LIGETI’S EARLY EXPERIMENTS IN COMPOSITIONAL PROCESS:
SIMPLE STRUCTURES IN *MUSICA RICERCATA*

Daniel Grantham, BM

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APPROVED:

Daniel Arthurs, Major Professor
Stephen Slottow, Committee Member
Andrew May, Committee Member
Frank Heidleberger, Chair of the Department of Music History, Theory, Ethnomusicology
Benjamin Brand, Director of Graduate Studies in Music
James C. Scott, Dean of the College of Music
Mark Wardell, Dean of the Toulouse Graduate School

This study examines the formation of a unique chromatic and formal language in *Musica Ricercata* by György Ligeti. The study begins by examining statements from an interview with Ligeti conducted by Ove Nordwall in 1979. The interview discusses his compositional experiments from the early 1950s, the period in which *Musica Ricercata* was composed. Working from Ligeti’s words, “simple structures” are defined as repeating formations of rhythms and intervals with easily discernable features. These features must be salient such that when the structure is altered, it is still clearly and audibly recognizable. The musical and political environment in Hungary at the time is established, providing context for this early experimentation with compositional parameters. The analysis begins with an overview of the entire work, outlining developments of pitch-class density, symmetrical pitch-class structures, and notated accelerandi over the course of the multi-movement work. Analyses of simple structures in each movement elucidate both Ligeti’s experimental approaches to chromaticism, along with more traditional aspects, with special reference to Bartók’s compositional style.
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CHAPTER 1

INTRODUCTION AND BACKGROUND

The following passage of an interview of György Ligeti conducted by Ove Nordwall in 1976 establishes the basis for this study. Discussing his compositions from Hungary, specifically those from 1951-1956, he states:

It was then that I first conceived of a static, self-contained music without either development or traditional rhythmic configurations. These ideas were vague at first, and at that time I lacked the courage and the compositional and technical abilities to put them into practice. Although traditional modes of thought appeared questionable, I still clung to regular, metrical groupings. In 1951, I began to experiment with very simple structures of sonorities and rhythms as if to build a new kind of music starting from nothing. My approach was frankly Cartesian, in that I regarded all the music I knew and loved as being, for my purpose, irrelevant and even invalid. I set myself such problems as: what can I do with a single note? with its octave? with an interval? with two intervals? What can I do with specific rhythmic interrelationships which could serve as the basic elements in a formation of rhythms and intervals? Several small pieces resulted, mostly for piano.

Certain features of these problems and their solutions have something in common with the principles of serial composition. This is surprising, as I had approached them from totally different premises and a totally different route. At the time, I hadn’t the faintest idea of the developments which led up to serial music and which were then evolving in Western Europe. I was even totally oblivious to Schoenberg’s method of composition with twelve notes, not to mention Webern’s procedures. My supposed self-liberation was, of course, doomed to partial frustration by the isolation in which I was working, for the worthy Bartókian idiom still came through, even though it was less marked than in my earlier music. So my works of that period strike me as being thoroughly heterogeneous in style, naïve in their absence of orientation, inadequate and half-baked solutions.1

A detailed examination of this interview plus additional statements from other interviews establishes the context and direction of this study. Ligeti notes that several small pieces for piano resulted from experiments began in 1951. Musica Ricercata is a set of eleven short movements for piano written from 1951-1953. Because of its compositional time frame and instrumentation,

it is reasonable to consider that these miniatures are at least some of the “small pieces for piano” to which Ligeti was referring.\(^2\) Ligeti discussed his attempts to discard aspects of traditional music, but also expressed that he felt unsuccessful because of a specifically Bartókian musical idiom found in his compositions from Hungary.\(^3\)

That he unambiguously singled out Béla Bartók as a model is not haphazard. The associations a reference to Bartók had within Cold War-era Hungarian musical thought places not just Ligeti’s experimentation in context, but also the school of thought from which Ligeti eventually needed to escape. Ligeti asserts that a “lack of courage and compositional and technical ability” and “isolation” are explicit causes of his failure to break with Bartók’s style.\(^4\) This raises two questions:

1. What obstacle did Ligeti feel he needed courage to overcome?

2. What technical abilities did Ligeti feel he lacked and more importantly in this context what technical abilities did he have?

The answers arise in the relationship the “Bartókian idiom” had to Hungarian musical thought and, by extension, the context for Ligeti’s experimentation in the 1950s.

During the composition of *Musica Ricercata*, Ligeti lived under a Soviet influenced regime with a unique brand of Socialist Realism emphasizing a uniquely Hungarian culture.

Rachel Beckles Willson contends that during the interwar years Hungarian intelligentsia sought


\(^3\) Sallis, 281-93.
to preserve Hungarian culture through standardization of language and categorization of both Hungarian folk and art music.⁵ They intended to differentiate Hungarian music by setting it against Schoenberg and his dodecaphonic works. Driving Willson’s argument is the antipathy Hungarian writers and composers felt for Adrian Leverkühn from Thomas Mann’s Doktor Faustus. Despite the fact that he is fictional, she justifies that Leverkühn is a stand-in for Schoenberg and the second Viennese school.⁶ She then argues that musical figures—Zoltán Kodály in particular—who were steeped in the sentiment of “national preservation” during interwar years became prominent leaders during the era of Soviet influence.⁷ Under their leadership, musicians were expected by the government to emulate traditional folk music styles in the manner of Bartók.⁸ This edict was enforced by restrictions placed on teaching appointments, commissions, performances, and composition prizes similar to Soviet Russia. Ligeti was susceptible to these restrictions and the consequences of breaking them given that he held a teaching appointment at the Liszt Conservatory in Budapest and faced occasional censorship by the government.⁹

Bartók’s role in the propaganda of the Hungarian authorities is not as a living participant, but as a symbol of the ideal Hungarian composer. Willson states that “[Bartók] was to become a powerful symbol of national renewal. Most visibly, he was embraced and celebrated as never before at a Bartók festival in 1948.”¹⁰ By 1948, Bartók was dead and the gradual takeover of the

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5. Rachel Beckles Willson, Ligeti, Kurtág, and Hungarian Music during the Cold War (New York: Cambridge University Press, 2007), 19-34.
6. Willson, 32.
7. Ibid.
8. Ibid.
10. Willson, 28.
country by the communist party was nearly complete. Thus, Bartók was unable to be actively involved in his legacy in Hungary, which allowed it to be delegated by Communist authorities. They placed an ideal Bartók in opposition to Schoenberg, serialism, and “formalist” music. They placed an ideal Bartók in opposition to Schoenberg, serialism, and “formalist” music. However, his most chromatic works from the middle period were considered flawed by these authorities and consequently were banned under their regime. This selective censorship demonstrates the divide between Bartók as a composer and his treatment as the ideal Hungarian composer by the musical establishment.

Government authorities proliferated and subsequently celebrated an idealized version of Bartók and condemned an archetypal version of Schoenberg. The propaganda surrounding these two composers was adaptable, within limits, such that it could be applicable to whoever needed either reproach or encouragement, for musical or extramusical (political) reasons controlling what was acceptable practice for a composer. Willson describes a “historical tendency of constructing Hungarian music as a totality in opposition to modern Germanic music.” It is safe to conclude that to emulate any aspects of the music of Western Europe and reject the iconic image of Bartók would have resulted in disciplinary actions by the authorities.

11. Formalism was used as a description for art that “had no necessary causal relationship with the economic and social context in which it was produced” Jonathan Walker, The Oxford Companion to Music, Oxford Music Online, s.v. “formalism, "http://www.oxfordmusiconline.com/subscriber/article/opr/t114/e2625" (accessed March 28, 2013). But “during the period of Stalin's rule (1927–53), the term became a mere buzzword, albeit very dangerous to those on the receiving end, and served as the opposite pole to socialist realism, the official aesthetic doctrine. Formalist music, in these years, could be written in an idiom that Stalin disliked, a work, which a critic thought it prudent to condemn (for fear of being wrong-footed), or by a composer the Party wished to discipline. It would therefore be misleading to define formalism solely in terms of any particular stylistic features, though dense textures, the avoidance of melody, elusive rhythms, and the absence of a firm tonal framework would often (but not always) invite condemnation.”
12. Willson 34.
14. While any attempt to delineate what musicians in Hungary were aware of with respect to music in Western Europe is speculative, it is easier to view propaganda about Western European music as a symbol of an oppositional Other to rally Hungarian composers than as an issue of real concern for the authorities.
Thus, when Ligeti tried to move beyond Bartók, he repudiated more than just Bartók, but also the attitude of the Hungarian regime at the time. He exposed himself to the dangers of censorship, loss of authority, and loss of financial security. To talk about any of these goals openly was to invite disciplinary action and it would seem Ligeti intentionally hid his experimental compositions, instead diffidently referring to them as having been written “for the bottom drawer.”\textsuperscript{15} He knew that these compositions would not be accepted for performance in that cultural climate and to discuss them would have brought unwanted attention from the authorities.

\textit{Musica Ricercata} was the subject of censorship in an arrangement for woodwind quintet titled \textit{Six Bagatelles}. This piece consists of six movements of \textit{Musica Ricercata} arranged and presented for performance during a Hungarian Music Week in place of his string quartet, \textit{Metamorphoses Nocturnes}. One can assume that Ligeti knew that large portions of the string quartet, which was a later, more experimental work, would be censored, so in its place he offered the arrangement of selections from the earlier piece.\textsuperscript{16} Despite the substitution, the committee responsible for reviewing his work concluded that \textit{even the earlier work} was unsuitable for public performance, and the committee censored the final, most chromatic movement.\textsuperscript{17}

In a second interview with Péter Várnai from 1978, Ligeti discusses Bartók’s influence on him more specifically and illustrating his desire for change.\textsuperscript{18} In it, Ligeti expands upon his

\begin{center}
\begin{tabular}{l}
15. Willson, 54. \\
16. See Steinitz, 59 and Willson, 53. \\
17. Steinitz, 59 and Willson, 53. The censored movement is the tenth movement of \textit{Musica Ricercata}, while the more chromatic eleventh movement was not included in the arrangement. \\
\end{tabular}
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reasoning for experimenting in the early 1950s. He felt the need to separate himself from traditional models and clarifies that those models were not solely at the motivic level, but also at the level of form. He also critiques *Musica Ricercata* for the piece’s rhythmic and metric structures because they often fall into regular subdivisions based on bar lines. He expresses that this feature was common in his Hungarian compositions and that he tenaciously deemphasized after he left Hungary and was influenced by Western European art music. The resulting rhythm and meter do not reflect Ligeti’s compositions from Western Europe and is part of the reason he concluded that the work did not fulfill his expectations. Despite this “failure,” the work exhibits early indications of future developments in both pitch and rhythm.

It is only after Ligeti left Hungary and entered a climate more hospitable to experimentation that he was able to break from Bartók. While in Hungary, Ligeti was little aware of the developments in the West. Steinitz states that

> [Ligeti] was as isolated from new music in the West as he was unable to investigate the music of his immediate predecessors. The music of the second Viennese school went unplayed and undiscussed; his only acquaintance with it was via a score of Berg’s *Lyric Suite* which he had seen at the Academy library. Nor had he any idea about the post-war avant-garde.¹⁹

Ligeti’s solution was organizing music in such a way that it maintained internal consistency despite what he considered to be a non-traditional method. Adopting Ligeti’s term, this study provides a definition of *simple structures*, discusses how they are used, and draws some conclusions about Ligeti’s experiments. Recall the opening quote (p. 1), where Ligeti states that “very simple structures” are made of “sonorities and rhythms” that can be used to build

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¹⁹. Steinitz, 35.
music, stating in particular about the basic elements of structures: “What can I do with a single
note? with its octave? with an interval? with two intervals? What can I do with specific rhythmic
interrelationships which could serve as the basic elements in a formation of rhythms and
intervals?” \(^{20}\) From this statement, \textit{simple structures are repeating formations of rhythms and
intervals with easily discernable features. These features must be salient such that when the
structure is altered, it is still clearly and audibly recognizable.} These structures combine to form
“static” and “self-contained” musical units. \(^{21}\) Static and self-contained structures have specific
internal relationships that remain unchanged when repeated. His discussion of “very simple
structures” and “static,” “self-contained” music form a basis for the following analysis of \textit{Musica
Ricercata}.

When Ligeti raises these questions, he begins to place limitations early in the
compositional process on the materials available to him. He restricts pitch-class and rhythmic
content, but also reserves certain pitch-classes for key moments and places certain intervals to
either a prominent melodic or accompanimental role. Mayron K. Tsong, discussing Ligeti’s
\textit{Piano Études}, has also noticed Ligeti’s predilection for organization of musical parameters early
in the process of composition and states,

Ligeti felt that serial composition and its linear emphasis on pitch relationships, intervals,
and texture ignored the vertical dimension of music. However, despite his objections to
these aspects of serialization, Ligeti agreed with the systemization of musical elements
and procedures that is logically executed to the end of a composition. \(^{22}\)

The organization of materials by limitation of their availability and use is the connection

\(^{20}\) See n. 1 \textit{supra}.
\(^{21}\) Steinitz, 54.
\(^{22}\) Mayron K. Tsong, “Études Pour Piano, premier Livre of György Ligeti: studies in Composition and Pianism”
Ligeti felt between his method in the 50s and serialism as pointed out by Tsong.

It is in Western Europe where he found the courage to break with the music of Bartók, where he acquired the technical skills to do so, and where he could openly discuss his music without fear of reproach. It is the combination of technical skill and freedom to experiment that allowed Ligeti to write *Apparitions* (1958-9) and *Atmospheres* (1961), two compositions whose freedom would have impeded their construction in Hungary in the 1960s.

I first began to think about a kind of static music you find in *Atmospheres* and *Apparitions* in 1950; music wholly within itself, free of tunes, in which there are separate parts but they are not discernable, music that would change through gradual transformation almost as if it changed its colour [sic] from the inside. Before writing down a composition, first I always imagine what it would sound like; I can practically hear the various instruments play. Around 1950, I could hear the music I imagined but I did not possess the technique of imagining it put on paper. The main trouble was the possibility had never occurred to me to write music without bars and bar-lines. Whereas I would have been able to note down harmonic structures and clusters I had in mind I was stuck when it came to the notation of metre and rhythm. It was both a notational and compositional difficulty. *Musica Ricercata* and *Métamorphoses Nocturnes* are divided up into bars, they are conceived within the framework of conventional time measurement and periodic structure. Yes, it was more than a problem of notation. The change in my musical style did not really coincide with my leaving Hungary. My first ‘static’ piece dates back to the summer of 1956.23

In this quote, Ligeti described his musical goal in the 1950s. *Atmospheres* and *Apparitions* fulfilled his goal of a “static self-contained music without either development or traditional rhythmic configurations” described in the first interview. He based *Apparitions* specifically on sketches of a choral piece, *Viziók*, from 1956 that travelled with him form Hungary.24 It is probably this “static” piece conceived before leaving Hungary to which he

23. Ligeti et al., 33.
was referring in the above quote.

As demonstrated in this study, in *Musica Ricercata*, structures remain static for long periods, but at significant formal junctures they undergo change. These moments of change, often articulated metrically, delineate moments of arrival and divisions between larger formal sections and clarify the experimental aspects of the form and the role of traditional metric structures.\(^{25}\)

It is important to note that Ligeti did not eschew either traditional rhythmic or melodic structures. Their sonorities and rhythms often evoke idioms of the past, and they might appear to reference works by Bartók or Kodály. But of particular interest in this study is the idea that Ligeti was experimenting, instead, with the relationships *between* structures through form-defining alterations of static structures. For example, a structure reappear by repeating an aurally discernable aspect that remains deliberately unchanged throughout a subsection of the form. The juncture between that subsection and the next is indicated by an alteration to the static element of the structure. The structure maintains enough characteristics to be recognizable, but with a perceivable contrast between the formerly static aspect and its derivative arrangement. This contrast forms a point of interest in several of the movements where older versions of a structure appear alongside newer versions. Several of these structures might appear in a single movement.

\(^{25}\) Ligeti’s treatment of form and time recalls the work of Jonathan D. Kramer, *The Time of Music: New Meanings, New Temporalities, New Listening Strategies* (New York: Schirmer Books, 1988). Indeed, Kramer’s later usage (after Stockhausen) of *moment* and *multiply-directed* forms resembles Ligeti’s discussion of static music without development. The difference in Ligeti’s treatment of meter/rhythm between the music composed during his experiments in Hungary and the music written after his arrival in the West could be described in terms of Kramer’s discussion. *Musica Ricercata*, with its more linear treatment, sudden discontinuities, and multiple arrival points, represents *multiply-directed form*, while *Atmospheres* and *Apparitions* fall closer to *moment form*. The similarity of approaches to time may not be coincidence, since Ligeti met Stockhausen at the Darmstadt International Summer Courses in New Music after his arrival in the West.
where interest is formed between a static structure and one that changes. Examples of alterations are octave adjustments, articulation order changes, added attacks, shortening of the span between attacks, added pitches, character changes, adjustment of placement of one line against a static line (syncopating), dynamic increase or decrease, and tempo modifications. Ligeti’s attempts to eschew tradition are expressed by how these changes combine to create larger formal structures. Ligeti creates a hierarchy of static, easily discerned structures and adjusts their static nature to generate form.

Scholarly opinion on *Musica Ricercata* recognizes its quality and position as a turning point in Ligeti’s career, but as expressed by Richard Toop, “the musical outcome of *Musica Ricercata* is, for the most part, much less iconoclastic than its intentions: Bartók is by no means left behind, and several pieces inhabit a world very close to that of his *Mikrokosmos*.” Friedemann Sallis and Martón Kerékfy discuss the pieces of this time period in terms of their debt to Bartók, citing specific musical examples where Ligeti is clearly channeling the older composer. While both mention the first quote, Kerékfy addresses simple structures directly, finding examples in movements one, two, three, six, seven, eight, ten, and eleven of *Musica Ricercata*. He also uncovers specific similarities to Bartók’s *Mikrokosmos* and goes so far as to suggest there might be elements from it in works from Ligeti’s final style period. This claim is not unfounded, but suggests further in depth discussion.

This study relies heavily on Richard Steinitz’s placement of *Musica Ricercata* in the

scope of Ligeti’s work, but also in the broader context of the Hungarian musical environment. Of
the experimental time period Steinitz states, “Ligeti’s remaining years in Hungary were marked
by a widening divergence between the relatively bland music he wrote for public performance
and the radicalism of his secret compositions.” 28 He goes on to describe Ligeti in this period as a
“composer unsure of himself, no longer convinced by either Bartókian routines or folk style.” He
describes Ligeti’s experimentation in terms of his friend Sandor Weöres’ transformation five
years earlier:

Weöres stripped away all the inessentials of his style in order to rebuild it from scratch
according to the most rigorous discipline, exactly what Ligeti himself was about to do.
He would rework the first two movements of the Sonatina for his own purgative self-
examination, Musica Ricercata for solo piano -and with surprising results. 29

He goes on to describe some of what he sees as simple structures found in the work. The
first of these is the large-scale, pitch-class structure. This structure is clever for its
straightforward simplicity. Each movement’s pitch-class content is limited to its ordinal number
plus one. For example, the first movement has ordinal number 1, plus 1, for a total of 2 pitch-
classes; the second movement has 3 pitch-classes; the third movement has 4; and so on. The
pitch-class sets from movement to movement differ. The overall effect is a continuous increase
in chromatic density culminating in the final movement, when all twelve pitch-classes are
presented. This simple organizational structure provides variety, but also unifies the piece
through the noticeable, incremental escalation in chromatic density as the piece progresses.

28. Steinitz, 36.
29. Ibid, 53.
CHAPTER 2
ANALYSIS

Overview

This study’s analysis begins with structures that span the entire course of the piece followed by analysis of individual movements. Over the course of individual movements and the whole piece, periodic and sentential structures appear and melodic lines are developed. Formal sections are clearly delineated with unconventional materials that fill conventional roles. For instance, while there are unusual uses of dynamics and articulations, they imply variations of traditional structures, specifically climaxes and the subdivisions of melodies. In this time period, Ligeti’s chromatic language is distinguished from his chromatic language immediately after his departure from Hungary, where discernable melodies and traditional musical structures are not easily recognized.

Mentioned in the analysis of the individual movements, the number of pitch-classes available increases by one in each successive movement. These increases lead to intensifying chromaticism as the piece progresses.

A comparison of the pitches of each movement yields symmetry, although individual movements do not necessarily exploit this trait. Figure 1 indicates the symmetric axis of each movement and denotes whether it occurs as a pitch or between two pitches of the collection. Note that movement 5 is the only movement not symmetrical by inversion, where interval distance is mirrored around the central axis. Rather, movement 5 is related by transpositional symmetry, where the subset of pitch-classes is transposed by a set amount, the tritone in this case. The symmetrical pitch structures are not exploited in every movement—the second, third, and fifth
movements do utilize this trait. There is no conclusion as to whether or not it was an intentional aspect of the work, but is a feature worth observing.

\[
\begin{array}{c|c|c}
\text{Movement 1:} & D & A \\
\text{Movement 2:} & E\# & F\# & G \\
\text{Movement 3:} & C-E_b & E-G \\
\text{Movement 4:} & F\#-G & G\# & A-B_b \\
\text{Movement 5:} & [B-C\#-D] & [F-G-A_b] \\
\text{Movement 6:} & F\#-G\#-A & B & C\#-D-E \\
\text{Movement 7:} & E_b & F-G-A_b & A-B_b-C-D \\
\text{Movement 8:} & B-C-C\#-D & E & F\#-G-G\#-A \\
\text{Movement 9:} & C-C\#-D-D\#-F & F\#-G\#-A-A\#-B \\
\text{Movement 10:} & C\#-D-D\#-E-F & F\# & G-G\#-A-A\#-B \\
\text{Movement 11:} & D\#-E-F-F\#-G-G\# & A-A\#-B-C-C\#-D \\
\end{array}
\]

Figure 1. The symmetric axes of the movements.

The notated accelerando is another structure that reoccurs throughout the piece. In the notated accelerando Ligeti conceived of an auditory phenomenon, a discontinuous increase of the perceived speed of the music, and realizes it using several approaches. The notated accelerando appears three times in the first movement. First it is introduced by an incremental building of the ostinato at the beginning of the movement. The second variation precedes the
climax and shortens a repeated eighth-note structure from 5 eighths, to 4 eighths, and then 3 eighths by repeatedly removing a single eighth from the structure. This variation of the accelerando reduces the duration of a multi-note structure through the removal of a note. The third variation preceded the final D and left the audible note structure intact. In this case, the duration of the rest is reduced between instances a single, isolated pitch.

A third type of notated accelerando is introduced in movement 3. It arises when a structure is kept intact and its proportion is reduced. For example, when eighths become triplets or sixteenths in a repeating pattern. A fourth and final type is the motivic acceleration that occurs in movement 6. In this case the space allotted to the multiple motivic structures of the movement is reduced and they appear immediately succeeding one another. The last instance of the accelerando appears in the final movement, where the subject is layered in stretto similarly to movement 6. The stretto builds until the individual lines are lost and blur together into a mass of sound. This layering presages similar textures from *Apparitions* and *Atmospheres*.

There are other larger relationships that appear between groups of movements that share mood. Some specific instances occur between movements one and three; movements two, five, and nine; and movements four and ten. These movements can be grouped by their expressive disposition. These similarities are accomplished through similarities in rhythm, contour, modal inflections, tempo, and character markings. Examples include the changing line and the arpeggiating melody, from movements one and three, respectively, which exhibit similar alternating contour and syncopating rhythms. Explicit modal inflections and tempo provide unity between movements two and five. As noted by Richard Steinitz in his discussion of this work, the character marking *capriccioso* appears in movements three, eight, and ten tying them together.
through their disposition.30 There are some structures that take on specific roles within multiple movements. For example, the notated accelerando, when it appears, usually foreshadows a juncture in the form. Another example is the closing motive from movement 6 that has a rhythmic and functional similarity to the closing motive from movements eight and ten.

The role of the closing motive is to provide a modal, cadential step at the end of a melodic line to indicate a phrase or section break. This example assigns a specific musical role, in this case a melodic ending, to a reoccurring structure. This attribute is corroborated with Ligeti’s statements about his apparent inability to break from tradition. Traditional organizational methods still appear. For example, regularly in this work melodic and accompanimental roles are by clearly discernable. Despite aspects that break from tradition, such as individual pitch or rhythmic characteristics, traditional musical structures, such as discernable melodies, are the “failures” Ligeti discussed in the initial interview. These traditional aspects disappear from the musical surface in Ligeti’s musical language immediately after his departure from Hungary.

Movement 1

This movement explores what Ligeti meant by “I set myself such problems as: what can I do with a single note? with its octave? with an interval? with two intervals? What can I do with specific rhythmic interrelationships which could serve as the basic elements in a formation of rhythms and intervals?” It is clear how Ligeti limited pitch class and rhythm in this movement. With the exception of pitch-class D which is added in the final sonority of the movement, the first movement of Ligeti’s *Musica Ricercata* is limited to a single pitch-class, A, for the duration of the movement. The exception provides formal closure to the movement exemplifying the formal role exceptions play in the movements of this piece. The exception, pitch-class D, not only highlights, but also recontextualizes the preceding A into a fifth relationship with D. Fifth relationships appear in several of the following movements reinforcing this recontextualization. Rhythm is limited to a static ostinato, a changing melodic line, and the notated accelerando. Structures within the music are kept static and alterations to them have implications for the form and structure of the movement.

The movement demonstrates several characteristics that found in later movements: separation of the hands into a static and changing materials, juxtaposition of static and change elements, pitch as a movement-to-movement formal element, and explicitly notated accelerating passages. In this movement motives seem to be divided into static and altered categories. The ostinato from m. 14, the notated accelerando,

Example 1. Movement 1, with annotations

Musica ricercata
per pianoforte
(1951–53)

Inroductory Interjection
Sostenuto $\frac{3}{4} \times 66$

Misurato $\frac{3}{4} \times 106$ Gradual construction of the eighth note ostinato

The melodic (Changing) line
(misurato, poco/piecheo)

*) Tasten stumm niederdrücken / depress keys without sounding.

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Example 1, continued
Example 1, continued

Gradual Acceleration to the Climax, motivic version of the notated accelerando

Climax! End of the Ostinato
Prestissimo Final Version of the Changing Line

*) mit beiden Fingern zugleich anschlagen / play note with both fingers at once.
Example 1, continued

Second notated incremental increase in speed, this version includes tuplets

Tasten stumm niederdrücken / depress keys without sounding

Mit beiden Fingern anschlagen, dann mit einem Finger halten. 1 Play note with both fingers then hold with one.
and the note A are limited and static. Applied to these motives are alterations, which can transform a structure from static, as in the ostinato once it has been established, to changing, as in the changing line. Examples of alterations include octave adjustments, articulations, added attacks, shortening of the span between attacks, adjustment of the placement of a line against a static line (syncopating), dynamic modifications, and tempo modifications. The form of this movement is best expressed by how these changes combine to create a sense of arrival at a climax in m. 60, introduction in mm. 1 through 14, and coda from mm. 66 to the end.

Since the pitch aspect of this movement is static, it is up to other elements to provide foreground contrast. A short introductory interjection features tremolos and silently depressed keys, which sound sympathetically with the articulated notes starts the movement. Three rhythmic structures appear in this movement after the initial announcement. The first arises in mm. 6 through 9. The structure incrementally increases or decreases the speed of the rhythm. From the first articulation of A1 in m. 6, three quarter notes pass before the next articulation, then two, and finally a single quarter note. The accelerating version of this structure surfaces twice in this movement, once at the beginning and again at the ending. The version at the end starts from a larger duration and accelerates through more intervening steps, starting with 8 quarter notes and includes tuplet subdivisions of 3, 5, 6, and 7 before ending with a final interjection similar to the one that emerged at the beginning of the movement. In later movements, the notated accelerando reverses and instead of accelerating it decelerates. This

32 Due to the nature of acoustics, strings are able to vibrate sympathetically when they are depressed and occur at intervals found in the harmonic series—octaves, twelfths, and major tenths being the most common. In this case the stuck octave sounds sympathetically with the depressed keys.
33 All octave designations conform to the standard of the Acoustic Society of America where the lowest A is A0.
structure is distinct from performance indications ritardando, stringendo, or accelerando in that the change in speed is notated explicitly and has abrupt, disjunct shifts in speed, i.e. not a performance instruction. This distinction is important here because this structure acts as structural bookends for the movement and surfaces in the movements that follow.

The next rhythmic structure occurs in m. 10 where A2 enters an octave higher on the upbeat. This builds into an octave, eighth-note ostinato that continues until the climax at m. 60 marked Prestissimo. During this same span, the music is marked crescendo poco a poco and accelerates stringendo poco a poco sin al Prestissimo, which mimics the acceleration in mm. 6 and 9, but is less explicitly measured. The distinction between explicitly written out acceleration and acceleration arising from a performance indication can be summarized by examining mm. 52 through 60, where a written acceleration is combined with the climax of the stringendo. From m. 52, the rhythms in the right hand are contracted by reduction of an eighth first in m. 56 and then in m. 58. This contraction is paired with a change in register and the arrival on Prestissimo. In addition, the number of repetitions is reduced after each contraction. The motive starts as 3 eighths and a quarter and is repeated seven times, followed by 2 eighths and a quarter five times, and finally a single eighth and a quarter only three times. The reduction of duration creates an effect similar to that found at m. 6 in the initial instance of the notated accelerando motive.

In this first movement the only interval available is the octave and its compound. The “melodic” line must use other means, such as articulation and rhythm, to create variety. In m. 14, the melodic line enters with three attacks on the strong beats of the measure marked with an accent, a tenuto, and a staccato articulation. This entrance arises at A3 an octave higher than the ostinato mentioned earlier. These articulations occur in a specific order within the motive: the
accent is always first, followed by the tenuto, concluding with the staccato. These aspects are static between mm. 14 and 15. However, as the piece progresses to the Prestissimo, these aspects are altered in the changing line considered in opposition to the static ostinato. Interest is generated between static elements, the ostinato and the pitch, and the elements that change, the articulation, the number of attacks in a grouping, the register between groupings, and register within a grouping. The changing line is altered incrementally over time. Each repetition sounds related to prior repetitions, but are not continuously static like the ostinato. Specifically, register and articulation aurally create distinctions between one repetition and the next. The use of the octave as a means of dividing repetitions is featured in later movements.

Eventually the changing line settles into a pattern of 3 eighth notes followed by a quarter note in m. 60, the Prestissimo. This pattern is foreshadowed in m. 23, where the first instance of 3 eighths appears notably with an alteration in the order of articulations, accent with a staccato, staccato, tenuto, staccato. This order surfaces again in m. 40 without register changes, and in m. 52, which was discussed earlier. Additionally a crescendo from m. 22 to m. 60 adds to the sense of acceleration that transpires over the length of the movement.

In m. 60, the duration of the changing line is 5 eighth notes. This length does not overlap regularly with the ostinato, which is divisible by 2. From mm. 60 through 66, the continuous repetitions of this pattern against the ostinato alternates between syncopated and not. The alternation provides the forward impetus for this section and the climax of the movement. In m. 66, the notated accelerating figure found at the beginning of the movement returns and played in additional registers. The movement finishes with the D and silently depressed keys, a reference to the beginning of the movement, but in reverse order.
Movement 2

The overall sense of this movement is of a character going through the motions in a sad, rigid, and ceremonial manner (Mesto, rigido e cerimoniale), muttering angrily perdendosi as they become resigned to inescapable fate. Cohesion is achieved through reference and repetition. As seen in movement 1, elements remain static, with exceptions. Adjustments are consistent, connect important musical elements, and delineate a two-part form. A strong formal division is signaled by the addition of the final pitch, G♭. It treats the final pitch in a similar manner as the first movement.

This movement also extends the prominent use of register changes, accelerating motive, intentional use of articulations, and character markings from movement 1 into a movement with a contrasting mood. Pitches E♯ and F♯ are introduced at the beginning of the movement and only these two pitches are played until G♭ is added in m. 18 with an accelerando rhythm similar to that found in the first movement. This version of the explicitly notated accelerando starts with whole notes, moves through halves, half-note triplets, quarters, quintuplets, and ends with a string of sixty-fourth notes labeled repetition of tones as dense as possible, but fades (perdendosi) as it does in each of its successive entrances. Ligeti envisioned the G♭, marked minaccioso (menacing), as “A knife in the heart of Stalin.” The three pitches combine form a pitch-set that is symmetrical with F as its axis of symmetry.

34 Steinitz, p.57
Example 2. Movement 2, with annotations

Presentation

II

Continuation

Mesto, rigido e cerimoniale \( \text{\textit{j} = 56} \)

\( f \) Non legato

\( X \) Open

\( Y \) Closed

senza ped.

\( \text{\textit{pp}} \) Una corda

con ped. *)

\( f^\prime \) Tre corde

senza ped. non leg.

quasi parlando

\( \uparrow \) non repenting tones

*) Pedalwechsel bei jedem Ton / change pedal on each note.

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Example 2, continued

\[ \text{Explicitly notated accelerando, added G} \]

\[ \text{Piu mosso, pesante} \]

\[ \text{Senza tempo, rapido} \]

\[ \text{As a knife through Stalin’s Heart!} \]

\[ \text{Ped. bei jedem Ton} \]

\[ \text{Pedal on each note} \]

\[ \text{Mit beiden Fingern zugleich anschlagen} \]

\[ \text{play note with both fingers at once.} \]

\[ \text{Tonrepetition so dicht wie möglich} \]

\[ \text{repetition of tones as dense as possible.} \]
Example 2, continued
Before the G♭ enters, the primary melodic structure is a four-measure phrase built from smaller eighth note units alternating between the E♯ and F♯. The first four measures provide a paradigm for the melody built from these two pitches. The line remains static in both rhythm and pitch class order for a majority of the movement. The melody begins with an ascending half step in eighths paired with an immediately descending half step, labeled X, and is followed by an ending, ascending half step, marked open. The rest of the melody is built from this pairing and the subsequent music organically grows from what came before. The first two measures mirror each other. Motive X is inverted into motive Y, which is then followed by an ending, descending half step, marked closed in the score. The second half of the phrase condenses and animates this material in ways that are similar to what William Caplin calls a sentence structure. Sentences are constructed using a basic idea presented twice in a presentation phrase, X and Y, followed by a more active continuing phrase. In this case the second phrase reflects the first and is organized XYY with a closed ending.

This arrangement of phrase structures into a traditional model is one of the salient features of *Musica Ricercata* as a whole. Phrases that fall into “typical” or “traditional” models, uncoupled from traditional signifiers such as cadences, appears in later movements and is a reference to tradition. In this movement, in place of cadences, phrase endings are disclosed using a presentation form.

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articulations such as *non legato* and *tenuto* markings as seen in m. 1 in the open ending and in mm. 2 and 4 in the closed ending. Combined with an increase in duration, these articulations provide visual and auditory cues that signify the end of a phrase. This non-traditional way of signifying traditional structural bounds exists in later movements as well. Phrase structures with 2, 4, 8, or 16 elements per unit also reflect traditional phrase lengths and features in the movements that follow this one as well.

Aurally, the descending, closing half step alludes to the descending half step found in the Phrygian mode. Modal allusions emerge in many of the movements commonly at phrase endings and within the pitch relationships of melodic lines. In this movement, phrase endings, besides solely being demarcated by the characteristics outlined above, allude to modal characteristics that could be attributed to Bartók, Renaissance contrapuntal theory, or folk music in general.

Two forms of the initial melodic line emerge in the movement. The first is a single line marked *forte, senza ped.*, as it is found in the first four measures. The second form of the melody is as it is found in the following four measures, at the extreme registers of the piano doubled in octaves, at the opposite end of the dynamic spectrum *pianissimo*, and with the marking *una corda* and *con ped.*, all elements that contrast with the initial *forte* presentation.

The following phrase, mm. 9 through 12, foreshadows the G♯ and accelerating motive when it displaces the three F♯s upwards by an octave. Their pairing with *sforzandi* provides them added weight and provides further foreshadowing of the G♯. The shortening of the duration between adjusted F♯s from 6 quarters to 3 quarters, references the notated accelerando and also foreshadows the G♯. The F♯s are adjusted such that the pitch and rhythmic pattern of the phrase remain static while altering the register.
Within the phrase, the entrances of the adjusted F♯ in mm. 10 and 12 also alter the pitch order in the Y motive. This change places more emphasis on the octave adjusted F♯s, but, since the alternation of E♯ and F♯ continues, also changes what were closed endings into open endings. The open endings heighten the intensity of the phrase. The phrase is marked *quasi parlando* (seemingly spoken) and contrasts with the *Mesto, rigido e cerimoniale* marking in m. 1 and m. 13. Again some elements are kept static, such as pitch class and rhythm, while others are altered, such as register and pitch order. These four contrasting phrases combine make a larger formal unit, another structure whose divisions allude to traditional phrase structures. Immediately following these phrases, the G♯, the final pitch, enters at a formal juncture and arises in a notated accelerando.

Additional elements provide formal unity for this movement. The G5 mentioned earlier enters *three* times in mm. 18, 25, and 33 marked with *sfondo*, a reference to the *three* F♯s altered in register and with *sfondo*, in the phrase beginning in m. 9. These G5s are punctuated with octave adjustment to G6 in mm. 26, 27, 28, and 33 that also reference the F♯s and come in groups of 3 accented Gs. In m. 33, the accelerating motive is reversed, instead decelerating, which relaxes the tension built by the acceleration of the G♯ from m. 18. In this final measure, the movement ends by restating the closed ending in the lower register *twice*. As discussed earlier, the *two* endings in the phrase beginning in m. 9 were altered from closed to open. One might consider the closed endings in the final measure to provide a response to the *quasi parlando* in the adjusted earlier phrase in m. 9. These repetitions of the phrase ending also demarcate the end of the movement. This sense of closure is facilitated by aural allusions to the Phrygian mode.
Movement 3

Besides the surface effect of a dry pun, the structure of this movement also adopts an additional punning quality by playing upon the reversal implied by its large-scale form a chiasmus, ABBA. This reversal extends into the role musical elements play in the texture. Adding to this, the pitch collection emphasizes its inherent mirror qualities; the C-E♭ and E-G are mirror images of one another within the symmetrical mixed third chord. The pitch and rhythmic elements remain static, while other elements, such as the register, direction, melodic vs. accompaniment function, articulation, agogic accents, etc. inform the larger formal dimension of the movement.

Movement 3 uses only four pitch classes, but unlike the previous two movements, the whole pitch-class set is found throughout most of the movement. Together these pitch classes, C, E♭, E♯, and G make a symmetrical collection that contains both the C major and C minor triads, the chord of the split third. The movement is an exploration of the symmetrical shape of this chord. Originally identified in the music of Bartók by Ernő Lendvai, it is a tetrachord with a root, both major and minor thirds, and a fifth. An example of this harmonic formation occurs in Mikrokosmos, No. 103, “Major and Minor.”

Example 3. Movement 3, with annotations

III

Phrase 1

Allegro con spirito \( \text{d} = 176 \)

f tre corde

senza pre.

Second Phase, add E-natural

C

\( \text{pp} \)

una corda

staccatissimo, leggero

Eb against E

Third Phrase

\( \text{G} \)

tre corde

\( \text{C} \)

Ascending!

Eb acting as D\(^\#\)

\( \text{pp sub.} \)

\( \text{mp} \)

una corda

E-natural!

\( \text{sf} \)

\( \text{pp molto leggero} \)
Example 3, continued

Arpeggiating figure as melody with thirds as accompaniment and regular cross relations between E and Eb

---

p leggero e giocoso

(sempre pp)

Eb acting as D♯

(f sub tre corde)

(f)

(sempre f)

B1

p

(sempre ff)

pp sub., molto leggero

---

Accelerando Figure

string.

pp cresc. molto

pp
Example 3, continued
Example 4. Béla Bartók, *Mikrokosmos* 103, “Major and Minor.” At *soprano* an A chord occurs with both the major and minor thirds emphasizing the A and E in the bass with the D♯ and F♯ acting as incomplete neighbor tones to the E. In this case the melodic material is derived from the half-whole octatonic and could be considered an F♯ chord in first inversion with a split fifth.

![Musical notation](image)

The form of this movement is a chiasmus, ABBA, which is audible melodically.

However, the underlying adjustments to the musical materials, ensure that the initial A section, B sections, and the final A section maintain interest.

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C E♭ || E G
```

Figure 3. The symmetric pitch axis of this movement.

The opposition of the E♭ and E♭ is explored in the first A section. Two rhythmic patterns are contrasted in this section as well. First, a four beat structure found in m. 1. Second, a structure made of continuous eighth notes found in mm. 4 and 5. Measure 1 has several recognizable characteristics. An octave marked *martellato* and *staccato*, which is boxed in the
score, provides a strong pulse on the initial beat. It has a *descending, minor* third between $E_b$ and $C$, which enters on the *weak* beat. It has two *slurred* sixteenths that also enter on the weak beat. It has tenuto markings that denote the ending. Like the second and first movements, the order and type of articulation are important here. This structure is explored in mm. 1 through 6 where, like the second movement, it is repeated and altered to make a melody. Unlike the second movement, the phrase structure is five measures long, is less balanced, and provides the music a dark, but joking quality (later, *giocoso*, playfully) to which the unbalanced rhythm and split third contribute. In the second half of this initial phrase, the alterations to the structure introduce the $G$ leading into an arpeggiation in continuous eighths starting with a slur. This arpeggiation arrives at an octave in m. 6, signaling the end of the phrase and the beginning of the next. This first phrase explores the $C$ to $E_b$ minor third, but also the $C$ $E_b$ $G$ triad.

The next phrase, from mm. 6 through 11, establishes the opposition of $E_b$ and $E$. In this phrase the descending minor third that was $E_b$ to $C$ is now $G$ to $E$. Several other elements of the initial structure are altered as well. The volume is *pianissimo* and the steady impetus provided by the *martellato* octave is replaced by a continuation of the arpeggiating figure from the second half of the first phrase. This figure uses $E_b$ rather than $E_b$ to explore the $C$-$E$-$G$ triad.

In the initial phrase, mm. 1 through 4, a steady pulse was also provided by arrival on $C_1$. In that phrase, the length between each pulse was 4 beats. In this phrase, mm. 6 through 11, the pulses are still provided by arrivals on $C_1$. However, due to the length of the motive, these arrivals occur every five beats and not every four in this second phrase. Above this is the melodic line exactly the same, *almost*. The length has been shortened by a half measure, but the also line enters a half measure late after the compounded $C$ octave at the beginning of m. 6.
This single change causes no simultaneous, compounded C octave to sound against the C1 from mm. 6 to 11. This lack of simultaneity contrasts with the first phrase where the C octave occurred regularly and provided a strong sense of metric pulse. The length of the phrase causes a G octave to occur in m. 10. This G octave is significant in the return of A. The purposeful simultaneous C1 and C5 on the downbeat of m. 11 ends this phrase like the ending of the first phrase in m. 6. Measures 6 and 11 are the only points where the 5-beat pattern discussed above and the melodic line arrive on C1 in the bass and C in the melodic line over the whole phrase. This arrival is marked and intentional, caused by the lengthened arpeggiation of the melodic line. Without it the line ends on C.

One other change transpires in m. 9, where, if everything were kept strictly intervallic, B natural should occur. C♭ works as a skip upwards contained within the pitch collection. Instead Eb appears against the E♭ in the bass. This Eb fits the pattern set by the G♭ in the melody in m. 3. If the pitch collection of this movement is considered in terms of adjacent pitches, the G♭ introduced in m. 3 is two steps away from the Eb and skips the E♭ between the Eb and the G. The C in m. 9 is similarly skipped in favor of the Eb, two steps away. This is also the only instance where the Eb and E♭ are struck simultaneously in the first A section.

The final phrase of the opening A section combines aspects of the first two phrases while continuing to make slight changes to the archetype set up in the first phrase. This phrase returns to the original dynamic, but now the C to Eb and the E♭ to G minor thirds alternate still placed in their correct, opposing metric positions.

The reversal of direction into an ascending minor third in m. 12 begins the fragmentation of melodic material that characterizes the third phrase. In 13 both the C to Eb and E♭ to G appear
simultaneously for the first time. The E♭ to G is found above the E♭ to C for the first time as well. The rest of the phrase sounds disjointed as the register, direction, and minor third fluctuates in each hand until m. 15. This fluctuation is a local reference to the larger chiasmus form, which also features reflection and symmetry through alternation of two elements. This fragmentation plays a role in the final A section as well.

Measure 15 is the ending of the phrase and the first A section. Several altered elements combine to signal the ending of the section. The 16th notes, which up to now have appeared only in weak metric positions, now appear in the strongest metric position in the arpeggiating figure and not in the melodic line. E♭ appears in this arpeggiation, but could enharmonically suggest D♯ resolving to the E♭. Finally, the E♭ in the bass is marked with the articulation of the C octaves in the first phrase at the same metric position. Besides the change of pitch-class, the upper note of the octave is missing. Perhaps the E♭ half note, the longest note of the movement, provides this missing note. This is further supported by the E♭/D♯ enharmonic possibility. The E♭ is also marked with a tenuto, which in movement 2 marked endings. The tenuto signals similarly the end of this phrase and section.

The B section explores the same materials, but not in the manner they were presented in the A section. In the B section, elements have been purposefully reversed in some way, while presenting “new” melodic material. This is a reference to the larger chiasmus structure that consists of two formal sections and then a repetition of those sections in reverse order, ABBA.

An examination of the dynamics provides a clear example of the B section reversing an aspect of the A section. The A section starts forte and alternates with pianissimo, and concludes with subito piano. The opening of the B section starts pianissimo, still alternates dynamics like
the A section, and ends *subito forte*. The B section reverses the order of dynamics in the A section.

Continuing the reversal, the arpeggiating figure in the A section was primarily used as accompaniment, but in the B section it takes the role of melodic material. This is contrasted with the interval of a third, which was prominent in the melodic material of the A section, but in the B section is relegated to the accompaniment as a major third instead of the minor. This reversal is visible in mm. 16 through 21. Rhythmically this melodic line could have come directly from the first movement. The articulation order, the jagged alternation of melodic direction, and the repetition are features that were prominent elements of the first movement’s changing line.

The A section alternated between the E♭ and E♯ purposefully avoiding simultaneously sounding both pitches with one exception mentioned earlier. The B section does not avoid sounding both pitches together. Eventually the focus shifts to the major sonority over the minor, which was initially suggested in the accompanying major third, mentioned earlier. The major sonority reflects the character marking *giocoso*. By m. 21, the E♭ is the more important of the two types of E. This change transpires in m. 19 where the final E♭ quarter note takes on the character of a D♯ leading into the E♭, an allusion to m. 15. This phrase ends with very prominent accented major chords that blatantly reinforce that major is the more important of the two triadic sonorities in this section. This is unlike the A section where the major and minor sonorities were treated relatively equally.

The second B section is very similar to the first, but has been lengthened to include a *stringendo* passage. This passage also features a notated accelerando that concludes in m. 33. It is accomplished by a repeating 3-eighth note rhythmic pattern. Like the 5-eighth repetition did in
movement 1, the 3-eighth pattern alternates between syncopated against the accompaniment and not. Once again the accelerating rhythm marks a formal arrival reiterated by a return of the

*martellato* C octave from the first A section in m. 33.

The second A section returns to the melodic material from the first, but, again referencing chiastic reversal, many of the elements have been reversed in some way. This phrase is shorter than the first A, but it also squeezes elements from the three phrases of the initial A section into a smaller time span. This A begins with a return to the C to E♭ and E♭ to G minor thirds alternating in the same manner as mm. 11 and 12, but this time their order is reversed.

This phrase also features the *martellato* octaves of the first phrase in the initial A section. One exception arises in m. 36, where a G octave marked *martellato*. The C to E♭ version of the motive overtakes the pattern found in the octaves and also references the *martellato* E in m. 15. The C, E♭, and G all have at least one instance of *martellato* articulation. The E♭ does not, providing further emphasis on the major triad over the minor one.

The *martellato* C octaves also reference notated accelerando passages in the second phrase of the final A section. Starting in m. 38, these octaves appear first every 4 beats, then every 2 beats, and finally every beat. These octaves occur with register shifts as seen in previous movements and in the final phrase of the initial A section. The last note also fits into the repetitions of C and its *secco* marking reflects the dry, humor of this movement.

Returning to the ending of the first phrase of the final A section in m. 36, where one more reference to the ending of the first A section occurs in the sixteenths. They do not come on the unaccented beat, but rather on the downbeat. These arpeggiating passages lead directly into an arpeggiating pattern similar to that found in the second phrase of the initial A. It is altered here to
arpeggiate the minor triad and not the major, reversing its mode. Above this is a melodic line that alternates between the descending and ascending forms of the E♭ to G minor third. This combination of major melodic line and minor accompaniment is the only permutation of major and minor that has not occurred previously in the movement. The last reference to the first section is in the final line where E♭ and E♭ are played simultaneously as in m. 9; not just once, but nine times.

Movement 4

In this movement, traditional elements exist on the surface where experimentation had occurred in previous movements and non-traditional elements are found in the form, where traditional elements occurred in prior movements. The introduction references the waltz, but is altered to give it a lurching, unsteady character. This structure is contrasted with a graceful melodic line, whose grace is muddled by its peculiar phrase length and disregard for the meter of the waltz. As in previous movements, the final pitch is withheld until a structurally significant moment. Unlike the previous movements where the final pitch persisted until the end of the movements, the final pitch here is added for a short period before a return to the initial pitch collection. Also unlike earlier movements where repetition of formal sections, a return of A for example, featured drastic changes, this time A returns with only minor changes, a further allusion to the waltz.

Movement 4 is similar to movement 3 in its exploration of two symmetrical minor thirds, F♯ to A and G to B♭. These pitches are symmetrical about the final added pitch, G♯, and the whole collection is indicated using a mixed key signature with an F♯ and a B♭. The axis of pitch symmetry is played in the movement, which contrasts with movement 3 where the axis
Example 5. Movement 4, with annotations

IV

Introduction

**Tempo di Valse (poco vivace - "à l'orgue de Barbarie")**

\[ \text{Tempo Mark: } \text{c. } 96 \text{ } \]

\[ \text{F#-A} \text{ vs } \text{G-Bb} \]

\[ \text{p} \]

\[ \text{grazioso} \]

\[ \text{cresc. poco} \]

**Hiccups**

\[ \text{pochiss. rit. a tempo} \]

\[ \text{dim. poco} \]

\[ \text{Elision} \]

\[ \text{pause} \]

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*Die Metronomangabe bezieht sich auf die maximale Geschwindigkeit; das Stück kann frei interpretiert werden - zuweilen langsamer - mit rubati, ritornati, accelerandi, wie der Leierkastenspieler sein Instrument kurbelt.

*a) The metronome value refers to the maximum tempo, the piece may be interpreted freely - as well as being slower - with rubati, ritornati, accelerandi, just as an organ grindel would play his barrel organ.*
Example 5, continued

End of A placed outside the repeat, as a codetta

B

\[ \text{a tempo} \]

Add G\#!

Tempo I Introduction Shortened

Ab resolves to G
Example 5, continued
of symmetry was between two pitches, the E♭ and E♭, and was not played or even was capable of being played. However, symmetry is a less prominent feature of this movement than it was in movement 3. The marking *Tempo di Valse (poco vivace -“à l’orgue de Barbarie”)* references both waltz rhythms and the street (barrel) organ, both of which are reflected in the form and performance of the movement. These instructions are extended with the text “*The metronome value refers to the maximum tempo, the piece may be interpreted freely -- as well as being slower -- with rubati, ritenuti, accelerandi, just as an organ grinder would play his barrel organ*”37

This movement is one of the more traditional in the entire set because of these instructions, but underlying the references to tradition are non-traditional elements.

The opening five measures of this movement set up two paradigms: alternation between the minor thirds F♯ to A with G to B♭; and a metric “hiccup”, the dropping of a single beat from the waltz rhythm. The pitch collection and its use inherently suggest the key of g-minor and an alternation from i to V, but since there is no D, the B♭ acts as the missing dominant pitch. This change subtly provides seediness to the underlying character of the movement and supports its affect of a playful, possibly drunken organ grinder. In the 19th and early 20th century, organ grinders were considered of only slightly higher standing than beggars and often their instruments were not well maintained. The B♭ in the bass, especially when placed against the F♯ and A♭, suggests a D that has become so flat that it has lowered to a B♭. Additionally, the dropped beat also suggests a broken instrument and the hiccup of a stereotypical drunk. In these ways, the

37 Each of these marking is in a different language: Italian, French, and German/English. It’s peculiar.
disposition of the movement is conveyed in notation as well as performance instructions like those mentioned above.

The form including repeats is AABA reflecting traditional large-scale dance construction. It is in the underlying phrase structure where tradition is thwarted. The opening A section juxtaposes a bouncing accompaniment with a *grazioso* (graceful) melodic line to typify the affect of the movement. The phrase is constructed similarly to phrases in earlier movements. In this case it is a period with an extension divided into mm. 6 through 13, 14 through 22, and 22 through 28. The length of the sections is irregular and there are hiccups in the waltz rhythm, alluding to the broken instrument and the introduction.

Melodically this section consists of 23 measures grouped 8+9+7, with an elision between the second and third grouping. The melody emphasizes the disjointed nature of the phrase structure by placing repetitions of two beats against a background of triple meter. This occurs first in mm. 8 through 11 in the scalar line from B♭ to F♯. This line lasts only 2 quarters and is placed over the 3-quarter waltz rhythm. This syncopation differs from its appearance in earlier movements, where the melodic line had three beats and the accompaniment was in duple time. The disjointed nature is further emphasized by the inclusion of the hiccup idea within the phrase and by the “rubati, ritenuti, acceleradi” discussed earlier. The entrance of each part of the period is continually pushed back by a single quarter, such that the second phrase in m. 14 enters on the second beat, and the extension enters on the third beat in m. 22. This measure overlaps with the end of the second phrase. In the final measure of the A section, the waltz rhythm alone, a reference to the introduction, ends with a notated pause as if the organ grinder has stopped.
grinding. The pause does not interrupt the alternation of minor thirds, but adds to the overall character of the movement.

The B section, mm. 38 through 60 of this movement does not contrast significantly with the A section. The alternating waltz pattern continues throughout the section and its melodic fragments allude to the extension in mm. 22 through 28, discussed earlier. Rather than a part of the B section, mm. 33 through 38 should be considered an end to the A section as they return to close the end of the movement proper in the final return of A and reinforce g-minor. The alternating pattern is broken between mm. 33 and 39. This break is the only time where that pattern is interrupted during a gap.

Melodically there are two ideas in the B section with initially contrasting dynamic markings. The opening motive in the first two measures is immediately followed by a motive related to the extension found in the A section’s period, specifically mm. 24-25. The rhythmic character of the closing material is maintained and repeated. The first 8 measures of B, mm. 38 through 45, alternate between these two ideas almost as if the first motive is interrupted by the second. It ends with an allusion to the end of the A section, m. 28. The second 8 measures, 48 through 55, reverses the order of these two ideas and does not alternate the dynamic.

By m. 50, the opening motive from 38 has become forceful. This forcefulness is double in m. 54 when it enters as in m. 52 and adds the final pitch G#. The G# has been saved for this moment and it takes over the waltz structure. The opening motive of the B section, interrupted by the closing motive from the A section, has acquired the G#. An additional four measures allow the opening motive to reach its conclusion. Once the axis G# is added, the symmetrical nature of the pitch collection is emphasized in these final four measures of the section. The melodic line
proceeds in a wedge from the G♯ in 57-60. This expanding wedge structure appears in later movements as well. Despite the break caused by the G♯, the alternation of minor thirds persists over the gap. The G♯ is the harbinger of the closing A section, which proceeds from here with two changes: a missing measure from the introduction, a reference to the final measures of A, and without a repeat.

Movement 5

In this movement a great variety of sonorities are heard, but everything is derived from the relationship of pitches and rhythms presented early in the movement. It is homogeneous, but also has enough variety to still maintain interest. The movement contains many of the formal structures found in earlier movements seen in the care taken when adding pitches and in the reduction of duration of the notated accelerando. These structures highlight important junctures in the form as they had in earlier movements. Three approaches accentuate the relationship between the predetermined pitches of this movement: the canon at the tritone that occurs in an interlude, the tritone relationship in the melodic line, and the tritone doubling in an expansion.

Movement 5, much like Bartók’s Diminished Fifths, uses a pitch pattern that can be repeated at the tritone. In this case D, C♯, and B can be transposed by tritone to A♭, G, and F. These pitches are a subset of the alternating half-whole octatonic scale starting on C♯. As in movement 4, the split key signature A♭ and C♯ denotes the pitch collection. Because of how these two groups of pitches are derived from the octatonic scale, melodic lines can span the entire length of the pitch collection and still be transposable at the level of the tritone. The tenor of the movement is reminiscent of the second movement because of similarities in rhythm,
tempo, and melodic features. This is also the first movement that clearly demonstrates Ligeti’s contrapuntal abilities.

In mm. 9, 10, and 11, a structure acts as a cadential figure. This structure is reminiscent of G Phrygian, bounded above by A♭ and below by F. The F resolves upwards to G with three consecutive eighth note attacks. Up until this point the pitch G has not been present and its inclusion here closes the opening A section.

The form of this movement is AA where the second A is an expanded version of the first. The first A section, mm. 1 through 11, can be divided into two phrases, mm. 1 through 4 and mm. 5 through 11. Together these phrases form a period and its features resemble that of the first phrase of the second movement. Reasons for dividing the phrase in this manner become clear in the treatment of this division in the expansion. Here the division that occurs in m. 4 is less emphasized than it is in the return.

The opening measure of the movement immediately recalls the second movement because of its alternation between two pitches and its steady eighth note pulse. The six attacks also recall the second movement and the ubiquitous tenuto marking. Counter to this is the C♯ on the final beat of the measure. As the movement progresses this accompaniment becomes more distinctive and is important to the overall form of the movement. It also recalls the struck C octaves from movement 3.

The opening measure of this movement is repeated much in the same manner as the opening measure of movement 2 to create a four-measure, antecedent phrase. The destination of this phrase is the A♭ in m. 4. As the phrase gets longer notes are added and the slow addition
Example 6. Movement 5, with annotations
Example 6, continued

(ALLARG. AL) \hspace{1cm} \mathbf{\text{Tempo I (C. 40)}}

\hspace{1cm} \text{in rilievo, grandioso}

\hspace{1cm} \text{molto pesante}

\hspace{1cm} F-B

\hspace{1cm} \text{D-A\textsc{b}, F-B}

\hspace{1cm} \text{acceleration followed by deceleration of G-A\textsc{b}}

\hspace{1cm} \text{\textit{sempre string.}}

\hspace{1cm} \text{\textit{non string.}}
Example 6, continued

*) Die Tasten stumm niederdrücken und ganz ausklingen lassen / depress keys silently and allow sound to die away.
of pitches aurally anticipates the G. The G is the most important pitch of the movement. Also in this phrase, D is added to accompaniment’s C♯ in m. 3 and 4.

The next four measures, 5 through 9, finish the period with two extensions in mm. 10 and 11. The melody and the accompaniment have swapped hands and A♭ has been added to the accompaniment’s D and C♯. In m. 9, the G has also been added to this grouping. This cluster demonstrates the periodicity of the pitch collection of this movement. The half step D to C♯ is related by tritone to the half step G to A♭.

In the consequent phrase, several of the melodic figures are the expansion of melodic figures from the antecedent phrase. Measures 3 and 4 closely resemble 5 and 6, but the F has been added, not as the next note descending down the scale of available pitches, which would be G, but as the next note ascending up from the D. The reason for adding the F over the next logical pitch, G, is that the G is reserved for the end of the phrase. One important aspect that returns is the descent D, C♯, to B in the melodic line in m. 8. When this melodic descent returns in the expansion, it is notated more clearly. As stated earlier, mm. 9, 10, and 11 resemble cadential material suggesting the Phrygian mode as in movement 2.

Starting in m. 18, the rest of this movement is an expansion of the first eleven measures of this movement. In an interlude from mm. 12 to 18, a short canon appears at the tritone. This canon is at a significantly faster tempo and, with the crescendo, builds into mm. 18, 19, and 20. These three measures are not exact repetitions of the first measures of the movement, but reference its first four pitches. The opening motive is reduced and repeated between the half steps mentioned earlier, D to C♯ and G to A♭.
Measures 21, 22, and 23 are direct references to mm. 2, 3, and 4 in rilievo, grandiso (in relief [as clearly visible, not as calmed], and grandiose) with an emphasis on the tritone. Each note is doubled at the octave, but also at the tritone. F and B occur here as accompaniment. These were the two pitches that did not appear in the accompaniment in the opening section. All of this is placed under a repeating pattern continued from the interlude in mm. 12 through 18. This figure begins to be played in canon with its inversion in m. 24 at the exact same pitch level. The canon results in several simultaneous arrivals on A♭ and G. These moments are references to the A♭, G, D, and C♯ cluster from the first eleven measures. This clash is the same as was found in movement 4.

In addition, the notated accelerando appears here leading into a formally significant moment. As the motive is repeated, its total length is reduced from 6, to 5, to 4, and to 3 by m. 26. The result of this reduction in duration is that the density of the very audible A♭ against G interval increases. By m. 26 the motive is reduced to just the dissonant attack between A♭ and G. This is combined with a stringendo, which provides extra impetus. In m. 26, the acceleration is immediately reversed into a deceleration ending in a full stop in m. 28.

This marks the division between the first and second halves of the melody. In the opening eleven measures, this division was not as clear, as discussed earlier, but here it is expanded significantly. There is now no doubt about the separation between the halves the opening period. The division between mm. 1 through 4 and 5 through 11 becomes retroactively more significant than it initially appeared. The arrival on A♭ in m. 23 is the equivalent of the A♭ arrival in m. 4. It is now expanded from a half measure in the original presentation to five measures encompassing the entirety of the accelerating rhythm discussed above.
Measures 29 to 42 are the expansion of the consequent phrase of the opening eleven measures. Measures 29, 30, and 31 correspond to mm. 5, 6, and 7 without the accompaniment. Measure 33 corresponds with m. 8 only in pitch material not in rhythm, D-C♯-B. Measure 35 matches m. 11 except the rhythm is doubled in duration. Interspersed in this section is a continuation of the G against A♭ as it was found in mm. 26 and 27, which in turn was a reference to its appearance in the opening eleven measures. In its presentation here, the duration between each attack is shortened an allusion to the notated accelerating rhythm.

The movement ends with repeated Gs, which on a background level are the resolution of the F♯s found in mm. 21 through 28. This is an expansion of the cadential material found in m. 11. These Gs may be reminiscent of the Gs that were “a knife through Stalin’s heart” from the second movement. Supporting this connection is the movement-to-movement attention given to the number and type of pitches.

The importance placed on the interval from A♭ to G is also reminiscent of the earlier movement where G had a similar relationship with F♯. Pedal markings and dynamic contrast in the final section of this movement reinforce the connection between this movement and the second movement. In the second movement pedaling distinctly separated one type of presentation of the same pitch and rhythmic material from another presentation.

This movement features a subsection of the half-whole octatonic scale, a common pitch collection found in Bartók’s works. One of the features of this collection is that it has transpositional symmetry at a minor third up, a minor third down, and at the tritone. This collection of pitches appears in Mikrokosmos, No. 101, subtitled “Diminished Fifths” and in 44 Violin Duets, No. 33, subtitled “Song of the Harvest.”

![Example 7](image)

Example 8. Béla Bartók, *Mikrokosmos*, No. 103, “Diminished Fifths.” This example shows has same relationship as that of the prior example without the use of two key signatures.

![Example 8](image)

Both of these pieces by Bartók exploit the transpositional symmetry of the half-whole octatonic scale. Similarly, the pitch collection of movement 5 is B C♯ D F G A♭. This collection also has transpositional symmetry at the tritone as indicated earlier. Ligeti exploits this transpositional symmetry in the movement in a way that is similar to Bartók’s use in the two pieces mentioned.

**Movement 6**

This movement uses the accelerating element that has occurred in previous movements as the basis for its formal development. Several simple structures (melodic fragments LMNOP) are introduced and altered mostly by accelerating the duration between their repetitions, but also through character changes. This is also reflected in the relationship between fragments in mm. 15
through 21, where each of the fragments appears in immediate succession with contrasting characteristics to their initial presentation.

The 5 melodic fragments explore repetition, duration between repetitions, and character alterations. The first two of these concepts are related to the notated accelerando. An example can be found in the first structures, labeled L found in m. 1. It consists of a descending line E, C♯, B, and A in staccato eighth notes. The following five measures explore repetition in the right hand, which is echoed by the left hand. These measures also explore duration between repetitions in an accelerating fashion.

Starting in m. 3, a change in octave audibly reduces the duration between repetitions in the right hand. The duration between repetitions is further reduced when the echoing voice enters in the left hand aurally. The conclusion of this fragment leads directly in the next melodic fragment, M. Fragment M resembles closing figures seen in previous movements and adds the pitch F♯. The section from mm. 1-6 acts as the opening phrase of the movement and returns in m. 26. In between, the other 3 melodic fragments are introduced and altered.

The pitch collection in this movement is the diatonic scale with two sharps, but across the whole movement it is neither D-major nor B-minor. Both are suggested, but not confirmed. Instead pitch usage suggest either A or E as modal centers for the work. For example, melodic fragment L suggests an A-Mixolydian character due to its sense of arrival on the A. This is countered by the closing structure, fragment M, which ends on the pitch E, suggesting E-Dorian. It is the mixture of both of these pitch centers that give this movement its character. Ultimately the piece ends with the closing figure on E, approached as one might expect in a modal work in
Example 9. Movement 6, with annotations

VI

*Allegro molto capriccioso* \( \text{\textit{d}} = 108 \)

 senza ped.

M Add F#

N Add D

\( \text{\textit{ff}} \) \textit{martellato, poco pesante}

L inverted?

O Add pitch G, complete 2-sharps diatonic collection

\( \text{\textit{ff}} \) \textit{leggiro}

\( \text{\textit{pp}} \) \textit{una corda}

\( \text{\textit{ff}} \) \textit{tre corde}

Fragmentation

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Example 9, continued

*L and M augmented

*) Pedal bei jedem Anschlag wechseln / change pedal with each note.
E-Dorian (from D below and F# above). One other reason for considering this movement in E-Dorian is the symmetry of the pitch collection. If one were to invert B, C#, and D intervally around E, one would get F#, G, and A. In this way, E is also the symmetric axis of the pitch collection. It is emphasized by its placement in the closing melodic fragment, M, found in m. 6.

\[ \begin{array}{cccccc}
| & B & C# & D & E & F# & G & A \\
\end{array} \]

Figure 4. The symmetric pitch structure of this movement.

In the following measure, 7, is melodic fragment N. It is the first to explore character alterations. This fragment appears in the right hand in mm. 7 and 8 and adds the pitch D marked \textit{martellato, poco pesante} (hammered, slightly heavy). Underneath this is a steady rhythm in quarters in an ascending scale that traverses the same interval as melodic fragment L. The quarter note rhythm extends the duration between repetitions to 5 units instead of 4 as it was in the opening section. This creates a compounded time as it had in movement 3’s arpeggiating pattern. Similarly to its use in that movement, the arrival on E occurs on the downbeat in m. 11, the return of melodic fragment N. Interestingly, the intervallic combination of fragment N with the ascending scalar line in mm. 7 through 10 creates only consonant intervals. The consonance is a nod to traditional (first) species counterpoint. In m. 11, melodic fragment N returns over a line that purposefully avoids the consonances in 7 through 10, a change of character from the previous repetition.
Melodic fragment O appears in m. 13 marked leggiero (lightly). It is smoothly led into through an extension of the ascending third pattern in m. 12, A, C#, E, to G. This G is the final new pitch of the movement is marked with a sforzando and an accent. It is added in a startling whole step clash with the A below it. Fragment O is reminiscent of the first motive. The second half uses only the pitches of fragment L with the E at the end instead of the beginning. Scalar passages have been extended as the movement progresses to cover the whole gamut of pitches. This fragment accentuates the A similarly to fragment L with its descending perfect fourth. Additionally, the repetition between right and left hands from the first phrase is repeated here with increased duration. The repetitions in mm. 14 and 15 grow progressively quieter with a sudden break in m. 16. The break changes the meter as it had m. 5. When fragment O reenters in the bass in m. 17, it returns to ff with a burst of energy. As a response, the perfect fourth continues to be repeated in m. 18. This is another instance of this movement contorting the duration between repetitions. Duration was extended in m. 16 and in response duration contracts in m. 18. The subito pp in m. 19 is a similar response to the ff in m. 17. The ostinato-like perfect fourth continues as an accompaniment figure under the final fragment that comes in m. 20.

In the same way that fragment O had aspects in common with L, fragment P references M (the closing fragment). Fragment M consisted solely of a descending whole step from F# to E from an eighth to a longer duration (dotted quarter). Like M, fragment P closes fragment O with its descending whole step from C# to B. Fragment is the only one that suggests the traditionally expected keys for this signature, b-minor in this case. Closure here is undermined because the ostinato continues into the next measure.
The introduction of fragment P signals an end to the first large part of the form. This section has progressively introduced each fragment. In the following six measures, every motive appears in immediate succession in the order they have appeared in the movement. Rather than appearing exactly the same, each motive is altered in character. This recalls the change in fragment N between mm. 7 to 11. Fragment L appears in m. 71 over the perfect fourth ostinato rather than independently. The measure is shortened as a reference to mm. 5 and 6, but this time marked \textit{pp} with a \textit{crescendo}. Immediately following is fragment M. This time M is played at a quieter dynamic. It is more conclusive than fragment P and ends the ostinato as well.

Fragment N follows in both hands with full parallel, closely spaced, root position triads doubled at the octave, \textit{fortissimo}, and \textit{martellato}. Fragment O comes in m. 24, this time accompanied by a version of itself at the compound 9\textsuperscript{th}. The ninth recalls the dissonance in mm. 11-12 with two contrasting dynamics in each hand. This is immediately followed by the only repetition of fragment P with the sustain pedal depressed. This time fragment P suggests the “correct” major key (D) a startling change from the emphasis on A and E that has been the norm for the rest of the movement. The rapid succession of the melodic fragments here highlights one of the primary features of this movement, the contraction and expansion of duration between melodic fragments rather than pitches or repetitions of a motive. The capricious nature of the rapid alternations in mood, dynamic, and melodic fragments in these six measures reinforces the \textit{capriccio} character of the movement as a whole.

The final section 26-33, returns to melodic fragment L presenting it nearly exactly as it was found in m. 1, altering m. 30 to complete the left hand’s iteration of fragment L. This alteration leads into one of the other startling moments of this movement. In mm. 31 to 33,
fragment L and M are presented, which is expected, but they have been augmented. This slowing down is the opposite of the duration changes that occurred earlier in this movement. The closure created by fragment M in m. 33 acquires more weight than it has had before, but necessitates its repetition in m. 34. The repetition recalls the rapid shift in character in mm. 21 to 25. Contrasted with a single pitch class E marked $p$, the F$\#$ from fragment M is marked $ff$ with closely spaced, octave doubled, root position triads built on the F$\#$ and with the sustain pedal depressed closing the movement.

Movement 7

The overall tone of this movement is still, almost static. This stillness is accomplished through three important compositional decisions. The first is the continuous stream in the left hand marked the figuration in the left hand is to be played very evenly, without any accent and independently of the right hands’ rhythm purposefully not emphasizing any single pitch. The speed at which this line is played blurs any clear melodic character it might have. This blurring results in a wash of sound that has specific pitch characteristics, but any clear distinction between pitches is marred. This deemphasis of individual pitch creates a static background over which the melodic line floats a cantabile, molto legato melody. The melody goes through several variations with an emphasis on (poly)modal counterpoint. The counterpoint strictly avoids traditional half step resolutions. This removes any forward impetus to resolution in the traditional sense caused by half steps. The tempo of the unchanging accompaniment is separate from that of the melodic line, a trait unique to this movement. Since each hand plays in a different tempo, any strict sense of meter is muddled stifling forward progression. The figuration emphasizes a 7 eighth-note
Example 10. Movement 7, with annotations

VII

1 Single line

Cantabile, molto legato

\( \text{J} = \text{ca. 116} \)

una corda

con moto, giusto

\( \text{pp} \) sempre molto leggero

quasi senza ped.

\(*\) Die Figuration der linken Hand wird gleichmäßig, akzentlos und unabhängig vom Rhythmus der rechten Hand gespielt.

\(*\) The figuration in the left hand is to be played very evenly, without any accent and independently of the right hand's rhythm.

\(**\) Nur für die linke Hand (für eine Gruppe) / only for the left hand (for one group).

\(***) Nur für die rechte Hand / only for the right hand.
Example 10, continued

2 Contrapuntal

M7 Contracting into P5

3 Imitation

Add Ab!

(m.s.: sempre pp)
Example 10, continued

4. Contrapuntal + Imitative

\( m.f \) tre corde

\( m.s.: \) sempre \( pp \)
Example 10, continued
pattern with pitches derived from the pentatonic scale F, E♭, C, B♭, and G. This pattern is symmetric by inversion about the pitch F, the outer bounds of the figure.

The construction of the melodic line is one long phrase with 3 distinct sections occurring in mm. 1 to 11, 12 to 19, and 20 to 28. The internal repetition in each of these sections, as well as the repetition between sections, creates a melodic line that is suspended in a similar way to the background texture. This movement is polymodal with centers on G and C. The melody emphasizes the pitches G and C not through a tonic-dominant relationship, but instead as arrival points indicated only by longer durations and modal indicators. Each of these tones is approached from above and below by whole step. These steps were cadential markers in previous movements (such as 5 and 6) and have modal implications (C-Dorian, G-Aeolian). These pitches are emphasized in the melodic line by repetition of double neighbors as seen in mm. 6, 7, 9, 16, 17, 23, and 26. Additional repetitions arise between mm. 8, 12, 16, and 25 and between mm. 13 and 20. These melodic fragments are combined and repeated such that the line is self-similar, but not regularly repeating.

In m. 29, another melodic line is added in counterpoint to the first. Like the contrapuntal aspects of the sixth movement, the counterpoint in this movement alludes to traditional contrapuntal rules, but also emphasizes dissonances and modality. Two types of motion illustrate these aspects. The first occurs in m. 34 where a consonant fourth appears. This technically does not break the rules of strict counterpoint because the fourth appears between upper voices (above the static bass voice). When the C moves to the B♭ in the following measures, the overall effect is that the F is now in suspension. The problem is that it is a perfect fifth, a traditionally consonant interval. Another example of this same relationship occurs in mm. 49 and 51. The A to F and E
to C sixths imply an appoggiatura and suspension where the upper voice must resolve down by step.

The second contrapuntal reference occurs in mm. 36 and 37. At the equivalent point in the single line melody, a pause on C was approached by whole step from above and below. The F in the accompanying line is also approached by whole step from above and below, which creates a vertical major 7th on the third beat of m. 38. This sonority would be dissonant in a single mode, but in the polymodal context of the movement, sounds perfectly acceptable, even correct. Like cadences in modal textures in Medieval/Renaissance music, the “finals” here are approached by step from above and below, but the final for each line is not the same pitch class in this case. In m. 43, this same relationship occurs, but the finals are C and G, corresponding equivalently to the solo melodic line.

So far two versions of the melodic line have occurred. The first was the line alone; the second was with a counter melody. In m. 56, the dynamic is increased and a third type of presentation enters. In this type, the original line enters imitatively at the fifth below starting with F.38 Up to this point the only pitches used were those diatonic to the two-flat key signature. The expected number of pitches in this movement is 8, its ordinal number, plus 1. Through imitation at fifth below in the imitative line, the final pitch, A♭, is added. The first instance of this pitch is m. 62 as a transposition of the E♭ that occurs in the upper voice in the same measure. In m. 62, it becomes necessary to change the rhythm of the melodic line to create balance between the imitative lines. The contrapuntal results of the canon feature some of the same dissonances that

38. The line is very close to being canonic, but because of some very slight rhythmic trickery, I refer to it as being imitative rather than canonic.
occurred in the counter melodic presentation. For example, mm. 61 and 62 both feature
suspensions. In the upper voice a 5-4 suspension appears on the final beat of m. 61. In the
following measure a 2-3 suspension occurs on the second beat. In traditional contrapuntal
settings, suspensions occur primarily on strong beat. Since the metric texture is an attempt to
remove the sense of pulse, suspensions can occur on weak beats in this movement. Due to the
intervallic relationship between the canonic voices, the lines finals are C and G like the
arrangement in the counter melodic iteration of the melodic line that appeared earlier.

Measure 84 initially appears as a return of the version of the melodic line with a counter
melody. In m. 87, the imitative voice enters combining both the counter melodic presentation
and the imitative presentation. Rhythmic alterations have been made to the sustained pitches
again to facilitate alternation between the imitative and contrapuntal versions. The melodic lines
stop in m. 103. They have been truncated to the equivalent of mm. 1 to 19 in the initial
presentation. This shortening necessitates a coda, which begins in m. 105. Here two shortened
repetitions of the counter melodic version of the line equivalent in length to mm. 30 to 45 and 30
to 37, respectively. These repetitions are played and shift their register upward by an octave each
time. They are altered slightly to give them more finality. The register shift in the melodic line
necessitates a similar shift in the static underpinning of the work. This change breaks the static
character of that line and signals that the movement is coming to a close. The first change arises
in m. 116 and the second in m. 127, where the accompaniment changes hands. The movement
ends by removing pitches in the once static pattern. The result is similar to the accelerandi that
have occurred in previous movements and the movement ends with a two-note trill that slowly
dies away. The effect is quite a bit different than previous instances of this motive. Rather than
speeding up the piece seems to slow down, emphasized by the marking *perdendosi* (gradually diminish).

Movement 8

Of the movements of *Musica Ricercata*, this movement is probably the most quintessentially based on easily delineated structures. The structures themselves are simple and constructed with traditional musical relationships. Ligeti’s focus is not on the surface details of the structures, but on the formal interrelationships between iterations structures as demonstrated by the reservation of the pitches C and G and by the notated accelerando from mm. 18-39. Specific pitch intervals, octave adjustments, and delayed entrances are features that highlight breaks between the phrases. The overall result is a movement where the surface structure is both static and resembles Bartók’s *Mikrokosmos*, but at a deeper level presents the expected and alters it into the unexpected. This alteration occurs without significantly changing the surface structures themselves.

Movement eight explores a static two-measure cell boxed on the score in mm. 2 and 3. This cell consists of two parts, a melodic line, moving up and down an implied B-Dorian scale, and a static pedal tone on E. The only other material in the movement is the single-measure introduction and a series of descending perfect fifths found in their initial iteration in mm. 11 to 17 in the left hand. The pitch collection, like the seventh movement, consists of the diatonic collection this time with three sharps including G♯ and C♯. There are three formal levels in the movement. In order from smallest to largest, they are referred to as phrase, period, and section.

The movement starts with a single note introduction on the pitches D and E. The introduction highlights the interval of a major second, which makes regular appearances
Example 11. Movement 8, with annotations

1) Das ganze Stück soll sehr tänzerisch und im Tempo sehr intensiv gespielt werden. Die drei *sf* sollen durchgehend stark betont werden (auch im piano - in relativer Lautstärke).

2) The whole piece should be very dance-like and played rigorously in tempo. The three *sf* should be strongly accented throughout (and relatively accented in dynamics of piano).

3) Half cell missing
Example 11, continued.
throughout the movement. In mm. 2 and 3 appears the first instance of the simple structure that makes up a large portion of this movement. In the cell, the major second between D and E is played on the second beat of the measure. Since the cell is repeated throughout the movement, this major second appears in almost every other measure.

As stated before the cell consists of two parts. The first is a melodic line with melodic and agogic emphasis on B. The melodic motion of this line combined the three sharp key signature give it the flavor of B-Dorian. The other aspect of the cell, the E-pedal, contradicts these Dorian implications.

The meter of the cell is uneven with groupings in the 7/8 meter of (2+3+2) + (3+2+2) indicated by the placement of the double accent and sforzandi. These groupings remain static throughout the movement and grouping order delineates the parts of the two-measure cell. The final two quarters on, B-E taking the character of an ending similar to endings found in earlier movements.

In mm. 2-9, the cell repeated completely unchanged followed by two repetitions where the melodic line is lowered by a step. The phrase is eight measures long and divides evenly into a hierarchy of two and four measures (2+2) + (2+2) or two repetitions of the cell unaltered and two repetitions of the altered cell. Phrases are defined by the alternation between repetitions between the melodic line at the original pitch level and those where it has been lowered. The division of the phrase into regular two- and four- measure units reflects a traditional phrase model. The altered cells have been modified to end with two quarters on B and E. Due to this change, these B and E quarter notes mark the end of cells.
If the first eight-measure phrase is considered an antecedent phrase, than the second eight-measure phrase can be considered the consequent of a larger parallel period. While the right hand continues playing the cell exactly as it was found in the antecedent, the left hand is altered as an answer to the first phrase. The left hand enters one whole measure later than the right hand. The material in the left hand is the other simple structure of the movement. While the rhythm remains unchanged, the melodic motion and harmony acts as a cadential structure. Consisting of a series of descending perfect fifths that arrive on a C to G perfect fifth. The G and the C are the last notes added in the movement. As in earlier movements, their entrance signals the end of the first period, a significant juncture in the form. The descending melodic motion is repeated for emphasis, first descending A to E, D to A, G to D, then D to A, G to D, C to G over a shorter period of time, heightening the intensity of the phrase and suggesting the notated accelerando found in other movements.

These two alterations both serve as aural signals. The delayed entrance indicates the start of a phrase and the descending fifths, especially with the arrival on the C to G fifth, indicates the end of a period. The first period serves as a paradigm from which each of the following periods has been derived. The second period starts in m. 18 with an imitative delayed entrance. It also shifts the register of the right hand up an octave and raises the dynamic level to *piu forte*. Like the delayed entrance, the adjustment of dynamic and octave shift from this point forward also serve to delineate the beginnings of a phrase. In mm. 22 and 23, the descending fifths structure returns indicating the end of the phrase, but does not arrive on the C to G fifth. Here the phrase ends, but since there is no arrival on the C to G fifth, the period does not end. In m. 24, all the indicators for a new phrase appear, an octave adjustment, a delayed entrance, and a shift of
dynamic level all serve as a break between the antecedent the consequent. The consequent completes the descent of the perfect fifth structure with an arrival on C to G in m. 28.

The third period, mm. 29 to 39, continues using the same aural signals that indicate the phrase structure and alters the paradigm of the first phrase. However, upon examination of the interchange of unaltered and altered melodic lines, this period seems to have three shorter phrases rather than two. The dynamic level still alternates between the phrases and each has a delayed entrance and octave shifts. Due to a lack of arrival on the C to G fifth in m. 39, the third period is incomplete. The incompleteness is emphasized by the metric interruption that occurs in m. 39, where the static metric structure of the cell has obviously been broken by the measure in 2/8 meter.

The interruption leads directly into the next large formal section. In previous movements the notated accelerando foreshadowed larger formal breaks and the same is true here. In this instance it transpires at the phrase level. The paradigmatic length of a phrase is eight measures like those found in the first period. Starting in m. 18, each phrase is reduced in length. Measures 18-23 is six measures long, or a reduction of two measures. Measures 24-28 is five measures, a reduction of three measures. 29-32 is four measures, a reduction of four. Measure 36 is shortened, thus the phrase from mm. 33-36 is three and a half measures long. The last phrase from mm. 37 to 39 is two and a half measures long since m. 39 shortened as well. Each phrase is shorter than the one that preceded it resulting in a notated accelerando at the level of the phrase that extends over two periods. This accelerando precedes and foreshadows the next larger formal section.

The second section has a complete change of character, but still explores the same simple structures. It consists of a single loosely constructed period where the antecedent phrase is
interrupted by the consequent phrase. The antecedent, mm. 40 to 51, completely alters the character of the movement. The repeating cell, which has had a foreground melodic role, becomes an accompaniment in m. 40 and is lowered several octaves. It suddenly changes character to pianissimo and sempre non legato, tenuto (not connected, but always slightly marked) rather than the forte and ruvido (very rough, abrasive) found in the final phrase of the first section. The melodic line that enters in m. 44 is derived from the melodic line from the cell. Due to extended durations of particular notes, like the first B, and a capriccioso (capricious) character instruction, it has a different aural disposition. When the E enters in m. 44 against the D in the melodic line, the same major second occurs as was found in the introduction.

In m. 46, the melodic line descends down the pentatonic scale using the same rhythm as the accompaniment and is followed by an interjection in m. 48. This interjection is the initial two-measure cell of the consequent phrase. It enters early, interrupting the antecedent phrase. When the consequent proper enters in m. 50, it closely resembles the model consequent in the first period except the pedal tone that was an E is moved to the pitch A. This A clashes with the G in a major second like the D and E from the introduction. The end of this phrase is interrupted in the same manner that 39 had been marking the beginning of the consequent phrase.

The consequent phrase returns to the paradigm set by the opening period. If you include the cell in mm. 48 and 49, than the consequent phrase is eight measures long and has repetitions that mirror exactly mm. 10-17. This phrase also completes the fifth descent that was interrupted in m. 39. The left hand material is significantly altered. The melodic and pedal lines from the cell have reversed their vertical placement and, as mentioned earlier, the pedal tone is A rather than B. The switch causes another clash between A and G in m. 53. It also allows the fifth between the A
and the E to lead directly into the descending fifths figure. This figure arrives on the final C to G fifth in m. 58, the final cadential motion of the movement. The melodic line in 59 is an extension of the antecedent phrase. It readopts the lengthened *capriccioso* melody and reinforces the B-Dorian aspects of the cell’s melodic line. The antecedent phrase occurs over the perfect fifth harmony, C to G, which counteracts the suggestion of B-Dorian. The clashes between the G♯ and G♭ as well as the C♯ and C♭ have appeared throughout the movement and occur prominently in final descent between the melody and accompaniment. The final two measures act as a codetta that balances with the introduction, includes the E and D major second, and reasserts the two-measure cell as the primary motive of the movement.

This movement is built from several aurally distinct structures. The distinct characteristics of these structures, when they are played, evoke the cell whether the whole cell is played or not. The cells operate like bricks. Walls are constructed of individual bricks layered and arranged. The size and shape of a single brick is recognizable on its own. When a brick with other characteristics is encountered, it is clear what aspects it shares and does not share with the first brick. When constructing with bricks, the arrangement of different shapes and colors of brick contribute to the building’s structure and aesthetic appeal. In the same way, the alterations to the two-measure cell of this movement provide both structure and aesthetic interest.

The two-measure cell from movement eight could easily have been the subject of a movement of *Mikrokosmos*. Several of the studies in *Mikrokosmos* share the pedal and Dorian characteristics with the two-measure cell. These parallels can be clearly understood through a comparison of the first phrase of Bartók’s *Mikrokosmos 126* “Change of Time” and the two-measure cell.
Example 12. Béla Bartók, *Mikrokosmos*, No. 126 “Change of Time.” This selection has characteristics similar to the two-measure cell of movement 8 in *Musica Ricercata*.

A comparison of the G and E centered tetrachords, C pedal, and cadential motion by fifth, G to C, reveals similarities to the two-measure cell from movement eight of *Musica Ricercata*. If you compare only the melodic line that starts with G in the top voice combined with the C pedal to the melodic line and pedal from the two-measure cell, the similarities are much clearer. The quarters in m. 4 of the Bartók example and the final two quarters of the two-measure cell are similar. In addition the melodic line is lowered a step starting in m. 5 of the Bartók. Similarly the melodic line is lowered in m. 6 of movement eight.

39. The F♯ that appears in the melodic line starting with E♯ does not conform to the pattern.
Movement 9

The increase in interval content in this movement replaces pitch-class entrance as an element that divulged the form. This replacement is due to the increased pitch-class content that characterizes the last three movements. This movement synthesizes aspects of movement 2, 3, 5, 7, and 8. This synthesis is another property of the last three movements of the work. Once again the simple structures in this movement start with simple static characteristics that are altered at significant formal junctures. The relationships and development of these alterations convey the musical meaning more than their surface details.

In the movement, pitch-class is limited to 10, almost the whole chromatic collection. As these final movements become progressively more chromatic due to the increase in number of pitch-classes available, the pitch-classes left out become as important as when pitch-classes are first appear in them. In this movement, limits on interval content shape the movement more than limits on pitch class. Minor and major thirds are the predominant melodic intervals in the opening section. Minor seconds are not allowed melodically, but are harmonically. The resulting harmony and melody suggest the half-whole octatonic scale, but never as explicitly as movement 5. The opening pitch-class set divides the octave evenly (A♯-C♯-D-F-F♯-A) part of a half-whole octatonic scale. This pitch-class collection reserves the final four pitch-classes for a formal distinction similar to the previous movements. For performance purposes, notation has been limited to sharps only. Occasionally this obscures relationships present in the music where a flat sign would have clearly articulated the actual relationship.
Example 13. Movement 9, with annotations

IX

(�la Bartók in memoriam)

Adagio, Mesto $j = 58$

$\text{wie tiefe Glocken} / \text{the low-sounding bells}$

$\text{pp una corda}$

Haltepedal / sustaining ped.

Allegro maestoso $j = 104$

$stringendo$

$\text{ff sib. tre corde}$

$\text{con ped.}$

Più mosso, agitato

$string$)

$\text{ff Y. inv.}$

$\text{Y. inv.}$

$\text{Y}$

 senza ped.

$^{a)}$ An beiden Stellen sofort weierspielen, ohne Zuset / On both occasions play on without a caesura.

* 1990 Schott Music GmbH & Co. KG, Mainz
Example 13, continued.

stringendo (wie in Panic / as if panicking)

Tempo I (Adagio) Maestoso \( \downarrow = 58 \)

cresc. molto poco a poco tre corde
tutta la forza con ped.

Più mosso, stringendo molto
(wie in Panic / as if panicking)

E-natural!

Tempo I. Mesto \( \downarrow = 58 \) Notated Accelerando

una corda con ped.

senza ped. X

P PP

dim.

Decelerando

(dim. molto) \( \downarrow \)

(m.d.)

m3 M3 PPP

ped. ped. ped. ped. ca. 2'30''

ped. allmählich aufheben /
lift pedal gradually
While pitch-class restrictions have a structural function in this movement, as stated earlier restrictions on interval content are equally as informative. The major and minor thirds as well as the minor second play a role in nearly every pitch relationship in the movement. A strange parallel occurs here between this movement and the early atonal works of the Second Viennese School. When a minor third and a major third are stacked, the result is set-class (014). This movement is peppered with instances of this set-class, which result not from conscious association, but one that arises from the decision to emphasize the major third, minor third, and the minor second. If you compare this emphasis with the interval vector of (014), 101100, the set-class is restricted to these intervals. This comparison illuminates the coincidental nature of this association.

An example of this chance relationship occurs in m. 5. The three pitch-classes of m. 5 are F, D, and C♯ or an instance of set-class (014). However, this relationship arises from the melodic motive in mm. 4 and 5 combined with the C♯ pedal tone. Its relationship with the set-class is coincidental, but in light of Ligeti’s statements in regards to serialism, should at least be mentioned.

The form of the movement consists of three larger sections, ABA₁, that begin in mm. 1, 10, and 22. Unifying the whole movement is the rhythm. For most of the movement the prominent rhythm is a sixteenth-note that appears on the beat plus a note of longer duration. In a subsection of the second section, the sixteenth is adjusted to become a thirty-second note. This change supports the final occurrence of the character instruction as if panicking and leads into the final section, whose rhythm deviates significantly from the others. This deviation is similar to how rhythm was treated in movement eight. While the short-long rhythm is prominent, its
combination with rhythms that explicitly provide agogic strong beats causes the movement to have jerky, unsettled feeling.

The first section, mm. 1-9, uses only the pitches A♯ C♯ D F F♯ A that divide the octave evenly until the final m. when C♯ is added. Accompanying the melodic material is C♯ pedal tone that is struck every 3 quarters a total of twelve times. The instruction *like low-sounding bells* combined with the number of instances invokes the image of a clock striking midnight. This is set against a melodic line that emphasizes durations of 4, 5, and 8 quarters that do not divide evenly against the 3 quarters. The offset in beat structure allows the section to avoid clearly establishing a pulse.

The melodic line in mm. 4 and 5 is the germ for the melodic material of the movement. The pitch configuration of this germ is referred to as motive X. Motive X uses the sixteenth note rhythm described above with the intervals from the split third chord, A♯ (B♭) C♯ (D♭) D♯ F♭, seen previously in movement 3. The pitch content of this motive combined with the rhythm sounds as mirrored minor thirds like those from movement 3. The melodic line alternates minor thirds with major thirds. The minor third is emphasized as the melodic line ascends through repetitions of motive X. Motive X interlocks with itself in retrograde inversion in m. 7 where pitch classes F♯ and A♯ are added. Each repetition heightens the tension through reduction in duration. This reduction invokes the notated accelerando. Measure 6 repeats mm. 4 and 5, but in a single measure span. Measure 7 adds pitch-classes F♯ and A and further reduces the duration between motivic entrances. The fourth instance finishes the phrase returning to C♯ and A♯ an octave higher.
Measure 9 ends the opening section, but also leads without a break into m. 10. The performance direction *on both occasions play without a caesura* that applies to m. 9 and m. 14, stress the sudden transition from section to section. Three elements of m. 9 allow this sudden break to occur. Its duration is halved similar to the interruptions found in movement eight; the A♯ to A♭ movement is the first true half step, and the pitch C♭ is added.

The C♭ seems innocuous enough by itself coming so closely after the first instance of A♭. However, it destroys the even division of the octave in the first section, breaks the melodic pattern, and is followed in m. 10 by the addition of two more new pitch-classes, G♯ and B♭. Once these two pitches are added only the final pitch-class, D♭, is held in reserve. This C♭ appears in the other melodic motive of the movement, which is referred to as motive Y. This motive is related to motive X. It still consists of two minor thirds, but the second one is separated by half step from the first rather than the major third of motive X. The entrance of the first melodic half step signals the transition from one section into the next. This signal, the addition of an interval rather than a pitch to indicate change in formal section, is significant in this movement.

The second section begins in m. 10 and has three subsections. Each of these subsections builds to a climax only to restart in the next subsection and each subsequent subsection further accentuates the performance instruction *panicked*. Movements three, five, seven, and eight have featured subsections where each successive subsection was further intensified. The first subsection in this movement starts with two closely packed chords that follow one another, which acts as accompaniment in this section. This arrangement reverses the register placement of melody and accompaniment from the first section. The music also ascends into the upper register.
of the piano. Several earlier movements also featured this exchange of melodic and accompanimental roles.

The first chord’s arrangement in m. 10 appears as stacked perfect fifths, but if you ignore register and restrict the pitch-classes within an octave, it forms an arrangement of alternating minor thirds separated by a major third, D F A C. This alternation is reminiscent of motive X.

Continuing to play with the interval of the third, the right hand descends melodically a respelled major third from the first chord to the second. The left hand melodically descends a minor third. This motion continues the interplay between major and minor thirds. Additionally, if register is ignored, every pitch in the first chord is separated by a minor second from one in the second, C to B; D to C♯; F to F♯; A to G♯. This minor second is echoes the minor second of motive Y.

The following chord, B F♯, C♯ G♯, can also built from stacked thirds like the first. If this second chord is respelled as B D♯ F♯ A♯, an arrangement is created consisting of alternating diminished thirds separated by an augmented third. These diminished and augmented thirds extend the interval content beyond the major and minor third. This extension adds intervals that is explored as the movement progresses, but respelled as proper perfect fourths and major seconds.

In the first section, the interval content was limited to minor thirds, major thirds, and minor seconds. The addition of perfect fifths and major seconds in m. 10 signals that the movement has entered its second formal section. This limitation on interval content operates similarly to the way the addition of pitch-class announced formal change in other movements.
In m. 11, an inverted motive Y enters on F♯ and melodic material is distinguished by an increase in dynamic level. At the end of m. 12, the final pitch-class, D♯, enters in the lowest register after the first melodic whole step between E♯ and D♯. The whole step is required by the pitch collection to avoid the E♭, which does not appear in this movement. The limitation on melodic interval content must be broken for the final pitch-class to enter. Repetitions of inverted motive Y appear in mm. 13 and 14. These Y motives combined with the, now, allowed melodic whole steps permit the melodic line to descend back to the minor third between C♯ and A♯, which is found in its initial register in m. 14. This descent leads without break into the second subsection. The C♯ and A♯ is an instance of non-inverted motive Y that extends over the break and connects with the A♭ and C♭ in m. 15 an octave away. This relationship is explored further as the piece progresses. The end of the second section is a complete exploration of the minor second as a repetition of the melodic line of mm. 11 through 14. Between mm. 15 and 17, the major second appears in every possible pitch-class combination possible in this movement. Additionally, the left and right hands are separated by a major ninth or, more insightfully, a compound major second.

The third subsection begins in m. 18. This subsection like the previous one adds one interval, the tritone. The texture in m. 18 resembles that of m. 10 and uses the exact same pitch-classes rearranged to emphasize another set of intervals. The initial chord is no longer stacked perfect fifths. If you respell B as C♭, it consists of stacked diminished fifths. A similar relationship ensues in the melodic minor thirds that separate the two chords here with one exception. The lowest voice has a perfect fourth F♯ to C♯. The perfect fourth/fifth has yet to occur as a melodic interval, but does so here. If the melodic content were exact, this C♯ would
have been a D♯. The interval of a tritone also occurs melodically in the bass voice from mm. 18 to 20 between the F♯ and C♯ marked fortississimo. The melodic line builds to a final climax in m. 21 exploiting melodic material from motive X and Y in each hand separated by a minor second and ending with an A to C minor third in the upper and middle registers of the piano. The A to C minor third also ended the first section and is here doubly marked by register and non stringendo. The melodic content of this third subsection is significantly more dissonant, which reinforces the as if panicking character instruction.

The final section adopts the tempo and character of the first section while also harkening back to movements two and five. It presents new rhythmic ideas using pitch relationships found in the first section, but also uses the gamut of pitches available in this movement. Unlike the first section, this section focuses on the minor second rather than minor or major third. A notated accelerando that starts in m. 23 leads directly into half step trills, once again with an exception.

Two whole step trills rather than half step trills avoid the two pitch-classes that do not occur in this movement, E♭ and G♭. The first instance occurs in m. 24 in the right hand on F♯ avoiding the G♭. The second instance occurs in the left hand on beat four of the same measure between D♯ and E♯ avoiding the E♭. The trills ascend up the scale arriving on the B in m. 25. While not explicitly related to the increasing tension in the middle section, the ascent produces a similar effect. This ascent is followed by a gradual deceleration in trills between E♯ and F♯, two pitches that were prominent in movement 2. In mm. 25 and 26 motive X is inverted, which has not occurred previously in the movement. In m. 29 G♯ and E♯ occur answering the A and C from m. 21, creating motive X inverted again. In m. 31 the piece ends with the melodic interval from D to F. This F forms provides the minor third above the perfect fifth, D to A, in the bass voice. In
the following measure when it is enharmonically respelled as an E#, it provides the major third above the bass fifth, C# to G#. The change from minor to major third is a reference to both the alternating major and minor thirds from the opening section, but also explicitly notated perfect fifth relationships from m. 10. This change also alludes to the half step descent from motive Y that have occurred throughout the movement occurring first in m. 9.

Movement 10

By this point in the whole work, movements have had simple structures that remained completely internally static and others where internal changes to the simple structure occurred over time in a controlled manner. Some movements have had only one or two structures; others, like this movement, appear to have several. This movement is the culmination of multi structure type and includes internal changes to the structures, while the final movement is the culmination of the type with two structures and they remain strictly defined.

The form of movement 10 is a five-part rondo, ABA'CA² with a codetta. While sections B and C have distinct characteristics that distinguish them from the A sections, there is a nearly static rhythmic thread that unites the movement as a whole. This rhythmic thread appears in mm. 2 through 5 in the first A section. This section, mm. 1 through 17, repeats this rhythmic thread in a manner that parallels its treatment in the larger movement. The thread consists of 3 parts. The ascending eighths of m. 2 into the downbeat of 3 act as an opening. The following 4 quarters appear in the middle. The eighth and quarter of m. 5 act as a closing similar to the closing motive of movement 6.

These divisions reflect the melodic material to which the thread is applied. The order of these parts remains relatively static throughout the movement in a similar way to the order of
Example 14. Movement 10, with annotations

A) Vivace. Capriccioso  \( \text{\textit{d} = 200} \) Initial Rhythmic Pattern, with chromatic motion

B) Rhythmic pattern with arpeggiation

C) Chromatic Half-step Motive

Fragmentation

\( \text{\textit{B} g\text{r\textit{ozioso}}} \)
Example 14, continued

\*) Omit Zisar's rallent. and continue without a coda.
Example 14, continued
Example 14, continued
articulations in movement 1. The intervallic relationship of the thread consists of half steps in the A sections and thirds in the B section. Seconds do not disappear from the B section, but reappear as accompaniment reversing the musical roles of thirds and seconds. This reversal mirrors a similar exchange that occurred in the third movement. These types of role alterations accumulate from section to section within this movement until the final A section that includes aspects from all the previous sections another feature found in movement 3.

The second and its compound are treated in movement 10 in a similar manner as the third in movement 9. The step is bound both melodically and harmonically to the only pitch not played in the movement, the pitch C♯ while accentuating the last pitch-class to enter, A♭. The A♭ is specifically reserved to act as the dominant to the suggested pitch center D, mirroring the first movement. The C♯ is treated as if it had no effect on the sound. This occurs when the whole step between C♯ and B is treated as another half step.

This movement also magnifies the role of the expanding wedge first seen in movement 4 where a melodic line expanded outward from the last added pitch in that movement, G♯. It is movement 4 to which this movement seems to draw its character. Besides the wedge progression, the interplay between melody, accompaniment, and the rhythm reference movement 4, but there are also elements similar to movement 6 and, once again, an explicitly notated accelerando appears at a crucial juncture.

The opening A section has 4 parts forming an XXYX pattern: 2 repetitions of the thread, a deviation from the thread that repeats the opening motive, and a return to the thread proper. The thread is static the first three sections of the rondo, ABA¹, it digresses in C, and then return to its original form in the final A². The thread whole is used almost exclusively for the melodic
line. In the first A, it is used in a melody that ascends and descends through the chromatic scale. Skips appear only in the closing motive, which throughout the movement is melodically separate from the rest of the thread. The melodic line has implications of D when you consider the pedal tone and its two significant stops, once on A♭, not quite reaching the dominant, and once on C♯, before reaching the C♮. The movement is another where a key is suggested, D, but never explicitly realized through a traditional structure like a cadence.

The melodic line appears against a static pitch-class D accompaniment that fills in the eighth note gaps created by the rhythmic thread. The articulation of the three eighths in mm. 5 and 6 in the accompaniment ends with a sforzando. This is repeated in mm. 9-10, 11-12, 13-14, and 17-18 where the section ends. This has implications for the D in m. 1. The incorrect placement of the sforzando changes the role of the initial eighth note D as an introductory interjection, similar to that found in movement 1, but even more movement 8.

The melodic line seems to rise from these initial D eighths. Once the melody splits from the D pedal, it does not cross it until m. 17 at the end of the section. The descent to C♯ closes the section. It is the first C♯ found in the movement and signals the juncture between the A and B sections. The melodic line cannot go any lower by chromatic step because C♯ is not part of the pitch collection of the movement. Later in the movement lines arise from a pedal, chromatically ascend and descend against that pedal tone, and only ends after crossing that pedal referencing this opening section.

The B section starts immediately after with the rhythmic thread in the right hand. The melodic line here arpeggiates up and down in the key of two sharps adding the new pitch-class B. The direction of the line and the melodic roles of each motivic section, opening, middle, and
closing, are as unchanged as the rhythmic thread itself, with one small exception. Measure 21, 25, and 27 all have four eighths and not three like their equivalent positions in initial thread. Against this melodic line is an accompaniment placed a minor ninth compounded below the melody. This line creates suggestions of polytonality and adds the new pitch-class A# below the B♭. Like nearly everything else in this movement, there is a single exception to the minor ninth. In m. 24, since the pitch C is unavailable, a B has been placed below the C♯ creating a major ninth. This discrepancy, where a C♯ maintains a pattern, but is not available, continues to occur throughout the movement. The movement treats the distance between C♯ and B as a half step, as if the C♯’s absence does not change the sound.

In m. 21 the final pitch-class, A, enters. Like in previous movements, this is a signal, but not of a juncture in the form as in earlier movements. Instead it is added to a motive that recalls the accompaniment from the first section because it fills in the eighths missing in the melodic line similar to the Ds in m. 5. It also maintains the intervallic distance, minor 9th, but collapses it into a half step. When this line is referenced later, it is recognizable because of the parallel harmonic interval and parallel chromatic motion. The inclusion of the A natural is a signal that this motive is more important than it seems. As the movement progresses, material related to the accompaniment in m. 21 comes to dominate the movement.

Like the third part of the first A section, the third part of the B section deviates from the other parts and the rhythmic thread is expanded beyond the four measures in the initial A section to 14 measures. The first four measures of this expansion mirror those in the initial A section. Added to this is what appears to be a modified, entire iteration of the rhythmic thread in mm. 30-39 with the pitch material of the B section, the D major arpeggio. Under this iteration, the
accompaniment schizophrenically jumps from octave to octave in a rhythm suggestive of the opening motive of the rhythmic thread and mimicking the octave leaps in movement eight. The final thread closes section B without any unexpected changes. Measure 43 has 4 eighths instead of 3 like m. 21 and ends on the pitch B, a nod to the relative minor. This section has changed the melodic line without changing the rhythmic thread, uncoupling rhythm from pitch. The accompanying melody was placed a compounded minor second below the melodic line with a single exception to skip the pitch C\. The next A section, which begins in m. 44, is truncated. It proceeds through the first three parts of the section as expected, but forgoes the final one to enter section C. Like B, the direction of the melodic line is the same. It moves entirely by half step like the initial A, but it starts on a different note and the direction is not exactly the same. For example, when comparing m. 30 with m. 5, and m. 54 with 9, each of these ending motives appears in a different position than their equivalents in the initial A. One slightly less noticeable change arises in m. 51 where the opening motive is a whole step higher than m. 47. The equivalent measures, 2 and 6, in the opening A were unchanged. This is a characteristic taken from the B section where the equivalent measures, 18 and 22, do not occur at the same pitch level. The accompaniment here is a static pedal consisting of a B and D\. The D comes from the initial A while the B is a holdover from m. 43. This interval is incessantly struck in a series of three eighth notes and an eighth note rest. The accent on the first eighth note shifts the metric center by one eighth note, a metric shift of emphasis that is reminiscent of the first movement.

The minor third leads directly into a transition in m. 60. This transition is related to the material discussed in m. 21. The interval between the voices is static and the line ascends
chromatically except for the one instance where the pitch C♯ is skipped. Measures 63-65 repeats
the relationship of the melodic line to the D pedal in the first A section. There the melodic line
descended by chromatic step until it crossed the pedal arriving on the pitch C#. In m. 64, the A♭
in the right hand extends the chromatic line found in the left hand in mm. 62 and 63 as it crosses
a pedal on G. This is a similar relationship to the C# crossing the D pedal. This material
continues acting as the accompaniment in section C with register shifts as found in the
accompaniment of section B. Like the opening motive from m. 2, this material leads into the A♭
in the melodic line, which appears in mm. 65 and 73.

Section C uses the rhythmic thread, but it has been truncated in a similar manner to the
second A section. The rhythmic thread still uses the opening and middle motives, but everything
after the third quarter note, including the closing motive, has been removed. The descent that
occurred on the quarters has been changed to a single repeated pitch. The result is a melodic line
that aurally is related to the melodic line in the B section, but has a noticeably different character.
This line is marked with the performance instruction capriccioso e burlesco. This marking recalls
the Tempo di Valse (poco vivace -“à l’orgue de Barbarie”) from movement 4 and the capriccioso
marking from movement 3. The pitch material in this melodic line arpeggiates up and down in
the two♯s key, but replaces A♭ with A♯ continuing to emphasize the minor mode from m. 43.
Like B, the modified rhythmic thread is repeated 4 times with an extension in mm. 71 and 72.
The register shift and inclusion of F♭ in m. 72 is startling reminiscent of the schizophrenic
accompaniment of section B. Section C runs out of steam in m. 75 halfway through a fifth
repetition. Steps are added at the peak of the phrase in mm. 69 and 71 to give them extra
emphasis.
The third and final A section enters in 76 returning to the rhythmic thread with half step melodic pitch material. The accompaniment now has the rhythmic thread as well, mimicking the material found in 21, keeping the harmonic interval parallel at a major second and moving melodically by intervals of a half step. The effect the C♯ has in this section is interesting. When either of the hands chromatically passes through the C♯, it moves directly from C♯ to B. This motion never take place in each voice at the same time and causes the interval between the voices to expand and contract. The first time this occurs is in m. 77 where C♯ and E♭ are separated by whole step. When the lower line descends over the C♯ break, the interval between the voices expands to a minor third. The interval contracts back to its original size in 79 when the upper line crosses over the C♯. Since this section consists primarily of parallel melodic lines ascending and descending chromatically, the harmonic interval expands and contracts often. Like the C♯ in section B, this section acts as if skipping the C♯ does not change the aural result.

The rhythmic aspect of this section brings the piece quite convincingly to a climax using the notated accelerando. Initially A² repeats the rhythmic thread repeating the first A section, but like A¹ the end is modified. Instead of being truncated, the ending is expanded. This expansion brings the piece to a climax repeating the accelerando pattern twice with the chromatic ascent introduced in m. 21, where the A♯ appeared for the first time. Two parallel lines ascend and descend chromatically in imitation at the interval of a major second and both skip the C♯ as discussed earlier. The accelerando starts with grouped eighth notes in m. 94. The fist groups have 8 eighths, then 4 in m. 100, 3 in 101, 2 and finally 1 in m. 102. Melodically both lines start ascending imitatively at the octave, but in m. 97 the top line changes direction and descends after
reaching the highest pitches of the movement. This causes the lines to converge in m. 102 on a cluster G-G#-A-A#.

From mm. 101 to 113, this cluster goes through the notated accelerando pattern in a different manner than seen in mm. 94-101. Instead the duration of rest between attacks is contracted. The pitch content of these attacks is initially static and the space between them is filled with material from the initial A. These eighths in the left hand ascend to pitch-class A. The initial A section had a similar ascent, but stopped on the pitch A♭. The pitch-class A here acts as the “dominant” of the movement, a response suggesting the pitch center D. Pitch-class A was avoided in the opening section to reserve it for this situation. Pitch-class A is also the last pitch-class that was added to the movement and accentuation of it was avoided in favor of A♭ in m. 48 in A¹. Once this A is stated the accelerando beings in earnest with an added instruction insistent, spiteful. Added to the accelerando is an expanding wedge that mirrors mm. 97-102. This expansion transpires harmonically rather than melodically increasing the pitch content of the cluster until it has all possible pitch classes in the movement except one, D, the key center of the movement. The notated accelerando ends after a measure marked repeat often/as if mad with a final instance at the dynamic level sfortissississimo (sfff). Following this instance, a final statement of the rhythmic thread occurs with the melodic material from B. This melodic material arpeggiates down to D in the notes of D-major but adds F♭ at the end suggesting the chord of the split third and deemphasizing the role of mode in the movement.
Movement 11

This movement is an exploration of somewhat non-traditional counterpoint. A pattern in the relationship between subject entries remains somewhat static and is of greater import than the vertical intervals. This defies traditional contrapuntal practice where the verticalities are handled strictly. Semitone motion is found in both the subject and countersubject and combines with entrances in stretto. This combination causes aurally following any given entrance of the subject to become progressively more difficult. This difficulty culminates in mm. 55-57, the final instance of the notated accelerando, where subject entries have been so densely packed in stretto that individual entrances are lost. In this movement, since the relationship between subject entries is strictly static until a significant formal juncture, simplicity extends into the static relationships between instances of structures/subjects rather than just within the structures themselves.

All twelve pitch-classes are available in movement 11, the final movement. This movement is subtitled Omaggio a Girolamo Frescobaldi. The dedication is apt since the movement is reminiscent of a ricercar. It is not strictly a fugue, but has imitative entries and longer note values. The material of the movement is solely the subject and countersubject. Rather than reserve the final pitch-class for an important formal juncture, all twelve pitch-classes appear in the subject. The subject explores the wedge shape seen in earlier movements, expanding chromatically outward from E.

40. The subject of this movement is reminiscent of Frescobaldi’s Ricercare Cromatico Post il Credo from Fiori Musicali.
Example 15. Movement 11, with annotations

XI

(Omaggio a Girolamo Frescobaldi)

Andante misurato e tranquillo \( \frac{\text{d}}{\text{E}} = 76 \)

Subject in A

Countersubject

in F\#
Example 15, continued

in F, late

Change of direction in inner voice

in D

in G

in B

in F#

in A

in E

Begin Stretto
Example 15, continued

(cresc.) — — —

in Bb, dim.

in Ab, in Diminution, on downbeat

in Eb, in Augmentation

ascending 5ths

in Bb, dim.
in Eb, dim.

in F, early

non arpegg.

(mf)

Pesante e grandioso

48

Skip F#, in B

non arpegg.

Skip Ab, in Db dim.

(cresc.)

Skip E, in A dim.

in D, G and A

Simultaneously

(f)

mf

f

(m.d.)

Halting pedal / sustaining pedal

ff
Example 15, continued

From here a series of entries in G, D, A, C, and F begins in dim. All Incomplete Entries in C, dim

[Poco meno mosso]

Più tranquillo

[pp] Final entry in A, in decelerando pattern

dim. poco a poco

PPP

The same sonority that began the piece at the opposite dynamic
It is tempting to consider the E the pitch center of this subject. The true pitch center of the initial subject and the movement is A. It is possible that the subject could last for only the first three measures, but it extends to the downbeat of the fourth measure causing the A to be the only pitch played \textit{twice} in the movements subject. The following factors indicate that the second A is to be included in the subject and is the central pitch of the movement: the first movement’s key center was A, it is sensible for \textit{Musica Ricercata} to begin and end by emphasizing the same pitch; the last pitch to enter in the movement, which has been an important signal in the previous movements, is A; the opening E of this movement acts as a dominant to the following A; if you include the A on the downbeat of m. 4, the wedge expands up to A and down to A; and the last instance of the subject, the final statement of the piece, also on A, and purposefully mirrors the sonority found at the very beginning of the first movement, another clue that the last note of the subject is its pitch center.

Movement 10 schizophrenically interweaved multiple structures while separating rhythm from pitch. In contrast movement 11 focuses entirely on the subject and countersubject as a whole pitch and rhythmic structure. The subject and countersubject are presented in mm. 1-7 and do not change throughout the movement, i.e. they remain internally consistent. The cell in movement eight was similar in its treatment. For a majority of that movement no changes were made to the internal structure of the cell. Similarly, in this movement the interest comes from layering entrances of the subject and its interaction with the countersubject.

The first instance of the subject starts with E in m. 1. The second, not breaking with tradition, starts on B in m. 4. The third entrance comes in m. 7 after the entire previous entry of the subject has been played on F#. The fourth entrance continues this relationship entering on C#
a perfect fifth higher in m. 10 after the previous subject has ended. For a significant part of this movement, the relationship between the entries is by ascending perfect fifth occurring strictly after the entire previous subject has been played. This relationship remains static and only changes to signify a juncture in the form. Forbidden parallels are not avoided, nor are dissonances. Because every subject entry occurs exactly a fifth up and only after the previous subject ends, only a few changes allow any leeway in how the iterations of subject interact. The duration of the first note can change. In m. 1, it is a half note. In mm. 4, 7, and 10, this note has been shortened to a quarter. This does not significantly change the position of the subject within the measure. It is only in m. 13, where the half note duration of the initial G♯ in the highest voice is combined with an entrance on beat 2 to delay the rest of the subject by a single quarter length. Also in m. 13, the bottom voice’s entry of the subject, which began in m. 10, ends without being followed by the countersubject. It ends with a second F♯, reinforcing the argument that the original subject ends in m. 4 on the A.

The countersubject follows from nearly every entrance of the subject and consists solely of a descending chromatic scale. It must be at least the length of a single subject entry and nothing prevents any particular instance of the countersubject from continuing to descend down the scale over several entries of the subject. For example, the countersubject following the initial subject begins in m. 4 on the B♭. This instance of the countersubject continues through two entrances of the subject ending in m. 10 on C♯ eliding with the subject entry that enters there. The duration of individual pitches in the countersubject can be extended as seen in mm. 7, 8, and 9 in the G♭, E♭, and D. The register of countersubject lines is not static either. Also in m. 10, the countersubject in the middle voice, leaps up one octave to allow room for the subject entry in the
bass voice on C#. The treatment of the subject and countersubject are guided by the rules outlined above from mm. 1 through 35. Subjects enter at every pitch class traversing the whole circle of fifths. There is only one exceptional instance where the countersubject reverses direction in the left hand’s top middle voice in mm. 27 and 28.

The last entry is in 35 begins on pitch class A on beat 3 having traversed the entire chromatic collection. From this point forward, entries of the subject become less and less predictable and the countersubject nearly disappears and is only used to extend the subject by one or two descending chromatic semi-tones. The next entry after the A occurs in the following measure, breaking with the pattern that came before where every entry was completed before the next entered. The result is a stretto that continues through m. 58. The layering of entries varies in density. Initially the pitch level of the entries continues the pattern, entering by ascending successive perfect fifth arriving at D♯ in m. 42, where the first set of stretto entries ends.

The two entrances in m. 42, the D♯ in diminution, the A♯ in augmentation—the only instance of augmentation—change the pace of the subject, but are still in stretto. The entrances continue by ascending perfect fifth in stretto until the A♯ entrance in diminution in m. 47. From here each entrance is related through whole step descent, B♭-A♭-F♯-E-D. In m. 50, the subject is played in parallel starting with a stacked sonority, D-G-A-D. Harkening back the change in duration of the first note at the opening of the movement, here the first note is further reduced in duration to an eighth note.

In m. 52, an incomplete, truncated subject enters on D. The first two entries have 6 correct pitches, D-D♯-E-D♭-C-B, and the second two have 4 D-D♯-E-D♭ before becoming the countersubject. Additionally, the four successive entrances that start with pitch-class D enter in a
short two-measure span. The result is an audible acceleration in the pace of the piece as these incomplete entries enter and end quickly. Only the second entrance by the middle voice in the upbeat of beat 1 in m. 53 covers the entire chromatic collection.

In the second half of m. 54, the same process is repeated with even greater effect. This time entries come in pairs separated by a fifth like subjects and answers in the exposition of a fugue. For example, the subject entry starting with A in 54 is answered by the E in 55. In the next two measures, the distance between the subject and its answer is condensed accelerating the phrase. This acceleration is enhanced through increasing truncation of the subject itself. Entries are closer together and each entry is shorter. This is the final iteration of the notated accelerando that has been prominent since in the first movement. Here it leads into a break announcing the final entry of the subject in highest register of the piano at the correct pitch-class level ensuring it ends on A. This final entry is combined with a continuation of the countersubject in augmentation that was last seen in the low D♭ in m. 51. This countersubject also ends on A. The distance between the final As is the same interval that opened the piece.

The ubiquity of movement by half step resembles Bartók’s Mikrokosmos 145, subtitled “Chromatic Invention” where melodic motion is accomplished entirely by half step. This includes examples where multiple voices occur in a single melodic line separated by large leaps. This type of movement predominates in this movement of Musica Ricercata where the subject of the ricercar is two voices that create an ascending and descending chromatic wedge in a single voice. All the motion in the voices is accomplished by half step like Bartók’s “Chromatic Invention.”
CHAPTER 3

CONCLUSION

Musica Ricercata was Ligeti’s laboratory for composing a new type of music. Ligeti’s description of simple structures was invoked as a primary method for creating hierarchy among pitch and rhythmic materials. This approach has revealed novel construction and internal consistency within his music. Traditional aspects appear, such as modal and tonal implications, the relegation of simple structures to melody and harmony, phrase structures emphasizing two, four, and eight measures, and organizing rhythmic material by bar lines. However, within the piece there are signs of future advancements. As the chromatic density increases and as structures become varied, the relationships between the structures become more complex. Simple structures span instances where a single pitch class or rhythm defines a structure through instances of complete rhythmic and melodic motives. These structures are often defined by how they limit pitch, interval, and rhythmic material across their reoccurrences in a movement. They vary in their application as well, either remaining completely static or only changing at important junctures in the form. The variety of pitch, rhythm, and formal organization culminates in the last two movements, which synthesize relationships from the previous nine movements and cover the spectrum of chromatic and rhythmic language.

While Musica Ricercata may not be “a new kind of music starting from nothing,” or “a static, self-contained music without either development or traditional rhythmic configurations,” Ligeti’s own stated goals from the initial interview discussed at the beginning of this study, the
work demonstrates clearly a progression from simple to gradually more complicated ideas. In it are references to the music of Bartók, but also inklings of future compositions. The use of simple structures alone may or may not be important to Ligeti’s musical development, but the harmonic and formal language developed over the course of its composition are. The use of register, articulation, repetition, layering, separation of rhythmic motives from pitch materials, adjustments in rate of speed, a hierarchical approach to music where relationships between motivic materials focused on layers of structure, and the creation of paradigmatic structures and their eventual deconstruction in a single movement are important aspects of the work and of Ligeti’s work going forward.

Martón Kerékfy’s analysis of this work discusses these aspects. He sees Musica Ricercata as the piece where Ligeti codifies his personal chromatic voice through experimentation. This voice keeps Bartók as an influence by incorporating aspects of the elder composer’s chromaticism and is by no means completely defined in this piece. This shared view sees Musica Ricercata as a training ground where Ligeti developed a chromatic language that uses the chromatic collection in a manner similar to serialism. It emphasizes the whole chromatic collection and treats rhythm as equally important as pitch. However, Ligeti’s language is fundamentally different from serialism because it exhausts pitch material less strictly and encourages a hierarchy of pitch-classes without specific tonal references.

This work does not represent the culmination of his efforts, but the first step. While the work contains traditional rhythms, meters, phrase structures, pitch collections, and melodic and

harmonic roles, the impetus is toward a new language. The culmination of this new language required Ligeti’s departure from his homeland that occurred in 1956. In Western Europe, he was introduced to a musical culture that was more encouraging and open to experimentation. His exposure to Stockhausen, Webern, Boulez, and the school at Darmstadt significantly impacted his compositional output. The isolation he experienced in Hungary, due to official policies, did not cripple his desire to write a new kind of music, but it did stifle the environment that could foster a paradigm shift in his musical language.

Thus the seeds were planted in Hungary, but the fruit were not born until after he left. Ligeti’s compositions that were intended for his bottom drawer are well constructed. The focus on simple structures, over the course of composition, allowed him to develop his personal chromatic language fostering a quality that cannot be described as “Bartókian.” This language is both similar to serialism in its rigorous treatment of rhythm and pitch, but different in that it accepts elements from Bartók’s chromatic language and the music of the past. As Ligeti moves forward, his compositions combine the chromatic language he developed and his attention to structural detail. Both of these compositional strategies are exhibited and developed in this piece. This combination becomes a vital part of his future compositions stemming from this experimental time period. In his late works, when Ligeti returns to a language that reinstates melodic and accompanimental roles resembling in some respects the music from this time period. These late period works exhibit a mastery of chromatic language and organization whose roots are found in the experiments of Musica Ricercata.


