The Relation of Analysis to Performance of Post-tonal Violin Music: Three Case Studies

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by

Karen Rostron

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THE CITY UNIVERSITY OF NEW YORK
Abstract

THE RELATION OF ANALYSIS TO PERFORMANCE OF POST-TONAL VIOLIN MUSIC: THREE CASE STUDIES

by

Karen Rostron

Adviser: Professor Joseph N. Straus

This dissertation investigates analytical and performance relationships through studies of three post-tonal pieces for solo violin: Élégie by Igor Stravinsky (1944), Riconoscenza per Goffredo Petrassi by Elliott Carter (1984), and Melismata by Milton Babbitt (1982). The challenge of interpretation is especially evident in non-tonal music, as performers are unlikely to have any knowledge of the relevant relationships between pitches, functions of harmonies, or formal features in the pieces they play. In this respect analysis can contribute to an understanding needed to form a meaningful interpretation. I will attempt to show that even the most seemingly abstract theoretical concepts can have direct bearing on performance of modernist music and will propose a four-step process that I believe is effective at producing analyses in a form that can influence playing, down to the minute details.
Acknowledgments

I am deeply grateful to my professors at the CUNY Graduate Center, particularly to my adviser, Joseph Straus, for his knowledge, prompt feedback, and for always encouraging and believing in me. His invaluable mentorship has guided me throughout this project, from beginning to end. A seminar on Stravinsky inspired my chapter on Élégie, a year of independent study on Carter produced the chapter on Riconoscenza per Goffredo Petrassi, and a seminar on the music of Milton Babbitt, co-taught by Jeff Nichols, prompted me to write a chapter on Babbitt’s Melismata. I am also grateful to Norman Carey for his straightforward guidance in performance and analysis, as well as his precise and thorough editing of my drafts. I would also like to thank Ursula Oppens for indirectly being responsible for this whole project and for being a role model and an inspiration to me. Rolf Schulte generously shared his knowledge of and enthusiasm for all of the pieces discussed here, and others.

I am indebted to Roger Zare for his notation brilliance in digitizing the Babbitt score. Michael Cherlin, John Link, and John Roeder provided valuable input in the beginning stages of this project. I must also acknowledge the assistance I received from the music librarians of the Library of Congress who extended themselves to give me access to both the Stravinsky and Babbitt material.

Josh Gilinsky, Ron Ma, and Bob Sweeney helped too by offering their advice and support.
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Preface

I mean to tell you, it takes a long time for performers to learn, or to find out what’s in the music. They can’t understand. The first performance very seldom presents the music as it will be worked out. I’ve always felt…that it took about ten years for the performers to understand what the music was about.

–Elliott Carter¹

Years ago as a young violin student, I performed Riconoscenza per Goffredo Petrassi (1984) for solo violin by Elliott Carter. The experience was so distressing that for the next 20 years, I categorically refused to play any music by Carter.

I had been instructed to practice every complex rhythmic subdivision with a metronome until I became capable of faultless execution. Not only was this in itself challenging, but relating them to the notated bar lines seemed impossible, if not senseless. Moreover, the pitches were awkward, and appeared to be random and without relation. Needless to say, despite hours of practicing, the musical result was unrewarding, and did not seem worth all the effort. During the performance I felt like I was reciting something by rote in a foreign language of which I had no knowledge.

What made me decide in 2009 to give Carter another chance was a concert featuring some of his piano music, performed by Ursula Oppens. I had expected to hate it, but instead, it caught my attention. As each piece unfolded, I found myself eager to hear what would happen next, as if a story were being told. Instead of all sounding the same as I had expected, each piece was different, and within each piece I could hear different characters.

At that moment it seemed apparent that an interesting performance of music by Carter, as with any music, depended a great deal on the performer. Although it has been said, by performers, composers, critics, theorists, and audience members alike, that they do not particularly enjoy or want to hear Carter's music (for example, an article in *New York Magazine* begins with, "What does it mean to be a great composer if nobody wants to hear your music?"),² perhaps performers are partly to blame for this reaction. After all, it is the performer's responsibility to understand and convey the “meaning” of a piece to the listener. This new-found belief presented me with a problem: how could I make Carter’s music, or post-tonal music in general, appealing to the listener?

Since theorists find Carter's music so intellectually engaging, I thought there must be something that performers do not know about or understand. I wanted to investigate this challenge. I went back to *Riconoscenza*, and turned to music theory and analysis for answers. I talked to John Link, one of the foremost Carter scholars. I also talked to and played for Oppens, as well as Rolf Schulte who has performed the piece over thirty times and recorded it twice. I hoped that if I could get to know Carter's language by studying its structure—the musical vocabulary, grammar, and syntax—then perhaps I could learn to speak it with actual understanding, and that might lead to meaningful communication.

I found the subject so compelling that I did not stop with Carter’s *Riconoscenza*. I went on to examine other modernist pieces for solo violin as well: *Élégie* by Igor Stravinsky (1944), *Melismata* by Milton Babbitt (1983), *Fantasy* in Two Movements by Ross Lee Finney (1958), and more.³ In doing so, my purpose was not to provide a written exploration of solo violin repertoire written after 1940. Rather, my intent was to use these very distinct works to

---

³ I have chosen to omit the Finney from this dissertation.
investigate analytical and performance relationships. Since the works are so unalike, they all required different analytical approaches. The approach used in each case reflects differences in the context and structure of each piece.

For Élégie for solo violin or viola by Igor Stravinsky I investigate pitch centricity, inversional symmetry, referential collections such as the Phrygian mode and whole tone scale, and symbolic expressive elements as described by Joseph Straus in Stravinsky’s Late Music. For Carter’s Riconoscenza per Goffredo Petrassi, I explore the use of the all-interval tetrachords as a referential sonority to create unity, the differentiation of musical material, and the interconnections between contrasting ideas. Finally, for Melismata by Milton Babbitt I probe the composer’s own expanded variety of twelve-tone serialism.

In addition to the above conceptual framework, I also utilize the following resources.

Stravinsky’s Élégie:

- Comparison of three manuscript versions with the final published versions._MANUSCRIPTS OF THE VIOLA AND VIOLIN VERSIONS, ALONG WITH A TWO-STAFF, VIOLA VERSION ARE PRESERVED IN THE LIBRARY OF CONGRESS.
- Interpretation of the extended fingering techniques used in the piece, as described in Principles of Extensions in Violin Fingering by Sol Babitz, editor of Stravinsky’s violin parts.
- Aural analysis of different recordings, including the premiere performance by violist Germain Prévost (the work’s commissioner) at the Library of Congress on January 26, 1945.

Carter’s Riconoscenza per Goffredo Petrassi:

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5 Manuscripts of the viola and violin versions, along with a two-staff, viola version are preserved in the Library of Congress.
7 Quatuor Pro Arte, et al., [Library of Congress Music Division Concert, 1945-01-26], (1945), sound recording, 1 sound tape reel : analog, 7 1/2 ips, 2 track, mono. : 10 in.
- Examination of a manuscript copy obtained from Carter in 1986.
- Synthesis of lessons, interviews, and conversations with preeminent Carter performers Ursula Oppens and Rolf Schulte, and correspondence with leading Carter scholar John Link.
- Comparison of different recordings.

Melismata by Milton Babbitt:
- Realization and study of the twelve-tone array
- Scrutiny of the score for errata and discrepancies between it and the array
- Comparison to other solo string pieces by Babbitt and their arrays
- Examination of sketches held at the Library of Congress

This paper is geared toward those who have an interest in or curiosity about a connection between systematic, theory-based examination of music, from which insights into structure can be of help for forming interpretations for the sake of performance. Based on more than a dozen inquiries I have received from other doctoral students majoring in performance, I realize that there is in fact a cohort who believes that analysis is beneficial to what they do. These people have already decided to analyze and relate it to performance, but many are not sure how to go about it. This dissertation is my demonstration of how I integrate analysis with performance. For practically every analytical point I make, I present a corresponding option for performance. I assume that the reader has extensive musical experience and possesses a full technical command of his or her instrument. I also assume a working knowledge of pitch-class set theory as well as basic tonal and post-tonal theory.
The Relation of Post-Tonal Analysis to Performance

Perspectives from Music Theory

In 1989 Wallace Berry asked the question: Does it matter whether the performer is consciously aware of the elements and processes of form and structure? His answer, with which I agree, is: yes. Many others must have likewise found this question compelling, for Berry’s book, *Musical Structure and Performance* caused a flurry of responses and indirectly turned the topic of analysis and performance into a true subdiscipline within music theory. Although Berry presented some new and interesting ideas, perhaps the book’s biggest contribution was the large number of mostly negative reactions to it that stimulated others to respond and bring forward their own views. What many objected to was his authoritarian approach. Like previous authors on the subject including, Erwin Stein (1962), Edward Cone (1968), and to a lesser extent Janet Schmalfeldt (1985), Berry put the analyst in charge—instructing the performer on the correct way to play. It was reactions against this point of view which first appeared in journals as reviews of Berry’s book that encouraged new studies and even expanded the topic in new directions.

Although still prescriptive, Schmalfeldt, in what is perhaps the most often-quoted article in Analysis and Performance Studies, attempted to give voice to the performer. The article’s scenario is a hypothetical dialogue between an analyst and performer, with the author playing

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both roles. Although the performer was allowed to offer her ideas, more often than not, she simply responded to the analysis in a somewhat deferential manner. (“I have gained a new attitude toward the closing statement (mm. 17-26) by playing the Analyst's voice-leading graphs for this passage.”) Nevertheless, it was considered novel that a performer was featured in a theory article. When Berry’s book came along, though, many felt that too much emphasis was still being placed on the analyst. Some, like Daphne Leong, believed that a performer's ideas could complement those of a theorist in the analysis of a musical work. Joel Lester and others went further to assert that performance and analysis were interdependent and that performances can both inform as well as guide analysts in their projects as well as the other way around.  

Yet others took it one step further and turned the idea upside down by focusing on analyzing performances (mostly recordings) believing that even recorded performances can both inform as well as guide analysts in their projects. Eventually, many of these scholars focused on comparative analyses of performances using sophisticated computer programs that capture data such as tempo, dynamics and articulation, and analyze them. Along with this, some turned to performance studies from the perspective of process or music as a creative practice. I do not include these types of studies in this paper.

12 See, for example, Nicholas Cook, "Between Process and Product: Music and/as Performance," Music Theory Online 7, no. 2 (2001); and Daniel G. Barolsky, "The Performer as Analyst," Music Theory Online 13, no. 1 (2007). Several major studies in these areas have more recently come out of research funded by the Arts and Humanities Research Council (AHRC) in the UK: The AHRC Research Centre for the History and Analysis of Recorded Music (CHARM), and its successor, The AHRC Research Centre for Musical Performance as Creative Practice (CMPCP).
Performers’ intuition

One of the reviews of Berry’s book, by John Rink, introduces the idea of intuition. Instead of the one-sidedness in favor of the analyst, Rink believes in a performer’s “informed intuition” as being equally valid to traditional analysis if not even more desirable, regarding performance. Rink explains by saying that “good performers rely at least in part on what I call ‘informed intuition’ (or ‘acquired intuition’), which accrues with a broad range of experience and which may exploit theoretical and analytical knowledge.” He goes on to recognize that “this term acknowledges that musicality is not innate (although the importance of talent should not be underestimated) but arises through imitation. One plays ‘musically’ when what has been learned through imitation is made one’s own.”

Rink fails to define what he means by “talent.” Perhaps so-called “talent” is the result of a particular set of coinciding conditions and circumstances: probably, a person has to be very quick to learn, there has to be a support system such as encouraging parents, and there must be a method for positive reinforcement such as an enthusiastic audience. I am sure studies have been conducted in this area, but it is beyond the scope of this paper to veer off in this direction. I agree with Rink that intuition is not an innate, divine gift. Rather, it seems to me that “intuition” is a fancy word for unexamined habit and convention, and when dealing with unfamiliar music, which contemporary music is to most performers, it can lead to erroneous associations. The performers who rely on their “acquired intuition” which is often based on a lifetime of playing the standard, common practice repertoire, can be misled when playing something completely different. I have often observed that when playing a newly composed, or unfamiliar post-tonal piece with other musicians (especially in a chamber ensemble or duo setting), their first instinct

is to look for phrases. Long before other things such as sound, ensemble, articulation, intonation, or even tempo are worked out, they have a need to find phrases and appear very unsettled until they do so. However, some music is composed without phrases. Whenever I have suggested that we might suspend the matter of phrases for the time being and let the music emerge, or study the score in more depth before making up our minds on the matter, the proposal has been met with resistance. I recently premiered a violin duo with an excellent musician. She too, immediately began to look for phrases. When I analyzed the piece, I found that the music was a process of continually evolving and expanding harmonies. Although there were some “sections” within the movements, there were no real phrases. This is one example of how relying on “acquired intuition” could lead a performer to a wrong interpretation.

I will give another example that is in more of a gray area, raising the question of stylistic pertinence of a given performer’s intuition. The violinist Rolf Schulte is known for performing the most technically complicated contemporary music. However, like most of us, his basic training consisted of standard violin repertoire. I went to play for him and discuss Carter’s Riconoscenza as part of the research for my chapter on that piece. Schulte has performed this piece many times and has also recorded it. He has additionally performed many other pieces by Carter. At one point in the piece where there are a number of large chords, Schulte said he had recently experimented with playing them from the top to bottom because the lowest notes reminded him of “a bass line, like in Bach.” Since Carter did not compose in a harmonic language in which bass lines determine harmonies the way that Bach did (Carter’s chords spell out his favored harmonies, the all-interval tetrachords, [0146] and [0137], as seen in Example 1–1), this raises an interesting issue regarding interpretive choices.
On the other hand, I do know of an example in which “informed intuition,” based on a lifetime of hearing and playing atonal music, proved to be correct. Ursula Oppens was learning Catenaires (2006) for solo piano soon after it was published. She felt that in two places there were wrong notes. However, this persistent feeling was not just based on a hunch. She also suspected from her past experience of working with Carter that he would not have written those notes in the particular ways that they appeared. Example 1–2a shows the original version of measure 40, where Oppens felt the highest note should have been a C and not an E.

Example 1–2. Misprints in Catenaires

a. Misprint in m. 40
Upon consulting the composer, it was determined that she was correct and that the E was indeed a mistake. In the other location, measure 154, shown in Example 1–2b, she felt that the first note E#, should have been C#. Again this was based on an “intuition” that it sounded wrong along with a knowledge that Carter probably would not have notated an E# like that. Carter confirmed that she was correct in this instance too, and the publisher has since fixed the errors. The corrected version of measure 154 is shown in Example 1–3. Examination of the corrected version revealed that the change to C# produces a 12-pitch aggregate, and that the first six notes form Carter’s signature all-trichord hexachord, [012478]. The particular pitch-class set, {9T1345}, is of importance to the piece as a whole as well.\footnote{See Joseph N. Straus, \textit{Twelve-Tone Music in America}, Music in the Twentieth Century (Cambridge, UK ; New York: Cambridge University Press, 2009), 53-55.} The piece is based on a “Link Chord,” named for John Link, the theorist who presented a comprehensive list these chords to Carter.\footnote{Elliott Carter, \textit{Harmony Book}, ed. Nicholas Hopkins and John F. Link (New York: Carl Fischer, 2002). 358-59.} A “Link Chord” is a 12-note series of pitches arranged by register from lowest to highest, (not by the chronological order in which they appear in the score) that contains one of every interval type between adjacent notes. Additionally, it embeds the all-trichord hexachord. This six-note chord is special because it contains one of each type of trichord.\footnote{There are twelve trichord types.}
Example 1–3. Corrected m. 154 with 12-note chord

Although measure 154 does not contain one of the “Link” chords, the “Link Chord” upon which the piece is based embeds the same form of [012478] seen in measure 154: {9T1345}. Example 1–4 shows measures eight to eleven and the “Link Chord” with {9T1345} embedded.

My conclusion, therefore, is that so-called intuition, as most people think of it, does not exist, but “informed intuition” as defined by Rink, does. However, relying on this for unfamiliar atonal music can lead to faulty outcomes. Only those who have a specialized “atonal intuition” acquired from a lifetime of exposure to modernist music, like Oppens has, can attempt to rely on it.

**Composers’ intent**

If intuition is not reliable, then how do we find artistic individuality when performing a piece of post-tonal music? Furthermore, what is the role of the performer in general? Is it faithful reproduction of every marking in the score and nothing more? Are performers simply
messengers of composers’ intent? These questions have been debated before by others, but bear consideration here in this particular context. Many performers have been told by their teachers that their duty is to convey the intent of the composer. Erich Leinsdorf wrote, “The interpreter must have the means at his disposal to grasp the composers’ intentions.”

There are a couple of problems with this assumption. First of all, how can we know what the composer wanted? The answer is that we cannot know. Even if a composer were to speak or write about a particular work of his, we often cannot put complete faith in those remarks because it is known that composers do not always like to speak about their own works, or they may not remember or even know what their exact intent was at the time of composition. Second, very interestingly, it sometimes happens that a score takes on a life of its own; the composer can have a clear musical vision about a piece, but end up liking a performer’s interpretation better than his own. One example is a recording the Manhattan Chamber Orchestra—a group I ran and played with for many years—made of Alan Hovhaness’s chamber symphony, *Mountains and Rivers Without End*. Upon hearing the recording, Hovhaness wrote a letter to our conductor, stating: “*Mountains and Rivers Without End* was a happy surprise. I like it your way. The original recording by Royal Philharmonic Orchestra of London, I conducted myself. I liked it all this time, but now I realize it was harsh. I appreciate your interpretation.” This type of reaction, in fact, happens pretty frequently. Therefore, as a performer, my fidelity is to the score and not to the composer.

As an analyst, the situation is similar. Most of us have heard of the debate of authorial intent in literature. Ethan Haimo debates the validity of Allen Forte’s use of pitch-class set

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theory to analyze Schoenberg’s atonal music since there is no evidence to suggest that 
Schoenberg himself intentionally composed with pitch-class sets. This of course directly 
confronts the question of validating not only performances but also analytical findings based on 
composers’ intentions.

Although a composer’s compositional procedures can be extremely interesting to study, 
they are not always self-explanatory; the procedures may not possess their own vocabulary with 
which to describe themselves. Pitch-class set analysis is a helpful tool for working with many 
different types of music and for illustrating certain features. It is not an analytical paradigm. 
When pitch-class set analysis is used as a way to describe combinations of intervals, it becomes 
irrelevant whether or not a composer composed with sets.

**Historical information**

If our obligation is not to the delivery of a composer’s “intention,” neither as performer 
nor as analyst, then perhaps we might consider historical information to help inform our 
interpretations. By “historical information,” I do not mean historical performance practice, which 
is indeed important and informs us on the way music was played in its historical context. Instead, 
I mean historical information surrounding a particular piece.

It is common for young students to think that if they concentrate intently on a particular 
piece of historical information they will somehow play the piece “correctly.” I had a young 
violin student who learned that Mozart’s E Minor Violin Sonata, K. 304, was written soon after 
the death of the composer’s mother. He thought that this knowledge would cause him to 
automatically play the music “correctly” if he simply focused all his attention on what it might 
be like if his own mother died.

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Musicologist Robert Levin has a similar belief concerning the A Minor Piano Sonata, K. 310, which was also written soon after Mozart’s mother’s death. Levin talks about “the wildness of the A minor Sonata which lashes out in a kind of rage of impotence… one imagines the fists really striking the instrument.” Levin’s method of playing the opening of the piece is to play the chords in the left hand quite forcefully. He admits, “I know many people play this piece in a much more civilized fashion,” but goes on to state that “there is something absolutely psychotic about this piece.” Although there is nothing marked in the score that indicates that it is to be played in a “psychotic” manner, with one’s fists “striking the instrument” (see Example 1–5). Levin’s interpretation is influenced by his historical knowledge. Emotions may be variously expressed, and Levin’s interpretation represents a class of observations that can lead to wonderful results. However, the focus of my particular study is based on fidelity to the score and not the composer’s intent or historical knowledge surrounding the creation of a work.

Example 1–5. Mm. 1—2 of Mozart’s Sonata in A minor, K. 310

Integrating analysis and performance

Although I consider some type of analysis to be a part of the preparation process for performance—just as practice is—many people see analysis and performance as two separate activities. Nicholas Cook concludes that there is a fundamental “incommensurability” between

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20 Francesca Kemp, *Mozart, Great Composers* (West Long Branch, NJ: Kultur, 2006), Video, KUL D1832
the two activities. Jonathan Dunsby writes, “understanding and trying to explain musical structure is not the same kind of activity as understanding and communicating music. There is a genuine overlap between these poles of activity, but it cannot be a complete overlap.”

Recently, I have communicated with a number of doctoral candidates who are interested in combining analysis with performance. Most of them complete their analysis and then ask: how do I now derive suggestions for performance from my analysis?

Berry was intent on finding ways that structural details uncovered by analysis could be illuminated in performance. In his preface, he asserted that “this book asks how, in very precise terms and carefully defined circumstances, a structural relation exposed in analysis can be illuminated in the inflections of edifying performance.” This statement assumes a direct, one-to-one mapping of analytical findings to performance techniques. It does not take into consideration any form of interpretation, although Berry admits that he assumes “intuitive cognitions of experience.” As with analysis of tonal music, the mere identification of different harmonic functions or formal sections (I realize I am over simplifying here) may be revealing, but it is usually insufficient to draw upon directly to form an interpretation. Many of us who are engaged in music studies have heard performances where the performer seems to be trying in earnest to “bring out” certain structural features, as if saying, “here is the second theme.” The result is often a performance that sounds contrived. And what is the point of announcing that one knows what the structural components are, if the announcement itself does not fulfill some musical purpose? What is more, “intuitive cognitions of experience,” sounds similar to Rink’s

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23 Berry, Musical Structure and Performance: x.
“informed intuition” which, as I have already stated, may not be aptly applied to structurally unfamiliar, atonal music.

**Play the interpretation, not the analysis**

I believe that in between the acts of analysis and performance there must be a place for interpretation, and that as performers we have to play the interpretation, not the analysis (I discuss this more later). The question is, how do we arrive at the interpretation? There are some people who will offer an interpretation of their analysis by putting it in dramatic terms. For example, Janet Schmalfeldt interprets Beethoven’s Bagatelle, Op. 126, No. 2 in terms of a battle between two musical ideas:

At the upbeat to m. 17 the rivalry begins. Within the alternation scheme, it is the basic idea's turn to be heard… I suggest that here we have a courageous effort to maintain a position of strength. But the effort fails. For now, as if undaunted, the quiet eighth-note contrasting legato idea simply "reaches over" and completes an expansive ten-measure phrase; thus the contrasting idea gives the strong impression of having gained the upper hand.24

While this offers insight into what is taking place analytically, I reckon that scarcely a performer would know how to “play” this narrative. It must be translated further into a format that can be heard.

Bethany Loewe wrote about interpretation as affecting both analysis and performance. She proposed a three-way model in which interpretation was an intermediary step between analysis and performance. Figure 1–1 reproduces her diagram of this relationship.25

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Notice that the arrows point in both directions, representing her view that interpretation affects and informs both performance and analysis, and vice versa, but analysis and performance do not directly interact. Like Rink’s “informed intuition,” Loewe believes that “interpretation” is influenced by a person’s experiences. However, she believes that even a person’s daily activities can affect interpretation and therefore change the analysis and performance as well. The difference between the two concepts seems to be that Rink’s intuition is transferable from one piece to another rather than being fixed on the understanding of a particular work, and therefore describes an attribute of a person rather than a piece.

**The four-step process**

Although Loewe takes interpretation into account, I feel that the three-way model does not go far enough to explain everything that must occur in order to effectively use analysis to inform performance. Expanding on her idea, I propose a four-step process, represented by Figure 1–2. I see analysis and performance as both being creative acts of interpretation. One is not scientific and the other solely artistic. Although their interpretations are expressed by different means—verbal expression vs. musical performance—I would like to acknowledge what I see as their parallel and equal importance by including two interpretive steps, the interpretation of the analysis (IA) and the interpretation for performance (IP), thereby suggesting a more thorough
and fluid account of the interrelationships among the stages of analysis, interpretation, and performance.

Figure 1–2. Four-step diagram of the relationship between Analysis and Performance

During the initial stages of learning a piece, there may not be much interchange between the steps, and the process might simply proceed clockwise from analysis (A) to performance (P). A detailed Analysis can be thought of as a kind of deconstruction in which we are in a sense doing what the composer did, in reverse. As part of this process we would likely label or describe our findings in technical terms. This leads one to then create an interpretation of the analysis (IA). The first, deconstruction, step leads us to mentally reconstruct the music and apply a meaning, or purpose to the analytical information. This is the stage Schmalfeldt was in when she conceived of her dramatic analysis of the Bagatelle. The IA does not necessarily have to be a dramatic narrative. The IA might point out “phrase” boundaries, arrival points, or corresponding motives in various places throughout a piece. Generally, the IA is not playable as is. One must translate it into something that can be heard. This translation process is the interpretation for performance (IP). The IP may include elements such as tempo, dynamics, articulation, etc., that
will be used to convey the IA. It might also contain words that describe emotions or moods, such as “timid,” “melancholy,” or “heroic,” that one can imagine playing and hearing. Continuing clockwise around the model, the final step in this process is the realization, or performance (P) of the IP interpretation. This is when one conceives of the technical means for conveying one’s interpretation such as, bow strokes, fingerings, vibrato, etc.

However, as one becomes more familiar with a piece, the process becomes much more fluid, with each step possessing the capability of affecting adjacent ones, as indicated by the bi-directional arrows shown in the diagram. A performer’s (IP) will undoubtedly become more refined and this can influence the IA, and vice versa. Additionally, over time, the analysis itself will evolve and one will gain deeper analytical insight into the piece. Although an analysis is unlikely to directly influence performance without undergoing the interpretive processes, there are times when a performance may trigger an analytical revelation. In such cases, the performance directly influences the analysis, as indicated by the unidirectional arrow from (P) to (A). In my own case, after becoming familiar with *Melismata*, playing it led me to recognize certain reoccurring intervals and pitches which informed my analysis and in turn led to findings that enabled me to assign expressive qualities to certain gestures and combinations of pitches.

The purpose of this study is to demonstrate a method for incorporating analysis into the process of developing an interpretation for performance. To that end, I have found that the four-step model shown in Figure 1–2 is an effective practice that can influence playing, down to the minute details. If the analyst/performer cannot arrive at an IA and IP from his or her analysis, then what is often needed is better analysis. Even the most seemingly abstract theoretical concepts can potentially have bearing on performance of modernist music, and the four-step process outlined above can provide a method for exploring this idea.
CASE STUDY ONE

Élégie for Solo Viola or Violin by Igor Stravinsky

How often it is just they [performers] that determine the impression made on the listener and decide the very success of the piece! Naturally the public does not understand, and judges the piece by the way in which it is presented. Composers may well envy the lot of painters, sculptors, and writers, who communicate directly with their public without having recourse to intermediaries.

–Igor Stravinsky

I. Introduction

The intimate Élégie by Stravinsky is an understated gem of the solo violin and viola repertoire. This short, single-movement work was composed during the latter part of 1944 at the request of Germain Prévost, violist of the Pro Arte Quartet whose founder and leader, Alphonse Onnou, had died in 1940. The first performance took place at the Library of Congress on January 26, 1945 in a concert given by the Pro Arte Quartet in memory of Onnou.

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2 Throughout this chapter I refer to the violin version. Although originally conceived as a piece for solo viola, it is clear that a violin version, which was suggested by the violinist Sol Babitz, was planned early on. Manuscripts of both versions preserved in the Library of Congress bear the inscription in pencil, “Gift, Igor Strawinsky, Dec. 22, 1944,” the date of which is more than a month prior to the D.C. concert. The manuscripts also reveal that special attention was paid to the violin version as its manuscript contains many more and in some places different and more difficult fingerings than the viola version. What is more, Stravinsky’s notes to the performer appear in the violin manuscript only.
The inclusion of this work alongside those by Carter and Babbitt may at first seem inapposite, as its diatonic sound and use of traditional forms convey a commonality with traditional, tonal music that both performers and listeners will readily grasp. However, within this seemingly familiar aura is a complete absence of traditional, functional, tonal harmony. An analysis of the piece along with an examination of several other works by Stravinsky reveals a harmonic/melodic structure and an expressive musical symbolism that are very much Stravinsky's own. In addition to providing insight for interpretation in performance, these findings raise the question of where to draw the line between recognition of a pervasive, implicit tonal presence and a non-tonal interpretation of this music based on pitch centricity, intervals, inversional symmetry, and referential collections. What is unquestionable is that the mere presence in Élégie of both the non-tonal elements and the “semblance of tonality” (Arthur Berger's term), mandates that the performance implications of both be considered. In fact, all of the above-mentioned elements impact performance in some way, and in this chapter I will focus on some ways that (1) voice-leading conceived in tonality steers the music from one phrase or idea to the next; (2) expressive symbolism provides insight for interpretation of larger sections; (3) the non-tonal harmonic/melodic construction creates unity from the large-scale form down to the molecular, trichordal level; and (4) Stravinsky's “borrowing” from musical traditions of the past serves as a guide for general matters of style.

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II. The Old: Borrowing and Style

Background

The practice of “borrowing,” which Stravinsky employed throughout his career, has been extensively discussed, from Russian folk tunes in his early works, to conventions of the common practice period in his neoclassical compositions, to the music and techniques of Schoenberg, Webern, and Krenek in his later, serial period. Among the numerous authors on the subject, there is a general consensus that Stravinsky’s predilection for incorporating preexisting material represents neither a simple laziness nor a perverse delight in using purloined material (his “rare form of kleptomania”), but rather a fascination with recomposition and transformation, or as described by Pieter van den Toorn, “accommodation and appropriation, the ‘making his own.’” In Élégie, the appropriation is not a literal one in the way that it is in Stravinsky’s usage of Tchaikovsky’s melodies for Le baiser de la fée (The Fairy's Kiss), music attributed to Pergolesi for Pulcinella, or the “Happy Birthday to You” song for Greeting Prelude. Instead, it is a more general and conceptual one that alludes to styles and forms of several older musical traditions which are fused together in a seemingly random and idiosyncratic way.

Bach and chant

This more general appropriation in Élégie is most evident in the overall sound and form; the piece is almost entirely diatonic and is in a traditional, three-part, ABA form. The A section is hymn-like and flowing. At times it sounds truly polyphonic while at other times the steady and

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5 van den Toorn, The Music of Igor Stravinsky: 256. “Rare form of kleptomania” and “making his own” refer to Stravinsky's often-quoted response to the question of why he never became a teacher: “My instinct is to recompose, and not only students' works, but old masters' as well… Whatever interests me, whatever I love, I wish to make my own (I am probably describing a rare form of kleptomania).” Igor Stravinsky and Robert Craft, Memories and Commentaries (London: Faber & Faber London, 1981). 110.
mostly continuous eighth notes in the lower voice suggest melody-accompaniment style. The middle B section is a fugue in two voices. Stravinsky’s fugue is not strict in terms of rhythm—the subject’s rhythm is slightly altered each time it occurs—but in terms of pitch, with the exception of the final answer, each appearance of the subject is an exact transposition of the initial statement. The contrapuntal writing certainly alludes to the music of Bach, as the A section can be likened to a prelude while the middle fugue section unavoidably brings to mind the fugues of the solo violin sonatas.

At the same time, the A section can also be thought of as being chant-like, albeit as a combination of Gregorian conception and Stravinskyan innovation. In a remark about the opening church scene of *The Flood*, Stravinsky defines this particular amalgamation as, “not Gregorian but Igorian chant.” Notable allusions to chant in *Élégie* include the lack of a time signature throughout, bar lines that demarcate varied metrical groupings and lengths of measures, and the use of apostrophes (breath marks) to indicate phrases, not unlike in Gregorian chant.

**Meter and tempo variance**

The chant-like features have implications for performance with regard to tempo, rhythm, and meter. Although Stravinsky has provided a tempo indication (eighth-note equals 56), the absence of a consistent meter implies that the performer may exercise some freedom when it comes to tempo as well as rhythm, not only in between sections and phrases, but also within them. The extent of the liberties a performer might take, however, are tempered by the piece's mood. Since the entire piece is marked *piano* and the violin is muted throughout (not to mention that the piece’s inspiration is death), the mood is somber, not passionate or rhapsodic, and therefore, extreme rubato (as well as dynamic surges) would be out of character. Nonetheless, because of the free meter and assorted lengths of the measures, the music can be viewed as having a more than slightly improvisatory feel, and if—bearing in mind that the music is a

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collage of time periods and styles—we adopt some earlier, historical performance conventions, then a certain amount of rhythmic freedom as well as tempo variance is expected.7

A performer who agrees with this view would not strive to establish a sense of regularity with regard to pulse, accentuation, or phrase length. Additionally, following the chant model, the phrases indicated by the apostrophes would naturally be played as discrete statements, with the breath marks approximating caesuras within stanzas of text. Stravinsky himself appears to support this approach by writing in his notes to the performer in the score: “Except where the breathing mark appears, all bow changes are sostenuto.” This implies that while the notes in between the breath marks are to be sostenuto and project continuous sound, a pause by the bow (and therefore a pause in sound), is expected at each apostrophe. Interestingly, during the premiere performance Prévost plays the lower voice’s accompanying eighth notes with an unremitting regularity that completely disregards the breath marks. In fact, Prévost's eighth notes march on with such homogeneity that the melody, harmony, and rhythmic variations in the upper voice all become subordinate to the metronomic pulse. The musical result is one of a plodding dirge, rather than a poignant lament.8

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8 The recording is available at the Library of Congress. See Quatuor Pro Arte. et al., [Library of Congress Music Division Concert, 1945-01-26]. As previously mentioned, the composer's directions regarding the breath marks appear in the violin manuscript version only, not in the viola version. The directions appear in the published versions for both instruments. Another point of interest is that Prévost repeats the A section and takes the second ending, which is in fact the conclusion of the entire piece, before going on to the fugue. The reason for this is that, unlike the published version of the piece in which the return of the A section is completely written out, the manuscript version now held at the library of Congress, which is almost certainly Stravinsky's fair copy and likely the copy that Prévost used for his first performance, shows the A section written only once, with a first and second ending but without a repeat sign after the first. A repeat sign appears at the end of the B section, and is marked “Da capo all' FINE.”


Vibrato

The allusions to both chant and Bach also suggest that vibrato be employed sparingly in order to preserve the somber mood as well as to emulate the Baroque and Classical performance traditions which treated vibrato as a type of ornament or discretionary, expressive device. What is more, it appears that Stravinsky himself preferred a pure, unadorned, melodic sound without continuous vibrato. In much of his writing for string instruments there are frequent explicit indications of open strings which preclude the use of vibrato. On some occasions Stravinsky even specifies the usage and treatment of vibrato. In the violin solo at the end of the “Pas de deux: Firebird and Ivan Tsarevich” from the 1945 version of the Firebird Suite (one of the new movements inserted between the first and second movements of the 1919 suite), Stravinsky writes, “non vibrato.” On the other hand, in Apollo, there are two places in Apollo's first variation where he requests vibrato from the solo violin. In one instance (measure 15) he illustrates how to produce a sympathetic vibrato while playing an open string, and at Rehearsal 22 the word “vibrato” appears in the solo violin part only, as shown in Example 2–1. Since these directions do not appear in the other string parts, one may conclude that Stravinsky is treating the vibrato in the solo violin as a selective, expressive device.
Example 2–1. Vibrato indications in *Apollo*

a. M. 15

\[ \text{Example 2–1a} \]

b. R. 22

\[ \text{Example 2–1b} \]

I do not mean to suggest that a performer of *Élégie* should forego vibrato altogether based on the absence of any explicit indications for it in the score. To do this would be just as erroneous as subscribing to the fallacy that “historically authentic” Baroque and Classical performance practice dictates that no vibrato be used at all. The truth of the matter is that at no time in the history of the violin as a concert instrument was vibrato not used to some extent. An additional factor which might influence a performer's thinking about vibrato is the marking “*tranquilo cantabile*” at the beginning of the piece. There are those who equate expressive indications such as *cantabile* and *espressivo* with a directive to use vibrato. Regardless of the presence of the word *cantabile*, the proliferation of open strings in the first four measures of *Élégie* makes it impossible to use more than the smallest amount of vibrato in the opening. While the use of more vibrato is physically possible in the second part of the A section due to the absence of open strings (except for the G), abstaining from vibrato on the perfect intervals would

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result in a more pure, chant-like sound. Therefore, what I do mean to suggest is that when performing any piece of music, one should always ask the questions: (1) when to use vibrato; (2) what kind of vibrato to use for different types of music; and (3) what kind of vibrato to use for different parts of a single piece. In the case of Élégie, the answers to these questions may be found in the styles of the past from which Stravinsky has borrowed, along with his own unique practices when writing for strings.

**Counterpoint determines fingerings**

Fingering is another area that may be considered to be affected by the borrowing because it is largely determined by the counterpoint. In his notes to the performer in the score, Stravinsky writes, “The fingerings have been chosen with a view to underlining the counterpoint, and not for technical facility.” Indeed, the fingerings provided in the score are unconventional and difficult to execute. Biographer Stephen Walsh, in describing Prévost's premiere performance, remarks that “the whole work strained his technical resources.”\(^{10}\) A review of the piece written in 1946 points out that “throughout it employs considerable double-stopping, and though carefully edited to outline the contrapuntal writing, its intonation problems are such as to make it inaccessible to the amateur.”\(^{11}\) At the heart of these “intonation problems” are the unconventional fingerings. Although all of the manuscript versions in the Library of Congress contain fingerings written in Stravinsky's handwriting, they may have been provided by Sol Babitz, a Hollywood studio violinist who suggested the violin version of Élégie.\(^{12}\) Babitz often edited string parts for Stravinsky and also wrote a book about unconventional violin fingerings.

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around the same time that Élégie was composed.\textsuperscript{13} The fingerings in Élégie are designed to maintain two lines of continuous sound. To accomplish this, use of the same finger on consecutive notes is avoided, especially in situations that would ordinarily require lifting the finger to move it to a different string. Consequently, there are many finger contractions and extensions which do not conform to the customary rule that intervals of seconds, fourths, and sixths are to be played by adjacent fingers, and thirds and sevenths by every other finger (0 and 2, 1 and 3, and 2 and 4). Some examples of finger contractions are circled in Example 2–2.

Example 2–2. Finger contractions

Measures seven and ten contain a perfect fourth, D-G, played with the second and fourth fingers. Normally, this would be played with adjacent fingers, in this case the second and third, because the intervallic distance between the fingers (not the distance between pitches), is a whole tone.\textsuperscript{14} The printed fingering is difficult because the third finger, which is used immediately beforehand on the Ab, blocks the fourth finger's approach to the G string. This is precisely the passage that most severely derailed Prévost's premiere performance. A similar problem exists in measures


\textsuperscript{14} When playing melodic intervals on a single string, the distance between fingers is the same as the distance between pitches. However, when playing either double stops or melodic intervals on two adjacent strings, the distance between fingers is not the same as the distance between the pitches because of the perfect fifth relation between strings. When playing double stops, the distance between fingers is calculated by subtracting the pitch interval from 7.
eight and twelve where the minor thirds, D-F and C-E♭ respectively, which ordinarily would be played with the first and third fingers, are to be played with the first and fourth. In measure 11, the fingerings avoid using the first finger on consecutive notes by descending into half position. Even more challenging than the perfect fourths in measures seven and ten is the use of the same fingering, 2 and 4, to play an augmented fourth, E♭ – A, as seen in Example 2–3a. A tritone is usually played by adjacent fingers and is already a tight configuration because the distance between fingers is only a semitone. In this example, at measure 32, the performer once again encounters the obstacle of the third finger already in use (for the B♭), stuck in between the second and fourth fingers. I find this impossible to do, even with small hands. The solution I employ,

Example 2–3. Fingerings for augmented fourth

a. Printed fingering

![Printed fingering](image1)

b. Alternative fingering

![Alternative fingering](image2)

shown in brackets in Example 2–3b, calls for rocking the third finger from the E string to the A without lifting it. In Example 2–4, a finger extension is used to avoid lifting a finger. While the first finger plays the note A on the D string, the second finger extends to play a G on the A
string. Customarily, this minor seventh would be played with the first and third fingers. This unusual fingering is employed to facilitate playing the C in the lower voice two notes later without changing position or having to raise a finger.

**Example 2–4. Extension fingering**

The prevalence of perfect fifths throughout the piece also creates a difficulty if one wants to avoid lifting a finger to place it on a different string. In measure 39 I propose an alternate way, shown in brackets in Example 2–5, to execute the perfect fifth, E♯-B♯. Stravinsky (or Babitz) has indicated the standard method of using one finger to cover both strings. However, taking into account the concept of not lifting fingers, I have found that this can be played without a lift by holding the third finger on the sustained B♯ and using the second finger to play the lower E♯. This is accomplished by sliding from the D♯ to the E and while doing so, slightly pushing the A string upward toward the D to make room for both fingers. This technique produces a very clear perfect
fifth played by two fingers. Even though this procedure was not printed in the music, it is strongly suggested by the principle behind the piece's unconventional fingerings. In conclusion, it is not absolutely necessary to adhere to all of the printed fingerings merely for the sake of faithful observance of the printed page. It is advisable, however, when altering fingerings, to faithfully observe the intent of maintaining two unbroken lines of music.

Melodic violin

The use of the violin as a traditional, melodic instrument might also be considered a borrowed element, as Élégie's long, legato lines are uncharacteristic of Stravinsky's usual string writing. In his earlier pieces that prominently feature the violin, namely Three Pieces for string quartet (1914) and L'Histoire du Soldat (1918), one senses almost a hostility toward the very nature of string instruments in Stravinsky’s mechanical treatment of them. In these earlier pieces, as well as in the violin parts of his orchestral works, Stravinsky favored percussive and other sound effects such as harmonics, over a more conventional, singing tone.

Apollo (1928), the first neoclassical work to use strings (apart from Mavra and Oedipus Rex which utilize a full orchestra), was a turning point in Stravinsky’s approach toward string instruments. It allowed them to take a more melodic role and even included a florid violin cadenza that opens the second scene (Apollo’s first variation). Stravinsky admitted, “Apollo was my largest single step toward a long-line polyphonic style, and though it has a harmonic and melodic, above all an intervallic, character of its own, it nourished many later works as well.”15 However, even in Apollo and even, in fact, in the concert works written for violinist Samuel Dushkin during the early 1930s, frequent use of harmonics, ricochet and other bounced bowings, accented consecutive down bows, pizzicato, and short and dry chords—effects and techniques

15 Igor Stravinsky and Robert Craft, Dialogues (Berkeley: University of California Press, 1982). 34.
that go back to the Firebird—still appears. In contrast, Élégie makes use of none of these. Perhaps the only remnant of that atmosphere is the mute which is applied throughout.

**Absence of other typical elements**

In addition to the lack of percussive effects and harmonics, there are other typical Stravinskian features which are seemingly absent. These include devices such as rhythmic displacement, harmonic misalignment, ostinato, superimposition, and what has been variously referred to as “block juxtaposition,” “abrupt cuts,” “disjointed repetition,” and “montage.” Although many of these features are typically associated with the earlier Russian period works, they continue to persist, although in a modified, gentler form, into the neoclassical period as well. Van den Toorn describes this modification as a “breakdown of the rigid block structure…or, more generally, a tendency, in the juxtaposition of heterogeneous blocks of material, to become less abrupt, rigid, or ‘heterogeneous’ in an effort to accommodate the Baroque and Classical forms.” In fact, in Élégie the block device appears with such subtlety (I discuss this later) that it could possibly go unnoticed. The absence of the overt “rigid block structure” calls more attention to the Baroque and chant models and supports a stylistic approach for performance—encompassing tempo variance, phrase and metric groupings, vibrato, fingerings, and a melodic character—that takes those models into consideration.

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16 The works written for Dushkin include the violin Concerto in D (1931), Duo Concertante for violin and piano (1932), and the transcriptions: Divertimento (1934) from the Fairy’s Kiss, and Suite Italienne (1932) from Pulcinella, among others.
III. The Old: Insinuations of Tonality

Diatonicism

Much of the “familiar aura” associated with Stravinsky’s neoclassical music is due to the prevalence of diatonicism. Although, as I discuss later, Élégie is not entirely diatonic, it is this recognizable sonority that grabs the listener from the outset and makes the music more accessible—than, perhaps, the non-diatonic music of Babbitt or Carter—to both listeners and players. However, in 1927 Stravinsky issued a “Warning” against quick judgments based on just such an initial, superficial impression:

There is much talk nowadays of a reversion to classicism, and works believed to have been composed under the influence of so-called classical models are labeled neo-classic…With works that are worthy of attention, and have been written under the obvious influence of the music of the past, does not the matter consist rather in a quest that probes deeper than a mere imitation of the so-called classical idiom? I fear that the bulk of the public, and also the critics, are content with recording superficial impressions created by the use of certain technical devices which were current in so-called classical music.19

Commenting on this statement, Berger addresses diatonicism specifically and goes so far as to state that “nothing is more revealing as to our ignorance of what really constitutes his [Stravinsky’s] neo-classicism than the notion that diatonicism defines it.”20 The diatonicism, though, gives us an opportunity to examine the music from a tonal perspective and perhaps one

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of the analyst-performer’s tasks is to consider how this particular technical device functions in relation to Stravinsky’s non-tonal compositional procedures.

**Impression of “G minor”**

One quality of the device in question—namely, the diatonic collection—is that it offers multiple possibilities for both tonal and non-tonal engagements depending on the referential order of the pitch-class content.\(^1\) One possibility is that it can represent, or merely insinuate, major and minor keys. Despite the key signature of three flats, the first four measures of Élégie, shown in Example 2–6a, do not contain an A♭. Instead, the measures contain all of the pc that constitute G minor. (Beginning in measure five, the three flats are utilized as G Phrygian, which I discuss later.) These opening measures may further give the impression of being in the key of G minor because, as visible in Example 2–6a and delineated in Example 2–6b, with the exception of measure three, the lower voice’s accompanying eighth notes arpeggiate a G minor seventh chord. (For the present discussion I will exclude measure three as I treat it as an insertion of contrasting material, an example of the subtle block device mentioned earlier and which I will discuss in greater detail later on in this chapter.)

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\(^1\) See Ethan Haimo, "Problems of Hierarchy in Stravinsky's Octet," in *Stravinsky Retrospectives* (Lincoln: University of Nebraska, 1987), 44.: “Given one diatonic collection, there are conceivably seven possible tonics and thus seven potential referential orderings, each with a characteristic and unique interval ordering.”
Example 2–6. Implied G minor in measures 1–4

a. G minor collection in mm. 1–4

b. G minor harmonic framework

c. Support of the fifth, D to G

The prevalence of D in the lower voice reinforces the G minor impression by providing an allusion to its fifth. However, in tonal music, a key is customarily established by authentic cadence and nowhere in this opening, nor in fact in the entire piece, is one to be found. As shown in Example 2–6c, the last D in measure four does pave the way for the G in measure five, but not by way of a conventional harmonic progression. Also contributing to the impression of G minor is the B♭ in the upper voice, over G in the lower one, in the first measure. But the B♭–A in the
melodic line has an appoggiatura feel and the ensuing persistence of A conveys the melody as being a prolongation of A, a non-harmonic tone in the key of G minor. The persistence of A imparts a subtle clash against the lower voice’s G and diminishes B-flat’s role in supporting G minor. Further diminishing that role and weakening the case for G minor is the B-natural that appears under the G in measure five (see Example 2–6c), which introduces a major-inflected quality. One may conclude that the section is centered on pitch-class G, but that the tonality is neither minor nor major.

Nevertheless, performers who are convinced by the insinuations of “G minor” may make interpretive choices that focus on the features that suggest that tonality. An example of this is Prevost’s performance which emphasizes the G minor impression due to the rhythmic regularity with which he plays the accompaniment figure in the lower voice. The resulting musical effect is one of a stable, “G minor” harmonic base with incidental spasms perched on top. On the other hand, a performer who recognizes the “deception” may wish to explore a variety of non-tonal possibilities such as the clash of A against G, lack of resolution, and major-minor ambiguity. These can be projected by (1) stressing and prolonging the dyad G–A in the first measure before playing the lower voice’s remaining eighth-notes, D–B♭–D, more steadily and quietly; slightly emphasizing and prolonging the open G, the third of the lower voice’s eighth-notes in the second measure; (2) once again sustaining the A in the upper voice in measure four, but this time also giving special attention to the last eighth-note in the lower voice, D, allowing plenty of time for it to create the illusion of a functional fifth, with the expectation of resolution; and (3) moving without delay from the G to B-natural in measure five and then hesitating on the unexpected G majorish double-stop, to create ambiguity.
Possibility of Eb major

Regardless of how convincing the insinuation of “G minor” may have been, it evaporates after the introductory four measures when, beginning in measure five, Stravinsky for the most part complies with the key signature of three flats that can represent, among other things, Eb major. A figure (Example 2–7a) that appears in the second half of measure five as well as in measure eight, offers a subtle demonstration of another way in which a single diatonic collection can behave in different ways depending on the referential order of the pc. The figure in Example 2–7a appears to suggest something tonal in the key of Eb major possessing the potential for a cadence in that key. The expected tonal resolution is shown in Example 2–7b. However, this

Example 2–7. Suggestion of Eb

a. Implied harmonic progression toward Eb

b. Expected resolution

c. Actual music: lack of resolution
scenario does not materialize in the music. What happens in actuality, as seen in Example 2–7c, is unexpected, but the surprise is not entirely due to the music’s failure to establish E♭ major as the tonality. In fact, there is very little in this section that convincingly implies E♭ major. Except for a passing appearance in measure three, the pitch-class E♭ is withheld until measure 11, near the end of the A section. What is aurally more compelling is that the G-centricity established in the first four measures has been maintained despite the change in pc collection. Here the referential order of the pc content is predominantly G Phrygian rather than E♭ major and throughout this section the sound is more modal than tonal. To the same extent that one might expect to hear the E♭ major resolution proposed in Example 2–7b, one might also expect to hear a G minor-inflected sound. Just as was the case in measure five, the real surprise is the appearance of B-natural which is a denial of both the E♭ major and G minor possibilities. However, the G major-inflection afforded by the B-natural is immediately cast in doubt by the next double-stop, D–B♭, which creates an ambiguous, major-minor atmosphere. These localized harmonic ploys contribute to the music’s unique, unpredictable quality, but do not function on a large-scale, structure-defining level.

In performance, these tactics, including the possibility of E♭, the denial of resolution, the surprise of the unanticipated B-natural, and the tonal ambiguity that results can be explored by (1) playing the figure shown in Example 2–7a (in both measures five and eight) deliberately, as if going to E♭; slightly prolonging the fifth, B♭–F, prior to the phrase mark to create expectation; (2) initiating the B♭–G in measures six and nine hesitantly from the tip of the bow; and (3) asserting the D–B♭ more solidly.
Local tendency tones and voice-leading

While Stravinsky plays with tonal conventions within a single diatonic collection by manipulating notes to suggest more than one “tonality” and create expectations (and subsequently deny their fulfillment), when moving from one collection to another, Stravinsky often uses tendency tones and voice-leading derived from tonality to steer the music to its destination. Within the fugal B section there are six subsections, each one of which is made up of a different pc collection and is in a different area of pitch-centricity. The initial statement of the fugue subject begins on the pitch G and asserts a G Phrygian impression. It is given a real answer at the fourth, beginning on C and primarily in C Phrygian. The last few notes of the subject, shown in Example 2–8a, occupy two registers which imply two voices—a virtual counterpoint—within the subject itself. These implied voices lead us, via tendency tones and a suggestion of a harmonic motion rooted in tonality, to C. The entrance of the “legitimate” counterpoint in measure 21 with F–E♭ in the lower voice supplies the suggested “resolution” and creates a momentary impression of a modulation to “C minor.” Example 2–8b represents this tonal interpretation. But a further examination that includes the few notes occurring before and after this “modulatory” maneuver, shown in Example 2–8c, reveals that the function is extremely localized. Almost immediately after arriving on C, the harmonic direction appears to reverse and the inkling of a tonal connection soon evaporates. Nevertheless, despite that the counterpoint never harmonically supports the “modulatory” function, throughout the B section this detail of the subject effectively steers the music from one area to the next.

22 As noted earlier, the “real answer” is in terms of pitch content only and not rhythm.
Example 2–8. Impression of “modulation” to “c minor,” built into subject, m. 20

a. End of fugue subject

![Image of musical notation]

b. Implied voice-leading and harmonic resolution

![Image of musical notation]

Cm: vii i

c. Enlarged excerpt shows function is localized

![Image of musical notation]

The subject is not the only material to use tonally-derived tendency tones and voice-leading to transition from one section to another. Like most fugues, the B section of Élégie contains counterpoint episodes. They are placed where one would expect them: the first occurs after both voices have stated the subject, and the second appears after the middle entry statement. In one of the episodes, the ending of which is shown in Example 2–9, a tritone is used to lead the ear to an apparent resolution and subject entry in “F major.” However, F major shares the same pc collection as A Phrygian which is the actual referential order of the upcoming material. In this case, Stravinsky makes use of both the dual-tonality diatonic property and the contextual voice-leading device to “modulate” to a new diatonic collection and area of pitch-centricity.
Example 2–9. Tritone resolution, mm. 39–40

In the other, earlier episode, Stravinsky moves from an area beginning on F to a subject entry on D by voice-leading in the upper line which forms a melodic sequence, as shown in Example 2–10. The sequence creates upper and lower leading tones to D, by the first notes of

Example 2–10. Melodic sequence in upper voice, mm. 27–29

Each measure, and by the descending eighth notes, respectively. Although the lower voice does not participate in or harmonically support this motion, the descending melodic line is sufficient to lead our ear to the D on which the subject enters. The pause before the D heightens the listener’s expectation and makes the D sound like a tonally legitimate arrival.
In performance, this episode can be treated like any other, more traditional, sequential passage whose function is to go from one place to another. The purpose of such music is to “travel,” and therefore, it is desirable to keep the line moving without highlighting or pausing on individual details along the way. The goal of this episode is the last dyad, D–C#, which, with the aid of the crescendo and the pause, leads to the D that begins the next section.

IV. The New: Non-tonal Views of Pitch Organization

The previous section examined ways that Stravinsky used devices derived from tonality to produce local effects within an overall non-tonal agenda. In this section, I will consider some non-tonal views of the pitch organization in an effort to explain more global aspects of the piece.

Bi-quintal model

We previously determined that the A section was centered on pitch-class G, but that it contained two different pitch collections: the two flats collection approximating G minor in measures 1–4; and the three flats collection, appearing as predominantly G Phrygian, in measures 5–9. My use of the words “approximating” and “predominantly” reflects the circumstance that the “G minor” collection does not behave like a traditional, tonal key, and the “G Phrygian” collection, while projecting a modal inflection, is a bit muddied by the presence of B-natural. Clearly, relying on the scalar/collection approach to explain this section of the piece is not entirely satisfactory. One system for analyzing this section and reconciling these issues is the bi-quintal theory, proposed by Joseph Straus. Straus maintains that the vast majority of Stravinsky’s music, throughout his career and spanning all styles, can be shown to consist of
“two structural [perfect] fifths separated by some interval.” A structural fifth is simply a rather narrow pitch range, an outer shell, inside of which all the other notes reside. Typically, one of the perfect fifths is applied harmonically and the other is disposed as a perfect fourth and filled in melodically. According to Straus, both fifths may be variously filled in, therefore the pitch collections may change or may not fit any known collection. Furthermore, Straus asserts that the outward quality of the music is less influenced by the fill (i.e., the particular pitch collection), than by the distance between the two structural fifths. This perspective assuages those who are uneasy about applying established labels to music that does not strictly conform to conventional norms.

The melody-accompaniment style of the A section makes it easy to see what those structural fifths are. Straus says that “a harmonic fifth is occasionally not only filled in as a triad but also further elaborated as a seventh chord.” In the beginning of Élégie, shown in Example 2–11a, the harmonic fifth is G–D. It is filled in with B♭, and the F is an extension of the triad. The melodic span, a perfect fourth A–D, is shown in Example 2–11b. It is filled in as a Phrygian tetrachord. Because the two structural fifths, G–D and D–A (the melodic fifth is deployed in descending order as a perfect fourth), are separated by a distance of five semitones, Straus classifies this combination as “Model 5.” When joined together, a pair of structural fifths form what Straus calls a “harmonic axis.” In this case, D–G–A–D forms a [027] trichord, a sonority that is oriented toward perfect fourths/fifths. Straus observes that for this reason, Model 5 usually

24 Ibid.
25 Ibid. This term was introduced in Joseph N. Straus, "Stravinsky's Tonal Axis," Journal of Music Theory 26, no. 2 (1982). The earlier concept was based on a pair of overlapping triads. The more recent theory expands on this and is much more inclusive.
Example 2–11. Structural fifths in the introduction

a. Harmonic span of a fifth G–D filled in with B♭ and seventh F

![Example notation for harmonic span G–D]

b. Melodic span of a perfect fourth A–D filled in as [0135]

![Example notation for melodic span A–D]

produces “an open-sounding, consonant, diatonic environment.” In fact, the introduction of Élégie is made especially open-sounding by the use of open G, D, and A strings. In most cases in Stravinsky’s music, one of the structural fifths is dominant. In Élégie, G–D, the harmonic fifth, is clearly primary and D–A exists as a low-tension opposition to it. Although the combined sound is substantially consonant, the prolongation of A in the melody provides a gentle “rub” against the G. Straus maintains that it is the distance between the structural fifths that determines the

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degree of clash in Stravinsky’s works and that the resulting sonority might be thought of as the prevailing tonality, or “tonic.”

Like more traditional music which moves from key to key, Stravinsky often uses more than one bi-quintal model within a single piece to achieve changes in sound or temperament. At measure five, where the music shifts toward a more modal sound, the bi-quintal model also changes. Although the harmonic fifth G–D remains in place, the melodic span changes from A–D to F–B♭ which is filled in as a Dorian tetrachord, [0235], as shown in Example 2–12. Since the two structural fifths G–D and B♭–F are three semitones apart, we might describe the music as having “modulated” from Model 5 to Model 3. While the fourths and fifths of Model 5 produced an open sound that was heightened by open strings, Model 3 is much more triadic. The combined pitch-classes of the Model 3 spans form a harmonic axis of a minor seventh chord, G–B♭–D–F, the same pitches that comprise the accompaniment figure and harmonic framework of the first four measures. Even though the newly added B-natural in the lower voice does not fit the Phrygian or any other known collection, it nonetheless falls within the primary structural fifth and is completely compatible with the present triadic environment.

Example 2–12. Mm. 5-10 Melodic span of a fourth F–B♭
For the purpose of performance, simply identifying the shift from one bi-quintal model to another may not be very helpful. I can think of no reason nor musical means to announce, “and now we have a Model 3!” It is clear to the listener that the music changes. I already discussed some ways that one might project the musical effects of Model 3, such as major-minor ambiguity. In observing that the music has shifted from one model to another, what would perhaps be of more use to the performer would be to further observe how Stravinsky moves from one block to the next. In measure four, shown in Example 2–13a, the two grace notes, F–G, are notated with downward stems, indicating that they belong to the lower voice. They also fit the harmonic fill up to that point. However, despite their notation, I consider these notes as belonging to the melody. It is easy to hear them this way because in contrast to the steady, arpeggiating figure of the accompaniment, the quick speed of the grace notes connects them rhythmically to the fast trill-like figure of the upper voice and the stepwise, ascending motion smoothly links them melodically to the stepwise A–B♭ oscillation.
Example 2–13. Transition to Model 3

a. New melodic span of a fourth, F–B♭

![Example 2–13a: New melodic span of a fourth, F–B♭]

b. Melodic spans of mm. 1–3 and m. 4 filled-in with two [0135] tetrachords related by inversion

![Example 2–13b: Melodic spans of mm. 1–3 and m. 4 filled-in with two [0135] tetrachords related by inversion]

Treating the grace notes as part of the melody shifts the melodic span from A–D to F–B♭, thereby paving the way for the Model 3 which occupies the following six measures. Therefore, measure four can be understood as performing a transitional function. Further smoothing this transition are the melodic fills of the two spans; both are filled-in with [0135] tetrachords which are related by inversion around their common tones, A–B♭, as illustrated in Example 2–13b. Although from measure five onward the A from the previous melodic fill is replaced by A♭, the F–B♭ span is retained. If a performer viewed measure four as being transitional, then it would be played with a feeling of restlessness rather than a feeling of conclusion. Some ways to project that include playing the grace notes quickly to connect them to the A-B♭ oscillation and refraining from making a conspicuous ritardando or diminuendo at the end of the measure. One could even
intensify the feeling of restlessness or the quality of leading, by making a slight crescendo on the last note.

During the last five measures of the A section the bi-quintal system disintegrates, along with the chant-like idea. As seen in Example 2–14, the melodic line, $\text{E}_b - \text{F} - \text{G} - \text{A} - \text{B}_\flat$, no longer lies within a perfect fifth. In fact, it is a whole-tone string. The lower voice, too, is much more chromatic. Nevertheless, the double stops which are circled in the last two measures of the example, D–G and G–B, recall the earlier material and frame the entire A section.

Example 2–14. Measures 11–15

The onset of the fugue section, shown in Example 2–15, appears to reinstate the bi-quintal system. Measures 16–17 feature a melodic span of a perfect fourth, the familiar G–D structural

Example 2–15. [0135] in opening of fugue subject
fifth that dominated as the harmonic frame of the A section, filled in as a [0135] Phrygian
tetrachord. However, immediately following this it appears that another melodic span, that of
E♭–A♭, is put into play. As in the first four measures of the A section (see Example 2–13b), these
Phrygian tetrachords are related by inversion around their common tones. In this instance, the
whole-tone intervals are retained and the semitone interval is inverted around the E♭–F–G.
However, this is not a good bi-quintal example, because under the bi-quintal theory, one of the
structural fifths is deployed harmonically. Furthermore, at the end of measure 19, the pitches A
and G♭ are introduced, expanding the melodic span beyond a perfect fourth. The subject then
continues to become much more chromatic as it leads to the next entry (see Example 2–8). When
the counterpoint enters, it too, is very chromatic and does not conform to the bi-quintal theory.

**Block insertion of basic cells**

Since the fugue is not bi-quintal, a different analytical approach is needed for B section.
Example 2–16a points out three notes forming [013] in the lower voice in measure three. Earlier,
I referred to this measure as a “block insertion,” the juxtaposition of contextually unrelated
material. The measure features two three-note cells which prefigure later events.²⁷

The three-note cell, C–D–B♭ in the upper voice, although an essential part of the bi-
quintal melodic span and fill, is clearly different in every way from the other measures of the
introduction. When the next subsection begins in measure five, this idea is repeated in the
melody. As seen in Example 2–16b, G–A♭–F is not a literal quote nor an exact transposition (it is
a diatonic transposition), but the motion up a step and down a third makes the reference

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²⁷ “Cell” and “basic cell” are George Perle’s terms. See George Perle, *Serial Composition and Atonality: an
recognizable. Making this connection would support the practice of lingering on the “majorish” double stop B♭–G at the beginning of measure five, not only for the sake of taking notice of the unexpected major-minor quality, but also because prolonging the G would make the rhythm

Example 2–16. Three-note cells from block insertion

a. M. 3 block insertion

b. M. 5, melodic cell from m. 3 upper voice

c. M. 17, beginning of fugue subject [013] from m. 3 lower voice

d. Mm. 21–22, counterpoint entrance in lower voice

e. Mm. 30–31, [013] in counterpoint in upper voice
sound more like that of measure three. The [024] in measure three also subtly alludes to the whole-tone string that occurs at the end of the A section (see Example 2–14). The D–Eb–F [013] of the lower voice reappears early in the fugue subject, as seen in Example 2–16c, as well as at the entrance of the counterpoint in measure 21 (in retrograde), which can be seen in Example 2–16d. [013], in various forms, goes on to figure prominently throughout the B section. Typical use of it is shown in Examples 2–16d and 2–16e.

Since the block insertion at measure three is a seed for much that appears later, it raises the question of whether or not it should be played in a special way. If one agrees that measure three is a separate idea from the measures that surround it, then it goes without saying that one would play it in a way so as not to connect them together. Some ways that a violinist could differentiate it from the surrounding material include using vibrato in that measure only, carefully observing the lack of an accent on the first note (the other measures begin with an accent), and slightly raising the dynamic level to produce a fuller sound. (One could also lower the dynamic level, but raising it is more compatible with an increased use of vibrato.)

Also appearing in Example 2–16d is a [012] which is a variation of the [013] cell. The [012] also appears throughout the B section in much the same way as [013]; the notes of both sets are always spaced as closely together as possible and are presented in a unidirectional order. [012] first appears in measure 20, at the end of the subject. As shown in Example 2–17a, the notes Db–C–Bb form a [012] unit which is soon answered in the lower voice an octave lower and in retrograde. Examples 2–17b and 2–17c show some other occurrences of [012].
Example 2–17. [012]

a. Introduction of [012] at end of subject, answered in counterpoint

b. [012] used in free counterpoint episode

c. [012] together with [013] at end of the piece

[024579] as a generating, fundamental chord

The D–E♭–F [013] cell at the beginning of the fugue is, of course, a subset of the [0135] that comprises the first two measures of the subject (see Example 2–15). Another example of [013] as a subset of a larger unit is found in measures 30–31. Example 2–18 shows how two forms of [013] can be combined to form [0235]. As is frequently the case in Élégie, the trichords are related by inversion around their common tones, in this case, F♯–G. According to our bi-quintal analysis, both [0135] and [0235] played major roles in the A section; the melodic content
of the introduction belonged to set class [0135], and that of the subsequent six measures belonged to [0235].

Example 2–18. Mm. 30–31

One may wonder at this point about the origin of the tetrachords and if they also are derived from a larger set. In the introduction, the pitch contents of the two [0135] melodic areas, A–B♭–C–D and what I have called the “transitional” span and its fill, F–G–A–B♭, can be combined to form F–G–A–B♭–C–D, a diatonic hexachord [024579]. It is shown in Example 2–19. An alternative way to look at it is to combine the pitches of the primary harmonic and melodic structural fifths and their fills which are shown together in Example 2–20. The result is also a F–G–A–B♭–C–D [024579] hexachord. This hexachord and its symmetrical quality are fundamental to the piece.²⁸

²⁸ [024579] is an inversionally symmetrical set.
The esteemed (in Russia) Russian music theorist Yuri Kholopov (1932–2003) conceived of a system of neotonality based on the concept of a “central element” to which all other elements would be subordinate. Russian music scholar Phillip Ewell explains that Kholopov based many of his analyses “on a single fundamental chord from which structure—at first harmonic and from there formal—emanates… whatever the CE [central element] of the system is, it should be labeled and thought of as the tonic, irrespective of what that harmony may have meant in the past.”

Kholopov’s concept of the central element might very well describe what

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Stravinsky meant when he spoke about “the polar attraction of sound, of an interval, or even of a complex of tones. The sounding tone constitutes in a way the essential axis of music.”

In Élégie, the [024579] hexachord, specifically {02579T}, can be thought of as the generating, “fundamental chord,” “central element,” or “sonic complex.” In terms of pitch organization, it breaks down into the two main tetrachordal subsets: [0135], the generating motive for both the opening melody and the fugue subject; and [0235] the generating motive for the “second theme” of the A section and elements of the counterpoint in the B section. These tetrachords themselves break down into two trichordal subsets, [013] and [024], which I previously referred to as “cells.” The Phrygian tetrachord [0135] contains both, while the Dorian tetrachord [0235] contains only [013]. In terms of symmetry, this quality of [024579] is applied to [0135] by means of its deployment; it appears in a symmetrical arrangement along with its inversion around common tones. Its subset [013] also often appears along with its inversion sharing common tones. [0235] is itself inversionally symmetrical as is [024].

The influence of {02579T} and its symmetrical quality extends to the formal design of the piece. The pitches of this hexachord can also be arranged as a segment of the circle of fifths, B♭–F–C–G–D–A, as shown in Figure 2–1. In the fugue section, each subsection—the subject entries and counterpoint episodes—begins on one of the pitches of this circle of fifths segment.

Figure 2–1. Arrangement of [024579] as a segment of the circle of fifths

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31 The [0135] subsets of the introduction are, of course, literal. Subsequent occurrences, as well as [0235], are abstract subsets.
and the subsections are paired and arranged symmetrically inside this framework, according to the diagram in Figure 2-1 (except for the second episode which begins on G and therefore is a repetition because the initial subject statement also begins on G. I discuss this exception in the next paragraph). The first subject statement on G is answered on C; an episode beginning on F leads to another entry on D, and the final, incomplete statement with its answer itself an altered inversion, occurs on A and B♭, as shown in Example 2–21.

Example 2–21. Final entries

The second episode, which begins on G, occurs before the final A–B♭ pair. Since it does not fit inside the symmetrical framework of the rest of the fugue, I consider it to be another example of the block device. While the first, single-measure block insertion prefigured elements that would appear later in the piece, this more extensive insertion recalls elements from the beginning of the piece. The entire episode is reproduced in Example 2–22. The lower voice recalls the A section’s harmonic framework based on G. Here however, instead of outlining a structural fifth or arpeggiating seventh chords, it reiterates octaves; in this passage, G is the highest as well as lowest pitch until measure 39. The gentle clash of A in the upper voice against the G is also revived. The upper voice features the A–D melodic span filled in as a Phrygian
tetrachord [0135]. This span gradually expands to include E♭ and F in measures 37 and 38, completing the two-flats collection that began the piece. In the second half of measure 38

Example 2–22. Second episode block device

beginning with C♯, the collection dissipates as the music becomes much more chromatic. The episode ends with an ascending [024] which alludes to the whole tone line that concluded the A section. The circled double stops are moments that recall the harmonic framework of the A section.

For performance, it might be helpful if the violinist were aware that the fugue subsections occur in pairs. The second, juxtaposed episode could be viewed as an invitation to break free of the strict, fugal disposition and allude to the rhythmically looser style of the A section. A more rhapsodic feel may be appropriate, especially as the music moves toward the climax of the piece in measure 39.

**Collectional or scalar view**

In this section about non-tonal views of Élégie, I have avoided placing emphasis on the collectional/scalar approach (even though many theorists use it as the primary basis for their understanding of Stravinsky’s music), because too often, collections are a bit fuzzy due the
inclusion of one or more notes that do not fit, and scales (at least diatonic ones) are mutable depending on their referential order. I am uneasy about habitually labeling something as “almost” a particular known entity. Nevertheless, there are times when Stravinsky clearly did think in terms of scales and collections, and in those instances, one must approach the analysis from that perspective. Although the Phrygian inflection in both the A section and the fugue subject is somewhat clouded by the inclusion of extra notes and incompleteness, the Phrygian intent is made clear in the final subject and answer pair that occurs in *stretto* beginning in measure 40. It is interesting that both statements are incomplete; Stravinsky uses just enough material to constitute a full A-Phrygian collection. The answer is in inversion, and it is a “tonal” one in which the intervals have been altered so that the pitches conform to the collection. (See Example 2–23.)

Example 2–23. A-Phrygian collection in final, incomplete subject-answer pair

Although the piece is mainly diatonic, changes in referential collections or scales occur at the ends of significant sections. The A section concludes with the whole tone-string.
E♭–F–G–A–B♭, in the upper voice (Example 2–15). This is nearly a complete WT₁ scale; only C♯ is missing. A very similar thing occurs at the end of the B section. As shown in Example 2–24, the B section comes to a close with the upper voice spelling out what is nearly a WT₀ whole-tone scale. But here, C♯ which does not fit, is now present. What is now missing is A♭/G♯. Putting the pitches in scale order and enclosing the C♯ in parentheses B♭–C–(C♯)–D–E–F♯ shows the line to otherwise be a transposition of the first example, up a perfect fifth.

On a smaller scale, the fugue subject which starts out diatonic, becomes more chromatic toward the end. As seen in Example 2–25, beginning with the A3 at the end of measure 19, the remaining pitches of the subject constitute nearly an OCT₂,₃ octatonic collection. Here too, the misfit is pc 1, this time spelled as D♭. Once more putting the extra note in parentheses, A–B–C–(D♭)–D–E♭–F–G♭ demonstrates that again, A♭/G♯ is the only missing pitch.³²

³² Van den Toorn catalogues many octatonic and nearly-octatonic passages in van den Toorn, *The Music of Igor Stravinsky*: 44–46. He does not include this excerpt from Élégie.
Even though the collectional/scalar view is not always ideal for this piece, the changes in collection that occur at the ends of sections indicate a departure from what had been going on and signal a significant break.\textsuperscript{33} The performer who is aware of this will take notice of the striking sonic shift and may wish to complement it with an accompanying change in color. Some ways this can be accomplished include altering the bow speed or pressure, placing the bow closer to or farther away from the bridge, and altering the vibrato. Since both the whole-tone and octatonic collections are generally considered to be more exotic than the diatonic one, my inclination is to strive for a more subdued and less focused or less “ordinary” sound. Fittingly, the whole-tone lines diminuendo to \textit{pp}, and although it is not marked in the score, I elect to make a diminuendo at the end of the fugue subject as well.

V. The New: Symbolic Devices

Referential collections/scales

The referential collections and scales can be related to more than an association of the Phrygian with the main idea and the whole tone and octatonic with section-ending material. The Phrygian mode, which colors most of \textit{Élégie}, has a traditional association with death and mourning.\textsuperscript{34} As he did with other traditions of the past, Stravinsky also “borrowed” this convention on numerous occasions, and even described the introduction to “\textit{Lyke-Wake Dirge}” from his \textit{Cantata} as being “in the Phrygian mode.”\textsuperscript{35} A prime example of his use of this device

\textsuperscript{33} Note that these collections appear in a single voice only. Except for the initial subject statement, they are harmonized, but the harmonizing voice does not belong to the alternate collection.

\textsuperscript{34} The association with death and mourning goes back as far as the Roman Requiem introit \textit{Rogamus te}. See Theodore Karp, Fabrice Fitch, and Basil Smallman, "Requiem Mass," in \textit{Grove Music Online} (Oxford University Press). More modern examples of the Phrygian association with death can be found throughout the literature. For some specific examples by Monteverdi, Bach, Beethoven, Brahms, and others, see William B. Kimmel, "The Phrygian Inflection and the Appearances of Death in Music," \textit{College Music Symposium} 20, no. 2 (1980).

appears in the opening of Orpheus in which, according to the stage directions in the score, “Orpheus weeps for Eurydice. He stands motionless, with his back to the audience.” Extracted in Example 2–26 are the first three measures of the harp part in which two Phrygian tetrachords (E–D–C–B and A–G–F–E) are adjoined to form an entire descending Phrygian scale.36

Example 2–26. Opening three measures of Orpheus, harp

strauss sees Orpheus as the prototype for Stravinsky’s relation of descending, Phrygian-inflected lines with death, but extends the metaphor and pairs it with subsequent ascending, major-inflected melodic motions to signify “motion from grief and lamentation to acceptance or transcendence of death.”37 Example 2–27 shows the harp part extracted from the opening and ending measures as well as the complete final chord of the last scene, “Orpheus’ Apotheosis,” during which “Apollo appears. He wrests the lyre from Orpheus and raises his song heavenwards.” In this scene, the descending E-Phrygian scale heard at the beginning of the piece returns, but at Rehearsal 144 the pattern changes to become an ascending D-Dorian scale which then runs throughout the movement until the conclusion of the ballet, on a quasi-D major chord.

36 See also Straus, Stravinsky’s Late Music: 189.
37 Ibid., 186.
Maureen Carr speculates that inspiration for the descending tetrachords at the beginning of *Orpheus* and the rising line at the end could have come from sections in Monteverdi’s *L’Orfeo*, “Lamento della Ninfa” (Lament of the Nymph) and “Apollo e Orfeo ascendono al cielo cantando” (Apollo and Orpheus Ascend to the Sky Singing), respectively. But Straus finds similar usage in some of Stravinsky’s later works, including *Cantata* and *In Memoriam Dylan Thomas*. Straus also observes that this symbolic representation often involves a tonal shift from E-centered music to D-centered music. Such is indeed the case with *Orpheus* which moves from E-Phrygian to D-Dorian, and then concludes on a quasi-D major chord upon Orpheus’ ascent to heaven.

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Although Élégie does not move from E-centered music to D-centered music, it nevertheless exhibits many of the other features of Straus’ theory. Both the A and B sections are predominantly in the Phrygian mode, are replete with Phrygian tetrachords (and their inversions) and Phrygian-inflected [013] trichords, and both sections end with ascending motions to major-inflected dyads. As shown in Examples 2–28a and 2–28b, the A section ends with an ascending melodic motion to an implied G major double-stop, and the B section concludes with a melodic line that ascends to a slightly ambiguous, but nevertheless major-inflected, Eb – F#. Both lines fade peacefully to pp.

Example 2–28. Ascending lines at ends of large sections

a. Ending of the A section

b. Ending of the B section

The quiet endings convey a peaceful quality which is compatible with the concept of acceptance of death. The violinist who is aware of this subtext would be careful not to disrupt the feeling of tranquility with an accent in the bow, swell in sound, or tense vibrato. A relaxed vibrato along with placement of the bow away from the bridge might be employed to contribute to a musical portrayal of peace and transcendence.
While the section-ending ascending lines are easily heard and recognized, descending lines in Élégie are not as obvious. Example 2–29a points out a descending [013], B♭–A♭–G, in the upper voice that a performer could easily overlook. Due to the location of the bar line and the manner in which the notes are beamed, the performer’s first reaction would be to group together the ascending melodic third, G–B♭, and then accentuate the A♭ in order to create a downbeat. This would be heard as two notes ascending followed by two notes descending. Particularly since the piece is metrically flexible, it may be appropriate for the performer to play against the notated meter in certain spots. I choose to highlight the descending Phrygian-inflected trichord by playing the B♭–G double stop as if it were a pickup to the descending melodic line that follows. I also give a slight emphasis to the B♭ to create a strong-beat feel. An approximation of this interpretation is notated in Example 2–29b.

Example 2–29. Descending [013]

a. As notated in the score

b. Performance option
Interestingly, the very end of the piece, shown in Example 2–30, does not conform to the rest of the work by concluding with a rising whole tone-inflected scale. In measures 56–57 the melodic line descends while the lower voice makes two attempts to ascend. In measure 58 both voices appear to strive toward a G major-inflected finish, but they are unable to reach the goal and in the final measure slip backward into a downward motion. Although the final double-stop B–D suggests G major, the absence of G leaves it uncertain while the descending line imparts a degree of bitterness, as if grief has not been vanquished. The final double stop, with the raised third, B², as opposed to the B♭ of the Phrygian mode, also alludes to a Picardy third, which is entirely consistent with “borrowing” from music of the past.

Example 2–30. Descending motions at the end of the piece

In performance, one might begin measure 58 very softly to enable a dramatic crescendo. In correspondence with the crescendo, one could apply an increasingly active vibrato, to convey the feelings of anxiousness and hope. The last measure might be played very slowly to allow time for the listener to realize that the possibility of a happy ending is fading away. Because the piece does not end with a traditional cadence, it is important to delay the final B in the lower voice for as long as possible in order to create expectation leading to the impression of resolution. If one proceeds from the C to the B too quickly, the listener may perceive the last
double-stop, B–D, as a dominant harmony and expect to hear the two voices converge on a unison C.

Another symbolic meaning can be inferred from the section-ending, rising melodic lines that form or strongly suggest whole tone scales (Example 2–28). In addition to the expressive implications of descending, Phrygian-inflected lines moving to ascending, major-inflected ones, there is a Russian tradition of associating diatonicism with the human world, and alternate scales/collections (namely, whole-tone and octatonic), with the other-worldly or fantastic. This tradition is widely recognized as originating with *Ruslan and Ludmila* in which Glinka uses whole-tone sequences and augmented triads to depict the evil sorcerer, Chernomor. Rimsky-Korsakov later extended the model to include the octatonic scale. Richard Taruskin, who has written extensively on the ethnographic influences on Stravinsky, describes this model as “the tradition initiated in *Ruslan*… that would remain in force until *Petrushka*: differentiating the human and fantastic worlds by contrast between diatonic and chromatic harmony, the chromatic/fantastic being of the third-related kind (whole-tone or octatonic) to play off against the fifth relations of the human music.”

Broadly, to combine Straus’ E to D theory with the Russian tradition, the music of both the A and B sections moves from the human world of grief and mourning to transcendence of the afterworld. Within the fugue subsections, where the music shifts frequently from being Phrygian-inflected to nearly octatonic, the use of these different collections might be better understood as signaling divisions within and between each block rather than as having any symbolic meaning.

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“Stutter”

Another semiotic device is found in Stravinsky’s melodic lines that involve what is widely referred to as a “stutter,” a trill-like alternation between two pitches, a whole-tone or semitone apart. The term “stutter” comes from Stravinsky himself who, when asked by a New York Times reporter about the origins of Elegy for J.F.K., described “a recurring stutter in my musical speech from as long ago as Les Noces to the Concerto in D, and earlier and later than both as well—in fact a lifelong affliction.”

As is the case with the composer’s other practices, this device has been examined from various perspectives by Stravinsky scholars. Van den Toorn observed that neoclassical stutters, such as the ones at the beginning of Élégie (circled in Example 2–31a), tend to be half-step reiterations rather than whole-step ones. Additionally, he interprets the musical stutters broadly, relating them to Stravinsky’s penchant for oscillations of all kinds, saying the reiterations “are ultimately a form of back and forth oscillation; and in this respect they may indeed be found reaching into every crevice of melodic, rhythmic, formal, or pitch-relational matter…such intimations of the past are not confined to matters strictly pitch-relational…but extend as well to elements of form and rhythmic-metric construction.”

Gretchen Horlacher devotes an entire book chapter to this musical mannerism, but her focus is on examples of small repetitive melodies that reoccur throughout a piece to act as an agent of connection and unity. Horlacher’s view of the stutter as a connecting device does not apply to Élégie in which the stutters that begin the piece do not reoccur until the very end when the A

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41 Stravinsky, Themes and Conclusions: 61. Stravinsky said this in reference to the alternation of the notes D and E in the vocal line of Elegy for J.F.K. at measures 14–15, shown in Example 2–31b.
42 van den Toorn, The Music of Igor Stravinsky: 439-40. Van den Toorn likens the ic 1 of these stutters to the tendency tones of the major scale (and relates ic 2 to the “Russian” octatonic system).
43 Ibid., 440.
44 Horlacher, Building Blocks: Repetition and Continuity in the Music of Stravinsky: 71–128. Additionally, Horlacher does not confine her discussion to alternations between two pitches a step apart.
section is recapitulated. On the other hand, the final subject and answer on A and B♭, with their presentation in *stretto*, could be construed as a very abstract reference to the A–B♭ alternation of the opening stutter figure. For the performer who construes it as such, it is obviously not possible to have the final fugal entries directly refer to the opening by making them sound the same. It is possible, though, as I discuss at the end of this chapter, to make an expressive connection. This type of abstract reoccurrence is not what Horlacher is concerned with, however, and neither she nor van den Toorn offer any hermeneutical theories about the stutters. Although their investigations shed light on different aspects of the device, they are of a technical/theoretical nature that is not directly useful to the performer.

Offering a more expressive perspective, Straus describes the stutter as representing “somber muteness in the face of death.”

While Stravinsky’s stutters, and his repetitions in general, are usually associated with stasis—melodic, harmonic, and rhythmical—the stutters that occur in music that is associated with the subject of death seem also to be closely related to speech. Straus explains the connection between the two ideas: “The stutter in Stravinsky’s music, as in real life, suggests an inability to speak fluently. That apparent disfluency renders the melody static, fixed in place, and enhances the isolation of the musical fragment of which it is part.” The stutter that Stravinsky himself identified is the alternation of the notes D and E in the vocal line of *Elegy for J.F.K.* (at measures 14–15) which is set to the words, “The Heavens are silent” (see Example 2–31b). Stravinsky alluded to the device on another occasion when describing the moment of revelation in *Oedipus Rex*: “Thus, the clarinet trill at ‘lux facta est’ is a manifestation of my *Oedipus* manners: the trill is not just a trill but an indispensable

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45 Straus, *Stravinsky’s Late Music*: 186.
This foreboding trill played by a single instrument (see Example 2–31c) is immediately followed by the final monologue, “La tête divine de Jocaste est morte,” in which the messenger tells of the death of Jocaste. The speaker states that the messenger “can scarcely open his mouth.” Soon after the monologue, at Rehearsal 178, the music erupts in a massive stutter played by all of the woodwinds during the second statement of what Stravinsky calls the “singing telegram” of "Divum Jocastae caput mortuum" (the divine Jocasta is dead!). Example 2–32d shows the score reduced to show only the woodwinds and the messenger. The foregoing examples are textual and therefore the association of those musical stutters with the subject of death and an accompanying inability to speak is clear. There are also purely instrumental examples, besides Élégie, of Stravinsky’s use of stutters in the context of death. Example 2–31e shows the violin solo from Orpheus’ Air de Danse which can be understood as an elegy to Eurydice, and Example 2–31f displays the first trumpet’s melody at the beginning of Ode: “Eulogy.”

Example 2–31. “Stutters”

a. Opening of Élégie

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47 Stravinsky and Craft, Dialogues: 27.
48 From the final monologue of Oedipus Rex: «Il peut à peine ouvrir la bouche. Le chœur emprunte son rôle et l'aide à dire comment la reine s'est pendue et comment Oedipe s'est crevé les yeux, avec son agrafe d'or.»
49 Stravinsky and Craft, Dialogues: 30. Although I do not show the string instruments in Example2–31d, it is interesting to note that while the woodwinds produce the stutter, the strings play G-Phrygian scales.
b. Elegy for J.F.K.

The Heavens are silent.

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c. Oedipus Rex: “Lux facta est,” clarinet trill

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d. Oedipus Rex: “Divum Jocaste caput mortuum”
e. Orpheus: “Air de Danse,” violin solo

Of course, not all pitch oscillations in Stravinsky’s music are semiotic depictions of human reactions to death. Example 2–32 shows two excerpts that are not related to “muteness in the face of death.” The first one, from the Concerto in D, exudes a gentle lilt, and the second one, from the opening of Danses Concertantes, is rhythmically vigorous and driving. Although the pieces are very different in temperament, both convey motion. Very generally, the generic stutters (and also ostinato-type repetitions) tend to have a regular pulse, rhythmic drive, and often feature dotted rhythms, whereas the death-related stutters tend to be more arrhythmic and irregular. Horlacher believes that stutters convey both motion and stasis, but I believe that those associated with death reflect only stasis.

Example 2–32. Stutters unrelated to death

a. Concerto in D: Arioso, 1st violins and cellos

b. Danses Concertantes, 1st violins

f. Ode: “Eulogy,” trumpet
This interpretive distinction has implications for performance. In the opening of Élégie as well as in the violin solo from Orpheus, Air de Danse, the reiterations are punctuated with accents which create an impression of each stutter being a spasmodic burst. If a performer wanted to project this effect, he would not play them gently, but rather would initiate them with a degree of harshness. Additionally, it would be inappropriate to play the stutters in such a way that the melodic line becomes subordinate to a regular rhythm in the accompanying lower voice. Instead, it would be preferable to have the accompaniment accommodate the sentiment of the melodic line. Since the stutters in Élégie are not rhythmically uniform and each consists of a different number of repetitions, no attempt need be made toward uniformity or regularity. In fact, playing each at a slightly different speed would enhance the impression of each one being a brief shudder followed by a period of motionlessness. Example 2–33 proposes sustaining the dyad G–A before continuing with the accompanying eighth notes, to convey momentary paralysis. Refraining from the use of vibrato would reinforce the idea.

Example 2–33. Performance option for stutter

Finally, consideration of the expressive implications of the stutter within the context of death may provide an answer to the question of how to abstractly connect the final subject and answer pair on A and B♭ to the opening stutter figure. As I mentioned earlier, it is obviously not possible to make the two excerpts sound alike. It is possible, though, to imagine the two passages as having the same expressive meaning (i.e., “somber muteness in the face of death”). If one
chooses to make this expressive connection, an approach for performance might be to infuse that last section of the fugue with a “plaintive” quality. There are a couple of things a violinist might try to achieve this quality. One is to pay attention to the accents on the first four quarter notes, along with the marking, “ma non f.” Since a violinist, like all players of bowed stringed instruments, can more precisely control the rate of sound decay than players of some other instruments can, it is possible—and advisable—to drop the dynamic level quickly after initiating each accent. Sustaining the notes strongly will tend to project a heroic attitude, which is the opposite of that which is desired. Another thing the performer can do is intensify the “dissonant” intervals. The passage in question contains many tritones, sevenths, and seconds which can be intensified to enhance the “plaintive” quality.

VI. Summary and Conclusion

In 1963, Berger’s seminal article “Problems of Pitch Organization in Stravinsky” called for a “new branch of theory, as it were, starting from what this music itself is, rather than dwelling upon its deviation from what music was previously.” However, even though Berger believes Stravinsky’s music is centric but not tonally functional, and even though his article initiated the trend in Stravinsky studies that is grounded in the music’s octatonic and octatonic-diatonic content, Berger stresses that we are still “obliged to come to terms with that in the music which is influenced by traditional schemata.”

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50 The term “plaintive” comes from Stravinsky’s own description of Orpheus. See Stravinsky, Themes and Conclusions: 51–52. “A new, so-called plaintiveness was detected in the Orpheus music, but I think that this character was already present in my Bäsler Concerto…”


52 Ibid. The chief proponents of the octatonic approach are Taruskin and van den Toorn. By “traditional schemata,” Berger means functional tonal harmony.
The chameleon-like nature of the piece impelled me to examine Élégie from many points of view including both tonal and non-tonal angles, all of which either directly or indirectly have the potential to impact performance. The elements that are shaped by a relation to traditional tonality, even if that relation consists of mere resemblance or even irony, exert an influence on the music that is likely more relevant to the performer than it is to the theorist. While one can deliberate the structural functionality of elements such as tendency tones in the voice-leading, it is clearly heard and comprehended by the listener that the music is leading from one area to another despite the lack of a traditional arrival by cadence. This contextual function must be acknowledged and executed by the performer who would likely project it in a manner similar to that which he would do with the traditional music to which it alludes. Even when the intimations of tonality prove to be illusory, the deception can only be comprehended if the listener is first led to believe that the music might be headed where it ultimately does not go. Taking this into consideration, it would be extremely valuable to the performer to be aware of all of the harmonic implications in the piece, tonal and otherwise. As Berger states, “any residuum or—if such is the case—‘semblance’ of tonality must be dealt with accordingly, both in the light of our total theoretical knowledge and in the light of interval relationships, whether of the basic cell, independent pitch-class formations, or the diatonic and symmetrical scales.”

What is interesting is that in looking at the same material from different perspectives, the performance suggestions I arrived at were mostly in agreement; one analytical system did not produce an interpretive option that conflicted with that of another. A blatant example of this occurs at the end of the introduction, at measure four going into measure five. The “tonal” inferences called for elongating the last eighth-note in the lower voice, D, to create the illusion of

53 Ibid., 42.
a functional fifth and the expectation of resolution; the collectional view also supports this as the
music shifts at this juncture from two-flats to three; the bi-quintal model also suggested
prolonging the end of measure four to signal a shift from Model 5 to Model 3 as well as the
change from fifths-based material to that oriented toward thirds; the block insertion concept may
also suggest the same treatment, to prepare and set apart the reference to the three-note melodic
cell from measure three; the view of [024579] as the generating, fundamental chord also suggests
playing the final note of measure four \textit{tenuto}, to signal the end of the literal presentation of the
fundamental chord before the abstract subsets commence in measure five; and consideration of
expressive symbolism might also lead to the same idea as the shock and muteness of the stutters
evolve into the “Phrygian mode” of mourning.

Very generally, and quite clearly, all systems indicated that measure four was the end of
one “phrase” or idea and that measure five began another. The listener needs no justification to
perceive and comprehend that the music changes at this juncture. However, there could be subtle
variations in nuance if a performer favored one of the above interpretations over some others, or
if a performer took several or all of them into account. Although the reader may assume that
most performers would have no trouble recognizing the musical boundary between measures
four and five, and that said performers would “instinctively” know how to end one “phrase” and
begin another (even in music by a composer like Stravinsky), it appears that this is largely
untrue. Prévost’s premiere performance does not acknowledge any change of “phrase” or
musical idea at this location. What is more, a survey of 20 different recordings of \textit{Élégie} found
on the internet video platform YouTube revealed that virtually all of the performers did exactly
the same thing as Prévost: they played the accompanying eighth notes of the lower voice with
unwavering steadiness throughout and did not alter their dynamics, tempo, or vibrato at the
“phrase” border in question, or at any other point in the A section, for that matter. A few acknowledged the breath mark between the measures by pausing, but they then continued on at the same pace and dynamic level, with the same articulation and vibrato. The YouTube performers included a mixture of known artists, such as Ruggiero Ricci, Sigiswald Kuijken, Gidon Kremer, Miles Hoffman, and Dino Asciolla, as well as lesser known violinists and violists, and students. I can only surmise that their interpretations were based on a very superficial reading of the score. One notable and remarkable exception was found in the performance by Gidon Kremer. Estimably, Kremer played the opening stutters like spasms; changed tempo, intensity and vibrato for the block insertion at measure three; made a clear indication of a “phrase” ending at measure four; and shaped three-note descending lines in measures 6–7 and 9–10. Whether or not Kremer engaged in a formal analysis of the piece, it seems clear to me that he undertook a deeper and more thoughtful study of the score than did the others. What was especially interesting was that throughout the piece Kremer made interpretive choices that were very similar to the ones that I arrived at through the present study.

Although I explored the piece from many different angles, it is possible that an analyst-performer would not necessarily have to perform such an exhaustive analysis to arrive at the same or similar approaches for performance as I did. However, engaging in such an analysis affirms those decisions and provides fascinating insight into the complexity of this short, seemingly simple piece. What is more, further analysis did in fact uncover some finer details. The bi-quintal model, if it is granted that measure four serves as a transition to the new section, further suggested that the note D may not only be prolonged, but that it could also be intensified by means of a slight crescendo to create the feeling of restlessness and anticipation of leading
into something new, and that this feeling could be reinforced by refraining from making more than a slight *ritardando*. 
CASE STUDY TWO

*Riconoscenza per Goffredo Petrassi* by Elliott Carter

I’m very concerned with the performer, but I’m not too concerned with the listener. It seems to me that if you can interest the performer and make him feel that he’s done something really valuable, his playing will convince the audience just that.

—Elliott Carter

I. Introduction

Elliott Carter’s music following the completion of *Night Fantasies* for solo piano in 1980 is often referred to as belonging to his late period. Given that he went on to compose at an accelerated pace for more than thirty years after that time, it is conceivable that his oeuvre will be recategorized in the near future. What is of significance here is that during the half dozen years after composing the exhaustive *Night Fantasies*, Carter temporarily turned away from the large, mostly orchestral pieces that had preoccupied him previously and began writing shorter pieces for smaller groups and solo instruments other than the piano. At approximately five minutes in duration, *Riconoscenza per Goffredo Petrassi* for solo violin is a prime example of one of these early, late-style pieces. Written in 1984 to commemorate the 80th birthday of the Italian composer Goffredo Petrassi, the piece is an expression of Carter’s gratitude to his “best

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2 *Night Fantasies* is complex on many levels. It is approximately 20 minutes in duration and is extremely difficult to play. Compositionally, it utilizes a long-range polyrhythm and makes use of all 88 symmetrical inverted, all-interval, 12-note “chords.” See John Link, "The Composition of Carter's *Night Fantasies*," *Sonus* 14, no. 2 (1994).
musical friend.” It was premiered on June 15, 1984, in the medieval refectory of the Abbey of Fossanova, Priverno, Italy, by violinist Georg Mönch. It is now part of a collection of four violin solos, all dedications, called 4 Lauds. This was the first written, with fifteen years between it and the next one, Statement - Remembering Aaron (1999, for Aaron Copland). The other two quickly followed: Fantasy - Remembering Roger (also 1999, for Roger Sessions) and Rhapsodic Musings (2001, for violinist Robert Mann). Although the four pieces are currently published as a collection, they were written at different times for different performers and each received its own premiere. In view of this, it is clear that they are independent works and should not be thought of as a suite.

Elliott Carter’s modernism is unique in that although he is often described as a twelve-tone composer—a term which most people associate with serialism—his music is not serial in the same manner as that of Schoenberg and his pupils. Moreover, during a time when a handful of American composers and theorists were working on various ideas that would later evolve into what we now know of as pitch-class set theory—and sharing their concepts with the music theory community—Carter was quietly working on his own system of pitch organization and classification. The result of this solitary work, Carter’s comprehensive catalogue of chords known as Harmomy Book, was not published until 2002. What is notable about this is that the project began neither as a textbook nor as a vehicle for presenting his findings to academia, but

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4 A clear explanation of how and why Carter may be considered a twelve-tone composer is given in Straus, Twelve-Tone Music in America: 52-53.
as a tool for himself as a composer. Although Carter did not publicly divulge much about his compositional techniques until later in life, the composer’s customary practices have been made known by the extensive work of Carter scholars.

**Drama and human social interaction**

Many of these scholars have described Carter’s music in dramatic terms, often comparing it to a conversation or argument. For example, John Roeder postulates an interpretation of *Enchanted Preludes* for cello and flute as a musical portrayal of a marital relationship; Jonathan Bernard suggests referring to the different varieties of music in the Piano Sonata as dramatic characters “speaking their lines in alternation;” and David Schiff ascribes human personality traits to the instruments in the Second String Quartet: “the first violin is a virtuoso, interested mainly in showing off, the viola is a bit too-consistently doleful, the cello self-indulgently romantic; the second violin, like a composer, tries to create order among its narcissistic neighbors. Psychologically the four could be termed manic, compulsive, depressive, hysterical.”

In fact, Carter himself described his music as a portrait of society and human social interaction. In Frank Scheffer’s documentary film about him, *Labyrinth of Time*, Carter says, “my own music is a picture of society as I hoped it would be; as I hoped it will be. That is, there are a lot of individuals dealing with each other, sensitive to each other, and cooperating and yet not losing their own individuality, and this is what I hope a state and a society will be everywhere.” Carter also frequently uses the term “characters” when discussing his music.

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7 Ibid., ix.
When describing the Second String Quartet, he said, “each of the four instruments has a repertory of musical characters of its own, following, sometimes opposing the leader, usually according to its own capabilities—that is, according to the repertory of expression, continuity, interval, and rhythmic patterns assigned to it. Each is treated as an ‘individual,’ usually making an effort to cooperate, especially when this seems helpful in carrying on the musical enterprise.” An even more vivid personification of Carter’s musical characters appears in his description of the Brass Quintet:

Indeed another way of hearing the piece is to consider it as a meeting of five brass players who have come together to play slow, solemn music. As they start to do so… the weak member of the group, the horn, interjects irrelevant, disruptive ideas that momentarily upset the plan. Given the atmosphere of discord that arises between the players, each begins to assert himself, joining partners in small groups while the excluded ones try to bring back the slow music… Midway through, the horn deplores its alienation in a long unaccompanied solo, which arouses the others to a menacing duo for trumpets and an angry trio for trombones and horn… the tenor trombone, never having had a proper solo like the others have had, stops them for his, which is accompanied by a muted trumpet.

In consideration of this established practice, I approach Riconoscenza as a narrative of human behavior. I also personify the different musical characters to relate their actions to the development of the music and to explore the ways in which Carter uses pitch and rhythm to create a musical drama.

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Characters in *Riconoscenza*

The characters in *Riconoscenza* are represented by three distinct musical ideas which follow, overlap, and sometimes interrupt one another. Each of these elements has a unique quality created by different intervals, rhythms, articulations, and dynamics. Two different interval-classes (ic) are assigned to each, therefore all six ic are evenly distributed among them. The first of these, a lyrical idea shown in Example 3–1 and hereinafter referred to as *A*, consists of many notes slurred in each bow and is marked *dolce, legatissimo, scorrevole* (flowing).

Example 3–1. *dolce* *A*

Its characteristic intervals are ic 3 and ic 6 which form diminished seventh chords [0369]s and their subsets. *A*’s dynamics range moderately from *mf* down to *p*. Of the three ideas, it is the most varied in its rhythm and pitch content; from the outset, it almost always makes use of all 12 pitch-classes (pc).

The second idea, which is shown in Example 3–2 and referred to as *B*, is marked *giocosamente, furioso, martellato*, and is characterized by a more rhythmic and aggressive quality. It consists of sixteenth notes played with short, separate bows, as well as occasional

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15 Although the sampling given in Example 3–1 does not show all 12 *pc*, the episode goes on to utilize the full 12-pc aggregate.
pizzicatos and multiple stops. B’s dynamics typically range from $f$ to $fff$, and its key intervals are ic 1 and ic 2.

Example 3–2. martellato B

The third element, marked tranquillo, ben legato, shown in Example 3–3 and referred to as C, quietly sustains double-stops. It maintains a dynamic level of $pp$ virtually all of the time.

Example 3–3. tranquillo C

The double-stops alternate between ic 4 and ic 5, often in arrangements that spell out Carter’s signature set-classes, the two all-interval tetrachords (AIT), [0146] and [0137]. An all-interval tetrachord is unique because it contains all six interval-classes—its interval vector is $[111111]$—using the smallest possible cardinality. Example 3–3 depicts a typical arrangement, in which the two [0146] tetrachords are inversions around their common tones, in this case, B♭ and F. Combined, the two tetrachords form a [013467] hexachord which appears frequently throughout the piece. Both [0146] and [0137] are subsets of [013467]. Because it is an inversionally symmetrical set, this hexachord contains two forms of each AIT: $[0146] = \{E, F, G\#, B\flat\}$ and $\{F, G, B\flat, B\}$; $[0137] = \{E, F, G, B\}$ and $\{E, G\#, B\flat, B\}$. Although [0146], the predominant
harmony of the C material, is expressed vertically as dyads [04] and [05], due to the tetrachord’s all-interval property, the remaining intervals must then appear linearly. At times Carter takes advantage of this to smooth the transitions between characters, as I will discuss later.

**Interruption and recollection**

According to Schiff, Riconoscenza’s musical characters form an example of temporal counterpoint: “three ideas unfold in small, interspersed episodes, creating the illusion that we are hearing three pieces, expressive, percussive and peaceful, at once.”  

Max Noubel calls the effect a “virtual stratification” of not just three but of four independent layers (Noubel treats the pizzicato interjections as an additional layer). Schiff and Noubel are no doubt making an analogy to Carter’s pieces for multiple instruments where independent musical ideas do unfold simultaneously. However, in Riconoscenza, the separate ideas appear to communicate with and respond to each other. Throughout the piece, the B martellato and C tranquillo elements make their entrances by interrupting dolce A. In response, A resumes by reiterating the last few pitches that it played prior to the interruption, as if to state, “as I was saying.” This literal recall device seen here in dolce A had not been used by Carter up to this point, but it resurfaces with great importance in some of his later works.

In 1994, Carter described how Riconoscenza inspired this concept:

> About 10 years ago while composing a piece in honor of a friend of mine [Riconoscenza], I thought of creating a work for violin which would have the strings striving on throughout the composition while being interrupted by other instruments, not unlike how our lives are interrupted by unpredictable challenges.

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17 Noubel, *Elliott Carter, Ou Le Temps Fertile*: 239. «Elle est aussi une stratification virtuelle dont chaque strate est investie par un seul des caractères musicaux. Ainsi la succession des trois caractères musicaux principaux de cette œuvre monodique qu’est Riconoscenza peut être transformée en une superposition virtuelle de trois strates auxquelles il peut même être ajouté une quatrième strate pour les interventions des pizzicatos, éléments parasites venant sporadiquement contrarier les interventions des caractères musicaux.»
and tragedies. That idea of a living struggle has permeated all my work since then.\textsuperscript{19}

**Central lyrical figure**

The musical characters in *Riconoscenza* not only to react to one another, but they also appear to cooperate and sympathize with each other. Although their characteristic rhythms, articulations, and dynamics remain differentiated throughout the piece, some intermingling of pitch and interval content takes place as a result of the characters’ interaction.

In fact, Carter implied that the three musical ideas represent different qualities within a single, dominant, lyrical personality, and reflect Petrassi’s sudden changes of mood.\textsuperscript{20} From this perspective, *dolce A* is clearly the main figure; it is the most lyrical of the three, it begins and ends the piece, it appears more frequently than the other characters, and it is much more varied than the others in terms of pitch, rhythm, and register. Like the recollection device, the concept of a central lyrical figure also resurfaces to play an important role in Carter’s later music.\textsuperscript{21}

In *Riconoscenza*, besides the recollection behavior which maintains *A*’s continuity amid the other material, the premise of *A* being the primary character is supported by the existence of characteristic *B* and *C* elements, cleverly disguised and embedded within *A* from the outset. AIT content, especially [0146], is the most significant of these hidden elements. As the piece unfolds,

\textsuperscript{19} Carvin, "American Gothic: An Interview with Elliott Carter." Also quoted in Link, "Elliott Carter's Late Music."
\textsuperscript{20} Joël Bons, "Interview with Elliott Carter," in *CD liner notes: Elliott Carter: Homages & Dedications* (Montaigne, 2003). In *CD liner notes: Elliott Carter: Homages & Dedications* (Montaigne, 2003), 16. “I remember vividly that Petrassi—like many Italians—was somebody who could talk very seriously about important subjects and suddenly burst into laughter or become terribly angry—then sometimes talk in a very exultant, quiet mood. I wrote *Riconoscenza* so that it has alternations of rather comically angry music, then lofty, slow and quiet sections.” Also see Link, "Elliott Carter's Late Music," 38n21., and Roeder, "The Matter of Human Cooperation' in Carter's Mature Style," 125n17.
\textsuperscript{21} Link, "Elliott Carter's Late Music."
it becomes more prominent, serving as a common goal and providing points of unity along the way. Ultimately it becomes the agent of unification and closure.

**Narrative overview**

The three distinct characters readily lend themselves to vivid performance narratives. Oppens described B as a misbehaving boy: “Johnny has a whole bunch of toys and he’s throwing them *everywhere!*” She also commented on A’s recall behavior, “yes, ‘as I was saying’—it’s like a dinner party conversation.”[^22] Constructing storylines can be helpful for performers seeking a large-scale understanding of a piece. In a discussion about analysis and performance, William Rothstein wrote, “many performers deliberately construct narratives, tableaux and programmes for the works they play, but—probably wisely—they rarely speak of them in public.”[^23] In certain passages of *Riconoscenza*, I found it helpful to think of words that the musical personae might be saying, and I relate these when discussing the relevant moments in the music.

Dramatic narratives can also be useful for analysis. In Carter’s music, they can help relate seemingly abstract elements, such as all-interval tetrachords and 12-note all-interval chords fixed in register, to the composer’s vision of his music as a depiction of human social interaction. I have framed my analysis around the story of the lyrical *dolce* A as it comes to grips with its alter egos and ultimately integrates them. At first, B’s and C’s intrusions impede A’s ability to maintain its composure. In its struggle to persevere, A must acknowledge the mischievous, impulsive B along with the serene and wise C, while it tries to reestablish and solidify its own identity. As the piece progresses, B and C assist A with this process by demonstrating, prompting, and even admonishing A to adjust its intervals and follow the correct path. C acts as a

stabilizing influence as its inherent all-interval tetrachords present points of agreement along the way. Eventually, a balanced coexistence is achieved, first by establishing order, which is accomplished musically by segments of 12-note all-interval chords fixed in register, and finally, by assimilating the maturity and wisdom symbolized by the AITs. In the end, the lyrical character reemerges as a fully integrated personality.

While this account may give the performer or listener some sense of the dramatic action of the piece, it says very little about how to interpret and play specific passages in it. In order to show valid connections between analysis, dramatic narrative, and performance practice, it is necessary to relate specific structural engagements to the behaviors of the three musical characters and then propose performance approaches for melding the two aspects in order to project the overall drama. For the purpose of this investigation, I have segmented the piece into six parts defined by different degrees of interaction between characters along with increasingly more overt AIT appearances.

II. The Characters in Detail

The main character, Dolce A

Example 3–4. dolce A

\[\text{Example 3–4. dolce A}\]

Riconoscenza begins with an extended statement by the lyrical character, A. Marked dolce, legatissimo, scorrevole (flowing), it goes without saying that this idea should be played
sweatly and smoothly. The main difficulty for the performer lies in the irregular rhythms which do not correlate to the bar lines. Attempting to play them as syncopations in relation to the specified meter not only creates superfluous complexity, but also ruins the expressive fluidity of the music. This raises the question of how strictly or freely the rhythms should be played. Oppens says that this type of rhythmic structure in Carter’s music denotes a rhapsodic quality and therefore should be played with an “illusion of freedom.” The indication *Quasi improvisando* supports this view, and most recordings treat this section with considerable freedom.

My process for learning the A material was to first practice the rhythms accurately and in a steady tempo while disregarding the bar lines. Once that became second nature, I looked for note groupings that might represent an implied local meter and suggest phrasing. These groupings were found in the placement of slurs. Oppens also says that regarding his piano music, Carter specified that he wanted the beginnings of slurs to have a strong-beat feel. Based upon the placement of the slurs in relation to the corresponding harmonies and dynamics, we can deduce that this applies to his violin music as well. In addition to the varied rhythms, A has the widest range of dynamics and fluctuations in register. For the performer, this could suggest an imperative to project a wide range of emotional expression. Corresponding to this, the performer might consider utilizing a variety of styles of vibrato.

*Dolce A*’s surface harmony, or intervallic content, on the other hand, is initially very uniform. As previously mentioned, A’s designated intervals are ic 3 and ic 6. The first dolce A episode (measures 1–15) is constructed almost entirely of diminished seventh chords and their subsets, a sampling of which is shown in Example 3–5. In fact, all forms of [036] are present in

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24 Lesson/interview 10-21-2010.
Example 3–5. [03-6-9] in A dolce

this section except for one, \{T14\}, which is alluded to by the first two pitches, C♯–E, but left incomplete. Although the omission of the B♭ is curious, the manner in which the piece begins, on the last 16th note of the measure, conjures the feeling that the music had already begun by the time the first note, C♯, is heard. A performer who wishes to convey this idea would avoid commencing with an attack and would instead allow the C♯ to materialize gently, giving the audience the impression that they are joining something already in progress. In addition to the opening C♯–E, there are several other instances of [03] which can be thought of as incomplete [036]s (I discuss these in more detail later). This proliferation of [036] in the initial A statement clearly introduces it as the defining sonority of the A character.

For the performer, this has an implication with regard to bowings. String players often equate slurs with bowings, but most of the slurs in the A episodes throughout the piece contain more notes than can fit in a single bow. The usual considerations for deciding where to change the bow are rhythmic groupings, melodic contour, and changes in register. In this case however, the rhythmic pattern is irregular, and relying on changes in contour and register can lead to inaccurate perceptions of phrases with regard to the harmony. Example 3–5 shows that the
beginnings and endings of slurs always coincide with the beginnings and endings of \([0369]\) or its subsets (i.e., a slur never bisects a set). This indicates that the performer’s choice of bowings in this section should probably aim to keep those sets intact by changing bow in between the sets, not in the midst of them. Although it is desirable to change the bow in a way that observes this surface harmony, it is not advisable to accentuate every change of bow or set because, as I discuss later, there is another, background harmonic implication residing in larger groups of notes.

For the remainder of this chapter, when referring to \([0369]\) and its subsets as a single, general sonority, I use the abbreviated notation \([03-6-9]\) to signify the inclusion of all three sets, \([03]\), \([036]\), and \([0369]\). I use \([03-6]\) and \([036-9]\) to indicate the inclusion of the pairs of sets \([03]\) and \([036]\), and \([036]\) and \([0369]\), respectively.

While the \([03-6-9]\) sonority is without a doubt the most important of A’s features, what is perhaps most striking about this character is its literal recollection behavior, which is shown in Example 3–6. A reacts to the early B and C entrances by virtually ignoring them; after each interruption, A restates its previous “thoughts” and continues on. Carter has described this piece as “the line of life, often interrupted, which always picks up and goes on.”\(^{25}\) In A’s persistence to go on, this recollection behavior also helps foster continuity and establishes dolce as the primary voice.

There are several things a violinist might do to acknowledge these references in performance. One straightforward option is to use the same fingering for both the initial statement and its recall. Additionally, if one initially chose to slide up to a high note, then the slide could be recreated when playing the recollection. The use of hesitation or accentuation as methods for setting apart the recalled notes is not suitable because often times the interruptions occur before a set has been completed, and when A resumes it must finish the set that it had previously begun. For example, in measure 12, A recalls F–D–B from measures 10–11. In the previous measure A was interrupted, but now in measure 12 it must be allowed to continue on to the G♯ to complete the [0369] set. Perhaps the entire statement, F–D–B–G♯–F♯–C–A, might be better played as a single gesture in one bow, as printed. Another example occurs in measure 18 where A recalls G–B♭ from measures 14–15. Here too, the music must continue on past the B♭ because as A continues, the subsequent D♭–E not only complete [0369], but they also combine with the previous B♭ to fill out the {T14} that was left incomplete in the very beginning. Then,
in a non-literal recall, the line goes on to allude to the remainder of measure one by invoking the same pc. This is as shown in Example 3–7.

Example 3–7. A recall of \{T14\} and m. 1

a. Mm.18–19, recall

![Example notation]

b. M. 1

![Example notation]

A more effective way to project the recollections is through tone, dynamics, and tempo. The references will be more noticeable if A reenters with the same dynamic level, tone quality, and timing that it exhibited before it was cut off, and then makes the crescendo that Carter has precisely placed in both of these examples at the point where the figure continues on. Despite the extreme care with which Carter has notated these passages, let us admit that the reference to the incomplete \{T14\} and pc of measure one will not be perceptible regardless of what the player does. However, the allusion to the first measure could be interpreted as a new beginning, with a connotation that the music should come to life here in terms of both dynamics and pacing.
The more rhythmic and active B idea is marked *giocosamente, furioso, martellato* when it first appears. The performer may be tempted to play it very aggressively, but there are some details in the music that suggest taking a different approach. *Giocosamente* means playfully, and *staccato e leggero*, in the next measure, indicates that the notes should be kept short and light. In addition, the fluctuation between single notes and double stops naturally prevents one from digging in too harshly. Accordingly, the performer might do well to heed this built-in deterrent. I see this character as more mischievous than menacing, and Carter himself described it as “rather comically angry music.”

Although B consists almost entirely of sixteenth notes, their arrangements vary from four to seven notes per beat and include rests and *pizzicatos*. The arrangements change quickly, and the sudden shifts create continuous bursts of acceleration and deceleration along with abrupt stops and starts. In some recordings of this piece, the sixteenth notes are played without any noticeable distinction between the different tuplets, which obliterates the spasmodic effect of the material.

As shown in Example 3–9, B first makes itself known in measure 11 by interrupting A with a single snap *pizzicato C♯*. Although the *pizzicato* is startling, the arrival of B is gradual,

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26 Bons, "Interview with Elliott Carter," 16.
emerging a few notes at a time. The first two utterances are like stutters. In measure 13, $B$
reiterates the C# $pizzicato$ and then adds a D, followed by an $arco$ double-stop of the two notes
together. When $B$ fully enters in measure 15 it recalls this C#–D before continuing on. In
performance, the $pizzicato$ in measure 11 will be more conspicuous as a new and contrasting
element if the player stops the string with the left hand after the snap, rather than allowing it to
ring. The same may be done after the C#–D $arco$ dyad in measure 13.\(^{27}\)

About *Tranquillo C*

*Example 3–10. Tranquillo C*

\(^{27}\) John Link informed me that this C#–D dyad was originally $pizzicato$ and it is played that way on the earliest
(now at the Sacher Foundation), that he felt $arco$ provided a better connection to the $martellato$ passage two
two measures later. This change had already been made in a manuscript copy obtained by the author in the fall of 1986.
The C component, marked *tranquillo, ben legato* might represent the superior or wiser character. Its intervals—major thirds, minor sixths, and perfect fourths and fifths—are traditionally associated with consonance (unlike B’s seconds and A’s diminished chords) and they almost always combine to form Carter’s favored harmonies, the two all-interval tetrachords (AIT), [0146] and [0137]. Carter described this character as “lofty, slow and quiet.”28 Because this material is rhythmically inactive, the listener’s focus naturally falls on the simultaneity of the notes in the double-stops and the AITs formed by the combination of adjacent dyads. Projecting this effect requires holding the double-stops for their full value. Because of their long durations, the performer will probably find it necessary to count the beats when playing them. If one moves from one dyad to the next too quickly, then the linear motion comes into view (I discuss this later) and diminishes the impact of C’s key intervals and the AITs. Changing the bow slowly can prevent disturbances in the line, and keeping the swells to a minimum while using little or no vibrato helps to maintain a *tranquillo* demeanor.

III. Early Connections between the Characters (mm. 1–36)

Synopsis

Initially, the connections between characters are subtle. Characteristic B and C traits exist within the initial *dolce* material, but are disguised as if dormant, such that they are imperceptible. Traces of the musical alter egos appear fleetingly in moments of harmonic ambiguity, but in ways that offer two or more possibilities for hearing. Even after B and C break through to the surface, their attempts to bridge the boundaries between themselves and A are kept opaque by non-adjacent arrangements of notes.

Pre-existence of B and C elements within Dolce A

In the first section of this piece, hidden AIT elements reside within A and form larger groups within the [036] surface harmony. This background presence is a crucial component of the large-scale form as it points to the existence of C within the central, lyrical A from the outset. Example 3–11 shows some groups of five and six notes. There is also a seven-note string in measures 12–13, and four occurrences of AITs—two [0137]s and two [0146]s—in measures 3–4, 6–7, 8–9, and 12–13 which are enclosed in dashed lines in the example. The five-note groups seen here, [01469], [01346], [01367], [01347], and [02568] are all examples of all-interval tetrachords with an extra note that masks their presence, as illustrated in Example 3–12.

Example 3–11. Groups of 5, 6, and 7 notes
Example 3–12. “Masked” AITs

a. Mm. 1–2: [0146]s plus an extra note

b. Mm. 13–15: [0137] and [0146] plus an extra note

The hexachords in this excerpt, the first of which appears as [013467] in measures 3–4, are each a union of two forms of [036]. They also contain two forms each of [0146] and [0137], the most AIT possible from six notes. There are only four hexachords that share this property: [013467], [023568], [014679], and [013479]. A discrete example of [013479] does not appear here but the hexachord is contained within the [0134679] seven-note string, <F-D-B-G*-F*-C-A> in measures 12–13. This seven-note set houses all four of the aforementioned hexachords: excluding F yields [023568]; excluding D yields [013467]; excluding B yields [013479]; and excluding G# yields [014679]. The instances of these chords along with their [036] and AIT subsets are listed in Table 3–1.
Table 3–1. [036], [0146], and [0137] subsets of hexachords and septachord [0134679]

<table>
<thead>
<tr>
<th>Prime Form</th>
<th>mm.</th>
<th>Normal Form</th>
<th>[036] Subsets</th>
<th>[0146] Subsets</th>
<th>[0137] Subsets</th>
</tr>
</thead>
<tbody>
<tr>
<td>[013467]</td>
<td>3–4</td>
<td>{013467}</td>
<td>036 + 147</td>
<td>0146, 1367</td>
<td>0137, 0467</td>
</tr>
<tr>
<td>[013467]</td>
<td>4–5</td>
<td>{E02356}</td>
<td>E25 + 036</td>
<td>E035, 0256</td>
<td>E026, E356</td>
</tr>
<tr>
<td>[023568]</td>
<td>8–9</td>
<td>{79T013}</td>
<td>7T1 + 903</td>
<td>9T13, 7901</td>
<td>0137, 379T</td>
</tr>
<tr>
<td>[014679]</td>
<td>9–10</td>
<td>{569E02}</td>
<td>E25 + 690</td>
<td>569E, 0256</td>
<td>E026, 59E0</td>
</tr>
<tr>
<td>[0134679]</td>
<td>12–13</td>
<td>{5689E02}</td>
<td>58E, 8E2, E25,</td>
<td>569E, 68E0,</td>
<td>5680, 59E0,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>258, 690</td>
<td>8902, 0256</td>
<td>E026, 2689</td>
</tr>
</tbody>
</table>

The AIT content is not evident in the music because the pitches are arranged such that [03-6-9] stays in the forefront and, as we have seen, the AITs are for the most part noncontiguous. Nevertheless, one can assume that Carter’s use of these sets was not accidental. The concept of a background of dormant AITs also explains the incomplete [036]s—the five occurrences of [03]—seen earlier in Example 3–5; they contribute to the formation of the larger, scrambled groups.29

For the performer, this is an example of a structural element that should not be exposed. In fact, it is probably impossible to do so, musically. While this area exists, it is clear that it is meant to remain hidden, and that the feature to be made audible is the continuity of [0369] and its subsets. Later in the piece when Carter wants to change that focus, he slurs the notes in a way that breaks up the [0369] and shifts attention to the masked AIT. An instance of this is shown in

---

29 While the idea of AIT-except-for-one-note representing a background structure may at first seem far-fetched, John Link offered the observation that Carter’s sketches show that he often began with something very regular and overt and then proceeded to “mess it up” or scramble it when composing the actual music. Link has conducted extensive research on the Carter sketches at the Sacher Foundation.
Example 3–13. This provides further justification for choosing a bowing that keeps [03-6-9] intact in the opening section of the piece.

Example 3–13. Slurs de-emphasize [0369]s and emphasize masked AITs

![Example 3–13](image)

AIT content is not the only alter ego characteristic embedded in the opening A section. Boundary intervals of ic 1 and ic 2 separate the different forms of [03-6-9] and abstractly allude to the B idea. The ways in which the forms of [0369] and its subsets are strung together also suggest phrasing. Typically, [0369] and its subsets are linked together by ic1 and ic2. Deviations from these two linking intervals indicate phrase boundaries. Example 3–14a shows a [03] and

Example 3–14. Linking intervals

a. ic 2 in between [03-6-9] forms, and ic 4 phrase border

![Example 3–14a](image)

b. Detail of ic 4 phrase border

![Example 3–14b](image)
two \([0369]\)s separated by ic 2, one of the primary linking intervals. This is the usual flow of the music. The example also shows that this flow changes in measure three with the appearance of ic 4 as the linking interval. I call this a phrase border. Although the string of notes beginning with D4 in measure two all lie beneath a single slur, the contrasting interval hints at a way to shape the long line. A performer probably would not pause in between the B and D# nor accentuate the leap. In this instance, rhythm provides an additional clue to an approach for phrasing. As seen in Example 3–14b, the first and last notes of the \([0369]\), D and B, as well as the first note of the subsequent \([036]\), D#, have longer rhythmic values. The middle notes move more quickly, and a rhythmic retrograde occurs at the border between sets which further delineates the harmonic structure and its relation to the present phrase. The performer will naturally tend to push forward from the G# to the D# and make a crescendo while doing so even though the dynamic marking is clearly meant to prevent this. This tendency is due to the melodic line’s rise in pitch, which musicians often equate with a corresponding rise in other musical parameters. In this case however, the phrasing is indicated by intervals, rhythm, and dynamics. An alternative approach would be to quietly play the bordering note B slightly longer to finish the set before moving on to the D# and the next set. The D# should then be held for the same length as the previous B, and the following C should be held the same length as the previous G#, and so forth, to carry out the rhythmic symmetry.

Sometimes borders occur between slurs, as shown in Example 3–15, reinforcing the rule that beginnings of slurs should have a strong-beat feel.
Schulte said that he hears the B♭–G–E [036] at the end of measure seven as continuing on and connecting to the A♭ in measure eight such that a new phrase commences on the F. This may again be attributed to an association of the shape of the phrase with the rise of the melodic line along with its drop in register on the F. This partitioning, however, is not supported by the intervals, dynamics, or slurs. The crescendo leading to the mf which is maintained for two beats of measure eight shows the A♭ to be an initiation, not a termination. Additionally, because the A♭ begins a new slur as well as a new harmonic grouping, it is appropriate to play it like a true downbeat. I play the B♭–G–E in an up-bow, then make a fast break before initiating the A♭ with emphasis from the frog. The F should also be played strongly, in observation that the diminuendo does not begin until the onset of the next [036] on G♭.

In measure nine, there is likewise a tendency to crescendo from the G to the B♭ immediately preceding the ic 5 border, and to treat it as the start of a sequence of rising [03]s: G–B♭, E♭–C, A–F#. However, the G–B♭ does not belong to the [0369] E♭–C–A–F#. Connecting the notes in that way would partition the harmony incorrectly, violate the rule of slurs, and disregard the dynamics. The B♭ marks an ending, and the E♭ a beginning. One interpretive

option is to hesitate briefly at the border, allowing the B♭ to die away so that the E♭ sounds like the start of a fresh, expanding chord.

A slightly different situation is presented in Example 3–16. When A resumes following the initial B and C episodes, ic 5 indicates a border between [0369] and [03] followed by a change in pitch arrangement (I discuss this in more detail later). The shift away from the usual [036-9] grouping is significant and signals an important boundary. This can be illuminated by some shaping of the line. Although all of the notes from the F♯ in measure 36 to the E in measure 38 lie under a single slur, they are too many to fit in one bow. The ic 5 border at the bar line is a natural place to change the bow. Making a slight hesitation while doing so is one way to acknowledge the subtle change that is about to take place. One bowing possibility is shown in Example 3–16b.

Example 3–16. Border before change in pitch arrangement

a. Mm. 36–37

b. Suggested bowings and phrasing

The altered pitch arrangement in measure 37 temporarily disrupts the continuity of A’s [03-6-9] schema. Sometimes the foreground and background intersect in a way that results in
ambiguity as well as disruption. One example of this occurs in measure 6 where, as shown in Example 3–17, the appearance of even eighth notes grabs the listener’s attention. For the performer, it is very tempting to accentuate these “duplets” and create a pulse since none has existed thus far. This is made even more inviting because of the beaming. In some recordings,

Example 3–17. Regular rhythm points out harmonic ambiguity in m. 6

the violinist appears to slur each pair of eighth notes in its own bow, beginning with the D in measure six. In doing so, the tendency is to accentuate each pair and accelerate the tempo. However, a slur begins on the dotted eighth note F prior to the even eighth-notes and extends to include the [036] D–A♭–B that follows them. The slur, dynamics, and new rhythmic pattern create an ambiguity which can be interpreted in two different ways. Example 3–18a shows the familiar arrangement of [03] and [036] linked by ic 1 and ic 2. Example 3–18b demonstrates how the same passage could also be seen as a pair of [02]s plus the AIT [0146], separated by ic 3. The first reading emphasizes the inherent characteristics of A, while the second view reveals traits of both B and C. Since once again the printed slur contains more notes than can fit in one bow, the performer must decide on how to partition the notes. The choice of bowing depends on which of the above views the violinist prefers. Example 3–18c offers the bowing that favors the [03-6] reading. At the same time, the even rhythm of the eighth notes is probably sufficient to allow the B element to emerge for a moment. This bowing also keeps [0146] in the background. The bowing in Example 3–18d does not elucidate either reading, but attempts to subtly give attention
Example 3–18. Two views of mm. 5–7 and bowing suggestions

a. [03-6] separated by ic 1 and ic 2 in mm. 5–7

b. [02] and [0146] separated by ic 3 in mm. 5–7

c. Suggested bowing favors [03-6]

d. Alternate bowing favors a harmonic mixture and follows dynamics

to both, and follows the dynamic markings. Later in the piece, passages of uniform rhythms lead toward more overt AIT appearances (I discuss this later). At this point though, the B and C characters have not yet made their official entrances, so it is justifiable to keep them hidden. The [0146], although fully intact and free of extraneous notes, is embedded within two [036]s and as such is still disguised.
The situation requires that the performer makes a choice, preferably one based on a consideration of the extent to which the $B$ and $C$ characters should be revealed before they arrive on the surface. Playing the pairs of even eighth notes as accentuated duplets, on the other hand, is the result of an automatic response—to the visual cue of the beaming and the perception of a steady pulse—that ignores the question of harmonic intent, contradicts the long slur, and potentially disrupts the flow of the music in time.

**Prefiguring in $B$**

Similar ambiguities can also be found within the $B$ character. In measure 17, there are accents on three double stops: $D$–$C\#$, $B$–$C\#$, and $B$–$A$. As shown in Example 3–19, a voice crossing—tracing $D$–$C\#$–$B$ beginning and ending in the lower voice, and $C\#$–$B$–$A$ beginning and ending in the upper voice—keeps up the appearance of oblique motion while maintaining the continuity of ic 1 and ic 2. The central pitch around which the semitones circle changes from open string $D$ to open string $A$, and these pitches are highlighted with left-hand *pizzicatos*. This situation also presents an alternate possibility for hearing—ic 3, $D$–$B$ in the lower voice and ic 4, $C\#$–$A$ in the upper one—which infers qualities of $A$ and $C$. Although it is extremely unlikely that anyone could make this voice-leading aurally discernable, the performer could play these accented double stops with added weight to call attention to the shift from $D$ to $A$ as the central
pitch. This shift will be even more clearly recognized if the left-hand *pizzicato* of the open A is carefully prepared to ensure that it sounds robustly.

**Connecting gestures across boundaries between characters**

In addition to the subtle prefiguring of one character within another, common intervals are sometimes used by B and C in cooperative gestures that ease the transitions between themselves and A.

In an apparent nod to the previous A material, B concludes its first episode with a staggered array of [036]s that also forms a connection with the first two notes of A’s next episode. The staggered effect is reminiscent of the AITs in A that were off by one or more notes. Although the three scrambled [036]s, shown in Example 3–20, are extremely inconspicuous, Carter has punctuated these with a left-hand *pizzicato* on the note A and accents on the notes E and B, thereby marking the beginning of the first and third sets, and the end of the second one. Care, and possibly some time, should be taken in performance to ensure that these articulations project.

Example 3–20. Staggered [036]s connect B to A

C also makes an effort to cooperate in its first connection to A. C’s first appearance occurs on the heels of an A episode and its entrance is prepared several measures in advance. As shown in Example 3–21, a sustained open D sneaks in under the A line in measure 21, forming
{8E2} with A’s B and G#. Marked $p$, it is clearly intended that the D should emerge quietly under the moving *dolce* line which is still *mp*. This is extremely difficult to accomplish and it is probably acceptable to play the D more securely at first to ensure that the open string speaks and the [036] is heard. One could then adjust the balance and pressure of the bow to drop down under the upper voice when that line moves to G-natural. The D provides a smooth connection into the C episode not only because of its quiet, sustained quality, but also because it subsequently recalls its joint {8E2} with A in measure 21 by forming {8E25} linearly with the notes in its upper voice when the dyads appear. Because of A’s intervening notes in measures 22–23, the connection is subtle. Meanwhile, C’s lower voice spells out a different member of [036], {47T}. The performer might simply let this linear relationship exist without trying to reveal it in any way, and allow the listener’s focus to remain on the verticality of the double stops. This can be accomplished effectively by playing each dyad with a single, slow bow, if possible.
IV. Connections Become More Overt (mm. 36–66)

Synopsis

Following C’s official debut, the interpenetration between musical characters becomes more explicit. Now consciously aware of the others, A responds by rearranging its intervals to produce a vague but intact [0137]. In the process however, it disturbs its own native [036-9] order. B also acknowledges C by playing a decisive quadruple stop [0146]. Previously, A had utilized all 12 pc and all 12 forms of [036] in each of its episodes, but now A appears confused and no longer adheres to that practice. B and C then intervene to help A regain its identity by incorporating some of A’s qualities into their own material.

First Response

As if in response to the B and C episodes that have taken place, A reenters and slightly alters its configuration to reveal B and C traits that are more evident than before. Up to this point, each episode of A had presented all twelve forms of [036] (either discrete or embedded in [0369] supersets), but in this short response section, the most that can be extracted in the same manner is five. We previously observed that the boundary between measures 36–37 marked a departure from the usual [036-9] pattern. Now, we will examine that alteration more closely. As seen in Example 3–22, a “displaced” B♭ in measure 37 appears in the middle of what would otherwise be [0369] {258E} and gives the appearance of having migrated from its proper place alongside D♭–G–E (the last three notes in Example 3–22) where it would have formed [0369] {147T}. The result of this single note “migration” is the formation of adjacent ic 2 and ic 4, characteristic intervals of B and C, as well as a [0137] AIT with no extraneous note to hide it. The placement of the poco crescendo beginning on the high G in measure 38 supports this shift by separating
the E from the prior Db–G, thereby de-emphasizing the {147} and calling attention to the [0137].


In a reversal of the AITs with an extraneous note amid intact [0369]s and subsets that were so prevalent earlier, Carter now presents us with a [0369] with an extraneous note, alongside an intact [0137].

Marguerite Boland has described these harmonies that are off by one pitch or interval as having a transitional function in the context of localized progressions going from one pitch collection toward a referential sonority or “key chord” such as the all-trichord hexachord (ATH).31 In Riconoscenza, the harmonic “morphing,” as Boland calls it, in conjunction with the other details such as slurs, rhythm, and dynamics that aid the transfer of focus, instigates a large scale movement that occurs throughout the piece as it evolves from highly differentiated material to an integrated coexistence of the key sonority, in this case the AIT, with non-AIT elements.

Immediately following A’s “morphing” episode (Example 3–22), B also alludes to C, with a pair of unlikely ic 4s and a quadruple stop [0146] in measure 38. As shown in Example 3–23, B also contributes to a [0369] as a connecting gesture into the next A section.

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If one accepts the concept of “the wisdom of C,” then one might consider refraining from attacking the chord violently and might instead approach it seriously and intently. On the other hand, the chord, with its *sf*, *marcato*, and accent markings, could also be interpreted as a retort to A, who went to some trouble to produce its AIT, compared to B’s almost flippant ejaculation. This interpretation would warrant a sassier execution. Breaking the chord markedly would bring out the [02] and [01] dyads contained within the [0146]. Since A disrupted its [0369] in realizing the AIT (in contrast to B’s unscathed dyads), highlighting the double-stops could be viewed as either B’s flaunting its prowess, or, in a friendlier interpretation, as a didactic demonstration. Another performance consideration concerns the subsequent B♭ which initiates the [0369] connection to the A entrance. There is an accent on this note as well, therefore it should not be allowed to die away. Instead, it could be played with an upbeat feel.

**Cooperation**

In the next excerpt, B and C respond to A’s apparent confusion over its own intervals. As shown in Example 3–24, A begins its current episode in measure 39, but halts in measure 41 after using only nine pc. C steps in to supply the missing pitches, B♭–D–B, and completes the 12-pc collection without stating its characteristic [0146]. A also has trouble forming [036] and instead produces only strings of [03]s separated by a mixture of B and C intervals. As if prompting A, the B interjections in measures 48–49 offer pitches needed to form [036-9]. In a further crisis of
identity, A botches a recollection in measure 49 by entering a semitone too low and in the wrong order. C gives the impression of correcting this by accurately demonstrating a recall of its own in measure 51, which also forms a bridge to the preceding passage by taking up where A had left off and completing [0369] with B–A♭ in its upper voice.

Example 3–24. Mm. 39–53. B and C intervene with A

Continuity must be maintained in performance to project all of this interchange, but if one tries to do it by rushing from one utterance to the next, the distinction between characters will be lost and it will not come across effectively. One way to simulate continuity is by making a *crescendo* on the last notes of each episode, which will create a feeling of forward momentum (for example, A’s E♭ in measure 41, C♯ in measure 48, D♯ in measure 49, and F in measure 51). The exceptions to this are the ending of the C episode in measure 46, and A’s high E in measure 48, both of which should remain quiet. The latter should be played softly because there is no rest
between the E and the *marcato* sixteenth notes after it; making a *crescendo* would obscure the division between the two characters. Instead, A’s E6 in measure 48 could be played at the same dynamic level as the prior C# to indicate that it is a resumption of the interrupted A material. In fact, Carter has notated all of this precisely. The B pizzicatos are effective if played very sharply, as if admonishing A: “No! Do it this way!” I use two fingers to yank the triple stop in measure 48—the first finger for the lower two notes and the second finger for the open A.

V. Establishing Order and Agreement (mm. 66–91)

**Synopsis**

Having been guided by B and C, A breaks into an extended, uninterrupted solo during which it works on integrating its own voice with the intervals of the others and establishing a system of order. At first, A returns to its old habit of [036-9] situated within scrambled AITs, but soon enough it moves on to confront ic1 through ic5 in a process that leads to almost a moment of agreement among the three characters. “Almost,” because A has not completely assimilated the system of order into its own structure; A still adds extraneous notes in its attempt to master the new scenario. As if to show A how it should be done, B then goes off on its own extended passage and executes practically the same progression that A attempted, but B handles the new scenario with ease, without adding any extraneous notes.

**A’s progression (mm. 66–83)**

As seen in Example 3–25, A sets out in measure 66 in its original, customary manner: forms of [036] strung together and arranged within a larger context that suggests multiple forms of hidden AITs. In measure 70, there is change in pitch arrangement accompanied by a regular rhythmic pattern of eighth-note triplets. Earlier (Examples 3–17 and 3–18), we examined a
shorter passage of steady eighth notes that coincided with an ambiguity in the pitch organization that harbored a [0146] AIT. The present passage is longer than the earlier one, and the music appears to move toward something. Schulte said he hears this passage as “driving” and indeed, the musical momentum seems to surge forward.\(^{32}\)

Rhythmic irregularity, a hallmark of Carter’s music, pervades all sections of this piece. When there is a prolonged convergence of meter and rhythm that creates a regular beat pattern, the result is a very noticeable effect—one that is not only audible to the listener, but also physically palpable to the player. This raises questions for performance. Should the performer latch onto the perceived pulse or not, and how might one interpret the passage in the context of the larger section in which it belongs?

Attempting to answer these questions requires examining this episode in terms of its function—or dramatic action—and the outcome.

\(^{32}\) Lesson/interview on 10-15-2010
Once the regular rhythmic pattern begins, the [036-9] sonority and hidden AITs disappear. In their place appears to be a random babbling of ic 1 through ic 5, as if A is trying to process the diverse material presented by the other characters. At the end of measure 72, the last note, B4, connects to the subsequent G♯–F to form {58E}, a member of set-class [036]. A, momentarily at least, regains its composure. But it then resumes its quest to establish order. As shown in Example 3–26a, G♯–F in measure 73 combines with the next group of slurred notes, G–B♭–C–E♭, to form a new hexachord, {E♭–F–G–G♯–B♭–C}, which is a member of set-class [024579]. This hexachord does in fact establish a type of order, for when the pitches are arranged according to register from lowest to highest, their consecutive intervals include each of one through five, as shown in Example 3–26b. The swirling chaos of the interval-classes seen in the previous passage of triplets has been corralled into an orderly design.
Example 3–26. [024579] in mm. 73–74

a. Score view

```
[024579]
```

b. In registral order

```
\begin{align*}
\text{pitch intervals: } & 1 & 4 & 3 & 2 & 5 \\
\end{align*}
```

In registral order, the pitches form the interval sequence $i<1, 4, 3, 2, 5>$ which is one half of a 12-note all-interval series (AIS). The full 11-interval sequence, which Carter has classified as symmetrical inverted 12-note chord #24, is $i<1432567T98E>$. The complete 12-pitch series, based on the interval sequence, is the present hexachord $<78035T>$ plus $<4E9621>$. In order to complete the total chromatic, the pitches required are \{A–B–C♯–D–E–F♯\}.

Immediately following the AIS segment, A appears to be making an attempt at completion with D–F♯ in measure 74 (enclosed in dashed lines and labeled “completion process”)

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34 Symmetrical inverted 12-note chords are listed in Carter, *Harmony Book*: 57. Note that the numbers refer to intervals, not pitch-classes.
35 The pc are listed in registral, not chronological order.
in Example 3–25), but then seems unable to move forward. As if reluctant to go on, A twice recalls the G–B♭ leap of a tenth which first appeared in measure 73, before settling in to introduce the remaining pitches. But A does this in a rather peculiar way. As seen in Example 3–27a, the circled notes would form the complement, <C♯–E–F♯–A–B–D> which is another form of [024579], if it were not for G–D♭ inserted in the middle. These two extraneous notes belong to pcs that have already been stated, but their presence allows for two discrete [036]s within the figure and maintains the succession of ic 3. This suggests that within this new register-based order, A is reestablishing its identity, but has not yet perfected the process. The six notes that form the complementary [024579], if placed in their order of register, form another sequence of intervals one through five, i<5, 2, 3, 4, 1>, which is shown in Example 3–27b. It is an inversion of the sequence previously seen in Example 3–26b. The two [024579] hexachords are not segments of the same AIS, but rather are segments of two different ones that combine to complete the 12-pc aggregate. This interval sequence, i<5, 2, 3, 4, 1>, is a segment of symmetrical inverted, all-interval 12-note chord, Carter #23: i<523416E89T7>.

In this section we have witnessed a progression of orderly rhythm with chaotic interval arrangements leading to a distinctive intervallic arrangement of pitches fixed in register. This however, is not yet the arrival point. Resolution occurs only after A emerges from this episode in measure 77 and produces [0146] while still stating [036] and [0369], as shown in Example 3–28. However, A’s [0146] is indecisive as it is still embedded within, rather than incorporated into, the two [036]s. As if to clarify the situation, C answers with a [0146] comprised of the same pitches fixed in register, which then B mimics in agreement.
Example 3–27. Complementary [024579] in mm. 75–76

a. Score view

b. In registral order

Example 3–28. Mm. 77–83, [0146]s

What began as an altered rhythmic pattern and pitch arrangement turned into an extended progression that established register as an important feature. This development then led to an AIT event in which all three characters participated. This outcome sheds light on the entire section which might be interpreted as a process toward and arrival at a significant stage in A’s transformation as it strives to incorporate registral order and the AITs into its own individuality.

This brings us back to the matter of performance, and the question of how to interpret this section musically. While learning this piece for the second time, I did not understand what was happening in this section, and a localized analysis of the intervals did not explain it adequately. I
could see what Schulte meant by the passage of triplets having a “driving” quality, and it instinctively felt right for those few measures. However, this approach did not seem to hold up in terms of the next section, because the triplets do not drive to an immediate culmination the way one might expect. Schulte suggested that one might play with a full sound throughout measures 73–78 in order to project a more climactic effect on the entire passage. That did not appeal to me as a completely satisfactory solution either, and I remained stumped. Only by expanding the analysis to include a larger view which placed this passage in the context of a longer, sustained progression toward a moment of unity, was I able understand what was taking place.

The triplets do indeed move forward, and it is reasonable to play them in a driving manner. However, the passage containing the AIS segments (measures 73–76) is not a climax and therefore it would be inappropriate to try to play it as if it were. The AIS segments indicate a new stage of advancement, but continue the longer progression to the point of unity involving all three characters. The wild leaps will give forward momentum to the line if played so that the bottom notes of the tenths lead to the top notes. In other words, the momentum will be maintained more effectively if the accentuation is on the high note. Additionally, these measures might be paced to project a small but continuous accelerando right up until A’s [0146] in measures 77–78. To create a feeling of arrival and closure, the D♯–A at the end of measure 77 as well as the subsequent G–E and B♭–Db could be played deliberately with a slight tenuto while slowing the tempo. Distributing the pairs of eighth notes into three bows gives them added weight, aids the crescendo, and allows [0146] as well as [0369] to be heard equally. The response from C could be played with simplicity—without inflection, flaws in intonation, disturbances in the bow, or nervous vibrato. Consciously making a diminuendo on the second double stop counteracts the natural tendencies to crescendo on the up-bow and to anticipate the
upcoming *forte* entrance. I take time to finish the G–Eb double-stop and then wait before going on. B’s chord might be also be played slightly *tenuto* to give it importance and to set it apart from what happens next. These performance suggestions as well as suggested bowings are indicated in brackets in Example 3–29.

Example 3–29. Mm. 77–83, performance suggestions

Performers often feel that larger-scale structural features are not relevant to what they do, and prefer detailed, local information. This is a case where a slightly enlarged view was necessary to understand the functions of the smaller passages within the overall section. When an analysis does not seem relevant to performance, often the answer is not less analysis, but more and better analysis.

*B’s progression (mm. 82–91)*

Immediately after B contributes the [0146] chord in measure 83, it embarks on its most extended passage in the piece. Up to this point, B has been heard for only a few measures at a time. Now B is allowed to expand its range in every way, with extremes in dynamics, register, rhythm, and tempo. Apart from the [0146] chord, B begins in its usual manner: sixteenth notes of ic 1 and ic 2 in quick alternations between four and five notes per beat with rests and pizzicatos mixed in. Before long however, B encounters its own passage of regular rhythm. By now we can guess that this indicates the start of a progression leading to an AIS segment, followed by an AIT event. It is in fact virtually the same process that A undertook, but B manages it without any
hesitations, extraneous notes, or departures from its own intervallic structure of ic 1 and ic 2.

Each stage of the process is now more obvious. As shown in Example 3–30, the steadiness of the rhythm and lack of accents in measure 87 set it apart from the previous typical erratic rhythms and accents.36

Oppens said she thinks of measures 88–89 as representing “one chord” because of the common repeated pitches in and between the two measures.37 She suggests playing evenly but moving forward to avoid breaking up the “chord.” This would also contribute to a sense of direction and, as in the previous episode, this forward movement is consistent with the idea of a progression. The diminuendo and absence of accents at the end of measure 89 help to set up the beginning of measure 90 and the [012345] hexachord which is an AIS segment. As shown in Example 3–31, when placed in registral order, the pitches in measure 90, G–F#–G#–F–A–E, form the interval sequence i<E, 2, 9, 4, 7> which is a segment of symmetrical inverted all-interval, 12-note chord, Carter #11: <583T16E2947>.

Exaggerating the drop in dynamic level when going into measure 90 will create a dramatic sense of anticipation and also will leave room to make a substantial crescendo in the second half of the measure. The accents disappear at the end of measure 90 and the tempo naturally broadens as the notes revert back to sixteenths. One way to build the intensity going into measure 91 would be to play these sixteenth notes more smoothly without lifting the bow.

36There is a mistake in the published score at the time signature change where it is indicated that the eighth note remains constant but in parentheses indicates that = 61+. In the manuscript, Carter has written [dotted quarter note] = 61+ which is the correct conversion for in 6/8 from = 92 in 3/4, the tempo marking at the start of the piece.
37Lesson/interview 10-21-2010.
The last double stop of the measure, F–E, should receive a sharp accent, and despite the rest that follows, the performer could slightly extend the duration of the dyad and continue to crescendo throughout in order to lead more dramatically into the next measure. This double stop should not be made to sound like an arrival because it leads to a battery of AITs in the next measure, as shown in Example 3–32.
I previously mentioned that Schulte has experimented with playing the chords from the top to bottom in order to bring out a bass line, in the manner of Bach. This is a very thoughtful and inventive approach. Although playing the chords in the conventional way, from the bottom up, allows a significant harmonic relationship, aurally connecting the upper three notes of the first chord, B–F–E, to the next low G, which together form AIT [0137], Schulte’s idea presents an interesting exploration of intertextuality in Carter.

VI. Final Process Toward Order and Assimilation (mm. 91–99)

**Synopsis**

Character $B$ flawlessly demonstrated how to proceed from regular rhythms to an AIS segment to an AIT without disrupting its own intervallic structure. In the next section, $B$ turns its attention to $A$ and emphatically helps it to reestablish its identity while conforming to the new constraints.

**Reestablishing order**

When $A$ returns in measure 91, $B$ takes an active role in helping $A$ carry out its task, beginning by combining with it in a recall of measures 77–78. As can be seen in Example 3–33,
Example 3–33. Composite recall of mm. 77–78

a. Recall in mm. 91–92

b. Mm. 77–78

this is not a literal recollection; neither order nor register are fixed as A and B patch together a joint effort. What is more important is that while shouting out [0146], B is simultaneously helping A to reestablish its proper intervallic framework. Example 3–34 shows how B combines with A to form [036-9].

Example 3–34. B Combines with A to form [036-9] in mm. 91–92

If we expand our view to include the entire passage shown in Example 3–35, we will see that this marks the onset of a larger process. The notes that comprise the [036-9] in measures 91–92
initiate a free 12-pitch series. In measure 93, following the joint recall effort with $B$, $A$ begins another aimless episode of random intervals and continues until all 12 pitch-classes have been stated. At this point (measure 95), $B$ interjects with its most forceful $[0146]$ of the piece. Not only is this the $B$ climax, but it now appears that $B$ had been trying to get a message across to $A$ when helping it spell out $A$’s characteristic $[036-9]$ while insistently hammering out $[0146]$. After this final outburst, $A$ seems to finally take notice. In what at first appears to be an attempt at another recollection, $A$ reconsiders the entire previous passage, and in a loose retrograde it retraces its steps, rearranging some of the notes in such a way that they are now all in “$[036-9]$ order.” Then, in the second part of measure 98, $A$ initiates another series in “$[036-9]$ order,” and the combined pitches form a new hexachord, $[013589]$. The high harmonic $D_9$ in the middle of the hexachord gives the appearance of being another example of an extraneous note, but it can

Example 3–35. Mm. 91–99
also be viewed as belonging to the high register of the previous measure. In addition, pc 1 completes the 12-pc aggregate of the preceding “[036-9] ordered” section.

This section is difficult to pull off in performance. The B interjections happen so quickly that it is easy to lose the division of characters in the midst of the interplay. One way to avoid this is through the use of contrasting sounds. The sound of the A stream could be excruciatingly warm, almost pleading at times, but B should be kept extremely sharp and resolute. Despite the temptation to keep moving forward, a certain amount of time must be taken to finish the A statements so that they are not ruined by any anticipation of the B chords. Oppens suggested playing the A notes following each interruption unresponsively, as if saying, “I didn’t hear you.”

The first of the B [0146] chords, in measure 92, might be played slightly sustained, in order to audibly connect to the lyrical voice for the joint [036]. The next chord, also in measure 92, could be shorter and sharper, in an act of cutting A off. The final chord, in measure 95, is a resounding “NO!!!” and can be broken into two bows: down-bow for G–F–E and up-bow for the upper two notes, B♭–A♭. It is effective to pause and allow the air to clear before having A re-enter, meekly.

The subsequent rearranging episode can be played almost mechanically, without obtrusive slides or vibrato. On the last note of measure 99, E♭, Schulte suggested going up on the D string with a slight portamento and expressive vibrato. I like this suggestion because it signals the end of the mechanical ordering process and slightly separates the E♭ from the D–B–F before it while also forming an effective connection into the next [036] and the final section of the piece. It is also the last time an E♭ is heard until the last measure.
VII. Closure (mm. 100–End)

Synopsis

Closure is achieved when all three personalities converge on the same eight pitches fixed in register, and intervals arranged in registral order. While doing so, they also incorporate the symbolic wisdom of the AITs without altering any of their own self-defining characteristics. In the final measure, the lyrical character reemerges seemingly “back to normal,” having weathered the storm.

Integration and unification

The [013589] that A built in measures 98–99 is shown more closely in Example 3–36. This hexachord, {2357TE}, functions as a hinge to the final act of unification and closure which begins in measure 100. In order to complete the 12 pc aggregate, {2357TE} requires {014689}, another form of [013589], related by T₁₁₁ ([013589] is self-complementary). These pcs, along with a repeated pc 7, appear in measure 100, and are labeled Ax in Example 3–37.

Example 3–36. [013589] in mm. 98–99

Although Ax is to a large extent in “[036] order,” the same pitches also appear in the subsequent B and C passages, but are arranged to display their respective preferred intervals.

After every x, each voice states two [0146] all-interval tetrachords, labeled y and z. The pitches are fixed in register, and from measure 100 to measure 120, the music is confined to eight pitches which are limited in range from G3 to E5, the lowest and highest of the violin’s open strings. The pitches that comprise x, the [013589] with an added G, can be arranged in registral order, as shown in Example 3–38, to produce the interval sequence i<6, 5, 2, 1, 3, 4>, a segment from the parallel inverted, all-interval 12-note chord, <7TE98652134>.\footnote{The G–C# form a tritone which is the interval that separates the two hexachords in a 12-note, all-interval series. The G is the duplicated pc which also occurs in the [013589] in mm. 98–99.} Previously, AIS segments signaled an imminent AIT event. Now the relationship is fully exposed.\footnote{Parallel inverted chords are listed in Carter, \textit{Harmony Book}, 71.}

\footnote{A slightly different view of this section is presented in Roeder, “’The Matter of Human Cooperation’ in Carter’s Mature Style,” 126.}
How can this revelation be projected in performance? I decided simply to imagine what A, B, and C might be saying in their \(x\)-\(y\)-\(z\) sequences. A: “I think I figured it now” — “don’t you think so?”— “yes, I believe I did it;” B: “I knew it all along” — “I told you so” — “I TOLD YOU SO!”; C: contentedly remains unchanged.

The final six notes signal A’s return to “normalcy,” and by ending the piece with this material, Carter re-establishes A as the main character. Most noticeable, as seen in Example 3–39a, are the two forms of \([036]\) separated by ic 1, a mainstay of A’s personality. However, the aggregate of those pc, B\(b\)–G–D\(b\)–C–E\(b\)–A, form the symmetrical set \([023568]\) which embeds the following: \([036]\) = \{7T1\} and \{903\}; \([0146]\) = \{9T13\} and \{7901\}; \([0137]\) = \{0137\} and \{379T\}. As in the beginning of the piece, AITs, mostly scrambled, exist beneath the surface as subsets of a larger collection. The penultimate E\(b\) belongs to the pitch-class that was omitted from this final section of the piece. Taking that as a hint, if we were to exclude it, but include the G\(b\) that appears just beforehand, the final string of slurred notes, G\(b\)–B\(b\)–G–D\(b\)–C–A, shown in Example 3–39b, yields a form of \([013467]\) which is also a symmetrical set, and a combination of the \([0146]\) tetrachords \(y\) and \(z\). The relevant subsets of \{679T01\} are: \([036]\) = \{7T1\} and \{690\}; \([0146]\) = \{67T0\} and \{7901\}; and \([0137]\) = \{6791\} and \{6T01\}. 

Example 3–38. \([013589]\) and \([0146]\) in registral order
Example 3–39. Final A statement

a. Last six notes

b. Last seven notes, excluding Eb

In performance, this final phrase might be projected with a matter-of-fact attitude as A, like “the line of life, often interrupted… picks up and goes on.” When playing the harmonic A5, it is tempting to apply a burst of speed to the bow and lift it for the release, much like the technique one would likely use on the harmonic A at the beginning of the third movement of the Mendelssohn Concerto in E minor (Example 3–40). The idea of releasing the note into the air is psychologically appealing, but unless one carefully considers the musical effect that is desired, merely the thought of “releasing” will trigger a physical movement in the right arm that will
cause the note to stand out and also create an abrupt stop. Carter’s notation indicates that the music is to die away in terms of both speed and dynamics. Although it is written “non rit.,” the music necessarily slows down as the rhythm changes from eighth notes to a quarter-note triplet. The violinist might consider complying with the printed slur by playing the last six notes in a single down bow. As the music fades away, the bow could be allowed to remain on the string, letting the sound drift off as if it were continuing on into the inaudible distance whence the piece arose.

VIII. Conclusion

The three musical characters in Riconoscenza are so clearly differentiated in terms of rhythm, intervals, and dynamics that even performers with no interest in analysis can recognize their presence throughout the piece and fashion their playing to portray the different “personalities.” Some theoretical concepts, however, such as the all-interval tetrachords and segments of all-interval, twelve-note chords fixed in register, are not easily perceived by the ear and may seem initially to be hopelessly abstract and irrelevant to performance concerns. I sought to uncover relevance to performance by identifying the interconnections between characters and by determining that certain structural elements were associated with certain behaviors and conditions. In many respects, the correlation of structure and drama revealed A’s musical journey through this piece to be a struggle of individuality versus conformity. This understanding provided a much more detailed scenario on which to base a cohesive interpretation.

More generally, the cooperative behavior between characters establishes the piece as being more light-hearted than heavy. The marcato B character in particular, although boisterous, proved to be extremely helpful to A and invaluable to the unification process. B is technically the most difficult stream to play, and the sentiment of cooperation will not come across in
performance if the violinist allows his technical struggles to dominate the portrayal of this musical character.

Because Carter’s compositional techniques are so unique, it is unlikely that the analytical methods and relevant violin techniques used in this case could be successfully applied elsewhere. [0146] in the music of Milton Babbitt, for example, would not be considered a referential sonority nor would it signify a moment of unification. By the same token, the musical traditions that performers have absorbed during the totality of their musical experience cannot be relied upon to provide insightful renditions of Carter’s music. For example, chords in Bach’s solo violin music do not serve the same purpose as chords in Carter’s solo violin music. During a panel discussion about performing Carter, Oppens remarked that when she first began playing his music she tried to interpret it according to the way she thought it should sound: “That was a terrible mistake. I eventually realized that I had to let the music tell me how to play it.”

Nevertheless, there are certain elements that can be applied from one piece by Carter to another. 

*Mnemosyné*, Carter’s last piece for solo violin, composed in 2011 for Schulte for the composer’s 103rd birthday celebration in New York City, begins with a lyrical, *dolce* line that immediately spells out [0146] and then continues on to complete [012478] the all-trichord hexachord (ATH). The lyrical line is briefly interrupted by appearances of *staccato* eighth and sixteenth notes marked *leggiero*, which are similar in style to *Riconoscenza*’s *B* character. During the second half of the piece, long, sustained, *legato* notes, not unlike *Riconoscenza*’s *C* character, combine to form the AITs and ATH, but are also subject to frequent interruptions by *staccato* fragments. Only in the final measure do the *staccato leggiero* notes themselves state

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42 Elliott Carter Performance Practice Colloquium, CUNY Graduate Center, February 14, 2013.
43 The concert was held in the 92nd Street Y on December 8, 2011.
44 The ATH, although not prominently featured in *Riconoscenza*, is another one of Carter’s favored sets. All twelve trichord types can be derived from this superset.
The scenario is different, but the language is familiar. Certain interpretive/performance techniques, such as controlling sound to differentiate musical material, conveying appearances of the AITs and ATH as arrival points and interruptions as setbacks, and observing that episodes of regular rhythms lead toward key harmonic events, can be effectively applied to this and other pieces to express Carter’s conception of musical drama.
The music is apparently very difficult for some performers. By the way, it’s not that difficult for others. –Milton Babbitt

I. Introduction

Melismata for Solo Violin brings us into the realm of Milton Babbitt, a rich and fascinating twelve-tone dominion that is like no other. This single-movement work was written for violinist Paul Zukofsky and premiered on February 2, 1983 at the Kennedy Center Terrace Theater on the American Composers' Series, "One Man," in an all-Babbitt concert held to pay tribute to the composer's many accomplishments.

While much has been written about Babbitt's intricate array structures, and several interesting studies exist on aspects of performance, the relationship between the music and its compositional procedures is not readily apparent. Attempting to specify how and in what context the theories behind the array become guiding principles for interpretation, and determining when to balance those with purely experiential phenomena, is a complicated problem. Furthermore, the musical and technical means needed to solve that problem can be elusive. This chapter examines these problems in terms of the challenges Melismata presents to the performer, with details for analysis chosen from that perspective.

II. General Performance Issues

Like most of Babbitt’s music, *Melismata* is extremely difficult to play. The interesting thing is that, to the listener, it may not appear that way. It is virtuosity without the glitz of overt technical gymnastics. For one thing, it is mostly very quiet. And for another, it sounds slow. The entire work unfolds at a steady rate of 72 quarter-note beats per minute, a speed marked on most metronomes as *Adagio*. However, for the violinist confronted with flurries of notes arranged in irregular metrical subdivisions along with dauntingly large leaps in pitch register, the specified tempo is essentially unachievable. Out of physical necessity, therefore, the question of tempo may be the first major consideration the performer encounters. Besides tempo, *Melismata* presents other unique challenges ranging from elements that directly invoke technical skills of execution such as rhythm, dynamics, fingerings, and bowings, to questions concerning larger-scale issues: Are there phrases? Is there a climax? How can one progress through the piece in a way that helps a performance cohere? In what follows, I will first identify and discuss some of these questions and concerns, and then for the remainder of this survey I will explore possible analytical inferences and musical approaches for addressing them in performance.

As was just mentioned, perhaps the first and foremost consideration facing the performer is tempo. It is conceivable that one of the reasons the piece comes across as slow is because few violinists have attempted to play it at the prescribed speed. Curtis Macomber, the only violinist who has recorded *Melismata*, plays it much more slowly than indicated and takes expressive liberties. In doing so, he extends the piece more than five minutes beyond its specified duration of approximately 13 minutes. Schulte approaches Babbitt’s tempos with a degree of freedom and applies his own individual philosophy to violin playing in which projection and production of a
lush tone are valued above some other considerations.\textsuperscript{2} It is known and accepted that performers frequently take liberties with tempos in all of the music we play. The question here is, apart from the physical difficulties and the obvious fact that the composer specified a metronome marking (quarter note = 72 is one of his favorites), or even that he has expressed disapproval of performances of his music that were significantly under tempo,\textsuperscript{3} beyond the issue of technical limits, are there also musical or even analytical reasons to induce the performer to either adhere to or disregard the tempo marking?

This general question of how literally one should adhere to the score also extends to rhythm and dynamics. Although the piece maintains a noticeable steady pulse and, unlike in some of Babbitt's other music, accentuations can be found where we expect them—on the downbeats—it features many irregular metrical subdivisions. When practicing these, one performer might approximate the timing of a figure such as the one shown in Example 4–1 by playing the double stop slightly longer than the very last note which could be interjected quickly just before the next beat. On the other hand, another performer might practice it slowly with a metronome and methodically count out ten even subdivisions.

\textsuperscript{2} Discussions with the author, 2010–2012. Although Schulte has not recorded or publicly performed \textit{Melismata} to date, he has extensive experience performing Babbitt's music. He has recorded \textit{Sextets} and \textit{The Joy of More Sextets}, premiered \textit{Little Goes a Long Way}, and performed a host of Babbitt's chamber music.

\textsuperscript{3} See Karpman and Hilferty, "Documentary: Avant-Garde Composer Milton Babbitt," the documentary film available from NPR in which Babbitt comments on the Philadelphia Orchestra's inability to play \textit{Transfigured Notes} up to tempo: “They’ve tried, they’ve cooperated; the work is simply not up to tempo and I’m hoping someday to hear it up to tempo but, you know, life is short and my piece gets long.” (He had just observed a rehearsal before the orchestra's third failure to produce a premiere performance.)
Example 4–1. Rhythmic subdivision

During my own preparation, I combined methodical and aural approaches. I first used the metronome at a slow speed and counted the subdivisions. Once I felt comfortable with that, the magic of the computer provided me with a MIDI playback of how these figures were supposed to sound at tempo, a speed at which I was often no longer able to subdivide. Nevertheless, no matter how accurately I might have played it, it is highly unlikely that a listener would have been able to identify the figure in Example 4–1 as consisting of various numbers of ten equal subdivisions. How could a listener have the foresight to decide to subdivide the quarter-note beat into tenths at that exact moment in the music? Joel Lester maintains that unless a listener can do exactly that, the perceived rhythm is simply an unequal division of the prevailing pulse. He also demonstrates how listeners readily perceive pulses when they are regular and constant, but cannot distinguish between notes that are held for varying numbers of subdivisions from changes in tempo, without a prescribed grid of the subdivisions.\footnote{Joel Lester, "Notated and Heard Meter," \textit{Perspectives of New Music} 24, no. 2 (1986).} Based on what Lester says, one would assume that it makes more sense for the performer to concentrate on maintaining a regular and perceivable pulse, rather than to labor over the exact rendering of more complex subdivisions. However, by itself, perception may not be the best criterion on which to base an interpretation. Later, I will explore some analytical angles that may imply an alternative approach to playing these rhythms.
While the rhythms are problematic due to their irregularity, dynamics pose a technical challenge because of their rapid fluctuations. In Example 4–2a, six different dynamic levels appear within four measures.

Example 4–2. Dynamic variety

a. Six dynamic levels in four measures

![Dynamic Example 4–2a](image)

b. Four levels of piano

![Dynamic Example 4–2b](image)

Playing this demands a very different bow technique from the style of playing most violinists are used to. Zukofsky wrote: "The relevance of Milton Babbitt's use of dynamics to our control of the bow with respect to speed, pressure and distribution combinations cannot be overstated... The concepts we must employ when bowing Babbitt's music completely contradict the stasis that is our norm, i.e. do the same thing for a very long time." Due to the relative anomalism of the rapid rate of change, one might question if these dynamics are there for a reason other than to produce erratic variations in sound. In Example 4–2b, the subtle differences between the four

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different shades of piano are not only challenging to produce, but are also very likely aurally indiscernible. A listener would probably be able to distinguish the mezzo piano triplet at the beginning of measure 85 as being as louder than what came just before it, but it is doubtful that anyone would recognize the return to mezzo piano in the very next measure, or make the connection that the last triplet E–E♭–B♭ marked pianissimo, marks a return to the same dynamic level as heard on the first three notes of this passage, A♭–A–D. Andrew Mead and Joseph Straus have described Babbitt's dynamics with terms such as "inflectional contours" and "relationships of softer and louder." In an interview, Babbitt himself admitted that it is not possible to establish absolute values for dynamics:

The dynamics are very important in the piece [Sheer Pluck]—in all of these pieces, as you know—because dynamics, after all, are not absolutes. We can't scale dynamics the way we can scale pitch, but relative dynamics are of the greatest importance and they usually serve to project some other dimension of the music. So, the differences are how the performers decide, again, the total scale of dynamics, the relative scales within the dynamics, and then, of course, the modes of sound production between the two.

If the dynamics "serve to project some other dimension of the music," perhaps the performer ought to know what that dimension is in order to assess its importance within different contexts and decide how much effort to put into distinguishing each individual dynamic from the rest.

Fingerings are always a concern for the violinist, but in Melismata, deciding on fingerings is particularly problematic due to the frequent large leaps in pitch register. Two

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7 Joseph N. Straus, "Listening to Babbitt," Perspectives of New Music 24, no. 2 (1986).
techniques to utilize when dealing with this problem are extensions/contractions, and harmonics (artificial and natural). Both of these practices can enable a violinist to reach a larger range of pitches without changing the position of the left hand. In his directions in the score to the performer, Babbitt wrote, "all harmonics are notated at actual pitch; notes notated as harmonics may be produced as non-harmonics, and conversely, at the convenience of the violinist, but the registral placement of the pitch should not be altered." If one prioritizes the preservation of tempo, one might see this as an invitation to use harmonics even where they are not indicated, as a means of producing accurate pitches while maintaining tempo and rhythm. On the other hand, if one prefers clarity and uniformity of tone, one might in fact play stopped notes even where a harmonic is indicated. I decided to use harmonics as well as extensions in order to avoid changing position where I felt it was important to maintain tempo and rhythm. Example 4–3 shows one such instance. I interpret the harmonic symbol over the high E as a hint that the figure should be played rapidly, like a flourish. The fingerings I used (Example 4–3b) which add an additional harmonic, on the last A, allowed me to play the figure quickly without leaving third position.

Example 4–3. Harmonics and fingerings in m. 40.
Despite the printed harmonic indication on the high E♭, Schulte chooses to play it as a stopped note in order to achieve and sustain a true forte dynamic. During several conversations, Schulte said he does not like to use harmonics, even if they are indicated, because they lack projection. To him, it is better to take time and carefully play stopped notes, even in fast passages containing large shifts such as the one in Example 4–3, in order to ensure adequate projection and tone. Zukofsky, who wrote an article on harmonics,⁹ stated (in another article) that harmonics "are useful as substitute fingerings in certain extreme passages."¹⁰ Despite what a violinist may feel about physical comfort or projection and tone, it seems reasonable to assume that the questions of rhythm and tempo ought to be resolved first before deciding on the use of harmonics or other fingerings.

The matters discussed so far directly involve violin technique. In addition to these, there are more general questions of phrasing and other interpretive concerns. Often the pitches and rhythms appear to be without relation. Although there are obvious repeated pitches and rhythms throughout the piece, these appear locally for limited durations and then are seemingly left behind as new repeated selections emerge. It is not immediately apparent whether there are elements that reoccur to make large-scale connections and help the music cohere. Performers have commented that often in Babbitt's music there are no clearly defined sections and some perceive it as a succession of fragments.¹¹ In discussing Arie da Capo, Ciro Scotto said:

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⁹ Paul Zukofsky, "On Violin Harmonics," Perspectives of New Music 6, no. 2 (1968).
¹⁰ Zukofsky, "Aspects of Contemporary Technique (with Comments About Cage, Feldman, Scelsi and Babbitt)," 145.
¹¹ There are exceptions, most notably in the music for ensembles where sections are well defined because of the changes in instrumentation. Similarly, My Ends Are My Beginnings, a solo piece, has distinct large sections where the performer changes from B♭ clarinet to bass and back again.
I have often heard musicians speak of Babbitt's music as music composed of fragments. If one hears the music as fragmented, one will certainly produce fragmented sounds. Each sound could be compared to a bolt or screw or sprocket in a great machine, having no awareness beyond its immediate function. In complex music such as Babbitt's, which is filled with an enormous amount of local detail, it is sometimes easy to lose sight of the forest for the trees. One must have an overall idea of what the piece is about.\textsuperscript{12}

Attempting to apprehend an overall idea of \textit{Melismata} can be challenging when one is studying the piece for the first time; the music seems to continuously spin out from itself, slowly mutating, with no obvious reoccurring themes nor changes of tempo, instrumentation, or key—the usual things we look for in more traditional music. And what is more, it is long! How can one traverse a piece that often seems hopelessly discursive?

Somewhat related to this is the question of climax. Is there one? Performers who participated in the 2012 CUNY Babbitt Retrospective concert were mixed in their responses to this question about their pieces. Clarinetist Charles Neidich said he always looks for one and identified a particular passage in \textit{My Ends Are My Beginnings} that he believes is a sustained and triumphant climactic section. Flutist Patricia Spencer did not feel that \textit{None but the Lonely Flute} has a climax, and cellist Christopher Gross described sustained pitches in \textit{More Melismata} as being "like a kind of anti-climax, a calm within the storm." As for \textit{Melismata}, I don't believe there is a climax in the traditional sense. At the very least, I think we have to apply a very different definition of the idea to this piece. As I will discuss later, extremely important events in \textit{Melismata} are neither loud, nor high in pitch, nor sustained in duration.

III. Babbitt’s Serial Practice

Although composed in 1982, a year generally considered as belonging to Babbitt's third stylistic period, *Melismata* is more accurately representative of his middle period because of its use of something called an all-partition array, a particular form of expansion of Schoenberg's twelve-tone system which is a distinguishing feature of the second period. Although much has been written about the serialism of Schoenberg and its influence on Babbitt's own serial system, it might be worthwhile to briefly review the genesis of Babbitt's twelve-tone process, Schoenberg's practice of hexachordal combinatoriality.

Combinatoriality is the condition of combining pitch class (pc) collections or sets, to form aggregates of all twelve pc. The type of combinatoriality that Schoenberg employed in his later works involved a hexachord that could be combined with an inversion of itself to produce all twelve pc, with the resulting aggregate forming a complete twelve-tone row. Since the row's two constituent hexachords are related by inversion, if the entire row were inverted at the same level as that which relates the hexachords, the result would be a new row in which the contents of the two hexachords have switched positions, i.e., the pc contents of the new row's first hexachord would be equivalent to the contents of the original row's second hexachord, and vice versa. More importantly, using both of these rows simultaneously would result in the formation of four aggregates: the two rows themselves, plus the aggregates generated by the combination of the first hexachords of each row and the combination of the second hexachords of each row, respectively. An example of inversional hexachordal combinatoriality in Schoenberg's Violin Phantasy Op. 47 is shown in Example 4–4, below. This simultaneous use of two rows related by inversion, and the formation of multiple aggregates on more than one level, is the foundation of all of Babbitt's twelve-tone structures. As Andrew Mead wrote, "The fundamental slicing of a row into two segmental hexachords has remained a feature of Babbitt's compositional practice
throughout his work, with few exceptions. At the heart of virtually all of his compositions is Schoenberg's hexachordal combinatoriality.\textsuperscript{13}


a. mm. 32–33

\begin{figure}
\centering
\includegraphics[width=\textwidth]{example4-4.png}
\end{figure}

b. $P_{10}/I_3$ Combinatoriality

\begin{figure}
\centering
\includegraphics[width=\textwidth]{example4-4b.png}
\end{figure}

Babbitt, however, expanded on Schoenberg's procedure in a number of significant ways. I will briefly mention three of them here in terms of how they manifest in the array used in the composition of \textit{Melismata}. An array can be described as several lines of music unfolding simultaneously. Example 4–4b, above, depicts an array. One thing Babbitt did was to use several

of these Schoenberg-type arrays concurrently. *Melismata*\textquotesingle s array combines three of them into a single, expanded array. Example 4–5 illustrates how the array looks in its most basic state.

Example 4–5. Basic array of *Melismata*

```
\begin{tikzpicture}
\node [anchor=east] at (2.5,1.5) {Block};
\node [anchor=east] at (2.5,0.5) {Lyne};
\node [anchor=east] at (2.5,-1.5) {P11};
\node [anchor=east] at (2.5,-2.5) {I6};
\node [anchor=east] at (2.5,-3.5) {R4};
\node [anchor=east] at (2.5,-4.5) {I2};
\node [anchor=east] at (2.5,-5.5) {RI4};
\node [anchor=east] at (2.5,-6.5) {R9};
\end{tikzpicture}
```

Because the violin is basically a melodic instrument, the musical effect is one of virtual counterpoint, expressed mostly one note at a time (this will be made clear, shortly.)

Another thing Babbitt did was to extend the length of the array by chaining numerous of these arrays together. In this situation, the "sub-arrays" are called *blocks*. The horizontal rows, which then consist of concatenated series forms, are called *lynes*. If we were talking about any other contrapuntal music, we might simply refer to them as voices.

Most significantly, Babbitt expanded the concept of combinatoriality by generalizing Schoenberg\textquotesingle s principle in a way that allowed the pairing of a hexachord with any transformation, not only inversion, of itself. He discovered six hexachords, which he called "all-combinatorial," that may be transformed by all four of the basic twelve-tone operations (T, R, I, and RI) at
certain levels and combined with the original to form aggregates. *Melismata's* array uses a row based on the type D all-combinatorial hexachord [012678].

**IV. Melismata's Array**

Babbitt did not construct a new array for every composition. The particular model or array-class that he used in *Melismata* first appeared in the early 1970s, and is one of only two six-part arrays that are based on the type D hexachord. As Mead explained, "Because arrays may be interpreted in a wide variety of ways, and because they are not the easiest things in the world to construct, Babbitt has tended to reuse the same rather small bunch of all-partition arrays in a number of works, varying them under certain types of operations." Indeed, Babbitt transformed his arrays not only for use in different pieces, but also for use within a single piece. Roughly half of *Melismata* is composed from one form of the array, while the second half (from measure 202) uses that form transformed by $T_3RI$.

**Registers**

One method that Babbitt employed to audibly delineate the layers of combinatorial lyne pairs, was to assign them different registers. Since *Melismata's* array contains three combinatorial lyne pairs, the array is accordingly divided into three registers: low, corresponding to open G to open A; middle, corresponding to open A to C6; and high, corresponding to C6 to D#/E♭7. As can be seen in Example 4–6, adjacent registers share one pitch.

---

Example 4–6. Registers

\[
\begin{array}{c}
\text{L} & \text{M} & \text{H} \\
\begin{array}{c}
\text{L = Low: } G3 - A4 \\
\text{M = Middle: } A4 - C6 \\
\text{H = High: } C6 - D\# / E_b 7
\end{array}
\end{array}
\]

Example 4–7 illustrates the pitch and register distribution in the opening phrase. In chronological order, the low register contains the pitches F#, G, Ab, Eb, F, and Bb; the middle register contains D, Db, C, A5, and A4; and the high register contains B and E.

Example 4–7. Parsing of registers in the opening phrase

**Combinatorial lyne pairs – transposition areas**

Although it is not apparent from Example 4–7, two lynes of music do indeed inhabit each of the registers. Just as the registers are interwoven into the surface, so are the lynes interwoven within their registers and all combine to create a single, composite line of music. Example 4–8 shows the same excerpt with the lynes and registers deconstructed and notated in six parts. (The absence of notes in the lower lyne of the high register will be explained in due course.)
Example 4–8. Notated lynes and registers in the first phrase

Following Schoenberg's practice, the pairs of lynes are inversionally combinatorial. In addition, each register presents one combinatorial transposition area. Like a mode of limited transposition, \([012678]\) together with its complement can only be transposed a certain number of times before the hexachords start duplicating their contents. There are three distinct complementary pairs of D-type hexachords, which are shown in Table 4–1.

Table 4–1. Combinatorial lyne pairs and transposition areas

<table>
<thead>
<tr>
<th>Registers</th>
<th>Row Forms</th>
<th>Combinatorial Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>RI₈</td>
<td>A₀: {012678} + {3459te}</td>
</tr>
<tr>
<td></td>
<td>R₀</td>
<td>610287 4₈₃₅₉₁</td>
</tr>
<tr>
<td>M</td>
<td>I₁</td>
<td>A₂: {23489t} + {567e01}</td>
</tr>
<tr>
<td></td>
<td>R₅</td>
<td>2₉₈₄₃ 0₇₆₁₆₅</td>
</tr>
<tr>
<td>L</td>
<td>P₇</td>
<td>A₁: {123789} + {456te0}</td>
</tr>
<tr>
<td></td>
<td>I₆</td>
<td>6₅0₄₈ 8₇₁₃₂₉</td>
</tr>
</tbody>
</table>
The three registers maintain these areas throughout the array. This is possible because [012678], a second order all-combinatorial hexachord, is combinatorial on two levels of each of the four basic twelve-tone operations: T, R, I, and RI. As a result of this property, the contents of the constituent hexachords of RI8 are preserved in the following series forms: RI2, I11, I5, R0, R6, P3 and P3. Each of these, plus its retrograde is used exactly once throughout the high register and therefore the content is maintained for the course of the array. The middle and low registers do the same to maintain their respective hexachordal areas. In this way, all 48 members of the row class are used once, forming what is known as a hyperaggregate.

My labeling of the row forms follows Babbitt’s diagram of the series in his sketches, as shown in Example 4–9. I have designated this as P0.

Example 4–9. Babbitt’s sketch of the series

\[\text{Example 4–9. Babbitt’s sketch of the series}\)

**Partitioning**

Not content with only the aggregates formed linearly by the individual lynes and hexachordally between combinatorial pairs of lynes, Babbitt devised a way to partition the array to form aggregates vertically, using all six parts. The array is described as being "all-partition" because it makes use of every possible way to divide the twelve pc into six or fewer parts, the six

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17N.B. this refers to the pc content, and not the order.
18From the *Melismata* binder, Milton Babbitt Collection at the Library of Congress
parts being the six lynes. The partitioning of the first four aggregates is shown in Example 4–10. As one can see, not every part is utilized in every partition. Unused parts can be seen in the lower lyne of the high register in the first aggregate (aggregates are shown as columns in between the vertical "bar lines"), and the upper lyne of the high register as well as the lower lyne of the low register in the second aggregate. It is also possible to have all 12 pc present in a single lyne (thereby representing a complete row form) with no participation by the other five lynes. Accordingly, this configuration appears once in every array.

Example 4–10. Aggregate partitions (shown as representative pc, not at actual pitch)\(^{19}\)

The numbers beneath the partitions indicate the breakdown of parts according to the lengths of the lyne segments. The principal number indicates the length of the segment or number of pc. Exponential notation is used to indicate the frequency of that particular length. Under the first partition, \(3^22^3\) means there are two segments of three pc and three segments of two pc. There are

---

\(^{19}\) Expanded and adapted from Mead, *An Introduction to the Music of Milton Babbitt*: 168., example 3.31
58 possible combinations. Because there are only 48 members of any row class and each member is used only once, some pc must be repeated, or "recycled," to extend the array to form 58 aggregates. This repetition always occurs in the form of the last pc of a partition being carried over across an aggregate boundary and reappearing, without any intervening pc, as the first note of a subsequent partition. This can be seen in the low register in Example 4–10: the E♭ at the end of the upper lyne is repeated to begin the second partition, and the B♭ at the end of the lower lyne is repeated at the start of the third partition. In fact, one can see many more occurrences of this in this example. Example 4–10 expressed in integers and extended to eight aggregates—the first block—is depicted in Table 4–2 below.

Table 4–2. First block of Array 1

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>e4—</td>
<td>6102</td>
<td>45—</td>
<td>539t1—</td>
<td>16—</td>
<td>2—</td>
<td>20—</td>
<td>078//</td>
</tr>
<tr>
<td></td>
<td>87—</td>
<td></td>
<td>7—</td>
<td>4e—</td>
<td>3—</td>
<td>35t9//</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>10—</td>
<td>57e—</td>
<td>e6—</td>
<td>328t9—</td>
<td>94—</td>
<td>4//</td>
<td>16—</td>
<td>65—</td>
</tr>
<tr>
<td></td>
<td>29—</td>
<td>98t4</td>
<td>6—</td>
<td>0—</td>
<td>7e1—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3—</td>
<td>3—</td>
<td>7e1—</td>
<td>e4//</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>783—</td>
<td>192—</td>
<td>5—</td>
<td>560t—</td>
<td>e—</td>
<td>e4//</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>65t—</td>
<td>t0—</td>
<td>4e8—</td>
<td>8—</td>
<td>87—</td>
<td>1329/t</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Partition: 3^22^3| 4^23^1| 32^41| 531^4| 52^21| 4321^3| 42^31^2| 532^2
Duration: 7| 12| 11| 2| 6| 11| 9| 12

One might at first be tempted to interpret these aggregates as phrases. We usually think of tonal phrases as ending with cadences. The aggregates do in a way "cadence," that is, they form a harmonic closure of sorts because the partitions end when an aggregate of 12 pc has been completed. However, as I will discuss later, the aural perception of musical phrases, which

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20 Because of the retrograde relationship between the two arrays used in this piece, for the sake of correspondence I number the aggregates in the first array from 1–58 and the aggregates in the second array from 58'–1', and the blocks from 1–8 and 8'–1'.
Babbitt articulates with repeated groups and rests among other things, does not usually coincide with the harmonic partitions of the array.

**Aggregate Durations**

As can be seen from the lowest row of numbers in Table 4–2, the durations of the aggregates vary. Unlike most of Babbitt's music from this period onward, *Melismata* does not use the method of serializing durations known as the time-point system. Rather, it is what has been called a "pulse piece."

A noticeable steady pulse pervades the work, while layered on top, irregularities produced by tuplets create a feeling of free improvisation.

Although there is no time-point array, the aggregate durations and certain other rhythmic aspects of *Melismata* can still be considered to be serialized, in that they are related to the pitch class array. The duration of each aggregate, in quarter-note pulses, corresponds to the succession of ordered pc intervals of the lower lyne in the middle register. As can be seen in the fourth lyne from the top in Table 4–2, the interval between the first two pc, 2 and 9 (D and A), is 7 and the duration of the first aggregate is seven quarter-note beats (Example 4–11). The distance between the second and third pc, 9 and 9, is 12, and the duration of the second aggregate is 12 quarter notes.

The entire lyne from the first block, along with the aggregate durations derived from it are shown in Example 4–12.

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21 Mead, 1987, 215; and 1994, 170-1

22 Mead, "About About Time's Time: A Survey of Milton Babbitt's Recent Rhythmic Practice," 219. Distances between same pc are counted as 12, since there cannot be a duration of zero.
Example 4–11. Duration of Aggregate 1

Example 4–12. Aggregate durations in quarter notes

Array lyne (lower-middle register):

| 29 – | 98t4 | 3 | 0 – | 07 – | 7e1– | 16 – | 65 – |

Aggregates:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |

Durations (quarter note):

| 7 | 12 | 11 | 2 | 6 | 11 | 9 | 12 | 7 | 12 | 4 | 14 | 12 | 5 | 12 | 11 |

One might notice that there is an approximate 1:2 ratio between the source lyne and the aggregate durations. That is, the intervals from one block of this lyne produce approximately two blocks of aggregate durations. In fact, the pitch-class intervals from the first four blocks of this lyne determine the aggregate durations for the music of the entire array, roughly half of the piece. Although the second half of the piece is based on another form of the array, the aggregate durations continue to be derived from the remainder of the same lyne of the first array (blocks five through eight), in the same manner without interruption.

---

23 Reproduced and adapted from Mead, 1987, example 28, p. 219
Since these durations have been so systematically determined and are tied to the underlying pitch array, one might assume that they are vital to the structure of the piece and therefore should be somehow projected in performance. However, the last note of measure two, B♭, is tied into the next measure and clearly belongs with the following three notes, E♭–F–A. Musically, the line does not end after seven beats, even though the aggregate does (see Example 4–11). If one cannot perceive the precise end of an aggregate, how can one perceive its duration?

Furthermore, let us admit that it is impossible for anyone to aurally discern the connection between the generating pitch-class intervals and the aggregate durations. The further along one goes in the piece, the greater the distance between the pc interval and the duration that it determines. Therefore, if the aggregates do not necessarily form phrases, and their durations—not to mention the pc intervals from which they are derived—are not perceivable, are they of any importance to the performer? Most people would probably agree that it makes little or no sense to do anything purposeful about them in performance. However, the varying durations have an effect on certain surface things we can hear. For example, the shorter the duration, the more rapidly the twelve pc must be presented, and that would preclude many repeated and sustained notes. On the other hand, with longer durations, the twelve pc must be spread out by repetition, rests, and sustained notes. In this respect, the durations are important to the performer as these effects are only noticeable if one maintains a relatively steady pulse.

This is yet another example of how understanding the effects or functions of structural elements is more relevant to performance than simply identifying them. While elements such as aggregate durations and partitions are fundamental to the structure, it would be a mistake, if not an exercise in futility, to try to portray them literally in performance because the music that is heard is not a literal or even systematic realization of the array. Babbitt clarifies this by calling the array a "precompositional" structure and provides the following explanation:
I hope you know what I mean when I say precompositional. I don't mean this is something a composer does before he composes his piece. It's not a chronological statement. Precomposition means that it is in a form where it is not yet compositionally performable. You still have to do things to it. You have to assign exact temporal values to these notes. You have to assign registral values. You have to assign timbral values. This is in a theoretical—or, if you wish, in a compositional—state which is not yet performable. Therefore it is precompositional because obviously it's not a formed composition. You have to make further decisions with regard to every element presented here.24

This idea of incompleteness or "precomposition" is particularly evident when one listens to other pieces using the same array. Although Babbitt mainly used this array-class in the 1970s and early 1980s, he later revived it for several pieces, including his two others for solo string instruments, *Play it Again, Sam* for solo viola (1989) and *More Melismata* for solo cello (2006).25 Even though they are based on transformations of the same pitch array and are therefore similar in certain predictable ways, it is striking how different these pieces sound from one another. Despite their shared precompositional "DNA," it is clear from comparing the three solo string pieces that the process of composing out the array involves considerable artistic ingenuity and shapes much of the sound.

**Contextual or self-referential**

In *Melismata*, the composing out of the array is usually related to some other detail of the array. In fact, practically every aspect of the surface can be related to some aspect of the array. When asked the extent to which one should be able to deduce the "mechanics" of the music from...
its surface, Babbitt answered, "as far as I'm concerned, all the things that we have been talking about should be inferable from the surface."26

In Melismata, virtually every group of notes in the piece represents a segment of a lyne someplace in the array. These cross-references manifest in two ways: dynamics, and rhythmic divisions of the quarter note (tuplets). Like clues to a treasure map, the dynamics and rhythmic subdivisions point to the locations throughout the array from where bits of the row are being quoted. In the absence of a time-point array, dynamics are free to serve other purposes. In Melismata, the dynamics indicate the distance, in blocks, between the surface detail and the location of the row material being referenced.27

Table 4–3. Index of dynamic levels and distances to referent

<table>
<thead>
<tr>
<th>Dynamic</th>
<th>Distance to referent (number of blocks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ppp</td>
<td>0</td>
</tr>
<tr>
<td>pp</td>
<td>1</td>
</tr>
<tr>
<td>p</td>
<td>2</td>
</tr>
<tr>
<td>mp</td>
<td>3</td>
</tr>
<tr>
<td>mf</td>
<td>4</td>
</tr>
<tr>
<td>f</td>
<td>5</td>
</tr>
<tr>
<td>ff</td>
<td>6</td>
</tr>
<tr>
<td>fff</td>
<td>7</td>
</tr>
</tbody>
</table>

There are eight dynamic levels, corresponding to the number of blocks in the array, with louder levels indicating greater distances. If the dynamic is *ppp*, the referent is in the current block; if the dynamic is *pp*, then the referent lies in an adjacent block (either before or after). The dynamic levels and their distances are shown in Table 4–3. What is notable about this is that since only the first and last blocks are seven blocks away from another block (i.e., each other), *fff* indications appear in those blocks only. One instance of this is illustrated in Example 4–13. The four notes are marked *ppp*, indicating that the referent lies in the same block, in this case the first one. The notes $E_\flat$–$F$–$B_\flat$–$A$ are not easy to distinguish in the local source, but are clearly identifiable as a single string in aggregate 7.

Example 4–13. Dynamic index of reference

<table>
<thead>
<tr>
<th>Local Source</th>
<th>Referent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Agg. 1</strong></td>
<td><strong>Agg. 7</strong></td>
</tr>
<tr>
<td>e4</td>
<td>20</td>
</tr>
<tr>
<td>-----------</td>
<td>[510]//</td>
</tr>
<tr>
<td>10</td>
<td>4//</td>
</tr>
<tr>
<td>29</td>
<td>16</td>
</tr>
<tr>
<td>785</td>
<td>e</td>
</tr>
<tr>
<td>6511</td>
<td>87</td>
</tr>
</tbody>
</table>
While dynamics indicate the distance between the local detail and referent source, rhythmic subdivisions indicate the length of a referent string within a single partition. In Example 4–13, the four-note string corresponds to a partition length of four. More irregular subdivisions reference partitions of different lengths. What is more, they may be incomplete. Missing pc are often indicated with rests or longer durational values. 28 One occurrence of this is shown in Example 4–14.

Example 4–14. Incomplete reference

As Joseph Dubiel has pointed out, the music often more closely resembles the referential material, often a distant portion of the array, than it resembles itself. 29 The music shown in Example 4–13 is hard to trace within its own aggregate, but can be recognized, even with the rest and missing Bb, as a quotation of a partition from aggregate 57. Perhaps the closest we get to perceiving the row and the way its forms relate within the array, is through our understanding of the references. Because locally the music is expressed as a sampling from multiple lynes and registers, what we hear is not the local row, nor the array. If we focus on the note-to-note progression of the music, we will readily notice the way the pitches jump around, how the dynamics shift rapidly, and how the rhythm fluctuates unexpectedly, and it may seem as if there

29 Joseph Dubiel, "What's the Use of the Twelve-Tone System?," *Perspectives of New Music* 35, no. 2 (1997).
is no relation between the sounds that are heard. Approached this way, neither the listener nor the performer will spontaneously think of the longer hidden line or mentally paste together snippets of row forms. If one wants to consider these ideas, they must be conceived in advance by the performer. For this reason, the tuplets, and probably even more so the dynamics, are important in performance. In this regard, the importance lies not in the accurate rendering of the written text simply for the sake of accuracy, but in the way the rhythms and dynamics can help performers identify groupings and make connections between them.

V. Interaction between Surface and Array

The profusion of information in Melismata provides the performer with much to explore and interpret in every reading. But is there a point at which a performer can be "too well-informed?" Once aware of the piece's multilayered unfoldings—aggregates formed by the local, registral counterpoint; the longer, surface row forms of the lynes; and the embedded cross references—a performer may feel obligated to "do something" about all of them. Although this may seem like a noble attempt to do justice to the score, it might be more productive to examine how these things act upon the music in order to limit one's focus to one or two features at a time. In Melismata, surface and background elements interact in various ways to either create surface musical effects or reveal array details. Identifying some of the more prevalent presentations can help a performer arrive at a more meaningful interpretation.

Surface Serves the Array

One type of interaction between surface and background involves the use of dynamics, rhythm, and timbre to point out twelve-tone aspects of the piece. While virtually every group of notes references a segment of a lyne housed in a single partition, sometimes references extend
beyond partition boundaries to project quotations of entire (or almost entire) lynes, and may even reflect the partitioning. One instance of this is shown in Example 4–15.

Example 4–15. Reference to a lyne minus one note

a. Local source, agg. 21

```
<table>
<thead>
<tr>
<th>Agg. 21</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
</tr>
<tr>
<td>3e94</td>
</tr>
<tr>
<td>2//</td>
</tr>
<tr>
<td>67//t</td>
</tr>
<tr>
<td>58</td>
</tr>
</tbody>
</table>
```

b. Score, mm. 72–75

![Score mm. 72–75]

```
21
72

1 2 0 6 7 t 3 — 3 e 9 4 — 4 5 8
```

c. Referent

```
<table>
<thead>
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<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
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</thead>
<tbody>
<tr>
<td>H</td>
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<td>35e —</td>
<td>et72681 —</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>81</td>
<td>2067t</td>
<td>3 —</td>
<td>3e94 —</td>
<td>45//</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

Although the string of notes shown in Example 4–15b does not appear remarkable in terms of its own local source (Example 4–15a), it in fact refers to all but one note of a single lyne and, as shown in Example 4–15c, bears a striking resemblance even to the partitioning. The omitted first note of the lyne, A♭, appears at the end of measure 75 and is marked *sul ponticello*. The repeated
E–F in measures 74–75, marked *mp*, refers to a two-note segment three blocks away (agg. 40) and may be seen as an interruption or delaying of the completion of aggregate 21 as well as the referent lyne. If the performer adopts this interpretation, he may want to project the *ppp* notes as a seamless line (and *lyne*). In order to do that, it is necessary to connect the B♭ at the end of measure 72 to the high D♯ that begins measure 73 without a break in sound or fluctuation in dynamic level. It is possible to softly float the high note like a *filo di voce* by means of a slow, continuous, light bow, in combination with a fast and light shift. There should be no feeling of anticipation when playing the B♭. In order to prevent the preceding double-stop from sounding clumsy and spoiling the delicate quality of the line, the bow should barely brush the strings. To project the feeling of interruption, one could play the first E–F quietly, again with a slow bow, and then suddenly break it off, using a fast bow to interject the next E–F with more emphasis. The *ponticello* A♭ can be played slightly tenuto, taking care to not lift the bow until the note has finished, to convey a sense of completion. The only rest in the passage punctuates the end.

Dubiel has argued that “we might regard any or all of these correspondences as just that, correspondences, without imposing any notion of reference or dependency. We might decline to use any image that suggests determination by the source material acting as a casual force. Indeed, we might explicitly reverse the idea of a foundation in the series or array…” He goes on to further suggest that we might see such notes "as locally chosen and as interacting with other locally chosen phenomena, more or less independently of the array." Yet in situations such as this, I would feel uneasy about disregarding the series or array as either source material or as an

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30 According to Bronstein, "one of the surest signs of immaturity in a performance… is anticipatory playing" in which anxiety over an upcoming technical obstacle, such as a large shift, mars the preceding note or phrase. See Raphael Bronstein, *The Science of Violin Playing*, 2nd ed. (Neptune, N.J.: Paganiniana Publications, 1981).

31 Dubiel, "What's the Use of the Twelve-Tone System?" 38.
essential element with implications for performance. The order of pc and partition-mirroring durations and repetitions in measures 72–74 were not dictated by the array, nor did they appear by accident; they are the result of Babbitt’s intentional composing-out of aggregate 21.

**Timbre forms generalized aggregates**

The use of different timbres—*sul tasto*, *sul ponticello*, and *pizzicato*—in *Melismata*, reveals a kind of composing-out on another level, the completion of an aggregate within a single register. Except for passages where incidences overlap, alternative timbres appear in one register only and involve notes from both lynes of that register which combine to form an aggregate. I refer to these as mid-range aggregates because they develop over a longer period of time than the vertical, all-partition aggregates, but span a shorter duration than the horizontal, individual lynes. For the most part, these timbral aggregates are not series forms (of the 19 passages using alternate timbres, only three produce actual row forms) but, like the partitioned aggregates, are generic or "generalized" aggregates which are best regarded as 12-pc collections and not as sets. In *Melismata* there are four aggregate-forming processes and each operates on a different level of time and has a different degree of relatedness to the series or, to use Babbitt’s term, the

![Figure 4-1. Aggregate-forming processes](image)

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32 For more on generalized aggregates, see Babbitt, "Since Schoenberg (1974)," 314-17.
“referential set.” As shown in Figure 4–1, longer time spans (labeled "slowest") are generally associated with having more correlation to the series order.

In theory, anyway, that is how it is supposed to work. In actuality, the hexachordal aggregates between lyne pairs lead a mostly theoretical existence (remember that the lyne pairs are intertwined but don't necessarily unfold concurrently), but the series/array emerges from time to time in the other dimensions to impart varying amounts of its information. For example, the partitions include all of the possibilities from $12^1$ to $2^6$, the most ordered to the least ordered. (Not to mention those occasions when a completely unordered partition quotes an entire, completely ordered lyne.) Needless to say, it is more complicated than it appears, and the performer should probably focus on those aspects, from whichever dimension, that are the most musically perceivable (and understand that what we cannot hear supports that which we can). Timbre is one of those. The next section looks at three different passages in which timbre is used to form mid-range aggregates in a single register.

In Example 4–16, *sul ponticello* appears intermittently in the low register and forms its own mid-range aggregate. As is typically the case, the aggregate formed by the *sul ponticello* notes is not a series form and both lynes of the low register are utilized. It is interesting to note that the Fs in aggregate 21 (measures 74–75) are not marked *sul ponticello*. For one thing, as we saw earlier, aggregate 21 references a single lyne, and having *sul ponticello* appear earlier than it does would disrupt that presentation. For another thing, when composing out the partitions of the array, that is, when determining the succession of notes that make up the music, it is customary for Babbitt to repeat pitches, but rarely does he return to one after he has progressed onward in that lyne. As he already used F in measure 68 and promptly moved on to E, the next pc in that lyne, following his usual practice, he does not return to the F in aggregate 21.
Example 4–16. Sul ponticello forms an aggregate in the low register

a. Score

b. Array

In this section, the performer is challenged by three areas of activity: (1) the low register ponticello aggregate, (2) the lyne reference in aggregate 21, and (3) aggregate 20 (measures 70–71) which does not participate in either of the former two pursuits. Aggregate 20 may in fact present the biggest obstacle to tying this section together in performance. In those two measures, the succession of fragments, changing dynamics, and varied rhythmic subdivisions create a transitory, choppy episode. The small clusters of mostly rapid 32nd notes cannot be heard or interpreted as meaningful row segments. Instead, each fragment relates to the next by at least one
common tone, which propels the music forward. One might therefore think of measures 70–71 (all of agg. 20) as a connecting section between the first *ponticello* notes in measure 68 and the lyne reference of aggregate 21. In this case, one would not linger on these fragments but instead push through the passage with a forward, anticipatory feeling. The end of measure 77 marks not only the completion of the *ponticello*, low-register aggregate, but also the conclusions of both aggregate 22 and Block 3; it is a multiple aggregate. Therefore, it would be appropriate to play it with a feeling of closure. A quarter rest follows the double-stop G–D, the longest pause in 50 measures, marking the "cadence."

Example 4–17. *Pizzicato* reveals series form $P_{11}$ in the middle register

a. Score

![Score](image)

b. Array

<table>
<thead>
<tr>
<th></th>
<th>47</th>
<th>48</th>
<th>49</th>
<th>50</th>
<th>51</th>
</tr>
</thead>
<tbody>
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<td>750</td>
<td>0</td>
<td>075169t423</td>
<td>1</td>
</tr>
</tbody>
</table>
In Example 4–17, timbre is also used to form an aggregate within a single register, but here, the result is a complete series form. As in the previous example, notes from both lynes of the register are incorporated. The *pizzicato* notes, B–C–G–F–Db–Gb–A–Bb–E–D–Eb–Ab, spell out series form P_{11}. As shown in Example 4–17b, most of the notes belong to the upper lyne of the middle register, but the first note, B, is "borrowed" from the lower lyne of that same register. Because of this borrowing, the *pizzicato* aggregate spans a shorter duration than a single-lyne aggregate; the B that begins the upper lyne occurs eight measures earlier than the one used. A similar example can be found in measures 228–235, the corresponding spot in the second array, where the effect of *sul tasto* is used to produce P_{2}.

In performance, it is not difficult to distinguish the *pizzicato* notes from the *arco* notes. The plucking sounds stand out from the long legato lines which surround them, and the effect is a very audible, virtual counterpoint. Babbitt provides plenty of time after each *pizzicato* episode, which allows both the *pizzicato* and *arco* to be heard clearly and independently. The violinist might take advantage of this (and avoid anticipatory playing) by making sure not to rush into the *arco* after the *pizzicato* B in measure 159 and after the Eb in measure 162. The final Eb–Ab double-stop in measure 169 can be slightly arpeggiated to give it a longer duration and convey a sense of finality.

A particularly difficult section to play appears approximately two-thirds of the way through the piece where two timbral effects, *sul ponticello* and *pizzicato*, are used concurrently along with the standard *arco*. As is the case with all uses of timbre, each one is assigned a specific register—middle for *sul ponticello* and low for *pizzicato*—and forms an aggregate using

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33 At measure 232 a partial bar is accidentally numbered in the score. I refer to measure numbers as they appear in the published score, but there are actually only 396 bars in the piece, not 397.
notes from both lyres of that register. Example 4–18 shows the score and array views of this section.

Example 4–18. Two timbral effects in the same passage

a. Score

b. Array

<table>
<thead>
<tr>
<th></th>
<th>42'</th>
<th>41'</th>
<th>40'</th>
<th>39'</th>
<th>38'</th>
<th>37'</th>
</tr>
</thead>
<tbody>
<tr>
<td>M – sul pont.</td>
<td>61e</td>
<td>t823</td>
<td>t6</td>
<td>750</td>
<td>e</td>
<td>7034t989</td>
</tr>
<tr>
<td>L – pizz.</td>
<td>27</td>
<td>594</td>
<td>1068</td>
<td>87</td>
<td>349</td>
<td>0768</td>
</tr>
</tbody>
</table>
What makes this section so challenging is not the number of effects, but the rate of change, especially from aggregate 40' onward. It is especially important to distinguish between the *sul ponticello* and *ordinario* modes of playing. The *ordinario* segments are particularly difficult because, unlike the *ponticello* and *pizzicato* notes, they are not confined to a single register, and therefore, the notes jump around more drastically. The alternate timbres appear gradually at first, in measures 249, 252, and 253, and then take over from measure 255. From that point on, the *arco* may be seen as a background texture, in and out of which the aggregate-forming timbres weave. The row segments that generate the dynamics are not distinguishable as such because they contain notes of mixed timbres. This section is one place where it would be acceptable to sacrifice some rhythmic accuracy and also slow the tempo slightly in order to carefully prepare the effects and clearly project the sense of a three-part, polyphonic texture. If necessary, extra time can be taken in between each change of mode, preferably in the form of a preparatory space rather than a distortive elongation of any notes. This approach will help preserve proportion in the music and also prevent frantic execution by the performer. For example, in measure 263, one might play the *sul ponticello* F very short, as if it were marked *staccato*, then take a sliver of time to prepare before playing the following *arco* B♭–D♭ in time so that F–B♭–D♭ appear to be the same length and speed. Upon emerging from this section, the left-hand *pizzicato* in measure 266 (aggregate 37') helps to reestablish the pulse.

**Array Serves the Surface**

Thus far we have concerned ourselves with examples where different surface details—dynamics, rhythms, and timbre—refer to portions of the row or array, or form aggregates. However, just as often in *Melismata* the reverse occurs and portions of the array are used to generate surface details. As mentioned earlier, it makes little sense to think of very short or incomplete references as row segments since they are not recognizable as such. Consider, for
example, a single-note reference for which it is impossible to establish correspondence to a referent. In cases such as this, it appears that Babbitt is using the system purely to generate surface effects. For the performer, the best approach is to simply identify and play the effect that is being created.

The single-note reference shown in Example 4–19a can be understood as simply a dynamic indication. The **pp** on the D♯ followed by an immediate diminuendo indicates a slight emphasis on the beginning of that note. Babbitt doesn’t use accents or *sforzando* indications, but this might be interpreted as a gentle version of such.

Example 4–19. Short, incomplete references

a. Single-note reference

![Example 4–19a](image)

b. Multiple reference fragments

![Example 4–19b](image)

The second reference (Example 4–19b) has a prevailing dynamic marking of **pp** which indicates that the referent can be found in an adjacent block. In fact, these groups of notes are taken from both the block before and the block after. The musical effect is like an ornament in which the quick notes dance around the first three before settling on F–B♭ in measure 325.

Because references to row segments are tied to both dynamics and rhythm, multiple references involving the same group of pitches can be used to produce temporal as well as
dynamic effects. These are often used in a way that suggests phrase or phrase-segment closure. Example 4–20 shows some of these treatments.

Example 4–20. Dynamic and temporal effects

a. Rapid echo

b. Echo and ritardano

c. Crescendo and accelerando

Examples 4–20a and 4–20b illustrate different references being used to produce echo effects, the former a quick afterthought, and the latter a ritardando resulting in a more formal phrase ending.

A performer might lightly toss off the first one without excessive concern for rhythmic accuracy. In the second case, a performer might make a more exaggerated ritardando and diminuendo for the entire duration of measure 19, and then allow the phrase to finish before continuing on. In
Example 4–20c, the notes A–G♯–D–Eb are rapidly announced in a flashy manner in measure 40 after which the dynamic drops to *ppp* and the figure begins again slowly and hesitantly. As the pitches are reiterated, the music gradually becomes louder, faster, and more continuous. In performance, one might play this as a continuous crescendo and accelerando over three measures (from measure 41 to the downbeat of measure 44). Similar examples can also be found in measures 102–103, and measure 351. (Incidentally, the flashy introductory figure will only come across that way if the performer makes use of the harmonic on the high note to maintain the tempo and rhythm.) Although the array is used to generate these effects, a performer would not need to be aware of the array or the influence of the array in order to perceive and interpret them musically.

When the same idea is applied to repeated pitches or pitch classes that appear before and after some intervening notes, it not only forms groups of the repeated pitches themselves, but also frames short phrases and parts of phrases. Example 4–21 shows the beginning of the piece where the opening pitches, F♯–G–D return at the end of the measure (with an added A♭). The notes E♭–F–B♭–A that begin the second measure reappear in the third. The F in measure three, which now belongs in the middle register, is kept at the same pitch that was previously heard, to create a stronger connection.34

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34 In aggregate two, F appears in the middle register of the array and therefore should sound an octave higher.
This tactic gives each of these units a beginning, a middle, and an end, and divides the opening phrase into two parts. It would, therefore, be appropriate to play measure one as one distinct part and measures two to three as another. While making the diminuendo at the end of measure one, the D can be held a little bit longer to allow the sound to die down and the music to pause for a moment. The next part ends more strongly to conclude the whole phrase. I keep the B♭–Eb–F–A slurred in one bow for a glossier finish. Babbitt has indicated a new slur under the F–A, but this is most likely there to reflect the fact that those two notes mark the start of a new aggregate. Changing bow on that short slur results in a clumsy phrase ending. In his directions to the performer at the beginning of the score, Babbitt wrote: ‘Slurs’ are merely indications of desired connections and associations; the means (bowing, resonance, modes of attack and release) of obtaining them should be determined by the violinist. In this situation, the phrasing implied by the corresponding pitches suggests precedency over acknowledging the start of a new aggregate.

Repeated gestures can also imply phrases when applied to rhythms and specific sonorities in longer passages with more intervening material. One case in point is shown in Example 4–22.

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35 Although the Eb also belongs to the second aggregate, the pitch is "carried over" from the first aggregate.
Example 4–22. Repeated rhythms and trichords

Here (Example 4–22), two passages of continuous music end with corresponding rhythms and trichords, which group the passages in the manner of antecedent and consequent phrases. The performer can shape this arrangement by being careful to avoid making a diminuendo or ritardando at the end of the first "antecedent" phrase, but then giving the second phrase a more conclusive ending by slowing up slightly and playing the last three notes, F–A–E more deliberately. In fact, Babbitt places a relatively long rest after this, indicating a significant end.

Much has been written about the background versus the surface in Babbitt's music. The examples just presented prove that in actuality, this music is about both, and the ways in which they interact with and serve each other to bring about either musical effects or details of the array. The dual nature of the music suggests a dual approach for performance: (1) When array details are used solely to produce surface effects such as echo, crescendo, ritardando, accelerando, ornamentation, and parallel phrases, the performer may adopt a freer, more "traditional" approach and focus on playing the musical effect (e.g., simply make a continuous crescendo, accelerando, etc.) rather than adhering pedantically to the notation; (2) When surface details, such as dynamics and tuplets point to aspects of the array, the approach needs to be more
precise with careful attention given to maintaining consistent dynamic levels, accurately rendering rhythms, and maintaining tempo, because of the interdependence of those musical elements and the structural details. The mid-range aggregates formed by timbre can be placed in the first category. It is important to make sure the timbre is clearly differentiated, and often one can take time to carefully prepare the notes since these aggregates are not dependent on time. It is also important to remember that the notes are connected and not a series of isolated occurrences.

VI. Prioritizing

Even if aware of these main modes of surface to background interaction and general approaches for playing them, it can be helpful to have a system for prioritizing what to project in performance since at any given moment several of these processes may be taking place simultaneously. To this end I propose two general assumptions: (1) that it is preferable to focus on the larger picture than to become overwhelmed by myriad minutiae, and (2) that the most important events are those that project either an overt musical effect or substantial twelve-tone information.

Based on those assumptions, among the features discussed so far, the least important are single-note, short, or incomplete references that result in localized effects such as accents and ornamentation, as well as episodes consisting of short fragments. When encountering these features, the performer might analyze the detail or episode for the effect being produced and at the same time look for proximate twelve-tone details or prominent phrases to establish context.

More important treatments include those that organize the music into small units of one to several measures, such as the use of multiple array references to produce repeated groups of pitches or pc to create phrase endings or frame short complete phrases, and repeated rhythms and
sonorities that form parallel phrase arrangements. Equally important in the twelve-tone domain are quotations of entire (or almost entire) lynes that simultaneously reflect partitioning. It is also important to carefully project instances of *sul tasto*, *sul ponticello*, and *pizzicato*, not only for the aggregates that they construct, but also because they serve to unify even larger sections of music.

We can also apply these general criteria to a feature that I have not yet discussed in depth, row segments. Since virtually every group of notes in *Melismata* represents a segment of a lyne, it is impossible to project all of them. On the other hand, because of their ubiquitous nature, they are difficult to ignore and once again, the performer could benefit from a system for prioritizing. For this evaluation, it will be necessary to expand our criteria. Among row segments, there are varying degrees of self-referentiality and one might use this as a guide for prioritizing. One might decide that the more highly self-referential a figure is, the more importance it should be assigned. Based on this, one would determine that a reference to a complete row form or lyne is more important than a short or incomplete reference. The distance between the referent and the local source might also be taken into consideration with closer distances ranking higher. Under this assumption, passages marked *ppp* would rank higher than those with louder dynamics, since *ppp* indicates a referent in the same block as the source material. Duration may also be taken into account, with shorter durations being considered more significant, as if delivering "the message" in a more condensed form. Example 4–23 shows one instance that fits these criteria.
Example 4–23. Series form projected on one beat

a. Score

b. Array

<table>
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<th>31</th>
<th>32</th>
<th>33</th>
<th>34</th>
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<tbody>
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<td>t961570e-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Duration: 5 5 5 5 10 6 13 12

The figure in Example 4–23a projects a series form, R11, on a single quarter-note beat, and the dynamic of ppp indicates that the referent resides in the same block. Interestingly, this is not a 12\textsuperscript{1} partition, yet it resembles one, even more so than the actual 12\textsuperscript{1} partition found in measures 307–309. This is due to the aggregate durations which, as discussed earlier, are determined by the pc intervals in a particular lyne. Aggregate 33 has a duration of one quarter note, whereas, as I will discuss later, the 12\textsuperscript{1} partition in the second array has a duration of six. The dynamic indication of ppp and the presence of all 12 pc on a single quarter-note beat provide clues to the performer that this is a significant twelve-tone event. Following the rules laid out earlier, the focus of the performer should be on projecting a consistent dynamic level, executing the rhythm accurately so that all notes fit within the allotted time, and maintaining a steady pulse so as to not create the erroneous impression of a different meter.
After references to entire series forms or lynes, one might decide that next in importance are references to segments that are six notes or longer. In addition to the conditions already mentioned, we should probably also consider timbre, since after all, *sul tasto*, *sul ponticello*, and *pizzicato* form their own mid-range aggregates within a single register and unify larger sections of music. Incredibly, very often all of these criteria, including distance and duration, intersect. Practically all of the figures shown below in Example 4–24 depict longer, unbroken lyne segments, have a duration of a single quarter-note beat, a dynamic of *ppp*, and in fact reference their own partitions. What is more, they also participate in some other larger-scale event.

The 12\textsuperscript{l} partition is the one situation where a form of the series must appear outright. In this case, the entire R1\textsubscript{9} form is projected during a single beat. However, in addition to that, this string also participates in a low register, *sul tasto* mid-range event; the entire lyne to which these notes belong does not end until a repetition of the A, also marked *sul tasto*, is heard four more measures later. The string shown in Example 4–24b participates in a mid-range aggregate delineated by *sul tasto*. The two notes missing from this group, D and B as well as a repeated E\textsubscript{b}, appear before and after, are also marked *sul tasto*, and form P\textsubscript{2} in the middle register. Example 4–24c, which we observed earlier, also directly references itself and participates in a mid-range aggregate in which notes from both lynes of the middle register are played *pizzicato* and form P\textsubscript{11}. The first of the 8-note segments (Example 4–24d), is a very interesting figure which comprises the entirety of measure 80. It does not participate in a timbral aggregate, nor does it, as evidenced by the dynamic marking of *pp*, reference a segment in its own block. Nevertheless, it is still extremely self-referential because it mirrors the retrograde of itself that appears immediately beforehand in the array. The second 8-note figure, taken from measure 316, is part of a *pizzicato* aggregate in the low register. Other interesting segments occurring on one beat can be found in measures 82, 304, 355, 357, and 379.
Example 4–24. Long row segments within one beat

a. 12\(^\text{th}\) Partition

b. 10-note segment

c. 9-note segment

d. 8-note segment

e. 8 note segment, part of a pizzicato aggregate

There is an electrifying quirkiness to these examples which could be viewed as long lines compressed into the timespan of less than a second. The concentration of diversity—irregular rhythms, double stops, various articulations, alternate timbres, and glissandi, is striking. Played
in tempo, these figures sound somewhat like recorded human speech played back at a high speed, and one may get the impression that a secret, subliminal message is embedded in them. These are extraordinary moments in the piece. At the same time, they serve as focal points of the particular sections in which they occur. Although brief in duration, these special segments give shape in a consistent manner not only to certain sections, but to the entire piece.

**VII. How to progress through the piece (large scale)**

Referential sonorities

In addition to those rather stylized row segments, there are several sonorities that pervade the work and in a more general way give the piece a uniquely characteristic sound. In fact, Dubiel maintains that "in all cases Babbitt’s fundamental interpretive policy is still clearly to make each of the so numerous and so stretched-out set forms a succession of in some respect uniform sounds."\(^{36}\) Attempting to determine how the series forms contribute to that uniformity of sound, however, is complicated. Of the two hexachords that make up the series, one is generated by a pair of [016] related by inversion and the other is generated by a pair of [015] related by transposition (see Figure 4–2).

Figure 4–2. Trichordal subsets of the row

As series generators, one might expect these trichords to figure prominently in the music and serve as determinants for interpretation. In fact, the relationship between the array and the music is not self-evident and definitive features of the series do not always translate into details of equal importance in the music. If they did, we could expect [016] and [015] to contribute equally to the overall sonority of the piece, but in actuality, [015] appears to have been singled out for use in phrase-defining ways (for instance, see Example 4–22). What is more audibly noticeable, however, is a persistent recurrence of certain dyads. It may be worth noting that there are no order-preserving invariances longer than two pc. Although the row is constructed from two type-D [012678] all-combinatorial hexachords that map onto themselves and each other under two levels of transposition and inversion, and the contents of [015] and [016] are preserved under certain levels of T and TnI respectively, the orders of their intervals do not correspond, and therefore, the order of pc within the trichords is not preserved under any transformation. More generally, both [015] and [016] can be thought of as a perfect fourth plus a semitone and, not surprisingly, the most salient sonorities in the piece belong to interval-class (ic) 1 and ic 5. These often appear as double stops of a semitone and a perfect fourth (in fact, roughly one third of all double-stops belong to ic 1 and roughly another third belong to ic 5). Some of these are shown in Example 4–25. The way these double stops frequently appear in certain closing gestures that end with a rest turns them into mannerisms of a sort, and the performer can assign a distinct performance approach to each to distinguish them. The semitone double-stops could be associated with a less conclusive or "question" type of ending, and if so, should not be accented or played abruptly, but rather, played with a feeling of dissipation by lifting the bow to create a more open-ended quality. On the other hand, the perfect fourths can be played with more certainty and fullness to convey a more conclusive quality.
Example. 4–25. Gestures ending with a semitone double-stop

When a perfect fourth appears after a semitone in a passage, they form a question-answer pair. One could also think of it as a sentence in which the semitone is a comma or semicolon and the perfect fourth is the period. These expressive qualities can be applied to melodic intervals as well as to double stops when they appear in a similar setting, as shown in Example 4–26. A performer would not need to be aware of the influence of the series to notice the prevalence of these dyads and the similarity of the gestures. My assignment of expressive qualities is based on contextual observations: the tendency of the semitones to exhibit a diminishing quality by having a shorter duration (e.g., having a dot as in measure 339 or the lack of a tenuto line as in measure 204) or decreased dynamic level (as in measure 12), their less stable sonority compared to a perfect fourth, and their placement in the musical line.
Example 4–26. Double-stop semitone followed by a perfect fourth

In contrast, semitone double-stops in *Play It Again, Sam* are treated in the opposite manner; they are usually louder and longer, and ic 5 appears most often in the form of perfect fifths rather than fourths. In *More Melismata*, ic 1 appears mostly as leaps or double-stops of sevenths and ninths, but rarely as a semitone and rarely in a phrase-ending context. Although the series certainly contributes to the prevalence of ic 1 and ic 5 in the surface of the music of all three pieces, the treatment regarding their position in the phrase, accentuation, and spacing differ considerably (and therefore so do the expressive implications), and result from conscious compositional choices which give each piece its unique character.

Another compositional choice involving ic 5 is seen in the use of the three-note set [027] which can be represented as two perfect fourths. Although it is not a series-generating trichord and occurs only once in each row form (see Example 4–24), it appears in the music frequently, especially in ways that suggest strong endings. As can be seen in Example 4–27, Babbitt is particularly fond of \{A♭, B♭, E♭\}.
An inversionally symmetrical set, \{8t3\} maps onto itself at $T_0I$ and is found in the $P_2/R_2$ and $I_0/R_1$ forms of the series. However, all of the instances of \{8t3\}, including those that are not shown in Example 4–27, are the result of local, registral counterpoint and reference the same few places in the array, mainly those containing $P_2$ or $R_2$. These figures stand out because of the distinctive sonority of at least one perfect fourth and form audible connections because of their shared pc and strong dynamic levels. Even though there are more subtle appearances of this set between measures 57 and 327 that may serve as reminders, the statement in measure 327 evokes a powerful sense of recognition and subsequent appearances have an accumulative effect. A performer can draw attention to this by playing these figures solidly and with increasing determination. The final measure of the piece (measure 397) can be seen as two \{027\}, \{G#, B, D\#\} and \{D, E, A\}, a tritone apart. Interestingly, in *Play It Again, Sam* Babbitt also frequently uses \{027\} and the preferred pitches are \{Db, Eb, Ab\} (Example 4–28).
The frequent appearances of these sets are not so much the result of any direct mandate of the row or the array, but presumably of Babbitt's preference for these sounds and the compositional process he uses to produce them. The pitch arrays of *Melismata* and *Play It Again, Sam* are related by a simple $T_6$ operation. Therefore, the choice of $\text{Db–E♭–A♭}$ for the viola piece versus $\text{A♭–B♭–E♭}$ used in the violin piece perhaps reflects not the $T_6$ transposition of the array, but the transposition down a fifth, the relationship of the viola to the violin, of his favored sonority. In contrast to the semitones and perfect fourths which are inherently abundant in the series, in the case of [027] Babbitt finds ways to quote the same bits over and over. This is one demonstration of how the array structure and Babbitt’s system of composing out the array, contrary to popular belief, provides him with plenty of freedom to create different sounds, even referential sonorities and expressive qualities, that are unique to each piece. An understanding of this should likewise provide the performer with freedom to interpret these expressions.

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37 The pitch arrays are related at $T_6$, with H and M registers swapped. See appendix D.
**Dynamic trajectory**

In a more general way, dynamics contribute to an overall shape with which we can trace a path through the piece. We have spoken about local dynamic contours and how they might be manipulated to make certain features more audible. There is also a large-scale contour, which is the result of the referential distance system. This system determines the peak volume of each block. Throughout the piece the lowest level is always *ppp*, but the highest level is restricted by the distance between the present block and the one farthest away. Example 4–29 shows a chart of the approximate dynamic ranges in the piece. One will notice that the quietest sections as well as the central, loud section, consist of two blocks each and are approximately 50 measures long.

Example 4–29. Dynamic trajectory

The sections having the widest dynamic range, those containing *fff*, represent the first and last blocks of each array and the sections having the narrowest range represent the middle blocks (4–5 and 5′–4′) of each array. Earlier, we considered the problems of establishing absolute values for dynamics and maintaining those for the duration of a piece. However, with regard to the large-scale contour shown here, it is quite possible to establish a base dynamic of *ppp* and maintain that throughout. The other dynamics then, layered on top, could be played in relation to their local contexts while at the same time, the performer might keep in mind the continually diminishing range from blocks one to four and the expanding one from blocks five to eight in the first part of the piece, and likewise for the second half of the piece (blocks 8′–5′ and 4′–1′). This
is not impossible to accomplish, if one establishes a ceiling and then gradually lowers or raises it as appropriate, with each successive block.

**Comparison of First and Last Blocks**

Another general sense of form can be discovered through a comparison of the first and last blocks. The onset of the last block (1') at measure 362 is noticeable because of the application of the mute which has not been used up to this point. Although the music does not immediately evoke an overt sense of recapitulation, the first and last blocks are similar in several ways. Neither use any alternate timbres, the durations in quarter note beats are the same, 70, which is the longest duration of any block in the piece, and there is a return of the **fff** dynamic. Additionally, because of the retrograde relationship between the two arrays, the registral partitioning also corresponds: aggregate 8 with 8', aggregate 7 with 7', and so on, and most importantly, aggregate 1 with 1'.

The first and last blocks also correspond in a more abstract way. The lyne pairs of the high and low registers of the first block are related at $T_3RI$, the same transformation that relates the two forms of the array used in the piece (Example 4–30). As a result, the lyne pairs swap registers but are duplicated in the last block (Example 4–31). Furthermore, because the dyads B–E and G–A♭ map onto themselves under $T_3I$, their order is preserved by retrograde, and the registers swap, the first and highest two pitches in the high register {e4} are the same as the last two pitches in the high register, as are the first two lowest pitches in the low register {78} (which are the two lowest possible pitches on the violin) the same as the last. The actual pitches are given in Example 4–32.
Example 4–30. $T_3$RI relation of lyne pairs of H and L registers in Block 1

Example 4–31. Result of $T_3$RI relationship between Array 1 and Array 2

Example 4–32. Highest and lowest pitches at the beginning and the end

The effect of all of this is that the closer one gets to the end of the piece, the more apparent the correspondence becomes until one reaches the last aggregate where there is an unmistakable
sense of familiarity. Even though it is not a literal reprise, the ending is in some ways reminiscent of the beginning. Not only do the two highest notes, B–E, as well as the two lowest notes, G–Ab, appear in the same register and order as they did in the opening, but the dynamics are also quite similar. Because of the retrograde relationship, as shown in Example 4–33, the first part of the last phrase loosely mirrors the second part of the opening phrase and vice versa.

Measures two and 393 both start at the dynamic level of pianississimo which is followed by the two highest notes <e,4> at pianissimo, and a concluding [0157] at mezzo-piano. While the [0157] ending in measure three is more conclusive, the corresponding figure in measure 395 ends with an ic 1, E–D#, that includes a staccato marking on the second note D#, a condition which we previously designated as connoting a "question" type ending. The repetition of the same D#–E in
the last two measures gives the impression of a codetta, while the reiteration of the low G followed by G♯ going to the harmonic D recalls the first measure. The inclusion of the note A above the low G♯ creates a perfect fourth with the final D, an interval which we previously associated with a more conclusive ending. The reversed order of the music between the first and last aggregates results in a continuous crescendo at the end that extends to f which, along with a notated accelerando, brings the piece to an exuberant conclusion. The final G♯–D with the harmonic on the last note is an artful reminder of the opening and gives the performer a justification for stretching the A♭–D in measure one. The association can be reinforced by using the same bowings and fingerings in both figures. As shown in Example 4–34, I suggest slurring both instances of A♭/G♯–D on an up bow. I also make a slight portamento both times, and even though in the last measure Babbitt has indicated a harmonic on the pizzicato note only, I play one on the penultimate D so that the gestures feel and sound the same.

Example 4–34. First and last phrase-endings: suggested fingerings and bowings

The Question of Climax

Finally, I have left the question of climax for last because in Babbitt's music the issue is complicated and is perhaps best considered after an examination of his compositional practices. Such a consideration may call into question the very definition of a climax, as the things we
usually associate with the idea—expanded pitch register, volume, acceleration, and duration—may or may not coincide or even exist in the conventional way in Babbitt's music.

If we were to consider the matter in a traditional way, one choice might be the central section with the widest dynamic range, measures 171–220, which encompasses a block on either side of the junction of the two arrays. In fact, a case could be made for the last section of the first array, leading up to that junction. The last block of the first array (block 8) begins in measure 177 with notes in the highest register and an immediate dynamic of **fff** which is sustained for the most part of four measures. Even though these levels subsequently drop, the performer remains extremely busy throughout this section because of the greater number of dynamic levels (all eight are used) and frequent switches between *sul ponticello* and *ordinario* modes of playing, both of which contribute to an overall increase in density. As the music advances toward the border, there is an insistent repetition of certain pitches, and the final aggregate of the first array (agg. 58) is played almost entirely *sul ponticello*. Immediately at the start of the second array the dynamic level drops and the pitch repetition and *sul ponticello* cease. This flurry of surface activity in the section immediately before the border creates a heightened sense of intensity, and performers who are mainly concerned about the surface aspects of the music may opt to view this section as an extended climax.

There are various other factors that contribute to a sense of climax here. The final block of the first array is the most expansive in terms of its harmonic/melodic pacing. It has a duration of 70 quarter-note beats which, as was previously noted, is the longest duration of any block in the piece. Although the very first and last blocks also have durations of 70 beats, they complete eight aggregates during that time span, whereas the eighth block completes only seven. This allows plenty of time for lengthened note durations as well as the pitch repetitions previously mentioned. The repetitions of G and A₉ are directly related to the transition from the first form of
the array to the second. The particular array-class used in *Melismata* requires the addition of one extra pc at the end of the array to complete the final aggregate.\(^{38}\) This is shown as pc 8 in parentheses in Example 4–35a. Since the two forms of the array are related by retrograde, an extra note must also be added to the first aggregate of the second array (shown as pc 7 in parentheses).

Example 4–35. Junction of arrays

a. Array

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<td>119354e//</td>
</tr>
<tr>
<td><strong>M</strong></td>
<td>2//</td>
<td>8–</td>
</tr>
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<td><strong>L</strong></td>
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Duration: 12

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<table>
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<tr>
<td>111</td>
<td>741</td>
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</table>

b. Score

\[\text{See Mead, An Introduction to the Music of Milton Babbitt: 163.}\]
Since pc 7 and 8 map onto each other under T₃I, the operation that relates the two arrays (in retrograde), the added pitch classes do not seem out of place. However, according to the array, those pitch classes would have to swap registers three times, once in each aggregate from 57 to 57', which would make for a less than smooth transition. Babbitt's solution in the music is to maintain the registers from aggregate 57 to the end of the first array and then swap registers at the onset of the second array. The prolonged reiteration of those pitches toward the end of the first array makes the register switch noticeable at the start of the new array. Example 4–35b shows some of the repetitions of G and Ab leading up to the border, as well as the measures immediately surrounding it. The performer can intensify the feeling of progression by playing each subsequent repetition of G and Ab with more insistence and a feeling of renewal. In practical terms, this means initiating each occurrence of these notes "better" than the previous one. ("Better" does not necessarily mean louder. It has to do with intention and attention applied to the start of the individual note.) It goes without saying that the intonation should match.

Players can take advantage of bow changes to infuse fresh energy into the onset of each pitch. The problems with this proposal in terms of a possible climax are its placement early in the work, and the lack of any extraordinary outpouring of intensity. Although the tension builds as the music progresses to the border, the arrival of the new array brings not a sense of triumphant culmination, but rather, a sudden dissipation.

Offering a more dramatic possibility closer to the end of the piece are several episodes, starting in measure 373, of pitches in the highest register at fff. These follow one another in short succession and seem to build to a culminating fff outburst containing the piece's three highest pitches, <D♭–E♭–D>, in measure 390 (Example 4–36). This outburst is directly followed by a complete (but briefly interrupted) winding down to the lowest possible pitch (open G) and the
quietest dynamic level before the last aggregate begins its final push to the end. Performers who want to project a climactic effect here can employ a similar approach to the "initiate each

Example 4–36. Measure 390

occurrence better" technique just discussed, but apply it to the fff groups in measures 373, 379, 384, and 390, rather than to individual notes.

On the other hand, there are no significant array references in this section and a violinist who is concerned about twelve-tone aspects may feel uneasy about designating a climax solely based on register and dynamic level. In the analytical literature, some authors discern a climax in the 12\textsuperscript{1} partition, the sole moment in the array where the entire row must be spelled out in its entirety and the order is totally prescribed by the series. However, in many of these analyzed works, the 12\textsuperscript{1} partition of the pitch-class array also coincides with a registral or dynamic climax.\textsuperscript{39} In Melismata the complete opposite occurs. The 12\textsuperscript{1} partition in the first section of the piece, shown in Example 4–37, represents the convergence of the lowest levels of every dimension. The twelve pc are stated in the lowest register at the dynamic of ppp with a timbre of sul tasto (perhaps the most muffled sound possible on the violin) on a single quarter-note beat. If the performer can pull it off (i.e., maintain the tempo), the whole display will last less than one

\textsuperscript{39} See for example, Mead, "Detail and the Array in Milton Babbitt's My Complements to Roger."93 & 104. Also Daphne Leong and Elizabeth McNutt, "Virtuosity in Babbitt’s Lonely Flute," Music Theory Online 11, no. 1 (2005).
Example 4–37. 12\textsuperscript{1} Partition in the first array

second, an effect Mead describes as "a dramatic flourish at the deepest view into the underlying structure of the music."\textsuperscript{40} Despite the fleeting duration, a steep plunge in register at measure 83 followed by a leap back up in measure 84 helps this moment stand out, and many interesting strings of reference lead up to this point. The playing technique can imitate the music by use of a compact bow space with added weight to concentrate the many notes into a limited area. The muscles of the bow arm could be kept stiff and the fingers of the left hand held close to the strings to further replicate the sense of restriction and create a dense, almost gritty, but quiet sound with which to convey that urgent feeling of an "embedded subliminal message." Semitone and perfect fourth double-stops appear here in reverse order, that is, the figure ends with the semitone instead of the fourth, causing it to sound open-ended. The string crossing and open A create a tendency for the violinist to make a strong accent, but one can counteract this and project an open-ended quality by lifting the bow while sounding the semitone to avoid finishing it "properly." In terms of a conventional climax, however, this figure also takes place too early in the work, and does not sustain its intensity. In spite of that, this is an emotionally penetrating moment and quite possibly my favorite spot in the piece.

The 12\textsuperscript{1} partition in the second part of the piece (Example 4–38), on the other hand, is situated in a better location in terms of being a candidate for the climax. Like the previous

\textsuperscript{40} Mead is talking about the first 12\textsuperscript{1} pc partition of My Ends Are My Beginnings. In Mead, "About About Time's Time: A Survey of Milton Babbitt's Recent Rhythmic Practice."
Example 4–38. $12^1$ partition in the second array

example, it also occupies the low register and is very quiet, but unlike the first one, this $12^1$ partition is stretched out for six beats. Because it is very slow and rhythmically regular, it lacks the tension of the compressed quality found in the first $12^1$ partition. There is no dramatic shift in register this time to make the passage stand out, and the pizzicatos break up the line. It is hardly what anyone would call climactic in the conventional sense.

However, from a Babbittian, twelve-tone point of view, it is important to remember that the series doesn't represent a theme, but might instead be thought of as the engine—the propulsion mechanism—for the entire piece. The $12^1$ partition in the second array of *Melismata* may very well represent what Babbitt calls "the unique accumulator whose control extends through and back to the first note of the composition."$^{41}$ From this perspective, the passage does tell us something about the series and some traits of the piece. While the three measures slowly and unambiguously present a form of the series ($P_0$), the first trichord states the same pc as the first trichord heard in the piece. The second hexachord mixes pizzicato notes in alternation with arco to spell out two versions of [015], the favored trichordal generator, and also offers the familiar double-stops of a semitone and a perfect fourth. Here the fourth follows the semitone and is placed at the end; the figure is not open-ended. The violinist can pause momentarily after the pizzicato semitone, and the B♭–E♭ double-stop should be sustained for its full quarter-note.

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$^{41}$ Babbitt, "Responses: A First Approximation (1976)." 351.
value to convey closure. Babbitt is careful to place tenuto lines on the notes that precede the pizzicatos, an indication that they too should be carefully finished and not cut short or accented abruptly out of angst over getting to the upcoming pizzicatos. Practically speaking, if the notes are played slightly longer (and up-bow), it is more likely that the violinist will end up in the lower part of the bow where it is more comfortable to switch to pizzicato. If one wishes to present a clearer demonstration of the series, one can gently arpeggiate the double-stops (in Babbitt's music, the lower note nearly always precedes the upper one in the series order).

I have offered these diverse examples not to prove that there is or is not a climax in *Melismata*, but to suggest that perhaps there is no single apex of drama in the piece, and also to further suggest that one may need to consider a conception of climax that is drastically different from any traditional understanding of the term. The examples just presented represent interesting and meaningful events in terms of different dimensions, at different junctures in the piece. In other pieces by Babbitt background and foreground elements sometimes converge into a single climactic passage, but in *Melismata* they do not. For that reason, the performer may find it necessary to consider the 12\(^1\) partitions in terms of their significance to the deepest, structural aspects of the piece, but evaluate the other sections in terms of their participation in the unfolding of the surface drama. Only after that, might one consider a more global view and ask the question posed by Babbitt himself: "what of the significance of the event at precisely its own moment of occurrence, at its own tonal level, and in its relation to other such events and to the work as a whole?"\(^{42}\)

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VIII. Summary and Conclusion

Summary

The pursuit to answer the questions posed at the beginning of this chapter has led to a conclusion that array details and local-perceptual phenomena hold equal significance in *Melismata*, and this conclusion formed the basis for an approach for prioritizing what to project in performance. The interdimensional connections are such that from our study of the background we found our way to the surface, and from the surface we found ourselves being drawn deeper into the multiple levels of the background. At the same time, we also observed that a performer or listener would not need to have any knowledge of the series or the array to perceive certain musical details and interpret them. However, these details constitute only one portion of the music. Recognition of the other, equally important portion, the twelve-tone details as they are apparent in the music, can only come from an understanding of the theories behind the array and a subsequent analysis of how those theories are put into play. Performers who aren't aware of the piece's structure are deprived of an understanding and appreciation of an essential aspect of the music: the dual nature that arises from Babbitt's "now admitted desire to establish within a composition both constant—time-independent—processes, and dynamic—time-dependent—processes."\(^{43}\)

For the performer, the realization of this dualism in *Melismata* should in fact be liberating. Some performers, such as Charles Neidich, believe that the complexity of the score demands strict adherence to the notation at all times. Other performers, such as Schulte and Macomber, approach some notated details more loosely, bringing forth their own unique interpretations. I propose that neither approach by itself is adequate and that the dual nature of

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\(^{43}\) Babbitt, "Responses: A First Approximation (1976)," 355.
the music calls for a dual approach to performance in which some elements are played more freely and other elements are played more precisely. Additionally, not all notes or passages in *Melismata* are of equal importance and, as the study of *Melismata*'s structural details paradoxically reveals, there is plenty of room for interpretive freedom.

**Final thoughts – expansion effect**

As a performer, I found the demands of the score to be challenging, but the process of trying to meet those demands expanded my capabilities in several ways, some of which proved to be quite useful when applied to other music. One essential bow technique involves controlling pressure by keeping the right arm suspended higher than usual so that the bow can sweep across, or even above, the strings to preserve a melodic line without changes in attack or dynamic level. When this technique is applied to solo Bach and other more standard virtuosic music, one can very effectively manage chords and string crossings while maintaining an unbroken, legato line.

One left hand/arm requirement is that shifts must jump rather than slide in order to execute large leaps without distorting the tempo or rhythm. I found this technique particularly effective when playing chamber music by Dvořák and Brahms, whose leaps then seemed practically effortless.

*Melismata* also expands one's dynamic range. The performer will find the capacity for more contrast when playing more traditional music, as well as a new capability for less contrast. Like *Melismata*, the Debussy Violin Sonata also uses four levels of *piano*: *più* *pp*, *pp*, *più* *p*, and *p*, but each lasts a substantial length of time. Compared to the challenge of differentiating numerous levels of *piano* that may appear within a single measure or two in *Melismata*, projecting the subtle differences in Debussy is accomplished with relative ease.

Playing and studying Babbitt's music also expands our ability to perceive and appreciate things such as the hidden long line, the timbral aggregates spread over time, and the interweaving or alternation of different processes. We may even find ourselves beginning to hear
aggregates or recognize the number of notes contained in those long segments occurring on a single beat. In fact, after a while, some other music may seem transparent in its thematic treatments or diminutive in its formal arrangements, and we may well crave something more vibrant and complex such as *Melismata*.

More generally, playing and studying Babbitt's compositions can expand our understanding of music. We cannot deny that in addition to emotional drama and sensorial beauty, Babbitt also loved mathematics. Indeed, much of his theoretical writing concerned properties of sets and numerical relationships. The coexistence of the intellectual and the sensuous in Babbitt's music should lead us to embrace the idea that music can embody both of these dimensions. Personally, I find that what tantalizes the brain can excite the emotions and thereby open a channel to the heart.
Afterword

It won’t be that way the next time; you’ll make worse mistakes.1 –Milton Babbitt

It is an undeniable fact that every performance will be imperfect in some way. Whether one is the type of performer who plans out every minute detail and aspires to flawless replication of that conception, or the type who provides herself with ample leeway for unplanned happenings on stage, perfection is unattainable. No amount of analysis can counteract that. Of course, in the quotation above, Babbitt is being cynical, as Babbitt can be. It is probably not the case that a performer will make worse mistakes with each subsequent performance.

There are those who believe that there is one true way to play a piece. I am not among them. Despite the certitude with which I present many points in this dissertation, I recognize that different performers will produce different renderings from even the same analysis. This result is due to the interpretation process which allows performers to emphasize different aspects of analytical findings. Regardless of the possibility for multiple outcomes, I have tried to demonstrate some ways that analysis can aid the violinist with performance, along with technical means to carry them out. At the very least, the conviction that one has arrived at an interpretation based on objective inquiry should contribute to a convincing performance.

The challenge of interpretation is especially evident in non-tonal music, as performers are unlikely to have any knowledge of the relevant relationships between pitches, functions of harmonies, or formal features in the pieces they play. In this respect analysis can contribute to an understanding needed to form a meaningful interpretation.

In fact, there are some who believe that performance of post-tonal music cannot be undertaken at all without prior study of its structure. Dunsby writes, “Everybody now accepts that a sensitive performance of these post-tonal scores…is unlikely to occur unless the performer is thoroughly familiar with the interval properties of the tone row or rows and the rhythmic structure of their presentation. Every detail of the score and all the interrelationships are considered vital study for the performer.”2 I do not know who he means when he refers to “everybody,” and it seems inappropriate to generalize to such an extent. However, I think Dunsby makes a worthwhile point that a thorough knowledge of the score is “vital study for the performer,” especially with respect to post-tonal music.

I have emphasized that in order to be useful for performance, an analysis has to be particularly detailed and thorough. Ideally, since a performer has to play every note of a piece, an analysis should be able to explain every note. I am not the first violinist to hold this belief. Years ago, violinist Rudolf Kolisch (1896–1978), leader of the Kolisch quartet and a proponent of Schoenberg’s music, believed strongly in analysis for performers of post-tonal music. He expressed that in order to be useful for performance, the study of the score,

…has to reach much further than usual structural analysis. It has to penetrate so deeply, that we are finally able to retrace every thought process of the composer. Only such a thorough examination will enable us to read the signs to their full extent and meaning and to define the objective performance elements, especially those referring to phrasing, punctuation and inflection, the speechlike elements.3

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I began this dissertation with a quotation in which Carter stated that it takes performers a long time to understand music. There is no doubt in my mind that analysis will significantly reduce that time. Although it took me 20 years to understand and appreciate Carter’s music, now that I have come to pair analysis and performance, I do not have the patience to wait even the ten years that Carters suggests it takes to “get it.” Life is too short and there is a lot of music to analyze and play.
**APPENDIX A: All-Partition Array of Melismata**

Note: An array from *Arie da Capo* appears in Mead, 1987, Example 4–20. This first array is that transformed by T5M7 with H and L registers swapped, as well as the lines of the middle pair.

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**Duration:** 7 12 11 2 6 11 9 12

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**Partition:** 532^1 93 543 3^4 6321 4^2^1^4 43^1^2 12

**Duration:** 7 12 4 14 12 5 12

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**Duration:** 11 12 3 13 7 10 8

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**Partition:** 81^4 75 12 831 721^3 6^2 3^2^2^1^2

**Duration:** 5 3 1 6 12 10 13
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#2 All-partition array of *Melismata*. T₃RI of array #1.

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Partition: $32^21^2$ $6^2$ $721^3$ $831$ $12$ $75$ $81^4$
Duration: $5$ $5$ $13$ $10$ $6$ $13$ $3$

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Partition: $5^221$ $432^1$ $84$ $72^1$ $642$ $53^1$ $321$
Duration: $5$ $8$ $10$ $7$ $12$ $13$ $12$

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Partition: $43^21^2$ $42^1$ $6321$ $3^4$ $543$ $93$ $5321^2$
Duration: $3$ $11$ $12$ $5$ $2$ $4$ $7$

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Partition: $532^2$ $42^1$ $4321^3$ $52^1$ $531^4$ $32^1$ $4^31$ $3^23$
Duration: $9$ $11$ $6$ $12$ $2$ $11$ $7$ $12$
**APPENDIX B: Disposition of the Row in Lynes, Registers, and Blocks**

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APPENDIX C: Errata

Measure 3 – The first rest should be a sixteenth rest not an eight rest.

Measure 35 – The missing ord. should be placed on the last note, G. It is marked in red in the sketch. Furthermore, G was already marked sul tasto in m. 27. The sul tasto notes form a generalized aggregate in the middle register and Babbitt does not typically reuse a pc once he has moved onward in a particular lyne.

Measure 84 – Ord. is missing from the start of the measure. This is marked in the sketch.

Measure 159 – Missing a 32nd rest after the quintuplet.

Measure 180 – Missing ord. on low D♯ based on register and the timbral aggregates. It is also marked in the sketch.

Measure 184–6 – There are three sul ponticello indications in a row. Based on the sketch as well as the registral/timbral aggregate-forming process, the following are required:
   m. 185 – Ord. on G ♯; sp. on C–B ♯; ord. on F.
   m. 186 – Ord. on D

Measure 213 – According to the sketch, s.p. on the first D is missing; there is a missing ord. on the subsequent E ♯, and sp. on the last note, G ♯.

Measure 215 – According to the sketch, an ord. on the first note G is missing.

Measure 216 – The second beat should be a septuplet instead of 11-let. See m. 220. Ord. on F is crossed out in the sketch.

Measure 217 – Sp. on G ♯ is crossed out in the sketch.

Measure 224 – There is a missing eighth rest at the end of the bar. The figure references an 8-segment partition in aggregate 55'.

Measure 232 – A partial bar is accidentally numbered. I refer to measure numbers as they appear in the published score, but there are actually only 396 measures in the piece, not 397.

Measure 236 – Missing meter change to 2/4

Measure 257 – Missing meter change to 3/4

Measure 280 – Missing ord. on first note E ♯ based on register and according to the sketch.

Measure 285 – Missing meter change to 2/4

Measure 291 – Ord. on A is missing.

Measure 297 – Missing meter change to 2/4

Measure 373 – Missing septuplet indication, according to the sketch. Additionally, the string references three notes from each of two 7-segment partitions, in aggregates 57' and 58'.
APPENDIX D: Related Arrays

*Play It Again, Sam* for solo viola (1989)

T₆ of *Melismata's* first array, H and M registers swapped

**First 8 PC Aggregates (mm. 1–22)**

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T₃M₅ of *Melismata's* first array, H and L registers swapped

**First 8 PC Aggregates (mm. 1–21)**

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Works Cited


———. "Listening to Babbitt." *Perspectives of New Music* 24, no. 2 (1986): 10-25.


