MUSIC AND DANCE IN TIME

A PUBLICATION OF THE JERUSALEM ACADEMY OF MUSIC AND DANCE
ISRAEL
MAY 2012

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עתים למוסיקה

פרסום האקדמיה למוסיקה ולמחול בירושלים
תשע"ב

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A publication of the Jerusalem Academy of Music and Dance, Givat Ram, Jerusalem, Israel.
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EDITOR'S NOTE

Time in Music and Dance

Time is an important factor, not only in our lives, but also in all the arts. However, when it comes to the dynamic arts - theatre, dance and music - time becomes one of the most important factors. All three take place within the framework of time, and time marks their boundaries.

Having said this, one must stress the fact that, within these dynamic arts, there is one such art that relies completely on time, and this is music. Moreover, time is the only concrete element in music. However, in saying this I am not completely accurate, because time is also abstract. Nonetheless, the measuring of time, minutes and hours, has a degree of concreteness.

In my humble opinion, music is "sounding time" that touches us directly. Music, in which case, superimposes "sounding time" upon "passing time" and, by way of this, gives music its unique impact. Thus music enables us to break free from any intermediary factor like canvas, stone, color or figures that might appear in a novel or on stage, these, by their very nature, forming a buffer between us and the artistic creation. This is due to the fact that in music time that sounds in our ears is directly translated into the formation of a highly personal experience for each and every listener. "Sounding time" tells the attentive listener his very own story.[1]

This is why the new editorial board of our publication "Music and Dance in Time" has seen fit to dedicate this first issue, published after a hiatus of some years, to the most intriguing subject of "time".

You may also have noticed that we have added the field of dance to music, (the former issues were called "Music in Time"). We have done this not only because the Jerusalem Academy of Music and Dance has, for many years, included a dance school as one of its many faculties, but mainly because we do believe that dance and music are closely interrelated, and that they, in many ways, complement each other.

Composer Professor Tzvi Avni wrestles with the problem of time at large and dwells on the concept of time in the movement of science and music, examining the time concept from its historical development in western- and non-European music

Dr. Alon Shab's article deals with Henry Purcell's theatre music and explores the time relationships between theatre performance and Purcell's incidental music, while pianist Dr. Ron Regev has written an analytical study of tempo regularity of Mendelssohn's piano trio and sketches the changes that occurred at the time of composition.

Roy Oppenheim examines our attitude to time by asking how one can characterize the space between two notes; he sheds new light on the term: "duration".

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[1] Similar thoughts may be found in my book "The Mission and Message of Music" Cambridge Scholars Publishing, 2010, chapter 4.

Dr. Amit Weiner devotes his article to the time component in compositions of Arvo Pärt and examines the concept of time and space in Pärt's music.

Double bass player Dr. Michael Klinghoffer actually builds his article in sonata form and examines time in relationship to form as well as the difference between musical- and physical time, while flautist Professor Michael Melzer, also approaching the subject from a formal point of view, focuses on the form of the "canon", (including all canonical forms, such as the rondo, passacaglia, etc.) Melzer also examines the canon in its non-musical meaning, as seen through the eyes of the performer.

Composer and researcher Dr. Stephen Horenstein embarks on a personal journey into the realm of time dilation through the prism of his own composition, and Dr. Yair Ehrlich examines time regularity and irregularity in the phrase structure of Domenico Scarlatti's keyboard sonatas

Two articles are devoted to the concept of time in dance: Dr. Vered Aviv investigates the difference of time prediction in music and dance, and choreographer Amir Kolben probes different aspects of dance time by disassembling a complete movement, this also including form, direction and energy and the focusing on time itself.

May I thus invite our reader to take some time to peruse and think about the phenomenon of time in music and dance.

Wishing you stimulating reading,

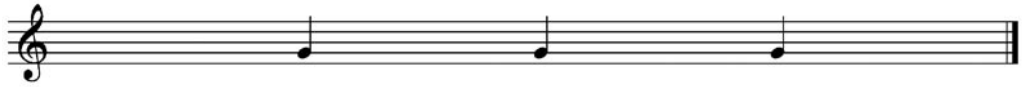
The editor

A DIFFERENT ENDING: A SHORT SONATA ON THE SUBJECT OF MUSICAL TIME

Michael Klinghoffer

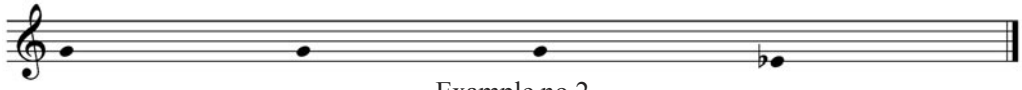
Introduction: Similarity Divides and Differences Join

The beginning of this discussion is on the question of unity and multiplicity: What do these sounds represent to us? Unity or multiplicity?



Example no.1

Some will say it is unity, for, indeed, we are talking about that same, exact note. Most will claim it is multiplicity, for we are surely talking about the same note sounding **three times.** And now I shall ask: what do the following notes represent…unity or multiplicity?



Example no.2

Also here there will surely be differences of opinion: some will say "multiplicity", as there is more than one note here and the majority will go for "unity". This is because they identify the melody as **the opening motif of Beethoven's Symphony no.5** or as the famous melody on the neighbor's mobile 'phone.

Dr. Michael Klinghoffer, double bass performer, conductor, educator and the author of: *"Mr. Karr Would You Teach Me How to Drive a Double Bass?"*. Since 1987 faculty member of the Jerusalem Academy of Music and Dance, currently serves as Dean of Performing Arts and Director of the Jerusalem Conservatory Chamber Orchestra.
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www.michaelklinghoffer.wordpress.com

From these examples, we are convinced that our brain will usually tend to grasp the identity or close resemblance as multiple appearances of the same thing. On the other hand, we tend to connect things that are different, creating with them new associations and new meanings. We can then say that similarity divides and differences unify, or, in other words, that the first example represents multiplicity and that the second represents unity.

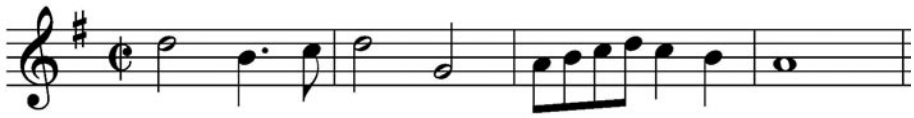
Exposition: "Repetition is musical time" (Zuckerkandl)

In his immortal book "Sound and Symbol", Viktor Zuckerkandl describes repetition as an inseparable part of the existence of musical time: Zuckerkandl begins by comparing musical time to physical time, and, for the sake of our discussion, I will present two central issues from this comparison[1]:

1) Physical time measures events, whereas musical time creates events.
2) Physical time can be divided into equal parts, whereas musical time has no sense of equal division.

"Will physical time still have meaning if we remove the events from it?" Zuckerkandl asks. In his answer to this, he quotes Leibniz's words – that time is a notion and not reality, for, indeed, snow melts, people grow old and the earth's surface changes, but that these phenomena do not occur as a result of the change of time but as chemical reactions, temperature differences and vulcan activity. I have asked myself whether, in fact, musical time has meaning when we empty it of events.

As an example, let us take this famous melody from "Judas Maccabaeus" by Händel:



Example no.3

Every child in Israel can sing this melody. If we were to now listen to Beethoven's Variations for Piano and 'Cello on this theme, we would be able to hum the melody to ourselves in each of the variations. As a matter of fact, we would also actually be able to predict the length of each variation, for indeed, its length would be that of the Chanukah song[2]. Also, if the music suddenly stops, we will still be able to imagine, if we so wish, the duration of each variation. Also, should Beethoven suddenly decide to change the length of the beat or the time signature of a certain variation, we would immediately match the new beat or the new meter to the "Chanukah song" and "guess" the course of the variation. This would also be the case in many songs of the AABA form. Tell that to an experienced jazz musician and he will immediately know what you are talking about. He will know well when to improvise on the verse and when to improvise on the refrain.

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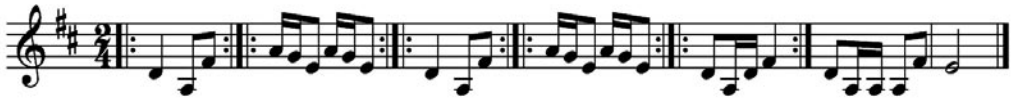
[1] Zuckerkandl, Viktor Sound and Symbol page 202, Princeton University Press, 1969

[2] Chanukah – the Jewish Feast of Lights. A song pertaining to this festival is sung to a melody from "Judas Maccabaeus"

Let us take an even bolder example: as experienced musicians, when we hear a minuet movement from a Mozart quartet, we know that it will be in the form of AABBCCDDAB. Even if we are not familiar with the movement, we are able to predict the course of what will happen from our acquaintance with the form. We will now dispose of the events i.e. notes and rhythms, and implant new events in the same form, such as a gavotte from a Bach suite. The gavotte will have the same form or, in other words, will behave according to the same development of musical time. We are talking about pieces from the periods written many years apart, pieces having different meters, different tempi yet still having the same "temporal behavior", if it can be called that, identical to AABBCCDDAB.

In the light of these examples, it can be said that musical time has its own meaning, even if we remove the events from it. In the last instance, we have seen that, from the point of view of our grasp of musical time, equality is not the most important issue, (beats, meter, bars), rather, in fact, repetitiveness is that which has greater meaning in our grasp of musical time: as we said at the beginning of the article, similarity divides… Zuckerkandl questions and tries to find a parallel to the phenomenon of repetitiveness in music and in the other arts[3]: he talks about carpets or embroidery, in which there is endless repetition of the same motif. According to him, the difference is in that, simultaneously, we see the same countless repeats of a specific adorning feature as a complete unit, thus creating interesting, formal complexities. The question is, on having to see that same ornament, and only it, many times, time after time, whether we would derive the same enjoyment from it. From here, Zuckerkandl continues his journey to the world of poetry, drawing on the example of the Hunters' Chorus from Weber's "Der Freischütz" (Marksman).



Example no.4

And now, all of this comes back from the beginning. Is anyone able to imagine a poem in which the text is repeated so many times? I invite you to try.

In theatre, it is also difficult to imagine a play in the form of a sonata: let us try to envisage a play that opens with a love story, developing into a fight that ends in murder. Immediately after these two subjects have been presented, the love story begins again, just as the former one happened, with a murder taking place again, just as in the initial story. It is clear that these examples are absurd, but they illustrate the uniqueness of the repetition phenomenon in music. In the opening of Beethoven's Pastoral Symphony, we hear a subject that is based on five notes in three variations. The subject and its simple variations are repeated 36 times. Immediately following, a part of the subject appears another eight times and all this is then repeated from the beginning. By means of this example, Zuckerkandl strengthens his argument that music is not merely sound, but sound and time. The more use there is of repetition, the more strongly the time component is expressed, becoming increasingly clearer.[4]

[3] Ibid page 213
[4] Ibid pages 216-217

Development: Musical time and psychological time are not linear (Jacques Lacan)

I have endeavored to examine whether there are, nevertheless, parallels to musical time according to how Zuckerkandl describes it and whether it is possible to attribute to repetitiveness additional meanings concerning musical experience.

In his book "The Eroticism of Time", Jacques-Alain Miller allows for a glance into Lacan's world, and, among other things, explains his concept of time. As opposed to the classical concept of time of Barrow, Newton's teacher, that claims that "time only has length as its parts are similar to each other and it can be seen as made up of a simple joining of consecutive moments or as the continuous flow of one moment"[5] Miller discusses the subject of the double temporality of time. Miller presents Lacan's theory in "The Seminar of Jacques Lacan" Book V "The Formations of the Unconscious": time is described as moving between the present and the future; however, simultaneously, time also moves in the opposite direction: "Time passing and advancing towards the future is always accompanied by time that points back to the past and establishes the meaning and illusion of the subject, granted knowledge"[6]. Let us, for a moment, recall Schubert's song "Death and the Maiden": the song begins with the piano alone; we then hear the maiden's plea, the song ending with Death having his say. This observance is a linear description, but when we identify the similarity between the piano opening and the music accompanying Death's words, we understand retroactively that the end was known in advance and was inevitable. There is, here, new meaning to repetition in music: beyond the fact that that it is the main constituent in expressing musical time, it is that which allows us to simultaneously move backwards and forwards within time: while the voice of Death is singing his text, we are reminded of the first eight bars the piano played and we experience the tragic meaning of the song. Miller concludes by saying that an event of the future can either take place or not, but, from the moment that it happens, what is "possible" becomes a "sine qua non". The fact that the event has become a "sine qua non", having meaning, stems from the simultaneous movement of psychological time and from the present moving into the past.[7]

Recapitulation: "Awful things have happened when Wizards have meddled with time" (Hermione Granger to Harry Potter) (Page 399)

Moving backwards in time in heard music functions on a number of levels- one which we have mentioned is associated with repetitiveness in music: every time a motif or section repeats we progress in the course of the work, moving back, at the height of the act of

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5 Jacques Alain Miller Eroticism in Time,2008, Roessling edition

6 Ibid page 31

7 Ibid page 31

identifying resemblance between a section being played at this moment and the identical part we have heard a short while ago.

Another level is the influence of music on our memory: where was I when I first heard that melody? With whom did I play that song ten years ago? Sometimes a thought pops into one's mind "If only I had behaved differently". Sometimes we would like to be able to change the course of events; for, from the moment that they, indeed, happen, they have changed, in Miller and Lacan's words, from the possible to the sine qua non. In the third book of the Harry Potter series, Hermione has a time-generator (the hourglass is called a "time-turner") (p.395) which enables her to be at two lessons simultaneously. At the end of the book, we arrive at the most important use of the time generator – changing the course of events: Professor Dumbldore sends Harry Potter and Hermione to "save more than one soul"[8]. We are happy at their success and heroism, not only thanks to the story's happy end, but also because Harry and Hermione have managed to do what we all would like to: to change events that have already happened.

In the same context, it is interesting to read the writings of Charles Rosen from his book "Sonata Forms": "In a ternary form such as the Minuet and Trio, the sections function as an exposition, contrast and re-exposition. In sonata form, the exposition presents conflict, the development section is the intensification of the conflict and the recapitulation presents the resolution"[9]. This solution usually includes the same events as the exposition (the same melodies), but the harmony in this part of the recapitulation section changes the course of events, magically allowing us, also, to be involved in time and create a different ending.

[8] J.K.Rowling "Harry Potter and the Prisoner from Azkaban", 1999, Bloomsbury

[9] Charles Rosen "Sonata Forms, Norton, 1980, pages 17-18.

TIME IN MUSIC

Tzvi Avni

"To everything there is a season,
A time for every purpose under the sun.
A time to be born and a time to die:
A time to plant and a time to pluck up that which is planted;
A time to kill and a time to heal" …..and so on and so forth.. Ecclesiastes 3: 1-3

In this awe-inspiring chapter, the speaker describes different aspects of the junctures of our lives, under the seemingly complete and reasonable assumption that we all know what time is.

The great philosophers have pondered over various definitions of the essence of time. Typical of this are the unique words of St. Augustine of the 5th century A.D regarding the question: What is time? "If you do not ask me what time is, I know it; if you ask me, I do not know"[1] Philosophers were deeply involved with the concept of time, with most, if not all, relating time, in one way or another, to some kind of movement and to the cyclicality of the phenomena of nature.

In our everyday lives, we are exposed to situations that create within ourselves – consciously or otherwise – various and contrasting sensations of time. A person sitting calmly on the balcony of his/her home, surrounded by tranquil scenery, senses time in a different way to someone seated, nevertheless relaxed, in a train travelling at 200 kph.

If the central catchword in science and philosophy is usually connected to the relationship between time and movement, it is, all the more so, regarding music. The origin of each sound reaching our ears is some kind of movement, such as plucking, blowing, friction, drumming etc., and, nowadays, even by means of the movement of electric currents in electronic devices. As musicians, our awareness of the connection between time and movement is both physical and intellectual, as we are constantly relating to the tempo and rhythm of a piece which we are writing, playing or hearing.

The development of a musician's relationship to the element of time in the history of western music is a fascinating subject, one totally coinciding with the development of styles over the course of generations. In the Renaissance- and Baroque periods, the attitude to the element of time in the realm of performance was mainly based on tradition and familiarity with the stylistic characteristics of works. Tempo- and dynamic markings were not usually common practice. In the process of the gradual advancement of subjective elements and an increasing focus on the desire for originality and innovation, the need to show some kind of guidelines as to the character of the music, dynamics, tempo, etc in the score became increasingly more pressing.

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[1] Saint Aurelius Augustinus Augustine. Attributed as quoted by Locke, quoted by Alfred w. Benn, review of the book "Metaphysik" by F. Erhardt "Mind" 3, 547.

In the 17th century, written verbal instructions begin to appear as an aid to the correct understanding of the composer's intentions. In the Classical period, these instructions are stepped up in quantity and, during Beethoven's time, his friend Johann Nepomuk Maelzel invents the metronome (in fact, it seems he stole the idea from someone else.) Beethoven was so elated at the invention that enabled the precise indication of musical tempi that he dedicated the slow movement of his Symphony no.8 to the imitating of the ticking metronome. In the Classical period, elements of time were relatively simple, both from the point of view of the dimensions of a work's movements and from the aspect of rhythmic constructions and musical phrasing, most of which were symmetrical and easy to follow. In the 19th century, with the strengthening of Romantic tendencies in the arts and music, the element of time became more complex, as a result of the expanding of dimensions of works and the gradual blurring of construction and of form, particularly in symphonic music. This tendency can already be seen in Beethoven's later works, from which a line can be drawn straight to the late Romanticism of Berlioz, Liszt and, especially, Wagner. In Wagner's overture to "Tristan und Isolde" (1859) the element of time is blurred and stretched beyond the common practice of the frameworks of meter and rhythm – a kind of music that endeavors to flow, giving a feel of time that has something of the sense of eternity.

Bruckner, Mahler and R.Strauss persisted in this direction in their works; with Mahler, in particular, both dimensions and character of the music represent a concept of time that involves psychological-emotional awareness that is powerful in meaning. To achieve this, Mahler is not contented merely to indicate tempo markings at the beginning of a movement or of a specific section of a work: he crams his score with an endless number of instructions as to the changes he is looking for. In addition to those, he adds many verbal directions regarding the *character* of the sounds, directions that are also relevant to tempo, such as "contemplative", "not hurried", "freshly", "broadly singing", "not dragging", etc. The instructions usually appear in both German and in Italian.

We find other developments in the domain of time in music in the non-European elements which begin to make themselves felt in the latter part of the 19th century. In 1889, an ensemble of players from Java, playing on authentic instruments, appears in Paris; the 27-year-old Claude Debussy writes: "If we set aside European prejudices and turn our attention to their (the Javanese players') percussion instruments, we will be obliged to admit that, in comparison to them, our percussion instruments produce the barbaric noises of a traveling circus". Regarding the rhythms, he adds: "Javanese music is based on counterpoint, in comparison to which, Palestrina's works are child's play".[2]

With the beginning of the 20th century, the tendency to focus on the rhythmic elements of music gathers momentum. The widening of knowledge of non-European cultures, alongside a rising interest in the authentic- and early folklore of some European countries (Russia, Hungary, Czechoslovakia, etc) and, indeed, the penetration of jazz music from the United States, made their way into works of composers such as Stravinsky, Bartok, Janà□ek, Hindemith, Prokofiev, and others. These constituents contributed much to the breaking down of the routine criteria of rhythm in traditional music.

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[2] The Oxford Dictionary of Music, Michael Kennedy editor, Oxford 2006.

The evolvement of atonal thinking in composers of the Second Viennese School also contributed to the development of a more abstract approach to the element of time in music.

Also, technological developments, such as the electric train, the automobile, the aeroplane and various machines, created new advances in the world, not just in music. In literature, poetry, dance and even in painting, those involved in creating were showing more and more interest in the elements of time.

One of the characteristic landmarks of the period was the "Futurist Manifesto" published by Filippo Tommaso Marinetti in the Parisian newspaper "Le Figaro" in 1909. I quote here some sentences distinctive of the text: "We want to sing the love of danger, the reality of energy and speed…..We declare that the world's wonder has been enriched by a fresh beauty: the beauty of speed. A racing car with its trunk adorned by great exhaust pipes like snakes with an explosive breath….a roaring motor which seems to run on machine-gun fire is more beautiful than the Victory of Samothrace.[3]" [4]

Another futurist, Luigi Russolo, published a book in 1913 on "The Art of Noise"; here he classifies the sounds of music of the future as a large variety of mechanical noises, the common denominator of them being forms of sound produced by such means as drumming, striking, rubbing and scratching carried out on all sorts of objects and apparatuses, all of which can be included in the domain of the rhythmic succession in time.

One of the more extreme examples showing the development of rhythmic thinking in the 20th century is, of course, Stravinsky's "Rite of Spring" (1913) which, till today, still serves as an example of poly-metric and poly-rhythmic complexity. Stravinsky spoke of his approach to the concept of time in music in talks he gave in the series of the Charles Eliot Norton Lectures at Harvard University in 1947: "What gives the concept of musical time its unique power is that this concept was created simultaneously with psychological time, both outside of it as well as within it. All music – whether it is heard within the normal flow of time or if it separates itself from it – creates a specific relativity, a kind of counterpoint with the time of the continuity of the music itself and with the materials and technical media through which music reaches us"[5].

In the 1950's and 1960's one could find two extreme directions on the part of composers regarding time. At one extremity – the attempt of total organization of time in the framework of rows of rhythmic values that have been formulated in advance, based on a strict method of, for example, Boulez' "Structures" For Two Pianos (1952); and at the other – total freedom in the treatment of time values, as appears in many of John Cage's works.

Between those two extremes, there came into being an approach of "proportional" rhythm notation, in which, concerning rhythmic definition, composers used notation that indicated time values of notes in relation to each other, still leaving a substantial extent of freedom and of interpretation, the latter producing different results in each and every performance of the work. A typical example of this can be seen in Lutoslawski's work "Three Poems by Henri Michaux" and in Penderecki's "Threnody for the Victims of Hiroshima".

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3 A Greek island that was conquered by the Persians in a battle in 508 B.C.

4 Translation from James Joll "Three Intellectuals in Politics", 1960, Pantheon Books

5 From "Poetics in Music", Vintage 1956.

The use of proportional notation was, for many, the basic focus of composition of the 1950's and 1960's, and the graphic form of the notation was, to a large extent, a component of the inventive skill of the composer. An interesting and extreme case of this issue can be found in some of Boguslaw Schaeffer's works, in which the composer indicates that the very notation symbols of the score are included in the copyrighting of his works, with nobody having the right of use of these symbols except for the performing of the music.

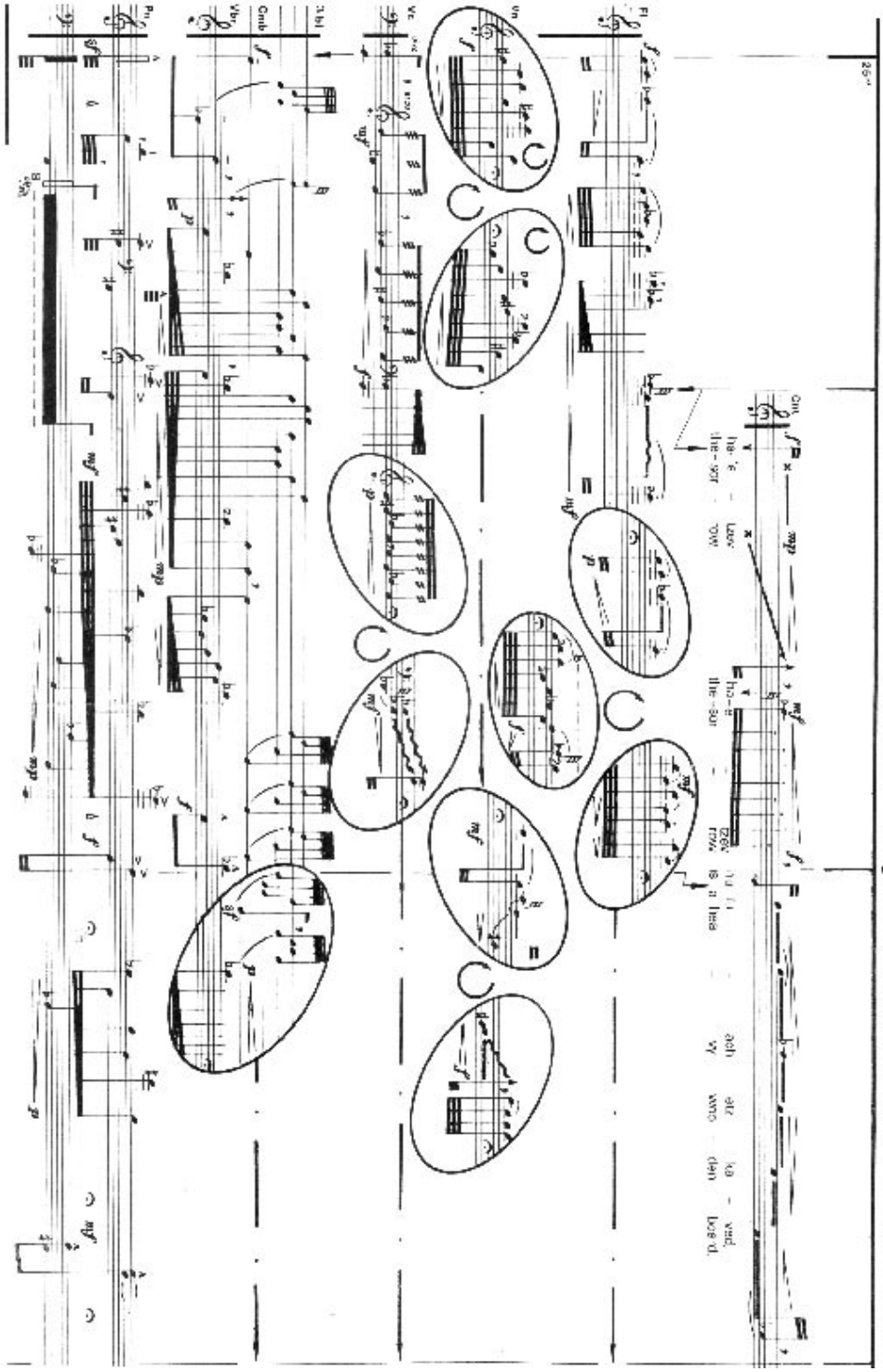
Alongside proportional notation, it is fitting here to mention other scores of various composers, scores written in the "graphic" style. Here we are, in fact, talking about objects or drawings which are totally subjective and, in most cases, almost not for use in conventional musical notation. A variety of examples of this can be found in Erhard Karkoschka's book "Notation in New Music"[6].

The three examples of proportional- and graphic notation below are from Israeli works and are presented here with the kind permission of the Israel Music Institute. The methods of notation enabling various degrees of interpretation on the part of performers, from the partial use of regular musical notes to the total abstraction of the composer's intentions, allow for many and sundry interpretations.

1) Mark Kopytman[7] – from "October Sun" (1974) for alto voice and chamber ensemble. Circular figures specify the repetition of notes in accordance with decisions made by the performers.

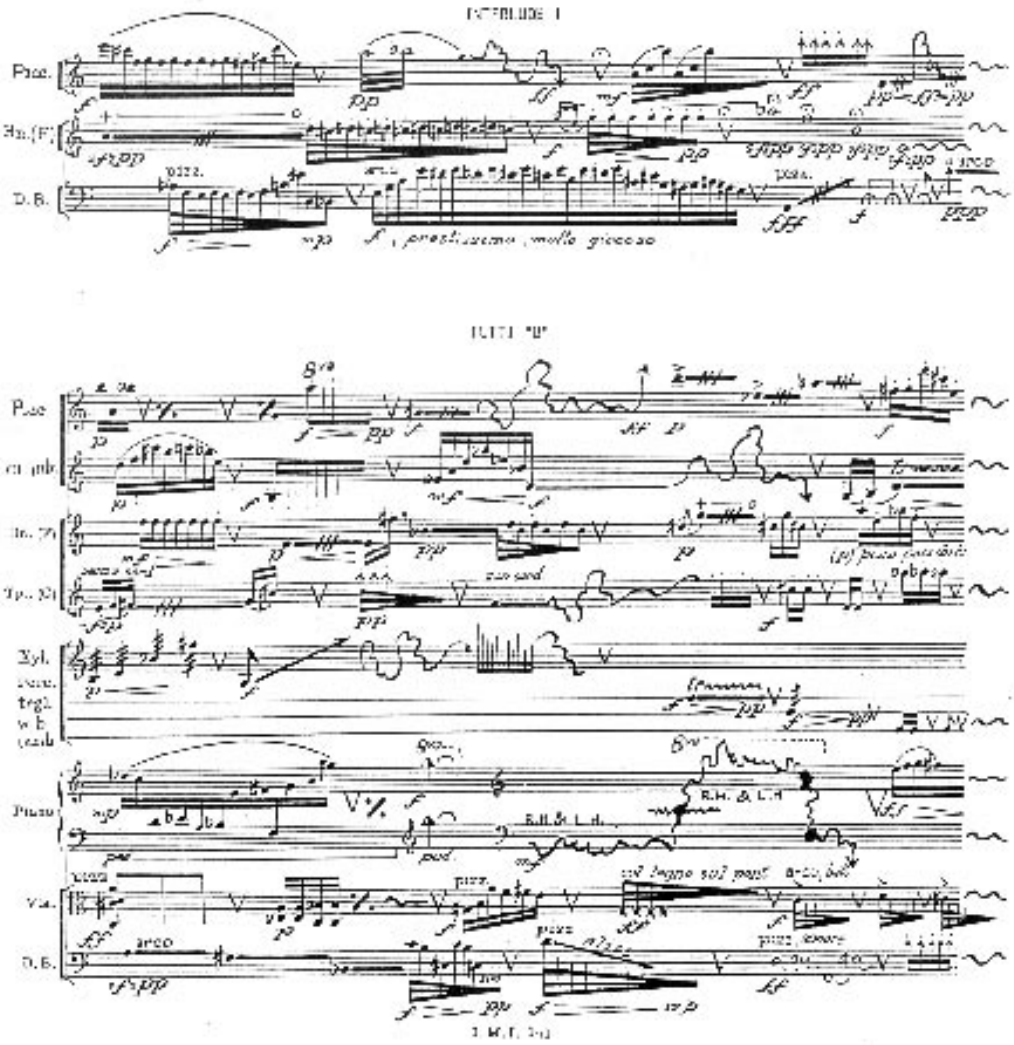
[6] Karkoschka, E. "Notation in New Music", London/New York, Universal Edition, 1972.

[7] Born Ukraine, 1929



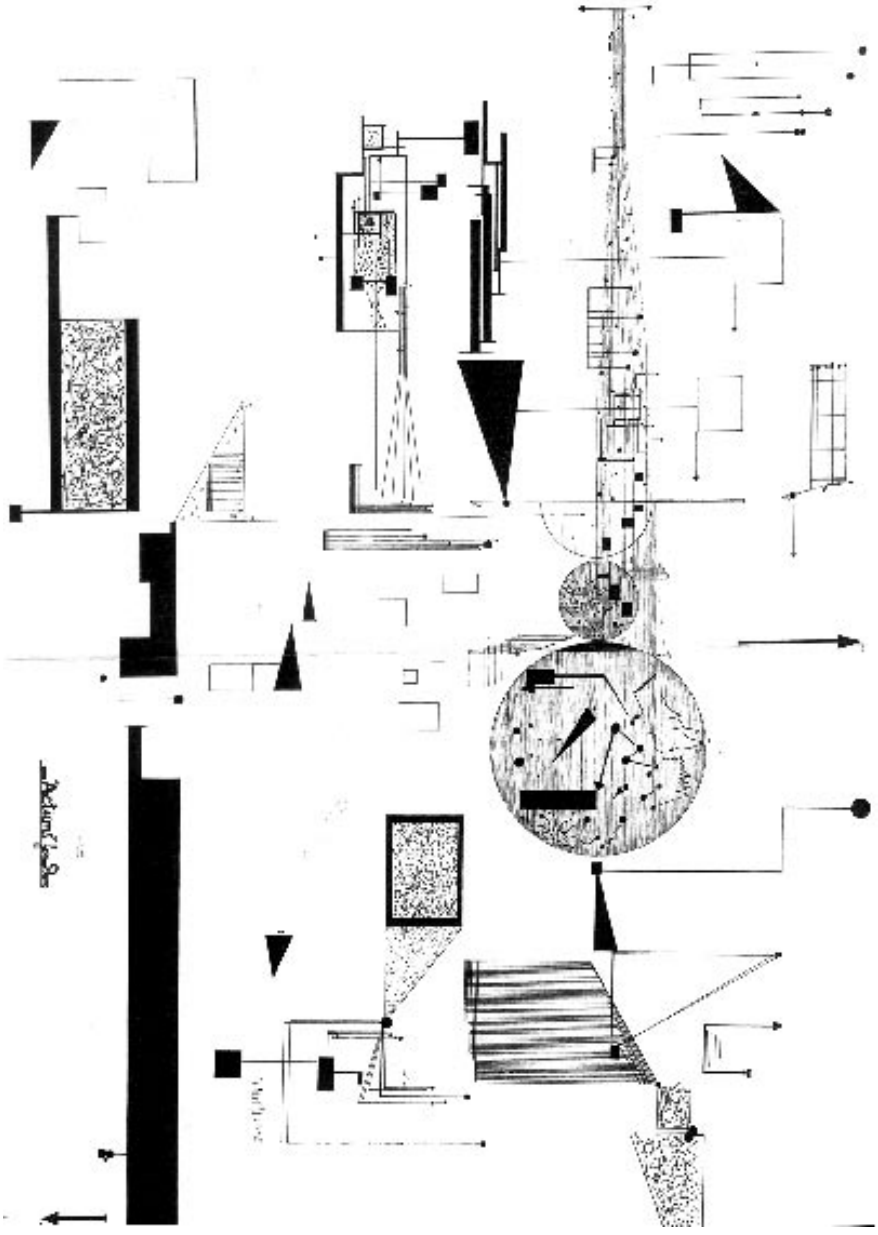
Mark Kopytman – from "October Sun" (1974) for alto voice and chamber ensemble.

2) Tzvi Avni[8] – From "Five Pantomimes" for eight players (1968). Some notes are specified and some are performed freely according to the actual sketched outlines in the paintings themselves.



[8] Born Germany, 1927

3) Leon Schidlowsky[9] – "Actions for Piano" (1972). In this kind of graphic-associative notation, the performer is expected to interpret the depicted symbols, guided solely by his own imagination. All the symbols are, as it were, "guidelines" for kinds of action, the nature of whose interpretation will be different not only from player to player, but, certainly, from performance to performance of the work by the same artist.



Leon Schidlowsky – "Actions for Piano" (1972).

[9] Born Chile. 1931

Many books and articles have been written on the different aspects of time in music, dealing with the issue comprehensively. In this article, I have, in particular, endeavored to present a fundamental history of the development of the approach to time in western art music through the course of centuries.

Adding to this, I wish to mention a work by Lukas Foss – "Time Cycle" (1960). Here, time figures as the central subject of the music, a piece based on four literary works as chosen by Lukas Foss. In my opinion, this is one of the most meaningful works written in the second half of the 20th century. The texts are by Friedrich Nietsche, Franz Kafka, A.E. Housman and W.H.Auden.

The four movements of the work describe experiences and moods in which time is the most meaningful element; the work fluctuates between gentle lyricism and charged drama. The work, scored for soprano and orchestra, appears on CD (Sony label), conducted by Leonard Bernstein and featuring the superb singing of Adele Addison.

There is also a chamber version of "Time Cycle", a section of which can be heard on YouTube.

PURCELL'S MASQUES: CONTROLLING TIME FROM OUTSIDE OF TIME

Alon Schab

'Dramatick Opera' and Purcell's 'The Fairy Queen'[1]

According to musicologist Joseph Kerman,

> The fundamental mode of presentation in drama is action, and in musical drama the medium of imaginative articulation is music. Inevitably the relationship or interplay between these two, action and music, is the perennial central problem of operatic dramaturgy.[2]

Throughout history, when composers attempted to establish the relationship between action and music, their solutions tended to relate to one of two opposing poles – idealism and realism. However, it seems that the accepted narrative of opera history prefers those composers whose solutions tended to realism, or at least hints at the inevitable development from *Orfeo* to *Wozzeck* (or *Peter Grimes*). Even today, when composers are involved in a stage production, the same ancient 'central problem of operatic dramaturgy' rises again and keeps sleep from their eyes. How and to what extent should one aim at dramatic coherence and flux?

Approaching this question through the music of Henry Purcell (1659–1695) is a challenge, considering the operatic culture in which he worked and the relative separation of action and music it imposed: the English theatrical tradition separated the sung element of seventeenth-century opera from its main dialogue, which remained spoken even at times where tendencies for adopting Italian and French practices were strong. Music was usually reserved either for use as incidental music or as short 'entertainments' or 'masques'. The entertainment was a short play-within-play, acted before a primary character by secondary ones, and often included supernatural entities, allegorical figures or priests summoning deities. Such an opera, whose core remained spoken though it contained elaborate sung entertainments, is often referred to as a 'dramatick opera'.[3]

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1 The author wishes to thank Dr. Martin Adams (Trinity College Dublin) and Dr. Alan Howard (University of East Anglia) for reading preliminary drafts of this paper and for discussing some of the issues presented below.

2 Joseph Kerman, Opera as Drama (New York: Vintage, 1956), 73.

3 The term 'dramatick opera', originally coined by Dryden, is used here for Purcell's large-scale works for the stage composed during the 1690s. In recent decades the term has become at least as common as the terms 'opera' and 'semi-opera' and is now in frequent use by Purcell scholars. For example, Andrew Pinnock, 'Play into opera: Purcell's The Indian Queen', Early Music 18/1 (1990), 3–21; Michael Burden, 'Where did Purcell keep his theatre band?', Early Music 37/3 (2009), 429–43.

Stemming from that first challenge is the trap of falling into yet another discussion of Purcell's first operatic attempt, *Dido and Aeneas*, which stands out as the composer's only opera which is all-sung (hence *not* a dramatick opera).[4] Purcell's extensive collaboration with the London stage during the early 1690s yielded four dramatick operas: *Dioclesian* (1690), *King Arthur* (1691), *The Fairy Queen* (1692) and *The Indian Queen* (1695). These four pieces are not less fascinating than *Dido and Aeneas* in terms of their control of musical form, but surely less inviting for analysts, who cannot use the accepted categories and tools of operatic analysis on them. Nonetheless, if one tries to understand Purcell's original thinking in terms of temporal control, limiting oneself to the exceptional *Dido* may prove unrewarding, if not downright misleading.

The Night's Masque

The Fairy Queen is arguably the most ripe of Purcell's four dramatick operas (the later *The Indian Queen* being on a much smaller scale), and the dramatic background against which Purcell worked – Shakespeare's *A Midsummer Night's Dream* – is well studied and allows comparison through numerous musical treatments it received, either as opera (Britten, 1960) or as incidental music (Mendelssohn, 1842).[5] But, as hinted above, the adaptation of the famous comedy into the format of dramatick opera results in a series of musical sequences that is, to a large extent, independent of the play. The masque of Act II (henceforth Night's Masque), for example, consists of a series of four vocal solos, sung by allegorical figures who lull Titania to sleep, followed by a dance tune. This is the only appearance of each of the figures (Night, Secrecie, Mystery and Sleep) and they do not have any parallel characters in Shakespeare's original.[6]

Now let us stop for a minute from looking at Purcell's works as historians, and start thinking as conductors or directors setting out from the written score to create a spectacle of music, dance and scenery. The main question I would like to raise is in what ways does the score of *The Fairy Queen* represent processes of time flow and what is the influence of the dramatick opera conventions (often considered artificial and contradictory to the essence of drama) on those processes.

The flow of time in an all-sung opera (and for that purpose *Dido and Aeneas* is a good example) can be roughly divided into two different speeds: realistic moments which move in clock time (such as recitatives) and moments of contemplation (choruses, dances,

[4] Indeed, it is the only opera by Purcell which is treated in Kerman's study. Further discussion of Dido and Aeneas' special place in Purcell's œuvre in can be found in Martin Adams, 'Purcell's "curiously poor and perfunctory piece of work": critical reflections on Purcell via his music for the centenary of Trinity College Dublin', in Irish Musical Studies: 10: Music, Ireland and the Seventeenth Century, Barra Boydell and Kerry Houston (eds.), (Dublin: Four Courts Press, 2009), 181–202.

[5] Ironically, A Midsummer Night's Dream refers in passim to the story of Dido and Aeneas, a reference that was cut out in The Fairy Queen libretto. In Act I, Scene I, Hermia swears 'by that fire which burn'd the Carthage queen, [w]hen the false Troyan under sail was seen', that she would meet with Lysander the following day.

[6] It is not known who did the adaptation of Shakespeare's original. It is probable that Thomas Betterton (1635–1710), manager of the United Company theatre (Dorset Garden) which staged The Fairy Queen, was in charge of the literary side of the production. However, for the purpose of this article, the librettist will be referred to anonymously.

instrumental pieces) which break the flow of clock time and lie, as it were, outside of time.[7] But to what extent is that dichotomy relevant in a dramatick opera and, more specifically, in *The Fairy Queen*? In the original *A Midsummer Night's Dream*, clock time is retained in dialogue; moments of contemplation which create the feeling that clock time is at halt are usually reserved for soliloquies; other moments of rhymed verse do not necessarily lie outside of time — for example the fairies' lullaby ('Ye Spotted Snakes' in Act II, Scene II) seems to play a double role — both a descriptive account of fairy land and of the dangers which await to those who sleep out in its woods, and a lullaby sung to the fairy queen within clock time.

The flow of time in a dramatick opera is risked by the complexity of its stage design and the time required in order for the scenery to be changed. Scenery changes are short durations of 'dead time' — time that lies outside the plot's clock time but is experienced by the theatre goers nonetheless. That combination is the most dangerous, as it allows the audience to get bored, or to contemplate their own lives and reality. For the composer, these are the moments which must be filled in so that the audience is enticed to stay within the realms of fairy land and so that their attention is drawn from what is actually 'the nearest exit from the theatre'.

The Fairy Queen libretto shows several attempts to eliminate 'dead time' originating in *A Midsummer Night's Dream*. For example, let us observe For example, let us observe the implied 'dead time' between the end of Oberon and Puck's conversation (Scene I), and Titania's entrance (Scene II) in Act II of Shakespeare's play.

> PUCK
> Fear not, my lord, your servant shall do so.
> {Exeunt}
>
> SCENE II. Another part of the wood.
> {Enter TITANIA, with her train}
>
> TITANIA
> Come, now a roundel and a fairy song;
> Then, for the third part of a minute, hence;

Unless the director manages to convince that Titania's entrance takes place in another part of the wood (which is possible if he has a very large stage at his disposal), the transition to another part of the wood takes time and requires some change of scenery. Aware of that, the 1692 librettist decided to relocate the potential 'dead time' inside the flow of plot time: the change of scenery, accompanied by music, becomes the result of Titania's magic (rather than the stage designer's), hence a part of the plot itself:

[7] This correlation is not without exception. Alongside contemplative ayres and choruses ('Oft She Visits this Lone Mountain'; 'Great Minds Against Themselves Conspire'), Dido also contains choruses which are integrated within clock time ('Come away, fellow sailors').

ROBIN GOOD-FELLOW[8]
I will; and bring the Nymph when he shall wake.
OBERON.
What different Passions in her Soul will move?
To see his former Hatred, turn'd to Love.
{Exeunt}

{Enter Titania, and her Train}

TITANIA
Take Hands, and trip it in a round,
While I Consecrate the ground.
All shall change at my Command,
All shall turn to Fairy-Land.

{The Scene changes to a Prospect of Grotto's, Arbors, and delightful Walks: The Arbors are Adorn'd with all variety of Flowers, the Grotto's supported by Terms, these lead to two Arbors on either side of the Scene, of a great length, whose prospect runs toward the two Angles of the House. Between these two Arbors is the great Grotto, which is continued by several Arches, to the farther end of the House}

The detailed description of the spectacular stage design emphasises the change of scenery into what was originally 'another part of the wood' and here becomes a complex of grottos and arbors. Change of location means also change of acoustic surroundings – just twenty lines later, the ensemble 'May the God of Wit Inspire' emulates the double echo resonating in the new fantastic landscape. A similar effect was attempted by the composer earlier in *Dido*, when the witches sing 'In Our Deep-Vaulted Cell' in the lush acoustic environment of their cave. Thus we see how librettist and composer collaborate on eliminating 'dead time' of scenery change, and on the musical characterization of the landscape prescribed by the new scenery.

Changes of location and acoustic surroundings bring with them change of time feeling. The 1692 librettist edited out the fairies' lullaby and wrote a new entertainment to replace it. What is achieved here is a complete rethinking of the time flow: Shakespeare's original lullaby, whether it was sung or spoken in the first productions of the play, is integrated within the play's clock time; the Night's Masque, on the other hand, through its use of music and musical form, tries to manipulate clock time from within — no indication is given for withdrawing from clock time, but the composer emulates the gradual loss of time track, characteristic of falling asleep. In other words, Purcell manages to overcome opera's rigid dichotomy of clock time and contemplation by (paradoxically) creating a variety of clock times!

How can this be done? First by layering a complex of directionalities over clock time (what could easily be termed a counterpoint of clock times): some processes move forward, some backwards, some are of a cyclic nature and some combine forward and backward motions by

[8] Robin Good-Fellow is the 1692 parallel of Shakespeare's Puck.

means of palindromic structures. Then, when time flow is saturated with temporal superstructures, no single direction (including the most natural forward motion) can be said to predominate.

Large Scale Design

The first adjustment Purcell applies to the implied duration of the Night's Masque relates to his treatment of the verse. Although much of an opera's feeling of time is embodied in its libretto, Purcell did not consider its poetic form (as dictated by the poet) as a rigid restriction. Looking at the text alone, the Night's Masque is a clear manifestation of English poets' preference for duple metre, a preference of great challenge for the composers who set their texts to music.[9] Purcell might have been troubled by the fact that the masque's text is duple throughout, as he altered the musical interpretation of the poetic metre in two of its four verses: the musical setting presents Night (triple metre), then Mystery (duple), Secrecie (triple) and Sleep (duple); the 'Dance for the Followers of Night', which rounds off the masque, albeit in duple time, creates a more ambiguous metre that will be analysed below. All this gives the music a clear sense of oscillation between duple and triple metres, thereby avoiding tedium (even if going against some of the poet's design).

SONG.[10]
{Enter Night, Mystery, Secresie, Sleep; and their Attendants.}

{Night Sings.}

Ni[ght].
See, even Night her self is here,
To favour your Design;
And all her Peaceful Train is near,
That Men to Sleep incline.
Let Noise and Care,
Doubt and Despair,
Envy and Spight,
(The Fiends delight)
Be ever Banish'd hence.
Let soft Repose,
Her Eye-lids close;
And murmuring Streams,
Bring pleasing Dreams;
Let nothing stay to give offence.

See, even Night, &c. Ω

[9] Bruce Wood, Purcell: An Extraordinary Life (London: ABRSM, 2009), 91.

[10] Text based on The Fairy Queen: An Opera (London: Jacob Tonson, 1692), 16–18. Lines which were not set to music by Purcell are marked with Ω.

Mys[tery].
I am come to look all fast,
Love without me cannot last.
Love, like Counsels of the Wise,
Must be hid from Vulgar Eyes.
'Tis holy, and we must conceal it,
They profane it, who reveal it.
I am come, &c. Ω

Se[crecie].
One charming Night
Gives more delight,
Than a hundred lucky Days.
Night and I improve the tast[e],
Make the pleasure longer last,
A thousand thousand several ways.
Make the pleasure, &c. Ω

Sl[eep].
Hush, no more, be silent all,
Sweet Repose has clos'd her Eyes.
Soft as feather'd Snow does fall!
Softly, softly, steal from hence.
No noise disturb her sleeping sence.
Rest till the Rosie Morn's uprise. Ω
Chorus.
Hush, no more, &c.

A Dance of the Followers of Night.

Accepting Wood and Pinnock's reconstructed history of the premiere, one may observe the many differences between the 1692 playbook and the text as it is set to music, and consider them as differences between the text that Purcell was given at the outset of project and the text after it was modified in order to fit the necessities of production and the composer's compositional preferences.[11] In the musical setting of Night's Masque, not only was Sleep's last line ('Rest till the Rosie Morn's uprise') omitted, but the librettist's indication of repeating the first lines of three ayres was discarded, thereby avoiding an envisaged musical da-capo;[12] the only repeat that Purcell retained was in Sleep's ayre, and that only to facilitate a choral version of the whole

[11] Bruce Wood and Andrew Pinnock (eds.), The Fairy Queen, The Works of Henry Purcell, Vol. 12 (London: Stainer & Bell, 2009), xvi – xxi.

[12] Bruce Wood and Andrew Pinnock, ' "The Fairy Queen": A Fresh Look at the Issues', Early Music 21/1 (February 1993), 44–62 (52).

verse. Thus, avoiding any da-capo structures, Purcell could easily set the forms of the four ayres: through-composed (Night), binary (Mystery), binary (Secrecie), and through-composed (Sleep); he thereby gave more compositional weight on the outer wings of the masque, creating a musical form that is, in terms of elaboration and subtlety, an arch form.

Another interesting feature (which is common to the designs of both Night's Masque and the Seasons' Masque in Act IV)[13] is the gradual descent from higher voices to lower voices, resolved into a final full chorus.[14] Purcell seems to have tried to counterbalance this descent with other elements of scoring: the masque begins and ends with strings (accompanying Night and Sleep, and strings alone in the 'Dance for the Followers of Night') but no strings are indicated in the two middle ayres (Mystery's and Secrecie's); the basso continuo, absent from the Night's ayre (as befits a French-style *sommeil* scene),[15] is the only instrumental accompaniment in the Mystery's ayre, immediately following; flutes are specified only in the centre point of the scene—Secrecie's ayre 'One charming night'.

However, in contrast with the Seasons' Masque tonal scheme (a neat and dynamic progression whereby each season presents its own key: vi – IV – ii – v), the Night's Masque is governed by a single tonality: although each of the ayres modulates to secondary tonal centres (III, VII and v), all of them are set on the tonic (even Sleep's 'Hush, no more' which begins on an Eb-major chord, a deviation that will be dealt with below). Here, the difference seems to correlate with the difference in subject matter: the seasons are in constant flux while night is, as far as sleep is concerned, static.

Yet the most interesting way of controlling the feeling of time is by pacing subtle repetitions, and by creating repetitions which are questionable enough to make listeners uncertain whether the repeated idea was indeed played before or perhaps it is played for the first time. This is achieved by an elaborate web of motivic connections, incorporating the transformation of the opening motif in Night's ritornello throughout the masque, as well as the connection between the harmonic progressions (for example – in the second part of Secrecie's ayre with Sleep's uncharacteristic beginning on the III rather than on the tonic (Ex. 1)).[16]

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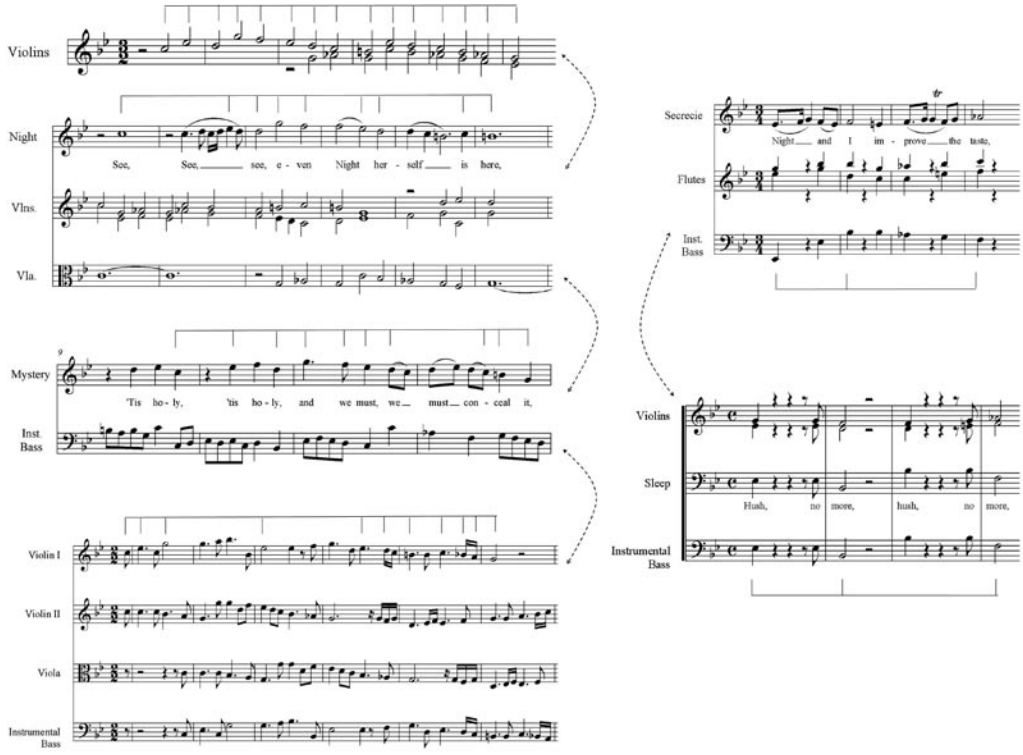
[13] The masque of Act IV is a celebration of the transition of the four seasons. Each season is represented by a vocal solo, and the sequence is preceded and followed by a festive chorus in praise of Phoebus. The pretext of the whole masque is a celebration of Oberon's birthday (again, not mentioned in Shakespeare).

[14] Consider also the reverse order taken by Mozart in the vocal writing of his Tuba Mirum from the Requiem K.626 (Bass, Tenor, Alto, Soprano). In both cases, a 'gap' of sonority slowly opens up, giving the choral resolution a sense of inner necessity.

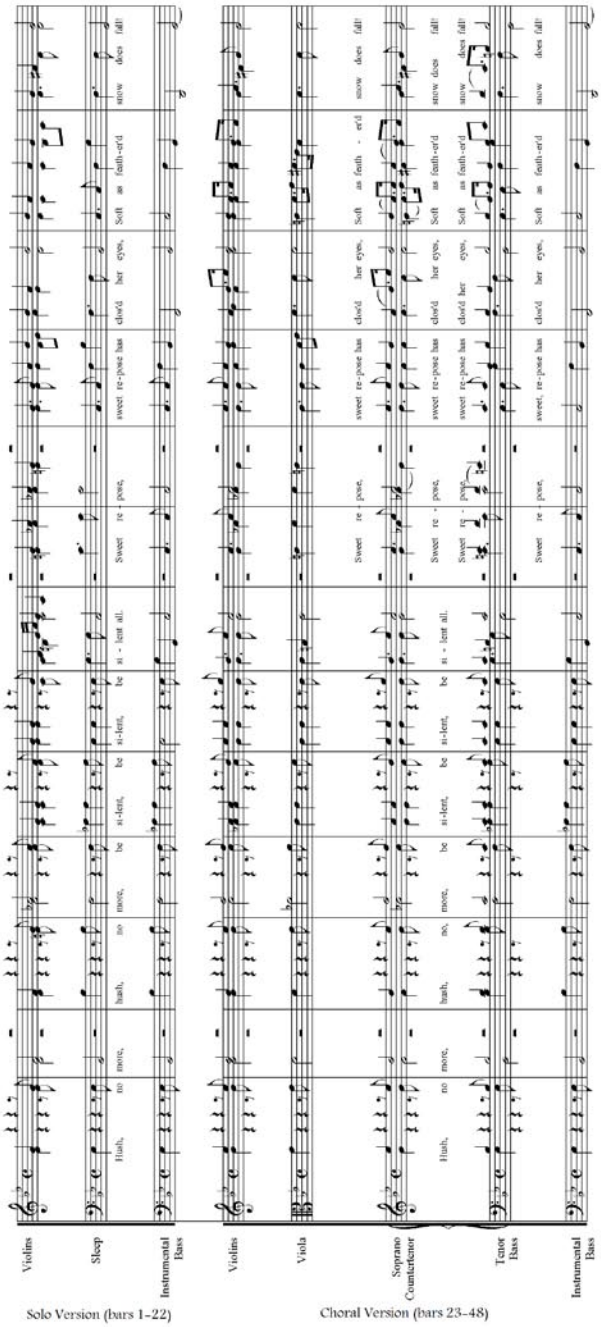
[15] For example, the ending Sommeil of Henri Desmarets' Le Diane de Fontainebleu (1686).

[16] Regardless of the different social contexts involved, Purcell made use of comparable motivic transformation in his sonatas—a form which embodies similar formal challenges: creating coherence and development within a succession of several independent movements in the same key. Adams described motivic links between the different movements of the Sonata in F major Z.793 from that set. Holman was right to remark on Purcell's da-capo technique and its possible connections with Legrenzi's Op. 2; it is possible, however, that similar phenomena in other genres hint at a more general, cross-generic, aesthetic issue. It should also be mentioned that the tonal plan of the Seasons' masque, with its succession of descending thirds, resembles that of Purcell's Sonnata's of Three Parts (1683). Martin Adams, Henry Purcell: The Origins and development of his musical style (Cambridge: Cambridge University Press, 1995), 108–9; Peter Holman, Henry Purcell (Oxford, New York: Oxford University Press, 1994), 88.

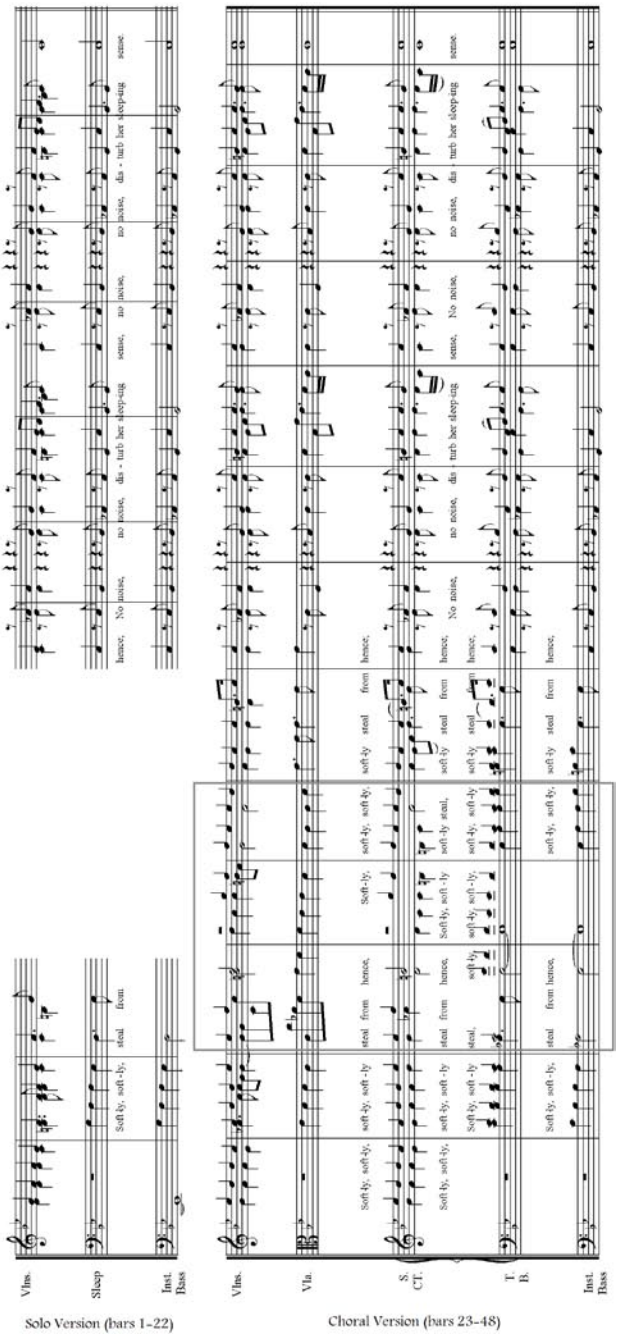


Example 1 – Purcell, *The Fairy Queen, Night's Masque,* motivic connections.

This sort of motivic fluidity, usually identified with nineteenth-century music rather than with seventeenth-century opera, well serves the subject matter. The way in which musical ideas are shaped only to be modified in ways which are not strict manipulations (inversion, augmentation) helps to imitate the experience of dream, when ideas or images which preoccupied one before falling asleep, transfer to one's dream and sometimes assume new meaning, guise or form. This can be seen also in an unusual device employed by Purcell in the choral repetition of 'Hush, no more'. Unlike other cases in the opera where the choir repeats musical material previously sung by a soloist ('If Love's a Sweet Passion', 'Sing While We Trip It'), here the repetition changes not only the harmony but also the phrasing and even the length of imitative working of motifs—the choral repetition is four bars longer than the solo. The bars which are exclusive to the choral repetition (38–41) are also the only bars in 'Hush, no more' where Purcell distorts the synchronised declamation of the choir and enriches the texture contrapuntally (framed in Ex. 2).



Example 2 – Purcell, *The Fairy Queen*, Night's Masque, 'Hush, No More', comparison of solo and choral versions.



Example 2 – Purcell, *The Fairy Queen*, Night's Masque, 'Hush, No More', comparison of solo and choral versions. (contd.)

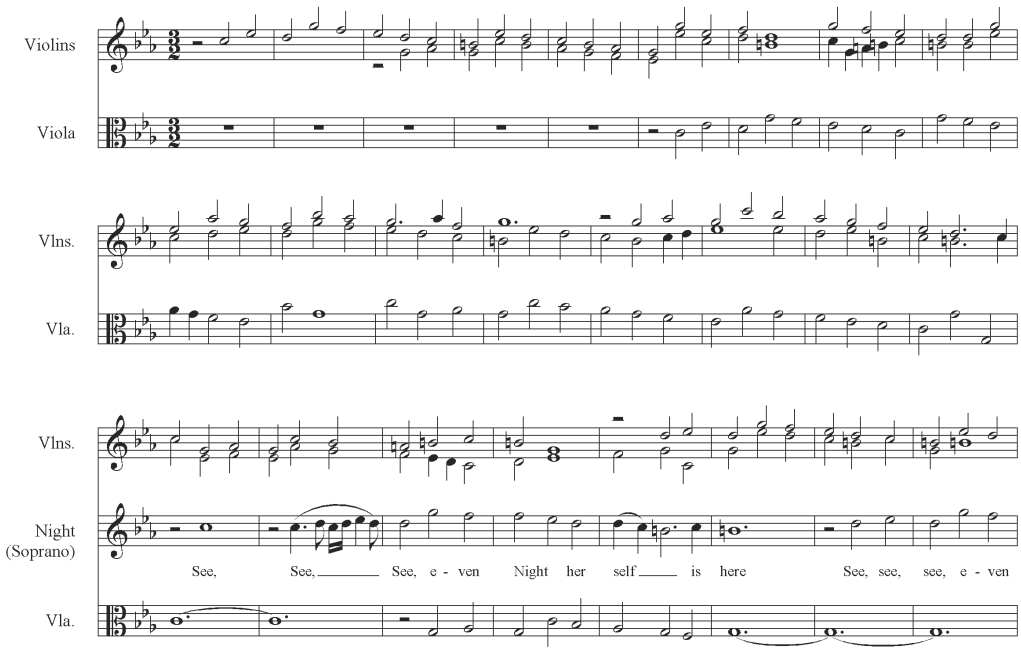
Subtleties of Temporal Control

While Purcell's premeditated large-scale network of balances and recurrences clearly served a programmatic function, it is important to note that each ayre in itself reflects great attention to the complicated layering of temporal processes. The scope of this study will allow but two observations, one each concerning the opening ayre ('See, See Even Night') and the closing dance (Dance for the Followers of Night).

The ritornello of 'See, See, Even Night' presents six statements of the subject, two for each part. What is clearly more elaborate about that ayre is its texture: as befits the somnambulant atmosphere of a French-style slumber scene (*Sommeil*), Purcell asks for a high 'bass' part to be played by the viola. The use of a high-register melodic instrument for that purpose entrusts the two violin parts with a double task: carrying an ongoing imitative texture and, in the absence of a harmonic continuo instrument, harmonising the bass.[17] That imitative texture in 'See, See Even Night' gives an impression of two detached 'layers': a 'three-part fantazia' in the strings exploring a subject and its inversions, and an independent vocal part which, at least at the beginning, paraphrases the main imitative subject (note that the soprano presents the subject only seven bars after it enters and after presenting a freely augmented and ornamented version of the subject. See Example 3). Other aspects are revealed when focusing on the vocal and bass parts alone. If one divides the song according to its textual phrases, seven sections result:

1. [Ritornello]
2. See, even Night her self is here,
   to favour your Design;
3. And all her Peaceful Train is near,
   that Men to Sleep incline.
4. Let Noise and Care,
   Doubt and Despair,
   Envy and Spight,
   (The Fiends delight)
   Be ever Banish'd hence.
5. Let soft Repose,
   her Eye-lids close;
   And murmuring Streams,
   Bring pleasing Dreams;
6. Let nothing stay to give offence.
7. [Ritornello]

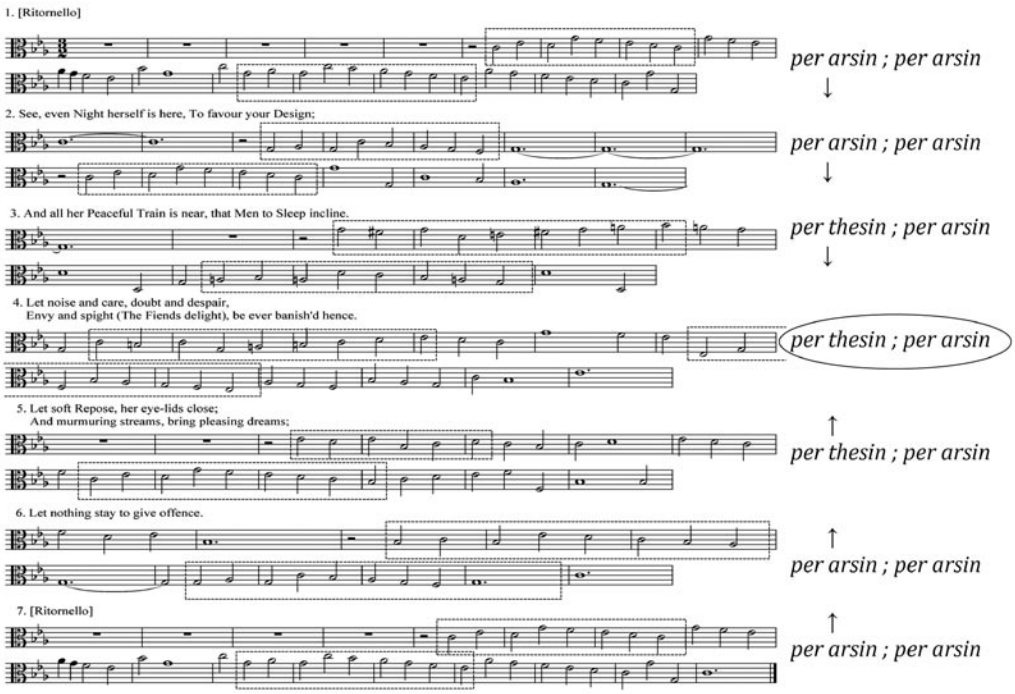
[17] The constant movement in minims not only serves the dramatic purpose of creating a hypnotizing monotony but also helps the composer not to attract to much of the listeners' attention away from the singer. To some extent, this demonstrates the composer's limited efforts to communicate the sophistication of his contrapuntal reworking to his audiences.



Example 3 – Purcell, *The Fairy Queen*, Night's Masque, 'See, See, even Night', bars 1–25.

Examining the corresponding viola part and the way it is constructed of *per arsin* (prime form) and *per thesin* (inverted) entries of the subject in each of these sections may suggest that Purcell attempted to shape the bass part in a symmetrical way which, in turn, shaped the vocal part (Ex. 4). This unique bass-part structure implies that Purcell may have had a predetermined structure, in this case a viola part, that dictated the harmony and imitative complexes for the remaining parts, just as a *cantus-firmus* based composition would have done several decades before that.[18]

[18] Purcell's chronological order of work, writing the bass and the vocal part before adding additional instrumental parts, is surprising in this case but can be supported by circumstantial evidence in the score. In Autumn's 'See, See my many coloured fields' from the masque of the Seasons in Act IV the violins, both in the ritornello and throughout the song, were added in Purcell's hand after an anonymous copyist copied the vocal part and the bass. The fact that Purcell may have composed into the score rather than merely copied previously-composed material is hinted by the apparently later addition of bar 36. The barring to the left of the bar seem to be carelessly drawn in the middle of a pre-existing bar, in order to 'squeeze' a two-bar interpolation of the violins where only one bar was originally intended.



Example 4 – Purcell, *The Fairy Queen*, Night's Masque, 'See, See, even Night', Viola part.

The most unusual part of the Night's Masque, and some would say in all of *The Fairy Queen*, is the 'Dance for the Followers of Night' which, like Locke's conclusion to *The Tempest*, has been said to 'verge on musical unintelligibility'.[19] The immediate reason for its unintelligibility is of course the fact that, like the model in Locke, it is a 'Canon 4 in 2', a texture of considerable intricacy which Purcell undoubtedly boasted. But in context of Purcell's compositional objectives, one technical issue must be borne in mind: as far as canonic writing is concerned, the part-coupling used by Purcell and Locke in the two pieces (Violin 1 and Bass, Violin 2 and Viola) is the least problematic of all possible couplings;[20] once the composer created a convincing couple of Violin 1 and Bass parts, completing the inner parts (which have to be neither a catchy top part nor a harmonically functioning bass line) may be subordinated to harmonic considerations alone. Nevertheless, what makes this dance one of Purcell's great achievements in canonic writing is the way in which Purcell integrates it into the complete picture of the Night's Masque, and refers it to the web of considerations described hitherto.

[19] Price, Purcell and the London Stage, 343. (Cambridge: Cambridge University Press, 1984), 343.

[20] Compare with Purcell's Miserere Z.109 (where the coupling is Tenor following Soprano, Bass following Alto) or 'Glory be to the Father' from the Bb Service Z.230 (where the coupling is Alto following Soprano, Bass following Tenor).

Not only is the canonic part of Violin 1 and the Bass closely connected to the ritornello of Night's ayre (see Ex. 1),[21] the dance also partakes in Purcell's ongoing metric oscillation highlighted above. The Dance features swift transitions between duple and triple meters, even if these are implicit and not evident in the score (for example, in explicit time signatures). Ex. 5 shows the score of the Dance with several cues marked on the score: an accent ('>') denotes a beat which, due to surface phenomena (harmonic, melodic climax etc.) assumes the significance of a strong beat; a dash ('–') denotes a beat which, due to similar kinds of surface phenomena, assumes the significance of a weak beat. Each cue, with reference to the cue that preceded it, re-establishes the implicit meter of the dance, and projects a new metre, which is represented in a numbered line underneath the score:

1) The g" in Violin 1 is accented in several ways: quantitative accent (it is longest rhythmic value to that point), contour (it is the highest note to that point, and approached with a leap) and change of harmony. This, in retrospect, adds the first beat of bar 1 to the anacrusis and makes it an anacrusis to the second beat of bar 1. However, the g" being the first accented beat in the piece, still leaves the listener with no knowledge of the metre. Such knowledge could be acquired only when the next strong beat is sounded.[22]
2) The g in the Bass, following that of Violin 1, is accented for the same reasons of quantitative accent, contour and harmony. However, played by the bass, it overrides the following quantitative accent of Violin 1—the first beat of bar 3. Heard two minims after the previous accent, it sets the metre to 2/2 (the designated metre of the dance) but with the strong beats shifted to the second beat of each bar.
3) The clear cadential implication of the second beat of bar 3 (in Eb major: $I_{6/4}\ V_7$), shakes its strength and gravitates towards the following beat.
4) Following the cadence of the previous bar, the first beat of bar 4 resolves the harmony to the tonic Eb major and becomes a strong beat. This is also reaffirmed by the melody of the Bass, which approaches the chord with a leap of a fourth (whose significance in Violin 1 was previously overridden, see bars 2–3). Heard three minims after the previous accent, it changes the metre to 3/2.

[21] In the context of the motivic transformation and the Dance's being its final link, it should be asked whether the decision in a recent production of The Fairy Queen (Glyndebourne, June–August 2009), to move the Dance to the beginning of Night's Masque, does not undermine the order of the gradual transformation, as envisaged by the composer. However, the irony of singing the four lullabies only after an ominously unintelligible Dance was played (combined with spider web scenery) certainly has dramatic value of its own.

[22] I have previously presented this sort of analysis, referring to the way in which a piece is heard along the duration of its performance, in relation to the Chacony Z.730 and the Chaconne Z.335/7. Analytical presuppositions, similar to those I have formulated in my earlier article (regarding the applicability of my analysis to Purcell's chaconnes alone), should be declared here also. The listener to whose perception I refer is a listener acquainted with English seventeenth-century melodic and harmonic style. However, the present analysis is applied on much smaller detail than the formal analysis of chaconnes and the principles of accentuation are not dependent on the listener's acquaintance with conventions of binary form. Full account of human perception of accentuation is beyond the scope of this study. Alon Schab, 'On the Ground and off: a comparative study of two Purcell Chaconnes', The Musical Times (Autumn 2010): 47–57.

5) The change in harmony to the dominant of C minor seems to arrive too early (the previous strong beat implied some dependence between the metre and change in harmony). This, together with the rest in the Bass and the anacrusis to the first beat of bar 5, changes the metre again to 2/2.

6) The strength of the first beat of bar 8 has been worn out by the harmonic stasis of bars 6–7 (which prolong the dominant) and the disappearance of the bass on that beat. The melodic significance which could have been assumed by the semiquaver descent into the second beat of bar 7 is camouflaged: the note on the second beat in the Violin 1 (c') clearly continues an outlined ascending scale which started in Violin 2 (g', a' and b' on the minims, bars 6–7). Even if the first beat of bar 8 may still be heard as a strong beat, all the above certainly prepares the overriding effect of the next beat.

7) Unlike its first occurrence in Violin 1, the semiquavers descent in the Bass is easily perceived as anacrusis to the second beat of bar 8, thereby changing the metre to 3/2. The new metre is reaffirmed in bar 9 by a resulting sequence (three parallel tenths above the Viola's g – a – b; three parallel tenths above the Bass' c – d – eb) (Ex. 6).

8) The first beat of bar 11 assumes the significance of a strong beat because of the harmonic implications of the half cadence, the quantitative accent and the general halt of the texture. In the repeat, the g" in Violin 1 (bar 1) is heard three minims after the first beat of bar 11, hence implying the metre of 3/2.

9) Similarly to cue 1, the b'b in Violin 1 is accented by quantitative accent, but also by the leap in Violin 2 into that beat. Unlike the first time cue 1 was heard, here the listener refers to cue 8 as the previous strong beat. This makes the metre 3/2.

10) Similarly to cue 2, the Bb in the Bass, following that of Violin 1, is accented with a quantitative accent, and it overrides the following quantitative accent of Violin 1—the first beat of bar 14. Heard two minims after the previous accent, it sets the metre to 2/2 (as written) but with the strong beats shifted to the second beat of each bar.

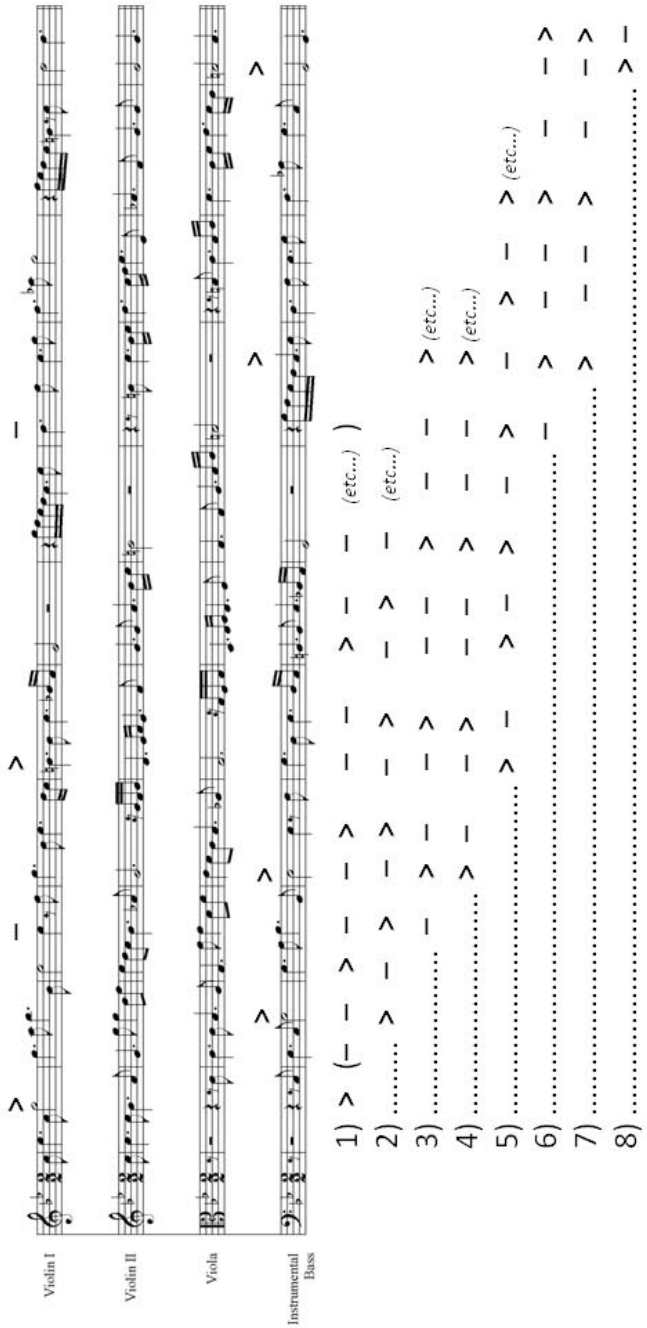
11) Here, both the lack of harmonic motion on the beat and the fact that the rhythmic pattern which repeats itself in the bass is three minims long, make the second beat of bar 14 a weak beat, thereby implying a 3/2 metre and gravitating to the next beat.

12) The first beat of bar 15 assumes the significance of a strong beat because of the rhythmic repetition in the Bass (a quaver upbeat, dotted crotchet, quaver, minim, crotchet, quaver rest)—the quantitative accent applied on the minim in cue 10, is also applied here on the minim, thereby changing the implied meter to 3/2.

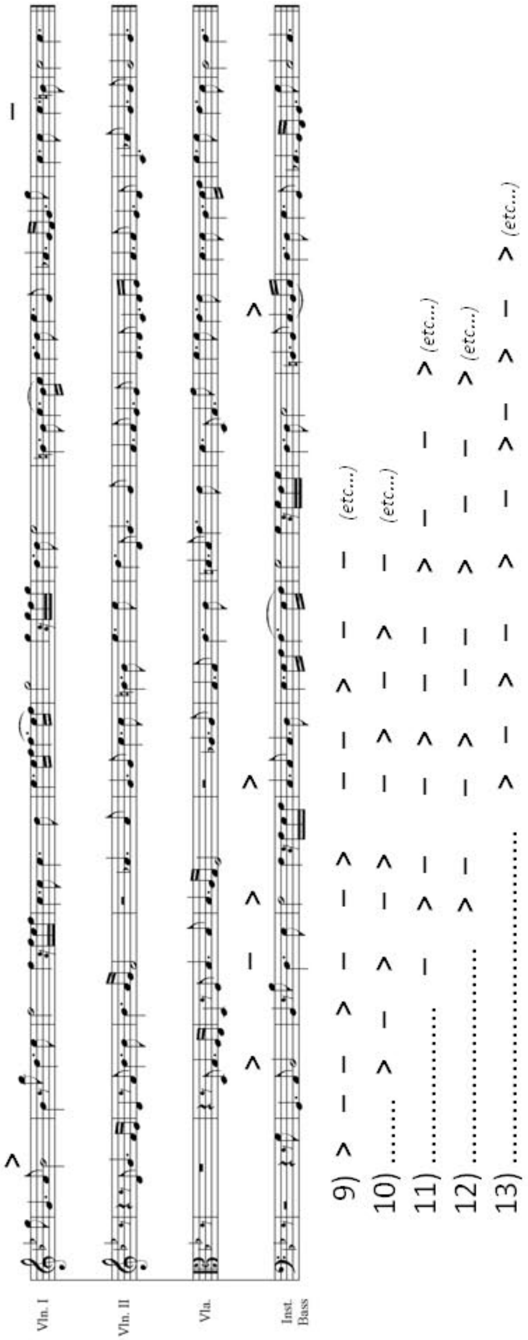
13) The Bass' c is highlighted by the anacrusis in semiquavers leading to it, the leap down into it, and the harmonic progression into the tonic. This sets the metre back to 2/2, until the end of the piece. Mainly for harmonic reasons, bars 18–20 can easily be interpreted as two bars of 3/2 metre. This division, clearly corresponding to that of bars 7–9 in the first strain (cue 6 and cue 7), can be seen as three-minims prolongations of the dominant and the tonic (VII_6–i_6–V_6; i–II–i_6). This, however, is ambiguous and subjected more to the performers' phrasing to any intrinsic parameter of the music.

When setting Night's Masque to music, Purcell faced an extraordinary challenge: instead of shaping a transfer from realistic time to a contemplative sequence outside of time, he needed to create the illusion of gradually slowing down the realistic pace of events into a quasi-sleep pace. Purcell takes several measures in order to achieve that goal: first, he binds the four ayres (and the concluding dance) together through the use of underlying unities –metrical (by superimposing the oscillation between duple/triple times) and formal (by creating the oscillation between through-composed and binary forms). But unity alone does not really create a continuous process of slowing down (as it tends to create stasis). For that purpose, Purcell enriched the masque with additional large-scale processes which blur the listener's ability to trace motives or palindromic designs which create an illusion of going backwards.

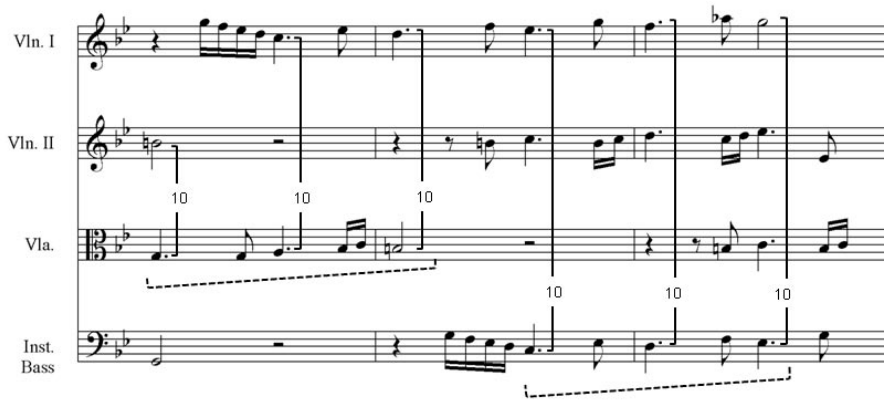
Purcell's *The Fairy Queen* reflects profound understanding of the theatrical medium and its subtlest mechanisms. But not only that it is one of Purcell's greatest artistic achievements, it can also enlighten us with regards to general issues of temporal control – issues that transcend style and historical period. In that sense, *The Fairy Queen* may give the contemporary composer, conductor or director who bothers to study it, much more than any other stage work by Purcell (*Dido and Aeneas* included), and not less than any other stage work of the seventeenth and eighteenth centuries. It is only left to hope that students today, when grappling with old questions such as those of dramatic coherence and flux, will have the patience and guidance to consult the works of composers who are sadly neglected in common-practice literature.



Example 5 – Purcell, Night's Masque, 'Dance for the Followers of Night', cue analysis of strong and weak beats.



Example 5 – Purcell, Night's Masque, 'Dance for the Followers of Night', cue analysis of strong and weak beats. (contd.)



Example 6 – Purcell, Night's Masque, 'Dance for the Followers of Night', bars 7–9, implicit movement in parallel tenths.

TIME IN MUSIC: AN ANALYTICAL STUDY OF MENDELSSOHN'S FEAR OF TEMPORAL REGULARITY IN THE FIRST MOVEMENT OF HIS PIANO TRIO OP. 49

Ron Regev

Robert Schumann had a very clear view of the natural progress of music history: every period must have its own Mozart and its own Beethoven. In his famous article of 1853, "Neue Bahnen" ("New Paths"), he hailed Brahms as the new Beethoven of his time; thirteen years earlier, however, he announced that the Mozart of the 19th century was Felix Mendelssohn Bartholdy.[1]

Indeed, Mozart and Mendelssohn had a lot in common: two of the greatest child prodigies of all time, virtuosi of several instruments, both had legendary musical memories and a seemingly unnatural ability to complete most of the process of composition, even of the most complex and lengthy works, in their heads – before committing a single note to paper. Both composers seem to have burnt with such creative brightness, that there is almost a poetic quality to the tragic shortness of their lives, Mozart having died at the age of 35, and Mendelssohn – at the age of 38.

Despite the similarities in skills and in their manners of composition, there is also a fundamental difference between the two. Whereas Mozart's compositions were mostly doled out quickly, with few, if any revisions, Mendelssohn was reluctant to part with his manuscripts. As quick as he was in drafting his masterpieces, he often kept them for months, even years, for extensive revisions, before reluctantly sending them to publishers. On June 12, 1843, he wrote to Karl Klingemann about this reluctance:

> As long as the compositions remain here with me they never cease to torment me, because I so much dislike to see such nice, clean manuscript pass into the dirty hands of engravers, customers and the public, and I bolster up a little here, smooth out a little there and go on improving them just in order to keep them here. But when the proofs are once here, they are as foreign and indifferent to me as if they had been written by a stranger.[2]

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For more information: www.ronregev.com

1 Douglass Seaton, ed., *The Mendelssohn Companion* (Westport, Conn.: Greenwood Press, 2001), 574.

2 Felix Mendelssohn-Bartholdy, *Letters: Edited by G. Selden-Goth: With 33 Illustrations* (New York, N.Y.: Pantheon, 1945; reprint, New York, N.Y.: Kraus Reprint, 1969), 325; quoted in F. Mendelssohn-Bartholdy, *Mendelssohn: A Self-Portrait in His Own Words*, compiled by David Whitwell (Northridge, Calif.: Winds, 1986), 19.

Mendelssohn's perfectionism was such, that he rejected from publication many of his masterpieces that we have come to treat as mainstream repertory. Suffices to note that two of his celebrated symphonies, the fourth ("Italian") and fifth ("Reformation") were in fact written before his second symphony – but were published posthumously, since he deemed them unworthy of publication during his lifetime.

This was also the fate of Mendelssohn's single large-scale violin sonata, which was a sister-work to his first cello sonata. He worked on both pieces during the second half of 1838. The violin sonata survived a complete draft and the early stages of a revision, only to be discarded as inadequate. The cello sonata managed to live up to the composer's exceedingly high standards, and was published in early 1839. This work is the first large-scale chamber work with piano the adult Mendelssohn completed, preceded only by his virtuoso set of variations for piano and cello, opus 17.

This raises a serious question: why was it, that the most celebrated composer of his time refrained from writing pieces in one of the most popular (not to mention lucrative) genres of his time? As a child, Mendelssohn did write several short sonatas with piano, a trio for piano, violin and viola, and three piano quartets that he chose to publish as his opus 1. Between these early years and the publication of the first cello sonata, the only work Mendelssohn produced in this genre is the aforementioned set of variations. It is interesting to note, then, that in quite a few letters he wrote to different publishers during the 1830s he promised them chamber works with piano, most notably a piano trio – a promise he would only fulfill in 1840. It is just as interesting to read his follow-ups, in which he comes up with rather creative excuses to not having produced such works, and asking the publishers to substitute them with other works. It was not the publishers alone who pressured Mendelssohn for chamber works with piano: he was repeatedly urged by his sister, Fanny, and by his close friend and colleague, violinist Ferdinand David, to produce them.[3]

Perhaps we can find our answer in the high standards Mendelssohn set for his chamber works with piano, once he finally got to compose them in the late 1830s. As noted before, the violin sonata was rejected altogether. The first cello sonata underwent a lengthy process of composition, lasting the better part of 1838. Finally, the first piano trio, opus 49, took the composer over a year, and four different versions, to achieve publication status. Is it possible, then, that it was Mendelssohn's own perfectionism that prevented him from composing in this genre earlier? Judging from the extensive revisions, it does seem that Mendelssohn was determined to produce works that are nothing short of masterpieces. In 1838 Mendelssohn wrote to his good friend, composer and pianist Ferdinand Hiller:

> Piano pieces are not the most enjoyable form of composition to me right now; I cannot even write them with real success; but I sometimes need a new piece to play, and if now and then something really suitable for the piano comes into my head, why should I be afraid of writing it down? Moreover, a very important branch of piano music, and one of which I am particularly fond – trios, quartets and other pieces with accompaniment, genuine chamber music – is quite forgotten now and I feel a great urge to do something new of this kind.

[3] Ron Regev, "Mendelssohn's Trio opus 49: A Study of the Composer's Change of Mind" (Doctoral Document, The Juilliard School, 2005), 5-9

In 1838 Mendelssohn finally found the time and the motivation to do so: first with his discarded violin sonata and his first cello sonata, and then, in 1839, with his first piano trio.

Mendelssohn's piano trio in D minor, opus 49, is celebrated nowadays as one of the high points of music literature for this ensemble. The polished quality of the piece, and the feeling it gives most listeners that there is not a note that is out of place, did not come easily to the composer. In early 1839 Mendelssohn started work on the piece. Few remaining drafts of that time suggest that he had had a lot of the trio sketched down when he and his family went to Frankfurt for vacation. There Mendelssohn started copying his notes into a fair score. The score did not remain fair for more than a page – starting with the last line of the first page, Mendelssohn started revising once more, and the intended fair copy ended up being just another working draft. This draft was completed on July of that summer, and is still extant and housed in the Deutsche Staatsbibliothek in Berlin as part of the volume known as Mus. Ms.Autogr. Mendelssohn 31.[4]

It would appear that upon completion of the work, the first thing the composer started doing was revising the whole score once more. Sir George Grove, the renowned musicologist, accounted for another version of the trio, dated September 1839, which is now lost. The ensuing revisions of the work suggest that the September version was quite close to the work as we know it today – except for the treatment of the virtuoso aspect of the piano writing. In December of that year Mendelssohn was visited by Ferdinand Hiller, who managed to persuade the composer to revise his treatment of the piano part in accordance with an approach to piano technique more in agreement with the writing of Chopin and Liszt.[5] Mendelssohn started work immediately, and by January 21, 1840, the finalized manuscript was sent to the publishing house of Breitkopf & Härtel.

Mendelssohn, however, was not done yet. Upon receiving the proofs from B&H, he did exactly what all publishers of the time feared when they contracted leading composers: he added some "final touches" to the proofs, which forced the publisher to redo some of the printing plates, resulting, at places, with awkward spacings of the music. The final word was not said, however, until Mendelssohn sent another copy of the piece to his English publisher, Ewer, with additional corrections.

On April 9, 1840, the trio was published simultaneously in Germany, England and France. The French edition, incidentally, was based on the manuscript the composer sent B&H in January, and was therefore not of the final version of the piece.

The first movement of the trio underwent extremely meticulous reworking between its first complete draft from the summer of 1839, and its final published version. Many of the revisions were carried out in order to address **the treatment and the shaping of time** in the early version. Mendelssohn addressed these issues in two distinct methods:

1. He wanted to create a greater overall rhythmic sweep, and to avoid the stagnation caused by a heavy downbeat in every measure. To this end he subtly altered many of

4 See ibid., 9-45, for a thorough discussion of the trio's history of composition, publication and reception.

5 Ferdinand Hiller, *Mendelssohn: Letters and Recollections: Translated with the Consent and Revision of the Author, by M. E. von Glehn,* with an introduction by Joel Sachs (New York: Vienna House, 1972), 154-155.

the movement's rhythmic patterns and gestures, in a manner that effectively turned the basic pulse of the movement into a **hypermeasure** of two measures, rather than the single measure of most of the draft version.

2. He opted to eliminate all instances of structural and harmonic redundancies.

The two most noticeable changes between the two versions are the recomposition of the development section and the extreme truncation of the coda. Overall, a movement which was once over ten minutes long according to the composer's metronome markings, was shortened to less than nine.[6]

We shall now examine in detail several examples of the **creation of hypermeasures** and **the elimination of structural and harmonic redundancies**. To facilitate the discussions, readers are encouraged to use as references the score of the draft version, the score of the final version, a facsimile of the draft version, a recording of the first movement of the draft version and a recording of the first movement of the final version.[7]

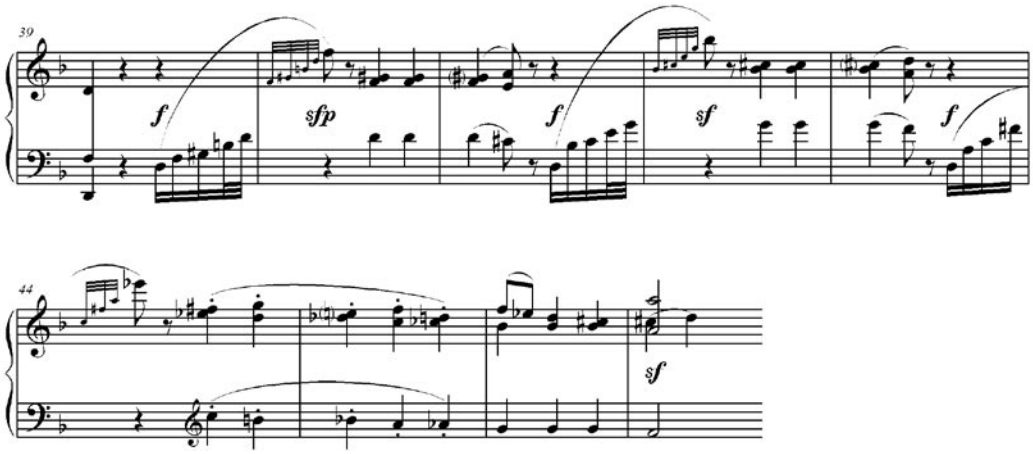
[6] A complete analytical discussion of the revisions is beyond the scope of this article. The interested reader can find such a discussion in the second part of my doctoral document – see footnote 3.

[7] The score and the facsimile of the draft version, as well as both recordings, were created as part of my doctoral document – see footnote 3. The recording artists were I as the pianist, with violinist Frank Huang and cellist Alisa Weilerstein. The linked edition of the final version is the Breitkopf & Härtel edition of 1840, courtesy of the IMSLP project. Please be mindful that all linked material, save the edition of the final version, is under copyright, and copying or reproducing it in any form is strictly prohibited.

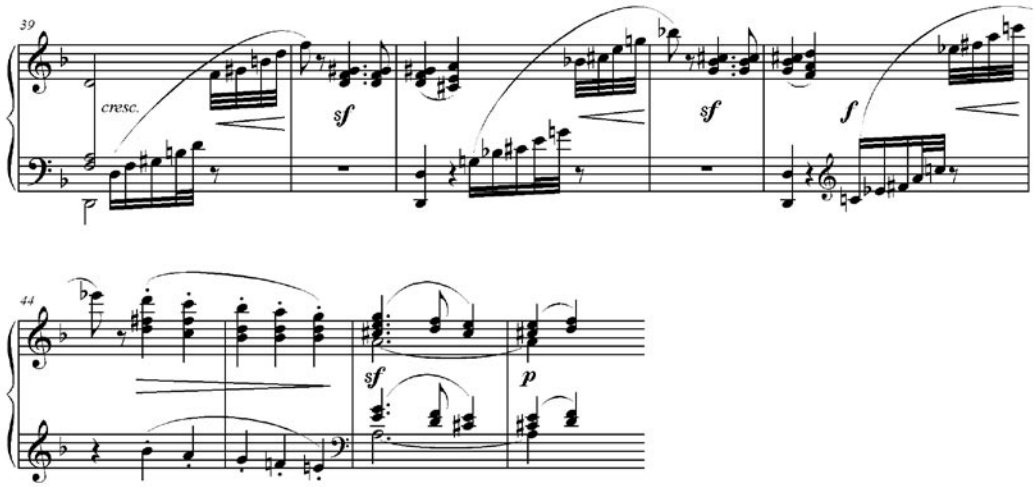
The full links are:
Score of the draft version - http://www.ronregev.com/mendelssohn/pdf/RegevEditionScore.pdf
Score of the final version - http://imslp.org/wiki/Special:ImagefromIndex/17394
Facsimile of the draft version - http://www.ronregev.com/mendelssohn/pdf/RegevFacsimile.pdf
Recording of the 1st mvt of the draft version - http://www.ronregev.com/mendelssohn/mp3/1839/I.m3u
Recording of the 1st mvt of the final version - http://www.ronregev.com/mendelssohn/mp3/1840/I.m3u

The Creation of Hypermeasures

Let us examine the parallel passages in Exx. 1a (draft) and 1b (final):



Ex. 1a: Draft Version, first mvt.: Allegro molto agitato, mm. 39-47, piano part



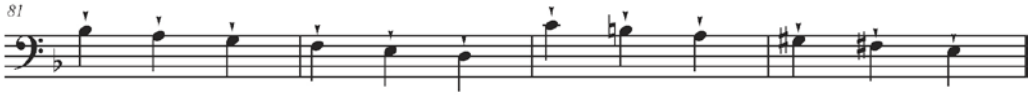
Ex. 1b: Final Version, first mvt.: *Molto Allegro agitato,* mm. 39-47, piano part

Mendelssohn revised this passage several times. Its earliest form appears at the end of the first page of the draft's manuscript. Donald Mintz observes that it may have been rejected because of its lack of rhythmic and harmonic intensity.[8] The first revision of the passage, at the top of the second page of the manuscript, included the arpeggiated diminished seventh chords that we now find in the final version. These were abandoned in the draft in favor of chord formations that included a *d* pedal tone. In the final version

8 Donald Monturean Mintz, "The Sketches and Drafts of Three of Felix Mendelssohn's Major Works" (Ph.D. diss., Cornell University, 1960), 156.

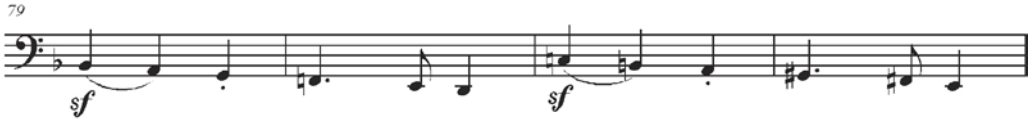
Mendelssohn found a way to combine the diminished seventh chords with the pedal tone, and also establish hypermeasures: the pedal tone was introduced as bass octaves every second measure. The other deciding factor in establishing the broader pulse was the alteration of the rhythmic pattern in mm. 40 and 42: whereas repeated quarter notes yielded heavy downbeats in the following measures, the dotted rhythm made the gesture more flexible and agitated, enough to provide the drive needed for the downbeats of mm. 41 and 43 to be perceived as lighter than those of mm. 42 and 44. This broader pulse is reaffirmed by an examination of the following entrance of the strings: their syncopations are all the more effective, since they anticipate the heavier downbeat measures. Consequently, the listener perceives both mm. 39 and 40 of the final version as downbeat measures, and this asymmetry is another factor contributing to the overall drive and agitation of the passage.

Later in the exposition, during the transition to the second theme, the draft version includes the following sequence for the cello:



Ex. 2a: Draft Version, first mvt.: *Allegro molto agitato,* mm. 81-84, cello part

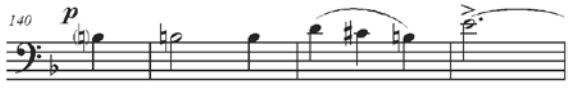
This passage seemingly conforms to a hypermeasure pulse. This, however, is not quite the case: the fact that the harmony changes every measure here makes the listener perceive the passage not as two sequences, but rather as four. To correct this problem, Mendelssohn applied a similar rhythmic manipulation to the one in the previous example:



Ex. 2b: Final Version, first mvt.: *Molto Allegro agitato,* mm. 79-82, cello part

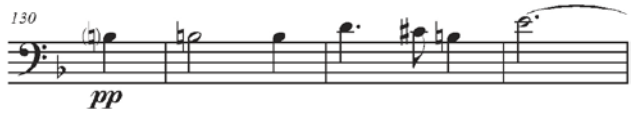
Example 2b demonstrates how important it was for Mendelssohn to avoid having a heavy downbeat every measure: not only did he change the rhythm of mm. 80 and 82, but he also included slurs and ***sf***s in mm. 79 and 81 to remove any doubt that there are only two, and not four, downbeats in this passage.

By this point in the final version the dotted rhythm has become motivic. It is not surprising, then, that when Mendelssohn was looking for a way to avoid one-measure downbeats in the "tail" of the second theme, he reverted to the same method, which had proven effective before. Thus this:



Ex. 3a: Draft Version, first mvt.: *Allegro molto agitato,* mm. 140-143, cello part

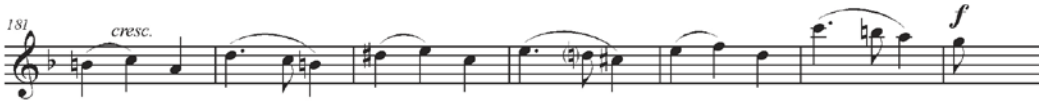
turned into this:



Ex. 3b: Final Version, first mvt.: *Molto Allegro agitato,* mm. 130-133, cello part

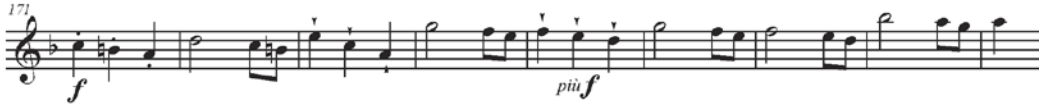
In Ex. 1b the second beats of mm. 40 and 42 were dotted, and consequently they lent enough drive to the ensuing downbeats to prevent them from being perceived as heavy. In Exx. 2b and 3b it is the downbeat that is dotted, and the effect is different: the eighth notes and the third-beat quarter notes are perceived as upbeats to the following measures, thus making those measures heavier than the ones preceding them. Therefore Mendelssohn no longer needed the accent on the e^1 in m. 143 of the draft (Ex. 3a), and removed it from m. 133 of the final version (Ex. 3b). Another factor contributing to the greater lightness and rhythmic "tilt" of the final version is the absence of a slur in m. 132, which allows the cellist to alter bow strokes and thus produce a lighter sound, as well as create greater affinity between this measure and previous instances of dotted rhythms.

As the exposition of the movement progresses, its dramatic intensity and drive increase. In the transition between the second theme and the concluding section, Mendelssohn uses the dotted rhythm already in the draft:



Ex. 4a: Draft Version, first mvt.: *Allegro molto agitato,* mm. 181-187, violin part

However, in this passage of great build-up of intensity, the dotted rhythms do not suffice. Moreover, their effect is diminished by the bow strokes on each downbeat. Here Mendelssohn was looking for a way to transform the ends of the lighter measures into upbeats to the heavier ones. This he did by going beyond the dotted rhythm:



Ex. 4b: Final Version, first mvt.: *Molto Allegro agitato,* mm. 171-179, violin part

The eighth notes at the ends of mm. 172 and 174 clearly turn mm. 173 and 175 into downbeat measures. In addition, the slurs of the draft are abandoned in favor of *staccati* and wedges. The final three measures of the passage do not mark a transition into a one-measure pulse, but rather accelerate the harmonic rhythm, thus rendering m. 179 a true point of arrival.

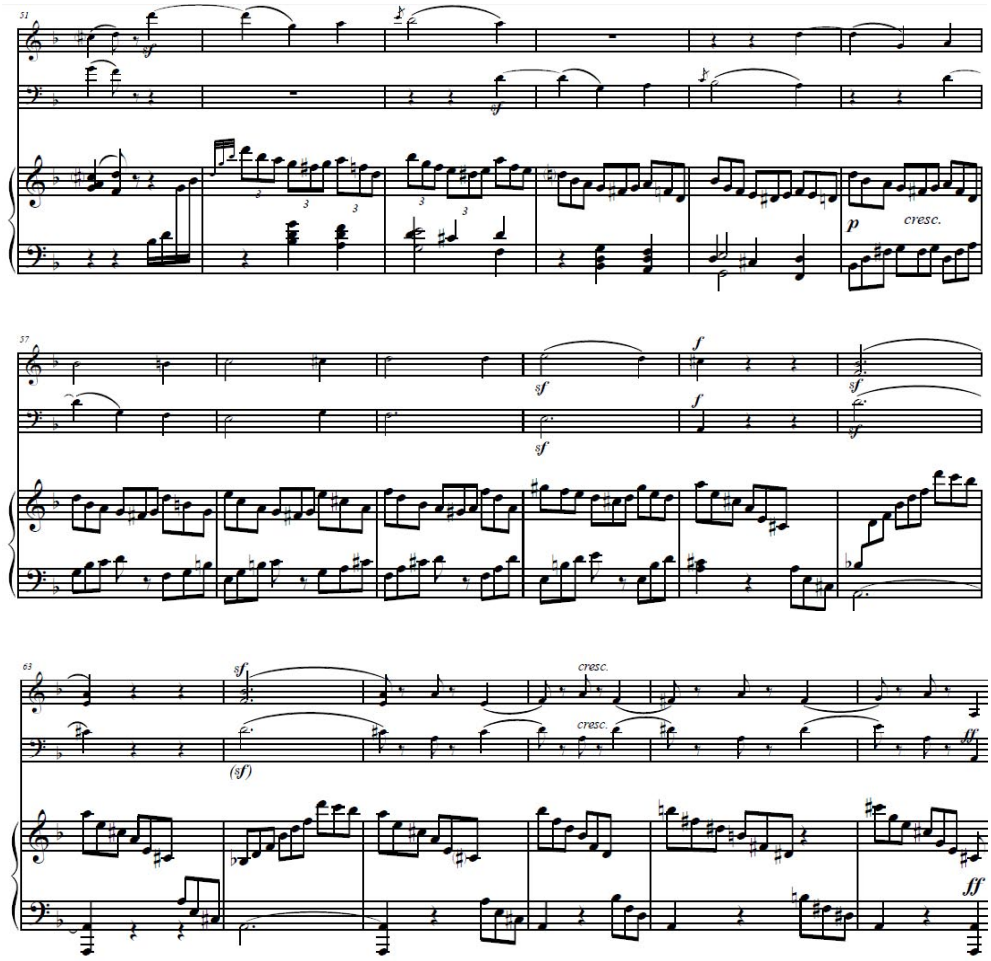
The alterations presented in Exx. 1-4 demonstrate an extremely subtle and skillful compositional craftsmanship. The altered passages are not different in essence and in function

from their predecessors in the draft; they simply enhance them, and transform their pulse into that of one downbeat per two measures. Consequently, they create a greater flow, and eliminate any possibility of heaviness or stagnation. These alterations affect the exposition and recapitulation of the movement; accordingly, Mendelssohn recomposed the development and coda with the premise of hypermeasures as basic metric units.

The Elimination of Structural and Harmonic Redundancies

The previous examples are indicative of an overall intention Mendelssohn had in his revision of the movement: in its final version, he aimed to make the work tighter and more intense. To this end he also discarded several large sections of the movement as they appeared in the draft, and recomposed them almost from scratch.

The first of these sections is part of the transition to the second theme, which starts in the draft in m. 51 and ends in m. 68:

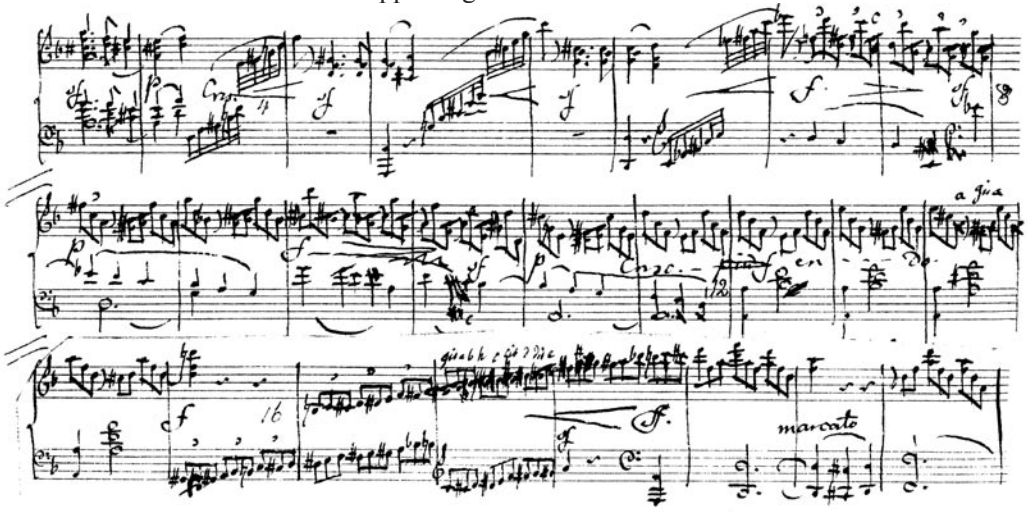


Ex. 5: Draft Version, first mvt.: *Allegro molto agitato,* mm. 51-68

The manuscript reveals that Mendelssohn already tried to make this section tighter in the draft itself by crossing out the original measure that followed m. 59.[9] This discarded m. 60, along with a crossed-out sharp before the last *f* 2 of m. 59, would have added a chromatic flavor to an otherwise diatonic passage. Mendelssohn was able to cross them out without compromising the integrity of the whole phrase for a reason that may have contributed to his decision to abandon this passage altogether: its pulse was clearly one downbeat per measure.

Mintz mentions another possible reason for the rejection of these eighteen measures:[10] their initial harmonic plane is that of G minor, and it is not just a fleeting touch on the subdominant key, but a harmonic underpinning for a statement that appears in the violin part (mm. 51-53), in the cello part (mm. 53-55), and then in both string parts together (mm. 55-57). In addition to being static harmonically, these seven measures anticipate the structurally significant harmonic shift to G minor that would take place later on, in m. 77. This passage therefore robs the later appearance of the subdominant of some of its effectiveness. It also anticipates the ensuing *ff* appearance of the first theme through its use of motivic fragments taken from that theme: the melodic cell that both string parts play here is loosely based on the first two measures of the theme. In the final version the melodic cell of the recomposed passage, as it appears in mm. 52-66, relates to the bass line of mm. 79-89, thus creating a sense of continuity without anticipating the appearance of the first theme.

Mendelssohn did not have an easy time coming up with alternatives to these measures. The piano score, which he submitted for engraving on January 21, 1840, and which was reproduced almost exactly in Richault's first French edition[11] of the piece, includes a slightly different transition from the one appearing in the final version:



Ex. 6: Separate Piano Score, first mvt.: *Molto Allegro agitato,*
equivalent of mm. 46-69 of the Final Version[12]

[9] See the second page of the movement in the facsimile.

[10] D. M. Mintz, "The Sketches and Drafts," 158-159.

[11] Full link: http://imslp.org/wiki/Special:ImagefromIndex/01540

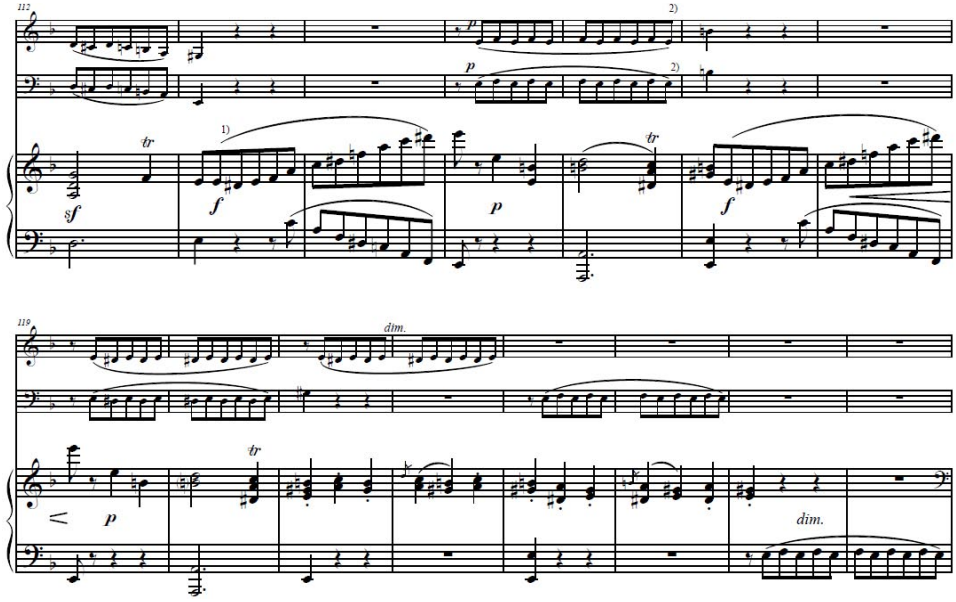
The last system includes a chromatic scale that is reminiscent of mm. 547-548 of the draft version. These two measures from the draft are part of the transition to the concluding section in the recapitulation; this transition was suppressed in the final version. Perhaps Mendelssohn was trying to preserve the gesture in a different location.

We can learn from the Richault edition that in the second and third measures of the last system in Ex. 6 the strings supported the piano by sustaining long notes (d^3 in the violin part and f^1 in the cello part). As a result, the downbeat of the measure, which correlates with m. 65 of the final version (last system, second measure), was not pronounced enough, since it did not include a strongly articulated bass. It was also harmonically weaker than the final version: the bass supported a secondary diminished seventh chord (vii°7 of V), rather than a stronger dominant chord. These reasons may have been the ones that led to the revision of the three measures of ascending chromatic scale into the two measures present in the final version (mm. 65-66).

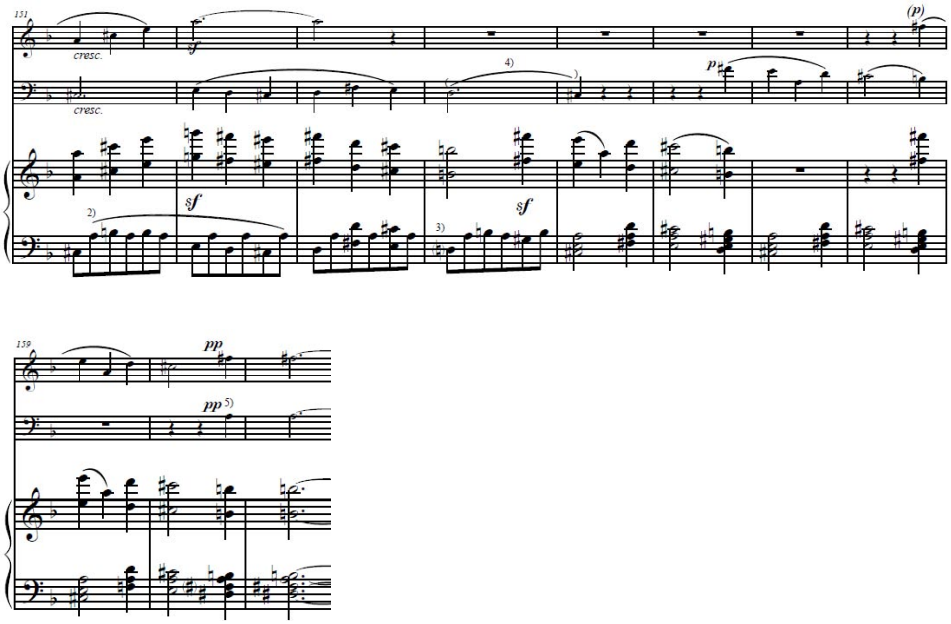
We should also note that the final version of this passage is not its third, but its fourth: the version presented in Ex. 6 is pasted over a yet older version of the same passage.[13]

This revision left its mark in the engraving of the Breitkopf & Härtel edition: the engraver originally spaced this system to include six measures; he then had to change it to include only five. Consequently, the spacing of this system in the German first edition is noticeably wider than that of the rest of the page.

The next passages that Mendelssohn removed on account of their repetitive nature and lack of harmonic interest come in mm. 112-124 of the draft version, which precede the second theme, and in mm. 154-160, which follow it (as well as their parallels in the recapitulation):



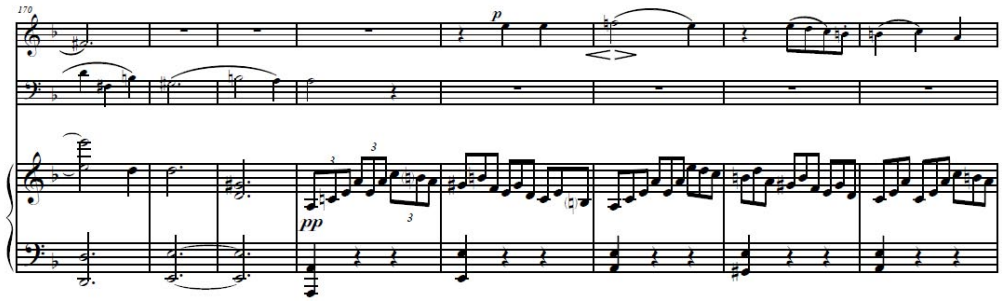
Ex. 7a: Draft Version, first mvt.: *Allegro molto agitato,* mm. 112-126



Ex. 7b: Draft Version, first mvt.: *Allegro molto agitato,* mm. 151-161

The latter passage originally included three additional measures after m. 154; these crossed-out measures repeated the material of mm. 140-142.[14] Once again, Mendelssohn chose to reject passages that did not advance the movement harmonically or structurally.

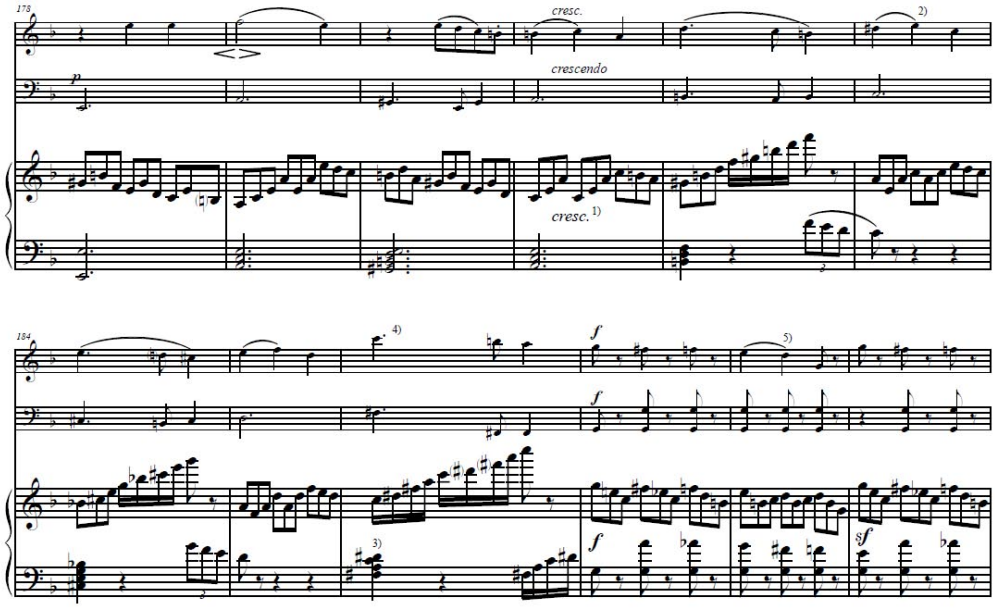
The first part of the transition to the concluding section in the draft (mm. 173-186) is replaced in the final version with material based on its parallel passage in the recapitulation (mm. 519-534):



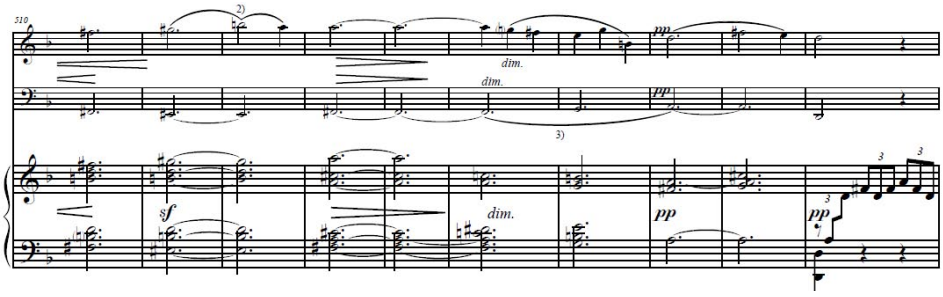
12 This facsimile is reproduced from a copy of the autograph provided by Dr. Sopart of the Breitkopf & Härtel archives in Wiesbaden, and with his permission.

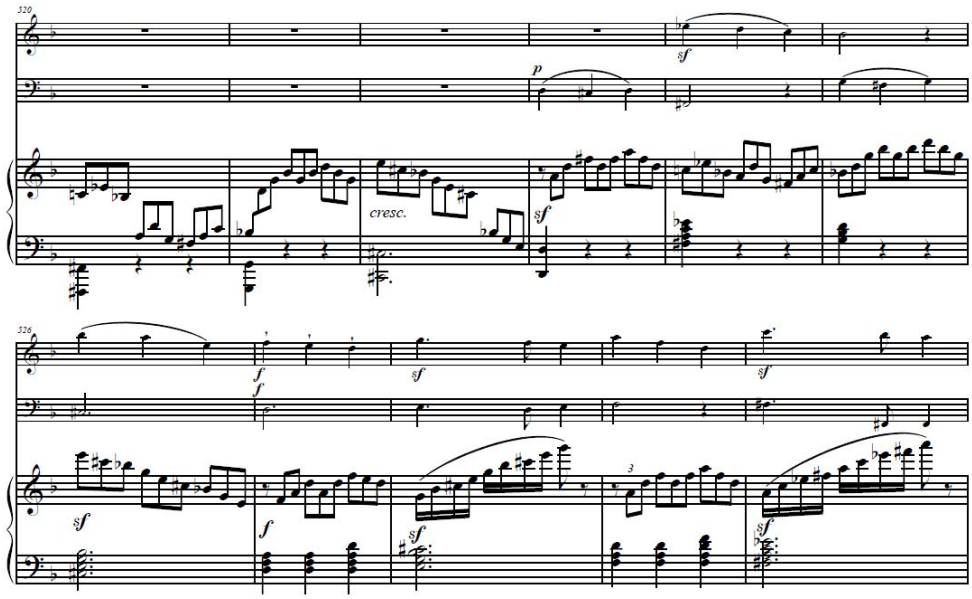
13 There were no planned attempts to separate this paste-over when I was studying the original manuscript in Wiesbaden; perhaps such attempts will take place in the future.

14 In the facsimile this page is marked as page 133 on its top right-hand corner.



Ex. 8a: Draft Version, first mvt.: *Allegro molto agitato, mm. 170-189*





Ex. 8b: Draft Version, first mvt.: *Allegro molto agitato,* mm. 510-530

Whereas the original passage states and restates a tonic harmony every two measures, the revised one does so every four. Even then, in the final version the tonic appears as the V of iv, and while the violin part of the original passage repeats the same melodic idea twice, the revised string parts incorporate one continuous line. The reasons for the revision, therefore, are the same ones that we have encountered in our discussion of hypermeasures, and the revision also adds textural counterpoint.

The second part of this transition, in both the exposition (mm. 187-200) and the recapitulation (mm. 535-548), modulated in the draft version to the relative major. Mendelssohn rejected both passages in the final version. He may have decided that this tonal shift constituted an unnecessary deviation from the otherwise straightforward move to the minor dominant in the exposition, and to the minor tonic in the recapitulation; additionally, these passages did not include any motivic or thematic substance.

Whereas the exposition of the draft version ends with a repeat sign, it is omitted in the final version. Although this may seem to be, once again, an attempt to tighten the movement's dramatic flow, we should notice that the repeat sign in the draft does not connect well to the beginning of the movement, and cannot be performed as written. We can therefore assume that Mendelssohn has placed it there as a tribute to the conventions of the form more than anything else.

As mentioned before, the development section of the movement was completely recomposed between the draft and the final versions of the trio. Although the beginnings of both developments draw from similar materials, within less than a page they go

in completely different directions. Since these sections are not comparable, we can only try to speculate as to the reasons that led Mendelssohn to abandon his original development.

One reason may be the lack of thematic and motivic complexity in the original development. The materials introduced in the exposition are subjected only to quotations, repetitions and sequences – the most basic developmental tools. Mendelssohn spends a large portion of this section employing a relatively insignificant textural idea from the end of the exposition: that of repeated notes in triplets. His use of this idea becomes reminiscent of that of Schubert, in the first movement of his last string quartet.

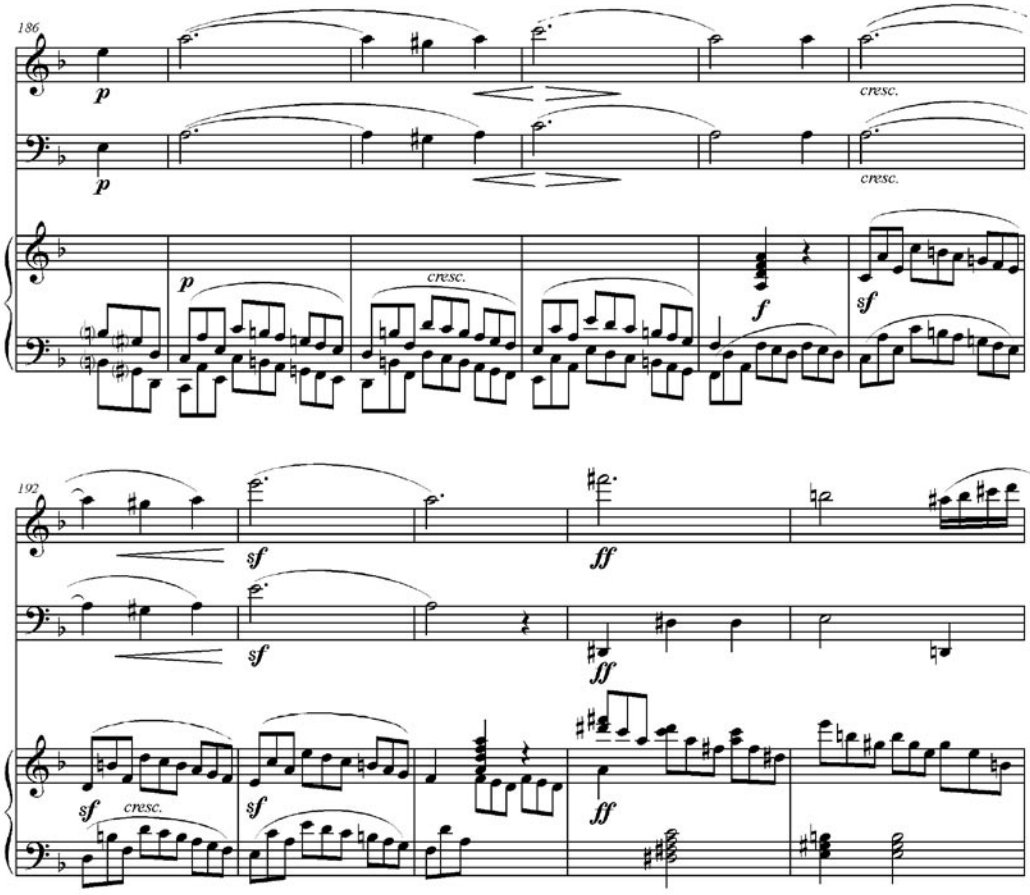
Another possible fault of the original development is its harmonic arch. The harmonic progress is extremely slow and rather static; when it finally builds up to a climax, the key reached is so remote from the desired D minor of the recapitulation, that the ensuing transition to the original key sounds rather forced. Mendelssohn may have felt that the development, as it was initially conceived, was foreign to temporal shaping of the rest of the movement, and beyond repair.

Whereas the recapitulation of the movement undergoes a treatment similar to that of the exposition, Mendelssohn's treatment of the movement's coda is as almost as harsh as that of the development: in the final version he opts to discard the bulk of it. The possible reasons for his decision are by now all too familiar: once again, the original coda, which starts in a manner reminiscent of the rejected development, breaks the drive of the movement in favor of a quiet statement of the second theme in the key of the Neapolitan. The buildup to the final statement of the second theme in the major tonic (m. 647), where the discarded coda joins the recomposed one, is extremely gradual, and incorporates but two redundant harmonic moves: from E-flat major to G minor and back. The new coda follows an overall similar tonal scheme, yet it condenses some sixty measures to approximately seventeen, discards the redundant modulations, and does not let go of the drive and excitement of the end of the recapitulation for a moment.

One final revision, which warrants special attention, is a fine example of the way Mendelssohn chooses to avoid periodic symmetry and harmonic redundancy. This particular example should also be used as a cautionary note for performers, since most interpretations that are not based on knowledge of the revision process, would fail to acknowledge the asymmetry Mendelssohn was seeking in his final version.

The passage in question is the climax of the concluding section of the first movement's exposition and recapitulation.

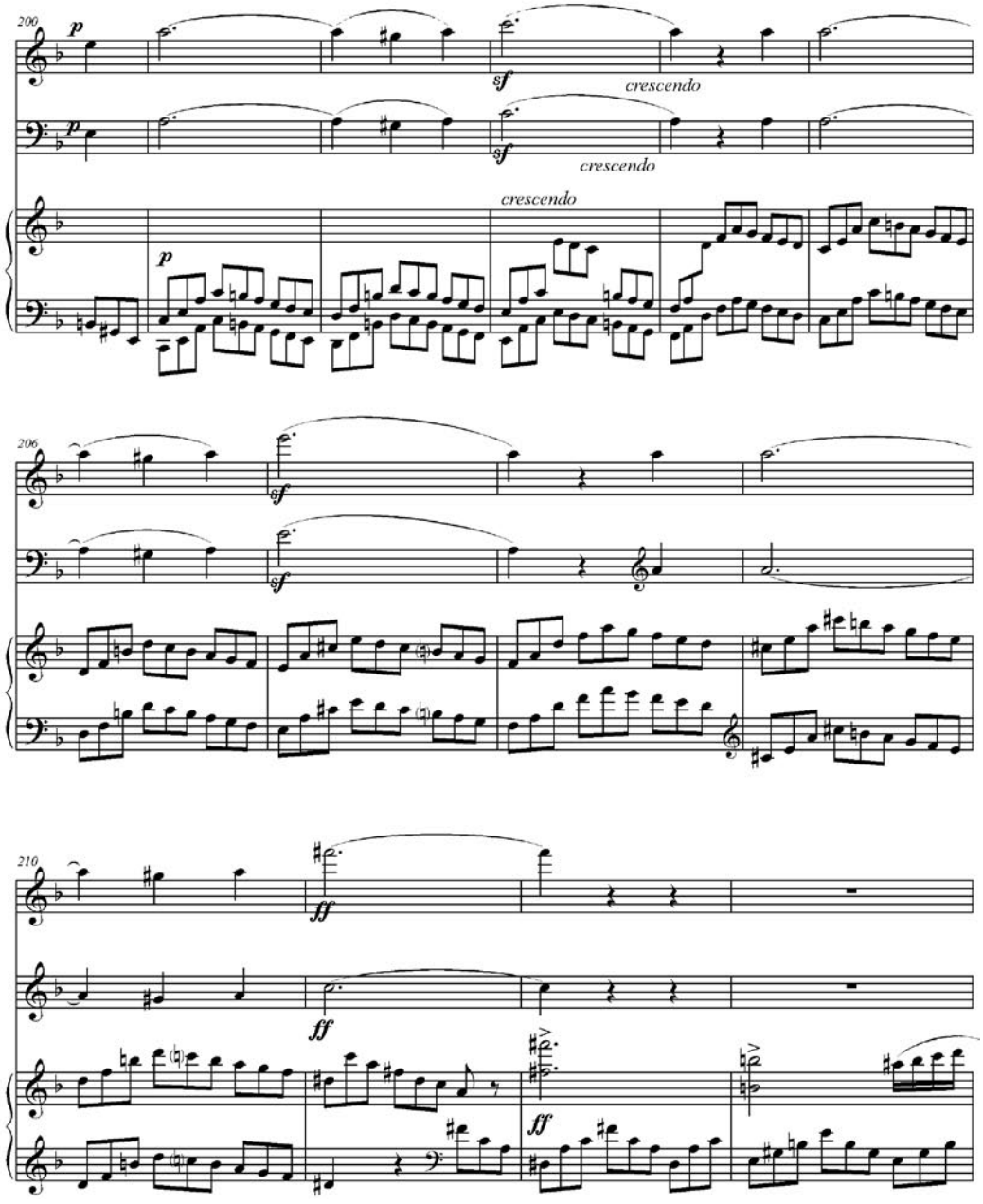
The final version of the passage is given in Ex. 9a:



Ex. 9a: Final Version, first mvt.: *Molto Allegro agitato,* mm. 186-196

The phrase that starts in m. 195 consists of nineteen measures. The twentieth measure serves as the first downbeat of the next phrase. Even if we take into account that mm. 210-213 constitute an extension of the previous phrase, we are still faced with asymmetry, which is not typical of this movement. Where should the downbeat of the hypermeasure shift?

The answer to this question is found in the draft version of this passage.



Ex. 9b: Draft Version, first mvt.: *Allegro molto agitato,* mm. 200-210

Measures 209-211, which were probably discarded in the final version because of their harmonic redundancy, clearly show that m. 212 is conceived as an upbeat measure. This not only sorts out the asymmetry of the ensuing phrase but also explains why in the final version the piano's right hand has a single note in m. 203 and a full chord in m. 204. The ***sf***s in the string parts can be understood as providing textural counterpoint rather than giving unnecessary extra emphasis to the downbeats. Most importantly, the two descending fifths of the violin in mm. 193-196 are now perceived not as heavy-light-heavy-light, but rather as heavy-light-light-heavy. These fifths, with one conceptual shift, turn from an ordinary sequence to a carefully calculated and extremely effective prolongation of tension. The ensuing climax, in its turn, is rendered almost cathartic

We can see that there is nothing random about Mendelssohn's revision of the first movement. Every change was made for the purpose of intensifying the music. Even if Mendelssohn chose to sacrifice moments of lyricism, more original textures, and broader harmonic gestures, by doing so he gained the great sweep that he lacked in the draft version, and successfully avoided the risk of falling into symmetrical, static phrases. Therefore, a study of the revisions of this iconic work lets us glimpse into the master's machinations in his quest to shape the listener's perception of musical time.

OF THE DEFILEMENT OF MUSICAL TIME

Roy Oppenheim

> "L'espace semble être, ou plus apprivoisé, ou plus inoffensif, que le temps: on rencontre partout des gens qui ont des montres, et très rarement des gens qui ont des boussoles. On a toujours besoin de savoir l'heure mais on ne se demande jamais où l'on est."[1]

[Prelude]

Musical experience is usually described thus: music is a temporal series of auditory objects, its sounds being images on the background of time. In this article, I will endeavor to challenge this description by examining our attitude to time by asking how one can characterize the space between two tones of a melody. In other words, I will seek to describe the distance between 5 o'clock and 5:01.

In this article, I will use the musical experience as a laboratory in which to research temporal experience and shed new light on the term "duration", a term central to the musical – and time – experience, In this manner, clarifying basic assumptions that are incorrect concerning the musical experience and concerning the concept of time. One of the central arguments I will be presenting, based on Bergson's philosophy, is that most philosophical difficulties concerning the concept of time, and, as a result, concerning concepts of musical experience and time, derive from the setting up of musical (real) time, called "duration", over space and measurement, thus turning it into physical and linear time. In other words: the defilement of time.

The basic assumption of this article is that musical experience, of whatever kind, is first and foremost a **temporal experience** and not necessarily an aesthetic experience – an artistic act.[2] This article will, indeed, investigate the musical act (not necessarily the artistic act) posing the question as to whether this act is an experience which has a certain duration, as do many of our day-to-day experiences, or whether it is an experience of duration itself: an experience ***in*** time or an experience ***of*** time.

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1 "Space seems to be either tamer or more inoffensive than time; we are forever meeting people who have watches, very seldom people who have compasses. We always need to know what time it is but we never ask ourselves where we are (Perec (1997), p. 85).

2 Not every musical experience is an aesthetic experience, but every musical experience is necessarily a temporal experience (consider the sound of a whistle as an example of a musical experience).

[To Grasp Duration]
Of the Space Between Notes

What is the nature of musical duration? In what terms is one to answer the question as to what the distance, or interval, is between notes "c" and "d"?[3] Are they differences of pitch? Are they differences of quantity? Do we, on hearing a melody, draw the melody notes one after the other, as points in space, in our minds, with the listener reaching them in leaps, skipping over the empty gap between them? Or could it be that the notes did and do exist in the form of a pure quality?

"If sounds are separated, they must leave empty intervals between them. If we count them, the intervals must remain, though the sounds disappear: how could these intervals remain, if they were pure duration and not space?" (Bergson, 1910, p. 87). One of Bergson's central arguments in his book "An Essay on the Immediate Data of Consciousness" is that most of the philosophical difficulties and problems concerning the concept of time originate from the status of real time, i.e. duration, over space; and I add to his argument and claim that most of the philosophical problems to do with musical experience and time are rooted in the need to observe them, to say something about them and to endeavor to preserve them.

Bergson distinguishes between two "types" of time:[4]

1. **Measurable (linear) time** – time in which space is involved. A spatial concept of time for the purpose of "acting upon" time, the creation of consciousness.
2. **Real time** – which is duration – qualitative, and therefore, immeasurable.

These are the two possible concepts of musical duration (time). In the latter explanation (2), Bergson is referring to real and pure duration, clean of any mixing, while in the first explanation (1), spatial concepts find their way in. However, what is musical duration? Would it be possible to talk about musical duration (time) without spatial terminology - without intervals, pitches, forms, scales and structures?

To do this, I will endeavor to clarify the differences between the two kinds of time and basic assumptions and characteristics of each of them; by so doing, I will place musical experience and time as either time **itself** or as **in** time.

Bergson claims that measurable time is a kind of "second stature" of real time – duration – in contradiction to today's widespread concept. Measurable (physical) time adds basic assumptions that are not connected to the quality of duration inasmuch as they allow for quantification, its measurement. Bergson indicates that time is measurable, linear and spatial only when setting down two basic assumptions:

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[3] What is the interval between "c" and "d"? A seventh or a second? Are they identical intervals? Is there a difference between the distance between notes "e" and "d" and that between notes "d" and "c"?

[4] Paul Ricoeur's book "Time and Narrative" will refer to them as "physical time" (of the world) and "temporality" (of the subject), based on Heidegger's differentiation between "vulgar" (physical) time and temporality, as the primordial time in "Being and Time". Ricoeur, as Heidegger, will add a third form of time, bridging between the two – historic and narrative time, parallel to Heidegger's world time. The principle difference between Ricoeur and Heidegger, as opposed to Bergson, is that they find temporality final, but this difference is irrelevant to our discussion.

1. **Homogeneousness** – uniformity of the points of the present in time (a state in which no point of the present takes precedence over others).
2. **Discontinuity** of duration.

My claim is that these assumptions are irrelevant to musical experience and time.

[To Grasp Tones [5] and Sheep]
Of Measurable Time: Homogeneousness, Measurement, Number and Space

"There are many instruments to measure time. For example, the bar of soap, the toothpaste and other household items that run out and time is measured by them. Then one measures by remembering and forgetting, until reaching the stars which change positions because time passes." - (Yehuda Amichai)

In the event of our wishing to characterize a flock of sheep as such, we will need to assume that all the sheep are identical (all are sheep; there is no wolf, goat or zebra among them). We have to make an **assumption of the homogeneousness** of the flock. On the other hand, we will want to say that the sheep are **different** from each other from the point of view of the place they occupy in space; for, in the case of their not being different, they would not constitute a flock. This differentiation allows for the **possibility to measure, to count**. The act of measuring, on one hand, makes the assumption of the **homogeneousness** of the group (only sheep), on the other hand assuming its **difference and discontinuity** (the space, the limits between the sheep – "Twenty One Sheep in the Flock", "The Sixteenth Sheep"). "For we must understand what is meant by the discontinuity of number. It cannot be denied that the formation or construction of a number implies discontinuity…" (Bergson, 1910, p. 82)

The acts of measuring and counting also take into account the fact that the **basic unit (the example of the sheep) is not given to division**. It is perceived as a mathematical point, with an empty space separating it from the next one – this is the space between one sheep and the next. Only with the help of these assumptions is it possible to characterize the flock as a flock of sheep and the melody as a collection of tones. "The unit is irreducible while we are thinking it and [its] number is discontinuous while we are building it up" (Bergson, 1910, p.83). This discontinuity assumes the non-penetration of the material, in this way pointing to the propensity of affinity in the terms "number" and "space". "Impenetrability thus makes its appearance at the same time as and when we attribute this quality to matter in order to distinguish it from everything which is not matter" (Bergson, 1910, p.89).

Measurement and number, assuming homogeneousness and discontinuity (differentiation), thus suggest the concept of space. "Space is, accordingly, the medium in which our mind places the number […] addition implies a multiplicity of parts simultaneously perceived"

[5] "Tone" is to be defined for the purpose of this article as sound or noise perceived as part of a musical experience, however, not necessarily related to western tonal systems. (Notes are referred to as the symbols for tones in the musical notation system).

(Bergson, 1910, pp. 84-5). In other words, once the measuring and counting of the flock of sheep has begun, we also assume the existence of the meadow – the juxtaposition of the sheep. The act of measuring enforced on the duration includes concepts of space, uncharacteristic of time, allowing one to "act upon" time on one hand, while changing its quality and its temporal essence, by "taming" it, on the other. "…We are compelled to borrow from space the images by which we describe what the reflective consciousness feels about time and even about succession; it follows that pure duration must be something different." (Bergson, 1910, p. 91). The assumption of homogeneousness required in the act of measuring is the assumption of the absence of the qualitative aspect.[6] "…When we make time a homogeneous medium in which conscious states unfold themselves, we take it to be given all at once, which amounts to saying that we abstract it from duration." (Bergson, 1910, p. 98). Duration, once it is discerned in a homogeneous environment, is, in other words, a hybrid term, and is connected, against one's will, to the concept of space in an attempt to "tame" it, to leave it in place, to determine it. "…Time, conceived under the form of a homogeneous medium, is a spurious concept, due to the trespassing of the idea of space upon the field of pure consciousness." (Bergson, 1910, p. 98).

Therefore, in what manner do we grasp the concept of musical duration (the space between two tones)? Is it as basic, pure duration, devoid of any mixing, or could it be that the concept of space has crept into it? "Might it not be said that, even if these notes succeed one another, yet we perceive them within one another, and that their totality may be compared to a living being whose parts, although distinct, they permeate one another just because they are so closely connected? The proof is that, if we interrupt the rhythm by dwelling longer than proportional on one note of the tune, it is not its exaggerated length, as length, which will warn us of our mistake, but the qualitative change thereby caused in the whole of the musical phrase […] We can thus conceive of succession without distinction, and think of it as mutual penetration, an interconnection and organization of elements, each one of which represents the whole, and cannot be distinguished or isolated from it except by abstract thought." (Bergson, 1910, pp. 100-1).

Observing melody tones as objects existing one next to the other is deceiving, distorting the nature of musical duration, due to the "stealthy" inserting of the concept of space into it, this stemming from the presumption of homogeneousness. This observation sees a collection of tones as a flock of sheep. In order to measure tones, one must make them homogeneous, separated, space-related, "kinds of sheep"; but the nature of melody tones is different to that of sheep. Tones, as opposed to noise/sounds and sheep, comprise of the whole melodic "flock" as anticipation and retention (inasmuch as the hand carries with it the arm and shoulder).[7] Musical time is a coming into being in which each moment is loaded

[6] The assumption of the homogeneousness of points of the present in time is something that is determined in an arbitrary manner and as an axiom for the purpose of quantification and measuring.

[7] Similarly to Husserl's 1905 lecture model (see appendix). I do not wish to present the model in this article, as this model also takes into account space and the tones as building blocks of musical structure, in contradiction to my central argument, to be presented later in this article, that musical duration takes precedence over tones from a phenomenological point of view and the transcendence is of duration itself; the establishment of sounds is the result of an attempt to preserve and grasp (by observing) the experience and the musical duration.

with all of the past, carrying amidst it the whole of the future, as opposed to the flock of sheep. From its very essence, musical time is **heterogeneous, continuous, and not given to measurement.**

(Illustration no.1)

The assumptions of homogeneousness and discontinuity mean that the qualitative is turned into quantitative, in an attempt to measure and count – turning the durational into spatial. Duration is both an identical and a changing "entity", allowing for the consecutive and concurrent, and therefore intrinsically lacking any concept of space. "In obtaining the measurement we, as it were, forget what has been measured as such so that nothing is to be found except distance and number" (Heidegger 1996, p. 384).

We clock-users and note-readers have been trained to use the latter concept of time, the mixture of duration and space, homogeneous, discontinuous, measurable time, and this is a kind of obsession that does not leave us in peace. "We project time into space" (Bergson, 1910, p. 101) and music into the geometric. We turn the "following tone" into the "adjacent note", the "adjacent note" into the "higher or lower note", the measure (bar) into a place, the musical rest into a space, and the scale into something constructed of one interval following another, in order to rise up and escape from the essence of duration into spatial time.[8] Nevertheless, "…it (duration) is not a quantity, and as soon as we try to measure it, we unwittingly replace it by space." (Bergson, 1910, p. 106).

Musical duration is not the only example of time "not contaminated" by spatial concepts. Dream time can also successfully preserve the quality of temporal duration without the interference of space. In dreaming, as in music, there is a sense of time, duration and movement, but these are not given to measurement, not given to quantification. In dreaming, "we no longer measure duration, but we feel it; from quantity it returns to the state of quality…time … has become quantity by being set out in space" (Bergson, 1910, pp. 126-7). Inasmuch as no person will measure how much time it took him to get from one place to another in a dream, so is there no meaning to measuring the distance and interval between notes "c" and "d", as there is no gap between them. This is a categorical error, a question regarding time with an answer in terms of space, a question regarding tones with an answer in terms of sheep.

[8] The musical term "measure" (bar) refers to measurement. The question is: what is there to be measured?

[To Grasp Notes]
Of Symbols Serving Measurable Space-oriented Time

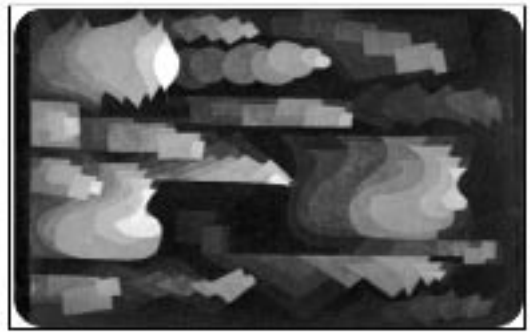
"If, finally, I retain the recollection of the preceding oscillation together with the image of the present oscillation, one of two things will happen. Either I shall set the two images side by side, and we then fall back on our first hypothesis, or I shall perceive one in the other, each permeating the other and organizing themselves like the notes of a tune, so as to form what we shall call a continuous or qualitative multiplicity with no resemblance to number. I shall thus get the image of pure duration ; but I shall have entirely got rid of the idea of a homogeneous medium or a measurable quantity." (Bergson, 1910, p. 105). Musical experience is defined by Bergson as undifferentiated, qualitative multiplicity. Between melody tones there is no gap or interval and even no boundary, but an **affinity**, meaning they penetrate each other as opposed to physical, spatial objects, e.g. sheep. Tone heterogeneousness and consecutiveness do not allow for measurement and quantification but for qualitative, undifferentiated multiplicity.

"There is no form, since form is immobile and reality is movement. What is real is the continual change of form […] form is only a snapshot view of a transition."(Bergson, 1911, p. 301). Therefore, precisely the musical discussion itself, saturated with space-oriented time expressions, changes our comprehension of musical time (duration) concepts (as well as other musical concepts). Musical form, for example in musical discussion, is reduced to visual form. Musical works and movements are conceptualized by visual symbols like notes, words and letters (such as ABA as in Minuet-Trio-Minuet). It is as if it were assumed that juxtaposition, i.e. one placed next to the other, is identical in meaning to being one later than the other. Symbols and notes, by their nature, must be spatially located one next to the other, in complete opposition to tones and musical movements which occur one later than the other, a relation of affinity, which is a kind of qualitative synthesis. Musical duration is a constant act of becoming, where each moment is charged with the past and impregnated with the future. For example: the recapitulation in sonata form comes later than the development section and is placed neither next to it or after it, thus rendering it different to the exposition which appears earlier, even if the same tones are played in it, marked as "A-B-A".[9] **"Before and afterwards are not necessarily earlier and later, are not ways of temporality"** (Heidegger, 1992, p.18).

In my perception, the note (the system of musical notation) is the central opening from which space wields its way into musical duration. The role of the notation system (notes) is the preservation and conceptualization of the musical experience (the possibility of imagining or thinking it) – precisely what the musical tone does **not** allow. Notation, similar to a photograph, will "freeze time", granting it a permanent shape, visible to the eye, a spatial place for what is, by nature, changing and "displaced"… transitory. Notation, therefore, preserves music, but, just as it exposes it, it conceals it. While notation exposes the "pitch" of tones, it, at the same time, hides the affinity between

[9] It would be preferable for musicians to relate to the concept of musical form as Aristotle viewed the concept of form: as a purpose, a final implementation, not reducing this concept to a visual form which, in addition to reducing the concept, misleads and deceives as to the nature of musical duration.

them, thus creating the illusion that "being adjacent" and "delaying" are identical relationships, that tones are objects with spaces between them which can be drawn (See illustration no. 2).



(Illustration no.2 "Fugue in Red", Paul Klee)

The role of every set of symbols is to point out objects. In my perception, in the case of the musical experience, it is the musical notation **itself** that creates them. Musical notation obscures continuous musical duration and constructs an illusion of gaps (which do not exist) between the tones, represented as objects. This is an illusion which stems from our space-oriented conceptualization of musical time. This is a problem that is not an issue of duration, a fictitious problem, the origins of which lie in a categorical error, as has been mentioned.

Musical melody and action are experienced as motion, as a becoming, and not as a series of objects in time (as erroneously presented by the notation system). The premise in the discourse regarding the musical experience that the melody and musical movement are a collection of tones - a collection of auditory objects - is what is misleading. Melody notes are produced **only** when the music's motion is frozen, when endeavoring to preserve it, in retrospect. The attempt to preserve motion, to preserve anything temporary, establishes the creation of "bizarre" auditory objects that are grasped neither as properties nor as symbols of anything.

In my perception, the musical experience, when described phenomenologically, is first and foremost an experience of the act of becoming, of temporal motion, and not the movement in time of a series of objects. Only in the attempt to preserve it has this temporal motion (duration) become a series of "objects" in time – figures on a temporal background, parallel to a flock of sheep on the background of a meadow. And so, only if we still insist on describing the musical experience in visual terms, can the most accurate way to describe it be as a **background with no figures:** musical experience is the temporal background of human existence with no space and no objects.

Therefore, comparing pictures, such as that of Klee, with the motion of the musical experience, is erroneous and misleading, as is the comparison of reading music notes to

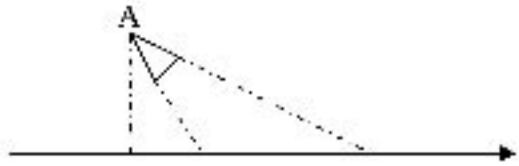
that of reading a book or watching a film. Literature and cinema are experiences **in** time, as it is possible to easily discern between real time, i.e. the duration it takes to read the story and to see the film, and the time of happening of the story or the plot. This is not the case with the musical experience! In the musical experience there is a complete correspondence between real time (duration) and the time of the musical action, and therefore **tones cannot be perceived as figures on a temporal background (objects or symbols), but as an auditory embodiment of time, of duration itself.**[10]

Notes, symbols and language do not have the ability to grasp real time, musical duration or continuous movement, without freezing the motion and turning it into a collection of moments, a collection of sounds. "..It has no sign to express what strikes our consciousness in succession and duration. It no more applies to becoming so far as that is moving, than the bridges thrown here and there across the stream follow the water that flows under their arches." (Bergson, 1911, p. 338). We tend to solidify and freeze our impressions in order to convey them by means of sign and number; this is a kind of taming of real time, a taming that borders on the distortion of the essence of musical duration. "…a duration whose moments permeate one another. By separating these moments from each other, by separating out time in space, we have caused this feeling to lose its life and color. Hence, we axe now standing before our own shadow." (Bergson, 1910, p. 133).

External Point of View: Observation and Listening

For the purpose of clarifying the problem of the erroneous comparison, however almost obvious, between continuous duration and a line in space, between concealed musical form and spatial form and the axiom, Bergson presents the following example: a physical point "A" moves along the surface of a line. In the event of this point being aware of its movement, it would sense that it was changing and would engage in a kind of tracing process. But would this tracing bear the form of a line? The answer to that question is positive only if the point can rise above the line along which it is traveling and simultaneously perceive a number of points positioned next to each other. Such a point needs to be not only aware of itself, but also of the space around it, and, to do this, it would need to set down a plane on which the line is situated (like the shepherd of the flock who can see the flock as a flock, like a sheep that is outside of the flock or like a swimmer who can look down from above at the trail of water he or she has created)."Succession exists solely for a conscious spectator who keeps the past in mind and sets the two oscillations or their symbols side by side in an auxiliary space." (Bergson, 1910, pp. 108-109), and I will add to this – and not one after the other!

[10] In the musical experience there is no possibility of summarizing, of acronyms, as in books or films. While "RIP" and "Rest in Peace" bear the same meaning, their temporal experience and their duration, and even their acoustic interference, are different. So are "R.S.V.P." compared to "Répondez s'il vous plaît" or "UFO" compared to "Unidentified flying object". One cannot find acronyms in the Schenker method or in harmonic analysis because they do not carry the obligation of the experience itself, its whole meaning being its temporal being.



(Illustration no. 3)

That is to say, in order to perceive a line as such, or a flock as a flock, a person (or a point having awareness) must stand outside of it. A point having awareness but lacking the concept of space (unable to stand outside of its own movement) will not be able to perceive the tracing processes of situations or tones in the form of a line. "But its sensations will add themselves dynamically to one another and will organize themselves, like the successive notes of a tune by which we allow ourselves to be lulled and soothed […] pure duration might well be nothing but a succession of qualitative changes, which melt into and permeate one another, without precise outlines, without any tendency to externalize themselves in relation to one another, without any affiliation with number: it would be pure heterogeneity. …[because] from the moment when you attribute the least homogeneity to duration, you surreptitiously introduce space." (Bergson, 1910, pp. 103-104).

Therefore, one must distinguish between two manners of hearing: **observation** and **listening**. One cannot **observe** music as duration, only as time that is intermixed with space (measured, homogeneous time)[11]. It is, however, possible to **listen** to time as duration without intermixing concepts of space: this is the fundamental action of the pure musical experience. The aforementioned is not about observation from an outside viewpoint but about attentive listening - a manner of hearing that does not surreptitiously introduce concepts of space into the duration, or quantitative observation and homogeneousness into qualitative and continuous motion of the duration.

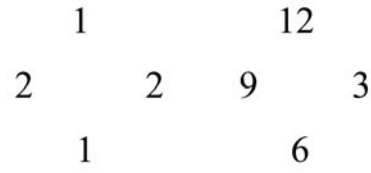
The description of musical time, as I present it, based on Bergson's perception, challenges Kant's perception of time as a form of observation or a model by which reality is interpreted; a model allowing for the organization of objects and events in specific structures. In Bergson's perception, as opposed to Kant's, basic time (duration) does not belong together with observation. Time is a framework that takes precedence over the distinction between observation and thought and is not seen as a deviation from it, a viewpoint outside of it. "He who installs himself in becoming sees in duration the very life of things, the fundamental reality" (Bergson 1911, p. 317)."Time [Duration] is the reality itself". (Bergson 1911, p. 34).

[11] This is the definition of "a fourth dimension of space, which we call homogeneous time" according to Bergson's perception (Bergson, 1910, p.109).

In my perception, "auditory observation" "outside" of the music, the listening that is diluted with observation, replaces pure musical experience, listening, hearing of duration as duration devoid of the mixing of concepts of space. This observation turns the experience of duration into an experience which has a specific duration, the experience **of** musical time into a musical piece **in** time.

Motion and Order

This attempt to characterize musical duration as different from experience in time can be examined from an additional critical point of view with regard to the accepted approach that music is a series of sounds in time, consisting of repetitions and contrasts, and that its motion is a kind of illusion, a by-product of repetitions and contrasts. The main problem that arises from this approach is that a series does not assume time, in fact, almost cancelling it. Repetition and contrast do, however, establish order, but not time and not motion. One must seek the establishing of musical time elsewhere. For example, the series of numerals such as [1,2,3,4] is a spatial series only, not a series in time. Likewise, the cyclic series [2,1,2,1] is not in time – **cyclicality does not necessarily establish time,**[12] which is true even if the series is spread over a surface and not on an axis:



Numbers and symbols do not occur earlier or later as they are not within time. All the series created by repetition and contrast, even if they are linear or cyclical, require space but not necessarily time, observation but not necessarily listening. This is also where the confusion between change and movement began: in all movement there must be change, but change (like repetition and contrast) does not necessarily require movement, for **"the philosophical problem" in the perception of melody AS melody is not in the change that occurs in it from tone to tone, but in the explanation of the sensing of its continuousness, its motion.**

[12] This erroneous approach also exists in the perception of day-to-day time. The cyclicality of day and night, for example, does not establish the duration and the time of day. Only by viewing it "from the outside", freezing the movement of life, can one perceive its cyclicality. The perception of cyclicality assumes homogeneousness, a lack of continuity, and a lack of permeation of day and night.

The origin of the experience of musical movement, to my understanding, can be found in temporality, in duration. The perception of order (repetition and contrast) not only does not establish time and duration, it is also a process external to musical duration, forcing the latter to behave as an experience and series **in** time, much like point "A" did when using an outside viewpoint in order to define its movement as a line. This action (of observation) is exactly like the action of reading notes, a secondary way of perceiving musical duration, mixing duration with space, trying to freeze it, thus endeavoring to deal with the fact that it is temporary; that is, all the demands that are not in the nature of musical duration. The musical experience is first and foremost an experience **of** duration, a temporal coming into being, where, only in the cognitive process, in retrospect, can one find in its repetitions, contrasts, and order. Repetition and contrast, without the premise of duration as the place for the "unheard of the heard", cannot establish the experience of musical movement.

Musical examples that clarify this argument are the phenomenological description of the difference between a chord and an arpeggio and the meaning of serial music. The chord and the arpeggio are musical structures "built" of the same series (tones and intervals). They are two **different** musical phenomena of the **"same"** series, where all that distinguishes between them is duration – time. This example clarifies and emphasizes why one cannot reduce duration and motion to concepts of series, repetition and contrast, and concepts of space. As opposed to that, an extreme case of the musical experience as a series **within** time is serial music. This music, within its own definition, turns itself into a series devoid of time, a series devoid of music, as it relates to tones as objects (spaces) in an arithmetic series, placing repetition and contrast as the basis for musical duration, while the latter has nothing to do with repetition and contrast. They are changes in time, not a motion of time – duration.

[To Grasp a Rest] – 4'33"

A Phenomenological Analysis of the Musical Rest[13]

The appearance of the musical rest is, to my taste, the best and most extreme example of permeation, of the defilement of musical time. Why is an empty page in the middle of an article incomprehensible? Why is it seen as an error or as a printing problem? It is because it is not a part of the logic of the article's jargon. A rest in the spatial and linguistic sense is a divider, a boundary, a gap, whereas the perception of the concept of the rest in musical experience is absolutely different from the day-to-day concept of a rest (pause). Our day-to-day perception of the concept of the rest is of a separator, producing a gap **between** things: a break at school, an intermission at the cinema, time out, a commercial break; and yet, the musical rest does not function like other breaks. The musical rest functions as a tone among tones, and its spatial perception as "a divider of tones" is erroneous and misleading. The musical rest, present within the musical piece, as opposed to a break between pieces, functions **as a tone with no acoustic interference,** as a part of the melody.[14] The musical rest is neither a barrier nor a border, just as it does not necessarily produce the release of tension. Its function is identical to that of the other tones despite its slightly different characteristics (the musical rest, indeed, lacks pitch and timbre, but it bears a number of duration measurements, exactly as do the other melody tones).

To demonstrate the character of the musical rest, I will focus on the beginning of Beethoven's Symphony no.5 as an extreme example of the musical rest.

(Illustration no. 4)

The "Fate" motif that opens Beethoven's Symphony no.5 (the piece's hallmark) is not a motif of two sounds where the first is repeated three times – "G-G-G-E Flat". The first tone of the motif is the musical rest of a duration of an eighth note (the rest has the identical duration of the second note of the motif), only after which there appears the triple repetition of the second note (G) followed by the third note (E Flat). That is to say that the motif is "Rest-G-G-G-E Flat" (see an example of the notes in Illustration no.1 above). **Not performing** the musical rest will change the character of the motif as a kind of triplet already constituting a variation on the motif.[15] This example, wherein the musical experience begins with a musical rest, a motif where the musical rest **is not** between two

[13] Listen to the following works: John Cage's "4'33", Schnittke's Sonata for Violin and Piano no.2 and Chopin's Prelude no.4 in e minor.

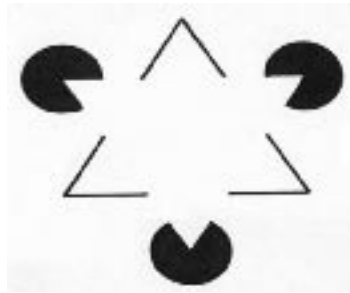
[14] As opposed to the first, one can cough and applaud in the second.

[15] Beethoven, indeed, uses these inverted variations of the motto as a triplet and those appear in the continuation of the symphony, mostly in the third and fourth movements of the piece (listen to the entry of the horns in the third movement).

tones but "exists between" the silence preceding the onset of the music and the first tone that bears acoustic interference, requires, to my liking, the rejection of the musical rest's meaning as a "gap between", a divider, a boundary or a separator.

Inasmuch as the sound is "transparent", with no acoustic interference, it facilitates an "entry to beyond" the acoustic interference, thus exposing the musical duration – the temporal background that makes the musical experience possible -. in other words, the **"unheard of the heard"**.

In my perception, should we wish to find the visual parallel to the auditory musical rest's phenomenon, we could compare it to the phenomenon of the white triangle in Illustration no. 5 below. We see the white triangle despite its being sides-less, just as we hear the musical rest despite it being without acoustic interference. Just as the white triangle is perceived as a form, the rest is perceived as a tone. This is the example of an absence that is present: the sides-less triangle is a visual parallel to a tone lacking acoustic interference.[16]



(Illustration no. 5)

The description of the musical rest **as a tone lacking acoustic interference** clarifies a number of points that have arisen in our discussion of musical duration and measurable time, bringing it to a level of absurdity.[17] The musical rest clarifies the lack of homogeneousness and the lack of differentiation of melody, of the "tone-flock". The assumption of homogeneousness somewhat dissipates when the musical rest is perceived

[16] It is important to point out that the white triangle is understood by all who view Illustration no.5 – there can be no doubt. The characteristic of this picture as a visual illusion (by natural sciences as well as psychology) does not oppose the perception of the triangle as such. The problem arises when the characteristic of the illusion is expressed using erroneous terms, as happens in natural sciences and psychology. In my perception, the "visual/auditory illusion", like the triangle or the musical rest, is not an error in perception that requires explanation. It is an experience, a phenomenon that serves as the starting point of a comprehensive description of the visual/auditory perception (see M.Merleau-Ponty's "Phenomenology of Perception", Introduction, paragraph 1).

[17] Husserl's model (see appendix) cannot describe the musical rest as a tone as it is a spatial model (how would it describe the musical rest's transcendence, its retention and pretension?) Constant transcendence in musical experience belongs to duration and not to the musical tone.

as a melody tone (despite its lack of acoustic interference), just as a black sheep is not a regular sheep, although it is a part of the flock. In addition, if the musical rest is not a gap between tones, but a tone like the other tones, the assumption of dissimilarity – the lack of continuousness – would also dissipate. Thus, the example of the musical rest turns the possibility of "auditory observation" and measurement into something that is devoid of any content to do with musical duration, turning the question of the gap between tones into a meaningless one; for although it is represented in notes, nobody would consider asking what the gap or boundary between the tone and the rest is…[18]

In conclusion: measurable (physical) time is time that mixes concepts of space (a kind of temporal architecture) within itself. For time allowing for premises of homogeneousness, separateness and discontinuity, one must, in order to grasp it, take an outside viewpoint, observing it as if it were a thing, an object and a structure. This is time that is constructed as a second stature, on top of duration, on scaffolding that is not its own, but borrowed from spatial concepts. **Linear, homogeneous time has come about as the result of our obsessive need to observe, measure and quantify things, thus imposing on musical duration traits that are not its own, traits that we currently accept as obvious and fundamental characteristics of the musical experience.** "Deep-seated conscious states [as melody] have no relation to quantity - they are pure quality; they intermingle in such a way that we cannot tell whether they are one or several, nor even examine them from this point of view without at once altering their nature. The duration which they thus create is a duration whose moments do not constitute a numerical multiplicity..." (Bergson, 1910, p. 137).

Unlike measurable time, **musical duration** is continuous (not given to division into separate objects), heterogeneous in essence, not constructed of homogeneous points of the present and, thus, also immeasurable and not given to quantification – a quality not given to quantitative reduction. Musical duration is not a kind of object. Musical duration, in contrast to measurable time "…avoids ideas of flux and flowing, which make us think of a liquid substance and announce the possibility of the measure of time" (Levinas, 2000, p. 7). Musical duration is a "being" unlike other objects, an essence always in a constant state of becoming, continuous motion without any movement that transcends itself; it is motion that embodies the temporal background of human existence, the unheard of the heard.

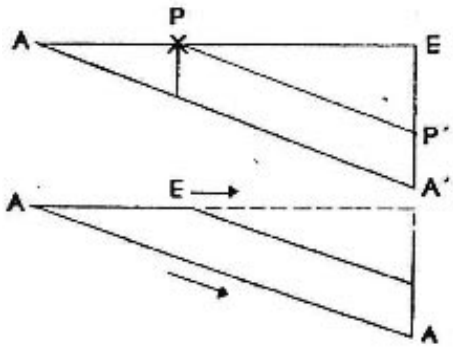
Musical experience and duration, unlike the concept of the musical piece, as derived from spatial time, are not **in** time but are time itself – an experience **of** duration, not an experience having duration….time that is not defiled.

"We cannot kill time without injuring eternity." (Henry David Thoreau)

[18] Returning to the hallmark of Beethoven's Symphony no.5, the image of the motif as "fate knocking on the door" not only fails to promote musical understanding of the motif, but also renounces the role of the musical rest in the motif (In what sense could a rest – a silence of a defined duration – exist when knocking on a door?)

Appendix

The model used by Husserl in his lectures on the awareness of time in "The Running-Off Phenomena - The Diagram of Time" (1905, clause 10, page 28)



AE – The series of now points.
AA' – Sinking into the past.
EA' – Continuum of phases (Now-point with horizon of the past).
E→ – The series of nows perhaps filled with other objects.

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THE TIME COMPONENT IN ARVO PÄRT'S "NEW SIMPLICITY", OR WHAT IS THE MEANING OF A REST WHOSE LENGTH IS OF ZERO HALF-NOTES?

Amit Weiner

"Music turns time into audible sound" (Suzanne Langer)[1]
"But one moment, Suzanne, how is it possible to hear a rest of zero half-notes?"
(Amit Weiner)

Introduction: Absurdities, Illusions and Unanswered Questions

Zero half-notes, you ask yourselves? Could there be some mistake in the title of the article? Is there any logic here in a rest having the length of zero half-notes? And how would it be indicated in the musical notation system that is familiar to us? And, say it is zero half-notes, why not have a rest of zero quarter-notes or zero whole-notes? And is it equal in value to a **note** whose length is of two half-notes? Is there any logic in all of this?

Indeed, there is logic! Pure, unadulterated logic, as we will discover by the end of the article. These absurd questions are the result of the conspicuous processes the world of music has undergone (as, also, has the world itself) over the course of the 20th century: mathematization and the will to control. The subject of discussion is the act of one process: mathematization and technology cause the illusion of control. But it is merely an illusion as we will see in due course. As the catastrophes befalling the world in the 20th century increased and strengthened, music became more and more mathematical and the illusion of control over musical material increased. The First World War brought about Dodecaphony (five years after the war, in 1923) and World War II introduced "Total Serialism" (seven years after the war, in 1952); Schönberg "is dead"[2] and, with him, so is Dodecaphony. Each war had brought about the desire for more accuracy in the composing down of music and more control over its parameters. Following each catastrophe, composers made the decision to no longer surrender themselves to feeling: this feeling was not to be allowed to return. Feelings had caused disillusion and had

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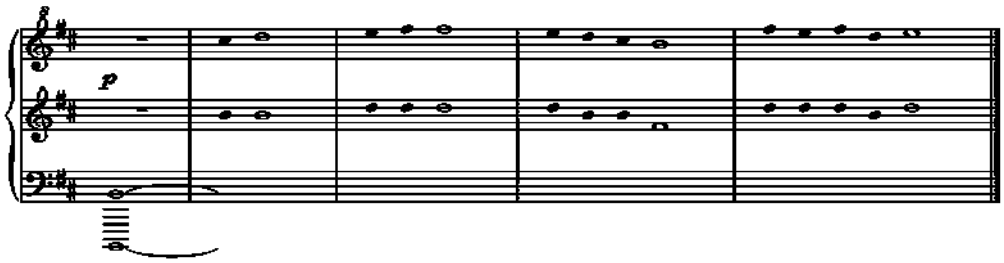
1 This appears in Naphtali Wagner's book "*Music Then and Now*" Tel Aviv, Mappah Publishing, 2004 page 83.

2 From the title of an article by Boulez, who lit the fire of Serialism in the World, winning himself the name of the "serial manifesto". Boulez, Pierre "Schoenberg is Dead" from "Stocktakings from an Apprenticeship", New York, Oxford University Press, 1991.

led to frightful results. "This time we will work with the mind", composers said to themselves, hoping that, with that, they had found the solution to their distress. Was this a mere intellectual illusion and no more?

Indeed, in due course, we will understand that the aspiration for order and absolute organization always leads to chaos (and not only in music. For example, take Nazism and its results.) This is the paradox outlined here: with absolute order, just like the **lack** of absolute order, both, actually, lead to chaos.

The mathematization of music is characteristic of twentieth century styles that are different from each other in the most extreme ways: there is no other period in the history of music in which such different styles can be found, styles such as the "Total Serialism" of Pierre Boulez and the "New Simplicity" of Arvo Pärt[3], the latter shown in Example no.1 as follows.



Example no.1 "Aliinal – For Alina" for piano, bars 1-5, Arvo Pärt (1976)[4]

Look at Example no.1, compare it with works by Boulez, and see if this convinces you: is there any period in the history of music wherein one can find two such opposing styles at the same time? Is it possible that the discipline of mathematics, in fact, unifies these two different worlds? And how does all this connect to the rest of zero half-notes in the title of the article?

In order to answer these questions, which touch on the component of time in Arvo Pärt's "New simplicity", we need to begin by observing this component as it appears as an expression of "Total Serialism".

The Component of Time in "Total Serialism":

"This was the post-Hiroshima period…Something needed to be built on the ashes of the victims of the war of Fascism and Nazism. And we did it" (Luciano Berio)[5]

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[3] Arvo Pärt (1935-)

[4] Arvo Pärt "Für Aline" © Copyright 1990 by Universal Edition A.G., Wien/UE 19823

[5] From an interview with Berio that appears in the book: Ron, Hanoch *Schönberg is Dead – The Avan guard Music, His Rise and Fall*, Tel Aviv, 2009

Background:

"The post-Hiroshima period"…"something needed to be built"…these finely distinctive expressions of Berio do not leave room for doubt: Europe, being destroyed (musically and physically) after World War II was looking for a new messiah. The previous messiah had been a disappointment. He had been too emotional, too romantic. He had been too Jewish (Schönberg) or he had been too anti-Semitic (Hitler). He was still working with the older forms of the nineteenth century (such as sonata form; such as genocide). Long live the new messiah (Boulez, the big brother always watching you) who is devoid of feelings. Long live cold intellect! Rows of 12 components in every parameter – finally now there was complete control over the material! Away with Romanticism!

"Total Serialism" was, in effect, the world of music's first reaction to the trauma that had caused World War II. It is no wonder that "Total Serialism" had grown out of an industrial German town with a significant Nazi past - Darmstadt. From Nuremburg it would have been too much. Berlin was also still being reconstructed from ruins. But Darmstadt? The perfect choice. No one would notice it. The Germans were, allegedly, trying to forget the past (but only allegedly). Complete emotional alienation and total mathematization had led them to the extreme antithesis, to the excessive emotionality of Hitler's speeches of the 1920's and 1930's, to emotionality that had enraptured millions. The war had left European composers in a deep emotional crisis and in the state of searching for a way to express through the medium of music what had befallen them and the world. Theodor Adorno's well-known aphorism "To write poetry after Auschwitz is barbaric"[6] was still echoing in the ears of the first serialist composers. And the writing of poetry, that is, lyrical and emotional writing, had now become considered as anarchism and a focus of ridicule in the eyes of the cold, anti-Romantic intellectuals, declared by the latter in the 1950's. The mathematization of every musical parameter – this was the serial message as expressed in an article of Pierre Boulez, whose title is loaded with gun powder "Schönberg is Dead" (resemblance to Nietzsche's "God is dead" is not coincidental), and was designated to shake up conservative composers, to arouse young people into a kind of rebellion of the kind of "the king is dead; long live the new king"[7] Oh, those Germans! They thought we would not be paying attention. They thought the world would not notice that, seven years after the previous king's suicide, they had brought to the world a new, totalitarian message in the guise of the escape from the former totalitarianism. "Totalitarian Serialism" – a sobriquet even Boulez himself had blurted out in an unforgettable Freudian slip[8]. And who would be the new leader? Who, if not the French composer himself, the new leader of the rebels. A Frenchman! How convenient! Nobody would notice the watchful eye of the new big brother….

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6 Adorno, Theodor, An Essay on Cultural Criticism and Society page 34 in "Prisms", translation S. & S. Weber, MIT Press, Boston, 1967

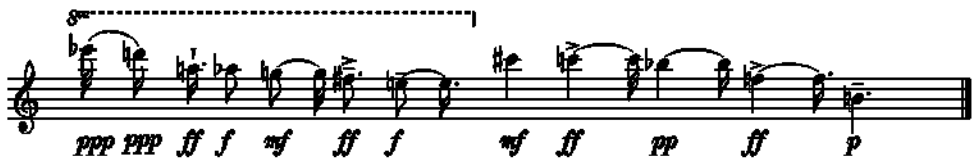
7 See on this article and on the rebellion of young people led by Boulez: Hanoch Ron ibid. pages 7-16. On the other hand, a cynical criticism by Maurizio Kagel can also be found in Boulez' article. "Although Boulez shouted 'Schönberg is dead' twenty years ago, he was conducting works by Schönberg twice a week. His utterance was, indeed, of empty words". Ibid. page 104

8 Shaked, Yuval "*Developing Music*", Tel Aviv, Dvir 1992

Approach to the Time Component:

One of the most complex aspects of "Total Serialism", perhaps more than in any other 20th century style, is the use of the time component which had given serial composers complete control, mathematically speaking. The tendency of Serialism towards mathematical principles finds its strongest expression here in a musical parameter that is basically mathematical – rhythm. This parameter allows for the discipline of mathematics to work in perfectly, resulting in Rows of 12 durations leading up to the most complex of rhythmic manipulations, more so than the world had seen till then.

One of the first works to present this practice is a work by Olivier Messiaen's "Mode of Durations and Intensities" for piano, whose tone row is shown in the example below:



Example no.2: the row forming the basis of the work -
Olivier Messiaen, "Mode de valeurs et d'intensités". (1949)

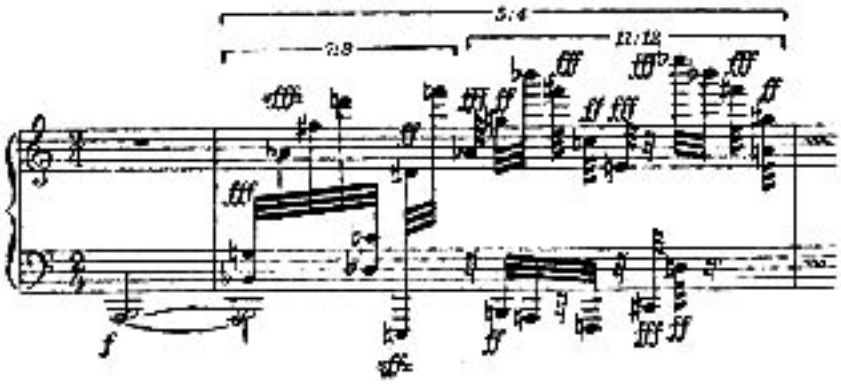
In the example, it can be seen that each note of the row is a 32th note longer than its previous note, achieving, in this way, 12 durations which Messiaen called "chromatic durations".[9] In addition, each note in the row is furnished with its own specific dynamic marking, with a total of six dynamic markings (and not twelve, as would be typical of "Total Serialism"). An interesting point to mention is that this tone row also formed the basis for Pierre Boulez' work "Structures 1"[10] and both these works constituted prototypes for the whole serial style.

From time to time, as has been mentioned, the discipline of mathematics led serial composers to absolute absurdity. Take a look at the following example from Karlheinz Stockhausen's "Klavierstücke 1"[11]:

[9] Griffiths, Paul. "*Modern Music and After*", page 29-30, New York, Oxford University Press, 1995

[10] For a comparison between the two works and an analysis see: Whittall, Arnold The Cambridge Introduction to Serialism, New York, Oxford University Press, 2008

[11] Karlheinz Stockhausen (1928-2007)



Example no.3: K.Stockhausen "Klavierstücke 1" (1952)[12] bars 5-6[13]

This example points to complicated rhythmic complexity that is taken to a point of absurdity so achieved through the serial method: as it were, the most complicated calculations are needed in order to understand how 7:8 + 11:12 actually equals 5:4. Mindboggling, indeed! But can one assume that the intention here is that performance should be mathematically accurate? Go off and find a pianist who is capable of making such a complex calculation and accurately! It is absolutely clear who the performer will be: the computer. However, Stockhausen's intention here is not a precise performance, but, all told, an acceleration written in notes, with the complicated rhythm intended to point out this acceleration without, indeed, supplying us with information as to the precise length of each note. But, lo and behold, the discipline of mathematics controls this acceleration perfectly: when the numbers are organized in order in this table: we get a simple arithmetic series: 4,5,7,8,11,12…and there is absolutely no coincidence in this. Now here we have the next question: what is the next pair of numbers in the series? The answer is at the foot of the page[14].

Facing an impossible rhythmic complication such as this, we can understand the extreme rhythmic undermining as the basis of Arvo Pärt's work "For Alina", shown in Example no.1 above, where there consist merely two rhythmic values throughout, in the form of short as opposed to long – a black circle versus a white circle. Only a composer like Pärt, who had begun his compositional journey as a serialist, walking the rocky road of rhythmic complications such as 7:8 + 11:12 = 5:4, could arrive at the extreme and pure rhythmic simplicity existent in the work "For Alina".

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[12] Karlheinz Stockhausen Klavierstücke 1-4 für Klavier Nr.2©Copyright 1954 by Universal Edition London (Ltd) London/UE 12251

[13] This example appears as an instance of the rhythmic complexity to which serial music reached, also in the book: Grant, Morag Josephine, Serial Music, Serial Aesthetics. Cambridge, Cambridge University Press 2001 page 210

[14] Answer: 16,17. Why? Between each pair of consecutive numbers there is a skip increasing by one (1) each time. 4,5 – skip 2 to 7,8, then skip 3 to 11,12 – and then skip 4 to 16,17.

However, Pärt's other works from his post-serial period contain a surprising secret. Supposedly, so it seems, there exists in them pure, rhythmic simplicity, almost **simplistic** in nature. This is the origin of the name attached to this style -"New Simplicity". However, we will very soon discover that visual appearances and what our ears hear are deceptive here. The "New Simplicity" is, indeed, that which brought the absurdity of the zero half-note rest to the world. In what manner?

The Time Component in the "New Simplicity"

"I am not convinced that there can be progress in the world of art. The progress of advancement is characteristic of science. Art represents a much more complex situation…" (Arvo Pärt)[15]

Background:

"There is no progress in art"…. "Progress and advancement are characteristic of science"… In the year 1976, following a crisis in creative activity lasting eight years, during which he was almost not involved in composing, a sharp change of direction took place in the style of the Estonian composer, Arvo Pärt. In that year, the composer, who, till then had been identified with "Total Serialism", wrote his composition for piano "For Alina"; see Example 1 above. It will be no exaggeration to say that this work was as an atom bomb falling on the world of modern music, which did not know how to comprehend this music, music that aesthetically seemed to be returning back hundreds of years to the Middle Ages. This work issued in Pärt's later style, the "Tintinnabuli" as he called it, a style belonging to the "New Simplicity" style[16]. The "Tintinnabuli" publicized Pärt's name widely, he, who till then, had been an almost anonymous composer outside of Estonia, and this is the style still associated with him till today.

In analyzing Pärt's compositions written in the "Tintinnabuli" style, we have happened upon a sensational discovery, something that is, at first glance, difficult to believe of it: there exists a close and inseparable connection between the "Tintinnabuli" music – which is modal, diatonic, minimal in rhythmic values, mystical, meditational, and sparse in information – and the music of "Total Serialism", the latter appearing to be the absolute opposite of it – chromatic music, devoid of any tonal center, using the most complex rhythms, placing emphasis on intellectual control, consisting of broken melodic lines to the degree of absolute pointillism and neuroticism laden with information. We are, in fact, talking about two sides of the same issue, that which appears at the beginning of this article – the mathematization of music.

How come?

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[15] Hillier, Paul "Arvo Pärt", Oxford University Press, New York 1997, page 65

[16] In contradiction to this simplicity, an opposing movement emerged: the "New Complexity", of which two of its prominent composers are Michael Finnissy (1946-) and Brian Fernyhough. (1943-).

Approach to the Time Component:

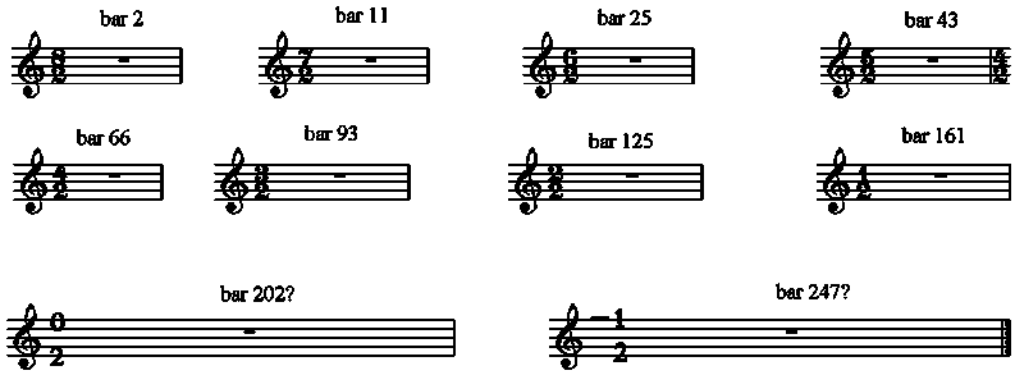
Let us observe a work that publicized Pärt in the world of music, winning him great popularity – "Tabula Rasa"- a concerto for two violins, string orchestra and prepared piano (1977). The translation of its Latin title is "blank slate", referring to the fact that a person is born with no prior knowledge and that he/she is likened to a blank slate onto which he/she will record knowledge[17]. Pärt, himself, presumably felt like a blank slate in his new style, as he endeavored to flee from all he had learned as a serialist, trying to create a new musical language for himself

In the following, we will focus on the time component and on Pärt's approach to rhythm only, according to how it is revealed in the first movement of the work. The title of the first movement "Ludos" (Game) is an indication of Pärt's intention: before us we have a mathematical game of algorithms and in musical patterns. The movement is constructed as a theme and variations, its form being A1,A2,A3…and so on to A8 (In due course we will understand why there are, in fact, eight variations.) Each A section is constructed of a number of elements which undergo gradual mathematical changes in each of the ensuing variations according to plans, all of which have been laid down in advance. We will now focus on the opening element, which, in itself, is especially interesting: **A bar of rest** (bar 2 of the work): the whole of section A opens with a bar of general pause (G.P.) constituting, in fact, a motif of the work. It should be noted that Pärt, in his works, relates to rests as musical material in the full sense of the word[18]. As proof to this: the whole work ends with four bars of general pause, an occurrence devoid of all meaning from the point of view of the musical outcome. (How can these four bars be heard? Is there any difference between four bars of rests at the end of the work and one bar of rest with a fermata?) However, for Pärt the rests and their exact length are of constructional- and mathematical importance and the rests constitute a part of the schematic process based on his writing. And what is this process? The reduction or expansion of each pattern in the work in a totally mathematical manner. An example of the reduction: Pärt reduces the bar of rest throughout the movement by the duration of a half-note each time it appears, as can be seen in the following example:

---

[17] The expression was implied in Aristotle's writings and even mentioned in the Ethics of the Fathers: "To what is a child who learns to be compared? To ink written on a fresh sheet; and to what is an old man who learns to be compared? To ink written on an erased sheet." Ethics of the Fathers, 4,20. But it is most likely that the basis of the expression to which Pärt was referring in this work was taken from the philosopher John Locke.

[18] Is it so that there is an influence of John Cage here? Does, indeed, the work '4.33 use the rest as musical material or, in fact, does the background noise, created as the work is being performed, function as the fundamental musical material?



Example no.4. Arvo Pärt "Tabula Rasa" (1977)[19], analysis of the bars of rest throughout the first movement.

In the example, it can be seen that bar no.2 is a bar of rests, its duration being eight half-notes; bar 11, which opens part A2, has the duration of seven half-notes and, in this manner, bar 25 is a bar of rests of six half-notes, and so on and so forth, till, in the eighth section – A8 – the rest disappears. Is this really so?

In fact, mathematically speaking, we have here a bar worth zero half-notes. The embodiment of the absurd – a bar the length of zero half-notes! However, the discipline of mathematics dictates this unequivocally. We now understand the reason why the work consists of eight variations on the A subject: if there had been more that eight variations, we would reach a bar of rests of minus one half-note (see example)…Is the rest of minus one half-note more absurd than a rest of zero half-notes? Difficult to know. …and the concluding question: what is the calculation that leads to the fact that the bar whose length is zero half-notes is supposed to be bar 202, as can be seen in Example no.4, and the bar whose length is minus a half-note should be bar 247? Once again, our heads indeed reel from such strange deliberations. The answer is at the foot of the page[20].

An additional aspect constructed totally mathematically, this time based on mathematical expansion, is the first violin's line in this movement: the melody, on which we will now focus. In the course of the whole movement, this line is constructed according to basic rules that can be formulated as exact mathematical algorithms and one can have the

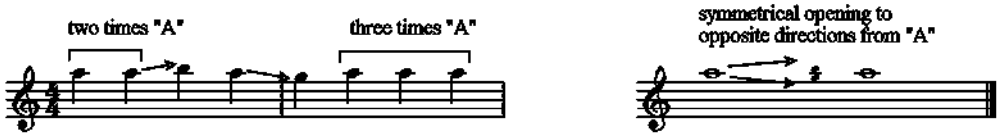
[19] All the examples from "Tabula Rasa" are protected by copyright laws of: Tabula Rasa Doppelkonzert für 2 Violinen, Streichorchester und präpariertes Klavier© Copyright 1980, 2001 by Universal Edition A.G., Wien/UE 31937

[20] The distance between the bars of rests increases each time by 5 and 4 alternately. For example: between the first two in Example no.4, bars 2 and 11 have a difference of 9. Between the next pair, bars 11 and 25, there is a difference of 14. Between the next bars, bars 25 and 43, there is a difference of 18, and so on. That is to say, the arithmetic series of the differences between each pair of bars is:…9,14,18,23,27,32,36, meaning that each time5 or 4 are added alternately. In this way, one can arrive at the numbers of the imaginary bars, the absurd bars of zero half-notes and minus a half-note: bars 202 and 247.

computer draw out from them the "output", which is the work itself. Following are these basic rules, formulated as algorithms of a computer program:

- The time signature is four quarters and all the notes of the first violin part are quarter notes in value.
- Each phrase will begin with two repeats of the note "A" and will end with three repeats of "A".
- The phrase is constructed exclusively of steps of seconds in the "A" Aolian mode.
- In each phrase there exists a symmetrical opening equal in its movement in opposite directions from "A" and this opening will increase by one step in each direction in each phrase.

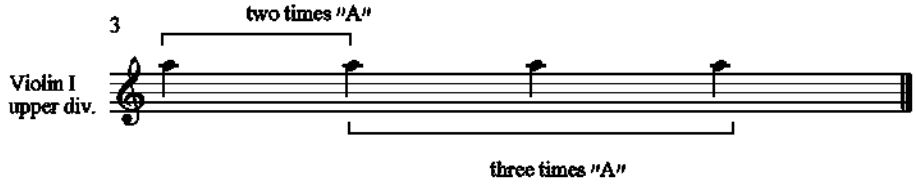
The next example shows the second phrase of the eight, demonstrating these basic rules:



Example no.5 A. Pärt, "Tabula Rasa", second phrase, bars 12-13, the upper first violin part.

It can be seen that the four basic rules formulated above exist in this example.

Bar 3 of the work, which constitutes the first phrase of eight, is given to being comprehended, in retrospect, as also functioning according to the same four algorithmic basic rules as formulated above. See next example:

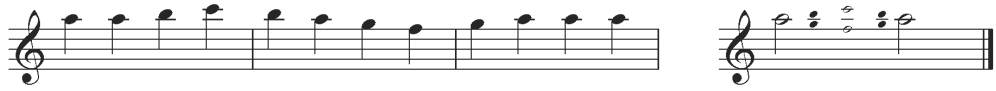


Example no.6 Arvo Pärt "Tabula Rasa" first phrase, bar 3, upper first violin

In keeping with the four basic rules of the algorithm, one is led to believe that the four notes existing in Example no.6 actually comprise of two congruent patterns, starting with two "A" pitches and ending with three "A"s, whereby between them there is a symmetrical opening of seconds at an interval of zero second intervals. Zero seconds! This explanation is liable to sound totally absurd (what is an interval of zero seconds?) but in Pärt's "Tintinnabuli" (as in also in "Total Serialism", as we have seen above) the total mathematicization of the patterns leads to these kinds of absurdities from time to time. Bars having the duration of zero half-

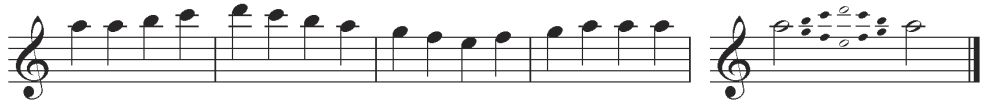
notes…a symmetrical opening of zero second intervals…The questions with which we began the article are very slowly beginning to clarify themselves.

One can extract the continuation of the phrases of the first violin part for the duration of the movement automatically from the principles formulated above. The third phrase will, as expected, have a length of three bars:



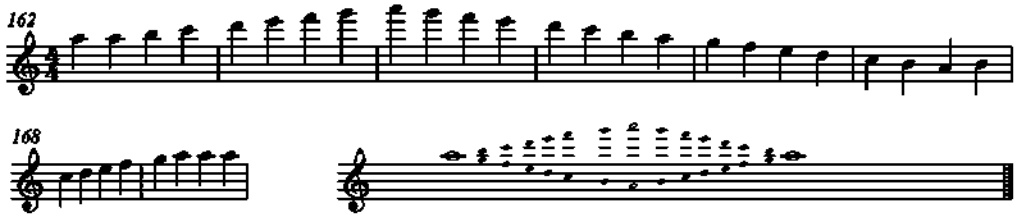
Example no.7 A.Pärt "Tabula Rasa" third phrase, bars 24 to 26, first upper violin part.

It can be seen that the number of bars of each phrase will be according to the size of the interval between the basic note to the end of the phrase: for the interval of a second – the phrase will be two bars long (Example no.5 above), for the interval of a third - a phrase the length of three bars (Example no.7 above), and so on. The fourth phrase will lead to the interval of a fourth moving in each direction from the central note, and its length will be, as expected, four bars:



Example no.8 A.Pärt "Tabula Rasa" fourth phrase bars 44-47, first upper violin part.

And so the process continues right through to the eighth (and last) phrase, which will open with the interval of an octave in each direction, and its length will be eight bars:



Example no.9 A.Pärt "Tabula Rasa" eighth phrase, bars 162-169, first upper violin part.

Before us, in which case, we have what is suitably called "Automatic Writing"[21]. This writing derives from "Total Serialism" and, in it, the composer determines only the principles on which it is based, with the music emerging automatically from these principles, as it were, "untouched by human hands" over the course of the process of the work. Like those same stickers on mineral water bottles, "not touched by human hands", this term became the hallmark of quality of products in the 20th century. In fact,

[21] This expression is my own and appears in more detail in the thesis on which this article is based: Amit Weiner (2011) "*Serial Components in Arvo Pärt's New Simplicity*", a thesis accompanying my PhD in Composition, Bar Ilan University.

if we were to program into the computer the principles of the basis of the role of the first violin, as formulated above, the computer would produce a score part identical to that of Pärt.

Is this a saving? Or perhaps an advantage? These questions, despite the great interest they are likely to arouse, touch on aesthetic and almost political views, but this is not the place to discuss them (and, perhaps, these questions are outdated, questions that had been discussed time and time again during the 1950's and 1960's).

Conclusion:

We have only touched on the tip of the iceberg of an issue that is extremely broad: the time component in both styles, for the sake of appearances, and to what the ear hears, looks different in the extreme, i.e. "Total Serialism" and "New Simplicity". We have discovered a number of surprising truths regarding the existing connection between the two styles, and, in the process of doing so, we have met with a number of especially strange mathematical-musical mutations: rests of the duration of zero half-notes; rests of minus one half-note; four bars of general pause (G.P.) at the end of a work; complicated rhythmic equations such as: 7:8 + 11:12 = 5:4…. oh my gosh! Is this "music" – the art of the Muses" as referred to in Greek mythology and as the most exalted expression of the human spirit and the direct expression of the "will" according to Schopenhauer?

We have managed to discover that there exists, surprisingly, in Pärt's "Tintinnabuli" a serial thought process on all levels of the musical language: in the parameter of duration, in the choice of pitches, in the length of phrases, in the development of phrases in the course of the movement, in the use of motifs and also in the formal construction of the movement as a whole – all of these are based on strict, predetermined principles which do not allow for any deviation and which are completely based on "Automatic Writing". The application of serial principles on all levels of the writing, including the formal construction of the work, actually provided the environment for Pärt's total emotional separation from the compositional process. In fact, it also led to total alienation from the musical experience as a whole. The discipline of mathematics is that which determines the rules here and not personal aesthetics or the strength of imagination of the artist. We have seen that the work actually evolves from within itself, from beginning to end, after the composer has determined the basic rules, that is, the basic mathematical algorithm. (On the other hand, this algorithm is indeed based on absolutely personal aesthetic choices, and, from here, we observe a huge difference between Pärt and Boulez in the resulting music.)

Why then does Pärt adhere to the principles of Serialism in his later style, a style which is so different from serial music? Could it be that it was a kind of therapy for the composer, who had spent so many years composing in the serial style, a style foreign to him and that did not serve his emotional and aesthetic objectives? Or is it that Pärt perhaps did not manage to sever his ties from the strong – and sometimes destructive – influence which "Total Serialism" and the charismatic figures which led it in those same years had planted (with that same French big brother who was always

watching you)?

And what about the questions that were presented at the beginning of this article: what is the meaning of a rest whose duration is zero half-notes? Well, at the end of the day, Boulez and Stockhausen's serial music, just as Arvo Pärt's "New Simplicity", does not **sound** like mathematical music. Indeed, let us stop for a moment to ask ourselves this question: **what does mathematical music sound like?** Is it really possible to hear mathematical principles in the music itself? Surely, as was stated at the beginning of this article, these composers had achieved only an **illusion** of control over the parameters. For music is a cunning art, escaping from the hands of the composer from the moment when he/she completes it; even if it appears to the composer that he/she has succeeded in organizing the elements in perfect, mathematical fashion, it is liable, in the long run, to sound like expressionistic chaos in the hands of Boulez or like meditative music of the Middle Ages in the hands of Pärt. Surprising, is it not?

If so, we now know that both in the very complex use of the parameter of time, as we have met in the music of Stockhausen, and in simple practice bordering on simplicity, as we have met in the music of Pärt (as in the complete movement comprising exclusively of quarter notes) the same mathematical complexity hides behind both, and that both styles are based on formulas and algorithms anchored in "Automatic Writing"….like bottles of mineral water, works written, so to speak, "untouched by human hands". Technology, mathematics, the will to control…have we already mentioned those?

And still, a number of questions remain unanswered:

- How does that same mathematical-musical "baby boom" that erupted after World War II – Total(itarian) Serialism – continue to exert an influence on the world of music of today?
- How come Arvo Pärt was the one to succeed in penetrating the barrier of the general public and in bringing his works to large audiences, much more so than Stockhausen and Boulez?
- And how, for goodness sake, can one solve the illogical equation, nevertheless stemming from unadulterated and pure logic:

$$7:8 + 11:12 = 5:4$$

ON SHIFTING AND SKIPS IN TIME: NEW VOICES IN OLD CANONS

Michael Melzer[1]

[…] I – the glorious creation, being
the one chasing as well as the one escaping…
and since my burden has been unloaded and lost,
I have been running after the I [...]

Alexander Penn[2]

The Canon in Time

"Seek peace and pursue it" (Psalm 34:14)

As a musical genre, the canon is treated with ambivalence.

From the theoretical-historical aspect, it has been pushed into a corner within musicological research, and treated as a specific case of polyphony – one kind of "strict" counterpoint which appeared close to the time when notation was invented[3] (a fact testifying to its antiquity). Except for within the framework of a discussion on single highlights, such as in the case of Bach's *Musical Offering or Goldberg Variations* - the canon has been granted almost no focused attention nor profound research. The list of books completely devoted to the canon is extremely short[4], and the number of articles that deal with it does not extend beyond some tens.[5] In books devoted to the theory of counterpoint, the canon only receives a short chapter and is certainly not centrally placed (mostly, it is mentioned at the end of the book).[6] From the structural-formal

1 **Prof. Michael Melzer**, Flautist and recorder player. Expert on early-music. Since 1997 Vice-President of Academic Affairs of the Jerusalem Academy of Music and Dance. Artistic director of the Voice of Music festival for 11 years.

2 Penn, Alexander, *Beatnik (antipoem)*, in *Poems II*, Hakibbutz hameuchad, Tel Aviv 2005, p.511.

3 See the 6-voiced double-canon *Summer is icumin in* from the mid-13th century in England.

4 Klauwell, O., *Die historische Entwickelung des musikalischen Canons*, Sturm und Koppe, Leipzig 1875; Ziehn, B., *Canonical Studies*, Kaun, Milwaukee 1912; Jöde, F., *Der Kanon*, 1926; Feininger, L., *Die Frühgeschichte des Kanons bis Josquin de Prez*, Lechte, Emsdetten 1937; Rubsamen, W.R., *Canonic Chansons and Motets of the Early 16th Century*, 1954; Wetschky, J., *Die Kanontechnik in der Instrumentalmusik von Johaness Brahms*, Bosse, Regensburg 1967; Norden, H., *The Technique of canon*, Branden, Boston 1970; Bizzi, G., *Miroirs invisibles des sons: la construction des canons*, Les Belles-lettres, Paris 1986; Gerbino, G., *Canoni ed enigmi*, Torre d'Orfeo, Roma 1995.

5 Exceptional in its scope is Schlitz, Katelijne and Blackborn, Bonnie J. (Ed.), *Canons and Techniques, 14th-16th centuries: theory, practice and reception history; proceedings of the international conference, Leuven*, 4-6 October 2005, Peeters, Leuven 2007.

6 This considerable ignorance toward the canon is evident mainly in German and French counterpoint treatises: Albrechtsberger in *Collected Writings on Thorough-Bass Harmony and Composition,* trans. Sebilla Novello, Novello, London & New York 1855, devotes 19 pages to the canon (of those, three

aspect, the canon does not have any specific form; rather, it is appropriated to different, various forms (the simplest of which, of course, being the "round" – the canon repeating cyclically from the joining in of voices at its outset and to its end) and thus, from this aspect, does not attract specific research. In addition, from the essence of its melodic nature, and also because of the abbreviated form of writing of "riddle canons", the canon is very limited from the harmonic point of view, and thus does not win a mention in books on harmony.

A musical-practical facet of most of the works written in canon is brevity, and they do not provide the listener with meaningful content. For this reason, musicians avoid performing complete works constructed as canons, and this is perhaps due to "an excess of academicism" often attributed to them by those mainly seeking creativeness, imagination and drama in music.

Indeed, the functional-social aspect of the canon constitutes an accessible form of entertainment, one offering easy inclusion to all (in communal singing), thus constituting a source of enjoyment and light entertainment in society. In England in the 17th and 18th centuries, "catch and glee" clubs were fashionable, with the finest of composers rendering their services to write canons for them, some of the canons boasting texts that were anything from mischievous to scandalous (for they were meant exclusively for men – for "gentlemen").[7] However, since then and until today, musicians have tended to discount the quality of canons, justifiably criticizing certain of them (mostly those canons having no inversions).

From a historical perspective, one can see the lowly value attributed to the canon as a direct continuation and ongoing influence of two inferior periods in the history of the canon – the onset of the Baroque (the seconda prattica) and the early Romantic period; those were two periods when musicians distanced themselves from any obvious symbol of academization in music, with the canon, indeed, representing the obvious. But these very two periods are the exception and are a drop in the ocean compared with the zenith eras of involvement in the canon: the Ars Nova of the 14th century in France; the caccia genre in 14th century Italy; Flemish music of the 15th century; the 16th century Italian Renaissance; the high German Baroque (mainly Bach and Telemann); the writing of Brahms; the Second Viennese School (Schönberg and, more importantly, Webern who was influenced by Heinrich Isaac); and, finally – prominent 20th century composers (Bartok, Hindemith, Stravinsky, Messiaen, Boulez, Pärt, and others).

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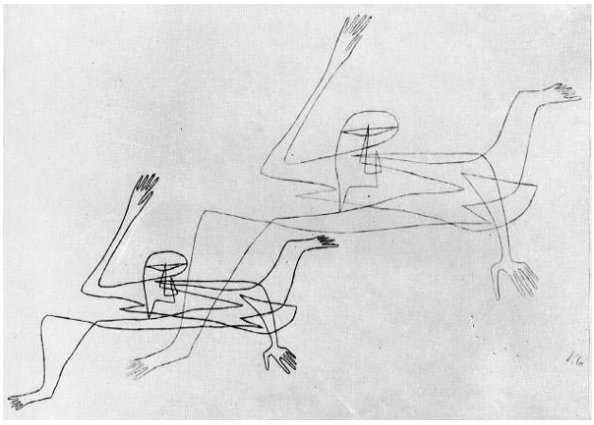
are verbal text and the rest, musical examples) in a book of 256 pages. Rameau, J.Ph., in *Principles of Composition,* English trans. Luke White, Dublin 1779 (pp.176-180) devotes 4 pages of 180 to the canon; Reicha, A., in *Kompositionslehre,* Diabelli, Vienna 1832 (p.914), devotes 6 lines of the 1222 pages of the book to the subject; Cherubini, Luigi, in *Treatise on Counterpoint & Fugue*, trans. Cowden Clarke, Novello, London & New York, 1854 (p.45), gives the canon a third of a page of the 128 pages of his book; Dubois, Theodore, *Traité de Contrepoint et de Fugue,* Heugel & Co., Paris 1901, pp. 80-88 devotes 9 pages (including exercises) of 308 pages; Fux, J.J., in *Gradus ad Parnassum,* van Ghelen, Vienna 1725 (p.141) mentions the canon just once in all the 279 pages of his important book. Only in 17th Century England did a general survey of canonic writing technique exist, and I'm grateful to Dr. Alon Schab for directing my attention to an interesting book – Bewin, Elway, *a Briefe and Short Instruction of the Art of Musicke […] And also to compose all sorts of Canons that are usuall, by these directions of two or three parts in one, upon the Plain-Song,* the Author, London 1631.

7 See examples of The Catch Club or Merry Companions of 1700; the Hibernian Catch Club established in Ireland in 1680 and active till today; the Noblemen and Gentlemen's Catch Club existent in London from 1761 and still functioning today. See elaboration in Viscount Gladstone, Boas, G., Christopherson, H., *Noblemen and Gentlemen's Catch Club*, Cypher Press, London 1996, also Robins, Brian, *Catch and Glee Culture in Eighteenth-Century England,* The Boydell Press, Woodbridge, Suffolk 2006.

The objective of this article is to redeem the canon from the negligence existing on the part of academic discussion and performance practice at one and the same time. I will endeavor here to clarify the essence of the canon from a broad – multidisciplinary and poly-aesthetic perspective, characterized by metaphoric thinking, flexibility and the possibility of assimilating new experiences as the modification of previous experiences. A thought process will be adopted here, in which concepts and principles from the area of one discipline become sharper and clearer as they are brought into comparison with articulation from other areas of knowledge,[8] and in the case of there being reason, in this thought process, to find equivalence also in dissimilar phenomena and place them one in place of the other.[9] For this reason, alongside discussion of the central principles of performance in music, connections between the canon and different realms of content will be presented in this article, those, seeming divorced from it, such as the ethical-philosophical field, the areas of law, mathematics, poetry, ethics and pedagogy. I hope that, as the result of my setting these things down in words, the canon will rise in status to being a genre of singular importance, justifying discussion of its significance and uses.

Defining the Canon

"The Canon – Do not erase it, rather wait, and later imitate it"
A play-on-words on Shvili's "Psalms – Do not erase it, rather imitate and later wait"[10]



Paul Klee – "Fleeing from Yourself"[11]

[8] On polyaesthetic research see Roscher, Wolfgang, Allesch & Krakauer. *Polyaesthesis: Multiperceptual consciousness and the idea of integrating arts and sciences in education*, Verband der wissenschaftlichen Gesellschaften Österreichs, Wien 1991, and Phenix, P.H. *The architectonics of knowledge,* in Elam (Ed.) *Education and the Structure of Knowledge,* Rand McNally, Chicago 1964.

[9] See Gombrich, Ernst, *Meditations on a Hobby Horse and Other Essays on the Theory of Art*, Phaidon, Oxford 1963.

[10] Shvili, Benjamin, *The Library of the Heart*, Kinneret, Zmora-Bitan, Dvir, Or-Yehuda 2011, p.53.

[11] Klee, Paul, *Flucht vor sich,* [Erstes stadium, 1931], Kunstmuseum Bern, Paul-Klee-Stiftung.

Following are two alternative definitions of the musical canon. The first is taken from a music dictionary and the second, from the field of science – a mathematical-physical definition.[12]

1. **An inscribed formula by which a polyphonic texture is derived from a single melody through strict imitation of successive voices.**[13] There are two variables: the space between voice entries (time difference between them) and the interval between them (the simplest and most obvious is the unison canon or the octave canon, created naturally in the course of singing canons in the company of men, women and children; but there are also canons at the fifth and fourth and even at non-perfect intervals[14]). The relationship between canonic voices can be based on identity, inversion (mirror inversion or retrograde) or on stretching and contracting (augmentation or diminution). There are closed canons, repeating from the beginning (such as the round or catch) and there are continuous canons (free in melodic and tonal directionality).
2. An **elementary canon**, based on a single melody – the **base melody** in the sequel, is defined as an **acoustic superposition** of a number (greater than one) of simultaneously-heard melodies, each one being related to the base melody via an **invertible transformation** in the **time-frequency plane**.
   (As a generalization thereof, a **complex canon** can be defined as a superposition of several elementary canons with different base melodies.)
   Herein –
   the time-frequency plane is the natural space for performing short-time spectral analysis of an acoustic signal, namely, an analysis of the powers of the spectral (Fourier) components active in the acoustic signal within short consecutive time segments. The typical duration of such time segments is of the order of a few hundredths of seconds, in accordance with the temporal resolution of the human hearing system. Also, in view of this system's characteristics, it is natural to measure the frequency in a logarithmic scale, namely, transform the frequency axis into the "pitch" axis, as commonly used in music (theory). On the **time-pitch plane**, the transformations mentioned above in the canon definition are generated as certain compositions of displacements, rescaling operations, and reflections along the two axes (time and pitch). The set of all (linear) transformations of that kind spans a **symmetry group** of the plane. In certain cases (or rather senses), it is possible to define a **periodic compactification** of the time-pitch plane, along at least one of its two axes; then – following a projection of the transformations acting on the infinite plane onto the resulting (semi-)compact two-dimensional space – the transformations involved in the definition of a certain canon span a **subgroup** of the above (compactified) symmetry group; consequently, the **canon** is recognized as being **symmetric** with respect to this subgroup, i.e., as an object which is **invariant** under its operation.

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[12] I wish to thank scientist and musician Dr. Ezer Melzer, for the fascinating lecture series he has been giving over recent years at the Jerusalem Academy of Music and Dance as part of a course of structures and forms in the arts. The mathematical content presented here is taken from these lectures.

[13] Mann, Alfred & Wilson, J. Kenneth, *Canon* in *The New Grove Dictionary of Music and Musicians*, edited by Stanley Sadie, Macmillan, London 1995, p.689.

[14] In the *Aria and thirty variations* generally referred to as *The Goldberg Variations* Bach writes a canon using each of nine intervals in rising order, beginning with the unison and ending with that at the ninth. In this manner, each third variation is given the definition of its placing by virtue of the number representing its interval, as in a mathematical series: the third variation is marked as 1, the sixth as 2, the ninth as 3, and so on.

These definitions leave a number of unraveled threads, at the ends of which some unsolved questions remain: what is the minimal space (time span) between voices affirming the definition of the canon? What is the maximum time span? How large can the variation between voices be to still be defined as canonic voices? What is the relationship between the note actually sounded and the notation, and which of them is more important for the purpose of defining the canon? Does the environment (other voices, for instance) influence defining the piece as a canon? What is the minimal time span of a piece in which there are voices that maintain a canonic relationship between them for the work to be recognized as being a canon? - In this article, it will not be possible to carry out comprehensive and profound discussion on all of these questions. We will make do with the matter of presenting the issues that raise the above-mentioned questions in the forthcoming sections.

'I was
And here I am
And if I continue to be –
I will be as I have been
And here I am.'

Alexander Penn[15] (Translation: Pamela Hickman)

The Canon as Law-keeper

> *Before the law sits a gatekeeper. To this gatekeeper comes a man from the country who asks to gain entry into the law. But the gatekeeper says that he cannot grant him entry at the moment. The man thinks about it and then asks if he will be allowed to come in sometime later on. "It is possible," says the gatekeeper, "but not now."[...] The law should always be accessible for everyone [...], He decides that it would be better to wait until he gets permission to go inside. [...] The gatekeeper sees that the man is already dying and, in order to reach his diminishing sense of hearing, he shouts at him, "Here no one else can gain entry, since this entrance was assigned only to you. I'm going now to close it."*[16]

Many different titles and sobriquets have been attributed to works of canonic texture and these are arrayed throughout the history of music in the threads of events that evolve from three categorical meanings:

1. **The Pursuing Amongst Voices.** Within the framework of the "Ars Nova" of the 14th century in France, hunting songs with two voices chasing each other in canon form were known as a **Chase.** The Italian **Caccia** of the same period is extremely close to this genre in its canonic treatment of two voices, however, constructed above an instrumental tenor line.[17] The same term in England – **Catch** (and with the similar meaning of "hide and seek") – becomes very popular in England in the 16th-, 17th- and 18th centuries. The name "catch" first appears in a manuscript of 1580 which includes **"divers fine catches, otherwise called Roundes"**, and, for the first time in print, in

[15] Alexander Penn*, Poems II*, Hakibbutz Hameuchad, Tel Aviv 2005, p.522.

[16] Kafka, Franz, *Before the Law,* Trans. Ian Johnston, from http://records.viu.ca/~johnstoi/kafka/beforethelaw.htm

[17] See Marrocco, W.T., *Fourteenth Century Italian Cacce*, Mediaeval Academy of America, Cambridge, Mass. 1942.

1609.[18] On the title page of the second book of songs and canons that Ravenscroft published in the same year – **Deuteromelia –** an aphorism appears in Latin 'Qui canere potest canat' – (this is the first time the word "canon" is used as a musical term) and the aphorism translated into English 'Catch that Catch can' appears on the title page of a book of canons by John Hilton in 1652.[19] But the term most commonly used for the canon, as of 1330 and up to Bach's time was the Latin translation of the **caccia – fuga.** Already at the beginning of the 15th century, the Minnersänger Oswald von Wolkenstein used the term **fuga** as a sobriquet for songs that have within them canonic imitations, and Josquin and Palestrina used the title **Missa ad Fugam** for canonic Masses.

2. **Circle or Cycle.** Within the structure of the Rondellus (Rotundellus or Rondeau) of the 14th century, a tradition of endlessly repeating canonic textures developed, that transformed into the **Rota**[20] (Latin), the **Radel** (German) and the **Rondeau** (French). Two especially beautiful examples of the 'circle' in the 'rondeau' appear in manuscripts of the 14th century: the rondeau for 3 voices **'Ma fin est mon commencement Et mon commencement ma fin'**[21] (My end is my beginning and my beginning, my end), which, in the same way as its verbal text, is written in full retrograde inversion of the whole song (back and forth to the beginning point, which then becomes the end); and the canon **'Tout par compass suy composés'** by **Baude Cordier**[22] , penned in superb calligraphy in circular staves. Then, later on, the **Round** appeared in England, its form a cyclical canon (with endless repeating from the beginning, where the spacing between the different voice entries is consistent, with each line numbered and ending in cadential configuration).

3. **Rule.** The origin of the term 'canon' is from the early Greek κανών meaning 'basic rule', 'law' or 'model'. The use of the term 'canon' is familiar from many different disciplines, all of which are associated with a set of general principles and laws: the canonical trial (carried out in Europe by the church), the literary canon (an anthology of works accepted as representative of a specific discipline or writer) and the canon of sacred scriptures of Judaism and Christianity as well as the sacred writings of Buddhism. In fact, the name of the classical Arabic musical instrument - the 'qanun', comes from the same etymological root, through the Arabic قانون meaning 'rule' (indeed, the qanun is the most prominent instrument of the Arabic orchestra, determining the 'rule' by which the melody of the whole ensemble progresses.)

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[18] Ravenscroft, Thomas, *Pammelia: Musicks Miscellanie[…]and Delightful Catches,* William Barley, London 1609.

[19] Hilton, John the Younger, *Choice Collection of Catches, Rounds & Canons,* John Benson & John Playford, London 1652.

[20] The term 'rota' appears in the original manuscript of the earliest canon in survival - *Sumer is icumen in.*

[21] A reproduction appears in Wilkins, Nigel, *Rondeau*, in Grove's New Dictionary of Music and Musicians, Ed.Stanley Sadie, Macmillan, London 1995.

[22] Ibid.

The term 'canon' appeared in the course of the 15th century with the aim of defining a form of notation that minimized a polyphonic musical text to one stave, as a kind of puzzle or riddle to be solved by the reader. This form of notation defines and emphasizes the general rule or law according to which the work has been composed, and so a whole world is created wherein the sound is sometimes only a trivial manifestation of the richness constructed from the visual representation of the notes. A retrograde canon (played backwards, from the end to the beginning - 'canone al rovescio', 'canon cancrizans', 'crab canon') is an example of an action that is 'correct' when performed from the notation; however, it somewhat ignores the sound actually being heard (the sound itself does not 'move backwards', rather it is only the representation of the start of the notes). The addressing of the idea of the 'law' that triggers the music has initiated the creation of various terms of formula to define the law; for example, **canon ad semibrevem** - at the distance of a whole note, **canon ad epidiapente** – at a fifth above, **canone al contrario riverso** – the text to be read upside down (from the bottom to the top and from the end to the beginning) and the customary convention in 17th century England of the 'two in one' canon (two voices on the same stave), 'four in two' (a double canon for two pairs of voices, each having its own stave), and the like.

The earliest definition of the canon, that of Tinctoris, testifies to the complexities and sophistication of the art of the 15th century canon, and, together with this, also to the fact that the canon was considered as intellectual entertainment whose essence was in the solving of its riddle, more so than in its musical content: "The canon is an intellectual set of written instructions which, in a vague (concealed) way, declares the composer's intentions"[23]. It is fitting to pay attention to the fact that this definition makes no reference to the musical texture. In the introduction to another book of his[24], Tinctoris comments that the ideal of the learned style (of counterpoint, including riddle canons) had already been ruling music for 40 years and he mentions 'too many composers to count, among them Ockeghem…extolled for their lofty artistry learned from Dunstable, Binchois and Dufay.' In the course of the 16th century, many books were printed teaching both the method of canon-writing as well as the way to solve the riddle of their method of notation. Among them, the chapter devoted to canons of Josquin's contemporaries from Glareanus' 'Dodecachordon' is significant.[25] Despite mounting criticism in the early Baroque (17th century) regarding the use of the canon as an intellectual, sterile and archaic form of artistry, the practice of canonic technique made a come-back in the 18th century, whether as part of the movement of a work or as a whole movement, and there were even complete works written in canonic form. In all those works, the principle of abbreviated notation has remained as a riddle formula to challenge the reader-performer. Among those works, entirely canonic works of Telemann, Graupner, Locatelli and others stand out. The canon reached its peak due to Bach's success in merging intellect with the domain of feeling, producing absolutely sophisticated music which, in addition, was also capable of exciting and touching the listener's heart. Most of his works abound in various kinds of different canonic devices. Bach also wrote many riddle canons, some of which are

[23] Tinctoris, Johannes, *Diffinitorum Musicae* ,1475: "Canon est regula voluntatem compositoris sub obscuritate quadam ostendens. "

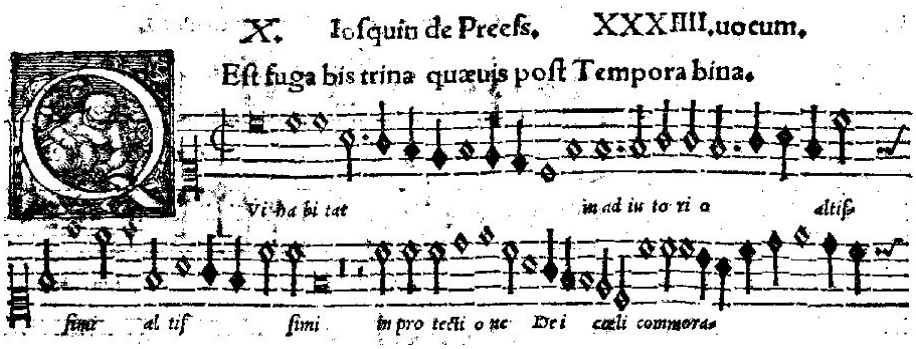
[24] Tinctoris, Johannes, *Liber de arte contrapuncti,* 1477.

[25] Glareanus, Henricus, *Dodecachordon,* Basel 1547.

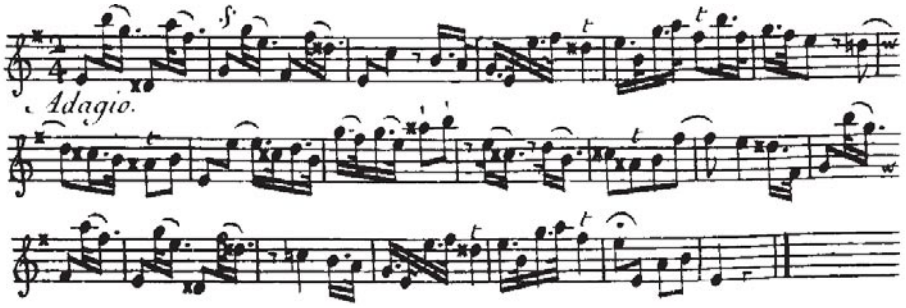
included in his work 'The Musical Offering', others appearing separately – such as a one-page triple canon Bach composed in honor of his being accepted into the Society of Musical Sciences, an organization established by his pupil Mitzler, this canon included in the portrait of Bach created by Haussmann on the occasion.

Here are some examples of canons written in a riddle-form:

a. Josquin – the beginning of a canon for 24 voices[26] -



b. Telemann: second movement of Canonic Sonata no.1 for two equal instruments (flutes or violins)[27] –

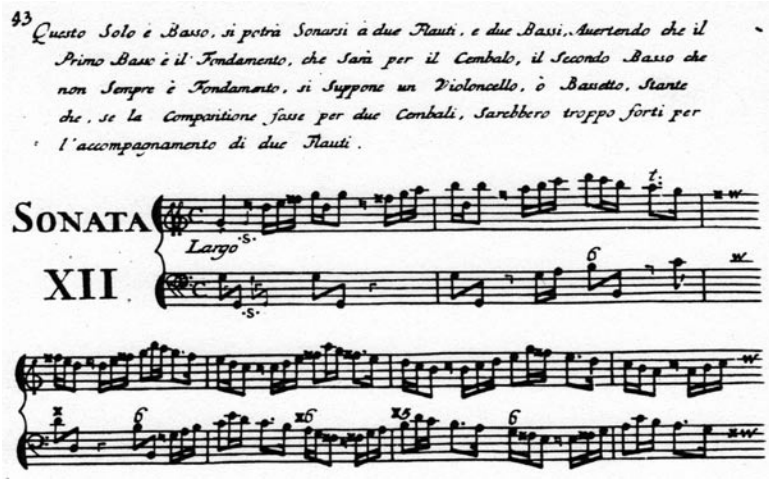


c. Locatelli - Sonata[28] Op.2 no. 12 written as a canon for two flutes and two groups of basso continuo -

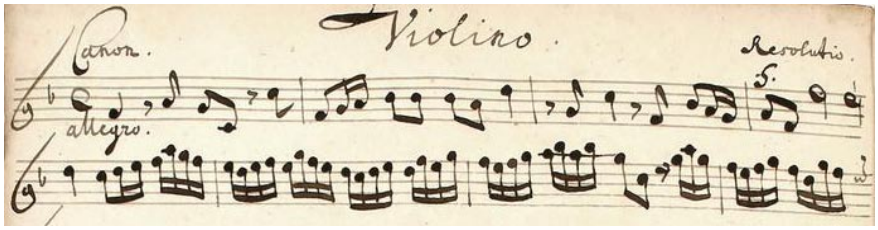
[26] Josquin des Prez, *Qui habitat in adjutorio altissimi,* from Stephani, Clemens, *Cantiones Triginta Selectissimae,* Ulrici Neubert, Norinbergae 1568. - 24 voices, not 34 as stated erroneously in the title.

[27] Telemann, Georg Philipp, *18 Canons Mélodieux ou 6 Sonates en duo,* Paris 1738.

[28] Locatelli, Pietro, XII Sonate à Flauto Traversiere Solo è Basso Op. 2, l'Autore, Amsterdam 1732, pp. 43-49.



d. Graupner – Trio-Sonata[29] in F Major –



e. Bach – canon a 4, quoted by Telemann[30]

From the riddle-compositional-form itself, the performer playing the 'following' voice finds himself in a situation of being required to follow the 'law' established by the 'leader', adhering strictly to the motivic course and according to the other's directions. The main pedagogical significance of the playing and singing of the canon is in the training of the player/singer to like- and keep the rules in the spirit of Schiller's "freedom through art".[31]

[29] Graupner, Christoph, *Canon al unison a 2 Violino, Violoncello overo Viola di Gamba e Cembalo,* ca. 1737. The two violinists have the same part, the entrance of the second Violin is marked 'Resolutio'.

[30] Telemann, Georg Philipp, *Der Getreue Music-Meister,* Telemann, Hamburg 1728, p. 68.

[31] Schiller, Friedrich*, Letters upon the Aesthetic Education of Man*, quoted in Berlin, Isaiah, *The Roots of Romanticism*, Princeton University Press, Princeton 1999, p. 85.

On the Right to Choose – The Free Canon

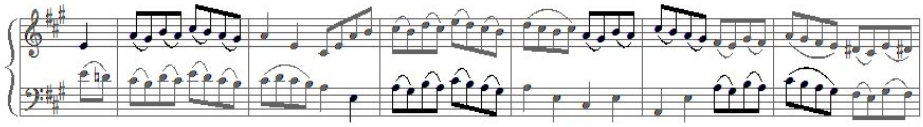
All is foreseen, and freedom of choice is granted.

Rabbi Akiva[32]

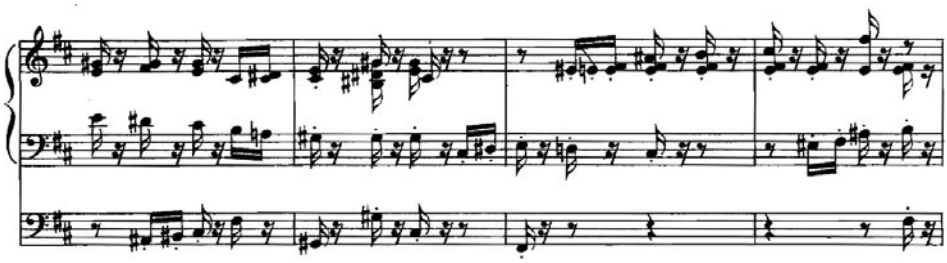
Indeed, constancy is the ruling of the canon. Whether declared as a 'canon' in the title of the movement or work or whether the canon is revealed to the eye of the performer and to the listener's ear in the course of the sounds, as a conclusion to the rhetorical question 'Can two walk together (in exactly the same manner) except they be agreed?'[33] – the main characteristic of the polyphonic texture the canon creates is the joint responsibility of the voices and the excessive strictness in which this same responsibility is carried. In which case, all is foreseen. But, together with this, throughout history, composers have revealed to us that even in a canon much freedom of choice still exists. In the field of composition, this freedom of choice is expressed in the prerogative to change the rules during the course of the canon; they are not to be cancelled or violated – however, new rules may theoretically be chosen. Concerning the field of interpretation – we will adhere to it in one of the following chapters.

On the basis of the general subject of the *Music and Dance in Time* publication, we will, in the following examples, limit ourselves to an attempt at mapping out the areas of freedom of the canon solely to the field of time-span changes (distance) between voices:

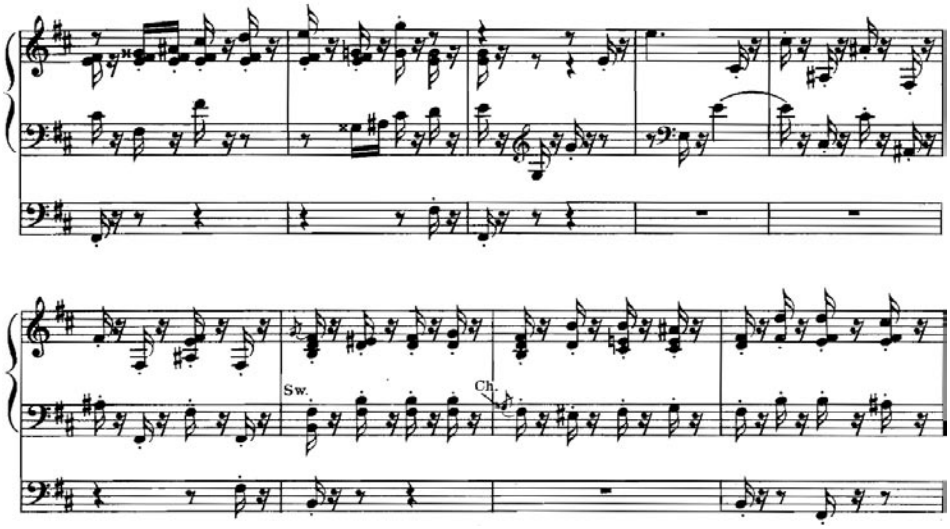
The temporal distance of two bars between right- and left hand lines becomes a gap of one bar only in Bach's Bourrée (bars 9-14)[34] –



The distance of one bar between the two hands on the organ becomes, for the duration of three bars, an interval of half a bar (in the following example – the beginning of the fourth bar of the second line) in this organ canon by Schumann[35] -



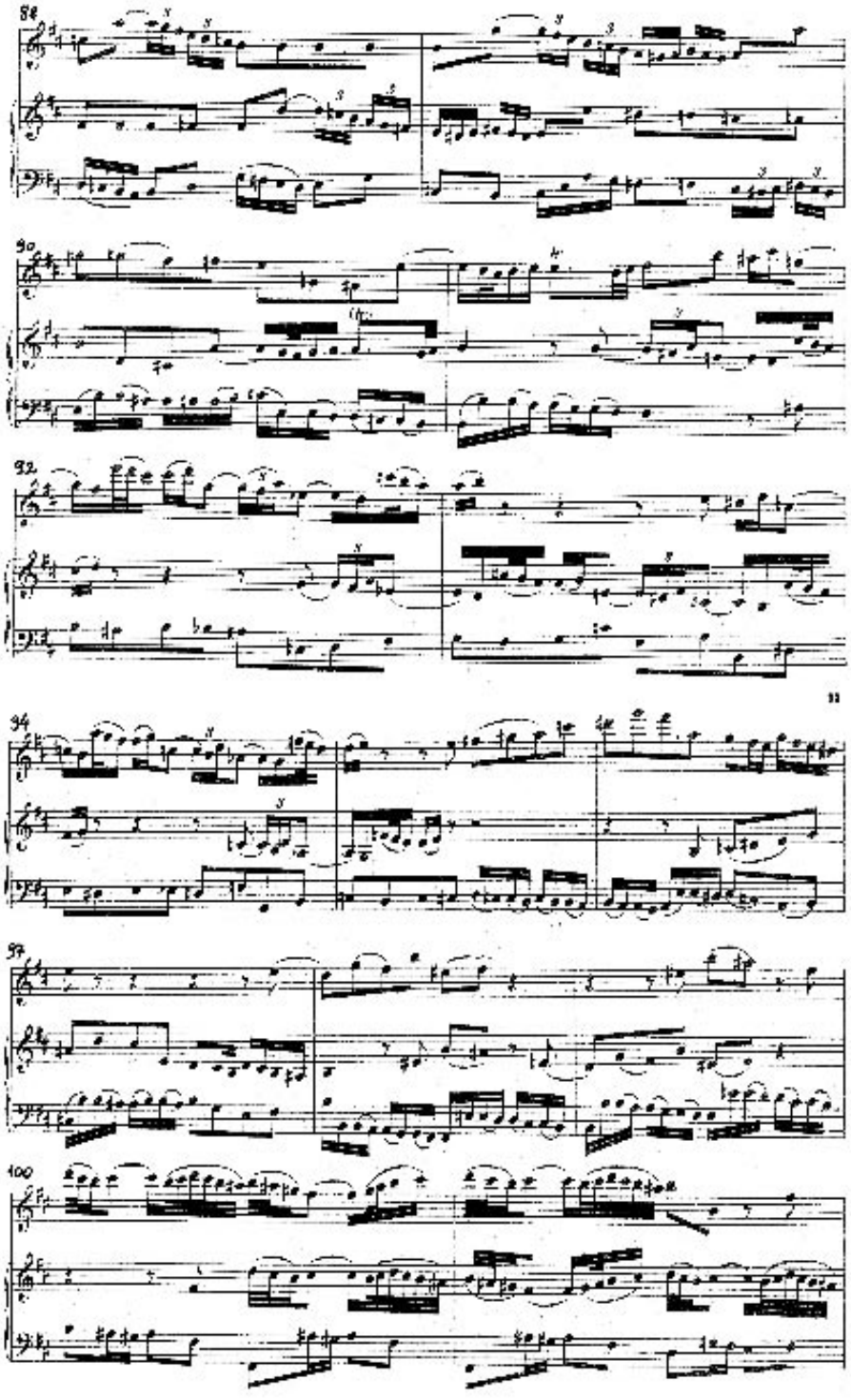
[32] Ethics of the Fathers, Chapter 3, verse 15.
[33] Amos, Chapter 3, verse 3.
[34] Bach, J.S., *Englische Suite I*, in *Johann Sebastien Bachs Werke,* Bach Gesellschaft, Leipzig 1864, Band XIII (2), p.12.
[35] Schumann, Robert, *Canon in B minor Op.56 No.5,* in *Masterpieces for the Organ*, Schirmer, New York 1898, pp.59-62.



In the greater majority of cases, the change is towards the stretto (increasing of textural intensity), heightening the musical energy by means of compressing the polyphonic texture. An example of increasing the canonic concentration over the course of a whole movement can be found in the first movement (Andante) of J.S.Bach's Sonata in B minor for flute and harpsichord obbligato. The subjects presented at the beginning of this lengthy movement receive, in due course, canonic treatment that becomes increasingly more compacted. In bars 88-101 as shown below[36] we can find the following relationships between the flute and the right hand of the harpsichord (the changing parameter each time has been highlighted):

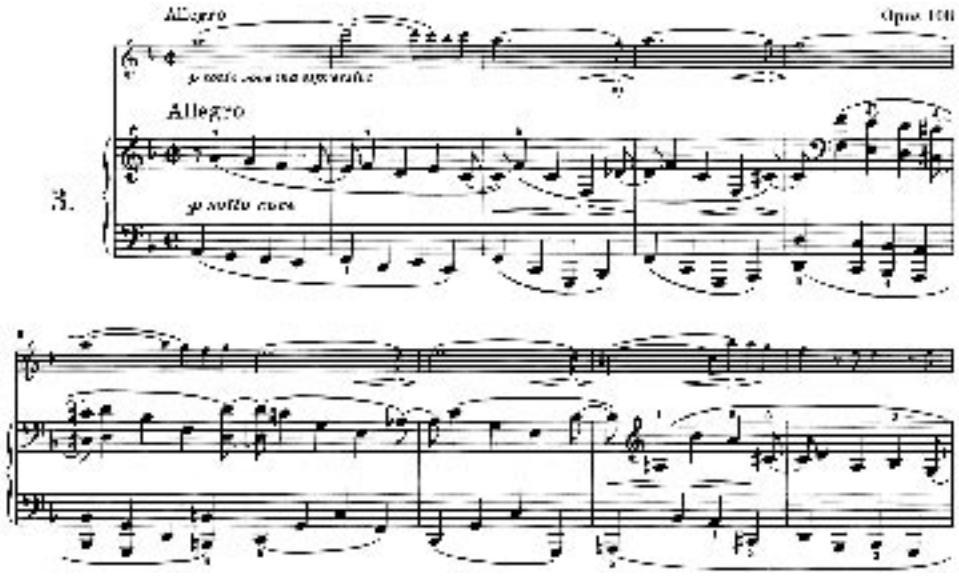
The following part	**interval**	**Distance (time-span) between the voices**	**Length of sequence**
Flute	Upper fourth	Half a bar	3 bars (88-90)
Flute	Upper fifth	Half a bar	3 quarters (90-91)
Flute	Upper octave	Quarter-note	3 quarters (bar 91)
Harpsichord	Lower octave	Quarter-note	3 quarters (bar 92)
Flute	Upper octave	Quarter-note	3 quarters (bar 93)
Harpsichord	Lower octave	Quarter-note	3 quarters (bar 94)
Harpsichord	Lower fourth	A bar	2 bars (95-97)
Harpsichord	Lower octave	A bar	1 bar (98-99)
Flute	Upper octave	A bar	1 bar (98-99)
Harpsichord	Lower octave	Half a bar	2 bars (100-101)

[36] Bach, J.S., *Sonata in B minor* in Johann Sebastian Bachs Werke Bach Gesellschaft, Leipzig 1860, Band IX, p.11.


88
90
92
94
96
100

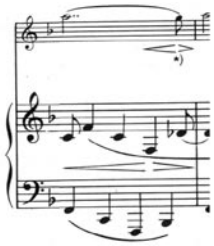
An example of the inverse development can be found in the first movement of Brahms' Sonata no.3 in d minor, Op.108, for piano and violin:[37]

The 11 opening bars, presenting the first subject, include a canon between both hands of the piano part, at the distance of an eighth-note: in bars 1-4 at the interval of an octave, in bars 5-6 at the third, in bars 7-8 in mirror inversion (with a special formula for diminishing the intervals, in which the fifth is turned into fourth, fourth into third, and major second into minor second and vice versa, so that in general the left hand plays a sequence of alternating fifths and fourth while the right hand plays alternating fourths and thirds), and in bars 9-10 again at the octave.



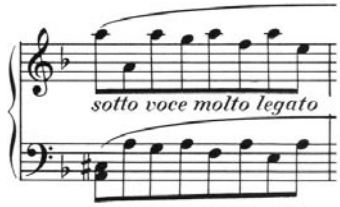
Two notes deviate from the strict canon at the octave in the first four bars (both in the right hand): the d-flat at the end of bar 3 (instead of the b-flat in the left hand) and the c-sharp of the end of bar 4 (instead of the a in the left hand). It is easy to explain the choice of c-sharp as a "correction" of the d-flat, but the d-flat is really a 'serious mishap' in relation to the tonic of d minor. I will offer neither solution to- nor justification of this problem; however, we will turn our attention to the remark that appears in the introduction to the superb Urtext version of the Henle edition:[38] "The different positioning of the crescendo- and diminuendo markings in bars 3 and 4 of the violin part, in contrast to all the comparable instances in the movement, has been preserved strictly in keeping with the markings of the original, but these notational differences do not necessarily testify to the fact that Brahms was referring to a different performance in any event." If we, nevertheless, examine the difference between bar 3

[37] Brahms, Johannes, *Sonaten,* G.Henle Verlag, München 1967.
[38] Hiekel, Hans Otto, *Vorwort*, Brahms, Johannes, *Sonaten,* G. Henle Verlag, München 1967, p.4.

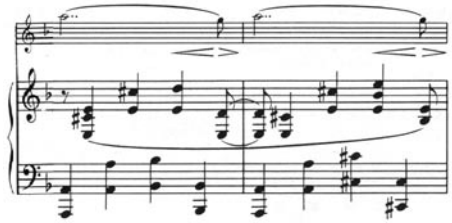


and bar 132 (the third bar of the recapitulation)
we will be able to discover that there is a connection between Brahms' original dynamic markings and the appearance of the note d-flat – each time in a different place, and precisely in keeping with the violin dynamics. This d-flat is that very distinctive note that had deviated from the canon at the beginning of the work, bringing it to our attention.

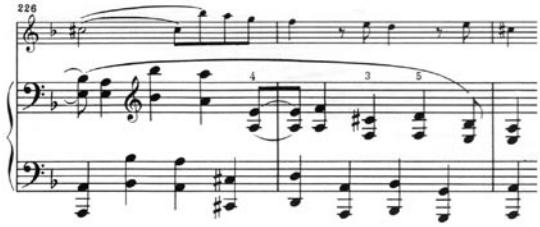
Of course, in the recapitulation, Brahms the Romantic does not return to the first subject in the same manner and in bar 130 (the recapitulation) he totally changes the piano part. At the same time, he keeps the canon functioning between both hands at the same distance of an eighth-note (for one bar) –



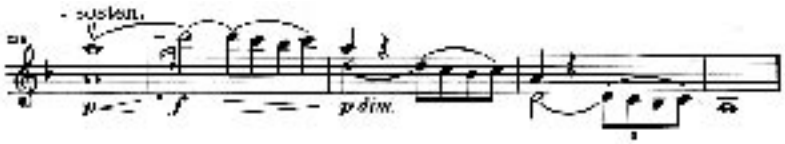
In the continuation, when the whole subject returns and appears in the coda (bars 218-236), the canon is much less present: in its third- and fourth bars (220-221) at the third at a distance of an eighth –



In its ninth- and tenth bars (226-227) at the octave and immediately after that at the third, at the distance of an eighth-note –

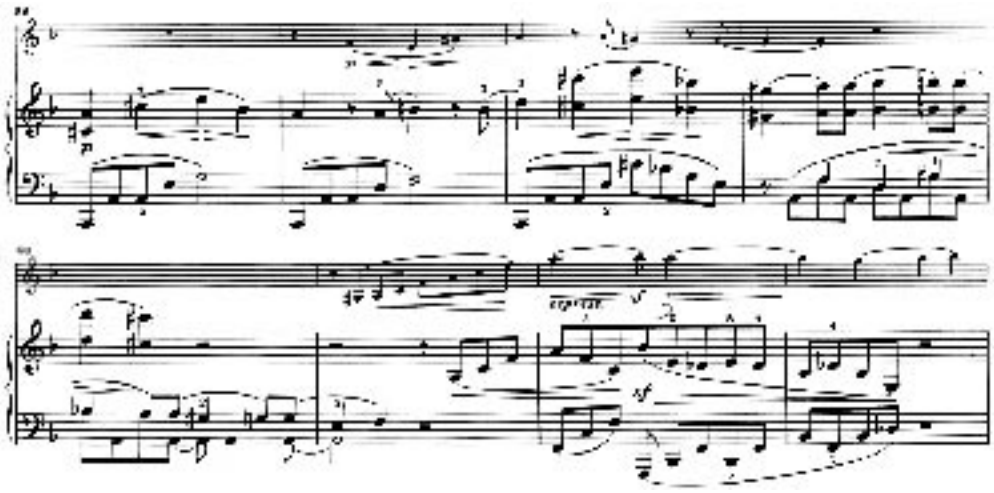


The general process occurring in the first subject of the movement is the decreasing of the use of canon between the hands of the piano part. The violin tries as best it can (it is limited in ability by its melodic nature) to save the canon right at the end of the coda (bars 259-262) –



but to no avail…

In fact, the second subject of the movement achieves stability from the point of view of canonic texture: at the end of the bridge passage, before the second subject appears (bars 40 to 44), the piano right hand part repeats (although with embellishments!) the subject the violin had played (canon at the upper octave at the distance of two bars) but the canonic texture, in its treatment of this melody, will appear in true form only later (bars 56-61);

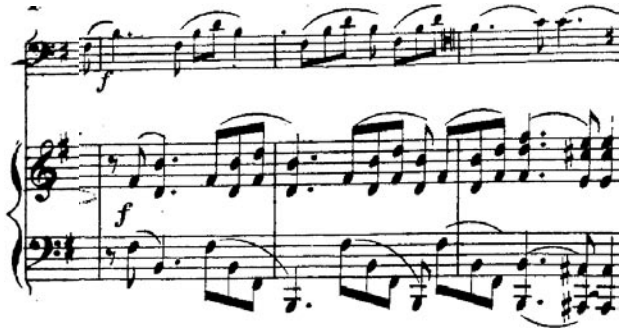


The violin enters in bar 57 in an accurate mirror inversion canon (the pivot note is an a) at the distance of a bar, with the right hand imitating itself as of bar 58 (a canon at the octave at the temporal distance of two bars – with the same embellishments that there were in bar 43!), and in bar 61 a new canonic entrance in the left hand (an accurate mirror inversion of the right hand in a distance of one bar, including the embellishments!). Exactly the same procedure is repeated in the recapitulation (bars 178-182 and 194-199). In this case, it seems that the strict use of mirror inversion reinforces the texture, rendering it fixed.

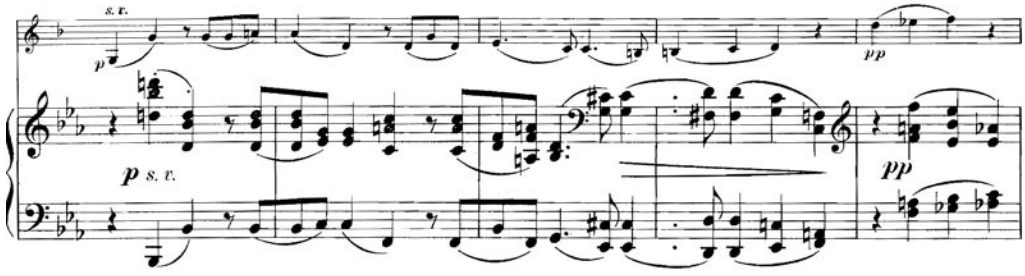
Canonic treatment is not rare in Brahms' music.[39] In many of his works he enjoyed the canonic texture, sometimes explicit and obvious to the listener and sometimes implicit and hidden, not only in development sections but even as theme characteristics:

[39] On Brahms' studies of the canon (with Joachim) see Brodbeck, David, *The Brahms-Joachim Counterpoint Exchange, or, Robert, Clara, and 'the best harmony between Jos. And Joh.',* in *Brahms Studies, Vol.1,* University of Nebraska Press, Lincoln 1994, pp. 30-80. See also Hancock, Virginia, *Brahms's Choral Compositions and His Library of Early Choral Music,* UMI Research Press, Ann Arbor 1983.

In the e minor 'Cello Sonata[40] the second theme of the first movement starts as a canon at the octave and at the distance of a quarter-note between the right hand and the 'cello (bars 58-60) -

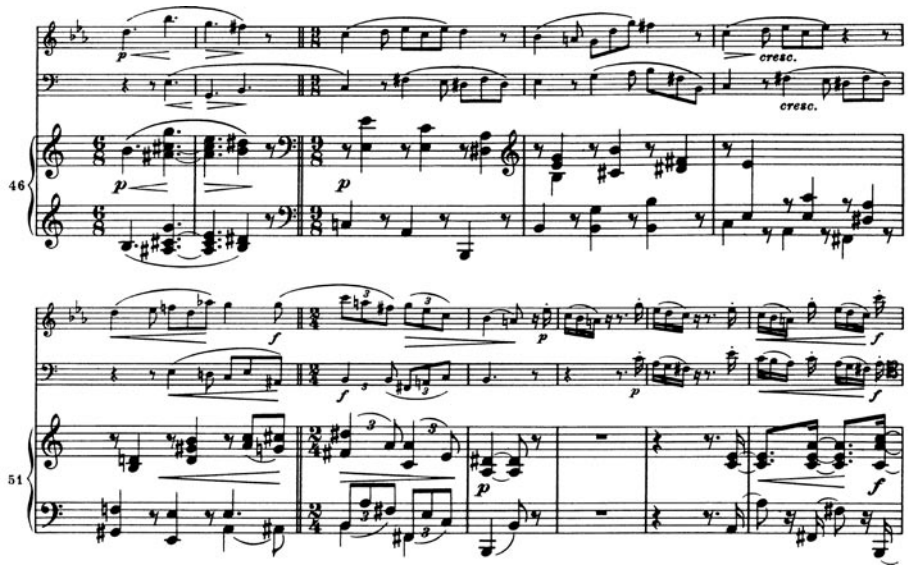


Also in his Sonata no.2 for Clarinet and Piano[41] Brahms presents the second subject in canonic texture – a canon at the lower fifth and at the temporal distance of a quarter-note between piano and clarinet – for six bars (bars 22 to 27);



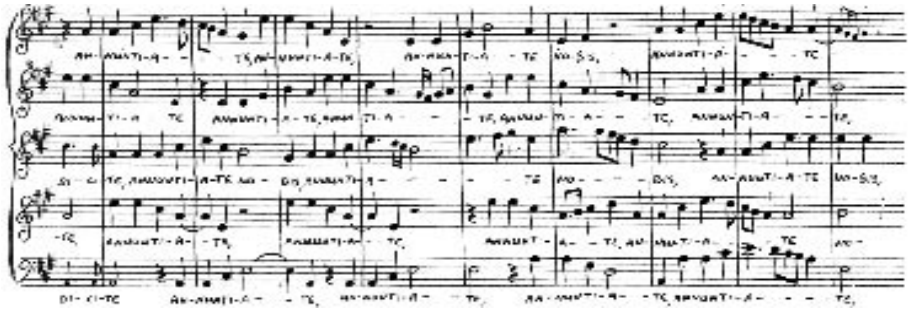
Another second theme receiving canonic treatment in the hands of Brahms can be found in the last movement of the Clarinet Trio:[42] there is a mirror inversion canon between the 'cello and clarinet at the temporal interval of a dotted quarter-note for 7 bars, and then, a simple unison canon at the temporal interval of half a bar, for 2 bars –

[40] Brahms, Johannes, *Sonate Op.38,* Simrock, Berlin n.d.
[41] Brahms, Johannes, *Zwei Sonaten* Op.120, N.Simrock, Berlin 1895.
[42] Brahms, Johannes, *Trio Op.114,* in Johannes Brahms: Sämtliche Werke, Band 9: Klavier-Trios, Breitkopf & Härtel, Leipzig 1926-7.



The examples presented above illustrate the great freedom still remaining within that same limited and narrowed-down playing field we call the 'canon'. A work of art is revealed in its entire splendor precisely when its creator chooses to limit himself/herself to a large extent by means of rigid rules, and, from the tension that exists between the obligation of the form and the will to be liberated from it or to breach it. The surprise caused by the 'breaching of the law', or the ability to overcome its limitations, can be seen as an expression of a well-developed sense of humor.[43]

Canons, whose regularity changes as they proceed, are known to have existed as of the Renaissance. An impressive example of great freedom in canonic texture can be found in works of Orlando di Lasso[44]:



In these nine bars, one can find canonic entries of many kinds in the **annunciate** motif: at the unison, octave and fifth, at the temporal interval of a quarter- or half-note, and also in mirror inversion. In the first five bars (from the section above) there is a group of seven entries of the motif that ascends at the unison and at the octave (with the fourth- and seventh entries at the fifth) at the temporal interval of a half bar (with the sixth entry, however, being at the

[43] An example of this is Mozart's k.560-562, also the menuetto of K.388.
[44] Orlando di Lasso, *Quem vidistis*, bars 11-19.

temporal interval of a bar and the seventh entry at the interval of three quarter-notes). At the same time, the motif in mirror inversion appears in the first two bars as a two-part canon at the octave at the temporal interval of a half-note, in the following pair of bars in a three-part canon at the octave at the temporal interval of a quarter-note and then a half-note apart, in the next pair of bars in a three-part canon at the octave and at the lower fifth at the distance of a quarter-note. And, finally, in the last two bars, there is a five-part canon (tenor, soprano 1, bass, soprano 2, alto) at the octave or unison in stretto (a quarter-note apart). **In this case, there is a sum total of 20 canonic entries in nine bars** of five voices.

The Distance (Temporal Interval) Between Voices

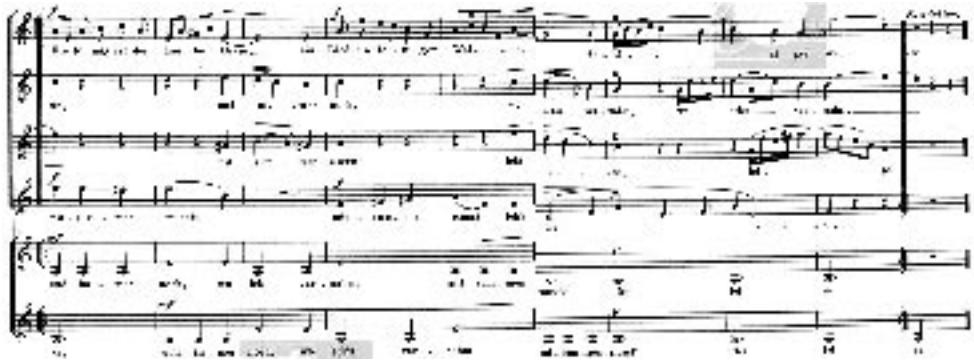
Old age is the unexpected

Space in a Bach fugue, haunting
The place between now and then.

Hamutal Bar-Yosef[45] (translation: Rachel Tzvia Back)

The attempt to define the minimal or maximal distance (period of time) between voices of the canon is more than problematic. In the **'round'**[46] (a cyclical canon in which the distance between all voices is identical, this being mostly determined according to the cadential procedure that concludes the melody) this distance is mostly of pair doubling (of 4 or 8 bars). Nevertheless, there are temporal distances that are the exception:

- Nine bars of Brahms' canon **Einförmig ist der Liebe Gram** (Op.113, no.13)[47] -

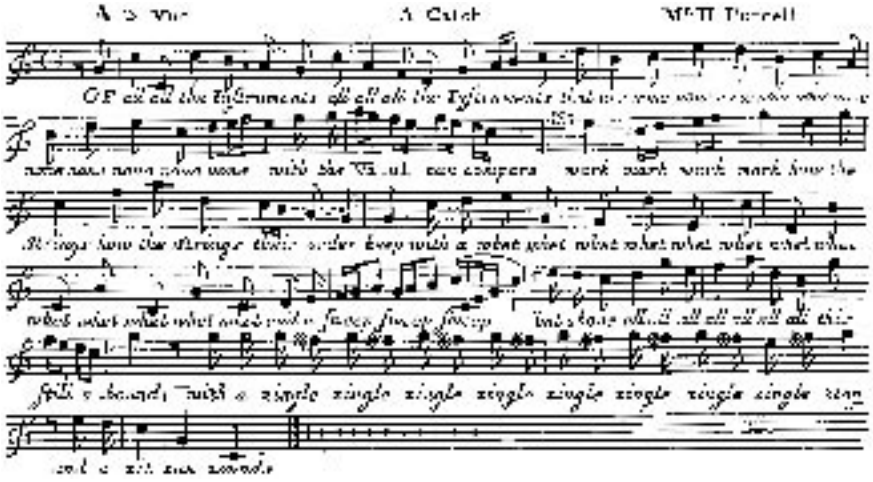


[45] Bar-Yosef, Hamutal, *Poems of Aging*, from *Night, Morning,* Carmel Publishing House, Jerusalem 2001.

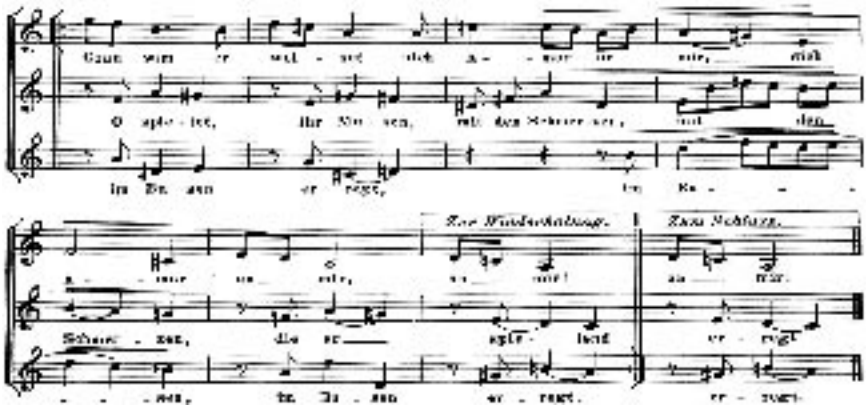
[46] See the huge choice of examples in *The Catch Club or Merry Companions, being a Choice Collection of the most diverting Catches for Three and Four Voices compos'd by the late Mr. Henry Purcell, Dr. Blow, etc.*, John Walsh, London, 1700. Or in *The Essex Harmony,* John Arnold, London 1767, pp.106-154. Also in Arnold, John, *Catch Club Harmony,* Longman, Lukey & Co., London n.d. Or Caldara, Antonio, (35) *Canons,* Österreichischer Bundesverlag, Vienna 1932, Denkmäler der Tonkunst in Österreich, Band 75.

[47] Brahms, Johannes, *13 Canons für Frauenstimmen Op.113,* Peters, Leipzig 1891.

- Five bars of the Purcell canon **Of All the Instruments**[48] -



- Seven bars of Brahms' canon **Grausam erweiset sich Amor an mir** (Op.113, no.2)[49]

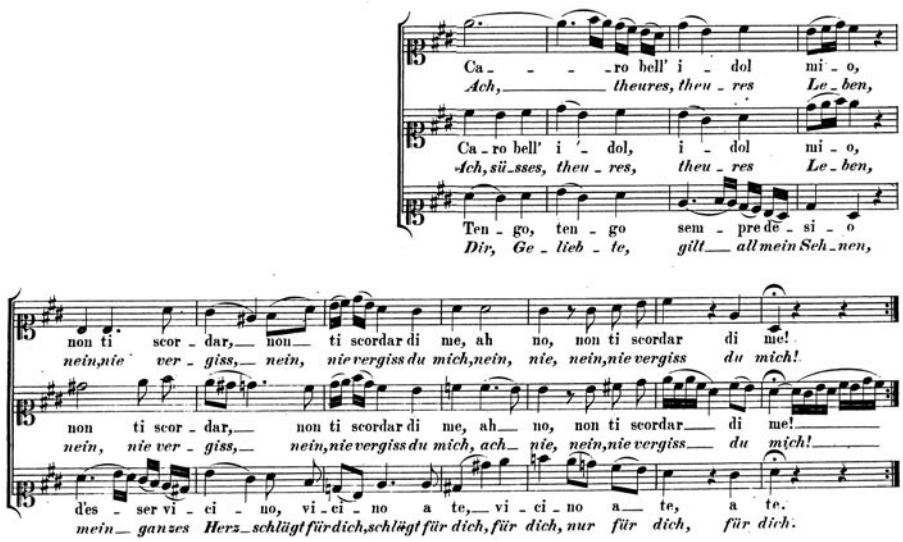


- 11 bars of Mozart's canon **Caro bell' idol mio, K.562**[50] -

[48] *The Catch Club,* Walsh, London 1700, p.22.

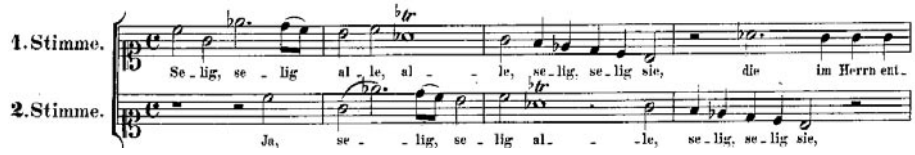
[49] Brahms, Johannes, *13 Canons für Frauenstimmen*, Op.113, Peters, Leipzig 1614, p.2.

[50] Mozart, W.A., *Kanon* '*Caro bell' idol mio*', K.562, in *Wolfgang Amadeus Mozarts Werke, Serie VII*, Breitkopf & Härtel, Leipzig 1880, p.39.



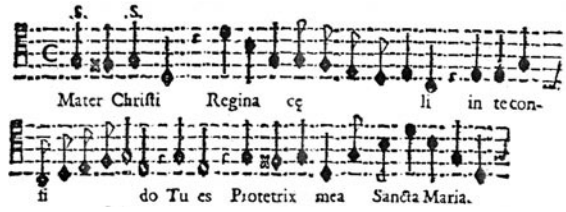
And the strangest of all (among the historic canons):

- **3/4** of a bar (at the temporal interval of 3 half-notes in the time-signature of 4 half-notes) -



The Mozart canon **Selig, selig alle,** K.230.[51]

There are instances in which the canon melody is written in such a way as to arouse embarrassment and confusion regarding the distance between voices. An example of the rhythmic displacement of a repeated motif producing a kind of "double canon" (the distance of a half-note between two voices, however, the distance of 7 quarter-notes between the **Protetrix mea** of the second voice and the same melody assigned to the **Mater Christi** text of the first voice on returning to the beginning) is found in Banchieri[52] -

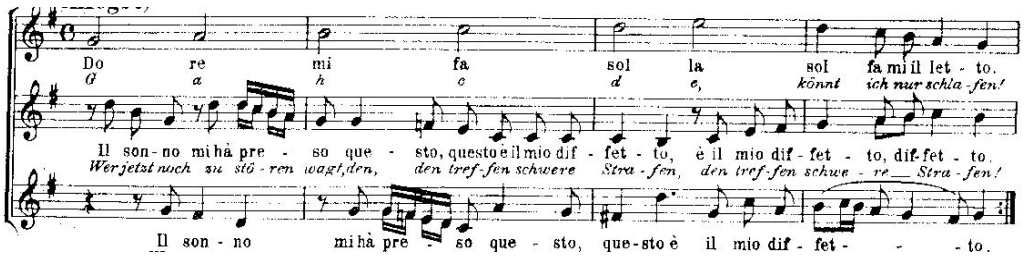


[51] Mozart, W.A., *Kanon* '*Selig, Selig alle*', K.230, in *Wolfgang Amadeus Mozarts Werke, Serie VII*, Breitkopf & Härtel, Leipzig 1880, p.4.

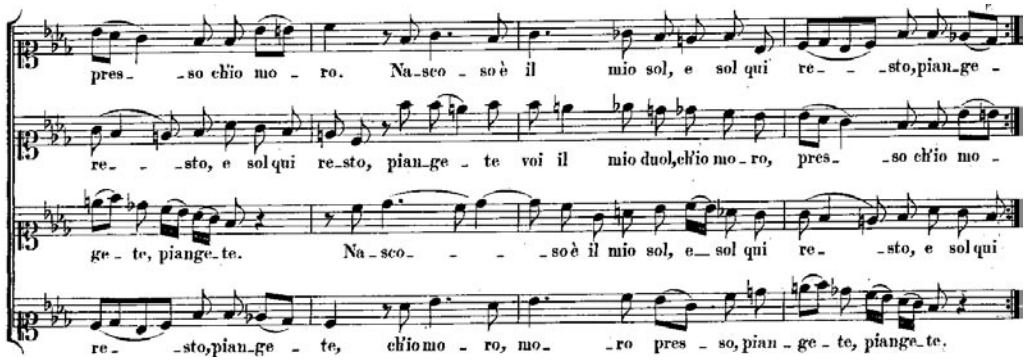
[52] Banchieri, Adriano, *Cartella musicale,* Giacomo Vincenti, Venice 1614, p.2.

It is worthwhile noticing the stretto (distance of a quarter-note in the unison) created between the voices when the first voice reaches the *Tu es.*

From time to time, even closer imitations than the fixed distance between each voice are created between voices of a circular canon. See, for example, how the first voice (in bar 2) imitates the second voice (bar 1) where the first voice reaches the third line: within the general 3-voiced unison canon at a distance of 4 bars, a fraction of a canon at the lower fifth at a distance of half a bar, the latter strengthened and emphasized by the verbal text. This is so in Caldara's canon[53]-



The possibility of creating a false canonic entry fascinated composers who had a sense of humor, such as Mozart. In his four-voiced unison canon[54], with entries at the temporal interval of 3 bars, the counterpoint in line with the third voice's enterance creates a stretto canon of a quarter-note at the lower fifth between the third voice and the first (in the following example, as of the second bar of the line, the third voice sings the opening line of the canon, and the entry of the first voice is emphasized by way of the use of the same text – **nascoso**) -



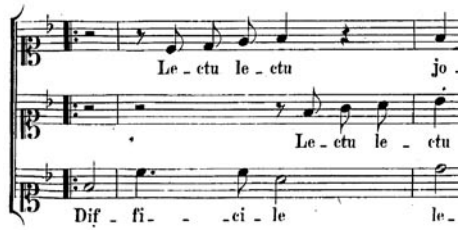
Likewise, a stretto canon can be created between two voices of the counterpoint, conversing among themselves while facing the opening melody, and it certainly needs to start at a different distance. In the following example,[55] in the framework of a unison canon with

[53] Caldara, Antonio, *18 Canons,* in *Das Chorwerk,* Möseler Verlag, Wolfenbüttel 1933, Heft 25, p.14.

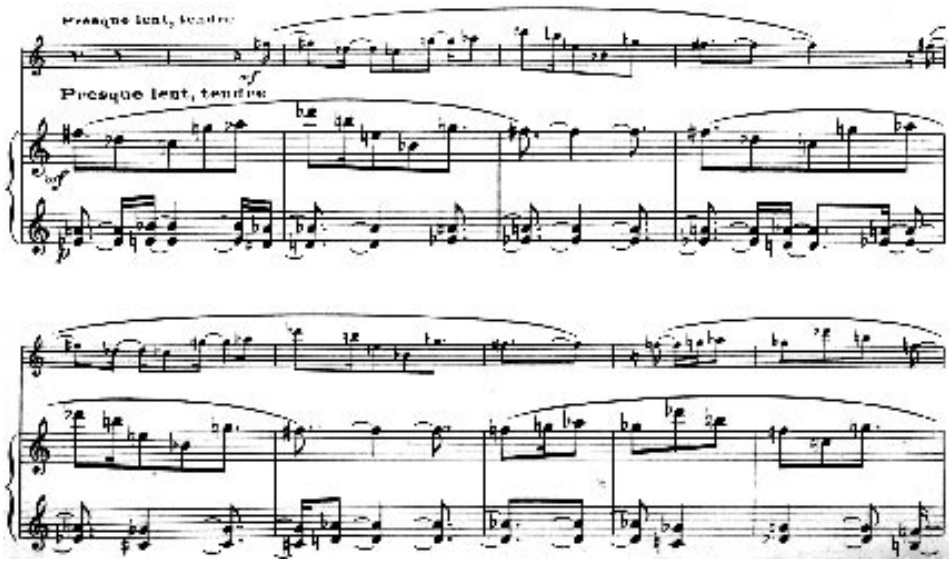
[54] Mozart, W.A., *Kanon* '*Nascosa è il mio sol*' *K557,* in *Wolfgang Amadeus Mozarts Werke, Serie VII*, Breitkopf & Härtel, Leipzig 1880, p.29.

[55] Mozart, W.A., *Kanon* '*Difficile Lectu*', K.559, in *Wolfgang Amadeus Mozarts Werke, Serie VII*, Breitkopf & Härtel, Leipzig 1880, p.29.

entries at the distance of 7 bars, Mozart threads a canonic entry at the upper fourth at the distance of half a bar between the second- and first voices –



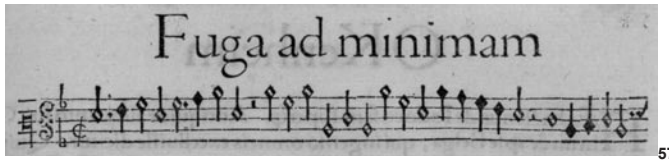
In the 20th century, there are examples of distinctive asymmetrical distances between voices (despite the fact that the canonic texture creates symmetry even in an unstable and unsymmetrical rhythmic environment). Here is an example of the distance of 5 eighths between the flute and the right hand of the piano in a work by Messiaen[56] -



The longer the distance between voice entries of the canon, the more difficult it is to identify the canon, generally, and to get a sense of the uniqueness of the atypical distance between voices, in particular.

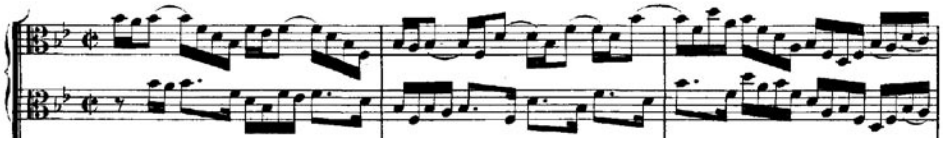
In the **continuous canon** (no repeats) there is a predilection for shorter distances between voices; in the Renaissance period, a canon at the shortest temporal interval (**minim** or half-note) was termed **Fuga (canon) ad minimam.**

[56] Messiaen, Olivier, *Le merle noir,* Alphonse Leduc, Paris 1952.



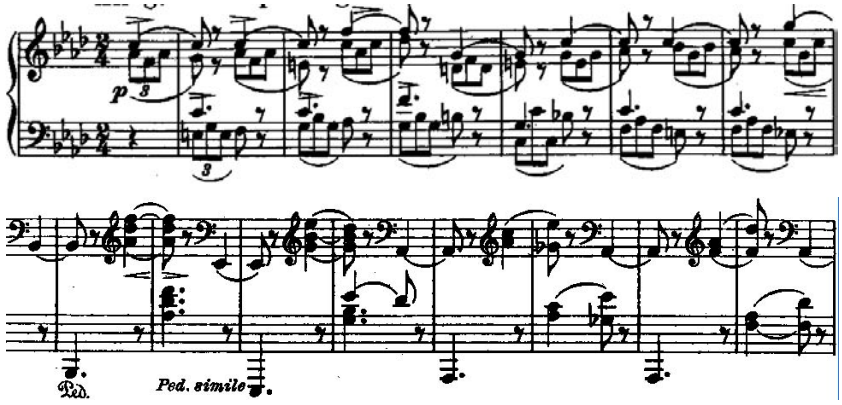
57

Bach challenges the limits of several aspects of the canon, among them, also the issue of the distance between voices. Beyond the proof of Bach's skills in the enigma of the ancient art of the canon (for instance, in 3 **ad minimam** canons for 4- and 8 parts BWV1072-1074[58] or Variation no.18 of the 'Goldberg Variations', an **ad minimam** canon in alla breve time), he astounds us with his ingenuity: in the ritornello sections of the first movement of Brandenburg Concerto no. 6 (the length of the opening ritornello is 16 bars) there is a canon at the distance of an eighth-note (!) between both solo violas –



Despite the fact that Bach wrote no tempo marking for this movement – and therefore, apparently, the distance between the voices (which is tempo-dependent by nature) could be augmented by choosing a slow tempo; however, a slow tempo is not logical considering the positioning of the movement in this work of several movements, and mainly because of the very slow harmonic rhythm of the ritornelli, demanding fast action. This example was surely the high point of the stretto (the cramming together of voices or the shortest distance between them) in the Baroque period. This high point prevailed till the 20th century, despite the challenges that Brahms set for himself in his canon-writing: throughout Intermezzo Op.118 no.4, there is a canon at the distance of a quarter-note between the high notes of each hand (sometimes inverted, sometimes even including chords and not just melodies – as in bars 53-91, and in bar 18 the distance between left- and right hand shrinks to two triplet-notes (although only for 5 notes) -

bars 1-6

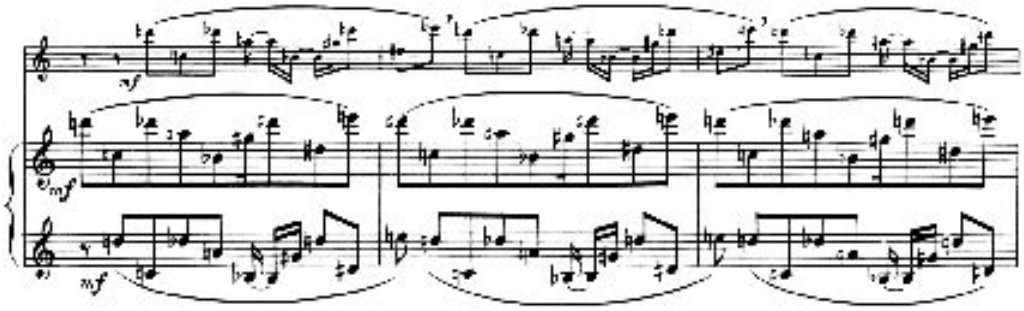


[57] *Fuga ad minimam*, Josquin (?) found in Glareanus, Dodecachordon, Basel 1547, Liber III cap.26, p.453.

[58] Bach Gesellschaft Ausgabe, Band 45.1, Breitkopf & Härtel, Leipzig 1897.

This is where we should think back to the canon at the distance of an eighth-note in the opening of Brahms' Sonata no.3 for Violin, presented in the previous chapter.

And here is an example of an especially dense 3-voiced canon at the octave (at a distance of an eighth-note) by Messiaen[59]: the stretto is not just between voices but also in the intervals created between them – the interval of a half-tone is produced 8 times, and in three cases (on the third eighth-note, the fourth and the last in the bar) there is a cluster of two lined-up half-tones. The melody also (the last three notes are a cancrizans [crab] inversion of intervals as opposed to the first three in the repeating 9-note formation, and only the b-flat "ruins" the symmetric, triple formation which a g-natural could have produced) adds to the sensation of denseness -

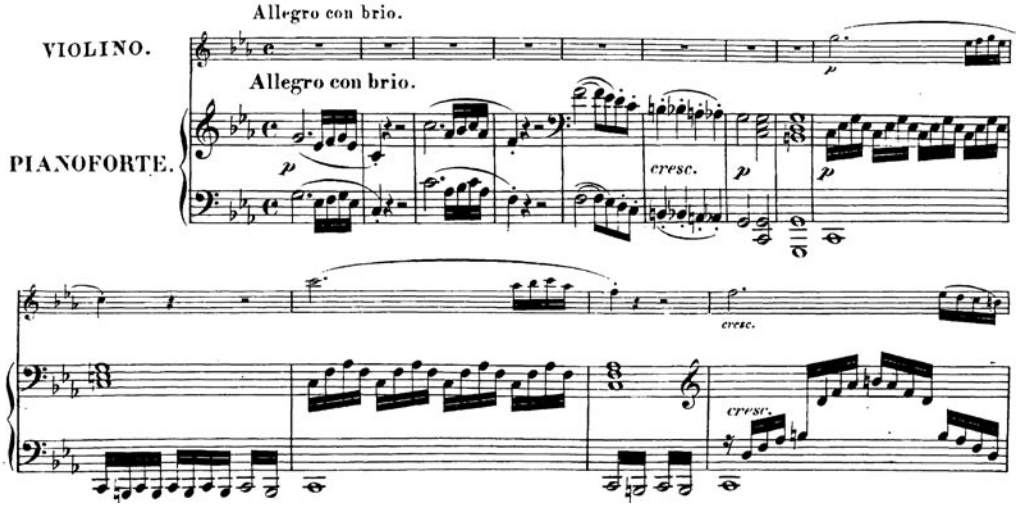


And so it is that the diversity of different temporal intervals between voice entries of the canon is extremely broad, almost endless. Actually, if we are prepared for a real microscopic investigation – every group of players/singers playing/singing any kind of melody is creating a canon: even if all make the utmost effort, perfect synchronization will never be achieved and with any group of violinists or singers, and, indeed, in every performance, even in the most professional orchestra or choir, it is par for the course that a canon will be created (this only depending on the degree of the strict examination we are to carry out). However, we have all become accustomed to this effect of heterophony or 'continuous canon' in listening to an orchestra, and we grasp this dense canon (at the temporal interval of thousandths-, hundreds- and even tenths of a second between members of the group) as a standard of 'rich, sturdy sound' well suited to the Romantic music of the 19th century, and, thus, even aspire to it. Do any of us notice the canon frequently created between the first violins and woodwinds or brass playing a unison melody with them in the midst of a large symphony orchestra? Even among the finest of professionals, this unintended canon is still produced due to the matter of the spatial separation of seating on the stage that separates players from each other and the performers from the concert hall audience.

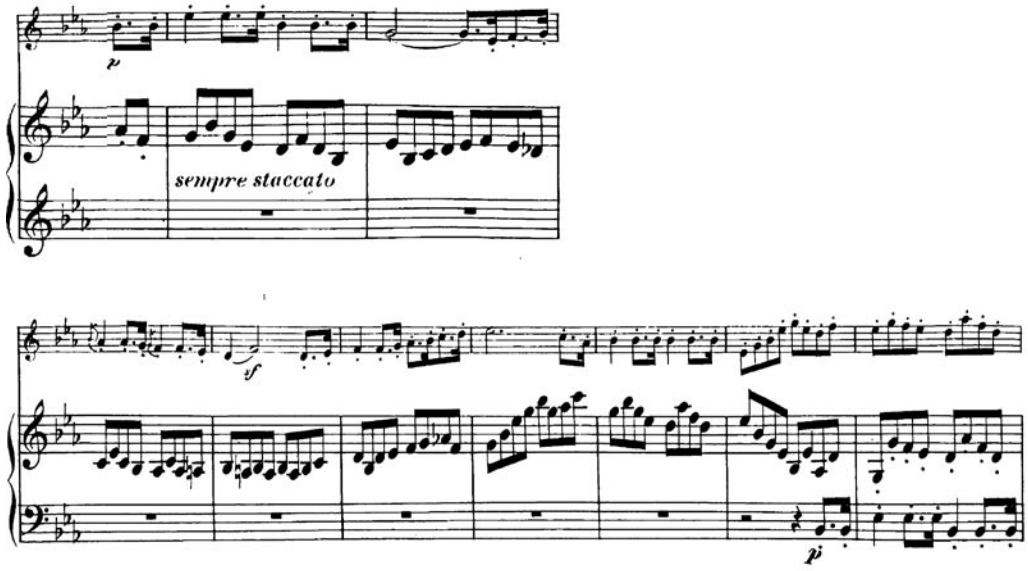
At the other extreme, the temporal interval between voices of a canon could be so large as to render the definition of the canon empty of any content. In effect, the listener discovers that the work functions as a canon only the moment the following voice concludes the accurate repeat of the opening declaration of the leading voice, and if the opening melody of the leading voice is lengthy, it then stands to reason that the canon is extended and is only revealed after twice as long as the distance between the voices. For example, in Beethoven's Sonata no.7 for

[59] Messiaen, Olivier, *Le merle noir,* Alphonse Leduc, Paris 1952.

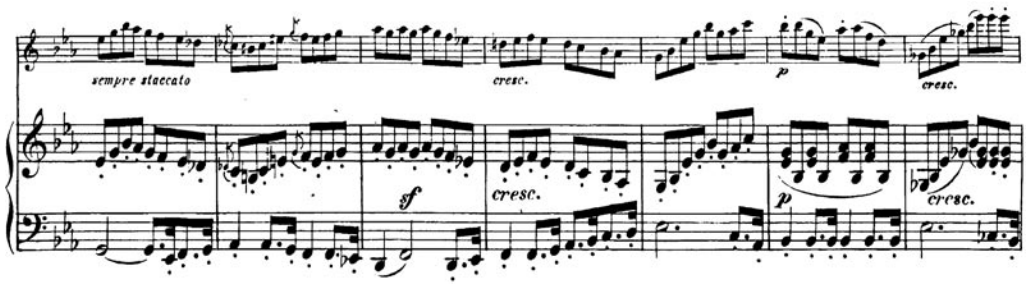
Piano and Violin (Op.30 no.2), the canon in the first subject of the first movement, between the violin and the right hand of the piano, dissipates and disappears only in the middle of the fifth bar of the violin part (bar 13)[60] -



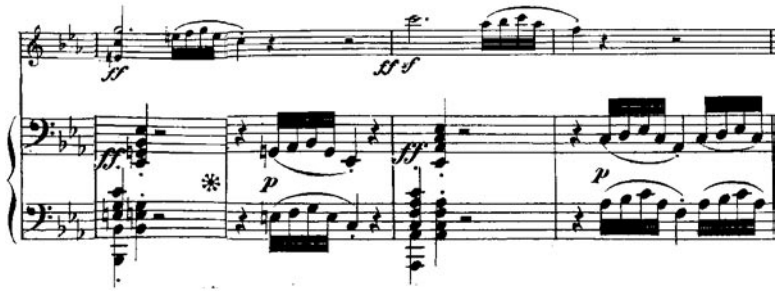
And the canon in the second subject of the same movement, this time between the violin and the left hand of the piano, becomes clear as such only after 15 bars.



[60] From his desire for equality between violin and piano, Beethoven also uses a similar technique in Sonata no.5 for Violin and Piano ('Spring') and in Sonata no. 9, ('Kreutzer').



In any case, the entire movement is characterized by many disclosures of canons or apparent canons (fragmented), as in the example of the stretto canon (in changing temporal interval) appearing in the coda (bars 218-221) –



The most interesting example is in the recapitulation, where Beethoven has the violin join the piano in unison (bar 125 and on) and the moment the violin answers as a following voice (bar139), a canon, in fact, is formed between the violin and itself.[61] True there is a difference between both the violin's 'canonic entries' (in scoring and dynamics) but, still, from here the question may be asked as to why it is not possible to see any melody- or subject repeat as a process of canonic imitation.

Would it be possible to see the refrain of a rondo as a canonic entry? Is any repeated sounding of a specific work the following entry of a universal canon?

The 'Double See-Saw' Effect – On Meter in the Canon

Meeting and parting endlessly
The one ascending while the other descending on the wheel

Natan Zach[62]

One of the most meaningful aspects of the singing- or playing of canons is that of the choice of meter in performing the music. The canon offers the opportunity of discussing this somewhat neglected subject, as it constitutes an excellent example of distinguishing between the written

[61] Discussion of the function of the canon in this sonata will not be complete without examining the jest Beethoven makes of the genre of the canon, and by means of it, in the Scherzo of the same sonata.

[62] Zach, Natan, *Death-Carpet (after Else Lasker-Schüler)*, from Lasker-Schüler, *Mein Blaues Klavier,* Hakibbutz Hameuchad, Tel Aviv 2011, p.12.

meter (the length of the bar in the movement or a given section) and the actual rhythmic values (of the textural-, melodic- and harmonic content). Regarding this issue, the canon also allows for examination of the complex subject of the difference between qualitative meter (the character of the beats – heavy or light or 'good' and 'bad' in relation to where the barline is written) and quantitative meter (the number of syllables or notes and the directionality that it creates towards the center of the musical phrase and away from it).[63]

In order to emphasize the contrast in relationship between the leading voice and the following voice, and mainly as a result of their melodic movement being identical, there must exist successive states of changes in balance, where, at any given moment, only one of the voices stands out (i.e. emphasized by strong dynamics, distinct articulation or a note held for longer - tenuto). The directionality of melody in the canon can not be executed when performed with rubato (accelerando, ritardando), for since the performance of both canonic voices is at a temporal distance, any rubato will interrupt either the synchronization between them or the identification between them; that is to say – it will ruin the canonic texture itself.[64] The performer must create directionality by means of dynamics. A crescendo from the beginning of the melody to the entry point of the following voice, and, consequently, a diminuendo for the same time span will produce a constant state of contrast and complement between the voices: at any given moment, if one is rising in volume the other will be falling in volume; in any given moment, if one voice is loud and prominent, the second will be soft and played down. And so one can, in this way, maintain in music a kind of closed system somewhat like the law of connected vessels or of that of conservation of energy.

Without such a **double see-saw effect**, it will be difficult for the listener to distinguish between the voices, and to manage to examine the relationship of identity between them at the same time. The meter that allows for this effect to take place is determined by the distance between the voice entries, and it is the double of it: if the distance between voice entries is one bar, the meter (the distance between one heavy place and the next heavy place of each voice) will be two bars; if the distance between the voice entries is two bars, the meter will be four bars, and so on. It is worth noting that beyond a certain distance (in fact, in a situation where there is no more stretto, where the melody gets to a cadential pause in preparation of the entry of the following voice) the effect loses its meaning. This is what happens in the '**round**' or '**catch**', that is to say, in the circular-repeated canon.[65]

There is some difficulty in finding examples of the 'double see-saw effect' in music literature and this difficulty can be explained by a number of reasons:

1) Most canons are written in a shortened form, as 'riddle canons' of just one line of music that holds all voices. This kind of writing is considered academic-theoretical, and, traditionally, has no dynamic markings added (In general, it can be said that all the writing of canons, and, mostly on the subject of canons, does not address the performer and does not relate to their interpretation. In most cases, it remains in the

[63] This issue demands elaboration elsewhere.

[64] As an example of the problematic nature of using rubato in a canon, consider Arensky, Anton, *6 Klavierstücke in Canonform*, *Op.1*, Rahter, Leipzig 1881, p.10: *Sorglosigkeit.*

[65] A canon in mirror inversion, to be mentioned in the continuation, raises an interesting question regarding this effect.

theoretical domain. Is this a shortcoming of those who 'think via the keyboard', as do most theoreticians and many composers, and therefore it is so difficult for them to enter the mysteries of polyphony – to understand the essence of its existence and the behavior process of the single voice? Analogous to the analysis of a painting, one can describe this as relating to picture skill from the compositional aspect of forms and colors only, at the same time totally disregarding its line and drawing technique).

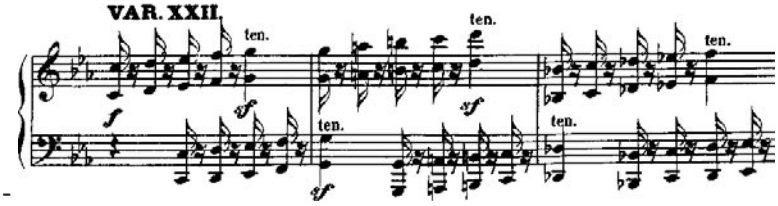
2) Most canons were written in early periods, at a time when dynamic markings were not included at all, and signs for the gradual increasing- and decreasing of volume were not used.

3) Most of the canons written in the 19th- and 20th centuries have a large distance between voice entries, thus the 'double see-saw effect' does not apply to them.[66]

4) Many canons of the 19th- and 20th centuries were written to be played on instruments for which separation in performance between voices is problematic: in customary piano notation, dynamic markings apply to both hands and are written between both staves; on the organ[67], there is no possibility of gradually changing dynamics (in particular the simultaneous executing of crescendo and diminuendo); and, in writing for singers, it is customary to use few performance instructions in general and dynamic signs in particular. In all of these three possibilities, accepted traditional notation avoids specifically placed dynamic markings that relate to each individual voice, with only general, localized dynamics specified.[68]

5) In literature touching on interpretation in music, there is no reference to the canon genre and its performance.

Even so, it is possible to point out a number of examples where composers relate to the 'double see-saw effect' in notation:



Beethoven[69] -

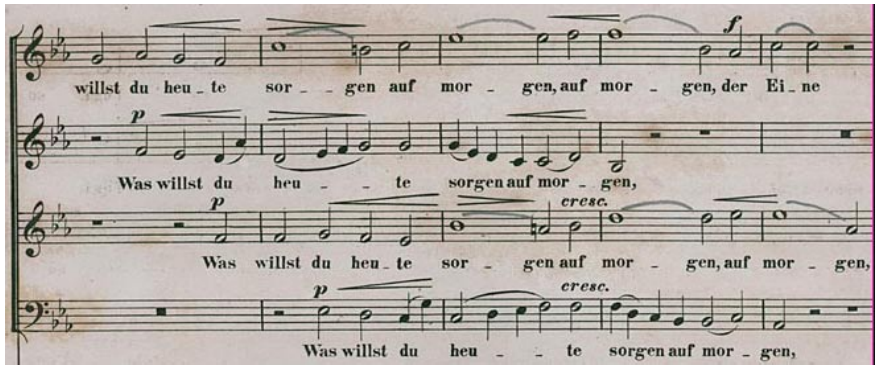
[66] For example, in the first- and second movements of Hindemith, Paul, *Kanonische Sonatine für zwei Flöten, Op.31, Nr.3*, Schott & Co., London 1952, the distance between voice entries is 18 eighth-notes and 14 respectively, and, until the entry of the following voice, there are many dynamic signs in the leading voice. On the other hand, it is interesting to see that, for half of the third movement, the distance between them is reduced to a half bar (in 'Ein wenig ruhiger'), and immediately, as a result, the 'double see-saw effect' indeed appears with Hindemith's dynamic markings (Hindemith, as well as being a composer, pedagogue and theorist, was also an experienced violist).

[67] For example, see the organ canons of both D'Indy, Vincent, *Prélude et Petit Canon Op. 38*, Durand, Paris n.d., and of Fleuret, Daniel, *Andante en forme de Canon Op.7*, Janin Frères, Lyon, 1906.

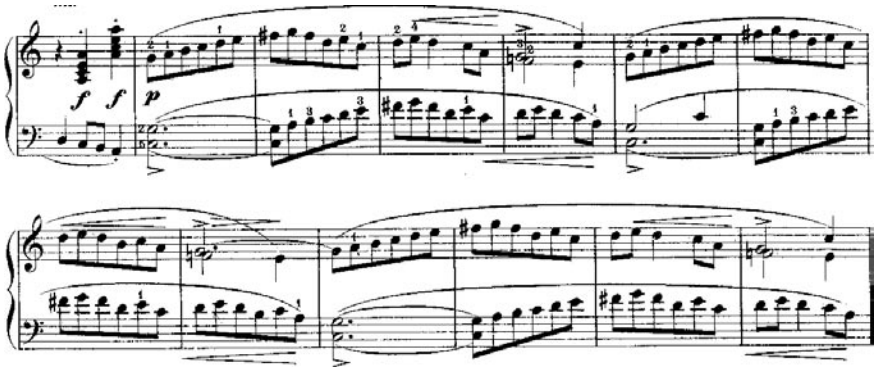
[68] See, for example, Berlioz, Hector, *Canon libre à la quint 'La nuit de son voile épais',* Breitkopf & Härtel, Leipzig 1900, and also Brahms - *2 Motetten Op.29*, in *Brahms Sämtliche Werke*, *Vols. 21-22*, Breitkopf & Härtel, Leipzig 1949.

[69] Beethoven, Ludwig van, *32 Variations in c minor,* Bureau des Arts et d'Industrie, Wien n.d., Var.22.

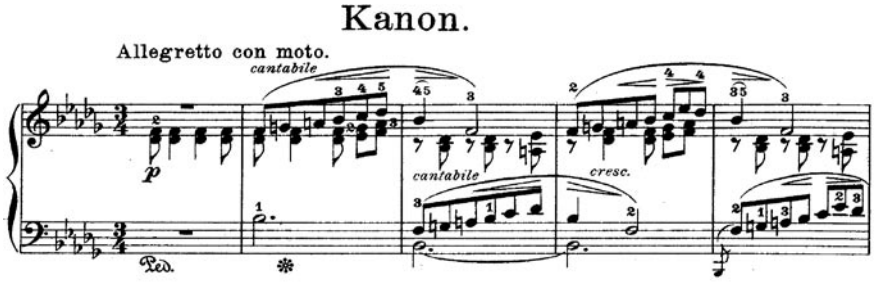
Brahms[70] -



Chopin[71] -



Grieg[72] -



[70] Brahms, Johannes, *Geistliches Lied Op.30*, in *Brahms Sämtliche Werke, Vols. 21-22,* Breitkpf & Härtel, Leipzig 1949.

[71] *Mazurka Op.56, Nr.2*, Chopin, Frédéric, *Frédéric Chopin: Werke, Band III*, Breitkopf & Härtel, Leipzig 1879, bars 52-64.

[72] Grieg, Edvard, *Lyric Pieces Op.38, Nr.16,* Peters, Leipzig 1897, bars 2-5.

On the 'Echo' as a Canon

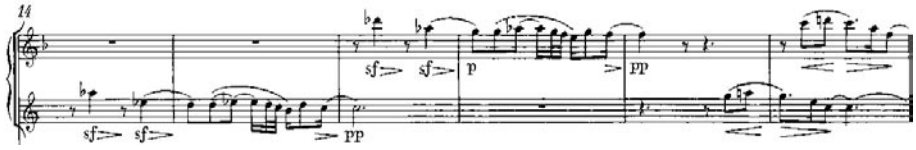
Let echo too perform her part,
Prolonging every note with art,
And in a low expiring strain
Play all the concert o'er again.

Joseph Addison[73]

Already in a previous section, a query arose regarding the possibility of identifying the return of the 'refrain' of a rondo as a canonic entry. Directly continuing from there, one could ask the same question about the musical 'echo' – would it be included within the bounds of the definition of the canon?

Indeed, the definition of the canon included the expression 'many-voiced (polyphonic) texture', but both this and the mathematical definition 'acoustic superposition of a number of melodies, each of which constitutes a transformation of the basic melody' do not reject the possibility of the basic melody containing fragmental rests in symmetrical segments. Such is the case of the echo – an accurate repeat of a complete melody or of the last part, appearing in a silence which is an integral part of the basic melody. Our natural inclination is to identify the echo in a canon, mostly when there is a geographical distance between the leading voice and between the answering voice (i.e. that which is imitating).

A good example of this is the pastoral scene in the third movement of the 'Symphonie Fantastique'.[74] At the opening of the movement, the oboe, from behind the scenes, answers the cor anglais playing on stage, each in turn, for two bars. In the second phrase, the cor anglais continues playing into the oboe's echo, creating counterpoint with it. And so it is with the third- and fourth phrase, at the same distance of two bars. In the fifth phrase (bars 18-19), the oboe suddenly answers at the temporal interval of a half bar, and, as a result of this stretto, it becomes much closer (it would be interesting if this 'nearing' phenomenon of the distance of the canonic answer for the purpose of actual physical drawing closer has ever been exploited, and, as a result of this, bringing the first oboist back on stage…).



The last phrase, actually the bar that completes the cor anglais melody, is, needless to say, an articulate canon (at the octave).The opening bars do not present themselves so obviously as a canon, despite the fact that the only difference between them and the last phrase is the distance between the voices.

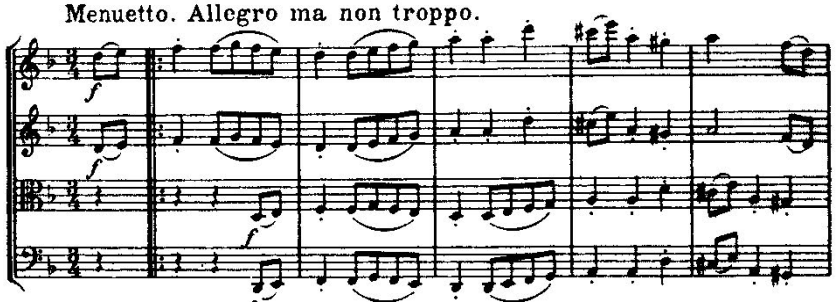
---

[73] Addison, Joseph, *an Ode for St. Cecilia's Day, IV,* 1694.

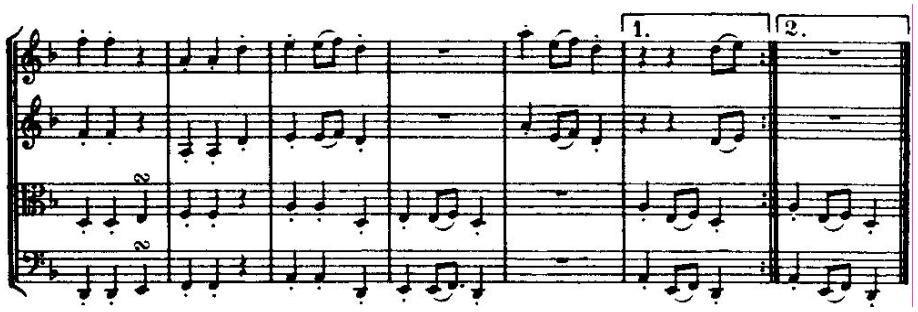
[74] *Scène aux Champs* (Scene in the Countryside), *Symphonie Fantastique*, in Berlioz, Hector, *Hector Berlioz Werke, Serie1, Band 1*, Breitkopf & Härtel, Leipzig, 1900.

It is worthwhile observing what happens to the **listener** at the end of the movement: the cor anglais plays the same fragments of broken melody, awaiting and expecting the oboe's echo-answers, but in vain. At the end of the movement, the echo only exists in the listener's imagination. Can this be seen as an additional species of counterpoint that causes the listener to be an active agent of the musical work? Is this not similar to the way our vision functions – through the reflection of a picture penetrating the eye's retina and 'screened' in the rear section of the brain?

The total, opposite case is the Menuetto from Haydn's 'Fifths' Quartet.[75] It is entirely a canon at the octave of the two violins versus the viola and 'cello –



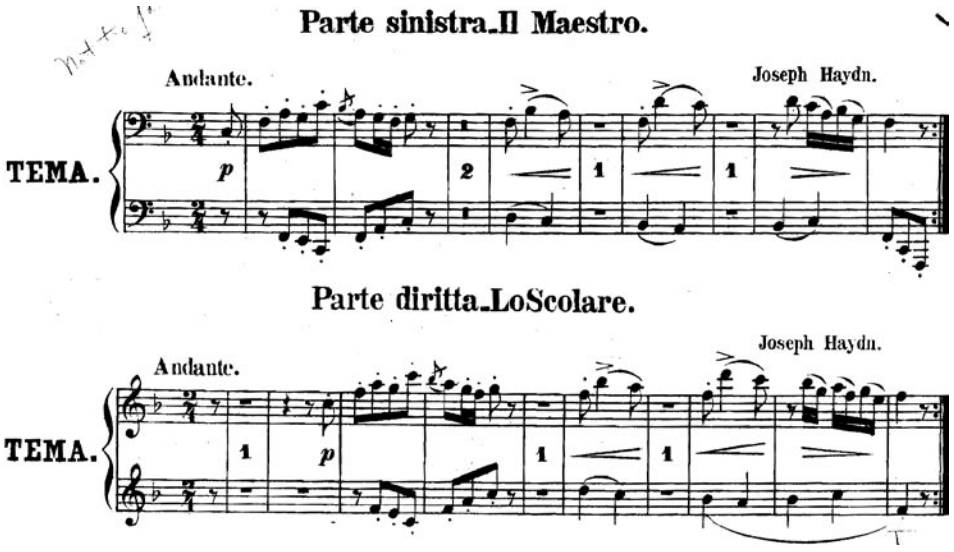
But at the end of the Menuetto, where the last bar is repeated again, the other voice (alternately) is silent, thus creating an 'echo' effect (bars 36-37, the final bars) –



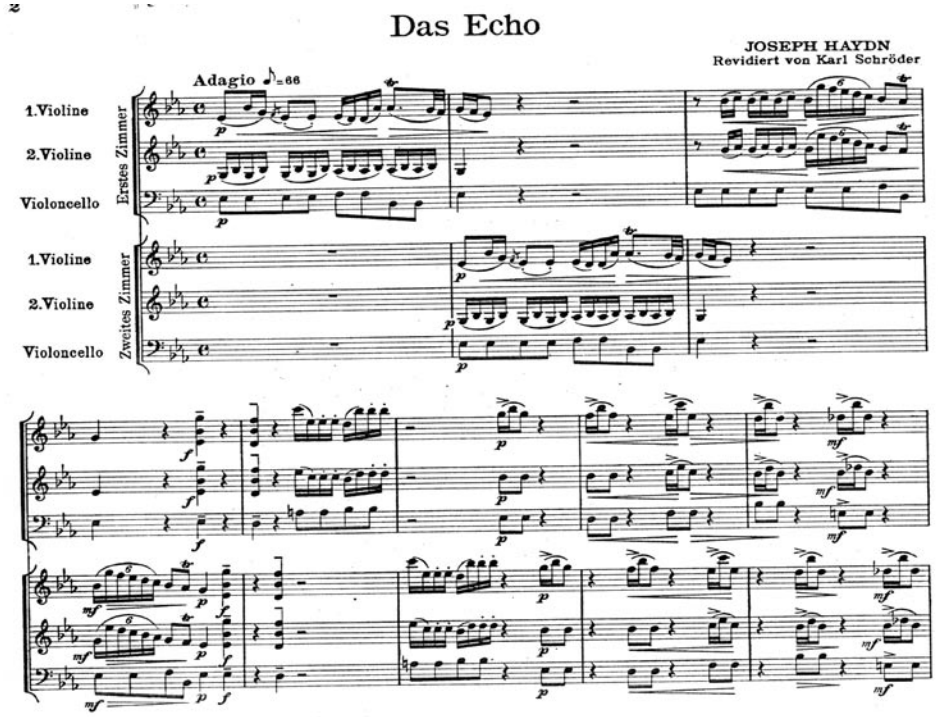
The 'echo' surprise arrives after an articulate and very lengthy canon, in addition to the fact that this is also the end of the whole movement, causing the blurring of judgement when it comes to distinguishing between 'canon' and 'echo', similar to what Berlioz had created (although in the opposite order).

From here a question arises concerning a great number of works. Is the following example– (Haydn - "The Master and the Scholar", subject and 7 variations in methodical canon)[76] one of a canonic work? -

[75] Haydn, Joseph, *Quartet in d minor, Op.76 Nr.2*, Eulenburg, Leipzig n.d.
[76] Haydn, Joseph, *Il Maestro e lo Scolare, Hob.XVIIa:1*, Peters, Leipzig n.d.



Another work raising the question of an echo constituting a canon is a Haydn Divertimento,[77] composed for two string trios **'in two separate rooms'** (!) –



[77] Haydn, Joseph, *Das Echo, Hob.II:39*, Friedrich Vieweg, Berlin n.d.

An interesting variant on the 'echo' is the 'shadow'. Like the echo, the shadow also changes in length according to environmental conditions, however, in the case of the shadow it is often located ahead of its walker-creator, in front of him/her.

Yehuda Polliker[78] wrote and sang –

'My shadow in me made me shake
Made me scared more than ever
It asks where you are taking (me)
I take you back to where you're escaping […]

Let's fly far
You'll be my wings
To the imaginary story
That wasn't possible until now…
Enough continuing to run away
To what we always wanted to forget […]

And only melodies remind
That outside it's possible to be
Liberated from all fear
Only when my shadow and I are together […]

(Translation: George Jakubovits)

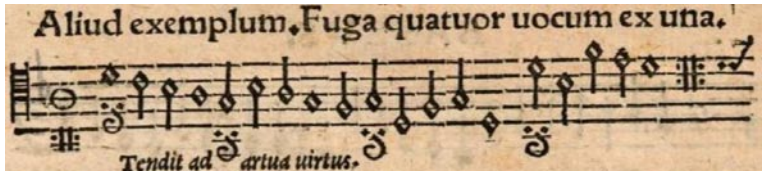
On Moving in a Circle, The Endless Vertigo of the Canon

"One in All, All in One…
Here words fail

For it is beyond past, present and future."[79]

[78] Polliker, Yehuda, *The Shadow and Me,* from *"Hurts But Less"*, CBS, Tel Aviv 1990.

The circular canon, repeating again and again from its beginning, is liable to cause despair. The lack of expectancy for advance is constant, resulting from inertia of a kind that never leads to any point of conclusion and is likely to induce a lessening of energy as well as fatigue.



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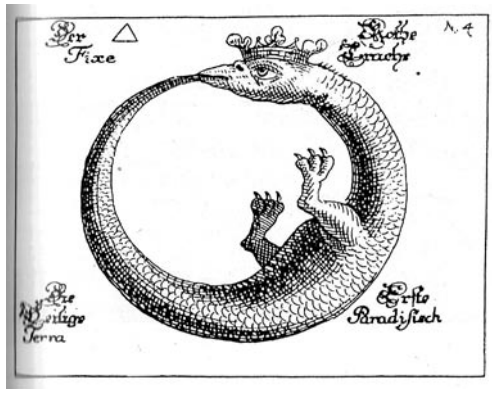
The party guilty of this endlessness is the double line with its double dots, that same repeat sign waiting at the end of the line, whose existence can not be ignored. It is the embodiment of the threat forbidding one to take leave of the canon (and not to enter it, as in the case of the Garden of Eden). It is the cause of cyclicality, like 'Ouroboros' – the snake or dragon which swallows its own tail, this being the symbol of the beginning of the Great Alchemic Circle, the 'Great Work'.



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The advantage of this sleep of mine, with its sudden, labyrinthine short-circuits – such that, though I recognize the chronology of different periods, I can travel through them in both directions, having done away with time's arrow – the advantage is that I can now relive it all, no longer encumbered by any forward or backwards, in a circle that could last for geological ages.[82]

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79 Zen wisdom – The Paintbrush of artist Yasuichi Awakawa, from Suzuki, D.T., *Studies in the Lankavatara Sutra*, London 1930.

80 Coclico, *Compendium Musices Descriptum*, Montani & Neuberi, Norimberg 1552, p.72.

81 The image of Ouroboros from Eleazar, Abraham (Pseudo-), *Donum Dei,* Erfurt 1735.

82 Eco, Umberto, *The Mysterious Flame of Queen Loana,* Trans. Geoffrey Brock, Vintage, London 2006, p.416.

Indeed, one can find an advantage in exiting the domain of time, in the ability to shoot ahead like an arrow – but on the surface of a sphere or a cylinder, the movement characteristic of that of voices in a circular canon. For each bout is, nevertheless, special in its own way, at least while being performed in music. While performing a canon one can actually reach a fulfillment of the wish -

'Free me from the eternal repeat
Reviving one by one my soul's stories'

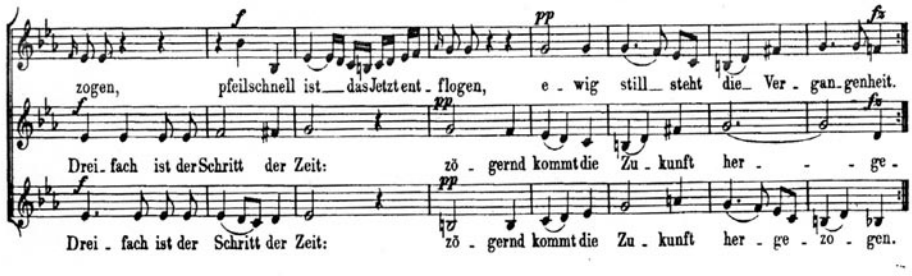
Haviva Pedaya [83]

This only depends on the wish, awareness and ability of the performers. The actual ability of expressing the feeling of powerlessness in the face of the endless cyclical proceeding of the world - this has value as the actual reading of the poetry of Ecclesiastes –

'Generations come and generations go,
But the earth remains forever […]
The wind blows to the south
And turns to the north;
Round and round it goes,
Ever returning on its course […]
All streams flow into the sea,
Yet the sea is never full.
To the place the streams come from,
There they return again […]
What has been will be again,
What has been done will be done again;
There is nothing new under the sun.' [84]

Relativity of Time Spans Between Voices

Time in fact is "before" and "after" in one.[85]



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[83] Pedaya, Haviva, *More of Genesis' stories*, from *Blood's Ink – Poems*, Hakibbutz Hameuchad, Tel Aviv 2009.
[84] Ecclesiastes 1, verses 4,6,7,9. BibleGateway.com New International Version, Biblica 1973.
[85] Bradley, F.H., *Appearance and Reality – a Metaphysical Essay,* Allen & Unwin, London 1893, p.39.

'Threefold is of Time the tread:
Lingering comes the Future pacing hither;
Dartlike is the Now gone thither;
Stands the Past aye moveless, foot and head.'[87]

The mathematical wording of the laws of physics does not express the necessity of a one-way stream of reality within time. According to them, there is no reason why we should not be able to invert the one-dimensional axis of time,[88] that is in theory, to change the direction of the forward-moving process, and, out of this to remember the future or to influence the past. The tension between the will to control the course of time and its direction and the inability to execute this in actual practice, creates a special area for philosophy and art.

> "Living backwards!" Alice repeated in great astonishment. "I never heard of such a thing!"
>
> "- but there's one great advantage in it, that one's memory works both ways."
>
> "I'm sure *mine* only works one way," Alice remarked. "I can't remember things before they happen".
>
> "It's a poor sort of memory that only works backwards," the Queen remarked.
>
> "What sort of things do *you* remember best?" Alice ventured to ask.
>
> "Oh, things that happened the week after next," the Queen replied in a careless tone. "For instance now," she went on […]"There's the King's Messenger. He's in prison now, being punished: and the trial doesn't even begin till next Wednesday; and of course the crime comes last of all."[89]
>
> "Yes, to jump you have to make a leap forward, but to do that you have to get a running start, so you have to back up first. If you don't back up, you won't go forward. So I have the feeling that in order to say what I'll do next, I need to know a lot about what I did before. You get ready to do a thing by changing something that was there before[…]"
>
> "You're saying you no longer live in time. We are the time we live in. You used to love Augustine's passages about time. He was the most intelligent man who ever lived, you always said. We psychologists can learn a lot from him still. We live in the three moments of expectation, attention, and memory, and none of them can exist without the others. You can't stretch towards the future because you've lost your past." [90]

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[86] Schubert, *Dreifach ist der Schritt der Zeit,* from *Franz Peter Schuberts Werke, Serie 19 No.23*, Breitkopf & Härtel, Leipzig 1884-1897.

[87] Schiller, *Sayings of Confucius,* Trans.: George MacDonald, www.readbookonline.net

[88] Inverting the entire axis: not the case of inverting it in the course of its movement.

[89] Carroll, Lewis, *Through the Looking Glass,* in *The Complete Illustrated Works of Lewis Carroll*, Chancellor Press, London 1982, p.171.

[90] Eco, Umberto, *The Mysterious Flame of Queen Loana,* Trans. Geoffrey Brock, Vintage, London 2006, pp.28-29.

The present, the time of attention in the above excerpt, is evasive to the point of actually not existing (as in the Hebrew language, whereby the verb in the present tense is, in fact, the description of a situation). Music, the art of time, whose entire existence is seemingly in the present continuous, queries various kinds of time. The question is especially conspicuous in reference to canonic texture. Within the canon, the voices observe each other, and, due to this, a number of kinds of time exist simultaneously: when the following voice is observing the leading voice, it is experiencing its own future – the leading voice is present in the future of the following voice. On the other hand, in mirror reflection, when the leading voice observes the following voice, it experiences its own past – the following voice is present in the past of the leading voice. The following voice is the embodiment of the past of the leading voice; it is the result of the leading voice's past actions, for better or for worse. The leading voice is the embodiment of the future for the following voice, it is its expectation and awareness of what the future will hold for the following voice; it is its fate, for better or for worse. In this multiplicity of times and in its existence at the same time in the awareness of two (or more) voices, one can see an expression of the central idea of the special theory of relativity (and this is many years before it was formulated by Einstein).

This experience of the relativity of time can be undergone only by someone carrying one voice only of the canon, time is an elective; but one can not experience two (or more) times simultaneously. It is not possible to become a 'judge', observing from the side -

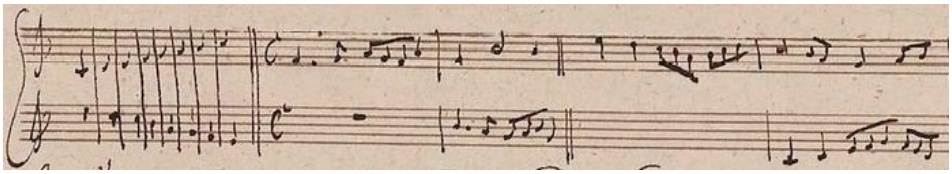
> He has two foes: the one pushes him from behind, from where he has come. The other blocks the way ahead of him. He struggles with both of them. Indeed, the first one helps him in his struggle with the second, since he pushes him forward, while the second one helps him in his struggle with the first, since he draws him backwards. But this is only in theory. As a matter of fact, it is not only about his foes but also about himself; and who would know his own intentions? Anyway, he has a dream: that some time, in a moment of absent-mindedness – by the way, this requires an unprecedented dark night – he will jump out of the front, and due to his military experience he will be promoted to the rank of judge between his two fighting foes.[91]

In order to undergo the artistic experience of directionality in time, in order to realize the ability of placing oneself in relation to the other, a participant in the canon must be a singer or the player of a melodic instrument.

[91] Kafka, Franz, *He,* from *Description of a Struggle,* 1920.

On the Canon in Mirror Inversion

Schubert: sketches of mirror inversions from the initial manuscript (fragments) of his last, the Tenth Symphony that remains uncompleted -



That mirror
Whose magic penetrates like a dart,
Who lifts that mirror
And throws our mind back on us, and our heart,
until we start?

That mirror
Works well in these night hours of ache;
Why in that mirror
Are tincts we never see ourselves once take
When the world is awake?

Thomas Hardy[92]

Titian – Venus with a Mirror[93]

[92] Hardy, Thomas, *Moments of Vision,* in *Moments of Vision and Miscellaneous Verses,* Macmillan, London 1917.

[93] http://upload.wikimedia.org/wikipedia/commons/thumb/c/c8/Titian_Venus_Mirror_%28furs%29.jpg

[…] A woman bends over me,
Searching my reaches for what she really is.
Then she turns to those liars, the candles or the moon […]
Each morning it is her face that replaces the darkness.
In me she has drowned a young girl, and in me an old woman
Rises toward her day after day, like a terrible fish.

Sylvia Plath[94]

The mirror represents a reliable reflection[95] of the truth, in all its aspects, but is likely or liable to become non-objective and unreliable to the eye of the observer.

> "Contrariwise," continued Tweedledee, "if it was so, it might be; and if it were so, it would be; but as it isn't, it ain't. That's logic."[96]

Eichenberg: "Last rehearsal"[97]

94 Plath, Sylvia, Mirror, http://allpoetry.com/poem/8498499-Mirror-by-Sylvia_Plath

95 'Speculum sine macula" – mirror without a blemish.

96 Carroll, Lewis, *Through the Looking Glass,* in *The Complete Illustrated Works of Lewis Carroll*, Chancellor Press, London 1982, p.157.

The mirror distorts: in Eichenberg's etching it deceives one, presenting an illusion in the mind's eye of the figure of the aging actress. Escher's distortion[98] creates a misleading illusion regarding the location of the mirror (in the room or the street?) -

Whereas with Velazquez[99] the mirror is actually the only unit that represents the significant truth – in which the figures of the king and queen, present in the room, are reflected; on the one hand they are present, observing their family members and, on the other, they are the subject of a hidden painting of the painter Velazquez (himself appearing in the picture) –

[97] Eichenberg, Fritz, *The Last Rehearsal* from *Dance of Death,* Abbeville Press, New York 1983, p.107. The inscription beside the etching says "Remember, dear, those halcyon days,/the rave reviews, the rose bouquets,/the curtain calls that never stopped?/My eyes get weak, the mirror fades,/I trust in you, my faithful friend,/to stay by me until the end."

[98] Escher, M.C., *Still life with mirror*, 1934, in *The World of M.C.Escher,* Harry N.Abrams, New York 1974.

[99] Velazquez, *Velazquez and the Royal Family* (Las Meniñas) – detail, Museo del Prado, Madrid, inv. 1174.

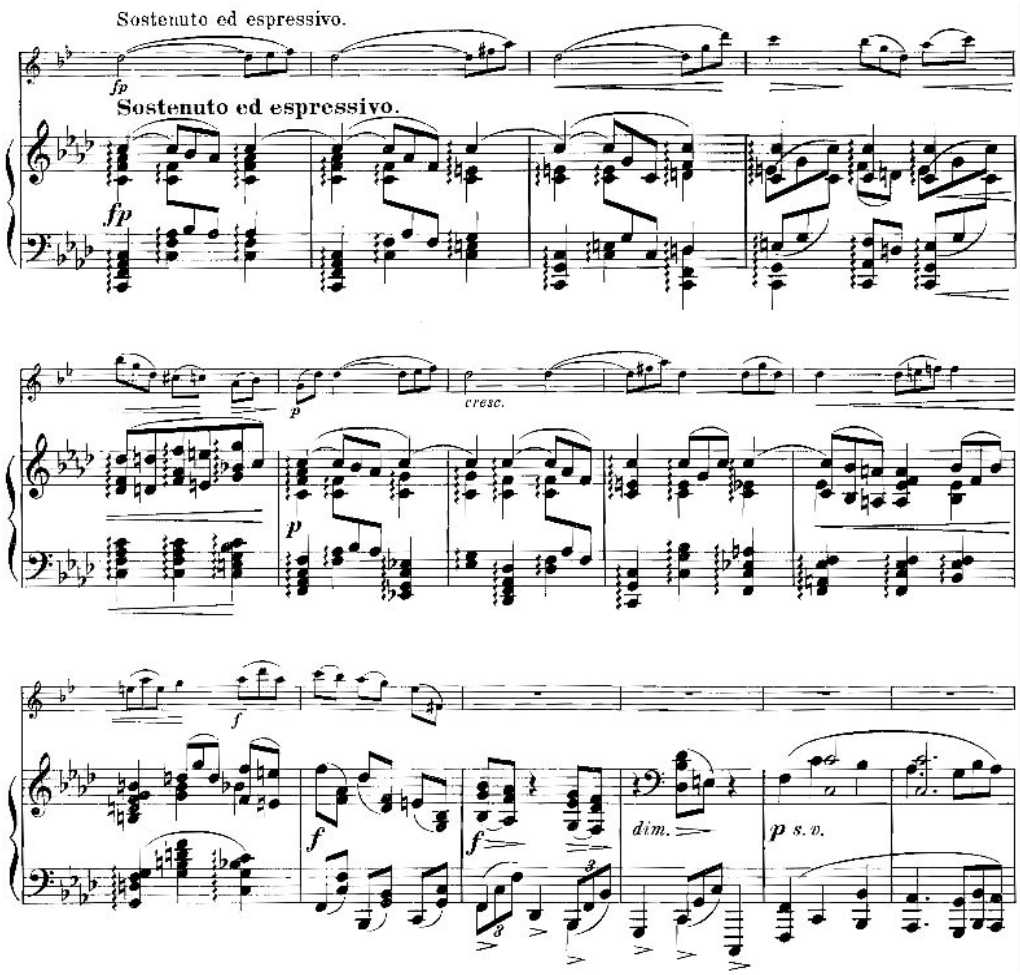
The mirror, as it is familiar to us today, was invented only in the 15th century Venice, by which time production of both polished glass sheeting and the treatment of mercury had been mastered. Till then, a person could see his/her reflection in water (as did the mythological Narcissus), in metal surfaces (such as copper) or in polished stone. With the appearance of the bright mirror, the mirror accurately reflecting reality, new artistic and cultural expressions developed – for example, the literary genre of the autobiography and self-portraits in painting. From that time till today, many mirrors have appeared in the plastic arts, from the first mirrors in paintings such as Van Eyck's 'The Arnolfini Wedding' (1434), Titian's 'Woman Combing her Hair' (Venice, 1511-1515), Titian's 'Woman With Mirror' (1515), his 'Venus With a Mirror' (1555), and many more. Most of the painters choose to represent hidden sides of the figures in the mirror – their backs or sides. For it is obvious that a person viewing from the side does not see what the figure looking in the mirror sees, and this is the source of many tricks of visual art when showing a mirror in a picture. Also, the same person looking in the mirror does not see himself as others see him because of the symmetry of the reflection swapping right- and left sides.

In music, the mirror creating the 'mirror inversion' is positioned on the stave and not vertically - as an inversion on the axis of time (retrograde canon) - but horizontally, creating an inversion of pitches and melodic intervals.

In the coda of the first movement of Sonata no.1 for Clarinet and Piano of Brahms[100] there is a mirror canon (the pivot-note being c) with the temporal interval of a quarter-note between the clarinet and the right hand of the piano, continuing on for 10 (!) bars. For a few moments, the canonic line in the piano hides (as in the fourth bar in the following example, where the leading voice moves to the alto line and the high notes in the right hand create an organ point

[100] Brahms, Johannes, Zwei Sonaten Op.120, N.Simrock, Berlin 1895.

with the low notes of the left hand), but it remains present the whole time and in an incredibly accurate form –



The definition of the reflection as an 'inversion' results in the recognition of the mirror as a 'negative' of the object. In Eli Alon's description:[101]

> "The astonishing journey of the toad in the Land of the Mirror:
> However much one soars upwards – one deepens. However much one ascends – one falls. To the extent one draws closer - one moves away. One goes from darkness to light – and arrives from light to darkness. Good people begin – and end up bad. **Every triumph is revealed to be a defeat,** every good deed – an injustice, trust – as villainy, love – as hate. One builds a tower heavenwards - and reaches hell…" (Trans.: Pamela Hickman)

[101] Alon, Eli, *Before the Law, with the "flees commentary"*, Hakibbutz Hameuchad (Shdemot no. 13), Kibbutz Dalia 2000, p.10.

And in another text:[102]

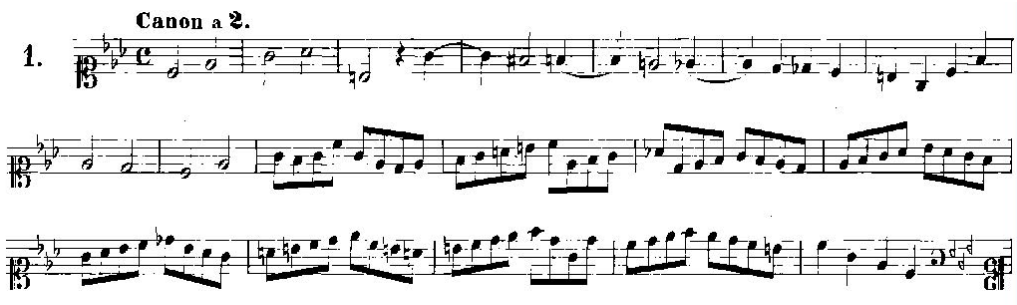
> "Come and I will whisper in your ear the secret I heard beyond the canopy: the rule is the 'hypo-rule'. When it says 'no', it means 'yes'. " And if the rule is inversion – does it then follow that 'no' becomes 'yes' and does the 'yes' become 'no'? – "This is also explained in 'The meanings of Law': 'given authorization'. Anyone can stop the wheel wherever convenient for him. **What you have chosen - is your law.** " – And what is the fate of whoever chooses 'yes' or 'no'? - "He will get to the threshold of 'yes' and 'no' will enter. The choice of 'no' will be the 'yes' of his life."

Would this, indeed, be the relationship between the clarinet and the piano in the above example? Do composers relate to 'mirror inversion' as to a contrast of the negative? Is there such an inclination between performers? In order to answer these questions, one needs to find the correct door:

> 'Welcome. You have reached the right door. Your "No Entry" is here'.
>
> Eli Alon[103]

On the Retrograde Canon

> "And you shall see my back; but my face shall not be seen." Exodus 33:23.



Bach – Retrograde Canon from the "Musical Offering".

[102] Ibid, p.41.

[103] Alon, Eli, *Between Eden and Ecclesiastes,* Sifriat Poalim – Hakibbutz Hameuchad, Tel Aviv 2009, p.168. Trans. Pamela Hickman.

On Duplication

"It's even hard to guess how far things might go
If people start to follow their example."

Wislawa Szymborska [104]

In the discussion on the essence of duplication, or on the role of the following voice in the canon as accurate duplicity but as absolutely not identical, it is interesting to present an example of the approach from the brazenly absurd writings of Borges[105]. He writes about Menard, who rewrote "Don Quixote" in the 20th century:

> *The Cervantes text and the Menard text are verbally identical, but the second is almost infinitely richer. (More ambiguous, his detractors will say—but ambiguity is richness.)*
>
> *It is a revelation to compare the Don Quixote of Pierre Menard with that of Miguel de Cervantes. Cervantes, for example, wrote the following (Part I, Chapter IX):*
>
> *... truth, whose mother is history, rival of time, depository of deeds, witness of the past, exemplar and adviser to the present, and the future's counselor.*
>
> *This catalog of attributes, written in the seventeenth century, and written by the "ingenious layman" Miguel de Cervantes, is mere rhetorical praise of history. Menard, on the other hand, writes:*
>
> *... truth, whose mother is history, rival of time, depository of deeds, witness of the past, exemplar and adviser to the present, and the future's counselor.*
>
> *History, the mother of truth!—the idea is staggering. Menard, a contemporary of William James, defines history not as a delving into reality but as the very fount of reality. Historical truth, for Menard, is not "what happened"; it is what we believe happened. The final phrases—exemplar and adviser to the present, and the future's counselor—are brazenly pragmatic.*
>
> *The contrast in styles is equally striking. The archaic style of Menard—who is, in addition, not a native speaker of the language in which he writes—is somewhat affected. Not so the style of his precursor, who employs the Spanish of his time with complete naturalness.*[106]

In Borges' view, the identical becomes the different in character from the very essence of its different place on the axis of time. Indeed, Borges is relating to a time span of over 300 years, and, therefore, of a significant difference of period, style and historic associations; however, in theory, it is not the distance that determines, but the situation and the role. From the point of view of the performer of the following voice in the canon - there is no doubt that he/she carries the message of truth: he/she is the 'depository of deeds', the ' 'exemplar and adviser to the present ' and potentially – also a "warning of the future to come". A fascinating example of realization of this warning can be found in the book 'Despair' by Nabokov[107], where the

[104] Szymborska, Wislawa, *True Love, from The End and the Beginning*, Transl. Stanislaw Baranczak and Clare Cavanagh, in http://dungtientran3.blogspot.com/2006/11/wisawa-szymborska.html

[105] Borges. Jorge Luis, *Pierre Menard – Author of Don Quixote*, from *The Garden of Forking Paths*, Trans. Andrew Hurley, Allen Lane the Penguin Press, London 1999.

[106] Borges, Jorge Luis, *Fictions*, Trans. Andrew Hurley, Allen Lane the Penguin Press, London 1999. http://bearsite.info/General/Philosophy/Jorge%20Luis%20Borges%20-%20Collected%20Fictions%20(transl.%20Andrew%20Hurle.pdf

[107] Nabokov, Vladimir, *Despair,*1932. English edition – Putnam 1966.

double murders a person of striking resemblance to him (in his eyes…). Nabokov indeed stretches the limits even beyond the horror of recognition of duplicity that Dostoyevsky describes in "The Double" -

> *Mr. Golyadkin wanted to scream, but could not — to protest in some way, but his strength failed him. His hair stood on end, and he almost fell down with horror. And, indeed, there was good reason. He recognised his nocturnal visitor. The nocturnal visitor was no other than himself — Mr. Golyadkin himself, another Mr. Golyadkin, but absolutely the same as himself — in fact, what is called a double in every respect...*[108]

In this 'Petersburg poem', Dostoyevsky does a fine job of expressing the anguish of the leading voice of the canon, caused by its awareness of the doubles dragged in after it, threatening it with the very essence of their existence and their presence alongside it. In fact, performing a canon evokes a struggle with the will for independence and also the need to be rid of the other entities 'speaking' at the same time. Coping with this occurs throughout and bears no end result. In total contrast to the canon-writing process, which ends and is concluded with the consolidation of a tight and concentrated formula, the performance disassembles the consolidation and causes it to disintegrate into a long, challenging progression. Dostoyevsky writes –

> *[…] The figure that was sitting opposite Mr. Golyadkin now was his terror, was his shame, was his nightmare of the evening before; in short, was Mr. Golyadkin himself, not the Mr. Golyadkin who was sitting now in his chair with his mouth wide open and his pen petrified in his hand, not the one who acted as assistant to his chief, not the one who liked to efface himself and slink away in the crowd, not the one whose deportment plainly said, "Don't touch me and I won't touch you," or, "Don't interfere with me, you see I'm not touching you"; no, this was another Mr. Golyadkin, quite different, yet at the same time, exactly like the first — the same height, the same figure, the same clothes, the same baldness; in fact, nothing, absolutely nothing, was lacking to complete the likeness, so that if one were to set them side by side, nobody, absolutely nobody, could have undertaken to distinguish which was the real Mr. Golyadkin and which was the new one, which was the original and which was the copy.109*

On the 'I' and the 'Other' in the Canon

> At that moment I felt I was another person who was watching, from the outside – someone watching Simonini [me] who, all of a sudden, did not know exactly who he was.[…][110]
>
> Everything seems unreal. It is as though someone is watching me. Write it down to make sure it's true. […] Reread the above notes. If what is written is written, then it has actually happened. Believe in what is written.
>
> Umberto Eco[111]

[108] Dostoyevsky, Fyodor, *The Double, end of Chapter 5*, in http://ebooks.adelaide.edu.au/d/dostoyevsky/d72d/chapter5.html
[109] Ibid, *Chapter 6*. In http://ebooks.adelaide.edu.au/d/dostoyevsky/d72d/chapter6.html
[110] Eco, Umberto, *the Prague Cemetery,* Trans. Richard Dixon, Harvill Secker, London 2011, p.21.
[111] Ibid, p.23.

And the Lord called unto Adam, and said unto him "Where *art* thou?" (Genesis 3:9)

The most ancient question of all, the first divine question, can be answered according to the coordinates of space but can also address the axis of time, and, in order to have a viewpoint to assist the possibility of a real answer to this question, it is possible to be aided by (canonic) shifting on the axis of time. The canon allows for relative placement on the axis of time because it creates flexibility of distancing (the possibility to move closer or further away) in music.[112]

In our times, we are experiencing all forms of time at once – music from all times and periods, also again and again. Today, one's ear can access unlimited sound information. With its being 'all-hearing', our ear has become a slavish vassal of everything which is auditory, becoming accustomed to moving along sequences lacking all hierarchy or center on which are placed together a mix of near and distant, old and new, original and duplicated, of importance and pertaining to entertainment, profound and shallow. A trivial example of this is the convention of the equal distance between all speakers and the microphone in the recording of film soundtracks; another is the compressor that shrinks the dynamic range of music broadcast on radio.

In his book *Panimdibbur,* Hagi Kenaan addresses the visual dimension –

> 'An eye that swallows everything or which is swallowed by everything is an eye that is not able to relate to location or to the question of "where?". This is an eye to which the ethical dimension of the visual aspect is foreign and strange, because the possibility of distancing has been erased from its experiential space.'[113]

In music, the canon creates a relationship that enables the existence of distancing on the axis of time.

> '[Sartre[114]] points to a unique form of daily experience, in which the immediate and undoubting presence of other subjects is revealed: we are exposed to the presence of another subject when we ourselves constitute the object of its glance, when we occupy room in the visual field of the other person. In other words, we acknowledge the other person as another subject not by virtue of the fact that we see, but by virtue of our being seen. The existence of the other person as a subject can not receive validity for certain from his being observed; however, it becomes obvious to us when we find ourselves the subject to the other's gaze. The act of existing as an object of the other's gaze is a primeval experience which can not be reduced to more basic elements, and, as of this kind, it constitutes the phenomenological key to any further analysis of the inter-subjective relationship.'[115]

This presents us precisely with the role game of the canon! Although the phenomenon of the canon is not common in western music to the extent that it could be considered everyday experience, anyone who has, however, taken part in performing a voice in a canon has certainly experienced the sense of being the subject who is the object of the

[112] See an interesting discussion on the visual aspect in: Kenaan, Hagi, *Panimdibbur*, *Seeing Differently, based on Emmanuel Levinas,* Hakibbutz Hameuchad, Tel Aviv 2008, pp.12-14.

[113] Kenaan, Hagi, *Panimdibbur, Seeing Differently, based on Emmanuel Levinas,* Hakibbutz Hameuchad, Tel Aviv 2008, p.18.

[114] Sartre, J.P., *L'être et le néant,* Gallimard, Paris 1943.

[115] Kenaan, Hagi, *Panimdibbur, Seeing Differently, based on Emmanuel Levinas,* Hakibbutz Hameuchad, Tel Aviv 2008, p.93.

glance (or listening) of the performer of a different voice (especially if it is not a group-social performance of a number of singers singing the same voice together). This is correct even in a canon in the 'round' form that moves and comes back in circles, returning again and again, not to speak of the non-closed canon (of the kind that does not have a 'da capo' repeat). While the fundamental experience of the leading voice of the canon is that of the wish and need to free oneself from the following voice and to cause it to fail in its imitations and give up, the experience of the following voice constitutes the desire to prove to the leading voice that nothing will stand in its way, as in the song "Anything you can do I can do better", (or… at least, "the same"). This role game creates tension between the intention of one voice with another, creating, in effect, a situation of competition which can, in practice, exist only between two (or more) performers. It simply does not exist when one player is performing all parts of the canon alone. In the case of one player, there is absolutely no inter-subject relationship.

The Following Voice of the Canon As an Image of the Other

> Sauntering the pavement thus, or crossing the ceaseless ferry, faces
> and faces and faces,
> I see them and complain not, and am content with all.
>
> Walt Whitman[116]

> In this laborious world of thine, tumultuous with toil
> and with struggle, among hurrying crowds
> shall I stand before thee face to face.
>
> Rabindranath Tagore[117]

In the performance of a canon by a number of melodic players/singers, mutual listening is revealed as being a strategy of strength, an active vector, a meaningful form of energy. On the basis of Sartre's investigations, listening has changed from an event that takes place within the ear and mind, from an internal relationship between consciousness and its personal content, to the aspect of our existence in the real- and interpersonal world.

Even before it constitutes internal representation, listening already has an external effect. In other words, before anything else, the audial field in which the other person appears is a field of strength, an area of life, of interactional activity – an arena of the clash of strengths, the principle of its activity being struggle.

> "Conflict is the original significance of being 'for' the Other." The Other is present by the very fact of the power he exerts over me, power that intrudes on my internal calm and indifference, the very existence of my self-sufficient subjectivity".[118]

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[116] Whitman, Walt, *Faces*, http://www.daypoems.net/poems/2129.html

[117] Tagore, Rabindranath, *Face to Face*, http://www.inspirationalstories.com/poems/face-to-face-rabindranath-tagore-poems/

[118] Kenaan, Hagi, *Panimdibbur, Seeing Differently, based on Emmanuel Levinas,* Hakibbutz Hameuchad, Tel Aviv 2008, p.94.

Here we have an explanation for the enormous importance which can be attributed to the playing of the canon at the many stages of learning an instrument. The authority given to a teacher playing a canon with his pupil is matchless. It is much stronger than the authority wielded when playing an accompaniment or even a separate melodic line. And in Sartre's words: "The Other's glance fashions my body…sculpts it, forms it **as it is**, sees it as I will never see it…he causes me to be, and, in this way, obtains ownership of me."[119]

In this sense, in the canon system - the act of listening on the part of the Other, whether its expression is imitation that shows respect or mocking created by the following voice, or whether its expression is fashioned of the fetters and prison bars the leading voice has created for the other voice – is, in essence, insufferable. The Other represents hell, the only possible means of escape from which, according to Sartre, being counter-subjugation of the Other to the listening of the "I". In order to free myself from the listening on the part of the Other, I would need "to arise up against the Other in order to turn **him** into an object, in that the fact of **his** being the object destroys my essence of being an object for the Other."

> From Sartre's point of view, the glance constitutes one-directional authority, splitting the involvement a person has in inter-personal interaction into two possibilities that reject each other: in the field of view and visibility, glances can not meet or even be mutual, and according to this, in the presence of the Other, the "I" – as a result of its place in the dialectics of the glance – is certainly either the subject or the object.[…] Since my bond to the Other is necessarily being included in one of two modes of visuality (to see or to be seen), indeed, "my reaction to my detachedness as far as the Other is concerned…is expressed in conceiving the Other as an object." That is to say, according to Sartre, the question of the Other's appearance fundamentally entails […] the same insolvable struggle existing at the basis of all inter-personal dynamics: "All that is valid concerning me is valid concerning the Other. While I am trying to free myself from the grip of the Other, the Other is trying to free himself from my grip; while I am striving to enslave the Other, the Other is striving to enslave me".[120]

Two issues in this paragraph deserve attention: 1) The description of mutual relationships between the different identities here (the different voices of the canon) is given a violent and barbaric character, quite outrageous in fact, but easier to accept and excuse when one considers that Sartre published these insights in annexed France of 1943. 2) While in the field of view and of visibility, glances are, indeed, one-directional, and can not be mutual; in the sound field, however, it seems there is a possibility for bi-directionality. In the harmony of music, it is possible to hear and be heard simultaneously, as compared to seeing and being seen, and, in my humble opinion, in philosophical discourse, there is some neglect of this idiosyncratic aspect regarding music.

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[119] Quoted by Kenaan in *Panimdibbur,* p.95, from J.P.Sartre, *L'Être et le néant*, Gallimard, Paris 1943, p.413.

[120] Kenaan, Hagi, *Panimdibbur*, *Seeing Differently, based on Emmanuel Levinas,* Hakibbutz Hameuchad, Tel Aviv 2008, pp.95-96.

It is surprising how accurate the following definition is regarding the situation of performing a canon, despite being taken from a philosophy text which is absolutely not directed to the genre of music and certainly not specifically to the canon –

> The "I" is whoever is present – in will, intention, as planned – in constant movement towards the objects that populate his world, ever within the dynamic of relationships with objects, engulfed within the same courses of use and demand, enabling the "I" to realize himself in the world. Encountering the face of the Other creates a kind of disruption of forward-going movement, a disturbance generating movement in the opposite direction – movement towards the "I", of the kind turning the "I" into its own object.[121]

Indeed, this is how a voice in a canon feels: an entity in constant motion on the same courses as other voices which are, in effect, an accurate reflection of it; and yet they are not the entity itself but constitute other objects (from its point of view), and because it is aware of their movement and of their very existence, disruption occurs in its movement causing it to become dependent on them and obliged to bear in mind their existence. And, as penned by Umberto Eco, who tells of a person who has lost all his personal memories: "It is awkward, revisiting a world you have never seen before; like coming home, after a long journey, to someone's else's house."[122]

The Canon as an Ethical Field

> Not knowing who I was, how could I meet someone? I had to hide until I had worked it all out.
>
> Umberto Eco[123]

Emmanuel Levinas identifies the human face as an unusual place at the heart of the visual dimension, a kind of anomalous "episode" that disrupts and unravels what appears to the eye. Similar to this, one can also recognize the canon as an anomalous happening disrupting in the heart of the audial dimension. In Levinas' words, "the appearance of that same 'ethical alienation' of the experience – that is, the human factor – is a fracture in the experience".[124] In other words, the canon constitutes a loophole which, according to Levinas and Hagi Kenaan's analysis[125], is the source of an alternative kind of disorder: the revealing of the ethical aspect. So, despite the fact that the canon is deviant in its audial order, its very existence and appearance requires a change in the understanding of the entire field of sounds. The canon, with the meeting it creates between different voices (speakers), embodies the situation of an exterior question to the human being, a question that requires the "I" to supply the answer.

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[121] Kenaan, Hagi, *Panimdibbur, Seeing Differently, based on Emmanuel Levinas,* Hakibbutz Hameuchad, Tel Aviv 2008, pp.102-103.

[122] Eco, Umberto, *The Mysterious Flame of Queen Loana,* Trans. Geoffrey Brock, Vintage, London 2006, p.245.

[123] Eco, Umberto, *the Prague Cemetery,* Trans. Richard Dixon, Harvill Secker, London 2011, p.25.

[124] Levinas, Emmanuel, *Ethique et infini: dialogues avec Philippe Nemo,* Fayard, Paris 1984.

[125] Kenaan, Hagi, *Panimdibbur, Seeing Differently, based on Emmanuel Levinas,* Hakibbutz Hameuchad, Tel Aviv 2008, p.24.

In accordance with Levinas, this philosophical thought is carried on under the hegemony of what he calls 'the identical' (le même) and within the framework of "the philosophy of the identical…the Other's otherness dissipating".[126] In another text, he claims that "western philosophy is usually ontological: the reducing of the Other to being the same by the placing of a mediating and neutral term which ensures understanding of the experience. This precedence of the identical is the lesson we have learned from Socrates: not to accept anything from the Other besides what already exists within me".[127]

The canon sets before us a dilemma in recognizing the "I" or the "Other" between voices in the canon, the identical or the different. On one hand, the voices are identical according to the very definition of the canon; on the other hand, the fact that each voice is located at a different point on the axis of time results in there being no possibility for full identity between them (in any event, the point of viewing each other is opposite in direction, and therefore, the significance of one in face of the other is totally different). From here it will be understood how important the very different classification of the canon is to the identical voices (or instruments) or to those that are not identical; the ethical dilemma appears most pointedly in the instance of a canon of identical instruments or voices.

> The 'I' was not born as such, but is in a constant process of establishing and maintaining itself, these processes 'producing' unity and identity. "The existence of the 'I' comes about like identifying the multi-diversed". In other words, despite the "many events befalling the 'I'" and despite the fact that the "'I', the myself …does not remain unchanging within change", we manage to live our lives in such a way as "the 'I' remains identical to itself!"[128]

If we place the "canonic voice" instead of the "I" in this paragraph, we have, indeed, a meaningful statement concerning the role of the person performing the canon.

The canon does not reduce the other voice into being identical, but queries the activity of the identical (voice). Marking the identical with a question mark is done solely by the Other. Querying the spontaneity of the leading voice (the "I", the speaker) of the canon by the presence of the Other (the following voice) is called "Ethics".[129]

> Levinas is looking for a way that will enable the mind to be open to the presence of the Other while challenging the control of the identical one. This kind of challenging will not be implemented, Levinas emphasizes, out of what he calls "egoistic spontaneity". This expression must be understood verbally. Egoistic spontaneity is the spontaneity of the ego, in other words, the continuity of the immediate experience supplying and constantly reinforcing our sense of the 'I'. Egoistic spontaneity is the platform for activity of the philosophy of the identical, and therefore it stands in opposition to the possibility of criticism. Within the framework of thought relating to the "natural" and sequential course of the "I", there is no doubting the hegemony of the identical. The otherness of

[126] Levinas, Emmanuel, *Philosophy and the Idea of Infinity, New Talmudic Readings.*
[127] See Emmanuel Levinas, *Totalité et infini: essai sur l'extériorité,* Kluwer Academic Publishers, Dordrecht.
[128] Levinas, Emmanuel, *Philosophy and the Idea of Infinity,New Talmudic Readings.*
[129] See Levinas, Emmanuel, *Totalité et infini:essai sur l'extériorité,* Kluwer Academic Publishers, biblio essays 1971, 33.

> the Other will never be able to hinder us within ourselves. Alternatively, the possibility of appearance of the Other is associated with a hindrance that does not allow the ego to continue to see itself as explicit and obvious. However, this hindrance is not anything that occurs between me and myself. Its source is external. Objection to the control of the identical is not the result of an inner process of deduction and understanding, rather "brought to practice by the Other". Philosophy that permits itself to be shifted by an outside agent, that does not fear of being its own fragile self, that can be fractured by the presence of the Other, is, as previously stated, called "Ethics" by Levinas.[130]

In the same manner, we will be able to say that music that allows itself to lose its independence and its spontaneous freedom, polyphonic music that is created by dependence and consideration between a number of speakers' voices, especially if they are similar and even identical in progression and importance, music that does not fear the presence of the Other (and, in fact, this is the essence of the canon) – exists and functions within the field of Ethics.

The canon generates unsolvable tension, the source of which is in the specific presence of the transcendent within the real world of sounds. The leading voice has no possibility of ignoring the voice following after it or of being without it. In fact, the resemblance of identity between the voices is that which reveals the transcendent, that which is not given to grasping or hearing. In Levinas' view, the unheard is what interrupts the harmony of the heard: it splits the leading voice's identity, thus creating a surprising effect, at times bothersome, painful and uncomfortable. All of this is not especially due to dissonances occurring between voices but to the very paradox of identity in the face of the Other, existing between them simultaneously. [131]

The movement of musical time, like that of history, is like the movement within its pattern that necessarily turns each case of the future into the present, and eventually into the past – and the past, in keeping, is necessarily what was once connected to the future, later existing as the present. Only in a reversed world, such as that described by Bradley[132], "death precedes birth, the scar precedes the wound, the wound preceding the blow".[133] Borges brings in examples of that kind of reversed world (for example, of Plato), but forgoes suggesting his own – "It is interesting to imagine the inversion of time: a situation where we would remember the future and we would not know, or only our hearts would predict the past to us."[134] In the canon, one can find mixing and confusion between those times in different directionality of the glance (listening) of each voice with the other. In unique cases, a curious occurrence will take place, whereby the leading voice finds its future in the following voice, or the following voice will find its past in the leading voice.

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[130] Kenaan, Hagi, *Panimdibbur, Seeing Differently, based on Emmanuel Levinas*, Hakibbutz Hameuchad, Tel Aviv 2008, pp. 29-30.

[131] Ibid, p.38.

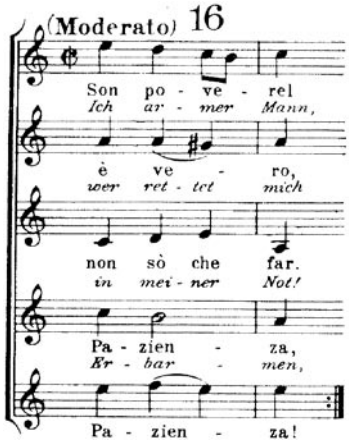
[132] Bradley, F.H., Appearance and Reality – *A Metaphysical Essay,* Allen & Unwin, London 1893, p.215.

[133] Borges, Jorge Luis, An *Examination of the Work of Herbert Quain*, from T*he Garden of Forking Paths*, Trans. Andrew Hurley, Allen Lane the Penguin Press, London 1999. http://bearsite.info/General/Philosophy/Jorge%20Luis%20Borges%20-%20Collected%20Fictions%20(transl.%20Andrew%20Hurle.pdf

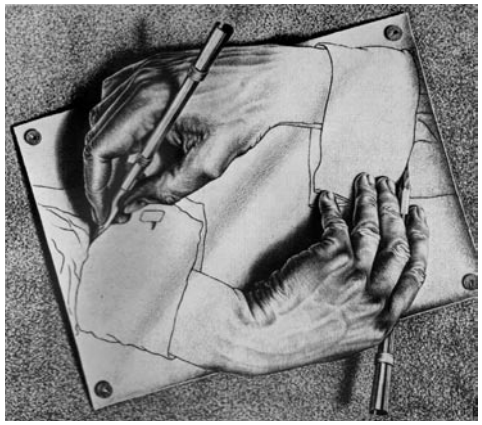
[134] Ibid, footnote p.68.

Here are a number of examples of this phenomenon:

1) In a circular canon (round), due to the entry of the last voice, the leading voice returns to the beginning of the canon, this way finding itself coming after the following voice. When the circular canon is written as a score, as with Caldara,[135] it is especially obvious.

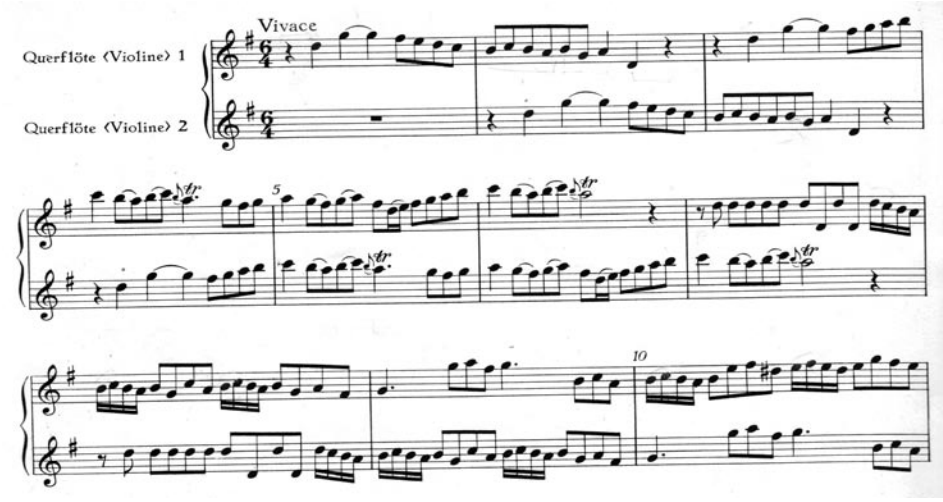


2) In the individual case of the two-voiced canon, a situation of confused times is created, a true case of the cycle of "the chicken and the egg", as in Escher's picture of "Drawing Hands".[136]

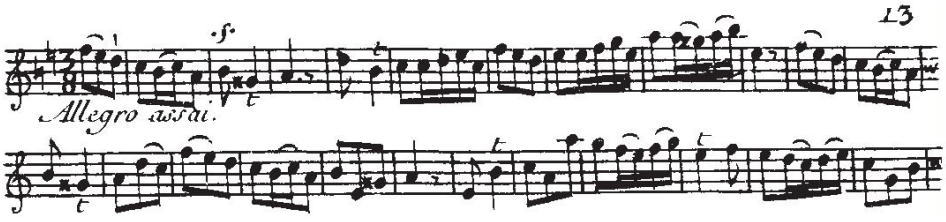


3) In the continuous canon, having no repeats, when the same melody moves back and forwards between the voices, the voices enter a kind of whirlwind effect that does not enable one to know who the initiator was and who the imitator is. It is thus with Telemann,[137] where the first bar of each line moves from voice to voice (especially obvious in the second and third lines of the next example) –

[135] Caldara, Antonio, *18 Kanons* in *Das Chorwerk,* Möseler Verlag, Wolfenbüttel 1933, Heft 25 p.16.
[136] Escher, M.C., *Drawing Hands,* 1948. Lithograph.
[137] Telemann, Georg Philipp, *Sechs Sonaten im Kanon Op.5,* Bärenreiter Verlag, Kassel 1955, p.58.



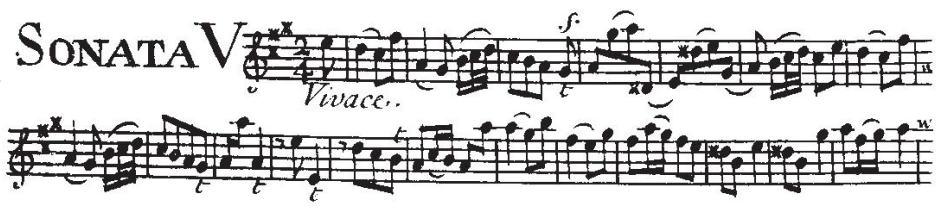
In the writing of a single line, the fact of the passing of a motif or complete melody back and forth between voices is hidden from the eye, but in the actual performance (mainly heard to the players themselves) it sounds articulate. See this in Telemann[138], mostly at the beginning of the second line, when the opening motive repeats once more after 4 bars –



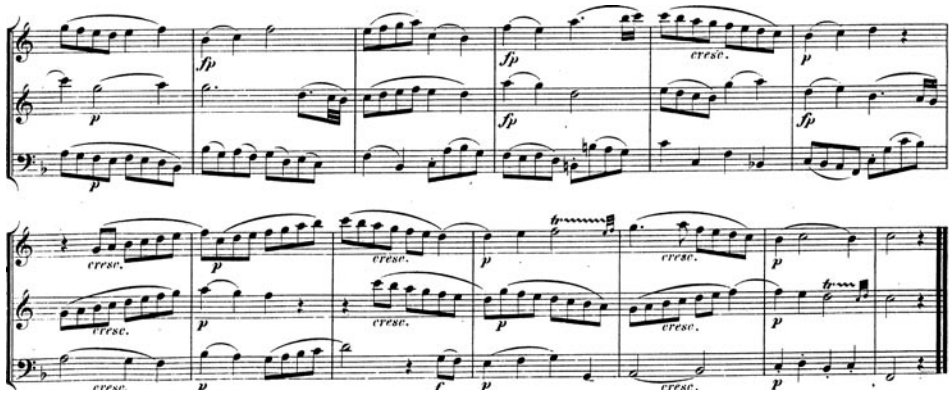
In this example, the distance between the leading voice and the following voice is two bars, and therefore, the repeat of the motif in bars 11 and 15 (at a distance of four bars) creates a state of turmoil, in which each of the voices is both the leading- and the other's following voice, at the fixed and identical distance of two bars.

This is a one-time shift leading up to the end of the repeating refrain in the rondo. Telemann finds a way to obscure the order of voices and their role in the canon even from the outset – as in the following example[139]: because the distance between the two voices is 3 bars, with the subject already repeated in bar 7, the first voice in bars 7-9, in fact, imitates bars 4-6 of the second voice.

[138] Telemann, Georg Philipp,*18 Canons Mélodieux ou 6 Sonates en duo*, Paris 1738, p.13.
[139] Telemann, Georg Philipp, *18 Canons Mélodieux ou 6 Sonates en duo,* Paris 1738, p.10.



4) The change of distance between the voices of a canon in mirror inversion demands special expertise. In a canon in mirror inversion[140] between two basset horns (with bassoon), all taking place at a distance of 2 bars between the two basset horns, towards the end, Mozart employs ascending- and descending scales in order to, indeed, create a stretto canon at the temporal distance of a quarter-note (for the duration of almost a bar at the beginning of the last line and also in its third bar), where, in fact, the second voice is the leader –



The Canon as Relationship

> While proceeding towards you, towards me I have found you
>
> Yehuda Halevi [141]

Levinas points to eschatological thinking (the end of time) as an example of thought that acknowledges the distance between it (the thinking) and the object, a distance which will never contract, a distance not given to bridging (for here is the intention of time that will never be part of the framework of historic entirety). This is the same recognition of the following voice of the canon in relation to the leading voice. Recognition of this distance, continuing Levinas' investigation, is fundamental to the understanding of the

[140] Mozart, W.A., *Kanonisches Adagio K.410,* in *Wolfgang Amadeus Mozarts Werke , Serie X*, Breitkopf & Härtel, Leipzig 1883, p.79.
[141] Yehuda Halevi, *"Ofan" – "God, where can I find thee?"*

ethical relationship that exists between the "I" and the Other, and it receives tangible representation in the canon.[142]

> What characterizes the whole field of consciousness in recognition is the fact of consciousness always being "consciousness of something". Each concept is the concept of the thing conceived; each desire is the desire of the desired, etc.
> Husserl calls this basic attribute of consciousness **intentionality**.[143]

Intentionality is the basic form of the canonic idea, and its meaning is that the canon is a form of **interaction**. The canon, as such, can not be understood from within itself, isolated from the world to which it is directed (the relationship between different entities, between different voices), and there is, therefore, no meaning to a canon in which one performer plays the various different voices (in such a case, this is only a kind of marking on a map, with no real meaning). Only in a situation where the leading voice and following voices are each performed by **different** singers/players is the real meaning of the canon achieved. From this, one can also conclude that the proper understanding and genuine correct performance of polyphonic music in general can exist only where each voice has its own particular performer – for only then is the ethical dimension produced. Husserl takes this even further, as he is able to see that "the relationship to the object" is not something that is between consciousness and the object, but it is "consciousness" itself. By his method, according to how Levinas presents it, in the canon one must see not the subject and object apparently moving in the direction of each other, but the relationship with the object as the basic phenomenon; not the melody of the leading voice, but the very contrapuntal relationship created by both shifting on the axis of time.[144]

> That which opens up the basic possibility of meaning is not the relationship between the subject to any kind of objective content, and also not, as Heidegger puts it, the relationship between the "I" and nothing. Alternatively, Levinas points to a more elementary vector, joining the subject to endless otherness. However, this otherness is not abstract; it is tangible and depicted with regard to interpersonal relationships. "In welcoming the Other…the idea of the infinite is realized".[145]

What still remains to be investigated is whether the latter utterance of Levinas quoted here fits in with the meaning of the mirror inversion of the canon or even of the mirror canon (in its entirety).

Paraphrasing Hagi Kenaan's writings[146]-

In the canon, a unique creative-artistic situation is produced, in which we are no longer trapped within the "spontaneity of the ego" but are open to what is beyond ourselves – beyond the realm of consciousness – to a powerful otherness which is inferred upon us even before we give it place within ourselves. "This situation", Levinas writes, "is the glimmering of the exteriority or transcendence in face of the Other".[147]

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[142] Kenaan, Hagi, *Panimdibbur, Seeing Differently based on Emmanuel Levinas,* Hakibbutz Hameuchad, Tel Aviv 2008, pp.39-40.

[143] Levinas, Emmanuel, "*Sur les 'Ideen' de M.E. Husserl", Les imprévus de l'histoire*. Fata Morgana, 2000, quoted in Kenaan, *Panimdibbur*, p.41.

[144] Kenaan, Hagi, *Panimdibbur, Seeing Differently based on Emmanuel Levinas*, Hakibbutz Hameuchad, Tel Aviv 2008, p.41.

[145] Ibid, p.47.

[146] Ibid, pp.52-53.

[147] Levinas, Emmanuel, *Totalité et infini:essai sur l'extériorité,* Kluwer Academic, biblio essays 1971, pp.9-10.

Resemblance and Difference

"The Other (person) is presented as perceptible in the totality in which he is imminent"; that is, he appears as someone specific – always within a social-cultural-political context. What enables the Other to appear as having separate and specific significance is his certain place within the whole, his similarity to A and his difference from B.[148] In the canon, it is very easy to discern similarity and difference between the voices, and from here, that the other person, the 'other', is most tangible in the canon (indeed more so than in homophony or monody, but also much more than in the fabric of less strict polyphony than the canon). Understanding the 'other', the other voice, is, in fact, a kind of exegesis of it; it depends on one's ability to interpret it, to place it again and again within the given sound of contextual entirety. It is not enough for us to define the distance between voices and the interval between them beforehand; there is, however, a need to observe the procedure and the changing relationship between them throughout the canon. This is correct regarding the strict canon, and, even more so, regarding the free canon.

In Levinas' wording: "The revelation of the 'other person' has, hidden within itself, its own significance".[149] Despite similarity between the voices of the canon, there is a separate identity, that of different significance, to each voice. If we adopt the point of view of the following voice as being the central 'I', we will discover the leading voice as the herald or inspector, as he who dips his toes into a pool water in an attempt to estimate the temperature in preparation for the true and more significant entry of the following voice, the true and fundamental 'I'.

The relationship of each voice of the canon to the other voice is neither simple nor obvious:

> The face of the other person is not an object. It is not found and, indeed, not revealed **there** to our eyes, but is present in a different manner: it comes towards us. "The revelation of the face is a **visitation**". So, despite the fact that we are now sitting on two sides of the same table, I can not, based on Levinas, say where your face is. I can not simply point to where it is located. This is due to the fact that its location is not there at all, and, in fact, the very expression "the face is there" and the term "to be located" are not at all suitable here. The face is not anywhere. That is, it is not one of those things that, in their mass, inhabit a specific space. Alternatively, the face is present as a kind of movement, a crossing of boundaries, an entering into, a movement towards us.[150]

[148] See Kenaan, Hagi, *Panimdibbur*, *Seeing Differently, based on Emmanuel Levinas",* Hakibbutz Hameuchad, Tel Aviv 2008, p.62.

[149] Levinas, Emmanuel, *Ethique et infini: dialogues avec Philippe Nemo,* Fayard, Paris 1984.

[150] Kenaan, Hagi, *Panimdibbur*, *Seeing Differently based on Emmanuel Levinas,* Hakibbutz Hameuchad, Tel Aviv 2008, p.64.

And here, it is as if this whole paragraph were really written about the canon – if we only place the words 'another voice of the canon' instead of the word 'face'. The musician (or listener) must free himself from the graphic representation of musical notation and, indeed, see movement or a 'visitation' in the canonic voice, certainly not an imitation indicating place or space. This can be done only from a melodic point of view, by whoever is present with one only of the voices, observing the others. There is no possibility to be both the 'I' and the 'other' simultaneously, as it is would be when all voices of the canon are played on a harmonic instrument by one person.

> The "beyond" from which the face comes is in the third person. The third person, "he", expresses irreversibility that is not given to expression; that is, the irreversibility that has already evaded all disclosure as from all camouflage – and, in this meaning, it is not given to encompassment; the **he-ism** of the third person is the condition for irreversibility.[151]

Levinas does not see in the revelation of the face of the other person the probability of intimacy, of familiarity or mutual understanding. The ethical relationship he calls "face to face" is not symmetrical and it has no association with mirror reflection. He objects to Martin Buber's approach, presented in his book 'I-You' (1922), according to which the essence of our openness to the other person is concealed in a dialogical meeting that is based on a basic bond that exists between us, on a unique, pre-cognitive closeness, enabling the 'I' to place in brackets the objective characteristics of the other person, thus, experiencing him directly as the "you"[…]As opposed to Buber, Levinas is searching, as aforementioned, for a way to formulate the manner of presence of the other person without presenting him as part of a common space; that is, in preserving his own strong transcendence.[152]

In this argument between the conflicting concepts of Buber and Levinas, it seems that the analysis of the canon phenomenon reinforces and supports Buber's approach. Indeed, Levinas aspires to represent conditions that will maintain irreversibility, although in the musical canon the 'I-You' relationship indeed exists bearing reversibility, and this reversibility is highly significant to the existence of the ethical field in music. The attitude of one voice to another of the canon is such that, in specific cases, it even enables the swapping or the reversing of roles, at least theoretically. One can find the third person only in a canon that has an accompaniment. This accompaniment can appear as additional voices or harmony that do not take part in the canon itself, but observe it from the side and react independently and spontaneously, sometimes even fulfilling independent law and order, as in the example of the basso ostinato of a chaconne or passacaglia.[153] This accompaniment is the objective 'he' existing outside of the concept of the "face to face" that is between voices of the canon, and thus, its performance and realization occur in a straightforward fashion and are isolated from tension existing between the voices of the canon.

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[151] Levinas, Emmanuel, *Meaning and Sense,* in *Basic Philosophical writings,* Indiana University press, 1996.

[152] Kenaan, Hagi, *Panimdibbur*, *Seeing Differently based on Emmanuel Levinas,* Hakibbutz Hameuchad, Tel Aviv 2008, pp.70-71.

[153] An example of a complete book of canons with basso continuo is Naumann, Johann Gottlieb, *Zwölf Kanons,* Rudolph Weckmeister, Oranienburg 1804. Similarly, each third variation of J.S.Bach's 'Goldberg Variations', Telemann's Canonic Trio Sonatas, and more.

> The basic assumption of the Husserlian inquiry is that the form of appearance of the Other is the form of the **alter ego**, the other 'I': the Other is another 'I' who is not the 'I'. In other words, despite Husserl's dealing with the relations of external consciousnesses to the 'I', he, at the same time, accepts as obvious that these external consciousnesses consist of a symmetrical construction analogous to the consciousness of the 'I'….The problem occupying Husserl is, in effect, the problem of multiple consciousnesses and the approach enabling this multiplicity, so that, from his viewpoint, these consciousnesses, apart from their different placing in space, can, in principle, be identical.[154]

Based on our conjecture, in this multiplicity of entities the genuine difference between the fugue and canon is concealed, the canon being a specific case of the fugue. While in the fugue each voice is a speaker of independent and spontaneous utterance, with many possibilities of change and variation throughout the fugue, in the canon there is a connection and binding relationship between the voices. Although in both instances the relationship between the speaking voices is a relationship between cases of similar consciousnesses placed on different locations of the field, and thus they do not make it possible in the realm of sounds for the appearance of the deviant and disassembling that Levinas is seeking, the strict canon, nevertheless, creates a kind of insolvable tension of contrasted vectors, encouraging transcendental revelation. "I am unable to cut myself off from the other voice" – in this sense, the following voice constitutes disturbance to the consecutiveness of the ego of the leading voice.

> In other words, there is no fraternity of comrades or meeting of soul mates; there is no reflection of the 'I' in the mirror of the other 'I', no mutual acceptance or recognition, but vulnerability, an unclear mix of strength and weakness; it is not clear from where one sees what; passivity, dissonance, trauma.[155]

Here the question appears and arises again – is it possible to achieve such an event in a canon performed by one person on one (harmonic) instrument?

> The other person's face appears as resistance to the schematism of consciousness, as resistance to the hegemony of the ego. In the light of the face of the other person, the ego can not continue to conduct itself as it has been used to doing, as the centre of the world. But, the words "can not" are evasive words. Of course, in the usual sense of the word, the ego can indeed continue on in its own way…but, in another sense, it can also **not** do that: "can not" in the sense that its ability comes up against a "no", a "no" appearing precisely because the "I" indeed can…the ethical directive is a fragile directive inasmuch as not only is it possible to breach it, but it also appears precisely on the background of the ability and the tendency to breach it. [156]

[154] Kenaan, Hagi, *Panimdibbur*, *Seeing Differently based on Emmanuel Levinas,* Hakibbutz Hameuchad, Tel Aviv 2008, p.90.
[155] Ibid, p.91.
[156] Ibid, p.101.

Here the ethical field is revealed in the very heart of the performance of the canon. In the course of performing the canon, the tendency of each artist towards individual, spontaneous creativeness comes up against restrictions imposed on it by the other voice. For example, in performing a canon, one is prohibited from deviating from the tempo, as any rubato will rupture the polyphonic texture, causing irreversible damage to the ability of the other voice in continuing to steer his own melodic line. In this way, the musician learns both the value of consideration of the other member of the pair (and beyond the pair) and the measure of self-restraint demanded in a non-egocentric situation, even if this does not induce totally erasing his "I".

'Who Am I?' or "Who?...Me???'

> Suddenly there was more silence within the silence. What we hear hears us
>
> Israel Eliraz[157]

We return to the event of the dissonance created by the other's face or by the other voice of the canon, which is revealed as a minor disruption in the course of the 'I', of my voice. Levinas, writing of this disruption, says it "places a question mark on the simple right of my using my strength, the joyful spontaneity of life".[158]

Kenaan succeeds in relating to this central issue –

> For Levinas, the structure of a question is fundamental to describing the placing of the 'I' in the presence of the face of the other person. In the presence of the other face, the 'I' finds itself ranked as a question (mark). This is a theme to which he returns again and again: the infinite discovered in the face "attaches a question mark" not only to "my simple right of applying my strengths" but also, as mentioned above, to the very "joyful spontaneity of life". "The status of my spontaneity bears a question mark by means of the other's presence we call ethics"; or, in another place in the text, "giving the 'I' the status of having a question mark, this happening together with the appearance of the face of the other, we call - language".[159]

In this I have found a fundamental point not only in the performing of the canon but in the performing of music altogether. The question mark regarding the authenticity of the performer in music is central to artistic performance and to the experience created in the course of it. The matter of authenticity, both of the performer's style and of the performer and the stand he takes with the text of the work, is a key issue in any discussion on- or guidance in the performing of music. Balance between the "sanctity" of the written work and the personal-original-spontaneous expression of the performer is not to be taken as obvious and it changes frequently from performance to performance according to the people involved, the situation, the audience and additional uncontrollable factors (such as mishaps or inspiration, known as **sprezzatura** in the Renaissance). This balance must preserve both the original intention of the composer and the personal expression of the performer. If one of

[157] Eliraz, Israel, *Urgent Matters,* Hakibbutz Hameuchad, Tel Aviv 2010, p.370.
[158] Levinas, Emmanuel, *Philosophy and the Idea of Infinity*, New Talmudic Readings, Transl. D.Epstein, Shocken, Tel Aviv 2004, p.94.
[159] Kenaan, Hagi, *Panimdibbur, Seeing Differently based on Emmanuel Levinas,* Hakibbutz Hameuchad, Tel Aviv 2008, pp.104-105.

these elements is totally missing, the music is dead, since, in the arts, there is no correct and no incorrect, no true and no false. It is difficult to deal with these issues, both in the fields of criticism and of teaching, unless they are posed as questions. The fact of presenting the question is central in the consolidation of artistic language or in the style of performing music, and the musical genre that supports and preserves a characteristic question mark for the duration of the work is the canon. In addition to that, each of the partners in the performance of the canon is given the continuous task of the defining of identity, of preserving its being in an environment where each entity is reflected and is duplicated, causing the 'I' to become blurred and even to disappear.

> According to Levinas, the very existence of the 'I' is not a simple item of data but is involved in the punctiliousness of maintaining its identity and unity. Being 'I', according to Levinas, is a kind of non-trivial project, conditioned by human ability to substantiate and stabilize a distinct structure bearing a permanent appearance within the stream of time and change. [160]

From the centrality of the placing of the question mark, and from the importance of understanding the need to form the 'I the speaker' in music, the major importance of the canon functions as a tool of cardinal significance in the teaching of playing a musical instrument at all stages.

Pondering and wondering about the meaning of the musical utterance is imbedded in, and based, from the outset on sounds, not to be changed by verbal statements; and, therefore, reference to the musical phrase as a question and as a movement that opens up opportunities and does not close off or affix them is so important. The canon, with all the conservative intransigence of voice following voice, only proves that one can, indeed, identify and compromise with the utterance of the other – however, only in the same sound language – the same language being characterized by the uncertainty of hints and fragments of meaning, the same wonderment and questioning which are an inherent part of the magic and mystery existing in music.

The latter is true not only in regard to music itself but also to musical performance. The parameters in performance given to criticism and absolute and objective judiciality are few, and, actually, belong to the sportive sides of playing music and not to artistic and creative aspects. Thus, it is fitting and important to maintain the performance as a form of option, as conjecture, as introducing a question – and not as a proven fact or as the absolute determining of an ideal. It is true that, in the case of the canon there is, in this manner, a kind of paradox – the representing of law, a basic rule, a framework not to be touched or from which to deviate, while simultaneously placing question marks which doubt all certainty or obligation. Nevertheless, there is an essentially artistic element in this very paradox, and, I believe it is not possible to achieve a fully artistic performance without recognition of this paradox and without inviting the smile it arouses. This smile is the identifying symbol of any game, even more so in 'playing' music (the term used in most European languages – play, spielen, jouer, играть, giocare, spelen, spil, jogar, grać, spēlēt…).

[160] Ibid, p.106.

The game in music in general and in performing the canon in particular, creates and emphasizes the dependence of voices and the mutual responsibility that come to light as a result of it. "From the moment the other looks at me, I have a responsibility towards him".[161] The moment the performer is forced to confront the glance of the other voice, the moment he loses his egocentric centrality, he discovers responsibility for his own subjectivity, "he discovers that the responsibility is not an external addition to the nucleus of self-concept but that his self-concept is already established in essence on the profound construction of responsibility".[162]

> And I am you, and what I see is me.
>
> Pink Floyd[163]

> There are things one can only achieve by a deliberate leap in the opposite direction. One has to go abroad in order to find the home one has lost.
>
> Kafka[164]

A Coda to Infinite Circular Movement

In this article, an attempt has been made to examine anew the canon riddle. On preparing myself for the understanding of the subject, I dared to keep a safe distance from "ready packaged" information, taking a risk and not choosing the "safe way". I saw myself as rowing through much water towards an unknown shore while being drawn to a field of enquiry deviating from the limits of music in the direction of overlapping areas of knowledge and poesy. I feel that perseverance and the need for precision in wording and conceptualization in this project have not been superfluous. I am not ignoring the fact that I have left behind unturned stones and un-researched tracks. Nonetheless, I would like to hope that this article of mine has assisted not only in answering a number of questions but also in posing a number of new questions that are likely to provide an opening to new research.

[161] Levinas, Emmanuel, *Ethique et infini: dialogues avec Philippe Nemo,* Fayard, Paris 1984.
[162] Ibid.
[163] Pink Floyd, *Echoes,* EMI, England 1971.
[164] Janouch, Gustav, *Conversations with Kafka,* Transl. Goronwy Rees, Penguin Books Ltd., UK 1971.

A COMPOSER'S JOURNEY INTO THE EXPERIENCE OF TIME

Stephen Horenstein

> "The clocks are not in unison; the inner one runs crazily on at a devilish or demonic or in any case inhuman pace, the outer one limps along at its usual speed. What else can happen but that the worlds split apart, and they do split apart, or at least clash in a fearful manner."
>
> *Franz Kafka, from his Diary, 16 January, 1922*

I. Introduction

Time: Fall, 1986. Place: A recording studio in Jerusalem. I was mixing sixty-four tracks of a densely packed sound collage entitled *Andarta*[1], voices from restored World War II field recordings with an array of instrumental sounds. Every move of my hand impacted the "mix"; I was composing in the "twilight" zone between layered texture (with perceivable separate musical elements) and unified timbre (with those elements so dense they became "blurred"). The climax I was seeking needed precision and sensitivity. During the seventh "mix", things were going well. The sound was slowly accumulating, creating a heightened dramatic moment. But at the same time, something jolted me out of my "routine". I suddenly had the eeriest sensation that I was frozen in time. Everything around me stopped, even the movement of my hand, which I KNEW was moving! I looked up at the spectrum analyzer on the wall, and ALL of the lights were lit: all frequencies were being triggered. This sublime moment lasted several minutes, and then passed, as did the sounds. I was never able to forget the momento. It haunted me. It remained a puzzle for decades, navigating me through my doctoral dissertation, a set of psycho-acoustic experiments and a system of analysis of musical works—all of which have been attempts to "unravel" the mystery. This paper summarizes that journey.

Dr. Stephen Horenstein, composer, faculty member of the Jerusalem Academy of Music and Dance.

[1] *Andarta* may be heard in its entirety at the composer's blog site: www.zrimah.wordpress.com - Feb.2012

II. The Inquiry

The Concept-The Metaphor

My basic premise was rooted in a simple image: When one creates a solution (e.g. sugar and water) there is a point where the liquid can no longer hold the solid. This is called the "saturation" point. Could such a phenomenon occur in music, when more and more perceptible musical data is no longer be "accepted" by a musical texture? Could this be a bridge from "texture" to "timbre" (when all distinct elements are "blurred" and fused into one)? My intuition told me that something in this process of "saturation" effected one's perception of time, so much so that it caused a perceived slowing—and even "stopping" of time. I called this phenomenon "supersaturation"[2]. To test my premise, the phenomenon had to be reduced to basic principles for further study.

The Principles and Assumptions

I reduced the overlying principles to three[3]:

1st Principle: Degree of Definability[4]

2nd Principle: Range of Occurrences (with Deviation from the Norm)[5]

3rd Principle: Degree of Directionality[6]

I felt that these three principles were particularly important in determining basic musical style, and as such, would be effective modes of inquiry. After studying past research in time perception (see Appendix I), the writings of many composers and analyzing my own experiences over the years, I set out to confirm the following assumptions:

1) The *Degree of Definability* which may occur through the appearance of different characteristics (by the appearance of a single parameter-- the degree of its regularity; the laws of organization which govern its different units; by the degree of concurrence between different simultaneous events of different parameters).
   ***The assumption*: As the degree of definability is less, it will lengthen the duration of our time sense.**

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2 Horenstein, S. (2004)

3 Three of the array of principles emanating from natural (vs. learned) schemata (Cohen, D. 2004)

4 Here definability is not represented by exact quantitative size, but qualities generally accepted in the musical world. For instance, rhythm, with concurrence between the event and the beat, is more defined than with syncopation—and even more, with rhythm without beat or irregularity. Or melody—with symmetry of its phrases, it is considered defined, and if asymmetrical, less defined; traditional melodic contour of gradual rise and fall is defined, where one with a great deal of abrupt zig-zag movement is considered less defined. (Cohen, D. 2001)

5 Related to the inverted U function (Hargreaves, 1986), which can be applied to many parameters, with deviation from the norm, one toward the "less" and the other toward the "more".

6 Related to the various musical processes that over time are directed toward a concrete goal: functional harmony, accumulation of events toward climax, building of tension and release of tension, etc.

2) The ***Range of Occurrences*** *in relationship to the normative range*, in relationship to the different parameters.

   The assumption**: As the degree of departure from the norm is greater (over the boundary toward the "more" or toward the "less"[7]), it will lengthen the duration of our time sense.**

3) Clarity/lack of clarity in ***Directionality*** of melodic units or harmonic patterns.

   The assumption: **The increase of uncertainty throughout the process (blurring of directionality) causes the lengthening of the duration of time.**

To test these assumptions, I designed two parallel methods for investigation:

I) a set of two experiments and II) a system for analyzing new music works (including *Andarta*, as described in this paper's introduction).

Method I: The Two Experiments (No. 1 and No.2)

The experiments utilized groups of 48 subjects (divided equally between musicians and non-musicians) who listened and responded to array of musical fragments, designed with the principles in mind. The fragments, many of which were from musical works that would later be analyzed, used various musical parameters: rhythms, melodies, harmonic progressions, at various densities and intensities, in selected durations. In **Experiment No. 1**, subjects listened to a pair of examples, and were asked to indicate which example "sounded longer" or if they sounded "the same"). Subjects were free to add written remarks to the form. **In Experiment No.2**, subjects were asked to listen to each fragment, and then "re-perform" (i.e. simulate) the duration of each event by pressing on a button attached to a computer. Their responses were then tracked and timed by a special self-designed computer program, with the results later codified and analyzed. Though an in-depth description of Experiments No. 1 and No. 2 (both example content and detailed results) is beyond the scope of this paper[8], the experiments' conclusions can be thus summarized:

[7] Example of deviations toward the "more" in extremes: very loud, fast, high, with many contrasts and changes; and the contrary, deviations toward the "less": very soft, slow, low, with few contrasts and changes.

[8] For further information, see Appendix II and the author's study (Supersaturation: A Phenomenon in Contemporary Music-On the Background of Time, Hebrew University, 2004).

Experiment No. 1: Highly conclusive responses were found in 38 out of 54 patterns presented (70%)-in both musician and non-musician responses- suggesting the following outcomes:

1) As it is faster, it is perceived as longer
2) As it is less defined, it is perceived as longer
3) As it is extremely low or high (Inverted U) it is perceived as longer
4) As it is extremely high, it is perceived as longer. As it is extremely low, it is perceived as the longest.
5) As it is less defined, it is perceived as longer.
6) As it moves toward "deviation to the more" it is perceived as much longer that the normative, and somewhat longer than the "deviation to the less", especially with extreme, exaggerated and contrasting degrees.
7) As it is less harmonically directional, it is perceived as longer. As it is more enharmonically- chained and without harmonic direction, it is perceived as longest

Experiment No. 2: Highly conclusive responses were found in most patterns presented- in both musician and non-musician responses--suggesting the following outcomes:

1) Rhythm, degrees of speed (slow, low attack density 9/100, over short duration) perceived as 39% longer
2) Rhythm, degrees of definability and complexity (somewhat undefined), perceived as 30% longer
3) Rhythm, degrees of speed (fast, high attack density 72/100, over longer durations) perceived as 26%
4) Exaggerated degrees of departure from the "norm" to the "more" (high, fast, loud, jagged), perceived as 24% longer
5) Three degrees of absolute pitch (with emphasis on high frequencies, rich in overtones), perceived as 21%
6) In the realm of harmonic patterns, **non-directional patterns are perceived as much as 73% longer** than directional ones!
7) In the realm of regularity-irregularity of accented patterns, **maximum of equality of events** (relating to equality-non-equality of accents) **is perceived as 70% longer** over an extended period of time.

Thus the experiments indicated potentially powerful "tools" for "lengthening" the sense of time:

1) Greater rhythmic complexity
2) Greater density of attacks (to the "more")
3) Greater sparseness of attacks (to the "less")

4) Greater deviation from the norm (especially deviation to the "more")
5) Greater blurring of definability
6) Extremes in degrees of absolute pitch (especially high-pitched ambitus)
7) Less harmonic directionality
8) Maximum equality of events over an extended period of time (cyclicality)

Method II- A System for Analysis (Findings with Respect to *Andarta*)

In addition to being "informed" by the results of the two experiments, the work *Andarta*[9] was analyzed through the "prism" of an analytical system designed for works with progressively saturated textures and discreet points of "supersaturation". The system used measurements of density at pivotal points in the composition, in the following ways:

1) Number of events per measure (event density)
2) Number of attacks of each orchestral group per measure (s) (group attack density)
3) Number of attacks of individual instruments (individual attack density)
4) Degree of attack densities by groups of instruments with similar dynamics
5) Changes of timbre at various frequency band widths, with special emphasis on the movement toward homogeneity (similarity of tone color)
6) Breadth of the ambitus
7) Degree to which the ambitus is "filled" throughout the registers
8) The special role of frequency bands, especially low frequencies
9) Vertical structures with using accumulated clusters (dissonances) and their overall use percentage in the texture
10) Dynamic changes, sudden or gradual
11) Increased speeds throughout the various layers (related to attack density)
12) Other "thickening devices", such as trills (especially in the lower register), tremolos, flutter tonguing, and other "noise" producing effects[10]

[9] For further commentary and listening, see www.zrimah.wordpress.com -Feb.2012

[10] Adapted from Berry, W. (1976).

The general structure of *Andarta* is a convex curve divided into three larger parts (I, II, III) of lengths of progressively contracted duration (from longest to shortest):

Sections: I (4'16")—II (3'54")—III (3'04").[11] The opening cymbal rolls, drum rolls and silence return at the end, to give the piece an overall ABA structure, though B is considerably longer. The analysis focused on the process toward "supersaturation" and time dilation effect, and as in Experiments No. 1 and No. 2, was based on a number of variables with respect to the **Three Principles:** 1) Definability; 2) Range of Occurrences (*related to Deviation from the Norm*); and 3) Directionality. Those variables included:

1) Duration of the Different Sections—and the overall structure of the piece
2) Characteristic Parameters and Musical Elements of the Sections
3) The Instruments and Sounds- (orchestral, vocal, electronic)
4) The Characteristics of the Layers
   a. sustained tones (lower, middle, and upper registers)
   b. cyclical elements (ostinato, repetitive figures)
   c. blocks of chordal material (homophonic)
   d. blocks of melodic material (2 or more parts, polyphonic)
   e. sudden bursts of sound
   f. spoken voice fragments (clearly and somewhat audible, blurred)
   g. sung voice fragments (clearly and somewhat audible, blurred)
   h. extended voice parts (clearly and somewhat audible, blurred)
5) Distinguishing Characteristics of Selected Sections, Related to U Function
6) Definability—(1st Principle) with respect to:
   a. combinations of parameters
   b. linguistic (verbal) components
7) Range of Occurrences—(2nd Principle) with respect to:
   a. pitch (register, ambitus)
   b. loudness
   c. rhythm (speed)
   d. degree of change
   e. density (number of units and/or events)
   f. combinations of parameters (loudness, speed, register, degree of change) in extreme deviation from the norm

[11] *Andarta* (11:14 in duration) is constructed in one "movement" – a miniature "opera" featuring one recorded vocal soloist (voice from field recording). The composition moves from a slow, spacious percussive introduction, to the gradual introduction of faintly blurred spoken and sung vocal fragments weaved with instrumental sounds, as though from a distance. After cello harmonies with a clear tonal center in ostinato form, the piece builds using layers of vocal material (spoken and sung, this time clearer) and instrumental lines. The cello harmonies thicken, progressing from 4 to 16 voices, while the vocal material "blackens" from the thickness of texture. As the texture thickens, the vocal material becomes unintelligible, aside from an occasional "soloistic" spoken or sung vocal fragment. The texture builds to points of supersaturation, in which the texture "can take no more", approach a fused timbre. It then "winds down", defragmenting to a thin, cello ½ tone cluster. A soft percussion transition (reminiscent of the piece's beginning), revealing, in the utmost clarity, the "hero" (vocal soloist), singing a song, repeated several times, fading into the distance…ending with the sound of the low drum roll. Also, see Figure 1.

8) Directionality—(3rd Principle) with respect to:
   a. harmonic progression
   b. rhythm (beat; organization, repetition)
   c. linguistic content
9) Cyclical Elements—cyclical events, use of ostinato
10) Linguistic Properties—through the different spoken and sung fragments

Analysis of the composition confirmed conclusions of Experiments No. 1 and No. 2 with respect to the assumptions. The most evident "time dilating" processes in the piece were parallel to the Experiments' findings. They included (also see Diagram 1 and Figure 1):

1) Use of extreme sudden change (abundant movement to "static state") at moment of supersaturation (Sections G-H). **2nd Principle: Range of Occurrences deviation toward the "less"**
2) Frequent and sudden movements between poles of extremes--sections A2-3 (very soft introduction), G-H (saturation) and J (cello cluster).

   2nd Principle: Range of Occurrences deviations toward the "less" and "more"
3) Use of text blurring to create a "dreamlike" effect, lack of clarity, in the initial introduction to the text material (B1) and area of saturation (G-H), contrasted with the sudden clarity of the song text at L1. **1st Principle: Degree of Definability**
4) At the entrance of the piece's large part (I, II, III), there is a sudden drop from the state of deviation from the norm, to the normative (or close to the normative). **2nd Principle: Range of Occurrences deviation toward the "less"**
5) The **accumulation and simultaneity** of extreme deviations from the norm in all parameters at the saturation area (G-H), **2nd Principle: Range of Occurrences deviation to the "more"**
   a) Loudest (amplitude)
   b) Highest pitched (range)
   c) Fastest and slowest (speed)
   d) Widening of ranges (ambitus)
   e) Highest density (event density)
6) At the point of supersaturation (G-H) with accumulated deviations to the "more", there were also two distinct **deviations to the "less"** (see small figures IV-V of Figure 1)
   a) Sudden freezing of movement (stasis)
   b) Sudden lack of contrast, fusion of elements (stasis)

   The co-existence of these qualities (to the "less") with deviations to the "more" (i.e. while most parameters were "raging" in their extremes), demonstrates **concurrence-non concurrence**[12] a variant of **1st Principle: Degree Definability**

[12] According to Professor Cohen, concurrence/non-concurrence is an important manifestation on various levels of organization (with respect to both natural and learned schema), emanating from the Principle No. 1, Degree of Definability (Cohen, D, 2004).

7) Use of extended dominant chord (C7) as shift from directionality to non-directionality leading to supersaturation **3rd Principle: Degree of Directionality**[13]

In addition to the above, discovered processes included those in which cycles had significant roles:

1) Increase in number of **repetitions** is in Section F, the section preceding saturation. **1st 2nd Principle: Range of Occurrences. deviation from the norm toward the "more".**
2) The **numerous repetitions**, especially cyclical use of melodic ostinato (cellos) with clear tonal center in Section F, help contribute to the section's tension, leading to sudden shifts of tonal directionality/non-directionality (uncertainty, great contrasts) of Sections G-H (area of saturation). **3rd Principle: Degree of Directionality.**

The articulation of these processes led to further investigation of "time cycles".[14]

III Discovery of "Clock 1 and Clock 2"

The piece's "deep structure" slowly became evident: **the use of re-occurring equivalent symmetrical durational cycles**[15] built primarily from durations of **34 and 12 seconds**. The piece's intricate inner durational form was even more astounding, given the intuitive, improvisatory approach to composing the original mixes. Given this process, such intricate structures could not have been planned! Hence, in addition to the accumulation of extreme parameters leading to supersaturation (and confirming the Three Principles)—now called **"Clock 1"--there existed a 2nd independent layer, cyclical in nature--"Clock 2"**. The co-existence of Clock 1 and 2, with their two disparate processes, created a state of **incoherency**, proven to lengthen the perception of time.[16]

Further more, Clock 2 indicated further evidence for one of the findings of Experiment No. 2, that **maximum of equality of events is perceived as 70% longer over an extended period of time.**[17]

It was though there were two clocks in motion: one **psychological** and the other **physical**, one variable, one constant. One like the "clicking" of a clock, the rising and setting of the sun, predictable and constant, juxtaposed with the other: forward moving, dynamic, unpredictable. It was as though a listener was like the man taking a journey in a rocket ship flying at the speed of light, but simultaneously sitting in a booth, outside the

[13] Pg. 5-Exp. No. 2, #6: "non-directional patterns are perceived as much as 73% longer than directional ones"

[14] And how fondly do I remember that "ah ha" moment (December, 2002) while studying the piece's overall structure with my mentor Professor Dalia Cohen, and her sudden revelation revealing the piece's intricate time cycle form.

[15] Time cycles, in seconds: e.g. Part I: 34-12-34 -(4)-34-34-12-34-12-34-12, see Figure 1.

[16] "Incoherent events in various respects lengthens the time" (Jones and Boltz, 1989) see Appendix1

[17] See findings of Experiment No. 2, item #7, page 6 of this study.

ship, watching himself experience the time dilation journey. It was as if the listener was both "attending" to the piece and at the same time outside of it, assessing it—as if he was both reveling in the "pathos" of the moment while also basking in the security of balanced "ethos"[18] and the predictable cycle of life.

IV Conclusion

In the examined work what were the conditions that contributed extreme time dilation?

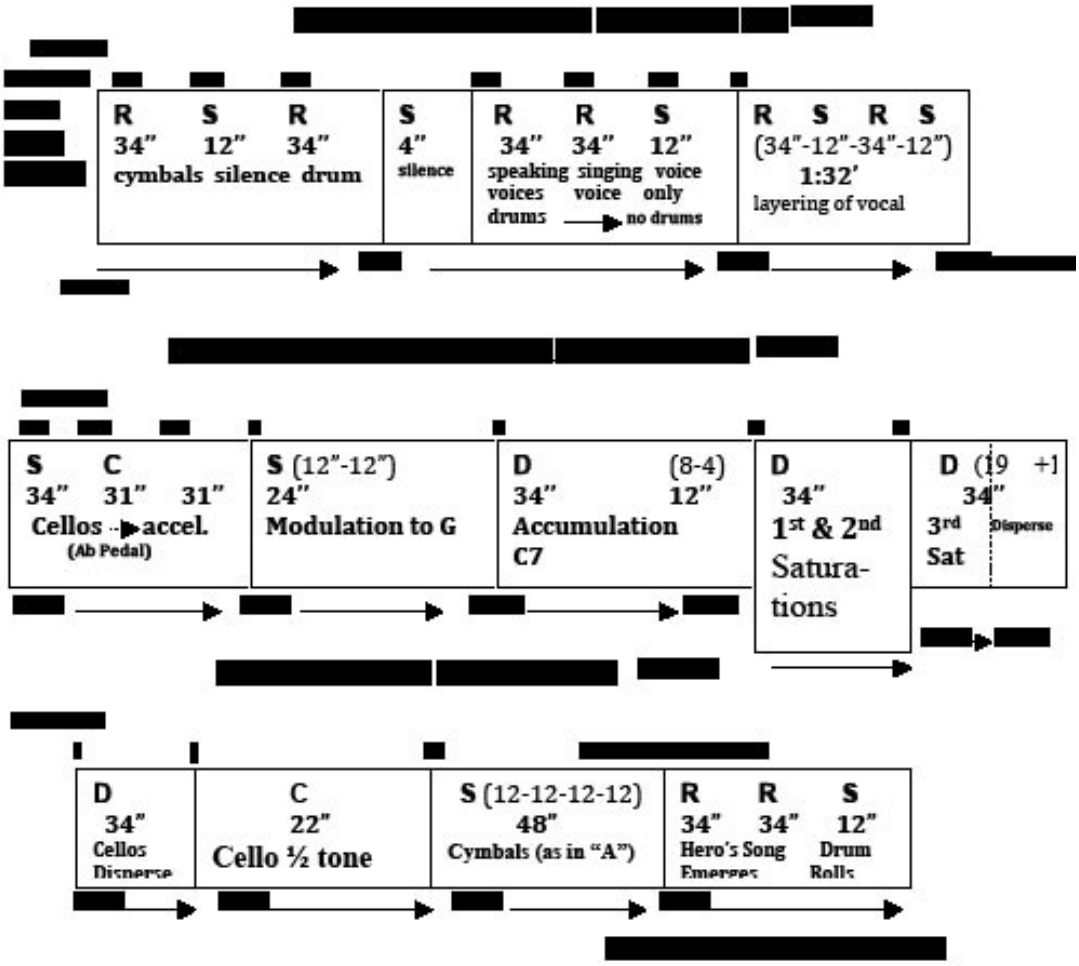
1) The **co-existence of multiple musical operations**, based on one or several of the **examined principles (1st, 2nd, and 3rd)** proven to contribute to lengthening time sense.
2) The co-existence and incongruence of two "clocks", one steady and cyclical, the other variable, constantly changing and "relative"—hence creating a **state of incoherence**, lengthening the perception of time.
3) The use of extreme states, departures from the norm, creating a **constant state of surprise, the unexpected and unpredictability**, and ultimately, lack of definability.
4) The **accumulation and simultaneity of extreme states** (deviation from the norm, to the "more") in most/all of the parameters at the point of saturation.
5) The state of **non-concurrency** at the point of saturation, extremes (to the "more") in the realm of dynamics, register, speed, etc. juxtaposed with fusion of sound, and stasis.
6) Prolonged state of **lack of directionality**, using extended dominant chord.
7) The composer's original time dilation experience: receptivity and **attention** to the music, i.e. state of "deep listening" and **attending**, while, at the same time, being "outside of it" **reflection**—i.e. the composer's own analytical and reflective experience[19]
8) Rather than focusing on one stylistic ideal "ethos" or "pathos" [20], creating a "clash" between them, co-existence of balanced predictability and restraint with an extreme state of boundary-breaking contrasts.

[18] Curt Sachs sublimely articulated the terms "ethos" and "pathos" in his epic book *The Commonwealth of Art*, in which he designated these stylistic ideals both in art and life. (Sachs, C, 1934)

[19] See John Dewey's description of role of reflection in an artist's work flow is of interest here (Dewey,1934).
Also research into prospective (at the moment) and retrospective (historical) time (Zakay, 1989).

[20] Op. Cit., Sachs.

Figure 1*: Andarta* –A Structural Analysis
With Respect to the Duration of the Sections and their Internal Time Cycles



Legend: Code

R = Sections of 34", with repeated rhythmic cycles

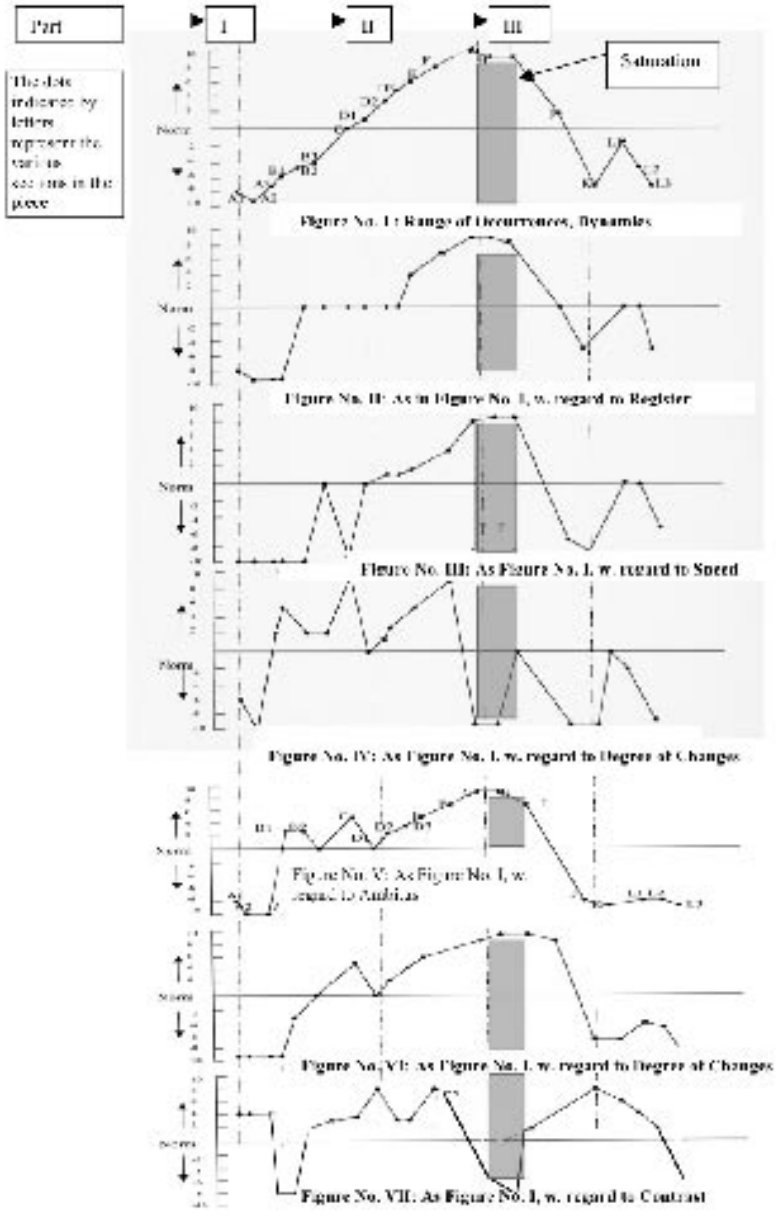
D = Sections of 34", with varied dispersed material

C = Compressed sections, with slightly shorter durations than 34", e.g. 31", 24", 22"

S = Sections of 12", with silence, sparse sound, sudden drop in sound, or static state

Diagram 1: Point of "Supersaturation"--Convergence of Extremes-Range of Occurrences of Multiple Parameters

Example from original analysis, Horenstein, S., 2004



Figures I-VII: Summary, Range of Occurrences, Of the Various Parameters as Related to the Deviation from the Norm (Here Designated in Shortened "II" Function)

Appendix I

Some Principles of Music and Time Perception--*a compendium of research*

(Collaborative summary by Professor Dalia Cohen, Dr. Stephen Horenstein 2002)

1) An expected cadence contributes to an accurate assessment of time (Boltz, 1992)
2) An unexpected cadence shortens the perception of time (Boltz, 1992)
3) A cadence before an expected cadence shortens the perception of time (Boltz, 1989)
4) A cadence after an expected cadence lengthens the perception of time (Boltz, 1989)
5) Orderly events contribute to an accurate assessment of time (Boltz, 1994)
6) Tension shortens the perception of time (Jones, Boltz, 1989)
7) Increased interest shortens it (Jones, Boltz, 1989)
8) Attention to time lengthens time (Zakay, 1998) i.e. you wait for a light, it's very long
9) Incoherent events in various respects lengthens the time (Jones and Boltz, 1989)
10) By focusing attention on the moment so the analysis takes place on the immediate moment (on the surface, at the moment) time is perceived longer (Jones and Boltz, 1989) (i.e. When things are not clear, one focuses on the moment)
11) Non-concurrence lengthens it (Zakay, 1989)…e.g. looking at faces in red, then yellow… in music, if it is high, loud, and accented there is a high degree of concurrency; if the highest sound is the softest, lowest the loudest, there is greater degree of non-concurrence; non-concurrence contributes to complexity
12) Complexity of prospective time has a shortening effect (at the moment) Zakay, 1989
13) Complexity of retrospective time has a lengthening effect (Zakay, 1989) [21]
14) The effect of the density of events depends on prospective time, retrospective time and the type of events (Zakay, and others, 1994)
15) Thus the type of event may shorten or lengthen (Zakay and others, 1994)

[21] Discussion of prospective-retrospective time is beyond the scope of this paper, but is currently under further investigation by the author, with respect to these experiments, analysis and the findings.

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EXPLICIT AND IMPLICIT METRICAL REGULARITY IN DOMENICO SCARLATTI'S KEYBOARD SONATA

Yair Ehrlich[1]

Domenico Scarlatti's collection of keyboard sonatas represents an exceptional and unique genre, both in comparison to other pieces of that period, as well as those of other periods. This uniqueness is manifest in a number of planes: the formal, melodic-contrapuntal, harmonic, "orchestrational" and so forth. The second half of the twentieth century produced important studies dealing with Domenico Scarlatti and his keyboard sonatas specifically, in which the abovementioned were examined. Notwithstanding, research of the rhythmic plane was somewhat neglected in comparison to the research of other planes. Kirkpatrick (1953), who set down the principles of modern research of Scarlatti, almost completely ignores the rhythmic perspective. Sutcliffe (2003) points out this void, and even goes so far as to dedicate an entire chapter of his book to the syntax of sonatas, which includes a broad discussion on common rhythmic phenomena. That said, he usually makes do with a mere presentation of phenomena that diverge from the norm, without offering a systemic method to analyze these. In my doctoral dissertation (Ehrlich 2011) I try to take on this challenge, in light of the enormous advancement in the study of rhythm in recent decades by researchers of the Schenkerian school of thought. The dissertation presents rhythmic analyses of various sonatas by means of rhythmic reductions, enabling one to follow the phrase rhythm (which is the interaction between structure and length of a phrase, on the on hand, and its meter - especially the metrical levels present above the notated bar, known as "hypermeter"[2] – on the other hand) with greater ease.

As far back as the eighteenth century, phrase rhythm was of interest to researchers, who discussed the question of the normative length of a phrase in great detail. (This resulted in discussion regarding the length of hypermeasure, although the term was not used explicitly.) They were mainly interested in the question of the "naturalness" of the even structure of phrases, i.e. phrases consisting of two, four, eight and sixteen bars. It is commonly agreed upon that phrases of even structure are more common than others, and yet there is no consent as to the reason for this. Hugo Riemann, for example, holds the radical opinion that every

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[2] The term "phrase rhythm" was coined by Rothstein (1989), and the term '"hypermeter" was coined by Cohn (1968). Needless to say that the length of a phrase and its hypermetrical structure are closely related; however, the two are not identical, especially in such case when their borders appear in different "phases". For more detailed definitions of phrases, see Sessions (1950, p. 13) and Westergaard (1975, p. 311).

phrase consisting of a non-even number of measures stems from a phrase of even structure, which had undergone manipulation either by augmentation or diminution. He also believes that one cannot escape the basic even structure, in much the same way as one cannot evade tonality (!). Theorists of the eighteenth century, like Riepel, Kirnberger and Koch, take a more moderate stance: They hold the opinion that even-structured phrases are indeed more natural; however, non-even phrases do exist. In some cases, albeit not all, such phrases are a result of the manipulation of even phrases. Heinrhich Schenker's view is similar to the above. He believes that giving preference to organization of even structure is an inherent human trait, resulting from psychological and physiological reasons, such as the rhythm of our heart beat[3]. Carl Schachter also mentions the symmetrical, even structure of the human body as the source for natural, even structure[4]. The point of departure is thus that a four-bar phrase is the norm, whereas a phrase of different length is perceived, in most cases, as a variant of a "regular" phrase, which is the archetype having undergone transformation. In such cases, one can "normalize" the phrase and turn it into its "original" form. William Rothstein emphasizes that not in every case can one find in a musical piece the "regular" phrase that might serve as the archetype for the augmented or reduced phrases. In such cases one may, on occasion, create a "hypothetical archetype", which would serve as a reference point for the non-regular phrases. Notwithstanding the above, there are some instances in which this is impossible, and in such cases the non-even structure is an integral part of the phrase[5].

Scarlatti's rhythmic language is notable for its great virtuosity and the frequent change in phrase length. In some places the non-regular structure is, indeed, part and parcel of the phrase. However, in other cases the length of the phrase changes in accordance with the transformation – augmentation or reduction – of a regular archetype. On occasion, the length of phrase varies because of phrase overlap (when the end of a phrase overlaps the beginning of the following one), or because of avoidance of such overlap, at such instances when this overlap is quite expected from the musical context[6].

In this article I wish to examine the fascinating instances when changes in phrase length and, consequently, the hypermeter stem from the transformation of phrases of regular structure. More particularly, I wish to follow the transformation process, from the (hypothetical) archetype till "the very surface". For this purpose we will turn to one of Scarlatti's earlier sonatas, K. 3 (see Example 1). This sonata is part of a collection called *Essercizi per Gravicembalo*, published in 1738, when the composer was still alive. This sonata takes on the traditional Scarlatti form: a one movement piece, comprised of two parts, in

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3 Schenker (1979, pp. 118-127)

4 Schachter (1987, p. 17)

5 See Rothstein (1989, pp. 92-93).

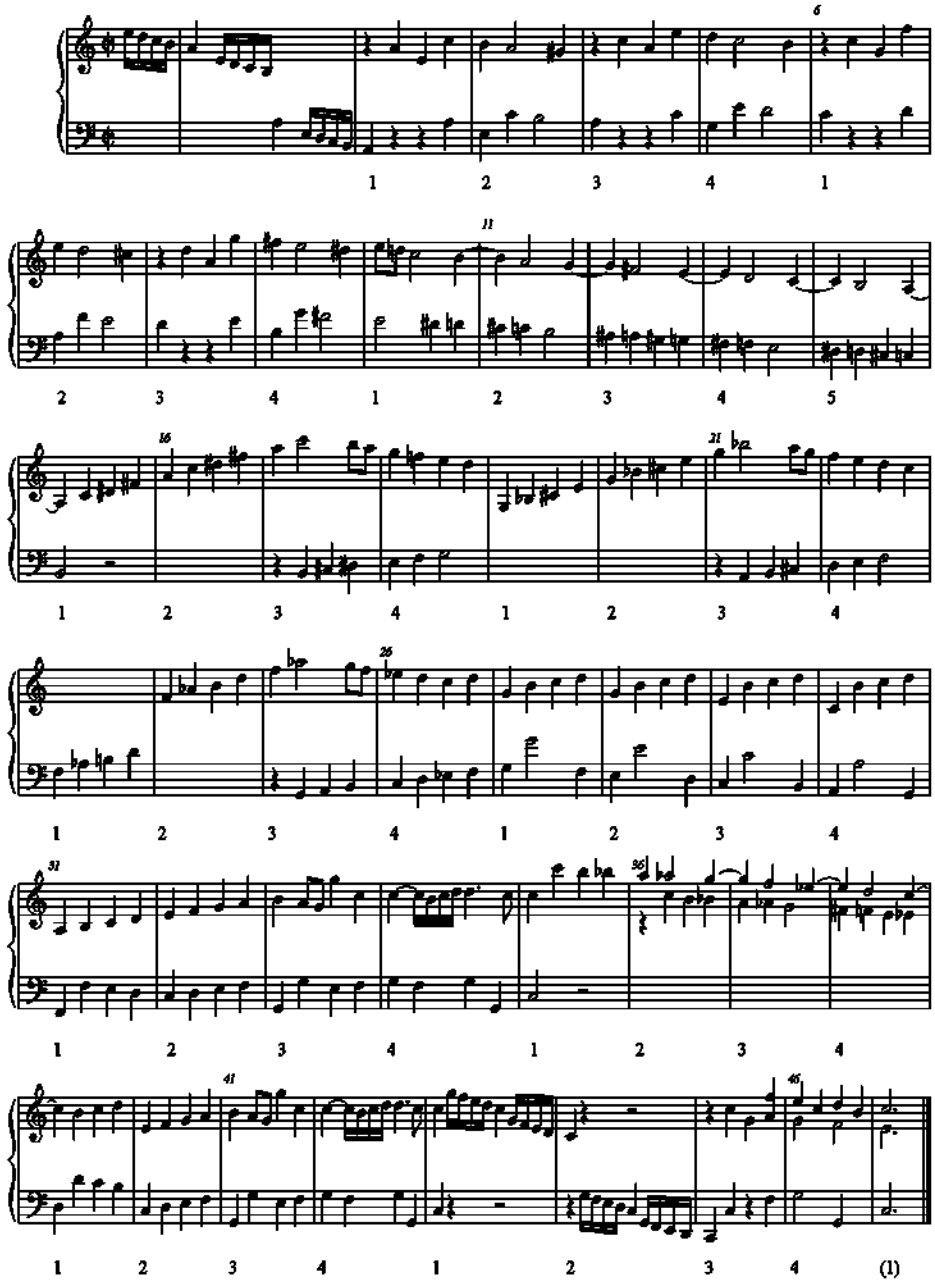
6 For example, in such places where the regular hypermeter includes phrases that are all overlapping and the last one cannot overlap the one to follow. In such instance, one must ad on a bar that will include the concluding tonic. In my dissertation I deal expansively with phrase overlap, since it is a reflection of the fact that not all "rhythmic desires" may be fulfilled in any given musical piece, for the reason that these desires are often contradictory. The reason for this being that the tonal closure of a piece must, by definition, appear before the rhythmic closure. The desire to define the concluding point of a piece by means of a musical event is impossible. For a more comprehensive account of immanent conflicts, see Agmon (1997).

which the first part modulates (in this case) to the relative major, while the second part reverts to the tonic, A minor. Generally speaking, it is difficult to define with precision the form of Scarlatti's sonatas, but it is common practice to use the analysis offered by Kirkpatrick. The aforementioned analysis points out the "critical point", towards the end of each of the two parts, at which the tonic (temporary in the first part and central in the second) is established, and at which it unifies thematic material in both parts. This critical point is called *the crux*[7]. The music preceding the crux is rather free, and every sonata has its own unique structure. However, Kirkpatrick does make the rough distinction between "closed sonatas", in which the second part begins with the same thematic material appearing at the beginning of the first part, and "open sonatas" in which the second part presents different material[8]. The beginning of the second part is usually a development of sorts.

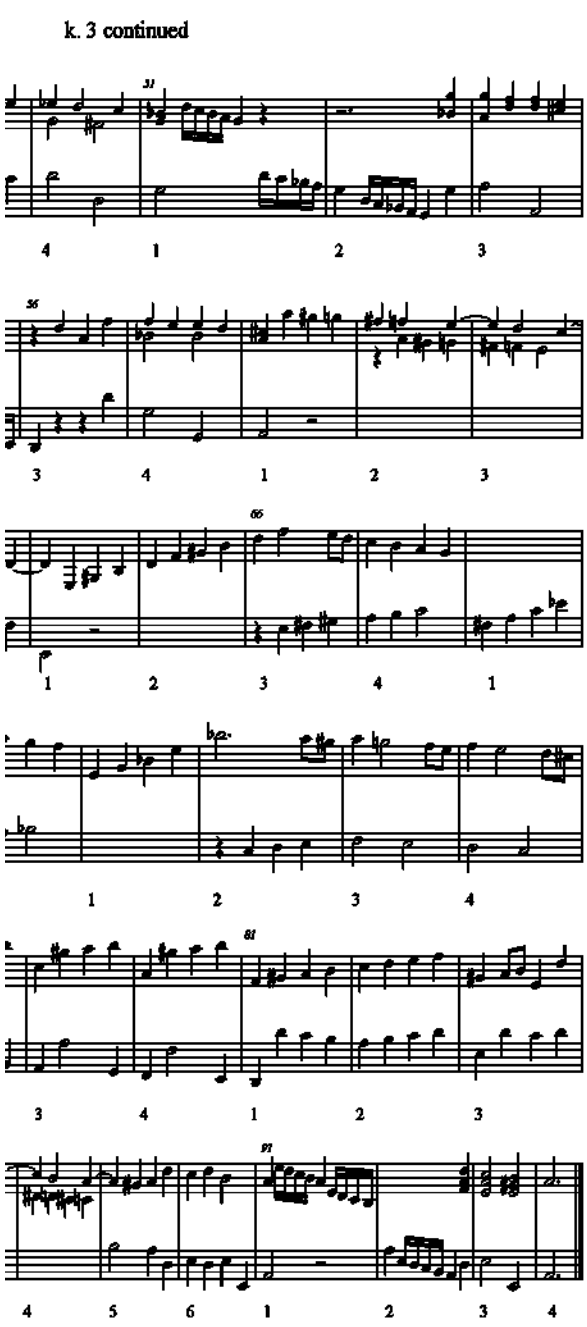
[7] Kirkpatrick (1953, p. 253).

[8] Ibid, pp. 266-269.

Sonata k. 3



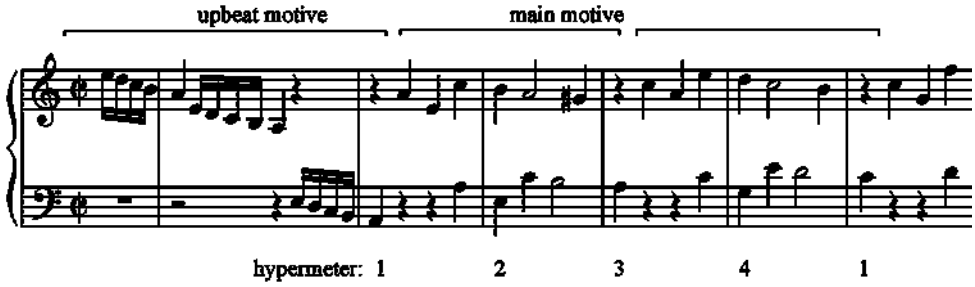
Example 1: Sonata K. 3



Example 1: K. 3 (conclusion)

The sonata before us is a "closed" one, and *the crux* in each of the parts appears in bars 27 and 77 respectively. The fact that there are very few cadences (appearing only once in each of the parts before the final cadence of the double-bar lines) gives the sonata its flowing flavor, and it would thus be wiser to discuss hypermeter at this point rather than the length of phrases[9]. A hypermetric analysis appears in example no. 1 under the notes. It is easily apparent that the first part of the sonata boasts a 4-bar hypermeter almost throughout, except for the anacrusis in bar 1 and the addition of bar 14, bars 10-14 being a 5-bar hypermeter. (In this case, the hypermeter is dictated by the *tonal rhythm*, a derivative of the length of the descending scale.)[10] The hypermeter in the second part of the sonata is less regular, and includes more transformations of the "hypothetical archetype". We will now focus on the opening 10 bars of the second part (48-57), which serve as a lovely example for the connection between "source" and "transformation".

The beginning of the second part acts as a sort of development of the opening theme of the sonata. Although the hypermetric analysis points to a pretty regular meter (with the exception for the hypermeasure 51-53), the picture is still more complex. The descending scalar motive, which opens the second part (bars 47-48), *is included here with the hypermeasure*, in contrast to how it appears at the beginning of the sonata (see bar 1). The length of the theme and its metric position varies (sometimes beginning at the first beat and sometimes at the third). In order to better understand bars 48-57, let us first turn to the "source", i.e. the bars opening the sonata (bars 1-4), appearing in Example 2 below:



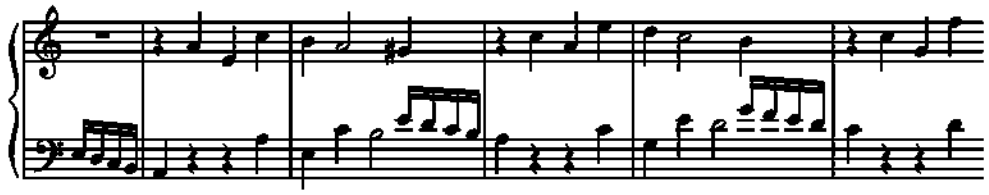
Example 2: K. 3 bars 1-6

This subject is comprised of two motives: the first – in bar 1 (preceded by a one quarter anacrusis) which introduces a scalar descent in rhythmic values of sixteenth notes. The second, from bar 2, introduces a melodic idea, which repeats itself time and time again and

[9] According to Sessions and Westergaard, a phrase is defined by its concluding cadence. See also Rothstein (1989, pp. 3-5).

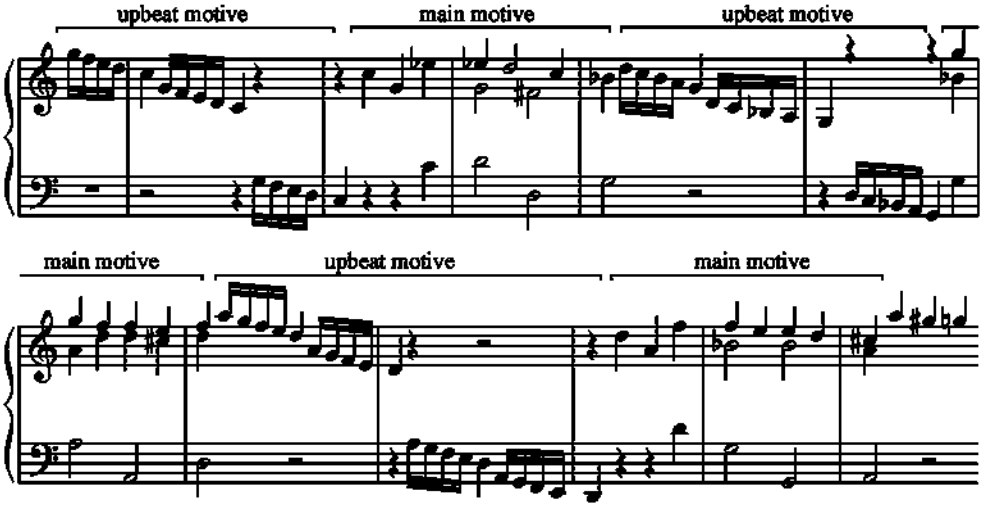
[10] Despite the regularity of the hypermeter as it appears in the first part, the interaction between the hypermeter and the length and structure of the phrases is not that simple. The cadence in bar 35 takes the form of a "strong" bar, but its tonic concludes the previous phrase, which "pours over" into the beginning of the following phrase and the next hypermeasures, thus creating phrase overlap. Phrase overlap creates phrases that are longer than the hypermeasures that contain them. At the end of the first part, before the double-bar line, we are compelled to "add a bar" in order to show the concluding tonic, which cannot overlap the beginning of the next phrase. At the end of the second part, in bars 91-94, Scarlatti "compresses" the concluding tonic into the 4-bar hypermeasure, and thus shortens the phrase. This is quite typical of Scarlatti.

comprises two bars. The first motive in its entirety serves as a sort of anacrusis to the second theme, and yet this anacrusis lingers over *a bar and a half*. Rothstein calls this "elongated upbeat", i.e. an anacrusis appearing *before* the first notated bar in any given hypermeasure, and of which the length is at least one whole bar. This bar is *not* counted as part of the hypermeter[11]. In our particular case, the lengthening of the anacrusis is achieved by repeating the first motive – that of the descending fifth – in three different registers. This being so, one is able to "normalize" it by excluding the repetitions, thus inserting the anacrusis into the main motive itself without distorting the hypermeter. Moreover, the motive of the anacrusis may be inserted before every appearance of the main motive, as illustrated in Example 3.[12]



Example 3: Recomposition of bars 1-6, which are reduced after a "normalization" process.

Now let us turn to the opening of the second part. Example 4 displays bars 48-57. Despite the "almost regular" hypermeter, one can easily discern differences between the sub-phrases, both in the length of the main motive itself (it is "shortened" in the second instance in comparison to the first and third) and in the length of the "anacrusis motive" (which is longer the third time). As a result, the metric and hypermetric position of each part of the phrase changes.

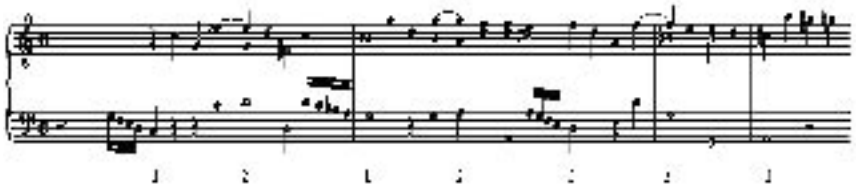


Example 4: Bars 48-57

[11] Rothstein (1989), pp 56-57.

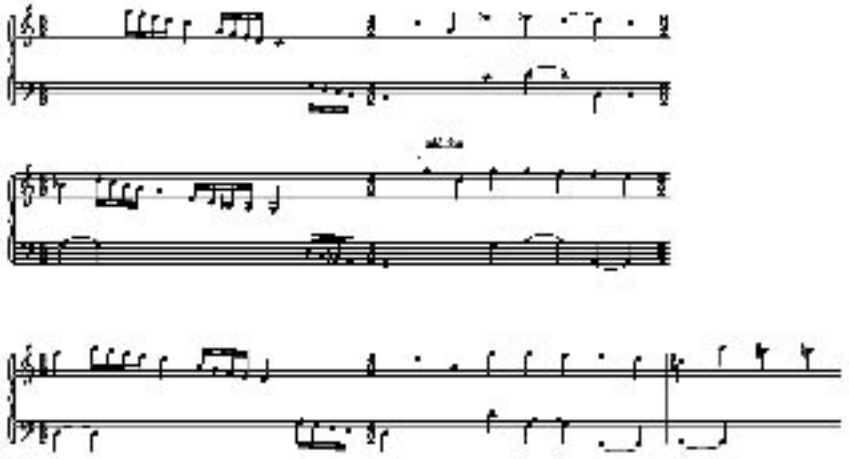
[12] Nonetheless, one must take note that in some instances the very act of expansion makes possible the regular hypermeter. An unmistakable example of this would be the conclusion of the first part, in bars 43-46. The four-bar hypermeter is only made possible because of the lengthened anacrusis.

However, "normalization" of the phrase makes it possible to expose the process, from the regular hypothetical archetype all the way to the final result - the irregularity that is apparent at surface level. Example 5 proposes a hypothetical archetype, or "normalization", similar to the normalization portrayed in the bars opening the sonata. The anacrusis motive was reduced here to one quarter, and is integrated in the central motive. One should take note that this phrase is composed of three links, thus creating a 6-bar hypermeasure. Therefore, the hypermeter here is even only on *one* level higher than that of the notated one[13].



Example 5: "Hypothetical archetype" for bars 48-58

Now let us look at the development process between the hypothetical archetype in example 5 and the final result, as it appears in Scarlatti's pieces. Example 6 displays the intermediary stage, characterized by a transition between a quadruple measure and a triple measure intermittently. In this example, the anacrusis appears in its lengthened form, but the length of all the "anacruses" was made equal to three halves. Similarly, the length of all the "main motives" was equated to four halves, and for this purpose two quarters were added to the second appearance of the "main motive", which was shortened by Scarlatti. Despite the changes in meter, some sort of regularity is maintained because of the *consistency* in changes of meter.

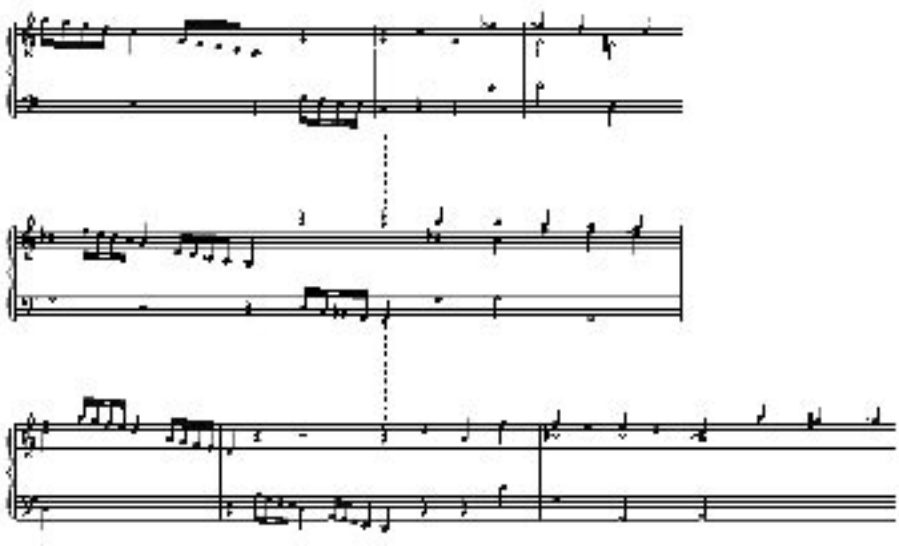


Example 6: Recomposition of bars 48-58: The "intermediary level"
at the transition between the hypothetical archetype and the source text.

[13] The term "a quadruple hypermeter" is used here for the sake of convenience, and also for the reason that it significantly domineers the sonata. A more precise term would relate to the even hypermeter on all its levels. When a hypermeasure unites two bars only, even hypermeter is formed on one level. When the hypermeasure unites four bars, even hypermeter is created on two levels, and so forth.

Finally, Scarlatti's original text level is illustrated in example 7 in such a way that makes it possible to follow the connection between example 6 and 7. The perforated line connects between the strong beats of each appearance of the "main motive".

This process greatly assists in the formal organization of the sonata. This area, constituting the beginning of the second part, is mainly developmental of character. In this case, Scarlatti wisely exploits the rhythmic base as well in order to enhance the developmental character of the section. Notwithstanding, the rhythmic tension is not achieved through capricious means (a trait often associated with him), but through a conscious development of the stable subjects appearing at the beginning of the piece.



Example 7: Bars 48-58 – Original text level

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TIME FOR PREDICTIONS ON DANCE AND MUSIC

Vered Aviv

The Brain as the Generator of Prediction

We are not passive observers in the world: we are active as viewers of and listeners to the sensory information reaching our senses. "Active" means that, at any given time, we predict the future based on the present and we constantly renew and revise these predictions. In fact, we "see" the next step, "hear" the next sound and thus construct a bridge between the past and future. The process of predicting is an integral part of viewing and listening, actually taking place unconsciously in our brain (Bar 2007; Hochstein & Ahissar, 2002).

On what is the prediction of this cognitive procedure based in our minds? It is customary to think that the main elements taking part in the predicting process are information about the world coming via our senses, associations evoked by in-coming information, related to our past experiences, the analogies they create. The integration of all of these leads up to the forming of a specific prediction in connection to what is expected to happen in the near future (Bar 2007). Indeed, the incoming sensory information initiates in our brain a sequence of associations based on memory of what we know and with which we become familiar regarding the world, in the context of that particular information. This associative memory includes the meaning we associate with that particular information and the context corresponding to it. In this way, the experience accumulated in our memory allows for the forming of prediction of what is expected next, based on the associations that the sensory stimulus arouses.

In fact, the brain always uses the sensory information (even when it is incomplete or equivocal) in order to create an analogy to something already familiar to us. For example, a dancer who appears in our field of vision for a brief moment automatically evokes a comparison with the representation of a dancer we know and, actually, we ask ourselves about this new information 'to whom does he/she resemble?' In the process of this analogy, we compare the representation of the person we have just seen to the most similar representation of him/her from what we recall and find in the stores of our memory. This is, apparently, our way of making an analogy between the new- and old information that we have. This representation, that of the dancer, for example, can be complex and multi-sensory and it may invoke a whole

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set of associations accompanying the representation and, consequently, the predictions of the coming movements of the dancer appearing before us.

It is important to emphasize that the brain updates its own predictions and also enhances the way they are represented by examining the correspondence between the prediction and what is happening in actuality. A successful prediction will be further consolidated whereas the weight of an unsuccessful one will be reduced in future predictions.

On Time as the Central Link in the Chain of the Processes of Prediction in the Arts

We have presented the argument that the process of predicting is an active, multi-stage process which depends on time. Information (that comes from the world and/or from inner sources) gives rise to a prediction of which, in turn, the degree of its success is examined and its weight is then updated accordingly. When we focus on what is going on in our brain while we view art works, a dichotomy exists between time-dependent art forms (such as dance and music) and the stationary arts (the plastic arts). In the latter case, all the components of the work are exposed visually simultaneously and we engage in deciphering them (Zeki 1999). In this case, also, the brain builds an immediate representation on the incoming visual information, a representation that updates itself until maximal agreement is achieved with the visual input (matching of top down representation and bottom up incoming information. Hochstein & Ahissar 2002); However, all the visual data already exists in the first viewing and does not change with the passing of time. The performing arts, on the other hand, present us with elements that inevitably change with time, and the nature of a gesture or musical phrase can only be understood within time and context (Hagendoorn 2004, Aviv 2010). This implies that, while viewing performing arts, we must constantly update our predictions. Namely, the degree of matching between what we expect, e.g. what the next move of the dancer would be, and what actually happens on stage (Hagendoorn 2004, Aviv 2010).

About the Proceeding of Time in Dance as Opposed to Music

While listening to music, we form predictions as to sound (or a collection of sounds) that will be heard in the next moment; the main dimension in this case is time. In contrast, while viewing dance, we form expectation based on both the dimension of time and on the dimension of space. We ask ourselves what movements the dancer will execute in the next moment; this question consists of **what** he/she will do and **where** the movement will be performed in space. One may conclude that the task of prediction in dance is more complex than during musical perception since the former deals with two independent and separate dimensions, compared to the single dimension in the latter. However, in dance, space and time are realized through a person's movement, a movement having only few degrees of freedom that are well familiar to us through our daily experiences, thus allowing for relatively simple prediction. When we listen to music, and our brain is involved with the question "what note will be heard in the coming moment", we are undergoing a different experience. Since the nature of sound evolves from the nature of a physical factor

producing it – such as a violin or synthesizer – and these origins can be different and varied, very many possibilities exist for predicting the next note. This span of possibilities is, however, reduced when we are dealing with formational music (western or otherwise) having familiar "rules". But, still, it seems that the extent of prediction in music is large (and our ability to predict is limited.)

A Tool Box for Prediction in Dance

In the course of watching dance, when the brain is busy predicting the dancer's movement, we have a number of fundamental tools at our disposal: human anatomy determines (limits) freedom of movement alongside the unique skill the brain has developed in analyzing and understanding a human body's movement. Dance is a unique case of comprehending movement, human movement. This is by virtue of the fact that we are involved with movement of the human body – we are dealing with a body of a specific build and of clear anatomical limitations functioning within gravity, a body we know and are expert in using (Figure 1). From this, it can be inferred that we can predict more easily and with greater certainty the coming movement sequence on the basis of what is happening now. This skill of prediction is expressed in every area of human movement, even when we are not limited to any movement style, such as classical ballet steps or capoeira movements.

Figure 1: The degree of freedom of human movement and its limitations, as shown in this photograph of the skilled dancer Talia Paz (photo courtesy of Talia Paz).

The natural anatomical limitations of the body's movement, by virtue of its construction of joints that are limited in their extent of movement reduces the number of degrees of freedom in the movement of the human body. We understand and are familiar with the limitations of

the human body, not only with regard to the extent of movement, but also regarding the speed of movement and the spatial configuration of movement (Abernathy et al. 1997, Levangie & Norton 2005).

An additional fundamental factor that is used to predict movement is the great skill we have developed in "observing" movement. This observation, in fact, includes two basic components: one is the visual-perceptual component and the visual understanding of movement. However, no less important is the non-visual component – the motor component. The human eye is particularly expert at analyzing *movement* (change of body location in time) that takes place in the field of vision, such as the movement of an object or living creature (Kandel et al. 2000). The visual skills we have developed as to observing the human body in motion are very significant. These skills actually enable us to observe only partial information and to deduce from it the movement of the whole person (Decety J. & Grèzes J. 1999, Neri et al 2006). For example, viewing a limited number of points of light placed on the surface of just a small number of joints on the body of a dancer will enable us to understand the all-inclusive movement of the dancer, by way of observing the moving points of light (on a dark background, without actually seeing the dancer's body) – see Figure 2 and example (display points of light) at right.

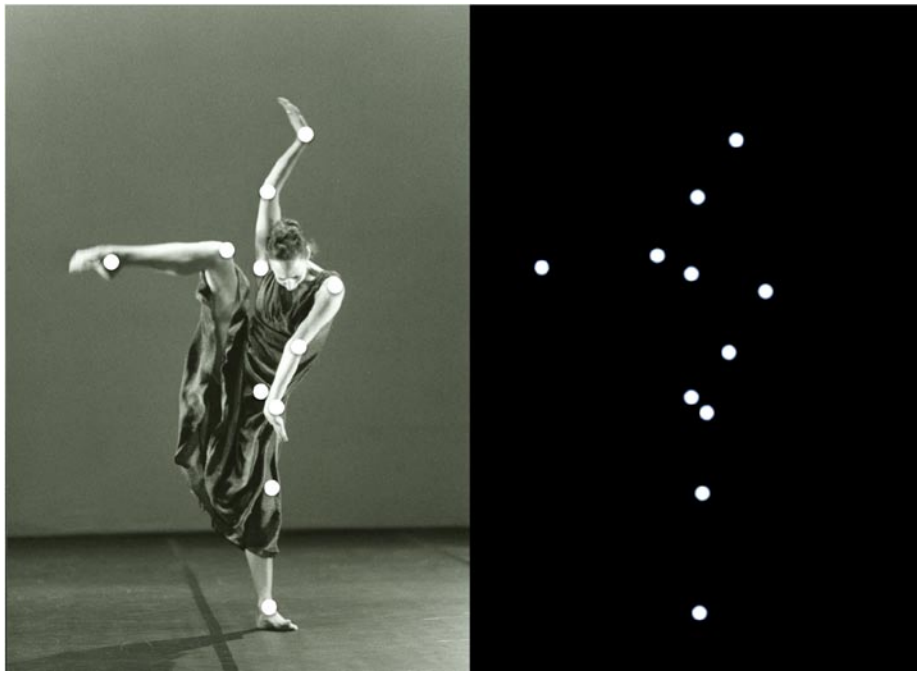

Figure 2: Display points of light (right) on several key joints of dancer Talia Paz (on left). The points of light alone are not enough for understanding that we are looking at a human body; however, the conjectural motion of the points enables immediate recognition of the human body. Photograph by courtesy of Talia Paz.
http://www.youtube.com/watch?v=jZFRGH1vUE&feature=related

Furthermore, from the small number of such display points, we can identify the movements of a pair of dancers and even identify the kind of dance they are performing – for example, a waltz. We are capable of identifying a person we know only based on the movement of the points of light and we can recognize the movement even when the points change between the various joints in the course of movement. In these cases, the understanding of form is possible only by way of movement – termed "figure from motion" (Johansson 1973; Puce & Perrett 2003).

The motor component, itself, constitutes an important factor in the understanding of human movement and in forming predictions regarding the latter. While we are executing a movement, or imagining the same movement being performed by us or by a third person, or, when we observe the same movement being executed by someone else – in all these cases the motor mechanism is involved in the "observation" and the relevant regions of the motor cortex are active (Rizzolatti & Craighero 2004, Cross et al. 2006). We form a correspondence between the representation in our brain when we perform a certain movement and the image of someone else performing the same movement by means of the "mirror neurons" system. We observe others through identifying and through motor understanding (Brass & Heyes 2005). One can relate to this as if we "see" dance via our own bodies. Moreover, the more experienced we are in executing movements that we see and are performed by someone else, the higher the brain's activity is in the relevant motor regions (SMAr, PMv, IPL, STS, and M1). In other words, the level of our identification as viewers depends on our own experience in that specific movement repertoire (Cross et al. 2006).

Indeed, we have at our disposal great capability for understanding human movement: skill that is based on visual analysis of movement, the understanding of the limitations of human movement and on motor identification with it. This skill enables the viewer of human movement to provide fast and efficient prediction of the dancer's next step. The viewer of dance is occasionally mistaken in the understanding of the visual scene of movement he/she sees. For the chorographer, this situation creates an interesting opportunity in which to maneuver between realizing expectation created by the viewer and the non-realization of expectation, this, thus generating an effect of surprise and excitement for the audience (Hagendoorn 2004) (Figures 3&4).

Figure 3: What will the dancers' next steps be?
"Mongar" by Barak Marshall, courtesy of the Suzanne Dellal Center.
Photograph: Gad Dagon

Figure 4: Dancer Talia Paz's act of landing after a leap is experienced by the viewer through his/her solidarity.
Photograph courtesy of Talia Paz.

Music Decrees its Own Limitations

Because music is not limited to any specific medium that carries it (in analogy to the human body), prediction of the musical process is subject to identifying the organization of sounds in the form of musical frameworks (Bregman 1994). These frameworks can move on an axis that spans from the very simple – a case in which it is being perceived as trivial, to overly complex frameworks - making it then impossible for us to extract them from out of the collection of sounds (Levitin 2006). Musical traditions have created sets of "rules" or consensuses concerning what is suitable and what "goes with what" in sound continuum. However, these traditions have their limitations and they depend on the order the composer imposes on the organization of sounds; they are, therefore, not inherent limitations. The listener's brain will, therefore, be occupied in searching for the order of sounds in time, for the beat, the rhythm and for complex patterns. (Peretz & Zatorre 2005).

Conclusion

Referring to a work of contemporary music, Luciano Berio said that "one of the most serious musical problems of our times is the distance and apathy existing between the acoustic- and conceptual dimensions of music" (from Berio,L. *"Discussions on Music with Rossana Dalmonte"* 1984, page 41, Hakibbutz Hameuhad, Tel Aviv). If we apply this analogy to the art of dance and the subject of this article, we understand that one of the major challenges of dance is the lack of separation between the physical dimension of the dancer and the conceptual dimension of dance. This separation in music and the lack thereof in dance are what constitute the basis of the fundamental difference in the possibility of prediction in dance as opposed to that in music.

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CHRONOS'[1] SMILE

Amir Kolben

Introduction

Every art form has its own, unique relationship with time. In a certain sense, this relationship gives each form of art its specific identity, and often distinguishes it from other art forms. This article, based primarily on my many years of experience as choreographer, endeavors to examine different aspects of time in dance. This is clearly an analytical endeavor, in the sense that it singles out one part of the complete movement, which is composed of form, direction, energy and time, for the purpose of a focused examination of one component: time. In this article I shall first address objective and subjective expressions of time. Then, I will briefly comment on some other art forms, especially those that have some form of direct or indirect contact with dance, in order to provide a framework for the discussion of time in dance. I have no intention, and I am not qualified, to discuss in depth the gamut of temporal issues related to the other forms of art. Rather, I will touch on only those subjects that help me define a structure and conceptual framework for this discussion of time in dance. In the following section, I will discuss time in dance more fully, and attempt to answer two questions:

1) It there a unique "dance time" that differentiates the art of dance from other art forms?
2) If so, what are the components of that dance time?

In the penultimate section, I will present examples of the ways in which my dance 'Chronos' Smile" deals with time, in both its form and content.

The Evasiveness of Time: Problems Defining and Discussing Time

Dancers of the Kolben Dance Company have the custom of writing entertaining or strange comments made by staff members or visitors during the day, on the company's notice board. Over time, quite a few peculiar and humorous sentences have accumulated. In their own strange way, they have become signposts on the map of processes the company has experienced in the time that has passed. It is as good a map as any whose creators

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[1] In Greek mythology, Chronos is the god of time and father of Zeus, the ruler of Olympus. Many time-related words, including "chronology" and "synchronize," are derived from his name. Chronos' Smile is the title of a dance I created in 2000, which deals with the subject of time.

arbitrarily chose its scale. Scale influences the amount of detail shown, and the extent to which the map resembles the reality it is supposed to simplify, expose and present. Among the many sentences written on this smiling notice board, there is one statement of mine that still causes one dancer to wink quizzically and demand an explanation: "You use time lengthwise and not widthwise." Apparently, I said this when trying to correct something a dancer was doing during a rehearsal… I must have hoped that the correction would help him to understand my aims better and perform as I wanted. However, I cannot remember the exact situation and lacking their context, even I do not understand what I meant. I only remember the dancer's raised eyebrows, which instantly communicated his great puzzlement, and the smile that crept onto his lips, expressing triumph like that of a fisherman who has dredged a pearl from the sea: another sentence worthy to join the pantheon immortalized on our notice board.

Before continuing, I must admit that my memory is very weak in some areas, and the passage of time is not improving my ability to remember and recall events collected somewhere in the overloaded storerooms of my mind. Therefore, I am indebted to the dancer who wrote down my words, which now serve as the point of departure for my study of dance time. This sentence will serve as a reference point, from which I will endeavor to develop the entire map.

In retrospect, after additional thought about the incomprehensible sentence I blurted out, it seems to me that my intention must have been: If length is the dimension that answers the objective question about time and measures "how much time has passed," then width is the subjective dimension, which asks existential and ontological questions about time, among them: "What did I do during the time I was there?" It forms the subjective feelings about the time that has passed. In other, more mundane words, one could say what everyone knows: the measurement of objective time does not depend on the subject who is experiencing the time, but subjective time expands or shrinks, accelerates or decelerates, according to our involvement and interest in events we are participating in or witnessing during a given span of time. Time spent enjoyably will always seem too short, or, at least, shorter than time spent waiting in intensive expectation of a future event, or for the dentist to finish drilling.

I would not find it necessary to delve into these questions if they were not at the core of my study about the essence of time in art in general and in dance, in particular.

But do we possess a way of knowing what objective time is? Moreover, does it actually exist or is it nothing more than another construction of the devious human mind? Seemingly, in our everyday lives, everybody knows what time is, everybody uses time, devotes time to that things that are important to him/her, and wastes time on nonsense. Each person's time is important to him/herself. Despite this, if we try to answer the direct question, "What is time?" we are very likely to find ourselves wandering around in circles, in an insolvable entanglement of inarticulate partial answers[2]. Therefore, I turned to the oracle of our time, and used Google

[2] Heidegger claims that it is not even possible to ask the question "What is time?" because the question immediately implies that time is something present (quoted in Levinas, Emmanuel, Death and Time, Resling, Tel Aviv, p. 21.)

to search for the word "time." The search engine returned 11,080,000,000 results. Obviously, I do not have the time to read all, or even some, of the entries; suffice it to say that I am not the only one in the forest searching for lost time. Therefore, for purposes of this discussion, I would prefer to rely on a philosophical response to similar difficult questions. According to Wittgenstein and others, there is absolutely no need to define "time," since we all understand it intuitively. For this discussion, let it suffice to use the word "time" according to the commonly understood meaning shared by speakers of the language, a meaning that is neither ambiguous nor confusing. If we reject this proposal, we will be forced to emerge ourselves in a thought process whose purpose is to examine our very ability to possess knowledge of the world and reality in a "genuine" manner, a process that is not part of this discussion.

Now that I have pointed out part of the problematic situation inherent in discussing an issue that I am unable to clearly define or characterize, we can proceed to an operative definition that indeed coincides with the manner in which we relate to time in our daily lives, as a tool. It is a tool that enables us to organize sequences of events, compare the duration of events and the intervals between them, and to quantify the pace of changes, such as movement. Moreover, questions concerning objective time have negligible meaning for the time experience of an art work, whatever it might be. Despite this, when attending a performance, we do glance at our watch, which supposedly gauges objective time. We simultaneously experience the existence of different kinds of time:

1) Subjective time: We look at our watch when we are bored, feel like we are wasting our precious time, and cannot wait for the performance to end.
2) Objective time: The time for which we must pay the babysitter or making certain that we have not missed the last bus home.

Time in Different Art Forms

I am not an expert in any of the art forms presented in this section. I am neither a philosopher nor a scholar in these fields, yet I wish to address some of the ways in which these art forms are, in my opinion, distinctive and differentiated from each other, using the parameter of time as my sole criteria. I permit myself to do this because of the constant and unavoidable friction between other arts and the art of dance, in which I am an expert, friction that exists in several forms of encounter: containment, analogy, dialogue and others.

Time in Painting

Time in painting is permanent, stable, and eternal; within a single painting it is unchanging, as if "time has frozen" in that specific work. Despite its relative permanence, even an individual painting – like in any art form – does have dimensions of time that are not constant, such as time that passed during creation of the work itself, the time the observer needs to view the painting, experience or appraise it. In addition to these factors, the way a particular painting is seen and evaluated varies constantly because of historical, social, aesthetic and other changes. Nonetheless, at the foundation of painting there is an assumption that the object whose creation was completed prior to exhibition is permanent. This permanence allows us to assume, with a reasonable level of accuracy (baring faded colors or an accumulated layer

of dust) that if we return at a later date, we will see the exact same painting, even though our relationship to it may have changed in the meantime. The passage of time influences the observer, but has very little impact on the object being observed[3].

Time in Theater

Theatrical time, time on the stage, unlike time in painting, is flexible. In general, a theatrical event, like all performing arts, transpires in time and its existence is conditioned by a continuum of events that must occur during a certain period. Sometimes, it shrinks or condenses the real time of events to a reasonable time span for a performance. It is possible that a performance lasting an hour and a half will present the events of an entire life, or even several generations[4]. Conversely, some theatrical events, mostly those of realistic nature, attempt to preserve the rules of classical Greek play-writing that require the unity of time, place and plot. To achieve this, the plot is portrayed as a diachronic sequence of events that take place consecutively in a realistic sequence and at an ordinary pace; the audience experiences it as devoid of jumps in time. In this case, it is possible to speak of real-time event, in which its theatrical duration is identical to the time an event of the same type might take in extra-theatrical reality, that which a realistic theatrical event depicts.

Parallel to these possibilities, theater is able to use the cinematic stratagem of decelerating time, of showing action in slow motion, at a pace that allows observers to follow each and every shade-of-meaning and nuance in the actors' facial expression, something that is impossible when the action is portrayed at a "realistic" or "reasonable" pace. This alternative can intensify the emotional effect of the moment revealed before our eyes. It must be emphasized that our reference point for the flexibility of theatrical time is the sense of a reasonable pace and correct sequencing of events that is formed by our life experience, even though this is a totally subjective process.

Time in Music

Music has its own time, which is real time in its essence. More than any other form of art, music deals with the dimension of time in a clearly visible manner, because time is the foundation on which it organizes its materials and constructs its components. The organization of time, which exists in the background of other artistic endeavors, is located in the forefront of music: the tempo of a movement is often given as a precise metronome marking, a time signature appears before the first notes, and the notes themselves indicate their precise duration[5].

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[3] Conversely, paraphrasing the historian Herodotus who claimed that one can never enter the same river twice, one could say that we are unable to look at the same painting twice. The fact that we have changed prevents us from seeing the same painting again, and because we have no way of seeing the painting we saw previously another time, we are left devoid of a point of reference that would allow us to claim that it is, indeed, the same painting.

[4] Without entering into too much detail, it is important to say that one can also watch a theatrical event as if it were a real time event by disregarding its attempt to present an extra-theatrical reality with a duration different from its theatrical duration. If we watch a performance as an "event in and by itself" it is, indeed, a real-time event. From this point of view, a theatrical event is similar to music or any other performing art.

[5] For the sake of simplicity, I am here purposely disregarding the "ad libitum" approach, aleatoric music and other attempts to destroy the tyranny of musical time.

Music is the most abstract art form. Therefore, its time is real time; it does not attempt to represent extra-musical events directly, even if it recounts a story or representational, historical event, or endeavors to describe real places and events. Musical time is the period of time during which the music is heard by the listener[6]. In other words, the musical event, by its very nature, happens in real time. Yet, this assertion is insufficient because it ignores the widespread connection between music and words in songs, musical theater and opera. This connection is not merely one of simply pasting elements together. Rather, it creates a musical form that is less abstract. In this case, the sung and/or spoken words redirect musical time towards theatrical time, with all the possibilities inherent in this diversion, as discussed above.

The current context does not permit relating to all of many aspects of musical time itself. However, I will briefly mention the most essential aspects, which resemble the components of dance time, which I will address in the next section: music has a diachronic time dimension, which is the melodic or rhythmic line, and a synchronic dimension, the harmony, which combines the various diachronic lines into a whole. In both of these dimensions, the musical composition is formed by forming relationships between durations of sound and the gaps between them.

Time in Dance

There are several approaches that endeavor to single out the basic elements of choreography, of any type; and although they are not in full agreement, not one ignores these three components: movement, space and time. However, despite the importance of time as a component of dance, there is a tendency not to approach it as an independent specific research subject. Perhaps this is due to the theoretical difficulty that arises out of approaching the evasive subject of time, and perhaps it is because of the practical difficulty of distinguishing between time and movement happening in time. Dance time is not simple to describe because its nature changes in different performances, depending on its resemblance to music or theater, sometimes even during the same performance. Time is only one of the formal components that places dance at a mid-point on the continuum between the concrete and the abstract, a continuum with theater on one end and music on the other.

Abstract dance[7], which by nature is closer to music, does not attempt to represent an external event; rather, it is the event itself, its time is real time in the musical sense of the word. However, in theatrical dance (which includes dance theater) the dance event sometimes occurs in real time. As in theater, dance sometimes presents situations, actions or events that are familiar to the observer from extra-dance reality that serves as a criterion for a "reasonable" duration in which they might occur. When this feeling of "reasonableness" is created, the dance event can be experienced as occurring in real time. Generally, this experience is the exception to the rule, one possibility out of the many ways in which time can be used. Dance usually utilizes the musical possibilities of accelerating and decelerating rhythmic units, stretching

[6] Other aspects of time in music do not concern this article, so let it suffice to mention the duration of a note, the system by which duration of time is measured, the relative duration of various notes, etc.

[7] It is superfluous to note that there is no such thing as totally abstract dance because dance is performed using a concrete, perspiring, breathing human body. However, this reservation is also valid, on other levels, for abstract painting that exists through the medium of paint placed on canvas, and music, whose sounds are heard via vibrations transmitted through the air and received using physical mechanisms.

or shrinking time while the dance is being performed. In other words, dance usually uses formalistic manipulations of time that distance the dance event – even in the case of dance theater – from any kind of realistic representation of external, non-dance reality.

The Duration of Movements and what is between them

When examining a dance piece on the structural level, there is reason to examine the relationship between the durations of its sections while also considering the length of the movement phrases that construct these sections. On the micro-level, it is necessary to study how the duration of the execution of a single movement affects its character, and its connection to the other movements along the time continuum, especially those occurring in close temporal proximity. In this article, I shall focus exclusively on this element of dance time, which observes the single or isolated movement as the basic component from which the entire choreography is composed, equivalent to a single note in music. However in the case of dance, we encounter a problem because it is difficult to define a movement, and distinguish it from adjacent movements. We are unable to define an isolated movement by imposing a limit on the duration of its performance since this will necessarily eliminate the possibility of performing an isolated movement at an extremely slow pace. A movement executed by only one part of the body is the closest parallel to a single musical note; but is a circular movement of one finger a single movement or is it made up of several different movements? Can a movement that is executed simultaneously by several parts of the body not be defined as an isolated movement? In the absence of analytical clarity, I shall, for the sake of this discussion, choose to define the isolated movement as a movement that arises from activating energy in one or more body parts in one (in the case of one body part) direction or more (in the case of multiple body parts) and continues as long as there is no change in these directions[8].

Time and the Isolated Movement

The isolated movement cannot exist outside the dimension of time; a movement begins at a point in time, and ends after a certain time has passed. The event, that is, the change that has occurred in the body's state within that period, is the isolated movement[9]. It has duration, which is measured from its beginning to its end. Just like the movement of a clock's pendulum, the flow of sand in an hourglass, or even the measured vibrations of cesium in an atomic clock, time is measured using some type of movement or the sequence of and between events. In order to claim that we are repeating the very same isolated movement[10], we can define it in a wider sense by its shape, direction and placement or, in a more limiting way, also by its duration.

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[8] An isolated movement, unlike an isolated sound (although most sounds do include overtones) is an abstraction. Every movement of our body, however small, is accompanied by secondary movements that change the general configuration of the body.

[9] Nevertheless, it is appropriate to point out that every isolated movement can be subdivided into a great many smaller, single movements, each making up the single movement, just as a physical material can be broken down into its atomic- and sub-atomic components. The minimal unit of movement is, in principle, limited only by the smallest units of time and distance.

[10] I am intentionally disregarding this issue here, due to the impossibility of executing precisely the same movement in accordance with the parameters mentioned above, in order to make do with somewhat reasonable approximately that creates a very close resemblance between the movements, to the point that it is difficult to distinguish between them, without tools that prolonged and analyze the movement.

If we examine the wider definition, we can say that changing the duration of a single movement changes its character and, sometimes, its meaning (be it theatrical or formal). For example, if we imagine the isolated movement of a slap in the face, and then decelerate greatly, its' meaning changes and it becomes a caress. Or, if we halt it a split-second before the hand reaches the other person's cheek, and then complete the movement slowly, we will be able to observe the emotional barriers, uncertainties and changing intention of the person executing the movement. However, this simple description of a gesture or familiar movement is nothing more than an individual case in which a variation in rhythm, accent and speed can change the character of a movement. Obviously, most movements do not have the specific narrative meaning of a slap in the face; nonetheless, time is very important also for an abstract movement.

Likewise, if we examine this issue in terms of the more limiting definition of a single movement, we will discover the same consequences because a movement that is the same in terms of duration and spatial change can be performed in an endless variety of rhythms or tempos (i.e., speed, acceleration and deceleration etc.) within the framework of the time allotted to it. For example, the movement can be executed very quickly until the mid-point of its allotted time and then gradually decelerate to the end. Another possibility would be the temporal mirror image of this process, in which the movement is executed with gradual acceleration at the beginning and ends very quickly. There are innumerable variations for the use of time by each isolated movement; some of the variations are the same as variations possible when using a single note, while others are unique to movement[11].

Isolated Movements and what is between them

A sequence of isolated movements is inevitably and by definition performed on an axis of time where one movement follows the previous movement, and makes way for the next one. This kind of sequence can create a movement phrase or be characterized by cyclical repetition[12]. In order to understand the influence of time on a sequence of this type, it is necessary to examine it not only on the level of the isolated movement, as explained above, but also on the level of relative durations of isolated movements, and the time intervals between them. The character of a movement phrase is, to great extent, determined by these time components. From a familiar sequence of isolated movements, it is possible to build a phrase that is fast or slow, one that is compressed or more freely spaced, another that is surprising and frenetic or one that is predictable and relaxed. The character and atmosphere of any given sequence can change from one extreme to another by changing the various temporal components that determine its essence. Already on the level of a sequence of isolated movements, we can talk about creating a structure, and forming of the supporting pillars of a complete dance piece. Already on this level, the isolated movement is extremely important: if it starts tenderly and ends suddenly in an extended silence, followed by the appearance of the next isolated movement, the result produces a totally

[11] For example, it is impossible to accelerate a long note, which us indeed possible in a single (dance) movement, as described above.

[12] I do not wish to elaborate on the distinction between these or even to try to distinguish between a movement sentence and a movement sequence that is not a sentence. Even though this subject is worthy of clarification, it strays from the subject of this paper.

different composition than if the second movement is executed immediately after the first, without any delay, and so on. Here, again, there are innumerable musical variations, but there is also a fundamental difference between dance and music: while a musical rest, the absence of sound, is present only by and through the relationships with adjacent sounds, the moving body, in dance, maintains its existence and is fully present, even if it is not in motion. The continuous presence of the dancing body deprives the dance of the option of its complete absence[13]. Traces of the last movement remain not only in the memory of the performer and the observer but also in the dancer's posture. Despite this, the pause between movements, similar to the interval between written or spoken words, has great influence on the very essence of the single movement, the sequence of movements and their possible interpretations. To the same extent, there is significance to the way isolated movements are grouped into sequences of different lengths, the relationship between the durations of these sequences and each other, as well as between them and the duration of the breaks between movements.

From the perspective of composition, there is another meaningful aspect of time, which I have not addressed previously: periodicity as a building block of composition. This aspect is very significant for determining the character and nature of the choreography. It has two components: the duration of the movement and the duration of the intervals between movements. In order to measure periodicity, we can create a graph on which the time of the movement is located on the X axis and the interval between movements, on the Y axis. At the point where they meet, we are at the maximal level of periodicity, meaning that every movement is equal in length to the other and every interval is equal in length to the other intervals. As we move farther along one of the axes, the periodicity decreases. Thus, every point (x:y) in the area between the axes represents a level of order or disorder in the use of time. To express this in other words, we can describe the absolute order as movements of equal duration, executed at equal intervals, movements similar to a clock's pendulum. Partial disorder could be created with movements whose durations vary, but the interval between remains equal. A higher level of disorder would be created if all periodicity is avoided: each movement and each interval is different and unpredictable, creating an extremely chaotic or restless feeling.

Conclusion

Based on the above, we can conclude that there is, indeed, dance time, a unique association between time and dance, unlike the relationship between time and other art forms. Although several components of dance time are identical components of music time or theater time, there exists a unique essence which is not just the sum total of these time components, an essence that can be called "dance time." This unique essence constitutes one component of dance's distinct identity, among others that are beyond the scope of this paper.

[13] There is, of course, the possibility of disappearance and concealment using stage effects – scenery, costumes and lighting – that could create a closer parallel to the musical pause, but awareness of the continuous physical existence of the dancer's body, even if it is not visible to the eye, does not cease even when the dancer is out of sight.

Chronos' Smile

The work *Chronos' Smile* was premiered on January 1, 2000. It was not only my birthday, but also a day on which religious fortune tellers, mystics and technologists predicted there would be worldwide catastrophe. It is now apparent that this catastrophe never occurred. It was certainly no coincidence that this date was chosen to premiere a performance which, in its entirety, deals with time. Personal time – my birthday and the birth of my new work – connected with world time (or, perhaps, mythical, or even cosmic time) in order to create an affinity between them which would enrich the work itself with additional meaning because of the circumstances of its presentation. In this instance, the personal and the universal shared a state of expectation, preparation for some future but imminent time.

When I was a child, the anticipation of an approaching birthday was a kind of torture combined with a source of happiness. However, both of these caused time to slow its progress as the happy day approached, when I would receive the birthday presents I hoped would make me very happy. Presents were very rare in the place where I grew up: one was supposed to be satisfied with a minimum, for both ideological and financial reasons. The rarer the presents were, the more difficult waiting for my birthday became, and mainly, in the context of time, much longer.

A personal birthday is a special affair, a unique pivate event in time, which is otherwise marked by a sequence of religious, national, cosmic and other events. Therefore, this theme is injected into ***Chronos' Smile*** in a scene where a violin plays the familiar melody of "Happy birthday to you." However, that is not all. The time component was given additional meaning in two ways: first, the melody was played repeatedly in a cycle, a metaphorical expression of the possibility that cyclical or, perhaps, repetitive mythological time, rather than moving from past to future, does indeed exist.

However, I wove the defined directionality of stage time into the cyclical repetition of the popular birthday song, like time arrow within the cycle: the playing began hesitatingly, as if "learning" the notes, with mistakes and off-key notes, like a child who has only just begun learning how to play the violin. The playing gradually became more confident but still lacked good intonation, until it was finally played using vibrato and musical phrasing. Thus, a small dramatic scene integrated music, dance and theater, expressing both of the innocence of childhood and the sobriety of my maturing, which forces one to look ahead to the end, to death, to the future certainty of my own personal death, as deduced from the death of my father, who passed away in my youth, and left me with the image of his death as a point of reference for my life and art.

Once we are already dealing with death, what could be more natural than choosing Franz Schubert's quartet *Death and the Maiden* as one of the musical components of *Chronos'* Smile. In my choreographic version of the quartet's second movement, a theme and variations, I endeavored to touch on the story told by *Death and the Maiden* by shifting it to a pseudo-reality (which today we might, with some amount of distancing, call "virtual" reality) of the world of dolls, both toys and theatrical puppets. This thematic choice was not arbitrary; it touches on the options for a fanciful relationship to time, which both childhood games and theater create with forward and backward motion through time, the possibility of

multiple tempos existing simultaneously and, most importantly, the reversibility of death, that same final act that gives meaning to life only because of the uncompromising totality of its finality[14]. The occupation with time does not stop at the thematic, metaphoric or narrative level of *Death and the Maiden*, rather it continues with the movement materials of which the work is constructed. For example, the second movement of Schubert's quartet begins with the appearance of a slow theme; in the choreography it bacame the theme of time, which is danced by one of the doll characters. As the work unfolds, we discover that this character is the figure of death, who is in love with the maiden, and who forgoes the purpose of his existence in favor of love, returning the dead maiden to life.

This theme reappears in the first variation just as the other characters come to life, moving rapidly as if ignoring the underlying time theme while creating a counterpoint of movement and rhythm. The slow-fast duo serves both as a metaphor for vibrant strength in the face of death hidden by time, and as an option of synchronic existence of time at varying speeds.

I hope these few examples have provided an opportunity to glimpse the inner workings of creating a work of art in which *time,* is simultaneously its content and its most critical component. This dialogue between content and form (a well known challenge for artists of all disciplines) is, from my point of view, the essence of my artistic activity.

Conclusion

In the process of writing this article, I conducted a less than thorough search for material and articles written about the subject of time in dance. To my amazement, I found nothing. I assume that a more uncompromising search would come up with some kind of results. However, since the purpose of this article was to share my own experience, and not necessarily rely on previous work, I did not continue my search. Despite this, I consider my failure indicative of the fact that the subject of time in dance has not been fully researched, which may be why it has also not become an integral part of discourse on dance.

I do not delude myself into thinking that I have covered all the issues related to dance time that are worthy of discussion. However, I do hope that I have clarified a number of issues and provided an opening for further, deeper discussion on these relatively neglected issues. In conclusion, I wish to state that the study of dance time has given me much pleasure. The time I have devoted to the writing of this article was not wasted, definitely not.

14 In all modesty, I refrain from discussing or making a statement regarding the philosophical disagreement between Martin Heidegger – for whom time arises from death – and Emmanuel Levinas – who claimed that death arises from time (Levinas, Emmanuel, *Death and Time, Resling*, Tel Aviv, p. 21.). One way or the other, the meaning of our lives is derived from death.