The Melody Phrasing Curve

A Visual Tool for Illustrating Perceived Musical Dynamics

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ABSTRACT

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In Western classical music traditions, conventional ways of considering melody have been established. The tones of a melody phrase might be experienced as building up a continuous line moving between dynamical culmination points and relaxation points. In this study, a special visual tool called the Melody phrasing curve (MPhC) has been tested. The MPhC is designed according to some established conventions for performing classical music, and the intention was to explore the contingent benefit of a supplying tool that might be used in order to facilitate the communication of musical ideas in different music educational contexts on a higher level.

The present study might be regarded as a search for alternative means of developing musicians' awareness when interpreting and performing classical music. In explicit educational contexts, the MPhC might be used as a tool for clarifying the students' musical intentions, facilitating in this way the professor's role of guiding them and encouraging them to realise their own ideas when expressing themselves musically.

The MPhC is drawn by free hand into a specially designed device parallel to the systems of the printed score, visually illustrating the individually *perceived* dynamical progression of the melody part. Perceived dynamics does not refer to physical amplitudes calculated in decibels but to the subjective way a listener experiences the changing *loud* or *soft* sound levels within performed melody phrases.

In this initial study, the MPhC has been tested from the perspective of selected professional music listeners teaching different musical subjects at the Academy of Music. In the study's first phase, seven participants, five men and two women, were asked to draw curves illustrating the dynamical progression of the melody part, as experienced by them when listening to excerpts from five stylistically diverging classical piano pieces recorded on tape.

The results reveal resemblances as well as discrepancies between the phrasing curves representing the corresponding recordings. There seems to be more resemblances between the shapes of the individual curves in structurally simple homophone music than in music that may be characterised as complex in a structural sense. In this context, no accurate conformity was expected. The potential benefit of a phrasing curve in educational situations might be compared to the usefulness of a hand-drawn map describing approximately where to go.

Since the visual appearance of the printed score parallel to the MPhC device might have affected the shape of the drawn phrasing curves, the study's second phase was carried out. The purpose was to test if dynamical characteristics within each one of three differently performed recordings of Schumann's piano composition *Von fremden Ländern und Menschen* might be visualised by means of the MPhC. The results reveal many similarities between the curves representing one and the same version of the composition. In return, the curves drawn by each one of the participants representing the three different versions are clearly diverging in a way that seems to correspond to the specific dynamical characteristics of the respective recordings.

In a forthcoming study, the MPhC will be explored in a way including participants performing music themselves, drawing phrasing curves and listening to their own recordings, as well as in-depth-interviews, giving the participants an opportunity to express their personal reactions and to make comments on the shapes of their curves.

CONTENTS

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Malmö, May, 2006

Ingemar Fridell

Chapter 1:
INTRODUCTION

The present study's point of departure is a perceived need for exploring alternative ways to communicate issues particularly linked to the education of Western classical music. In educational contexts, the verbal language seems to play a dominating role (Woody, 2000), although it may often be hard to express musical ideas, experiences, or emotions only verbally.

In this context, the research field of music education is defined as implying more than exclusively studies of musical learning based on lessons in a traditional sense. Learning processes are taking place in many other situations as well (cf. Folkestad, 1996). For example, two chamber musicians discussing different interpretative solutions may also be described as being involved in a kind of continuous learning process.

1.1. Background

During my own education at the Academy of Music, the piano professor used to give me instructions of a rather general character: 'More feelings, please! Clearer melody! Mind the melody line!' Ever since then, I have been wondering how it would be possible to explain and discuss musical problems in a more comprehensible way.

1.1.1. Need for many supplying means of communication

Sometimes music students are not able to transform their interpretative ideas into sounding music, particularly when not yet mastering their music instruments to a degree that admits an accurate musical representation of what was intended. By using alternative means, the students might clarify the intended musical expressions better, facilitating in this way the teacher's role of guiding them to realise their own ideas in a musical form.

There may be a need for many supplying means of communication supporting the exchange of musical ideas in educational contexts. Woody (2000) suggests the use of the performer's felt emotions or moods in order to develop musical expressivity, reducing too much theoretical verbal instructions by instead using aural modelling, metaphors, gestures and imagery.

Combining several means of communication might help the process of encircling musical problems in order to find efficient practical solutions. Furthermore, something that seems hard to express in one medium might be clearer expressed through the use of another medium, which opens up to a communicative flexibility.

1.1.2. Representing music visually

In this context, the question might arise whether it is at all possible to communicate musical issues by other means than music itself. Nielsen (1946) and Bengtsson (1988) regard music as something *absolute* constituting its own sovereign sphere. However, some later studies indicate that performers and listener are more or less aware of a commonly agreed emotional code within the music (Gabrielsson & Juslin, 1996).

Walker (2004) objects to the concept of so-called 'pure' music, which may be regarded as a construction made by the Western intellectualisation of music. He states that music works as a medium for expressing experiences from outside the music universe. Walker claims that humans tend to make analogies especially across sound and vision.

Crain (1980) describes the psychologist Heinz Werner and his concept of physiognomic perception based on *synaesthesia*, which means that there exists a syncretistic unity between all the human senses. For example, some people seem to be able to 'hear' colours or to 'see' music. This ability might be connected to earlier stages in the evolution, where the senses were not yet completely separated, theories that have been further developed by Stern (1991).

An example of the connections between different sensorial stimuli is the experience of *rhythm* that may be provoked by sounds as well as by visual phenomena (cf. Fridell, 1999). A conductor's bodily movements represent rhythmical and emotional impulses, which are reinterpreted into sounding music by the musicians of an orchestra.

Some people seem to be particularly susceptible to non-verbal information. For example, visual representations might save both time and effort, due to sometimes being experienced as more clarifying than verbal explications. Using a metaphor, if a person wants to find the best way to go somewhere in a big city, it might be easier to explain this by drawing a map on a piece of paper, indicating some important roads and buildings. Indeed, a map drawn by hand is likely to be very approximate compared to an official map. The single details may not represent the precise cardinal points or the proportions of the distances, and the roads' bends may deviate considerably from those of the external world. Nevertheless, such a map might still be useful in functioning as a visual complement to the verbal instructions.

In this study, a specially designed *visual* tool is tested, intended for illustrating the individually experienced dynamical progression within melody phrases: the *Melody Phrasing Curve* (MPhC). The curve is drawn by free hand, and it is supposed to represent approximately the performed changing dynamics of the melody part.

1.2. Purpose of the study

The present study is planned to be the *first* part of a PhD research project, in which the MPhC's possible usefulness will be further explored. The MPhC is intended to be used as a tool in different educational contexts in a wide sense, hopefully facilitating the communication of issues concerning melody phrasing within the frames of the classical music sphere. Consequently, the primary focus of this study has been to test the potential benefit of a visual tool that might be used concretely in different music educational contexts, rather than exploring music experiences out of a general experimental psychological perspective.

In this initial study, the MPhC has been tested out of the perspective of *professional music listeners*. When listening to classical piano music recorded on tape, the participating listeners were asked to draw phrasing curves by hand into a specially designed device, visually illustrating their individual impressions of the melody part's changing dynamics.

Here, music is thus considered as a phenomenon *experienced* by human people, not its external physical properties as for example amplitudes, frequencies, or the spectrum of harmonics.

1.2.1. Definitions

The concept of *perceived dynamics* is defined as the *subjective* way a presumptive listener experiences the performed *soft* and *loud* sound levels within a composition. Accordingly, perceived dynamics should not be understood as exactly correlated to physical amplitudes calculated in decibels. Apart from the performed sound levels exerting a principal impact, many other musical aspects may reinforce or modify the total impression of the changing dynamics, for example the contour of the melody line, the harmonic progression, rhythm, etc. Furthermore, the specific instrumental sound, pitch, agogics, acoustics, etc., may also affect a person's experience of the performed dynamics (cf. 5.2.3.).

A *melody phrase* might be defined as a metrical unit within a melody voice, experienced as being a delimited part although integrated in the total course of musical events. Traditionally, the integral elements of a melody phrase are articulated through for example dynamics and temporal displacements, analogously to punctuation in a linguistic sense, which means that the performance of a melody phrase might be compared to some similar means of expression, being used within the spoken language in order to articulate the elements of a sentence (cf. Fridell, 1999).

1.2.2. Research question

The research question is formulated as follows: *How does the Melody Phrasing curve function as an instrument for visually illustrating the dynamical progression of the melody part, when applied by experienced music professors listening to classical piano compositions recorded on tape?*

1.3. Disposition of the study

In Chapter 2, different perspectives have been considered in order to give a survey of conventional views on melody phrasing. The chapter contains a literature review of scientific and theoretical kinds, as well as biographies of eminent musicians and conductors. Different conventions for using dynamical means when performing melody phrases are discussed.

In Chapter 3, the methodological considerations, the device of the MPhC, and the study's design are described, as well as the analysis of the data. A special phrasing curve designed by the famous pianist Badura-Skoda is discussed, because resembling of the MPhC. The chapter ends with a short discussion about validity, reliability and credibility.

The results of the study's two phases are presented in Chapter 4. In a number of images, the participant's drawn phrasing curves are displayed, representing selected sections from the employed music excerpts. In the first part of the chapter, the results emanating from the study's first phase are presented. In this phase, the participants' phrasing curves illustrating each one of five stylistically diverging music excerpts recorded on tape have been compared. These results have been structured into six main categories corresponding to the participants focusing on different musical aspects when drawing their curves. In the second part of the chapter, the results emanating from the study's second phase are presented. In the second phase, the focus has been on comparing the curves drawn by the participants illustrating three differently performed recordings of one and the same composition. The chapter ends with some conclusions answering the research question.

In Chapter 5, dynamical conventions for performing melody phrases and the connections between dynamics and emotions are discussed, since the results indicate that the participants might in some cases have been affected by their knowledge about these conventions when drawing their curves. In the following section, possible reasons for occurring discrepancies between the individual curves are discussed. After that, the chapter treats with some implications in educational contexts, and finally, possible ways to proceed are discussed ending with a short description of the planned forthcoming study.

Chapter 2:
LITERATURE

The design of the Melody Phrasing Curve (MPhC) tested in this study is supposed to be based on conventions of melody phrasing within the frames of Western classical music traditions. In this context, different perspectives have been considered in order to achieve an overview of this specific musical aspect. Apart from literature of scientific and theoretical kinds, the chapter also includes references to biographies of eminent musicians and conductors. Among artists having expressed their view on melody phrasing, the presented statements seem to be rather typical. Sundin's dissertation (1994) may also be of interest, containing a redundant documentation of established aesthetic criteria for musical interpretation.

The reason for referring to some literature of an older date is that the texts seem to mirror conventional views that have been established within the classical music tradition since many centuries back in time. In this chapter, there are thus references to literature by the German music theorists Oskar Rainer (1925), Alexander Truslit (1938), as well as to Ernst Kurth (1947).

2.1. Conventional views on melody phrasing

Generally, melody is considered to be the principal musical element. A common view is melody phrases regarded as continuous lines with interchanging phases of tension and relaxation, which gives rise to the experience of periodicity. The perceived inner movement as well as the way the single tones are prepared seem to affect the character of the performed music.

2.1.1. Horizontal and vertical layers of music

Statements made by different artists and authors seem to represent diverging positions on a scale between homophonic and polyphonic ways of considering music, giving priority to either counterpoint and the harmonies, or to the melody line moving forwards in time.

According to Brincker (2002), Rosseau considered music as primarily melody: the continuous succession of sounds builds up a story. Furtwängler (1991) thinks that the overall melodic shape is fundamental to the inner meaning of the work, but it may change between the instruments from one register to another.

In Walter's (1958) opinion, polyphony does not mean that all the voices should be treated equally; generally there is just one main line at a time. He claims that all the voices are obliged to adapt to the melody that demands a certain care and atten-

tion. Walter regards all music to be basically *homophone*. Even polyphony is subject to a homophone purpose.

In contrast to this, Barenboim (1991) considers music as *polyphone* by nature, and the harmonies should always be considered in a polyphonic sense. None of the voices is independent of the others; the voices are functioning like bodies in a unit. However, he admits that different voices may dominate in different sections. The pianist Glenn Gould goes a step further in striving to give priority to the *vertical* layer of the music (Bazzana, 1997).

When discussing phrasing, Sundin (1994) refers to Hans Mersmann's 'Angewandte Musik-ästhetik'. The ideal is to strive for a balance between the horizontal (linear succession of tones) and vertical (chord structure) layers, avoiding none of them to be dominant. Traditionally, it is however primarily the uppermost voice that calls the listener's attention (Sloboda, 1985).

2.1.2. Melody regarded as a continuous line and a stream of energy

Melody phrases have often been regarded as *continuous lines*, as bows or arches. Casals described the phrases as 'rainbows' with each tone as a link in a chain: '...important in itself and also as a connection between what has been and what will be' (Blum, 1977, p. 19).

To Sundin (1994), linearity is one of the fundamental aspects of interpretational coherency in which species of melody, harmony, rhythm, dynamic or sonority are imbedded. He refers to Mersmann's principles of performing, in the frames of which phrasing is described as an interaction between musical elements either belonging together in the composition and which therefore should be unified in a performance, or musical elements supposed to be separated and therefore being delimited from another. Meyer (1996) claims that 'proximity between stimuli or events tends to produce connection, disjunction usually creates segregation' (p. 13).

Kurth (1947) explains the experience of music 'energy'. In its simplest form, it may be perceived as a continuous stream flowing through the melodic shape, as some kind of force between the tones, not to be understood as a supplying connection but rather as a *drawing* force, an *inner* movement giving rise to changing states of *tension*.

The experienced energy is described as flowing through beginnings, releases, staccato notes, rests, as well as the space between single notes. The elements relate to each other in a way that creates the impression of a *shape* (German: 'Gestalt') connecting elements on different hierarchic levels. The phrases are continuing into each other as a kind of fluid.

Kurth considers the remaining acoustic image of a total melody easier to reproduce than single tones and sounds. Inspired by Husserl, Sundin (1994) states that '…a melody comes into existence through retrospective relation to phases that can no longer be heard… therefore, the melody is not its sound, but that which appears through transcending it (p. 113)'. Sundin explains the phrase bows as linked together with releases and new beginnings overlapping each other. When a new dynamical activity is emerging, the impression of a release may be perceived as a new increasing tension. For example, a diminuendo can be reinterpreted as a crescendo, which means that the past might be revised.

The Swedish researcher of cognition Gärdenfors (1996/1999) claims that the human brain structures sensorial impressions automatically. 'Hjärnan är ingen passiv mottagare av bilder och ljud från omvärlden. Den söker aktivt efter *mönster* och den *tolkar* omvärlden (p. 62).' ('The human brain does not perceive images and sounds from the external world passively. It searches actively for *patterns* and it *interprets* the surrounding world.') The 'filling-in-mechanisms' ('ifyllnadsmekanismer', p. 64) of the human brain enables the creation of illusions. Maybe the reinterpretation of single tones into melody phrases is an example of this.

Using *Gestalt psychology* as a point of departure, Meyer (1967) claims that we perceive and understand the world and consequently also music in terms of patterns, models, concepts and classifications rooted in our specific cultural tradition. In music, single tones tend to be perceived as grouped into melody phrases. Conjunct pitch sequences, continuing timbres, as well as cyclic formal structures facilitate perception, learning and understanding.

In the same way as Kurth (1947), Uhde and Wieland (1989) describe a musical stream, a continuous main thread running trough all the rests, cæsura and still standing sounds. For example, a break in the acoustically sounding unit does not necessarily signify a stop in the energy flow. Barenboim (1991) claims that even silence may represent a lot of tension.

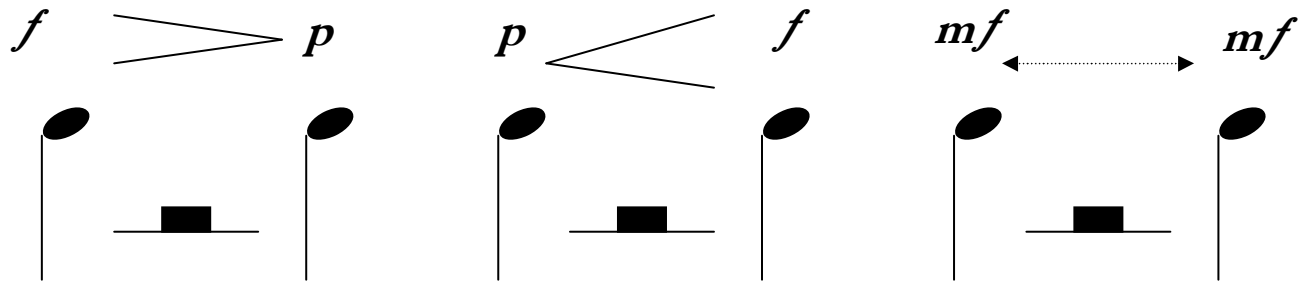


Figure 1:
Three examples of dynamical changes that might be experienced during indicated rests

Figure 1 illustrates how an illusion of transformed dynamics may appear during a rest under certain circumstances. The figure to the left represents a tone performed

in a forte dynamic and experienced as being of a character fitting to the character of the onset of the succeeding tone performed in a piano dynamic, which may create the illusion of a *diminuendo* traversing the rest. The middle figure shows the opposite: a tone performed in a piano dynamic and being of a character that fits to the onset character of the succeeding tone performed in a forte dynamic may create the illusion of a *crescendo* through the rest. The figure to the right illustrates two tones localised on both sides of a rest and being of the same character, which may give rise to the experience of an unchanged dynamic level continuing throughout the rest.

If the end of a tone is experienced as not being of the same character as the onset of the succeeding tone, the dynamical change may instead be perceived as a sudden '*subito*' effect. The explanations above also seem to be consistent with the illusionary impression of *accented rests* in a section of a Brahms Symphony, which is displayed in Image 1 (cf. Fridell, 1999).

(J. Brahms: from Symphony no 3,
op. 90, first movement)

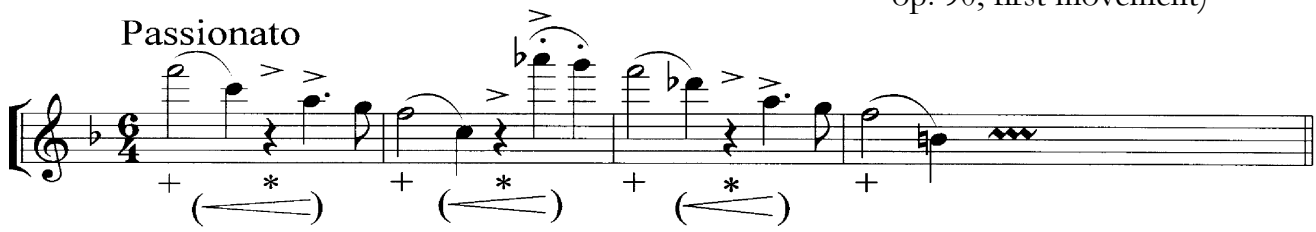


Image 1: Experience of 'accented' rests

2.1.3. Tension and relaxation

In the renaissance era, polyphone vocal music was considered as subject to some kinds of laws analogous to physical laws influencing a body in movement (Jeppesen, 1930; Söderholm, 1967). For example, an ascending melody line was treated as if conquering a resistance, a kind of a musical *gravity*. Valkare (1997) argues that the conception of notes being 'high' or 'low' are partly affected by the visual appearance of the score, although he admits that such a view might also emerge as an association between muscular sensorial experience when singing a high tone and the experience of resistance in a physical sense. Tones located higher up in the register may thus provoke a stronger feeling of tension than tones in the lower register due to the natural physiological functions of the human voice.

In all music, the experience of periodicity seems to be essential. According to Celibidache, music moves between culmination points and dissolutions (Weiler, 1993). He considered musical periods as constituted of phases of ascending tension and phases with diminishing kinetic energy being compressed (Sundin, 1994). In a

similar way, Uhde and Wieland (1989) describe music as based on cycles of tension and *counter-tension* overlapping each other.

The culmination points of musical phrases are generally performed by means of different emphasises, usually emphasises of articulation, agogics, or dynamical emphasises (Bengtsson et al., 1969; Edlund, 1994; Edlund, 1996; Fridell, 1999). Inspired by Cooper and Meyer's (1960) method of analysing the music's rhythmical units on several architectonical levels, Fridell (1999) suggests a mental model with practical implications for performing music. Different kinds of emphases are discussed, as well as musical *points of gravity* serving as energy impulses, upbeats charging the music with power, and the musical 'transmission gear'.

Nielsen (1983) has studied the connections between the subjectively experienced musical *tension* and the music's structural features. By means of a synchronized graphical curve displaying continuously the varying degrees of tension as indicated by the participants, the musical events giving rise to the tension could be identified in the printed score.

According to Nielsen (1987), concepts like musical tension, energy, and force have been used within the German musicology and psychology tradition of 'form dynamics' from the 1920s and 1930s. Nielsen argues against an ascription of the experienced tension to any single musical aspect. Following the same path, Fredrickson (2001), referring to previous studies, states that no specific variable seems to influence the totally perceived tension. Tension might thus emerge out of the combined impact of all the musical variables involved in the performance.

2.1.4. Preparation of single tones

The preparation of single tones seems to affect the musical experience. According to Barenboim (1991), an upbeat without authority creates a dead sound. He recommends instrumentalists, singers and conductors to imagine the desired sound a fractal of a second before playing. Klemperer (1973) is also concerned about the relationship between an upbeat and the shape of the succeeding tone.

Furtwängler (1991) and Casals (Blum, 1977) have both adopted a similar view. Furtwängler claims that the secret behind the sound and power of a tone lies in how it is prepared. Casals considered the very first note of a piece of music to be particularly important. He used the metaphor of beautifully embellished initial letters in older books painted by hand.

When discussing the performance of improvised jazz music, Contro (1993) focuses on the concept of *gesture*, however not in a visual sense, but primarily referring to its auditory dimension as an indispensable condition for the realisation of the music in question. 'Le mot indique un rapport au corps, un movement, un acte.' (p. 170) ('The word indicates a relation to the body, a movement, an action.') The concept is defined as implying breathing and articulation as well as the relation between instruments and the music being produced.

2.1.5. Movements of the music

Rainer (1925) discusses how melodies and different moods may relate to bodily movements. For example, joy may be expressed through stretching out the hands, sadness through contracting movements. In a similar way, the German music theorist Truslit (1938) explains the relationship between emotional bodily expressions and music performance. He regards the *movement* as the music's original element: 'Musik ist tönende Bewegung.' (p. 51) ('Music is sounding movement.') Referring to Richard Wagner, Truslit claims that it is primarily the *melody* sung by for example an orchestra that gives rise to this impression. Rhythm and harmony are flowing together with melody in a unified course of movements.

Truslit (1938) uses the concept of *dynamo-agogic*. Deviations in an agogic sense are not only allowed but also indispensable. Agogics and dynamics are considered as two related elements being born out of the same movement. The bodily movement is transmitted to the sound, which is explained by the metaphor of a parish clerk who is going to ring the bell.

The movements are expressed by means of visual curves. However, Truslit's (1938) curves are supposed to correspond primarily to the inner energetic movement, not to pitches or the register of the melody contour. His idea is that when reflecting upon visual curves, it will be easier to discover musical shapes not being naturally coherent. Straight and sharp-angular musical movements interrupting the continuity of the singing line should be avoided, Truslit advises. His curves imply movements existing already before the very first tone. Neither fermata, rests, nor the decay of the very last tone are considered as still-standing in a kinetic sense.

The different shapes of Truslit's (1938) curves correspond to diverging kinds of musical movements. Image 2 displays two examples mirroring the experience of an inner movement. The figure to the right seems to illustrate a movement starting already before the onset of the tone. In later times, the music researcher Bruno Repp (1993) has summarised and translated Truslit's book as a synopsis in English.

Image 2: Two examples of Truslit´s (1938) 'dynamo-agogical' curves displayed in his book

2.2. Dynamical shape of the melody phrases

The performed dynamics seem to exert an important influence on the perceived character of the melody phrases. Within the classical music traditions, at least two different kinds of interacting conventions for using musical dynamics seem to occur: (i) a basic model for performing melody phrases and (ii) a commonly agreed emotional code consisting of several cues for expressing special musical effects.

2.2.1. Dynamics following the melody contour

Usually, musicians tend to reinforce the movements of the *melody contour* up and down in the register by increasing and decreasing the sound level in a corresponding way. According to Sundin (1994), the music theorist Hugo Riemann argued that an ascending melody should be performed by increasing the dynamic level (treble oriented performing), giving rise to the impression of cumulative tension and liveliness. A descending melody should be performed with a corresponding decreasing dynamic level. At least when performing music by Bach, Klemperer (1986) regards it as appropriate to increase and decrease the sound level, following the contours of the phrase, but without disturbing its basic dynamic line.

Casals (Blum, 1977) also claims that dynamics should mostly follow the melody contour, even where the score indicates a soft dynamic at the beginning of the phrase. Normally, there should be a *high point* in each phrase, coinciding in many cases with the highest pitch, regardless if the tone in question happens to be localised on an unstressed beat of the bar.

Friberg and Battel (2002) have studied expert performances by analysing variations in timing and dynamics within melody phrases. Particularly in the Romantic period, phrases often tend to start slow, speed up in the middle, and slow down again towards the last tone. Dynamic variations tend to follow a corresponding pattern: soft-loud-soft. Pitches higher up in the register are usually played louder. The highest tone of a phrase is often the most important.

However, the established conventions of musical expressions also imply many exceptions from the basic rule of melodic-dynamic phrasing in order to create special emotional effects. For example, a special harmonic progression may awake some kinds of musical expectations, and a sudden soft dynamic may give rise to the effect of a surprise (cf. Quantz, 1752/1974).

2.2.2. Dynamics and emotions

From the perspective of brain physiology, Fagius (2001) claims that music has the power of influencing people emotionally. The music psychological researchers Gabrielsson and Juslin (1996) have shown that performers as well as listeners seem to be more or less aware of a commonly agreed code for expressing emotions in music. It has also been possible to simulate emotional expressions in synthesized performances so that listeners can decode the intended emotion (Juslin & Persson, 2002). For the purpose of obtaining a successful musical communication, it is indispensable that the performer's cue utilisation should be as similar as possible to the listeners' cue utilisation. Musicians tend to communicate emotions by using an acoustical code similar to that of vocal expression. However, no absolute uniformity in the utilisation of emotional cues can be discerned within the musical sphere.

Clynes (1973) presents quantitative theories and measurements of the shapes of emotional expression by means of normalised expressive touch pressure. Due to the recognition of the expressive shape or 'essentic' form, a caress, for example, is clearly recognised as different from a scratch and is further differentiated as to a motherly or sexual caress. Even a dog may discriminate anger and affection through the character of the voice, the gestures, or the caresses.

To Eitan (1993), music is related to universal characteristics of non-musical human behaviours such as the emotional expression through speech intonation and motion gestures. In speech, high-pitch accents are used to create the intonational 'nucleus' of a phrase, emphasised by speakers and perceived by the listeners as correlated to an increased level of tension.

Many studies indicate thus a direct connection between performed dynamics and the experience of musical emotions (Rigg, 1964; Gabrielsson & Juslin, 1996; Woody, 2000; Juslin & Persson, 2002; Friberg & Battel, 2002). Performing music by using big dynamical contrasts has traditionally been associated to a romantic style (Goulding, 1996). Echo effects have existed as an emotionally motivated convention within the classical music tradition ever since the renaissance era with its usual terrace dynamics (cf. Dart, 1964; Goulding, 1996).

Hence, the performed musical *dynamics* in particular seems to function as a kind of principal *marker* of the melody phrases, affecting to a great extent how the phrases' character might be experienced by music listeners.

Chapter 3:
METHODOLOGY, METHOD AND DESIGN

The Melody Phrasing Curve (MPhC) that is tested in the present study is designed in accordance with some established conventions of melody phrasing within the frames of Western music traditions (cf. Chapter 2; cf. 3.2.). Based on the literature of the previous chapter, the study's point of departure has been a common idea that melody plays the primary role in classical music. This idea implies thus that the melodic aspect dominates other musical aspects as for instance harmony and rhythm. However, this does not exclude that these other musical aspects may modify, reinforce or diminish the principal impact of melody.

The study includes two phases with different foci. The first phase was carried out in Sweden, from January to April 2002. The study's second phase was carried out in Sweden, May 2004. In the analytical work of the first phase, the individual curves representing five stylistically diverging music excerpts have been compared. Since the visual appearance of the device's parallel printed score might have modified the shape of the drawn curves, the second phase of the study was designed and carried out. In contrast to the study's first phase, the analytical work of the second phase focuses on comparing the curves drawn by the participants representing three differently performed recordings of one and the same composition.

Accordingly, in both phases the primary method of analysis consisted of comparing and analysing the participants' phrasing curves drawn by free hand. Although the data collection did not imply any interviews, some interesting comments made by the participants when carrying out the study have still been documented and taken into account (cf. 3.3.3.; 3.3.6.).

In this chapter, the theoretical considerations for the choice of method, the design of the MPhC, as well as the design of the study will be described. The chapter ends with a short discussion about the validity, reliability and credibility of the study.

3.1. Theoretical considerations

The purpose of the present study was to explore how the MPhC works as a visual tool for illustrating the *subjectively* experienced progression of the melody part's sound level within a selection of classical piano compositions recorded on tape (cf. Chapter 1: 1.2.). This means that the study focuses on the representation of music from the listeners' perspective. In other words, in this context music is considered as a phenomenon *perceived* by human beings.

Exclusively qualitative methods of research have been used in this study. To some extent, the study is inspired by a *phenomenographical* approach dealing with people's different ways of experiencing phenomena (cf. Bengtsson, 1988; Marton & Booth, 1997; Bengtsson, 1999). A phenomenographical study strives after structuring people's different experiences into corresponding categories. These categories, describing the variation on a collective level, should not be regarded as linked to specific persons, since one individual may represent diverging categories in different situations. On the other hand, the categories should be distinctive with clear boundaries between the corresponding different perspectives of experiences.

The individual phrasing curves of this study are supposed to mirror certain aspects of the participants' experiences when listening to music. In other words, the phrasing curves may be considered as a visual expression of some of the participants' individual experiences. At first, the present study's primary focus has been on finding *similarities* rather than individual *variations* between the shapes of the participants' phrasing curves. The reason for this is that the MPhC, according to its original purpose, cannot be used as a tool for *communicating* musical ideas, if not observable similarities can be found between the participants' phrasing curves representing one and the same music performance.

When carrying out the study, the participants were asked to focus primarily on the progression of the melody part's changing dynamical sound levels within the performed music. However, a preliminary analysis revealed that in some cases the specific shapes of the individual phrasing curves seem to correspond more to other aspects than the dynamics of the melody part (cf. Chapter 4: 4.1.1-6.). An interpretation of this is that the participants may have understood the instructions for how to draw the phrasing curves differently.

In order to shed light to such occurring variations, the *differences* in shape between the individual phrasing curves, which are supposed to express certain aspects of the participants' musical experiences, have been taken into account and categorised as well (cf. 3.4.2.2.). In this respect, the study might be described as inspired by a phenomenographical approach. However, since music may be considered as a generally very ambiguous and manifold phenomenon, the boundaries between the categories of this study are not as distinct as in a study representing a typical phenomenographical approach (Marton & Booth, 1997).

At the same time, Marton and Booth encourage methodological creativity and the use of adequate methods adapted to the specific research area. The design of the present study might be regarded as an example of such a methodological creativity.

Bruner (2002/1996) considers all psychical activities to be culturally situated in a world of cultural traditions. Bruner discusses the concept of *cultural tools* used by human beings. According to Säljö (2000) and a *socio-cultural* perspective, people are not only biological creatures but also human beings living and communicating in a

socio-cultural reality providing many different kinds of instruments and tools, which enables the transcendence of the biological restraints' limits. Säljö claims that physical artefacts as well as linguistic and intellectual tools are the results of understandings and experiences emanating from people living in present time, as well as from generations living in the past. Consequently, music instruments, the written score, as well as the invented MPhC that is tested in this study may all be regarded as examples of such cultural artefacts and tools.

3.2. Design of the melody phrasing curve

Before describing the device of the MPhC tested in the present study, the special design of this phrasing curve will be discussed. This design is supposed to be in accordance to some conventional views on melody phrasing having been treated in the previous chapter.

When starting to design the MPhC, a dynamical phrasing curve that has been used by the famous pianist Paul Badura-Skoda (Skoda, 1957) was unknown to me. In order to clarify his ideas about how to perform the melody phrases of Mozart's music, Skoda has used principally the same kind of visual curve as the one that is tested in this study. As far as I know, Skodas's curve has not been subject to any empirical studies.

3.2.1. Badura-Skoda's dynamical phrasing curve

Image 3 displays Paul Badura-Skoda's (Skoda, 1957) curve suggesting the musical dynamics of the melody part at the beginning of Mozart's piano concert, KV 491. The image also displays a pattern indicating the stressed and unstressed beats (s=schwer [heavy] and l=leicht [light]). To the left of Skoda's curve, three different dynamical levels are indicated: *pp*, *p* and *f* respectively, from which three corresponding horizontal broken lines are proceeding. The curve moves from the left to the right parallel to the melody part of the score within the space of these lines. It departs from the continuous line localised below the first broken line representing the *pp* level. Then the curve ascends steeply towards the *f* level already at the very first accented melody tone.

Skoda's dynamical curve might be interpreted as representing the intended or *experienced* dynamics of the music rather than the performed sound levels in a physical sense. This interpretation is furthermore confirmed by the ascending movement in the fourth bar, from the dynamical level of *pp* all the way up to an *f*, in the middle of a rest with no music. The complete score reveals that there are rests in all of the other voices as well. Since it is by no means possible to perform a crescendo in a rest, it may be concluded that Skoda's curve refers to the experienced dynamical progression of the music (cf. 2.1.2.).

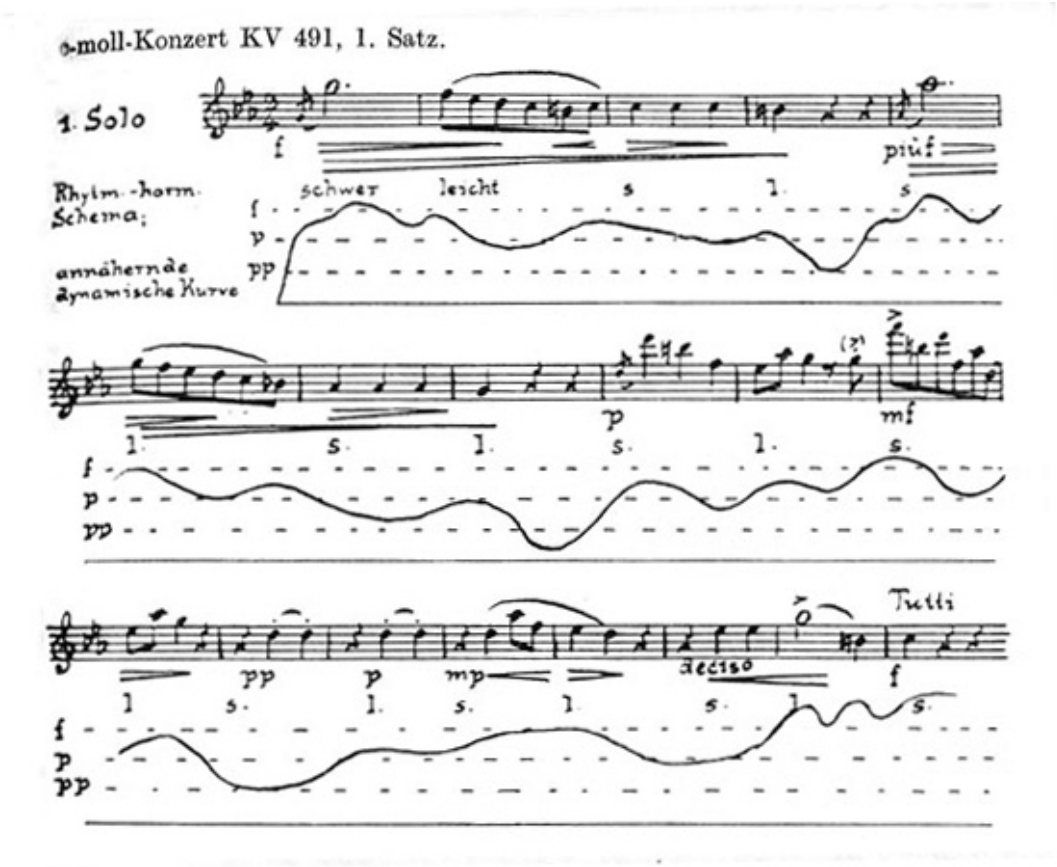


Image 3: An example of Skoda's (1957) dynamical phrasing curve as displayed in his book: curve representing a section of the melody part at the beginning of Mozart's piano concert, KV 491

3.2.2. Designing a phrasing curve based on conventional views

Many attempts to illustrate different musical aspects visually have been made within the history of Western classical music, for example Truslit's (1938) visual curves having been discussed in Chapter 2: 2.1.5., Nielsen's (1983) graphical curve representing the changing degrees of tension as experienced by music listeners (cf. 2.1.3.), and Skoda's (1957) dynamical phrasing curve described above in the text. Truslit's (1938) dynamo-agogical curves, which seem to focus primarily on the experienced characters of the musical movement forwards in time, is not supposed to be drawn continuously parallel to the systems of the music's printed score. Accordingly, this kind of curve does not display any direct links to specific musical features imbedded in the music. Therefore, Truslit's curve might be interpreted as primarily *symbolising* the music's kinaesthetic aspect. Nielsen's (1983) graphical curve, on the other hand, is not a curve drawn by free hand, and it is supposed to correspond to the spontaneously experienced *tension* of the music, and not specifically to the music's dynamical progression.

According to some conventional views having been presented in Chapter 2, the performed musical *dynamics* might be regarded as a principal *marker* of the melody phrases' character (cf. 2.2.). By focusing on this very aspect in the same way as Skoda's (1957) curve, the shape of the phrasing curve tested in the present study will refer to something concrete: the disposition of the performed sound levels within a musical phrase. Accordingly, the design of the MPhC has the shape of a continuous line drawn by free hand parallel to the printed score, illustrating the dynamical progression of the melody part as perceived by music listeners.

In spite of its relatively simple design, the design of the MPhC still covers several criteria linked to the previously discussed conventional views on melody phrasing:

1) it focuses on the horizontal layer of the music represented by the melody part,
2) it has the shape of a continuous line,
3) its visual appearance may express the dynamical shape of the melody line changing between phases of tension and relaxation,
4) it is intended to illustrate the changing dynamics as personally experienced,
5) it is supposed to indicate the experienced dynamical high points and low points,
6) it may also illustrate the inner preparation preceding a tone or a chord, and the perceived dynamical decay succeeding a tone or a chord,
7) it may furthermore visualise the experienced dynamical progression through rests, fermata, as well as cæsura within the total shape of the sounding music.

3.2.3. Device of the MPhC

The printed score of the music excerpts has been linked to the MPhC's device for drawing individual curves. The reason for this is that this construction enables the indication of the dynamical levels in relation to the corresponding musical events, which facilitates the interpretation of what kinds of events that may have give rise to the specific shapes of the drawn phrasing curves. The disadvantage is that the shape of the individual curves then risks to be modified by influence of the visual appearance of the score. As a consequence of this, the second phase of the study was carried out in order to explore to what extent the MPhC really works as an instrument for illustrating dynamical features within the *sounding* music.

The device of the MPhC consisted originally of a dynamical scale with *six* horizontal lines localised above and parallel to copied systems of the printed score (cf. Appendix A1-5). However, in the second phase of the study the device was modified in some respects (cf. 3.3.5.; cf. Appendix B). One important modification was the dynamical scale being changed into a scale consisting of *five* lines, now localised

below the printed score, instead of six lines. In both phases of the study, the scale of the horizontal lines were intended to illustrate all dynamical levels from the experience of complete silence in a musical sense to the experienced maximal dynamical level within the excerpt in question.

Bearing in mind that the MPhC is intended as a rather approximate illustration of the subjectively experienced dynamical progression of the music, it should be underlined that the single horizontal lines of the device are by no means supposed to refer to any fix performed dynamical sound levels. The primary reason for displaying these lines in the device is to make the drawing of the curves visually more convenient to the participants on one hand, and to facilitate the process of comparing and analysing all the individual curves on the other.

The individual phrasing curves were supposed to be *drawn* into the device as continuous lines synchronised to the printed score located parallel to the dynamical scale. The curves of this study have thus been drawn by free hand by means of a pencil in order to enable corrections giving space for *personal reflections and decisions* within the frames of the verbal instructions. Another reason for using a device with curves drawn by free hand is that mastering a pencil might be perceived as easier, compared to being obliged to learn the functions of, for example, an unknown computer application.

Music implies indeed a multitude of different aspects contributing to the total experience of changing dynamical sound levels. However, the participants were asked to focus primarily on the melody part, discriminating as far as possible the melody's dynamical progression from other things happening in a musical sense (cf. 3.3.4.). This means that instead of designing a complicated device illustrating several musical aspects at a time, by means of for example different kinds of curves, the MPhC is supposed to express *one* single musical aspect in order to make the visualisation of the corresponding individual musical experience more simple and lucid. Thus, the MPhC is by no means expected to express the impression of the sounding music in its total complexity, but to illustrate the perceived musical dynamics of the melody line.

A detailed description of the instructions that were given to the participants concerning the intended use of the MPhC will be presented in section 3.3.4.

3.3. Design of the study

In the following, the design of the study is described in respect of the selection of participants and recordings, the different approaches of the study's two phases, as well as the instructions and realisation of the study's first phase. After that, the realisation of the study's second phase with its revision of the device is described.

Finally, some comments made by the participants in the first phase of the study are discussed.

3.3.1. Participants

A strategic selection of seven experienced professors teaching different musical subjects participated in the study's *first phase*. Bearing in mind that the MPhC pretends to be based on established conventions concerning melody phrasing within the frames of the Western classical music traditions (cf. Chapter 2), the participants were selected because of being thoroughly initiated into these corresponding conventional views through their individual professional educations. By teaching different musical subjects on an advanced level at the Academy of Music, they are also representatives of somewhat diverging classical perspectives, which might be of some interest in order to make the outcome more varied.

The participants in the first phase of the study, five men and two women, were as follows:

A) Professor of piano, woman, age 51
B) Conductor, man, age 80
C) Professor of music theory, man, age 42
D) Musicologist, man, age 56
E) Professor of flute, man, age 46
F) Composer, man, age 38
G) Professor of singing, woman, age 58

Two of the participants, A and D, were pianists. However, D is also a scientist representing a musicological perspective.

A preliminary analysis of the phrasing curves from the study's first phase revealed that in some cases the shape of the individual phrasing curves seemed to partly mirror the participants' respective professional specialities. In order to eliminate some of the occurring discrepancies between the participants that might be linked to their specific musical specialities, the participants of the study's *second phase* were selected on the basis of representing more of the same musical perspective. Thus, in the second phase of the study all of the three participants were pianists teaching piano or music interpretation at the Academy of Music.

The participants of the second phase were as follows:

A) Piano accompanist and professor of musical interpretation, man, age 46
B) Piano accompanist and professor of musical interpretation, man, age 31
C) Professor of piano, woman, age 53

The participant C in the study's second phase is the same person as the participant A in the first phase of the study. The two other participants did not take part in the first phase of the study.

3.3.2. Differences between the two phases of the study

In the *first phase* of the study, each participant listened to excerpts from five stylistically diverging classical piano compositions recorded on tape. Subsequently, they were asked to draw continuous phrasing curves by free hand into a device constructed specially for the purpose of this study (cf. 3.2.). Their curves were supposed to express the progression of the melody part's dynamical sound levels within each one of the excerpts, as experienced by them. This means that the participants' visual curves were intended to illustrate approximately the experienced changing dynamical levels within the melody part of the music in question.

The visual appearance of the printed score displayed in parallel to the device indicating the experienced dynamical levels might have affected the participants when drawing their phrasing curves. For this reason, the *second phase* of the study was designed and conducted, in which the purpose was to explore more thoroughly in what respect the MPhC really mirrors the experienced changing dynamics of the sounding music. In order to function as an instrument for visualising this very musical aspect, evident dynamical features within different performances of one and the same composition should be observable in the shape of the corresponding phrasing curves.

In the second phase of the study, the participants were asked to draw phrasing curves into a device that although being modified in some respects (cf. 3.3.5.), was principally the same as the one used in the previous phase. This time, the individual phrasing curves were supposed to illustrate the perceived dynamical progression of the melody part within each one of three different performances of Robert Schumann's piano composition *Von fremden Ländern und Menschen* recorded on tape.

3.3.3. Recordings

In the *first phase* of the study, recorded music excerpts from the following five piano compositions were used:

1) W. A. Mozart: from Sonata in B flat major, Köchel 333, first movement
2) J. Brahms: from Intermezzo in E flat major, op. 117, No 1
3) C. Debussy: from 'Préludes pour Piano (1er Livre)', No 12 ('Minstrels')
4) N. V. Bentzon: from 'Træsnit' ('Woodcut'), op. 65
5) A. Schönberg: Sonata op. 26 (1924), version for flute and piano edited by F. Greissle, interlude for piano solo from the third movement

The piano excerpts were all performed and recorded by myself. In order to test the usefulness of the MPhC in different kinds of music, the excerpts were selected because of being supposed to represent distinctly diverging music styles. For example, the Mozart excerpt may be characterised as an example of classical homophony, the Bentzon excerpt as an example of free tonality, whereas the Schönberg piece is an example of dodecaphony. The advantage of using piano music is that there is no accompaniment of other instruments, which facilitated the preparation of the study and made the listening less ambiguous. Consequently, the participants did not have to make an effort concentrating on the melody part switching between many instruments of different sound characters.

The participants are likely to be familiar with at least some of the employed music excerpts. A disadvantage is that when listening to the recordings the participants' musical experiences might have been partly contaminated by their respective individual musical pre-understanding, affecting in this way the shape of the drawn curves. On the other hand, the MPhC is intended to function within common educational contexts, for which reason musical excerpts from the classical standard repertoire have been chosen for the purpose of this study.

A preliminary analysis of the individual phrasing curves from the study's first phase revealed that the MPhC seems to work better in structurally simple music of a *homophone* kind with the melody part appearing in a clear relief to the other voices than in music that may be characterised as more ambiguous and complex in a structural sense (cf. Chapter 4: 4.1.). Therefore, in the *second phase* of the study different recordings of Robert Schumann's piano composition *Von fremden Ländern und Menschen* have been selected. The composition is from his piano suite 'Kinderscenen' op. 15, and it may be described as structurally very simple with a clear homophone character. Another reason for choosing this music was that three distinctively different recordings of the composition could be found. According to the specific purpose of the study's second phase, there should be evident dynamical differences between the performances of one and the same work of music (cf. 3.3.2.).

The participants of the study's second phase listened to the following three versions of the Schumann composition mentioned above:

1) Marta Argerich, Hamburg 1984, Deutsche Grammophon GH stereo 410653-1
2) Ingid Haebler, LY Philips Holland stereo 802738 [1]
3) Lucia Negro, Malmö Musikhögskolan 1991, Map of Sweden CD 9130

In order to avoid any undesirable influence when drawing the curves, none of the participants was informed about the names of the performing artists a priori, and none of them commented on being familiar with the specific recordings.

[1] Unfortunately, there is no year of publication indicated on the cover of the Haebler record.

Nevertheless, the participants commented spontaneously on the specific characters of the three differently performed versions of the Schumann composition. All of them described in different ways the character of the *first version* as being more 'romantic' than the other two versions, calmer, more intimate and maybe also somewhat sentimental.

The character of the *second version* was in different ways described as more energetic than the other two versions, maybe even 'nervous'. The composition was also experienced as being performed with long phrase lines moving on forwards.

All of the participants declared in different ways that the character of the *third version* might be described as melodious and non-sentimental with distinct articulations at some phrase closures, clarifying in this way the metrical patterns. In this context, the participant B added that he did not experience these articulations as directly disturbing the continuous flow of the melody line. The participant C commented explicitly on the generally very high dynamical level of her curve representing this third version by referring to the performed pregnancy of the melody line in the right hand part, as experienced by her.

In both phases of the study, the music was copied to tape cassettes. The number of every single music excerpt was introduced verbally on the recorded tape. The reason for using a cassette recorder was that the equipment, a Sony Walkman Professional and two small computer loudspeakers, had to be moved easily between different rooms happening to be vacant at the actual time. The sound quality was judged to be sufficient to the purpose of the study, and in this way all of the participants listened to the recorded excerpts by using the same equipment.

3.3.4. Instructions and realisation of the study's first phase

The *first phase* of the study was, as stated earlier, carried out in 2002 during the spring semester and at the Academy of Music except for in one case, where the study took place at another department at the University. The meetings with the individual participants took place according to personal agreements about date and time, in many cases with a rather short preparation time.

In order to explore the usefulness of the MPhC, it was crucial that the participants would use it in fairly the same way. For this reason, before effectuating the study each participant was verbally informed about the initially intended purpose of the MPhC as a tool for illustrating primarily the perceived dynamical progression of the melody part, which in this context means the subjective experience of the melody's changing loud and soft sound levels (cf. 1.2.1.; cf. 3.2.2.). As a consequence of this, the participants were asked to focus on this very aspect, discriminating as far as possible the changing dynamics of the melody from the many other things happening in a musical sense. Apart from that, it was up to the participants themselves to assess in every single moment, *which voice* within the recorded composition

in question that was representing the primary melody part. For example, the Bentzon excerpt of the study's first phase may be characterised as music of a polyphonic kind, for which reason the primary melody part is likely to be experienced as switching from one voice to another within the composition.

Before effectuating the study's first phase, the participants were firstly asked to listen to the excerpt in question from the beginning to the end in order to get a preliminary view of the changing dynamical levels of the recording. At the same time, they were recommended to make small notices into the device of the most evident dynamical high points, as experienced by them. Since each recorded excerpt has a specific musical character with its own dynamical levels, the participants were asked to 'calibrate' the experienced dynamical amplitudes of the excerpt in question by adapting it to the scale of the device. This means that independently of whether the music was to be characterised as generally soft or loud, they were asked to use all of the device's dynamical scale in each excerpt when drawing their curves, except for the space between the first and the second lines counted from below (cf. explanation below in this text). A metaphor for calibrating the visualised dynamical levels in this way may be the adjustments of the input sound volume by means of a so-called VU-meter when using old kinds of analogue tape recorders.

At the left of each system of the horizontal scale lines there were some figures indicating in rough outline different values in a progressive scale from 0 to 5 approximately corresponding to the experienced dynamical levels of the music (cf. Appendix A1-5). The participants were asked to express their experience of the maximal dynamical level by drawing their curves touching upon the *sixth* line of the dynamical scale counted from below *at least once* in every single excerpt, independently of the experienced maximal dynamical levels within the *other* excerpts. On the other hand, the participants were free to indicate the maximal level (*peak*) more than once in one and the same excerpt, if they had experienced the music in that way. Except for at the beginning and at the end of each excerpt, they were *not* obliged to indicate any minimal dynamical levels, if they did not explicitly experience the music in a corresponding way.

The participants were also asked to consider the space between the first and the second horizontal lines of the dynamical scale counted from below. This space was *not* intended to be used for expressing *sounding* music, even if the music was experienced as being performed in a very soft dynamic. The space between the first and the second horizontal lines was instead supposed to be restricted for expressing the experience of *silence* in a musical sense, for example at the beginnings and the ends of the excerpts. In other words, the participants were asked not to draw any curves below the *second* line as long as they could perceive the sound of the music acoustically.

The beginning of each phrasing curve was thus supposed to depart from the notated star, localised on this first line of the dynamical scale, to the left and above the

first system of the printed score, illustrating in this way the inner experience of transition between the preceding silence and the sounding music (cf. Appendix A1-5). At the end of some excerpts, the phrasing curve was supposed to return to the first line and to a notated star, localised to the right and above the printed score, illustrating in this way the experienced return into the succeeding silence after the music has stopped sounding. The reason for asking the participants to draw beginnings and ends of their phrasing curves was to explore in what ways they express their experience of connections between the relative silence preceding the music and the silence succeeding the music on one hand and the beginnings and the ends of the sounding music on the other (cf. musical conceptions discussed in Chapter 2: 2.1.).

The participants had the opportunity to listen to each excerpt, in shorter or longer sections and with an optional number of stops, as many times as they wished. After having accomplished their phrasing curves representing the recording in question, most of the participants listened to the excerpt without stops from the beginning to the end a concluding time in order to check the curves and make corrections, if necessary.

The curves were drawn by means of a lead pencil, facilitating all kinds of corrections. Every time before proceeding to the next excerpt, each participant was asked if he/her was definitely pleased with the drawn curve.

Finally, each participant were asked to check the coherence between the notated dynamical level at the end of each system and the beginning of the succeeding system, avoiding in this way sudden and unintended 'jumps' to break the continuous line.

3.3.5. Revision of the device and realisation of the study's second phase

In the *second phase* of the study, which was carried out at the Academy of Music, May 2004, the design of the device had been changed in some respects (cf. 3.2.; cf. Appendix B).

The changes of the device were as follows:

1) Initially, the number of horizontal lines within the dynamical scale was not definitely settled. A scale with many lines representing different dynamical levels may give rise to a big spread between the individual phrasing curves, which renders a comparison more difficult. In order to find out the optimum design of the dynamical scale, a device consisting of *five* lines instead of six lines was tested in the study's second phase. Another reason for changing the device in the study's second phase was to adopt the dynamical scale to the relatively soft and low-voiced character of the performed Schumann

composition with less dynamical amplitudes compared to most of the music excerpts that were used in the study's first phase. Consequently, all of the five horizontal lines could be used for expressing the experienced sounding music, including the space between the first line and the second line from below. It was now the *fifth* line instead of the sixth line counted from below that was supposed to represent the experienced maximal dynamical level.

2) The experienced connection between the preceding 'silence' and the beginning of the sounding music was now represented by the initial part of the curves moving out from the black point within a circle, located to the left and *below* the first line of the dynamical scale. In a corresponding way, the experienced connection between the end of the sounding music and the succeeding 'silence' was represented by the final part of the curves moving down to the black point within a circle, located to the right and below the first line of the very last system of the dynamical scale.
3) On the proposal of the piano professor (participant C), who also participated in the previous phase of the study (as participant A), the device for drawing phrasing curves had now been localised *below* instead of above the systems of the printed score as a test. This change is also in accordance to the way Badura-Skoda (1957) designed his phrasing curve that reminds of the MPhC tested in this study (cf. 3.2.1.; cf. Image 3). An advantage is that when drawing the curves, the printed score will not be hidden by the participant's hand. The disadvantage is that the dynamical scale might appear as being linked to the left hand part of the score, although the melody part is in most cases represented by the uppermost voice of the right hand part (cf. Sloboda, 1985).
4) Except for slurs and fermata, all kinds of printed instructions within the score of this original edition had been removed in the same way as in Hultberg's study (2000). The reason for this was to eliminate as far as possible any undesirable visual information that might modify the shape of the individual phrasing curves. Furthermore, the two indicated repeats of the score have been removed. Instead, each one of the two sections has been displayed twice consecutively.
5) As distinguished from the study's first phase, the image of the device that was used in this phase was printed out after having been processed by means of a computer. The reason for this was to improve the quality of the scanned images of the individual phrasing curves, facilitating in this way the analytical work of comparing individual phrasing curves (cf. 3.4.3.).

In the second phase of the study, the instructions for how to draw the phrasing curves were principally the same as in the study's first phase (cf. 3.3.4.). The participants were asked to 'calibrate' the dynamical levels of their curves, permitting them to touch upon the maximum level at least once or several times in one or in *more* than one single of the recorded three performances, regardless of the generally

silent and low-voiced character of the composition. This means that before drawing any curves, each participant should listen first to all of the three versions.

3.3.6. Participants' comments

Throughout the complete study, no in-depth interviews have been effectuated. According to the specific purpose of the study, the analysis has been concentrated on comparing the phrasing curves drawn by the participants. Nevertheless, some of their comments elucidating the specific shapes of the individual phrasing curves have still been documented and taken into consideration.

In the first phase of the study, the participant D (musicologist) expressed explicitly his intention of attempting to put himself into the place of a presumptive listener not being familiar with the music in advance and therefore reacting quickly and spontaneously to musical events as if he would hear the composition for the first time.

It may be regarded as doubtful to adopt such a point of departure, which implies a sudden ignorance of already achieved musical experiences and pre-understanding, particularly bearing in mind that D is likely to be familiar with many of the piano excerpts of the study's first phase by being also a pianist himself. However, for ethical reasons the integrity of all the participants of this study has been fully respected. This means that nobody has been pushed to change a chosen attitude. Besides, the participants have all been very friendly and obliging, sacrificing their precious time without being compensated economically in any ways.

In some cases, the intended use of the MPhC as a tool for visualising the experienced dynamical progression of the melody part was further explained to the participants by means of the following metaphor: The indicated dynamical amplitudes of the phrasing curves may be compared to the changing amplitudes of the arm movements and bodily gestures of a conductor communicating the aimed dynamics and emotional moods to his/her orchestra. The reason for using such a metaphor was to encourage the participants to focus exclusively on the changing dynamics, avoiding in this way the phrasing curves to be drawn with high dynamical levels, for instance, at places representing music being performed with clearly soft dynamics.

However, based on his own experiences from conducting music of recent date, the participating professor of music theory (participant C) objected to the mentioned metaphor when the study's first phase was carried out. He claimed that a conductor sometimes has to indicate nothing but the beats in a quite neutral way, regardless of the dynamics of the music.

It is true that in situations when the rhythmical structure within a contemporary composition happens to be very complex, a conductor may be obliged to give priority to the organisation and coordination between the single parts and voices,

which means that the performance of changing dynamics and emotional characters will be more or less left to the musicians themselves. However, this approach may not be classified as being representative of music belonging to a more typical classical repertoire.

3.4. Analysis

In the following, the analysis after having collected the complete data material will be described. All of the data material consisting of phrasing curves drawn by hand was scanned into images in order to be processed by means of Microsoft computer software (for technical details, see Appendix A6). Thereby the comparison between the individual curves was convenient enabling a closer analytical work.

The phrasing curves of the study's first phase were processed and analysed during the autumn semester of 2002, whereas the phrasing curves of the second phase were processed during the summer of 2004 and analysed during the succeeding autumn of the same year.

3.4.1. Conditions of the MPhC

Since the MPhC implies phrasing curves drawn by free hand, no perfect conformity between the individual curves was expected. Bearing in mind that the phrasing curve is intended for communicative purposes, there should however still be observable similarities between the individual curves when representing one and the same musical performance.

Considering the study's specific purpose, a condition that had to be fulfilled is that all the participants would use the MPhC in fairly the same way. In this context, the reference point is the originally intended use of this tool, which was explained to the participants by means of verbally expressed instructions for how to draw the curves at the very beginning of the study (cf. 3.3.4.). It is not because these instructions represent the only possible way of using a phrasing curve, but because the present study was supposed to explore the contingent usefulness of the MPhC exclusively according to its original purpose (cf. Chapter 1: 1.2.).

3.4.2. Analysis of the study's first phase

In the first phase of the study, the analysis focused on comparing the phrasing curves drawn by the seven participants and representing each one of the five stylistically diverging music excerpts that were employed.

The curves were compared in respect of:

1) the *general shape*,
2) notated *high points* and *low points*, resemblances and differences between the participants,
3) *beginnings and ends of the curves*: the shape of the corresponding parts of the curves representing the experience of a connection between the preceding 'silence' and the first note of the music as well as the experience of a connection between the last note and the succeeding 'silence'.

The reason for comparing the individual phrasing curves in respect of the general shape was to get an overview of occurring resemblances and divergences. The notated high points and low points were supposed to mirror the dynamical culmination points and relaxation points as experienced by the participants. These high points and low points also reveal the turning points or 'corners' of the continuously drawn phrase line, which facilitates the comparison between the individual phrasing curves. The idea of drawing special beginnings and ends to the phrasing curves is based on some established conventional conceptions concerning melody phrasing within the frames of the classical traditions (cf. Chapter 2: 2.1.). The purpose of drawing the parts of the curves beginning before the corresponding start of the music and ending after the corresponding decay of the sounding music was to test in which respect the MPhC might express the participant's experience of such a dynamical connection between the preceding 'silence' and the first note or chord on one hand, as well as a dynamical connection between the last note or chord and the succeeding 'silence' on the other.

In order to facilitate the analytical work, the parts of the curves stepping occasionally over the fifth line counted from below have been defined as *high points*, or *high areas* in cases where the drawn curves remains moving on that dynamical level. The notated maximal dynamical levels touching upon the sixth line from below have been called *peaks*. The parts of the curves touching occasionally upon the second line or falling below the second line have been defined as *low points*, or *low areas* in cases where the drawn curves remains moving on that same dynamical level.

3.4.2.1. Complementary curves

The data material of the study's first phase includes some other kinds of curves as well (cf. Appendix A6). As an experiment when preparing the study, I also drew phrasing curves myself, representing my own impressions when listening to each one of the five employed recordings respectively. However, none of these curves have been taken into consideration in this study.

A constructed curve visualising the changing *physical amplitudes* of the Schönberg excerpt was also included in the total data material. The curve has been constructed by normalising the visualised changing physical amplitudes of the recording into

the same dynamical scale that was used for drawing individual phrasing curves (for technical details, see Appendix A6). This curve cannot represent the dynamical progression of the melody part specifically, since the sound track of the record covers the music's total dynamical impact of all components together. The physical amplitude curve in question was constructed primarily as an experiment for comparative purposes in the analytical process.

To some extent, this kind of curve has thus been used when analysing the data emanating from the Schönberg excerpt, in order to get a hint of the difference between a curve representing the *measured* changing loudness of the recording's sound in a *physical* sense on one hand, and on the other the phrasing curves drawn by the participants illustrating the dynamical progression of the reproduced sound within the melody part as *experienced individually* by them when listening to the tape (cf. Chapter 4: 4.1.1.1.:*5*; Image 8a and 8b). The reason for constructing a physical amplitude curve only to the Schönberg excerpt was partly the intention of studying one single example of discrepancies between the different kinds of curves mentioned above, partly because of the specific lucid character of the Schönberg music in question enabling the otherwise relatively complicated construction of such a curve (cf. Appendix A6).

Furthermore, a curve representing the changing average of the dynamical sound levels as notated by all the seven participants together has been calculated statistically to two of the five music excerpts (Mozart and Schönberg). Since an average curve does not reveal very much about the shape of the single phrasing curves because of the possible spread, this curve has not been taken into special consideration in this study. An exception of this is in the already mentioned *Image 8b* of Chapter 4, where the calculated average curve has been displayed within one single bar of the Schönberg excerpt in order to get a better overview when comparing to the corresponding part of the physical amplitude curve explained above in the text. In this context, it should be underlined that in *Image 8a* all of the single phrasing curves representing the bar in question have been displayed as well.

None of these different kinds of complementary curves should be regarded as vitally important to the study's first phase, and no corresponding curves have been effectuated in the second phase of the study.

3.4.2.2. Categorisation of the results emanating from the study's first phase

According to its originally intended use, the MPhC was supposed to illustrate the progression of the melody part's dynamical sound levels as personally perceived (cf. Chapter 1: 1.2.). However, when analysing the phrasing curves of the study's first phase, some further musical aspects seem to have been expressed as well. A preliminary interpretation of these results is that some of the participants might in some cases have paid more attention to other musical parameters than the per-

formed dynamical sound levels of the melody part. For this reason, the diverging shapes of the parts of the phrasing curves, probably corresponding to different musical foci, have been structured and categorised. In order to shed further light to occurring resemblances and differences between the participants' phrasing curves, individual characteristics as expressed by means of their drawn curves have been taken into account as well.

3.4.3. Analysis of the study's second phase

In the second phase of the study, the curves drawn by the three participants, representing each one of the three versions of the Schumann composition (cf. 3.3.3.), have been compared in order to find out how the MPhC works as an instrument for visualising musical dynamical features within different performances of one and the same composition. Considering the specific purpose of this phase (cf. 3.3.2.), the focus has been on studying to what extent audible differences in a musical dynamical sense between the recorded performances would be clearly visible in the individual phrasing curves.

Consequently, an analytical work has been carried out in order to

A) compare the curves representing the three differently performed versions of the composition drawn by each one of the three participants
B) compare the curves of the three participants in each one of the three versions.

In the second phase, the definitions of dynamical high points, high areas, peaks, low points and low areas are principally the same as in the first phase. However, this time the parts of the curves stepping over the *fourth* line from below will be defined as indicating high points or high areas, since the dynamical scale has been limited to five horizontal lines. As a consequence of this, the definition of a dynamical *peak* level has been changed to high points or high areas touching upon the *fifth* line counted from below.

Finally, it should also be emphasised that due to the absence of interviews in this study, all conclusions about which musical aspects that might have given rise to the specific shape of the individual phrasing curves should be considered as subjective interpretations based primarily on my own pre-understanding.

3.5. Validity, reliability and credibility

The purpose of the present study was to explore the usefulness of the MPhC as an instrument for visualising the experienced progression of the melody part's dynamical sound levels within classical music excerpts recorded on tape (cf. Chapter 1: 1.2.). This means that the shape of the drawn phrasing curves should correspond

approximately to the participants' experiences of the performed changing music dynamics within the melody part. In other worlds, the specific shape of the individual curves should illustrate something happening in the music itself.

People never experience music in exactly the same way. Therefore, when analysing the single curves, individual characteristics have also been observed and taken into account.

The usefulness of the MPhC has been tested out of the following two criterions:

A) The participants should use the phrasing curve in fairly the same way.
B) When representing one and the same section of a recorded excerpt, there should be observable similarities between the curves drawn by the participants.

Comments on the first criterion: Considering the specific purpose of this study, there have been some constraints and 'rules' for how to draw the curves. However, there was still space for a certain personal freedom, bearing in mind that the concept of perceived dynamical progression is by no ways clear-cut.

By relating the shape of the individual curves to the sounding music on one hand, and by comparing the curves to the parallel printed score on the other, it has been possible to get a hint of in what ways the participants did understood the verbal instructions for how to use the MPhC.

Comments on the second criterion: By comparing high points, low points, as well as the general shape of the individual curves representing the same sections of the recorded music, it has been possible to observe resemblances as well as discrepancies between the participants' phrasing curves.

Chapter 4:
RESULTS

The purpose of this study is to explore the possible usefulness of the Melody Phrasing Curve (MPhC) out of the perspective of professional music listeners, as a visual tool for illustrating the individually experienced dynamical progression of the melody part within different classical piano compositions recorded on tape. In all, nine professors teaching different subjects participated, all of them linked to the Academy of Music.

The results reveal many resemblances but also discrepancies between the participants' drawn phrasing curves when representing one and the same work of music. There seems to be more resemblances between the individual curves when representing structurally simple homophone music than music that may be characterised as more complex in a structural sense.

In this chapter, the presentation of the results follows the general design of the study carried out in two phases with different foci, as presented in the previous chapter. In the first phase, the participants' phrasing curves, representing each one of five stylistically diverging music excerpts recorded on tape, have been compared. Since the results of the first phase in particular indicate that the participants, when drawing their phrasing curves, have sometimes paid attention to other aspects than the originally intentioned dynamics of the melody part, the results have been structured into six main categories corresponding to these aspects. In the second phase of the study, the focus has been on comparing the curves drawn by the participants representing three differently performed recordings of one and the same composition.

The images of the chapter represent some examples of the individual curves in small sections of the employed music excerpts. These examples are supposed to illustrate certain specific aspects of the results. This is the reason for not displaying *all* the individual curves simultaneously in every image. Therefore, some of the images representing musical sections appear in two versions named *a* and *b* respectively, which means that the individual curves not being selected in the first version *a* are instead displayed and commented on in the second version *b*.

4.1. First phase

The purpose of the present study's first phase was to explore to what extent the MPhC might function as a tool for illustrating the dynamical progression of the melody part within stylistically diverging classical piano excerpts recorded on tape. Seven music professors, five men and two women, teaching different subjects at the Academy of Music, participated in this phase of the study. They were asked to

draw phrasing curves, visually illustrating the individually experienced dynamical progression of the melody part when listening to five recorded piano compositions by Mozart, Brahms, Debussy, Bentzon and Schönberg respectively (cf. Chapter 3: 3.3.).

The results reveal resemblances as well as discrepancies between the participants' phrasing curves in all of the music excerpts that have been employed in this phase of the study. In music of a typical *homophone* kind, for example the Mozart excerpt, there seems to be more resemblances between the individual curves than in music that may be characterised as more complex in a structural sense, for example the Debussy and the Bentzon excerpts.

According to the original intentions of the study, the MPhC was supposed to illustrate the changing dynamical sound levels of the *melody part* as individually experienced by the participants. However, the results of the study's first phase indicate that in some cases some participants seem to have focused more on *other* musical parameters than the performed dynamics of the melody part. This seems to have been the case particularly in musical sections that may be described as more ambiguous and complex in a structural sense, and where the melody part appears in a less clear relief to the other voices.

Out of the results emanating from the first phase of the study, *six main categories* have been extracted, which will be presented consecutively in this first part of the chapter. The description of the first category is the most extensive because of referring to the participants focusing on the dynamics of the melody part according to this study's original intentions. In each category, similarities as well as discrepancies between the individual curves will be presented. The five first categories refer to the participants focusing on the following different *musical* parameters: *melody line*, *harmony*, *rhythm*, *metrical units*, and *combined musical aspects* respectively, whereas the sixth category refers to some *individual characteristics* that have been observed as well when comparing the phrasing curves. The reason for treating the individual characteristics in a separate sixth category is to shed more light to the possible correspondences between the participants' professional specialities and their way of drawing phrasing curves. It should also be underlined that none of the mentioned categories is linked to any specific participant; the single participant may represent diverging categories in different situations.

In the images of this part of the chapter, each colour refers to the curves drawn by a specific participant:

A) brownish red (professor of piano, woman)
B) yellow (conductor, man)
C) green (professor of music theory, man)
D) light blue (musicologist, man)
E) dark blue (professor of flute, man)
F) pink (composer, man)
G) brown (professor of singing, woman)

The numerical figures refer to the specially designed score that was used in the study (cf. Appendix A1-5). Thus, the first figure refers to the *page* of the excerpt in question, the second figure to the *system* of the page, the third figure after the colon to the *bar* of the system, and the figures in parentheses or brackets refer to the precise *note* or *motif* within a certain bar. The first bracketed figure refers to the *beat* of the bar, whereas the second figure after the colon refers to the *subdivision* of the beat in question. In a conceived example of four beats measure, the numerical figures 1/2:3 (4:2-1) refers thus to the first page of the discussed excerpt, the second system, and the third bar, from the second quaver of the fourth beat until the first beat of the next following bar.

In the specially designed score, there are figures localised *between* the horizontal lines of the dynamical scale at the very left of each system, giving the participants a hint of different dynamical levels in a progressive scale from 0 to 5 (cf. Appendix A1-5). However, in order to avoid misunderstandings when *presenting* the results, the indicated dynamical levels are instead always described as located at one of the sixth lines of the device, counted from below.

The concepts of *high points* or *high areas* refer to the parts of the curves stepping over the fifth line from below. The definition of *peaks* is the maximal level of high points or high areas touching upon the sixth line from below. The parts of the drawn curves touching upon the second line or falling below the second line are defined as indicating *low points* or *low areas*.

4.1.1. Melody line

As mentioned above, the presentation of the first main category *melody line* is the most extensive of all the categories in this part of the chapter. The results of this category will be presented in respect of the phrasing curves' *general shape*, notated *high* and *low points*, as well as the *beginnings and the ends of the curves* (cf. Chapter 3: 3.4.2.). When studying particularly the general shape as well as the notated high and low points of the individual phrasing curves representing each one of the five stylis-

tically diverging music excerpts, many similarities between the participants' phrasing curves have been found.

The reason for comparing the general shapes of the individual curves was to achieve a clearer overview of occurring resemblances and divergences in shape (cf. Chapter 3: 3.4.2.). The notated high points and low points are also essential, partly because of reflecting the participants' experienced dynamical culmination points and relaxation points, partly because of functioning as visual turning points within the continuously drawn phrase line, which facilitates a comparison between the individual phrasing curves. The beginnings and ends of the curves were supposed to illustrate the visual correspondences to the acoustical shapes of the individually experienced connections between the preceding 'silence' and the first note on one hand, and the connection between the last note and the return into the following 'silence' on the other. None of these mentioned analyses have been effectuated as concerns the other five main categories of this chapter, partly because musical parameters as for instance harmony, rhythm and metrical units may be regarded as relatively complex phenomena making the analysis extremely difficult compared to studying the considerably clearer dynamical progression of the melody line, partly because the results indicating a focus on other aspects than the melody part was not expected and beside the present study's original purpose.

4.1.1.1. General shape of the curves

In respect of the phrasing curves' general shapes, important similarities have been observed in many cases, particularly in structurally simple homophone music such as the Mozart excerpt. In cases where the music can be characterised as more complex in a structural sense, for example in the first page of the Bentzon excerpt, the spread between the individual curves is more evident. In the frames of this section of the chapter, examples from each one of the five music excerpts will be presented and commented on consecutively. In the section dealing with the music of Schönberg, the difference between the measured sound levels in a physical sense and the individually perceived musical dynamics will be discussed as well by means of a constructed amplitude curve and a calculated average curve representing two bars of the excerpt.

When presenting the results of each excerpt for the first time, the composition in question will be indicated with its complete title. After that, only the composers' family name will be used as an abbreviation.

1) Mozart

(from W. A. Mozart: Sonata in B flat major, Köchel 333, first movement)

The Mozart excerpt has a typical clear homophone structure composed primarily as a kind of duet between two voices, of which the upper voice constitutes the melody part whereas the second voice has more the function of an accompanying voice

and the bass part at a time. In some few cases, the harmonies of the two voices are supplied with some extra chord notes.

In the Mozart excerpt, the shape of the participants' curves generally corresponds to the contour of the melody line. Image 4a shows an example of resemblances in shape between the curves drawn by the participants A, B, D, E and F in a part of the Mozart excerpt (1/3:1-4). However, in the first bar B has notated a weakening dynamic a little bit earlier than the other participants. In the fourth bar of the image, A seems to have experienced a less diminuendo compared to the other participants. Her curve may be interpreted as an expression of a perceived dynamical level continuing into the next melody phrase without much relaxation at the harmonic cadence of the fourth bar. A plausible explanation of this is that the participant A has experienced the harmonic-rhythmical figure in the left hand part as an end belonging to the total preceding melody phrase.

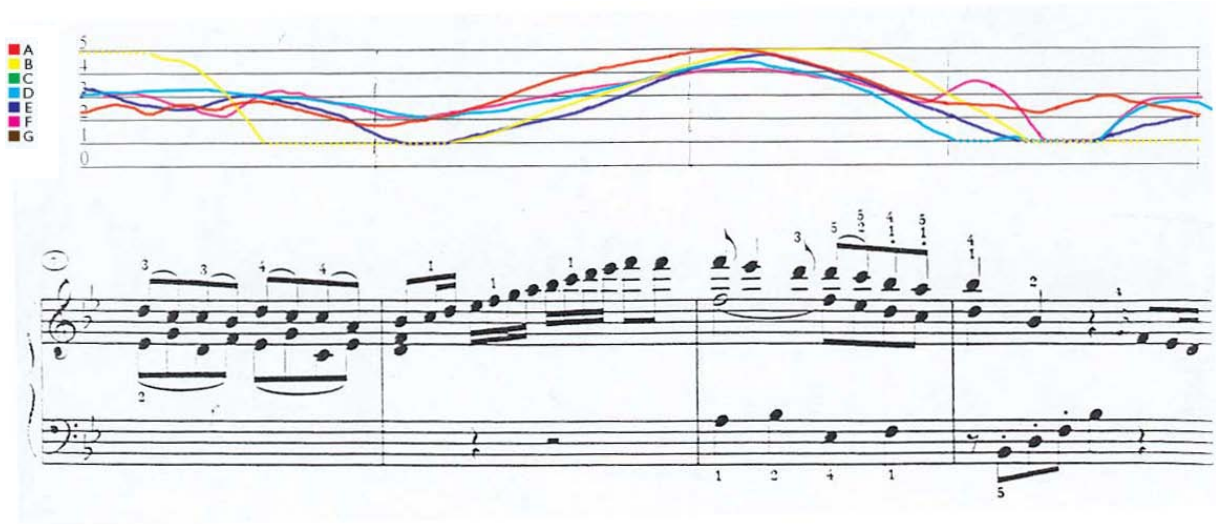


Image 4a: Curves drawn by A, B, D, E, and F in a section of the Mozart excerpt (1/3:1–4)

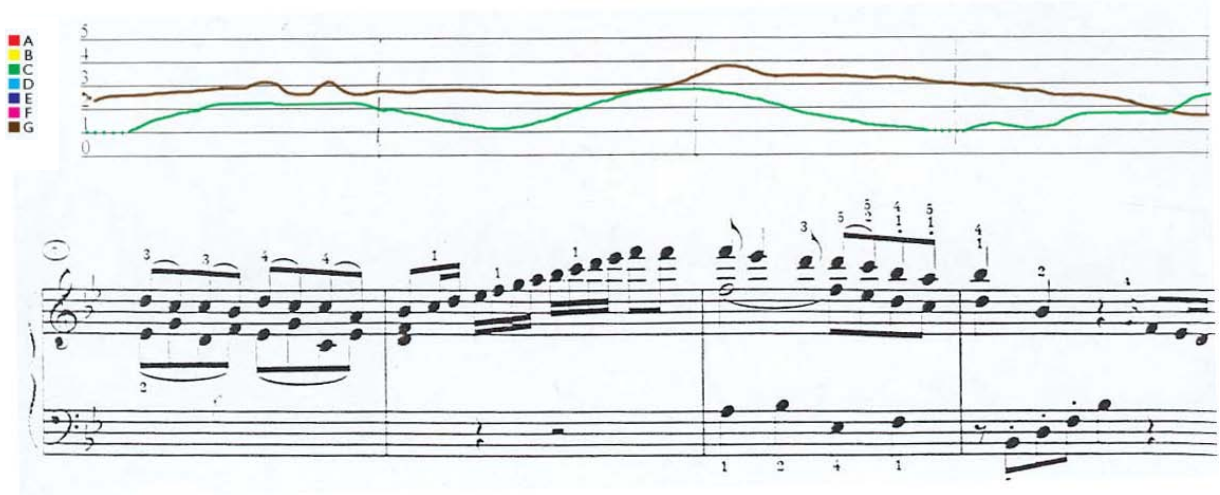


Image 4b: Curves drawn by C and G in a section of the Mozart excerpt (1/3:1–4)

Image 4b shows the curves drawn by C and G in the same section of the excerpt. Also these curves seem to relate partly to the melody line, even if the shape of the curve drawn by C does not follow the melody contour quite consequently and the curve drawn by G has a rather straight curve expressing less dynamical changes compared to the other participants. In contrast to the other curves, C's curve does not indicate any clear high point at the first beat of the third bar. At the harmonic cadence of the fourth bar, the curve of C tends to move upwards, indicating a gradually increasing dynamical level towards the next melody phrase, maybe for the same reason as the curve drawn by A, which has been discussed above.

At the dissonance-dissolution element of 1/2:1 (1-2), an exception of the phrasing curves' usual shape corresponding to the melody contour has been found. Here, all the participants except for C made their curves fall down a bit in spite of the melody line moving upwards. Traditionally, the dissolution of a harmonic dissonance in the melody part is performed by means of some kind of a diminuendo, even if the melody happens to move upwards. In this case, the shape of most of the phrasing curves seems to mirror such a diminuendo. This means that at this spot, the shape of the individual curves as generally following the contour of the melody line has been modified by a shape that might be interpreted as illustrating primarily the participants' individual experience of the performed dynamics of the harmonic dissonance's dissolution.

2) Brahms

(J Brahms: from Intermezzo in E flat major, op. 117, N° 1)

Brahms' Intermezzo has been composed in the following form: A1-B-A2. In this excerpt, only the two first parts of the composition have been included (A1-B). The first part may be characterised as primarily homophone and melodious, whereas the character of the second part is rather based on quickly changing harmonies and bold modulations between different keys. In the homophone structure of the first part, the melody line moves in a partly hidden way between the surrounding accompanying voices. This makes the melody appear in a less clear relief towards the other voices compared to what is the case for example in the Mozart excerpt, which may explain some of the occurring divergences between the shapes of the individual curves.

Nevertheless, in the homophone first part of the Brahms excerpt the phrasing curves often seem to correspond to the melody contour of the right hand part in the same way as in the Mozart excerpt, even if the individual curves are here generally more diverging. An interpretation of this is that the music might be characterised as somewhat more ambiguous and complex.

According to the shape of the individual curves, it seems as if the participants have sometimes focused not exclusively on the progression of the melody line, but also on other elements imbedded in the music. This seems to have been the case

particularly in the second part of the excerpt, which may be characterised as more based on changing harmonies and modulations than on a clear melody line. In this somewhat low-voiced section beginning in the third system of the second page (2/3:1-) and continuing until the end of the excerpt, the curves drawn by some participants seem to correspond to the harmonic progression rather than to the melody line, which will be exemplified when describing the second main category referring to the participants focusing mainly on the musical parameter of harmony.

Image 5a shows an example of phrasing curves still corresponding to the melody line by following its contour. The participants A, B, C, D, and E drew these curves at the bars 2/1:1-2 in the first part of the excerpt. Image 5b shows the curves drawn by F and G in the same section. The shape of the curve drawn by G looks straight indicating almost no dynamical changes, whereas the curve drawn by F does not relate exactly to the melody contour. Maybe, the participant F has experienced the dynamics of the recorded performance in a corresponding way, but it may also have something to do with F's tendency of focusing more on the harmonic progression than on the melody line, which will be discussed when presenting the next main category.

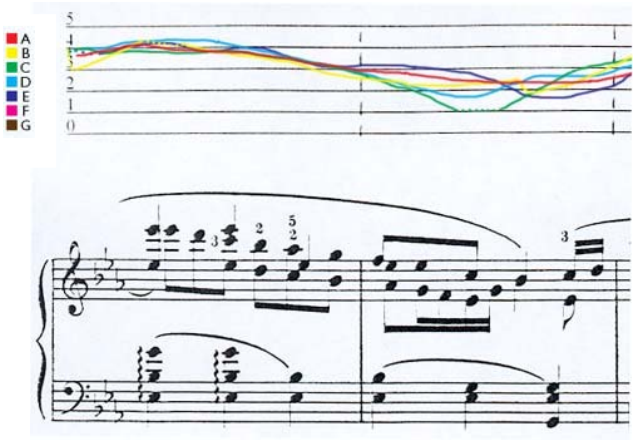


Image 5a: Curves drawn by A, B, C, D, and E in a section of the Brahms excerpt (2/1:1–2)

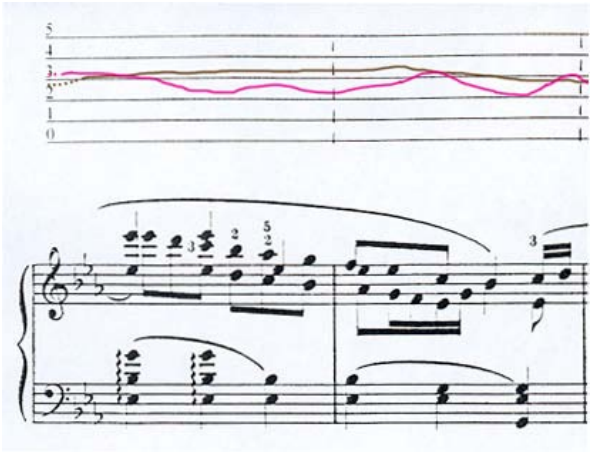


Image 5b: Curves drawn by F and G in a section of the Brahms excerpt (2/1:1–2)

3) Debussy

(C. Debussy: from 'Préludes pour Piano (1er Livre)', No 12 ['Minstrels'])

The title of Debussy's Prélude is *Minstrels* (referring to clowns, street musicians), which may be interpreted that the main character of this composition is supposed to be humoristic. The composition contains a lot of surprising and unexpected musical effects, which may give rise to the experience of something exciting happening all the time. Due to this special musical character, in general the curves drawn by the participants seem to mirror not so much any specific melody line as the total complex interplay of several musical parameters at a time, particularly rhythm and

the harmonic progression, which will be exemplified in the corresponding categories below.

The spread between the individual curves is generally rather big, although common features have been observed as well. In some more melodious parts of the excerpt, where the rhythm is less outstanding, the curves of the participants seem to correspond more to the melody contour in the same way as in the previous excerpts.

Image 6a shows an example of occurring similarities in shape between the curves of the participants A and D at the bars 2/2:1-4. The shape of their curves tends to follow the melody contour. Even if the music is rather complex, some kind of a melody line may still be discerned. When not calling special attention to another voice in a musical performance by using for example dynamical means, listeners will usually perceive the uppermost voice as the main melody line due to a long musical tradition (cf. Sloboda, 1985).

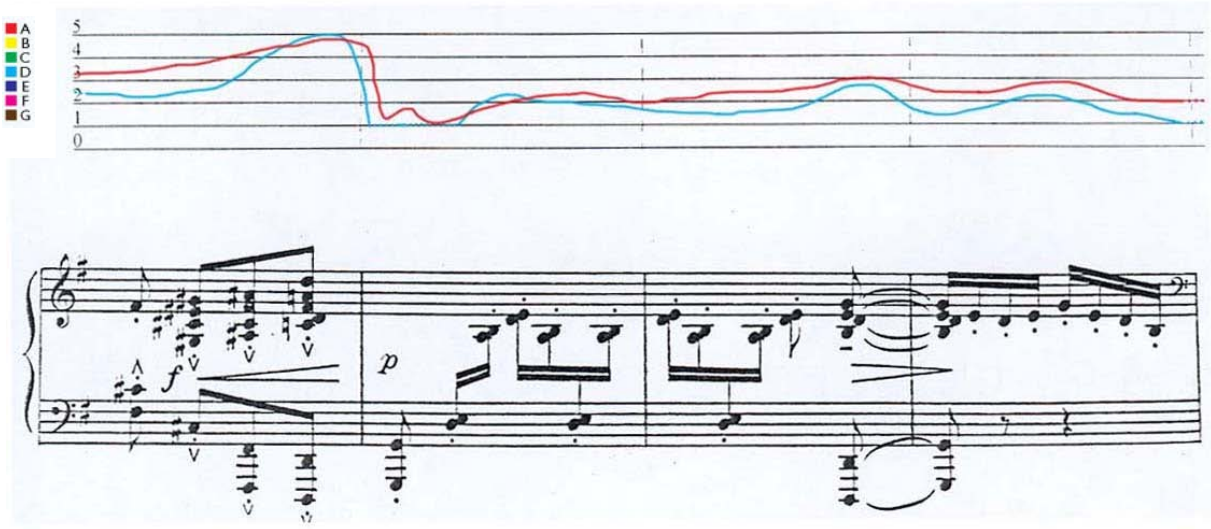


Image 6a: Curves drawn by A and D in a section of the Debussy excerpt (2/2:1–4)

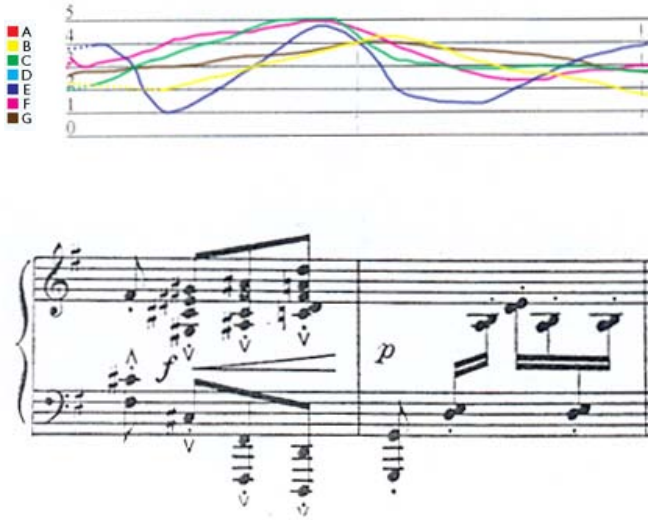


Image 6b: Curves drawn by B, C, E, F, and G in a section of the Debussy excerpt (2/2:1–2)

Image 6b shows the curves drawn by the other participants in the two first bars of this same section. In the same way as was the case in the corresponding parts of the curves drawn by A and D at the first bar (2/2:1), these curves indicate in different ways an ascending dynamic towards the culmination point at the last quaver of the bar (2/2:1 [2:2]). A comparison between the two images 6a and 6b respectively reveals that the curves of A and D on one hand and the curve of E (dark blue) on the other are all falling down abruptly after the culmination point towards a low dynamical level, exactly where the subito piano starts on the first beat of the succeeding bar (2/2:2 [1]). In contrast to this, the four other curves are here descending more slowly. According to the shape of their curves, A, D, and E seem to have reacted quicker to the musical stimuli compared to the other four participants, whose curves seem to express rather the experience of a kind of delayed remaining dynamical effect provoked by the preceding crescendo.

A similar example of curves expressing quicker or slower reactions towards musical stimuli appears in the following page of the excerpt, at 3/2: 1-2 (cf. Appendix A3). After the dynamically culminating last quaver of bar 3/2:1 (2:2), the curves of B, E, F, and G are descending gently, whereas the curves of A, C, and D are falling down in a more sudden way at the empty first beat of the following bar (3/2:2 [1]). This means that this time, it is not the curve drawn by E, as was the case in the previous example, but the part of the curve drawn by *C* that together with the corresponding parts of the curves of A and D may be interpreted as expressing a quicker reaction to the musical stimuli compared to the curves of the other participants expressing a delayed dynamical level, probably linked to the remaining effect of the preceding crescendo.

4) Bentzon

(N. V. Bentzon: from 'Træsnit' ['Woodcut'], op. 65)

The fourth excerpt is a polyphone variation composed by Bentzon with some musical licence for three intertwined voices. The music may be described as being more complex than that of the previous excerpts. The shape of the individual curves seem to mirror not only the melody line but also the artistic interplay between several musical parameters, for example rhythm, accents, metrical patterns, and harmonies.

The polyphonic character of the excerpt enables the melody part to change places between the three voices. At 2/1:2 in the first system of the second page, two voices are moving in opposite directions towards each other (cf. Image 7a, second bar). In this case, both of the voices may be perceived as melodies. According to the instructions, it was always up to the participants themselves to choose which voice to be considered the main melody part (cf. Chapter 3: 3.3.4.).

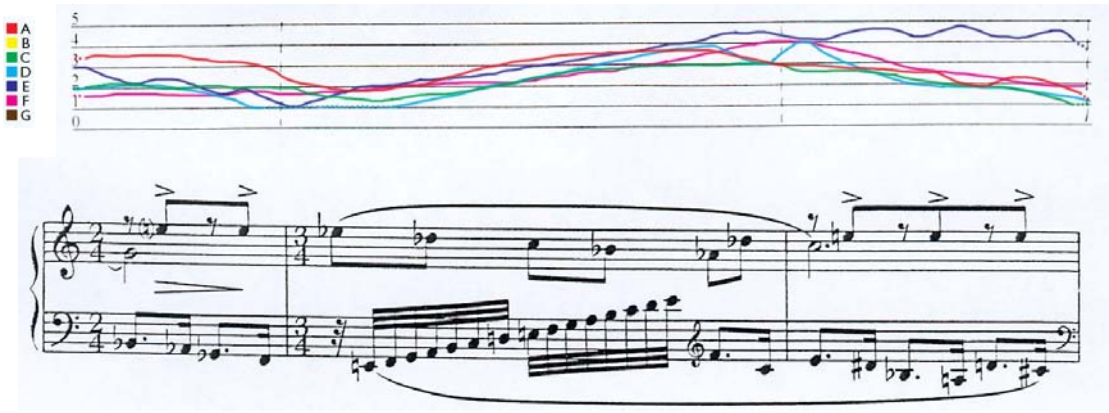


Image 7a: Curves drawn by A, C, D, E, and F in a section of the Bentzon excerpt (2/1:1–3)

Image 7a shows the curves drawn by A, C, D, E, and F at 2/1:1-3. In the beginning of the second bar, these curves correspond to the ascending melody contour of the left hand part. However, the individual phrasing curves express the location of this phrase's culmination point in slightly different ways. An interpretation of this is that the participants, although focusing at first mainly on the ascending melody contour of the left hand scale in the beginning of the second bar, have either switched focus to the ascending interval of the right hand part at the end of the second bar (2/1:2 [3]) (the participants E and F) or have kept their focus on the left hand part with its descending interval at the same spot (the participants A and D). At the end of the bar in question, C (green) has notated his curve continuing on one and the same dynamical level without changes, which means that at this place he has chosen not to follow any melody contour at all.

According to the shape of his curve, D (light blue) seems to have emphasised the high dynamic level on the first beat of the third bar (2/1:3) in particular, whereas the participant E (dark blue), contrarily to all the other participants, has notated the accented syncopes of the right hand part on a very high dynamical level. An interpretation of this is that the participants D and E have here focused mainly on accents and rhythmical elements of the music (cf. 4.1.3.).

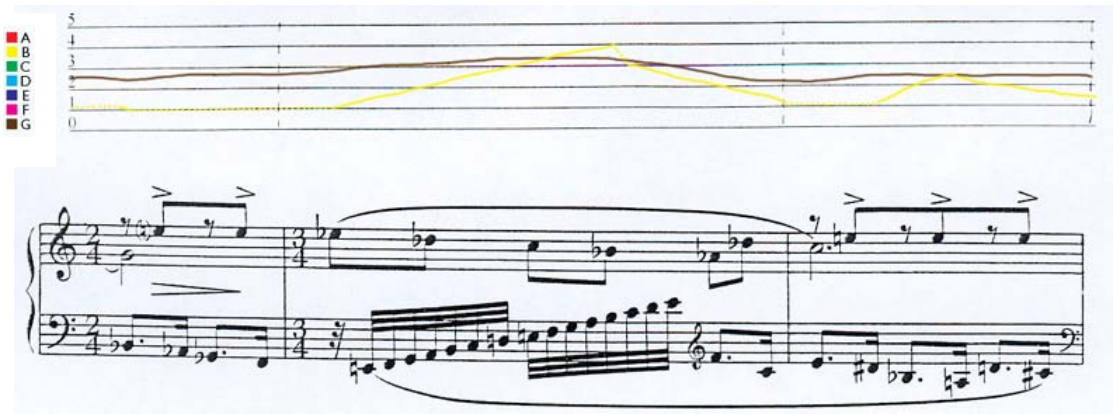


Image 7b: Curves drawn by B and G in a section of the Bentzon excerpt (2/1:1–3)

Image 7b shows the curves drawn by B and G in the corresponding section. The curve of G sticks to its generally rather straight shape, whereas the curve of B seems to correspond more or less to the melody contour of the left hand part in the second bar.

5) Schönberg

(A. Schönberg: from the third movement of Sonata op. 26 [1924])

The Schönberg excerpt is a short interlude for piano solo from the third movement of a composition that is originally written for woodwind instruments, but here transcribed for the flute and the piano by Felix Greissle, the son-in-law of Schönberg. The composer himself has approved the edition of this version.

The music may be described as polyphonic with a structure that gives rise to the impression of an interplay between two main voices, even if these voices are supplied with many chord notes in between. Despite the relatively big complexity of the Schönberg excerpt, the shape of the individual curves seems to correspond to some kind of synthesis between a limited number of musical parameters at a time: the changing dynamics of the melody line, rhythm and harmonies. The spread of the individual phrasing curves representing this excerpt is generally big, but some common features between the individual curves may still be discerned.

In bar 1/2:2, all the individual phrasing curves are in different ways ascending towards a dynamical high point (cf. Image 8a, first bar). According to the shape of the curves, this high point seems to be located somewhere in the area around the bar line between the two bars displayed in the image below. After the high point, all of the single curves express in different ways a slowly descending tendency, although there is a rather big spread between them.

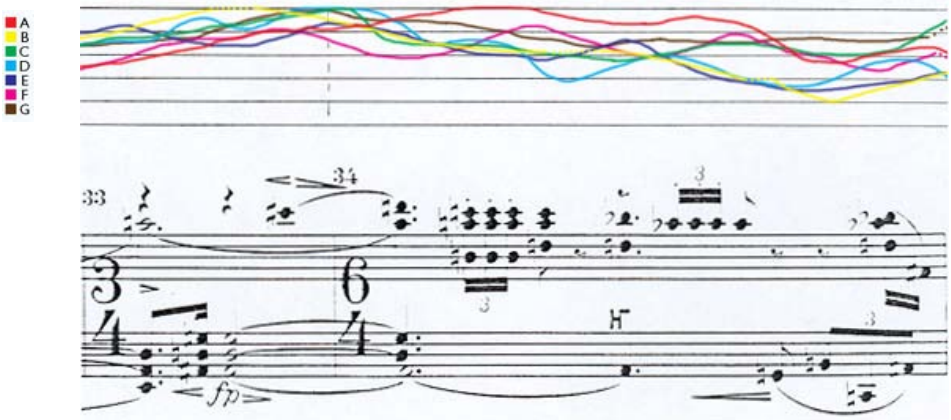


Image 8a: The participants' curves representing a section of the Schönberg excerpt (1/2:2–3)

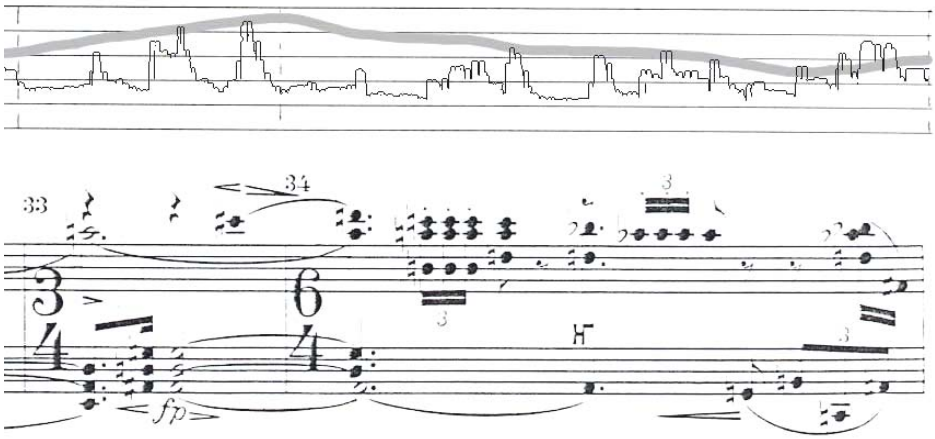


Image 8b: Average curve and physical amplitude curve representing a section of the Schönberg excerpt (1/2:2–3)

In Image 8b, the thicker grey line represents the calculated *average* of the constantly changing dynamical levels within all the seven individual phrasing curves together. The jagged light grey line is a constructed curve visualising the changing *physical amplitudes* of the recording. The latter curve has been normalised to fit into the same device with the dynamical scale that was used by the participants (cf. Chapter 3: 3.4.2.1.). A comparison between the constructed physical amplitude curve and the calculated average curve of the image gives a hint of the difference between the *measured* changing loudness of the recording's sound in a *physical* sense on one hand, and on the other the average of all the single phrasing curves together supposed to represent the dynamical progression of the reproduced sound within the melody part as *experienced individually* by all the participating listeners. In this context, it should be underlined that such a comparison cannot be taken for granted, bearing in mind that this representation of the changing physical amplitudes do not correspond to the dynamical progression of the melody part specifically. In this case, the indicated physical amplitudes refer to the total changing dynamical sound levels of all the single voices together within the performance. However, the relations between physically measurable phenomena in the surrounding world and the multiplex individual experience of the same phenomena cannot be left out of account either. Therefore, despite the mentioned reservations against a comparison of this kind, it might still be of some interest to study similarities and differences between the displayed curves representing two different aspects of the music.

The discrepancy in shape between the average curve and the physical amplitude curve indicates that the average curve based on all the notated levels within the individual phrasing curves intended to represent the individually perceived dynamical progression does not correspond exactly to the curve representing the measured dynamical sound levels of the music. For example, in the amplitude curve the changing amplitudes of every single piano tone is represented by very quick and sudden movements, whereas the calculated curve representing the average of the experienced dynamics reveals a tendency also visible in the single curves (cf. Image

8a) of *evening up* single musical stimuli into something that corresponds to a more coherent and continuous course of musical events (cf. Kurth, 1947).

In Image 8b, the amplitude curve thus drops down very abruptly at the beginning of the second bar immediately after the dynamical high point, whereas the average curve moves down only slowly. This tendency is also visible in each one of the seven individual curves in the same bar, even if the spread is big (cf. Image 8a). The shape of the curves may be interpreted as mirroring the experience of a delayed remaining effect emanating from the preceding high point.

In this special case, the physical amplitude curve represents the changing amplitude of the specific piano sound. An amplitude curve representing the sound of another instrument would definitely have another shape, without the typical quick and sudden movements emanating from the characteristic piano sound with its inevitable gradual decays after pressing down every single key. A corresponding amplitude curve representing for example the violin sound would probably have a somewhat evener shape. Nevertheless, it is still likely that the MPhC drawn by free hand representing the individually experienced dynamics would deviate considerably from a physical amplitude curve, the latter representing the progression of the acoustical sounds in a quicker and more sudden way compared to a curve reflecting the experience of human minds.

General shape of the curves: Summary

Important similarities between the shapes of the individual curves have been observed in many cases. However, except for in the Mozart excerpt, the spread between the curves is generally rather big. An interpretation of this is that music of a clear homophone kind, as for example the excerpt from the first movement of the Mozart Sonata that has been employed in this study, seems to facilitate the listeners' focus on the dynamical progression of the melody part according to the original intentions of the MPhC. On the other hand, music that may be characterised as more complex in a structural sense with the melody part appearing in a less clear way, for example the first page of the Bentzon excerpt, sometimes seems to provoke the listeners to focus not only on the melody part but also on other musical parameters as for instance harmonies, rhythm, and metrical patterns, which will be exemplified in the parts of this chapter describing the main categories corresponding to these parameters.

4.1.1.2. High points and low points

A criterion that the MPhC should fulfil for being useful as a tool representing the perceived dynamics of the melody part visually is that there are *visible similarities* between the individual phrasing curves drawn to *one and the same* performance of a composition. Therefore the exploration of the phrasing curves' high points and low points as notated by the participants of this study may be considered as being a matter of special concern. The notated high points and low points are supposed to

give a hint of the participants' experienced dynamical culmination points and relaxation points. The high points and low points also have the function of visual turning points within the continuously drawn phrasing curves, which gives an overview facilitating a comparison between the individual curves.

As already described (cf. Chapter 3: 3.3.4.), the participants were instructed to calibrate and adjust their phrasing curves to touch upon the sixth line, defined as the maximal level of the dynamical scale, *at least once* in each excerpt. This also includes the Brahms as well as the Schönberg excerpts in spite of their general low-voiced character in a dynamical sense. On the other hand, if the participants did not experience any sections performed in a corresponding *soft* dynamic they were not obliged to indicate any *low points* or *low areas* at all. An exception of this is at the very beginning of each excerpt, where the curves were supposed to start at a given point that is always located on the first line of the device's dynamical scale, and at the very end of some of the excerpts (Brahms, Bentzon, and Schönberg), where the curves in a corresponding way were supposed to return to a given point located also on the first line of the dynamical scale (cf. Appendix A1-5). In the Mozart and the Debussy excerpts no such returning points figure at the ends of the devices because of these excerpts interrupting musical sections without any final cadences.

Considering the specific purpose of this study, it is thus crucial that some kind of consensus can be found between the participants' notated high points and low points. This is also the reason why presenting mainly examples indicating an *agreement* in this sense between the individual phrasing curves. The individual experience of dynamical high points and low points is indeed a multiplex phenomenon provoked by the total impression of the often complicated interplay between many musical parameters at a time, which makes it difficult to focus primarily on the dynamical progression of the melody part. Nevertheless, the point of departure for this study has been the idea that the experience of melody is a dominant aspect, at least in classical music (cf. Chapter 3). Thus, generally the other musical aspects are subject to the dominating role of the melody part and not the other way around, even if these aspects may modify, reinforce or diminish to a great extent the principal impact of melody.

In some few cases, it is relatively obvious that the results of the participants' notated high points indicate a focus on other musical aspects than the dynamical progression of the melody part, which will be discussed in the parts of this chapter describing these corresponding main categories. However, according to the shape of the individual phrasing curves, the participants seem to have generally reacted to the same kinds of high points and low points that may be discerned in each one of the five piano excerpts out of a general structural perspective, which in this context means the composed melody line reinforced by other aspects imbedded in the music as for example the harmonic progression, meter and rhythm, etc. Sometimes the participants have also notated high points at other places than those motivated exclusively by the musical structure, which may be interpreted as an indication to that

they instead of reproducing only an impression provoked by their familiarity of reading printed scores, in this case the score displayed parallel to the device for drawing the MPhC, they have attempted to illustrate their experience of the *sounding* music.

1) Mozart

According to the curves drawn by the participants, there are three clear high points in the Mozart excerpt: at 1/3:3 (1-), 3/2:1 (1), and 3/3:4 (1) respectively (cf. Appendix A1). The first one is located at the first cadence of the movement, and here the pitches of the melody part of the right hand are moving high up in the register. In the third page, the second theme of the sonata movement is introduced. Here, the two other clearly indicated high points of this excerpt are located, in both cases according to the curves drawn by five of the seven participants, although not by exactly the same persons. In this excerpt, the curves drawn by most of the participants also have two low points or low areas in common.

At the first place of the first page, all of the participants except for C and G have notated clear high points or high areas (1/3:3 [1-]) (cf. Image 4a and 4b). However, the curve drawn by G is moving just below the fifth line from below defined as the border of the high area. The curve of C has also an ascending tendency, even if it does not move up to the high area.

The second high point of the excerpt is located at 3/2:1 (1) (according to the curves drawn by all the participants except for A and C). Particularly the curve of E begins a steep ascending movement towards the succeeding high point where the second theme is introduced already before the third beat of the preceding bar, which may be interpreted as the expression of an inner preparation or musical inhalation. The curves of A and G also have a similar tendency, even if the preparation towards the high point is indicated much later compared to the curve drawn by E. The curves of B, D, and F are here ascending abruptly, whereas the curve of C has no connection at all between the systems of the score.

The third high point of the excerpt has been notated at 3/3:4 (1) (according to the curves drawn by all the participants except for B and C). The curve of C does not reach up to the fifth line from below defined as the border of the high area at any of the mentioned two places in the third page, although it indicates still an increased dynamical level in both cases. At the first place, the curve of B steps clearly over the fifth line, whereas at the second place, the curve moves exactly in the opposite direction from a very low marked level at the beginning of the bar succeeded by an ascending movement in the second half of the bar. An interpretation of this is that when repeated at 3/3:4, the theme is accompanied by a less thick right hand chord on the first beat compared to what was the case the first time. Moreover, the two crotchets in the left hand part may have given rise to the experience of a light dance-like character. Thus, together these two musical factors may have provoked

the impression of a lower dynamical level, which may explain the shape of B's curve.

In contrast to the curve drawn by B, the curve of *A* does not reach up to the fifth line at the first place but at the second place indeed! A has drawn her curve with an increased dynamic when the theme is repeated a second time. These two contradictory reactions to the music, illustrated by the different shapes of the curves drawn by A and B respectively, may appear as somewhat strange. However, these examples shed light to the ambiguity and complexity of a phenomenon like music, which will far from always be perceived in exactly the same way by different persons.

Most of the participants seem to have agreed about the location of two principal low points or low areas. At the B flat major cadence of 1/3:4 (around 2-3) after the high point of the preceding bar that has been discussed above, all the participants except for A and G have indicated low points or low dynamical areas (cf. Image 4a and 4b). In the bar of the C major cadence at 3/1:3, all the curves except for that of A are falling down towards a low point or a low area.

2) Brahms

According to the phrasing curves representing the Brahms excerpt, there are five high points, three of them located in the first page. Most of the participants also seem to agree about the location of the low area sections.

The first high point is located at 1/2:1 (1) (as notated by all the participants except for F) (cf. Appendix A2). The reason for indicating this as a high point may be the impression of an increased dynamic caused by the ascending contour of the melody line, maybe reinforced by the harmonic progression. The second high point located at the end of the same bar, at 1/2:1 (6-1) (as indicated by all the participants except for C and F), is probably motivated by the same melodic element as in the previous bar with identical harmonies being repeated. The B flat pitch of the melody line relatively high up in the register at the upbeat of 1/2:1 (6) may be experienced as emphasising the repeated motif. This emphasis may also be the reason why the high point here, in contrast to the previous high point, has been notated on the upbeat and not on the first beat of the succeeding bar.

However, the most evident high point of page one seems to be located at 1/2:3 (between 3-6) (as indicated by all the participants except for F). There is a discrepancy between the single participants in respect of the exact location of the dynamical high point in this bar, maybe because of the participants focusing not exclusively on the melody line but also on the total complex interplay between several musical parameters at a time.

In the second page of the excerpt, at the first half of the bar 2/1:1, all the participants except for F and G have notated a high point, probably by influence of the melody pitches high up in the register in the right hand part. At 2/2:4 (1), the par-

ticipants B, E, F, and G have indicated a clear high point, regarding G even a peak. In this case, it seems as if the high point in question has been notated not exclusively because of the dynamics of the melody line but because of the complex interplay between many other musical aspects as well, since the music is not performed with any particularly loud dynamics in this section. On the other hand, at exactly the same place the curve of C sticks to a very low dynamical level corresponding more to the performed dynamics.

In this excerpt, the phrasing curves are often moving more or less close to the low area. In the middle of bar 2/1:4 of the Brahms excerpt, all the curves except for those of A and G are moving downwards in different ways towards the second line from below, probably because of the falling melody line of the middle voice in the right hand part, reinforced by the performed diminuendo and the harmonic cadence, all together provoking the impression of a relaxation.

The section that is introduced in the third system of the second page may be experienced as somewhat introverted and low-voiced. According to the indicated dynamics of the printed score, the music is supposed to be performed in a relatively soft dynamic. Here, the phrasing curves tend to stick to a corresponding low dynamical level. The curve of F is an exception of this, in general expressing a considerably higher dynamical level at this place. An interpretation of this is that F has been influenced by the harmonic progression rather than the dynamical progression of the melody part.

At the end of bar 4/1:2, where the melody line of the right hand part moves down in the register and the rhythmic movement of the left hand stops, all the participants except for C and F have indicated low points. In the very last bar (4/1:4), all the curves except for that of F are moving in different ways within the low dynamical area.

3) Debussy

In the phrasing curves representing the Debussy excerpt, five rather clear high points have been notated. According to the curves, most of the participants also agree about the location of low points and low areas.

In the second page, exactly on the last quaver of bar 2/2:1 (2:2), all the participants except for B and G have notated a high point, as regards C, D, and F even a peak (cf. Image 6a and 6b). The two other participants, B and G, have instead indicated high points located just one quaver later, which means on the first beat of the next bar (2/2:2 [1]). Thus, all the participants have expressed their personal experience of a high point very close to each other, no doubt because of the rather humoristic effect caused by the strong crescendo succeeded by a sudden soft dynamic on the first beat of the second bar. A, D, and E have illustrated this effect by making their curves fall down very abruptly towards this first beat.

When the fanfare-like motif is introduced in the right hand part for the first time at around the second half of bar 2/1:4 (cf. Appendix A3), the curves of C, E, and F move up into the high area, even if the high points have not been notated at exactly the same spot. When the same fanfare motif is repeated a second time at 2/3:5 (2), B, C, E, and F have notated a high point, as regards the curve of E even a peak. Here, the curves of A, D, and G indicate an ascending tendency as well, even if they do not move up all the way to the fifth line from below. As regards the curves of A and G, the ascending tendency is however totally absent when the same fanfare motif is introduced for the very first time, maybe because of the forte dynamic appearing much clearer the second time, since the motif has been modulated into another key higher up in the register.

The most evident high points of the excerpt's third page are located around the end of the bars 3/1:3 (2:2) and 3/2:1 (2:2) respectively, where all the participants without exceptions have expressed their experience of a dynamical culmination. According to the printed score, both of these two bars are supposed to be performed with a crescendo culminating on the last quaver. The first time, D and E have indicated almost a peak, whereas A, C, D, F, and G have indicated a peak the second time, when the same motif is repeated higher up in the register and with a wider melodic interval between the two last octave quavers in the right hand part.

In the Debussy excerpt, all the participants agree about a low point corresponding to the falling melody line, as well as the hesitating 'Cédez' and the diminuendo as printed in the score at the second half of bar 1/2:1 (2-1). At the place repeating the same motif at 1/3:1 (2), all the participants except for F have indicated a low point as well.

The curves of all the participants except for that of C are moving more or less close to the low area of the second line from below during all of the soft bass motif in the left hand part at the bars 3/2:4 (2:2) - 3/3:2 (2). However, here the curve of C dips down to a low point just occasionally on the last quaver of bar 3/2:5 (2:2), and contrarily to all the other participants, C has indicated almost a *peak* on the very first bass tone of this very soft motif that is supposed to be played in a pianissimo dynamic. From this it may be concluded that at this place, C has focused on other musical aspects than the intended dynamical progression of the melody part, which will be discussed in the part of this chapter describing the category of combined musical aspects.

4) Bentzon

The principal dynamical shape of the Bentzon excerpt may be described as one long gradual crescendo culminating in the middle of the excerpt and succeeded by a corresponding long gradual diminuendo into a very soft dynamic at the end. According to the participants' curves, the dynamical culmination point, which may also be considered as a huge energetic turning point within this excerpt, is located somewhere in the space from the end of the bar 2/3:1 until the beginning of bar

2/3:3 (cf. Appendix A4). Although having indicated their high points by means of curves assuming somewhat diverging shapes, all the participants without exceptions have expressed a very high dynamical level at this place. However, since it may be hard to discriminate the precise location of this dynamical culmination, the participants' curves do not indicate the highest point at exactly the same place in the device.

The participants have not notated any clear low points in this excerpt. Nevertheless, all the curves move down gradually towards the second line from below in the last system, which corresponds to the diminuendo into the very soft dynamic at the very end.

5) Schönberg

According to the participants' phrasing curves, there are two relative high points in the Schönberg excerpt, even if the general character may be described as rather low-voiced. The most evident high point, as notated by all the participants in different ways, is located in the first page, more or less close to the bar line between 1/2:2 and 1/2:3 (cf. Image 8a). This high point is probably motivated by the right hand melody line moving upwards in the register to the *d sharp* pitch and reinforced among other things by this note's relatively long duration.

In the second page, all the participants except for B have notated a high point at about the beginning of bar 2/2:1 (1) (cf. Appendix A5). An interpretation of this is that the experience of a high point at this place may have been provoked by the rising melody contour of the *left* hand part reinforced by the relatively big melodic interval jumping up in the register towards the long *g* note.

In the Schönberg excerpt, the participants have not notated any clear low points. Only the curves drawn by D and E fall down to the low dynamical area at each one of two indicated rests within the printed score, which are located respectively at 2/2:1 (5:2) and 2/3:1 (3:2-4).

High points and low points: Summary

The individual phrasing curves reveal an agreement between the participants about the location of many high points and low points that may be discerned in each one of the five piano excerpts out of the performed dynamical progression of the melody line as well as out of a general structural perspective, which means in respect of the composed melody part reinforced by other aspects imbedded in the music as for example the harmonic progression, meter and rhythm. However, notated high points have also occurred, sometimes even on the peak level, at other places than those motivated by the melody line or the imbedded general musical structure.

Since high points have been notated without always being related to structurally motivated culmination points, this may be interpreted as indicating that when drawing their curves, the participants seem to have attempted to express primarily their

personal experience of dynamical high and low points as transmitted *acoustically* through the recorded excerpts, which means that they have probably not been exclusively influenced by the visual appearance of the printed score and their previous general musical knowledge.

In some cases notated high points have occurred in spite of the low-voiced character of the musical sections being performed in a relatively soft dynamic. An interpretation of this is that the participants in question have focused on other musical aspects than the dynamical progression of the melody part, which will be discussed in the parts of this chapter describing the corresponding main categories.

4.1.1.3. Beginnings and ends of the curves

Drawing the curves' beginnings and ends constitutes a part of the present study that may be regarded as an experiment of somewhat less significance. These drawings were supposed to illustrate visually the experienced connections between the preceding 'silence' and the first note on one hand, and the connection between the last note and the return into the following 'silence' on the other. In most cases, there seems to be a rather big discrepancy between the parts of the participants' curves illustrating the beginnings and the ends of the excerpts. Only in some few cases, for example in the Brahms excerpt, an agreement between the participants' curves has been observed.

In the Brahms excerpt, the curves drawn by A, B, C, E, and G begin in a rather similar way with a smoothly ascending tendency through the upbeat towards the first beat of the first bar, which seems to correspond to the soft character of the music. However, the curve drawn by D rises up abruptly towards a notated high dynamical level. Also the curve of F starts somewhat abrupt, even if it ascends just to a very low dynamical level. All the curves except for that of F then fall down smoothly towards the dynamical level of zero (the first line from below) at the end of the excerpt, also corresponding to the soft character of the music. In contrast to this, the curve of F remains on a very high dynamical level until the end of the last bar, probably by influence of the harmonic aspect (cf. 4.1.2.).

Thus, except for in the Brahms excerpt the results indicate that this specific part of the study, testing the beginnings and the ends of the curves, has failed in respect of not revealing any evident accordance between the participants. An interpretation of this may be that they had not understood exactly what was asked for, because the instructions were not clear enough.

4.1.2. Harmony

As mentioned in the beginning of this chapter, the results of particularly the study's first phase indicate that the participants, in contrast to this study's original purpose, have sometimes focused more on other musical aspects than on the melody part. In some of the curves representing parts of the *Brahms* excerpt in particular, a presumed focus on *harmony* can be discerned. Even if many of Brahms' compositions may be characterised as rather melodious, the harmonic aspect is in many cases undeniably important as well in contributing to the special atmosphere of his music. The dominant role of harmony in the present Brahms excerpt may be a reason why some participants sometimes seem to have switched their focus from the melody part over to the harmonic progression.

In the first page, the curve of F moves on a very low dynamical level without any notated high points at all, although his curve still shows an ascending tendency towards the high point as notated by all the other participants at 1/2:3 (3-6) (cf. Appendix A2). From the second page, particularly where the second section is introduced in the third system, at 2/3:1, and continuing until the end of the excerpt, F's curve moves up to a considerably higher dynamical level compared to the curves drawn by all the other participants, in spite of the low-voiced character of the music being performed in a rather soft sound level. The other curves mostly tend to stick to a lower dynamical level corresponding to the recording at this place.

In the following pages, which are also supposed to be performed in a relatively soft dynamic, the curve of F reaches even the maximal level of the dynamical scale several times, for example at 4/1:2 (2) and 4/1:4 (5). From this it may be concluded that F has here focused more on other musical aspects than the dynamical progression of the melody part, probably on the harmonic progression of the Brahms excerpt. The rather big distances in pitch between the right and the left hand part may have furthermore reinforced the sensorial impact of the harmonies.

Image 9a and 9b display the diverging dynamical levels as notated by the participants in a bar within the low-voiced section of the Brahms excerpt (3/1:3). Image 9a reveals an evident difference between the dynamical levels of the curves drawn by A, B, D, and E on one hand, and the very high dynamical level of the curve drawn by F on the other. Image 9b shows the dynamical levels of the curves drawn by C and G at the same place. Their curves have been notated on a moderate dynamical level, somewhere between the high level of F's curve and the lower levels of the other curves represented in Image 9a. However, as Image 9b shows, the curve of G moves up close to the border of the high area in the middle of the bar in question, which means that it expresses a higher dynamical level here than the curves drawn by A, B, C, D, and E, although not such a high dynamical level as that of F's curve.

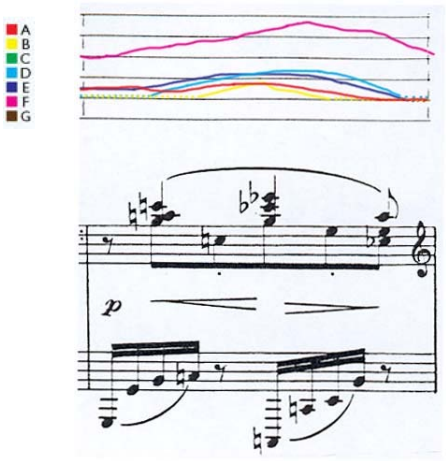


Image 9a: Curves drawn by A, B, D, E, and F in a bar of the Brahms excerpt (3/1:3)

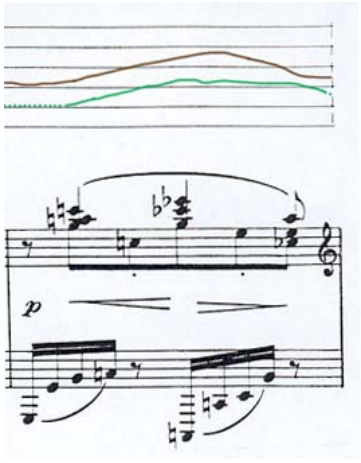


Image 9b: Curves drawn by C and G in a bar of the Brahms excerpt (3/1:3)

In the last page of the Brahms excerpt, several participants seem to have focused on another musical aspect than the dynamics of the melody line, in this case probably also the harmonic progression to a great extent. At the bars 4/1:1-4, the curves of C, D, E, and F appear with bends of big amplitudes in spite of the low-voiced diminuendo character of the music. Here, the curve of F keeps moving on a very high dynamical level all the way until the end of the excerpt. On the other hand, the curves of A, B, and G express a very low dynamical level at the same place, which may be interpreted as they have focused more on the dynamics of the performed melody part according to the original intentions of this study.

Hence, sometimes particularly the participant F seems to have focused on the harmonic aspect instead of on melody, for example in the Brahms excerpt. However, F is far from always a representative of the harmony category. For example, in the Mozart excerpt the curve drawn by F seems to correspond mainly to the melody line (cf. Image 10). The reason for this may be the special character of Mozart's music being composed in a typical homophonic style, probably facilitating the participants' focus on the melodic aspect.

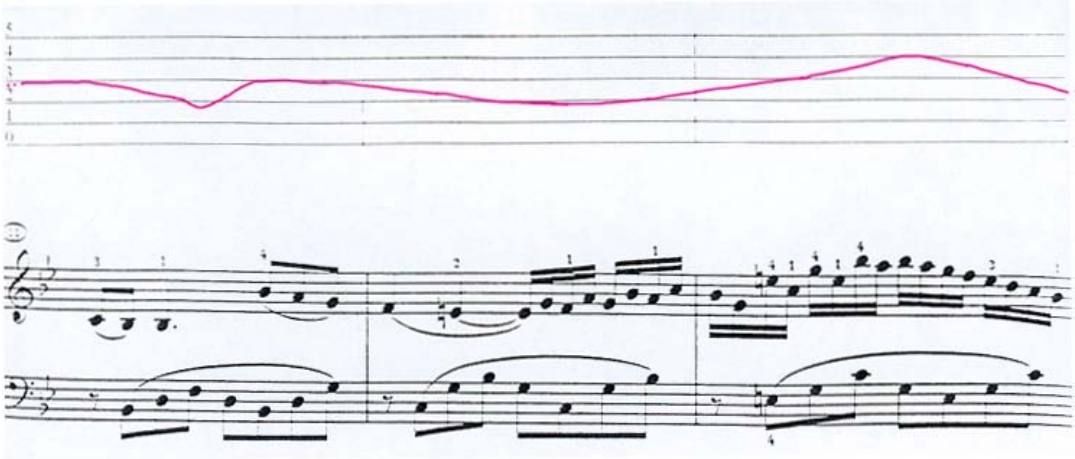


Image 10: Curve drawn by F in a section of the Mozart excerpt (2/1:1–3)

4.1.3. Rhythm

Sometimes the shapes of the curves drawn by some of the participants seem to correspond to the *rhythm* of the music rather than to the dynamical progression of the melody part. This interpretation is primarily based on the shape of some curves equipped with sudden bends or humps of different sizes at rhythmically stressed or accented notes. A focus mainly on the melodic element would probably have been expressed by means of a more continuous and evener curve at these places. The presumed focus on rhythmical elements occurs particularly in the Debussy, Bentzon, and Schönberg excerpts. Typical to these excerpts is that the rhythm appears in a clearer way compared to in the more melodious Mozart and Brahms excerpts.

1) Debussy

The Debussy excerpt may be characterised as humoristic with many surprising musical effects. In some parts, the rhythm seems to dominate the progression of the melody appearing in a less clear way than in the other music excerpts. In the beginning of the Debussy excerpt, the rhythm may be described as consisting of two elements: the bass voice of the left hand part emphasising the first beats as well as the upbeats of every single bar on one hand, and the right hand part emphasising instead the off beat rhythm with stresses primarily on the second and third beats of each bar on the other. However, this rhythmical structure does not exclude that these combined elements may be considered as a kind of a complete melody line moving between the left hand and the right hand parts. Furthermore, the right hand part may be perceived as a melody in itself even without taking into account the left hand part, whereas the left hand part in itself has primarily the function of an accompanying bass voice at this place.

In the two very first systems of the Debussy excerpt (1/1-2:1-7), all of the curves, except for that of G, are drawn with characteristic bends of different sizes (cf. Image 11a and Image 11b). The shape of these curves indicates a probable focus on rhythmical elements, since it is likely that a focus on melody would have instead been expressed by means of a more continuous and even curve shape. Although not expressing themselves in exactly the same way, most of the participants have thus drawn sudden bends within their curves, and the shape of five of the curves (the curves drawn by A, B, C, D, and F) corresponds to the rhythm of the right hand part with off beat stresses primarily on the second and third beat of each bar. Image 11a shows the rather similar shape of the curves drawn by A, D, and F in this section. Image 11b shows the other curves revealing among other things the clearly notated stresses of E's curve located on the left hand part's *first* beats of each bar instead. The curve drawn by E is also touching several times upon the fifth line counted from below indicating the border to the high area.

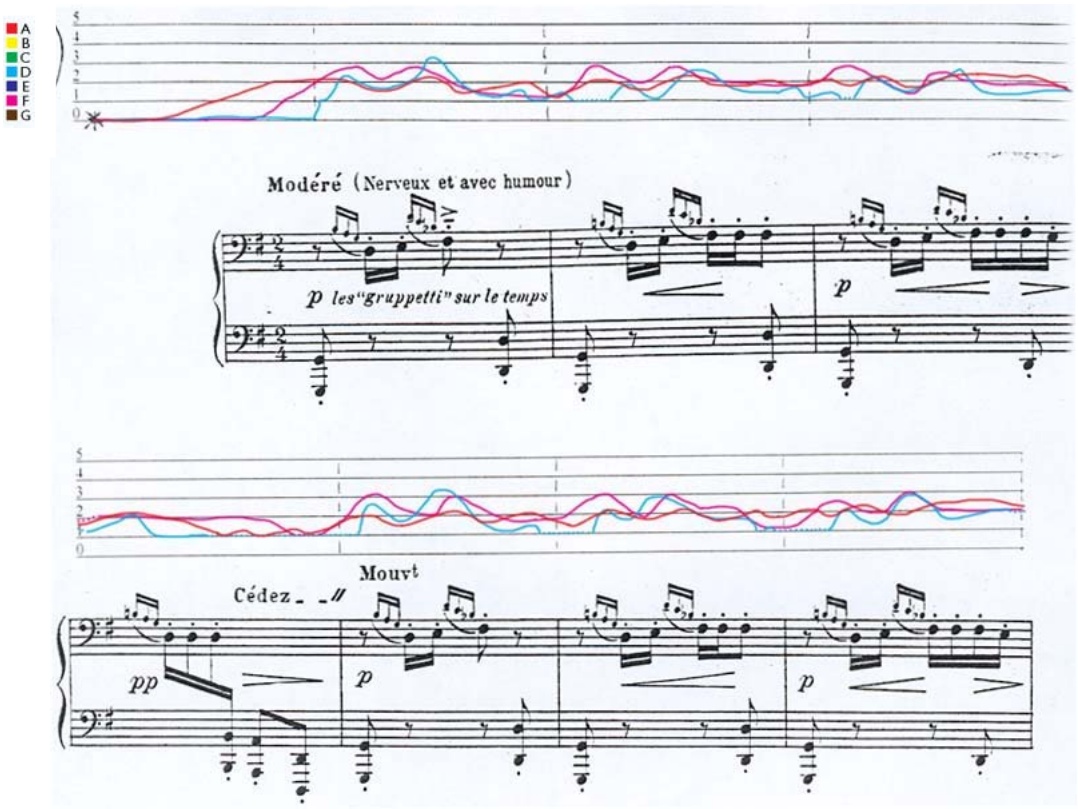


Image 11a: Curves drawn by A, D, and F in a section of the Debussy excerpt (1/1-2:1-7)

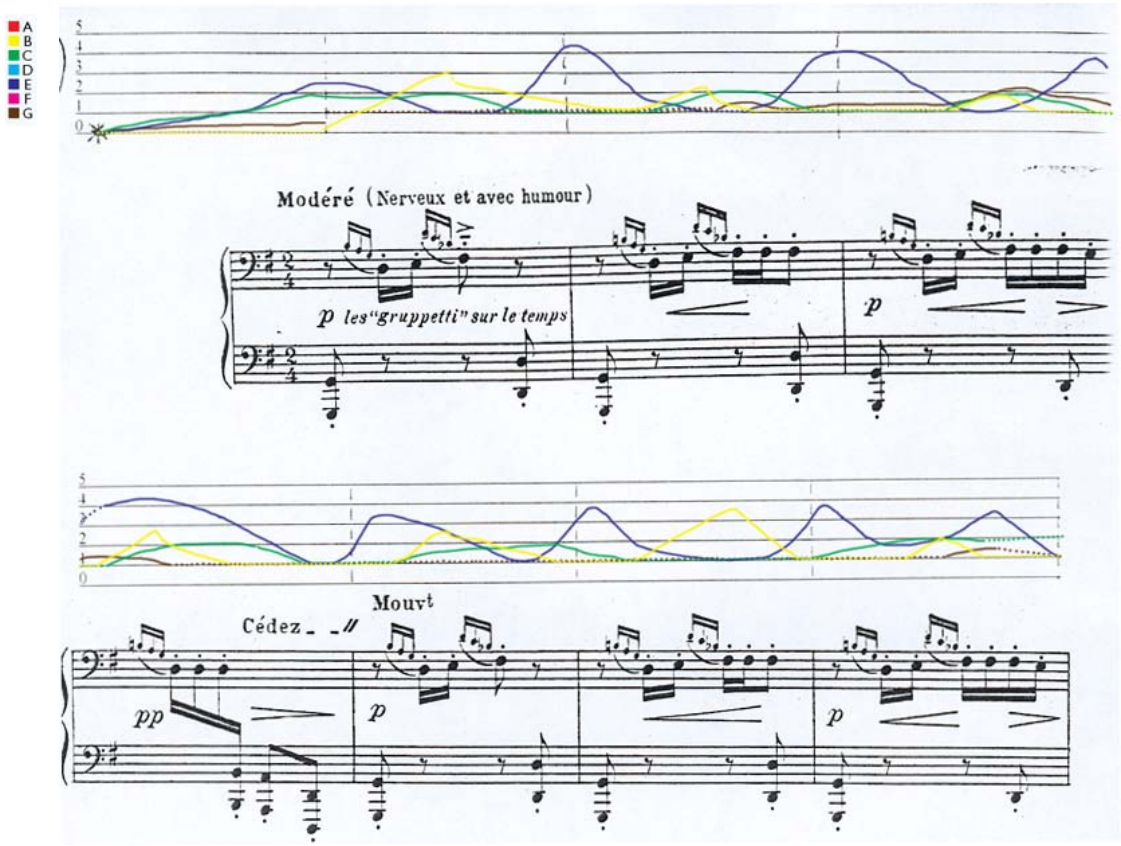


Image 11b: Curves drawn by B, C, E, and G in a section of the Debussy excerpt (1/1-2:1-7)

2) Bentzon

The Bentzon excerpt is a polyphone variation with a complex interplay between many rhythmical patterns imbedded in the different voices. These rhythms may easily draw a listener's attention away from focusing mainly on the melodic progression. In some cases, the shape of the individual curves representing this music may be interpreted as mirroring different rhythmical patterns, even if the musical parameters appear as intertwined in a way that makes it difficult to discriminate or isolate any single musical aspect from all the other aspects when listening to the excerpt.

In the first page of the Bentzon excerpt, the shape of the curves drawn by C and G can be interpreted as expressing the stresses localised mainly on the second or the third beats of each bar, whereas the curve of F indicates stresses on the first beats instead (cf. 4.1.4.), except for in bars with syncopated accents in the right hand part, where his curve indicates no signs of stresses at all. An interpretation of this is that the individual participants may have focused on different kinds of rhythmical patterns due to the rather complex character of the music.

In this same excerpt, the curves drawn by D and E seem to mirror the accented rhythm in different ways. The curve of D looks somewhat jagged and sharp angular, whereas the curve of E moves constantly on a very high dynamical level. At 2/1:3 (cf. Image 7a), E has in contrast to all the other participants drawn a curve assuming a shape equipped with humps touching upon the maximum peak level corresponding to the accented syncopes of the right hand part.

3) Schönberg

The polyphone Schönberg excerpt may be described as relatively complex. Nevertheless, it is still possible to discern some kind of a continuous melody line throughout the music. However, in some cases the shape of the individual curves may be interpreted as mirroring certain rhythmical patterns rather than the melody line.

In bar 1/2:3, the curves drawn by D and F correspond in different ways to the semi-quaver triplets of the right hand part. However, the shape of D's curve reveals a probable focus on the very triplets followed by a relaxation, whereas F seems to have focused on the quavers immediately succeeding each triplet group instead. This may be interpreted as F's experience of the triplets as a kind of anacrusis motif moving towards the succeeding quaver.

As Image 12a shows, the curves of A, C, D, and F have smooth bends, probably illustrating the triplets in bar 2/1:1 of the right hand part. At the end of this bar, the curves are striving up towards the high point as notated by most of the participants (except for B) at the first beat of the succeeding bar.

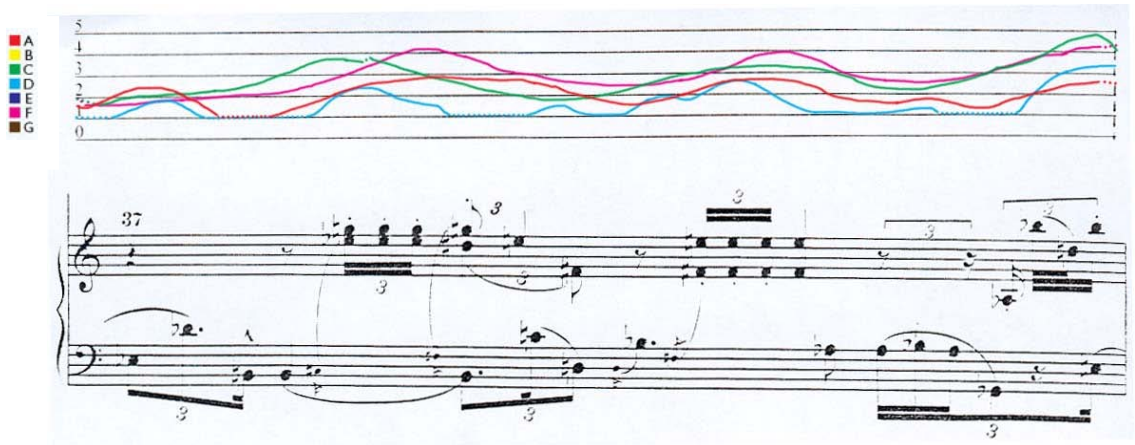


Image 12a: Curves drawn by A, C, D, and F representing a bar of the Schönberg excerpt (2/1:1)

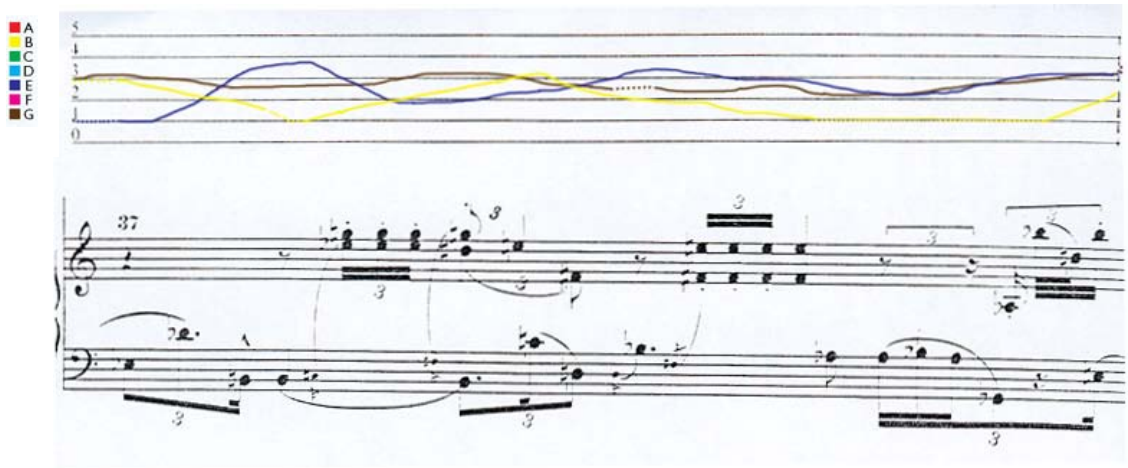


Image 12b: Curves drawn by B, E, and G representing a bar of the Schönberg excerpt (2/1:1)

Image 12b shows the curves drawn by B, E, and G representing the same bar. In G's curve, there seems to be a vague tendency of expressing the triplet motif of the right hand part, whereas the curves of B and E may be interpreted as focusing more, although in totally different ways, on the melody line of the left hand part supplied with some melodic comments in the right hand part.

At 2/3:1 (cf. Image 13a and Image 13b), the curves of all of the participants without exception seem to represent in different ways each one of the two last triplet motifs within the right hand part by means of shapes reminding of arches. As Image 13a shows, this arch shape is most evident in the curves drawn by B, E, and F succeeded by a rather similar decline at the very end of the excerpt. According to the shape of his drawn phrasing curve and in contrast to the part of his curve representing bar 1/2:3 that has just been discussed above in the text, F seems to have reacted mostly to the semi-quaver triplet as such in the right hand part at the beginning of the bar (2/3:1 [1:2]). Here, the shape of B's curve may be interpreted as

instead expressing the same semi-quaver triplet as an upbeat moving towards the succeeding quaver triplet at 2/3:1 (2).

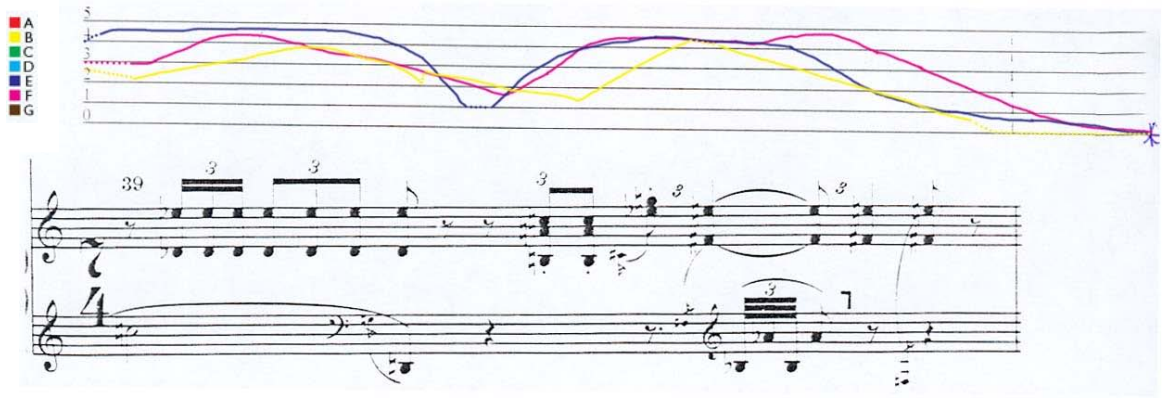


Image 13a: Curves drawn by B, E, and F representing a bar of the Schönberg excerpt (2/3:1)

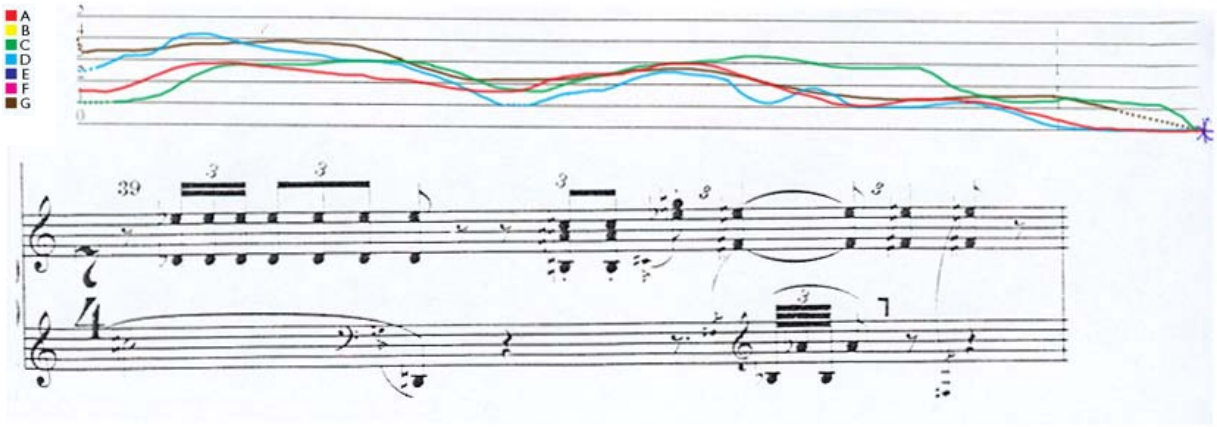


Image 13b: Curves drawn by A, C, D, and G representing a bar of the Schönberg excerpt (2/3:1)

In the same bar, the participants A, C, D, and G have notated less high dynamical levels compared to B, E, and F (cf. Image 13b). It is also typical that the curves of A, C, D, and G are representing the second triple motif with an arch shape that looks smaller than the first one. Consequently, at the very end of the excerpt the decline of the curves drawn by these participants appears as somewhat gentler compared to that of the curves drawn by B, E, and F.

4.1.4. Metrical units

The fourth category refers to the participants' curves expressing *metrical units*. Music can be analysed as built up of metrical units on different architectonical levels (Cooper & Meyer, 1960). However, the division of music into smaller elements does not have to be the result exclusively of a conscious analytical process. Human mind structures *automatically* sensorial stimuli emanating from the surrounding

world (Gärdenfors, 1996/1999). It searches actively for some kinds of *patterns* in order to make experience of life comprehensible. In the same way that human mind structures any kinds of impressions, the melody line in music, the harmonic progression, the rhythm, as well as the measure and the bar line structure of the music (Edlund, 1994; Edlund, 1996; Fridell 1999) may give rise to individual experiences of metrical units, all depending on a person's specific musical focus in a given situation. This also implies that the boundaries between the already discussed categories of melody, harmony, and rhythm on one hand, and the fourth category of metrical units on the other are not always clear.

In a section of the Brahms excerpt, the participants C and D have drawn two diverging phrasing curves representing the same melodic unit grasping over four bars. In a section of the Bentzon excerpt, the curve drawn by F expresses a metrical pattern corresponding to the bar line structure of the music.

1) Brahms

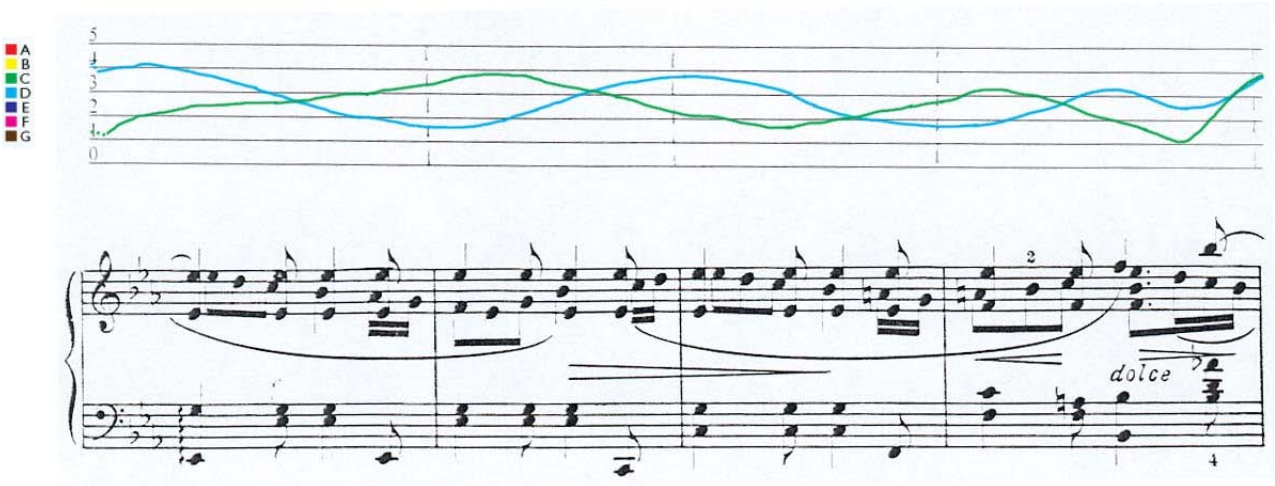


Image 14: Curves of C and D in a section of the Brahms excerpt, 1/3:1-4

In the third system of the Brahms excerpt, the curves of C and D start moving in almost opposite directions (cf. Image 14, 1/3:1-4). Here, the melody phrase may be interpreted as built up by metrical units consisting of two bars each (bar 1-2:-5, and bar 2:6 – 4:5 respectively), which means that each bar functions as a beat within these metrical units consisting of two notated bars. According to the shape of their curves, C as well as D has expressed some kind of *point of gravity* (cf. Fridell, 1999) or emphasis on the first beat of every second bar. However, in his curve C has indicated an emphasis on the first beat of every *second* notated bar within the metrical units, which means that every first bar has the function of an *anacrusis* towards the second bar, whereas D has instead expressed a *falling rhythmical structure* by indicating the emphasis on the first beat of every *first* bar (cf. Cooper & Meyer, 1960). In other words, the curve of D follows the melody contour dynamically according to some conventional views on melody phrasing (cf. 4.1.1.1.), whereas the curve of C, contrarily to the former curve, expresses an increasing dynamic correlated in an

inverted way to the melody contour moving *downwards* in the register. The two diverging kinds of curves may be regarded as an example of the difficulties in illustrating sounding music in an identical way, among other things due to its general ambiguity as a phenomenon provoking the experience of different metrical patterns from one person to another.

2) Bentzon

In the first page of the Bentzon excerpt, the shape of the curves drawn by C and G correspond mainly to the performed accents on the second or the third stressed beats of each bar (cf. 4.1.3.), whereas the shape of the curve drawn by F seems to correspond to the stressed first beats of the bars instead, except for in bars with the succeeding syncopated accents in the right hand part. By means of its special shape, F's curve expresses not only rhythmical stresses within the music but also a metrical bar line pattern grouping the bars of the first page in the following way: 2+2+1+2+1+1.

4.1.5. Combined musical aspects

Sometimes it may be hard to determine exactly which musical aspect that plays the dominant role in a certain situation, since generally the total sounding music exerts a very complex influence on human mind. The fifth category of this chapter represents the visual expression of *combined musical aspects*, which in this context means musical experiences presumably provoked by the combined impact of several musical aspects at a time.

In a section of the Brahms excerpt, four participants have notated high points in spite of the recording's relatively soft dynamic at this place. Since it is hard to isolate any single musical aspect directly corresponding to those high points, this example has been classified as belonging to the present category of combined musical aspects. In a section of the Debussy excerpt, C has contrarily to all the other participants notated a dynamical peak in spite of the very soft dynamic at this place. The high dynamical level of his curve has been interpreted out of the specific musical context with its interplay between many combined musical aspects.

1) Brahms

In the Brahms excerpt, B, E, F, and G have notated a clear high point at 2/2:4 (1) (cf. 4.1.1.2.), as regards G even a peak. In this case, the high point in question may have been notated because of the complex interplay between many other musical aspects than the dynamics of the recording, since the music is not performed with any loud dynamic in this section. Here, the music is slowing down considerably towards the harmonic cadence. There is also a modulation into another key simultaneously with the falling melody line. The combined impact of the tempo slowing down, the special harmonic progression, as well as the falling melody line may have awoken some kinds of musical expectations from the four participants due to their

familiarity with established conventions of musical expressions (cf. Quantz, 1752/1974). In other words, the participants may have, independently of the performed dynamics of the music, interpreted the performance of this section out of their implicit pre-understanding of musical conventions.

Out of a brain physiological perspective, Fagius (2001) claims that music has the power of influencing people emotionally. The music psychological researchers Gabrielsson and Juslin (1996) as well as Juslin and Persson (2002) have shown that performers and listener are more or less aware of a commonly agreed emotional code in music. The shape of the curves drawn by B, E, F, and G may thus be interpreted as mirroring the experience of something unexpected and therefore exciting in an emotional sense provoked by the interplay between the musical aspects mentioned above in this section of Brahms' composition.

2) Debussy

In the Debussy excerpt C has notated, contrarily to all of the other participants, almost a peak at the end of bar 3/2:4 (2:2), exactly on the very first low bass tone of the left hand part, where the music is supposed to be performed in a very soft pianissimo dynamic. After that, his curve dips down to a low point just on the last quaver of bar 3/2:5 (2:2). The character of the unexpected dull bass motif of this section may awake an experience of something exciting happening. The title of the Prélude in question is *Minstrels* (referring to clowns, street musicians), which indicates that the main character of this composition is supposed to be humoristic. There are lots of surprising and unexpected musical effects in the composition, which may shed light to the special shape of C's curve. In the same way as in the former example, many combined musical aspects may have contributed to the experience of something exciting happening in a musical sense.

4.1.6. Individual characteristics

Studying the specific shapes of the curves drawn by the participants has in some cases revealed typical *individual characteristics*. Sometimes the individual curves may be interpreted as mirroring the participants' professional specialities. The reason for treating this aspect as a separate category is that it may shed some more light to the possible correspondences between the participants' professional specialities and their way of drawing phrasing curves in this study. In contrast to the five previous main categories that have been presented in this part of the chapter, the category of individual characteristics is not directly linked to any *musical* features within the five recorded music excerpts that have been employed in the first phase of the study. Examples from the curves drawn by each participant will be presented consecutively.

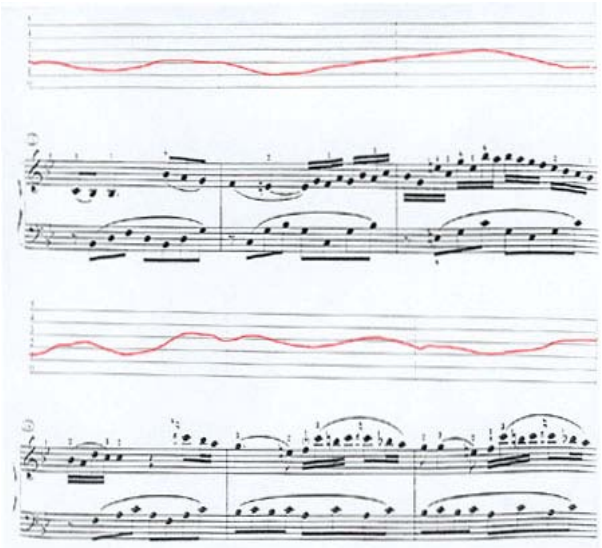


Image 15a: A's curve in a section of the Mozart excerpt (2/1-2)

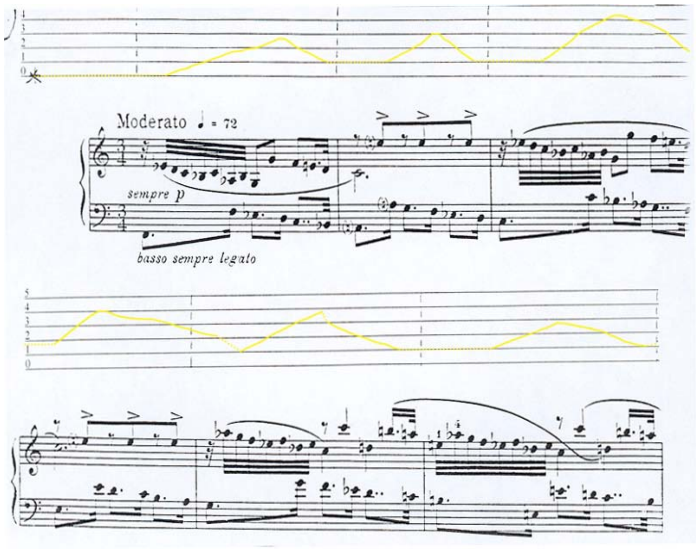


Image 15b: B's curve in a section of the Bentzon excerpt (1/1-2)

The curves drawn by A is mostly characterised by smooth bends (cf. Image 15a). The visual appearance of these curves seems to be the expression of her personal drawing style rather than the result of an influence linked to her specific professional speciality.

Generally, the curves of B appear as rather extreme in respect of their sudden movements and very wide amplitudes between the notated dynamical levels (cf. Image 15b). Sometimes, B seems to have had difficulties in 'obeying the rules' in respect of keeping his curve inside the prescribed horizontal lines. In most of the excerpts, his curve has a somewhat sharp-cornered fashion. In the Schönberg excerpt, however, the curve of B looks somewhat straighter than in the previous excerpts.

An interpretation of the special shape of B's curves may be that he is a very experienced conductor and that his curves represent to some extent the visual appearance of the bodily gestures when conducting music.

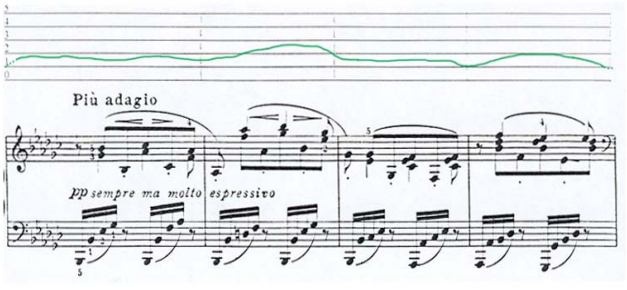


Image 15c: C's curve in a section of the Brahms excerpt (2/3:1-3)

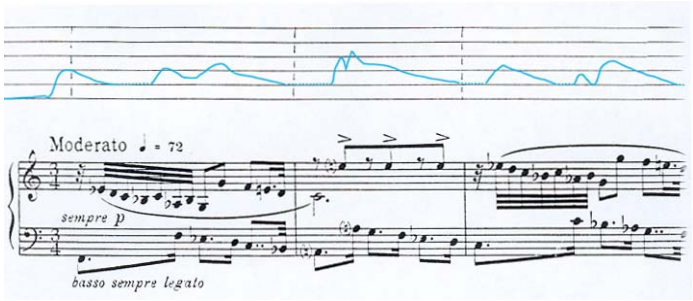


Image 15d: D's curve in a section of the Bentzon excerpt (1/1:1-3)

In many cases, the curves of C represent a drawing style characterised by gentle longish bends (cf. Image 15c). The visual appearance of C's curves cannot be directly linked to his professional speciality.

Generally, the curves of D may be described as somewhat twitched, often equipped with abrupt and sharp-angular bends. This shape may be explained by his explicitly expressed intention of putting himself into the place of a listener not being familiar with the music in advance and therefore reacting quickly and spontaneously to musical events as if he would hear the composition for the first time (cf. Chapter 3: 3.3.6.).

For example in the Bentzon excerpt, the curve of D looks to begin with extremely jagged (cf. Image 15d). However, as the music proceeds his curve looks more even, maybe because of the gradual transformation of the music into a character with less rhythmical accents.

D is a musicologist and especially interested in different perspectives of experiencing music. When this phase of the study was carried out, he expressed verbally his intention of pretending to be a listener not knowing the music in advance. However, to me it seems doubtful to adopt such a point of departure implying an attempt to suddenly ignore the knowledge you have already got, particularly bearing in mind that D is also a pianist himself and very initiated since a long time back into the code of established musical conventions. Therefore, the shape of his curves may rather be considered as a representation of *his personal view* on how listeners with less musical experiences would have perceived and expressed the music visually.

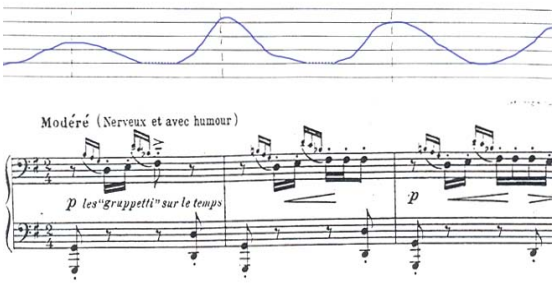


Image 15e: E's curve in a section of the Debussy excerpt (1/1:1-3)

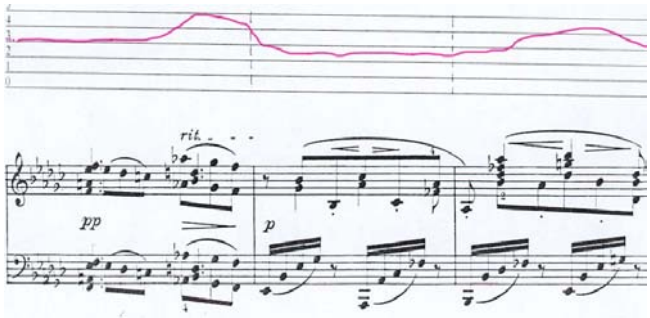


Image 15f: F's curve in a section of the Brahms excerpt (3/2:1-3)

The curves of E has a drawing style characterised by bends with very big dynamical amplitudes and notated dynamics that sometimes stick primarily to the higher levels, for example in the Debussy excerpt (cf. Image 15e), as well as in the Bentzon excerpt. This specific shape cannot be explained by his professional speciality.

Also the curves of F are characterised by the notated high dynamical levels (cf. Image 15f) as well as by occurring big amplitudes between high and low levels. As

already discussed above in this chapter (cf. 4.1.2.), F's curves seem in some cases, particularly in the Brahms excerpt, to correspond more to the harmonic progression than to the melody line. An interpretation of this is that F's professional speciality of being a composer has given rise to a special interest in the harmonic progression of the music.

The curves of G differ considerably from all the others in respect of its very straight shape with few bends (cf. Image 15g). Her curves have sometimes been notated on a rather low dynamical level.

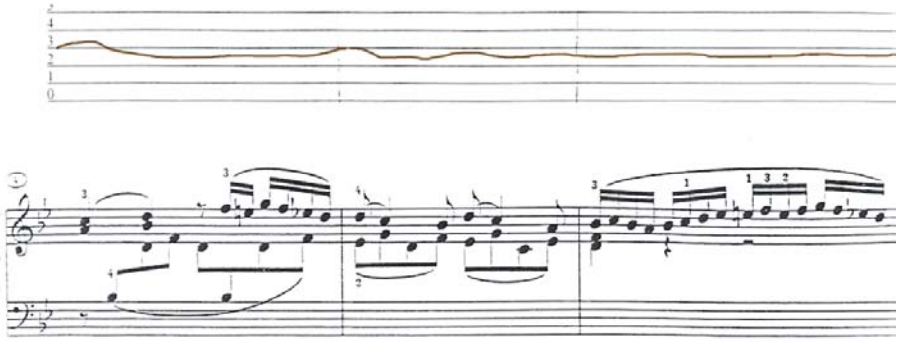


Image 15g: G's curve in a section of the Mozart excerpt (1/2:1-3)

G is an experienced professor of singing, and an interpretation of the typical straight shape of her curves is that she may have been influenced by some considerations concerning singing technical matters in order to control the flow of the air stream, keeping it on a constant level.

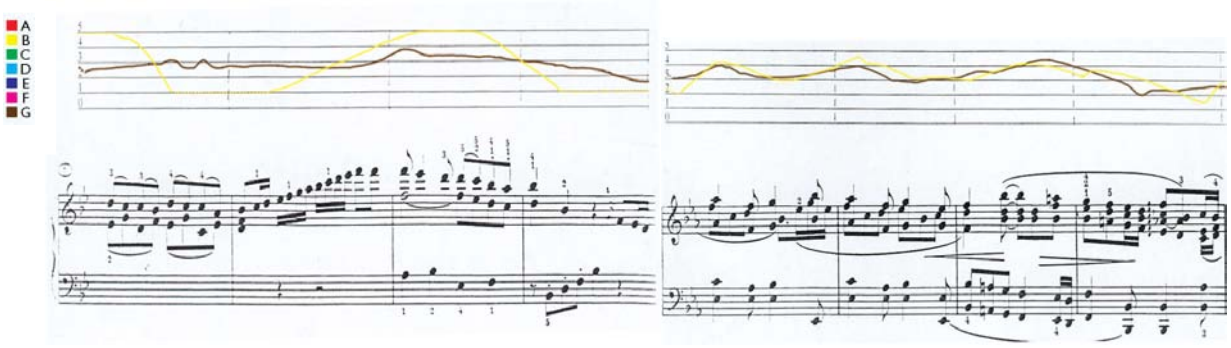


Image 16a: Curves drawn by B and G in a section of the Mozart excerpt (1/3:1-4)

Image 16b: Curves drawn by B and G in a section of the Brahms excerpt (1/2:1-4)

When comparing particularly the curves drawn by the participants B and G, big individual differences have sometimes been observed, for example at 1/3:1-4 (cf. Image 16a), where the curve of B moves steeply up and down in big bends, whereas the curve of G keeps moving almost straight forwards on a moderate dynamical level with just small fluctuations. Maybe these differences could be explained by their respective professional specialities according to the discussion above in the text. However, such differences between these two participants have

not occurred systematically in this study. Image 16b shows a section in the Brahms excerpt (1/2:1-4), where the two curves look somewhat more alike.

In some cases similarities have been observed between the shapes of the individual curves drawn by participants being specialised in related areas. An example of this is the curves drawn by A and D, both of them being pianists, even if the curve drawn by D has mostly its own rather special personal style due to reasons that have been mentioned specifically above in the text of this part of the chapter.

First phase of the study: Summary

The results of this study's first phase reveal thus many occurring resemblances as well as discrepancies between the participants' drawn phrasing curves representing each one of the five music excerpts. When being used by experienced music listeners, the MPhC seems to represent the individual experience of *homophone* music with the melody part appearing in a clear way better than in music of a more complex structure.

In this study, the printed score of the music excerpts has been linked to the device for drawing phrasing curves in order to localise the positions of the notated dynamical levels in relation to the sounding musical events (cf. Chapter 3: 3.2.). However, this also means that the shape of the participants' drawn curves may have been influenced by the visual appearance of the score.

Nevertheless, the participants have notated high points within their curves *not only* at places motivated by the musical structure that could be discerned by reading in the score, which may be interpreted as they have attempted to express primarily what they have heard when listening to the recorded excerpts.

Since the potential influence on the shape of the curves caused by the visual appearance of the parallel printed score cannot be disregarded, a second phase of the study was carried out in order the explore more thoroughly in which respect the MPhC really works as a tool for representing the individual experience of the *acoustically* transmitted dynamical progression of the melody part. A condition for this is that dynamical characteristics within different performances of one and the same work of music may be expressed by means of corresponding phrasing curves. In other words, evident dynamical differences between performances should be clearly visible in these phrasing curves. The results of the study's second phase will be presented in the part of the chapter that follows immediately below.

4.2. Second phase

The focus of the present study's second phase has been to explore to what extent dynamical characteristics within three differently performed versions of one and the same composition would be visible in the shape of the participants' corresponding phrasing curves (cf. Chapter 3: 3.3.2.). Three pianists, two men and one woman, participated in this phase of the study. They were asked to draw phrasing curves by free hand, visually illustrating the individually experienced dynamical progression of the melody part of three different recordings of Robert Schumann's piano composition *Von fremden Ländern und Menschen*.

According to the results emanating from the study's *first* phase, some parts of some participants' phrasing curves seem to correspond more to other musical parameters than the melody's changing dynamics, particularly in music of a more ambiguous and complex kind with the melody part appearing in a less clear relief to the other voices. This means that the Melody Phrasing Curve (MPhC) seems to function better in structurally simple music that is clearly homophone.

The music of the study's *second* phase was selected partly because of the distinctively diverging dynamical characters of the recorded performances, which was a condition according to the specific purpose of this part of the study, partly because of the composition's very clear homophonic structure facilitating the participants' focus primarily on the melody line according to the original intentions with the total study.

The results clearly reveal a *higher similarity* between the curves drawn by the three participants, representing *each recording* of the employed piano composition, than the curves drawn by each one of them representing the *three differently performed versions* of the same composition. This supports the idea that the MPhC might work as an instrument, at least in this kind of homophonic music, for illustrating features not only emanating from the visual appearance of the printed score but also some important audible features within the *sounding* music.

The following presentation of the results in two sections corresponds to the analytical work of the study's second phase (cf. Chapter 3: 3.4.3.). In the first section, all the curves drawn by *each one of the participants*, intended to illustrate the dynamical features of the *three different versions* of the composition respectively, have been compared, whereas in the second section, the curves drawn by *all of the participants* representing *each one of the three versions* have been compared. The descriptions of the general *characteristics* of the differently performed versions of the Schumann composition are based partly on comments made by the participants when carrying out the study (cf. Chapter 3: 3.3.6.), partly on my own personal experiences.

The numerical figures refer to the specially designed score that was used in this phase of the study, which is displayed in *Appendix B*. In the images of this chapter, dark colours signify the curves drawn by the participant A, middle colours the curves drawn by the participant B, and light colours the curves drawn by the participant C. The curves representing the first version are coloured in different graduations of red, the curves of the second version are green, whereas the curves of the third version are blue.

The curves have thus been arranged according to the following disposition:

Participant A	*Participant B*	*Participant C*
Version 1: dark red	Version 1: red	Version 1: light red
Version 2: dark green	Version 2: green	Version 2: light green
Version 3: dark blue	Version 3: blue	Version 3: light blue

For practical reasons, the abbreviations Ver. 1, Ver. 2, and Ver. 3, respectively referring to the three versions that have been employed in the study's second phase, will be used below in the text.

In this second phase of the study, the definitions of dynamical high points, high areas, peaks, low points and low areas are principally the same as in the first phase. However, this time the parts of the curves stepping over the *fourth* line from below will be defined as indicating high points or high areas, since the dynamical scale has been limited to five horizontal lines. The reason for changing the design was partly to test devices with dynamical scales of different sizes, partly to adapt the device to the generally more silent character of the Schumann composition with less dynamical amplitudes (cf. Chapter 3: 3.3.5.). Consequently, the definition of a peak has here been changed to high points or high areas touching upon the *fifth* line from below. The parts of the notated curves touching upon the second line or falling below the second line are supposed to indicate low points or low areas.

On proposal of the participating piano professor (C), who also participated in the previous phase of the study (as participant A), the device for drawing curves has now been localised *below* the systems of the printed score as a test. This was also the way Badura-Skoda (1957) used his phrasing curve, which is a curve that is very similar to the MPhC tested in this study (cf. 3.2.1.). No special advantages linked to this new localisation of the device have been observed in this part of the study.

Except for slurs and fermata, all kinds of printed instructions within the score have been removed in the same way as in Hultberg's study (2000). The reason for this was to eliminate as far as possible any undesirable visual influence affecting the shape of the curves. Except for the participant C, who participated in both phases of the total study, the two other music professors A and B participating only in the

study's second phase have thus not been subject to any changed conditions because of the device's new layout.

4.2.1. Comparison between the curves drawn by each one of the participants

The selected three versions of the Schumann composition were supposed to be of different dynamical characters. All of the three participants have drawn curves with clearly different shapes corresponding to the specific dynamical characters of each one of the recorded versions. These divergences between the curves drawn by each participant representing the three different versions is also a condition for the MPhC working as a possible instrument for illustrating features within the sounding music. Apart from illustrating the dynamical progression, the shapes of the individual curves also seem to mirror some general characteristic features within each one of the differently performed versions of the music. In this context, comments made by the participants when carrying out the study may be of interest, since they shed further light to the specific shapes of the curves (cf. Chapter 3: 3.3.6.). Therefore, when presenting the results in the text that follows, some references to these comments will occur.

In the following subsections, the results based on the curves drawn by the participants A, B, and C respectively will be presented. Schumann's piano composition *Von fremden Ländern und Menschen* is composed in the following form: A-A-B-A-B-A. The reason for having compared the curves only in respect of their general shape and not especially high points and low points as was the case in the first phase of the study, is that the composition may be described as a rather simple song without any clear high points in the same sense as in the previous music excerpts. Nevertheless, some of the *notated* high points that occur in the curves might be of interest out of the specific purpose of this study's second phase, and in these cases the high points will be treated within the frames of the curves' general dynamic levels. Apart from studying divergences and similarities in the general shape of the curves and general dynamical levels, the fermata bars, as well as some sudden sharp-cornered descents within the shape of the curves representing Ver. 3 have been considered as well. The reason for paying special attention to the fermata bars is that these may be described as having a key significance in being bars of transition between the B and A sections of the composition.

4.2.1.1. Curves drawn by A representing the three different versions

Significant divergences between the curves drawn by A representing the three different recordings were found in respect of their *general shape*, particularly in the second page of the score (cf. Appendix B). The shape of the curve representing Ver. 1 diverges mostly from the two other curves. A typical characteristic within this curve is its typical rounded bends, which may be interpreted as mirroring the specific character of the performance with somewhat bigger dynamical contrasts compared

to the two other versions. Big dynamical contrasts are often associated to a romantic performance style (Goulding, 1996; cf. Chapter 2: 2.2.2.). When carrying out the study, the participants also commented on the character of Ver. 1 as being more 'romantic' than the other two versions (cf. Chapter 3: 3.3.6.), which is my own subjective experience as well when listening to the recording.

Generally, the curve representing Ver. 3 is notated on a higher *dynamical level* than the other curves. Contrarily to this, the curve representing Ver. 1 is often notated on the lowest level of them all, and the curve of Ver. 2 generally moves between the dynamical levels of the two other curves. In other words, A's curves indicates that he may have experienced Ver. 3 on a higher dynamical level than Ver. 2, and Ver. 1 on a considerably lower dynamic level compared to the two other versions. According to the curves drawn by each one of the participants, they agree in most cases about the same dynamical hierarchy between the three versions of the music.

However, the shapes of the three curves drawn by A look somewhat more alike where the first melody theme is repeated in the third and the fourth systems of the first page (1/3-4), as well as in the fourth system of the second page, from the second bar until the very end of the piece (2/4:2-5:5). Here, all of the curves representing the different performances have been notated on a clearly lower dynamical level moving also closer to each other. An interpretation of the lower dynamics is that A has experienced all of the three different pianists performing the first melody theme with an echo effect when repeated. This kind of performed echo effects has existed as an emotionally motivated convention within the classical music tradition ever since the renaissance era with its usual terrace dynamics (cf. Dart, 1964; Goulding, 1996).

However, in spite of the visually expressed echo effect beginning at 2/4:2-, the curve of Ver. 3 moves up in the dynamical register in the second last bar of the composition (2/5:4). In the same bar, the curves representing the two other versions have already descended into the low area. An interpretation of this is that in the two last bars, A has experienced Ver. 3 with a less diminuendo compared to in the other versions.

An exception of the mentioned dynamical hierarchy of the curves representing the three different versions appears in the B section, which begins in the fifth system of the first page. In the second bar of this system (1/5:2), the curve of Ver. 1 is the one that reaches the highest dynamical level of them all, closely followed by the curve of Ver. 2, both of these two curves indicating a high point in this very bar. The curve of Ver. 3, which has generally been notated on the highest level, is here instead ascending gradually from a lower dynamical level towards a high point only in the fourth bar of the same system (1/5:4 [1]). According to his curves, A expresses thus the high points of the three performances as being located at different places in this system.

The specific character of each one of the three versions seems to be mirrored particularly in the *fermata bars*, which have a key significance as bars of transition between the B and A sections of the composition. According to the general dynamical hierarchy of the curves representing the three different versions, the curve of Ver. 3 would present the highest dynamic level. However, in the first fermata bar (2/1:1; cf. Image 17) it is instead the curve of Ver. 2 (dark green) that reaches the highest dynamical level, culminating dynamically precisely on the very fermata note. The curve of Ver. 3 (dark blue) reaches gradually a constant peak level only from the beginning of the next bar, as the main theme starts again. In these bars, A's curve representing Ver. 3 corresponds to comments made by participant *C* when effectuating the study. *She* explained the notated high dynamical level of *her* curve representing Ver. 3, by her paying attention to the performed pregnancy of the melody line typical to this version (cf. Chapter 3: 3.3.6.).

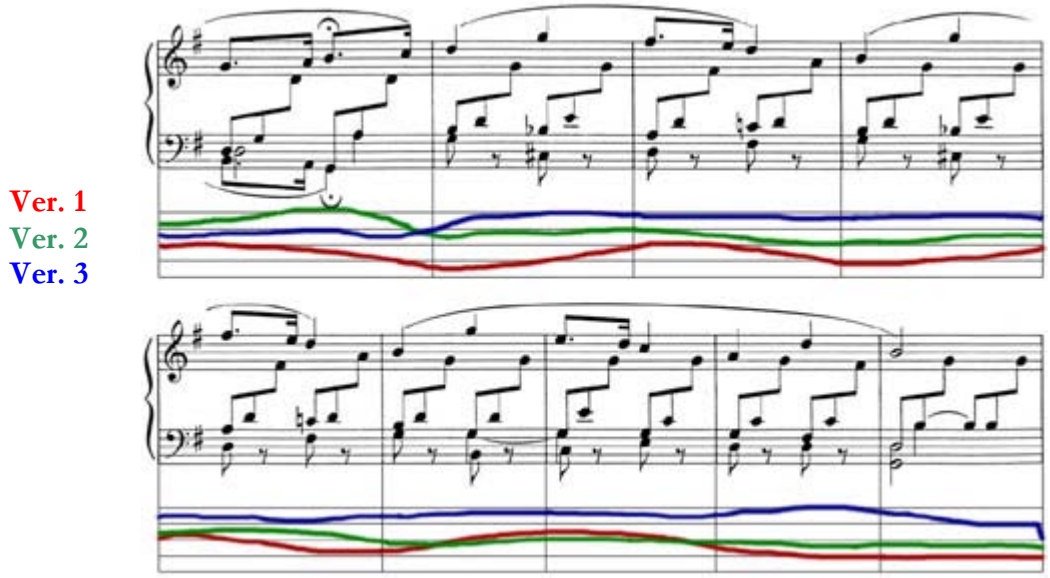


Image 17: A's curves in a section of the Schumann composition (2/1:1 – 2/2:5)

Contrarily to the curves representing the two other versions, the curve of Ver. 1 (dark red) descends gradually in the same fermata bar towards a notated low point on the first beat of the succeeding bar (cf. Image 17). The descending dynamical level of this curve in the fermata bar may be interpreted as mirroring the romantic and almost meditative silent atmosphere of Ver. 1, referred to by the participants. In the second fermata bar (2/4:1), the curve representing Ver. 2, which reached a peak in the previous fermata bar, has been notated on a comparatively lower dynamical level, which makes all the curves move closer to each other.

Typical to the shape of the curve drawn by A representing Ver. 3 is the *sudden* sharp-cornered *descents*, in the third system of the first page: at the very end of the fourth bar (1/3:4 [2:3]), in the fifth system of the first page: between the fourth and the fifth bars (1/5:4-5 [2:3-1]), in the second system of page two: at the very end of

the fifth bar (2/2:5 [2:3]) (cf. Image 17: the dark blue curve at the end of the last bar), as well as in the third system of page two: between the fourth and fifth bars (2/3:4-5 [2:3-1]). This means that A has notated those sudden descents every time just before the composition's B sections, and every time just before the beginning of the bar immediately preceding the fermata bar. According to the participants' comments when carrying out the study, they had all reacted to the performed striking articulations at some phrase closures within Ver. 3. It is likely that A has illustrated these phrase articulations consciously by means of the sudden descents within his curve representing this version.

4.2.1.2. Curves drawn by B representing the three different versions

In the same way as the curves of A, the curves drawn by B representing the three different recordings look different in respect of their *general shape*, even if they are in the first page of the score diverging somewhat less than A's curves. An exception of this is in the fifth system of this page, where the curves drawn by B are clearly different.

Generally, there is the same dynamical hierarchy between the three curves drawn by B as in the curves drawn by A, which means that the curve of Ver. 3 tends to move on the highest *dynamical level*, the curve of Ver. 1 on the lowest, and the curve of Ver. 2 between the two other curves. The curves of Ver. 1 and Ver. 2 look rather similar in respect of the notated dynamical levels in the very first eight bar period of the first page, even if the curve of Ver. 1 expresses a somewhat clearer diminuendo at the end of this period (1/2:3 [2]-1/2:4 [2:3]). The curves representing Ver. 1 and Ver. 2 are also similar in clearly indicating a lower dynamical level where the first theme is repeated in the third and fourth systems of the first page, presumably illustrating the experience of some kind of a performed echo effect. This visualised echo effect is particularly evident in the part of the curve representing Ver. 1. In contrast to this, the curve representing Ver. 3 has been notated with a dynamical difference that is less between the first and the second performances of the main theme compared to the corresponding parts of the curves representing Ver. 1 and Ver. 2.

At the B section in the first page's fifth system, there is an exception of the general dynamical hierarchy of the different curves implying that the curve of Ver. 3 would move on the highest dynamical level. Here, it is not the curve of Ver. 3 but instead the one representing Ver. 2 that has been notated on the highest dynamical level, very close to the peak level. Also in contrast to the mentioned dynamical hierarchy, the curve of Ver. 3 has been notated on a somewhat lower level at the same place compared to the corresponding parts of the curves drawn by B representing the other versions. Furthermore, this means that in contrast to the participant A, who has notated the curve of the *first* version (Ver. 1) on the highest level of all his curves at the same place, the participant B has instead notated the curve of the *second* version (Ver. 2) on the highest level. However, the curve drawn by B

representing Ver. 1, usually notated on the lowest level of all the curves, is still reaching a high point occasionally in the second bar of the B section (1/5:2). In the second B section, which is located in the third system of the second page (2/3:1-), the part of the participant B's curve representing Ver. 2 has been notated, as was also the case in the previous B section, on the highest dynamical level of all the curves.

Where the main theme starts again from the bar succeeding the first fermata bar at 2/1:2-, the curve drawn by B representing Ver. 3 ascends towards the highest dynamical level of all his curves representing this section, which corresponds to its general highest notation. However, it has not been notated on the peak level, as was the case with the corresponding curve drawn by A at this place. Where the main theme is repeated for the last time at 2/4:2-, it is B's curve representing the *second* version (Ver. 2) that expresses the highest dynamical level, higher than in the bar succeeding the first fermata bar where the main theme started the previous time at 2/1.2-. The corresponding part of the curve representing Ver. 3 that was moving on the highest level the first time, has now been notated on a lower dynamical level the second time. This means that according to his curves, B has experienced the last repetition of the main theme within Ver. 2 on a comparatively higher dynamical level, but in contrast to this, the corresponding section of Ver. 3 on a lower dynamical level the second time.

At the very end of the composition, in contrast to the corresponding curves drawn by A, all of B's curves, including that of Ver. 3, are indicating a diminuendo with a similar shape, although on somewhat diverging dynamical levels. Particularly the curve of Ver. 1 decays towards a very low dynamical level at the very end.

In the same way as in the curves of A, the parts of the curves drawn by B illustrating the performances of the *fermata bars* seem to mirror the specific characters of the three different versions of the composition. In contrast to the mentioned general dynamical hierarchy of the curves representing the three different versions, it is the curve drawn by B representing Ver. 2 that culminates, as was also the case with the corresponding part of the curve drawn by A, on a very high dynamical level in the middle of the first fermata bar (2/1:1), immediately followed by B's curve representing Ver. 3. At the same place, B's curve of Ver. 1 descends towards a very low dynamical level on the first beat of the succeeding bar, which corresponds also to the curve drawn by A in this bar. The low dynamical level notated by B as well as by A may be interpreted as mirroring the silent romantic atmosphere of Ver. 1 at this place, in accordance to the participants' general comments on this version when carrying out the study. The shape of the parts of B's curves representing the second fermata bar at 2/4:1 reminds very much of his curves in the first fermata bar. Contrarily to the corresponding part of the curve drawn by A, the participant B has *not* notated his curve representing Ver. 2 on a lower dynamical level at this place.

In the same way as the participant A, B has notated some kinds of *sudden descents* in his curve representing Ver. 3, at 2/3:4 (2:3)–2/3:5 (1) and at 2/5:1 (2.3)-2/5:2 (1) respectively. However, A has notated more of these sharp-cornered descents in his curve representing Ver. 3. According to the comments made by B when carrying out the study, he had paid attention to the performed articulations of the phrase closures indeed. However, he did not experience them as directly disturbing the continuous flow of the melody line, which was also his verbally expressed reason for not visualising all of these articulations in his curve.

4.2.1.3. Curves drawn by C representing the three different versions

In respect of their *general shape,* the three different curves drawn by C are diverging in a significant way. Particularly the curve of Ver. 3 (light blue) is diverging a lot from the two other curves in moving usually on a very high dynamical level close to the peak level, for example in the two first systems of page number one (cf. Image 18). As mentioned above, C explained the notated high dynamical level of her curve representing Ver. 3 by referring to her experience of the performed pregnancy of the melody line in this version (cf. Chapter 3: 3.3.6.). The curve of Ver. 2 (light green) is generally moving on a slightly higher level compared to the curve representing Ver. 1 (light red), which is in accordance to the mentioned general dynamical hierarchy of the three different curves as indicated by all the participants.

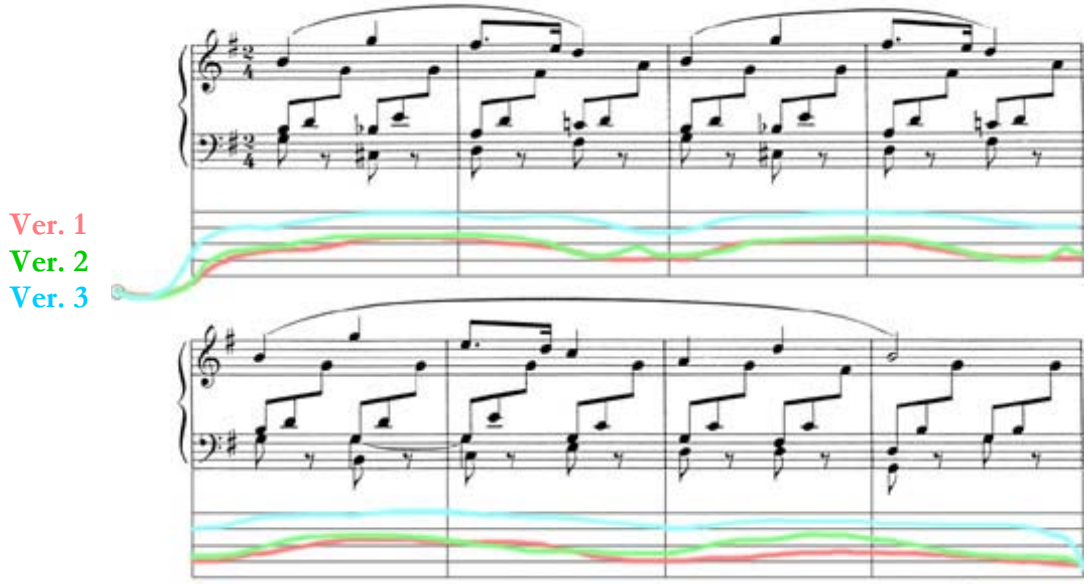


Image 18: C's curves in a section of the Schumann composition (1/1:1 – 1/2:4)

Specifically worthwhile noticing is the occasionally curly shape of C's curve representing Ver. 1 in the middle of the fourth last bar (2/5:2 [2]). An interpretation of this specific shape is that C has attempted to express some kind of emotional character within this very bar. In the first four bar period of each A section, the curve drawn by C representing Ver. 2 has a shape looking like humps upwards in the dynamical register at the end of every second bar, at 1/1:2 (2:3) and 1/1:4 (2:3) (cf.

Image 18: the light green curve at the end of the first system's second and fourth bar respectively), at 1/3:2 (2:3) and 1/3:4 (2:3), as well as at 2/1:3 (2:3) and 2/2:1 (2:3), but not where the A section is repeated on a lower dynamical level the very last time from 2/4:2-. The specific shape with the humps corresponds to my own impression of the somewhat energetic and unevenly performed triples of the middle voice typical to this version.

As already mentioned, C has in most cases notated her curves within the frames of the same dynamical hierarchy as the two other participants, which means that the curve of Ver. 3 is generally notated on the highest *dynamical level*, the curve representing Ver. 1 on the lowest level, whereas the curve of Ver. 2 is notated between the other curves. Where the main theme is repeated in the first page (1/3:1-), the curve of Ver. 1 has been notated on almost the same dynamical level as the first time. In contrast to this, the curves of Ver. 2 and Ver. 3 have been notated on a slightly lower dynamical level the second time. However, even if the part of the curve representing Ver. 3 has been notated on a slightly lower level where the theme is repeated, it is still notated on a very high level, although not as close to the peak level as was the case the first time.

This means that C has in the same way as the two other participants expressed dynamical echo effects in her curves where the main theme is repeated for the second time in the first page. However, she has notated these echo effects primarily in the parts of her curves representing Ver. 2 and Ver. 3, but there is almost *no* corresponding echo effect in the curve representing the *first* version (Ver. 1). In contrast to these parts of the curves drawn by C, the participant A has expressed a clear echo effect in *all* of his curves at the same place, whereas the participant B has expressed echo effects in the corresponding parts of the curves representing the second (Ver. 2) and the *first* version (Ver. 1) *in particular*, but a little less in the *third* version (Ver. 3). Hence, according to the parts of their curves representing the *second* version (Ver. 2), all of the three participants agree about an echo, but there is a discrepancy between them about the echo effects at this place within Ver. 1 and Ver. 2.

It is likely that the participants, all being pianists, have played the composition themselves, since they are all pianists knowing the classical standard piano repertory. One possible reason for the mentioned discrepancy between the participants may thus be their respective musical pre-understanding, which may to some extent provoke an experience when listening to the recorded versions that has been coloured by their own interpretative ideas about how to perform the same music (cf. Damasio, 1994; Johansson 1999).

Another reason for the discrepancy may be that it is indispensable for obtaining a successful musical communication between performer and listener that the performer's and the listener's cue utilisations are *matching* each other (cf. Juslin & Persson, 2002). This means that in order to succeed in communicating specific musical

intentions, the performer's cue utilisation should be as similar as possible to the listeners' cue utilisation, which may not always have been the case as concerns the musical communication between the respective pianists *performing* the three recorded versions of the Schumann composition on one hand, and the pianists *participating* in this phase of the study on the other. However, in this context it should also be underlined that in many cases, performers choose consciously to perform music in an ambiguous way, leaving the listeners entirely free to experience the music as they wish, without interfering by trying to communicate specific intentions to them.

Another discrepancy between the three participants' curves appears in the B section, which begins in the fifth system of the first page (1/5:1-). In contrast to the two participants A and B, who have both notated a clear high point at 1/5:2 in their respective curves representing the *first* version (Ver. 1), C has not notated any high point at all in the corresponding part of her curve. Her curve of Ver. 1 is instead even descending at this place, which means that it has been notated on the lowest level of all her curves, which is in accordance to the general position of the first curve within the mentioned dynamical hierarchy. Contrarily to this dynamical hierarchy, which implies that the curve of the *third* version (Ver. 3) would be notated on the highest level of all the curves, the curves of Ver. 3 drawn by the participants A and B have been notated on the lowest level of all their curves at the same place. Here, C's curve of Ver. 2 has been notated on the highest level, the first curve (Ver. 1) as mentioned on the lowest level in contrast to the corresponding curves drawn by the other participants, whereas C's curve of Ver. 3 is moving between the parts of her two other curves. The discrepancy between the three participants at the B section may in the same way as the mentioned echo effects, notated by the participants in diverging ways where the main theme is repeated in the first page, be explained out of Juslin's and Persson's (2002) theory of the need for matching cue utilisation as a means of communication between performer and listener.

According to her curve representing Ver. 3 in the very last four bars of the composition, C has expressed a considerably higher dynamical level compared to that of her two other curves, which are both decaying in a clear diminuendo towards the end. This is also in accordance to the corresponding curves drawn by A. At this place, the participant B is however diverging from the other participants in having expressed a similar diminuendo towards the end in *all* of his curves, including the curve of Ver. 3.

In the same way as in the corresponding parts of the curves drawn by the other participants, C has notated the curve of Ver. 2 on the highest dynamical level of all her curves in the first *fermata bar* (2/1:1), closely followed by the curve of Ver. 3. C also agrees with the other participants in having notated her curve of Ver. 1 on a low dynamical level at this place. Where the fermata bar is repeated a second time

at 2/4:1, all of C's curves are indicating a comparatively lower dynamical level, which may be interpreted as the expression of some kind of an echo effect.

In her curve representing Ver. 3, C has notated *sudden descents* at several endings of the phrase periods, for example each time after the performance of the main melody phrase grasping over eight bars at 1/2:4 (2:3) (cf. Image 18: the light blue curve at the very end of the second system), at 1/4:4 (2:3), as well as at 2/2:5 (2:3). There are also sudden descents immediately before the bar line of each of the bars preceding the two fermata bars respectively, at 1/5:4 (2:3) and 2/3:4 (2:3). An interpretation of this is that C in the same way as A has attempted to illustrate the clear articulations at some phrase closures, which according to the verbal comments made by the participants are typical to the third recorded version (Ver. 3) of the Schumann composition.

Comparison between the curves drawn by each one of the participants: Summary

The general shape of the curves representing the three different recordings displays significant divergences. This concerns the curves drawn by all participants. The curves of Ver. 3 have usually been notated on the highest dynamical level of all the curves, the curves of Ver. 1 on the lowest level, and those of Ver. 2 in most cases between the two curves representing the other versions. However, in the B sections of the composition (1/5:1-, 2/3:1-) as well as in the fermata bars (2/1:1, 2/4:1), all of the participants have notated their curves of Ver. 2 on a higher dynamical level than the curves of Ver. 3. Also in the curves representing Ver. 3 drawn by A and C, sudden descents have been notated at some phrase closures. In contrast to the participant B, the participants A and C have notated a considerably less diminuendo in Ver. 3 within the last bars of the entire composition. An interpretation of A's and C's curves expressing almost no diminuendo at the end, may be that they in the same way as myself have experienced the character of this performance ending in a more simple, non-sentimental way.

4.2.2. Comparison between all the curves representing each one of the versions

The results of this phase of the study indicate that the curves drawn by *all* the participants representing *each one of the three differently performed versions* of the Schumann composition display a *greater similarity* than *the curves drawn by each one* of the participants representing the three different versions. This is also a condition for the MPhC working as a possible instrument for illustrating features within the sounding music. In many cases, big resemblances between the individual curves representing one and the same version have been observed. However, some divergences have also occurred. One reason for this may be the general ambiguous character of music, which gives rise to many different individual experiences. One other reason may be the matter of fact that the phrasing curves intended to illustrate the partici-

pants' subjective musical experiences are drawn by *free hand*, which means that no accurate representation of the sounding music can be expected. Nevertheless, the shape of the individual curves still seems to mirror features of the performed dynamics as well as some characteristics within each one of the recorded versions of the Schumann composition, which has already been referred to in the previous section (cf. 4.2.1.).This means that the participants' verbal comments describing the characteristics of the three recordings (cf. Chapter 3: 3.3.6.) have to some extent also been visualised by means of the individual curves' shape.

In the following subsections, the results emanating from the curves drawn by the participants representing each one of the three versions consecutively will be presented. Since some utterances made by the participants concerning the character of the different versions (cf. Chapter 3: 3.3.6.) may bring further light to the specific shape of their curves, each subsection will be introduced by a short description of the version's character, based on the participants' verbal comments as well as on my own subjective impressions. When comparing the curves, the general shapes as well as the general dynamical levels have been considered particularly. This is also the reason for presenting the results with a special focus on these elements. The parts of the curves representing the fermata bars, having a key significance in this composition, have also been taken into account specifically, as well as the typical sudden descents at the phrase closures within the participants A's and C' curves representing Ver. 3 (cf. 4.2.2.1).

4.2.2.1. Curves drawn by all the participants representing Version 1

Characteristics of Ver. 1:

When carrying out the study, the participants commented on the character of Ver. 1 as being more 'romantic' than the other two versions (cf. Chapter 3: 3.3.6.), which is also my own subjective experience when listening to the recording. The notated low dynamics of the parts of the curves illustrating the fermata bars seem to mirror in particular the low-voiced, almost meditative atmosphere of this version. According to the shape of the participants' curves, this performance seems also to have been performed with more dynamical contrasts compared to the two other versions, although generally within the frames of somewhat lower dynamical levels. Traditionally, such bigger dynamical contrasts have often been associated to a so-called romantic character (cf. Goulding, 1996).

Significant similarities between the curves drawn by the three participants representing Ver. 1 have been observed. However, some discrepancies have been observed as well. For example in the first two systems of the first page, the *general shape* of the curves drawn by the participants B and C is more similar compared to the corresponding part of the curve drawn by the participant A, whereas the curves drawn by A and C are instead more similar than the curve drawn by B in respect of the notated dynamical levels. Here, the participant B has generally notated his curve

on a somewhat higher dynamical level than the other participants. The reason for the diverging shape of A's curve in the two first systems is that it expresses, in contrast to the corresponding parts of the curves drawn by the other participants, a dynamical emphasis on the *first* beats of each second bar in every metrical unit grasping over two bars, at 1/1:2 (1), 1/1:4 (1), and at 1/2:2 (1) respectively. This kind of emphasis has also been notated in the parts of A's curve (dark red colour) representing the A section in the first system of the second page (at 2/1:3 [1], 2/2:1 [1], and at 2/2:3 [1], cf. Image 19: the dark red curve). In the corresponding parts of the curves drawn by B (middle red) as well as C (light red) in the first page as well as in the second page, the dynamical emphasis have instead generally been notated on the *second* beats of each first bar in every metrical unit grasping over two bars (for example at 1/1:1 [2] and at 2/1:2 [2]: cf. Image 19). This discrepancy makes the parts of the curve drawn by A representing these sections look somewhat different in respect of its shape compared to the two other curves.

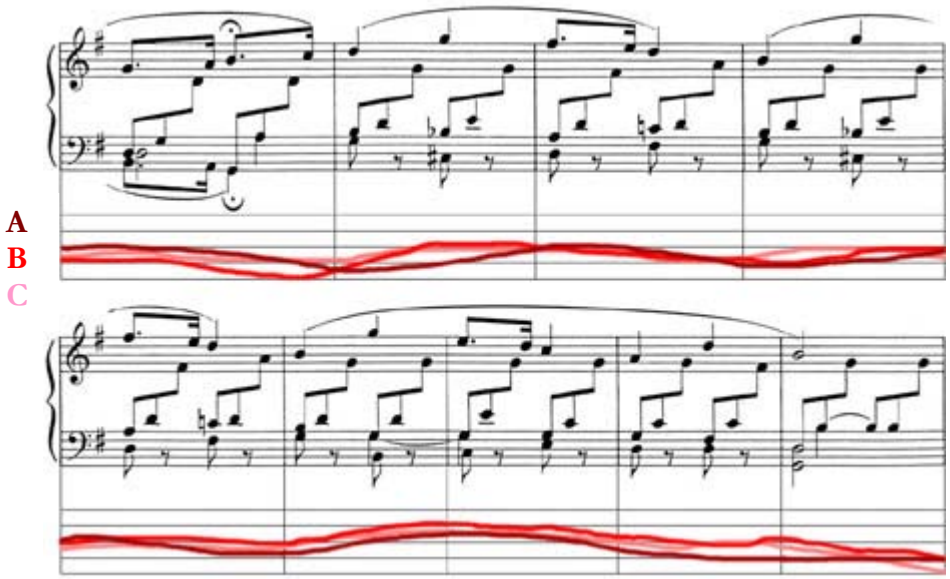


Image 19: Curves representing the Ver. 1 in a section of the Schumann composition (2/1:1 – 2/2:5)

There may be many reasons for these divergences, for example the general ambiguity of music giving rise to individual experiences of different patterns, all depending on the person's specific musical focus in a certain situation (Cooper & Meyer, 1960; Gärdenfors, 1996/1999; Edlund, 1994; Edlund, 1996; Fridell 1999). Thus, the shape of A's curve corresponds to the character of the first bar of every *metrical unit* grasping over two bars, which may be perceived as being an rhythmical anacrusis towards the first beat of the succeeding bars. The shape of B's and C's curves corresponds instead to the general *contour of the melody line*, traditionally performed by reinforcing the melody's movements up and down in the register by increasing and decreasing the sound levels in a corresponding way (Blum, 1977; Klemperer, 1986; Sundin, 1994). The shape of the curves drawn by B and C is thus consistent with

the top of the melody line located on the second beat of the first bar within every metrical unit grasping over two bars. However, an exception of this kind of divergences between the curves appears in the second system of page two, where all of the participants have notated a dynamical emphasis located close to the bar line between the second and third bar (2/2:2 [2:3-1]) (cf. Image 19).

Another possible reason for the mentioned discrepancy in shape between the participants in the A sections of the composition may be their individual pre-understanding as being all pianists familiar with the music in question, which may cause a musical experience coloured by their own interpretative ideas about how to perform the composition (cf. 4.2.1.3.). A third possible reason for the discrepancy may be a diverging cue utilisation between performer and listeners as explained out of Juslin's and Persson's (2002) already mentioned theory of *matching cue utilisation* as an indispensable musical means of communication between performers and listeners (cf. 4.2.1.3.).

Furthermore, the somewhat higher *dynamical level* and the comparatively bigger amplitudes of B's curve in the two first systems of the composition reinforce the discussed diverging shape of the parts of the curves representing the first A section. However, where the A section is repeated in the third system of the first page (1/3:1-), the curves drawn by A and B have both been notated on a lower level with smoother dynamical amplitudes and emphasises, which makes all of the three curves look more similar. The curve of C has been notated on a rather low dynamical level already where the main theme is introduced at the very beginning of the composition, and it has almost the same shape where the main theme is repeated for the second time as well, which may be interpreted that the participant C in contrast to the two other participants has *not* experienced any echo effect in Ver. 1 when the main theme is repeated.

As was also the case at the very beginning of the composition, B has drawn his curve on a rather high dynamical level with bends of big amplitudes where the main theme is repeated for the last time at 2/4:2-, in contrast to A and C, whose curves are instead expressing some kind of an echo effect by the notated lower dynamical levels at this place. In the last system of the second page, all the participants agree about a clear decay in notating a gradual diminuendo towards a very low dynamical level at the very end of the composition.

Where the first B section begins in the fifth system of the first page, the curves drawn by A and B are both expressing a high point, as concerns the curve of A even a peak, located on the second beat of the second bar (1/5:2 [2]), whereas the curve of C is instead indicating a very low dynamical level at this place. According to the corresponding part of her curve, C has apparently experienced the first B section of Ver. 1 very differently compared to the two other participants. However, where the B section is repeated in the third system of the second page at 2/3:1-, the curves of A and B have generally been notated on a lower dynamical level com-

pared to what was the case the previous time and without any clear high points this time, whereas the curve of C looks almost the same as the first time. In other words, according to their curves the participants A and B have experienced the B section of the second page as being performed on a lower dynamical level, in contrast to the participant C, who seems to have experienced the same dynamics both times.

In the first *fermata bar* at 2/1:1, all of the curves are descending towards the low area from an already rather low dynamical level (cf. Image 19). The curve of B is here descending mostly. The low dynamical level as notated by all the participants may mirror this bar's silent and almost meditative atmosphere typical to this version.

4.2.2.2. Curves drawn by all the participants representing Version 2

Characteristics of Ver. 2:

The participants described Ver. 2 of the Schumann composition as being of a more on-going and energetic character compared to Ver. 1 (cf. Chapter 3: 3.3.6.). The occurring 'humps' within the curve drawn by C may be an illustration of the pianist's specific but probably consciously chosen way of performing the triples in the middle voice. In my ears, the triples are somewhat unevenly performed, perhaps in order to achieve a more energetic character.

The three participants have mostly drawn their curves with a significant similar *general shape*. An exception of this occurs in the fourth and fifth system of page two (2/4:2-), where the main theme is performed for the very last time. Here, the individual curves are diverging a lot. B's curve has generally been notated with bends of rather big amplitudes at this place and on a considerably higher dynamical level than the corresponding parts of the curves drawn by A and C respectively, the latter two curves looking generally more similar. However, in contrast to A's curve continuing on an average dynamical level, the curve of C is suddenly descending towards the absolutely lowest level just before the bar line between the bars 2/4:3 and 2/4:4, which indicates that C may have experienced the dynamical level of this spot very differently compared to the two other participants. The comparatively higher dynamical levels of B's curve as well as the notated bends of bigger amplitudes in the two last systems are continuing until the end of the composition, whereas the curves drawn by A and C have both a somewhat straighter shape in this section, the latter two curves also indicating a gradual decay towards the end. Particularly the curve of C has been notated on a very low level all of the last system. The rather big discrepancy between the parts of the curves drawn by the three participants representing the two last systems of Ver. 2 may be explained out of Juslin's and Persson's (2002) theory dealing with the significance of matching cue utilisation between performer and listeners (cf. 4.2.1.3.; 4.2.2.1.).

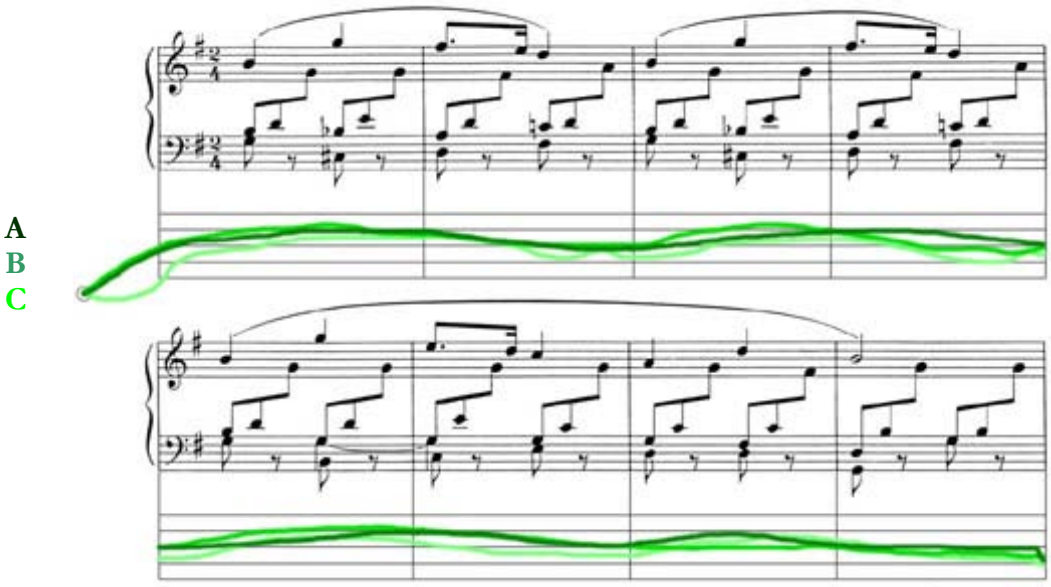


Image 20: Curves representing Ver. 2 in a section of the Schumann composition (1/1:1 – 1/2:4)

In the two very first systems of the composition, the curve drawn by the participant A (dark green) indicates, as was also the case in his curve representing Ver. 1, a dynamical emphasis generally somewhat later than in the corresponding parts of the two other curves, which makes the shapes of the individual curves diverge a little (cf. Image 20). The reason for the sometimes diverging shape of A's curve has already been discussed in the subsection 4.2.2.1. However, in A's curve representing Ver. 2 some emphasises have rather been localised on the bar lines instead of on the first beats of the second bars in every metrical unit grasping over two bars, for example at 1/1:1 (2:3-1) and 1/2:1 (2:3-1). At 1/2:3 (2), the curves of A and C (light green) indicate a small emphasis, whereas the curve of B (middle green) has a straighter shape (cf. Image 20). As already mentioned (cf. 4.2.1.3.), the curve of C has a shape with 'humps' on the last triple notes of some bars, for example at 1/1:2 (2:3) and 1/1:4 (2:3) (cf. Image 20), which may refer to the special way of performing the triples in the middle voice typical to Ver. 2 of the Schumann composition.

All of the curves express some kind of an echo effect by indicating the repetition of the main theme in the first page, at 1/3-1/4:4, on a clearly lower *dynamical level* compared to what was the case at the very beginning. As the part of the curve drawn by A indicates a lower dynamical level where the main theme is repeated in the first page, it also assumes a straighter shape making the mentioned diverging emphasises of this curve disappear. This is also the case where the main theme starts after the first fermata bar, at 2/1:2-. Here, the curve of A has thus been notated with a straighter shape as well, in contrast to the corresponding parts of the curves drawn by B and C, the two latter curves keeping their shape with the rounded bends at this place in the same way as at the beginning of the composi-

tion. The reason why A has drawn his curve with such a straight shape after the first fermata bar compared to the two other curves is unknown.

All the three curves are indicating a very high dynamical level at the beginning of the first B section at 1/5:1-, and the curve of B keeps moving even very close to the peak level and a little longer than the two other curves at this place, which are instead indicating a diminuendo in the third and the fourth bar of the system (1/5:3-4). According to his curve and in contrast to the two other participants, the participant B has apparently not experienced any clear diminuendo in the first B section of the composition within Ver. 2. Where the B section is repeated for a second time in page two, at 2/3:1-, it is only the curve of B that indicates a high point, on the second beat of the first bar (2/3:1 [2]), whereas the other curves have been consequently notated on a considerably lower level this time compared to what was the case in the first B section. From the second bar of the system, all of the curves descend in a similar way. An interpretation of this is that, apart from the notated high point in the first bar of B's curve, the participants have experienced the B section being performed in a softer dynamic the second time.

The three curves have a rather similar shape in the first *fermata bar*, at 2/1:1, and all of them indicate a high point, as concerns the curve drawn by A even a peak. According to this, the fermata bar of Ver. 2 seems to have been performed on a considerably higher dynamical level compared to what was the case in Ver. 1. Where the fermata bar is repeated at 2/4:1, however, all of the curves have been generally notated on a comparatively lower dynamical level, which indicates that the participants have experienced the second fermata bar with some kind of an echo effect compared to the first time. The second time, it is the curve of B and not the one drawn by A that has been notated on the highest level of all the curves.

4.2.2.3. Curves drawn by all the participants representing Version 3

Characteristics of Ver. 3:

When carrying out the study, the participant C commented explicitly on the generally very high dynamical level of her curve representing Ver. 3 of the Schumann composition by referring to the performed pregnancy of the melody line as experienced by her (cf. Chapter 3: 3.3.6.). The two other participants did not make any corresponding comments, but their curves are nevertheless moving on a generally higher dynamical level than the curves drawn by them representing the two other versions of the composition. An interpretation of this is that they have notated the high dynamical levels within their curves for the same reason as was verbally expressed by the participant C. According to their verbal comments, all of the participants noticed the performed striking articulations at some phrase closures within Ver. 3. This characteristic feature seems to be mirrored by means of the sudden sharp-cornered descents of the curves at the corresponding places as notated by the participants A and C in particular. In my ear, Ver. 3 ends in a simple and non-sentimental way without any clearly performed diminuendo. This impression is also

consistent with the shape of the participants' phrasing curves at the very end of the composition. Contrarily to what was the case in the corresponding sections within the two other versions, none of the participants has drawn a curve representing Ver. 3 that expresses any evident gradual diminuendo towards the end.

As was also the case in the curves drawn by all the participants representing the other versions of the Schumann composition, significant similarities have been observed between their curves representing Ver. 3 as well, for example in respect of their *general shape*. In the first two systems of page number one, the curve drawn by A indicates emphasises localised somewhat later than those of the two other participants' curves, for instance on the first beats of the bars 1/1:2 and 1/1:4 respectively, and this is also conforming to the corresponding parts of A's curves representing the two other versions. The diverging shape of A's curves in the first A section of the composition has already been discussed in the previous subsections dealing with his curves representing Ver. 1 and Ver. 2 respectively (4.2.2.1. and 4.2.2.2.). This means that A is the only one of the three participants who has consequently notated these emphasises comparatively later in *all* of his curves representing the different versions. From this it may be concluded that the participant A's visually expressed emphasises are probably not specifically linked to sounding features within any special of the three differently performed versions.

The curve of C representing the same initial section (the two first systems of the composition) indicates almost constantly a very high *dynamic level*, moving very close to the peak level. When carrying out the study, she expressed explicitly that she wanted to illustrate her experience of the performed pregnant melody line in this way. The curves of A and B have both been notated on a somewhat lower level than the curve drawn by C at this place, although still on a high level. In contrast to the two other curves, the curve of B has here a shape with rounded bends. The corresponding parts of the two other curves have a more straight shape, which may be interpreted as an attempt to express the melody line moving forwards without any clear dynamical decays before the phrase closure at 1/2:4 (2:3-1). This means that *all* of the curves representing Ver. 3 of the Schumann composition have in different ways been notated on a high dynamical level in the first two systems of the composition, which seems to correspond to the character of Ver. 3 being performed on a generally higher dynamical level compared to the two other versions. Where the main theme is repeated in the third system of the first page (1/3:1-), the dynamical level of A's curve in particular is considerably lower than the first time and without any clear emphasises, which may be interpreted as the expression of a performed echo effect at this place. The corresponding parts of the curves drawn by B and C have also been notated on a somewhat lower level compared to at the first presentation of the main theme.

Where the main theme begins again after the first fermata bar at 2/1:2-, the curve of A indicates in the same way as C's curve a very high dynamical level. This part of

A's curve has an extraordinary straight shape, moving almost constantly along the peak level line. At this same place and in contrast to in the first two systems of the composition, the curve drawn by C has a shape with more rounded bends, which makes it look more similar to the corresponding part of the curve drawn by the participant B. Here, the curve drawn by B has been notated on about the same dynamical level as in his curve of the corresponding section at the beginning of the composition. However, since the curve of A as mentioned above has been notated here moving almost constantly along the peak level, B's curve indicates a somewhat lower dynamical level than the corresponding parts of A's as well as C's curves. Thus, the results indicate that the three participants have not perceived this section within Ver. 3 in exactly the same way, but all of them have still expressed a high dynamical level in their phrasing curves. This is also consistent with the dynamical character of Ver. 3 that may described as generally performed on a somewhat higher level compared to the two other versions of the composition. A question that arises and that unfortunately cannot be answered in this context, is why the participant A in contrast to the two other participants has notated such a considerably higher level where the main theme begins after the first fermata bar, compared to what was the case within his curve where the main theme is introduced at the very beginning of the composition.

In the two B sections at 1/5:1- and 2/3:1- respectively, all of the curves have been notated on the same rather high dynamical level, even if they are diverging a little in respect of their shape. Where the main theme is repeated for the very last time at 2/4:2-, all of the curves have been notated on a somewhat lower dynamical level compared to at the previous corresponding section after the first fermata bar, maybe indicating the participants' experience of some kind of an echo effect at this place. However, the curve of C is still moving on a rather high level. B has for some reasons notated a higher level again in the beginning of the very last system. At this place, the curve of C indicates about the same level as B's curve, but in contrast to B's curve that ascends, C's curve indicates a gradually lower dynamical level compared to what was the case within his curve in the preceding bars of the same section. Here, the curve drawn by A indicates a somewhat lower dynamical level than the other two curves. The results indicate thus that the participants have not experienced this section in exactly the same way. In the four last bars of the composition, all the curves are indicating a later diminuendo compared to what was the case in the corresponding parts of the curves representing the two other versions, which means only in the very last bar. According to the individual curves representing these last bars of Ver. 3, none of the participants seems to have experienced any clearly performed decay at the very end, which corresponds to the musical character of this version that may be described as generally simple and non-sentimental.

In the first *fermata bar* of page two (2/1:1), the curves drawn by B and C respectively are indicating a high point exactly on the second beat, whereas the curve of A

has a straighter shape all of the bar through, although on the same level as the culminating parts of the two other curves. This means that all of the participants have in different ways expressed a rather high dynamical level in this bar. In the second fermata bar (2/4:1), all of the curves, and the curve drawn by B in particular, a comparatively lower level with a descending tendency. An interpretation of this is that in Ver. 3, all of the participants have experienced some kind of a performed echo effect when the fermata bar is repeated.

According to comments made by the participants when carrying out the study (cf. Chapter 3: 3.3.6.), all of them have noticed the performed clear articulations at some phrase closures within Ver. 3. Particularly the curve drawn by C has a shape with many *sudden descents*, presumably illustrating the special performance of these phrase closures (cf. 4.3.1.3.). In the same way as C, the participant A has also drawn his curve with sudden descents at some phrase closures in a rather sharp-cornered way, for example at 2/2:5 (2:3-1) (cf. 4.3.1.1.: Image 17).

Some explicit comments made by the participant B reveals that he had also noticed the performed articulations typical to Ver. 3, but he explained the shape of his curve indicating just a few descents at some phrase closures by referring to his experience of the performed phrasings within this version as generally not interrupting the continuous flow of the melody line. However, at 2/3:4 (2:3-1), just before the bar preceding the second fermata bar, all of the participants, including the participant B, have notated a very similar sudden descent. In contrast to the two other participants, for some reason the participant B has not notated any descent at the corresponding place before the bar preceding the *first* fermata bar.

On the bar line just before the fourth last bars of the composition, at 2/5:1 (2:3-1), both of the curves drawn by B and C have sudden descents as well, maybe illustrating some kind of performed expressive hesitation just on the threshold before the four last bars of the composition. However, A has not notated any corresponding dynamical descent at this very place.

Comparison between all the curves representing each one of the versions: Summary

When comparing the curves representing each one of the three versions of the Schumann composition, many similarities have been found in respect of the general shape as well as the dynamical levels, even if discrepancies have been found as well. Where the main theme is introduced at the very beginning of the composition, the participant A has notated dynamical emphasises consequently about one beat later compared to the two other participants. An interpretation of this is that he had focused primarily on a kind of metrical pattern where the first bar of every unit grasping over two bars has the function of an rhythmical anacrusis towards the first beat of the succeeding bar, whereas the shape of B's and C's curves corresponds instead to the general contour of the melody line. In their curves, all of the partici-

pants have expressed the general dynamical level of Ver. 1 as the lowest among the three versions, the level of Ver. 3 as the highest, and the dynamical level of Ver. 2 between the general dynamical levels of the two other versions, which corresponds also to the described performed dynamical as well as the emotional characteristics within the three different versions respectively. In the B sections of the composition and in the fermata bars, however, it is the curves representing Ver. 2 that have usually been notated on the highest dynamical level. An interpretation of this is that in these sections within Ver. 2, the dynamical levels are particular high. In the curves representing Ver. 3, many common sudden descents have been found, probably illustrating the clearly performed articulations at some phrase closures as noticed by all the participants. Contrarily to the curves representing the two other versions, the curves of Ver. 3 do not indicate any clear decay at the end of the composition.

Hence, the results indicate that the curves representing *one and the same version* of the composition have *more* features in common than the curves representing the three different versions drawn by each one of the participants. This indicates that the MphC might work as a tool for illustrating dynamical characteristics within the sounding music.

4.3. Conclusions and answer of the research question

In this study, resemblances as well as discrepancies have been observed between the individual curves representing one and the same composition. Some of the discrepancies may be linked to the participants' focusing on other musical aspects than the melody line, which was the original intention with this study, but sometimes the phrasing curves are diverging even in cases where the participants seem to have focused primarily on the dynamics of the melody line. An interpretation of this is that although having concentrating on this specific musical aspect, music listeners still do not experience music in the same way, which will inevitably be visualised by means of the individual diverging shapes of the MPhC.

4.3.1. Gender aspects

No clear differences related to gender between the seven men and the two women participating in this study have been observed.

4.3.2. Summary of the total study

The results of the present total study may be summarised and concluded as follows:

1) In respect of the general shape, many similarities have been observed between the curves drawn by the participants representing one and the same composition. However, in music that may be characterised as more complex in a structural sense, the differences between the individual curves might sometimes be rather big.
2) Generally, when representing music of a clear *homophone* character, there seems to be more similarities between the individual curves. From this it may be concluded that homophone music seems to facilitate the participants' focusing on the dynamical progression of the melody part. When illustrating primarily the dynamics of the melody part according to the original intentions of the MPhC, the phrasing curves often tend to follow the melody contour.
3) Particularly in musical sections that may be described as more complex in a structural sense and where the melody part appears in a less clear relief to the other voices, the participants seem to have paid more attention to other musical parameters than the performed dynamics of the melody part, for example harmony, rhythm, metrical units, as well as some combined musical aspects. From this it may be concluded that in some kind of music, it seems to be more difficult to focus exclusively on the melody part.
4) In some cases, the participants' specific professional occupations and specialities seem to have affected the shape of the individual phrasing curves independently of characteristic musical features within the recorded music.
5) According to their curves, the participants seem to mostly agree about the location of dynamical *high points* and *low points* that may be discerned out of the performed dynamical progression of the melody part reinforced by other aspects imbedded in the music as for example the harmonic progression, meter and rhythm, etc.
6) Sometimes the participants have notated high points at other places than those that might seem motivated by the visual impression of the printed score or those motivated by the participants' familiarity with the imbedded musical structure. This might be interpreted as if the participants have attempted to illustrate primarily their personal experience as transmitted by means of the *sounding* music.
7) The results of the study's second phase strengthen the support of the idea that the MPhC might work as an instrument for illustrating features visually within the sounding music.
8) When studying the shape of the curves' beginnings and ends, no evident accordance between the participants has been found.

4.3.3. Answer of the research question

The research question was formulated as follows (cf. 1.2.2.): *How does the Melody Phrasing curve function as an instrument for visually illustrating the dynamical progression of the melody part, when applied by experienced music professors listening to classical piano compositions recorded on tape?*

Based on the results emanating from the present study, the answer may be formulated as follows: *The Melody phrasing curve seems to function as an instrument for visually illustrating the dynamical progression of the melody part in classical piano compositions having a clear homophone structure. In music of a more complex character, it seems to be more difficult to focus primarily on the progression melody line. More research is needed in order to explore the usefulness of the phrasing curve as a communicative tool in educational contexts.*

Chapter 5:
DISCUSSION

In this chapter, the results will be discussed structured as follows: (i) dynamics and emotions, (ii) the reasons for discrepancies between the individual curves, and (iii) implications in an educational context. In conclusion, possible ways to proceed as well as a short description of the next planned study will be presented.

5.1. Dynamics and emotions

The results reveal that the MPhC seems to function most adequate, in relation to its intended use, when representing music of a clear homophone character. Maybe homophone music facilitates the intended focus on the dynamical progression of the melody part. Furthermore, in homophone music the shape of the individual phrasing curves tends to follow the melody contour closely, for example in the Mozart excerpt used in the study's first phase.

5.1.1. Phrasing curves following the melody contour

Usually, musicians tend to reinforce the melody line's movements up and down in the register by increasing and decreasing the dynamical sound levels in a corresponding way (Blum, 1977; Klemperer, 1986; Sundin, 1994; Friberg & Battle, 2002). It is likely that I myself have been influenced by this convention when the Mozart excerpt was performed and recorded (cf. 3.3.3.), which might explain the shape of the participants' curves as generally following the melodic contour.

However, there also exist many exceptions from the fundamental rule of melodic-dynamical phrasing. At the dissonance-dissolution element of 1/2:1 (1-2) within the Mozart excerpt (cf. 4.1.1.1. [1]), six participants drew their curves moving down in spite of the melody line moving upwards. A possible explanation might be that when listening to the recording, they experienced a performed diminuendo according to another musical convention of making a *diminuendo* at the dissolutions of harmonic dissonances. Hence, at this very spot the shape of the curves corresponds to this latter convention, which modifies the other convention of reinforcing the melody's contour dynamically.

The standard model of melodic-dynamical phrasing may be deliberately modified for many reasons. By performing just the opposite of what is normally expected, special emotional effects may arise. For example, a soft dynamic in the higher register may create an emotional effect of increased tension. According to the intended use of the MPhC, such interpretative choices should be visible within the curves.

5.1.2. Connections between dynamics and emotions

In the study's second phase, the shape of the phrasing curves might be interpreted as sometimes expressing not only performed dynamics but also the different recordings' emotional characteristics (cf. 4.2.). This interpretation of the results is further supported by comments made by the participants themselves (cf. 3.3.3.). Researches that have been carried out (Rigg, 1964; Gabrielsson & Juslin, 1996; Woody, 2000; Juslin & Persson, 2002; Friberg & Battel, 2002) indicate a connection between performed dynamics and the experience of musical emotions, which might explain the shape of the phrasing curves representing the Schumann composition as mirroring also the recordings' emotional characters.

5.2. Reasons for discrepancies

The results of the first phase, in particular, indicate that in some excerpts, parts of the phrasing curves seem to correspond more to other musical aspects than the dynamics of the melody part, for example in some sections of the Brahms excerpt (cf. 4.1.2.) and the Debussy excerpt (cf. 4.1.5.). An interpretation of this is that it may be hard to focus exclusively on the melody part in musical sections of a more complex kind. Furthermore, the results indicate that the participants' professional specialities might have affected the shape of the curves (cf. 4.2.6.).

For this reason, in the study's second phase a clearly homophone composition was selected (cf. 3.3.3.). The participants were also supposed to represent more of the same musical perspective in being all professional pianists (cf. 3.3.1.). The results from the second phase indicate a somewhat bigger accordance between the individual curves representing each one of the recordings, which might be a consequence of these changed conditions.

5.2.1. Discrepancies in the study's second phase

However, some discrepancies between the participants' curves have also been observed in the second phase. It is likely that the participating pianists have played the Schumann composition themselves, since it belongs to the classical standard piano repertory. Accordingly, some of the discrepancies between the phrasing curves of this music might have emerged because of the participants' respective musical preunderstanding, provoking them to experience musical characteristics in the recordings coloured by their own interpretative ideas (cf. Damasio, 1994; Johansson 1999).

Bearing in mind that the curves might be described as *drawings* illustrating the participants' *subjective* musical experiences, no perfect accordance between the phrasing curves was expected. Nevertheless, if the MPhC should work as a visual tool, there

still has to be observable similarities between the phrasing curves representing one and the same music.

In a longer term, the MPhC might be used as a trigger for activating musician's self-reflection, a kind of psychological tool for developing a bigger awareness when interpreting classical music. It might also work as a means of communication between musicians. For this latter purpose in particular, it is crucial that it will be used in fairly the same way (cf. 3.5.).

Since the results indicate that some parts of the individual phrasing curves seem to correspond more to other musical aspects than the intended dynamical progression of the melody part, it may be concluded that the MPhC has not always been used in the same way in this study. A reason for this might be that the participants have understood the verbal instructions differently. In order to shed light to this problem, the distinction of three related concepts will be discussed: *perceived dynamics*, *musical tension*, and *physical amplitude*.

5.2.2. Perceived dynamics, musical tension, and physical amplitudes

Nielsen's study (1983) focuses on the concept of musical tension as perceived by listeners. According to Nielsen as well as to Fredrickson (2001), the total impression of tension cannot be ascribed to any single isolated musical aspect. The perceived tension seems to emerge out of the combined impact of several musical variables.

Even though no watertight bulkheads exist between the concepts, perceived dynamics has in this context been defined as more dependent on the performed dynamical sound levels (cf. 1.2.1.) than musical tension according to Nielsen's study. Although being performed in a soft dynamic, music might still represent a high degree of musical tension.

On the other hand, perceived dynamics is not equivalent to physical amplitudes either. As already discussed in the previous chapter, this difference appears clearly in Image 8b representing two bars of the Schönberg excerpt (cf. 4.1.1.1. [5]).

In Image *8a*, the individual phrasing curves representing the same musical section as in Image 8b have been displayed. By moving down only gradually, the curves seem to express the experience of a kind of remaining *delayed* dynamical level provoked by the preceding high point. This phenomenon has also been observed in the Debussy excerpt, for example in the parts of the individual phrasing curves displayed in Image 6b (cf. 4.1.1.1. [3]).

In the Mozart excerpt of the study's first phase, at bar 3/1:3, the phrasing curve drawn by the participant E expresses an increasing dynamical level by ascending

steeply just before the third beat of the bar (cf. 4.1.1.2. [1]). This ascending shape proceeds towards the onset of the second theme, on the first beat of the succeeding bar. However, the curve ascends at a rest in the printed score, which means that E's curve does not correspond to any performed crescendo. Therefore, the shape of the curve might be interpreted as rather expressing some kind of a musical inhalation or an inner preparation. The corresponding parts of the phrasing curves drawn by A and G have a similar tendency, although the 'crescendo' has been located much later compared to the phrasing curve drawn by E.

The mentioned musical examples indicate that some participants seem to have conceived the concept of perceived dynamics as implying some kind of an inner dynamical activity that is not exactly correlated to the measurable dynamical amplitudes of the performed music. Gärdenfors (1996/1999) claims that the 'filling-in-mechanisms' ('ifyllnadsmekanismer', p. 64) of the human brain creates *patterns* in order to make the experiences of the surrounding world comprehensible, which might explain the musical phenomena that have been discussed in the previous paragraphs.

This is also consistent with conventional views within the classical tradition considering melody phrases as continuous lines moving through the music, including rests as well as cæsura (Kurth, 1947; Skoda, 1957; Uhde & Wieland, 1989; Barenboim, 1991) (cf. 2.1.2.). When listening to music, a rest in the printed score may thus, under certain circumstances, be described as representing a diminuendo or a crescendo, depending on the character of the tones immediately preceding and succeeding the rest in question (cf. 2.1.2.: Figure 1).

The phenomenon might be considered as a mental subsequent construction emerging only after the musical event that gave rise to the corresponding impression has passed. Sundin (1994) argues that the experience of a melody is not only caused by its single sounds; it is the result of a retrospective relation to what 'can no longer be heard' (p. 113). Kurth (1947) considers music listening as an inner dynamic activity. We 'hear' simultaneously the past, the present, and the future.

Accordingly, the preparation towards the first tone of a melody phrase may sometimes be perceived as a 'crescendo' emerging out of the preceding 'silence'. Many artists seem to be particularly concerned about the preparation of the first note, for example Casals (Blum, 1972), Klemperer (1973), Brendel (1982), Barenboim (1991), and Furtwängler (1991).

In accordance with the intended use of the MPhC, Paul Badura-Skoda's phrasing curve (Skoda, 1957) seems to refer to the dynamical progression of the melody part, since the horizontal lines of his device indicating the curve's different levels have been explicitly marked with musical dynamics at the beginning of the score (cf. Chapter 2: Image 3). Furthermore, Skoda seems to have conceived the dynamical progression as implying an inner dynamical activity as well: His phrasing curve

displayed in Image 3, representing the beginning of the melody part within a composition by Mozart, expresses a 'crescendo' before the very first tone of the melody part, and a 'crescendo' during a rest with no music sounding.

Hence, in this study perceived dynamics may be defined as being whether equivalent to the concept of musical tension or physical amplitudes. In contrast to musical tension, the individual impression of dynamics on a high level is not supposed to be provoked by music performed in a soft dynamical sound level. On the other hand, the visualisation of perceived dynamics may sometimes deviate considerably from measured physical amplitudes, since many other aspects than exclusively the dynamical sound levels seem to be involved in the individual experience of the performed dynamics.

However, this does not mean that the performed soft and loud sound levels should be more or less disregarded when drawing phrasing curves. According to the intended use of the MPhC, the principal aspect determining the shapes of the curves is still supposed to be the performed dynamics. In other words, no other aspect should *dominate* the shape of the phrasing curves, which still does not exclude that the experienced dynamical progression might be *modified* by the combined impact of a complex interplay between many different aspects.

5.2.3. Intended use of the MPhC

The distinction between, on one hand, a musical focus permitting other aspects than the performed dynamics to *dominate* the total impression of dynamics, and on the other hand a focus just permitting these other aspects to *modify* this impression is illustrated in Figure A and B, respectively. Figure A represents a musical focus paying attention to several aspects, all of them being considered as *equally* important, the reason of which they have been localised on the same level.

Figure B illustrates a musical focus according to the original intentions of the MPhC. Here, the performed dynamical sound level is the principal aspect, even if it may be modified or rather *filtered* through the complex interplay of several musical aspects.

Of course, the total impression of dynamics may also be modified by other aspects than those represented in Figure 1 and 2: instrumental properties, timbre, pitch, articulation, agogics, acoustics, and even visual stimuli. For example, an oboe may sound louder because of its specific timbre. The acoustics of the room might also increase or diminish the total impression of loud and soft sound levels. Speeding down the tempo slightly just before a musical climax may reinforce the dynamical impact on the listener.

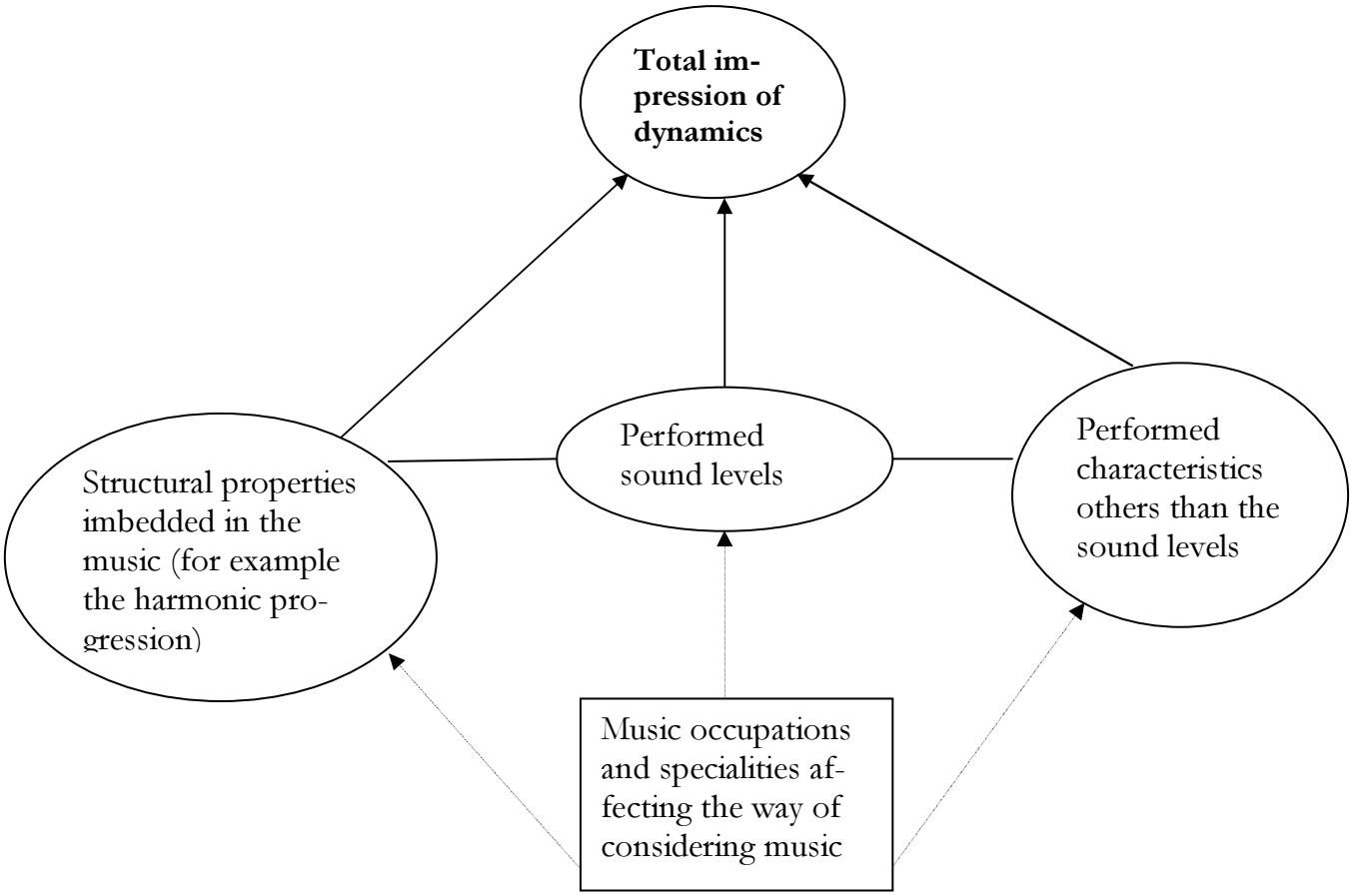


Figure A: Musical focus paying attention to several aspects considered as equally important

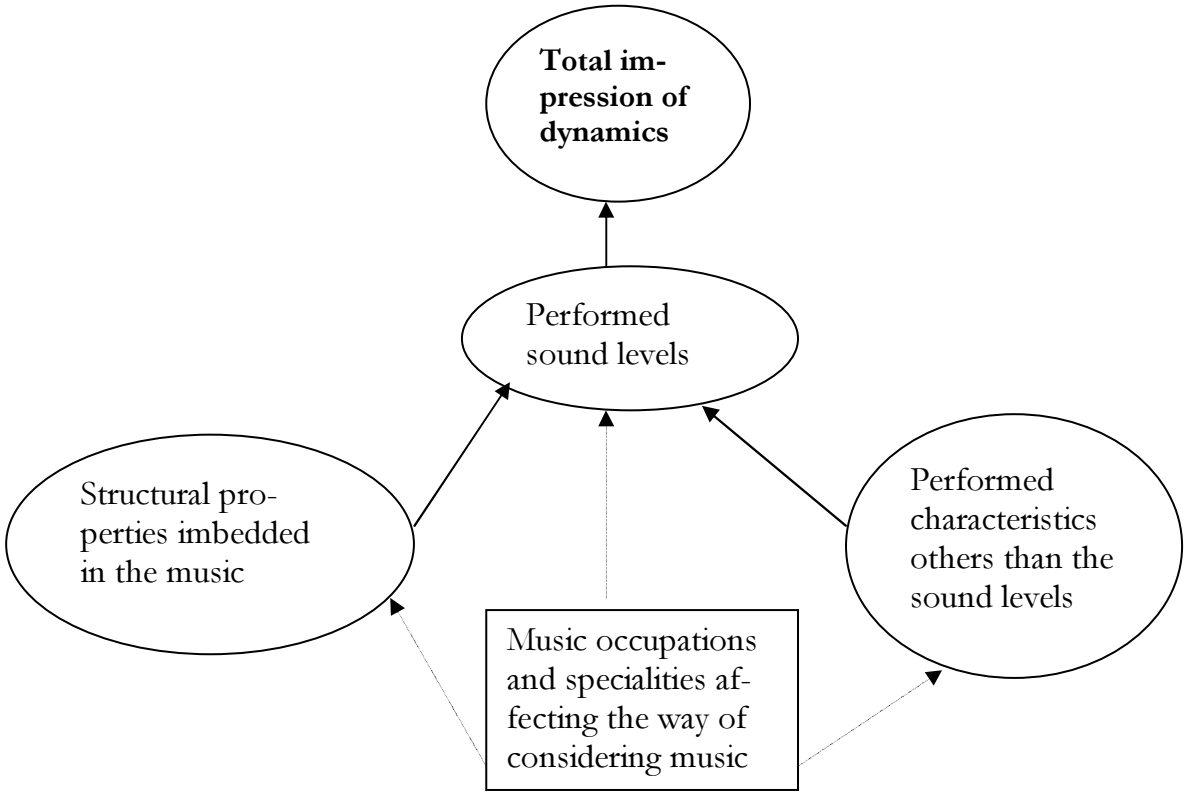


Figure B: Musical focus paying attention to the performed sound levels considered as the principal aspect

Image 21 displays the phrasing curve drawn by the participating composer (participant F, pink colour), departing from the fifth dynamical line counted from below, vis-à-vis three other phrasing curves (A, C, and D) representing a section of the Brahms excerpt used in the study's first phase (2/3:1 – 2/3:4). The shape of F's curve certainly reminds of that of the other participants, but it moves on a considerably higher dynamical level compared to the other curves, in spite of the performed soft level according to the implicitly indicated pianissimo dynamic of the printed score. From this, it might be concluded that in this section F has assumed a musical focus that almost neglects the performed dynamics. His curve might be interpreted as mirroring the harmonic progression (cf. 4.1.2.), maybe because of a specific interest in this aspect linked to his professional speciality of being an experienced composer.

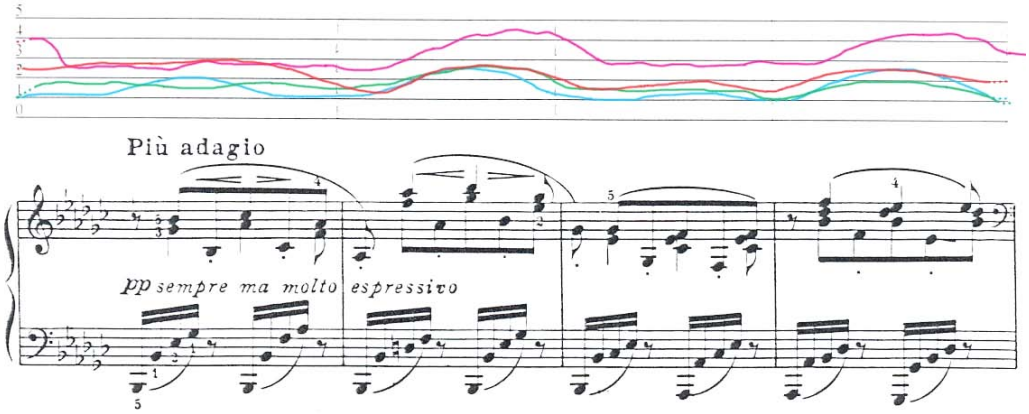


Image 21: Curves drawn by A, C, D, and F in a section of the Brahms excerpt (2/3:1 – 2/3:4)

5.2.4. The conductor metaphor

The concept of perceived dynamics as defined in this study may be explained by means of the following metaphor: The dynamical levels of the phrasing curves are intended to correspond approximately to the *size* or the *amplitudes* of a conductor's arm movements and bodily gestures. This implies that in some cases the movements of the conductor seem to visualise something more than just the *sounds* of the music. For example, the movements normally start before the onset of the music, continuing throughout the entire shape of the music, including rests and cæsura. Normally, the bodily gestures also continue a short time after the very last tone of the music has decayed.

Barenboim (1991) claims that the conductor's upbeat has an influence on the first sound. Barenboim also thought that the beats are not there exclusively to help the musicians orient themselves in relation to the score, but also to provide information about how to fill up the space between the tones.

Apart from the conductor's gestures introducing and ending the music, as well as filling up the space between the tones, a section of a composition where the musicians are supposed to perform in a *soft* dynamic would normally not be conducted

by means of *ample* gestures, even if the music happens to be of an intense character. In the same way, the notated dynamical levels of the MPhC are supposed to correspond to the amplitudes of an imagined conductor's arm movements.

5.2.5. The MPhC being used differently

There might be many possible reasons why the participants of this study did not always use the MPhC in the same way:

A) They did not want to use it in the intended way. — However, at the briefing none of the participants objected to the specific design of the MPhC. They all seemed to adopt a positive attitude towards the verbal instructions, and they seemed to have attempted generously to do their very best, which all speaks against this explanation.

B) They were not able to use it in the intended way. — It may sometimes be hard to abstract or discriminate the dynamical progression of the melody part from all the other existing aspects, particularly in music of a more complex kind. On the other hand, the MPhC has been designed according to some conventional views on melody phrasing within the classical music tradition (cf. 3.2.2.), and the participants were selected for being probably familiar with these conventional views through their respective musical backgrounds and educations. All of them also seemed to be colourful personalities, which has indeed made the outcome of the study redundant, but this has also created some problems in respect of a tendency towards too individually imprinted interpretations of the verbal instructions for how to use the MPhC (cf. 3.3.6.). In some cases, the participant's musical views seem to have been more affected by their different professional specialities than by their knowledge about the mentioned old conventions. As a consequence of this, it cannot be taken for granted that all the participants were used to considering melody phrases according to the intended use of the MPhC.

C) The instructions for how to use the MPhC were not clear enough. — This is a plausible explanation, partly associated to what have been discussed in the previous paragraph: if it may be difficult to use the MPhC according to its intended use, it is even more important that the instructions are very clear. Maybe the individual phrasing curves would have been somewhat more similar, if the participants had fully understood the instructions.

5.3. EDUCATIONAL IMPLICATIONS

Giving the results of the planned forthcoming study indicate that the MPhC might function as a useful visual tool for preparing musical performances, the next step would be to explore it in more explicit educational contexts. In an educational context, the MPhC might work as an instrument facilitating the communication of musical ideas between musicians playing together, as well as between teachers and students, maybe affecting their music performances in a stimulating way. The MPhC may be regarded as a potential trigger for self-reflection developing musicians' awareness. The phrasing curve might also clarify pupils' or students' intentions by visual means, which would facilitate the professor's role of guiding them to realise their own ideas when performing music.

When teaching classical music, there might be a need for dealing with the conventional views of performing music that have been established within this tradition. On the other hand, traditions should not be considered as static phenomena that remain stable over time. Thus, the MPhC is not supposed to be used for *forcing* the pupils or students to adopt specific interpretative solutions. Since even the strongest traditions are in a constant transformation, teaching conventional performing principles does not exclude encouraging the students to explore new possible means of expressing themselves.

5.4. WAYS TO PROCEED

Concerning the further research, there seems to be basically two approaches to consider:

1) to let the participants freely use the MPhC the way they like. — In this case, the phrasing curves might still serve as a possible trigger for musical self-reflection in a context of performing and practising music. On the other hand, using the phrasing curves only in a more general sense without referring to any specific musical aspect would disable the MPhC for the purpose of serving also as a possible means of communication between musicians, for example in an educational context. Nobody would then really know how to realise certain musical ideas practically or which concrete measures to take in order to make a musical performance sound in the intended way.
2) to improve the instructions in order to simplify the use of the MPhC. — When carrying out a study, respecting people's personal integrity is absolutely crucial. The participants should never be prevailed upon executing a task that appears awkward to them. A solution might be to choose only participants representing more of the same musical perspective, and who are very familiar with the conventional views on melody phrasing on which the

MPhC is supposed to be based. Another solution might be more preparation time making it more convenient for the participants to master the MPhC.

At present, I am most inclined to continue the research according to the *second* alternative. The reason for this is that the possible usefulness of the MPhC as a visual tool for communicating musical ideas has not yet been fully explored.

5.4.1. Reasons for focusing on the performed dynamics

A question that might arise, however, is why it is so important that the drawn phrasing curves should correspond specifically to the aspect of performed dynamics. — In an educational context, the MPhC might be more useful as a visual tool when expressing only *one* specific musical aspect. According to some common views within the classical tradition, the performed dynamical progression constitutes an important *marker* of melody phrases considered as building up arch shapes (cf. 2.1.2.: Casals in Blum, 1977; Huron, 1995). Choosing the aspect of perceived dynamics signifies that the shape of the phrasing curves refers to something *concrete*: the disposition of the performed dynamics within a musical phrase. This choice might enable a fruitful communication and discussion about practically orientated musical solutions. The MPhC might be used for testing the realisation of different musical ideas when performing. According to this intended practical use, different ways of shaping the dynamics of a melody phrase should also be visible within the corresponding drawn curves.

5.4.2. Design of a continuous study

As previously discussed, the results of the present study, carried out in the perspective of professional listeners, indicate that the MPhC seems to function most appropriate when illustrating homophone classical piano compositions not being of a too complex character (cf. 4.3.2.). However, this does not exclude that it might also function in other kinds of music as well. Further research is needed in order to explore its usefulness in music of other kinds, in music performed on other instruments, and with participants representing other musical perspectives.

However, the point of departure of the next planned study will be to further explore the MPhC under the mentioned conditions where it seems to have worked best. The potential usefulness of the MPhC might be studied in a more concrete context including participants performing music themselves, drawing phrasing curves and listening to recordings, as well as in-depth-interviews giving the participants an opportunity to express their reactions and to make their own comments.

By way of a suggestion, the planned study might be designed as follows: Four classical pianists on an advanced musical level at an Academy of Music will be selected, two professionals and two students, in order to make the outcome more

varied. Three music excerpts from typically homophone sonata movements composed by Mozart and Beethoven will be used. The two first excerpts are supposed to serve merely as preparation tasks, giving the participants more time to feel more convenient when using the MPhC. During this initial preparatory time including two or three personal appointments with each one of the participants and the researcher, the intended use of the phrasing curves will be thoroughly discussed, and the participants will be asked to perform the excerpts and to illustrate the dynamical progression of the melody part according to their own interpretative musical intentions by means of the MPhC. Their personal choice of metrical units and points of gravity might also be visualised by means of the system presented in Fridell (1999), as a complement to the drawn phrasing curves.

The total initial process is thus supposed to help the participants to get used to the mentioned visual tools. After this period, the main study focusing on the third one of the music excerpts will be carried out. Each of the participants will be asked to draw dynamical phrasing curves, and maybe also to indicate metrical units and points of gravity according to the other mentioned system, illustrating in this way their musical intentions. After that, they will be asked to perform the excerpt, which will also be recorded on DVD and tape. At a subsequent appointment, the participants will be confronted to their own recordings and interviewed, being also asked to give some general comments. They will also get the opportunity to comment on the shape of the drawn phrasing curve vis-à-vis their reactions when listening to the corresponding recording.

For comparative purposes, it might also be of interest to let each participant listen to and illustrate the performance of one of his/her fellow participants by means of the two mentioned visual tools. Finally, each participant would get some feedback on his/her performance by meeting the selected fellow participant in question, after which the two phrasing curves drawn by each one of them representing the same recording would be compared and commented on by the participants themselves. At that same occasion, the participants might be interviewed two by two.

The research question of this planned study might be formulated as follows: *What happens when classical musicians are using visual tools illustrating their musical ideas as a supplement to the common work of preparing a performance?*

5.4.3. Concluding remarks

The primary purpose of the present study has been to study the usefulness of the MPhC by comparing the individual curves representing the same performed works of music, not so much to explain why the participants have drawn their curves the way they did. Many questions remain still unanswered, partly because no interviews have been made. This means that none of the interpretations and conclusions has

been confirmed by means of any in-depth-interviews with the participants themselves. Therefore, there is a need for further research including such interviews. It is also crucial that the possible usefulness of the MPhC as a visual tool will be explored in a more concrete way, for example in explicit educational contexts.

REFERENCES

Bazzana, K. (1997). *Glenn Gould. The performer in the work. A study in performance practice.* Oxford: Clarendon Press.

Bengtsson, I., Gabrielsson, A. & Thorsén, S.-M. (1969). Empirisk rytmforskning — en orientering om musikvetenskaplig bakgrund, utveckling och några aktuella projekt. *STM Svensk tidskrift för musikforskning, 51/69*, pp. 49-118.

Bengtsson, J. (1988). *Sammanflätningar. Fenomenologi från Husserl till Merleau-Ponty.* Gothenburg: Daidalos.

Bengtsson, J. (1999). En livsvärldsansats för pedagogisk forskning. In J. Bengtsson (Ed.), *Med livsvärlden som grund. Bidrag till utvecklandet av en livsvärldsfenomenologisk ansats i pedagogisk forskning.* Lund: Studentlitteratur.

Barenboim, D. (1991). *A life in music* (Ed. Michael Lewin). London: Weidenfeld and Nicolson.

Blum, D. (1977). *Casals and the art of interpretation.* London: Heinemann.

Brendel, A. (1982). *Nachdenken über Musik.* München: Piper.Schott.

Brincker, J. (2002). Tidens stemme. In S.-E. Holgersen, K. Fink-Jensen, H. Jørgensen & B. Olsson (Eds.), *Musikpædagogiske refleksioner, pp. 211-220.* Copenhagen: Danmarks Pædagogiske Universitet.

Bruner, J. (1996/2002). *Kulturens väv – utbildning i kulturpsykologisk belysning.* Gothenburg: Daidalos.

Clynes, M. (1973). Sentics: Biocybernetics of emotion communication (pp. 55-131). In B. Boland (Ed.), *Annals of the New York Academy of Sciences*, volume 220, article N° 3. New York: Academy of Sciences.

Contro, V. (1993). Du geste à l'analyse musicale: L'exemple de l'improvisation contemporaine. *Les cahiers du CIREM, no 26-27 Mar 1993*, pp. 169-176. Agrégé: Université de Tours.

Cooper, G., & Meyer, L. B. (1960). *The Rhythmic Structure of Music.* Chicago: Chicago University Press.

Damasio, A. R. (1994). *Decartes' error: emotion, reason and the human brain.* New York: Grosset/Putman Book.

Dart, Th. (1964). *Musikalisk praxis. Från senmedeltid till wienklassicism* (Ed. I. Bengtsson). Stockholm: Natur och kultur.

Edlund, B. (1994). The tyranny of the bar-lines. Encoding notated meter in performance. In A. Friberg, Jenny Iwarsson, E. Jansson and J. Sundberg (Eds.), *SMAC 93, Proceedings of the Stockholm Music Acoustics Conference*, pp. 84-88, Stockholm 1994.

Edlund, B. (1996). Making meter evident. On the playing of an ambiguous Bach melody. *Musikpsychologie 12/96*, pp. 28-41.

Eitan, Z. (1993). Melodic contour and musical style: A quantitative study (pp. 1-68). In M. G. Boroda (Ed.), *Fundamentals of musical language: an inter-disciplinary approach*. Musikometrika, volume 5. Bochum: Univeritäts-verlag Dr. N. Brockmeyer.

Fagius, J. (2001). *Hemisfärernas musik. Om musikhanteringen i hjärnan.* Gothenburg: Bo Ejeby Förlag.

Folkestad, G. (1996). *Computer based creative music making : Young people's music in the digital age.* Diss. Gothenburg: Acta Universitatis Gothoburgensis.

Fredrickson, W. E. (2001). The effect of performance medium on perception of musical tension. In D. A. Sheldon (Ed.), *Bulletin of the council for research in music education, Nº. 148, pp. 60-64*. Urbana - Champaign: School of Music, University of Illinois.

Friberg, A., & Battel, G. U. (2002). Structural communication (Chapter 2.7). In R. Parncutt and G. E. McPherson (Eds.), *The science and psychology of music performance: creative strategies for teaching and learning (Part 2: Subskills of music performance)*. New York: Oxford University Press.

Fridell, I. (1999). *Musikens tyngdpunkter — om interaktionen mellan meter och rytm och dess roll i den interpretative processen* ('Metric Points of Gravity in Music — Interaction between Meter and Rhythm and its Role in the Process of Musical Interpretation'). Malmö: Malmoe Academy of Music.

Furtwängler, W. (1991). *Furtwängler on music.* Essays and Addresses edited and translated by Ronald Taylor. Aldershot: Scolar Press.

Gabrielsson, A. & Juslin, P. N. (1996). Emotional expression in music performance: between the performer's intention and the listener's experience. *Psychology of music, 24,* pp. 68-91.

Goulding, Ph. G. (1996). Klassisk musik. *Allt du behöver veta om de största kompositörerna och deras främsta verk.* Stockholm: Forum.

Gärdenfors, P. (1991/1999). *Fängslande Information*. Stockholm: Natur och Kultur.

Hultberg, C. (2000). *The printed score as a mediator of musical meaning. Approaches to music in Western tonal tradition*. Diss. Malmö: Malmoe Academy of Music / Lund University.

Huron, D. (1995). The melodic arch in Western folksongs. *Computing in musicology: An international directory of applications, volume 10, 1995*, pp. 3-23.

Jeppesen, K. (1930). *Kontrapunkt (Vokalpolyfoni)*. Copenhagen: Wilhelm Hansen Musik-forlag.

Johansson, B. B. (1999). Neurobiology of Intuition. In S. Sandström (Ed.), *Intuitive Formation of meaning*. Stockholm: The Royal Academy of Letters, History and Antiquities.

Juslin, P. N., & Persson, R. S. (2002). Emotional communication. In R. Parncutt & G. E. McPherson (Eds.), *The Science and Psychology of Music Performance: Creative Strategies for Teaching and Learning* (pp. 219-236). New York: Oxford University Press.

Klemperer, O. (1973). *Conversations with Klemperer*. (Ed. Peter Heyworth) London: Victor Gollancz LTD.

Klemperer, O. (1986). *Klemperer on music. Shavings from a musician's workbench*. (Ed. M. Anderson) Musicians on Music N° 2. London: Toccata Press.

Kurth, E. (1947). *Musik-Psychologie*. Bern: Verlag Krompholz & Co.

Marton, F., & Booth, S. (1997). *Learning and awareness*. Mahwah, N.J.: Lawrence Erlbaum Associates, Inc., Publishers.

Meyer, L. B. (1967/1992). *Music, the arts and ideas: patterns and predictions in twentieth-century culture*. Chicago: University of Chicago Press.

Meyer, L. B. (1996). *Style and music. Theory, history, and ideology* Chicago: University of Chicago Press.

Nielsen, C. (1946). *Levande musik*. Stockholm: Hugo Gebers förlag.

Nielsen, F. V. (1983). *Oplevelse af Musikalsk Spænding*. Diss. Copenhagen: Akademisk Forlag.

Nielsen, F. V. (1987). Musical 'tension' and related concepts. In T. A. Sebeok and J. Umiker-Sebeok (Eds.), *The Semiotic Web '86. An International Yearbook* (pp. 491-513). Berlin: Mouton de Gruyter.

Quantz, J. J. (1752/1974). *Versuch einer Anweisung, die Flöte traversiere zu spielen; mit verschiedenen, zur Beförderung des guten Geschamckes in der praktischen Musik dienlichen Anmerkungen begleitet, und mit Exempel erläutert. Nebst XXIV Kupfertafeln.* Original: Berlin 1752. Reprint, fifth edition (1974) of the fascimile print of the third edition (Breslau: Johann Friedrich Korn der ältere, 1789), H-P. Schmitz (Ed.). Kassel/Basel: Bärenreiter Verlag

Rainer, O. (1925): *Musikalische Graphik. Studien und Versuche über die Wechselbeziehungen zwischen Ton- und Farbharmonien.* Wien: Deutscher Verlag für Jugend und Volk Gesellschaft M.B.H.

Repp, B. (1993). Music as motion: a synopsis of Alexander Truslit's (1938) 'Gestaltung und Bewegung in der Musik'. *The Journal of the Society for Research in Psychology of Music and Music Education vol. 21, 1/93*, pp. 48-72.

Rigg, M. G. (1964). The mood effects of music: a comparison of data from earlier investigations. *Journal of Psychology, 58,* pp. 427-438.

Skoda, E. & P. B. (1957). *Mozart-Interpretation.* Wien: Eduard Wancura Verlag.

Sloboda, J. A. (1985). *The musical mind: The cognitive psychology of music.* Oxford Psychology Series, 5. Oxford: Clarendon Press.

Stern, D. (1991). *Spädbarnets interpersonella värld — ur psykoanalytiskt och utvecklingspsykologiskt perspektiv.* Stockholm: Natur och kultur.

Sundin, N.-G. (1994). *Aesthetic criteria for musical interpretation. A study of the contemporary performance of Western notated instrumental music after 1750.* Diss. Jyväskylä: University of Jyväskylä.

Säljö, R. (2000). *Lärande i praktiken. Ett sociokulturellt perspektiv.* Stockholm: Bokförlaget Prisma.

Söderholm, V. (1967). *Kontrapunkt. Tvåstämmig sats.* Stockholm: Eriks.

Truslit, A. (1938). *Gestaltung und Bewegung in der Musik. Ein tönendes Buch vom musikalischen Vortag und seinem Bewegungserlebten Gestalten und Hören.* Berlin – Lichterfelde: Chr. Friedrich Vieweg.

Uhde, J., & Wieland, R. (1989). Der Körper als Instrument der Musik. *Sonderdruck aus: Festschrift K. M. Komma, Laaber.*

Valkare, G. (1997). *Det audiografiska fältet. Om musikens förhållande till skriften och den unge Bo Nilssons strategier.* Diss. Gothenburg: Gothenburg University, Gothenburg Academy of Music.

Walker, R. (2004). Teaching music as image and narrative. In Andrea Giráldez (Ed.), *Proceedings of the 26th international Society for Music Education World Conference 11-16 July 2004*. Tenerife: Sound worlds discover.

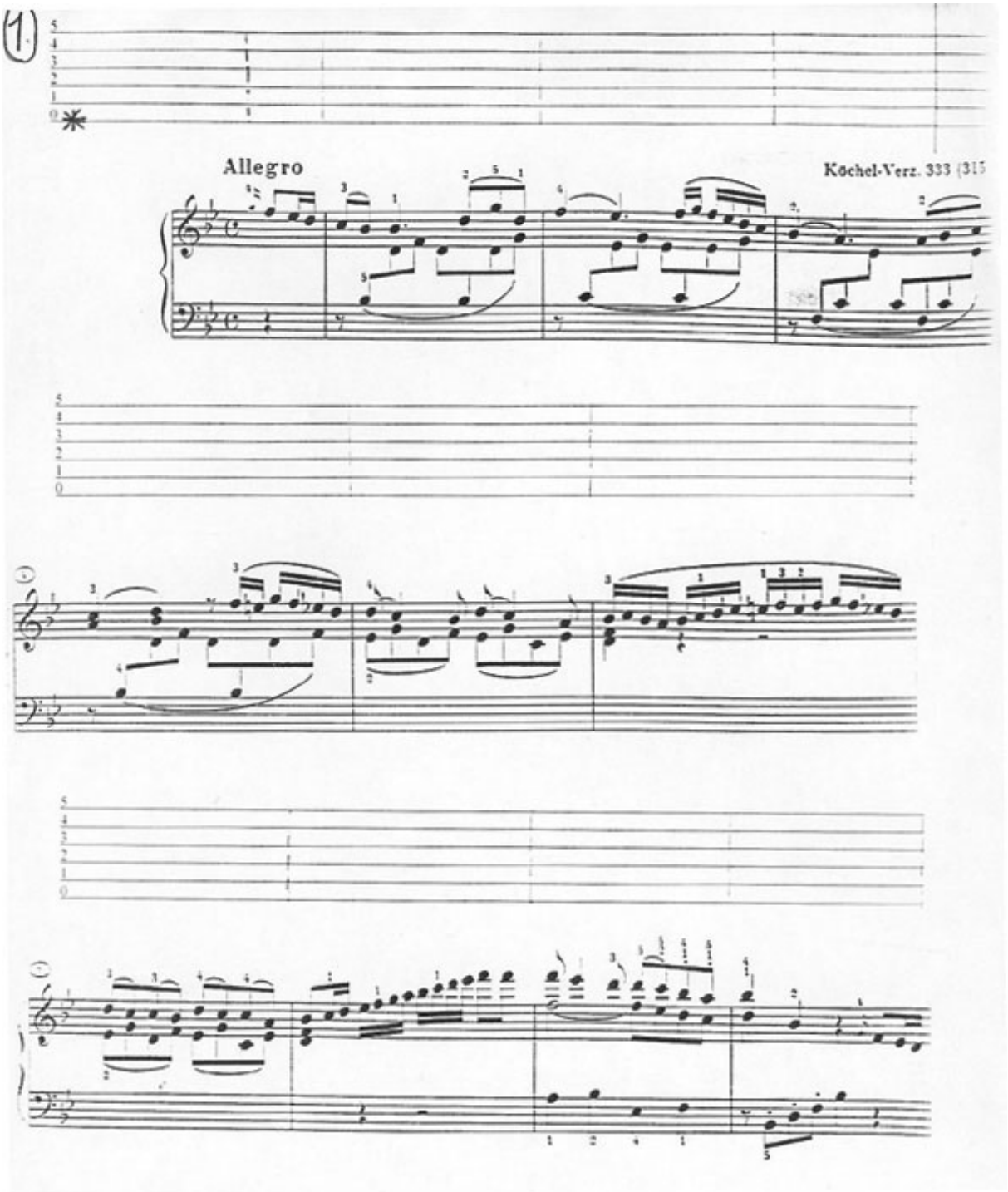
Walter, B. (1958). *Musik och musiker* ('Von der Musik und vom Musizieren', translation made by Kajsa Rootzén). Stockholm: P. A. Norstedts & söners förlag.

Weiler, K. (1993). *Celibidache: Musiker und Philosoph*. München: Schneekluth.

Woody, R. H. (2000). Learning expressivity in music performance: an exploratory study. *Research Studies in Music Education, 14*, pp. 14-23.

Appendix A 1

W. A. Mozart: from Sonata in B flat major, Köchel 333, first movement



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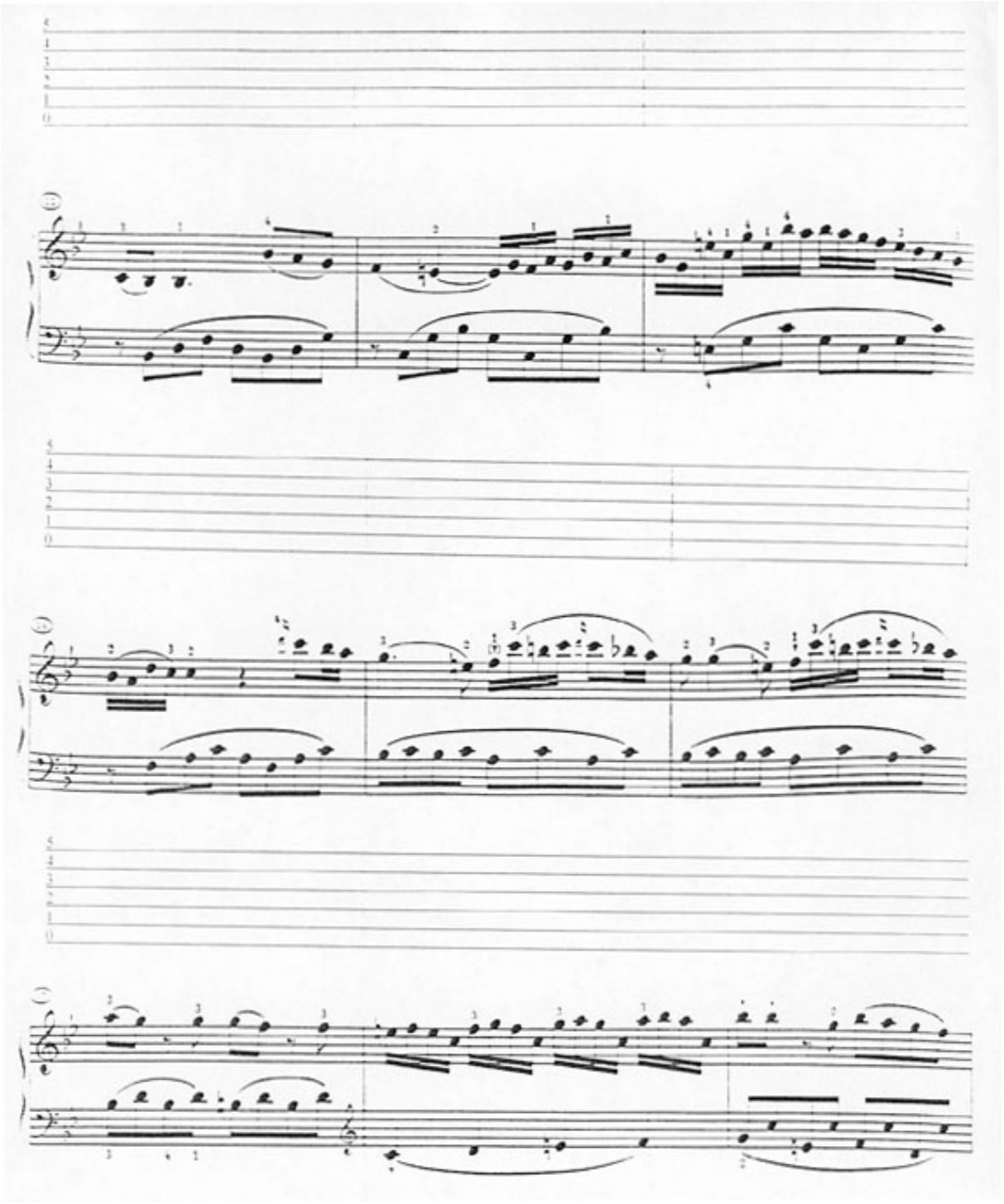

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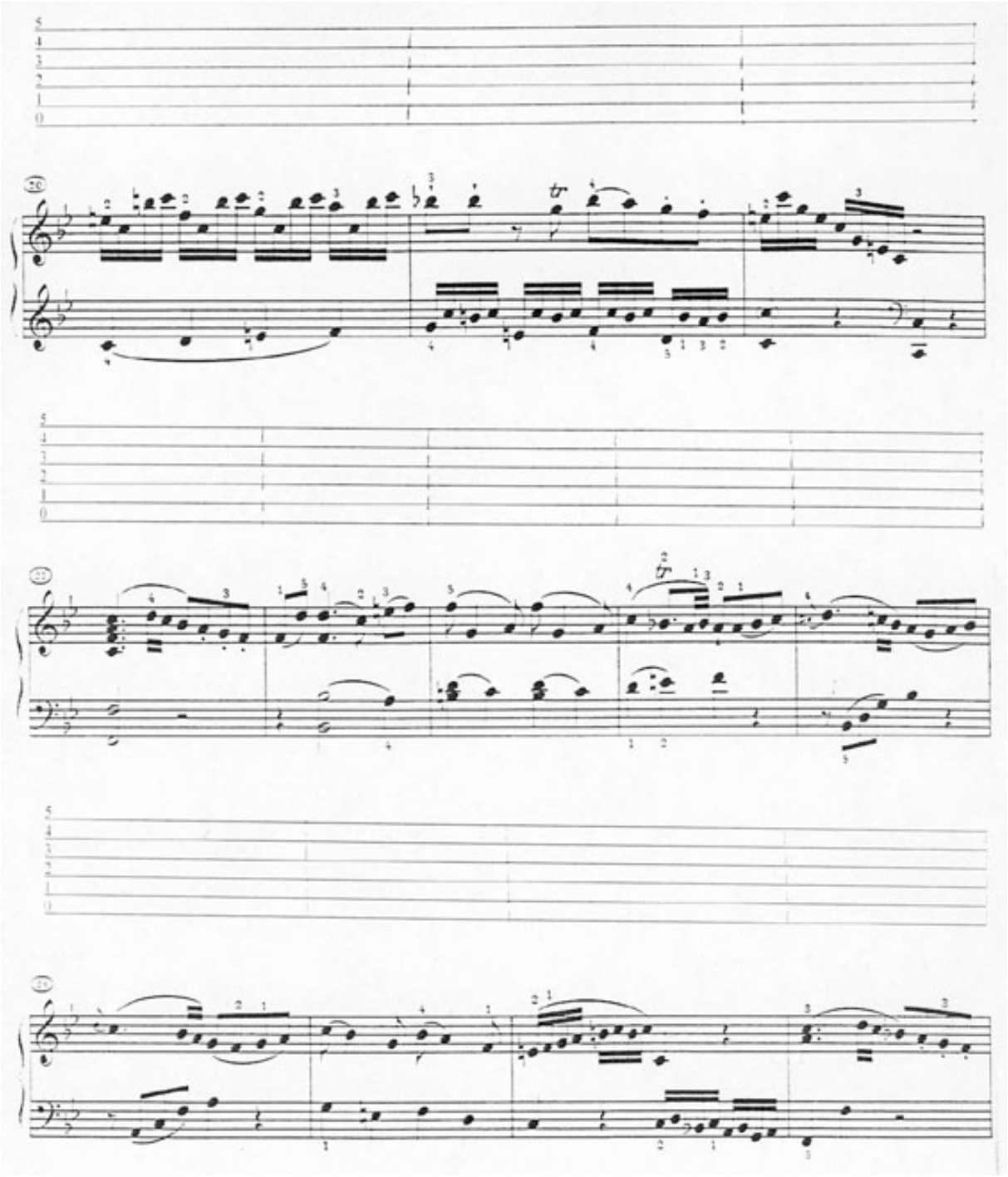

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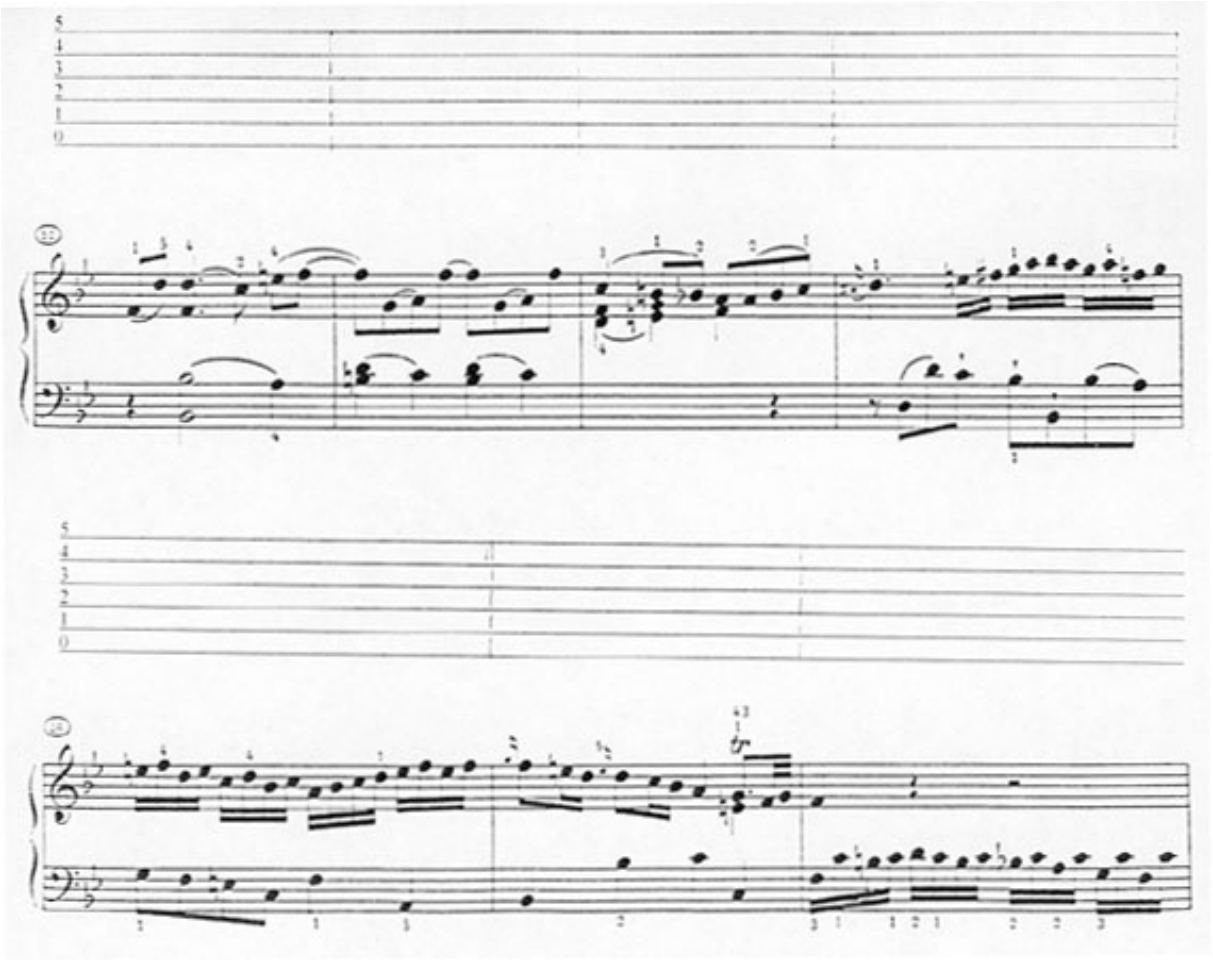
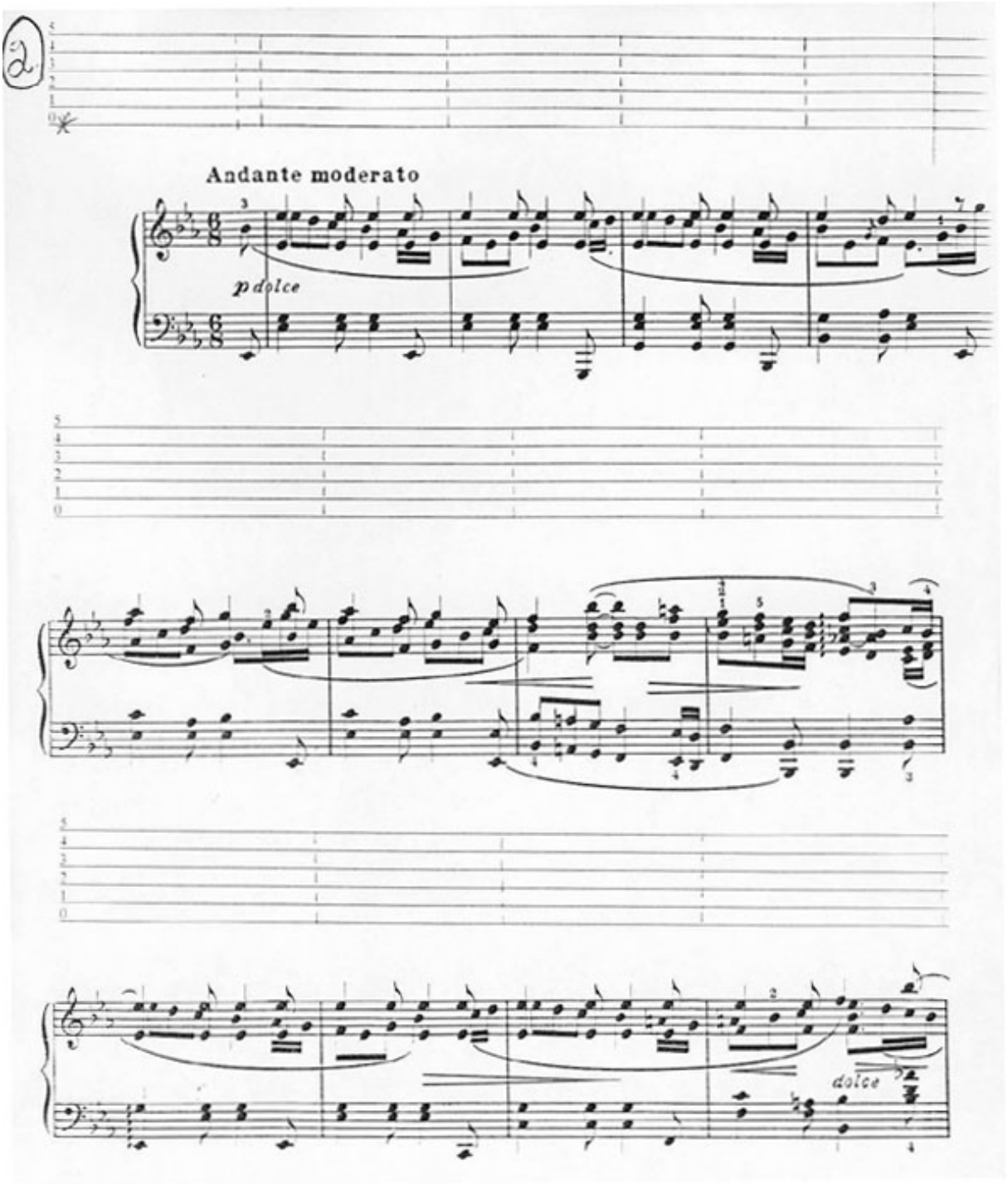


Appendix A 2

J. Brahms: from Intermezzo in E flat major, op. 117, No 1



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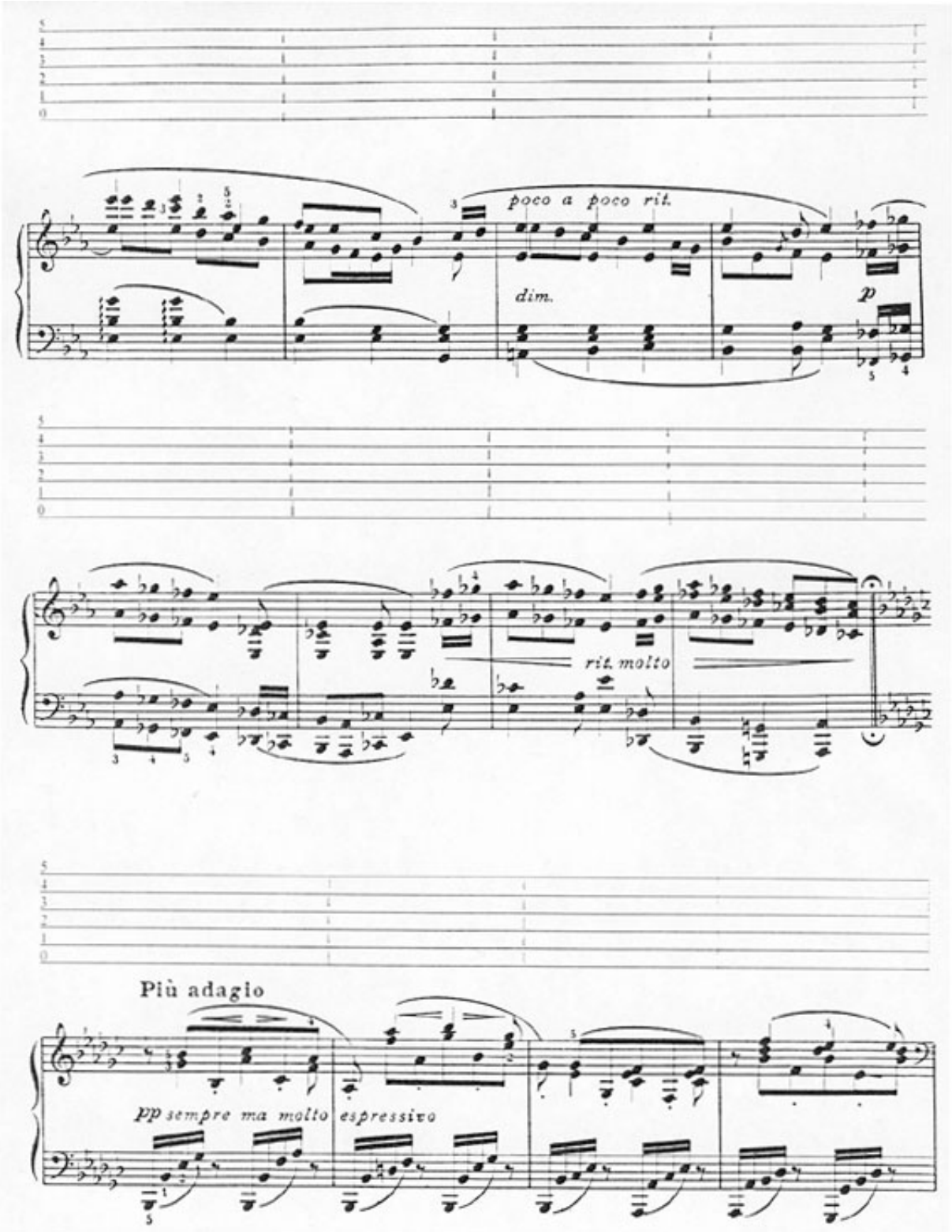

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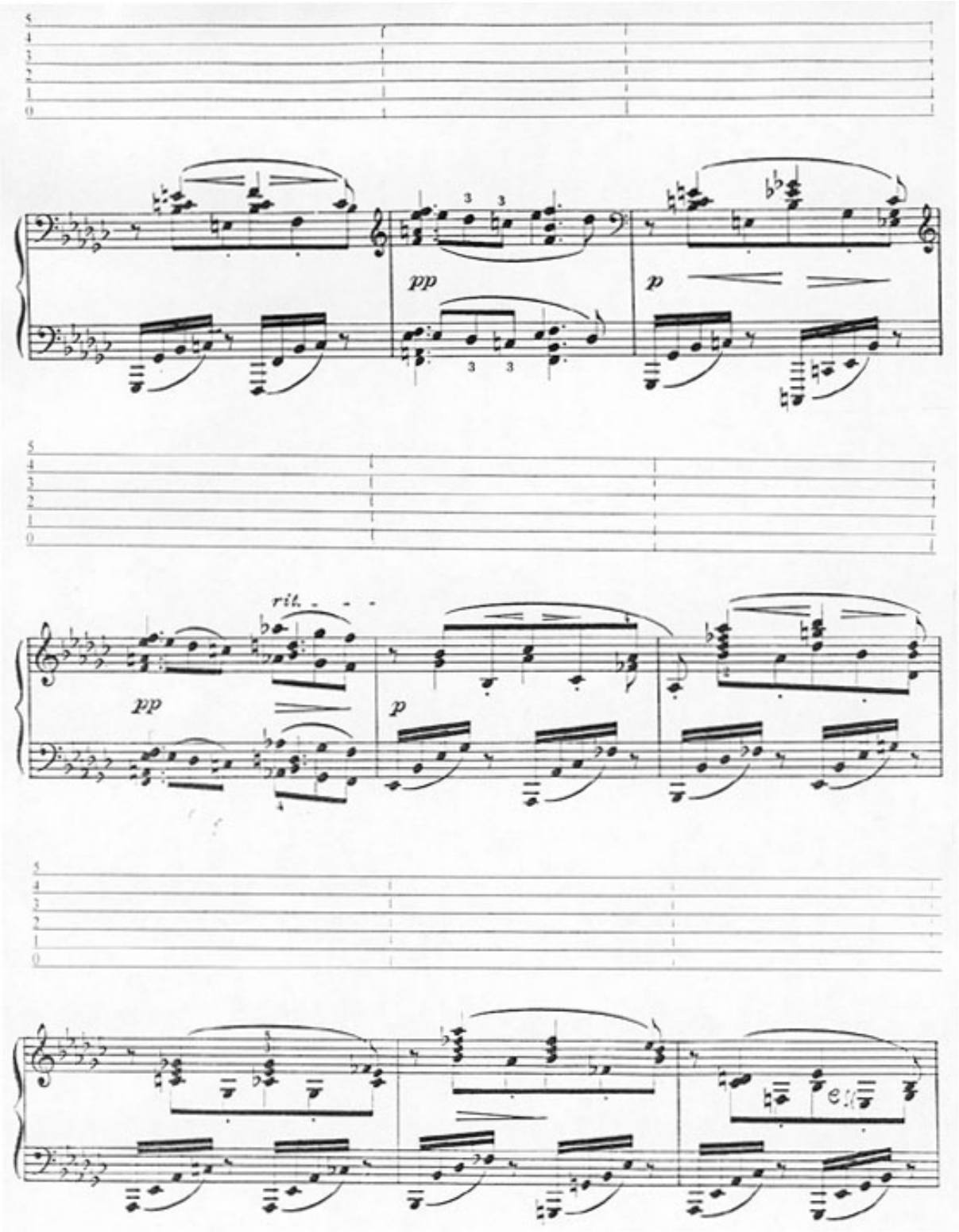

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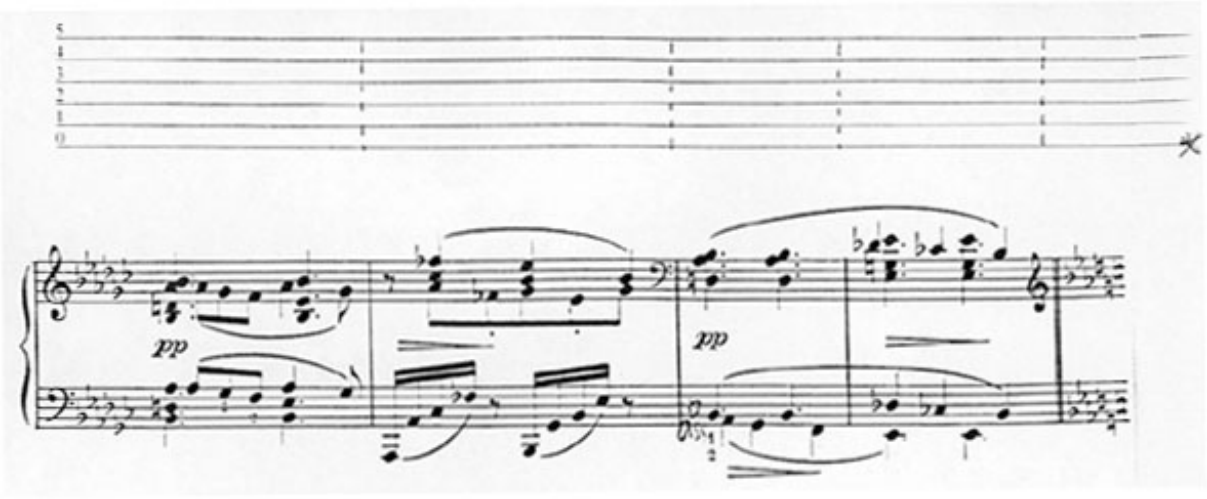
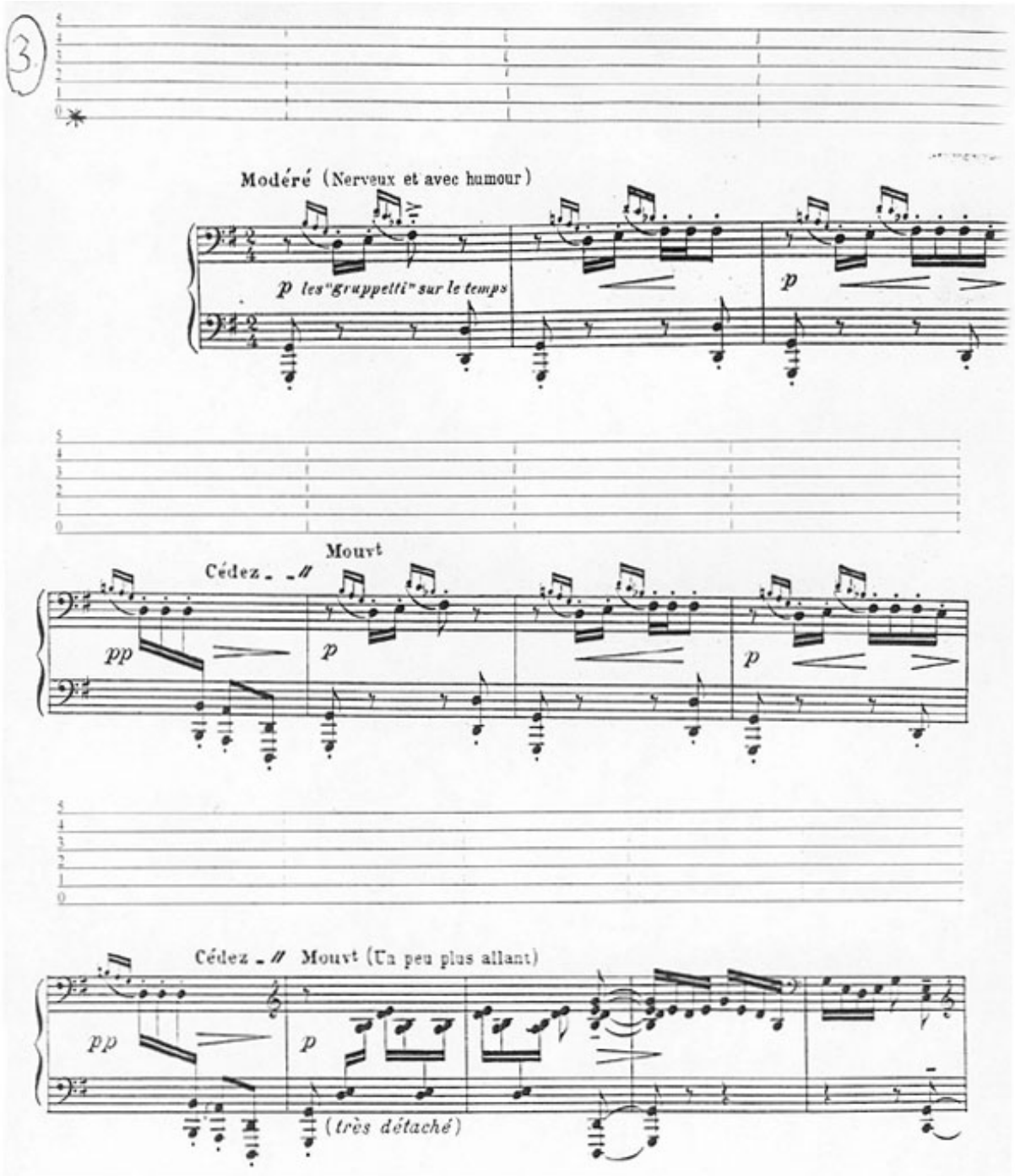
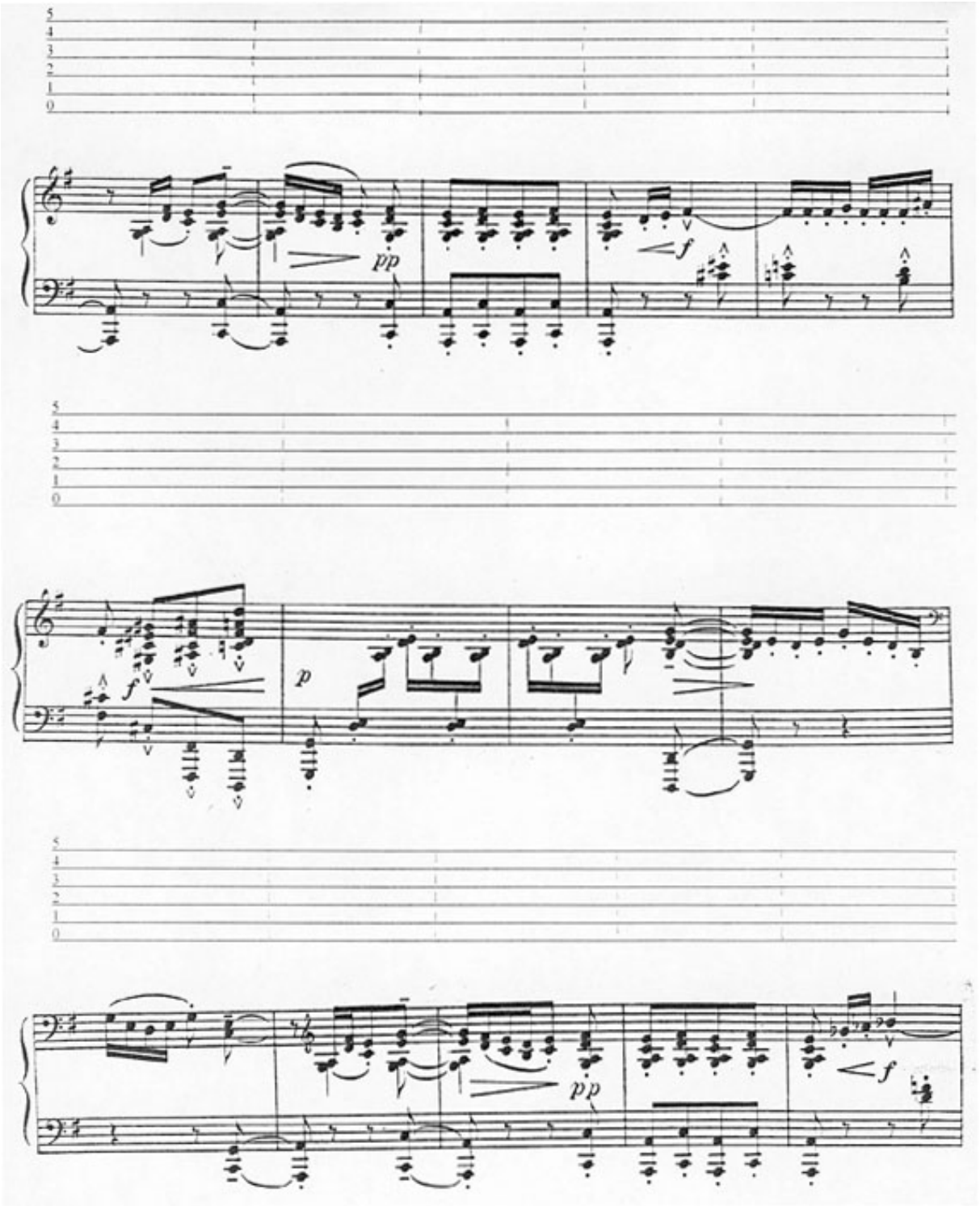


Appendix A 3

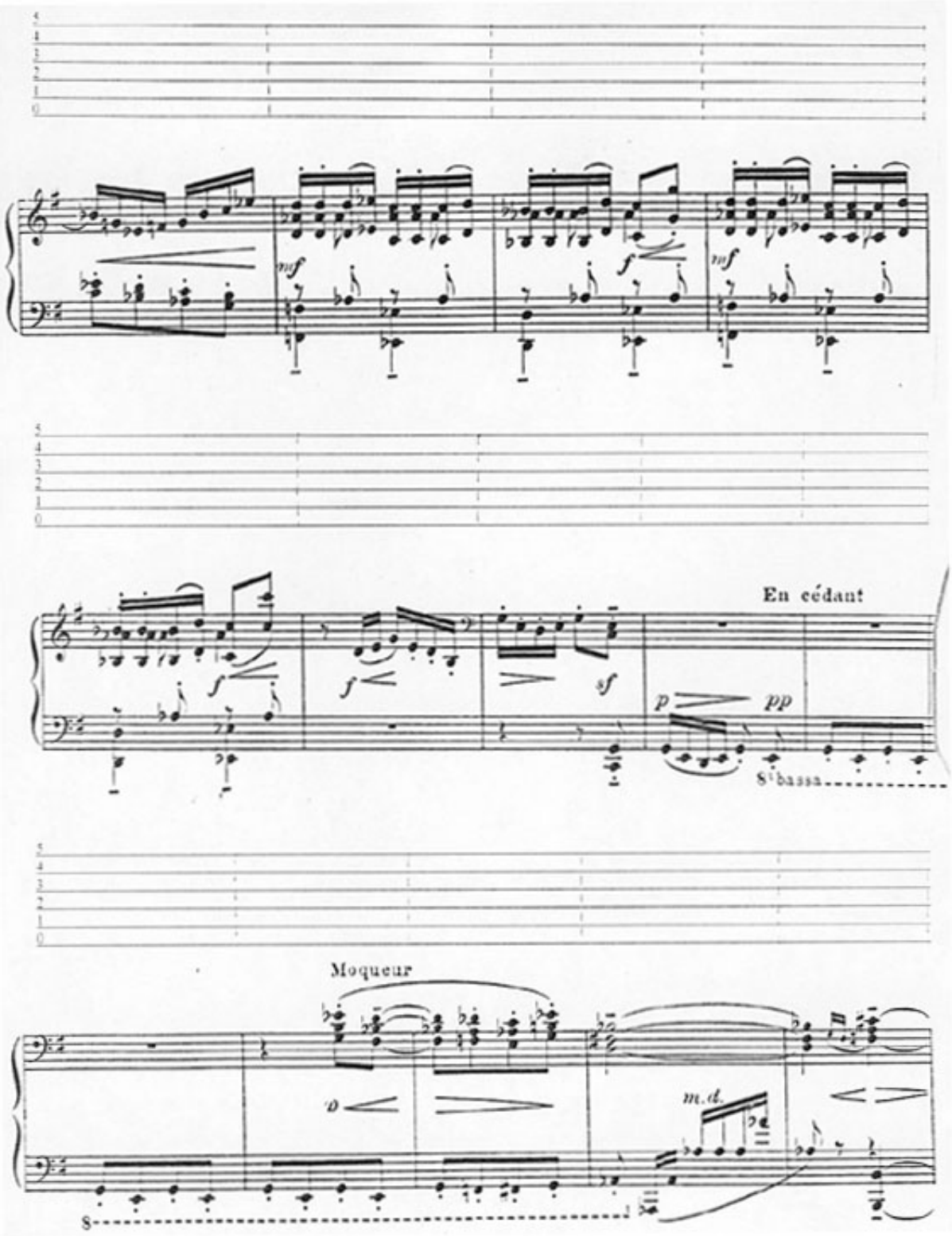
C. Debussy: from 'Préludes pour Piano (1er Livre)', No 12 ('Minstrels')



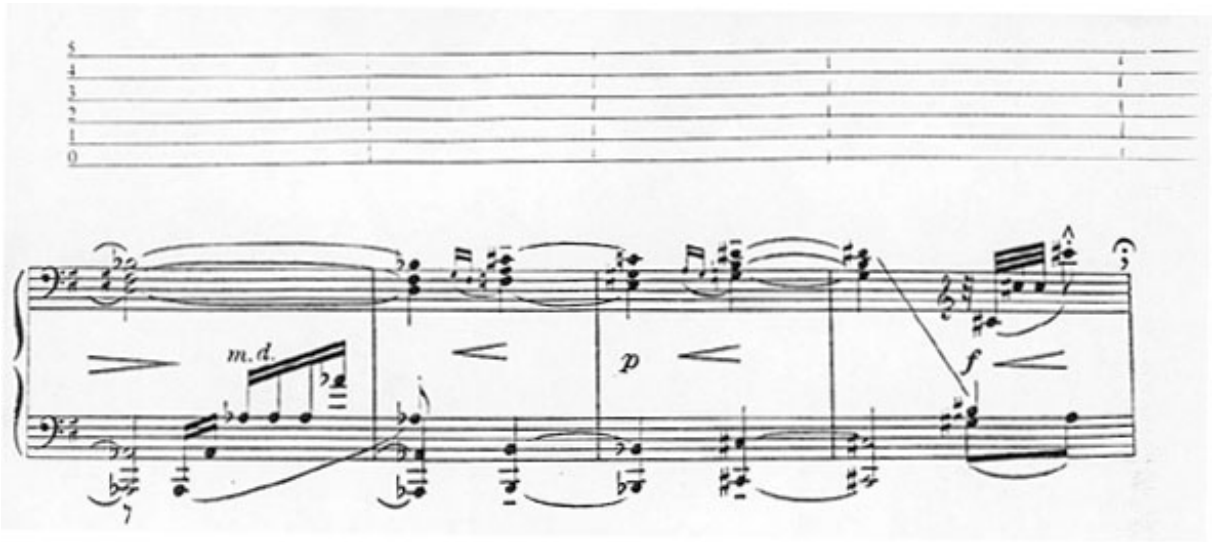
Appendix A 3, Page 2



Appendix A 3, Page 3

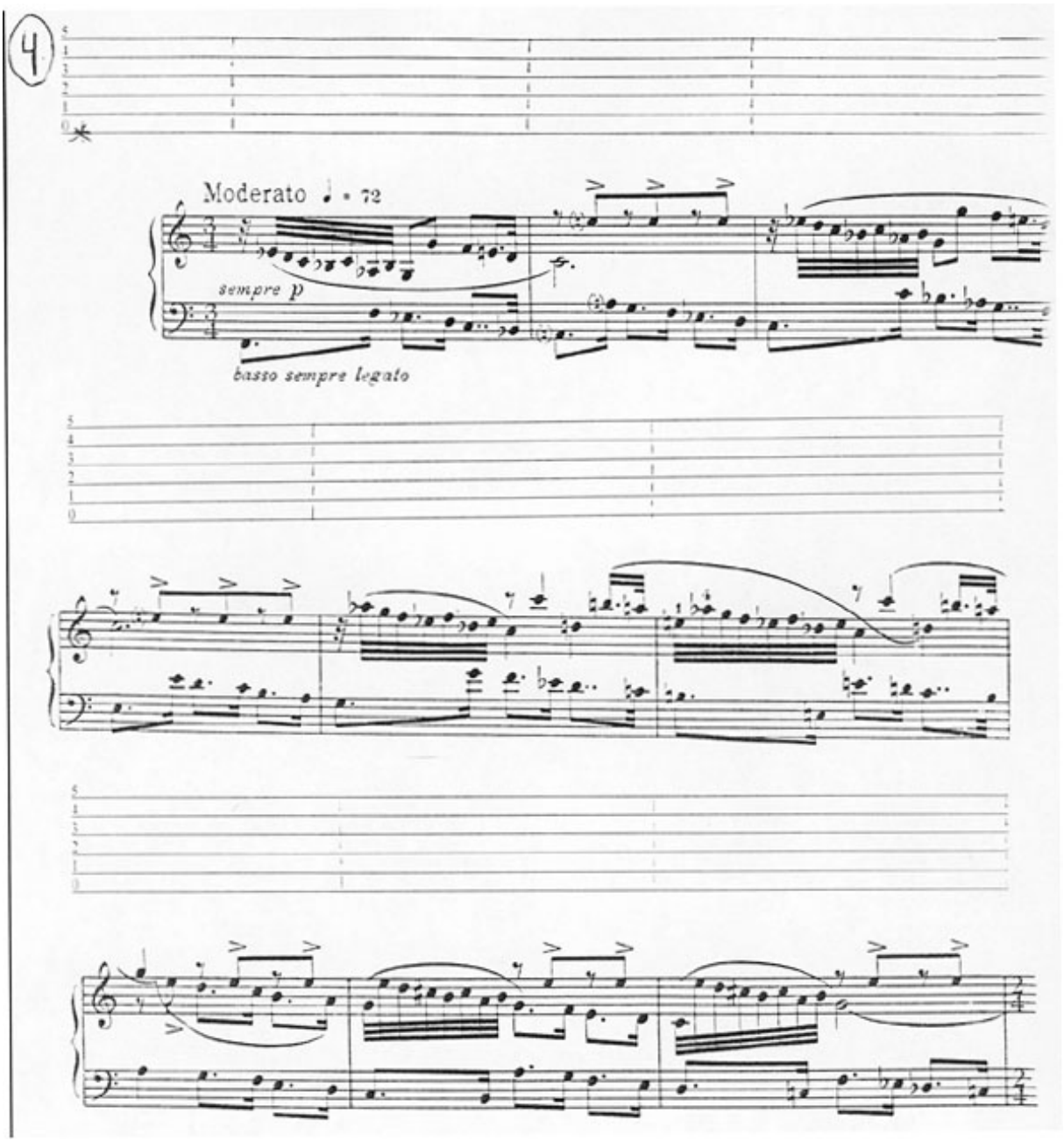


Appendix A 3, Page 4

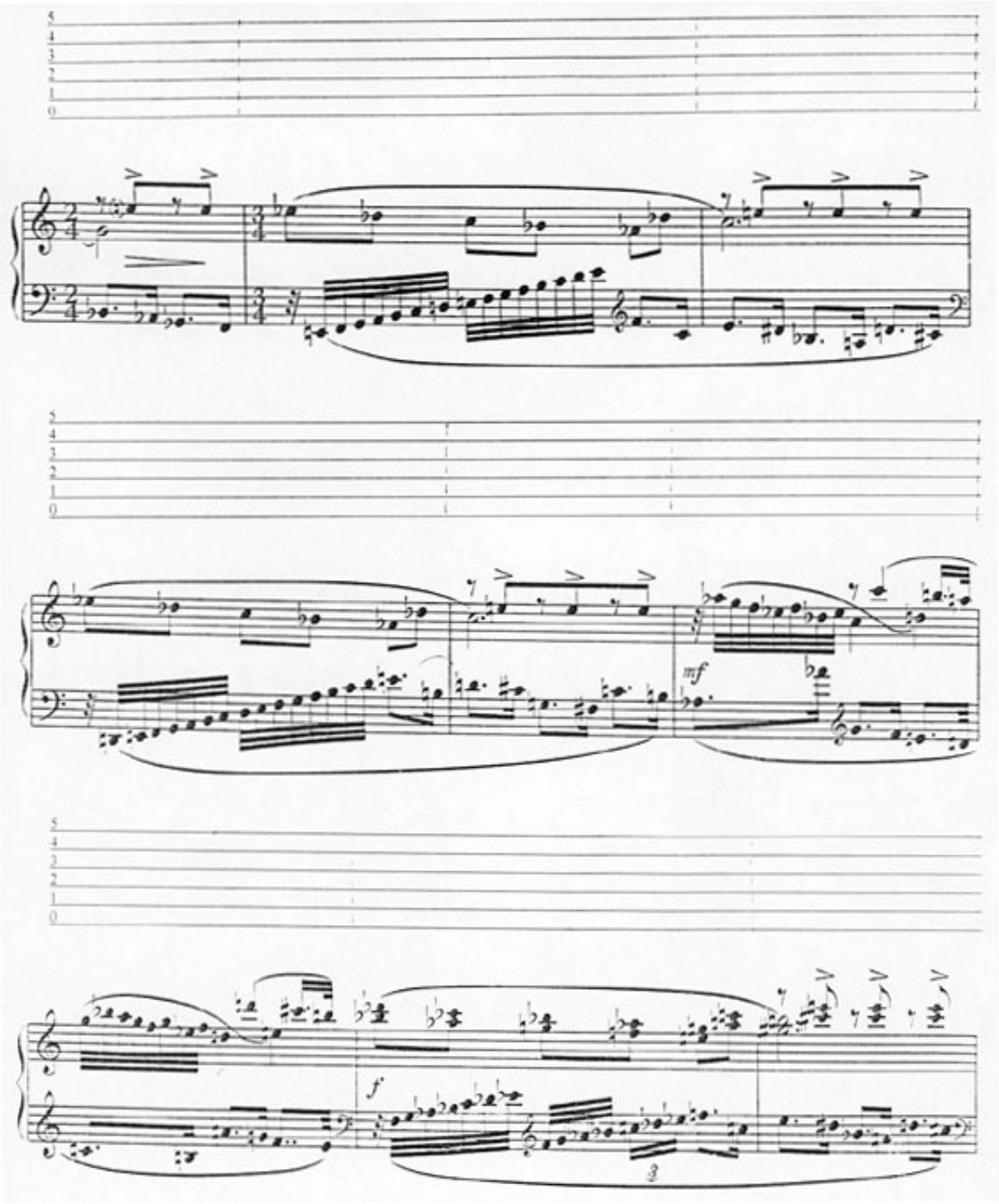


Appendix A 4

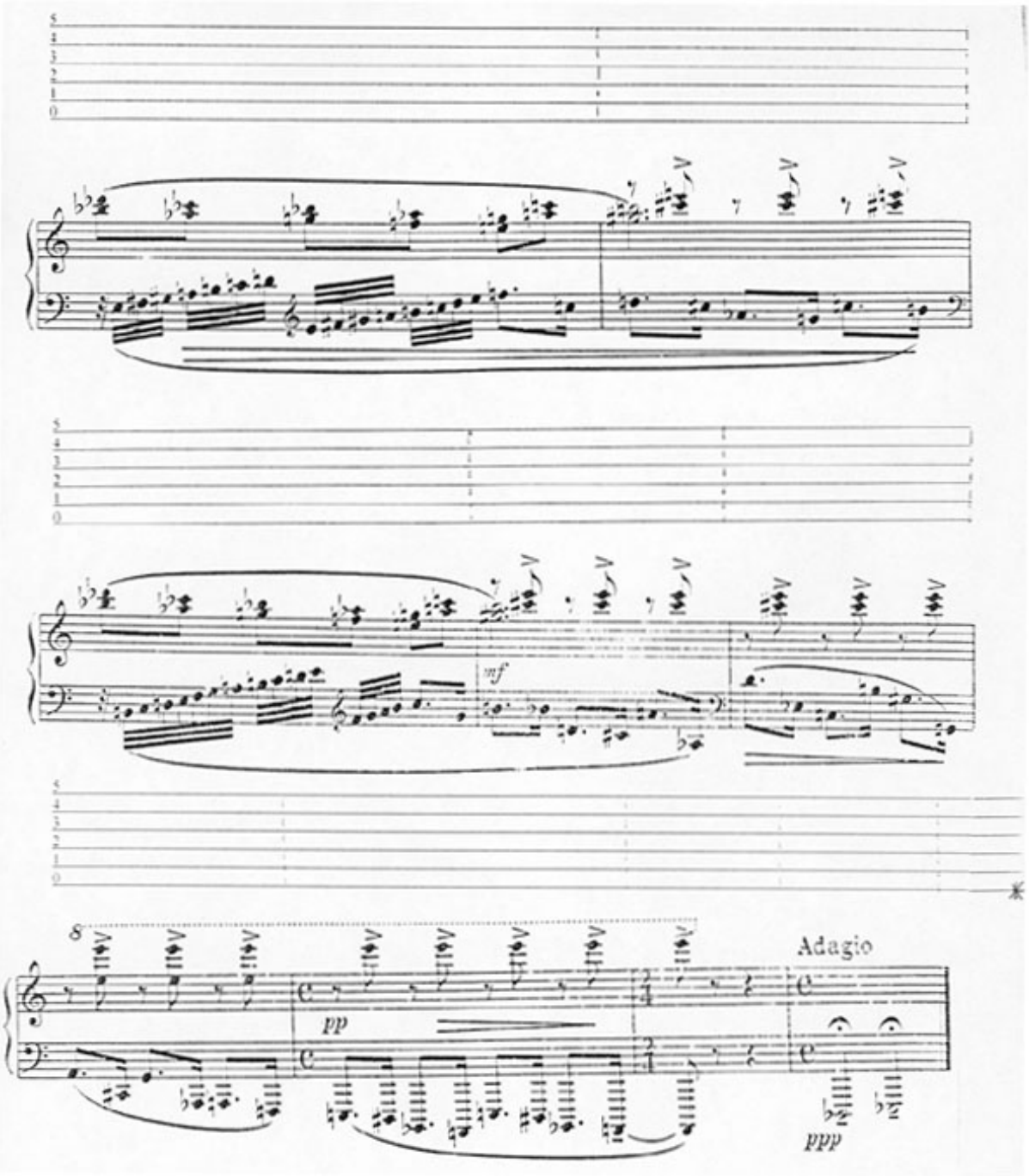
N. V. Bentzon: from 'Træsnit' ('Woodcut'), op. 65



Appendix A 4, Page 2

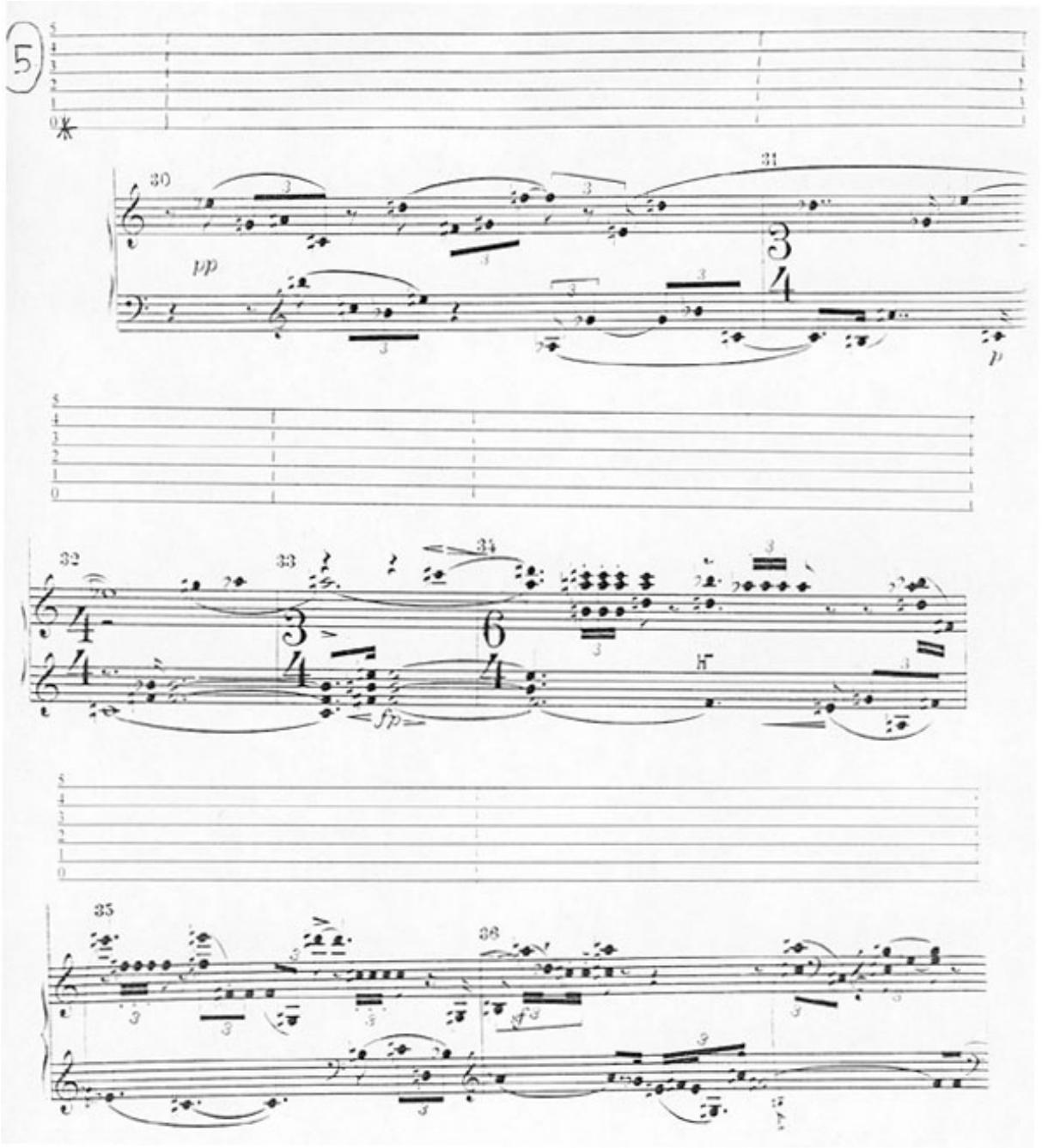


Appendix A 4, Page 3

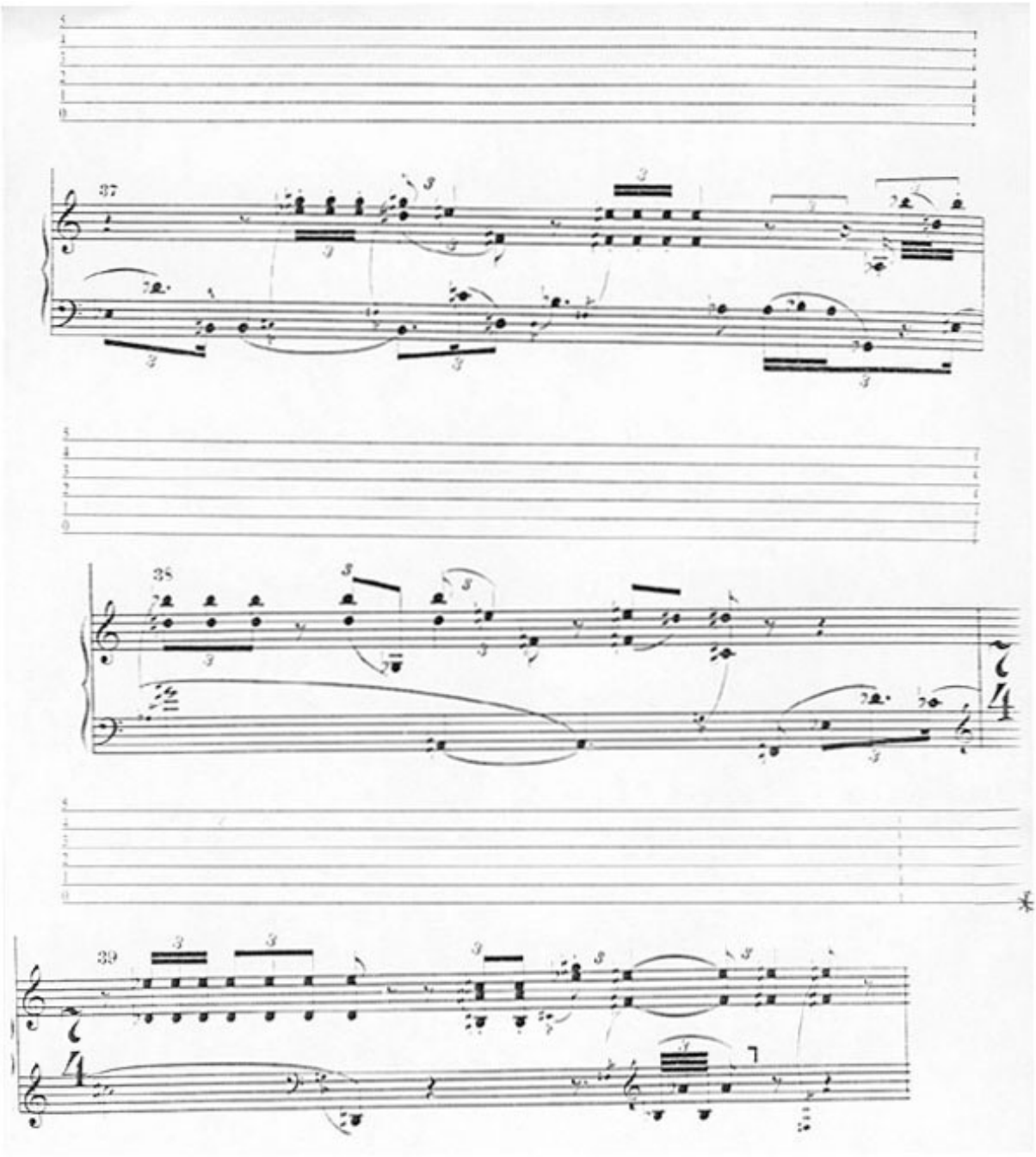


Appendix A 5

A. Schönberg: Sonata op. 26 (1924), version for flute and piano edited by Felix Greissle, interlude for piano solo from the third movement



Appendix A 5, Page 2



Appendix A6

Technical information

Name conventions

The single files have been given the same names as the corresponding layers within the software Photoshop files.

The scanned image named B_3_1_2.tif refers to the curve drawn by person B, music excerpt number three, and to the second system of page number one.

The name is thus constructed according to the following principle:

Person_Music excerpt_Page_System.file extension

A Photoshop file named 0_4_2.psd contains the curves of all the participating persons for the second page of the music excerpt number four.

The name is thus constructed according to the following principle:

0_Music excerpt_Page.file extension

A Photoshop layer named D_5_2 is part of the Photoshop file 0_5_2.psd, the layer containing the curves drawn by the person D illustrating the second page of the fifth music excerpt.

The name is constructed according to the following principle:

Person_Music excerpt_Page

There is also a Photoshop layer named *Background*, which is the scanned image of an empty sheet of the special device that was used for drawing the curves in this study, in this case however without any curves.

D_5_2 *original* refers to the scanned image of the original curve drawn by person D, illustrating the second page of the music excerpt number five.

The average curve (M) is a curve that is calculated out of the average of the indicated dynamical levels emanating from all the curves drawn by the persons A, B, C, D, E, F, and G together.

The letter "I" refers to the intentional curve drawn by Ingemar Fridell. There is also a layer called *I curve original* that is the scanned image of this curve as originally drawn.

Physical is a curve consisting of the upper half contour of the visual representation emanating from the sampled sound file in question (the Schönberg excerpt). There is also a layer called *Physical original*, which is the upper half of the visual representation emanating from the sampled sound file.

Procedure

Empty sheets of the special device for drawing curves that was used in this study for each one of the music excerpts were scanned without any drawn curves. The corresponding scanned images constitute the background layers of the Photoshop files.

The curves of all of the participating persons' curves were scanned, including the curves drawn by Ingemar Fridell. The images were saved as so-called *tif* files. Each page of the device contains up to three systems, which were then saved as three separate files.

The images consisting of the individual curves were applied in the Photoshop files of greater dimensions. Each Photoshop file corresponds to a sheet of the device that was used in this study containing up to three systems of curves.

The curves drawn by each one of the participating persons respectively were adjusted to fit into the corresponding background layers consisting of the images of the device's empty sheets.

The layers containing the curves of each persons were named according to the following principle:

Person_Music excerpt_Page.

An empty layer was created for each individual. In this layer, the individual curve of the corresponding sheet was applied.

Corrections

When stepping over the limits of the device in relation to the expressed rules for how to draw the curves, parts of an individual curve were replaced by a broken line, as close as possible to the drawn curve but within the limits of the device.

Occurring deviations in relation to the expressed rules have been corrected in the following ways:

1) The curve has stepped *under* the second line of the device counted from below when illustrating the sounding music, under the first line of the device from below *before* the first tone or chord of the excerpt, or under the first line from below *after* the last tone or chord of the excerpt. In those cases, the

replacing broken line has been applied along the second line from below or along the first line from below respectively.

2) The curve has stepped *over* the sixth line of the device counted from below indicating the maximal dynamical level. The replacing broken line has been applied along the sixth line counted from below from the point where the deviation starts until the point where it returns into the limits of the device again.
3) The indicated dynamical level at the end of a system does not correspond to the indicated dynamical level at the beginning of the next system. A replacing broken line has been applied in order to connect the two differently indicated dynamical levels of the curves.
4) In some cases two different curves occur simultaneously at the same place, but the real intention of the person in question seems to be clear anyway. Then a curve has been applied with a *continuous* line in spite of the original deviation in relation to the rules. For example, when one of the two alternative curves appears as considerably less clear compared to the other one being reinforced afterwards by the participant him-/herself, it is the clearest of the two curves that counts.
5) When one single curve is split into two alternative curves not connecting again, it is the suddenly ceasing curve that has been ignored.
6) When a part of the curve splits into two rejoining again, a new curve replacing the corresponding part has been applied right in the middle of the two drawn alternative curves. In those cases, the distance between the two original alternative curves has been not more than up to one dynamical line of the device, or less.

Average curve

The average curve has been calculated by adding the changing dynamical levels of the curves at regular intervals, each time as indicated by all of the seven participating persons together, after which the constantly changing sums of the individual levels counted at regular intervals were divided by seven. When calculating the average curves of the two employed music excerpts (Mozart and Schönberg respectively), the parts containing the replaced curves with the broken lines have been used as well. The intentional curve drawn by Ingemar Fridell has not been used when calculating the average curve. In order to read the dynamical levels of the individual curves before calculating the corresponding average levels at regular intervals, each system has been divided into 37-38 equally big parts. In cases when some dramatically critical or structurally interesting musical events are occurring, the dynamical levels of the individual curves have been measured even at denser intervals than that.

Physical amplitude curve

In the fifth music excerpt (from Schönberg opus 26), a visual representation of the sound of the music has been used. This visual representation was created by means of the following procedure:

The music excerpt was recorded and saved as a so-called wave-file to be opened in the software for editing sound called SoundForge. In this program the sound signal was normalised, which means that it was adapted to the employed quantifying depth. The signal is sampled in stereo at a sampling frequency of 44,1 KHz and a quantifying depth of 16 bites, which corresponds to 65536 different levels of amplitude. By mixing the two stereo channels together, a monophonic version of the normalised signal using 50% of the volume of each channel was created. The visual representation of the signal could now be adjusted permitting its minimal dynamical level to be localised along the first line counted from below in the graphical device of the study for drawing curves and its maximal dynamical level to be localised along the sixth line counted from below.

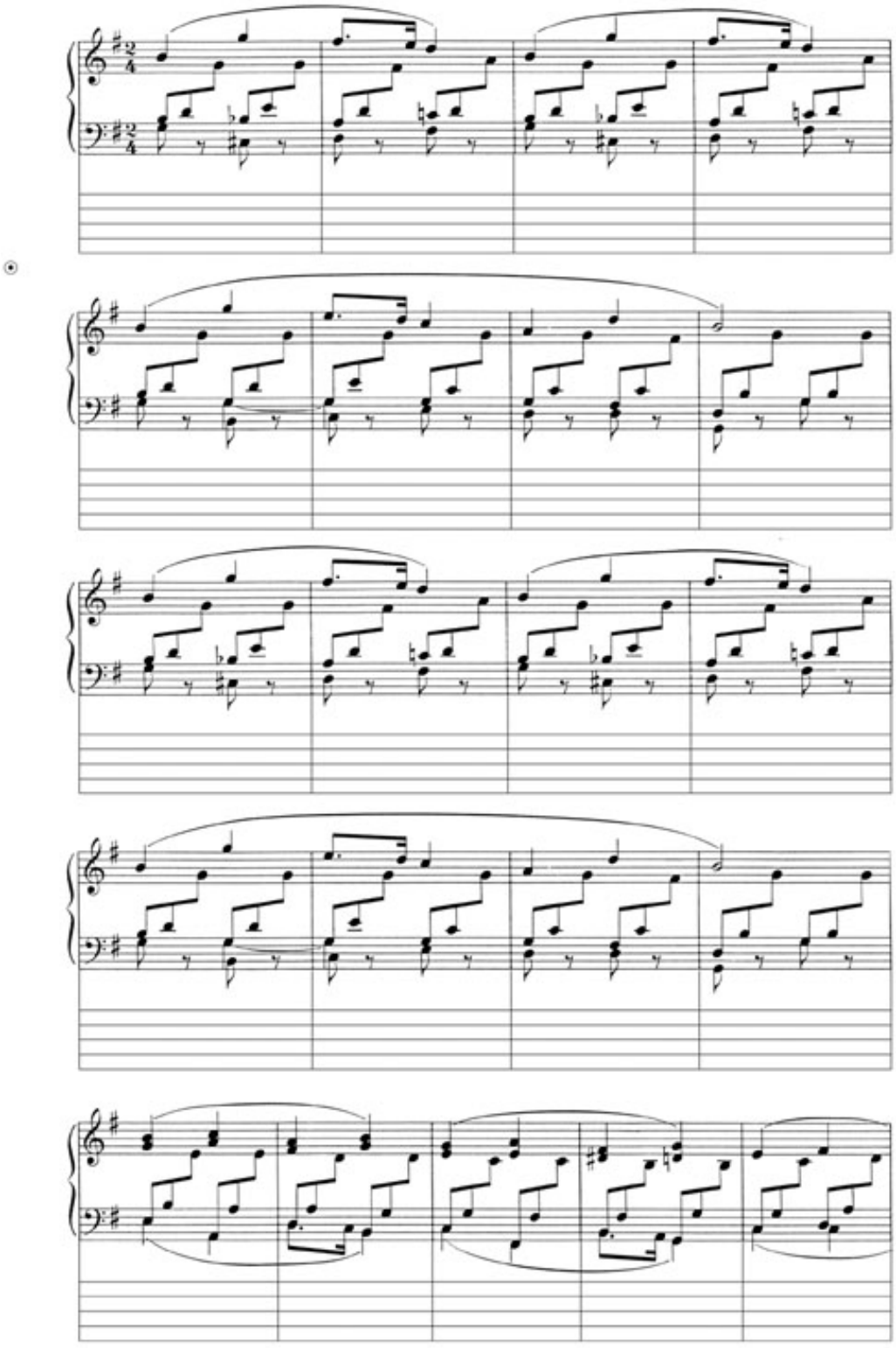
After that, the exact localisation of every single tone as appearing in the visual representation of the sound signal was identified and marked. Because of the difficulties of managing to accomplish the markings of each individual tone, the recorded sound was reproduced at half of the original speed. This was done without changing the pitch of the music. This kind of procedure can be done in a rather simple way out of the sampled sound, but the procedure of slowing down the speed all the way to the half of the original signal implies at the same time increasing the pitch of the music one whole octave for compensating for the low speed. Such a big transformation causes certain undesirable effects. For example, the visual shape of the original sound signal was influenced in a way reminding of an identical signal accompanying the original signal displaced by 0,007 seconds of time.

The upper half of the visual representation of the sound signal was copied as an image into Photoshop. Through this procedure, the visual representation was transformed into an image of which the upper contours remind of a dynamical sound curve. By means of an applied pattern consisting of vertical lines, the new shape of the representation was divided into small parts corresponding to the distances between the single notes and chords of the music excerpt, as notated in the printed score. Since sound signals are localised equally and horizontally according to a continuous fix imaginary temporal axis, which is never the case in a printed score, it was necessary to expand or compress every single part of the obtained sound curve adapting and synchronising it to the distances between each note or each chord of the printed score.

Finally, the visual sound curve was processed by means of the filter called Trace Contour in order to obtain a curve that only shows the upper contour of the dynamical levels in the same device as used for drawing the individual curves by hand.

Appendix B 1

R. Schumann: '*Von fremden Ländern und Menschen*' from 'Kinderscenen', op. 15



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