be done away from the keyboard with the use of simple, yet very important tools: a pencil and paper. Think of it as a war plan. You are about to attack an enemy you have never fought before. You are going to send your scouts to analyze the opposing troops: their position, their formation, the number of calvary units, and so on. The more you know, the more power you have to change the outcome of the battle in your favor. Think of the composition you are about to learn as a battle that you must win.

Instead of going through this step, many musicians will listen to recordings to get an idea of how the piece should sounds. There is one very large problem with this, however. The recording is merely the final product, and what is needed is the journey that the pianist is about to take to reach the final result. Just because you know where you need to be does not necessarily mean you will find the way there. This analysis, regardless of how deep it is, will shed more light on the overall understanding of finding the path.

Thirdly, we must connect the first two steps to the keyboard. This is the step that all of us think of when the word, “practice,” is spoken. Practicing at the keyboard, in many ways, is a translation from the score to the ears, the exact backwards process from which the composer underwent. It has physical and athletic challenges.
Physically, the pianist must make sure that he is not going to hurt his hands with the amount of hours he will spend preparing. At the same time, he must also make sure to constantly push himself outside of his comfort zone in order to gain new technical skills. Mental challenges are also present. For example, one must consider the speed of thinking, the ability to think in the present as the passage is being performed, and at the same time, anticipating what is about to be performed.

We need all the insight and guidance we can get from our piano teacher during this stage, as much depends on us and our work ethic in the practice room. Knowing how to practice perfectly is a skill that is acquired through years of experience and training, but there are fundamental things, which apply to any piece. Knowing yourself is the key to success in the practice room.

Think of how easy it would be if you played only one piece for the rest of your life. It would definitely eliminate all kinds of unknowns and surprises during a performance. You and the piece you study are always the unknown factors. If you do not solve one side of this equation, which is yourself, by establishing a constructive work ethic, you will never solve the equation since the piece will always be different. Not only will the piece be different, but the piano, the hall, the temperature of the hall, and your mood will all be different.

Finally, the composition must be memorized. Many pianists memorize a piece however they can without a certain plan. For some, memorization takes months. Many discover that even after years of practicing, the memory fails in a live recital. I will explore several techniques that I find useful for quickly and effectively memorizing any musical composition.
I will use Ligeti’s *Désordre*, one the most complicated pieces for the piano, to demonstrate how you can learn it by following the four steps I have listed above. I will go through each step in detail in hopes of explaining how one might benefit by studying this way. The same process should, by default, apply to any less difficult work.
Chapter III: STEP ONE: KNOWING THE COMPOSER

György Ligeti (1923-2006) was a composer always in search of new sounds and sound worlds. He once stated his thoughts about music in an interview saying, “I am in a prison... One wall is the avant-garde, the other is the past. I want to escape.”2 His compositional interests and style changed throughout his lifetime until the late 1990s.

During his early years, Ligeti’s compositional output was strongly influenced by Hungarian folk music and Bartok’s musical style; namely polytonality, irregular meter, and free counterpoint. Before Stalin’s death in 1953, new music was forbidden in Hungary by the political regime. However, most of Bartok’s music was allowed because he was an important national figure.

After Stalin’s death, Ligeti was introduced to the music of the Second Viennese School and Serialism. He was in search of his own compositional voice and was experimenting with many styles of new music during these years. After he fled Hungary, he came to know the music of composers like John Cage, Boulez, and Stockhausen and was shortly fascinated with fluxus, aleatoric, and electronic music. 3

Starting from the early 1960s, Ligeti yet again shifted his attention, this time, to his own invention, micropolyphony. Ligeti once expressed that his musical interests had always revolved around part writing, and mainly canons with dense textures. In his micropolyphonic works such as Atmosphères and Lontano, the polyphony is inaudible because of the density of the individual lines. Therefore, the ear grasps a texture rather

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3 Ji Won Baik, "György Ligeti’s Piano Études: A Polyrhythmic Study." (PhD diss., Florida State University, 2009).
than the direction of an individual line. It is important to note, however, that these
textures are highly organized and governed by rules. Ligeti also said, “I have retained the
melodic line in the process of composition, they are governed by rules as strict as
Palestrina’s or those of the Flemish school, but the rules of this polyphony are worked out
by me. The polyphonic structure is….microscopic, underwater world, to us, inaudible. I
call it micropolyphony.”

Later in life, Ligeti rejected the labels of tonality and atonality. The lifelong
search of new sounds led him to the discovery of an important ingredient, complex
polyrhythm, which would become the focus of his attention for the years to follow. In his
earlier micropolyphonic works, Ligeti divided the pulse into units, achieving an effect of
a sound mass. In his later compositions, he treated the pulse as a singular undividable unit
within which many different rhythms would exist, thus achieving an audible clarity of
voicing and stronger direction of overall musical flow.

In 1980, after listening to a recording of composer Conlon Nancarrow’s player
piano music, Ligeti found a new direction in his music, one based on highly complicated
rhythms. Ligeti’s new compositional style, which would be reflected immediately in his
_Piano Études_, was centered on complex polyrhythms. However, the ultimate goal was the
invention of new sounds and new expressions in music, not mere complexity for the sake
of virtuosity.

Conlon Nancarrow was an American-born composer who lived the latter part of
his life in Mexico. He expanded on the ideas of Henry Cowell to use the player piano in
order to compose highly complicated rhythmic performances. Between 1941 and 1947,

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5 Ibid.
Nancarrow was involved in composing and experimenting with the player piano since pianists were not able to play his music. By 1970, his recordings were published. In 1980, Ligeti purchased a player piano in Paris and was immediately fascinated by the music. He was also fascinated with the speed and the accuracy that the player piano, reengineered by Nancarrow, was able to execute the compositions. For example, one of Nancarrow’s compositions, Study No. 37, consists of twelve different tempo markings and voices. An accurate and fast performance of this kind of complexity would be impossible for any pianist. Ligeti stated, “The music of Nancarrow is so utterly original, enjoyable, and constructive, and at the same time, emotional. It is the best music by any living composer of today.”

Ligeti was also strongly influenced by modern science his entire life. As a young man, he had a wish to become a scientist. Therefore, it is not surprising that he implemented mathematics into his music. It is important to note, however, that his music used mathematical structures and ideas for the ultimate goal of expression. He did not formulate musical ideas by mathematical calculations, but rather drew his inspirations from it. He, like many artists of the 20th century, was specifically interested in implementing chaos theory in his art.

During an introductory lecture for a performance of Désordre in Gutersloh on May 5, 1990, Ligeti described it as “…a concealed homage to the new science of deterministic chaos.” Similarly, in a public conversation with Richard Steinitz, who wrote a book on Ligeti’s life and music, Ligeti stated, “Somewhere underneath, very

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deeply, there’s a common place in our spirit where the beauty of mathematics and the beauty of music meet. But they don’t meet on the level of algorithm or making music by calculation. It’s much lower, much deeper—or much higher, you could say.”  

Richard Steinitz states: “Originally, Ligeti’s Études were meant to address technical issues like Chopin’s, Listz’s and Debussy’s Études, but became volcanic and expansive, testament to an astonishingly wide-ranging imagination, requiring almost superhuman feats of mental and physical dexterity.”

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9 Ibid.
Chapter IV: STEPS TWO: THEORETICAL ANALYSIS

_Piano Études Book 1_ (1985) was a testament of Ligeti’s newly found compositional language. As the title, _Désordre_, suggests, the main goal of the piece is to give the listener a sense of disorder and to convey chaos. It is interesting, however, that most of the parameters of this _Étude_ are tightly organized. Even the parameters of the piece that are developmental in nature are formed with highly refined processes.

I have always thought of music as having two fundamental elements: sound and time. The basic properties of sound, which would apply to music analysis, are pitch, dynamics, and articulations. The properties of time include note durations, rhythm, meter, and compositional form. I think that during the absence of any of these elements, sound or time, any music would be robbed of its identity.

In all musical compositions, composers establish rules, a parameter to work within. The basic purpose is to organize their musical thoughts. In _Désordre_, Ligeti established two categories of rules, constant rules and dynamic rules.

**Constant Rules**

The constant rules keep the status quo. The applications of the constant rules can be found within both the sound and the time characteristics of the piece. I will give three examples of constant rules that are applied to time. The first constant rule is the tempo marking and the lack of speed-manipulating markings, like _accelerando_ or _ritenuto_ (See Example 1 on page 13). The form of the piece is a second example of a constant rule, because it never changes from performance to performance. Ligeti composed the
Désordre in ternary form (ABA’). The final example of a constant rule is the establishment of the smallest note value of the Étude, which is an eighth note.

Several simple constant rules are also applied to the sound world of the piece. First of all, both hands of the pianist are required to play simultaneously without a single moment of repose from the beginning to the end. Secondly, certain voices within each hand are always articulated with accents and forte dynamics, and others with legato and piano dynamics. In Example 1, I show the two voices present in each hand of the pianist. Each hand is carrying two distinct horizontal ideas. The number of lines remains two within each hand throughout the composition.

Example 1. György Ligeti, Piano Études, Book 1, No. 1, Désordre.
Dynamic Rules

Dynamic rules promote development and mutation. An example of a dynamic rule applied to time would be the 3+5 and 5+3 groupings of the eighth notes found in this piece (This rhythmic grouping is called Aksak, which is a Bulgarian rhythmic pattern that was used by Bartok quite frequently.) (See Example 2a). The composition is constructed around these 3+5/5+3 groupings, but throughout the piece, there are many mutations such as 5+2, 2+3, 4+3 and even 3+21 (See Example 2b).

Example 2a (above) and 2b (below). György Ligeti, Désordre.
Rules Which Lead to Chaos

Indeed, *Désordre* is actually quite ordered. In the previous subchapter, I gave examples of several constant and dynamic rules. It should be restated that none of these rules are responsible for conveying chaos. There are three rules that are responsible for the chaos. Even though the changes that these rules bring forth are subtle, the process of constant change in time leads to total chaos.

The first rule is a constant rule. It is applied to the sound world of the piece. The right hand of the pianist is always playing the white keys of the piano, while the left hand is always playing the black keys. This means that the right hand contains a diatonic collection and the left, a pentatonic collection. The music in each hand, when played separately from the other, sounds quite pleasant to the ear. There is no sensation of tonality or centricity in either hand, however. Once put together, a chaotic mass of sound makes it impossible to hear the individual pitches in each hand. (See Example 1 on page 13).

The second constant rule also applies to the sound world of the piece. As I mentioned above, each hand is carrying two horizontal lines, which I have labeled as Voice 1 and Voice 2 in Example 1 on page 13. In *Désordre*, Ligeti composed two phrases that are repeated without a break throughout the entire piece. Each hand has a distinct phrasing. The main difference between the phrasing of each hand is that the right hand has four sub-phrases, and the left hand has five, shown by Diagram 1 below. Even if Ligeti did not use the eighth note addition/subtraction technique to create disorder, the additional fifth sub-phrase in the left hand would be enough to distort the synchronization of the phrases.
Diagram 1: Phrases and Sub-phrases of Each Hand.

The third and final rule applied to this composition is responsible for most of the chaos. This is a dynamic rule applied to the time, specifically the interaction of time between the two hands of the pianist. The process here, although similar in nature to compositions like Steve Reich’s *Piano Phase*, is quite different in its execution primarily for two main reasons.\(^{10}\)

First of all, Ligeti does not use tempo manipulation to desynchronize the hands. In Reich’s *Piano Phase*, the first pianist keeps the tempo constant while the second pianist gradually accelerates. This creates a rhythmical blur effect. In contrast, in *Désordre*, Ligeti writes out every shift in time using eighth notes as the smallest time unit. The end result sounds like an artificial, mathematically calculated phase-like process. The music does not sound blurry at any point during the shifts. It is a fundamentally different process than phasing.

The beginnings of all the shifts are accented and are in octaves (See Examples 1 and 2a on pages 13-14). Towards the third part of the piece, the A’ section, these octaves become chord clusters (See Example 2b on page 14), making the accented vertical

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\(^{10}\) David Isgitt, "An Analysis of Periodic Rhythmic Structures in the Music of Steve Reich and György Ligeti." (master\., University of North Texas, 2002).
sonorities even stronger and harsher. This is evidence that the music is not a failed attempt of phasing, but rather a phase-like technique to achieve complex and highly calculated polyrhythm. Ligeti is, in fact, subtracting and adding the smallest time unit in the Étude, the eighth note, from the sub-phrases of each hand to achieve complex polyrhythm. Since these additions and subtractions are not systematic and are not a linear unchanged rule, I called it a dynamic rule above. I will explain in detail how this rule works.

For the majority of the A section, the left hand is constant while the right hand is going through a process of an eighth note subtraction. It systematically jumps ahead by an eighth note with each sub-phrase entrance. This process continues until the fourth phrase entrance of the right hand, during which the left hand joins the subtraction process (See Example 3 below). From that point until we reach the B section, the number of eighth notes shrinks from 3+5 eighth note groupings to 3+3 in both hands.

In the B section, for three eighth notes, both hands are synchronized. Example 4 shows that the left hand adds an extra eighth note during the fourth beat and the hands become desynchronized. In contrast to the A section, during the B section, this desynchronization lasts for 31 measures, until the end of the fourth phrase in the left hand.


In the B section, there is no subtraction or addition of eighth notes until the circled passage in Example 5. The phrases of each hand do not line up simply because each hand has a different number of sub-phrases. In the B section, only towards the end of the fourth phrase in the left hand does this subtraction technique get employed as Example 5 shows. The red circle annotations in Example 5 show the exact moment where the subtraction process starts.

Example 5. György Ligeti, *Désordre*. 
The overall process is quite similar from section A to B with one difference. In section A, the accents happen mostly in groups of 3+5. In the B section, the accents happen mostly in the groups of 3+3. From the beginning of the piece until the end of the B section, the amount of eighth notes lessens, and the accented first voices of each hand occur more rapidly, giving a sense of *accelerando*. Of course, there is no *accelerando* written out, since the tempo is a constant rule, but there is a definite sensation of *accelerando*, which is mathematically calculated and artificially achieved. In fact, there are two artificial *accelerandi* happening in each hand, and at different paces simultaneously. The climax of the piece occurs when the eighth note ascending motive, found in the second voice, disappears completely at the end of the B section as Example 5 shows, and only the first voice of each hand is heard. At this point, both hands are synchronized.

In A’, the reverse process of the A section happens. The right hand stays stable and the left hand starts an eighth note addition process (versus an eighth note subtraction process found in the A section). Since the process is the addition of eighth notes, as the piece reaches the end, there is a constant growth in the amount of eighth notes in the left hand. This creates a sense of gradual *ritardando*. As I mentioned above, the primary groups of eighth notes in the A section are divided in 3+5 or 5+3 groups. In section B, both hands are mostly in 3+3 groupings. In A’, by the time the left hand reaches the beginning of the third phrase, the eighth note groups of the second voice are as long as 3+13. The second sub-phrase of the third phrase actually includes an eighth note pentatonic ascending scale with a 3+21 grouping (I mentioned above that these are mutations of the 3+5 dynamic rule. See Example 2b).
In the beginning of A’, for 19 measures, the bar lines align. (Bar lines in this Étude, and in fact, in most of Ligeti’s Piano Études, are guidelines to make score reading easier and are non-functional in the traditional sense.) It is important to notice a key difference in how A’ begins. The phrases are not aligned at the beginning of A’ as they were aligned at the beginnings of the A and B sections (See Examples 1, 4 and 6). I will point out how this de-synchronization of phrases at the beginning of A’ impacts the expectations of the listener about the end of the piece.


How does Désordre end? This is a composition, which conveys chaos, however, endings in any kind of art form are strong landmarks, which usually portray order. Ligeti manages to break his two most important constant rules with the very last note of the piece. How is this possible?

The ascending scales in each hand, the pentatonic in the left hand, and the diatonic in the right hand, meet at the highest note of the piano. The highest note of the keyboard is a C, a white key. Above, I mentioned the three rules that are responsible for conveying chaos in the piece. Two were constant rules, and one was a dynamic rule. The
first constant rule prohibited the left hand from playing the white keys of the piano, which means that the last note of the piece broke this rule.

Careful observation of the phrasing will show that Ligeti also breaks the second constant rule with the ending of the piece. The left hand finishes the piece with the second sub-phrase of phrase three of the A’ section, which means the third phrase stays unfinished. The right hand is in the third sub-phrase of the fourth phrase at the same time in music. Since the right hand always had four sub-phrases before, it is one subset short of finishing the fourth phrase. Therefore, the right hand phrase is also interrupted.

The second constant rule is thus broken, because it established the exact amount of phrases in each hand of the pianist; four in the right and five in the left. No matter how and when the eighth notes were added or subtracted from each sub-phrase, this rule was never broken. There was no interruption of these phrases by any other musical idea or event throughout the entire Étude.

As I stated before, the phrases are not aligned at the beginning of A’. Since the A and B sections started with these phrases synchronized, and since they do not line up right after the climax at the beginning of A’, the logical expectation is for them to line up at the very end. This would give a strong sense of closure to the piece. In fact, this much-needed conclusive musical event never occurs, which amplifies the chaotic nature of this piece. The only element that synchronizes as expected is the pitches in each hand, both of which end on the highest C (See Example 2b on page 14). This is hardly a satisfying closure because it breaks two constant rules. The unfinished phrasing also hides the carefully organized structures and the sub-structures of the piece. Even though the
breaking of the rule happens in a brief second on a single note and at the very end of the piece, the breakdown reinforces chaos.  

The end of Ligeti’s *Désordre* conveys deterministic chaos. This chaos is set in motion with the three key rules established in the piece, but also amplified when most of them break. Therefore, we have a *crescendo* of chaos from one dimension to another throughout the *Étude*. This direction of one type of chaos to another is masterfully calculated and will only sound more convincing with each repeated hearing of this composition.

I have analyzed the conflicts of *Désordre* coming from two angles. The first one is from the angle of the composer, who organized the composition by setting rules to be followed and/or broken. The second one was from the angle of the listener and how the piece is perceived aurally.

The third angle, which yet begs to be explored, is the aural and physical perception of the pianist. Being a pianist myself, I will confidently state that most of the chaos and disorder in this composition is going to occur in the practice room and during the performance of the piece as the pianist tries to execute every wish of the composer.

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Chapter V: STEP THREE: PRACTICE

Everyone has his or her individual opinion on how to practice. This third step, the process of spending time with the keyboard, is when the first two steps I discussed previously are connected to the instrument through mental and physical work. Instead of concentrating on what to practice, most people are busy calculating the number of hours they spend with the instrument to convince themselves that they are practicing the piano. This is why the most commonly asked question is not, “How do I prepare my practice material,” but rather, “How many hours should I practice?”

Practice sessions require both physical and mental involvement. An example of physical involvement would be the study of different muscular techniques. The majority of pianists are focused on building technique, while others do not even believe in the concept of technique. The other group, which does not believe in technique, is busy strengthening their “musical” mentality. They blindly believe that without the vehicle of technique, their musicianship is enough to perform musical compositions. These are two basic components of practice ethics and there are no unanimous agreements on which is the correct way.

We all have different teachers who come from diverse schools of thought and come from different parts of the world. Regardless of this diversity, I believe the suggestions and the ideas that I am going to discuss in this chapter will apply to every pianist who wishes to properly learn Ligeti’s Désordre, because this piece, without argument, requires a unique physical and mental preparation.
Let us discuss a subject that many pianists would consider elementary, learning scales. We can learn immensely just by pondering upon this question. I understand that scales are a fundamental technique for a beginner pianist and they enforce respect for the “power of correct fingerings.” They also teach hand independence by exercising the subconscious mind. The fingerings (physical) and the subconscious (mental) are the two key elements I will explore in the path to learning Ligeti’s *Désordre*. 
Chapter VI: THE PHYSICAL: FINGERINGS

During the physical practice at the piano perhaps the most important habit to reinforce is the “correct” fingerings. Choosing “correct” fingerings is an art-form in itself. Every composition will have several fingering possibilities. The performer’s task is to use the set that will most vividly bring forth the important elements of the piece.

In the Baroque period, keyboard players used specific fingerings for shaping the line in order to achieve a specific effect. Some of these fingerings will seem foreign and awkward to most pianists today, but in the Baroque period, scales were rarely played with the groups that we are now commonly enforcing (123-1234). The most common scale fingerings at the harpsichord and the organ were 23-23 or 34-34-34.

Composers often enforced special fingerings in the manuscript to achieve certain effects. In Example 7 from the famous E-Flat Major Nocturne Op. 9, Chopin requires the use of the fifth finger from C Natural to B Natural. With these fingerings, Chopin forces the pianist to hesitate for a millisecond, essentially creating a written out rubato. If the pianist plays the passage with “more comfortable” fingerings, the affect will be greatly missed.

Example 7. Frederic Chopin: Nocturne Op. 9, No. 2 in E Flat Major, m. 16.
In the case of a virtuoso composition like an Étude, most often, the task of choosing fingerings is the main challenge. The fingerings have to be comfortable and allow the pianist to perform with velocity and accuracy. I would like to examine the basic fingering canvas of Ligeti’s Désordre and give some fingering suggestions for the most challenging parts of the piece.

Throughout the entire Étude, both hands are evolved in a similar fingering scheme (See Example 8 on page 27). Both hands have octaves which are filled with ascending scale-like eighth notes. In the A’ section, these octaves are replaced by chords. This change, as you might guess, presents a new set of challenges for the performer (See Example 12 on page 30). I would like to discuss both challenges in detail.

Octaves

In the A and B sections, the fingerings are actually very straightforward in all the passages where the eighth notes are grouped in 3+5 or 5+3. Since the octaves are going to be played with the thumb and the fifth finger, there are only 3 fingers left to choose from. Ligeti, therefore, is forcing the performer to strengthen the reactions of these fingers: the second, the third, and the fourth fingers.

Example 8 shows how Ligeti also forces the fifth finger, which is involved in accenting and holding the first voice, to immediately play the second voice. Just like Chopin limited the performer to the use of the fifth finger, Ligeti is doing the same in this Étude, for different reasons. In this example, Ligeti is enforcing fifth finger voicing. (The fifth finger marked in red is a heavy accent and the one in blue is a light eighth note.)
Example 8. György Ligeti, *Désordre*, Excerpt from the A Section.

The passages that have groups of eight eighth notes or more require the performer to make their fingering choices. Examples 9a and 9b show two different ways the passage can be fingered. Example 9a is using fingerings which resemble the Baroque thinking of 23-23-23. It is very easy to play the passage fast with other fingerings, but this grouping gives it clarity.

Example 9a. György Ligeti, *Désordre*, Excerpt from the A Section.

Example 9b shows a fingering pattern that is more familiar to us when playing scales. It is essentially using the 1234 group four times. For sheer speed, the fingerings found in this example (9b) would be better, but clarity will be lost since the fourth finger is involved.

Example 9b. György Ligeti, *Désordre*, Excerpt from the A Section.
Example 9b. György Ligeti, *Désordre*, Excerpt from the A Section.

In the B section Ligeti is creating an artificial *accelerando* by continuously subtracting the eighth notes. Since the accented octaves are more frequent, the composer chose to sometimes leave out the octave doublings in both hands for two reasons. The first reason is to keep the high velocity of the *Etude*. Many performers slow down the tempo during this section, because the accenting texture becomes overwhelmingly difficult to play quickly. One would perform it even slower if Ligeti kept the octave doublings.


Secondly, the emission of octaves is forcing the pianist to perform the accents with other fingers other than the usual thumb and the fifth finger. This is another example
of how Ligeti, just like Chopin, limiting the fingering possibilities to achieve a certain technically constructive goal. Example 10 shows several instances of this. (The accented notes which should have been doubled with octaves are circled with green annotations.)

**Chord Clusters**

In the A’ section, these octaves are replaced by chords. The chord clusters limit the fingering possibilities even further than the octaves did in the previous section, therefore, there is no need to talk about finger choices. This excerpt reminds me of Chopin’s *Étude* in A Minor from Op. 10.

Chopin’s *Étude* Op. 10 No. 2 is considered to be one of the most difficult *Études*. The right hand is forced to play a chromatic scale with mainly the third, the fourth and fifth fingers. This task becomes twice as difficult, however, since Chopin wants the pianist to play chords every fourth sixteenth note (See Example 11).


The A section of the Ligeti *Étude* would be similar to Chopin’s if Chopin had only written one note under the chromatic line, instead of consistently writing two. It is the extra challenging A’ section of Ligeti’s *Étude* which resembles the exact challenges of Chopin’s Op. 10 No. 2. *Désordre* is even more difficult since both hands are involved
in the same task at the same time, in different tonalities with different meters. In contrast to Chopin, Ligeti also adds three notes above the moving line in the right hand (See Example 12).

Chapter VII: THE MENTAL: THE SUBCONSCIOUS

Ligeti’s *Désordre* is difficult to learn because it requires the pianist to train the subconscious mind to a very high degree. First, I will explain what the subconscious is, why it is important, and how it works. Then, I will proceed to explain how one can train his subconscious mind.

Before we dive too deeply into the problems that *Désordre* brings forth, let us turn our attention back to simpler tasks: learning how to play scales. For a pianist who is hoping to learn Ligeti’s *Désordre*, playing scales must surely be a technique that represents very little challenge. “Have patience, all things are difficult before they become easy” said Saadi Shirazi, a great Medieval Persian poet. Scales must have been difficult for anyone at one point in the past. If we examine how scales were learned, or, in other words, transformed from something, which was once challenging to something that is now easy, we can apply the same recipe to similar tasks regardless of difficulty.

Scales are instrumental in teaching hand independence at the keyboard. There are many views on how to teach scales to beginners. Some think that the B Major scale should be the first to be taught because it fits the hand so comfortably. (The thumb only plays the white keys of the keyboard, as the fingers play only the black keys.) Others believe the C Major scale should be the first to be taught, because it has no black keys and is the simplest tonality to deal with for a beginner. In either case, all agree that scales become truly challenging when both hands are participating.

The true difficulty of learning how to play scales is often never discussed. Scales are rarely taught correctly, and the most important principle of learning them in the first
place goes unnoticed. Yet, this is one of the classic raw exercises for training the subconscious mind. If the student does not understand the involvement of the subconscious in the process of learning scales, he will be unable to overcome the challenges of any polyphonic composition.

In order to demonstrate how the subconscious plays a key role in learning the scales, let us examine the C Major scale. The finger grouping for both hands is the same: 123 1234 in each hand symmetrically (See Diagram 2). If the scale is played symmetrically, it is easy. Our hands are symmetric, and the fingerings will line up. However, even though the fingers in each hand line up, the notes are different.

![Diagram 2. Finger Symmetry.](image)

If you play both hands in parallel motion, the notes of the scale line up, but the fingerings do not. Notice that thumbs (once) and the third fingers (twice) of both hands line up, but they are both part of the opposite groups. The mind will be left confused if it tries to latch on to this accidental overlapping of the thumbs and the third fingers as guidelines (See Diagram 3 Below).
Diagram 3. Finger Groupings of the C Major Scale.

As you can see, even the simple C Major scale is not a perfect scale to teach to a beginner. In reality, there is no perfect scale or a perfect way of learning the scales. No matter which method is proposed, there is always that challenge, the challenge of dividing one’s attention. Is it humanly possible to divide our attention?

We do it without knowing how, and this is the danger. We must understand the fundamental way our brain is processing the information in order to learn more efficiently. The task of dividing one’s attention is present even in the simple scales, scales which have no tempo, dynamic, or affect indications to further complicate the process. Can you imagine the amount of multitasking Beethoven’s or Schubert’s sonatas require from a pianist? These would be huge undertakings, and without the right approach, the music will always leave the pianist confused and in distress.

What is, in fact, needed is to understand that our brain has a limited attention window. Multitasking can happen, but you always end up splitting that attention window into two or more parts. Once you split it, the power is also split and the possibilities of errors become twice as much.

I do not believe it is possible to divide our attention. You can be very fast at changing your attention from one thing to another, but I do not believe true linear
horizontal multitasking is possible. Think about it from this perspective. You are at a party with your most favorite relatives. Your grandmother is talking to your grandfather, and your mother is talking to your father. They are all talking about your girlfriend, and you desperately want to hear what they are saying. You try to listen and process at the exact same time the two linear conversations taking place in the moment. Can you do it? Can anyone do it? I highly doubt it.

Your brain will always choose one over the other, and when you pay attention to grandma, you, for that split second, are missing the word that comes out of your mom’s conversation, therefore, missing the meaning of that sentence.

If you cannot follow two conversations in the party, then it is ridiculous to assume that you are going to follow four of them. Does this mean that we cannot truly play a four-voice fugue by J.S. Bach? If you heard a recording, do you think you would have a better chance of hearing the voices since you are not engaged in the music making and are simply assuming the role of a spectator?

You see, scales are challenging you to do exactly that. They force your brain to guide your hands in two totally unrelated ways. If it is impossible, how did we learn scales? This is the magic of the subconscious.

When you are playing scales, follow the right hand and make sure that the notes and the fingerings are absolutely correct, as the left hand is trying to catch up however it can. Remember that mistakes are welcome in the practice room and your left hand is allowed to play the wrong notes and/or wrong fingerings. The important thing is for the left hand to stay with the right hand. Play this way several times. Then, switch the attention from the right hand to the left hand. This way, every time you play the scale,
you dedicate your full attention to one hand and leave the other fully for the subconscious to deal with.

At the first glance, it seems that you are practicing the hand, to which you give your full attention. In fact, the reality is the opposite. Every time you give one hundred percent of your attention to the right hand, you leave the left hand one hundred percent up to your subconscious to deal with. I guarantee you that with each full circle of “attention-shifting practice” starting from the right hand, (right hand to left hand to right hand) you will notice the progress in the left hand. In other words, you will improve your subconscious mind.

One of the brightest examples of how the subconscious mind and its inadequacies are exposed is in live recitals. The piece might sound perfectly fine in the practice room, but when you get nervous during the concert, some things fall apart. This is because when you are nervous, just like when you get distracted, you divide your attention between performing the composition and being nervous. When your attention is divided, the subconscious is exposed. If the subconscious was trained well, you will never slip in any passage of the performance, but if it was not, you will. If the composition is very difficult and is requiring you to divide your attention, then training the subconscious is the essential ingredient of success in a live performance.

We operate more subconsciously and instinctively than we might think. For example, we are under the influence of the subconscious one hundred percent while we sleep. During sleep, our brain processes and digests the newly learned techniques of that day. Another example is our heart, which from our birth, is operating fully through the subconscious, just like our digestive and immune systems.
Now, let us apply the principle of learning the scales to Ligeti’s *Désordre*. Ligeti’s *Désordre* requires the mind to follow a piece of music that has two different “tonalities”, one in each hand, and each with its own meter. It is like trying to keep up with four conversations. This could be the equivalent of following the grandma and the mother’s conversations plus your own conversation with two different girlfriends, one standing in front of you, and the other over the phone.

I dare you to try putting this piece together using conventional practice routines. It will first disappoint anyone before giving any sense of accomplishment. Ligeti’s *Étude* is challenging you to practice your subconscious in this polymetric and polytonal composition.

When a well-trained pianist looks at a polyrhythmic composition, the last thing that crosses his mind would be perhaps that, “This is just like learning scales.” But, that is exactly what would come into his mind if he had “correctly” learned scales before. In *Désordre*, just like in scales, when the pianist plays the hands separately, everything sounds civilized, and the task is quite easy. Just like scales, however, things get extremely complicated in this *Étude*. One might even say that this *Étude* is unplayable and aurally incomprehensible when the hands are combined.

In Ligeti’s *Étude*, we have two variables to deal with, polyrhythm and polytonality. First, I will discuss how to train your subconscious with regards to the polyrhythm, which results from the different metric pulse of each hand. Then, I will show how polytonality should be practiced, which is a result of the different tonal territories of each hand.
Training the Subconscious: Polyrhythm

The analysis helps us to see that the left hand stays metrically constant in the A part of the Étude. Since it is the constant, follow the left hand, and drag the right hand along without dividing your internal pulse into two. (The eighth notes always line up, so counting is unnecessary.) Set small goals for yourself, for example, trying to internalize the portion of the piece that is in Example 3. Do this several times and then switch the priority of your ear’s metric attention.

Follow the right hand and change the pulse of your mind with it. The right hand is always unpredictable, while the left was predictable, so this task will be a challenge. Do not worry about making mistakes with the left hand. Now, the left hand is being trained by your subconscious brain. Set small goals for yourself and repeat the sections several times. The next day, after a good night’s sleep, the piece will be in better shape. With a complicated composition like this Étude, it is important not to be discouraged with how slowly you make progress. (The faster you play, the more you will realize that you rely on your subconscious.)

This same technique can be easily applied to the middle section and the A’ section of the Étude. You will consciously perform one of the meters as the other one falls solely on your subconscious mind. Since you have trained both of your hands consciously and subconsciously, you can go back and forth from one to another. It is impossible to carry two different metric pulses at the same time, but you will become very good at switching from one to another.

The goal is to give the impression that you have divided your attention in two. But, what in fact will take place is a super-fast change of your attention window. This is
the equivalent of you being able to switch from your mom’s conversation to your
grandmother’s in such a speed that you pick out letters and still understand the meaning
of each sentence. (In Diagram 4 the red color symbolizes your attention path from one
sentence to the other.)

I hope they have a wonderful time in France.

.. to her. I hope that we have more time with them before …

Diagram 4. The Path of the Subconscious Mind.

Training the Subconscious: Polytonality

The analysis shows that each hand carries a different pitch collections, or in
different tonalities. It is impossible to think about two different pulses at the same time,
as well as two different tonalities.

In Ligeti’s Désordre, it is natural for the ear to understand the diatonic and
pentatonic pitch collections. I suggest dividing the Étude into three practice sections,
according to how the composition is structured (ABA’). Play each hand separately to
absorb the aural flavor and the melodic pace of each pitch collection.

Once you combine the hands in the A section, play the left hand (pentatonic
collection) fortissimo and the right hand (diatonic collection) pianissimo. Since the left
hand will be extremely loud compared to the right hand, you will naturally give full aural
attention to the left hand (pentatonic collection). The pentatonic will be recognized by
your consciousness as the tonal territory. Meanwhile, the right hand (diatonic collection),
which will be barely audible, is woven to this pentatonic world by your subconscious, absent of its own tonal flavor.

There is a concrete goal that I suggest you achieve to gain the maximum from this routine; otherwise, the point will be lost. Switch the dynamics of the hands, but still follow the left hand. Now, the left hand will be in pianissimo and the right in fortissimo. If your ear can hear the pianissimo pentatonic pitch collection as the center while fighting the right hand’s fortissimo, you have reached your goal. This will give you the ability to quickly go back and forth between the diatonic and pentatonic pitch collections when you put the hands together. The speed of the switch will be super quick. You will give yourself the impression that you are actually hearing two pitch collections (tonal centers) at the same time.

In conclusion, one practice session will contribute to the other. You will notice that after strengthening the subconscious of the polytonal ear, the training of the subconscious in polyrhythm becomes easier for you. Both of these will also contribute to you general fingering accuracy and hand independence. Through patience, the “difficult” music will become “easy.”

It is extremely important to have several different routines of practicing the same piece, because every time you practice in a different way, your mind is making different connections subconsciously and making you smarter and faster. After all, you give yourself a different perspective of the same object when you look at it from a different point of view. The new perspective is imperative to us, musicians who practice the same composition for years. After all, one might get bored.
Chapter VIII: STEP FOUR: MEMORIZATION

Josef Hofmann wrote, “When we study a piece we—unconsciously—associate in our mind a multitude of things with it which bear not the slightest relation upon it. By these ‘things’ I mean not only the action of the piano, light or heavy, as it may be, but also the color of its wood, the color of the wall paper, discoloration of the ivory on some key of the piano, the pictures on the walls, the angle at which the piano stands to the architectural lines of the room, in short, all sorts of things. And we remain utterly unconscious of having associated them with the piece we are studying—until we try to play the ‘well-learned’ piece in a different place, in the house of a friend or, if we are inexperienced enough to commit such a blunder, in the concert hall. Then we find that our memory fails us most unexpectedly, and we blame our memory for its unreliableness. But the fact is rather that our memory was only too good, too exact, for the absence of or difference from our accustomed surroundings disturbed our too precise memory.”

Since our memory is so good, we should take it through a cleansing process during which we isolate the unnecessary things that were subconsciously picked up by our memory. I do not believe that every piece benefits from memorization, but the more complicated the composition, the more you will benefit from it, because essentially, you put more details in your subconscious. In the case of a fast technical piece, like a Liszt, Scriabin or a Ligeti Étude, memorization is a must, since a lot of these compositions

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require great speed of thinking. Since speed is not the only skill that these Études
demand, we need to memorize them and deposit as much as we can to the infinite bank of
the subconscious.

The most common form of memorization used by pianists is the “finger memory”. Finger memorization is achieved by repeating passages countless times. It is a fruitful
way of learning fast passages, but not the most solid. It the case of Ligeti’s Étude, this
technique is very useful. This memorization process happens through the subconscious
mind, and as Hoffmann clearly stated, memorization of the subconscious mind is highly
unreliable. As powerful as our subconscious is and as useful as finger memorization is, I
do believe that the only way we can balance this unreliable cruise control mechanism of
“finger memory” is by employing two other memorization techniques, not often
exercised by musicians.

The first technique is memorization from the score. You can memorize notes,
harmonies, dynamics, structures, and textures away from the keyboard just by observing
the score and by copying it down to a piece of staff paper. During this process, the
keyboard is not evolved, and the brain will make markers to latch on to, markers to rely
on other than finger memory. As complex as Désordre might seem, your brain will
remember details during the slow meditational process of copying the music. Copy
Désordre’s score a dozen times and you will see how your perception will change.

The second memorization technique involves the aural reconstruction of the
composition at the keyboard, away from the score. This sort of technique could be
exercised after having practiced the composition for several days and before full finger
memory is in effect. There will be a lot of trials and errors. It is, in many ways, a “pre-
finger memory” step. Because there will be many errors, solutions will also be discovered and solidified. These solutions will guide the performer during the final performance if the finger memory fails. This technique trains a recovery mechanism and highly accelerates the rate and quality of memorization in general.

Memorization is one of the steps in the learning process of any composition, where instead of training our subconscious mind, we need to “un-train” it with these two techniques and by performing the piece several times in different environments as Hofmann suggests.
CHAPTER IX: CONCLUSION

I hope this paper will shed some light for students and music lovers in general and help them to see that being talented has very little to do with being a fine musician. The path of the sincere pianist involves very detailed mind-boggling work. The first steps that you take in learning a new composition are similar to the first step you might take to teach a beginning musician, because at the end, we are all our own teachers. Josef Lhevinne, in his book titled *Basic Principles in Pianoforte Playing*, wrote, “The teacher of beginners is a person of great importance in all education, particularly in music.”\(^\text{13}\)

Contrary to the popular belief, music is not a hobby. Ligeti’s *Désordre* is not the hardest piece ever composed, but the skill sets it requires from the performer are equal to the challenges that an engineer has to face in order to design a skyscraper.

Josef Hofmann wrote, “If music is to be merely a pastime, and you content yourself with a minimum of knowledge, the cheaper teacher will do; but if you aspire to become musical in a better sense, why, by all means, apply to a teacher of the better class. The maxim: ‘For the beginning this or that is good enough,’ is one of the most harmful fallacies. What would you think of an architect who says: ‘For the foundation loam is good enough; we put a sandstone house over it, anyway.’ Remember also, that the road a cheaper teacher has led you to take must usually be retraced when your aspirations rise toward the better in music.”\(^\text{14}\)


Music brings a new challenge with every piece, and there are as many challenges to conquer in every composition. Each new piece should be approached with the eyes of a beginner. The quality of the steps we take ourselves as our own teachers will determine the type of foundation we lay for our future musical endeavors.
Bibliography


