

A Kinesiological Analysis of Piano Technique as Employed in Selections of György Cziffra's Piano Transcriptions

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ABSTRACT

The piano transcriptions of György Cziffra (1921-1994) are under-performed jewels of the piano literature, largely due to their hyper-virtuosic nature that proves prohibitive in practice. The importance of physiological mechanics behind technical movements are highlighted in works such as these, but this field of study is generally left unaddressed by performers and teachers alike. By using information drawn from the field of kinesiology (the study of movement), the author sets out to analyse and discuss the physiological components underlining technical difficulties and pianistic effects found in the four transcription-etudes by Cziffra. The analysis shows how verifiable knowledge from the field of kinesiology can be applied subjectively by the author in order to analyse and cultivate awareness of his own movements and technique. This in turn enables the performer to adjust and finetune movement optimally according to his own physiology. Pianistic sources on technique tend to exclude sufficient information on the musculoskeletal system, specifically the joints of the shoulder complex. This is addressed by focussing on ‘scapulohumeral rhythm’, as explained through kinesiological sources. An important trait of Cziffra’s etudes concerns the conversion of a performed improvisation into a printed musical score. The author draws parallels from examples by Franz Liszt (1811-1886) and Frédéric Chopin (1810-1849) in order to contextualise techniques that may have influenced Cziffra’s transcription-etudes.

OPSOMMING

Die klaviertranskripsies van György Cziffra (1921-1994) is juwele van die klavierliteratuur wat skaars uitgevoer word, hoofsaaklik as gevolg van die hiper-virtuose tegniese vereistes wat dit aan die uitvoerder stel. Die belangrikheid van die fisiologiese meganika agter tegniese bewegings word in hierdie tipe repertorium onderstreep, maar hierdie veld van studie word in die algemeen kwalik deur onderwysers of uitvoerders bestudeer. Deur gebruik te maak van inligting vanuit die veld van kinesiologie (die bestudering van beweging), beoog die skrywer om die fisiologiese komponente wat die tegniese probleme en pianistiese effekte in Cziffra se vier transkripsie-etudes onderlê te analiseer en te bespreek. Die analise toon aan hoe die outeur objektiewe, verifieerbare kennis uit die veld van kinesiologie subjektief toepas om meer bewus te raak van sy eie tegniese bewegings om sodoende optimale fisiologiese aanpassings te kan maak. Pianistiese bronne oor tegniek is geneig om voldoende inligting oor die spier-geraamte stelsel uit te sluit, veral die litte van die skouerkompleks. Die skrywer fokus gevolglik op die konsep van 'skapulohumerale ritme', soos dit beskryf word deur kinesiologiese bronne. 'n Belangrike eienskap van Cziffra se etudes is dat geïmproviseerde uitvoerings uiteindelik omgeskakel is na gedrukte bladmusiek. Die skrywer vergelyk die tegnieke en pianistiese effekte wat in Cziffra se transkripsie-etudes aangetref word met voorbeelde uit werke deur Franz Liszt (1811-1886) en Frédéric Chopin (1810-1849) om tegnieke te kontekstualiseer wat Cziffra se transkripsie-etudes moontlik beïnvloed het.

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1 Introduction

1.1 Background

The technical flair and bravura of Cziffra's piano transcriptions have been a source of fascination to many. These transcriptions appear far beyond many aspiring pianists' capabilities as each work exhibits a fierce, intimidating approach to virtuosity in the spirit of Franz Liszt (1811-1886). György Cziffra (1921-1994), also known as Georges Cziffra, was a prodigious concert pianist, virtuoso and extemporiser of the twentieth century. Born in Budapest, Cziffra suffered a childhood of extreme poverty in the aftermath of World War I due to his parents' deportation from France back to Hungary, leaving them destitute (Loparits 2008:51; Cziffra 1983:12-13). He also endured World War II as a soldier, fugitive, and in its aftermath, a labour camp prisoner after an attempted escape from Soviet-occupied Hungary (Loparits 2008:56; Cziffra 1996:143).

It was within the stability of his adulthood that his extemporisations took the form of musical scores or texts. The two resultant volumes of transcriptions (of around 150 pages each) display a highly virtuosic late-Romantic style, enriched further through *style hongrois* elements. Cziffra's prowess at improvisation was in part a product of this Romani upbringing, learning the art of improvisation since the age of three (Loparits, 2008:2, 52). Numerous parallels appear between Cziffra and Liszt. To name but three, Liszt himself was Hungarian, a master of improvisation, and left behind a substantial body of transcriptions. One could argue that Cziffra's deep fascination with Liszt influenced his playing style and musical spirit, which naturally led to the development of hyper-virtuosic traits in his improvisations. As Cziffra writes about improvisation and technique:

When I improvise I feel as if I become one with myself, and my body is freed from all earthly pain. It is truly a process of going beyond my own talents, which makes it possible at each occasion to step over the known boundaries of the technical side of the piano performance. (Cziffra, 1995:8)

The process of creating the scores for his transcriptions was quite unconventional. Cziffra, together with his son, played back several recordings of Cziffra's improvisations, followed by meticulously writing down the notes on paper. As Cziffra writes about his son in the preface to his piano transcriptions:

With a tremendous amount of energy and enthusiasm he took on the work. Slowing down the tape in both directions, he wrote down the place of each sound, and slowly after a point he was able to give form to a certain amount of my musical creations. (Cziffra, 1995:8)

During improvisation, an individual becomes unrestricted by rules to some extent (e.g. strictly following a score) and ultimately relinquishes himself/herself to the spur of the moment to create something new. Ironically, we find Cziffra's creations, sourced directly from recorded improvised performances, now confined to the boundaries of paper.

What separates these transcriptions from those preceding them is not only their improvisatory nature, but also the recordings available that document their conception. This brings into question the Romanticised notion that these works should retain their aspect of inviolability (Taruskin, 2005:288). It breaks down the barrier of the incompatible dichotomy between perfectly adhering to the score and improvisation. As a result, it has an effect on an individual's decisions regarding performance and interpretation.

Of the 28 works contained in Cziffra's two volumes, 25 are transcriptions of works by various composers: Johannes Brahms, Nikolai Rimsky-Korsakov, Johann Strauss, Johann Strauss Jr., Franz von Vecsey, Franz Liszt, Gioachino Rossini, Manuel de Falla and Aram Khatchaturian. The three remaining works are original improvisations by Cziffra.

In the preface to the second volume (p.7), Gábor Eckhardt divides these 28 works into four categories:

- i. Works that are faithful to the original. The author interpreted this as piano compositions by other composers where Cziffra stayed loyal to the original

- form. However, Cziffra improvised embellishments, altering the works slightly, e.g. Liszt's 19th Hungarian Rhapsody, S.244/19.
- ii. Works that are faithful to the source composition, but considerably alter the mood and differ radically from their sources. An example would be *La Valse Triste*, which is a work originally for violin and piano. The form of the transcription is the same as the original, but Cziffra integrates and embellishes both instrumental parts of the original into one work for solo piano.
 - iii. Works that use the original compositions as a starting point and their eventual extemporisations fall under *paraphrases*, e.g. '*Le Vol du Bourdon*'.
 - iv. Purely original compositions or improvisations.

The most notable aspect of these transcriptions is the daunting physical and technical proficiency required for a performance of each work. For what may be lacking in length or musical complexity save a few, the vast mastery one needs over the instrument more than compensates for it. Yuja Wang, one of the most famous pianists alive today, has even employed some of these works as favoured encore pieces with videos of her renditions garnering millions of views on the online viewing platform, YouTube. Cziffra's *Flight of the Bumblebee (Le Vol du Bourdon)* transcription stands as Yuja Wang's most popular video on the platform at 5.8 million views (medici.tv 2008).

This popularity may be a product of Wang's influence, or the musical appeal and spectacle of skill a performance of one transcription exhibits, or both. More important is that these works and their renditions grant us a window through which we can observe a pianistic tradition from the past. Finding a niche in the artistic realm for hyper-virtuosity was met with plenty of opposition, not only during Cziffra's lifetime, but also Liszt's. Criticism aimed at Cziffra's performances tended to use the label 'circus music' (Loparits 2008:67). Though not sourced in his memoirs, Cziffra quotes Liszt as having a similar fear:

My hands no longer obey me and I fear that certain composers may see in my works nothing more than circus acrobatics. Let them talk: my time will come. (Liszt, as quoted in Cziffra 1996:168)

This dismissive view offers only injustice, as there is depth to Cziffra's works, despite their superficial musical character. *Transcriptions pour piano*, as one would find on the covers of these two volumes, is a deceiving title. Although it is indeed true that a majority of these works are transcriptions, their intended purpose stretches beyond this singular ascribed genre. Cziffra himself expands with the following pedagogical idea:

My most important desire and wish was to one day give my experiences with the Piano over to each pianist, and future young performer. But [sic] I have never seen myself as a teacher in the general meaning of the word. Rather I see in myself someone who sheds light, one who directs with a small lamp those similar to himself. (Cziffra, 1995:8)

This pedagogical intent adds an extra dimension to these transcriptions and gives a new angle of approach where we could potentially see these works as educational vehicles. They have several aspects worth exploring, but the pedagogical, physical and technical dimensions will receive primary attention.

1.2 Aims of the Study

Cziffra's transcriptions serve as an excellent platform on which to discuss piano technique and examine the physiological mechanics of the body at work. These transcriptions have earned a reputation as ranking at the pinnacle of acrobatic pianism. The thesis will focus predominantly on the physiological and kinaesthetic extremes in these works, demonstrating how the application of kinesiology can serve as a tool to determine and become aware of the joint and muscular movements entailed by their technical demands. Body movement is a fundamental part of the performing arts, and it is hoped that such an approach might be applicable in other contexts.

1.3 Modern Performance Practices Utilizing Biokinetic Information

Music studies in general place much emphasis on the analysis of certain works. Depending on how advanced the level of analysis is, whether it be harmonic, melodic or form analysis, it serves as an educational vehicle or to develop a broader understanding of the work, which is valuable for practical application. Rothstein (1995) describes the value of analysis to the performer as follows:

Which features of the music are ‘brought out’, which are concealed, which are allowed to speak for themselves [...] Determining what those features are is the task of analysis...performing a musical work and analysing it are activities of very different kinds, but the performer needs to understand both the work’s ‘characters’ and its ‘plot’ if the performance is to be a compelling one. The performer’s aim in undertaking an analysis is not only to understand the work for its own sake...but to discover, or create, a musical narrative. (pp.237)

Engelbrecht (2001) also explored various ways a pianist could study and practice a work in order to memorise more efficiently. She lists an analytical approach as one of the faculties of memorization and expands on it by referring to Bryant (1985), Pro (1980) and Hallam (1997):

The knowledge of musical form, harmonic structure and progression is an important aid in the memorization process...when organised properly, a cognitive understanding of the structure of the music can cue the auditory memory and muscular responses. Analysis embodies an awareness of all the parameters of music. It provides memory security and decreases the fear of forgetting because it minimises retrieval failure when supplementing the automated processes based on visual, auditory and kinaesthetic codes. (pp.32, 35)

While a lesser understanding of these theoretical fields might impede the piano student’s ability to learn or memorise a work, they are not alone in their influence. A big part of the practical student’s task lies in overcoming the physical hurdles a work may present. As an additional way of aiding or developing the performing artist’s endeavour, an analytical approach based on the physiological

aspects requiring attention in a work is worth exploring. This would shift focus towards the physical dimension, which is what this study aims to explore.

The selective focus on movement and awareness thereof manifested in several methods, approaches and ideas over the last century. It is necessary to discuss a few of these, since they are relevant to the approach followed in this study, starting with the ‘Body Map’, the act of ‘Body Mapping’ and their relation to Alexander Technique. William Conable is credited with developing Body Mapping as a self-inquiring pedagogical method during the 1970s (Salonen 2018:130-131). The Andover Educators website, which is the company established by Barbara Conable (wife of William Conable) (Buchanan 2014:145) provides a transcript of a lecture presented by Conable in which she describes the ‘Body Map’ and ‘Body Mapping’ as follows:

It [the ‘Body Map’] is a person’s representation of the body in the brain, just as your road map is a representation of Switzerland on paper. Our body map quite literally dictates our movement, its range and its quality. If the map is good, movement is good. If the map is a little weird, movement is a little weird, and if the map is seriously in error [...] then the movement will be inevitably painful and awkward.

Body Mapping is the conscious identifying of errors in the body map and the conscious correcting of those errors so that one’s body map becomes completely consistent with its territory, with regard to structure, but also with regard to function and size. (Conable, 2005)

Salonen (2018) expands on it further and leans on Buchanan & Hays (2014) as well as Woodard (2009) in order to describe ‘Body Mapping’ as follows:

BMg [Body Mapping] is the only somatic practice which focuses specifically on the needs of musicians and “provides a foundation for educators to teach musical technique in combination with movement training”. Musicians learn how to use their bodies in more biomechanically efficient ways by being taught relevant anatomical information and sensory awareness skills. Aspects such as the kinaesthetic sense, an integrated sensory

awareness, places of balance in the body, the movements related to breathing and those of the limbs are addressed. (pp.131-132)

We can deduce that Body Mapping theory provides a framework where the analysis of movement obtains value through applying information about how the body functions to instrumental practice. Pianists wishing to apply this theory cultivate an awareness and knowledge of how their bodies are structured in order to manipulate it better. Body Mapping claims for example that those who map the wrist as a flexible structure that consists of three joints (as it is in reality instead of a single hinge), will develop greater freedom of movement, flexibility and suppleness while avoiding injury (Mark et al. 2003:90).

Mark (2003:8) also describes how our kinaesthetic sense, which is the sense of limb position and movement (Proske and Gandevia 2009:4139), gathers and transmits information about the position and movement of our bodies. Without solely relying on the traditional senses (such as touch, sight, smell, hearing and taste), we can derive certain information about our bodies through our kinaesthetic sense. An example would be how we are able to reach under our car seats without looking and pull the lever for the fuel cap. A pianistic example would be the successful execution of large consecutive leaps where the performer cannot necessarily look at both his/her hands (see Figure 1.1. and note the leaping character of the left hand where the performer may be forced to look only at one hand with the other out of sight). The kinaesthetic sense is inseparable from the Body Map concept and pianism.



Figure 1.1. Liszt's *Hungarian Rhapsody No. 2*, S.244/2, *Friska*

When searching for information regarding Body Mapping, Alexander Technique often reveals itself as a relevant field. Barbara and William Conable teach the widely known and applied Alexander Technique and Body Mapping forms an integral part of it. Alexander Technique, lauded for its potential to relieve pain in musculoskeletal disorders, can be described as an educational method that aims to address postural and movement habits (Lauche et al., 2015:248). Registered teachers, using a hands-on approach, teach it individually in order to ‘diminish self-damaging postural and movement habits, and to modify habitual responses to stimuli, which can include pain and stress’ (Woodman and Moore 2012:98). It is worth mentioning that Body Mapping and Alexander Technique are two very similar somatic fields (a field of study relating to the body, distinguished from the psyche). As Salonen (2018:132) points out that this hands-on approach is what differentiates it from Body Mapping, which relies mostly on ‘visual aids, anatomical models, verbal instructions and demonstration’.

Almost congruent with Alexander Technique, the Taubman Approach also exists as a method specifically concerned with pianistic refinement. Both schools advocate for the replacement of unhealthy patterns of movement with effective, healthy ones, but the Golandsky Institute (the leading institution where the Taubman Approach is taught today) describes the difference as follows:

One key difference is that the Taubman Approach is absolutely specific to the requirements of playing the instrument and the requirements of the music. So for example, the Taubman Approach deals with how the fingers are able to move with ease, speed and power, how a singing tone is produced, how the hand can open to play chords. While the Alexander Technique may bring a musician to a certain point wherein their body will intuitively seek these precise details, it is not specific to the demands of playing the instrument. The same is true for Feldenkrais and other whole-body approaches. (The Golandsky Institute, 2018)

The practices discussed up until now are examples of pedagogical approaches taught all over the world today. They all have in common the integration of physiological and anatomical information in order to cultivate awareness of said fields and the effect it has on bodily movement. Their goal

is mainly to prevent performance-related injuries, discomfort or pain, thereby forming unique instrumental or practical techniques relating to movement in order to circumvent these issues. There are naturally other schools and approaches to pianism, but they lie outside the scope of this study.

1.4 Methodology

It is not the intent of this study to align itself with any of the above-mentioned schools. The main difference here is the goal and subject of focus, which are Cziffra's etudes. Instead of asking how bodily movement can be changed or manipulated in order to alleviate pain or reduce tension, the question rather becomes what the specific artwork itself and the effects and techniques it contains demand from the body. Aspects such as the causes of extreme tension (which are of a muscular nature) and inaccuracies (unsuccessful coordination of joint movements) unique to the works will be addressed. Additionally, the author will explore how manipulating different joints in different ways during an execution of a specific effect or technique inherent to the work changes the outcome of execution.

Amongst all the works, the four etudes found in volume one are of most interest. Labelled 'concert etudes', they were converted from improvisations to works partially intended to be pedagogical, and also belong to the genre of transcriptions. Spanning around fifty pages, the four etudes represent only a small sample of the full scope of both volumes, but include two of Cziffra's most popular works. They reflect a conglomerate of techniques, therefore making them ideal for a study of this nature. At first glance, one is confronted with relentless alternating octaves, coruscating runs, vast jumps with no repose in tempo and several other physical feats. They will be the prime focus of this paper's kinesiology-oriented approach.

These etudes will be assessed qualitatively, with no quantitative data presented in the results of analysis. Denzin and Lincoln (1994:2) describes the qualitative researcher as a bricoleur – one who '...uses the tools of his or her methodological trade, deploying whatever strategies, methods, or empirical materials as are at hand'. In this case, an already existing body of knowledge (kinesiology as a tool) is used to analyse technical demands posed in the compositions discussed here and make them explicit from the vantage point of the performer (the researcher). The efficacy

of this subjectively applied method will be questioned and discussed after these works are analysed.

The first priority will be to provide a solid kinesiological background of the range of motions possible at every joint in the body primarily involved in piano performance, as well as the muscle groups responsible for said motions. Section 3 will reflect this. The author, after integrating the information and learning the works, will proceed to identify the movements/techniques in each etude. Some etudes are more suited for discussion structured around categorised movements or techniques (e.g. ‘Double Thirds’, ‘Repeated Notes’ and ‘Double Sixths and Abduction’) while others are discussed with musical form as the underlying structure from which a vast array of technical demands are isolated.

Once the various movements/techniques are identified, a discussion will follow detailing the kinesiological elements at work in each work. The analysis becomes possible through the author’s own performance and practise experiences with these works. The objective will be to explicate each technique and effect’s inherent movements and underlying difficulty as they appear throughout the score by utilizing information from the field of kinesiology. By doing this, the analysis of movement will shed light on the mechanics behind what may seem like physical impossibilities.

2 Literature Review

The author found that very few sources exist dealing with Cziffra and his life's work. Those that do exist do not contribute to the analytical part of this study. It appears that no other study or thesis exists that explores technical demands in a musical work through a similar method (applying information directly from kinesiological sources). Wherever biomechanical fields are involved in performance research, most of the interest lies in the prevention of injuries.

For the kinesiological analysis itself, numerous sources exist in the medical sciences, more specifically kinesiology, that provide clinical information on every joint and all muscles responsible for making a specific joint move. Some sources exist that discuss general piano technique as well as its underlying physiological elements, but the analysis will mainly draw from clinical literature and supporting information will come from pianistic literature.

The analysis fits into the field of practice-based research as well as practice-led research, which will be discussed below. All the literature dealing with biomechanical aspects will be discussed thereafter.

2.1 Literature on Practice-Based Research

Practice-based research within the South African musical landscape is a relatively newly formalised field and method of approach. Many recent studies at Stellenbosch University prove to lean heavily on the writings of Borgdorff (2007, 2011) about practice-based research. Several sources exist that discuss practice-based/practice-led/arts-based research in general (e.g. Knowles and Cole 2008, Candy 2006, Dodd and Epstein 2012, Dean and Smith 2010), but it is Borgdorff's special and thorough focus on practice-based research in music that is probably the reason for him being referenced consistently.

In 2007, the *Dutch Journal of Music Theory* published a special issue dedicated to practice-based research in music, putting all its focus on this subject. It briefly introduces one philosophy of science:

...research tradition, to establish itself, must not only justify its claims, but also institutionalise its practices. The value of the knowledge production it pursues is further enhanced by the impact of that knowledge within its context of application...not only is such research [in and through musical practice] more keenly aware of its meaning and contribution to the world of music and to current musical practice (in contrast with some of today's mainstream musicological research), it is also increasingly embedded and anchored in the established realm of higher education and research. (Borgdorff and Cobussen, 2007:v-vi)

Research in Art and Design (1993), published by Christopher Frayling, introduced a distinction between types of arts research. Borgdorff (2007) slightly alters these distinctions to: (a) research on the arts, (b) research for the arts and (c) research in the arts. The latter two are of most importance, as the author's research falls under these two categories.

Research for the arts, or 'applied research', provides insights and instruments that could somehow find their way into concrete practices. This type of research delivers the tools and knowledge of materials that are needed during the creative process or in the creation of the artistic product. Research in the arts (the most controversial of the three distinctions) is an endeavour in which the production of art is itself a fundamental part of the research process, and whereby art is partly the result of research. Artistic practice is an essential component of both the research process and the research results. Research in the arts seeks to articulate embodied knowledge throughout the creative process and in the art object. (Borgdorff, 2007:1, 5)

Borgdorff (2007) and Sligter (2007) have mutual areas of discussion, such as the topic concerning differentiation between 'episteme' and 'phronesis'. Borgdorff offers a brief description of the two concepts while Sligter goes into a lengthy discussion about the dynamic relation between conceptual knowledge (episteme) and practical wisdom (phronesis). It is in Sligter's article that a very important rationalization takes place for the sake of giving performers footing in the academic realm.

A thought experiment may be conducted where the reader pictures a scenario where one encounters an individual unfamiliar with the piano. The task given to the reader is to explain to this individual how a piano sounds and how to play it, using only words and without a piano present. It is a completely impossible task. Using language and conceptual methods to transfer this knowledge yields minimal to no progress. This is where *phronesis*, tacit knowledge and embodied knowledge (where the body retains information regarding movement) have a part to play. Highly perceptual in nature, these forms of knowledge develop through the direct experiences of the individual. Immediately one becomes aware that knowledge takes on various forms, and in the case of this study's analysis, it is indeed tacit and embodied knowledge, and the explication thereof.

Reflection is the procedure needed to explicitate tacit knowledge. This explicitation [sic] can lead to a conscious awareness of actions, to the development of new concepts, but also to the awareness of hitherto unconsciously wielded concepts...(Sligter 2007:42)

The analysis itself serves as the reflection to develop awareness of the abundance of movements at the individual's disposal in order to achieve certain technical outcomes. In a sense, it is a method of reflection and therefore a method of making an individual's tacit knowledge more explicit through analysing his/her own movements and verbalising it. Opposition between the two frameworks of knowledge (*episteme* and *phronesis*) should therefore be broken down in order to enhance the relationship between theory and practice, especially concerning research in the performing arts (Sligter 2007:43). Knowles and Cole (2008:34, 35) presents a similar view:

While many areas of science strive for replication and constancy of results in experiments, the arts welcome the inevitable variations that emerge from systematic practice. Science tends to reduce experience to core principles while art amplifies and expands, and I see the two as complementary within the total complex of knowing...As we develop new methods of art-based research, it is my hope that we can pursue our goals in ways that lessen the divide between art and science and between different kinds of research.

An uncertainty exists however between the differentiation of the terms ‘practice-based’ and ‘practice-led’ research. Some sources use these terms interchangeably, while other sources provide a distinction. For example, Dodd and Epstein (2012) uses PBR as an umbrella term with no mention of ‘practice-led’ research, while Candy (2006) makes an explicit distinction between the two. This study’s analysis falls within Epstein’s (2001:17) definition where PBR is ‘the use of research-inspired principles, designs and information gathering techniques within existing forms of practice to answer questions that emerge from practice in ways that inform practice.’ At the same time, it also falls within Candy’s description of practice-led research:

...[Practice-led research] leads to new knowledge that has operational significance for that practice. The primary focus of the research is to advance knowledge about practice, or to advance knowledge within practice. Such research includes practice as an integral part of its method and often falls within the general area of action research. (Candy, 2006:3)

Practice-based research does have its limitations. Dodd and Epstein (2012:18-20) provide a short but valid discussion on the various strengths and limitations a practice-based study may exhibit. Its strengths mainly lie in the potential impact it has on vocational application, benefiting practitioners and clients. It possesses a certain level of flexibility and this aspect is what makes it not scientifically ‘rigorous’ enough to some (Ibid:12). Friction between the exact sciences and the subjective experiences of PBR in music is an expected result. According to Dodd and Epstein, it therefore becomes less publishable and fundable due to it not being ‘gold standard’.

The practice-based aspect of this study is not the experiences of a concert or performance, but the experiences of the author practicing Cziffra’s etudes in an attempt to explicate tacit or embodied knowledge through integrating kinesiological information. Through this method, new perspectives and information about the works will be produced.

2.2 Methodology, Physiology and Kinesiology

The twentieth century saw an increase in scholarly interest in testable, verifiable and replicable sciences concerning pianism; more and more research focused on ‘the border-land where science meets art’ (Ortmann, 1962[1929]:xxxix). One of the first and most thorough studies conducted for the sake of piano performance through the lens of biomechanics came from the efforts of Ortmann (1929). He provides a solid background of early 20th century understanding of pianistic kinesiology. Ortmann, amongst others such as Tobias Matthay and Rudolph Breithaupt, paved the way for fields of pianistic study concerned with the physiological dimension.

What all these pioneers had in common was the extreme value they placed on the knowledge and awareness a pianist should have of their body, movement and the physics behind their instrument. As mentioned before, notable examples were Matthay (1916) and Breithaupt (1921). This of course created friction in an era where many piano schools, after more than a century of pseudo-scientific method and tradition building, were increasingly exposed to this new scientific approach. As an example, Ortmann describes letters addressed to him from disgruntled musicians, containing phrases such as “The soul of the piano transcends all investigation” (Ortmann, 1981[1929]:xxxii).

Advancement in technology today provides the luxury of recording higher quality sound with less effort. This, as well as the accumulated knowledge in the relevant scientific fields, may have contributed immensely had it been available at the time. This is particularly evident in Part 3 of Ortmann’s book, where the discussion on various touch-forms and tone-qualities may have been enriched by supplementary knowledge such as modern-day analysis of sound waveforms.

Ortmann is mainly concerned with the ‘variations of force produced at the key-surface by the player’ (Ibid:3), viewing all technical movements as a means of executing a final force-variation. He recognised the question of the effect of finger-stroke upon tone quality and came to the following conclusion:

However fanciful our conception of the artistic phases of piano touch may be, whatever poetic qualities we assign to the piano tone, the fact remains that percussion and intensity are the only determinants. All differences in tonal qualities, therefore, must show in the degree of percussiveness and in the velocity of the finger stroke. (Ortmann, 1962:243)

Part 2 commences the experimental side of Ortmann's study after laying the physiological foundation in Part 1. His discussion of physiology and movement is very similar to kinesiology, but he never uses the term 'kinesiology' in his study. By using various scientific instruments available at the time, Ortmann made numerous records that detail the 'General Aspects of Physiological Movement'. It covers large ground, including data concerning geometrics of joint-movement, action and reaction of bodily mechanisms when moved in isolation, conjunction or when hitting the key surface, as well as graphs illustrating patterns of motion (see Figures 2.1 and 2.2).

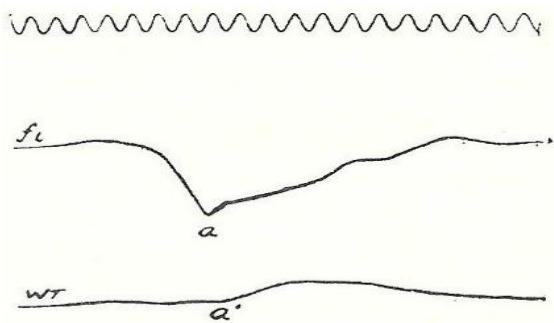


Figure 2.1. The relation of movement between finger and wrist. A graph by Ortmann displaying the relation of movement between a finger (*fl*) and wrist (*wt*) as the finger fully depresses a key (occurring at point *a*). The top line resembling vibration is that of a 50 d.v. fork, used as a method of time measurement demonstrated by the number of oscillations per second. Image from Otto Ortmann, *The physiological mechanics of piano technique* (New York: E.P. Dutton & Co. Inc, 1962[1929]), p.85

Various kinematic measurement systems and methods exist today, such as electrogoniometry, accelerometry, imaging techniques, and electromagnetic tracking devices (Neumann, 2010:104). Several studies that focused on performance practice have employed these biomechanical methods of objectively measuring joint movement. Topics include for example the assessment of muscle activity and joint angles in small-handed pianists (Wršten et al. 2006), and wrist positioning and muscle activities in the wrist flexor and extensor during piano playing (Oikawa et al. 2011).

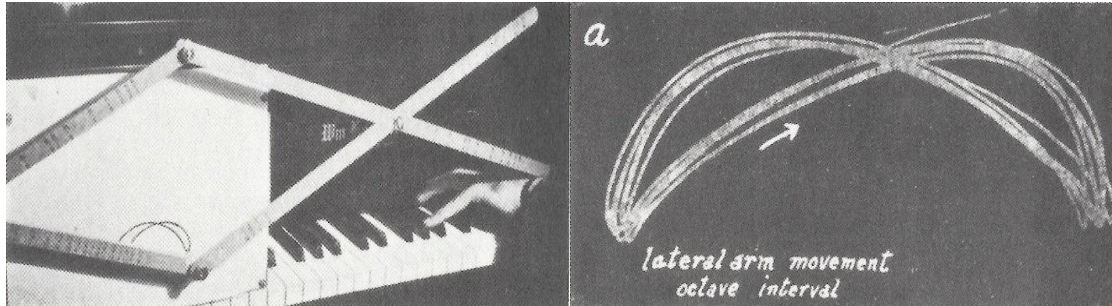


Figure 2.2. One of the methods Ortmann used to record movement was by utilizing an instrument known as a pantograph. This instrument, drawing inspiration from the geometric parallelogram, copies the exact motion of the arm and records it in a two-dimensional plane. Image from Otto Ortmann, *The physiological mechanics of piano technique* (New York: E.P. Dutton & Co. Inc, 1962[1929]), p.164

Ortmann's study concludes with Part 3, 'The Touch-Forms of Piano Technique'. It is a chapter very relevant to the subject of this study. Various techniques are discussed within this section such as arm-legato, tremolo, staccato, finger-stroke, scales, arpeggio and a few other movements. For each technique, Ortmann inspects the various physiological aspects associated with it. He sometimes references musical works where certain techniques appear and provides graphs of the associated movements occurring within the piece, such as the curve of the centre of the hand during rotary motion in Chopin's Op. 25 No. 3 (Ibid:290). There is also one instance where he discusses hand fatigue during finger abduction (spread fingers) as found in Op. 25 No. 9 (Ibid:335). This may count as evidence of a preceding interest in examining the physiological hurdles underlying certain works, as the author will attempt to do in the analysis, but that interest was not the crux of his study.

Since Ortmann's study, literature attempting to contribute to the unification of biomechanical concepts and pianism has expanded. Examples are Gát's 'The Technique of Piano Playing' (1965) and Sandor's 'On Piano Playing' (1981). Both provide thorough and insightful sections where physiologic mechanisms are explained in relation to pianism. Sandor also offers a relevant view on how the concept of movement relates to instrumental technique:

Technique...is a skill – a well-coordinated system of motions conditioned by the anatomy of the human body and the nature of the piano...they can be reduced to their components: motions executed by the fingers, hand, wrist, arm, and body – in fact, by the entire human anatomy. The coordination of this human mechanism is based on simple common-sense principles of physiology and the force of gravity. (Sandor, 1981:ix)

Mark's 'What Every Pianist Needs to Know about the Body' (2003) provides an application of Body Mapping theory for pianists with supplementary material for organists. When it comes down to considering or integrating concepts for a foundation to build upon, Mark provides this through anatomical information relevant to pianism with the goal of improving an individual's body map and movement (the movement aspect is more important). Avoiding injury appears to be another major motivation for the conception of the book, as it is stressed several times throughout and forms the subject of the final chapter.

One aspect Mark does not discuss is the anatomical components involved in the execution specific techniques – understandably so, as it is not the intent of the book. Mark makes this explicit in his introduction saying, 'This is not a book about piano technique' (p.xii). Through their own deductions and interpretation of the information, pianists will have to determine what is happening in the execution of specific techniques, as it is not made explicit. Although Mark provides useful general information about joint and muscular action in pianism, other sources will have to be consulted to explore the link between anatomical components of the body and technique.

When it came to obtaining information for clinical accuracy, sources that could thoroughly explain the mechanics of the body through the lens of movement were required. Since kinesiology is 'the study of human movement, typically pursued within the context of sport, art, or medicine' (Neumann, 2010:xv), it was the appropriate field to explore. Neumann's '*Kinesiology of the Musculoskeletal System*' and Loudon, Manske and Reiman's '*Clinical Mechanics and Kinesiology*' served as very thorough sources for this sort of information, containing graphic illustrations and explaining in detail the anatomical and biomechanical principles related to movement. Earlier sources such as Ortmann, Gát and Sandor could not draw on the breadth of information which support the bodies of knowledge in these two recent books, and which continues to grow as new editions are published. Using these two sources in order to understand movement

of the body seems preferable over Ortmann, Gát and Sandor and will be used primarily in the analysis, as well as the next section on physiology and kinesiology. The pianistic lens of these three lesser sources still offers insights to the application of these bodies of knowledge to piano performance.

One passage comes to mind that profoundly summarises the spirit in which this research topic will be conducted: the preface to Alfred Cortot's edition of Chopin's piano etudes. Cortot (1877-1962) has been viewed as a leading interpreter of Chopin, Schumann and Debussy, producing printed editions of their works. Cortot's editions offer an artistic approach to the technical challenges one faces attempting Chopin's etudes, full of meticulous commentary and offering approaches that pay close attention to the quality of sound produced. Each etude is usually precluded by two headings: 'The student should concentrate on', which gives a basic summary of what each etude focuses on and what the student should improve, and 'Difficulties to overcome', a section which goes into highly detailed instructions and offering numerous exercises one can use in approaching these works. Concert pianist Angela Hewitt once stated:

These days, the tendency is to return to the basic notes of the ur-text: it's somewhat frowned upon to use editions containing personal interpretative ideas – a shame, because we lose out on many important performance traditions. Cortot's writings were full not just of technical ideas and exercises, but of inspired suggestions as to what exactly was going on in the music, literary connotations and other insights. Cortot helped me realise how free you can be. (Tims, 2011)

The preface in Cortot's edition of Chopin's piano etudes states the following:

In publishing this Edition of Chopin's compositions, we propose to offer the public a final text, unimpaired by doubtful traditions and misprints which have been too often superstitiously respected in previous editions – and, at the same time, a rational method of study founded on a searching analysis of technical difficulties.

The essential principal of this method is to practise, not so much the difficult passage taken as a whole, but the particular difficulty it presents by reducing the latter to its elements.

This principle will hold good for all pianoforte practising; it does away with mechanical work which degrades the study of an Art essentially featured [sic] by sensibility and intelligence – and though it may appear superficially slow, ensures in fact definite progress.

Both teacher and pupil will find in the practice-formulae explained hereafter a basis from which to evolve new exercises suited to the individual difficulties peculiar to each performer.

We have not burdened the text with aesthetic observations. Rules may indeed be set down concerning the manual practice of an Art: but personality and taste have never followed rules.

3 Physiology and Kinesiology

3.1 Overview

It is imperative to give a brief overview of the anatomical factors involved during the execution of specific movements by the performing artist. The human body is a vast system of interdependent functions. One might be able to retort that musicians use their entire bodies and several of their senses. Why provide a detailed schematic of only the comparably superficial factors?

It would be beyond the scope of this study to account for the body as a system in its entirety. Within the context of pedagogical application, any problems a student might have correlating to these ‘superficial’ anatomical elements would be easier to identify and rectify with sufficient knowledge. That is after all where the entire physical basis of learning an instrument resides; musicality communicates through conscious movement of parts of the body. One way of defining technique is ‘a way of doing something’. In a musician’s case, that something is a consciously trained set of movements. Some movements cause more tension and stress than others do and it would be ideal to find the optimal and least taxing solution for executing a passage.

The following anatomical discussion will be relevant to the analysis of the four etudes by Cziffra in the succeeding chapter. One should keep in mind how deeply connected arthrology, kinesiology, physiology, anatomy and biomechanics are, as sometimes one cannot help but extract certain concepts from other fields while discussing only one. This section is an overview and discussion of the planes of movement and the main anatomical structures involved during execution of the technical figures found in Cziffra’s transcription-etudes. Mapping the skeletal structure and starting with it is less complex than mapping the muscles, due to it being the structure that various muscles act upon and not vice-versa.

3.2 Planes of Movement

There are various movements described by osteokinematics that are executed by a performer. Osteokinematics is the study of how bones move relative to the three cardinal planes of the body (Neumann, 2010:5). The basic movements are flexion (to bend, or move surfaces together), extension (to straighten, or move surfaces apart), abduction (to move away from the midline of a

body or part), adduction (to move towards the midline of a body or part) and rotation (either towards or away from the midline of a body) (Loudon et al., 2013:6).

The three cardinal planes of the body are the sagittal, frontal (or coronal) and horizontal (or transverse). Each plane divides the body as it is in the 'anatomic position' into two segments: the sagittal plane divides it into left and right, the frontal plane divides it into front and back, and the horizontal plane divides it into upper and lower sections (see Figure 3.1).

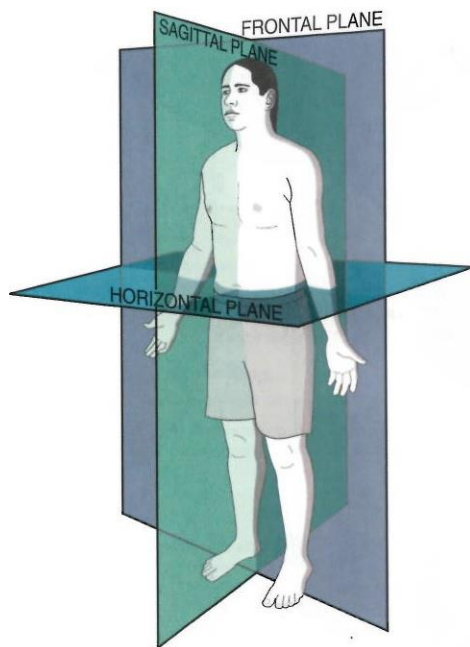


Figure 3.1. The three planes of the body in which movement takes place based on the anatomic position. Image from Donald A. Neumann, 2nd ed., *Kinesiology of the musculoskeletal system: Foundations for Rehabilitation* (St. Louis: Mosby, 2010), p.5

Each of the described movements takes place within these planes (based on the anatomic position): flexion and extension typically occur in the sagittal plane (e.g. bending and extending the elbow), abduction and adduction in the frontal plane (e.g. spreading the fingers and bringing them together), and medial and lateral rotation in the horizontal plane (e.g. twisting the forearm so that the palm of the hand faces either the front or back). Depending on the technique, the performer

will therefore execute one or a combination of these movements through one or more of these planes.

3.3 Skeletal Structure

The most important functions of the skeletal structure (for the pianist) are support and providing the joints and attachments for muscles in order to create movement.

Human joints make up the mechanical system that allows movement and transmission of forces in the musculoskeletal system. (Loudon et al., 2013:77)

When sitting at the piano, the weight of our upper bodies transfers to the bench via our sit bones (Mark et al. 2003:46). This is a ramification of our structures not only playing a weight-bearing role, but also one of delivering weight. This delivering of weight gives our arm structures a vital additional function in piano playing. In controlled measures, our arms transfer weight and force through our fingers onto the surface of the keyboard where the instrument's mechanism converts the kinetic energy into sound.

...our arms play no weight-bearing role in locomotion and are free to function primarily as manipulating structures. (Mark et al. 2003:65)

3.3.1 The Hand and Wrist

The hand consists of a relatively large number of bones – nineteen in total and twenty-seven if the wrist is included. With such a high bone count comes an equally high joint count (wrist excluded), increasing flexibility and the range of movements at the disposal of the performer (Neumann, 2010: 244).

Our hands connect to the wrist via five joints called the carpometacarpal (CMC) joints (see Figure 3.2 for a detailed map of the hand's skeletal structure). These joints connect the carpal bones of the wrist with the five metacarpal bones in the hand. These five metacarpal bones (one per finger) can be felt on the backside of the hand, between the wrist and knuckles.

Each metacarpal bone connects to a proximal phalange (bone of a finger, above the knuckle) via a metacarpophalangeal (MCP) joint. These MCP joints are the knuckles of the hand. The remaining phalanges (bones above the knuckles) of fingers 2-5 (three phalanges per finger) connects to each other via proximal interphalangeal (PIP) and distal interphalangeal (DIP) joints. The thumb only has two phalanges and therefore has one interphalangeal joint.

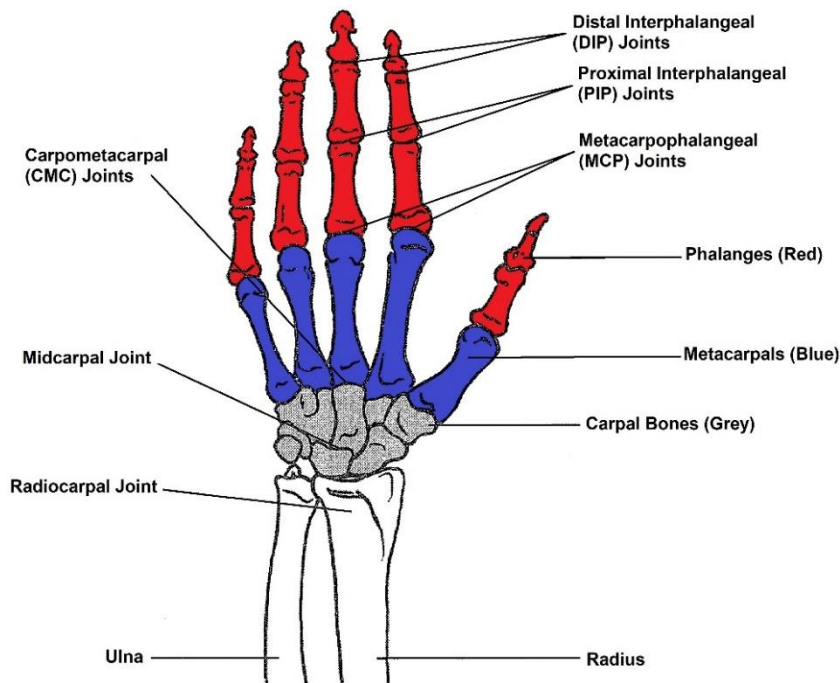


Figure 3.2. The joints and bones of the fingers and wrist. Image modified from Thomas Mark, *What Every Pianist Needs to Know about the Body* (Chicago: GIA Publications, 2003), p.88

In piano practice, the palm usually remains fixed, while the fingers move down in order to strike the key via curling or bending, and up to release it. We have come to know these movements as

flexion and extension. The thumb similarly moves downward to play a note, but its anatomical positioning renders the term ‘flexion’ incorrect.

Flexion and extension occur at the MCP, PIP and DIP joints of the other fingers. In the thumb’s case, this will induce horizontal movement when the hands rest on the keyboard. For vertical motion of the thumb, as used during a normal stroke of the key, the terms abduction and adduction are appropriate. Abduction of the thumb leads to downward motion and adduction leads to upward motion to palm level; movement occurs primarily at the CMC joint (Neumann, 2010: 252-254).

The wrist is both a joint and a structure. It contains eight carpal bones aligned in two rows. The first row connects to only one bone in the forearm, the radius, via the radiocarpal joint. Linking the two rows of carpal bones is the midcarpal joint and the first row lastly links to the metacarpal finger bones via the CMC (carpometacarpal) joints (see Figure 3.2). Contrary to its colloquial use, this would be the appropriate use of the term double-jointed; the radiocarpal and midcarpal joints work in synergy to enable a range of motions (Mark et al. 2003:88-91). These motions are a combination of flexion, extension and side-to-side movement (radial and ulnar deviation).

Deviation (moving the hand itself side-to-side) frequently occurs in the performance of piano literature. Deviation, as mentioned above, comes in two forms: radial deviation and ulnar deviation. Simply moving the hand from the middle of the keyboard to the extremities automatically requires the wrist to deviate (see Figure 3.3).

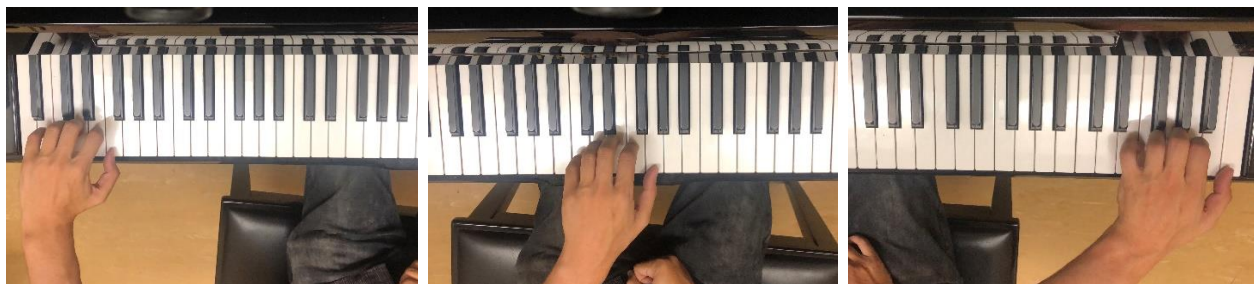


Figure 3.3. Positions of the left hand on the keyboard demonstrating deviation. The upper body remains fixed in front of middle C. First picture: the hand is positioned on the extreme left of the keyboard, inducing radial deviation. Second picture: the left hand is positioned in the middle of the keyboard with very little ulnar deviation. Third picture: the left hand is positioned on the extreme right of the keyboard, inducing ulnar deviation

These articulations occur through synchronous movement of the radiocarpal and midcarpal joints of the wrist. Radial deviation (lateral articulation of the wrist towards the radius) is limited to 15-20 degrees and ulnar deviation (lateral articulation of the wrist towards the ulna) is limited to 35-40 degrees. The angle of deviation is measured between the radius and the shaft of the third metacarpal (Neumann, 2010: 225-227).

3.3.2 Lower and Upper Arm

As we move up the arm, we come across a simpler structure. The lower arm (forearm) contains only two bones: the ulna and the radius (see Figure 3.4). Looking at the hands, palms facing up (supinated), the ulna and radius run parallel to each other (Neumann, 2010:175), with the ulna located on the side of the little finger and the radius on the thumb's side.

The radius connects to the carpal bones of the wrist via the radiocarpal joint (see Figure 3.2) but does not articulate at the elbow joint (the elbow joint is not responsible for moving it). The elbow joint connects the upper arm's humerus (the only bone of the upper arm) with the lower arm at its ulna (see Figure 3.4). An annular ligament holds the radius in place next to the ulna near the elbow joint and forms part of the proximal radioulnar joint (Neumann, 2010:186). The ulna has a similar, inverse connection. It interlocks with the humerus at the elbow joint and articulates there. Unlike the radius, it does not articulate with the wrist (carpal) bones at the radiocarpal joint, because an articular disk separates it from them (Loudon et al., 2013:236, 240). As a summary, this shows that there are only two joints in the elbow region: the elbow joint and radioulnar joint. The ulna articulates at the elbow joint, but not the wrist. The radius articulates at the wrist, but not the elbow joint.

It is in the elbow region where two very important movements take place, emphasised as crucial to piano technique: bending and rotation. Rotation, which is the result of pronating (twisting or rotating the forearm inwards) and supinating the hand (twisting or rotating the forearm outwards), is made possible by the radioulnar joint. Moving from a supinated to a pronated position, the radius crosses over the ulna, which remains stationary as it can only bend and unbend at the elbow – an action not involved with rotation (see Figure 3.4).

If only the elbow joint is moved at a piano by bending and straightening it (flexion and extension), the hand will move upwards (away from the keyboard via flexing) and downwards (towards the keyboard via extension). With the extensive range of motion available at the shoulder/glenohumeral joint, three-dimensional motion of a locked elbow joint is enabled, allowing for shifting the plane in which vertical bending of the elbow joint occurs. In other words, the shoulder joint has the capability to move the elbow around in three dimensions by moving the only bone of the upper arm, which determines the position of elbow flexion and extension.

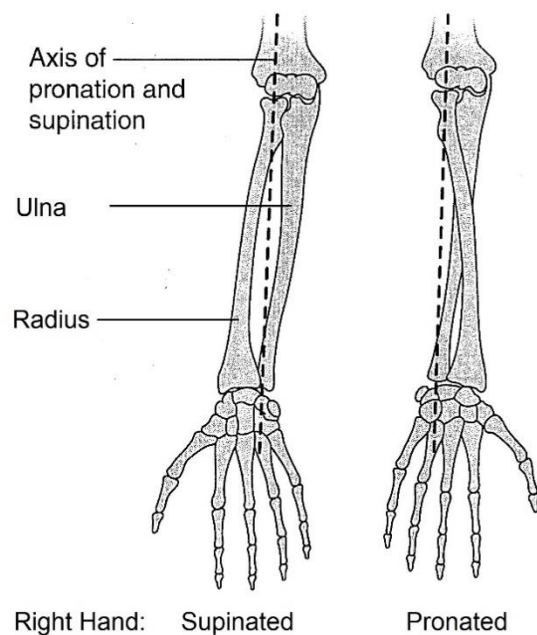


Figure 3.4. Supination (palm facing up) and Pronation (palm facing down) of the right hand. The radius crosses the ulna as the forearm is pronated, which is made possible by the radioulnar joint. Image from Loudon, Manske and Reiman, *Clinical Mechanics and Kinesiology* (Champaign: Human Kinetics, 2013), p.219

3.3.3 Shoulder Complex

Concluding the arm mapped as an interconnected structure is the shoulder complex. Here we find a set of four articulations, known as the glenohumeral, acromioclavicular, sternoclavicular and scapulothoracic joints (see Figure 3.5). The two bones connected by the glenohumeral joint are the

humerus and shoulder blade (scapula). The acromion of the shoulder blade (scapula) and the lateral end of the collarbone (clavicle) connect via the acromioclavicular joint (Neumann, 2010:130). At the sternoclavicular joint, articulation takes place between the medial end of the collarbone (clavicle) and the breastbone (sternum). The scapulothoracic joint is usually considered a pseudojoint (Loudon et al., 2013:185), defined as a point of contact between the frontal (anterior) surface of the shoulder blade (scapula) and the lateral backside of the ribcage (posterior-lateral wall of the thorax) (Neumann, 2010:133).

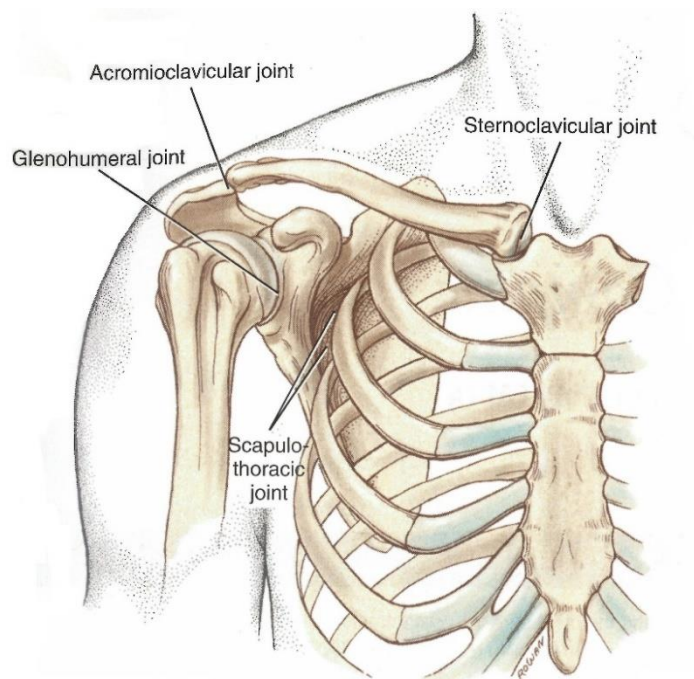


Figure 3.5. The four joints of the shoulder complex, crucial for weight distribution in piano performance. An anterior (front) view of the right shoulder complex. Image from Donald A. Neumann, 2nd ed., *Kinesiology of the musculoskeletal system: Foundations for Rehabilitation* (St. Louis: Mosby, 2010), p.122

The glenohumeral joint has three primary axes of rotation and therefore the following movements are possible: flexion and extension (moving the upper arm forward and backwards), abduction and adduction (moving the upper arm up and down in a sideways direction), and internal and external rotation (twisting or rotating the upper arm inwards and outwards) (Neumann, 2010:142). One can

also explain these motions respectively as forward and backward movement of the humerus in the sagittal plane, up and down movement of the humerus in the frontal plane and rotation of the humerus in the horizontal plane (see Figure 3.1).

At the sternoclavicular joint, the breastbone (sternum) of the body's axis connects to the collarbone (clavicle). The collarbone moves uniformly with, and never independently of, the shoulder blade in pianistic movement (Mark et al. 2003: 65), connected to the shoulder blade via the acromioclavicular joint. Together they form the shoulder girdle. The shoulder joint (glenohumeral) and sternoclavicular joint share three types of motion: up and down, back and front, and rotational. The sternoclavicular joint just has a smaller range of these motions due to its comparatively inhibited structure (Mark et al. 2003:72).

The involvement of the scapulothoracic and acromioclavicular joints becomes apparent when inspecting the kinematics of shoulder/arm abduction/flexion in a principle known as 'scapulohumeral rhythm'. It dictates that for every two degrees of abduction or flexion via the glenohumeral joint, one additional degree occurs through the scapulothoracic joint (Neumann 2010:146-150). This creates a total of three degrees shoulder abduction. This ratio of 2:1 means that for a complete 180 degrees of shoulder abduction, the glenohumeral joint would contribute 120 degrees and the scapulothoracic joint 60 degrees (see Figure 3.6).

Scapulohumeral rhythm can be divided into an early and late phase, each constituting 90 degrees of a complete 180 degrees shoulder abduction. Here we see how scapulothoracic joint movement (in this case, scapular rotation) becomes a product of sternoclavicular and acromioclavicular joint movements, demonstrating the co-dependent nature of the four joints in the shoulder complex. In the early phase, the first 90 degrees are a combination of 60 degrees glenohumeral abduction and 30 degrees scapular rotation. These 30 degrees of scapular rotation are a product of '20 to 25 degrees clavicular elevation at the sternoclavicular joint and about 10 degrees upward rotation at the acromioclavicular joint' (Loudon et al., 2013:194). Scapular rotation in the late phase constitutes the opposite with 20 to 25 degrees acromioclavicular rotation and 5 degrees clavicle elevation.

Since a pianist rarely deals with more than 90 degrees shoulder abduction (both hands placed at the left and right extremities of the keyboard yields less than 90 degrees shoulder abduction), it is inferable that the shoulder complex abducts the arm and shoulder according to the mechanics of

its early phase in piano performance. This explains the absence of describing the acromioclavicular joint in literature dealing with piano technique, since the degree of movement is extremely small and the movements at the glenohumeral and sternoclavicular joints are more obvious.

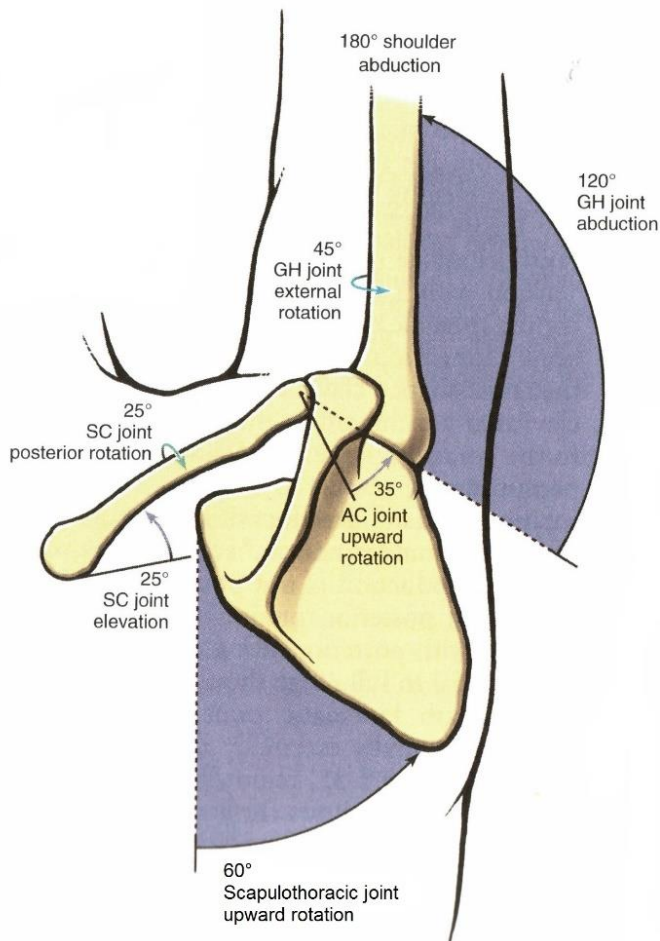


Figure 3.6. Contribution of all four shoulder complex joints during Scapulohumeral rhythm or shoulder abduction. Image from Donald A. Neumann, 2nd ed., *Kinesiology of the musculoskeletal system: Foundations for Rehabilitation* (St. Louis: Mosby, 2010), p.147

Immobility of the sternoclavicular joint means immobility of the shoulder girdle. This would have a dire effect on the pianist's ability to manipulate weight, robbed of the additional distribution of weight the shoulder girdle provides. In addition, inadequate mobility of this joint inhibits free

playing, which always involves small movements of the sternoclavicular joint and large movements in certain techniques.

3.4 Muscle Groups

Most of the time, there is not only one group of muscles activated, even for the simplest actions. Many muscles share certain functions in pianistic movement, but occasionally one muscle can also be responsible for a singular motion or function. It might come as a surprise to some pianists that there are no muscles to be found in the fingers themselves. Part of building a good Body Map would be integrating this piece of information to avoid erroneous practice.

In practice, quite often our teachers instruct us to play with certain parts of our arms, e.g. advising more use of the upper arm. The movement that follows from instructing a student to move a section of their arm usually involves no conscious muscle activity within the moving compartment. It is the muscles located higher up in the arm which usually affect and move the lower part. Contracting the muscles in the upper arm would for example result in the elbow bending and therefore moving the lower arm. It is the same with the lower arm muscles contracting to move the wrist and fingers while no movement takes place in the lower arm itself. This creates a hierarchy of the effect of conscious muscle contraction on the limbs and discussing the muscles in such an order would be a result of said hierarchy.

3.4.1 Types of Muscle Activation

According to Neumann (2010:18-19) there are three ways a muscular force can be produced once it is activated: isometric, concentric and eccentric contractions. Loudan, Manske and Reiman (2013:50-52) differs by instead grouping concentric and eccentric under 'isotonic' and adding isokinetic, therefore: isometric, isotonic and isokinetic contractions.

The way in which the length of the involved muscles changes defines these contractions. Isometric contractions result in no rotation of a joint or change in muscle length and is therefore a balance of the forces that create torque at a joint (pushing against a wall is an example of isometric exercise where no movement occurs in the body due to the immovable object). Isotonic contractions result

in either shortening (concentric) or lengthening (eccentric) a muscle, which causes movement at a joint.

3.4.2 Upper Arm and Shoulders

It is beyond the scope of this study to include a detailed summarisation of the sixteen muscles that control the movements of the shoulder complex. All of them synergise to stabilise and administer control over the four joints of the shoulder complex (Neumann, 2010:165). The muscles that are responsible for flexion, extension, abduction and adduction of the glenohumeral joint (the movements that move the upper arm away from the body and also back towards the body) deserve mention. They provide some of the largest range of movements found in piano practice, for example moving the hand from the middle of the keyboard to its extremities (even though it would not be possible without all four joints of the shoulder complex synergising). The flexors and abductors of the glenohumeral joint constantly counteracts the force of gravity, which by nature pulls the upper arm back towards the body. These are the anterior and middle deltoids, supraspinatus, coracobrachialis and long head of the biceps. The rotator cuff muscles also control the dynamic stability and arthrokinematics (movement of joint surfaces) of the glenohumeral joint. These are the supraspinatus, infraspinatus, teres minor, and subscapularis (Neumann, 2010:155). Whenever extension and adduction of the upper arm need to exceed the acceleration that the force of gravity provides in bringing the upper arm back to the body, the posterior deltoid, latissimus dorsi, teres major, long head of the triceps brachii, and sternocostal head of the pectoralis major can assist said movements (Neumann, 2010:161).

We find the largest arm muscles involved in pianistic movement in the upper arm. This part of the body contains four muscles: three in the anterior compartment (front of the arm) and one in the exterior compartment (back of the arm). The anterior compartment contains the biceps brachii, brachialis and coracobrachialis, while the exterior contains the triceps brachii. These muscles include a range of functions involving manipulation of the elbow joint as well as the shoulder joint. All three anterior muscles share a common function though, and that is flexing the elbow joint (bringing the forearm and upper arm together). The brachialis is the most powerful flexor of the lower arm and does not belong to the biceps. Acting as a powerful supinator, the biceps brachii acts upon the radius in the forearm in order to achieve rotation of the connecting wrist and hand.

It is therefore a very important muscle in many parts of piano literature. The coracobrachialis plays an assisting role in adducting the upper arm at the shoulder joint. The large triceps brachii muscle acts as principal extensor of the lower arm. Together with the biceps, they are crucial in controlling the bending and unbending of the lower arm, acting as opposing muscles to each other. In addition to this, they also control the lateral movements of the arm. Outward lateral movement is essentially an extending movement, therefore relying on the triceps. The biceps on the other hand enables a flexing inward lateral movement (Neumann, 2010:220-230).

3.4.3 Lower Arm

The lower arm possesses two very influential groups of muscles involved with the movement of finger joints and wrists: flexor and extensor muscles. As their names suggest, these muscles assist in flexing and extending the fingers. Due to their role in finger movement and location outside of the hand, they are called extrinsic muscles to the hand (Neumann 2010:262). The flexor muscles bend the fingers and hand down towards the keyboard while extensor muscles straighten the fingers and lift the hand. The flexors and extensors are called opposing muscles since they are responsible for opposite movements. *Co-contraction* is a term used when one of the muscle groups do not release tension as the other exerts its force (Mark et al. 2003:105). Neumann provides tables that list the various extrinsic muscles in the lower arm according to the role they play (Neumann 2010:263, 271, 274):

1. Wrist extensor muscles: Primary set (acts on wrist only) – extensor carpi radialis longus, extensor carpi radialis brevis and extensor carpi ulnaris. Secondary set (acts on wrist and hand) – extensor digitorum, extensor indicis, extensor digiti minimi and extensor pollicis longus.
2. Wrist flexor muscles: Primary set – flexor carpi radialis, flexor carpi ulnaris and palmaris longus. Secondary set – flexor digitorum profundus, flexor digitorum superficialis, flexor pollicis longus, abductor pollicis longus and extensor pollicis brevis.
3. Flexors of the digits: flexor digitorum superficialis, flexor digitorum profundus and flexor pollicis longus.

4. Extensors of the digits: extensor digitorum, extensor indicis and extensor digiti minimi.
5. Extensors of the thumb: extensor pollicis longus, extensor pollicis brevis and abductor pollicis longus.

It is interesting to note that every single extrinsic muscle responsible for finger movement has a potential effect on wrist movement; flexors of the fingers also flex the wrist and extensors of the fingers also extend the wrist. The exception is the extensor pollicis brevis (EPB) and abductor pollicis longus (APL), which assist with different movements between what they act upon the wrist (flexion) and what they act upon the thumb (extension).

All the muscles listed have their tendons crossing the wrist (see figures 3.7 and 3.8). When activating the forearm muscles, the vast number of tendons that cross the wrist has an effect on the wrist's flexibility. It is an occurrence in piano practice that flexibility of the wrist (meaning the effort needed to either flex, extend or deviate it) diminishes the larger a chord span is and when more fingers are involved in the played chord.

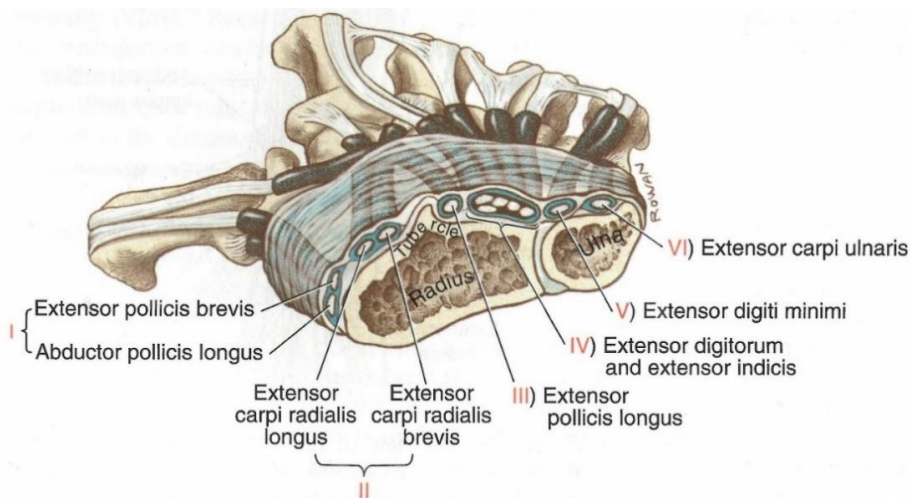


Figure 3.7. Tendons of the finger and wrist extensor muscles in the forearm crossing the wrist of the right hand dorsally. Each compartment is indicated by Roman numerals. Image from Donald A. Neumann, 2nd ed., *Kinesiology of the musculoskeletal system: Foundations for Rehabilitation* (St. Louis: Mosby, 2010), p.232

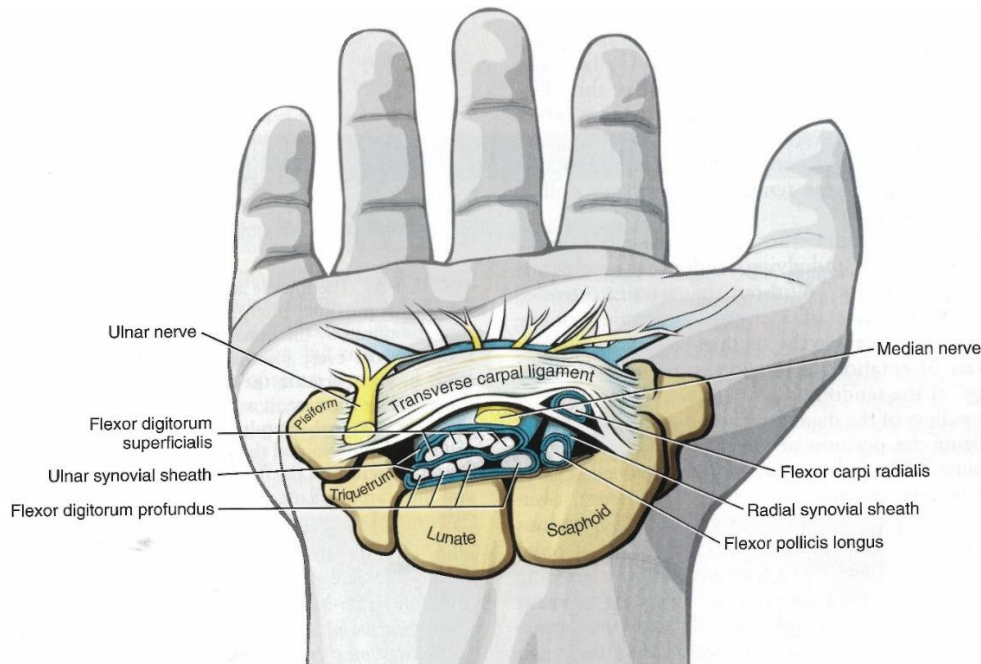


Figure 3.8. Tendons of the finger and wrist flexor muscles in the forearm passing through the carpal tunnel of the right hand. Image from Donald A. Neumann, 2nd ed., *Kinesiology of the musculoskeletal system: Foundations for Rehabilitation* (St. Louis: Mosby, 2010), p.265

3.4.4 The Hand

Inside the hand, we find various small muscles. These are known as intrinsic muscles and are involved in the fine motor functions that assist the hand with several movements made by the performer. According to Neumann (2010:272), the 20 intrinsic muscles of the hand are topographically divisible into four groups, which are the thenar eminence, hypothenar eminence, lumbricals and interossei, and adductor pollicis. The author places them in two groups: the thenar and hypothenar eminences, which moves the extremities of the hand, and the lumbricals and interossei, which are mostly responsible for abduction and adduction between fingers.

3.4.4.1 Thenar and Hypothenar Eminences

A group of three muscles are located on the palmar side of the hand and at the base of the thumb, together called the thenar eminence due to the bulge they produce. These muscles (flexor pollicis

brevis, abductor pollicis brevis and opponens pollicis) are only involved in the movements concerning the thumb. This includes a determined set of movements, applying torque primarily on the CMC (carpometacarpal) joint of the thumb (where it is connected to the wrist bones). The three muscles independently perform the combined action of flexion and abduction (Neumann 2010:272). It is important here to refer back to section 3.3.1 regarding the definition of movements for the thumb, because from the pianist's perspective it differs from the other digits.

While each muscle in the thenar eminence plays a role in flexion and abduction, one muscle exists that does not form part of the thenar eminence but also manipulates the thumb. This is the adductor pollicis muscle, responsible for thumb flexion and adduction. It provides the greatest combination of flexion and adduction torque at the CMC joint (Neumann 2010:273), but also influences flexion to some extent at the MCP joint (Ibid:271).

Just as the thenar muscles are responsible for movement of the thumb, so are the hypothenar responsible for movement of the little finger. The group of three muscles responsible for this movement similarly creates a bulge on the medial side of the palm at the base of the little finger. Abduction of the MCP joint, flexion of the MCP joint and opposition (see Figure 3.9 for an example of thumb and little finger opposition) all constitutes movement via the abductor digiti minimi, flexor digiti minimi brevis and opponens digiti minimi respectively.

3.4.4.2 Lumbricals and Interossei

The palmar side of the hand contains the lumbrical muscles. There are four of them and they are unique in the sense that they are not attached to bone. They instead attach to the radial side of the Flexor Digitorum Profundus tendons (Neumann, 2010:273), where radial refers to the radial bone of the forearm and the muscles therefore attaches to the side of the tendons associated with the radius (the ulnar side would be the opposite, associated with the ulna). The function of the lumbricals has been a topic of debate for many years, but today it is universally agreed upon (Neumann, 2010:275) that these four muscles assist in flexing the metacarpophalangeal (MCP) joints and extending the interphalangeal (IP) joints (see Figure 3.10).

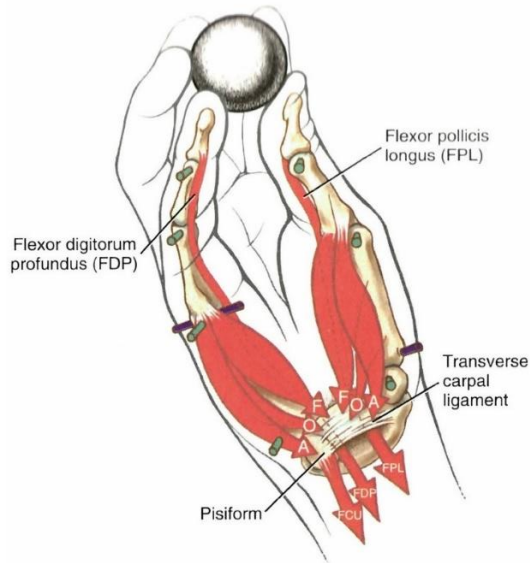


Figure 3.9. The muscles involved during opposition of the thumb and little finger. A – *abductor pollicis brevis* (thumb), *abductor digiti minimi* (little finger). O – *opponens pollicis*, *opponens digiti minimi*. F – *flexor pollicis brevis*, *flexor digiti minimi*. FCU – *flexor carpi ulnaris*. Image from Donald A. Neumann, 2nd ed., *Kinesiology of the musculoskeletal system: Foundations for Rehabilitation* (St. Louis: Mosby, 2010), p.272

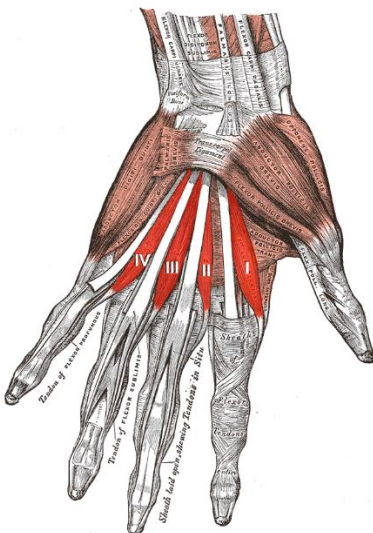


Figure 3.10. The four lumbrical muscles indicated by I, II, III and IV. Image is in the public domain and modified from Henry Gray, 20th ed., *Anatomy of the Human Body*, (Philadelphia: Lea & Febiger, 1918), p.463

The interossei muscles attach to the five metacarpal bones (see Figure 3.11). These muscles are essentially responsible for abduction and adduction of the fingers. Interossei muscles can be divided into two groups: palmar interossei and dorsal interossei. The four dorsal interossei muscles abducts the fingers while the four palmar interossei muscles adduct the fingers towards the middle finger. We say towards the middle finger because none of the palmar interossei muscles inserts into the middle finger. Due to the anatomical positioning of the thumb, one would not call its movement adduction, but flexion instead. The palmar interossei also assist the lumbricals in flexing the metacarpophalangeal joint and extending the interphalangeal joints (Neumann, 2010:275-276).

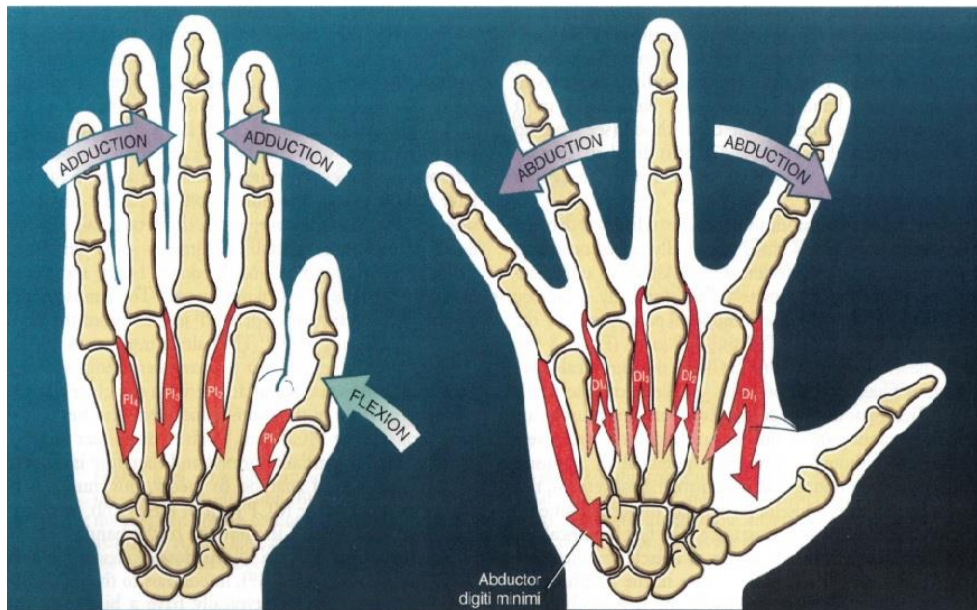


Figure 3.11. Palmar interossei (left) and Dorsal interossei (right) of the right hand. Image from Donald A. Neumann, 2nd ed., *Kinesiology of the musculoskeletal system: Foundations for Rehabilitation* (St. Louis: Mosby, 2010), p.276

3.5 Relevant Pianistic Movement, Positions and Kinesiology

Certain anatomical mechanics generally occur in any given piece, while some are used to a large extent in Cziffra's etudes. Neumann's explanation of finger flexion and extension provides a

detailed and easy to grasp illustration of the phases at which certain muscles are activated to achieve full extension and flexion. Figure 3.12 shows how certain muscles cooperate in fully extending the skeletal structure of the fingers. Darker red means greater intensity of the muscle. From the dashed outline depicting a starting position, the extensor digitorum acts as main agonist to extend the MCP joint. Eventually the lumbricals and interossei assist the extensor digitorum in extending the PIP and DIP joints until full extension. They also produce a flexion torque at the MCP joint, counteracting the much greater torque applied by the extensor digitorum in order to prevent hyperextension. In a contrary, yet assisting motion, the flexor carpi radialis flexes the wrist joint. An inverse action can be seen during strong flexion in figure 3.13.

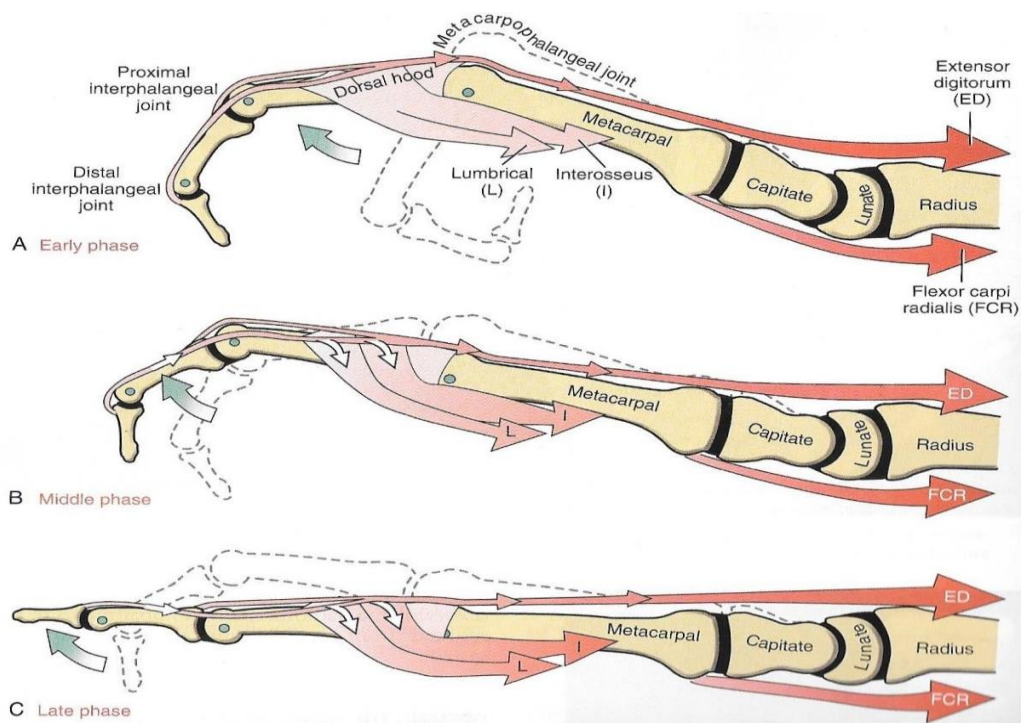


Figure 3.12. Finger Extension. Image from Donald A. Neumann, 2nd ed., *Kinesiology of the musculoskeletal system: Foundations for Rehabilitation* (St. Louis: Mosby, 2010), p.278

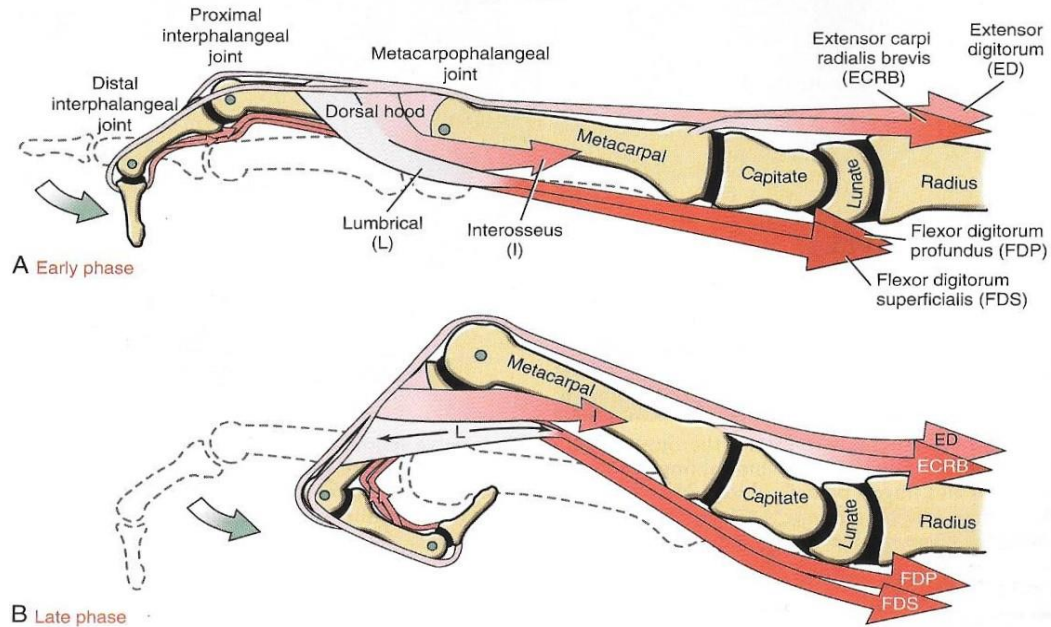


Figure 3.13. Finger Flexion. Image from Donald A. Neumann, 2nd ed., *Kinesiology of the musculoskeletal system: Foundations for Rehabilitation* (St. Louis: Mosby, 2010), p.280

Contraction of the flexor digitorum profundus, flexor digitorum superficialis and interossei causes flexion in all the finger joints, MCP, PIP and DIP, and exert their force throughout until full flexion. Even though the lumbricals in some cases assist in flexing the MCP joint, it is not the case here, as it remains inactive throughout the whole motion. The extensor carpi radialis brevis extends the wrist slightly while the extensor digitorum helps decelerate flexion of the MCP joint. Full flexion, which essentially makes the hand form a fist, is a position rarely utilised throughout piano literature, mainly reserved for some cases in contemporary music, e.g. fist clusters in Henry Cowell's *Advertisement*.

Rapidly closing and opening one's hand clearly shows the effect of these opposite movements as the wrist counteracts the movement of the fingers by moving the bridge (metacarpals) of the hand. This representation of muscular influence on the fingers and wrist stands as testament to their ever-present regulation on movement in performance. They constantly regulate degrees of flexion and extension in the performance of a work, meaning there is always some small level of strain as both the extensor and flexor muscles balance forces between wrist and finger joints.

Involvement of the *lumbricals* during MCP joint flexion is more prevalent in other hand positions. Figure 3.14 illustrates the lumbrical muscles' synergy with the interossei in one such position. They simultaneously produce flexion on the MCP joints and extension on the phalangeal joints in all the fingers except the thumb, giving shape to this specific position of the hand. One other configuration of the hand depicts the synergy between the thenar and hypothenar eminence in order to enable opposition in the little finger and thumb. Figure 3.9 showed how the eminences contract when holding a ball during a precision grip.

The range of movements provided by the muscles of the thenar eminence, hypothenar eminence, lumbricals and interossei unlocks a vast array of potential use for the performing artist. The positions discussed in figures 3.9 and 3.14 especially comes into play during Cziffra's *La Fantaisie Roumaine*.

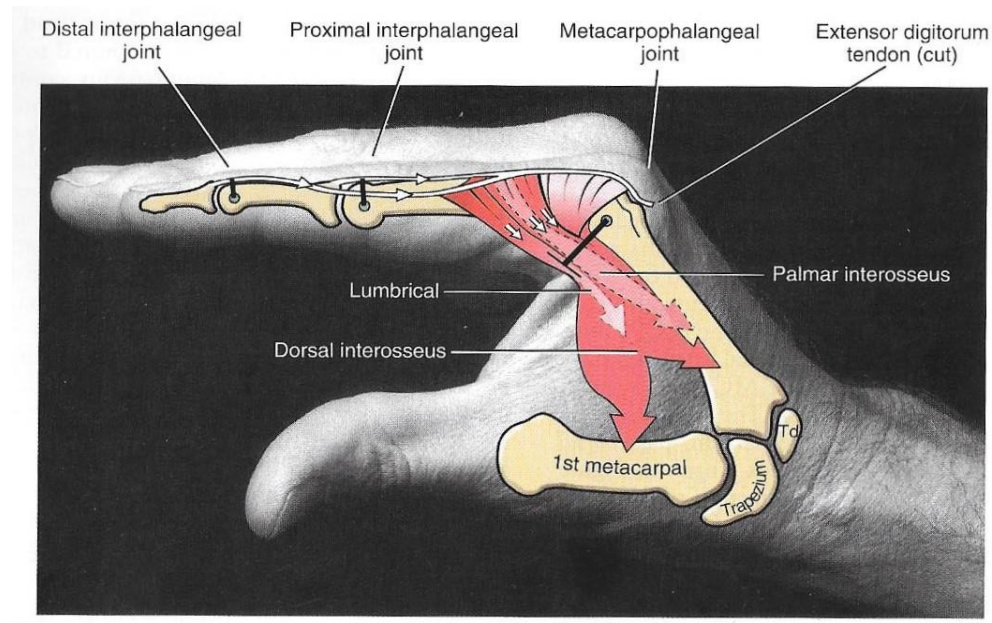


Figure 3.14. How the lumbricals and interossei work together to produce flexion at the metacarpophalangeal joint and extension at the interphalangeal joints. Image from Donald A. Neumann, 2nd ed., *Kinesiology of the musculoskeletal system: Foundations for Rehabilitation* (St. Louis: Mosby, 2010), 275

3.5.1 Motor Redundancy

Another concept that arises from kinesiology is *motor redundancy*. Sometimes one can choose from a wide range of movement combinations in completing a single task. An everyday example would be to pick up a bag. The act of bringing the hand into contact with the bag is achievable through any means of joint configuration. One might grasp it palm facing down, or palm facing up, or bend one's arm in order to grasp it sideways, using any combination of muscular action. There are many ways the joints of the body can be configured to bring a body part into contact with a specific place in space (Bernstein, 1967:196). From the pianist's perspective, this would involve bringing the fingers into contact with the surface of the keyboard. One can move any single one of the joints discussed thus far or a combination of any to bring the two surfaces into contact with one another. The question therefore arises which configuration to opt for as the pianist strives towards a subjectively ideal production of sound.

4 ANALYSIS

By now, all the kinesiological elements needed for the analysis have been explored. Just as a piece of music could be analysed harmonically, so the technical demands posed in the work can be analysed on kinesiological grounds. Through this method, the aim is to discover any information relevant to the physical dimension of piano performance from each of the four works analysed. This integration of objective knowledge (knowledge about all the joints, muscles and their movements) is juxtaposed with subjective reflection of the practicing pianist on his own movements. This is the realm where conceptual, verifiable knowledge meets perceptual and tacit knowledge. The study will also attempt to categorise the works according to their technical content (e.g. repeated notes, double sixths and alternating octaves).

Cziffra was not only a renowned interpreter and recording artist of Liszt's works, but also of Chopin's. His discography features a vast number of recordings that focused on these two composers. When it comes to recordings, no other composer received this amount of attention by Cziffra. Regarding etudes, he recorded the complete Op. 10 and Op. 25 sets by Chopin, the complete S.139 set of 'Transcendental' Etudes by Liszt, as well as most of the etudes found in S. 141, 144 and 145. The author have found it appropriate to point out cases where technical or physiological parallels occur between Cziffra's etudes and those of Liszt's and Chopin's.

The fingerings in the scores of the four works under investigation (assumedly used by Cziffra) often differ from the author's own fingerings, and the kinesiological differences between them will be investigated. This will show how an individual may explore different fingerings, how the network of movements changes as a consequence and how the individual may therefore tailor his/her own approach according to the consequence of each choice of fingering. Any mention of finger numbers in the analysis adheres to the traditional understanding in piano practice, meaning fingers 1-5 are understood as thumb to little finger.

The author's own physiology will naturally influence certain factors of the analysis. The execution of certain interval stretches in these transcriptions may differ depending on an individual's hand size, which is the most important variable. The author's own reach on the keyboard spans an interval of almost an eleventh in both hands between the thumb and little finger (21cm between their tips).

The author has performed three out of the four works multiple times during his performing career, namely *Le Vol du Bourdon*, *Tritsch-Tratsch Polka* and *La Valse Triste*, with *La Fantaisie Roumaine* being the exception. In the case of the latter, the author has practised the passages under discussion and explored the underlying kinesiological issues. These etudes will be discussed in the order that they were published: *Le Vol du Bourdon*, *Tritsch-Tratsch Polka*, *La Fantaisie Roumaine* and *La Valse Triste*. The first two etudes will be discussed at greater length than the last two, due to the repetitive nature of the third etude, *La Fantaisie Roumaine*, and the comparatively smaller scope of effects and techniques in the fourth, *La Valse Triste*.

4.1 Le Vol Du Bourdon

At first glance, it is unmistakable which technique this paraphrase of Rimsky-Korsakoff's 'Flight of the Bumblebee' mainly focuses on: testing one's endurance in octave technique. This etude gives brief repose from the relentless octaves during its middle section, instead slipping into a thin texture of shimmering *incalzando* sequences on the main theme. The final section concludes with a brief alternation between the two techniques. The following discussion will be structured according to five important technical focus points in the work: alternating octaves, repeated notes,

crossing hands, rapid scales in the middle section and scales exercising the ulnar side of the hand (see Addendum A for the entire score).

4.1.1 Alternating Octaves, Lockdown of the Wrist and its Consequences

In Figure 4.1 we see the melodic line embedded in the alternating thumbs of both hands. The fifth fingers also reinforce the melody, although alternating and jumping with a wide voice range compared to the linear horizontal movement the thumbs create. Mastery over this technique enables the performer to present the work at a tempo equal to that of one hand playing a single voiced version of the melody.



Figure 4.1. *Le Vol du Bourdon*, bars 1 and 2

Keeping in mind how the extrinsic hand muscles in the lower arm manipulate the fingers, one can determine how the stress of rapid successive octaves influences these muscles. Gát (1965:145) describes how simultaneously contracting the extensors, flexors, interossei and lumbricals can ‘hold the fingers like a pole tethered with ropes’. Here we see co-contraction at work, and it is required to some degree for keeping the hands in a fixed octave position. The integration of chords encumbers the left hand even further by restricting movement and adding more tension to the muscles involved.

The flexor muscles are exercised even more by the sheer impact of the fingers on the keyboard surface. This is demonstrable through a simple application of Newton’s third law: if an object A exerts a force on object B, then object B must exert a force of equal magnitude and opposite

direction back on object A. As the flexor muscles act to keep the fingers curled, the opposite force exerted by the keyboard on the fingers stresses them even more.

The close proximity of the alternating hands to each other, as well as the register of the music, forces the pianist to adduct his/her upper arm with the elbows tucked in next to the body. If this were a different case (where the arms extended laterally resulting in abducted upper arms) more weight would have aided in providing the force required for the rapid torrents of octaves. However, this adducted position robs the pianist of the weight of the upper arms. Instead, most of the motion occurs in the elbow joint and wrist joints through rapid small movements of flexing and extension. Very little to no movement occurs in every single other joint. Every muscle is in a contracted state; biceps and triceps co-contract to keep the elbow joint tethered just as the extensor and flexor muscles keep the fingers in place, but not completely. This makes the etude not only primarily a study in alternating octaves, but also one of dealing with muscular co-contraction of the entire arm.

Comparing the movement of the left arm with the right shows how larger chords inhibits mobility of the wrist. There are frequent chordal interjections in the left hand throughout the etude, which appears minimally in the right hand. As discussed in section 3.4.3, all of the tendons connected to the bones and joints of the fingers taper off from the flexor and extensor muscle bellies in the lower arm. This means that they must pass through the wrist, with flexor tendons passing under the transverse carpal ligament on the palmar side and the extensors through a series of synovial-lined compartments on the dorsal side of the wrist (see figures 3.7 and 3.8).

The large number of tendons passing through the wrist has a repercussion when all of their respective muscle bellies contract. Flexibility and mobility of the wrist reduces progressively with every flexor-extensor muscle of the finger joints that contracts, making every digit taut. The cause is strain placed on the wrist ligaments via the lifting and stretching tendons, constricting movement in between the wrist bones as well.

Abducted fingers (moved apart from one another) combined with chordal implementation, which inadvertently requires the fingers to be curled, places great strain and the pianist's left wrist. The right hand enjoys far greater mobility and flexibility of the wrist by making only the thumb and little fingers taut. As such, the performer must take advantage of this fact in order to reduce overall tension. Consciously keeping the upper arm muscles relaxed, relying on the intrinsic hand muscles for finger abduction and applying only rapid wrist flexion via the lower arm muscles facilitates

endurance. The unfortunate left hand instead has to apply more elbow/lower arm motion. This does not mean the wrist joints become immobile for the whole duration, but the degree to which they are constricted requires the upper arm muscles to become much more involved.

The lightness of the hand itself partially provides the luxury of rapid wrist movements in the right hand. When the lower arm and hand become a single unbending unit (locked wrist), the upper arm muscles are responsible for their entire weight and movement at the elbow joint. It is true that these are powerful, explosively fast contracting muscles (Neumann 2010:204), but compared to the weight-bearing responsibility of the lower arm muscles that only move the wrist and fingers, they are more encumbered with the addition of the lower arm weight. These left upper arm muscles therefore become fatigued faster compared to the right as they act as agonists, or prime movers, at elevated speeds. The author experienced this in the left upper arm as the muscles controlling the elbow joint created small, rapid vertical movements of the lower arm. It is a consequence of what the music demands.



Figure 4.2. *Le Vol du Bourdon*, bars 5 and 6

Hairpin markings that indicate rapid crescendos and decrescendos permeate the first four pages (see Figure 4.2) and affect the left upper arm as well. Applied arm weight as a physical aspect of manipulating the dynamics in a performance usually plays a big part. This is not the case here, as the immense speed and resulting rate at which the dynamic inflections appear in a live performance make it impractical; too little time and the immobility of the shoulder joint does not provide the capability to apply arm weight to shape the hairpins. Instead, the explosive power of the triceps (located in the upper arm) are required for this task by rapidly extending the elbow joint, as even the locked wrist is incapable of contributing to proper dynamic shaping.

The role the triceps play of extending the lower arm directly translates into an increase in volume as the power of the action increases. In this case, the right hand should not be concerned with applying extra force to shape the dynamic contour. It will have little to no effect, as it is playing offbeat. The left hand gives security by playing on the downbeats. To create a successful effect, increased contraction of the triceps should start on the fourth subdivided octave in the left hand. The chord on the second beat creates a natural increase in volume via the added notes.

Overall, considering the motion of the muscles and joints involved in this etude and more specifically during these alternating octaves and chords, it could count as an isometric exercise for the left hand (see definition in section 3.4.1). Compared to isotonic exercises where muscles change their length during contraction, isometric exercise involves no change in joint angle as the muscles contract with no significant change in their length.

Bar 21 marks a return to the initial technical aspect of the etude (see Figure 4.3). This time around, the left hand deals with changes in positioning and orientation. No longer are the extremities of the hand confined to the white keys, as was the case up until now; the transition from alternating octaves in A/D minor to G minor means that the thumb and little finger have to adapt to playing on the black key B-flat. This involves a subtle forward movement of the entire arm via elbow extension and shoulder flexion while the wrist is locked. Previous examples on the white keys involved a comparatively smaller motion moving from one octave to the next. In this case, the movement from C to B-flat to D results in a larger motion.



Figure 4.3. *Le Vol du Bourdon*, bars 21 and 22

Due to the anatomical positioning of the thumb, playing octaves naturally causes the thumb to connect to the keyboard via its bony side. The result is a small connecting surface area compared

to the larger, fleshier tips of the distal phalanges of other fingers. Combined with the decreased surface area of the black note, they impede accuracy as well as the degree of ease with which the left hand changes lateral direction on the B-flat.

Page 105 contains the final embodiments of this technique and develops the left hand even further while the right hand remains nearly unchanged. The first pulse of bar 58 does not let the left hand incorporate full four-note chords, but rather keeps it on two notes see (see Figure 4.4). The pianist has to ingrain a new physical pattern of execution. The author uses fingers 1 and 2 on D-A and 1 and 3 on C-F. Bars 62 and 63 contain the same pattern and fingering.

Acciaccaturas mark the second pulse, although their execution should not be as such. Depending on the whim of the performer, the chromatically added bracket notes may be omitted in favor of a pure octave. Should one wish to apply the full palette of notes it would be futile to see the acciaccaturas as separate entities of ornamentation. It all depends on the speed. For loyal adherence to the score's indication to have an audible articulated effect would entail sacrificing flair and speed to a considerable extent. Adhering to the preferred tempo indication of 96, even though Cziffra's own recording stretches beyond that, requires that these grace notes be played together with the others as 3-note chords.



Figure 4.4. *Le Vol du Bourdon*, bars 58 and 59

The first instance of a non-octave iteration appears in this pulse as well. In the last two chords of bar 58, the left hand has to move from an octave E dyad to an F-A-E trichord. This raises the question of which fingering to use. Two options exist, each with their own physiological consequence: either fingers 5-3-1 or 4-2-1. The first option compensates for the weakness of the fourth finger. The abductor digiti minimi in the hypothenar eminence acts as agonist (prime mover)

of the little finger in the octave stretch and needs to rapidly readjust the little finger to a seventh span and back to an octave.

Bars 65 and 66 (see Figure 4.5) contain a sudden, dramatic fluctuation of lateral movements. A large downward jump of a sixth between octaves C and E in the left hand appears in bar 65 as the main theme shifts an octave lower uninterrupted. This direction changes immediately in the following bar; both hands proceed to rocket up the keyboard in large alternating leaps. Moving laterally to the right involves extending the right elbow joint, while the left elbow remains halfway flexed and crosses the body as the shoulder girdle moves via the sternoclavicular joint to reach the upper register.

The image shows a musical score for two staves, likely piano and right hand. The top staff is labeled with bar number 64. It begins with a fortissimo (ff) dynamic marking. The music consists of complex rhythmic patterns with many beamed notes. A 'rinforz.' (ritornello) marking is present above the staff. The bottom staff is labeled with bar number 66. It starts with a fortissimo (f) dynamic marking. The music continues with similar complex rhythmic patterns. There are several dynamic markings and performance instructions, including 'ff', 'f', and 'rinforz.'. There are also some asterisks and other symbols scattered throughout the score.

Figure 4.5. *Le Vol du Bourdon*, bars 64 to 66

The left hand deals with non-octave dyads in bar 66. The first pulse's C-E dyad moving to the E-major chord on the second requires another rapid interval shift in the extremities. The author uses fingering 2-5 on the dyad, which requires a shift of the second finger from C to B in the E-major chord. Here the interosseous muscles (responsible for finger abduction and adduction) are vital for accuracy. The final obstacle is the second pulse's last two left hand dyads. The minor-tenth interval between the B of the first dyad and the D of the second makes it a difficult jump to reach. By using

ulnar deviation on the second dyad (lateral wrist articulation towards the side of the ulna), this may be successfully reached, together with extension of the elbow and flexion of the shoulder joint. Fingers 2-5 moving to 1-3 will suffice.

4.1.2 Repeated Notes

Arriving at bar 13 provides momentary repose from alternating octaves as the music progresses towards a thinner texture of rapid repeated single notes on A (see Figure 4.6). Just like the octaves, both hands alternate on these repeated notes. The second pulse of each bar follows with alternating double notes in both hands (with B-flat being the shared repeated note in both hands). The semitone relation is an imitation of the source material.



Figure 4.6. *Le Vol du Bourdon*, bars 13 and 14

This, together with bars 14, 17 and 18, shares a similarity with a passage in the *lassan* of Liszt's Hungarian Rhapsody No. 2, S.244/2. Both employ the same physical movement of the upper and lower arms. Although there are alternating fingers in the *lassan* section, one would not apply the same action as found in the *friska* section of the same rhapsody (see Figure 4.7).

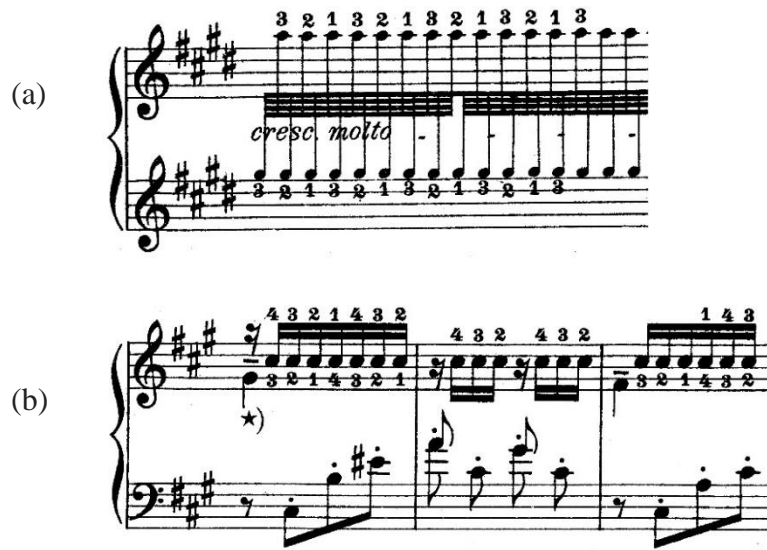


Figure 4.7. *Hungarian Rhapsody 2*: (a) *Lasso*, bar 84; (b) *Friska*, bar 142

Several joints adapt a different role. First would be the PIP and DIP joints of the fingers involved (refer back to Figure 3.2). Specific angles of these joints are required for the repeated single and double notes in bars 13, 14, 17 and 18. Looking from the side, the PIP joint bends to form about a 135-degree angle between the proximal and intermediate phalanges as it remains in a relaxed position with the hands suspended above the keyboard. The distal phalanx forms a slightly curved angle in relation to the intermediate phalanx, as this is its natural relaxed angle without any flexion or extension at the DIP joint. During execution of the repeated notes, none of the finger joints will move; the MCP, PIP and DIP joints remain tethered. Most of the movement occurs in the wrist, but it also involves small movements at the elbow and glenohumeral (shoulder) joints as their muscles co-contract to provide stability to the elbow joint. This effectively facilitates control over the rapid wrist movements of the alternating hands.

4.1.3 Crossing Hands

In bars 15, 16, 19 and 20 we see examples of the left hand crossing over the right hand, steadily alternating at a fast tempo between upper register and lower register (see Figure 4.8). It is again the result of adducting the humerus to bring the elbow in front of the body while the

sternoclavicular joint facilitates this movement. The only difficulty the right hand might experience during the chromatic scales shimmering underneath the jumping left hand is the diminished fifth dyad in the chromatic runs. A simple small down movement of the wrist will facilitate a simultaneous depression of both notes when finger independence is lacking.

The image displays three segments of a musical score for 'Le Vol du Bourdon'. The first segment, starting at bar 13, shows a right hand with dynamic markings *fp*, *fz*, and *leggero*, and a left hand with *fp* and *fz*. The second segment, starting at bar 56, is marked *a tempo subito* and *loco*, with dynamics *f* and *sotto*. The third segment, starting at bar 75a, is marked *loco* and *smorzando*. Red vertical lines indicate the beginning of each section.

Figure 4.8. *Le Vol du Bourdon*, bars 15, 56 and 75a, indicated by the red lines

Bars 56, 57, 60 and 61 contains examples of the right hand crossing the left (see Figure 4.8). The method of execution is facilitated by Cziffra's own instructions to either pass underneath (*sotto*) or over (*sopra*) the left. The last two bars of this etude (75a and 76a), by the author's method, would also involve the right hand crossing the left as the motif moves laterally downward in octave intervals (see Figure 4.8).

4.1.4 Middle Section/Scales

Bar 34 marks the beginning of the middle section and comprises completely different technical elements. The fact that the main theme is at times entrusted to the left hand is one of the features which distinguish this transcription from Sergei Rachmaninoff's, where the right hand maintains the main theme throughout. In this section the right hand adopts a harmonic role, accompanying the left hand in demisemiquavers (see b. 34 in Figure 4.9).

The image displays two musical excerpts from 'Le Vol du Bourdon'. The first excerpt, labeled '34', features a right hand accompaniment of demisemiquavers and a left hand melody. Above the staff, the instruction 'incalzando poco a poco' is written, along with a dynamic marking of 'mp'. A fingering diagram above the right hand shows a sequence of notes with fingers 3, 4, 5, 3, 2. Below the left hand staff, the instruction 'mp' and 'senza ped. tre corde' are present. The second excerpt, labeled '50', shows a right hand chromatic run and a left hand chromatic run. Above the right hand staff, the instruction 'velocissimo' is written, along with a dynamic marking of 'pp subito e leggiero'. Below the left hand staff, the instruction 'senza ped.' is present. Fingering numbers 1, 5, 5, 1, 5, 1 are indicated below the left hand staff.

Figure 4.9. *Le Vol du Bourdon*, bars 34 and 50

The finger pattern remains constant for the right hand on 3-1-2-5 and 4-2-1-5 as it shifts sequentially. Depending on the performer, the third finger may replace the fourth finger in the second half of the eight-note pattern. This small difference in fingering can have a marked physiological effect, and it may ultimately prove more comfortable to use the fourth finger where it is indicated, since fingers 3 and 4 are already in position when the pattern starts. By opting for maintaining the third finger throughout and omitting the fourth, small extending motions must occur in order to shift the third finger from A to B-flat, as well as the succeeding sequences.

Bar 50 contains chromatic runs where the hands move in opposite directions, progressively extending the elbow joints and abducting the upper arms. The biggest difference here is the pattern between the two hands. The right hand plays a 4-note pattern with fingers 1-2-3-5 while the left hand plays a 5-note pattern, causing a polymetric staggering of thumb action.

4.1.5 Scales Exercising the Ulnar Side of the Hand

Page 106 adds one final technical hurdle in the form of chromatic runs played by the fingers on the ulnar side of the right hand. This is partially similar to Chopin's Etude in A minor, Op. 10 No. 2 where fingers 3, 4 and 5 play chromatic runs while the thumb and second finger play the chordal elements, resulting in a division of the hand. In the case of *Le Vol du Bourdon*, the figuration does not involve the second finger. A more exact match occurs in bar 57 of Liszt's 'Transcendental' Etude No. 5, *Feux follets* (see Figure 4.10 below).

(a)

(b)

Figure 4.10.

The almost identical technical passages found in bar 68 of Cziffra's *Le Vol du Bourdon* and bar 57 of Liszt's 'Transcendental' Etude No. 5: (a) Cziffra – *Le Vol du Bourdon*, bar 68; (b) Liszt – *Feux follets*, bar 57, indicated by the red line

The challenge lies in cultivating finger independence between the third, fourth and fifth fingers, whose independent movements are naturally restricted by interconnected tendons and innervations. Bars 68 and 69 requires lateral inward motion and bars 72a-74a lateral outward

motion. The rapid chromatic movements between these three fingers appear in the left hand as well from the beginning of the middle section where it plays the main theme.

4.1.6 Summary and Reflection

The unusual amount of tension overall is caused by excessive muscular co-contraction in the alternating octaves and repeated notes. Full chords played rapidly in the left hand reduces wrist mobility. The adducted left arm (elbow against the body) is robbed of added weight provided through leverage and requires more muscular effort to compensate for it. The middle section displays rapid demisemiquavers with differing patterns of fingering between the two hands, which need to be executed with rhythmical precision. This is made more difficult by the restricted movements of the third, fourth and fifth fingers, which lack independence due to their interconnected tendons. It was in playing bar 21 that the author first became aware of different planes for the thumb and the entire hand as the thumb moves from white to black keys and the joint movements that are required to rapidly shift between these two planes.

4.2 Tritsch-Tratsch Polka

Tritsch-Tratsch Polka is different in character to the preceding transcription. Cziffra (1995:9) describes it as a ‘free paraphrase’ and ‘[an] ideal work for the elaboration of the reflexes.’ It nevertheless follows the formal outline of the original by Johann Strauss II quite closely. The main theme is presented four times, followed in the first three iterations by the second theme and an extended bridge, and in the last by a coda.

Each new entry of the main theme, second theme and bridge demonstrates Cziffra’s transformative capabilities, and is varied to present different technical challenges linked to developing dexterity. For this reason, the form of the work will serve as the basis around which the narrative of the technical analysis will be structured (see Addendum B for the entire score).

4.2.1 First Cycle, Bars 1-45

Bar 8, which forms part of a cadenza-like introduction (see Figure 4.11) contains the first serious obstacle the performer will face. Its seemingly irregular design actually follows a pattern, and the first task would be to unravel this, in order to facilitate the learning process.



Figure 4.11. *Tritsch-Tratsch Polka*, bar 8

An unrecognisable flurry of notes marks the beginning of the run. Upon closer inspection, there appears to be a large group of notes between two specific points that give hints to its nature. The two points of reference are the ‘B’ octaves found in the middle of the first line and at the beginning of the second line. Everything contained within these two points can be divided into smaller patterns.

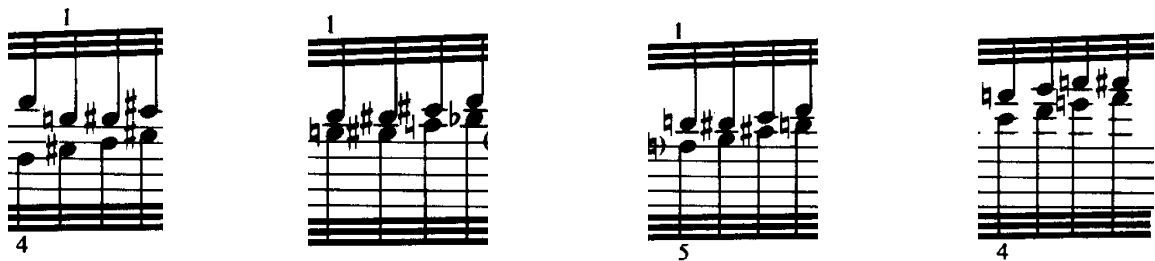


Figure 4.12. *Tritsch-Tratsch Polka*, bar 8’s main pattern subdivided

As seen in Figure 4.12, the main pattern is divided into groups of four, starting on the B octave. One can even divide it into two groups (8 notes), as both hands are seen jumping down to B \sharp and F \sharp to start an ascending run again. For practical purposes, the author found it useful to have four groups as mental reference. The left hand starts every pattern off with fingers 4 or 5, followed by 3-2-1 while the right hand plays 1-2-3-4 on every pattern with a slight variation on the first pattern (5-1-2-3). Summarised, the thumb in the right hand and either the fourth or the fifth finger in the left hand serve as an anchor for the physical ascending 4-note movements.

While the physical execution of this section is quite straightforward, determining the tonal nature proved otherwise. The result of analysing it bears testament to Cziffra's musical and improvisational Romani heritage, as well as his exposure to octatonic treatments in Liszt's music. It is imperative not to forget that Cziffra is the product of a cultural Romani musical upbringing and a Lisztian approach to virtuosity. As such, one must be aware of the musical elements associated with this background.



Figure 4.13. The double harmonic minor scale

The traditional double harmonic minor scale is very similar to the harmonic scale except for one alteration. The fourth is raised and the scale is therefore defined by two intervals of augmented seconds. It is possible to interpret many passages in Figure 4.11 as instances of the double harmonic minor: we see in the first subdivision of Figure 4.12 exactly how the left hand forms the first four notes of a traditional double harmonic minor scale starting on B. This is apparent by the augmented second interval between the D and E \sharp , which are the third and fourth steps respectively. Focusing further on the left hand we see the scale blending itself into another form. The third and fourth subdivisions give a hint to its change in nature. Both the right and left hands play a series

of notes, featuring a change from an E sharp to an F natural. This is not indicative of a change to a double harmonic minor starting on a different note, however (the augmented second interval between F and G# fits into a double harmonic minor scale starting on D). Rather, it is best to interpret the entire passage as being octatonic in nature, despite Cziffra's occasional enharmonic spellings and use of passing notes as chromatic alterations. An octatonic scale (E-F-G-G#-A#-B-C#-D) therefore forms a cadenza-like elaboration on the dominant.

Unravelling the apparent backbone to this run leaves only the kinesiological aspects to point out. Each subdivision has a certain requirement of the amount of abduction and adduction occurring between the fingers (the lateral distance between each finger). The groups of this embellished octatonic scale requires more adduction (little to no lateral distance between each finger) in the moments where chromaticism is present. The second group is an example where both the right and left hand play with fully adducted fingers because of its chromaticism. In the groups where the music returns to 4-note patterns containing intervals with less chromaticism, the hand returns to a more neutral position with a bit more space between the fingers (more abduction). This entire passage therefore demands a constant small alternation between adducted and abducted fingers.

Bar 9 marks the first iteration of the main theme (see Figure 4.14). The hands start by applying different forms of lateral stretching (abduction) compared to each other. The thumb in the right hand is forced to stay in position over E just before the dyad and trichord are played. After the second finger plays the F# acciaccatura, its position shifts along with the other three digits due to the ulnar deviation (lateral twist of the wrist towards the little finger) needed to reach the C#-E dyad. This is the primary motion as the thumb remains in position.



Figure 4.14. *Tritsch-Tratsch Polka*, bars 9-13

With regard to the left hand, the author's natural inclination, without looking at Cziffra's fingering, was to use fingers 1-5 on the starting A-E dyad. Physiologically, this means a fair amount of interosseous activity for the left hand as it alternates between the adducted position on A-E and abducted position on the succeeding trichords.

Cziffra's indication of '3' below the A-E dyad is somewhat unclear. This can either mean using fingers 3-5 or 1-3. Using either fingering is possible, but will of course have different outcomes for movement. Starting on fingers 3-5 means that the little and middle fingers are already in their abducted positions, suited for executing the succeeding chords. Its strong point is also its weakness as this abducted position interacts with deviation of the wrist that follows. The succeeding trichords inevitably use ulnar deviation and playing 3-5 on the starting dyad requires a non-deviated position for stability. This means alternating between slight and extensive ulnar deviation of the wrist. The A-major arpeggio preceding bar 13 requires a more adducted position and jumping from this to the reappearing abducted 3-5 position three octaves down in bar 13 increases the difficulty (see Figure 4.14).

Using fingers 3-1 circumvents the issue of wrist deviation. The hand is already in an ulnar-deviated position and this eliminates the wrist movements that were required in the previous strategy. This now creates proper positioning of the thumb and middle fingers for the anticipated trichords, but it also means that the little finger does not assume an abducted position. In this case, it needs to abduct when shifting to the trichords.

One aspect all the discussed fingerings have in common is the adducted position between the index and middle fingers. This position promptly changes to abduction as the hand shifts in preparation

for pressing down the first trichord. Figure 4.15 shows how the middle finger involuntarily extends at the MCP, PIP and DIP joints to facilitate abduction between it and the index finger.

Keeping in mind the second finger's need to abduct using these fingerings, the author tried finding another option for the A-E dyad in order to circumvent this issue of abduction occurring between the second and third fingers. By starting with fingers 2-5, the hand takes a position most similar to the trichord that follows. The second finger starts with a higher degree of abduction compared to the preceding positions. This results in an almost equal stretch between the fifth and second fingers and distance between the second finger and thumb as found in both dyad and trichord. Due to the smaller degree of active motion required, and taking into consideration the above dynamics between wrist deviation and finger abduction, 2-5 would be the author's preferred fingering.

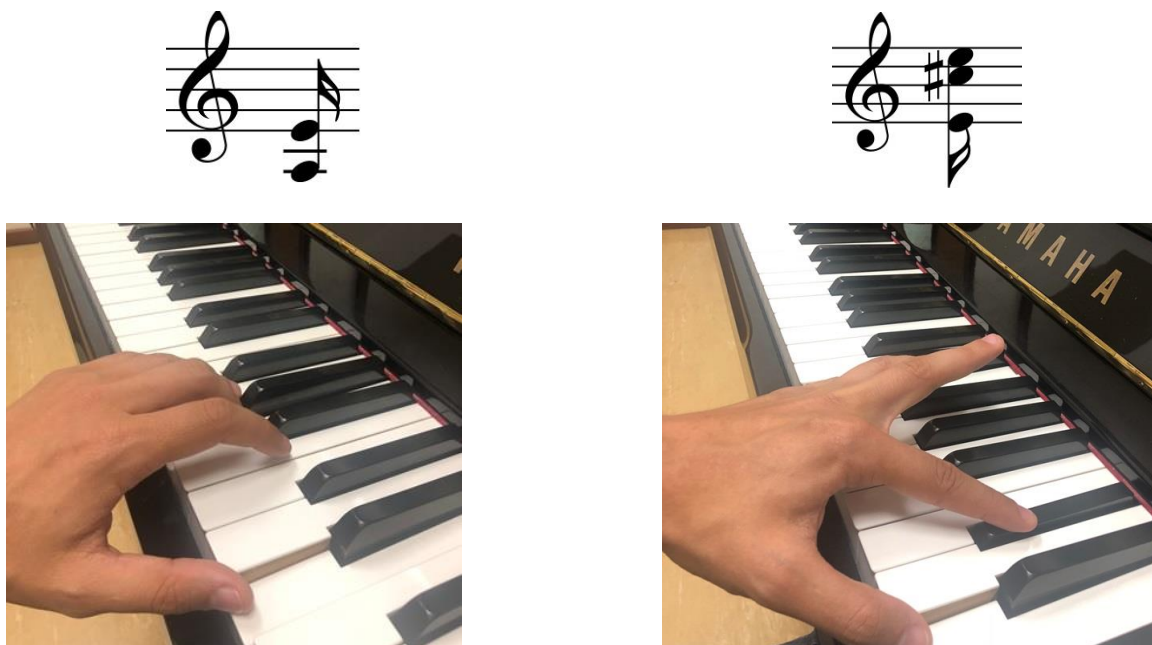


Figure 4.15. Involuntary extension of the middle finger as the fingers move quickly from adducted to abducted positions in order to reach the trichord in *Tritsch-Tratsch Polka*, bar 9

The announcement of the second theme in bar 20 introduces another exercise in alternation between abduction and adduction (see Figure 4.16). It consists of a sonorous melodic pulse at the extremities of the hands interspersed with contrapuntal movement occurring within the semiquaver

structures. These structures enforce an abducted position of the fingers and are followed by rapid torrents of scales that embellish the crotchets of this motif. These scales require a closely adducted position of the fingers, aggravating an already problematic positioning of the fingers between the black keys. The further the finger has to play from the tip of the key, the more force is required to depress the key. Keeping the fingers high up the keys, as some of these runs require, makes properly depressing certain keys problematic. One has to actively draw the upper arm back (extension at the glenohumeral joint) in order to bring the fingers further down the keys as the pattern is executed.

The image shows a musical score for the 'Tritsch-Tratsch Polka' in G major, 2/4 time. The score is divided into three systems of staves (treble and bass clef).
 - The first system (bars 17-19) begins with a first theme marked 'loco' and 'sempre stacc.'. It includes performance directions 'accel.' and 'veloce possibile'. A red vertical line is placed at the start of bar 20.
 - The second system (bars 20-22) contains the second theme, marked 'a tempo' and 'mf'. It features rapid scale passages with fingerings '8' and '5' indicated.
 - The third system (bars 23-24) contains the third theme, marked 'loco'. It also includes fingerings '8' and '5'.
 - The score includes various musical notations such as slurs, accents, and staccato markings. A 'Red.' marking is present in the bass clef of bars 19, 22, and 24.

Figure 4.16. *Tritsch-Tratsch Polka*, bars 17-24. The second theme starts at the red line in bar 20

Bars 27-38 contain a conglomerate of techniques as the types of motion change with every system. Each system exists as a fleeting technical idea within the work. Bars 27, 28 and 31 feature a characteristic chromatically shifting tritone effect, which, together with the right hand, are essentially pairs of chromatically descending diminished chords. This harmonic effect is similar to that found in bar 7 of Liszt's 'Transcendental' Etude No. 5, *Feux follets*. The difference between the two composers' arrangements of these harmonies (see Figure 4.17) means that the passages do not require the same physical technique.

Figure 4.17 consists of two musical excerpts, (a) and (b). Excerpt (a) shows bar 7 of Liszt's 'Feux follets' in G major, 4/4 time. It features a chromatically descending sequence of diminished chords in both hands, with a tritone effect. Fingerings are indicated by numbers 1-5. Excerpt (b) shows bar 31 of Cziffra's 'Tritsch-Tratsch Polka' in G major, 4/4 time. It features a similar chromatically descending sequence of diminished chords, but with a different fingering pattern and a dynamic marking of *f dim.*

Figure 4.17. Bar 7 of Franz Liszt's 'Transcendental' Etude No. 5 *Feux follets* compared to bar 31 of Cziffra's *Tritsch-Tratsch Polka*: (a) Liszt – *Feux follets*, bar 7; (b) Cziffra – *Tritsch-Tratsch Polka*, bar 31

Bars 29 and 30 contain a flurry of diminished chords alternating between both hands. It shows some similarities to bars 31-34 of Chopin's Etude Op. 25 No. 6 (see Figure 4.18 below). Both passages feature full diminished quartads in both hands, but while Chopin divides them into dyads in each hand, Cziffra alternates them between the hands.

Figure 4.18 consists of two musical staves, (a) and (b), comparing piano textures. Staff (a) shows Chopin's Etude Op. 25 No. 6, bar 32, with a complex chordal texture and a fermata over the first measure. Staff (b) shows Cziffra's Tritsch-Tratsch Polka, bar 29, with a similar texture, dynamic markings (mp, cresc.), and a fermata over the first measure.

Figure 4.18. Bar 32 of Chopin's Etude Op. 25 No. 6 compared to bar 29 of Cziffra's *Tritsch-Tratsch Polka*: (a) Chopin – Etude Op. 25 No. 6, bar 32; (b) Cziffra – *Tritsch-Tratsch Polka*, bar 29

Choice of fingering once again plays a determining role in the complexity of movement. One may opt to maintain a fingering of 5-3-2-1 in both hands throughout the entire two bars, in which case the section found in Op. 25 No. 6, which also uses the same fingers, may serve as an exercise one can practise in conjunction.

Each chord in this section of the transcription either has a black or white key at the outer extremities (played by the fifth fingers). On these extremities one can opt to use the fourth fingers on black notes and the fifth fingers on white, or to use a specific combination of fourth and fifth fingers on black notes. When using the fifth finger on all extremities, it is important to note the degrees of deviation occurring within the wrist. The greatest amount of ulnar deviation occurs in chords where the thumb is placed on a black key and the little finger on a white key. The opposite expectedly occurs as the wrist deviates considerably less when the thumb is placed on a black key and the little finger on a white key. By opting to use the fourth finger on black extremities, the range of deviation lessens for both hands as the wrists become less dependent on the motion of deviating

the hands to place the little fingers on black keys. Wrist motion diminishes, but inclusion of the fourth finger demands more coordination.

4.2.2 Second Cycle, Bars 46-77

The main theme reappears at bar 46 (see Figure 4.19). This variant employs the same lateral movement as before. The left hand again faces the same technical feat of accurately adducting and abducting the fingers as in the first cycle. Its physiological nature changes, however, in the second half of bar 47.

Figure

4.19. *Tritsch-Tratsch Polka*, bars 46-50

The first iteration required freedom of the wrist and radioulnar joints as rotation of the lower arm facilitated reciprocation between the little finger and the other three fingers playing chords, with little to no movement needed from the upper arm. This freedom becomes restricted in the left hand as the configuration changes to dyads using the notes of bar 11 an octave lower (see Figure 4.20). Bars 47 and 48 require greater abduction (laterally spread fingers) than bar 11 due to the finger settings applied in the dyads, which maintains the overall span of a tenth (B-D) between the thumb and little finger. Fingers 2-5 are applied on the first dyad (B-G#) and 1-3 on the second (E-D).

The image displays two systems of musical notation for the piano accompaniment of 'Tritsch-Tratsch Polka'. The top system shows measures 9 and 8, with the right hand marked 'loco' and 'p' (piano), and the left hand marked 'leggiero' and 'senza ped.' (senza pedale). The bottom system shows measures 47 and 48, with the right hand marked 'loco' and the left hand marked 'loco'. Red circles highlight specific passages in the left hand: one in bar 11 and another spanning bars 47-48.

Figure 4.20. *Tritsch-Tratsch Polka*, a comparison between the left hand in bar 11 and bars 47-48

With pronation and supination severely limited (rotating or twisting the forearm at the radioulnar joint, which moves the palm of the hand towards either a downwards or upwards facing position), mobility of the glenohumeral joint plays a more important role. The muscles responsible for its movement activate to alternate slightly between adduction and abduction of the upper arm, or humerus. This combined with ulnar deviation (lateral twist of the wrist towards the little finger) facilitates the grasp of the second dyad (3-1). The author noticed at this point how it becomes a necessity of the wrist to deviate radially (when playing piano) as soon as extreme abduction is required between the fifth and second fingers. Whenever the fifth finger alone needs to abduct (as in octaves), the wrist is inclined to perform ulnar deviation, but as soon as the second finger also needs to play a note requiring complete abduction, a sort of co-contraction takes place as the stretching fifth finger activates ulnar deviation and the abducting second finger activates radial deviation. This is a source of tension and potentially explains the reduced flexibility of the wrist.

Greater alteration is apparent in the right-hand part. It employs abduction and adduction of the upper arm or humerus as the same four-note pattern shifts up and down in octaves in bar 46. At

this point, a choice had to be made concerning motor redundancy (the multiple ways in which a body part can move to make contact with a certain point), as two possible ways were found that would efficiently bring the thumb into contact with the E key. The first would be to move the CMC joint of the thumb, applying no arm weight, and with little to no involvement of the lower and upper arm joints.

As a result, all the fingers involved in the four-note pattern would mimic this by primarily flexing their MCP joints during execution. The second would be to apply backwards movement of the upper arm by extending the glenohumeral joint. If every joint were locked from the elbow down, this would also bring the thumb into contact with the key due to the circular range of movement at the glenohumeral joint. However, one would not execute it with every joint locked, due to unnecessary tension and immobility. The wrist and elbow could similarly bring the thumb into contact with the key, but focusing on the glenohumeral joint provides greater weight potential.

A part of this section also deals with right-hand leaps in tenths between the thumb and little finger, specifically in bars 47 and 51 (see Figure 4.21). Probably the most popular – and one of the most challenging – examples of the motion required here is found in Liszt's *La Campanella*. Rotation of the radius at the radioulnar joint plays an important part during the required degrees of supination and pronation of the lower arm. Ulnar deviation occurs simultaneously with the supinating motion, which facilitates the reach of the little finger. Other important movements working in conjunction with this technique are upper arm abduction and adduction. The involvement of these movements becomes more apparent the larger the range of the leaps are. Figure 4.22 shows how the upper arm abducts and the lower arm pronates as the thumb plays the lower note, while the upper arm adducts, and the lower arm supinates as the fifth finger plays the upper note. While the intervals are not as large as in Liszt's example, the same movements apply to bars 47 and 51 of the polka.

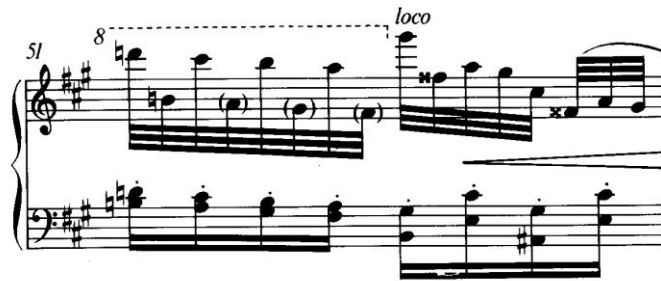


Figure 4.21. *Tritsch-Tratsch Polka*, leaps of tenths as they appear in bar 51 and identically in bar 47

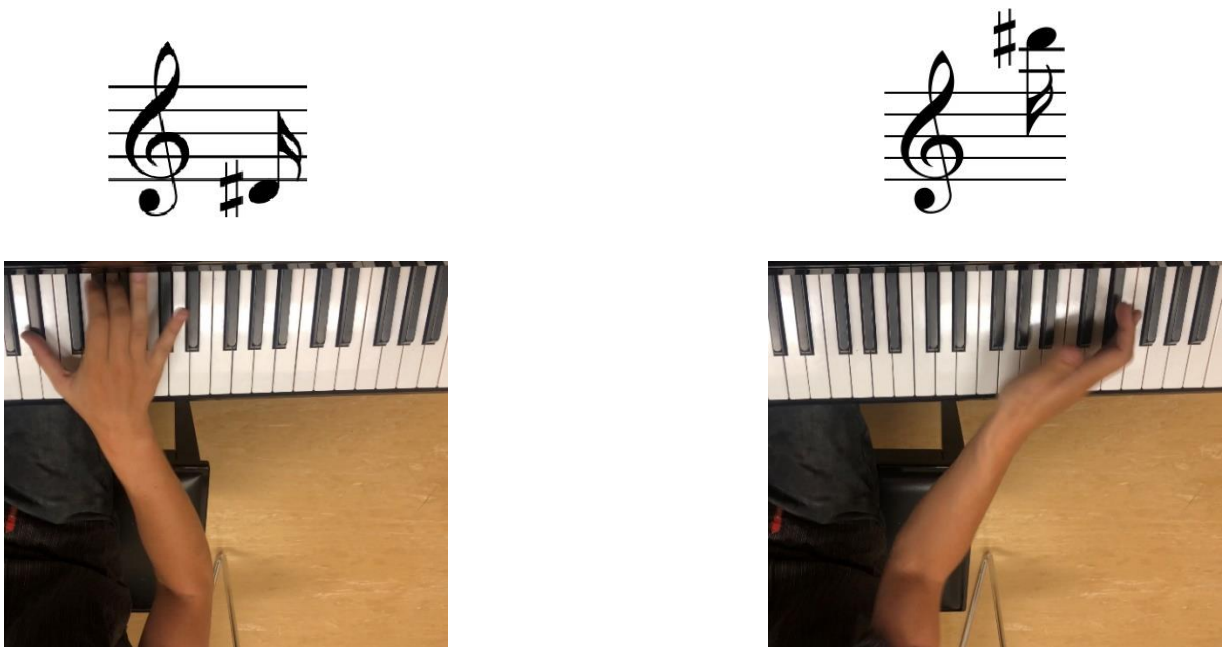


Figure 4.22. Configurations of the joints mid-action as the author performs the two-octave leaps in Liszt's *La Campanella*

The next major difficulty appears with the second theme in bar 58 (see Figure 4.23). The right hand once again provides the melodic pulse via the thumb and little fingers, but the right hand's intrinsic contrapuntal division becomes more erratic and the note quantity is doubled compared to bar 20. While the right hand texture is still similar to its first-cycle counterpart, the left provides the harmonic foundation via leaping bass figures. The anterior and exterior upper arm muscles

control the lateral movements of these leaps. The first rolled chord initiates a degree of adduction for the upper arm to facilitate inward lateral movement towards the dyad, but the sudden angular change of direction on each succeeding semiquaver contributes to its difficulty.

The image shows a musical score for two staves. The top staff is in treble clef and the bottom staff is in bass clef. The key signature has two sharps (F# and C#). The tempo is marked 'Tempo un poco ritenuto (MM ♩=144) (Tempo II)'. The piece is marked 'f marcato'. The right hand has a melodic line with a sequence of notes and rests, with fingering numbers 2, 4, 3, 2, 1, 3, 2. There is a 'loco' section with triplets. The left hand has a bass line with a '2do.' marking. The score is for bars 58 and 59.

Figure 4.23. *Tritsch-Tratsch Polka*, bars 58 and 59

Double thirds moving in contrary motion appear in bars 59, 60 and 63 as seen above. Cziffra's fingering indicates the repetitive use of 1-3 plus 2-4 pairs. This is a section requiring a high level of coordination between the hands, especially due to the sudden shift of techniques as the music alternates between the jumping bass figures and double thirds. The author experienced the left hand as being more difficult compared to the right. Closer inspection showed subtle differences between the two hands.

Fingers 1-3 provides the anchor and downbeat for the entire pattern. For the right hand, both these fingers constantly land on black keys. The left hand differs in this regard. The first double third using 1-3 requires the thumb on a white key and the third finger on a black key (F#-A). The next double third using 1-3 requires both on black keys (D#-F#) and the last one requires the thumb on a black key and the third finger on a white key (B-D#). Deviation of the wrist plays a big part in the accuracy of these left-handed double thirds. Each consecutive third requires a subtle change in deviation. The first group remains in a neutral wrist position. As the thumb shifts to a black key in the next group, more ulnar deviation is required. As the third finger shifts to a white note in the last group, even more ulnar deviation is required. It stands to reason that not deviating the wrist sufficiently can affect overall accuracy negatively. This 'under-deviation' at performance tempo

is a result of the initial double third in the left hand using little to no wrist deviation, and potentially from playing the same pattern simultaneously with the right hand, which requires no change in deviation (assuming the tendency of both hands to mimic each other's movements). The author experienced a dramatic improvement in accuracy as soon as wrist deviation was consciously controlled.

The final hurdle of the second cycle appears in bar 72 – a case of rapid alternation between the hands through rising octaves and chords (see Figure 4.24). The right hand only deals with octaves, which requires rapid to-and-fro lateral movement between the anchored 'E' octave and ascending chromatic octaves. Flexion at the glenohumeral joint (forward movement of the upper arm) occurs on every black key octave while the biceps and triceps gradually increase the degree of elbow extension and flexion for lateral hand movement. Abduction and adduction of the upper arm gradually assist with this lateral movement. The left hand again presents the greater challenge. It starts with a very slightly abducted position of the upper arm on the octave 'E'. Abduction of the upper arm enables the hand to reach the chords. Eventually, the upper arm needs to move forward (flex) in order to adduct the arm so that the elbow crosses the front of the body to reach the highest chords. Chords where the thumb has to play a black note complicates coordination of the glenohumeral joint further. Increasing degrees of ulnar deviation again also occur in the chords, starting in a neutral wrist position in bar 72 and gradually deviating towards the end of the bar.

The image shows a musical score for two staves, likely piano and bass clef. The score is for bars 72 and 73 of the piece 'Tritsch-Tratsch Polka'. The key signature is D major (two sharps). The tempo is marked 'Tempo II'. The right-hand staff (treble clef) starts with a dynamic of *mf* and a *cresc.* marking. The left-hand staff (bass clef) starts with a dynamic of *mf* and a *cresc.* marking. The right-hand staff has a *stacc.* marking above the first few notes and a *marc.* marking below the first few notes. The music consists of rapid octaves and chords in both hands.

Figure 4.24. *Tritsch-Tratsch Polka*, bars 72 to 73

4.2.3 Third Cycle, Bars 78-124

The thematic shift from right hand to left defines a large portion of the third cycle. Immediately the right hand adopts the role as an accompanying entity, while the left simultaneously states the theme and provides harmonic support (see Figure 4.25).



Figure 4.25. *Tritsch-Tratsch Polka*, bars 78 to 80

The greatest physical challenge here lies with the right hand. Musically it is a very simple pattern – constant repetition of the two-note pattern F#-E, alternating in two layers between F#6-E6 and F#7-E7. Placing the fingers on their respective notes makes it clear that it requires a reach far above the average hand span. This physical dilemma occurs in the stretch between the second and fourth fingers, which spans a seventh. A similar technique appears again in Liszt's *Feux follets* (see Figure 4.26).

In Liszt's example, the option to use a 4-1 fingering on the upper E and lower F# circumvents the large stretch 4-2 would cause. The repetitive aspect of Cziffra's example, without shifting to a lower register as in Liszt's, renders this option less practical – the second finger will have to play the lower E by crossing over the thumb (a combination of thumb opposition, second finger abduction and radial deviation of the wrist). This is followed by quick ulnar deviation and little finger abduction to reach the top F#. This aspect of constant radial and ulnar deviation makes this choice of fingering feel sluggish and awkward. Constant use of 5-4-2-1 (F#-E-F#-E), despite the complete abduction between fingers 2-5, provides more agility.

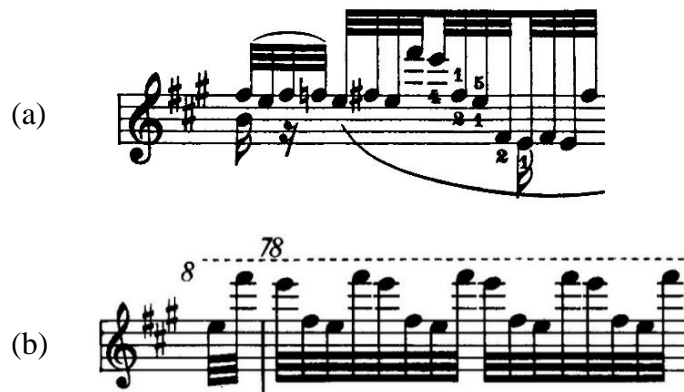


Figure 4.26. The right hand in bar 85 of Liszt's *Feux follets* compared to bar 78 of Cziffra's *Tritsch-Tratsch Polka*: (a) Liszt – *Feux follets*, bar 85; (b) Cziffra – *Tritsch-Tratsch Polka*, bar 78

Involvement of the glenohumeral and elbow joints becomes crucial, contrary to the previous choice of fingers. Abduction, adduction, flexion and extension (retracting the upper arm) occurs at the glenohumeral joint (in other words a combination of all directions of movement possible at this joint as described in Chapter 3.3.3). Flexion, extension, pronation and supination occurs at the elbow joint (again a combination of all directions of movement possible at this joint as described in Chapter 3.3.2).

A combination of all these movements enables the fast, repetitive execution of this section through circular motion. Abduction plus flexion at the glenohumeral joint and extension plus supination at the elbow joint contribute to reaching the upper two notes. Adduction plus extension (retracting the upper arm) at the glenohumeral joint and flexion plus pronation at the elbow joint contribute to reaching the lower two notes. All these movements synchronise to create a circular motion of the hand within a horizontal plane, which is inherent of this technical passage (see Figure 4.27).

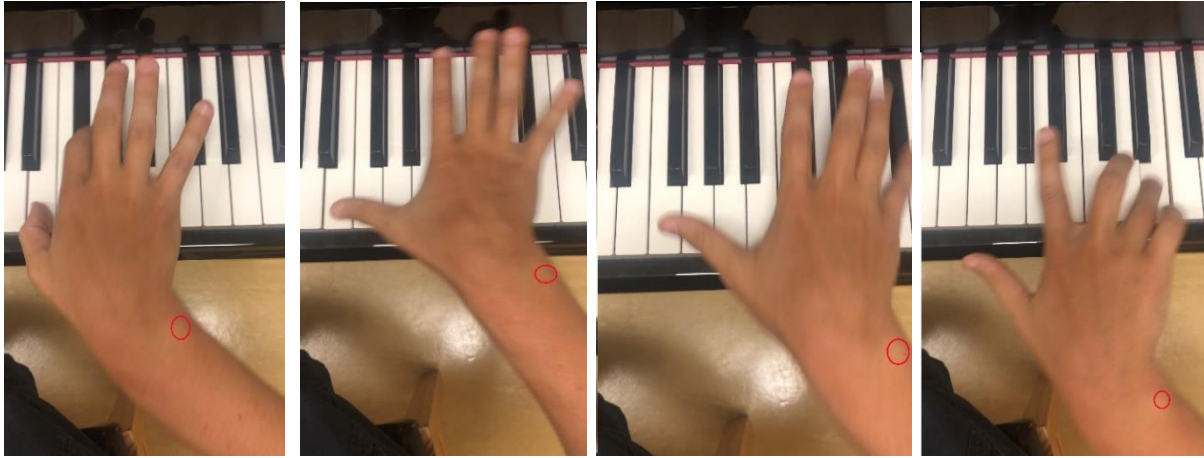


Figure 4.27. The circular motion of the right hand. The red circle indicates the position of the ulnar styloid process (the bony protrusion) (Neumann 2010:177) as it reaches the far left, top, right and bottom of the circular motion within a horizontal plane

The transformed second theme in bar 89 maintains its prominence within the left hand (see Figure 4.28). While the left hand is mainly concerned with small leaps spanning tenths and elevenths, the right hand brings the coruscating character to bear. As the score indicates, the performer is invited to play these descending sixths on the white keys in any manner that he/she is capable of.

Figure 4.28. *Tritsch-Tratsch Polka*, bars 89 and 90

By the author's determination, there are three methods that one could use to approach the right-hand figuration. The first would be omission of the notes in brackets. This results in a slight opposing movement of the thumb as the second finger crosses over it, enabled by the *opponens*

pollicis muscle acting as agonist. Lateral inward movement of the forearm facilitates the crossover of the second finger.

The second method would be to attempt playing every single note contained in the pattern. It is important to note the immense speed the first method provides. Once again, it is up to the performer to decide whether to sacrifice speed for fleshed out patterns. Probably the most logical fingering would be continuously using 2-5 and 1-4, or from a different perspective, 5-4-5-4 in the top and 2-1-2-1 in the bottom layer continuously. This creates another scenario where all the fingers abduct, which causes tension and reduces speed.

The third method would be to only apply wrist motion and use the same fingering on each dyad (e.g. 1-5 or 1-4). This is an extremely taxing movement when performed at a high tempo and fatigue quickly sets in. In the previous options wrist motion was not involved, but in this case, the forearm muscles need to make the fingers at the ulnar side and radial side of the hand taut, deviate the wrist to the ulnar side, as well as rapidly flex and extend it.

An extended bridge follows the ending of the second theme in bar 99, longer than those in previous cycles (see Figure 4.29). It is mainly characterised by large leaps in both hands. In both hands the upper arm needs to flex (move forward) to a specific degree whenever the thumb has to play on a black key, and retract when on a white key. Upper arm adduction and elbow joint extension are involved to reach the outer octaves, while upper arm abduction and elbow joint flexion assist with the inner chords/octaves.

The image shows a musical score for bar 99 of the piece 'Tritsch-Tratsch Polka'. The score is written for piano, with a treble clef on the upper staff and a bass clef on the lower staff. The key signature has two sharps (F# and C#). The treble staff contains a rapid sequence of dyads (pairs of notes) with 'loco' markings above them, indicating a 'loco' (fingered) technique. There are also '8' markings above the notes, indicating an octave shift. The bass staff contains a few chords. The tempo is marked 'ff furioso'.

Figure 4.29. *Tritsch-Tratsch Polka*, bar 99

4.2.4 Final Entry, Bars 125-145

It is within the fourth entry of the main theme that we find one of the most taxing cases of lateral movement in possibly the entire piano literature (see Figure 4.30 below). Enormous leaps in the left hand necessitates the performer to pay attention to one hand visually while the other remains out of view. This is complicated further due to the right hand shifting position by an octave in bars 125 and 127. The biggest double octave jumps in the work occur here, specifically on the double E's, which span a leap of two octaves down and up. Muscular contraction increases as 4-note chords are used within an octave span, requiring considerable finger abduction. Co-contraction becomes an issue as taut fingers are required to withstand the surface impact of the lateral momentum. The rest of the final section is a recapitulation of previous technical passages.

Allegro stretto (MM ♩ = 160)

125 8

f *loco*

sempre stacc. e marc.

129 8

loco *mp*

Figure 4.30. *Tritsch-Tratsch Polka*, bars 125-131

4.2.5 Summary and Reflection

This etude yielded a much larger scope of analysis compared to *Le Vol du Bourdon*, since the latter was mostly confined to only one position. Whereas fatigue (and therefore muscular overexertion) was a bigger concern in the previous etude, the range of movements at joints and their possible configurations were of more importance throughout this work due to its acrobatic nature. Several passages offered multiple possibilities for execution, which allowed for an analysis of the physical consequence of each option. Overall, this is a study for developing a wide range of agile movements, mostly for the right hand. During its latter half, it starts demanding a developed kinaesthetic sense where large jumps in both hands, mostly the left, make it almost impossible to look at both hands at the same time.

The analysis started with identifying the Romani or *styles hongrois* element of the cadenza-esque, improvisatory introduction, where adduction of the fingers plays a role. This was followed by an extensive investigation of the options for fingering in bar 9 and the kinesiological consequence of each choice – a key point in the analysis. By studying the options and the resulting orientation of joints and movements of each choice, the author could decide on the optimal fingering to use, based on which required the least complex coordination to execute.

By experimenting with the ascending scales in bars 21-25, the author became more aware of how the mechanics of the piano itself has an effect on the manner of execution. Playing on the edge of a key, instead of deeper further up, provides more leverage and is a facilitating factor in these bars.

Another important moment in the analysis occurred at the double thirds in bar 59. The varying degrees of ulnar deviation was pointed out on each third in the left hand as an inherently occurring movement of this effect. Insufficient deviation yielded inaccurate results, while a conscious effort to control deviation improved accuracy. The right hand pattern of the third cycle in bar 78 was another example of how a technique or effect has an inherent unique configuration of moving and

resting joints. Here the glenohumeral joint and elbow joint worked together to keep the wrist inside a horizontal plane (over the piano) while producing a circular motion.

4.3 La Fantaisie Roumaine

La Fantaisie Roumaine is unique amongst these pieces in the sense that it cannot be considered a transcription. Cziffra (1995:9) describes it as a ‘purely improvisational piece which contains the traditional slow-fast elements that are distinct for Central-European melodies.’ This aspect is reminiscent of Liszt’s *Hungarian Rhapsodies*. Many of the rhapsodies are composed in a two-part form, starting with a slow section titled ‘*Lassan*’ and followed by a more virtuosic ‘*Friska*’.

Cziffra also adheres to a slow-fast form in this work, however, he does not label the two sections in his fantasy as ‘*Lassan*’ and ‘*Friska*’. Instead, he uses the indications ‘*Lent, sans rigueur*’ for the first and ‘*Vif*’ for the second. The fantasy is the longest work in the volume (see Addendum C for the entire score). Spanning 27 pages, it has a performance time of about 11 minutes, surpassed only by his *Fantaisie d’après Guillaume Tell* in Volume 2.

The improvisatory nature quickly becomes apparent by studying the score; certain notes and patterns seem superfluous and is consistent with what one would expect happens if music is written down exactly as an improvised recording dictates. Examples are the arbitrarily changing tremolos in bars 23-25 and the questionable omission of notes in bar 33 where one would expect the left hand to maintain the complete E-major triad throughout (see Figure 4.31).



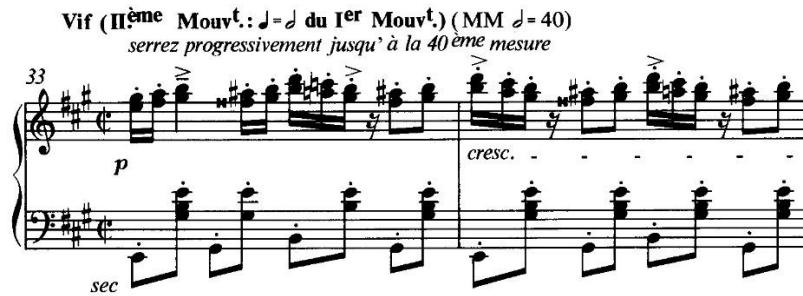


Figure 4.31. *La Fantaisie Roumaine*, bars 24, 33 and 34

It is also a highly repetitive work, where certain motifs, patterns and movements occur numerous times and freely within the work's two main structures. Due to this as well as the large scale of this work, the author focuses on the three general techniques/effects that defines this work: left hand sextuplets, sixths and double thirds.

4.3.1 Varying Left Hand Sextuplets

Throughout the second section, starting in bar 33, the left hand primarily maintains an accompanying role, frequently taking the form as sextuplets in bars 49-52, 55-61, 71, 77-78, 80, 89-90, 147-152 and 193-199 (see Figure 4.32 for one example). This form of accompaniment demands an undulating movement of the entire arm. As seen in '*Le Vol du Bourdon*', and as a general occurrence therefore in piano playing, the entire arm shifts as the thumb moves from a white to a black key. Figure 4.32 is an instance where the thumb of the left hand shifts back and forth between 'A' and 'C#', requiring constant glenohumeral flexion and retraction (forward and backwards movement of the upper arm). In order to keep the hand in the horizontal plane (keyboard level), the elbow joint extends as the glenohumeral joint flexes (as it moves the upper arm forward), and flexes when the glenohumeral joint retracts the upper arm.

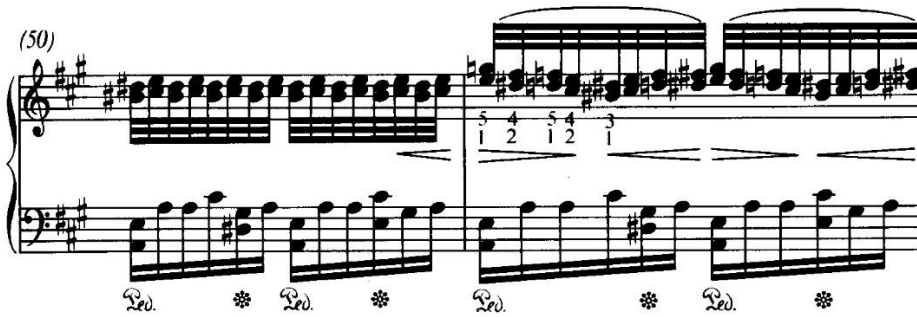


Figure 4.32. *La Fantaisie Roumaine*, bars 50 and 51

4.3.2 Double Sixths and Abduction

Out of all four studies, the fantasy has the most instances where some of the techniques found in Chopin's studies appear to have an influence. Our first encounter is in bar 7 where the performer has to play sixths in the right hand, but this is developed further in bars 10-12 and even further in bars 23-25. This is a possible allusion to Op. 25 No. 8 by Chopin, which focuses completely on double sixth technique. By inspecting the more strenuous pattern found in bar 12 (see Figure 4.33), one finds the awkward shape the hand has to take to be the result of the large distance between the second and fourth fingers. Not only that, but also all the fingers are in their abducted positions, stretching almost as much as they can. The muscles at work here seem to be the dorsal interossei, which are responsible for said finger abduction. The legato articulation further complicates the matter, as one finger is now required to connect the line of voice progression. Depending on hand size, the speed of execution will vary due to different intensities of abduction and normal fingering might not even be possible for smaller hands.

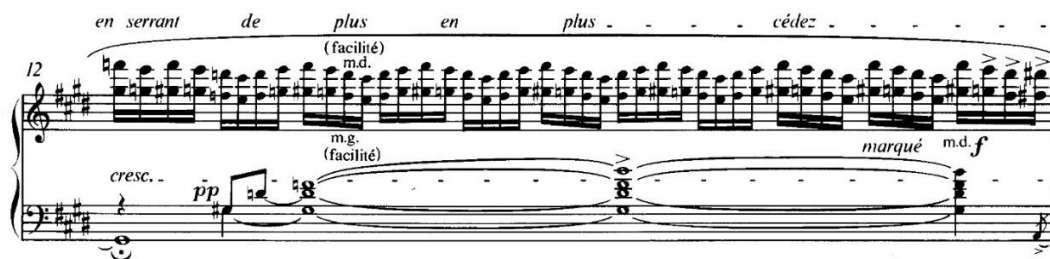


Figure 4.33. *La Fantaisie Roumaine*, bar 12

4.3.3 Double Thirds

An immediate application of double thirds in the right hand marks the beginning of the *friska* section. Initially the hand requires no tiring positions or movements, administering fine control over the thirds in bars 33-34 (see Figure 4.31) via the intrinsic hand muscles. Bars 37-39 show a development in complexity (see Figure 4.34), but it is from bar 50 on that configuration of double thirds starts increasing in intensity (see Figure 4.35). Here again it strongly resembles one of Chopin's studies, Op. 25 No. 6. It demands the same quasi trill in double thirds as found in the opening of Op. 25 No. 6, except in minor thirds. This specific minor-third trill starting on B# and D# also appears in bar 53 of Chopin's study.

Figure 4.34. *La Fantaisie Roumaine*, bars 36-39

a)

b)

Figure 4.35. Bar 53 of Chopin's Op. 25 No. 6 Etude compared to bars 49 and 50 of Cziffra's *La Fantaisie Roumaine*: a) Chopin – Etude Op. 25 No. 6, bar 53; (b) Cziffra - *La Fantaisie Roumaine*, bars 49 and 50

Later, in bars 109 and 110, both hands are required to play a torrent of double thirds in contrary motion (see Figure 4.36). The joint configuration of the hand makes these double thirds particularly difficult to execute. The author discussed certain hand positions earlier in chapter 3, specifically those found in figures 3.9 and 3.14. The double thirds, especially those moving chromatically in minor thirds, require the hands to adapt a combination of these positions.

Every finger has its PIP and DIP joints extended, while most of the movements occur at the already flexed MCP joints (Figure 3.14). The lumbrical and interossei muscles are felt tiring the longer this action endures. In addition to this, the thenar and hypothenar eminences are also involved as the muscles responsible for bringing the thumb and little finger into opposition with one another contract (Figure 3.9). We see the thumb flexing and the little finger adducting to the point where they are below fingers 2, 3 and 4 in order to play the minor thirds requiring fingers 5-1. The result

is usage of all the intrinsic hand muscles. At the same time, it gives insight to the difficulty underlining the fine control required not only for this etude, but also for Chopin's Op. 25 No. 6.

Figure 4.36. *La Fantaisie Roumaine*, bars 109 and 110

4.3.4 Outwards Octave-Glissando

This etude also presents a rare case of octave-glissandi in the right hand that moves outwards laterally (see Figure 4.37). This causes a problem for the weak little finger as it is not as strong as the thumb when it is compared to inward-moving octave-glissandi. Gát (1965:189) briefly discusses outwards-moving octave-glissandi and recommends strongly bending the third and fourth fingers. Through the author's experience, applying this provided more sturdiness to the little finger. The reason for this could be that the flexor muscles responsible for bending the third and fourth fingers also applies a certain level of flexing torque to the joints of the little finger (the little finger flexes involuntarily if the third and fourth fingers are consciously flexed).

The image displays a musical score for 'La Fantaisie Roumaine' by Franz Liszt, specifically bars 86 to 89. The score is written for piano and is in G major and 4/4 time. It consists of two systems of music. The first system (bars 86-87) features the right hand playing octaves with glissandi, marked with 'f' and 'loco'. The left hand plays chords and octaves, marked with 'loco'. The second system (bars 88-89) continues the right hand's octaves and glissandi, marked with 'ff' and 'loco'. The left hand plays a complex rhythmic pattern with triplets and sixths, marked with 'dim.', 'peu', and 'à'. The score includes various performance instructions such as 'gliss.', 'loco', and 'lié'.

Figure 4.37. *La Fantaisie Roumaine*, bars 86 to 89

4.3.5 Summary and Reflection

The author only focused on the most important movements of both sections in this fantasy, due to the large scope and highly repetitive nature of the work. The sixths in the slow section will most likely require abduction beyond the capability of pianists with smaller hands. This study also made extensive use of double third technique, which may result in fatigue of the intrinsic muscles of the hand. The difficulty of outwards-moving octave-glissandi was facilitated through flexing the third and fourth fingers. This caused involuntary flexing in the joints of the little finger, increasing its firmness. This work may potentially be practised alongside Chopin's Op. 25 No. 6 and No. 10 Etudes, because of the kinesiological similarities that they share.

4.4 La Valse Triste

As the title would lead one to suspect, this work represents one of Cziffra's more intimate creations (see Addendum D for the entire score). It is based on Ferenc Vecsey's *Valse Triste* in C minor

(1913). Vecsey (1893-1935) was well-known in Europe in the early 20th century as a Hungarian violin virtuoso and composer. It is safe to group Cziffra's reworking of this short *charakterstück* with the other three transcriptions. There is no change at all to the ternary form of the original work, as Cziffra simply fuses the original violin part and accompaniment into one coherent whole for solo piano. Great technical alteration of the accompanying harmonic figures reinforces the melodic line, which in contrast remains faithful to the original.

The acciaccaturas permeating the work are, to some extent, relevant to the kinesiological approach to these etudes. Musically it is what defines the work; there is an almost constant application of these grace notes in order to create an effect of anticipation. The notes of the bass line are stated less frequently on the first pulse and more on the preceding acciaccaturas. By all means this aspect would be a study in and of itself; a study to coordinate the left hand to be placed marginally earlier before the right, either through the little finger on single note acciaccaturas or through octave ones (see Figure 4.38).

Figure 4.38. *La Valse Triste*, bars 11-13, 29 and 32. Red lines indicate where the acciaccaturas start

4.4.1 Sigh Motifs

Up until now, very little attention has been given to the mechanics of the arm involved in tone production. While the first page of this etude does not pose any extreme challenge concerning physical exertion, it still provides food for thought regarding manner of execution. The pianist

faces decisions regarding sound production, as in the expressive sigh-motifs found in the opening bars (see Figure 4.39). Generally, one achieves this sigh-effect by using what is referred to as a ‘Mozart slur’, in which arm-weight is applied to the first note, while the second is sounded through a pivotal action of the wrist which causes the finger-hand unit to sound the key as the arm is raised.



Figure 4.39. *La Valse Triste*, bars 1-3

The sigh-effect results from a down-up (vertical) motion of the lower arm as various potential configurations of the glenohumeral and elbow joints work synchronously to bring this into effect. During reduction of weight, the muscles acting upon the wrist joint becomes more relaxed while gravity draws the hand down as the glenohumeral joint lifts the whole arm, but the flexors of the lower arm still applies a torque on the wrist and finger joints in order to meet key resistance

Considering Ortmann’s concept of force-variation (see Chapter 2.2), these differences in weight are in actuality contrasting forces produced at the surface of the keys. All three preceding etudes have mainly dealt with explicit technical feats, save certain moments in the slow section of the Romanian Fantasy. If we recall Ortmann’s findings on tone-quality, we at least know that percussiveness and intensity are the only affecting factors when dealing with the kinesiology of producing sound in a work such as this. But even so, considering that every joint and muscle can have an effect on the percussiveness and intensity of tone, the options of configurations become vast compared to simply meeting the requirements for executing a uniquely characterised technical passage, such as the alternating octaves in *Le Vol du Bourdon*.

4.4.2 Crossing hands

From bar 26 onwards (see Figure 4.40), numerous instances occur where the left hand crosses the right. Again, as in the analysis of the previous etudes, it demands that the elbow joint be brought to the torso's anterior (front) through means of both flexing and adducting the humerus via the glenohumeral joint. The elbow joint also extends the forearm to some degree to reach the desired note.

Figure 4.40. *La Valse Triste*, bars 24-28. The red circles indicate when the left hand crosses the right

4.4.3 Opposition of the Thumb and Little Finger

In some bars the performer has to connect the little finger and thumb where legato playing becomes a priority. This occurs in the physical lateral movement (upwards musically) of broken chords. Bar 34 (see Figure 4.41) indicates where the thumb (1) has to take over from the little finger. The thumb therefore moves from an octave hand position (on the G# above middle C) towards the little finger (which is holding the second G# above middle C). This momentarily induces opposition of the thumb and little finger as seen in Figure 3.9.

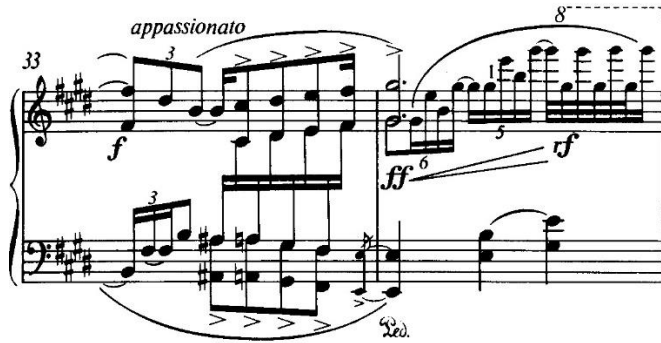


Figure 4.41. *La Valse Triste*, bars 33 and 34

4.4.4 Rapid Lateral Movement via Scales and Arpeggios.

The most technically challenging aspect of this etude appears in the form of rapid arpeggios and scales as the work reaches its climax. The first such instance (bar 49) also contains a passage where the author's technical approach differs from the score. The last two groups of the bar (see Figure 4.42) are notated so that the left hand plays the initial group and the right hand the next. The author proposes starting with the right hand and then the left, with the final F# octave taken over again by the right. The implications are the distance between fingers 4 and 5 of the left hand and the positioning of the left arm's elbow in front of the torso to reach the highest register. Larger abduction is required between fingers 4 and 5 when the left hand plays the score's intended five-note group before the end of the run. Larger degrees of upper arm adduction and flexion are also required of the left arm to reach this register, which is why the author opted to use the right hand on the higher register instead.

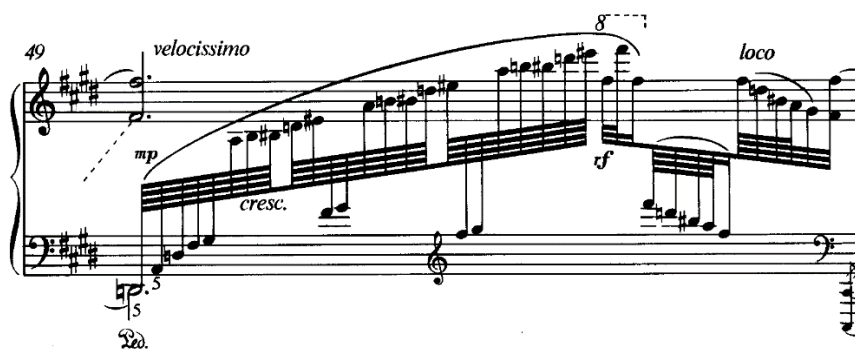


Figure 4.42. *La Valse Triste*, bar 49

Later in bar 56 (see Figure 4.43) the greatest range of lateral movement occurs with almost no repose in tempo. The arpeggios become a combination of said lateral movement and crossing the left hand over the right. As soon as the scale reaches the top, the left hand jumps left (bottom of the keyboard) in the opposite direction, more than three octaves.

Figure 4.43. *La Valse Triste*, bars 56-59

4.4.5 Summary and Reflection

La Valse Triste is an explicit example of how technique and interpretation are intertwined. From the opening bars, the performer has to opt for a certain combination of joint movements in order to create the desired (subjective) shaping of melodic lines and accompaniment. It is definitely the least virtuosic work of the four etudes, with only few displays of acrobatic pianism, although it requires that the left elbow be brought to the front of the torso numerous times. Furthermore, there

are only few instances where thumb and little finger opposition occur. Its main challenge lies in the coordination of rapid lateral movement with actions such as the crossing over of hands.

5 Conclusion

The analysis of Cziffra's four etudes investigated the range of movements and physiological mechanics demanded from the pianist in each work. Verifiable knowledge provided by the field of kinesiology served as the foundation for the researcher's analysis of the movements at work in his own playing mechanism during performance. This in turn directly shaped the author's perception and experience with the instrument and therefore one can argue that objective knowledge shaped the author's subjective approach.

Chapter 3 provided the kinesiological foundation for the analysis, but the author also exposed that the acromioclavicular joint receives very little to no attention in piano literature. The conclusion was that pianistic movement only falls within the early phase of scapulohumeral rhythm (refer to section 3.3) and it is within this phase that an extremely small degree of acromioclavicular joint movement occurs, too small to receive much attention. It plays a supportive role in overall shoulder movement, rather than being a prime and consciously controlled joint.

During the process of analysis, the author experienced a heightened awareness of his own movements. Through exploring the various configurations of joints and choice of fingerings, the author could make more informed decisions on why certain choices yielded higher accuracy and caused less fatigue.

Concerning Cziffra's potential integration of other composer's techniques into his improvisation, there were indeed instances where correlations between Cziffra, Chopin and Liszt appeared. After comparing Cziffra's etudes to all of Liszt's 'Transcendental' Etudes, the author found that *Le Vol du Bourdon* and *Tritsch-Tratsch Polka* contained technical material found in Liszt's fifth etude, *Feux follets*, and not the other 'Transcendental' Etudes. This indicates that some of the physiological dimensions in Liszt's *Feux follets* had a definite part to play in the conception of Cziffra's works.

It became apparent through the study that kinesiological analysis of the techniques and pianistic effects found in a work opens up new dimensions where performers can control and fine-tune their own movements through gaining an intimate knowledge of bodily mechanics. Small, conscious adjustments to certain movements can be made in order to improve accuracy. An example would be where the thumbs have to shift rapidly from playing on the white keys to the black keys, which requires moving the upper arm forward by flexing the glenohumeral joint. As the author consciously focussed on registering and adjusting movement of the upper arm, accuracy improved. Performers should also explore different fingerings and therefore different movements in order to tailor their technique to their individual physiology.

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Addendum A

Le Vol du bourdon

Presto (MM ♩ = 96, min.84) N. Rimsky-Korsakov – G. Cziffra

gwa *sempre leggiero* *loco*

rinf. *f* *senza Ped.*

mf *p*

mf *p*

mf *fp*

fp

9 *b*

11 *b*

Musical score for piano, measures 13-32. The score is written in treble clef with a key signature of one flat (B-flat). It features various dynamics and articulations:

- Measures 13-15: *fp* (fortissimo piano), *sfz* (sforzando), and *leggero* (light). Includes fingerings: 3 1, 4 2, 2 5, 2 3, 3 4, 1 2, 2 1.
- Measures 16-18: *f* (forte), *sfz* (sforzando), *marcato* (marked), and *p subito* (piano subito). Includes a *♯* symbol.
- Measures 19-20: *pp* (pianissimo), *leggero* (light).
- Measures 21-22: *mf* (mezzo-forte).
- Measures 23-25: *f* (forte), *sfz* (sforzando), *mf* (mezzo-forte), *p* (piano), and *mp* (mezzo-piano). Includes fingerings: 5 3, 4 3, 4 1, 3 1, 1 1, 1 1, 1 1, 1 1. Includes a *♯* symbol and the instruction *una corda*.
- Measures 26-28: *p* (piano).
- Measures 29-32: *mp* (mezzo-piano). Includes fingerings: 3 4, 5 4, 3 1. Includes a *♯* symbol.

32 *pp* *pp* *Λα.*

34 *mp* *incalzando poco a poco* *mp* *senza Λα.* *tre corde*

36 *mf* *mf*

38 *mp* *mp*

40 *cresc.* *f* *cresc.* *ff* *f*

42 *mp* *gva* *cresc.* *Λα.* *Λα.* *Λα.* *Λα.* *Λα.* *Λα.* *Λα.* *Λα.* *Λα.* *Λα.* *Λα.* *Λα.*

8 *f furioso cresc. sempre* *loco* *trillo vibrante* *sfz*

f furioso *cresc. sempre* *1* *4* *1* *sfz* *tr* *2do.*

47 *tr* *sfz* *tr* *5* *4* *fp* *lunga* *tr* *lunga* *fp* *2do.*

tr *sfz* *tr* *5* *4* *fp* *lunga* *tr* *lunga* *fp* *2do.*

50 *velocissimo* *pp subito e leggero* *8 va* *senza 2do.*

velocissimo *pp subito e leggero* *8 va* *senza 2do.*

52 *8 va* *prima volta segue* *soltanto seconda volta*

8 va *prima volta segue* *soltanto seconda volta*

54 *8 va*

8 va

a tempo subito

56 *f* *loco* *sotto* *sopra*

loco

58 *mf*

mf

60 *f* *loco* *sopra* *loco*

62

64 *ff* *rinforz.*

ff *2do* *2do* *2do*

66 *f* *mf* *f*

f *fp* *3* *5 1 3*

Musical notation for measures 68-70. Measure 68 features a piano with a forte (*f*) dynamic and a piano (*p*) marking. An 8-measure repeat is indicated by a dashed line above the staff. The notation includes sixteenth-note chords and eighth-note accompaniment. Measure 70 is marked *loco* and features a quasi-trillo.

Musical notation for measures 70-72. Measure 70 is marked *ffp* and *quasi trillo*. Measure 71 includes a triplet of sixteenth notes. Measure 72 is marked *p* and features a repeat sign.

Musical notation for measures 72-74. Measure 72 is marked *1ma volta* and *p*. Measure 73 includes a repeat sign and a *rinf.* marking. Measure 74 is marked *ff* and features a repeat sign.

Musical notation for measures 74-76. Measure 74 is marked *ff* and features a repeat sign. Measure 75 is marked *p* and features a repeat sign.

Musical notation for measures 76-80. Measure 76 is marked *2da volta* and *p*. Measures 77-79 include repeat signs and a *ff* marking.

Musical notation for measures 80-82. Measure 80 is marked *8* and *ff*. Measure 81 is marked *loco* and *smorzando*. Measure 82 is marked *8* and features a repeat sign.

Addendum B

Tritsch-Tratsch polka

Allegro volante e molto leggero (MM ♩ = 160) J. Strauss jr. – G. Cziffra

The musical score is written for piano and left hand. It begins with a treble clef and a key signature of two sharps (F# and C#). The tempo is marked 'Allegro volante e molto leggero' with a metronome marking of 160. The dynamics start at *mp*. The score consists of several systems of music. The first system (measures 1-3) features a complex rhythmic pattern with many sixteenth notes. The second system (measures 4-5) continues this pattern. The third system (measures 6-7) shows a change in the right hand's texture. The fourth system (measures 8-10) is marked *pp* and *velocissimo*, featuring a rapid sixteenth-note run. The fifth system (measures 11-13) is marked *8va* and continues the rapid run. The sixth system (measures 14-16) is marked *loco* and *p*, with the instruction *leggiero*. The seventh system (measures 17-19) includes the instruction *senza ped.* and features a more melodic line in the right hand. The score is filled with various articulations, including slurs, accents, and fingerings.

Musical score for measures 13-16. The piece is in G major (one sharp) and 3/4 time. Measure 13 starts with an 8-measure rest. The music features a complex rhythmic pattern with eighth and sixteenth notes, often beamed together. The right hand has a melodic line with grace notes, while the left hand provides a steady accompaniment.

Musical score for measures 17-20. Measure 17 begins with an 8-measure rest. The tempo marking *accel.* is present, followed by *loco* and *veloce possibile*. The music becomes more technically demanding with rapid sixteenth-note passages. A dynamic marking of *mf* is shown. The piece concludes with the tempo marking *a tempo*. Performance instructions include *sempre stacc.* and *ff*.

Musical score for measures 21-22. Measure 21 starts with an 8-measure rest. The music continues with intricate sixteenth-note patterns in both hands, featuring some five-fingered chords. The right hand has a melodic line with grace notes. The left hand has a rhythmic accompaniment.

Musical score for measures 23-24. Measure 23 begins with an 8-measure rest. The tempo marking *loco* is present. The music features rapid sixteenth-note passages. The right hand has a melodic line with grace notes, and the left hand has a rhythmic accompaniment.

Musical score for measures 25-28. Measure 25 starts with an 8-measure rest. The music continues with intricate sixteenth-note patterns. The right hand has a melodic line with grace notes, and the left hand has a rhythmic accompaniment. The piece concludes with a *stacc.* marking and a triplet of eighth notes in the right hand.

27 *strepitoso* *loco*
ff *sfz* *loco*

29 *cresc.*
mp *cresc.*

31 *loco* *f dim.* *loco* *p* *sfz*

33 *sostenuto loco* *accel.* *poco a poco*
f *sfz* *sfz* *sfz* *sfz* *sfz*

35 *a tempo*
p sub. *cresc.* *molto*

37 *ff* *loco* *fp*

40

42 *cresc.* *più espressivo* *dim.*

44 *allargando* *molto*

46 *a tempo* *p* *scherzando* *loco* *leggiere*

48 *loco* *leggiere*

51 *loco* *f* *p*

53 *accel.* *poco* *a* *poco* *allargando* *loco*
leggiere *fp cresc.* *leggiere* *poco* *a* *poco* *ff* *mf*

56 *molto*
cre *scen* *do*

Tempo un poco ritenuto (MM ♩=144) (Tempo II)

58 *f marcato* *loco*

Musical score for measures 60-61. The piece is in G major (one sharp) and 2/4 time. Measure 60 features a right-hand melody with an 8-measure repeat sign and a 'loco' section. The left hand provides a bass line. The instruction *sempre f marcato* is present. Measure 61 continues the right-hand melody with an 8-measure repeat sign and a 'loco' section. Fingerings 1, 1, 1, 3, and 4 are indicated.

Musical score for measures 62-63. Measure 62 continues the right-hand melody with an 8-measure repeat sign. Measure 63 features a 'loco' section in the right hand. The left hand continues with a bass line. A fermata is placed over the final note of measure 63.

Musical score for measures 64-65. Measure 64 begins with a 'Tempo I' marking. The right hand has a melodic line with a fermata. The left hand has a bass line with a fermata. Measure 65 features a 'loco' section in the right hand with fingerings 2, 4, 3, and 4. The left hand has a bass line with a fermata. The instruction *fp leggiero* is present.

Musical score for measures 67-68. Measure 67 features a right-hand melody with a fermata and a left-hand bass line with a fermata. Measure 68 features a 'loco' section in the right hand with an 8-measure repeat sign and fingerings 1, 4, 1, and 4. The left hand has a bass line with a fermata.

69 *sostenuto loco* *accel.*

sfz f

Red. *Red.* *sfz Red.* *sfz Red.* *sfz Red.*

Tempo II

72 *mf cresc.* *stacc. e marc.* *fp*

cresc.

Red.

75 *pp leggiero*

Red.

78 *dolce p* *pp*

pp

Red. *Red.* *Red.*

81 *pp*

Red. *Red.* *Red.*

84 *lusingando* *p* *sempre staccato* *loco* *accel.*

Tempo I *f* *loco* *ritenuto* *sempre staccato*

Tempo II *mf* *loco* *mf* *f*

91 *loco* *mf* *rf* *mf* *f* *loco*

93 *p sub. staccato* *rf* *(p)* *f* *loco*

95 *mf* *loco* *p dolce*

97 *mf* *loco*

99 *ff furioso* *loco* *loco* *leggiere* *p sub.* *ff*

101 *loco* *loco* *loco* *leggiere* *p sub.* *ff* *marcato*

103 *loco* *loco* *leggero*

p sub. *ff*

marcato *Red.* *Red.*

105 *stacc. sempre* *loco* *Tempo I* *leggero* *m.s.*

stacc. sempre *loco* *Tempo I* *leggero* *m.s.*

stacc. sempre

108 *f* *leggero sempre* *loco*

f *leggero sempre* *loco*

f *leggero sempre*

111 *fp* *f*

fp *f*

fp *Red.*

113 *loco*

loco

Red. *Red.*

115 *poco a poco accelerando*

ff

loco

ped.

119 **Tempo I**

loco

ff *martellato*

loco

123 **Tempo II**

f *sfz* *sfz* *sfz* *sfz*

ped.

Allegro stretto (MM ♩ = 160)

125 *loco*

f *f* *f* *f*

sempre stacc. e marc.

loco

129 *leggiro loco* *mp*

133

136 *cresc.* *f* *ff* *cresc.*

139 *ff* *loco*

142 *loco* *rit.* *loco* *nu - en - do* *mf* *ff* *f* *loco*

Addendum C

La Fantaisie roumaine

G. Cziffra

Lent, sans rigueur
(MM ♩ = 40-66: très librement)

toujours très expressivement

cédez - 3 -

f *mf* *p* *tr* *3* *3* *3* *3*

4 *3* *m.d.* *pp* *cresc.* *3* *5*

6 *mf* *p* *tr* *lié* *cédez - - -* *3* *3* *3* *3* *5* *4* *3* *3*

8 *tr* *mf* *m.d.* *mp* *mp* *m.g.* *mf* *rf*

(9) *retenu* - - - - - *au Mouvt.* *lié* - - - - - *serrez - - au Mouvt.*

mp *f* *calme* *dim.* *calme* *p* *rf*

sed. *f* *sed.* *sed.* *sed.*

en serrant de plus en plus - - - - - *cédez - - - - -*

12 *(facilité)* *m.d.* *m.g. (facilité)* *marqué* *m.d.* *f*

cresc. *pp*

13 *retenu* - - - - - *cédez - - au Mouvt.* *cédez - -*

calme *dim.* *p* *mal.* *pp* *mp*

sed. *sed.* *sed.* *sed.* *sed.*

15 *long* *très long*

p *mf* *p* *long* *très long*

sed. *sed.* *sed.* *sed.* *sed.*

17 *éteint* *très calme* *long* *cédez - - au Mouvt.* *doux* *calme*

4 *3* *2* *2* *2* *2* *2* *2* *mf*

sed. *sed.* *sed.* *sed.* *sed.* *sed.*

18 *mp* *égal, sans hâte* *loco* *cédez un peu*

p *tr* *3* *3* *3* *6* *6* *rf*

20 *tr* *rapide* *f* *au Mouvt.*

3 *8* *p* *f* *5* *5* *5*

21 *loco* *long* *pp* *pp*

6 *long* *3* *pp* *pp* *6* *12* *12*

22 *lié* *p* *pp* *très doux et calme* *très lentement, puis cresc., et serrez de plus en plus* *lié* *trem. très égal* *ppp* *pp* *p*

lié *p* *pp* *très doux et calme* *très lentement, puis cresc., et serrez de plus en plus* *lié* *trem. très égal* *ppp* *pp* *p* *8* *14* *6* *12* *6*

Musical score for measures 24-25. Measure 24 features a treble clef with a key signature of three sharps (F#, C#, G#) and a 3/4 time signature. The right hand plays a series of eighth notes with fingerings 8, 6, 8, 6, 6, 8, 8. The left hand plays a bass line with chords. Measure 25 continues the eighth-note pattern with fingerings 6, 4, 4, 4. A dynamic marking of *rf* is present at the end of the measure.

Musical score for measure 25. The right hand features a triplet of eighth notes (fingerings 3, 5) followed by sixteenth-note patterns with fingerings 6, 6, 6, 6, 6. The left hand has a *pp* dynamic marking and the instruction *très doux*. The right hand ends with a *martelé* (staccato) effect.

Musical score for measures 26-27. Measure 26 includes a glissando (*gliss.*) and an 8-measure *loco* passage. Dynamics range from *ff* to *mp*. Measure 27 features a *long* note with a fermata and a *retenu* (sustained) note. There are *ff* and *mf* markings in the left hand. Rehearsal marks are indicated with asterisks and $\frac{1}{2}$ *Red.*

Musical score for measures 27-28. Measure 27 starts with a *pp* dynamic and the instruction *cresc. et serrez progressivement*. The right hand has a *léger* (light) articulation. Measure 28 features a *facilité* (ease) instruction and a *léger* articulation. Fingerings 5 and 8 are shown. The right hand ends with *etc.* and a fermata. The left hand has a *mp* dynamic and a fermata.

Musical score for measures 29-30. The right hand features a complex rhythmic pattern with eighth and sixteenth notes, including triplets and groups of four and five notes. The left hand has a steady accompaniment with triplets and groups of three notes.

Musical score for measures 30-31. The right hand continues with eighth notes and triplets. The left hand features triplets and groups of three notes, with the instruction "marqué" appearing below the bass line.

Musical score for measures 31-32. The right hand includes a section marked "loco" and "cédez". The left hand has a section marked "martelé". Metronome markings are provided: (MM ♩=116) and (MM ♩=60).

Musical score for measures 32-33. The right hand features a melodic line with eighth notes and triplets, marked "cédez" and "suivez". The left hand has a bass line with triplets and groups of three notes, marked "m.s." and "dim.". The dynamic marking "ppp" is indicated at the end of the system.

Musical score for measures 33-34. The right hand includes a section marked "loco" and "bref". The left hand has a section marked "éteint". Dynamic markings include "pp", "mp", and "pp". The instruction "doux, sans hâte" is written below the left hand, and "attaquez" is written below the right hand.

Vif (II^{ème} Mouvt.: ♩ = ♩ du I^{er} Mouvt.) (MM ♩ = 40)
serrez progressivement jusqu' à la 40^{ème} mesure

Rapide (III^{ème} Mouvt.: ♩ = ♩ du II^{ème} Mouvt.) (MM ♩ = 80)

47 ⁸ *Vif (II.ème Mouvt.: ♩ = ♩ du III.ème Mouvt.) (MM ♩ = 80) mesuré loco*

ppp f martelé

pp * *sec* *Red.*

49

rf *f* *lié* *mp*

(facilité: 57ème mesure)

* *Red.* * *Red.* * *Red.* * *Red.*

(50)

Red. * *Red.* * *Red.* * *Red.* * *Red.* * *Red.* *

52

lié *loco* *(tr)* *lié*

Red. * *Red.* * *Red.* * *Red.* *

(53)

Red. * *Red.* * *Red.* * *Red.* * *Red.* * *Red.* *

55

Measures 55-56. Treble clef: 4 2 1, 4 3 2, *loco*, *dim.* - - - - *p*. Bass clef: *lié*, *Red.*, 2 3 6. Includes a dashed box over measures 55-56.

57

Measures 57-58. Treble clef: *(tr)* 1 4 3 2, *(tr)*, *(tr)*, *(tr)*, *lié*, *mp*. Bass clef: *Red.*, 4, *Red.*, *Red.*, *Red.*, *Red.*, 2 5, *Red.*

(58)

Measures 58-59. Treble clef: 5, 1 2 1, 5. Bass clef: *Red.*, *Red.*, *Red.*, 2, *Red.*, *Red.*, 3 4, *Red.*. *mf*

60

Measures 60-61. Treble clef: *f*, 2 3 4, 8, *loco*. Bass clef: *Red.*, 4, 3, *Red.*, 5, *Red.*, 5, *Red.*, 5. Includes a dashed box over measures 60-61.

(61)

Measures 61-62. Treble clef: 8, *loco*. Bass clef: *Red.*, 4, 6, *Red.*, *Red.*, *Red.*, *Red.*, *Red.*, *Red.*, *Red.*. *f*, *p*, *cresc.*

63

Musical score for measures 63-65. The piece is in G major (one sharp) and 3/4 time. Measure 63 starts with a treble clef and a dynamic of *mf*. The bass line features a triplet of eighth notes. Measure 64 continues with a dynamic of *mp* and a triplet of eighth notes. Measure 65 features a dynamic of *rf* and a triplet of eighth notes. A first ending bracket spans measures 63-65, with a *loco* marking above measure 65. A second ending bracket spans measures 63-65, with a *loco* marking below measure 65. The score includes various articulations such as accents and slurs.

(64)

Musical score for measures 64-66. The piece is in G major (one sharp) and 3/4 time. Measure 64 starts with a treble clef and a dynamic of *rf*. The bass line features a triplet of eighth notes. Measure 65 continues with a dynamic of *rf* and a triplet of eighth notes. Measure 66 features a dynamic of *rf* and a triplet of eighth notes. The score includes various articulations such as accents and slurs.

66

Musical score for measures 66-68. The piece is in G major (one sharp) and 3/4 time. Measure 66 starts with a treble clef and a dynamic of *p*. The bass line features a triplet of eighth notes. Measure 67 continues with a dynamic of *p* and a triplet of eighth notes. Measure 68 features a dynamic of *pp* and a triplet of eighth notes. The score includes various articulations such as accents and slurs.

(67)

Musical score for measures 67-69. The piece is in G major (one sharp) and 3/4 time. Measure 67 starts with a treble clef and a dynamic of *p*. The bass line features a triplet of eighth notes. Measure 68 continues with a dynamic of *p* and a triplet of eighth notes. Measure 69 features a dynamic of *p* and a triplet of eighth notes. The score includes various articulations such as accents and slurs.

69

Musical score for measures 69-71. The piece is in G major (one sharp) and 3/4 time. Measure 69 starts with a treble clef and a dynamic of *p*. The bass line features a triplet of eighth notes. Measure 70 continues with a dynamic of *p* and a triplet of eighth notes. Measure 71 features a dynamic of *p* and a triplet of eighth notes. The score includes various articulations such as accents and slurs.

70

marqué *loco* *trem.*

cresc. *rf* *sf pp* *mf* *rf*

72

mp *rf* *mp* *p cresc.*

(73)

peu *à* *peu* *f martelé*

75

loco *rf* *dim.* *rf* *rf*

loco

(76)

rf *mp*

78

Musical score for measures 78-79. The right hand features a melodic line with trills (tr) and slurs, with fingerings 5, 1, 4, 3, 2, 3, 3, 4, 4. The left hand has a bass line with slurs and triplets, marked *dim.* and *p*. The key signature has two sharps (F# and C#).

(79)

Musical score for measures 79-80. The right hand continues with trills and slurs, including a *cresc.* marking. The left hand has a bass line with slurs and triplets, marked *peu*. The key signature has two sharps.

81

Musical score for measures 81-82. The right hand has a melodic line with slurs and triplets, marked *à* and *peu*. The left hand has a bass line with slurs and triplets, marked *f*. The key signature has two sharps.

(82)

Musical score for measures 82-83. The right hand has a melodic line with slurs and triplets, marked *loco*. The left hand has a bass line with slurs and triplets, marked *martelé*. The key signature has two sharps.

84

Musical score for measures 84-85. The right hand has a melodic line with slurs and triplets, marked *marqué, détaché*. The left hand has a bass line with slurs and triplets. The key signature has two sharps.

85 *bruyant* *ff* *f* *loco*

(86) *gliss.* *8^{va} loco* *8^{va} loco* *(loco)* *gliss.* *gliss.* *f* *f*

88 *gliss.* *8^{va} loco* *gliss.* *gliss.* *ff* *lié* *dim.* *peu* *à*

90 *dim.* *peu* *à* *peu* *marqué* *pp* *léger* *sec*

(91) *mp* *cresc.* *peu* *f*

Detailed description: This page of a musical score contains six systems of piano music, numbered 85 through 91. Each system consists of a grand staff with a treble and bass clef. The music is written in a key with two sharps (F# and C#) and a 4/4 time signature. Measure 85 features a 'bruyant' (noisy) texture with a forte (ff) dynamic and includes an 8va lococo marking. Measure 86 shows glissando passages with 'gliss.' markings and '8va loco' markings, with dynamics of forte (f). Measure 88 continues with glissando and includes a 'lié' (tied) note, a 'dim.' (diminuendo) marking, and the word 'peu' (a little). Measure 90 features a 'marqué' (marked) note, a 'pp' (pianissimo) dynamic, and 'léger' (light) and 'sec' (dry) markings. Measure 91 shows a 'mp' (mezzo-piano) dynamic, a 'cresc.' (crescendo) marking, and another 'peu' marking. The score includes various musical notations such as slurs, accents, and fingerings.

93

à peu - - mf pp subitement, léger

5 1

2 1 3 1 5 2

This system contains measures 93 and 94. The right hand has a melodic line with a fermata over the first measure and a rapid sixteenth-note passage in the second. The left hand has a steady eighth-note accompaniment. Dynamic markings include *mf* and *pp subitement, léger*. Fingerings 5 and 1 are indicated for the right hand in measure 94, and 2, 1, 3, 1, 5, 2 for the left hand in measure 94.

95

3 5 2 5 2 5 3 5 2 1 5

This system contains measures 95 and 96. The right hand features a complex sixteenth-note pattern with fingerings 3, 5, 2, 5, 2, 5, 3, 5, 2, 1, 5. The left hand continues with eighth-note accompaniment. A repeat sign is present at the end of measure 95.

(96)

8

mp léger

tf p

3 3

This system contains measures 96 and 97. Measure 96 is marked *mp léger*. Measure 97 has a dynamic shift to *tf p* and includes triplets in both hands. A repeat sign is at the end of measure 97.

98

8

tf p

5 5

This system contains measures 98 and 99. Measure 98 is marked *tf*. Measure 99 is marked *p* and includes a quintuplet in the left hand. A repeat sign is at the end of measure 99.

(99)

8

loco

mp léger

This system contains measures 99 and 100. Measure 99 is marked *loco*. Measure 100 is marked *mp léger* and includes a quintuplet in the left hand. A repeat sign is at the end of measure 100.

101

diminuez *peu* *à*

And.

(102)

peu

And.

104

pp lointain *doux*

And.

(105)

cresc. *peu* *à* *peu*

And.

107

mf subitement détaché

And.

108 *loco* *mf*

109 *lié* *f* *bryant* *loco*

110

111 *f* *renforçez* *(tr)*

(112) *f* *toujours renforçez* *ff* *martelé* *(tr)*

114 *ff martelé*

115 *sfz* *f*

117 *p léger* *mp* *loco*

118 *mf* *détaché* *p* *loco*

120 *ff* *lié* *mp*

(121) 8 *loco*
p léger *cresc.*
Red. *Red.* *Red.*

123 8 5 *loco*
f *cresc.* *bruyant*
Red. *Red.* *Red.*

124 *mf*
mf *diminuez* *peu à peu*
Red. *Red.* *Red.*

126 *f* *pp*
Red. (tenez jusqu'à la mesure 132)

(127)
Red.

129

dim. peu à peu

This system contains measures 129 and 130. Measure 129 features a treble clef with a key signature of two sharps (F# and C#) and a 3/4 time signature. The right hand plays a series of eighth-note chords with fingerings 3, 4, 3, 4. The left hand plays a steady eighth-note accompaniment. Measure 130 continues the accompaniment. The dynamic marking 'dim. peu à peu' is written across the measures.

(130)

à peine

pp *ppp*

This system contains measures 130 and 131. Measure 130 has a treble clef with a key signature of two sharps and a 3/4 time signature. The right hand has a melodic line with fingerings 4 and 8, and a dynamic marking of *pp*. Measure 131 continues the melodic line with a dynamic marking of *ppp*. The left hand provides a consistent eighth-note accompaniment.

132

vif détaché
loco

mp
toujours détaché
pp

p

sec

This system contains measures 132 and 133. Measure 132 has a treble clef with a key signature of two sharps and a 3/4 time signature. The right hand plays a rapid eighth-note passage with fingerings 1 2 1 2 1 and 1 2 1 2. The left hand has a dynamic marking of *pp* and the instruction 'sec'. Measure 133 continues the passage with fingerings 1 2 3 1 3 2 and 1 5 3 2, and a dynamic marking of *p*.

(133)

loco

f

This system contains measures 133 and 134. Measure 133 has a treble clef with a key signature of two sharps and a 3/4 time signature. The right hand has a melodic line with fingerings 1 2 3 1 3 2 and 1 5 3 2, and a dynamic marking of *f*. Measure 134 continues the melodic line with fingerings 8 and 14, and a dynamic marking of *f*. The left hand has a dynamic marking of *f* and the instruction 'loco'.

135

loco

f

p détaché

This system contains measures 135 and 136. Measure 135 has a treble clef with a key signature of two sharps and a 3/4 time signature. The right hand has a melodic line with fingerings 8 and 15, and a dynamic marking of *f*. Measure 136 continues the melodic line with fingerings 8 and 15, and a dynamic marking of *p* and the instruction 'détaché'. The left hand has a dynamic marking of *f* and the instruction 'loco'.

(136)

mp détaché

138

p lié *pp doux*

(139)

loco *cresc.* *ff*

141

sfp *cresc.* *mf* *mp léger*

(142)

mp

144

léger p dim. pp lointain

lié

(145)

Plus vite (IV.ème Mouvt)(MM ♩=90)

(♩ = ♩)

147

cresc. peu

lié

(148)

mf peu

150

f

151 ⁸

153 ⁸ *marqué* *loco*

(154) ⁸ *loco*

156 ⁸ *loco*

(157) ^{5 3 4} ^{1 (tr) 3} ^{(tr) 3} ^{(tr) 3} *p* *mf* *ff martelé*

159

8

p

p

8

(160) *loco*

f

p léger

162

(163)

165

(p)

(166)

(p) *crescendo et serrez très progressivement*

8

Detailed description: This system covers measures 166 and 167. The music is in a key with two sharps (D major or F# minor). The right hand features a melodic line with slurs and accents, while the left hand plays a steady eighth-note accompaniment. The dynamic starts at piano (p) and increases as indicated by the instruction 'crescendo et serrez très progressivement'. A fermata is placed over the final measure of the system.

168

(mf)

8

Detailed description: This system covers measures 168, 169, and 170. The musical texture continues with the same melodic and accompanimental patterns. The dynamic is marked mezzo-forte (mf). A fermata is placed over the final measure of the system.

(169)

(f) *martelé*

8

Detailed description: This system covers measures 169 and 170. The dynamic is marked forte (f) and the texture is described as 'martelé' (hammered). The right hand has slurs and accents, and the left hand has a steady eighth-note accompaniment. A fermata is placed over the final measure of the system.

171

Cadence loco rubato (mais vif)

passionné

ff *marqué* *mf*

8

Detailed description: This system covers measures 171 and 172. It begins with a 'Cadence loco rubato (mais vif)' section. The right hand has a melodic line with slurs and accents, and the left hand has a steady eighth-note accompaniment. The dynamic is marked fortissimo (ff) and mezzo-forte (mf). The section ends with a 'passionné' section. A fermata is placed over the final measure of the system.

(172)

loco

rapide *bryant*

8

Detailed description: This system covers measures 172 and 173. The right hand has a melodic line with slurs and accents, and the left hand has a steady eighth-note accompaniment. The dynamic is marked forte (f). The section ends with a 'loco' section. A fermata is placed over the final measure of the system.

1^{er} Mouvt! (♩=40) puis serrez progressivement - - - jusqu'au - - - 5 4 - -

174 *long*
mp *p*

176 **II^{ème} Mouvt!** (Vif) (MM ♩=80) *loco*

(177) *bruyant*

179 *f marqué*

(180) *mf*

182

8

cresc. peu à peu

183

8

184

8

trionphant

loco

ff

loco

ff

sopra

185

8

loco

loco

ff

sopra

186

12

12

12

12

ff

ff

ff

ff

Musical score for measures 187-188. Measure 187 features a grand staff with a treble clef and a bass clef. The right hand has an 8-measure arpeggiated figure with a *loco* marking and a *ff* dynamic. The left hand has a 12-measure arpeggiated figure. Measure 188 continues the arpeggiated figures with a *ff* dynamic. The system ends with a *Cadence* marking and a *ff* dynamic. A *Seo. (tenez)* marking is present below the right hand.

rubato (mais vif)

Musical score for measures 188-189. Measure 188 is marked *marqué* and *mf*. The right hand has a 6-measure arpeggiated figure. Measure 189 continues with a 6-measure arpeggiated figure. The system ends with a *ff* dynamic and a *Seo. (tenez) passionné* marking.

Musical score for measures 189-190. Measure 189 features a complex arpeggiated figure with multiple 6-measure segments. Measure 190 continues with a 6-measure arpeggiated figure. The system ends with a *ff* dynamic and a *Seo.* marking.

Musical score for measures 190-191. Measure 190 is marked *rapide* and *bruyant*. The right hand has an 8-measure arpeggiated figure with a *loco* marking. The left hand has a 6-measure arpeggiated figure. Measure 191 continues with an 8-measure arpeggiated figure with a *loco* marking. The system ends with a *ff* dynamic and a *Seo.* marking.

Musical score for measures 191-200. Measure 191 is marked *au Mouv! (Vif)* and *marqué*. The right hand has an 8-measure arpeggiated figure with a *loco* marking and a *dim.* marking. The left hand has a 3-measure arpeggiated figure. Measure 192 continues with an 8-measure arpeggiated figure with a *loco* marking. Measure 193 continues with an 8-measure arpeggiated figure with a *loco* marking. Measure 194 continues with an 8-measure arpeggiated figure with a *loco* marking. Measure 195 continues with an 8-measure arpeggiated figure with a *loco* marking. Measure 196 continues with an 8-measure arpeggiated figure with a *loco* marking. Measure 197 continues with an 8-measure arpeggiated figure with a *loco* marking. Measure 198 continues with an 8-measure arpeggiated figure with a *loco* marking. Measure 199 continues with an 8-measure arpeggiated figure with a *loco* marking. Measure 200 continues with an 8-measure arpeggiated figure with a *loco* marking. The system ends with a *dim.* marking and a *Seo. (tenez jusqu'à la mesure 200)* marking.

(192) *mp* *(tr)* *(tr)* *(tr)* 8 *pp* *lointain* *lié* *p*

194 *loco* 8 *lié* *pp*

(195) 8 *à peine* *mp* *(pp)* *p* *léger* *ppp*

197 8 *tr* *pp*

cédez . . . **Rapide** (III^{ème} Mouv.^t ♩ = ♩ du Mouv.^t précédent) (MM ♩ = 80)

199 *long loco* *f* *f* 10 10 8 *loco court* *loco court* *ppp*

Addendum D

La Valse triste

Allegretto
sempre rubato ed espressivo assai

F. Vecsey – G. Cziffra

lunga a tempo

mf

largamente

ritardando

a tempo loco

mp dim.

pp

p

mp

dim.

rall.

p

pp

mp

mf

dim.

24 *incalzando poco a poco*

p *pp* *mp*

1 3 2 1 3 2 6

24 25 26 27 28

29

mf *f* *mp*

3 6 4 5

29 30 31 32

33 *appassionato*

f *ff* *f* *loco* *loco*

8

3 5 6 7 3

33 34 35 36

37

f *loco* *loco*

8

1 3 5 6 1 3 2

37 38 39 40

Musical score for measures 40-43. The piece is in D major (two sharps) and 3/4 time. Measure 40 features an 8-measure arpeggiated figure in the right hand, marked *loco*. Measure 41 includes a trill in the right hand and a *ff* dynamic marking. Measure 42 continues the 8-measure arpeggiated figure, also marked *loco*. Measure 43 shows a continuation of the arpeggiated figure with a *f* dynamic marking. The left hand provides a steady accompaniment with eighth notes and chords.

Musical score for measures 44-45. Measure 44 is characterized by a *martellato* (hammered) texture in the right hand, consisting of rapid sixteenth-note chords, with a *ff* dynamic marking. Measure 45 continues this texture. The left hand plays a rhythmic accompaniment of eighth notes.

Musical score for measures 46-48. Measure 46 features an 8-measure arpeggiated figure in the right hand, marked *loco*. Measure 47 includes a *quasi diminuendo* marking and continues the arpeggiated figure. Measure 48 shows the arpeggiated figure with a *f* dynamic marking. The left hand accompaniment includes triplets and eighth notes.

Musical score for measures 49-51. Measure 49 is marked *velocissimo* and *mp*, featuring a *cresc.* (crescendo) marking. Measure 50 includes an 8-measure arpeggiated figure in the right hand, marked *loco*. Measure 51 continues the arpeggiated figure, marked *incalzando poco a poco* and *loco*, with a *rf* dynamic marking. The left hand accompaniment includes triplets and eighth notes.

51 *loco*

3 6 8 8 6 8 3

loco

loco

loco

loco

55 *martellato*

6 6 6 8 6 6 6

loco

loco

loco

56 *passionato possibile*

velocissimo

ff

12 12

m.s. ad lib.

m.s. ad lib.

58 *loco*

5 13 19 18

loco

60

quasi trillo

loco

rit.

Musical score for measures 60-61. The system consists of two staves. The upper staff is in treble clef with a key signature of two sharps (F# and C#). It features a melodic line with a 'quasi trillo' indicated by a dashed line and a 'loco' marking. The lower staff is in bass clef, providing harmonic support with chords and moving lines. Dynamics include *mf* and *mp*. Fingerings are indicated with numbers 1-5. A 'rit.' (ritardando) marking is present at the end of the system.

61

ritenuto - - molto - -

poco slentando - - tranquillo

legato

ad lib. pp

p dolcissimo

Musical score for measures 61-63. The system consists of two staves. The upper staff continues the melodic line with 'ritenuto - - molto - -' and 'poco slentando - - tranquillo' markings. The lower staff features a 'legato' marking and 'ad lib. pp' and 'p dolcissimo' dynamics. Fingerings and articulation marks are present throughout.

64

egualmente

rubato

Musical score for measures 64-66. The system consists of two staves. The upper staff has a 'legato' marking and 'ad lib. pp' and 'p dolcissimo' dynamics. The lower staff features a 'rubato' marking. Fingerings and articulation marks are present throughout.

67

rit.

Musical score for measures 67-69. The system consists of two staves. The upper staff has a 'rit.' (ritardando) marking. The lower staff features a 'rubato' marking. Fingerings and articulation marks are present throughout.

70 *loco* *con resignazione* *espressivo mp*

pp *calmo*

74 *tranquillo* *pp* *8 loco* *mp* *rall. 8 loco* *loco*

78 *accel. quasi trillo* *ppp* *leggerissimo* *a tempo* *mp*

80 *molto rit.* *a tempo rit. molto* *loco*

pp *p* *ppp* *pp*

cantabile