

UNIVERSITY OF CALIFORNIA

Santa Barbara

Evolution and Process in Elliott Carter's String Quartets

A dissertation submitted in partial satisfaction of the  
requirements for the degree Doctor of Philosophy  
in Music

by

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June 2014

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Evolution and Process in Elliott Carter's String Quartets

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by

Laura V. Emmery

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## ABSTRACT

### Evolution and Process in Elliott Carter's String Quartets

by

Laura V. Emmery

My dissertation examines compositional process in Elliott Carter's five string quartets. Because Carter composed five quartets over a period of five decades (1951-1995), it creates an advantageous setting to systematically explore the stylistic changes within the same genre. Supplementing my analyses with sketch study, correspondence, and text manuscripts, I shed new light on the understanding of each quartet individually, and draw conclusions on their collective meaning and place in Carter's evolving compositional processes.

The First String Quartet (1951) was written at a time when Carter became increasingly interested in new and unusual ideas, which stem from his interest in time perception. Seeking new ways to address this notion musically, Carter turned to the modernist literature, primarily Marcel Proust. Chapter 1 examines Carter's First Quartet from the perspective of Proustian time: the superimposition of multiple temporal strands and the role memory plays in relating all events in time and space.

Musical expression in the Second String Quartet (1959) evolved from Carter's explorations in the First. Chapter 2 examines the similarities between the two quartets and the crucial differences that set this work apart from its predecessor. I argue that the Second Quartet

is the piece in which Carter solidified his harmonic language, through his experimentation with serialization, as well as borrowing compositional techniques of other composers, namely Béla Bartók and Anton Webern.

For Carter, the audience's experience was the most important factor in the Third String Quartet (1971). Chapter 3 examines the ways space relates to music. It also tracks the development of the concept of spatialization in Carter's music by looking at his earlier works (the first two quartets, the Double Concerto and the Concerto for Orchestra), as well as evaluating the spatial techniques of Carter's initial source—Charles Ives.

Chapter 4 focuses on sketch study to decipher the rhythmic, harmonic, and formal designs of the Fourth String Quartet (1986). My examination reveals a logical hierarchical system in Carter's compositional process, starting with a long-range polyrhythmic outline of the piece, adding distinct intervallic constraints to each instrument, and lastly forming a general effect of the piece. I argue that by the time Carter finished sketching the rhythmic, harmonic, and formal elements, he had already conceived the entire quartet, and was ready to write out the piece in a nearly fair-copy format.

In Chapter 5, I examine how Carter's choice of harmonic, intervallic and rhythmic constraints, combined with the development of a conceptually novel form, reflect the composer's aesthetic objectives and technical preferences in his Fifth String Quartet (1995). In addition to the novelties in his technical language, I shed light on Carter's meta-compositional concept in this piece—this final quartet is not only a composition in itself, but it captures the processes of a rehearsal, discussion, analysis, and performance, all working together to reveal the composition.

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## Introduction

The string quartet genre has long served as the composers' medium for experimentation, innovations and self-reflection. For Elliott Carter, this was no exception; his five string quartets are not only amongst his most celebrated and successful compositions, but they are highly original, personalized, and they express some of his boldest ideas. Written over a span of five decades (1951-1995), they reveal techniques, expressions, and aesthetics of his mature and late style. Carter was a true modernist, who believed in creating something new in each piece. Hence, by returning to the same genre, it was vital that each quartet presented a new "musical adventure."<sup>1</sup>

While the string quartet seemed on the verge of extinction by the end of the nineteenth century, Arnold Schoenberg and Béla Bartók sprung it back to life in the early twentieth century.<sup>2</sup> Often compared to Bartók's six quartets for their virtuosity, introspection, structural rigor, and emotional intensity, Carter's Quartets, associated with high modernism, continue from where Bartók left off.<sup>3</sup> They are Carter's most serious compositions, and as Schiff notes,

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<sup>1</sup> Carter often referred to his compositions as "new adventures." Specifically discussing compositional process in his five string quartets, Carter stated: "I consider all these pieces [string quartets] an adventure. Hence, I have to do something I haven't. I already had one adventure, and now I want another one that's different. As a result, I think up something that intrigues me. When I'm writing, it's not like Haydn or Mozart who wrote a whole string of string quartets one after the other. They are all more or less in the same general pattern, although they are filled with variety and differences. My quartets are in very different patterns, very different conception (Emmery, "An American Modernist," 25).

<sup>2</sup> Carl Dahlhaus observes that Beethoven elevated the string quartet genre to the rank of the central genres. While Mendelssohn attempted to continue the legacy of writing quartets in the "elevated" or truly Beethovenian style in his early string quartets Op. 12 and Op. 13, the nineteenth-century most "genuine" composers of chamber music, Schumann and Brahms, tended to avoid it. It was not until the early twentieth-century that the representative bodies of work by Schoenberg, Bartók, and Hindemith brought the genre back to life. Further, as Dahlhaus notes, despite the radically new musical idiom, these works took Beethoven as their starting point (see Dahlhaus, *Nineteenth-Century Music*, 78).

<sup>3</sup> Schiff, *The Music of Elliott Carter*, 53.

constitute “the spinal column” of his oeuvre.<sup>4</sup> My dissertation examines the historical evolution and compositional process in Carter’s five string quartets—the factors that influenced Carter’s new harmonic and rhythmic language and innovative forms—and how each of the quartets explores the possibilities opened up by the First Quartet. By supplementing my analyses with sketch study, correspondence, text manuscripts, and other original autograph sources (housed at the Paul Sacher Stiftung and the Library of Congress),<sup>5</sup> I expose new aspects of understanding each quartet individually, and draw conclusions on their collective meaning and place in Carter’s evolving compositional processes, which other scholars have not addressed.

The First String Quartet (1951) marks a turning point in Carter’s development of musical language and expression. Carter wrote it at a time when he became increasingly interested in exploring new and unusual ideas—the individualization of the instruments, superimposing thematic material, complex polyrhythms, tempo modulation, chordal sonorities as a means of unifying a work, and creating novel textures and forms. The piece is characterized by a textural conflict with many layers of contrasting speeds and characters, yielding what Carter has referred to as his “most extreme adventure into ‘metric modulation.’”<sup>6</sup> These ideas stemmed from Carter’s interest in the subject of time perception, leading him to conclude that the most compelling aspect of music is time. Seeking new ways to address the perception of time, its understanding and experience, as well as the role memory plays in music, Carter turned to the modernist literature, primarily Marcel Proust’s *À la recherche du*

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<sup>4</sup> Ibid.

<sup>5</sup> The Elliott Carter Collection at the Paul Sacher Stiftung (Paul Sacher Foundation) in Basel, Switzerland, houses most of Carter’s original sources. The complete sketches for the Second, Fourth and Fifth Quartets, as well as some pages from the First and Third are in the Foundation’s Elliott Carter Collection. Most of the sketches for the First and Third Quartets are located at the Library of Congress.

<sup>6</sup> See text manuscripts, Elliott Carter Collection at the Paul Sacher Stiftung.

*temps perdu* (*Remembrance of Things Past*).<sup>7</sup> In his drafts of the “Time Lecture (1965/94)”<sup>8</sup> and “The Time Dimension in Music (1965),”<sup>9</sup> Carter discusses the concept of “Proustian time” which was significant in his conception of the First Quartet.<sup>10</sup> Thus, Chapter 1 examines Carter’s First Quartet from the perspective of Proustian time: the superimposition of multiple temporal strands and the role memory plays in relating all events in time and space. In order to understand the relation of Proust’s literary techniques and the depiction of time in his novel to Carter’s composition, I examine time theories of Immanuel Kant (1724/1787), J. M. E. McTaggart (1908), Henri-Louis Bergson (1946), Charles Koechlin (1926), Pierre Suvchinsky (1939), and Gisèle Brelet (1949).

The musical expression of the Second String Quartet (1959), particularly its harmonic language, form, and intensified independence of voices, evolved from Carter’s explorations in First Quartet. Chapter 2 examines the similarities between the two quartets, which simultaneously both unify the two compositions and also serve as a springboard into a new direction. Building on the application of the all-interval tetrachord (AIT) (0146) in the First Quartet, Carter now differentiates between the two forms of the AITs—(0146) and (0137)—their combinations, their resultant eight-note chords, and the “left over” tetrachords (or the secondary tetrachords) that complete the twelve-tone aggregate. Moreover, the independence of four instruments in the First Quartet, with each instrument playing distinct melodies in individual speeds, thus creating a four-strand polyrhythmic counterpoint, was just a starting point for the concept of individualization. In the Second Quartet, in addition to separating

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<sup>7</sup> In discussing the topic of literary influences on his music, Carter remarked “It was all Proust...and James Joyce, but mostly Proust.” (Interview with Elliott Carter, May 30, 2012.)

<sup>8</sup> Carter, “Time Lecture,” in *Collected Essays and Lectures*, 313-318.

<sup>9</sup> Carter, “The Time Dimension in Music,” in *The Writings of Elliott Carter*, 245.

<sup>10</sup> Drafts of Carter’s “Time Lecture” and “The Time Dimension in Music” are housed at the Paul Sacher Stiftung. The significant details of these drafts will be discussed in Chapter 1.

melodies and speeds, Carter assigns each instrument a repertoire of intervals, colors, and gestures, thus creating four character-continuities. The characters engage in a musical discourse that is built from the interactions, combinations, cooperations, and oppositions among the four players. In this chapter, I argue that the Second Quartet is the piece in which Carter solidified his harmonic language, which eventually led to the creation of his *Harmony Book*.<sup>11</sup> The properties of the AITs, their combinations into larger sets, such as six-note chords or the complete aggregate, as well as segmentation into smaller sets of trichords, are systematically worked out on dozens of pages, suggesting that Carter is developing a new system of understanding harmony. Chapter 2 also addresses Carter's interest in serial technique, as evident in his sketches, correspondence, and text manuscripts. Sketches also show evidence that Carter was influenced by other composers, most notably Bartók and Webern, while developing his harmonic language in the Second Quartet. These sketches are particularly important in that they suggest that he borrowed the techniques of other composers to develop his identifying expression.

The Third String Quartet (1971) is the most complex of the five quartets in its form, expression, and effect. The ensemble is divided into two duos, which play unrelated musical material for the duration of the entire piece. The two groups also differ in their styles and character—Duo I plays in expressive *rubato*, while Duo II is in strict time. Further, each pair plays its own set of movements—four for Duo I and six for Duo II—each characterized by a dominating interval. The movements are broken into substantial fragments and played in the order that allows each of the four movements of Duo I to be heard in combination with each of the six of Duo II, and also for each of the ten movements to be heard for a time alone while

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<sup>11</sup> Carter, *Harmony Book*, eds. Nicholas Hopkins and John Link. New York: Carl Fischer, LLC, 2002.

the opposing duo pauses. As Carter observes in his program notes for this piece, the design of the Third Quartet forms a constant interlacing of moods, characters, and materials, evoking the idea of stream of consciousness.<sup>12</sup> Hence, the movements are always heard and perceived differently as they are presented in different contexts. For Carter, the listener's personal experience is really the most important interaction in the piece. Chapter 3 examines the ways space relates to music, and how all aspects of this relationship are evident in Carter's Third Quartet. It also tracks the development of the concept of spatialization in Carter's music by looking at his earlier works (the first two quartets, the Double Concerto and the Concerto for Orchestra), as well as evaluating the spatial techniques of Carter's initial source—Charles Ives.

With the Fourth String Quartet (1986), Carter reached the height of rhythmic complexity. Chapter 4 focuses on sketch study to decipher the rhythmic, harmonic, and formal designs of the Quartet. My examination reveals a logical hierarchical system in Carter's compositional process. After outlining the general long-range polyrhythmic structure of the quartet, Carter uses dots to map a distinct characteristic rhythmic grid to each instrument. By superimposing the underlying pulsations of each part, he marks points of polyrhythmic alignment, and forms a higher-level composite rhythmic structure. Within a small subset of measures, Carter transforms this dot-notation into elaborate rhythmic figures that fit within the previously established framework of aligned pulses. Next, Carter assigns unique intervallic restraints to each instrument. Lastly, Carter adds a general formal outline of the piece, descriptive character of instruments in certain sections, and the desired effects. He repeats these stages for each section of the piece. I argue that by the time Carter finished sketching the

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<sup>12</sup> Carter, "String Quartet No. 3 (1971)," 322.

rhythmic, harmonic, and formal elements, he had already conceived the entire quartet, and was ready to write out the piece in a nearly fair-copy format.

Certain gestures from the previous four quartets come together in his final quartet, the Fifth String Quartet (1995), imparting an element of retrospection into the new work. Chapter 5 examines how Carter's techniques from the earlier quartets contribute to both the evocation of the past and the conception of the new. I examine how Carter's choice of the harmonic, intervallic and rhythmic constraints, combined with the development of a conceptually novel form, reflect the composer's aesthetic objectives and technical preferences in this piece. In addition to the novelties in his technical language, I also shed light on what truly distinguishes this Quartet from others—the meta-compositional concept Carter conveys: it is not only a composition in itself, but it captures the processes of a rehearsal, discussion, analysis, and performance, all working together to unfold the composition.

Each of Carter's five string quartets is driven by a new idea, which Carter was exploring during a particular period (and decade). In his First String Quartet, Carter addresses all the novel ideas at once. Each subsequent quartet is a more focused study of a particular technique stemming from the First—harmony and individualization of characters in the Second Quartet; duality and spatialization in the Third Quartet; form based on the elaborate long-range polyrhythms in the Fourth Quartet; and the culmination of all four in the Fifth Quartet, with an emphasis on the notion of cooperation among the four instruments. Carter chose the genre of the string quartet as a medium for his boldest innovations. Hence, the analysis of the five string quartets offers not only a view of his compositional evolution and process within this genre, but also a microcosm of his complete *oeuvre*.

## CHAPTER 1

### Elliott Carter's First String Quartet: In Search of Proustian Time

#### INTRODUCTION

After receiving a Guggenheim Fellowship in 1950, Elliott Carter set on to compose a piece in which he could explore many novel and unusual ideas about “musical themes, ways of development, textures and forms.”<sup>13</sup> In order to fully devote himself to the development of these ideas that would allow an expressivity impossible in his pre-1944 musical vocabulary, Carter went to Tucson, Arizona, settling down to a “very arduous year’s work building up a whole world of musical thought.”<sup>14</sup> The piece that emerged from his escape to the lower Sonora Desert was the seminal First String Quartet (1951).

Carter notes that from 1944-1950, a drastic point of view began to overwhelm him.<sup>15</sup> With his Piano Sonata (1945-46), he became concerned with instrumental virtuosity; in the Cello Sonata (1948), *Eight Etudes and a Fantasy* (1949-50), and *Eight Pieces for Four Timpani* (1950), he became increasingly interested in the individualization of the instruments and with polyrhythms, modulation of tempo, and chordal sonorities as a means of unifying a work.<sup>16</sup> All these ideas merge in the First String Quartet, in which Carter achieves new heights

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<sup>13</sup> See text manuscripts, Elliott Carter Collection at the Paul Sacher Stiftung, Basel, Switzerland.

<sup>14</sup> Ibid.

<sup>15</sup> Ibid.

<sup>16</sup> See Schiff, *The Music of Elliott Carter*, 54-72; Bernard, “The Evolution of Elliott Carter’s Rhythmic Practice,” 164-74; Boretz, “Conversation with Elliott Carter,” 1-22. Boretz quotes Carter saying, “Every piece of mine has its own particular approach to meter. The Cello Sonata was the first that used overlapping speeds as an underlying pattern for the entire work. I carried it out much further in 1951 with my First String Quartet and then in subsequent works, but the Cello Sonata was the first time I tried to make a piece that had two contrasting aspects that could be heard as one totality,” 18.

of rhythmic complexity, precision and logic. Speaking about the First Quartet, Carter remarks that it marked a turning point in his development and his most extreme adventure into what has been called “metric modulation”<sup>17</sup>: shifts in tempo and meter become integrated with surface rhythms in such a way as to render the transitions from one tempo to another virtually seamless. Rather than just systematically shifting the tempo and meter, as he did in the timpani pieces, initially conceived as study pieces in metric modulation for the First Quartet, those shifts now intertwine with both texture and form.

This method of metric modulation evolved from Carter’s early interest in polyrhythm which he observed in the music of Alexander Scriabin, Charles Ives, Igor Stravinsky, Henry Cowell and Conlon Nancarrow. At the same time, he noted certain limitations to their system; most of their music was concerned with a local rhythmic detail, which to Carter seemed static. Carter stood in direct opposition to this static repetitiveness, considering “constant change-process-evolution” as music’s prime function.<sup>18</sup> In order to push those boundaries, Carter sought to restructure rhythmic expression in music and subject it to the same rethinking to which Arnold Schoenberg subjected harmony at the beginning of the twentieth century.

Carter’s reference to Schoenberg is significant for several reasons. First, Carter sought to restructure the rhythmic expression not only because he wanted to write a piece that would be compelling to him without compromising any of his new ideas for the sake of satisfying the audience or performers,<sup>19</sup> but more importantly because he saw it as a necessary step in the

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<sup>17</sup> Carter, “Program Notes,” in *Elliott Carter: The String Quartets* [score], vii.

<sup>18</sup> Edwards, *Flawed Words and Stubborn Sounds: A Conversation with Elliott Carter*, 90-91. Edwards quotes Carter saying, “Musical discourse, it became obvious to me, required as thorough a rethinking as harmony had been subjected to at the beginning of the century,” 91. Also see Bernard, “An Interview with Elliott Carter,” 197; Boretz, 19-21.

<sup>19</sup> Edwards, 35. Edwards quotes Carter on his First Quartet, “I decided for once to write a work very interesting to myself, and to say to hell with the public and the performers too. I wanted to write a work that carried out completely the various ideas I had at that time about the form of music, about texture and harmony—about everything.”



logical path of music discourse. Schoenberg also described his method of composing with twelve tones as growing out of necessity: with the increase of chromaticism, tonality developed into extended tonality, and then the question arose whether one basic tone, the root, still remained the central, referential harmony.<sup>20</sup> In Carter's view, composers such as Ives, Stravinsky and Nancarrow, who were seriously concerned with rhythm, have just scratched the surface of rhythmic expression. Their concept of rhythmic exploration was concerned with local detail, while Carter sought to elevate it to the large-scale structural level, just as twelve-tone compositions governed both the small and large-scale structures of compositions.<sup>21</sup> Simply put, rhythmic expression had not caught up with the complexities of harmonic language.<sup>22</sup>

Carter's path to new ideas was indeed an arduous one, taking seven years to formalize in the First Quartet. On some level it parallels Schoenberg's twelve-year process of developing his method of composing with twelve tones.<sup>23</sup> For both composers, it was not only about developing new ways of expressing musical ideas, but also about the acceptance of the method. Schoenberg decided to keep silent for two years, anticipating confusion,<sup>24</sup> while Carter's

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<sup>20</sup> Schoenberg, "Composition with Twelve-Tones (1)" (1941), 216.

<sup>21</sup> In "The Rhythmic Basis of American Music," discussing rhythmic innovations of Ives and Nancarrow, Carter also notes that "only a few American composers are seriously concerned with rhythmic problems. Owing to the influence of Copland, Harris, and Sessions, many seem to have an innate rhythmic sense that is different from that of European composers. But there has been little temptation to explore the field, since each of these has lately become more conservative in this respect, and performances of their rhythmically different works have been rare," 62.

<sup>22</sup> See Carter, "The Time Dimension in Music (1965)" in *Collected Essays and Lectures, 1937-1995*, ed. Jonathan Bernard, 225. In this essay, Carter observes how the "basic dimensions" of music—pitch, duration, volume, and timbre—have been separated out and examined anew. Stravinsky's *Le Sacre du Printemps* and other works showed an analogous reexamination of various rhythmic and durational procedures, but it was still a part of a general cultural pattern.

<sup>23</sup> Schoenberg, "Composition with Twelve-Tones (1)": "After many unsuccessful attempts during a period of approximately twelve years, I laid the foundations for a new procedure in musical construction which seemed fitted to replace those structural differences provided formerly by tonal harmonies. I called this procedure Method of Composing with Twelve Tones Which are Related Only with One Another," 218.

<sup>24</sup> Schoenberg, "Schoenberg's Tone-Rows (1936)," 213.

numerous unpublished drafts of his program notes for the Quartet show how, fully conscious of the complexity of his new musical language, Carter was very concerned with both the audience and the performers.<sup>25</sup> It was a concern Carter sought to conceal, diminishing its importance over the course of several drafts of his program notes, completely leaving it out from the final version, and eventually publicly sending the audience to hell in his interviews. In the first draft of the program note for the First Quartet, housed in the Paul Sacher Foundation, Carter writes:

While writing this work, I often thought that it would never be played and if it were played it would be too much for most audiences to take. But I had these ideas and wanted to give them shape regardless of the consequences.<sup>26</sup>

This paragraph is crossed out and below it, Carter first rewords it as to acknowledge the demanding performance techniques he was developing as not to undermine the performers, or to offend the audience:

While writing this st[ring]q[uartet], it occurred frequently to me that the Quartet might never be played because of its technical difficulty and that even if played it *might* be almost too much to expect any audience, no matter how familiar with contemporary music, to accept.<sup>27</sup>

In the following version, perhaps the most honest one, Carter lays bare his exact feelings and thoughts:

While writing this STRING QUARTET, I often was strongly aware of the risk (that it might be) of its never being played since the work is technically much more difficult than any previous one of mine—most of which performers grumble about and which do not always get good performances because of these demands. I also realized that ~~even~~ if it were played it might be very hard on audiences even those familiar with contemporary music, since in this domain too my previous works had occasionally met with ~~little response~~ lack of understanding and this quartet was very much more difficult in this respect too.<sup>28</sup>

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<sup>25</sup> For all versions of the drafts, see text manuscripts, Elliott Carter Collection at the Paul Sacher Stiftung.

<sup>26</sup> Text manuscripts, Elliott Carter Collection at the Paul Sacher Stiftung, Basel, Switzerland.

<sup>27</sup> Ibid.

<sup>28</sup> Ibid.

Perhaps worrying that if he voiced his doubts, so would the audience, performers and critics, he focuses on the critical acclaim of his quartet in his next version, and mentions his previous doubts as an afterthought with a less critical language:

The quartet turned out to be more advanced than most of my previous works because I had been saving up a number of novel ideas awaiting just such a long stretch of time to form them into a composition of suitable character. It is a character that had to be invented at every step of the way for I felt that I was constantly pushing into an unexplored musical realm. I was pleased to find that this impression was confirmed later by critics who praised this aspect of the work. Yet while I was composing there were many times when I wondered if the piece would ever be played since I knew I wrote what it would be very taxing both for performers and listeners.<sup>29</sup>

What made the First Quartet so much more difficult than any of his earlier works was the superimposition and juxtaposition of multiple textures of differing speeds, rhythms, and characters, combined with the harmonic language based on all-interval tetrachords (AITs).<sup>30</sup> But this new technique also achieved Carter's primary compositional goal: it captured the human experience of time. He explains in an interview:

I have tried in my pieces to give the concept of the passage of time as a dramatic idea, so that the pieces change as they go along in one way or another; different kinds of rhythm conflict with each other and so on. This was a sense that I wanted to give because after all, as we live our own lives, we are constantly involved in all sorts of different aspects of time. What's happening now, what's going on in our head about what's happening now, which is also something about the past and something about the future, and how we feel about all of this. So that is what I've done.<sup>31</sup>

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<sup>29</sup> Ibid.

<sup>30</sup> While writing the First Quartet, Carter was aware of the relationship of intervals that are contained within the four-note AIT. In discussing the harmonic plan of the First Quartet in his 1960 article, "Shop Talk by an American Composer," he explains that he used one of the two AITs, (0146) and that this "key" four-note chord is "one of the two four-note groups that joins all the two-note intervals into pairs, thus allowing for the total range of interval qualities that still can be referred back to a basic chord-sound." This "key" chord here functions primarily as a referential sonority, while the pitch organization in the piece is mostly generated from the themes (219). Schiff has said that Carter initially avoided (0137) because at that time, it appeared too tonally suggestive to him due to its subset of a minor triad (Schiff, *The Music of Elliott Carter*, 1<sup>st</sup> ed., 64). However, Carter uses both forms of AITs in the Quartet, and although the (0146) type is more prevalent, the (0137) is quite frequently encountered.

<sup>31</sup> Knussen, "Elliott Carter in Interview," 5.

To find the new means of expression and a way of organizing his ideas, Carter turned to literature. The notion that literature was integral to Carter's compositional process is hardly surprising, considering that he completed his undergraduate degree in English at Harvard University, and that he began composing in New York in the age of modernism. As Jonathan Bernard observes, this was a period during which many in the arts appropriated ideas that had originated in some other art form: music borrowed from literature, poetry from painting, painting from music, and so on.<sup>32</sup> Carter himself made a similar observation, particularly about the close connection between literature and music:

There is the other trend in recent music, toward greater inner organization, inspired perhaps by literary works such as those of James Joyce, Marcel Proust, Michel Butor, Alain Robbe-Grillet, and William S. Burroughs. These works have encouraged musicians to find new ways of dealing with perception, recognition, understanding, experience, and memory."<sup>33</sup>

Carter often spoke of the profound influence of Marcel Proust's novel, *À la recherche du temps perdu*,<sup>34</sup> in shaping his ideas of embodying the human understanding of time. Proust achieved this by treating time as a vivid entity, a critical notion Carter emulated in the Quartet. Despite this notion being so critical to Carter's development as a composer, the topic remains largely unexplored.<sup>35</sup> Considering the impact the novel left on Carter, the influence it rendered on his compositional expression, and how often Carter spoke of the novel, it is crucial to provide a critical analysis of the text in reference to the new ideas Carter developed in the Quartet. Further, such analysis reveals the evolution and development of Carter's techniques, ideas, and a detailed account of his solutions to the critical, practical and theoretical problems

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<sup>32</sup> Bernard, "Elliott Carter and the Modern Meaning of Time," 646.

<sup>33</sup> Carter, "La Musique sérielle aujourd'hui," in *Collected Essays and Lectures*, 18.

<sup>34</sup> Marcel Proust, *Remembrance of Things Past*, trans. C. K. Scott Moncrieff and Terence Kilmartin. New York: Random House, Inc., 1981.

<sup>35</sup> Jonathan Bernard briefly discusses the subject of Proustian memory and its impact on Carter in "Elliott Carter and the Modern Meaning of Time." See pages 651-52.

he faced during this particular period. Drawing on parallels between literature and composition, I will show how Proust's techniques in *À la recherche* influenced the development of Carter's distinct musical language. I will support my arguments with Carter's unpublished notes in his Time Lecture (1965/94) in which he discusses Proustian time at length,<sup>36</sup> with my in-depth analysis of the novel,<sup>37</sup> where I account for the key Proustian ideas that Carter adapted to his quartet: memory, continuity and circularity; simultaneity; and transformation of characters. But first, I will briefly describe the genesis of Carter's interest in the multiplicity of the time dimension.

## **TIME DIMENSION**

Around the same period Carter was seeking to explore the idea of different ways to experience time in his First String Quartet, he came across various readings on the subject, which sparked his interest and instigated his quest to expand his rhythmic language. Consequently, he realized that the most compelling aspect of music is time. Carter showed special interest in three particular writings concerning time in music, which he summarized in "Music and the Time Screen" and "Time Lecture" (1965)<sup>38</sup>: an essay by Charles Koechlin "Le temps et la musique" (1926),<sup>39</sup> Pierre Suvchinsky's article "La notion du temps et la musique"

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<sup>36</sup> See text manuscripts, Elliott Carter Collection at the Paul Sacher Stiftung.

<sup>37</sup> I incorporate the critical studies in Proustian time by Samuel Beckett, Paul de Man, Joshua Landy, Gilles Deleuze, and Georges Poulet.

<sup>38</sup> Carter, "Music and the Time Screen" (1976) in *The Writings of Elliott Carter*, 343-65; in *Collected Essays and Lectures*, 262-280; "Time Lecture," in *Collected Essays and Lectures*, 313-318.

<sup>39</sup> Koechlin, "Le temps et la musique," *Revue Musicale* 7, no. 3 (Jan. 1926): 45-62; quoted in Carter, "Music and the Time Screen," in *Collected Essays and Lectures*, 344-45.

(1939),<sup>40</sup> and Gisèle Brelet's two-volume study *Le temps musical: essai d'une esthétique nouvelle de la musique* (1949).<sup>41</sup>

Koechlin identifies four kinds of time: (1) pure duration which is a fundamental to our deepest consciousness and independent of the external world; (2) psychological time which interprets duration relative to the circumstances of life; (3) time measured by mathematical means, such as by clocks; (4) musical time, which is a combination of the other three with a connection to space. Suvchinsky collapsed Koechlin's four-part division, identifying only two different times: (1) real or "ontological" time and (2) many different "psychological" times including expectation, anxiety, sorrow, etc., none of which could be grasped if there was not a primary sensation of "real" time. This observation is particularly important because it acknowledges that there can be more than one kind of musical time. In fact, there can be many, arranged between the poles of chronometric ("real") and chronoametric ("psychological") time. Lastly, Brelet elaborated Suvchinsky's idea by observing that time is the principal constituent in music, and that it has a three-fold nature: (1) empirical or objective; (2) psychological or "pathological" and (3) time lived or experienced.<sup>42</sup>

These theories served as Carter's starting point for his own realization of ontological and psychological time. With the *First Quartet*, Carter was looking for a way to capture the human experience and the unfolding of drama in different temporal strands. He found in Proust a method for the isolation of the time element in his music: within each present point, there are infinite points in the past, and memory plays a key role in relating all events in time and space.

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<sup>40</sup> Suvchinsky [Suvchinsky], "La notion du temps et la musique," *Revue Musicale* 20 (May-June 1939): 310-20; quoted in Carter, "Music and the Time Screen," in *Collected Essays and Lectures*, 349.

<sup>41</sup> Brelet, *Le temps musical: essai d'une esthétique nouvelle de la musique*, 2 vols. (Paris: Presses Universitaires de France, 1949); quoted in Carter "Time Lecture," in *Collected Essays and Lectures*, 314-315.

<sup>42</sup> See Bernard, "Elliott Carter and the Modern Meaning of Time," 646-649, for a more in-depth summary and discussion of these three essays.

In order to understand how the characters and events unfold and relate in Proust's novel, hence in Carter's Quartet, it is essential to understand Kantian, Bergsonian, and McTaggart's theories on time.

Immanuel Kant regarded time and space to be unique—there is only one space and only one time series: “Different times are but parts of one and the same time.”<sup>43</sup> This means that any objects bearing spatial and temporal relations to *any* other such object would bear them to *all* other such objects.<sup>44</sup> The question arises: can there be a space or time where only *some* objects bear relations to other objects? Henri-Louis Bergson questioned whether time should be conceived spatially at all, since he conceived of two different kinds of time: *temps durée* (pure time) and *temps espace* (mathematical time). Bergson regarded *temps durée* to be real time as it did not impose the notion of measurement like *temps espace*, as his central issue is whether time (or any event) can be measured. Hence, for Bergson, the concept of time is very different from the concept of space.<sup>45</sup> J. M. E. McTaggart accounts for both of these possibilities. He defines two kinds of time series, one tensed (the A-series) and the other not (the B-series), coexisting within one unique time and space. But for time to be real, both series must be valid. McTaggart's A-series is the subjectively oriented aspect of time: the past, the present, and the future, in relation to the *now* of the subject; therefore, the A-series is tensed. The B-series is based on the more neutral positions in time depicted by dates and times, which enable the concepts of *before*, *after*, *earlier* and *later*; thus, the B-series is analogous to space and is not tensed. Rather, in the B-series, events relate only to one another without necessarily privileging any point in time, since the series specifies relative points in time without regard

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<sup>43</sup> Kant, *Critique of Pure Reason*, A32.

<sup>44</sup> Le Poidevin, *The Images of Time*, 162.

<sup>45</sup> Mailman, “Temporal dynamic for in music: atonal, tonal, and other,” 185.

to what is past, present, or future. Therefore, any event in B-series is precisely fixed in its relation to all other events. According to McTaggart, the B-series is insufficient on its own because it lacks the concept of change, which is essential to time. The A-series suffers from self-contradiction because it allows times to change from future to past; the B-series is therefore needed to resolve the apparent self-contradiction of the A-series.<sup>46</sup> The B-series plays an especially vital role in understanding Proustian time. Without the clear indication whether the events are taking place in the past or the present, the experiences relate to one another only in relation to each other. Proust is interested in a vivid reference time of the past, where we, as readers, have also been absorbed into the memories of the past, being able to discern these different points in time. Hence, it is memory which allows us to perceive time of the B-series.

That Proust was important to Carter and his formations of time is undeniable. In his notes for the “Time Lecture” (which was to be delivered at Harvard University in 1965), Carter initially conceived a different course of discussion than what we find in the published lecture.<sup>47</sup> In two early hand-written drafts, Carter planned to discuss Proust at length: in one version, it was the discussion of Proustian time and twentieth-century literature, not the Pythagorean philosophy, which was to begin the lecture.<sup>48</sup> In this draft, Carter writes on top of the page, “Start – Proust Time dimension.” Underneath, he opens with the introductory paragraph addressing how twentieth-century literature has been concerned with the time dimension in an entirely new way, whereas most composers have dealt with it sporadically and in a linear

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<sup>46</sup> Ibid., 182-83.

<sup>47</sup> For unpublished notes on the “Time Lecture,” see text manuscripts, Elliott Carter Collection, Paul Sacher Stiftung.

<sup>48</sup> See Carter, “Time Lecture,” in *Collected Essays and Lectures*, 313. Here, Carter opens the discussion on the subject of time with Pythagoras’ philosophy on time as expressed by Plato in *Timaeus* and in *Parmenides*. In *Timaeus*, Carter draws attention to Plato’s thoughts on the past and the future, as forms of time, which imitates eternity and revolves around numbers (see *Timaeus*, 1167). In *Parmenides*, Carter quotes the following line: “Whatever is becoming older than itself, if it is to have something than which it is becoming older, must also be at the same time becoming younger than itself” (See *Parmenides*, 935).



manner.<sup>49</sup> In another version, Carter planned to close the lecture with a reference to Proust and Proustian memory, and not Rilke (as we find in the published version):

Unfortunately with the post-War school a new kind of Pythagoreanism (related to Rimbaud's) has come in which the dealing with time and memory has become very obvious almost primitive. Things continue for a time in a more or less uniform way and then switch to another contrasting stretch of similar concept. There is a denial of memory + of time – which corresponds to the similar treatment of these we receive as readers of newspapers + advertisements, as participants in almost any kind of public communication which reduces everything to superficiality + ultimately to loss of identity. To quote Rilke's *Der Dichter* [ ]. On the other hand such an attitude has a growing number of opponents – of whom Proust was perhaps the first + most eloquent.<sup>50</sup>

Although Carter's reference to Proust was omitted in the final version of the lecture, it is evident that Proustian time was crucial to Carter's compositional approach and musical expression. In the following sections I will explain the key Proustian techniques in expressing the human experience of time in a non-linear way (B-series), and the techniques Carter developed to portray this concept in his First String Quartet.

## MEMORY, CONTINUITY AND CIRCULARITY

In 1909, Marcel Proust began work on *À la recherche du temps perdu*.<sup>51</sup> It would take the rest of his life, nearly two decades, before he would complete this seven-volume

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<sup>49</sup> See Carter text manuscripts.

<sup>50</sup> Ibid.

<sup>51</sup> *À la recherche du temps perdu* was first translated into English under the title *Remembrance of Things Past* by C. K. Scott Moncrieff, between 1922 and 1931. In this chapter, I refer to the 1981 edition in three volumes: *Remembrance of Things Past* (New York: Vintage, 1981), vol. 1: *Swann's Way; Within a Budding Grove* (English translation by C. K. Scott Moncrieff and Terence Kilmartin); vol. 2: *The Guermantes Way; Cities of the Plain* (English translation by C. K. Scott Moncrieff and Terence Kilmartin); vol. 3: *The Captive; The Fugitive; Time Regained* (English translation by C. K. Scott Moncrieff, Terence Kilmartin, and Andreas Mayor). The citations will be accompanied by an indication in Roman numerals of the corresponding volume of the English edition.

masterwork in 1927.<sup>52</sup> The 3000 page novel is rather difficult to summarize because it does not have a conventional story and the events unfold in non-linear time. Hence, the novel captures the human experience of time in its many forms. The Narrator, dubbed Marcel, recounts his childhood and growing up in the early twentieth-century Parisian high society. Finally realizing that death is quickly approaching, he embarks on a seemingly impossible quest to obtain lost time. In the course of his life unfolding, the Narrator seeks pure knowledge, contemplates the nature of “true life,” and cements the discovery of his calling as a writer. It is through his literary work that he strives to recover time.

Proust uses memory to unlock the Narrator’s past, and the Narrator finds solace in reliving events through memory. Memory enables him not only to recapture lost moments by recovering the past, but also to achieve a state of happiness through his recognition of the past in the present. Ultimately, it leads Marcel to better self-understanding as he relives the same events in different times: venturing into the past, Marcel captures his feelings of that time, based on his life experiences up to that point; reliving the same event in the present, he now interprets it differently, due to the new experiences accumulated in his life since the event was originally conceived. In the novel, Proust contrasts two types of memory: involuntary and voluntary.<sup>53</sup> In his critical study of Proustian memory, Gilles Deleuze suggest that Proust considers the latter to be retrieved by “intelligence,”—memories produced by putting

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<sup>52</sup> Vol. 1 (1913): *Du côté de chez Swann* (*Swann’s Way*); Vol. 2 (1919): *À l’ombre des jeunes filles en fleurs* (*Within a Budding Grove*); Vol. 3 (1920-1921): *Le Côté de Guermantes* (*The Guermantes Way*); Vol. 4 (1921-1922): *Sodome et Gomorrhe* (*Cities of the Plain*); Vol. 5 (1923): *La Prisonnière* (*The Captive*); Vol. 6 (1925): *La Fugitive/Albertine disparue* (*The Fugitive*); Vol. 7 (1927): *Le Temps retrouvé* (*Time Regained*). Proust died before he was able to complete his revision of the drafts and proofs of the final volumes, the last three of which were published posthumously and edited by his brother, Robert.

<sup>53</sup> Marcel Proust coined the term involuntary memory (fr. *souvenir involontaire*), which is also sometimes referred to as Proustian memory (see George Poulet, *Studies in Human Time*, 291-322).

conscious effort into remembering events, people, and places.<sup>54</sup> For Marcel, such memories are inevitably partial, and as such cannot bear the true essence of the past. Involuntary memory, on the other hand, is a conception of human memory in which cues encountered in everyday life evoke recollections of the past without conscious effort. Proust uses involuntary memory to unlock the Narrator's past. The most famous instance of involuntary memory is the madeleine episode. Prior to this event, the Narrator has few memories of Combray, his family country house. Then, many years later, his mother offers him a madeleine cake dipped in tea. The taste and smell of it stir many emotions and chaotic thoughts:

Many years had elapsed during which nothing of Combray...had any existence for me, when one day in winter, on my return home, my mother, seeing that I was cold, offered me some tea, a thing I did not ordinarily take....She sent for one of those squat, plump little cakes called 'petites madeleines.'...I raised to my lips a spoonful of the tea in which I had soaked a morsel of the cake. No sooner had the warm liquid mixed with the crumbs touched my palate than a shudder ran through me and I stopped, intent upon the extraordinary thing that was happening to me. An exquisite pleasure had invaded my senses, something isolated, detached, with no suggestion of its origin. And at once the vicissitudes of life had become indifferent to me, its disasters innocuous, its brevity illusory—this new sensation having had on me the effect which love has of filling me with a precious essence; or rather this essence was not in me, it *was* me. I had ceased now to feel mediocre, contingent, mortal. Whence could it have come to me, this all-powerful joy? I sensed that it was connected with the taste of the tea and the cake, but that it infinitely transcended those savours, could not, indeed, be of the same nature....I drink a second mouthful, in which I find nothing more than in the first, then a third, which gives me rather less than the second. It is time to stop; the potion is losing its magic. It is plain that the truth I am seeking lies not in the cup but in myself.<sup>55</sup>

Marcel struggles to organize his thoughts, causing him to question his existence. Suddenly, his reality seems rather uncertain because his mind has been overtaken by a memory that has triggered something very vivid and more real. But realizing that the truth lies not in

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<sup>54</sup> Deleuze, *Proust and Signs: The Complete Text*, especially pp. 3-14, 52-66. Also see Jackson, "The Genesis of the Involuntary Memory in Proust's Early Works"; Bernstein, *Involuntary Autobiographical Memories: An Introduction to the Unbidden Past*, 46-48, 133-141.

<sup>55</sup> Proust, *Remembrance of Things Past I*, 48.

the cup but within him, he must look inward to recreate and reorder memory. Finally, after a long series of struggling thoughts, he identifies the meaning of his awakened feelings:

And suddenly the memory revealed itself. The taste was that of the little piece of madeleine which on Sunday mornings at Combray...when I went to say good morning to her in her bedroom, my aunt Léonie used to give me, dipping it first in her own cup of tea or tisane.<sup>56</sup>

Once this realization formalizes, it inspires a nostalgic incident of involuntary memory leading to many detailed memories of Combray. The role of memory becomes central to the novel, as the Narrator continues to reveal many events from the past in the first volume of the novel. Proust uses the technique of circularity to organize scattered memories. *À la recherche*, is indeed a book that does not end, but forces the reader to go back to the beginning, creating a circle closing onto itself. For example, the madeleine episode, introduced in the first volume, comes back as a memory flash in the last.

Similarly, in the opening pages of the novel, Marcel reflects on his struggle and fear of aging and death. The *Combray* section introduces us to characters very dear to him, but most of whom, at the time of his recollections, are long gone. Thus, death, either directly or indirectly, lingers as one of the central concepts in the first volume. Death also emerges as the last thought in the concluding pages of the novel. In *Time Regained*, the Narrator writes: “The idea of death took up permanent residence within me in the way that love sometimes does. Not that I loved death, I abhorred it.”<sup>57</sup> Suddenly, it dawns on Marcel that everyone he knows in present time (unlike people in his memories) has passed. This revelation comes to him after running into an old acquaintance, ailing Baron de Charlus. In an effort to portray himself in good spirits, the Baron recites a list of family members and friends he has survived:

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<sup>56</sup> Ibid., 50.

<sup>57</sup> Proust, *Remembrance* III, 1100.

‘Hannibal de Bréauté, dead! Antoine de Mouchy, dead! Charles Swann, dead! Adalbert de Montmorency, dead! Boson de Talleyrand, dead! Sosthène de Doudeauville, dead!’ And every time he uttered it, the word ‘dead’ seemed to fall upon his departed friends like a spadeful of earth each heavier than the last, thrown by a grave-digger grimly determined to immure them yet more closely within the tomb.<sup>58</sup>

As the names, familiar both to the Baron and the Narrator are recited, Marcel realizes that he, too, has outlived them all. The powerful realization of imminent death looms in Marcel’s mind. This idea of death at the end of the novel generates a double circularity. In one, Marcel’s life has come a full circle from reliving the past through memories, to the dreadful realization that he is old, alone and approaching death. In the other, the large-scale form of the novel has reached a full circle; the story itself opens with a circle of life: Marcel, as an old man, remembers his childhood, family and friends who were alive at the time of those memories, but who are now long gone. Proust’s use of circularity incited Elliott Carter to implement the method as one of the principal tools of formal organization in his First String Quartet.

While Carter reveals that the idea for the general outline of the First Quartet was suggested by Jean Cocteau’s film *Le Sang d’un poète* (1930),<sup>59</sup> by framing the quartet with two solo cadenzas—the first one by the cello at the beginning of the Quartet that is continued by the first violin at the very end—the details of the inner organization, particularly the idea of circularity, are Proustian.

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<sup>58</sup> Ibid., 894.

<sup>59</sup> Carter, “String Quartets Nos. 1, 1951, and 2, 1959” (1970), in *CEL*, 233. In notes for the First String Quartet, Carter writes: “The general plan was suggested by Jean Cocteau’s film *Le Sang d’un poète*, in which the entire dream-like action is framed by an interrupted slow-motion shot of a tall brick chimney in an empty lot being dynamited. Just as the chimney begins to fall apart, the shot is broken off and the entire movie follows, after which the shot of the chimney is resumed at the point it left off, showing its disintegration in mid-air, and closing the film with its collapse on the ground. A similar interrupted continuity is employed in this quartet’s starting with a cadenza for cello alone that is continued by the first violin alone at the very end. On one level, I interpret Cocteau’s idea (and my own) as establishing the difference between external time (measured by the falling chimney, or the cadenza) and internal dream time (the main body of the work) – the dream time lasting but a moment of external time but from the dreamer’s point of view, a long stretch.”

The First String Quartet contains four movements: *Fantasia*, *Allegro scorrevole*, *Adagio*, and *Variations*. Although the movements flow into one another, the stream of music is broken twice with dramatic pauses. These breaks, which divide the Quartet into three sections, do not correspond to the divisions between movements (Figure 1).<sup>60</sup> Looking at the diagram, it becomes evident that the first movement (*Fantasia*) flows uninterrupted into the second movement (*Allegro scorrevole*). A pause interrupts the second movement and marks the beginning of the second section in the three-part division of the piece. The beginning of the third movement (*Adagio*) is a continuation from the previous one, and it flows uninterrupted into the fourth movement. Even though the title of the third section—*Variations*—appears in m. 1 (or m. 799 of the entire measure count), the process of variations started in the previous section of the piece (m. 167 of the second section). Carter found a way to both obscure the stream of music with interruptions, and to create a dramatic tension between the chronological sequence of events and the implied continuity. Yet, the surrounding cadenzas link the linear narrative with a large circular motion, within which “events emerge and disappear, usually affording hints or pretexts for succeeding ones.”<sup>61</sup>

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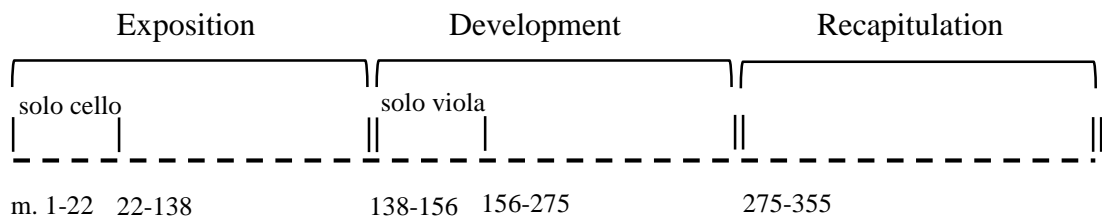
<sup>60</sup> In this discussion, I will differentiate between the terms “section” and “movement.” “Section” is in reference to the three-part division of the Quartet (derived from the arbitrary pauses); “movement” is in reference to the four-part division of the piece. Hence, the Quartet can be measured according to: (1) Three-part division: I. mm. 1-539; II. mm. 540-788; III. mm. 789-1292; and (2) Four-movement division: 1. mm. 1-356; 2. mm. 356-595; 3. mm. 596-620; 4. mm. 621-1292. Time flow is based on the 1988 recording by the Arditti Quartet.

<sup>61</sup> Boretz, 14.

**Figure 1:** Elliott Carter, String Quartet No. 1: Formal structure of the First Quartet

<b>Formal Structure</b>	<b>Three-Part Division</b>	Section I		Section II		Section III	
	<b>Four-Part Division</b>	Movement 1 <i>Fantasia</i>	Movement 2 <i>Allegro scorrevole</i>	Movement 3 <i>Adagio</i>	Movement 4 <i>Variations</i>		
		00:00 (m.1)	9'20" (m.356)	12'23" (m.1)	13'54" (m.57)	23'02" (m.167)	26'02" (m.1)
<b>Time</b>							

**Figure 2:** Elliott Carter, String Quartet No. 1: Formal structure of *Fantasia*



In addition to the framing cadenzas, the movements are unified by the return of the thematic, harmonic and rhythmic events. For example, the first movement, *Fantasia*, contains three sections: exposition (mm. 1-138), development (mm. 138-275), and recapitulation (mm. 275-355) (Figure 2).<sup>62</sup> The opening cello solo (mm. 1-22) repeats in the violin at the start of the middle section (mm. 138-156) (Example 1).

<sup>62</sup> See Schiff, 54-71. As Schiff observes, these terms are not used in a classical sense, but denote sections where Carter introduces many themes, develops them in the middle, and then brings them back juxtaposed, and in different ordering in the “recapitulation.”

**Example 1:** Elliott Carter, String Quartet No. 1: Solo cadenzas

(a) Solo cello, *Fantasia*, mm.1-12

Maestoso  $\text{♩} = 72$

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(b) Solo Viola, *Fantasia*, mm. 138-153

$\text{♩} = 60$

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(c) Solo Violin, *Variations*, mm. 490-504

String Quartet No. 1

Music by Elliott Carter

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Further, although no solos precede the recapitulation, the last movement of the Quartet, *Variations*, ends with a solo violin part, whose motive transforms into that of the opening cello, bringing the form of the piece full circle. Hence, the circularity of *Fantasia* can be summarized as Carter explains it in his program notes:

The first section, *Fantasia*, contrasts many themes of different character frequently counterpointed against each other. It concludes with the four main ideas being heard together, fading in and out of prominence.<sup>63</sup>

What makes this ending even more dramatic is that the violin plays a sustained E, the same pitch that the cello plays in the opening of the Quartet (Example 1c). The motion from the opening E<sup>4</sup> of the cello to the closing E<sup>8</sup> of the violin represents continuity, a motion forward; however, the repetition of the same note portrays the concept of circularity. The solo

<sup>63</sup> Carter, "String Quartets Nos. 1, 1951, and 2, 1959" (1970), in *Collected Essays and Lectures*, 234.

sections frame the entire quartet, and establish a contrast between the external time (of these solo sections) and the internal time (contained in the main body of the work). As a result, they frame the time-world of the quartet, but lie outside it.

For Carter, the relationship among phrases constitutes the crucial aspect of writing “serious” music—the connections of statements with what precedes, what is simultaneous with, and with what succeeds them—must be important.<sup>64</sup> The *Variations* movement greatly embodies this notion. Here, Carter develops eight principal melodic, rhythmic and motivic ideas, many of which are short, fragmented and polyrhythmic in nature.<sup>65</sup> Carter does not necessarily vary the themes in a particular order, but rather shuffles, fragments, and then juxtaposes them. The method of variations appearing, disappearing and reappearing, confirms the main idea of the *Fantasia*: continuity. However, since Carter does not present or vary themes in a predictable or organized manner, he devises a unifying compositional technique for this complex process: acceleration. Different themes accelerate in differing speeds, yet in a very methodical way. As themes become faster with each repetition, they eventually reach a “vanishing point,”<sup>66</sup> where they can no longer be perceived as the same idea. Once vanished, the life cycle of a theme is complete, and a new one begins. While the cycles of variations end and begin anew, the themes continue to accelerate into new forms, which eventually leads to the transformation of the last theme into a solo violin ending, whose motive is the reappearance of the Quartet’s opening cello solo. Here, the violin plays at MM 72, the same speed as the cello’s opening tempo. With these gestures, Carter connects the *Variations* to the *Fantasia*.

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<sup>64</sup> Boretz, 18.

<sup>65</sup> In an undated sketch, Carter summarizes the character and appearance (in measure numbers) of each theme. See Appendix C for the transcription of this sketch, and Appendix D for the notated transcription of each theme. Schiff reproduces a similar chart in *The Music of Elliott Carter*, 69, although he recognizes seven principal themes in this movement.

<sup>66</sup> Carter, “The Time Dimension in Music,” in *The Writings of Elliott Carter*, 245.

Just like Proust's novel, as the piece progresses, it is better understood in retrospect since the ending leads back to the beginning.

## **SIMULTANEITY**

The year Carter spent in Arizona left a strong impression on him. He sought to replicate the desert events in the character and form of the Quartet:

Like the desert horizons I saw daily while it was being written, the First Quartet presents a continuous unfolding and changing of expressive characters – one woven into the other or emerging from it – on a large scale.<sup>67</sup>

The long-term influence of the Arizona desert is apparent in the vivid program note Carter wrote twenty years after his desert experience:

The decision to stay in a place in the Lower Sonoran Desert near Tucson, Arizona, brought me by chance into contact with that superb naturalist Joe Krutch, who was then writing *The Desert Year*. Our almost daily meetings led to fascinating talks about the ecology of the region – how birds, animals, insects and plants had adapted to the heat and limited water supply, which consists of infrequent, spectacular but brief cloudbursts that for an hour seem about to wash everything away, and then very long droughts. There were trips to remote places such as Carr Canyon, the wild-bird paradise, but mainly it was right around the house that exotica (for an Easterner) could be seen – comic road runners, giant sugaros, flowering ocotillos, all sharing this special, dry world. It was indeed a kind of “magic mountain” and its specialness (for me) certainly encouraged the specialness (for me at that time) of the quartet as I worked on it during the fall and winter of '50 and the spring of '51.<sup>68</sup>

From this program note, it is discernible that desert events correlate to the music events: his description of the droughts, interrupted by “spectacular but brief cloudbursts,” can be applied to his description of *Allegro scorrevole* as sound-mosaic of “brief fragments,

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<sup>67</sup> Carter, “String Quartets Nos. 1, 1951, and 2, 1959” (1970), in *Collected Essays and Lectures*, 233.

<sup>68</sup> *Ibid.*, 232.

interrupted by a pause, again resumed, and finally interrupted by another outburst that forms the beginning of the *Adagio*.<sup>69</sup>

Meeting Joseph Krutch in Tucson had a profound effect on Carter. Carter not only uses the details of the desert ecology in his program notes for the First Quartet, but he also quotes Krutch in the opening statement:

The First Quartet was ‘written largely for my own satisfaction and grew out of an effort to understand myself,’ as the late Joseph Wood Krutch (a neighbor during the 1950-51 year of this quartet) wrote of his book *The Modern Temper*.<sup>70</sup>

It is not coincidental that Carter’s quest for the exploration of time perception in the deserts of Arizona led him to Proust; Krutch was familiar with Proustian time, having written an introduction to the 1934 edition of the novel. In it, Krutch observes that in 1905 Proust began cutting himself off from the world after the death of his mother, imprisoning himself in his bedroom. It is in the bedroom that Proust introduces the leitmotif of a magic lantern: it projects pictures on the walls of Marcel’s bedroom, suddenly making the room quite unrecognizable. The idea of something so familiar becoming foreign, opens Marcel’s new memory lane. The observation leads the Narrator to a self-realization in which time is to be transcended in order to construct a substitute for his reality out of memory and imagination.<sup>71</sup>

For Krutch, Proust’s quest is the recovery of the past which then must be made permanent. He can only accomplish this by means of imagination, since every moment must imply both past and future. As such, living experience, which is otherwise isolated and transitory, becomes significant only when it connects the parts that belong together but which are separated by time. Thus, the Narrator’s perception of time changes by venturing into the

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<sup>69</sup> Ibid., 232-34.

<sup>70</sup> Ibid., 232. Also, see Carter, “Program Notes.”

<sup>71</sup> Krutch, “Introduction” in Marcel Proust, *Remembrance of Things Past*, vol. 1, trans. C. K. Moncrieff and Frederick Blossom (New York: Random House, Inc., 1934): vii, xi.

past. He no longer perceives time as a chronological unfolding of actual events, but defines it by the order in which memories enact. Such experience of time makes it challenging to determine the time of inception of an event. If Marcel's idea of time is not necessarily chronological, then which memory is the starting point? Is there such a point? Georges Poulet's critical study of Proustian time in his *Studies in Human Time*<sup>72</sup> further elaborates this idea, observing that when Proust ventures into the past, there is an instant at the beginning of the novel which is not preceded by any other:

And when I awoke in the middle of the night, not knowing where I was, I did not even know at first who I was; I had only in its primal simplicity a sense of existing, such as many flicker in the depth of an animal's consciousness; I was more destitute than the cave-dweller.<sup>73</sup>

Poulet's interpretation of this instant is twofold: on the one hand, it can be viewed as an example of "primal simplicity," an instant that is oriented not toward the "becoming" but toward the nothingness that precedes it. Thus, this instant is about to become the starting point of the development that follows it. As a transitory agent, it cannot hold present realities or any future possibilities. On the other hand, if this instant is interpreted as a fundamental emptiness, then it is seen as lacking something from "behind," because it contains something that is *no longer*, not something which is *not yet*.<sup>74</sup> The notion of an instant without anything preceding it, leads Poulet to question whether a thing existing within this moment, which is itself "outside of time and all measures," can leave this moment which isolates it before and behind; how does it repair the ignorance of time, place, and its own person?

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<sup>72</sup> Georges Poulet (1902-1991) was a Belgian literary critic who conducted an exhaustive examination of the works of French authors, notably Molière, Marcel Proust, Gustave Flaubert, and Charles Pierre Baudelaire, to find the consciousness of each writer. He is best known for his four-volume work *Studies in Human Time*, trans. Elliott Coleman (Baltimore: Johns Hopkins Press, 1956).

<sup>73</sup> Proust, *Remembrance I*, 5.

<sup>74</sup> Poulet, *Studies in Human Time*, 291.

Poulet observes that at the moment when the sleeper awakes, he discovers that he exists at a certain time, in a certain place, among things. The recognition of the bedroom and things in it bring forth Marcel's self-realization. However, for Marcel, even such recognizable things lack stability, because he learned to represent existence as the flickering play of the light of a magic lantern, his first configuration of the world from which he is never fully able to detach himself. That is, his "reality" is a world in which things project themselves in instantaneous images which in turn are replaced by other images belonging to other moments and other places. Thus, Poulet notes that Marcel has created a world where one may find oneself going backward as well as forward; it is a world anachronistic in itself, as it wanders in duration and extent; it is a world in which the mind must precisely assign a certain place in duration and space.<sup>75</sup>

For Poulet, *À la recherche* is a novel without duration, which at the same time appears to embrace the duration of a retrospective existence. The ending, which leads back to the beginning, allows the novel to unfold at an undefined moment of unknown length. Proust's chronology is extremely difficult to follow, with the succession of events that jump to different points in the past, moving in every possible direction. Paul de Man notes that Proust's novel is a juxtaposition of different temporal layers, exhibiting a play between a prospective and a retrospective movement.<sup>76</sup> The diachrony of the passage, as the narrative moves from a center towards a periphery, is the spatial representation of a differential but complementary articulation within one single movement. According to Joshua Landy's critical study of the novel, Proust strives to "extract unity from a Self which is not just multiple, but, so to speak,

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<sup>75</sup> Ibid., 292-3.

<sup>76</sup> Paul de Man (1919-1983) was a Belgian deconstructionist literary critic and theorist. He is best known for his *Allegories of Reading: Figural Language in Rousseau, Nietzsche, Rilke, and Proust* (New Haven: Yale University Press, 1979). The quote in the text is from *Allegories of Reading*, 183.

doubly multiple.”<sup>77</sup> Landy suggests that each individual is fractured both synchronically, into a set of drives, and diachronically, into a set of distinct organizations of those drives, varying according to the phase of life (Figure 3).

**Figure 3a:** The Synchronic Faculties or Drives

<b>Faculty/Drive:</b>	Intellect ( <i>intelligence, raison</i> )	Intuition ( <i>faculté intuitive, intuition, sensibilité</i> )	Will ( <i>volonté</i> )
<b>Function:</b>	Rationalizes	Doubts	Makes decisions

A diachronic segmentation of the Self occurs when one’s personality changes to such an extent that today’s “moi” cannot predict tomorrow’s, or remember yesterday’s, consequently producing a series of “new selves.” Without a possible continuity between these “new selves,” the Self begins to look like “a gallery of photographs taken at different stages of development.” Marcel shows us such segmentation, for instance, in his relationship with Albertine, one of the central characters in the novel:

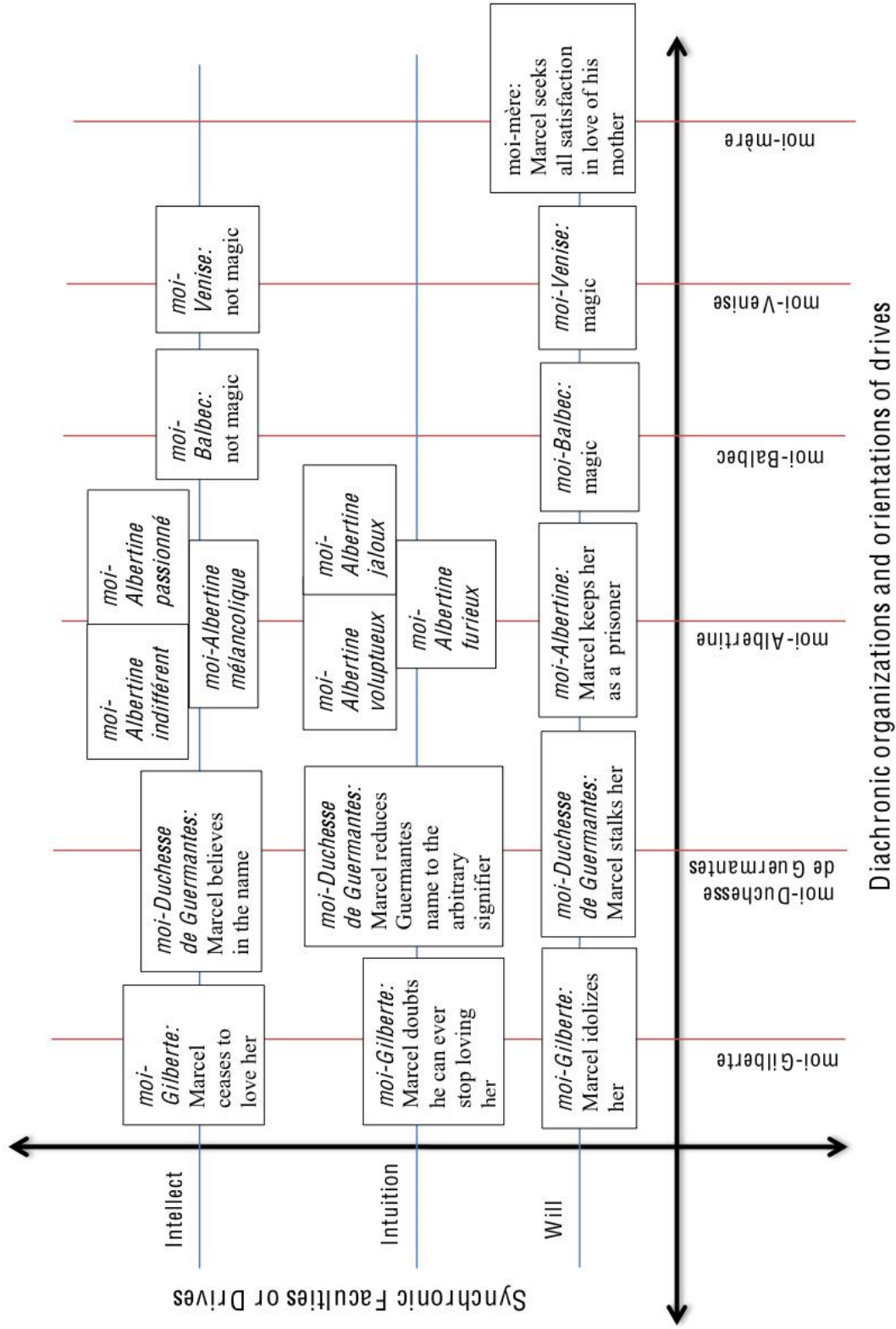
I possessed in my memory only a series of Albertines, separate from one another...a collection of profiles or snapshots [C 192].<sup>78</sup>

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<sup>77</sup> Joshua Landy is the co-director of the Literature and Philosophy at Stanford University. His primary research is in the field of philosophical literature, literary philosophy, philosophy of literature, symbolist poetry, and the first-person novel with particular emphasis on Marcel Proust. In his article, “Les Moi en Moi’: The Proustian Self in Philosophical Perspective,” *New Literary History*, Vol. 32, No. 1, Views and Interviews (Winter 2001): 91-132, Landy capitalizes the word “Self” when referring to the overall structure of an individual consciousness, as distinct from the individual incarnations (lower-case “selves”) which populate it. In Proust, these are “le moi” (or moi-même”) and “les moi” respectively.

<sup>78</sup> Landy, “Les Moi en Moi’: The Proustian Self in Philosophical Perspective,” 95.

Figure 3b: The Proustian Self: Synchronic and Diachronic Subdivisions





Hence, at different points in time, Marcel's *intellect* leads him to perceive of at least three different Albertines: the one toward which he is indifferent, melancholic, or passionate. His *intuition* leads him to develop yet several more forms of drives for Albertine: the sensual one, the one that drives him to jealousy, and Albertine who drives him mad. Despite the collection of different Albertines that reside within Marcel's Self, his *will* knows of only one Albertine: the one whom he keeps as a prisoner (Figure 3b). Marcel's Self is similarly fractured into multiple layers of faculties and drives with every character he encounters through his recollections, such as Gilberte, Duchesse de Guermantes, or his mother, every place (such as Balbec and Venice), and every object or idea (for instance, the "little phrase," which will be discussed later).

With the fragmentation of the Self into a series of "snap-shots" diachronically, and into three faculties synchronically, we cannot achieve unanimity within ourselves at any given moment. However, continuity of time *among* the fragments, from one moment to the next, can achieve it since none of the images of the series disappear. That is, all the images of Marcel's and Albertines in the gallery co-exist, and this creates an overlaid stratum of the Self, *les moi en moi*, representing a deposed *moi* from a different era of the individual's existence.<sup>79</sup> Such fragmentation of the Self, as well as the co-existence of *les moi* is evident in *The Captive*: on one layer, Marcel and Albertine reduce their existence to uneventful routines and habits framed within the memory of a room: every day revolves around waking up, opening the blinds, and going to sleep. However, within this routine, Marcel's self is divided between the *moi-Albertine-jaloux*, the *moi-Albertine-indifférent*, the *moi-Albertine-passionné*:

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<sup>79</sup> Ibid., 98.

I developed the habit of becoming myself a different person, according to the particular Albertine to whom my thoughts had turned: a jealous, an indifferent, a voluptuous, a melancholy, a frenzied person created anew...in proportion to the strength of [my] belief.<sup>80</sup>

Each of these discrete fragments of the Self can be further subdivided, with, for instance, *moi-Albertine-jaloux* Marcel being jealous of different Albertines:

I was not one man only, but as it were the march-past of a composite army in which there were passionate men, indifferent men, jealous men—jealous men not one of whom was jealous of the same woman.<sup>81</sup>

Yet, despite the stratification of the Self into many sub-layers, Marcel is able to blend them into a single substance:

Although Albertine might exist in my memory...subdivided in accordance with a series of fractions of time, my mind, reestablishing unity in her, made her a single person.<sup>82</sup>

The diachronic division of the Self into a set of wholly discrete temporal slices has synchronic ramifications. At any given moment, we are the sum of a large number of temporally layered existences, many of which are entirely unknown to us, but all of which cohabit simultaneously in the mind.

The characters in the novel exist in different time points—the present and multiple pasts reenacted by memory—yet at the same moment. The present and past intersect where the synchronic and the diachronic planes meet. Carter aims to portray musically and formally this idea of simultaneity, of superimposing ideas and characters. He explains in an interview:

Simultaneity, in its familiar meaning, is only one of the methods of statement used in my music. Others are cross-cutting, more or less abrupt switching from one level of character to another, and all sorts of “progressions” within any given strand of continuity. My music is the contrary of static, of the music of the ‘20’s which I was brought up on....Each level of a passage making simultaneous statements usually has its own distinct character, its own way of behaving, its own way of formulating its material, and its own pace; so that besides being differentiated from its partners in a

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<sup>80</sup> Proust, *Remembrance I*, 719-720.

<sup>81</sup> Proust, *Remembrance III*, 660.

<sup>82</sup> *Ibid.*, 693.

purely mechanical way, it is also differentiated in an expressive way. Also, there is a principle of unity that makes these various levels gain a meaning just because they are being heard together in a specific way. For me the drama of these simultaneous, apparently non-coordinated things is that they *are* coordinated and connected in a pattern, not in any familiar or conventional one, that makes them contribute to each other's effects. It would be uninteresting, I think, if they went along without having any connection at all except that of being played at the same time.<sup>83</sup>

One of Carter's compositional methods is what he described as the "time screen." This is a metaphor for the way in which music is "projected" on or against time, constructing a fundamental pulse. This pulse is too slow to be perceived by listeners, but it acts as a "rhythmic skeleton."<sup>84</sup> Once Carter layers music parts on top of this "skeleton," each with its own speed, as is the case in the Quartet, the end result is the sounding of several different pulses simultaneously.

In the Quartet, the highlights of the movements are the passages in which Carter states themes simultaneously, each with its distinct speed, rhythm, and character. As a result, texture becomes stratified by means of different tempos. *Fantasia* contains eight principal and several subsidiary themes. In the excerpt from this movement, mm. 22-32 (Example 2), the meter is  $\frac{4}{4}$  and with a metronome marking (MM) 120. Each instrument enters with a new theme.<sup>85</sup> Theme 1 is in the second violin (m. 22), Theme 2 in the first violin (m. 22), Theme 3 in the viola (m. 25), Theme 4 in the cello (m. 27), and Theme 7 in the cello (m. 22).<sup>86</sup> This section truly depicts the B-series and the Proustian technique: of all the themes stated here, only Theme 1 has been previously heard (in m. 12). Hence, hearing Theme 1 re-enter in m. 22 requires

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<sup>83</sup> Boretz, 19-20.

<sup>84</sup> Ford, *Composer to Composer: Conversations about Contemporary Music*, 5. Also, see Carter, "Music and the Time Screen (1976)," in *Collected Essays and Lectures*, 262-280.

<sup>85</sup> See Appendix A for a transcription of an undated sketch in which Carter summarizes and outlines each theme of the Quartet. See Appendix B for a notated transcription of each theme.

<sup>86</sup> Schiff deviates in his transcription of the principal themes in *Fantasia* by including a theme stated by the cello in m. 22, which he labels as Theme 7 (*Music of Elliott Carter*, 60). Despite its prominence, Carter omits this theme from his thematic chart. In this discussion, I will refer to Theme 7 as identified by Schiff. See Appendix B for a complete list of both Carter's and Schiff's thematic transcriptions.

memory to connect the events, determining that the re-entry is a *later* event. But, while Theme 1 establishes a later event in the B-series, the rest of the themes reveal themselves here for the first time, hence constituting the *present* moment. Since later in the Quartet Carter restates and develops each of the themes stated here, then this section (mm. 22-32) will shortly serve as a memory, too. Hence, just like in the novel, where the past occupies the present state of the Narrator, and the present is relived through the memories of the past, Carter too achieves the same effect in the Quartet: rehearsing the themes in the present is also reliving the music from the past through memories.

Each theme is characterized by a specific rhythm, which divides the beat into different units, some faster and some slower than the quarter note pulse. Consequently, four distinct pulses emerge, moving at different speeds at the same time. Theme 7 clearly articulates the quarter-note pulse at MM 120. The theme consists of sounding quarter notes on every beat of  $\frac{4}{4}$  meter for the length of five measures. The rhythm of the theme in the first violin is characterized by a dotted half note tied to the first note of the eighth-note triplet. This makes the articulated timespans slower than the quarter note pulse. It is defined precisely at MM 36. The second violin, articulating the quarter-note tied to a sixteenth-note rhythmic figure is also slower than the quarter note pulse (by one sixteenth-note), producing pulsations at MM 96. The viola enters in m. 25 with the theme played in quarter-note-triplets. This articulation of the pulse is faster than the steady quarter note, at MM 180. With the entrance of the viola in m. 25, all four differing pulses are superimposed: MM 36 (first violin), 96 (second violin), 180 (viola) and 120 (cello) (Figure 4a).

While the cello plays Theme 7 in steady quarter note pulses, the regular pulse is hardly discernible, since the melodic contour, which groups the quarter notes into an irregular pattern

of ascending and descending leaps, as well as articulation of alternating *marcato* and slurs that carry across the barlines, do not clearly reinforce the pattern of  $\frac{4}{4}$  grouping. By measure 27, the cello abandons the quarter note pulse as it enters with a new theme, characterized by a half-note tied to an eighth-note. The articulated timespans of this new melody occur at the speed of MM 48. Here is yet another superimposition of four differing speeds among four parts: MM 36 (first violin), 96 (second violin), 180 (viola) and 48 (cello) (Example 2, Figure 4b).

Without a single part playing at the notated tempo of MM 120, it becomes apparent that both the  $\frac{4}{4}$  meter and the notated quarter note pulse are arbitrary in terms of how meter, pulses and time are perceived. The meter is there primarily for notational convenience: it coordinates the four instruments through a common metric framework in order to show the rhythmic alignment and interrelationship of parts.

In addition to the distinct speeds and rhythms, the variety of thematic characters is essential to Carter. An early sketch for the First Quartet (Example 3) indicates that Carter initially lays out only three principal themes for this passage (mm. 22-32 of *Fantasia*), which he labels “A, B, C.”<sup>87</sup> These three themes correspond to themes 3, 4, and 2, respectively, as shown in Example 2, which are never stated simultaneously, but are rather juxtaposed. Evidently, their superimposition does not yield enough contrast, as Carter writes “not enough contrasting themes” on the page, and crosses out all ideas. Rather than fully abandoning the themes, Carter changes their pitch content slightly, adds the characteristic distinct rhythm to each, and more importantly, adds four additional themes, which when superimposed with the

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<sup>87</sup> The Library of Congress has digitized all the material in their collection pertaining to the First String Quartet. All pages are accessible on their website: <http://lcweb2.loc.gov/diglib/ihas/loc.natlib.ihas.200155638/default.html>.

initial three stated on this sketch, yields the contrasting speeds, rhythm and characters discussed above.

**Example 2:** Elliott Carter, String Quartet No. 1, *Fantasia*: Superimposition of pulses, mm. 22-32

The musical score is presented in four staves. The first system (mm. 22-26) includes:

- Staff 1 (Violin I):** Theme 2, starting at m. 22. Tempo: *mp tranquillo*. Dynamics: *mf*. Features triplets.
- Staff 2 (Violin II):** Theme 1, starting at m. 22. Tempo: *mp tranquillo*. Dynamics: *f marc.* (pizzicato), *mf*. Features triplets.
- Staff 3 (Viola):** Theme 3, starting at m. 25. Dynamics: *f marc., detache*. Features triplets.
- Staff 4 (Cello/Double Bass):** Theme 7, starting at m. 22. Dynamics: *mf sub.*

The second system (mm. 27-32) includes:

- Staff 1 (Violin I):** Continuation of Theme 2. Dynamics: *mf*. Features triplets.
- Staff 2 (Violin II):** Continuation of Theme 1. Dynamics: *mf*. Features triplets.
- Staff 3 (Viola):** Continuation of Theme 3. Dynamics: *meno f*. Features triplets.
- Staff 4 (Cello/Double Bass):** Continuation of Theme 7. Dynamics: *f sost. e cant.*

Additional markings include tempo changes to *(poco)* and *piu f*, and specific pulse markings such as  $(\text{♩} = 120)$ ,  $(\text{♩} = 60)$ , and  $(\text{♩} = 90)$ .

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**Figure 4:** Elliott Carter, String Quartet No. 1, *Fantasia*: Superimposition of four differing speeds

(a) Measures 22-26

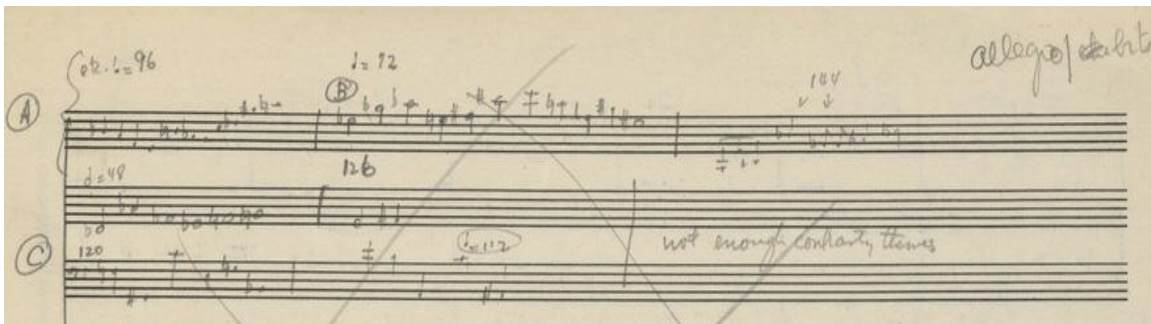
(b) Measures 27-30

Violin 1: MM 36
Violin 2: MM 96
Viola: MM 180
Cello: MM 120

Violin 1: MM 36
Violin 2: MM 96
Viola: MM 180
Cello: MM 48

**Example 3:** Elliott Carter, String Quartet No. 1: Thematic material, *Fantasia*, mm. 22-32

(a) Sketch 0125v



(b) Transcription of Sketch 0125v

As discussed earlier, the rhythmic experimentations by Ives and Nancarrow sparked Carter's interest in exploring polyrhythmic superimpositions in his own works. Appropriately, he pays homage to both composers by quoting their thematic material—the theme from Ives's

First Violin Sonata is quoted by the cello in *Fantasia*, starting in m. 27 (Theme 4, as discussed above), whereas a rhythmic idea from Nancarrow's *Rhythm Study No.1* is echoed at the beginning of the *Variations*.<sup>88</sup> Carter decided on the inclusion of the Ives theme in the initial planning stages of the Quartet, as his early sketches illustrate. In an undated sketch (transcribed in Example 4) Carter lays out the main thematic material for the Quartet, explaining that the first section (*Fantasia*) is built on a "number of musical lines and their varying combinations from the main idea in the movement," and that one theme, which he denotes as Theme A, is "quoted from Ives's Second [sic] Violin Sonata."<sup>89</sup> What is interesting about this thematic diagram is that it shows how Carter planned in advance to combine Ives's theme with other themes. Thus, he is not only paying homage to Ives by quoting his theme, but also by the manner in which he does it—by superimposing the "Ives theme" with other themes, Carter constructs complex rhythmic planes of polyrhythms, which is an Ivesian technique.

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<sup>88</sup> Carter, "String Quartets Nos. 1, 1951, and 2, 1959" (1970), in *Collected Essays and Lectures*, 233: "This quartet, for instance, quotes the opening theme of Ives's first Violin Sonata, first played by the cello in its lowest register after each of the other instruments has come in near the beginning. A rhythmic idea from Conlon Nancarrow's *First Rhythm Study* is quoted at the beginning of the *Variations*. These two composers, both through their music and their conversation, had been a great help to me in imaging this work and were quoted in homage." See Carter, "The Rhythmic Basis of American Music," in *Collected Essays and Lectures*, 61-62, for his discussion of Nancarrow's polyrhythms in the *First Rhythm Study*, which employs the combination of four distinct planes of rhythm in the piece's most elaborate measures (mm. 50-51).

<sup>89</sup> See text manuscripts, Elliott Carter Collection at the Paul Sacher Stiftung. Here Carter mistakenly cites that the theme is quoted from Ives's Second Violin *Sonata* instead of the First Violin Sonata.



**Example 4:** Elliott Carter, String Quartet No. 1: Transcription of the thematic layout sketch

<b>String Quartet #1</b>	
Quoted from Ives' 2 <sup>nd</sup> Violin Sonata – m. 27-29 <u>cello alone</u> It is heard near the beginning	
Theme	A Ives – m. 48 B – 25 C – 70 violin D – 2 <sup>nd</sup> violin m.41
22 m.	cello at 120 then 48 Ives VII 96 VI 36 Vla 180
<u>at climax</u>	VI = 100 VII = 135 – <u>Theme A</u> Vla = 48 <u>Theme B</u> cello = 180
70 – 77	Viola alone – then all
<u>Ives theme – 27 – 30 – developed by me</u> then 35 –	
A	cello alone then all from 20-32
B	lyric than viola m. 70 – 77 all from
A	Ives theme combined with lyric theme m. 108 – 130
lyric theme with other theme up beat to 182 – 188 end	
Ives – viola – 280 – 310 – then 311 – 358	

Carter translates this general outline into more precise music notation, as evident in the sketch titled “Themes-improvisations of cello” (folio 0021v, illustrated in Example 5). Here, Carter sketches eight thematic ideas for the cello, with the theme on the fourth staff referring to the opening lines of the Ives’ violin sonata (transcribed in Example 5c), which is first stated in m. 27 (*Fantasia*). All thematic material sketched on this folio is incorporated into the Quartet in some format. For instance, the theme on the second staff, labeled “marcato (pizz.)” occurs in m. 144 of *Fantasia*, the theme on the second staff is transformed into Theme 7 in m. 22 of the same movement, and the theme on the seventh staff, characterized by eighth-note quintuplets, is stated in m. 184.

**Example 5:** Elliott Carter, String Quartet No. 1: “Themes-improvisations of cello”

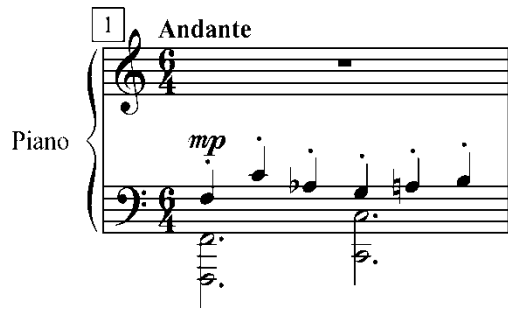
(a) Sketch 0021v

(b) Transcription of the “Ives Theme” from Sketch 0021v



(c) Violin Sonata No. 1, Charles E. Ives

Piano, m. 1



Violin, m. 34



The superimposition of pulses is also a principal characteristic of the second movement, *Allegro scorrevole*. The movement is characterized by uniform motion of sixteenth-notes at MM 540. Carter abruptly abandons this motion for long sustained notes (mm. 379-400) (Example 6). Once he introduces the contrasting speeds separately, Carter proceeds to combine them simultaneously (m. 400): the cello part plays constant sixteenth-notes against sustained notes in the upper three parts. Gradually, each part joins in the steady sixteenth-note motion until all four are characterized by this rhythm (m. 411).

Example 6: Elliott Carter, String Quartet No. 1: Superimposition of pulses, *Allegro scorrevole*, mm. 376-411

Musical score for measures 380-384. The score is written for four staves (Violin I, Violin II, Viola, and Cello/Double Bass). The key signature has one flat (B-flat). The time signature is 3/4. Measure 380 is marked with a box containing the number 380. Dynamics include *pp* (pianissimo) and *v* (accents). The music features complex rhythmic patterns with many sixteenth and thirty-second notes.

Musical score for measures 385-389. The score is written for four staves. Measure 385 is marked with a box containing the number 385. Dynamics include *pp*, *mf-pp*, and *mfpp*. The music features complex rhythmic patterns with many sixteenth and thirty-second notes. There are several accents (*v*) and dynamic markings.

Musical score for measures 390-394. The score is written for four staves. Measure 390 is marked with a box containing the number 390. Dynamics include *mfpp*, *mf*, and *f espr.* (forte espr.). The music features complex rhythmic patterns with many sixteenth and thirty-second notes. There are several accents (*>*) and dynamic markings.

(♩ = 108) *f molto espr.* *mf* (♩ = 72) *8va*  
 (♩ = 108) *molto espr.* *mf* (♩ = 72)  
 (♩ = 108) *f* *molto espr.* *mf* (♩ = 72)  
 (♩ = 108) *f* Solo al *mf* (♩ = 72) *f* *molto espr.*

*8va - v - - - -* *p* *p* *p*  
*f* *mf* *cresc. molto*

*f* *ff* *ff-f* *ff-f*  
*f* *ff-f*

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Following the first pause in m. 539, Carter contrasts speeds by juxtaposition rather than by superimposition in II. *Allegro scorrevole* (Example 7). A steady motion of sixteenth-notes in all four parts characterizes the first part of the section. This configuration, continuing from *Fantasia*, transforms into a contrasting slow section with all four parts playing sustained notes (m. 32). Here, two contrasting speeds never occur simultaneously, but rather, side-by-side. Despite the uniformity of sustained long notes in all four parts, in mm. 32-56, three differing

speeds form at the notated tempo of MM 135: the violins play at the speed of MM 13.5, at MM 202.5, and cello at MM 27 (Figure 5).

**Example 7:** Elliott Carter, String Quartet No. 1: Juxtaposition of pulses, *Allegro scorrevole*, mm. 32-56

The image displays a musical score for Elliott Carter's String Quartet No. 1, measures 32-56. The score is written for four staves: Violin I, Violin II, Cello, and Double Bass. The tempo is marked *Allegro scorrevole*. The score is divided into two systems. The first system starts at measure 35, marked with a box containing the number 35. The tempo is indicated as  $(\text{♩} = 135)$ . The dynamics range from *pp* (pianissimo) to *f* (forte). The second system starts at measure 40, marked with a box containing the number 40. The tempo is indicated as  $(\text{♩} = 108)$ . The dynamics range from *mp* (mezzo-piano) to *mf* (mezzo-forte) and *fp* (fortissimo). The score includes various musical notations such as slurs, accents, and dynamic markings. The key signature is one flat (B-flat major or D minor). The time signature is 2/4.

Musical score for String Quartet No. 1, measures 32-56. The score is in 3/4 time and consists of two systems of four staves each. The first system (measures 32-50) features a 'Solo' section for the first violin, with dynamics ranging from *f* to *p*. The second system (measures 51-56) includes markings for 'arco', 'pizz.', and 'f pesante'. A 'molto espr.' marking is present at the beginning of the second system. Measure numbers 50 and 55 are indicated in boxes.

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**Figure 5:** Elliott Carter, String Quartet No. 1: Juxtaposition of Pulses, *Allegro scorrevole*, mm. 32-56

Violins: MM 13.5
Viola: MM 202.5
Cello: MM 27



The concept of simultaneity characterizes the entire quartet. In *Adagio*, Carter introduces the duos separately, and then superimposes them in the manner where the lower duo (viola and cello) gradually ascends as the upper duo (violins) descends, until they reach a point where they cross and their vertical relationship is reversed. Carter describes *Adagio* as forming the extreme point of divergence between simultaneous ideas in the quartet which is led up to and led away from by many lesser degrees of differentiation.<sup>90</sup> This type of divergence polarizes the musical space, a concept that becomes integral to Carter's later works.<sup>91</sup> In *Variations*, a series of themes accelerated at each successive recurrence, Carter superimposes the themes, yet varies each one with different speeds, creating multiple simultaneous pulses.<sup>92</sup> As the themes accelerate, their component pulses split between different instruments (m. 290) (Example 8). In m. 290, the speeds in the instruments are distributed as follows: violin I, characterized by a dotted half note, plays at the speed of MM 27, violin II, with eighth-note quintuplets, at MM 48.6, the viola's dotted eighth-notes, at MM 60.75, and the cello, with its quarter notes, plays at MM 81 (Figure 6). Such superimposition of multiple themes, each with its designated speed and character sets a precedent for the Second String Quartet (1959), in which Carter not only assigns each instrument a distinct theme, but treats each instrument as a distinct character-continuity.<sup>93</sup>

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<sup>90</sup> Carter, "String Quartets Nos. 1, 1951, and 2, 1959" (1970), in *Collected Essays and Lectures*, 234.

<sup>91</sup> Carter's works that follow the First String Quartet are built on the idea of polarization. For instance, in the Double Concerto (1961), Carter divides the orchestra into two groups, each one featuring a soloist; in the Concerto for Orchestra (1969), Carter assigns each of the four movements its distinct set of chords and tempo designs; in the Third String Quartet (1971), the polarization of musical space is exaggerated with Carter dividing the ensemble into two duos for the entirety of the piece, which not only do not share any musical material, but also play their own set of movements. This topic will be further discussed in Chapter 3.

<sup>92</sup> Schiff also deviates in his transcription of the principal themes in *Variations* by identifying seven principal themes, whereas Carter outlines eight (*Music of Elliott Carter*, 69). See Appendix D for a complete list of both Carter's and Schiff's thematic transcriptions.

<sup>93</sup> This will be discussed in Chapter 2.

**Example 8:** Elliott Carter, String Quartet No. 1: *Variations*, Splitting of pulses, m. 286-294

286 (♩ = 54) (♩ = 81) 290

*mp*

*mf marc.*

*f cant. espr.*

*pp*  
Melodic outline of Vln.II, Vla., Vcl combined

*piu espr. 5* *f*

*p* evenly balanced with Viola and Cello

*p* evenly balanced with Violin II and Cello

*p* evenly balanced with Violin II and Viola

**Figure 6:** Elliott Carter, String Quartet No. 1: *Variations*, Splitting of Pulses, m. 286-294

Violin I:	MM 27
Violin II:	MM 48.6
Viola:	MM 60.75
Cello:	MM 81

## TRANSFORMATION OF CHARACTERS

As the events unfold in discontinuous time, Proust masterfully develops his characters to reveal changes and transformations, which at the same time seem both surprising and anticipated. As Jean-François Revel remarks,

Proust's characters change without changing. Sometimes they undergo a complete change without anything remarkable happening to them. On the other hand, there are times when their existence undergoes a major transformation without their changing.<sup>94</sup>

Even Marcel, the most stable character in the novel, cannot withstand the transformations that time imposes. As the young Narrator, he is fascinated with Gilberte only to later renounce her forever and “commit suicide of the self that loved [her].”<sup>95</sup> Similarly, his jealous love for Albertine develops into an infatuation and inevitably dissipates into indifference. As characters are split into multiple “selves,” several layers within each character develop simultaneously, but do not unfold in the same time. Both the present events acting upon a self and those selves initiated by memory develop simultaneously. Further, with characters undergoing transformations, so do the places, objects and ideas associated with them. For instance, “the little phrase,” from the Violin Sonata in F-sharp by an imaginary composer, Vinteuil, is one of the subordinate ideas in the novel, which, just like each character in the story, is subjected to developments and transformations.<sup>96</sup> Whereas music itself does not transform, its meaning and what it signifies to the characters in the novel, does. Hence, “the little phrase” plays a key role in the psychological evolution of the novel's two main

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<sup>94</sup> Revel, *On Proust*, 29.

<sup>95</sup> Proust, *Remembrance I*, 657.

<sup>96</sup> Proust makes references to several real composers and their works throughout the novel, including his in-depth analysis of Wagner's operas, *Parsifal* and *Tristan und Isolde*. Yet, he chooses an imaginary composer, Vinteuil, whose “little phrase” from the *Andante* movement of the Violin Sonata famously returns in all three volumes and constitutes one of the central ideas. Jean-Jacques Nattiez (*Proust as Musician*. Cambridge: Cambridge University Press, 1989), proposes that the philosophy of music of Schopenhauer convinced Proust that only an imaginary work of art could be truly absolute, as it is “unrealized, unreal and ideal” (Carbone, 165).

characters—Charles Swann and the Narrator. The phrase appears at the birth of Swann’s love towards Odette, becomes “the national anthem of their love”<sup>97</sup> until Swann realizes the illusory nature of both his love and the feelings the Sonata evokes in him. At this moment, when Swann disassociates this music with the image of Odette, the “little phrase,” with all its mystery and curiosity, is passed on to the young Narrator, who attaches it to the image and his love of Albertine.

Vinteuil’s Sonata and its “little phrase” are introduced to the readers during one of the soirées at the Verdurins’.<sup>98</sup> However, the first time we “hear” the sonata, Swann is hearing it for the second time. At first, he is unable to recognize the “little phrase” and remains unmoved. However, as his present hearing begins to evoke memories, he is able to identify it as being from the Vinteuil Sonata. Suddenly, “the little phrase” carries a peculiar power to move him:

This time he had distinguished quite clearly a phrase which emerged for a few moments above the waves of sound. It had at once suggested to him a world of inexpressible delights, of whose existence, before hearing it, he had never dreamed, into which he felt that nothing else could initiate him; and he had been filled with love for it, as with a new and strange desire.<sup>99</sup>

Swann experiences four important encounters with the sonata, before he transfers its mystery and curiosity to the Narrator. It is during the first hearing that he begins to equate the meaning of love with the “little phrase.” By the second hearing, this musical phrase becomes transformed into a symbol of his love toward Odette, the object of his infatuation. His feelings for the two become inextricable—Swann constantly refers to the phrase as “she” and describes it with such subjective verbs that it unmistakably evokes the image of Odette. Hence, as he comes to love Odette, music accompanies him along the way, expressing every stage of their

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<sup>97</sup> Proust, *Remembrance I*, 238.

<sup>98</sup> *Ibid.*, 224-31.

<sup>99</sup> *Ibid.*, 228.

love. During the third hearing, Swann comes to a partial realization that Odette, who has been involved in an affair with Forcheville, does not love him anymore. Thus, his love both for Odette and the sonata, which came to symbolize their love, is illusory. It is here that Swann desperately turns his hope toward the power of the “little phrase” to remind Odette of their love:

...[T]he little phrase had just appeared, distant, graceful, protected by the long, gradual unfurling of its transparent, incessant and sonorous curtain. And Swann, in his heart of hearts, turned to it as to a confidant of his love, as to a friend of Odette who would surely tell her to pay no attention to this Forcheville.<sup>100</sup>

As Swann ponders the nature of his relation with Odette, he begins to question the mystery of the “little phrase.” By the final hearing of the sonata, Swann is no longer in love with Odette, and hearing Vinteuil’s music serves only to evoke painful memories:

‘It’s the little phrase from Vinteuil’s sonata—I mustn’t listen!’ all his memories of the days when Odette had been in love with him, which he had succeeded until that moment in keeping invisible in the depths of his being, deceived by this sudden reflection of a season of love whose sun, they supposed, had dawned again, had awakened from their slumber, had taken wing and risen to sing maddeningly in his ears, without pity for his present desolation, the forgotten strains of happiness.<sup>101</sup>

Unable to separate the meaning of music from his relationship with Odette, the mystery of the sonata vanishes as their love ceases. Consequently, Swann fails to comprehend the true essence of Vinteuil’s music, disassociated from Odette. However, for Marcel, the psychological transformation associated with music is more significant. At first, Marcel associates “the little phrase” with his love for Albertine. But soon, he realizes that this evocation of memories is only a superficial effect of music. Instead, through his analysis of Vinteuil’s *Septet*, Marcel recognizes the truth and reality in music. Therefore, Vinteuil has led

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<sup>100</sup> Ibid., 288.

<sup>101</sup> Ibid., 375.

him to the realization that music can reach the innermost essence of things in nature, and consequently affirms his true calling as an artist.

The meaning of Vinteuil's music and the quest for the artistic absolute develop simultaneously in the novel. Jean-Jacques Nattiez observes that both transformations are subjected to the same three-fold process. In the quest of the absolute, both Swann and Marcel do not understand the work at first; confronted by this enigma, the characters embark on the quest to find true meaning. For Swann, the explanation turns to be illusory, but the Narrator is able to look past this second stage of "false trails," and penetrate to the true essence of music.<sup>102</sup> Similarly, the description of Vinteuil's music unfolds in three stages: on the first hearing, the sonata appears insignificant, unmemorable, and barely recognizable, and it is described in impersonal, vague language. In the next stage, both characters use more personal and expressive terminology, describing musical elements clearly and conveying ideas through individualized musical motifs. Finally, as Nattiez observes, "the work passes beyond this stage in order to arrive at a pure play of sonorous forms and achieve profundity."<sup>103</sup>

The transformations in the novel are simultaneous, merging events from different points in time, the effect Carter sought to depict in the First Quartet. Pierre Boulez described Carter's concept of form of the First String Quartet as "layered structures that resemble characters in a play."<sup>104</sup> The Quartet's distinct themes, just like characters in a play, interact with one another, engage in conversations, conflicts and resolutions, and develop over time. For example, Theme 1 in *Fantasia* is identifiable by *pizzicato* articulation, triple stops, the harmonic and intervallic content, and its pitch collection (Example 9). The theme is first

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<sup>102</sup> Nattiez, 34.

<sup>103</sup> Ibid., 34.

<sup>104</sup> Albèra, "Pierre Boulez in Interview (2): On Elliott Carter, 'A Composer Who Spurs Me On,'" 2.

introduced by the second violin in m. 12, marked *pizzicato*, *forte* and *marcato*, and each of its manifestations are marked in the same gesture.<sup>105</sup> Its first harmonic sonority, a triple stop, is the AIT (0137). The violin proceeds to play two more triple-stops, changing the sonority each time—a statement of (0236), followed by (0147). Further, AIT (0137) is always comprised of a particular tetrachord, {G<sup>#</sup>, E, B, A<sup>#</sup>}, whenever it occurs in the context of this melody. This is the only theme in the entire Quartet, whose pitch collection remains unchanged every time it appears throughout the piece, thus making it easily recognizable.

**Example 9:** Elliott Carter, String Quartet No. 1: Theme 1, *Fantasia*

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With its gestural, melodic, harmonic and pitch characteristics, Theme 1 tries to withstand change. Yet, the theme is one of the characters in a play, whose experiences expose it to change. Just like in Proust’s novel, time does not allow the themes (characters) to remain unchanged, intact, unaffected by the events surrounding them. Therefore, the theme does transform because time is the factor of change. As each restatement of the theme enters, its

<sup>105</sup> The first theme reoccurs in the second violin, mm. 22-23; in the first violin, mm. 91-96; in the cello, mm. 158-160 and 178-180.

transformations become evident: its initial speed of MM 72 changes through the process of metric modulation to MM 120, 144, 72, and 100.

Theme 3 of *Fantasia*, characterized by equal rhythmic durational values, undergoes the most dramatic transformation. When subjected to metric modulations, its rhythmic pattern is barely discerned. The motive is rarely stated in the same rhythmic unit, and not once in the same speed of the pulse. For example, in the first appearance of the theme in the viola in mm. 25-27 (Example 10a), the motive is stated in quarter note triplets at MM 120. In its next appearance (m. 53, Example 10b), the cello plays equal quarter note pulsations in  $\frac{6}{4}$  meter and at MM 180, followed by MM 144 in  $\frac{3}{4}$  meter in the viola (m. 88, Example 10c). The rhythmic unit gradually changes from a quarter note to a dotted quarter note in the second violin (m. 183, Example 10d), and dotted quarter noted tied to a dotted eighth-note in the cello (m. 198, Example 10e), where the pattern blends across all four instruments. The rhythmic transformation of the theme finally ends with a pattern of an eighth-note followed by an eighth-rest in the cello (mm. 312-346, Example 10f).

**Example 10:** Elliott Carter, String Quartet No. 1: Transformations of Theme 3, *Fantasia*

(a) Viola, mm. 25-27



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(b) Cello, mm. 53-55

53 (♩ = 60)      ♩ = ♩ (♩ = 60, ♩ = 180)

*mf*

(c) Viola, mm. 88-100

♩ = 144

90

*più f*      *espr.*

*p*

*cresc.*      ♩ = ♩ (♩ = 144)

(d) Second violin, mm. 180-185

180 (♩ = 100)

*pp*

♩ = ♩ (♩ = 100)

(e) All four parts, mm. 198-203

198  $\text{♩} = 63$

*f marc. e sost.* *f marc.* *meno f* *meno f* *meno f*

202

(f) Cello, mm. 312-323

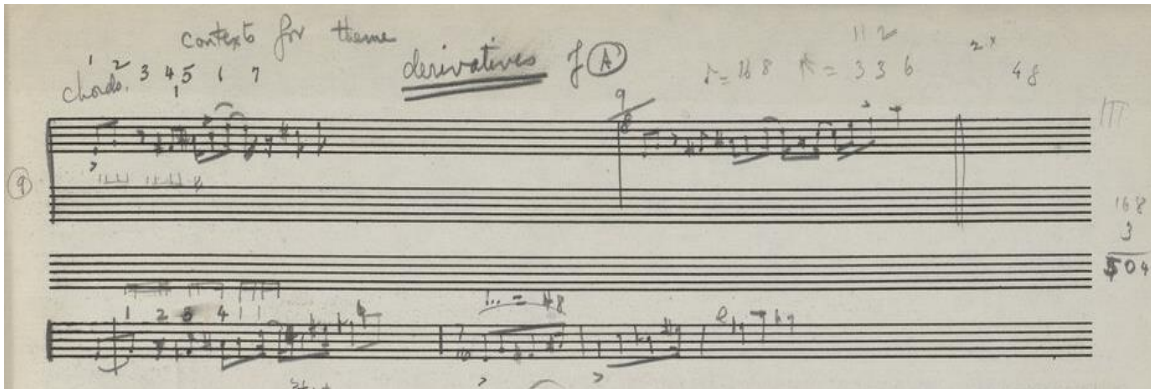
312 *mf* *mp*

*mf marc.*

As the theme undergoes transformations and starts to blend into its various forms, its distinct character is lost. Recalling Proustian division of the Self into many simultaneous “selves,” the themes of the Quartet are also split into many different strands; they now exist in their own restatements, split between different instruments or textures, and in different speeds. Sketches show that the notion of thematic transformations was essential and present in the earliest stages of planning of the Quartet, as many pages depict this process. One such example is a sketch 0245v (Example 11), which shows Carter transforming “theme A.” The theme is subjected to several rhythmic and metric permutations: the first statement of the motive is in the meter of 9/8 and later in 7/16. Further, the three restatements of the motive in 9/8 meter show the shifts of thematic elements, with the written-out beats starting on the first eighth-note (pitch E), which is then transformed on the bottom staff, with the numbering sequence starting a beat later (on pitch G).

**Example 11:** Elliott Carter, String Quartet No. 1: Thematic transformations: “Derivatives of A”

(a) Sketch 0245v, “derivatives of A”



(b) Transcription of Sketch 0245

chords 1 2 3 4 contexts for theme 5 6 7 derivatives of (A)  $\text{♩} = 168$   $\text{♩} = 336$

9  $\text{♩} = 48$

The transformation of characters is even more exaggerated in the *Variations*. Themes are varied by means of acceleration, until they become so fast that they disappear into the whirlpool of a new life cycle. As the themes' pulses increase, their characters change. For example, Theme 2 contains both intervallic and rhythmic characteristics. Intervallically, the theme alternates between two pitches that outline a minor third ( $C^\sharp$  and E), separated by long pauses. Rhythmically, its first appearance, in the cello line in m. 2, is characterized by the pulsating quarter notes separated by four beats of rest. Here, the theme's initial speed is MM 120 (Ex. 12).

**Example 12:** Elliott Carter, String Quartet No. 1: Theme 2, *Variations*

2  $\text{♩} = 120$  senza sord.  $\text{♩} = \text{♩} (\text{♩} = 160)$

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Music by Elliott Carter  
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As the theme accelerates, its pulse changes. For example, by m. 72, the pulse is dotted eighth-note = 192. With the accelerated pulse, the rhythm of the theme is faster, and the pauses between the notes shorten. By m. 382 the motive is transformed into a steady stream of sixteenth-notes without any rests, then into thirty-second-notes in m. 461, and finally the entire motive dissipates into tremolos at the end of the piece, m. 488 (Example 13).

**Example 13:** Elliott Carter, String Quartet No. 1: Transformations of Theme 2, *Variations*

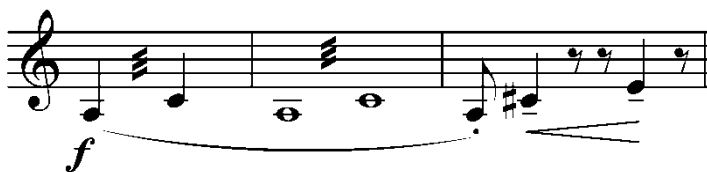
(a) Theme 2, m. 382



(b) Theme 2, m. 461



(c) Theme 2, m. 488



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While the outer movements are characterized by very complex thematic transformations, the inner movements are much simpler. The second movement, *Allegro scorrevole*, contrasts the fast and slow sections. The fast sections consist of the motivic fragments in a uniform motion of sixteenth-notes, which are imitated among all four instruments. The stream of sixteenth-notes is steady throughout the entire movement. The contrasting slow sections are characterized by long, sustained notes in all four instruments, with harmonies changing only when an instrument moves to a different pitch. Rather than contrasting acceleration and the method of transformation within single lines or themes, this movement pits the contrasting speeds of fast and slow sections against each other. The end result is the polarization of musical time.

In *Adagio*, Carter uses the idea of duality in a novel manner: he divides the four instruments of the quartet into two duos. The lower duo (cello and viola) is introduced first (m. 57 of II) and is characterized by quick rhythmic figures, utilizing thirty-second- and sixty-fourth-notes. The upper duo (violins) enters in m. 66 and plays slow, sustained and dotted figures. In contrast to the quick figures, the violins give this section “adagio” character. Carter describes the main thematic development and transformation of *Adagio* in his sketch:

ADAGIO – slow movement built of two main ideas: the duet in recitative character between viola & Cello and the duet in quiet lyrical character between V.I & V.II. These are later combined and ideas from this are developed into a coda which forms an introduction to movement III – variations.<sup>106</sup>

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<sup>106</sup> See text manuscripts, Elliott Carter Collection at the Paul Sacher Stiftung.

While the manner of stratification of musical elements, such as meter and space, became very important in the First String Quartet, we will see in later chapters how Carter develops this concept into a formal device for String Quartets Nos. 2 and 3.<sup>107</sup>

## CONCLUSION

In his 1978 “Concert Program Note,” Carter described his First String Quartet as “a masterpiece of design and order, a thing of beauty from the purely technical standpoint of its organization and construction.”<sup>108</sup> Deciding to focus on the ideas and interests that have occupied him for a long time, Carter composed a piece that featured complex rhythm, harmony, and counterpoint, structured within a complex formal design. From such construction emerged four polyrhythmic strands that unfold both vertically and horizontally, which are subjected to metric modulations while maintaining distinct polyrhythmic textures, and are formally framed within the solo sections (cadenzas). This design allowed Carter to represent the B-series of time experience, combining the internal and external worlds of the quartet where the themes superimpose, juxtapose, split, and transform both in the present and, through memory recollections, in the pasts, while propelling the motion of circularity of the grand-scale design. Proust also differentiates between the internal time of Marcel’s existence, subdivided into a large number of particles of the Self, all existing simultaneously and consequently creating a unity between the synchronic and diachronic passage of time. As portrayed in *The Captive*, this internal dream-like reality exists independently within the frame of external time, a world where life goes on in a different time dimension—while Marcel and Albertine seem ageless as

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<sup>107</sup> In the Second String Quartet (1959), Carter individualizes the four instruments, assigning each its own character, harmonic intervals and rhythms. The Third String Quartet (1971) is characterized by contrast and conflict of the opposing duos, which pursue their own paths and do not exchange any musical material.

<sup>108</sup> Carter, Program Notes for June in Buffalo—Concert I, June 1, 1978.

they are caught in the moment of routines, the radical and rapid inventions take place in the external world where people age and die.

In describing his First String Quartet, it is clear that Carter implemented the technique of superimposition, simultaneity and circularity from literature, particularly from Proust's *À la recherche du temps perdu*. His original thoughts on the "Time Lecture," as seen in the unpublished documents, emerged from the concept of Proustian time. The design of the external and internal worlds, within which multiple strands of events develop and transform in a non-linear time, is masterfully achieved by both Carter and Proust. Within such complexity, certain recognizable events or motives unify these works—for Carter, it is the opening cello cadenza which reappears at the end of the quartet; in Proust, "the little phrase" frames the first and last volumes of the novel. The similarity of design and techniques in both works is not a coincidence; Carter was fully aware of the effect of Proustian time and his literary techniques, which he clearly aimed to portray musically in his First Quartet. In the same "Program Note," Carter explains:

In the First Quartet, the opening cadenza also acts as an introduction to the rest, and when it reappears at the end, it forms the last variation in a set of variations. Not only is this plan like that of many "circular" works of modern literature, but the interlocked presentation of ideas parallels many characteristic devices found in Joyce, Proust, and others – the controlled "stream of consciousness," the "epiphany," the many uses of punctuation, of grammatical ambiguities, including the use of quotation.<sup>109</sup>

The First String Quartet is often described as Carter's first mature composition, and the work that "put Carter on a musical map."<sup>110</sup> While Carter scholars have explored many aspects of the quartet's design and language, which earned Carter such distinction, the analyses and conclusions were made independently from the actual source for Carter's novel techniques.

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<sup>109</sup> Ibid.

<sup>110</sup> Schiff, 53.



Only alluding to the connection of Carter's techniques to Proust's, the details of the similarities of the two remained largely unknown and unexplored. As I examine the evolution and process of Elliott Carter's string quartets, I analyze Carter's First Quartet in relation to Proust's novel. Considering the role *À la recherche du temps perdu* played in the development and expression of Carter's novel ideas, which marked the beginning of the composer's new and distinct period, such study is not only necessary but essential.

## CHAPTER 2

### Elliott Carter's Second String Quartet: Formation of a New Harmonic Language and Character-Continuities

#### INTRODUCTION

Elliott Carter's First String Quartet (1951) was the composer's medium for developing novel ideas—the perception of time, complex rhythmic expression, independence of voices, and a new harmonic language built on all-interval tetrachords (AITs). Many of these ideas were derived from sources other than music—namely, literature and film, including the works of Marcel Proust, James Joyce, Jean Cocteau, and Sergei Eisenstein.<sup>111</sup> The new techniques in the Second String Quartet (1959) also stemmed from literary influences. Carter specifically cited the works of Thomas Mann and Joyce as his influences in portraying “different versions of the humanly experienced time” in his music.<sup>112</sup> Nonetheless, the musical expression of the Second Quartet undoubtedly evolved from the explorations in the First Quartet. Not only literary depictions of experienced time, but also the harmonic language, form, and intensified independence of voices in the Second Quartet, all evolved from the developments in its predecessor. In discussing his first two quartets, Carter remarks that the musical language of the Second Quartet emerged “almost unconsciously through working during the fifties with ideas the First gave rise to.”<sup>113</sup>

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<sup>111</sup> In my first chapter, which focuses on Carter's First String Quartet, I examine some of these influences, particularly Marcel Proust's novel, *À la recherche du temps perdu*. For writings on the influences by James Joyce, Jean Cocteau and Sergei Eisenstein on Carter's music, see Jonathan Bernard's essay, “Elliott Carter and the Modern Meaning of Time.”

<sup>112</sup> Carter, “String Quartets Nos. 1, 1951, and 2, 1959, (1970)” in *Elliott Carter: Collected Essays and Lectures, 1937-1995*, 231- 232.

<sup>113</sup> *Ibid.*, 232.

While the First Quartet generally explores all the new ideas simultaneously, the Second Quartet is a more focused study of harmony and instruments' independence. Building on the application of the (0146) AIT in the First Quartet, Carter now investigates the properties of both AITs—(0146) and (0137)—their combinations, their resultant eight-note chords, and the “left over” tetrachords (or the secondary tetrachords) that complete the twelve-tone aggregate. Moreover, the independence of four instruments in the First Quartet, with each instrument playing a different melody and in its own speed, which results in a four-strand polyrhythmic counterpoint, gave rise to the idea of further individualizing the four instruments in the Second Quartet. Now, in addition to the distinct melodies and speeds, Carter assigns each instrument a repertoire of intervals, colors, and gestures, which create four character-continuities. These characters engage in a musical discourse that is built from the interactions, combinations, cooperations, and oppositions among the four players.

Although many of the ideas in the Second Quartet sprung from the First Quartet, ultimately, the two compositions stand in direct opposition to one another. The sheer scale of the two is remarkably different—the First Quartet stands at over forty minutes in length, while the more compact Second requires half that time. As Carter himself has noted:

Hearing these two quartets [the First and the Second] now, I get the impression of their living in different time worlds, the first in an expanded one, the second in a condensed and concentrated one—although this was hardly a conscious opposition at the times of their composition.... Although both quartets are concerned with motion, change, progression in which literal or mechanical repetition finds little place, the development of musical expression and thought during the eight years that separate them seems to be far-reaching.<sup>114</sup>

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<sup>114</sup> Carter, “String Quartets Nos. 1, 1951, and 2, 1959, (1970),” 231-32.

While in the First Quartet Carter focuses on the four-strand polyrhythms and melodic independence in the four voices, the Second Quartet emphasizes the novelties in the harmonic language and development of the “behavioral patterns” of character-continuities—their speeds, and intervals, which form the basis of their individualized characteristics, but also unify them as a group.<sup>115</sup> Sketches and text manuscripts, housed at the Paul Sacher Stiftung, show Carter’s relentless investigation of these novelties—many pages contain a systematic exploration of the properties of the AITs, their combinations into larger sets, such as six-note chords or the complete aggregate, as well as segmentation into smaller sets of trichords. This suggests that Carter was developing a new system of understanding harmony while composing the Second Quartet, solidifying his harmonic language, which eventually led to the creation of his *Harmony Book*.<sup>116</sup>

Even more interestingly, sketches, correspondence, and text manuscripts show a rare glimpse at Carter’s attempt at utilizing twelve-tone technique in the preliminary phases of the compositional process of the Second Quartet. Further, they show evidence that Carter was influenced by other composers, most notably Bartók and Webern, while developing his harmonic language in the Second Quartet. These sketches are particularly important in that they suggest that he borrowed the techniques of other composers to develop his identifying expression. Hence, a study of the original sources for the Second Quartet indicates that the development of his harmonic language was the primary emphasis during this period, and also that Carter greatly struggled to formulate his new harmonic grammar. In this chapter, I will examine novel developments in Carter’s musical language and how, its roots, and its effect on creating distinct character-continuities.

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<sup>115</sup> *Ibid.*, 232.

<sup>116</sup> Carter, *Harmony Book*, eds. Nicholas Hopkins and John Link. New York: Carl Fischer, LLC, 2002.

## HARMONY

Carter began composing the Second String Quartet in August of 1958, interrupting the work on his Double Concerto, on which he worked in the winter of 1956 through 1957. In the early stages of the Concerto, which he eventually finished between 1959 and 1961, Carter encountered conceptual difficulties, primarily concerning the form of the piece—expanding its orchestration so that each solo instrument was supported by a carefully selected instrumental ensemble.<sup>117</sup> With a commission by the Stanley String Quartet to write another quartet, Carter put the Concerto on hold, and started writing the Second Quartet, in which he continued to work out the ideas from the Double Concerto. Hence, the two pieces share certain compositional features, including the harmonic language based on all-interval tetrachords, the associations of particular intervals with each instrument, and the intensification of the soloists. In the Double Concerto, Carter emphasized the two soloists—the piano and harpsichord—within two chamber orchestras (a conceptual idea of spatial separation which he developed even further in his Third String Quartet of 1971). In the Second Quartet, each movement is led by one specific instrument. Additionally, Carter inserts solo cadenzas between the movements, each one featuring a new soloist.

In the eight years that separate the first two quartets, Carter's understanding of AITs has substantially changed. While writing the First Quartet, Carter was aware of the relationship of intervals that are contained within the four-note AIT. In discussing the harmonic plan of the First Quartet in his 1960 article, "Shop Talk by an American Composer," Carter explains that he used one of the two AITs, (0146), and that this "key" four-note chord is "one of the two four-note groups that joins all the two-note intervals into pairs, thus allowing for the total range

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<sup>117</sup> Meyer and Shreffler, *Elliott Carter: A Centennial Portrait in Letters and Documents*, 167.

of interval qualities that still can be referred back to a basic chord-sound.”<sup>118</sup> This “key” chord here functions primarily as a referential sonority, while the pitch organization in the piece is mostly generated from numerous themes. Carter chose to use only the (0146) tetrachord in the First Quartet, and avoided the (0137), which, at that time, appeared too tonally suggestive to him because of its subset of a minor triad.

However, with the Second String Quartet, Carter is more interested in generating the musical material directly from both AITs. By the time he finished composing this piece, Carter fully understood the properties of the two tetrachords. He combines tetrachords to form eight-note chords with mutually exclusive forms of (0137) and (0146), which he then supplements with secondary tetrachords to complete the twelve-note aggregate. Combining two transpositions of a single AIT, requires (0167), (0235), or (0347) to complete the aggregate, while juxtaposing both forms of the AITs leaves four secondary tetrachords (Figure 1).

**Figure 1:** Combinations of all-interval tetrachords and the remaining secondary tetrachords

Primary Chord Combinations	“Left-Over” Secondary Chords
(0146) + (0146) or (0137) + (0137)	(0167), (0235), (0347)
(0146) + (0137)	(0134), (0268), (0358), (0369)

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<sup>118</sup> Carter, “Shop Talk by an American Composer,” in *Collected Essays and Lectures*, 219.

Carter first employed two forms of AITs in his Double Concerto, which he then developed further in the Second Quartet. In fact, the two pieces share the same harmonic design, as evident from a sketch (transcribed in Example 1).<sup>119</sup> The heading of the sketch reads, “General harmonic scheme of Quartet II + Double Concerto,” which shows the particular partitioning of the AITs between the soloists and their respective ensembles. In the Double Concerto, Carter assigns the (0146) AIT to the piano and the (0137) to the harpsichord. On the top three systems of the chart, Carter shows how two transpositions of an AIT, with mutually exclusive pitch classes, combine with left-over tetrachords to complete the aggregate. For example, on the first system, the (0146) in the piano part, {A, B, D, Eb}, is combined with its  $T_7I$  {E, F, Ab, Bb} and the secondary (0167) set, {F#, G, C, Db}. Similarly, the harpsichord part combines the same (0167) set with the two transpositions of (0137)—{E, G#, A#, B} and its  $T_1I$ , {D, Eb, F, A}. On the next two systems, Carter provides two more orderings and transpositions of AITs, each combining with the other two possible tetrachords—(0235) and (0347)—to complete the aggregate. On the bottom part of the page, Carter shows how the combinations of both AITs combine with each of the four possible secondary tetrachords to complete the chromatic.

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<sup>119</sup> Carter provides a similar chart in his 1970 essay, “The Orchestral Composer’s Point of View,” 246. Here, Carter only discusses the chart in its relation to the Double Concerto

**Example 1:** Elliott Carter, String Quartet No. 2: General harmonic scheme of Quartet II + Double Concerto

general harmonic scheme of Quartet II + Double Concerto

The image displays a musical score titled "general harmonic scheme of Quartet II + Double Concerto". It consists of two systems of four staves each. The first system is labeled "piano" and "harpsichord" and contains five measures. The second system is labeled "piano" and "harps." and also contains five measures. Harmonic labels in parentheses are placed in boxes above the staves, indicating specific chord structures. The labels in the first system are (0146), (0146), (0235), (0137), and (0137). The labels in the second system are (0146), (0137), (0134), (0146), and (0137). Other labels like (0347), (0369), (0268), and (0358) are placed within the staves, often above specific notes or chords.

This sketch is significant for several reasons, in addition to laying out the harmonic scheme for the Double Concerto and the Second String Quartet: it reveals that the work on these two pieces overlaps. Correspondence and dates on the folios confirm that Carter began composing the Double Concerto first and then stopped the project because he encountered conceptual difficulties with his harmonic expression. He immediately began working on the Second Quartet, keeping the same harmonic design he intended to use in the Double Concerto.



This suggests that Carter returned to a familiar and comfortable medium—the string quartet genre—to find solutions to the problems he faced in the Concerto. He found the solution by the time he finished composing the Second Quartet (which eventually enabled him two years later to complete the Concerto)—by understanding fully the properties of the two AITs, and how combining them with secondary tetrachords could complete the aggregate. Hence, this sketch is a solution to his query.

That this chart was sketched later in the compositional process, certainly after Carter completed at least the Introduction, is evident from other information included on this folio. On top of the page, directly above the segment transcribed in Example 1 Carter provides a map of the vertical harmony in the Introduction (Example 2). The sketch identifies the AIT statements in the first nineteen measures of the Quartet. Pitch content in each labeled measure, with the exact voicing and registers, correspond accurately to the opening measures in the published score (Example 2b). For instance, the second violin's {A-C#} combines with the cello's {Bb-Eb} to create a statement of (0146) set. In the next measure, the same pairing of instruments creates another statement of (0146), while in m. 9, the first violin and the viola collaborate to form a statement of the (0137) set, and so forth. In order to complete the aggregate, Carter combines the statements of AITs with secondary hexachord (0167) in the viola part, as labeled. Hence, in this sketch, Carter is not pre-composing the harmonies for the Introduction section, but is rather extracting them from an already-composed segment.

**Example 2:** Elliott Carter, String Quartet No. 2: Vertical harmony in the Introduction, mm. 7-21

**(a)** “Vertical harmony in 2<sup>nd</sup> quartet” (transcription)

Transcription of vertical harmony in the 2<sup>nd</sup> quartet, mm. 7-19. The notation shows two staves of music. The first staff contains measures 7, 8, 9, 11-12, and 13-14. The second staff contains measures 15-16, 17, 18, and 19. A circled chord in measure 7 is transcribed in the lower staff as measures 12-13-14, labeled "viola: harmony".

**(b)** Introduction, mm. 7-19 (published score)

Published score of the Introduction, mm. 7-19. The score is in 4/16 time and features complex rhythmic patterns and dynamics. Annotations include red circles around specific chords in measures 7, 8, 9, and 12, and blue circles around chords in measures 13 and 14. Performance markings include *f*, *marcato*, *ruvido*, *fp*, *pp*, *piu. f*, *mf*, *espr. (>)*, *f espr.*, *gliss.*, *mf*, *pp*, *p*, *mf*, *p-pp*, and *f sub.*. Measure numbers (0146) and (0137) are indicated below the staves.

♩ = 140

pizz. (pizz. normale)  
*f marc. sf ruidoso* arco  
*mf*  
*f marc. stacc. corto*  
*mf sub.*  
*f molto espr.*  
 Viola harmony: (0167) (0167)  
*p* (0146) *mf*

15

*mp* *mf*  
*p* *pp*  
*leggero con fantasia*  
 (Tempo giusto)  
*stacc. f*  
*mf* (0146) (0146) *pp*

17

*mf* *f* *(f)*  
*ff sub.*  
 Viola harmony: (0167) *(f sempre)*  
 (0146) (0137) (0146) (0146)

**String Quartet No. 2**

Music by Elliott Carter

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Developing a new harmonic vocabulary and learning about the properties of AITs was a long process for Carter. The Second Quartet predates Carter's *Harmony Book*, which he developed from 1963-67, and in which he thoroughly examines the subset content of chords with three or more notes. Lacking an already devised system on which he could rely,<sup>120</sup> Carter charts the properties of the AITs in various combinations and permutations, both vertically and horizontally, in over one hundred pages of sketches for the Second Quartet. The approach is systematic—Carter notes the interval content of AITs, and writes out each chord as it partitions the set of interval classes. He then notes the common-tone relationships among the AITs, diligently rewrites the sets in each transformation.<sup>121</sup>

In the Second Quartet, Carter assigns each instrument its own repertoire of intervals to emphasize their individuality. The first violin uses the intervals of a minor third and a perfect fifth; the second violin is assigned a major third, major sixth, and a major seventh; the viola is characterized by the intervals of a tritone and a minor seventh; and the cello uses a perfect fourth and a minor sixth (Figure 2).<sup>122</sup> In addition, he distributes the intervals of a minor and major second to all four instruments, in order to assure that interval pairings among the instruments will result in a formation of one or both AITs.

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<sup>120</sup> See Carter, *Harmony Book*. In his postscript to "Elliott Carter Talks about his *Harmony Book*," John Link notes that Carter asked for his copy of the *Harmony Book* to be returned, because he had forgotten how much he depended on it while composing.

<sup>121</sup> In his article, "Structural and Transformational Properties of All-Interval Tetrachords," Adrian P. Childs notes that "an AIT implies a partition on the set of interval classes, dividing its six members into three pairs (or *partition components*), each defined by virtue of being non-overlapping in the AIT." AIT (0137) partition the interval classes as 1+4, 2+5, and 3+6; AIT (0146) partition as 1+2, 4+5, and 3+6 (see Childs, Figure 3). Childs' study builds on Guy Capuzzo's 1999 dissertation, "Variety within Unity: Expressive Ends and their Technical Means in the Music of Elliott Carter, 1983-1994."

<sup>122</sup> In the First String Quartet, Carter equates an interval to its inversion. However, with the Second Quartet, he starts differentiating between an interval and its inversion, viewing them as two different intervals. He continued to exaggerate their distinctiveness since then. See Bernard, "An Interview with Elliott Carter," 180-214.

**Figure 2:** Elliott Carter, String Quartet No. 2: Distribution of intervals among the instruments

Violin I	m3, P5	m2, M2
Violin II	M3, M6, M7	
Viola	TT, m7	
Cello	P4, m6	

For instance, in a sketch transcribed in Example 3, Carter explores different ways to derive AITs and secondary tetrachords by combining intervals assigned to each instrument individually, before joining two or more parts together. He starts by working out the possibilities with only one interval type within the instruments' assigned repertoire. Thus, in the left column, he writes pairs of major sevenths, which belong to the second violin's repertoire, {D-Eb, A-G#; F-E, D-C#}. Below it, he writes pairs of viola's minor sevenths, followed by minor thirds of the first violin, major thirds of the viola, and cello's perfect fourths. Once the transpositions of selected intervals are sketched, Carter combines instrument pairs to obtain the AITs and secondary tetrachords. Hence, continuing with the first system, Carter combines the major sevenths of the second violin {G-F#} with the viola's minor sevenths {C-Bb}, to get (0146), which he labels "a," or its T<sub>11</sub>I, which labels "b." He proceeds to pair new transpositions with different combination of intervals to form AITs. For instance, combining the second violin's interval of a major seventh {A-G#} with the viola's major third {B-D#}, forms a statement of (0137); viola's minor seventh in the system below, {F-Eb} with the second violin's major seventh {A-G#} create (0146); and the second violin's tritone {D-G#} and the second violin's minor third {C#-D} for another statement of (0137).<sup>123</sup> The remaining tetrachords mostly form statements of secondary tetrachords. Hence, in this harmonic layout,

<sup>123</sup> Although Carter assigns the interval of a tritone to the viola and a major third to the second violin, he had a different interval assigned in early harmonic sketches; initially, the tritone is assigned to the cello, and the major third to the viola.

Carter is not only thinking about the combination of intervals that yield AITs, but also about completing the aggregate.

**Example 3:** Elliott Carter, String Quartet No. 2: Harmonic Sketch (transcription)

The image displays a musical score for Elliott Carter's String Quartet No. 2, Harmonic Sketch. The score is a transcription showing various string parts: VII, Vla (VI), VI (Vla), Vla (cello 6-), Cello (VI), VII, and cello 4+. Annotations include circled numbers (0146), (0137), and (0146) with letters 'a' and 'b'. Red boxes highlight specific chordal textures in the VII and Vla (VI) parts. Blue boxes highlight textures in the Vla (VI) part. A large red rounded rectangle encloses the VI (Vla) part from measure 15 to 25, with 'aug. 15' written in red above it. A circled 'X' is placed over a note in the VI (Vla) part at measure 18. Arrows indicate voice leading between parts.

That Carter is thinking in terms of completing the aggregate is confirmed on the same sketch. On the segment circled and dated Aug. 15 [1958], Carter expands the interval pairs and four-note chords sketched earlier to form hexachords, which he then combines to complete the twelve-note aggregate (detail extracted in Example 4). He forms the first hexachord {D, Eb, A, Ab, G, C#}, which I label as hexachord a, by taking the first four pitches of the major seventh interval pairs of the second violin (first system in Example 3), and adding a tritone. This hexachord (012678) consists of two (016) trichord subsets—{D, Eb, A} and its  $T_{10}I$  {Ab, G, C#}. Next to it, Carter adds another hexachord (hexachord b) with two (016) trichord subsets, which share no pitches in common with the first, hence completing the aggregate. Underneath the first hexachord, he writes the  $T_4I$  of the first hexachord (hexachord c), which is combined with the tritone transposition of the second (hexachord d). Below the pairs of hexachords, Carter writes out two sets of aggregates—one derived by combining the trichords of the first pair of hexachords in different ordering, and the second aggregate by the combination of the pitches in the second pair of hexachords.

**Example 4:** Elliott Carter, String Quartet No. 2: Hexachords (extracted detail from Example 3)

The image displays musical notation for Example 4, showing four hexachords (a, b, c, d) and their combinations into aggregates. The notation is organized into two columns and three rows.

- Row 1:** Hexachord (a) is shown as a sequence of six notes: D, Eb, A, Ab, G, C#. It is labeled with the set class (012678) above it. Two (016) trichord subsets are indicated by brackets: {D, Eb, A} and its  $T_{10}I$  {Ab, G, C#}.
- Row 2:** Hexachord (b) is shown as a sequence of six notes: Eb, G, C#, D, Ab, A. It is labeled with the set class  $T_{10}I(012678)$  above it. Two (016) trichord subsets are indicated by brackets: {Eb, G, C#} and its  $T_{10}I$  {D, Ab, A}.
- Row 3:** Hexachord (c) is shown as a sequence of six notes: D, Ab, G, C#, Eb, A. It is labeled with the set class  $T_4I(012678)$  below it. A trichord subset {D, Ab, G} is indicated by a bracket and labeled "V II".
- Row 4:** Hexachord (d) is shown as a sequence of six notes: Eb, A, D, Ab, G, C#. It is labeled with the set class  $T_I(012678)$  below it. A trichord subset {Eb, A, D} is indicated by a bracket.
- Row 5:** An aggregate is shown as a sequence of six notes: D, Ab, G, C#, Eb, A. It is labeled "first trichord from a + second trichord from b (retrograde)".
- Row 6:** An aggregate is shown as a sequence of six notes: Eb, A, D, Ab, G, C#. It is labeled "first trichord from b + second trichord from a (retrograde)".

These sketches are vital in that they capture the very early stages of the development of Carter's harmonic language. The sketches for the First Quartet contain no such charts, and in the sketches of the later quartets, Carter shows thorough understanding of the AITs, all-trichord hexachords (ATH), and all-interval twelve-note chords. Therefore, it is during the period when he composed the Second Quartet that Carter was laying out the foundation for his harmonic language.

Further evidence that Carter is thoroughly and systematically exploring chord properties are sketches in which Carter outlines all combinations of dyads into all possible chords. In an early harmonic sketch, Carter outlines various combinations of interval pairs into tetrachords, and then writes, "how to get 3, 5, 6, 7, note groups?" That is, Carter is trying to understand the method in obtaining five-, six-, and seven-note chords by combining the statements of AITs that have one or more pitches in common, and segmenting the chords into trichords that he can manipulate (by the process of inversion, transposition, or retrograde). Over dozens of pages, Carter continues to chart and explore the properties of hexachords in terms of their complementation, and partition them into different combinations of AITs and secondary tetrachords to complete the aggregate (summarized in Figure 3). Those hexachords that have z-relation<sup>124</sup> (right column in Figure 3—hexachords (013467), (023568), (013479), and (014679) are partitioned four different ways into pairs of AITs (either pairs of one same AIT, or combinations of both). While the complements of these z-related hexachords contain no subsets of AITs, Carter typically uses them to complete the aggregate.

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<sup>124</sup> Sets that are z-related have the same intervallic content (i.e., the same interval vector) but are not transpositionally or inversionally related. Therefore, one set cannot be derived from the other through transposition or inversion. The two AITs, (0147) and (0137) are an example of z-related tetrachords.



**Figure 3:** Five- and six-note chords from overlapping statements of AITs

Tetrachord Combinations	Five-Note Chords	
(0137) + (0146)	(01367) (02368)	
Tetrachord Combinations	Six-Note Chords	Z-relations
(0137) + (0146)	(012357) (014568) (012468) (013469)	(013467) (023568) (013479) (014679)
(0137) + (0137)	(012567) (012456) (012579)	
(0146) + (0146)	(012378) (012348) (013578)	

### MUSICAL BORROWINGS

While numerous sketches show the evolution of Carter’s harmonic language, several folios also reveal that Carter faced certain conceptual challenges while learning this harmonic grammar. They also indicate that Carter turned to other composers’ harmonic structures—particularly those by Béla Bartók and Anton Webern—and combined their methods with his own.

Joseph Straus observes that Bartók’s Quartets Nos. 3 (1927), 4 (1928) and 5 (1934) are intensely chromatic atonal works, characterized by short motives of about three or four notes in length.<sup>125</sup> Motives usually outline a span of a perfect fourth, which is then chromatically filled. For instance, in the first movement of the Third Quartet, the motive of a perfect fourth

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<sup>125</sup> Straus, “The Pitch Language of the Bartók Quartets,” 70-71.

is subdivided into a major second and minor third. The motive of the Fourth Quartet is more chromatic, containing three minor seconds within a minor third (Example 10), as Straus observes in the following excerpts (Example 5):<sup>126</sup>

**Example 5:** Béla Bartók, String Quartets Nos. 3 and 4: Motivic characteristics

(a) String Quartet No. 3, *Prima Parte*, mm. 87-89

Violin II

Viola

*p* P4 m3 M2 P4 m3

*p*

(b) String Quartet No. 4, *I. Allegro*, mm. 1-2

Violin I

Violin II

*f* [D#, E, F, F#]

*f* [Eb, E, F, F#]

Carter shows his familiarity with Bartók’s treatment of motivic ideas, in that he inscribes one of the folios for the fourth movement of the Second Quartet, “for Bartók” (Example 6). The segment features a staggered entrance of voices: a sustained Eb in the viola; an outline of a minor third, D-F, in the first violin; a C# in the cello; and a block third, C-E, in the second violin. It is unquestionable that Carter follows Bartók’s method, outlining a span of

<sup>126</sup> Ibid., 71-72.

a perfect fourth, which he fills-in chromatically with the violins playing thirds and the lower strings a major second. Although this measure does not literally translate into the published score, it is quite significant because it suggests that Carter might have borrowed Bartók’s technique, which prevails in all of his music since the First Quartet: dissonant and atonal compositions, with densely contrapuntal lines, and staggered entrance of voices, each introducing pitches that chromatically fill-in smaller intervals (thirds or fourths). To this, Carter adds new elements—he combines the pitches to obtain the all-interval tetrachords (0146) and (0137), which constitute the fundamental harmonic design of this Quartet, and which he combines with other tetrachords to complete the aggregate.

**Example 6:** Elliott Carter, String Quartet No. 2: “For Bartók,” (transcription)

[C, C#, D, Eb, E, F]

The image shows a transcription of a musical segment with four staves. Above the staves is the pitch set [C, C#, D, Eb, E, F]. The first staff contains a melodic line with a bracket on the right labeled 'm3'. The second staff contains a single note with a bracket on the right labeled 'M3'. The third and fourth staves contain a pair of notes with a bracket on the right labeled 'M2'. The text 'for Bartók' is written across the second and third staves.

Through numerous revisions of the segment in the above example (Ex. 6), Carter develops m. 610 (Example 7). This measure truly exemplifies how Carter merged Bartók’s motivic treatment with his own. Reminiscent of Bartók’s style, the cello outlines a perfect fourth (E-A), which is chromatically filled-in by the pitches in the viola (G-A $\flat$ ) and the second violin (G $\flat$ -F). The remaining pitches chromatically complete a span of another perfect fourth, (B $\flat$ -Eb). Further, the individual instrumental lines feature the intervals of thirds (the violins),

seconds (the viola), and fourths (the cello). Carter carefully chooses the order in which pitches are introduced, so that his harmonic language, based on AITs, upholds. Hence, this measure features both forms of AITs—(0146), occurring between the second violin and the cello twice, and (0137), between the second violin and the viola. The first violin introduces the remaining pitches needed to complete the aggregate. This measure is just one instance where Carter effectively blends two methods—his own and a borrowed one. The sketch leading to it (“for Bartók”) is a direct link to Bartók, and shows how Carter took another composer’s conceptual method and combined it with his own harmonic language to derive an identifiably unique harmonic language.

**Example 7:** Elliott Carter, *String Quartet No. 2, IV-Allegro*, m. 610

The image shows a musical score for Elliott Carter's String Quartet No. 2, m. 610. The score is written for four staves: Violin I, Violin II, Viola, and Cello/Double Bass. The key signature has one flat (B-flat), and the time signature is 3/4. The music is in a complex, multi-measure rest for the first two staves, with a five-measure rest indicated above. The first violin part has a dynamic marking of *p*. The second violin part has a dynamic marking of *pp*. The viola part has a dynamic marking of *p* and a *pizz.* marking. The cello part has a dynamic marking of *f*. The double bass part has a dynamic marking of *pp sub.* and a *Solo* marking. Two AITs are highlighted: (0146) in red boxes, occurring between the second violin and the cello, and (0137) in a blue box, occurring between the second violin and the viola.

**String Quartet No. 2**

Music by Elliott Carter

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The sketches for the Second Quartet reveal even more curious borrowings. I discovered among the folios in this collection a sketch titled “Webern” (Example 8). This sketch, in which Carter re-composes the Webern’s *Six Bagatelles for String Quartet*, No. 6, Op. 9, is extraordinary for several reasons: it is the only known example in which Carter transcribes a piece of another composer, it shows a close connection to Webern, and it may be the only example in which Carter used a work of another composer as a starting point for his own composition.

Although Webern’s *Bagatelle* uses four staves, Carter reduces the parts to two, adding a third staff on the second system, in m. 5. The transcription abruptly stops on the downbeat of m. 6, leaving a large portion of the page blank. This layout of condensing the staves suggests that Carter intended to at least finish the transcription of the entire piece. The piece is only nine measures in length, hence Carter could have fit the remaining four measures on the second system, and perhaps elaborate it further. Yet, the excerpt stops about half-way through. Thus, the questions remain: why did Carter transcribe this *Bagatelle*, and how did he intend to use it in his Second String Quartet?

Although reduced and compressed, Carter’s transcription stays true to the original—the tempo is marked at MM 84 in  $\frac{3}{4}$  meter; the pitches, all written in their sounding registers, the rhythm, articulation, and most of the expressive and tempo markings are written out in detail. Unlike the “for Bartók” sketch, which Carter wrote as a dedication to the composer he admired, much so the way he did so for Ives and Nancarrow, the Webern sketch does not bear characteristics of a dedication, but rather of a study.

**Example 8:** Borrowings from Webern

(a) Carter's transcription of Webern's *Bagatelle No. 9* (Paul Sacher Stiftung. Used by permission)

The image shows a handwritten musical score on a page with ten staves. The top two staves contain handwritten musical notation, including notes, rests, and dynamic markings. A large diagonal line is drawn across the first two staves, starting from the bottom left and extending towards the top right. A large oval is drawn around a section of the first staff, encompassing several measures of music. The rest of the page is filled with empty staves. At the top of the page, there are several labels: 'Webern' written in cursive, 'Librod in U.S.A.' printed, and 'PASSING BRASS No. 11-24 STAVE Symphony Size' printed. At the bottom right, there is a blue stamp that reads 'String Quart No. 2 1980 Elliott CARTER'.

(b) Carter's transcription of Webern's *Bagatelle No. 9* (transcription)

**Webern**

The musical score is presented in two systems. The first system consists of two staves: a treble clef staff and a bass clef staff. It begins with a tempo marking of quarter note = 84 and a key signature of one sharp (F#). The notation includes various rhythmic values, including eighth and sixteenth notes, and rests. Performance instructions include 'tr' (trill), 'rit.' (ritardando), '8va' (octave), and '3' (triplet). The second system also consists of two staves: a treble clef staff and a bass clef staff. It features a 'ff' (fortissimo) dynamic marking and 'ato.' (ad libitum) instruction. The notation includes a triplet of eighth notes and a tremolo. The score concludes with a 'rit.' (ritardando) instruction.

(c) Anton Webern, *Bagatelles for String Quartet*, No. 6, Op. 9, mm. 1-6

**Fließend** (♩ = ca 84) **tempo**

The score is written for four staves (Violin I, Violin II, Viola, and Cello/Double Bass) in 3/4 time. The tempo is marked **Fließend** (♩ = ca 84) and **tempo**. The key signature has one sharp (F#). The score includes various dynamic markings such as *ppp*, *pp*, *p*, *f*, *ff*, *sf*, and *sff*. Performance instructions include *mit Dämpfer* (with dampers), *arco* (arco), *pizz.* (pizzicato), and *am Steg* (at the bridge). The score is divided into measures 1 through 6. A blue box highlights the first measure of each staff. The first measure of the first staff is marked with *ppp* and *mit Dämpfer*. The first measure of the second staff is marked with *ppp* and *am Steg*. The first measure of the third staff is marked with *ppp* and *am Steg*. The first measure of the fourth staff is marked with *ppp* and *am Steg*. The score includes various articulations such as slurs, accents, and breath marks. The score ends with a *rit.* (ritardando) marking in measure 6.



This sketch is found among the folios in which Carter works out the Introduction of the Quartet. Most of them contain harmonic charts and show that Carter struggled while developing his harmonic language. Dozens of pages contain systematic combinations, transpositions, inversions and other transformations of two-, three-, four-, five-, six-, eight-, and twelve-note chords. The sketches also indicate that Carter was trying out several different methods, including serialism, while searching for harmonic grammar that would be suitable for his expression. He admits to having serious difficulties and trying out the twelve-note method in a letter to Goffredo Petrassi, dated May 11, 1959:

J'ai presque fini un deuxième quatuor à cordes qui m'a coûté beaucoup de travail, de perplexité. Toujours j'ai des idées pour des moments ou des endroits dans une composition et ma technique musicale ne m'aide pas à les développer ou même à trouver d'autres choses qui vont avec les idées avec lesquelles j'ai commencé. Même la sérialisation ne m'aide pas—quoique je l'ai essayée plusieurs fois.<sup>127</sup>

[I have just finished the Second String Quartet, which has caused me much work, much perplexity. I had certain ideas for my piece, which my musical technique did not allow me to develop, or help me find other things that would work with the ideas which I began. Even serialization did not help me, even though I tried it several times.]

While the sketches for the Second Quartet do not contain matrices of rows in the same extent as AIT charts, there is evidence that Carter, indeed, was working with serial technique in the early stages of the compositional process. Although sketches of this nature are few in number, they are nonetheless important for several reasons: they reveal that Carter, despite distancing himself from serialists, tried applying the technique himself.<sup>128</sup> Further, although Carter eventually abandoned the twelve-tone system in favor of his own (system based on

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<sup>127</sup> Meyer and Shreffler, 158.

<sup>128</sup> In his 1960 article, "Shop Talk by an American Composer," Carter says that he never used the twelve-tone system in his music, because he found it inapplicable to what he was trying to do. As such, he found it to be more of a hindrance than help. However, he does state that he was familiar with the method and that he studied important twelve-tone works, many of which he admired, "out of interest and out of professional responsibility (219-220).

AITs), these sketches show that Carter’s development of his harmonic language came with many struggles and applications of different systems of harmony. But above all, these sketches offer a rare glimpse of Carter’s work with serialism.

While Carter seems to be predominately concerned with unordered aggregates, most of the sketches show methods of completing the twelve-note chromatic by combining tetrachords and hexachords. However, several sketches stand out, in that they contain row permutations and orderings. For instance, in a sketch dated August 28 [1958], Carter writes motivic ideas for the cello part (in the assumed bass clef), most of which are in the form of twelve-tone rows. However, in the system labeled with Roman numeral IV, Carter writes a complete row, labeled as  $P_0$  in Example 9, which he then transposes and inverts. Aside from deviating in two instances from the exact inversion (ic 8 from  $P_0$  is written as ic 10, and ic 1 as 2), Carter stays very close to the  $T_2I$  transformation of the row. Hence, we see that here, Carter is concerned with more than just completing the aggregate; he is employing serial techniques to accomplish it.

**Example 9:** Elliott Carter, String Quartet No. 2: “Sketch for cello, Aug 28 [1958]” (transcription)

The image shows a musical staff with a treble clef, labeled 'IV' on the left. The staff contains a sequence of twelve notes: G4, A4, Bb4, C5, D5, Eb5, F5, G5, Ab5, Bb5, C6, D6. Above the staff, the label 'P0' is placed above the first note, and '"T2I"' is placed above the eighth note. Below the staff, four brackets indicate intervals: a bracket under the first two notes is labeled '8'; a bracket under the eighth and ninth notes is labeled '1'; a bracket under the tenth and eleventh notes is labeled '10'; and a bracket under the twelfth and thirteenth notes is labeled '2'.

In another sketch, Carter even more explicitly shows that he is working with serial technique. In a sketch transcribed in Example 10, Carter writes an incomplete nine-pitch row {Ab, Db, Eb, Bb, F, G, C, F#, B,}, and then numbers the sequence of pitches in order, from 1-9. On the staff below, he changes the order of pitches, but preserves the numbering order, so that {Ab, F, A, G, Bb, Db, Eb, C} are numbered 1, 5, 6, 4, 2, 3, 7. Without a doubt, Carter is

going beyond merely finding ways to complete the aggregate. He is clearly ordering the row in a particular manner, numbering the pitches in a sequence, and then applying rotations and other permutations to the original series.

**Example 10:** Elliott Carter, String Quartet No. 2: Row ordering (transcription)

The image shows two systems of musical notation on a five-line staff. The first system contains a sequence of nine notes: G4 (quarter), A4 (quarter), B4 (quarter), C5 (quarter), D5 (quarter), E5 (quarter), F5 (quarter), G5 (quarter), and A5 (quarter). Below each note is a number: 1, 2, 3, 4, 5, 6, 7, 8, 9. The second system contains a sequence of seven notes: G4 (quarter), A4 (quarter), B4 (quarter), C5 (quarter), D5 (quarter), E5 (quarter), and F5 (quarter). Below each note is a number: 1, 5, 6, 4, 2, 3, 7.

In another sketch dated Aug. 4 [1958], Carter explores different ways to derive rows by using interval repertoire specific to each instrument. Unlike the previous example, in which Carter constructs rows for a single instrument (cello), he now combines the instruments to obtain the sequence, although the focus seems to be on the material for the second violin part. The numbers in the left margin, denoting the combination of intervals in a particular row, reveal which instruments are combined (since each instrument has its characteristic repertoire of intervals). For instance, the top system contains inscriptions, “+3, 4,” which denotes the intervals of a major third and a perfect fourth, and therefore shows the combination for the second violin and the cello (Example 11a). The cello’s fourths are bracketed in red pencil in Carter’s interval analysis. Once Carter constructs the prime form of the row, he writes ten transformations at various transposition and inversion levels. Similarly, Carter constructs rows out of intervals pertaining to the second violin (major third and major seventh), shown in

Example 11b. Lastly, Carter constructs one row based on the second violin's interval repertoire—a major second (shared among all four instruments) and a major sixth (Ex. 11c).

**Example 11:** Elliott Carter, String Quartet No. 2: Rows derived from specific interval repertoire (transcription)

(a) Second violin (major third) and perfect fourth (cello)

+  
3, 4

(A)

(014589) T<sub>1</sub>I (014589)

(b) Second violin (major third and major seventh)

+ +  
3 7

(014589) T<sub>1</sub>I (014589)

(c) Second violin (major second and major sixth)

+2, +6

(02468t) T<sub>1</sub>I (02468t)

What is truly significant about these rows in Example 11, is that they are all derived from all-combinatorial hexachords. There are only six of these hexachords, whose sets are capable of forming an aggregate with any of its basic transformations transposed (Figure 4). For instance, in the first system, Carter uses the “third-order” (014589) all-combinatorial hexachord, meaning that this set possesses the common property of creating all four types of combinatorial relationship (prime, inversionsal, retrograde, and retrograde-inversionsal) at three transpositional levels. On the bottom system, he employs the “sixth-order” (02468t) source set,

which means that it can complete the aggregate at all six transpositional levels.<sup>129</sup> These hexachords thus have remarkable properties for twelve-tone compositions, and constitute an indispensable resource for composers. The fact that Carter experimented with constructing rows from these hexachords, before their classification as “source” chords, is noteworthy in itself, as it may indicate that he was intimately familiar with the works of Schoenberg, Berg, and Webern, the composers who favored constructing their rows in this manner.

**Figure 4:** All-combinatorial hexachords

Forte name	Hexachord set	Order
6-1	(012345)	First-order
6-8	(023457)	
6-32	(024579)	
6-7	(012678)	Second-order
6-20	(014589)	Third-order
6-36	(02468t)	Sixth-order

It is not unusual that Carter was experimenting with the serial technique in his preliminary sketches for the Second Quartet.<sup>130</sup> It was during this time period, in the late fifties, that serialism emerged on American campuses. Further, Carter first encountered the music of the Second Viennese School in the 1920s and even in his youth he avidly sought out scores of

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<sup>129</sup> See Straus, *Introduction to Post-Tonal Theory*, 222-25. Twelve-tone series is traditionally used in four different orderings: prime, retrograde, inversion, and retrograde-inversion. One way to derive an aggregate is to combine hexachords, which at different transposition levels complete the full chromatic. There are four classes of hexachords: (1) Prime-combinatorial: a hexachord that can map onto its complement under transposition—a hexachord can combine with a transposed form of itself to create an aggregate; (2) Inversional-combinatorial: it can map onto its complement under inversion—when combined with an inverted form of itself, it creates an aggregate; (3) retrograde-combinatorial: it can map onto itself under transposition; and (4) Retrograde-inversional combinatorial: it can map onto itself under inversion. All-combinatorial hexachords are capable of forming an aggregate with any of its basic transformations transposed. The first three all-combinatorial hexachords are referred to as the “first order,” because they satisfy all four combinatorial criteria at just one transpositional value. The “second-order” hexachord forms an aggregate at two transpositional levels. “Third-order” hexachord is all-combinatorial at three transpositional levels. And “sixth-order” hexachord can create an aggregate at all six transpositional levels, meaning, it is all-combinatorial at six levels. Milton Babbitt classified the all-combinatorial hexachords according to their order (see Babbitt, *Words about Music*, 48-54).

<sup>130</sup> In his essay, “At the edge of creation: Elliott Carter’s sketches in the Library of Congress,” Stephen Soderberg states that even sketches for Carter’s much earlier works—*Holiday Overture* (1944), the Piano Sonata (1946), and the ballet *The Minotaur* (1947)—all contain evidence of serial techniques in them (241-246).

Schoenberg, Berg, and Webern.<sup>131</sup> From his letters, essays and lectures, it is evident that Carter was certainly familiar not only with their music, but also with the technique behind their works. For instance, in 1957, Carter presented his analysis of Schoenberg's *Variations for Orchestra*, Op. 31, in which he discussed the intricate details of the composer's twelve-tone technique, including his use of all-combinatorial hexachords.<sup>132</sup> As he states in his "Shop Talk" essay, he studied the important twelve-tone works, many of which he admired, "out of interest and out of professional responsibility."<sup>133</sup>

However, Carter disassociated himself from twelve-tone practice early on, finding the system inapplicable to what he was trying to do.<sup>134</sup> Although he explored the compositional possibilities within this method and had no objections in principle towards the use of the system, he never submitted to the serialist mentality. As Meyer and Shreffler observe, Carter's theoretical foundation and compositional practice differed distinctively from that of his contemporaries, such as Pierre Boulez, Karlheinz Stockhausen, and Bruno Maderna, who were primarily interested in the twelve-tone system, and used the music of Schoenberg, Berg, and Webern as an immediate point of departure for their own music.<sup>135</sup> Instead, Carter was interested in the expressive content of twelve-tone music, especially of Webern's compositions, as he notes in a letter to his friend, William Glock, dated May 3, 1957:

[F]rankly I find the rather Mendelssohnian charm of W[ebern] delightful and touching, but as an analyzer of music I must say I find the part you can't explain the best part of any piece.<sup>136</sup>

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<sup>131</sup> Meyer and Shreffler, 7.

<sup>132</sup> For a complete transcript of this talk, see Meyer and Shreffler, 141-147.

<sup>133</sup> Carter, "Shop Talk by an American Composer," 219-220.

<sup>134</sup> *Ibid.*, 220.

<sup>135</sup> Meyer and Shreffler, 14.

<sup>136</sup> See Meyer and Shreffler, 148-149 for a complete letter.

Thus, it is none too surprising that Carter turned to Webern's *Bagatelle* in his search for harmonic language that incorporates the twelve-note aggregate in a non-serial manner. Written in 1913, *Bagatelle No. 6* is an example of Webern's pre-serial, "free-atonal" composition. Nonetheless, Webern displays a specific approach to using the twelve-note aggregate, which involves a consistent deployment of chromatic segments.<sup>137</sup> Every note is heard clearly, with a distinct color, expressivity, or gesture. This piece appealed to Carter for several reasons: the *Bagatelle* opens with the AIT (0137), which is one of the structural harmonic blocks of the Second Quartet; by the end of the first measure, all interval classes have been introduced both vertically and linearly; and by beat two of the following measure, the aggregate is complete.

Both Webern's control of pitches and his treatment of intervals are of particular interest to Carter—the Second Quartet not only incorporates the combination of tetrachords (the two forms of AITs with the "left over" tetrachords) to complete the aggregate, but each instrument also works with a distinct repertoire of intervals to emphasize their individuality. Further, the fragmented, sparse texture of the *Bagatelle* with a variety of timbres, gestures, expressions, and articulations are all characteristics of the Quartet's Introduction (see Example 2b). In a certain way, Carter is using Webern as a starting conceptual point for the Introduction of his Quartet. Carter was particularly interested in Webern's texture and treatment of intervals in *Bagatelle No. 6*—how elements combine vertically to form musical cohesiveness, while also serving as the basis of the horizontal lines. As Carter reveals in his conversation with Allen

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<sup>137</sup> For a detailed discussion on the harmonic structure of Webern's *Bagatelle No. 6*, see Davies, "The Structuring of Tonal Space in Webern's Six Bagatelles for String Quartet Op. 9"; Sallmen, "Motives and Motivic Paths in Anton Webern's Six Bagatelles for String Quartet, Op.9"; Chrisman, "Anton Webern's 'Six Bagatelles for String Quartet,' Op. 9: The Unfolding of Intervallic Successions."

Edwards, Carter sought to create this particular type of texture in his music, especially during this period:

What began to interest me was the possibility of a texture in which, say, massive vertical sounds would be entirely composed of simultaneous elements having a direct and individual horizontal relation to the whole progress or history of the piece—that is, simultaneous elements, each of which has its own way of leading from the previous moment to the following one, maintaining its identity as part of one of a number of distinct, simultaneously evolving, contributory thought-processes of musical characters.<sup>138</sup>

### **MOTIVIC DEVELOPMENT**

In the Second Quartet, while Carter primarily sought to develop a new harmonic language, he was also looking to implement varying texture and distinct gestures to exaggerate the four character-continuities. The texture in this Quartet is derived from the intervals and harmonic units assigned to each instrument, and from the way the instruments interact.

While most of the harmonic sketches in the Second Quartet collection aid Carter's own understanding of various harmonic methods, not all analyses serve this purpose. That is to say, while most of the break-down of the harmonies is present in the preliminary stages of the compositional process, several sketches are fully-drafted sections of the Quartet that are identical (in pitch and rhythm) to the published score. These examples were most likely used by Carter as a demonstration of his harmonic language to others. For example, Jonathan Bernard points to a postcard Carter sent in 1960 to Michael Steinberg, a music critic, in which Carter includes a short excerpt from the Second Quartet, which contains the statements of the

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<sup>138</sup> Edwards, Allen. *Flawed Words and Stubborn Sounds: A Conversation with Elliott Carter*, 100-101.



two AITs, labeled as “Motive A” for (0137) and “B” for (0146).<sup>139</sup> Underneath, he writes the intervallic content of each tetrachord, showing that, indeed, they each contain all intervals.<sup>140</sup>

Similarly, Carter provides another detailed harmonic analysis in a sketch he labels, “Analysis of certain sections of String Quartet #2” (Example 11). Written on two sheets taped together, Carter extracts measures from the third and fourth movements of the finished score. Hence, this sketch represents Carter’s post-analysis of the Quartet, which he most likely used for lectures and teaching. On top of the page, he inscribes “all-interval chords.” The excerpts are written neatly in black ink, with various segments circled either in red or blue pencil. Carter annotates that those circled in red pertain to both harmonic and rhythmic motives, while the ones circled in blue are only harmonic motives. With this notation, Carter indicates that harmonic motives only occur as clear statements of the AITs, either voiced as block chords or pitches played in a sequence. The statements of AITs circled in red, i.e., rhythm and harmony, are statements of the AITs not easily discernible, as they are often either parts of larger sets, or derived from non-sequential pitches. Hence, Carter reveals three ways AITs function within the Second Quartet: (1) obvious statements of tetrachords are formed by notes played by two instrumental parts (mm. 416-421 below, detail extracted in Example 12a); (2) notes are rhythmically displaced and disbursed among the four parts, but without any other intervening notes (mm. 450-51, detail extracted in Example 12b); and (3) AITs are members of larger sets, such as five-, six-, seven-, and eight-note chords, or the aggregate (mm. 425-28, detail extracted in Example 12c).

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<sup>139</sup> Since harmonic sketches for the Second String Quartet predate Carter’s *Harmony Book*, he labels AIT (0137) as chord A, and (0146) as chord B. Eventually, in his *Harmony Book*, he labels these two AITs as chords #18 and #23, respectively.

<sup>140</sup> See Bernard, “Problems of Pitch Structure in Elliott Carter’s First and Second String Quartets,” 252-53. The postcard is reproduced on p. 253.

**Example 11:** Elliott Carter, String Quartet No. 2: "Analysis of certain sections of String Quartet #2," first page (Paul Sacher Stiftung. Used by permission)

Handwritten musical score analysis for Elliott Carter's String Quartet No. 2. The score is annotated with various markings and labels:

- Legend:**
  - Red = Harmonics + Rhythm
  - Blue = harmonic axis
- Section Labels:**
  - 416 (Base interval)
  - 418 (A)
  - 421 (B)
  - 425 (84)
  - 426
  - 427
  - 428
  - 436 (1)
  - 435 (5)
  - 438 (B)
  - 442
  - 446-47
  - 450
  - 457
  - 461
- Other Annotations:**
  - all - interval chords
  - from (B)
  - from (A)
  - used in 434
  - all 473
  - Some of the uses of A+B (C+D) - not all.
  - derives from (A)
  - (A - Rev. inv.)
  - A + B inv.
- Staff Labels:**
  - F<sup>1</sup> 126
  - C<sup>1</sup> 178-90
  - E<sup>1</sup> 178-90
  - A<sup>1</sup> 140
  - B<sup>1</sup> 105

On this sketch, Carter labels all-interval chords as cells A or B. As an example, he extracts the chain of AITs from the third movement (following the conclusion of the first violin's cadenza, mm. 418-425 in the score, numbered as mm. 416-421 on the sketch), where the AITs are linked by the retained intervals in the second violin and the viola (see Example 12a). On the system below, Carter inscribes, "Some of the uses of A+B (C+D) – not all" (see Example 12c). Here, we see Carter's techniques for implementing various forms of the AITs, either as overlapping statements sharing several pitches and consequently forming larger sets, or as individual cells that he uses in inversions and retrograde-inversions (mm. 425-37 in the sketch, mm.427-39 in the score). Further, whereas the chords in the initial examples occur as blocked sonorities, the AIT statements in these measures are constructed by selecting only certain pitches among the many sounding ones and not necessarily in sequence, many of which are not even simultaneously sounding.

**Example 12:** Elliott Carter, String Quartet No. 2: Extracted details from Example 11

(a) Sketch measures 416, 418, 421 (score mm. 420, 423, 425) (transcription)

The musical transcription shows three measures of music. The top staff is in treble clef and the bottom staff is in bass clef. Measure 416 (sketch) is marked with a box containing '416' and a bracket above the staff labeled 'B all interval'. Measure 418 (sketch) is marked with a box containing '418' and brackets above the staff labeled 'A' and 'B'. Measure 421 (sketch) is marked with a box containing '421' and a bracket above the staff labeled 'B'. Below the staves, the interval sets (0146) are indicated for each measure: (0146) under measure 416, (0137) under measure 418, (0146) under measure 418, and (0146) under measure 421.

(b) Sketch measures 450-451 (score mm. 455-456) (transcription)

Musical score for measures 450-451. The score consists of five staves. The first four staves are in treble and bass clefs, and the fifth staff is in bass clef. A box labeled '450' is at the top left. A bracket labeled '126' spans the first two measures. Red circles highlight specific notes: in measure 450, the G4 in the first staff, the G4 in the second staff, the G3 in the third staff, and the G4 in the fourth staff; in measure 451, the G4 in the first staff, the G4 in the second staff, the G3 in the third staff, and the G4 in the fourth staff. A bracket labeled 'A' is above the fifth staff, and 'INV' is written below it. A sharp sign (#) is above the third staff in measure 451.

(c) Sketch measures 425-428 (score mm. 429-432) (transcription)

Some of the uses of A+B (C+D) – not all

Musical score for measures 425-428. The score consists of three staves. The first two staves are in bass clef, and the third staff is in bass clef. Red circles highlight specific notes in each measure, and red lines connect them across staves. A box labeled '84' is above the first staff in measure 425, and a box labeled '140' is above the second staff in measure 425. A bracket labeled 'A, inv.' is above the third staff in measure 425, and 'A' is above it in measure 426. A bracket labeled 'B' is above the third staff in measure 427.

In addition to identifying various uses and forms of the harmonic cells, Carter also notes the speeds at which the instruments play. For instance, in m. 425 above (Example 12c), the notated tempo in the score is  $\text{♩} = 140$ . While the cello clearly articulates each beat, playing at the notated speed, the viola plays at  $\text{♩} = 84$ . Thus, the two instruments collaborate to form a common harmonic language, yet their individuality is maintained by distinct and clashing metric layers. In m. 455, an even more complex plan unfolds, featuring a six-strand polyrhythm (Example 13). In addition to assigning each instrument a distinct speed, Carter also splits the second violin's and cello's parts into double-streams—one for the speed pertaining to the repeating pitches in the upper parts, and one for the (repeating) pitches in the lower part. In the left margin of the sketch (shown in Example 12b), Carter notes the speeds of the six metric layers against the notated tempo of  $\text{♩} = 105$ : the first violin's speed is 126; the second's violin's upper pulse for the pitch F# is 90, while its lower pulse, for the repeating G# is  $78\frac{3}{4}$ ; the viola plays at the speed of 84, and the cello's upper strand, A#, plays at the speed of 140, while its lower strand, B, plays at the notated tempo of  $\text{♩} = 105$  (Figure 5). However, although the lowest strand in this polyrhythmic alignment plays at the speed of the notated tempo, the attacks are never on the beat. Consequently, none of the six rhythmic strands accentuate the notated pulse. Such division of the beats into six layers is indeed a new technique for Carter, unprecedented by any of his earlier compositions.

**Example 13:** Elliott Carter, String Quartet No. 2: Six-strand polyrhythm in m. 450

♩ = 105

V I: 126

V II: 90 (F#)  
78  $\frac{3}{4}$  (G#)

Vla: 84

Vc: 140 (A#)  
105 (B)

**String Quartet No. 2**

Music by Elliott Carter

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**Figure 5:** Elliott Carter, String Quartet No. 2: Metric layers in m. 450

Instruments	Speeds of Instruments
Violin I	♩ ♩ = 126
Violin II	♩ ♩ = 90 (F#) ♩ ♩ = 78 $\frac{3}{4}$ (G#)
Viola	♩ ♩ = 84 (E#)
Cello	♩ ♩ = 140 (A#) ♩ = 105 (B)

While the sketches for the Second String Quartet show Carter's focus on harmony, they also reveal the development of his metric language. The rhythmic design of multi-layered tempi is vital to Carter's objective of individualizing characters. Since the instruments are often paired to form statements of the AITs, often in the same register and with similar texture and gestures, providing each instrument with its distinct speed emphasizes their individuality. Nonetheless, harmonic language takes precedence over rhythm in the Second Quartet. The sketches show that in the process of writing the Second Quartet, Carter cemented the strong foundation for his harmonic language based on AITs and on larger sets obtained from their combinations. Along with the concept of metric modulation (and multi-layered tempi streams), this harmonic language becomes a true mark of Carter's musical expression throughout his entire *oeuvre*.

#### **CHARACTER-CONTINUITIES AND FORM**

The Second String Quartet is structured in four movements, framed by an Introduction and a Conclusion. The movements are intercepted by cadenzas for solo instruments (Figure 6). Hence, the form of the Quartet is paradoxical in nature: while Carter incorporates a "classical" four movement system—Allegro-Scherzo-Andante-Allegro—the novel concept of the form is far from standard. All sections are played without any breaks, with alternating *tutti* and solo cadenzas within the main body of the piece. Each movement features one dominating instrument, but Carter arranges the sections so that no single instrument will dominate two consecutive sections. Therefore, the first movement features the first violin, which leads into the cadenza for the viola. The second movement features the second violin, leading into the cello cadenza. The viola dominates the third movement, which is followed by the cadenza for

the first violin. The cello has an important role of imposing its character onto the other parts in the fourth movement. While the second violin does not have its solo cadenza, the instrument is featured again in the Conclusion of the Quartet. This form, where each movement that features an instrument is then followed by a cadenza for another soloist, is optimal for the individualization of instruments and their characters.

**Figure 6:** Elliott Carter, String Quartet No. 2: Form

Introduction				Conclusion
	<b>I:</b> Allegro fantastico	<b>II:</b> Presto scherzando	<b>III:</b> Andante espressivo	<b>IV:</b> Allegro
	Cadenza for Viola	Cadenza for Cello	Cadenza for Violin I	


There is only one sketch in the Second String Quartet collection that pertains to the formal design of the piece (Example 14). This sketch indicates that Carter had several ideas concerning the structure of the Second Quartet. In his first option, Carter considers having four movements that are to be subdivided into four sections, so that each instrument would play its version of the *allegro*, *scherzo*, etc. With this version of the formal outline, the piece would consist of sixteen sections, each one featuring a soloist. In the second version, Carter contemplates one long movement of fifteen minutes in length, with each instrument playing three movements but in different sequence and with different partners. Although Carter does not choose any of these layouts for the Quartet, they reveal that the concept of individualizing instruments was a central idea while developing the formal design of the piece. Ultimately, Carter combines certain aspects of these two ideas—a four movement structure from the first option, continuous music from the second option, as well as featuring different instrumentalist in different sequences—and inserts the solo cadenzas to obtain the final version of the form.



This structure—where movements are intercepted by cadenzas—intensifies the development of characters and individualization of the instruments, which was the primary conceptual idea of the Second Quartet.

**Example 14:** Elliott Carter, String Quartet No. 2: Form sketch (transcription)


String quartet:

(1) 4 parts in 4 mvts –  
each  instrument  
 plays its version of “allegro”  
 “scherzo” etc...

---

(2) one long mvt. (15)  
 each inst plays 3 mvts  
 but in different sequence and with  
 different partners:  
 each plays different no of mvts.

a) (or) 1    2    3    .  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

b)  allegro    adagio    allegro  
 andantino    presto    allegretto  
 • adagio    \_\_\_\_\_    allegro

Start: developing  
 dialogue –

(1) allegro	1	2	3	4	~	~	~
(2) allegretto	2	3	4	1	~	~	
(3) adagio	3	4	1	2			
(4) presto	4	1	2	3			

In describing his compositional process, Carter explains that conceiving the character of the piece is a starting point when beginning a new work:

I usually have at first a very specific plan of evolution for the whole of the work, with many of the details of the local events only very generally in mind. That is, I usually start with an idea of the sound, the musical character, and the dramatic development of these, similar to the plot—or subject—outline of a novel or play, or the scenario of a movie.<sup>141</sup>

In his Second Quartet, Carter sought to portray each instrument as a distinct character as in operas that primarily consist of quartets (Schiff cites that Carter particularly had in mind the quartets of Verdi's *Aida* and *Othello*<sup>142</sup>). Each instrument is characterized by its distinctive repertoire of intervals, speeds, colors, and gestures, which govern the tempo and texture of their individual parts, and hence create four character-continuities. In addition to the rigorous partitioning of the musical material among the four instruments, Carter also separates the four players in space: he indicates in the published score that the players should be seated at a greater distance from one another than usual, in order to emphasize the individualization of characters:

So that contrasts of tempi and polyrhythmic textures will stand out clearly, all indications of tempi and relationships of note-values must be observed quite strictly in this work. However, in the cello part as well as in the coda of the fourth movement (measures 563-587) various kinds of *rubati* are indicated; these are to be observed only at the points so notated and not otherwise.

Within this fairly strict observance of tempi, each instrument must for the most part maintain a slightly different character of playing from the others. This is indicated to a certain extent in the parts. To bring these differences clearly to the listener's attention, the performers may be more widely spaced than usual on the stage so that each is definitely separated from the others in space as well as in character, although this is not necessary.<sup>143</sup>

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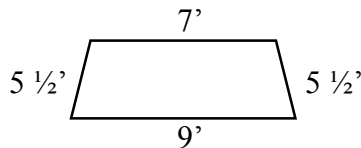
<sup>141</sup> Edwards, *Flawed Words and Stubborn Sounds*, 104.

<sup>142</sup> Schiff, *The Music of Elliott Carter*, 73.

<sup>143</sup> Carter, "String Quartet No. 2: Performance Notes," in *Elliott Carter: The String Quartets*, 120.

Although the separation of the players on the stage is only suggested in this note (most likely due to the increased difficulty of the performance of the piece), early copies of the Second Quartet include a note in which Carter more explicitly states the need for the performers to be separated spatially, including a diagram with the specific dimensions:

[...] To bring these differences clearly to the listener's attention, the performers, if possible, should be more widely spaced than usual on the stage so that each is definitely separated from the others in space as well as in character, but still close enough still to retain a feeling of ensemble. On a large scale stage it is suggested that a trapezoid of the following approximate dimensions be formed, retaining the accustomed seating plan of the quartet:<sup>144</sup>



Carter most likely derived the idea of spatiality from the Double Concerto, which features two ensembles and two soloists. However, encountering technical difficulties—both with the development of a new harmonic language and form, Carter decided to abandon this work and explore these solutions in the Second Quartet. Hence, while the Double Concerto was the conceptual point of the idea of spatiality, the Second Quartet set the grounds for developing this concept, which he had fully worked out by the time he composed his Third String Quartet (1971)—a piece formally structured by the defining separation of the two duos.<sup>145</sup>

Even without the spatial effect implemented in the Second Quartet, Carter's individualization of four characters is evident. Each instrument is given its own repertory of qualities, and expressions embodied in a set of melodic and harmonic intervals, rhythms and patterns of action or feeling. Hence four different strands of musical material of contrasting

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<sup>144</sup> See the sketches for String Quartet No. 2, "Prefatory Note (2<sup>nd</sup> copies)," Elliott Carter Collection at the Paul Sacher Stiftung.

<sup>145</sup> I will address the spatiality of the Third String Quartet in Chapter 3.

character are developed simultaneously throughout the work. In the Performance Notes, Carter describes some of the instruments' characteristics, stating that of the four instruments, the first violin should exhibit "the greatest variety of character, sometimes playing with insistent rigidity, but more often in a bravura style."<sup>146</sup> By contrast, the second violin is mostly written in regular rhythms, which should be observed strictly, and by four types of *pizzicati*—left-hand, right-hand (finger-tip), *pizzicato* picked with the fingernail of the right hand, and snap *pizzicato* (snapped against the fingerboard). The viola part is predominantly expressive, and the cello plays various groups of accelerating and retarding notes.<sup>147</sup>

Adding to these general and rhythmic descriptions, Carter adds more detail in his Performance Notes regarding the character of each instrument. He describes the first violin, which dominates the first movement and leads the second cadenza, as "fantastic, ornate, and mercurial," with "rapid figurations and variously expressive phrases."<sup>148</sup> The second violin is prominent in the second movement and in the Conclusion, and its character is "curt," "systematic," and "sometimes humorous."<sup>149</sup> The expressive viola is featured in the first cadenza and the third movement, while the "somewhat impetuous cello" frequently breaks out of the rhythmic scheme.<sup>150</sup> It is shown in all its freedom in its cadenza and finally draws the other three parts into an agitated *accelerando* at the end of the fourth movement (Figure 7).<sup>151</sup> As Schiff observes, the characters of the four parts create a sense that they exist in four independent time-worlds: the first violin, with its fragments and sharp contrasts in mood, seems to be unaware of time; the second violin, with its regular ticking, is insensitive to the human

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<sup>146</sup> Carter, "String Quartet No. 2: Performance Notes," 120.

<sup>147</sup> *Ibid.*, 120-121.

<sup>148</sup> See text manuscripts, Elliott Carter Collection at the Paul Sacher Stiftung.

<sup>149</sup> *Ibid.*

<sup>150</sup> *Ibid.*

<sup>151</sup> *Ibid.*

meaning of time; the viola and its expressive *rubato* character, stretches time; and the cello imposes its own subjective time-experience on the others.<sup>152</sup>

**Figure 7:** Elliott Carter, String Quartet No. 2: Characteristic descriptions of the four parts (transcription)

<b>Violin I</b>	Featured in its cadenza Dominates the first movement Plays with rigidity and bravura style It is fantastic, ornate, and mercurial, virtuosic
<b>Violin II</b>	Dominates the second movement and the Conclusion Plays in strict, regular rhythms It is characterized by four types of <i>pizzicati</i> Its character is curt/laconic, systematic, and sometimes humorous
<b>Viola</b>	Featured in its cadenza Dominates the third movement Its character is expressive, <i>rubato</i>
<b>Cello</b>	Featured in its cadenza It plays in constant <i>accelerando</i> and <i>ritardando</i> Its character is impetuous

Although Carter explained that the initial idea of ascribing each instrument a specific character arose from the wish to replicate the four-part dialogue of operatic quartets, there is no evidence in the sketches confirming this statement. However, rather than evoking any operatic quartets, the Second Quartet more explicitly calls to mind Ives’s Second String Quartet (1915), which contains three movements, titled “Discussions,” “Arguments,” and “The Call of the Mountains.” Ives offered a brief program for his piece, writing on a sketch that this String Quartet is for “4 men—who converse, discuss, argue, fight, shake hands, shut up—then walk up the mountain side to view the firmament!”<sup>153</sup> Carter’s description of the Second Quartet implies this program, particularly the first two movements, by stating that the interaction among the four characters in his Second Quartet forms three types of

<sup>152</sup> Schiff, 74.

<sup>153</sup> Burkholder, *All Made of Tunes*, 348.

responsiveness: discipleship, companionship, and confrontation.<sup>154</sup> The instruments imitate each other, cooperate with, or oppose one another. In addition to Carter’s own descriptions of the programmatic plan for the Quartet, many sketches corroborate this notion with folios bearing inscriptions “arguments,” “provocation,” or “cooperation.” For instance, an early sketch for the first movement contains the heading “provocation” on top of the page (transcribed in Example 15). The first violin, taking the leading role in this movement, is meant to intimidate and provoke the other three parts with its virtuosity, bold dynamics, and bravura character.

**Example 15:** Elliott Carter, String Quartet No.2: *Allegro fantastico*, “Provocation” (transcription)

"Provocation"

♩ = 112

is this first or second?

add

The Second Quartet is concentrated in activity, moving rapidly from one idea to the next, as each instrument comes to the fore according to different kinds of logic. The four movements exhibit a motion from opposition towards cooperation in the instruments. In the first two movements, the various facets of each instrument’s character are presented quite

<sup>154</sup> Carter, “String Quartets Nos. 1, 1951, and 2, 1959” (1970), 234.

distinctly, while in the third and fourth movements, there is a growing tendency to cooperate and exchange ideas. Thus, as discussed above, the first violin takes the leading role in the first movement, *Allegro fantastico*. In the second movement, *Presto scherzando*, two instruments begin to show signs of cooperation: while the second violin leads the movement with distinct *pizzicati*, the lower two parts engage in imitation of each other's motives. Such pairing of the viola and the cello is sketched on numerous folios, including one particular page titled "cooperative expressions." In this sketch (dated September 8 [1958]), Carter drafts various combinations of motivic imitation between the lower two parts. The two instruments imitate one another's rhythm and melodic contour—regular rhythms of eighth-notes, and expressive large leaps upward—hence depicting cooperation between characters.

In the third movement, *Andante espressivo*, three instruments join in the "dialogue" with one another, while the viola carries the leading role. For instance, a sketch dated February 26 [1959], pertaining to this movement, heads the caption "Dialogue," and shows three instruments—the violins and the cello—engaging in imitating the contours of each other's motives. Finally, in the fourth movement, *Allegro*, the role of a leader is replaced by a joint cooperation among all four parts, who join the common purpose of forming the harmonic-rhythmic patterns that define not only the fourth movement, but the entire Quartet. Following this climatic cooperation, the Conclusion returns to the state of individualization of the four instruments, as seen in the Introduction.

While the gradual progression from opposition to cooperation underlies the relationship of characters in the movements, the three cadenzas move toward oppositions. With each cadenza, the contrast between the soloist and other parts is further emphasized. The viola's expressive cadenza is answered by brief, lively interruptions by the others; the extended *rubato*

of the cello is presented against the strict rhythms of violins; and the first violin's virtuosic cadenza is opposed by the silence of the others.

Numerous sketches in the Second Quartet collection depict characters of the instruments. Carter develops such thematic ideas systematically: often, he jots down several themes for a movement, either for a single instrument or for all four parts, with each grouping of motives bearing particular unifying qualities. For instance, in a sketch for the Introduction, the instruments give a glimpse of what types of roles each one will play (Example 16). Accordingly, Carter labels it "Role call." Although the folio is undated, the use of intervals in each part points to an early compositional stage, in that he allows the first violin to use the interval of a major third (before assigning it to the second violin in the later stages of composing). Each measure shows the characteristic material for only one instrument at a time, typically identified by large leaps that are marked with red arrows. As such, it evokes a call of all characters before their appearance on the stage. This "role call" lays out the characteristic intervals used in each part, with prevalent major sevenths in the second violin, thirds and fifths in the first violin, minor seventh in the viola, and minor sixths in the cello. With short thematic snippets laid out in each measure, the sketch also points to the fragmented nature of the Introduction, such as short sixteenth-note runs in the first violin, large leaps, and double-stops.

Analysis of the original sources points to four types of motivic sketches: (1) Sketches showing a single motive as it may occur in all four parts in a particular section of the piece, such as the "role call" motive (discussed in Ex. 16). Carter names some other motives as "pedal tone," "lyrical," and "calm." (2) Sketches illustrating a variety of motives used by a single instrument throughout the Quartet, such as a sketch titled "ornament," transcribed in Example 17. (3) Sketches showing how intervallic and harmonic structure of the piece translates into



each instrument's motivic ideas (Example 18). (4) Sketches that incorporate rhythmic patterns as identifying a motivic idea (Example 19).

**Example 16:** Elliott Carter, String Quartet No.2: "Role call" (transcription)

"Role call"

The image shows a musical score for a section titled "Role call" from Elliott Carter's String Quartet No. 2. The score is presented as a transcription and consists of two systems of staves. Each system contains five staves, with the top staff in treble clef and the bottom staff in bass clef. The music is written in a key with one flat (B-flat major or D minor) and a 3/4 time signature. The first system shows a melodic line in the top staff and a more active line in the bottom staff. The second system continues the development of these lines, with the top staff showing a series of chords and the bottom staff showing a more complex rhythmic pattern with slurs and ties.

A sketch in Example 17, dated Aug 28 [1958], shows Carter developing a series of motives for the first violin. On the top of the page, he first writes a motive he calls the "ornament." Although this motive does not appear in this exact configuration in the Quartet, similar variations of it are prevalent in the first violin part throughout the piece. It is characterized by rapid six- and seven-note sixteenths, with adjacent ascending and descending pitches, or small leaps, completing the chromatic. What is significant about this sketch, as is

the case with all descriptive sketches, is that Carter is thinking about motives as the audience may perceive them. In other words, the audience may not be able to decipher the pitch content, motive's distinct intervals or pitches, but they may recognize a grouping of pitches sounding an ornament. Hence, with these types of descriptive sketches, Carter guides the listeners in what he wants them to hear.

**Example 17:** Elliott Carter, String Quartet No.2: “Ornament”



Since one of the primary distinctions of each instrument is its assigned interval repertoire, most of the motives are characterized by their interval class. Therefore, in order to develop some of the thematic ideas, Carter uses the same system he devises when working out the harmonic contents of chords. For instance, in the sketch titled “Motives,” dated September 26 [1958], Carter divides the page into four columns—one for each instrument (Example 18). On the top system, he charts five-note motives, each one concerning not only the distinct intervals, but also rhythmic patterns. Thus, the first violin’s rhythms feature sixteenth-notes, the second violin consists of eighth-notes, the viola uses predominantly dotted quarter notes, and the cello is characterized by syncopated rhythms.

The opening pitches of the first violin’s five-note motive are {A, F#, C#, E, C}, set (01469). Carter numbers the notes in a sequence, 1-5, and draws a connecting line to the second

violin's five pitches, {B, Bb, Eb, G, Ab}, which he numbers 6-10, hence continuing the sequence. None of the pitches in the second violin replicate the ones stated by the first violin, but rather continue to add more notes of the chromatic. With ten pitches stated, Carter writes the remaining two needed to complete the aggregate {D, F} in parentheses. Carter writes another version of cooperation between the two violins on the staff below, as he now offers a new five-pitch motive in the second violin, {Eb, Cb, Bb, D, F} and writes the remaining two pitches {Ab, G} inside the parentheses. Similarly, he writes several versions of five-note motives in the viola and cello parts, each adding a new combination of chromatic pitches to the first violin's motive. This indicates that Carter does not think of the motives in isolation, but rather how they connect and cooperate with one another. In this particular instance, the first violin's motive is a principal motive, since it is stated only once and unaltered, while the other three parts cooperate with the leader and supplement the missing pitches of the chromatic, given their interval repertoire. Once he explores the possibilities of completing the aggregate with five-note motives, Carter applies the same systematic approach to three-note motives on the second system, and four-note motives on the bottom system.

Once Carter sketches these three-, four-, and five-note motives, he incorporates on a new draft more detail, such as adding rhythmic variety and melodic contour. This continuation of motivic development is illustrated in another sketch drafted on the same day as the example above—September 26. On this new sketch (transcribed in Example 19), Carter implements a three-level numbering system: the rhythmic, melodic and harmonic content of each figure. Providing the “key” on the bottom of the page, we see that for rhythmic motives, number 1 represents even-note values, numbers 2 and 3 designate slowing down and speeding up, respectively. Melodically, numbers represent the contour: 1 for rising intervals, 2 for

descending, 3 for static melody, and 4 for a “zigzag wedge.” Harmonically, numbers denote the number of distinct pitches in a motive.

Carter starts with the second violin’s three- and six-note motives. Although these three-note motives contain up to six different pitches, Carter takes into account only the rhythmically sounding events. Hence, the top system pertains only to rhythmic motives. However, with the six-note motives, Carter is concerned with the pitch content. Thus, while these figures repeat some of the pitch content, bringing the count of individual notes to more than six within each figure, they contain only six distinct pitches. Therefore, in this system, Carter now addresses the melodic and harmonic properties of motives. On the system below, Carter follows the same principle for the viola’s five-note motives (meaning, motives containing five distinct pitches, not necessarily five events). The cello’s system includes two differently noted numbers “6”; the first one denotes a six-pitch motive (m. 1), containing six distinct pitches and not six events (in m, 1), and the second number “6” refers to the melodic contour and rhythm. Finally, on the bottom system, Carter writes the first violin’s five-note motives.

Interestingly, all statements of the first violin’s motive are various reorderings and transpositions of the set (01469) from the previous sketch (Example 18). Examining the first line of the violin’s system, Carter preserves much of the initial rhythm (half notes and a sixteenth-note figure) from Example 18, but transposes it a perfect fourth below. He follows this transposition of the first violin’s motive with transpositions in the other three instruments—cello first, then the second violin, and finally the viola. Recalling the system in the previous sketch, each new transposition ensures that the new five pitches, when combined with the violin, will add to the chromatic. On the two systems below, Carter offers six more transformations of the (01469) motive.

Example 18: Elliott Carter, String Quartet No.2: Five-, three-, and four-note motives, Sept. 26 (transcription)

**5 notes** V I motives Sept. 26 V II Vla Cello

The score is divided into three systems. The first system, labeled "5 notes", shows a five-note melodic line in Violin I (V I) with notes numbered 1 through 5. A circled number "(01469)" is placed below the first four notes. The second system, labeled "3 notes", shows a three-note melodic line in Violin I (V I) with notes numbered 6 through 8. A circled number "(01470)" is placed below the first three notes. The third system, labeled "4 notes", shows a four-note melodic line in Violin I (V I) with notes numbered 9 through 12. A circled number "(01471)" is placed below the first four notes. The score includes staves for Violin I (V I), Violin II (V II), Viola (Vla), and Cello. The key signature is one sharp (F#) and the time signature is 3/4. The tempo is marked "Up 3+" and the metronome marking is "♩ = 70".

**Example 19:** Elliott Carter, String Quartet No.2: Rhythmic, melodic, and harmonic motives, Sept. 26

**V II** *better* "mottos"? Sept. 26 all accel. patterns!  
 (no static patterns)

3 = 70 *imitated by*

6

5 *reverse* acc.

Viola?

6 *cello* 6 *accel.*

**VI** 5 note (01469)

(01469)

**Rhy** ① - even note values  
 ② - slowing  
 ③ - speeding

**harmony** ① rising  
 ② descending  
 ③ level  
 ④ zigzag wedge

① note  
 ② -||-  
 ③ -||-  
 ④ -||-

Harmony and rhythm not only provide motivic material for the four character-continuities, but they also outline the general structure of the Quartet—the characteristic rhythmic patterns are heard in the beginning and endings of the movements, and sections of the Quartet are generally outlined by clear statements of the AITs. In the Introduction, each instrument briefly reveals one of its characters, mainly exemplified by interval repertoire, melodic contour, and rhythms. The statements are fragmented with short motives and rests, but without interrupting the flow of music; as one character is introduced, another instrument takes the opportunity to make its entrance. While no instrument dominates the Introduction, the first violin assumes the role of a virtuosic leader in the first movement, *Allegro fantastico* (mm. 35-134). At first, the other instruments take the opportunity to play only one note at points in which the first violin comes to the end of a phrase or holds a sustained pitch. As the movement progresses, other instruments continue to take more of a part, imitating at first only the endings of the first violin's phrases, and then longer segments of the motives. The imitation is achieved by means of "analogy," meaning that the instruments imitate only the contour of the first violin's motive, while each instrument preserves its distinct intervals, rhythm, and timbre.<sup>155</sup> For instance, in mm. 41-42, the viola and cello mimic the first violin's phrase ending with an interval unfolding upwards (Example 20).

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<sup>155</sup> See text manuscripts, Elliott Carter Collection at the Paul Sacher Stiftung.

Example 20: I: Elliott Carter, String Quartet No.2: I *Allegro fantastico*, mm. 35-43

35

Allegro fantastico (♩ = 112)

Solo to 134

*f marc.* (*>*) *pizz.* *mf* *pp* *mf*

*III f sul tasto, secco*

*senza vib. sul tasto* *mf*

*> p* *p* *mf* *p* *schertz.* *espr.*

*molto vib.* *p* *f* *p*

42

*f* *p* *pizz.* *pizz. normale* *p*

*III p sul tasto* *molto vibrato*

*senza vib. sul tasto* *p* *mf* *espr.* *mf*

*tasto* *3* *3* *3*

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As the movement nears its end, the other parts become more prominent and dense in texture, until the viola takes the lead, which onsets its cadenza (mm. 135-170). Here the viola rapidly changes its character from expressive to dramatic, exemplified by a two-note motive marked in “*f subito*” dynamics. This abrupt accentuation of notes becomes one of the dominant features of the third movement, in which the viola resumes its lead.

While the end of the viola’s cadenza features interweaving statements of the AITs, the beginning of the second movement, *Presto scherzando* (mm. 171-242), is clearly signaled with the lower three instruments playing a (0146) chord on the downbeat of the movement’s first measure (m. 171) (Example 21). The second violin, playing nearly entirely in *pizzicato*, leads the second movement (marked “solo” in m. 171). Its rhythmic character alternates between regular rhythms to syncopations, while the other three parts continue to elaborate the motives they each played in the first movement. As Carter himself observes, the second movement is a variation of the first, with emphasis shifted from the first violin to the second violin’s part.<sup>156</sup> In the concluding measures of the movement, the cello part gains prominence, until it assumes its role as a soloist in its own cadenza (mm. 243-285).

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<sup>156</sup> Ibid.

Example 21: I: Elliott Carter, String Quartet No.2: End of viola cadenza and the beginning of II (mm. 161-171)

$\text{♩} = 116.7$   
 $\text{♩} = 233.3$

166

*f* *f* *f* *f* *ff*

*con molto incensità*

(0146) (0146) (0146) *f* (0146)

$\text{♩} = 175$

*f* *f* *mf* *mf* *pp*

*ff* *détaché* *mf* *mf* *pp* *attacca*  
*(ben in tempo)*

(0137) (0137) (0137) (0137) (0137) (0146) (0146)

Presto scherzando  
 (♩ = 175) (with rhythmic precision in all parts) **II**

(0146)

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The cello cadenza displays a contrast between the cello's rhythmic freedom, which plays entirely in expressive *rubato*, and the precise marking of time in the other three parts, particularly the second violin. Rhythmic variations yield distinct metric layers of superimposed polyrhythms: against the cello's rhythmic freedom, the first violin plays at the speed of the notated tempo, MM 93.3, while the second violin plays at the speed of MM 140, and the viola at MM 124.4 (Example 22).<sup>157</sup> As with the previous sections, the AIT statements at the opening and closing of the cello cadenza form a temporal frame, a referential sonority enclosing the body of the cadenza. The violins and the viola cooperate to jointly form statements of the (0146) AIT in mm. 243-244 and in m. 248, while the soloist has a short pause.

<sup>157</sup> See Bernard, "The String Quartets of Elliott Carter," 248.

Example 22: I: Elliott Carter, String Quartet No.2: Four metric layers in the cello cadenza, mm. 243-255

**243** *Cadenza for Cello*  
 = ♩ = 93.3 —

senza sord.

♩ = 140

(0146) pizz. *mf* (con sord.) *v*

♩ = 124.4

*mf espr.* senza sord.

*rubato*

*f*

(0146) **248** (0146)

*p* (pizz.) *mf* (con sord.) *v*

*pp* *mp* *pp*

*cresc. poco a poco*

*molto giusto*

*f* *marcato* *stacc. corto ed inciso, accomp. sempre*

*arco* *un poco meno f*

*f marcato - un poco meno f* *stacc. corto ed inciso, accomp. sempre*

*f espr.* *sempre ben in fuori* *f* *cantando intenso*

254

= 93.3  
 = 140  
 = 124.4  
*senza sord.*  
*f non troppo, accomp. sempre*  
*rubato*  
*ff molto espr.*

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The third movement, *Andante espressivo* (mm. 286-373) is led by the viola, whose character features abrupt accents derived from the viola cadenza (see Ex. 21). As in the first movement, the other three instruments imitate the viola's motives—sometimes its complete phrases, but typically only certain extracted fragments, such as the contours of the viola's lines, or the dynamic shapes of *crescendi* and *decrescendi*. The end of the movement features all four parts entangling to form overlaying statements of AITs in the form of suspensions (Example 23).

**Example 23:** I: Elliott Carter, String Quartet No.2: AIT suspensions in *Andante espressivo*, mm. 369-373

(0137) (0146) (0137)

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The cadenza for the first violin begins in m. 374 and continues through part of the fourth movement (ending in m. 438). Unlike the previous two cadenzas, where one instrument takes the role of a leader, this cadenza features an uninterrupted forty-five measure solo. The solo displays rapid passages that are rhythmically, melodically, and harmonically characteristic of the first violin's temperament, but it also incorporates certain elements from the other parts, to compensate for their total absence: mm. 381-382 refer to the viola's patterns; in mm. 389-392, the violin uses certain patterns, intervals and characteristics of the second violin, including the different types of *pizzicati* (Example 24).

Example 24: I: Elliott Carter, String Quartet No.2: Violin cadenza (mm. 374-415) (Used by permission.)

Cadenza for Violin I (Solo to 438)

L'istesso tempo

The musical score for the Violin I Cadenza consists of ten staves of music. The first staff begins with a treble clef, a key signature of one flat (B-flat), and a 4/4 time signature. It includes dynamic markings such as *p*, *mf*, *f*, *f marc.*, and *espr.*, along with performance instructions like *senza rit.* and a tempo change to  $\text{♩} = 112 \text{ subito}$ . The second staff features *marc.*, *ff*, *f*, *p sub. espr.*, and *f marc.* markings, with a measure number of 381. The third staff has *più f*, *mf cresc.*, *f espr.*, and *molto intenso* markings, with a tempo change to  $\text{♩} = 84$ . The fourth staff includes *ff (espr.)*, *f*, and a measure number of 393. The fifth staff shows *mf*, *mp*, *5 mf*, and *p* markings, with a tempo change to  $\text{♩} = 84 \text{ sempre}$ . The sixth staff contains *pp*, *pp*, *pp*, *pp*, *pp*, *sub. f*, *furioso, marc.*, and a tempo change to  $\text{♩} = 84 \rightarrow 5$ . The seventh staff has *ff*, *mf*, *ff marc.*, *5*, *ff*, *ff*, and *marcatissimo* markings, with a measure number of 402. The eighth staff includes *fff*, *8<sup>o</sup>*, *(♩ = 42)*, *4*, *♩ = 84*, *pp*, *sul tasto...*, and *pp* markings, with a measure number of 409. The ninth staff features *leggierissimo*, *(pp)*, *sul tasto.....*, *(pp)*, *leggierissimo*, and *f sub.* markings, with a measure number of 415. The score is filled with various musical notations including notes, rests, slurs, and fingerings.

Following its virtuosic display, the first violin reaches dramatic pauses, first in m. 399 for an entire measure, and then in m. 405, lasting four full measures. It proceeds to resume its cadenza without noticing that the other instruments have started a new movement (mm. 421-427).<sup>158</sup> In this “false” start of the last movement, the lowest part is characterized by rapidly oscillating pitches, while the inner voices combine their sustained double-stops to form consecutive statements of AITs (Example 25).

**Example 25:** Elliott Carter, String Quartet No.2: The end of the violin cadenza and “false” start of *Allegro*

(0146)

False start  
 = ♩ = 84 (♩ = 56) →

(0146)

<sup>158</sup> Text manuscripts, Elliott Carter Collection at the Paul Sacher Stiftung.



Musical score system 1, measures (0137) and (0146). The system includes four staves: Treble clef, Bass clef, and two Bass clefs. Dynamics include *f*, *sf espr.*, *mf*, and *ppp*. A blue box highlights a *ppp* note in the second staff at measure (0137), and a red box highlights a *ppp* note in the second staff at measure (0146).

Musical score system 2, measures (0146) and (0147). The system includes four staves. Dynamics include *ff*, *mf*, and *ff espr.*. A red box highlights a *ppp* note in the second staff at measure (0146).

Musical score system 3, measures (0148) and (0149). The system includes four staves. Dynamics include *mf* and *ppp*. The instruction *sempre molto cantando* is present. A tempo change is indicated: *Tempo giusto*.

## IV- Allegro (L'istesso tempo)

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The last movement, *Allegro* (mm. 427-598), stands out from the previous three, in that no instrument carries a role of a leader. Instead, all four parts come together to form the most explicit realization of the piece's pitch-structure based on AITs, with a culmination in m. 529, with tetrachords combining to create the (013467)<sup>159</sup> hexachord (Example 26). Carter notes that the fourth movement "might have been led by the cello if the pattern of having a dominant

<sup>159</sup> Hexachord (013467) can be obtained by combining two forms of (0146) AIT, or two forms of (0136), or one form of each tetrachord. See Figure 3.

instrument in each movement had not been superceded by the sense of growing interrelationship between all the instruments.”<sup>160</sup> Nonetheless, the cello is still given an important position in that, starting in m. 563, it imposes its *accelerandi* and *ritardandi* onto all instruments.<sup>161</sup> As Carter notes, the *Allegro* is a “togetherness” movement and it is dominated not by a single character, but rather by foundational harmonic-rhythmic schemes.<sup>162</sup> These schemes are used to produce motives, contrapuntal textures, rhythms, and polyrhythmic counterpoint in the course of the fourth movement. Carter explains that the general idea was to present a large variety of different short, fast sections all derived from the same material, which then join to make many varied paragraphs of music. Thus, it is not until the last movement that the four instruments share musical material.

**Example 26:** Elliott Carter, String Quartet No.2: IV- *Allegro*, mm. 526-529, explicit use of AITs

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<sup>160</sup> Ibid.

<sup>161</sup> Carter notes that he first used this type of the *accelerando* patterns in his Variations for Orchestra (1954-1955), but that they are more intricately worked out, with more individuality of the parts, in the Second String Quartet. See text manuscripts, Elliott Carter Collection at the Paul Sacher Stiftung.

<sup>162</sup> Text manuscripts, Elliott Carter Collection at the Paul Sacher Stiftung.

The Conclusion (mm. 599-633) begins with the return of the intervallic separation of the instruments heard in the Introduction. In mm. 599-601, the instruments take turns in playing their repertoire of intervals as double-stops (Example 27a). Each instrument also features brief fragments, whose melodic, harmonic, and rhythmic characteristics, as well as articulation, dynamics, and texture, are reminiscent of the Introduction. Jointly, the instruments once more cooperate to construct a series of AITs and secondary tetrachords to complete the aggregate, with the final statement of both tetrachords in the concluding measures of the Quartet (Example 27b). With this final gesture of circularity—recalling the beginning of the piece at the end—Carter also brings to mind the First String Quartet, which he ends with a motive and pitch content in the solo violin, first heard in the opening measure of the piece.

**Example 27a:** Elliott Carter, String Quartet No.2: Conclusion: opening measures, mm. 599-601

Conclusion  
♩ = 105

mp non vib.

601

pizz.

arco

pizz.

mf secco sempre f

ff sub.

non troppo vib.

p molto espr.

mf

mf

p

mf

mf

3 mp-p mf

attacca poco f - mf

f

(0146) (0146) (0235) (0137) (0146) (0137) (0268)

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**Example 27b:** Elliott Carter, String Quartet No.2: Conclusion: ending measures (mm. 630-633): the last statement of the AITs

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**CONCLUSION**

Elliott Carter firmly believed that with each composition, he ought to explore new ideas and new genres. With his true modernist philosophy, Carter embraced Ezra Pound’s slogan, “Make It New!,” which, as Peter Gay, a noted historian, critic, and scholar of modernism, observed, “modernists considered ...a professional, almost a sacred obligation.”<sup>163</sup> Yet, the Second String Quartet marks Carter’s first return to the instrumental genre which he had already used. For a modernist like Carter, this meant that the Second Quartet needed to make

<sup>163</sup> Gay, *Modernism: The Lure of Heresy*, 46, 106.

a new statement and be substantially different from the preceding one. Not wanting to repeat the ideas he explored in his First Quartet, Carter waited nearly a decade before something very new intrigued him to write the Second Quartet. He explains in an interview:

[...] I consider all these pieces an adventure. Hence, I have to do something I haven't. I already had one adventure, and now I want another one that's different. As a result, I think up something that intrigues me. When I'm writing, it's not like Haydn or Mozart who wrote a whole string of string quartets one after the other. They are all more or less in the same general pattern, although they are filled with variety and differences. My quartets are in very different patterns, very different conception.<sup>164</sup>

Carter's Second String Quartet grew out of ideas he explored in his earlier quartet—thematic and rhythmic independence of the four instruments in the First Quartet grew into a concept of four distinct character-continuities in the Second and the ways in which they interact; his use of the (0146) AIT as a referential sonority in the First, developed into a complex harmonic language in the Second, where both AITs, (0146) and (0137), guide the formal and thematic structure of the piece. Yet, the two quartets are very different in conception—the First deals with the idea of multiplicity, whereas the Second Quartet initially addresses the instruments' individuality and then in the later movements, their homogeneity.

One of the most significant aspects regarding Carter's Second Quartet is that it represents the composer's workshop for developing his characteristic harmonic language, which eventually led to his *Harmony Book*. The sketches support this argument: many folios in the collection depict the composer's systematic process of understanding the properties of AITs—how they combine into larger units to complete the twelve-note aggregate, or how they break down into smaller units of dyads and trichords. This learning process of harmonic properties also shows that if difficulties arose, Carter tried implementing other contemporary

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<sup>164</sup> Emmery, "An American Modernist: Teatime with Elliott Carter," 25.

compositional methods—serialism, or ordering twelve-note sequences and using them in various forms. This type of systematic development, combined with experimentation using different compositional methods, clearly suggests that Carter was in the developing stages of his harmonic language. Further, the compositions that followed begin to implement the notation in accordance with his *Harmony Book* (such as referring to AITs as chords 18 and 23, and not as motives A and B).

But it is not only the harmonic language of the Second String Quartet that sets a precedent for the works that follow. The concept of creating novel forms, characterizing each instrument, assigning each part distinct intervals, and emphasizing opposition and conflict are evident in many of the works after the Second Quartet.<sup>165</sup> For example, the concept of spatiality—four instrumentalists sitting on the stage as far apart as possible in order to accentuate their individualities—is only suggested in the Second Quartet. In the Third String Quartet, in contrast, the division of the ensemble into two groups is the principal formal and textural characteristic of the piece. Thus, Carter’s compositional process is itself multi-layered and contrapuntal: it not only shows how his characteristic musical expression evolves and develops, but also his keen ability to derive new from old, where the implementation of previously explored ideas are never mere repetitions.

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<sup>165</sup> Some examples are the imminent works that followed—the 1969 Double Concerto, the 1971 Third String Quartet, and the 1976 *A Symphony for Three Orchestras*.

## CHAPTER 3

### Elliott Carter's Third String Quartet: Separation in Time and Space

#### INTRODUCTION

The Second Quartet (1959) and the Third Quartet (1971) are separated from each other by almost the same lapse as the First Quartet (1951) is from the Second. Elliott Carter explained that such long separation in time shows “a reluctance to use the same medium” until he could think of a “different and challenging solution of writing for the same musical ensemble, and that it was a necessary step for creating a work with a genuine expressive importance that would be different from the previous two.”<sup>166</sup> Yet, all three quartets are concerned with contrasting layers of musical thought, character and expression. But their distinction arises from a growing separation and isolation of various musical parameters. The differentiation of superimposed polyrhythms and metric layers in the First Quartet, where each theme is assigned a distinct rhythm and speed, extended to separation of sound sources in the Second Quartet, in which each instrument is treated as a separate character-continuity. In the Third Quartet, the separation of stratified layers is further exaggerated, as Carter divides the ensemble into two duos, each playing its own material with a distinct character and expression.

In all three quartets, the separation is controlled by factors that join the oppositions into one concept. In the First Quartet, the all-interval tetrachord (AIT) (0146), in its many spacings and transpositions, is recalled in almost every measure of the piece, unifying the diverse thematic material. In the Second Quartet, while each instrument plays in its own character and

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<sup>166</sup> Text manuscripts, Elliott Carter Collection at the Paul Sacher Stiftung, Basel, Switzerland.



style, the parts combine to produce one of the two forms of the AITs—(0146) and (0137). Unlike the Second Quartet, in which there are various intercommunications among the instruments, the Third Quartet features opposing duos that are consistently isolated from each other in material. But here, too, the harmonies of the pairs, either produced by the players within their own duos or between both duos, join to unify the work and hence control the oppositions.

The Third Quartet's integral concepts of oppositions and dualities find their roots in the earlier quartets. For instance, in the *Adagio* of the First Quartet, Carter polarizes the musical space in the similar manner as in the Third Quartet: he introduces the duos separately, and then superimposes them in the following way: while the lower duo (viola and cello) gradually ascends, the upper duo (violins) descends, until they reach a point where they cross and their vertical relationship is reversed. In the Second Quartet, the oppositions between the cadenzas and the movements, as well as the leader of the movements and the remaining three parts characterize the formal design of the piece. In the Third Quartet, Carter pushes the idea of duality even further by composing each duo separately,<sup>167</sup> and then pitting the pairs, which do not share any material, against each other for the entirety of the piece.

The roots of the conceptual ideas that frame the Third Quartet, namely, his innovative harmonic, rhythmic, temporal, and formal designs, originated in the first two quartets. But before writing the Third Quartet, Carter continued to further develop these concepts in the three large-scale compositions he wrote during the twelve years that passed between the Second and the Third Quartets: the Double Concerto for Harpsichord and Piano with Two Chamber Orchestras (1961), which he had temporarily put on hold while writing the Second

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<sup>167</sup> See sketches for String Quartet No. 3, Elliott Carter Collection at the Paul Sacher Stiftung. Carter states that he wrote music for the Duo II first.

Quartet, the Piano Concerto (1964), and the Concerto for Orchestra (1969). For instance, the harmonic structure based on the all-interval tetrachords (AITs), first explored in the First Quartet and fully implemented in the Second Quartet, is integral to the design of the Double Concerto: Carter differentiates between the two forms of AITs and assigns each chord to one soloist and its orchestra. In the Piano Concerto, Carter divided the twelve trichords between the piano and a small concertino, as well as between the soloist and the rest of the orchestra. In the Concerto for Orchestra, Carter expanded his harmonic vocabulary by using chords of three, four, five, and seven notes as the basis of the material.<sup>168</sup> In the Third Quartet, Carter develops harmonic structure that includes all forms of chords used in his compositions from the First Quartet on, and adds the idea of a twelve-note all-interval chord.

Carter began exploring form in the first two quartets, and continued experimenting with it in the compositions before the Third Quartet—formal innovations, derived from the principle of simultaneity, remain the focal point in the three concertos of this period. The form of the Double Concerto was guided by the idea of musical stratification, which Carter described as “organized chaos.”<sup>169</sup> Not only does this piece feature two orchestras, each one with its soloist, playing simultaneously, but the Concerto itself features multiple textural layers. For instance, the Introduction is based on the superimposition of ten rhythmically divergent textural layers.<sup>170</sup> In the Concerto for Orchestra, each of the four movements is set apart by distinct facets: Carter assigns each a particular set of chords and tempo designs. The simultaneous contrasting layers fade in and out, intertwining their material as the piece progresses. This

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<sup>168</sup> Seven-note chords are derived in two different ways: either from the complementation of the five-note chords in order to complete the twelve-tone aggregate, or from the combination of smaller sonorities, such as three- and four-note chords.

<sup>169</sup> Restagno, 64.

<sup>170</sup> Meyer and Shreffler, 167.

concept is taken to a new level with the Third Quartet, where Carter divides the ensemble into two duos. Here, the duos play different movements and do not exchange musical material. This formal design is Carter's most radical innovation in the Third String Quartet.

### FORM AND SPATIALIZATION

In his Performance Notes for the Third String Quartet, Carter describes the effect he aims to achieve by dividing the ensemble into two distinct duos:

The two duos should perform as two groups as separated from each other as is conveniently possible, so that the listener can not only perceive them as two separate sounds sources but also be aware of the combinations they form with each other.<sup>171</sup>

Carter's venture into spatiality began in his earlier works of the 1950s and 60s. Carter began composing the Double Concerto in 1956. However, encountering serious conceptual difficulties with this piece, Carter put the Concerto temporarily on hold, returning to it in 1959 (and seeing its completion in 1961).<sup>172</sup> Acoustically, the distinction and balance between the two soloists and their respective orchestras is a challenging idea. In order to achieve the distinction between the two instruments, Carter assigns each its characteristic interval, rhythms, and speeds. To balance out the instruments and their respective ensembles, Carter spatially separates the two chamber groups and orchestrates each differently, so that each ensemble can both support and challenge its soloist. For instance, since the harpsichord has a "metallic, sharp, biting" attack, it is associated with cymbals, woodblocks, triangles, and other similar percussions; the piano's "duller" timbre is associated with drums, and hence the choice of percussions for each ensemble not only complements the color of the soloist's timbre, but

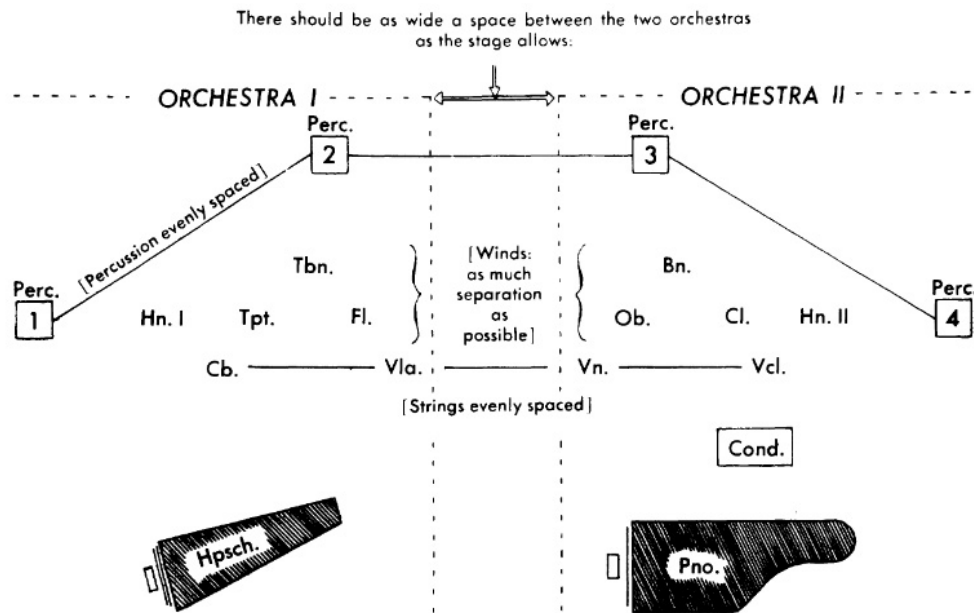
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<sup>171</sup> Carter, "Performance Notes," in *String Quartet No. 3* [score], n.p.

<sup>172</sup> Meyer and Shreffler, 167.

also reflects the opposition of the other.<sup>173</sup> Hence, the instrumentation, as well as the location of players on the stage (shown in Figure 1), becomes a fundamental part of the work.

**Figure 1:** Elliott Carter, *Double Concerto*: The seating chart<sup>174</sup>



During the period of interruption on the *Double Concerto*, Carter composed the *Second String Quartet* (1958-1959). In this piece, Carter thought of the four instruments as four distinct character-continuities, who at times oppose one another but also interact and cooperate in sharing the musical material. Carter assigns each instrument its distinct melodic and rhythmic motives, speeds, a repertory of intervals, expression, gestures, and characters. In order for the four instruments to be perceived as distinct characters, Carter wrote in the published score that

<sup>173</sup> Boretz, 5. For a further discussion on Carter's *Double Concerto*, see Bernard, "The Evolution of Elliott Carter's Rhythmic Practice," 188-196; Carter, "The Orchestra Composer's Point of View (1970)," 243-247; Schiff, *The Music of Elliott Carter*, 234-253; Meyer and Shreffler, 167-173.

<sup>174</sup> Carter, *Double Concerto for Harpsichord and Piano with Two Chamber Orchestras* [score], iii. This image is reproduced in Schiff, *The Music of Elliott Carter*, 239; in Barnard, "The Evolution of Elliott Carter's Rhythmic Practice," 195.

the players should be seated at a greater distance from one another than usual. Similar to the performance note in the Third Quartet, Carter specifies that the players should be definitely separated from each other in space, but remain close enough to retain a feeling of ensemble.<sup>175</sup> Here, too, he provides a diagram with the recommended seating chart.<sup>176</sup>

In her dissertation on spatiality in music, Maria Harley observes that space relates to music, in the most general sense, in three different ways: first, music is spatial because a certain sound quality, influenced by the size of performance space, is associated with different genres and types of instrumentation; therefore, space influences the sound ideal associated with different instruments and ensembles. Second, the spatial separation of groups of musicians allows for clear distinctions of the layers of sound and creates conditions for their lively interactions; therefore, the location of the sound sources within the space of performers views the musicians as “objects” dispersed in space producing sounds. Lastly, the experience of participation in a musical-spatial ritual brings out the fullness of human existence in incarnate subjectivity; therefore, spatiality in music relates to the nature of performing and listening.<sup>177</sup>

All three aspects of the relation of space to music are evident in Carter’s Third String Quartet. Supporting the first principle of relation, Carter recognizes that increasing space

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<sup>175</sup> See Carter, “String Quartet No. 2: Performance Notes,” in *Elliott Carter: The String Quartets*, 120.

<sup>176</sup> See Chapter 2. The seating chart for the Second String Quartet is not in the published score, but can be found in the “Prefatory Note (2<sup>nd</sup> copies),” sketches for the String Quartet No. 2, Elliott Carter Collection at the Paul Sacher Stiftung. In it, Carter provides a diagram with the trapezoid dimensions:  $5\frac{1}{2} \times 7 \times 5\frac{1}{2} \times 9$ .

<sup>177</sup> Harley, “Space and Spatialization in Contemporary Music History and Analysis, Ideas and Implementations,” 119-122. Harley defines four conceptual categories of spatialization: (1) spatial simultaneity of different musical layers, as encountered in the compositions of Gustav Mahler, Charles Ives, and Henry Brant; (2) “objectivity” of musical material projected into space, such as in the works of Erik Satie and Edgard Varèse; (3) speculative theories of spatialization in Darmstadt, primarily in the compositions of Karlheinz Stockhausen and Pierre Boulez; and (4) conceptual experimentation, starting with John Cage and his followers (see p. 117). For a further discussion on spatiality in music, see Harley, “Spatial Sound Movement in the Instrumental Music of Iannis Xenakis”; “An American in Space: Henry Brant's 'Spatial Music'”; “From Point to Sphere: Spatial Organization of Sound in Contemporary Music (after 1950)”; “Spatiality of sound and stream segregation in twentieth century instrumental music”; Trochimczyk, “From Circles to Nets: On the Signification of Spatial Sound Imagery in New Music.”

between the two duos will emphasize the difference in their instrumentation—violin and cello for Duo I, and violin and viola for Duo II—and hence have an impact on the overall effect of the sound. Corresponding to the second principle, Carter separates the two duos in space in order to make the distinction between the two ensembles more clear. Consequently, the separation creates two audibly recognizable layers of sound. Pertaining to the last relation of music and space, Carter specifically cites in his performance notes the effect this type of spatiality aims to produce on the audience; hence, he includes both the performers and the audience in the auditory experience of the spatial effect.

Carter was intrigued by the concept of spatiality early on, as the technique of separating musical elements is evident in his *Piano Sonata* (1946) and the *Holiday Overture* (1944).<sup>178</sup> It was the music of Igor Stravinsky, Charles Ives, and Conlon Nancarrow, particularly their rhythmic and timbral explorations, which influenced Carter’s own adventure into spatialization and stratification. This interest is discussed at length in Carter’s 1955 essay, “The Rhythmic Basis of American Music.” Carter goes beyond pointing out the simultaneous polyrhythms and metric layers of differing speeds in the music of these composers, or particularly Ives’s technique of presenting “literal quotations of familiar patriotic, religious, or dance tunes” simultaneously, “with an expressive commentary in another remotely related or unrelated speed.”<sup>179</sup> Rather, Carter examines Ives’s three main methods of combining different and complex rhythmic planes, all of which Carter directly implements into his *Third String Quartet*.

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<sup>178</sup> See Bernard, “The true significance of Carter’s early music.” Bernard points out that the first movement of the *Piano Sonata* exhibits such abrupt shifts in music characters, that rather than seeing them alternate, they overlap, usually each having its distinct speed (pp. 15-16). In his discussion of the *Holiday Overture*, Bernard points to the literal projection of contrasting rhythmic strata in the piece, most notably in the section starting in m. 103 (pp. 18-20). Bernard cites Carter revealing that the *Holiday Overture* was one of his first works in which he began applying the idea of “simultaneous streams of different things going on together” (Bernard, 18; Edwards, *Flawed Words*, 101).

<sup>179</sup> Carter, “The Rhythmic Basis of American Music,” 60. As an example, Carter points to the second movement of Ives’s *Three Places in New England*, where a boy dreams of two groups of soldiers marching at different

The first method Carter discusses, consists of superposing different speeds. For instance, in the second movement of Ives's Fourth Symphony, the brass and the winds play a dissonant harmonization of a national anthem in one tempo, the strings support the melody but in different (poly)rhythms, while the piano, bells, and basses play a hymn in yet another tempo. Of course, simultaneous polyrhythms and multiple metric layers have been an essential characteristic of Carter's compositions since the First Quartet. However, in the Third Quartet, each movement of Duo II is built on the notion of polyrhythms between the two instruments of the duo. In his text manuscripts pertaining to the Quartet, Carter outlines these polyrhythmic ratios according to a scale of degree of difference, which are presented in Figure 2.

In addition to the complicated polyrhythmic ratios between the second violin and the viola within Duo II, the two duos play in different tempos and meters throughout the Quartet. This type of rhythmic and temporal stratification is what Carter identifies as Ives's second method of rhythmic device. As an example, Carter presents Ives's *Calcium Light Night*, in which two metric layers emerge—one notated *rubato* against the other in strict time. Carter applies this exact “formula” to his Third Quartet: Duo I plays in a *rubato*, expressively irregular style, featuring various moods and exaggerated character types. On the other hand, Duo II is more systematic and always plays in strict time, with regularity of notated rhythms and tempi. Within each duo, the characters are for the most part in agreement. However, the expression of mood and ideas within one duo drastically opposes the music of the other. Thus, Carter's

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speeds, one disappearing as the other appears. In his discussion of the polyrhythmic and metric layering, Carter examines Ives's superposition of different speeds in the second movement of his Fourth Symphony. Further, Carter cites Nancarrow's method of combining “four distinct planes of rhythm” in the *Rhythm Study No. 1* (61-62). Nancarrow's rhythmic stratification played an important role in Carter's own development of rhythmic expression. As an act of homage, Carter quoted a rhythmic idea from Nancarrow's *Rhythm Study No. 1* at the beginning of the *Variations* movement in the First String Quartet, and Ives's theme from the First Violin Sonata in *Fantasia* (see Chapter 1).

division of four players into two duos yields the concept of agreement and disagreement, simultaneously.

**Figure 2:** Elliott Carter, String Quartet No. 3: Duo II, Polyrhythmic structure

<b>Movement</b>	<b>Polyrhythmic Ratios</b>
V Largo	64:63
I Maestoso	20:21 15:16 25:27 8:9 7:8
IV Scorrevole	4:5 7:9 16:21 3:4 5:7 7:10
VI Appassionato	5:8 2:3 32:49 3:5
III Giusto	4:7 9:16 5:9 8:15
II Grazioso	4:9    8:21 7:16    3:8 3:7    5:14 5:12    16:45 2:5

Ives's third rhythmic technique features combining two unrelated levels that are heard simultaneously. For instance, *The Unanswered Question* features three groups of instruments that are placed apart on the stage (or off the stage) and play in independent tempos. A solo trumpet, which poses the question more insistently and rapidly, and a woodwind quartet, fighting to give the answer, are placed on the stage; the strings, which remain quietly in the background, playing at a different speed and harmony, are placed off the stage, and hence require a separate conductor. Similarly, in the Third Quartet, the two duos never play at the



same speed and their notated meters are often different. Although strictly speaking, they are not playing “together,” the two duos must proceed through the music properly synchronized, as their barlines usually align. Rather than requiring a conductor, the Composers Quartet devised a click-track, a tape recording of the metronomic program of the piece, which gives each duo its separate and precisely calculated tempo information.<sup>180</sup> This makes possible the spatial separation requested by Carter, and frees the players from the obligation of sacrificing musical interpretation and freedom in order to preserve unity.

Even though the barlines for the two duos mostly align, there are no simultaneous downbeats; hence there are no coincidence attacks between the two groups. Incorporating different notated meters and speeds for the two duos, frequent metric modulations, distinct beat divisions among the four parts, and the superimposition of the strict time and *rubato*, Carter carefully plans the extent of rhythmic complexity in the Third Quartet. This complex rhythmic design is vividly explained in Robert Moevs’s description of the rhythmic events that take place in m. 110 (Example 1), which he enumerates as events 1-7:

[...] (1) Let us assume a measured quantum of time. (2) For Duo I divide this measure, say, into three parts as  $3/2$  meter, the half-note at 60. (3) For Duo II choose, then, a division that conflicts with this, e.g., into four parts. To provide greater independence, subdivide the resultant beats into triplets as  $12/8$  meter; the dotted quarter therefore will be at 80 (ratio 4:3). (4) The meters of the Duos now coincide only on the downbeat of the measure; let Duo I therefore rest on the downbeat. (5) It is not sufficient that each Duo be independent as a unit within the measure; each instrument also must have a particular subdivision of its beat. For Duo I, then, let the first violin divide the half-note pulse into two groups of triplets, and cello into quintuplets; for Duo II let the second violin divide the dotted quarter pulse into six sixteenths, and the viola into four dotted

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<sup>180</sup> In a BBC talk Carter gave on September 15, 1975, he explains that a click-track devised by the American Composers Quartet for their performance of his Third String Quartet records metronomic beats on a stereophonic tape—one channel of which is heard only by the players of one Duo through a small ear-phone, and the other track only by the other Duo. This click track was first made according to the metronomic indications of the score and then it was adjusted to meet the various expressive needs felt by the players and the composer. After much rehearsal, the American Composers Quartet did not need to follow the tape mechanically, but instead used it as a guide to keep the players in the right relation to each other. Thus, the click-track relieved the tension of playing complex rhythmic passages and allowed the performers to concentrate on the musical expression. The manuscript of Carter’s BBC talk is a part of the Elliott Carter’s text manuscript collection at the Paul Sacher Stiftung.

sixteenths. (6) Assign rests to the beginning of the beats to eliminate simultaneity of attack within the Duo. (7) Since Duo I plays in an impulsive rubato manner, intersperse further rests among its notes.

Relations so established usually do not last long; once set, they give way to others. The steps just listed describe measure 110. By measure 112, beat subdivision amongst the instruments has shifted from 6/5/4/3 to 7/5/3/2, common enough in this quartet to be considered standard.<sup>181</sup>

**Example 1:** Elliott Carter, String Quartet No. 3: mm. 110-112

110 (♩. = 80)

The musical score consists of four staves: Violin (II), Duo II (Viola), Duo I (Violin I), and Cello. Measure 110 is marked with a tempo of quarter note = 80. The score includes various dynamics such as *ppp*, *pp*, *p*, *mf*, and *f*, along with articulations like accents and slurs. Measure 111 features complex rhythmic patterns with triplets and quintuplets. Measure 112 continues the intricate rhythmic and dynamic interplay.

**String Quartet No. 3**

Music by Elliott Carter

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<sup>181</sup> Moevs, 157-58.

The complexity of the rhythmic design of the Third Quartet is revealed in the opening measure of the piece (Example 2).<sup>182</sup> Duo II (notated on the top system of the score) is in 6/4 at the speed of ♩ = 105. Within this duo, the second violin plays six groups of triplets, while the viola has three groups of quintuplets. The two rhythmic strands play at different speeds in strict time: the violin at MM 35 and the viola at MM 10.5. Duo I is notated in 12/8 meter at the speed of ♩ = 70, playing in rubato style. The first violin and cello begin together, with only their first beat rhythmically coinciding. From that point on, the two parts are syncopated; the first violin's beat division is characterized by sixteenth-notes, and the cello's by dotted sixteenth- and thirty-second-notes. Thus, the four parts seem to move independently, each one with its distinct beat division and speed. The independence is further exaggerated with dispersed rests in Duo II, which is already playing in "*quasi sempre rubato*." Aside from the second violin's and viola's partial coincidence point on the downbeat, there are no full coincidence points in the measure—a point where the downbeats of all four occur simultaneously.

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<sup>182</sup> Robert Mann, the first violinist for the Juilliard Quartet from 1946 until 1997, recalls that the ensemble spent two days putting the first measure together: "While the challenges of learning the first two quartets were extraordinary, the difficulties in preparing the Third Quartet (1971) were monumental. Again there were new rhythmic relationships to master, but additionally there was a whole new domain of instrumental coordination.... It took the Juilliard Quartet two full rehearsals just to be able to get through the first measure of the piece," (see Mann, iv).

**Example 2:** Elliott Carter, String Quartet No. 3: m. 1

**Maestoso ( giusto sempre )**  
♩ = 105

Violin (II)  
**Duo II**

Viola

**Furioso (quasi rubato sempre)**  
♩ = 70

Violin (I)  
**Duo I**

Cello

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By m. 10, the meter of Duo I is notated in 6/4, to coincide with Duo II. However, rhythmic relations typically last only for one measure. Hence, already by m. 11 the first tempo modulation is in effect and both duos change meter to 3/4. From this point on, meter and tempo changes are frequent, nearly every other measure, and not necessarily synchronized—meaning, one duo is subjected to one or more meter changes, while the other duo maintains its meter, hence their barlines hardly ever coincide (Example 3). By m. 39, the point where the duos return to their initial meter—6/4 and 12/8—the parts were already subjected to twenty-one meter changes and nine tempo modulations. The tempo for Duo II has changed from the initial

♩ = 105 in m. 1 to ♩ = 72 in m. 39, while the tempo for Duo I has remained the same (♩ = 70), but notated as ♩ = 96 in m. 39 to reflect the beat subdivisions of dotted thirty-second notes in its component parts (Example 4).

**Example 3:** Elliott Carter, String Quartet No. 3: mm. 26-29

The musical score for Example 3 consists of four staves: Violin (II), Viola, Violin (I), and Cello.   
 - **Violin (II):** Starts at measure 26 with a *pp* dynamic. It features long, sustained notes with a *p-pp* dynamic and a *smorz.* marking.   
 - **Viola:** Also starts at measure 26 with *pp* dynamics. It includes a *dim.* marking and a tempo change to ♩ = 108.   
 - **Violin (I):** Features complex rhythmic patterns, including triplets and sixteenth notes. Dynamics range from *pp* to *mf*.   
 - **Cello:** Plays a more rhythmic part with *pp* dynamics.   
 - **Measures 28-29:** The bottom two staves (Violin I and Cello) continue with intricate rhythmic figures. The Violin I part includes markings for *Leggerissimo (stesso tempo)*, *(poco esitando)*, *(a tempo)*, and *(poco esitando)*. The Cello part includes *spiccato sempre non troppo staccato*.   
 - **Tempo and Dynamics:** The score uses various dynamics (*pp*, *p*, *mf*) and tempo markings to indicate changes in mood and speed.

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**Example 4:** Elliott Carter, String Quartet No. 3: m. 39

The image shows a musical score for Elliott Carter's String Quartet No. 3, measure 39. The score is divided into two duos: Duo II (Violin II and Viola) and Duo I (Violin I and Cello).  
 - **Duo II:** Violin II and Viola. The Violin II part starts with a box containing the number 39. Both parts feature long, sustained notes with fermatas, marked with dynamics like *ppp* and *p*.  
 - **Duo I:** Violin I and Cello. Both parts play a complex, rhythmic pattern of sixteenth notes. The Violin I part includes markings such as *p*, *mf*, *p*, *mf*, *poco f (leggeriss. sempre)*, *p*, and *pp*. The Cello part includes markings like *p*, *mf*, *mf*, *p*, *mf*, *poco f (leggeriss.)*, *p*, and *pp*.  
 - **Other markings:** A tempo marking of  $\text{♩} = 96$  is present. There are also some performance instructions like *5* and *7* with arrows pointing to specific notes.

**String Quartet No. 3**

Music by Elliott Carter

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Carter remarked that during the period he was composing the Third Quartet, he was very much concerned with a way of writing music that was “an analog to the living stream of consciousness we all experience.”<sup>183</sup> He was particularly attracted to the sense of how our thoughts, feelings, and experiences can change their meanings according to the contexts in which they appear. To express this idea musically, Carter devised an intricate design for the Third Quartet. First, he divided the ensemble into two duos, which seldom share any musical material. Further, each duo plays its own set of movements, as shown in Figure 3.<sup>184</sup> Duo I plays four movements in a “quasi rubato, expressively intense, impulsive style”: *Furioso*, *Leggerissimo*, *Andante espressivo*, and *Giocosu*.<sup>185</sup> Meanwhile, Duo II plays six movements in

<sup>183</sup> See text manuscripts, Elliott Carter Collection, Paul Sacher Stiftung.

<sup>184</sup> Carter provides this chart inside of the seventh draft of the Third Quartet. See sketches for String Quartet No. 3, “7<sup>th</sup> Draft 26.02.1974,” Elliott Carter Collection, Paul Sacher Stiftung.

<sup>185</sup> Carter, “String Quartet No. 3 (1971),” 320.

strict time: *Maestoso*, *Grazioso*, *Pizzicato giusto*, *meccanico*, *Scorrevole*, *Largo tranquillo*, and *Appassionato*.

**Figure 3:** Elliott Carter, String Quartet No. 3: General layout of movements in Duo I and Duo II

DUO I	DUO II
<u>VIOLIN + CELLO</u>	<u>VIOLIN + VIOLA</u>
(PLAYING QUASI RUBATO THROUGHOUT)	(PLAYING IN QUITE STRICT RHYTHM THROUGHOUT)
1 FURIOSO	a) MAESTOSO
2 LEGGERISSIMO	b) GRAZIOSO
3 ANDANTE ESPRESSIVO	c) PIZZICATO, GIUSTO, MECCANICO
4 PIZZICATO GIOCOSO	d) SCORREVOLE
	e) LARGO TRANQUILLO
	f) APPASSIONATO
	(played in the order a, b, c, d, c, b, a, e, f, e, d, f)

Carter’s directions (Figure 4), written below the movements for Duo II, reveal the true complexity of this design: the duos not only play a separate repertoire of movements, but they are broken into substantial fragments, played in the order indicated in the chart.<sup>186</sup> This ordering allows each of the four movements of Duo I to be heard in combination with each of the six of Duo II, creating a total of twenty-four combinations. Further, it also allows for each of the ten movements to be heard for a time alone while the opposing duo pauses. The movements are followed by a coda, thus producing thirty-five sections in the piece (Fig 4). Reaching his objective, the movement pairings form a constant interlacing of moods, characters, and materials, evoking the idea of stream of consciousness.<sup>187</sup>

<sup>186</sup> This chart is appended to the Final Draft of String Quartet No. 3. See Elliott Carter Collection at the Paul Sacher Stiftung. Carter provides a similar chart in his program note for the Columbia recording by the Juilliard String Quartet (see Carter, “String Quartet No. 3 (1971),” 321-322).

<sup>187</sup> In literature, stream of consciousness technique is strongly associated with the modernist movement. Carter often employed literary techniques (or used texts for his song settings) of modernist writers in his compositions. The interlacing of movements in the Third String Quartet, which play unrelated musical material, is evocative of stream of consciousness segments in James Joyce’s *Ulysses*, or William Faulkner’s *The Sound and the Fury*. For instance, in *The Sound and the Fury*, Faulkner retells the story four times, each time from a different perspective. The first three sections are presented in the first person narration form by each of the three Compson sons: Benjamin, Quentin, and Jason; the last section is a narration by the omission character. Yet, despite the interdependence of the sections, none of the four tales speak to one another, as each imagined order cancels out the one that precedes it (see Kartiganer, 328). Hence, each “re-reading” brings new characters, moods, and

**Figure 4:** Elliott Carter, String Quartet No. 3: Detailed formal plan

Duo 1 (playing simultaneously the following movements):	Duo 2	Measures
Furioso	} Maestoso	1-16
(pause)		"
Leggerissimo	} "	fragments at 19-27
"		(pause)
"	} Grazioso	38-47
Andante		"
"	} Giusto	(61-63) 64-78
(pause)		"
Giocososo	} "	90-96
"		(pause)
"	} Scorrevole	106-114
(pause)		"
Leggerissimo	} "	136-150
"		Giusto
Furioso	} "	(160, 164, 165, 66, 7, 8, 9) 173-
"		Grazioso
(pause)	} "	184-196
Giocososo		"
"	} Maestoso	(210-218) 219-230
Andante		"
"	} (pause)	243-253
"		Largo
(pause)	} "	266-276
Leggerissimo		"
"	} Appassionato	289-309
Giocososo		"
"	} Largo	(322-325) 326-334 (335-338)
Furioso		"
"	} (pause)	353-365
"		Scorrevole
Andante	} "	380-395
"		Appassionato
(pause)	} "	fragmented: 402, 405-6, 13, 20
Furioso		"
Coda – combining:		
Furioso	Appassionato	425-end
Andante	"	463, 471-473
Leggeriss.	"	469-470
Giocososo	"	473-474
(measure numbers in parentheses are transitional, containing material from both preceding and succeeding sections)		

material, the same experience Carter sought to portray in his Third Quartet. Further, Faulkner polarizes the narrative in a similar manner as Carter divides the ensemble into two duos. He uses two distinct types of fonts to represent the past time (italics) and the events in the present time (regular font). The two strands are independent of one another; they do not meet or exchange the material until the novel reaches the longest stream of consciousness reverie section, where the temporalities conflate (see Faulkner, *The Sound and the Fury*, 90-100).



As indicated by the measure numbers (Fig. 4), the sections are not the same length. Further, their components are not of the same salience, because, as Carter explains, “each whole movement, although fragmented, has its own overall shape, with some sections more emphatic than others.”<sup>188</sup> The interlacing allows each duo to furnish contents for the other’s expressions and musical characters. In order to make such a contextual presentation of ideas clear, each duo must consist of a considerable number of different musical characters, some contrasting very strongly with each other and some only slightly; all characters need to be grasped distinctly, so that they could be heard as contexts of each other when combined together.<sup>189</sup> As David Schiff observes, the movements are changed by their context so that the focus of the work gradually becomes the connections between the two duos.<sup>190</sup> Carter points out, it is not necessary, or even possible, to hear all contexts at once. Rather, it is the overall effect that Carter wants the audience to experience:

[I]t is certainly not necessary (or even possible!) to hear everything at once. The attention should be allowed to wander freely among the instruments and pairs, hearing them separately or in different combinations – each listener, in effect, “making up” his own music from what he chooses to hear. The musical language is far advanced and extremely difficult, but this “translation” of Carter’s expression into the language of each listener’s own personal experience is really the most important interaction in the piece.<sup>191</sup>

For the content to be conveyed and realized by the listener, Carter sought to find musical materials and continuities that would put both contextual and unifying concepts clearly before the listener. To achieve this vision, Carter needed to develop new techniques, musical language, and a way of organizing the Quartet. Hence, his primary concern was to

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<sup>188</sup> Carter, “String Quartet No. 3 (1971),” 322.

<sup>189</sup> See text manuscripts, Elliott Carter Collection, Paul Sacher Stiftung.

<sup>190</sup> Schiff, *The Music of Elliott Carter*, 86.

<sup>191</sup> Notes on the program for the performance by the Composers Quartet at Baird Recital Hall, Buffalo, New York, June 1, 1978. See text manuscripts, Elliott Carter Collection, Paul Sacher Stiftung.

find musical vocabulary that would both unify the work and also give it its own individuality.<sup>192</sup> The formal design—interlacing the movements of the two duos—is one method Carter devised to demonstrate the duality of opposition and collaboration in the Third Quartet; the harmonic language—assigning each duo a distinct intervallic repertoire, which when combined often creates all-interval twelve-tone chords—is another method Carter used to reveal the oppositions in the Quartet.

### **UNIFYING THE OPPOSITIONS: HARMONY**

In the Third String Quartet, Carter continues the idea of distinguishing parts and textures from one another by assigning distinct interval repertoires and set content. Each movement is associated with a characteristic interval, except for the interval of the major second, which is used in all movements of Duo I. By adding a common interval to this group, Carter ensures that all eleven intervals are in use and partitioned between the two duos. In a sketch drafted on the back inside cover of the third draft of the Quartet, Carter provides a basic chart outlining the interval distribution among the ten movements, and how intervals may combine to create four-note chords, as well as the recurring all-interval twelve-note chord (Example 5).<sup>193</sup>

Looking at the chart, we can see an all-interval twelve-note chord in particular registral and intervallic spacing in the first measure. Below it is a list of numbers 1-11, representing intervals. Each one crossed out, showing that Carter is checking that each interval class is included within this source chord. Next, Carter extracts pitches from this chord to form particular intervals that characterize each of the movements. Hence, for Duo II's first

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<sup>192</sup> See text manuscripts, Elliott Carter Collection, Paul Sacher Stiftung.

<sup>193</sup> See sketches for String Quartet No.3, Third Draft, Elliott Carter Collection, Paul Sacher Stiftung.



**Figure 5:** Elliott Carter, String Quartet No. 3: A summary of interval distribution (transcription)

<b>Duo I</b>		<b>Duo II</b>	
MOVEMENT	INTERVAL	MOVEMENT	INTERVAL
Furioso	Major 7	Maestoso	Perfect 5
Leggerissimo	Perfect 4	Grazioso	Minor 7
Andante espressivo	Minor 6	Pizzicato giusto, meccanico	Tritone
Pizzicato giocoso	Minor 3	Scorrevole	Minor 2
		Largo tranquillo	Major 3
All movements	Major 2	Appassionato	Major 6

On other charts, Carter shows in more detail the harmonic design of the Third Quartet.<sup>194</sup> All sketches bear a similar layout: in the left column, Carter shows the harmonic content for Duo I, in the right column for Duo II, and the middle shows how the intervals of Duo I combine with intervals of Duo II. For instance, in a yet unpublished sketch, transcribed in Example 6, Carter first shows fixed intervals from each movement (written in whole notes): a major second {Bb-C}, which shared among all movements of Duo I, followed by a minor third {C#-E}, a perfect fourth {F-Bb}, a minor sixth {B-G}, and a major seventh {D-C#} for Duo I. In the right column, Carter writes the intervals characterizing the movements for Duo II: a minor second {F-Gb}, a major third {Gb-Bb}, a tritone {A-Eb}, a perfect fifth {E-B}, a major sixth {C-A}, and a minor seventh {G-F}. In the center, Carter combines the pitches to show the resultant all-interval twelve-note chord of fixed pitches, which is heard in many different textural patterns throughout the piece.

<sup>194</sup> See Schiff, *The Music of Elliot Carter* for “Fixed Pitches-Rhyme Scheme” and “Combination chords (uses of 4 note chords)” charts (80-81). Both charts are appended to the Photocopy of the 7<sup>th</sup> Draft with Corrections (Feb 26, 1973), and the Final Draft of the piece (see Elliott Carter Collection at the Paul Sacher Stiftung). Another sketch of the harmonic analytical diagram is produced in Schmidt, 185. All three charts are reproduced in the Appendix section (E, F, and G, respectively).

**Example 6:** Elliott Carter, String Quartet No. 3: "Intervallic uses in the Third String Quartet" (Elliott Carter Collection, Paul Sacher Stiftung) (transcription of Carter's handwritten chart)

Duo I

All-interval  
12-note chord

Duo II

WHOLE NOTES - FIXED PITCHES

CHORDS IN COMMON

Duo I

Duo II

Intervals

4 note chords assigned to I

4 note chords assigned to II

FURIOSO

MAESTOSO

INTERVAL COMBINATIONS

LEGGERISS.

GIUGTO

INTERVALlic USES IN  
Third String Quartet  
CARTER

4 NOTE CHORDS FORMING 12-note

systeme ©

Underneath the fixed-pitch intervals, Carter sketches four-note chords assigned to each duo, showing their combinations in the center column. Following the numbering system from his *Harmony Book*,<sup>195</sup> Carter assigns tetrachords 3, 9, 13, 14, 17, 18, 20, 25, and 26 to Duo I, and chords 2, 5, 12, 11, 16, 19, 21, 22, 23 and 29 to Duo II.<sup>196</sup> In the center column are the four-note chords joining both duos (Fig. 6). As evident from the figure below, Carter assigns one form of the AIT to each duo—(0146) to Duo I and (0137) to Duo II. Further, by assigning nine four-note chords to Duo I and ten to Duo II, whose combinations yield ten other four-note chords, Carter uses all twenty-nine types of distinct tetrachords. Carter similarly exhausts all trichords in the Quartet, by assigning six to Duo I, four to Duo II, with the remaining two falling in the “combination” category (not shown in this example, but the chart is summarized in Figure 6b).<sup>197</sup> Andrew Mead notes that this method of exhausting all possible combinations of three- and four-note chords is one of the two characteristics of Carter’s music of this period; the other one is the presence of twelve-tone sets, vertically ordered and at a fixed transposition.<sup>198</sup> Carter applies both methods to the Third String Quartet.

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<sup>195</sup> Carter, *Harmony Book*, eds. Nicholas Hopkins and John Link. New York: Carl Fischer, LLC, 2002.

<sup>196</sup> See Appendix H for a complete list of Carter’s numbering system for chords.

<sup>197</sup> See Schiff, 80 (reproduced in Appendix E).

<sup>198</sup> See Mead, “Pitch Structure in Elliott Carter’s String Quartet No. 3,” 35. Mead observes that Carter tends to exhaust all possible collection-classes of some cardinality at some level of structure in his music of this period, and also to use fixed twelve-tone sets, hence freezing the twelve pitch-classes in certain registers. The ordered sets may be found in the Piano Concerto (there are two sets used in this piece) and the Concerto for Orchestra (although the sets are not always present, they mark significant moments in the piece). Carter’s exhaustion of collection-class can be found in the Piano Concerto (trichords), the Concerto for Orchestra (pentachords), and the Symphony of Three Orchestras (hexachords). Mead makes a distinction between collection—a specific selection of pitch-classes—and collection-class—the class of all collections equivalent under transposition and/or inversion.

**Figure 6a:** Elliott Carter, String Quartet No. 3: Tetrachord distribution between the two duos

<b>Duo I</b>		<b>Combination</b>		<b>Duo II</b>	
Carter's numbering system	Set	Carter's numbering system	Set	Carter's numbering system	Set
3	(0235)	1	(0123)	2	(0167)
9	(0134)	4	(0257)	5	(0369)
13	(0347)	6	(0127)	12	(0268)
14	(0358)	7	(0136)	11	(0246)
17	(0124)	8	(0145)	16	(0248)
<b>18</b>	<b>(0146)</b>	10	(0156)	19	(0157)
20	(0125)	15	(0158)	21	(0147)
25	(0237)	24	(0148)	22	(0126)
26	(0135)	27	(0247)	<b>23</b>	<b>(0137)</b>
		28	(0236)	29	(0258)

**Figure 6b:** Elliott Carter, String Quartet No. 3: Trichord distribution between the two duos

<b>Duo I</b>		<b>Combination</b>		<b>Duo II</b>	
Carter's numbering system	Set	Carter's numbering system	Set	Carter's numbering system	Set
1	(048)	9	(015)	2	(036)
4	(012)	10	(025)	3	(024)
5	(027)			7	(016)
6	(037)			8	(026)
11	(014)				
12	(013)				

After combining every interval of all ten movements, Carter then proceeds to show how these intervals combine within each duo individually to reveal the Quartet's total harmonic vocabulary—combinations of intervals of Duo I are in the left column, and of Duo II in the right column. These diagrams provide the summary of the already-developed harmonic design of the piece. However, sketch material for the Third Quartet housed at the Library of Congress contains hundreds of pages on which Carter systemically explores the properties of intervals and chords, hence showing the process before deriving these final charts. Reminiscent of the harmonic sketches for the Second Quartet, these folios bear titles such as

“rejected chords,” “lost chord found,” “avoid this interval,” “trial combinations,” or “new possible total chord.” This material reveals that Carter was still in the developing stages of his harmonic language while writing the Third Quartet. Furthermore, the harmonic process on these sketches is very methodical: first, Carter dedicates several pages to examining each individual chord—all possible pitch-class variations and transpositions in close position. Once he has a complete list of the chord’s properties, he combines them with various transpositions to obtain a twelve-note chord. For instance, the sketch transcribed in Example 7 shows how tetrachord 19, or (0157), may be transposed and combined with tetrachord (0167) to derive the twelve-note chord.

In the first system, Carter writes the (0157) tetrachord {C, E, B, F#}, and its rotation, {B, F#, E, C}. Below, Carter writes the transposition of the set at T<sub>9</sub>I level (also with a corresponding rotation), which produces four new chromatic pitches, {Eb, Bb, F, A}. In order to complete the twelve-note aggregate, Carter writes the remaining four-note chord, (0167), {G, D, G#, C#} (and its rotation). Hence, the combination of the (0157) with its T<sub>9</sub>I and a (0167) set will produce an all-interval twelve-note chord. On the system below, Carter juxtaposes the two transpositions of (0157) with (0167) to show the featured twelve-note chord, in three orderings (Example 7).



**Example 7:** Elliott Carter, String Quartet No. 3: Formation of an all-interval twelve-note chord from chord #19

The sketch in Example 7 shows Carter systematically working with only one tetrachord, 19, to derive the twelve-note chord—by finding a specific transposition level of the chord and the remaining set (1067). In the next stages of harmonic planning, Carter charts the distribution of all tetrachord combinations between the two duos. One such example is a sketch dated July 8, 1970 (Example 8). Although this chart resembles the content of the final plans of harmonic design for the Third Quartet, as seen in Example 6, it nonetheless represents work in progress. On the top of the page, Carter makes ten columns, each one designated for a particular “combination” four-note chord. The chords are numbered according to his system: 1, 8, 10, 4, 6, 7, 15, 24, 27, and 28. Within each tetrachord, the first interval is derived from Duo II, the second one from Duo I. Once Carter obtains a particular tetrachord, he then writes down in column five possible interval pairings and spacing within each specific tetrachord.<sup>199</sup> On the right side of the sketch, Carter provides a summary chart showing thirty-nine possibilities by

<sup>199</sup> In the column for tetrachord 27, or (0247), {C#-B, D#-G#}, Carter misspells G# for F# in all interval reorderings, hence writing the interval content not for chord 27, but instead for chord 21, or (0147).

which tetrachords may combine to form all-interval twelve-note chord. Looking at the first line, for instance, we see that three transpositions of tetrachord 1, or (0123), form the twelve-note chord, as does a combination of chord 1 with two transpositions of chord 8, or (0145), and so on (see extracted detail, Ex. 8a). From this list, Carter chooses three specific orderings for each of the ten chords as a “final choice of distribution of intervals and chords” (see extracted detail in Example 8b).

**Example 8:** Elliott Carter, String Quartet No. 3: Harmonic sketch, dated July 8, 1970

(a) Tetrachords in various intervallic orderings and spacings (extracted detail)

(0123)	(0145)	(0156)	(0257)	(0127)	(0136)	(0158)	(0148)	(0247)	(0236)		
1	8	10	4	6	7	15	24	27	28		
										1, 1, 1	10, 6, 10
										1, 8, 8	
										1, 1, 6	15, 4, 15
										1, 7, 7	15, 6, 8
										1, 28, 28	15, 24, 27
										4, 4, 4	15, 24, 24
										4, 6, 4	15, 27, 24
										4, 7, 7	24, 15, 24
										4, 15, 15	24, 8, 24
										4, 27, 27	24, 15, 27
										6, 6, 6	27, 8, 27
										6, 1, 1	27, 4, 27
										6, 4, 4	27, 15, 24
										6, 7, 7	
										6, 8, 15	28, 1, 28
										6, 10, 10	28, 8, 28
										7, 7, 7	
										7, 1, 1	
										7, 6, 7	
										7, 4, 7	
										8, 1, 8	
										8, 6, 15	
										8, 24, 24	
										8, 27, 27	
										8, 28, 28	

(b) Final choice of distribution of intervals and chords (extracted detail)

The image displays musical notation for two measures, 27 and 28, and a larger sketch below. Measures 27 and 28 are shown in two staves each. Measure 27 has a circled chord in the upper staff. Measure 28 has a circled chord in the upper staff and a circled chord in the lower staff. A question mark is present in the lower staff of measure 28. Below the larger sketch, there are brackets indicating intervals: 1, 8, 10, 4, 6, 15, 7, and 24. The date July 8, 1970 is written below the brackets. An arrow points from the text Final choice to the larger sketch, with the text *of distribution of intervals + chords* written above it.

The harmonic sketches undergo several more stages before they are applied to the specific sections of the piece. In the next stage, Carter distributes the intervals and chords not only according to their respective Duos, but also as they occur in the ten movements of the Quartet. These sketches are color-coded, revealing three layers of information: one color scheme differentiates between chord cardinalities (for instance, trichords from tetrachords); another layer indicates to which duo each chord belongs (typically, tetrachords for Duo I are written in green pencil, those for Duo II in red, and the combination chords in blue); the last color layer identifies the movement at hand. Hence, looking at the sketch transcribed in Example 9, all “combination” chords are circled in blue, chords pertaining to Duo I are in red, and those belonging to Duo II in green.

**Example 9:** Elliott Carter, String Quartet No. 3: Distribution of chords among the movements (partial transcription) (Elliott Carter Manuscripts, the Library of Congress)

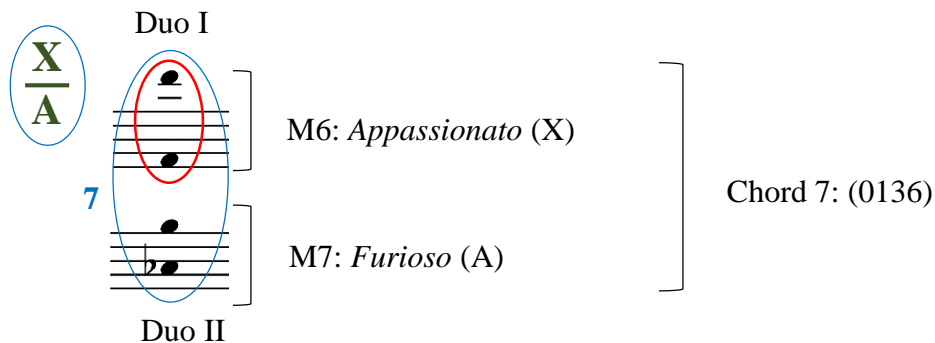
4, 15, 27, 28

The score is annotated with the following elements:

- 4, 15, 27, 28:** A blue header indicating specific chord numbers or measures.
- ④ 15, 24, 27, 28:** A circled blue number 4 followed by chord numbers 15, 24, 27, and 28.
- 1, ④ 6, 10, 15, 24, 27:** A circled blue number 4 followed by chord numbers 6, 10, 15, 24, and 27.
- ④ 15, 8, 10, 24, 28:** A circled blue number 4 followed by chord numbers 15, 8, 10, 24, and 28.
- X/A 7:** A circled blue 'X' over 'A' with a circled blue number 7 below it.
- X/B:** A circled blue 'X' over 'B'.
- Letters A, B, C:** Red letters marking specific sections of the score.
- Numbers:** Various numbers (e.g., 17, 26, 25, 3, 25, 18, 27, 17, 3, 18, 18, 18, 26, 20, 18, 9, 27, 9, 21, 14, 5, 27, 3, 5, 14, 22, 28, 8, 10, 15, 28, 8, 28, 24, 4, 22, 13, 22, 25, 22, 20, 12, 18, 21, 20, 19, 25, 19, 10, 14, 19, 26, 29, 8, 14, 29, 18, 16, 20, 21, 21, 21, 23, 23, 23, 29, 29, 22, 22, 22, 22, 22, 22, 22, 22, 21, 21, 6, 4, 15, 7, 6, 7, 4, 1, 24, 8, 10, 7, 1, 7, 10, 1, 8, 15, 20, 20, 25, 18, 17, 18, 17, 26, 20, 18, 26, 17, 18, 17, 18, 18, 14, 20, 19, 19, 19, 21, 22, 23, 23, 22, 21, 16, 16, 16, 12, 12, 12, 12, 2, 19, 28, 28, 28, 7, 28, 27, 27, 4, 8, 24, 24, 28, 28, 28, 28, 10, 7, 14, 20, 20, 20, 13, 3, 9, 17, 25, 18, 26, 17, 17, 26, 26, 18, 14, 17) are scattered throughout the score, often circled in blue or red.

In addition to the already established three-color scheme—blue, red, and green, Carter adds brown color in combination with the upper-case alphabet letters to designate each movement: letters A-D denote the four movements of Duo I, letters S-X the six movements of Duo II. Following this color- and alphabet scheme, the sketch in Example 9 shows different ways to derive combination chords (circled and labeled in blue pencil). Letters written in brown pencil indicate in which movements these chords occur, with their particular fixed pitches. Here, the second from the bottom system is labeled “X/A,” hence it shows the chord distribution for movements *Appassionato* (X) and *Furioso* (A). The first chord in this list is tetrachord 7 or set (0136). The top interval of this chord is circled in red, thus belonging to the repertoire of Duo II; the bottom interval is circled in green, as it pertains to Duo I. In addition to their divisions according to the respective duos, the interval content is specific to the movements. Therefore, the top interval is a major sixth, which characterizes *Appassionato* of Duo II, while the bottom interval is a major seventh, which predominates *Furioso*, played by Duo I (see extracted detail, Example 10).

**Example 10:** Elliott Carter, String Quartet No. 3: Distribution of chords among the movements (extracted detail): X/A (*Appassionato* / *Furioso*)



Lastly, with the interval and chord content distributed between the two duos and among the movements, Carter explores the harmonic designs for particular sections and measures as a basis for thematic content. For instance, the sketch transcribed in Example 11a shows harmonic possibilities for measures 278-288. In this section of the Quartet, Duo II (notated on top staves) is already twenty-four measures into its *Largo tranquillo* movement, while Duo I is just starting its *Leggerissimo* (see Figure 4 for a chart of interlacing movements). Carter composed Duo II first, and found it problematic to write music for the “leggerissimo” character, based on perfect fourths.<sup>200</sup> This sketch shows how Carter forms the thematic material for Duo I, and worked around this problem.

The harmonic segments are divided into pairs, and numbered above the staves 1-15 in green pencil. Each pair first states the interval(s) of Duo II, numbered in green pencil each time the harmony changes. Thus, in the first measure (in the sketch), the green-colored number 1 designates the first part of m. 278, while the green number 2 (sketch m. 3) is the end of 278, designating the change of harmony in the excerpt. The numbering system continues in this manner through the end of the sketch. Further, each of these Duo II measures contain a pair of intervals within, {G-C#, Gb-Bb}, labeled below the staff with numbers “1” and “2” in blue pencil. These numbers differentiate the intervals between the two instruments within Duo II. Hence, one of these intervals is played by the second violin and the other by the viola. This pair of blocked intervals is followed by a measure containing a linear statement of perfect fourths of Duo I, {B, E, A, D; C, F; Eb, Ab}. Carter avoids repeating any pitches used by Duo II, so that all twelve pitches of the aggregate (i.e., the all-interval twelve-note chord) is stated in each harmonic segment. The pairs of fourths circled in green, {C-F, Eb-Ab}, form chord 14

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<sup>200</sup> See text manuscripts and sketches, Elliott Carter Collection at the Paul Sacher Stiftung. Here, Carter reveals that he composed music for Duo II first.

or set (0358), assigned to the repertoire of Duo I. All chords in this sketch circled in orange form a part of the all-interval twelve-note chord (all pitches but “B” are present). The complete collection of these fourths is shown on the bottom system, where the intervals are numbered 1-7 in orange pencil and correspond to orange-numbered intervals on the sketch. Circled in purple are the fourths that Carter intended to notate in harmonics in this passage (played two octaves higher than written).<sup>201</sup> They are listed and numbered in purple pencil 1-6 on the sixth staff, and also in each measure. Lastly, the numbers in blue, denoting a bracketed-pair of intervals, indicate the “combination chords” that the fourths of Duo II form with intervals from Duo I. For instance, in the first measure, the second interval is numbered “2” in blue pencil. This interval, {Gb-Bb}, forms chord 24, or set (0148), when combined with the fourth {A-D}, also labeled “2” in blue pencil in the same harmonic segment (see extracted detail in Example 11b).

By examining the published score, it is evident that this sketch indeed provides the basis for the material for both duos in this section (Example 11c). For instance, in m. 278, the instruments of Duo II play the intervals/pitches written in the first measure of the sketch (which corresponds to the first harmony of Duo II in m. 278): {F#-A#} played by the second violin, and {C#-G} played by the viola. The harmony changes at the end of the measure, with the first violin playing {F-C} over the unchanged {C#-G} in the viola. This harmonic change is noted as green-numbered measure 2 on the sketch. While the instruments of Duo II sustain these intervals, Duo I features a passage dominated by perfect fourths. The combination of the pitches in both duos forms “combination” chords outlined in the sketch. The rest of the passage continues to adhere to the harmonic plan outlined in the sketch.

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<sup>201</sup> Ibid.

**Example 11:** Elliott Carter, String Quartet No. 3: Harmonic sketch for measures 278-288

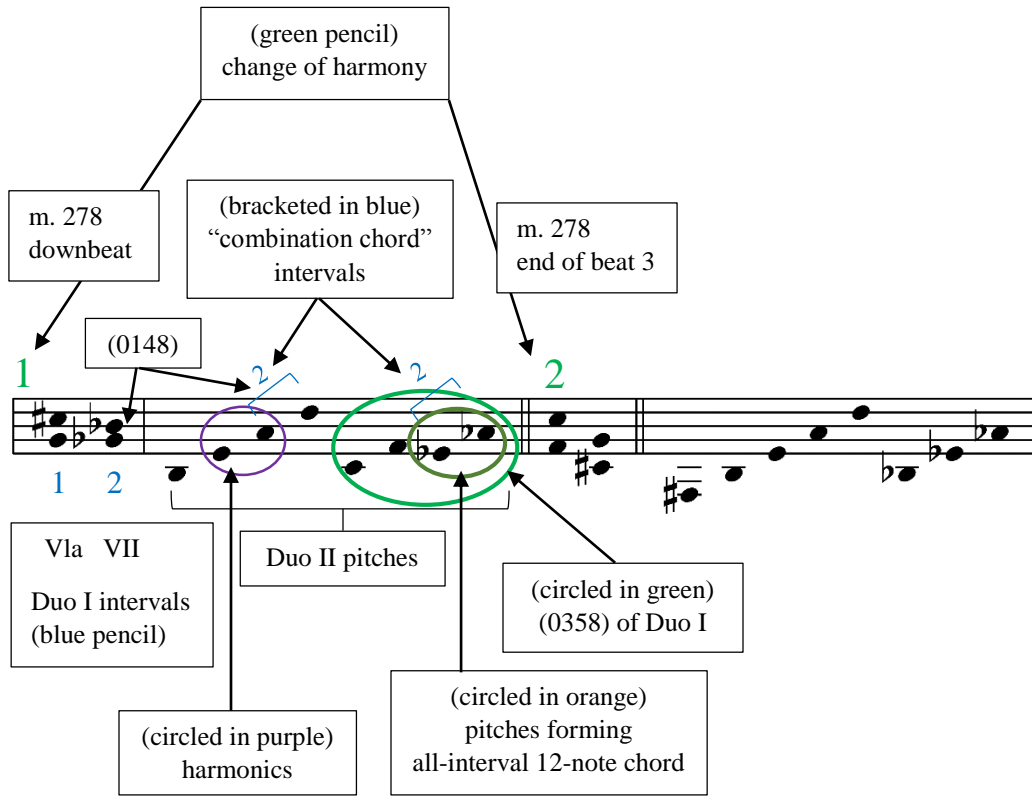
(a) Transcribed sketch (Elliott Carter Collection, Paul Sacher Stiftung)

The musical score consists of several staves. The first three staves are for the string quartet, with various chords circled in green and purple. The fourth staff is a grand staff (treble and bass clefs). The fifth staff shows a sequence of chords numbered 1 through 7. A legend on the right side of the page provides the following mappings:

- 1 = 3
- 2 = 5
- 3 = X
- 4 = 4
- 5 = 7
- 6 = 6



(b) Extracted detail, top system



(c): String Quartet No. 3: m. 278, published score (Used by permission.)

The published score for String Quartet No. 3, m. 278, includes the following parts and markings:

- Violin (II):** Treble clef, starting at measure 277. Dynamics include *p*, *pp*, and *p*.
- Duo II (Viola):** Bass clef, playing a sustained chord. Dynamics include *p* and *pp*.
- Violin (I):** Treble clef, starting at measure 278. Marked "con sord." (con sordina). Features triplet patterns. Dynamics include *pp*, *mf*, and *pp*.
- Cello:** Bass clef, starting at measure 278. Marked "con sord." (con sordina). Features triplet patterns. Dynamics include *pp*, *mf*, and *pp*.
- Tempo/Performance:** "Leggerissimo (stesso tempo)" is written across the Duo I and Cello staves.

As seen in the sketch above, Carter carefully juxtaposes pitches that yield an all-interval twelve-note chord, which he refers to as the “basic chord” of the Third String Quartet,<sup>202</sup> and which is formed from the combination of all intervals assigned to each movement. Furthermore, the chord is always stated with fixed pitches, meaning it is never transposed (see Example 12). Since it contains all intervals, it assigns a specific register or pitch location for each. It is heard in a variety of textural patterns and usually appears at transitional moments.<sup>203</sup> In the passage shown below, it is derived from the collection of pitches in mm. 285 (third beat) – 287 (downbeat). Pitches derived from Duo II are depicted in whole notes, and those from Duo I in quarter notes.

**Example 12:** String Quartet No. 3: All-interval twelve-note chord

(a) All-interval twelve-note chord of fixed pitches, mm. 285-286



<sup>202</sup> In his sketches and text manuscripts pertaining to the Third String Quartet, Carter refers to this all-interval twelve-tone chord as the “basic” chord.

<sup>203</sup> This chord also appears in the following measures: 15; 39; 60 (second beat) – 62; 113 – 114; 149 (second beat) – 151; 177 – 178; 228 (second beat) – 233; 260 (third beat) – 264 (first beat); 327 (third beat) – 328 (first beat); 334 (second half of measure) – 335 (beginning of measure); 338 – 339 (first five beats); 368 (second beat); 370 – 373 (only in Duo I); 400; 429 (second beat) – 437 (first eighth); 464 (second beat) – 467 (first beat).

(b) All-interval twelve-note chord, mm. 285-286, published score

The image displays a musical score for String Quartet No. 3, measures 285 and 286. The score is arranged in two systems. The first system (measures 285-286) includes parts for Violin (II), Duo II (Viola), Violin (I), and Duo I (Cello). Measure 285 features a complex texture with various intervals and dynamics such as *p*, *pp*, and *p sub.*. The second system (measures 286-287) includes parts for Violin (II), Duo II (Viola), Violin (I), and Duo I (Cello). Measure 286 features a tempo change to 67.5 and a 90 BPM section, with dynamics ranging from *p* to *mf*. The score includes various musical notations such as notes, rests, and dynamic markings.

**String Quartet No. 3**

Music by Elliott Carter

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On the verso of the sketch transcribed in Example 11a is a sketch dated April 28, 1971, with a heading “too agitated,” and the inscription “not used” on the bottom (transcribed in Example 13). This sketch shows both the harmonic and rhythmic details initially intended for a specific passage in the Third Quartet—measures 254-265. Even though Carter rejects this sketch for the final version of the piece, it nonetheless sheds light on the composer’s thought process. Carter refers to this sketch as a “trial run” for the fifteenth combination of duos. In this part of the Quartet, Duo II begins *Largo tranquillo*, while Duo I is about half-way through its *Andante espressivo*. The red “W” written at the top of the sketch is the code for the *Largo* movement, which is assigned the interval of a major third, and green “D” for the *Andante*, which is characterized by minor sixths. The red squares indicate the chords in the repertoire of Duo II (tetrachords 12 and 11), the green squares designate chords belonging to the repertoire of Duo I (tetrachords 13 and 26), and blue-colored chords are the resultant “combination” chords (tetrachords 8, 15, 24, and 28). In his text manuscripts, Carter explains that he rejected this passage because it contained too few of the chords from the repertoire of Duo I to effectively establish its harmonic character.<sup>204</sup> By looking at the published score (Example 13b), we can see that Carter keeps the interval of a major third in the upper duo (although transposed), but includes a greater variety and number of chords in the lower duo. Hence, what this sketch is revealing is that harmony is the determining factor in deciding whether or not to revise a section of the Quartet. Thus, despite the presence of rhythmic and textural elements in this sketch, as well as some intricate articulation and dynamics details, this sketch is still primarily a harmonic sketch.

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<sup>204</sup> See text manuscripts and sketches, Elliott Carter Collection, Paul Sacher Stiftung.

**Example 13:** Elliott Carter, String Quartet No. 3: Harmonic sketch for measures 254-265

(a) Sketch dated April 28, 1971 (transcription)

6 W too agitated 12

? used D 3 7 9 3

15 April 28, 1971 not used 26 3 5

(b) String Quartet No. 3: Published score, mm. 254-265

**Largo tranquillo (stesso tempo)**

The score is divided into three systems. The first system (measures 253-255) includes Violin II, Duo II (Viola), Duo I (Violin I), and Cello. Violin II and Duo II are marked 'con sord.' and 'pp'. Duo I and Cello are marked 'f-mf'. The second system (measures 256-259) includes Violin II, Duo II, Duo I, and Cello. Violin II and Duo II are marked 'legato'. Duo I and Cello are marked 'ff cantando'. The third system (measures 260-265) includes Violin II, Duo II, Duo I, and Cello. Violin II and Duo II are marked 'p'. Duo I and Cello are marked 'pp'.

263 (♩ = 54)

*pp*

*p legalissimo*

*f* *mf* *ff*

(♩ = 54)

*mf* *f* *mf* *ff* *p*

265 ♩ = 135

*pp*

*mf - p*

**String Quartet No. 3**

Music by Elliott Carter

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## CONCLUSION

With the Third String Quartet, Elliott Carter has yet again shown how he can create something quite new by using the ideas he explored in previous works. More than just building on old ideas, Carter masterfully makes a bold, new statement with each reinvention. Assigning a distinct repertoire of intervals, exhausting one or more collection-classes of some cardinality, basing the harmonic framework on tetrachordal structure and differentiating between the two forms of AITs, using fixed twelve-tone sets, polarizing the musical space, superimposing expressive *rubato* against strict time, creating complex polyrhythms, simultaneous differing speeds, and metric layers, are all ideas that characterize Carter's Third Quartet. Each of the techniques and concepts finds its roots in Carter's earlier works. For instance, in the Cello Sonata, the cello plays in expressive *rubato* style, while the piano is in strict time; in the *Adagio* movement of the First String Quartet, Carter divides the ensemble into two duos; in the Second Quartet, each instrument is assigned a repertoire of intervals; Carter exhausts one or more collection-classes of some cardinality in the Piano Concerto and the Concerto for Orchestra; using a tetrachordal structure as the basic harmonic framework and differentiating between the two forms of AITs can be observed in the first two quartets, and the Double Concerto; Carter uses fixed twelve-tone sets in the Piano Concerto and the Concerto for Orchestra; Carter experiments with the notion of spatialization in the first two quartets, the Double Concerto, and the Concerto for Orchestra; simultaneous statements of different thematic material, with distinct rhythm, and speeds, which form multiple metric layers is evident in all Carter's compositions since the First Quartet.

In the First Quartet, Carter begins to experiment with spatialization—in the *Adagio* movement, he divides the ensemble into two duos: the two violins against the lower strings.



The duos are introduced separately, but once superimposed, they play seemingly unrelated music. While this episode of spatial duality is confined to a single movement of the First Quartet, the entire Third Quartet is based on this principle. For the entire duration of the Third Quartet, the ensemble is divided into two groups, which hardly share any musical material. The division is so extreme, that each duo has its own set of movements, and each movement exhibits distinct characteristics. Further, the duos differ in their polyrhythmic structure, and quite often in their tempos and meter. In addition to differing musical material and harmonic-rhythmic-metric structure, the two duos have distinct characters—one plays in expressive, *rubato* style, while the other plays in somewhat impersonal, strict time. Differentiation of characters derives from his Second Quartet, in which each instrument is associated with a particular character-continuity: each part has its repertoire of intervals, set of gestures and characteristics, thematic material, and rhythms. Hence, as Carter notes, the Third Quartet, like the Second, focuses on the relationship of instruments, but rather than constantly shifting attention to one of the instruments, he divides the ensemble into pairs.<sup>205</sup>

Carter's use of simultaneity—combining different (and sometimes unrelated) elements, which form complex formal, textural, harmonic, polyrhythmic and metric designs—finds its origins in the music of Ives, Stravinsky, and Nancarrow, composers whose new rhythmic expressions greatly influenced Carter. Their ideas—the use of simultaneous polyrhythms and multiple rhythmic planes, superposition of different material, and spatialization—play a significant role in the structure and character of Carter's Third String Quartet. But Carter exceeds the level of complexity and difficulty in this piece, even for his own standards.<sup>206</sup> To

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<sup>205</sup> Carter, "String Quartet No. 3 (1971)," 320.

<sup>206</sup> Bernard notes that with his Third Quartet, Carter achieved a level of ensemble complexity and sheer "danger" that he has not attempted since ("The String Quartets of Elliott Carter," 258). Schiff similarly observes that the Third Quartet is Carter's most contrapuntal work, most complex of the Quartets, and certainly most difficult to

these, already intricate ideas, Carter adds new layers of novel expressions that further elevate the level of difficulty in the Quartet: the duos are complete and distinct entities in themselves; each movement has a definite form, with a clear beginning, a climactic point, and ending; the harmonic language incorporates all types of trichords and tetrachords, and uses the all-interval twelve-note chord as a unifying factor; the movements are rhythmically structured on complex polyrhythmic ratios, with each instrument often playing at its own speed; further, each instrument plays in a highly virtuosic manner; the tension never cedes, even when one duo is heard by itself; different combinations of movements create new contexts each time they are played, hence emphasizing not only the material within each, but also how they connect. The combination of all these innovations and expressions characterize the Third String Quartet as one of Carter's most unusual and ambitious works. In the two quartets that follow (Fourth String Quartet of 1986 and Fifth String Quartet of 1995), Carter scales down on simultaneous novel explorations—in the Fourth Quartet, he focuses on the long-range polyrhythmic design of this piece, while the Fifth Quartet is distinguished by its innovative form.<sup>207</sup>

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perform (*The Music of Elliott Carter*, 78-79, 83). The Arditti Quartet members concur that Carter's Third String Quartet is by far the most difficult of the five to play, but that it is also their favorite to perform because of its complexity and rich expression (unpublished interview with the Arditti Quartet, March 17, 2014 at the Colburn School of Music, Los Angeles). Even at the end of his compositional career, Carter himself regarded his Third Quartet as "the most complicated one of them all" (see Emmerly, "An American Modernist," 24).

<sup>207</sup> The long-range polyrhythmic design of the Fourth String Quartet is discussed at length in Chapter 4; the innovative formal design of the Fifth String Quartet is the central topic of Chapter 5.

## CHAPTER 4

### Connecting the Dots: Compositional Process in Elliott Carter's Fourth String Quartet

#### INTRODUCTION

Deciphering the sketches for Elliott Carter's Fourth String Quartet (1986) can be a daunting task. The sheer amount of material preserved at the Paul Sacher Stiftung is a staggering 1,117 pages.<sup>208</sup> In seemingly impenetrable notation, Carter devotes about 560 pages to morphological analysis of rhythmic patterns, interval structure, and pitch sets. Due to the intricate and extensive nature of these sketches, some scholars have found them to be counter-intuitive in retracing Carter's compositional process, in that the repeated preparatory exercises often *appear* to have no direct relation to the final product. Some even question whether these "daily combinatory gymnastics" can legitimately be classified as sketches.<sup>209</sup> My examination

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<sup>208</sup> The Elliott Carter Collection at the Paul Sacher Stiftung, Basel, Switzerland contains all material pertaining to the Fourth String Quartet: text manuscripts, sketches, three drafts with corrections, parts, and the fair copy. Out of 1,117 pages of sketches, 560 consist of rhythmic and harmonic charts that do not utilize any staff notation; 226 pages are devoted to the descriptive formal outline written on plain paper; the remaining 331 pages are written in music notation, and consist of (a) 111 harmonic sketches exploring the properties of chords and (b) 220 pages addressing the reworkings of specific measures from the quartet.

<sup>209</sup> See Vermaelen, "Elliott Carter's Sketches: Spiritual Exercises and Craftsmanship," 162. In the present study, I will refer to a "sketch" as any preliminary written idea pertaining to the Quartet, undeveloped or more complete, leading to, but not necessarily finding its place in the final version. Typically, a collection of Carter sketches will consist of preliminary, intermediary and final stages: the preliminary sketches contain the early stages of planning, for example, figuring out the harmonic properties of chords, or snippets of some "thematic" material. ("Thematic" material in Carter's late-modernist tradition does not refer to "themes" in the classical sense, but to identifiable entities, which contain specific and distinct characteristics. For more detail on Carter's late-modern thematicism, see Whittall, "The search for order: Carter's *Symphonia* and late-modern thematicism," 57-79). In the intermediary stages, the rhythmic, harmonic, and thematic elements are joined to form partial or full measures that may not necessarily appear in the final version. In the final stages, measures are grouped into segments of varying lengths, which can typically be identified in some form in the final version of the score. After sketching has been done and all aspects of the piece have been addressed, Carter writes a draft of the complete piece. Here, he may make additional adjustments (correcting notes, renotating rhythms/meters, or adding dynamics and articulation markings) before finalizing the last version of the piece in its fair copy, which is printed as the published score.

indicates quite the opposite—the repetition of rhythmic patterns, beat divisions, and calculations is not only methodical, but necessary. With a predetermined continuous four-part polyrhythm of 120:126:175:98 and a specific repertory of intervals assigned to each of the four instruments, these 560 pages are Carter’s careful calculations of rhythmic and harmonic restraints that frame the Quartet.<sup>210</sup>

My analysis of the complete sketch material for the Fourth Quartet identifies four categories of sketches: (1) Rhythmic sketches, addressing the rhythmic patterns of individual instruments and their polyrhythmic alignment; written on plain paper and not utilizing any staff notation, they are not concerned with pitch. (2) Harmonic sketches, mainly in the format of lists and charts of intervallic and chord content, following Carter’s numbering in the *Harmony Book*;<sup>211</sup> these charts do not allude to any rhythmic aspects. (3) Descriptive sketches containing phrases and summaries of formal outlines, dynamics, articulation, or character of certain passages. (4) A synthesis of all three types, translated into staff notation and correlating to particular measures in the published score.

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<sup>210</sup> For more discussion on the use of Carter’s sketches to explain some of the composer’s complex rhythmic and harmonic ideas in the Fourth String Quartet, see Bernard, “The String Quartets of Elliott Carter,” 258-266; Link, “Long-range Polyrhythms in Elliott Carter’s Recent Music” 49-56, 96-101; Meyer and Shreffler, *Elliott Carter: A Centennial Portrait in Letters and Documents*, 266-67; Schiff, “Elliott Carter’s Harvest Home,” 7-9; Schiff, *The Music of Elliott Carter*, 86-92; Schmidt, “‘I try to write music that will appeal to an intelligent listener’s ear.’ On Elliott Carter’s string quartets,” 177-182. Bernard accounts for a general description of the structural polyrhythm, the interval distribution and the principal harmonic language of the Quartet. Link’s dissertation on long-range polyrhythms in Carter’s music of the 1980s discusses the nature of polyrhythmic stream in the Quartet, and offers detailed calculations on the speed of polyrhythmic stream, cyclic durations, spans of maximum convergence and divergence, and formulas for prime factorizations of the pulse totals and beat divisions at various tempi; Meyer and Shreffler give a brief account of the different characters in the four instruments, their cooperative stance and the Quartet’s discontinuous flux of musical discourse; Schiff gives a general introduction to the Quartet in *The Music of Elliott Carter*, with basic characteristics of movements and instruments’ characters; in his 1988 article, he elaborates on the harmonic structure of the piece; Schmidt comments on Carter connecting the space of the four instruments’ independent tempo layers with a formal process.

<sup>211</sup> Carter, Elliott. *Harmony Book*, eds. Nicholas Hopkins and John Link. New York: Carl Fischer, LLC, 2002.

At first reading, the sketches seem to lack an intermediate compositional phase; Carter seemingly shifts from scattered dots to a final score. However, by focusing on the details of each folio—calculations of the pulse divisions, subtle changes in rhythmic alignments, and harmonic charts—a coherent system emerges. My study of these sketches reveals a logical hierarchy: after outlining the general long-range polyrhythmic structure of the quartet,<sup>212</sup> Carter uses dots to map a distinct characteristic rhythmic pattern to each instrument; by superimposing the underlying pulsations of each part, he marks points of polyrhythmic alignment, and forms a higher-level composite rhythmic structure; within a small subset of measures, Carter transforms this dot-notation into elaborate rhythmic figures that fit within the previously established framework of aligned pulses. With the thoroughly-planned polyrhythmic details of the four instruments—their tempi, ratios, rhythmic relations, motives and cycles—Carter assigns unique intervallic restraints to each instrument that typically yield all-interval twelve-tone chords with a characteristic parallel-inversional invariance.<sup>213</sup> Lastly, Carter adds a general formal outline of the piece, descriptive character of instruments in certain sections, and the desired effects. He repeats these stages until all sections of the piece have been completed.

In this chapter, I will describe how this particular compositional process—composing by sections where elements are worked out individually—allowed Carter to omit the intermediate compositional stage. I argue that by the time Carter finished sketching the rhythmic, harmonic, and formal processes, he had already conceived the entire quartet, and

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<sup>212</sup> Long-range polyrhythms are also referred to as large-scale polyrhythms and structural polyrhythms. This complex rhythmic structure, representative of Carter's works of the 1980s, will be discussed in detail in the section addressing the rhythmic process.

<sup>213</sup> This property of all-interval twelve-tone chords will be discussed in detail in the section pertaining to the harmonic sketches.

was ready to write out the piece in nearly fair-copy format. This will explain why sketches of the final stages are few in number, fragmented, and incomplete. Further, it will account for the lack of intermediary or final stages of sketches for certain sections of the quartet, such as the introductory measures and the Coda. Lastly, I will establish the relation between Carter's precise calculations on the page and his intuition, and discuss why Carter used this approach in composing the Fourth Quartet.

### **RHYTHMIC PROCESS**

Since his Cello Sonata (1948), Carter continuously sought ways to reform rhythm. He has employed a variety of complex and innovative ways of treating time in his music, which has become the most recognizable trait of his oeuvre. In the Cello Sonata he introduced proportional tempo changes and polyrhythms, where two instruments seem rhythmically independent: while the piano plays in the strict tempo and rhythm, the cello plays in an expressive rubato style.<sup>214</sup> In the First String Quartet (1951), Carter's process of metrical modulation was in full use: shifts in tempo and meter become integrated with surface rhythms in such a way as to render the transitions from one tempo to another virtually seamless. With his compositions of the 1960s, Carter deliberately combined different simultaneous speeds not only at the surface level, but also at a structural level. With *A Mirror on Which to Dwell* (1975), Carter used long-range polyrhythm as a structuring and form-generating technique for the first time.<sup>215</sup> In his compositions of the 1980s, Carter focused on further developing rhythmic

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<sup>214</sup> Schiff, *The Music of Elliott Carter*, 21.

<sup>215</sup> Coulembier, "Elliott Carter's Structural Polyrythms in the 1970s: 'A Mirror on Which to Dwell,'" 12. Coulembier notes that Carter's compositions of the 1960s, such as the Double Concerto (1961) and the Concerto for Orchestra (1969) were the roots of the technique of long-range polyrythms, or as he prefers to call them, structural polyrythms. Although long-range polyrythms appear in almost every composition Carter wrote

expression. Virtually all the works he wrote during this decade employ long-range polyrhythms: rhythms that guide both the large-scale and local rhythmic design of a composition.<sup>216</sup> By the time he completed his Fourth Quartet (1986), Carter had reached the apex: his use of complex polyrhythms, multiple tempi, and different pulse streams demonstrate a highly precise and sophisticated rhythmic language, present at all levels of the composition and guiding the formal organization of the piece. My sketch analysis shows that rhythm was not only the most important element in the Quartet, but it was the primary conceptual idea.

In this quartet, Carter assigns a distinct speed to each of the four instruments, creating a structural polyrhythm of 120:126:175:98 which runs from the beginning to the end of the piece. This polyrhythm results in a rhythmic relation of 8:7:6:5 but arranged vertically, from top to bottom, as 8:6:5:7. Thus, the first violin is rhythmically characterized by eight thirty-second notes, the second violin by six triplets, the viola by quintuplets, and the cello by septuplets. While the tempos project the actual note values composed in each of the four parts (which forms the polyrhythm of the whole piece), the 8:6:5:7 rhythmic relation represents the typical beat division which appear in each of the four parts, and which remains consistent for nearly the entirety of the piece.<sup>217</sup>

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during the 1980s, Coulembier's analyses of "Anaphora," "Insomnia" and "O Breath" from the 1975 song cycle *A Mirror on Which to Dwell*, show that the technique was used as a form-generating tool in these three songs.

<sup>216</sup> See Link, "Long-range Polyrhythms in Elliott Carter's Recent Music." Link examines six compositions Carter wrote during the decade of the 1980s, when his rhythmic practice has undergone fundamental changes, characterized most notably by long-range polyrhythms. This emphasis on the rhythmic process is evident in *Night Fantasies* (1980), *Triple Duo* (1983), *Esprit Rude / Esprit Doux* (1984), *Penthode* (1985), *Oboe Concerto* (1986-1987), and *Enchanted Preludes* (1988). Link focuses on Carter's construction of polyrhythms in these works, and how he builds the entire compositions based on this multi-temporal skeleton.

<sup>217</sup> There are only a handful of short deviations from this rhythmic relation, typically at points of metric modulation. For instance, m. 324 is an example of such deviation. Here, the first violin abandons its characteristic thirty-second-note pattern for triplets, in order for the tempo modulation of  $\text{♪} = \overset{3}{\text{♪}}$  to take place in m. 325. As the other three parts maintain their characteristic rhythmic patterns, it is the change of beat division in the first violin that acts as the agent for metric modulation here.

The specific beat division is meticulously calculated on every page of the rhythmic sketches. At first, these polyrhythmic figures appear cumbersome, repetitive, unnecessary, and perhaps even compulsive. However, a close inspection reveals important variations within each figure: Carter carefully calculates the points when the pulsations in each rhythmic grouping are sounding, their partial or full coincidence points, that is, a moment in which pulsations from two, three, or all four instruments coincide, and the length of cycles—time needed to pass from one coincidence point to the next. Carter writes the rhythmic details for the cello first. Pulse layers, as they traverse through a cycle, are marked by an extended stem downward. The longest stem in a grouping, marked by an “x” directly underneath it, denotes the sound attacks—the sounding pulses versus those that contain rests or carry a tie from the previous beat(s). When Carter adds the remaining three instruments, he denotes their attacks by dots (Example 1). A circled dot marks either a double-, triple- or quadruple-stop. Each instrument’s part, with its rhythmic figuration, is color-coded consistently in all sketches: blue pencil is reserved for the first violin, purple for the second violin, red for the viola, and green for the cello.

With so many variables represented within the rhythmic structure, it becomes clear why a detailed break-down of each measure is needed. The four instruments are playing in different speeds yielding a particular rhythmic ratio, different cycle durations, and carefully placed points of attack so that only a single one will be heard at a time; such rhythmic design requires precise calculations for each measure. For instance, with the formulae for the speed of polyrhythmic stream, and the number of beats between pulsations, Carter obtains the following calculations (Fig. 1):<sup>218</sup>

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<sup>218</sup> The calculations in Figures 1a and 1c can be found as quoted in many sketches in this sketch collection. The formulas for calculations of beats between pulsations, or Figure 1b, is not directly quoted in the sketches, but is



**Figure 1a:** Elliott Carter, String Quartet No. 4: Summary of calculations

$C = 23\frac{1}{3}$ minutes	$C = \text{Cyclic Duration of a polyrhythm}$ $C = P/S$
$P = 120:126:175:98$	$P = \text{Pulsation Total of a polyrhythmic stream}$ $P = S \times C$
$B = \frac{7 \times T}{36} : \frac{5 \times T}{27} : \frac{2 \times T}{15} : \frac{5 \times T}{21}$	$B = \text{Number of beats between pulsations}$ $B = (T \times C)/P$
$S = 5\frac{1}{7} : 5\frac{2}{5} : 7\frac{1}{2} : 4\frac{1}{5}$	$T = \text{Notated Tempo}$
	$S = \text{Speed of a polyrhythmic stream}$ (measured in pulsations per minute) $S = P/C$

**Figure 1b:** The number of beats occurring between pulsations at  $\downarrow = 63$

Violin I:	$B = T \times \frac{7}{36} = \frac{63 \times 7}{36} = \frac{49}{4} = 12\frac{1}{4}$
Violin II:	$B = T \times \frac{5}{27} = \frac{63 \times 5}{27} = \frac{35}{3} = 11\frac{2}{3}$
Viola:	$B = T \times \frac{2}{15} = \frac{63 \times 2}{15} = \frac{42}{5} = 8\frac{2}{5}$
Cello:	$B = T \times \frac{5}{21} = \frac{63 \times 5}{21} = 15$

**Figure 1c:** Speed of polyrhythmic streams measured in pulsations per minute

Violin I:	$S = \frac{120}{23\frac{1}{3}} = 5.142857$
Violin II:	$S = \frac{126}{23\frac{1}{3}} = 5.4$
Viola:	$S = \frac{175}{23\frac{1}{3}} = 7.5$
Cello:	$S = \frac{98}{23\frac{1}{3}} = 4.2$

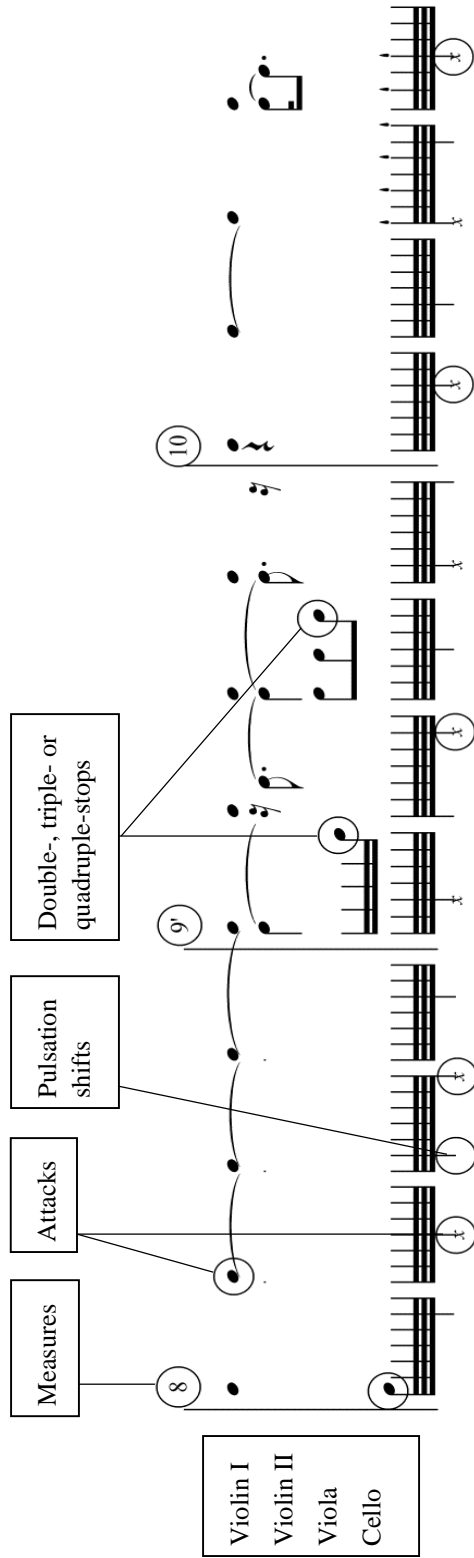
summarized in Link's dissertation (Link 1994, 51-52, 55, 119). Link calculates the detailed formulae for the speed of polyrhythmic stream, the cyclic duration of polyrhythms, the pulsation total of polyrhythmic streams, and the number of beats between pulsations in the Fourth String Quartet. The formula for the calculation of the speed of polyrhythmic stream is  $S=P /C$ ; the formula for the calculation of the number of beats between pulsations is  $B = (T \times C)/P$ . C stands for the cyclic duration of a polyrhythm, defined as the amount of time required to traverse one cycle; cycle is the motion from one coincidence point to the next. P is the pulsation total of a polyrhythmic stream, defined as the number of pulsations per cycle in a given stream (see Link 1994, 8). B, the number of beats between pulsations of a given stream, is related to the notated tempo, the cyclic duration, and the stream's pulsation total (Link 1994, 30-31). S stands for the speed of a polyrhythmic stream, which is defined as the number of pulsations per minute (Link 1994, 28). T is the notated tempo.

**Example 1:** Elliott Carter, String Quartet No. 4, Polyrhythmic graph, mm. 8-24' (score mm. 13-34)

(a) Rhythmic sketch from the Elliott Carter Collection, Paul Sacher Stiftung, Basel (used by permission)

The image shows a handwritten rhythmic sketch on a grid background, titled "STRING QUARTET NO 4" and "1966 E CARTER". It consists of five horizontal staves, each representing a different instrument. The notation is highly complex and polyrhythmic, with various note values, rests, and accents. The sketches are written in blue, green, and pink ink. The first staff has a circled "10" above it. The second staff has a circled "10" above it. The third staff has a circled "10" above it. The fourth staff has a circled "10" above it. The fifth staff has a circled "10" above it. The sketches are arranged in a way that shows the interaction of different rhythmic patterns across the instruments. The notation includes many vertical lines, some with arrows, and some with circled numbers. The overall appearance is that of a working draft or a sketch for a score.

(b) Extracted detail from the rhythmic sketch, mm. 8-10 (score mm. 13-15), shows pulse layers, points of attacks, and double-, triple-, and quadruple-stops in the four-strand polyrhythmic alignment



These calculations (summarized on the bottom of the long-range polyrhythmic graph shown in Example 2) tell us that, for instance, in a tempo of MM 63, the first violin's pulsations will occur every  $12\frac{1}{4}$  beats, the second violin's every  $11\frac{2}{3}$  beats, viola's every  $8\frac{2}{5}$  beats, and cello's pulsations will occur every fifteenth notated beat. The complexity of this design is further elevated by the addition of frequent meter changes and twenty six metric modulations, since the ratio of four polyrhythmic streams (120:126:175:98) and the speed of each stream individually (Violin I at 5.14 pulsations per minute, Violin II at 5.4, Viola at 7.5 and Cello at 4.2) remains unchanged throughout the entire composition.

The first sketch of the quartet (transcribed in Example 2) is a long-range polyrhythmic graph, and it lays out a general rhythmic design that guides both the large-scale and local rhythmic events.<sup>219</sup> The graph contains four horizontal lines, one for each instrument, which are color-coded according to the established scheme. The colors and the characteristic rhythmic patterns reveal that the instruments are not stacked in order—rather the cello is on top, followed by the second violin, then the first violin, and finally the viola on the bottom. Such ordering reflects the durations of periods between attacks in each instrument: the longest spans are in the cello, four measures apart, progressively decreasing to the shortest ones in the viola, which occur every other measure. Each measure outlines a general rhythmic event—the characteristic rhythmic pattern associated with each instrument (Violin I's sixteenth notes, Violin II's

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<sup>219</sup> Most of the sketches in the String Quartet No. 4 collection are not dated; however, I refer to the long-range polyrhythmic graph as the first sketch for the Quartet because Carter's method incorporated the first step of writing out large-scale rhythmic patterns in his compositions that are formally guided by the long-range polyrhythms, before he would write the music. In his conversation with Allen Edwards, he explains: "...I was aware that one of the big problems of contemporary music was that irregular and other kinds of rhythmic devices used in it tended to have a very small-scale cyclical organization—you heard patterns happening over one or two measures and no more. For this reason, one of the things I became interested in over the last ten years was an attempt to give the feeling of both smaller and larger-scale rhythmic periods. One way was to set out large-scale rhythmic patterns before writing the music, which would then become the important stress points of the piece, or section of a piece. These patterns or cycles were then subdivided in several degrees down to the smallest level of the rhythmic structure, relating the detail to the whole," Edwards, *Flawed Words and Stubborn Sounds*, 111.

triplets, Viola's quintuplets, and Cello's downbeats), beats on which these rhythmic events occur, and the placement of sound attacks designated by dots. From this general layout, Carter "zooms-in" onto a small section of several measures and gradually adds details.

Focusing on sketch material for mm. 74-83 (score mm. 91-103)<sup>220</sup> we can see how the stages of Carter's compositional process unfold.<sup>221</sup> In the first of these phases, the rhythmic layout is still general and resembles the long-range polyrhythm graph with slightly increased rhythmic activity: Carter fills in several more beats with the instruments' distinct 8:6:5:7 patterns, showing how polyrhythms for two- or three-parts may occur simultaneously. Next, Carter develops the cello's, viola's, and second violin's rhythmic grids individually. Then, he joins the three parts in one graph, showing their points of attack notated by dots, stops notated by circled note-heads, and shift in cycles with extended stems (transcribed in Example 3). Calculations on the page indicate the number of pulses and the length of a cycle for each instrument. For instance, since this section is marked at a tempo of MM 63 in the score (hence we can apply the calculations derived above), the cello's pulsations will occur every fifteenth notated beat. On the graph in Example 3, we can see that the stem in the cello's septuplets is extended downward every fifteenth pulse.

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<sup>220</sup> There is a discrepancy between measure-numbering systems in the published score and the sketches. In my discussions and examples, I will refer to both systems, parenthesizing the published score measures. The inconsistency in the numbering systems arises from several factors: certain measures in the published score were not sketched at all (such as the opening two measures of the Quartet); some measures were added after Carter sketched a specific segment depicted in the examples; lastly, Carter applied a method of appending prime marks to measure numbers in sections that are not notated in MM 63. This notation allows Carter to keep track of pulsations and cycles for each polyrhythm as the piece undergoes numerous metric modulations.

<sup>221</sup> I picked this particular section of the quartet because it is one of a very few examples where Carter drafted all four categories of sketches—rhythmic, harmonic, formal and synthesis of all three—thus providing a more complete picture of his compositional process.

**Example 2:** Elliott Carter, String Quartet No. 4, Long-range polyrhythms, page 1 (transcription)

1.  $\text{♩} = 60$

Cello  
Violin II  
Violin I  
Viola

(189)	(315)		
$\frac{3}{35}$	$\frac{5}{42}$	$\frac{1}{15}$	
5.4	7.5	4.2	

**Example 3:** Elliott Carter, String Quartet No. 4, Rhythmic detail: second violin, viola, cello, mm. 76-79 (score mm. 93-97)  
 (a) Polyrhythmic alignment for the second violin, viola, and cello in mm. 76-79 (score mm. 93-97)

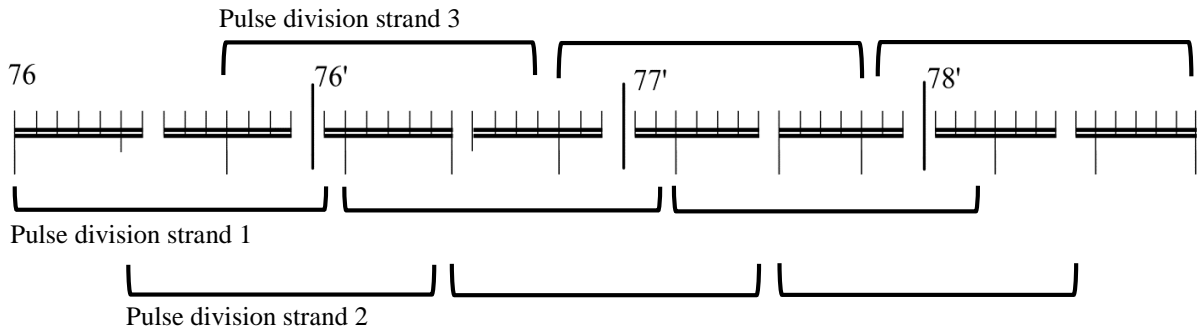
Violin II  
 Viola  
 Cello

76      76'      77'      78'      78'

79

$\frac{420}{2} = 210$        $\frac{9}{5} = 75.6$        $\frac{7}{5} \times 42 = 58.8$   
 $\frac{420}{4} = 105$        $\frac{9}{7} = 54$        $\frac{7}{3} \times 42 = 98$   
 $\frac{420}{8} = 52.5$        $\frac{9}{2} = 189$        $\frac{7}{15} \times 42 = 19.6$   
 $\frac{420}{7} = 60$        $\frac{9}{4} = 94.5$        $\frac{7}{15} \times 84 = 39.2$

(b) Extracted detail: three strands of fifteen-pulse beat division in the cello, mm. 76-78' (score mm. 93-96)



This causes the shifts in each measure to be offset by one pulse, thus occurring on the first pulse in m. 76, on the second in m. 76', on the third in m. 77', on the fourth in m. 78, and on the fifth in m. 79 (shown in the extracted detail in Example 3b). Similarly, we can see that there are eight pulses between the extended stems in the viola's part, and fifteen in the second violin's line. Therefore, in the notated meter of 4/4, the cello requires three measures (or seventy-seven pulsations of thirty-second note septuplets) to complete its cycle—to have its downbeat coincide with the pulse falling at the beginning of the septuplet grouping—the second violin requires five measures, and the viola requires two full measures (or eighty sixteenth-note quintuplet pulsations). Following this pattern, it becomes evident that the partial coincidence points occur only when the instruments share common factors among the pulsation totals. Recalling Figure 1a, the pulsation totals for each instrument are: 120 for the first violin, 126 for the second violin, 175 for the viola, and 98 for the cello. By factorizing the pulsation totals for each instrument, we can find the greatest common factors for each instrument (Figure 2):



**Figure 2:** Elliott Carter, String Quartet No. 4: Prime factorizations of the pulsation totals

Violin I: $120 = 2^3 \times 3 \times 5$
Violin II: $126 = 2 \times 3^2 \times 7$
Viola: $175 = 5^2 \times 7$
Cello: $98 = 2 \times 7^2$

As John Link observes, the prime factorization of pulsation totals shows that there are common factors among some instruments, but not all four.<sup>222</sup> Therefore, 120:126:175:98 is a single-cycle polyrhythm. However, groups of two or three instruments coincide at times when they share common factors: the first violin shares factors of 6, 5, and 2 with the second violin, the viola, and the cello, respectively; the second violin shares a factor of 7 with the viola, and 14 with the cello; the viola and cello share a factor of 7 (Figure 3):

**Figure 3:** Elliott Carter, String Quartet No. 4: Greatest common factors (GCF) among pulsation totals

GCF among instrument pairs	GCF among instrument trios
VI I + VI II: GCF = 6	VI I + VI II + Cello: GCF = 2
VI I + Vla: GCF = 5	VI II + Vla + Cello: GCF = 7
VI I + Cello: GCF = 2	
VI II + Vla: GCF = 7	
VI II + Cello: GCF = 14	
Vla + Cello: GCF = 7	

<sup>222</sup> For a further discussion on factorizations of each polyrhythmic strand, and detailed calculations of full and partial coincidence points, see Link, “Long-Range Polyrythms in Elliott Carter’s Recent Music,” 49-56 and 96-101 (especially 49-50 and 96-97).

Once Carter fully exploits the possibilities of this generally-constructed rhythmic outline, he writes the specific rhythmic variations. Usually, he starts with the first violin alone, and then gradually adds other parts (transcribed in Example 4). Here, the violin's rhythmic detail corresponds accurately to the rhythm in the printed score (Example 14b). Underneath the violin's specific rhythm, Carter sparingly adds general rhythmic figurations of the other three instruments: the second violin's triplets, the viola's quintuplets, and the cello's downbeats.

**Example 4:** Elliott Carter, String Quartet No. 4, Rhythmic detail, first violin, mm. 74'-83' (score mm. 91-103)

Violin I
Violin II
Viola
Cello

The musical score is arranged in four systems, each corresponding to a measure number. The first system shows measures 74' and 75' for Violin I, with a triplet of eighth notes in measure 76'. The second system shows measures 77' and 78' for Violin I, with a triplet of eighth notes in measure 78' and a quintuplet of eighth notes in measure 79'. The third system shows measures 79' and 80' for Violin I, with a triplet of eighth notes in measure 81' and a quintuplet of eighth notes in measure 82. The fourth system shows measures 82' and 83' for Violin I, with a triplet of eighth notes in measure 82' and a quintuplet of eighth notes in measure 83'. The other instruments (Violin II, Viola, Cello) have sparse rhythmic markings, including triplets and quintuplets, and downbeats.

The specific rhythms of the other instruments are included in the next stage (transcribed in Example 5). The added parts show not only their rhythmic groupings, but also attacks, rests, polyrhythmic alignment, subdivisions of the beat, and the beginnings and endings of their cycles. In the last stages of the rhythmic sketches, Carter translates the instruments' basic rhythmic configurations into exact rhythmic durations, complete with beat count, as shown in a sketch transcribed in Example 6. When the finest rhythmic details for each section are completed, Carter starts the process anew for the next set of measures.

**Example 5:** Elliott Carter, String Quartet No. 4, Polyrhythmic detail, mm. 78'-80' (score mm. 96-99)

The image displays a musical score for four string instruments: Violin I, Violin II, Viola, and Cello. The score is divided into three measures: 78', 79, and 80'.  
 - **Violin I:** Features melodic lines with various note values and rests, including a circled '0' in measure 78 and a circled '1' in measure 79.  
 - **Violin II:** Shows a rhythmic pattern of eighth and sixteenth notes.  
 - **Viola:** Displays a complex polyrhythmic pattern with many sixteenth notes.  
 - **Cello:** Shows a rhythmic pattern with many sixteenth notes and rests, including a circled '1' in measure 79.  
 The score uses various musical notations such as beams, slurs, and circled numbers to indicate specific rhythmic details and attacks.

**Example 6:** Elliott Carter, String Quartet No. 4, Rhythmic detail with pulse count, mm. 74-78' (score mm. 91-96)

Measures	74	74'	75'	76'
Violin I				
Pulse durations	48	18 6 24 24 3 9 12 24 12 12 24 18 6 48	54 54	54 54
Pulse totals	57	57	57	56

78	78'
12 24 15 9 24 16 8 24 15	15 15
51	49

9 12 24 8 16 24 12 12 24	53
16 24 9	52

	= 3
	= 4
	= 6
	= 8
	= 12
	= 18
	= 24

Pulse values scale	↑
--------------------	---

Rhythmic sketches are accompanied by numerous pages containing fractions, ratios, basic arithmetic calculations, linear, and second-degree polynomial equations. These are methodical calculations of beat durations, beat totals, the number of beats between each cycle, and their values as they transform through numerous meter changes and metric modulations. For instance, in the previous example, Carter writes the pulse values under each note, and then adds the totals to get the precise pulse duration of a sustained sound. On the bottom right side of the page, he assigns a pulsation value to each note: a thirty-second note equals three pulses, a sixteenth note of a triplet equals four, a sixteenth note is six, etc. These calculations of pulse totals are necessary to ensure that pulsation, as they traverse through cycles, adhere to the established pattern of rotation, and that all four instruments will not have simultaneous attacks.

On other folios, Carter calculates the speeds of each instrument in all tempi notated in the score: ♩ = 63, ♩. = 42, ♩ = 54, ♩ = 72, and so on (transcribed in Example 7). Through all of the tempo modulations, the speed of each instrument remains the same: 5.14 for the first violin, 5.4 for the second violin, 7.5 for the viola, and 4.2 for the cello. He also calculates the beat values in each tempo, the total number of beats (1470), and the required time for the beat total (23'20"). From these calculations, Carter obtains the duration of cycles for each instrument (Figure 4):

**Figure 4:** Elliott Carter, String Quartet No. 4: Cycle durations

Violin I: 1470 beats $\times \frac{1}{63} = 23\frac{1}{3}$ minutes	Viola: 1470 beats $\times \frac{1}{56} = 26.5$ minutes
Violin II: 1470 beats $\times \frac{1}{60} = 24.5$ minutes	Cello: 1470 beats $\times \frac{1}{49} = 30$ minutes

**Example 7:** Elliott Carter, String Quartet No. 4, Speed calculations

	$\downarrow = 63$	$\downarrow = 42$	$\downarrow = 54$	$\downarrow = 72$	$\downarrow = 45$		$\downarrow = 94.5$		
<b>Violin I</b>	$63 \times \frac{4}{49} = 5.1428571$	$42 \times \frac{6}{49}$	$54 \times \frac{2}{21}$	$\frac{72}{14} \times \frac{4}{57}$	$45 \times \frac{4}{35}$	$60 \times \frac{3}{35}$	$\left( \frac{105 \times 12}{245} \right)$	$\left( \frac{94.5 \times 8}{147} \right)$ NO	$78.75 \times \frac{16}{245}$
<b>Violin II</b>	$63 \times \frac{3}{35} = 5.4$	$42 \times \frac{9}{10}$	$\frac{54}{10}$	$72 \times \frac{3}{40}$	$45 \times \frac{6}{50}$	$60 \times \frac{9}{100}$	$\frac{105 \times 9}{175}$	$94.5 \times \frac{2}{35}$	$78.75 \times \frac{12}{175}$
<b>Viola</b>	$63 \times \frac{5}{42} = 7.5$	$42 \times \frac{5}{28}$	$54 \times \frac{5}{36}$	$72 \times \frac{5}{48}$	$\frac{45}{6}$	$\frac{60}{8}$	$\frac{105}{14}$	$94.5 \times \frac{5}{63}$	$78.75 \times \frac{2}{21}$
<b>Cello</b>	$\frac{63}{15} = 4.2$	$\frac{42}{10}$	$54 \times \frac{7}{90}$	$72 \times \frac{7}{120}$	$45 \times \frac{7}{75}$	$60 \times \frac{7}{100}$	$\frac{105}{25}$	$94.5 \times 2$	$78.75 \times \frac{4}{75}$
total of $\frac{1470}{63}$ beats of 63—(23' - 20")									

The Fourth Quartet uses a four-part in-phase polyrhythm, meaning one cycle represents a motion from one coincidence point to the next. The streams of all four instruments begin together on the downbeat of m. 3, and end together on the last attack of the piece after completing 120, 126, 175, and 98 pulsations, respectively. The chart above (Ex. 7) reveals that the duration of the first violin's cycle is equivalent to the duration of the entire quartet: 23'20". With the cycles of the other instruments exceeding this time frame, the second violin, viola and cello do not complete their grand-scheme cycles within the scope of the quartet. Carter, however, stops the cycles of the second violin, the viola and the cello, when the first violin's cycle ends. This brings the Quartet to a close with all four instruments playing the last chord of the quartet on the same beat.<sup>223</sup>

<sup>223</sup> See Link, "Long-range Polyrhythms in Elliott Carter's Recent Music," 50, 96, for factorization of polyrhythmic strands and for finding the Greatest Common Factor (GCF) for instrument pairs, which calculate the precise coincidence points when two or three instruments will sound together (partial coincidence points). Since four polyrhythmic strands share no common factors, once the stream begins, there will not be another full coincidence point, that is, a beat on which all four instruments will sound together, until the completion of the four-part polyrhythmic cycle.

## HARMONIC PROCESS

Once Carter composes all rhythmic and metric aspects of one small section, he then adds the intervallic and harmonic elements. Just as rhythmic sketches do not allude to any pitches, intervals or harmonies, harmonic sketches lack any rhythmic indications. While the emphasis of the Quartet is on the development of an intricate rhythmic language, Carter does not abandon other musical elements; rather, this Quartet also contains a complex harmonic structure.

Carter assigns each instrument a distinct set of intervals, defined in unordered pitch, which are not shared among the instruments,<sup>224</sup> except for the interval of 6, which is shared by the violins: the first violin is constricted to intervals 2, 6, and 9; the second violin—3, 6, and 11; the viola—4, 7, and 10; and the cello—1, 5, and 8. Carter expresses compound intervals as equivalent to their simple intervallic form,<sup>225</sup> hence by restricting each instrument to a particular repertory of intervals, he is not concerned with the specific intervals between the pitches or pitch classes, but equivalence classes of intervals between pitches.<sup>226</sup> Further, Carter does not equate an interval's inversion to the original, as he often uses them for different musical effects.<sup>227</sup>

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<sup>224</sup> In the Second String Quartet (1959), Carter began a compositional technique of assigning each instrument a repertoire of intervals which were not shared among the four instruments. This technique, combined with assigning distinct rhythms and tempi, allowed Carter to individualize the character of each instrument.

<sup>225</sup> Heinemann, "Melodic invention in Carter's recent music," 192. Heinemann notes that in the Second String Quartet, Carter distinguishes between compound intervals and their simple equivalents (such as assigning the unordered pitch interval 4 to the second violin, and its octave equivalence, unordered pitch interval 16 to the first violin). However, he abandoned this practice in his later works.

<sup>226</sup> *Ibid.*, 192. Heinemann refers to this type of interval type as unordered pitch-interval class (upic), which can be formalized as follows: for any two pitches  $x$  and  $y$ ,  $\text{upic}(x,y) = |y-x| \pmod{12}$ .

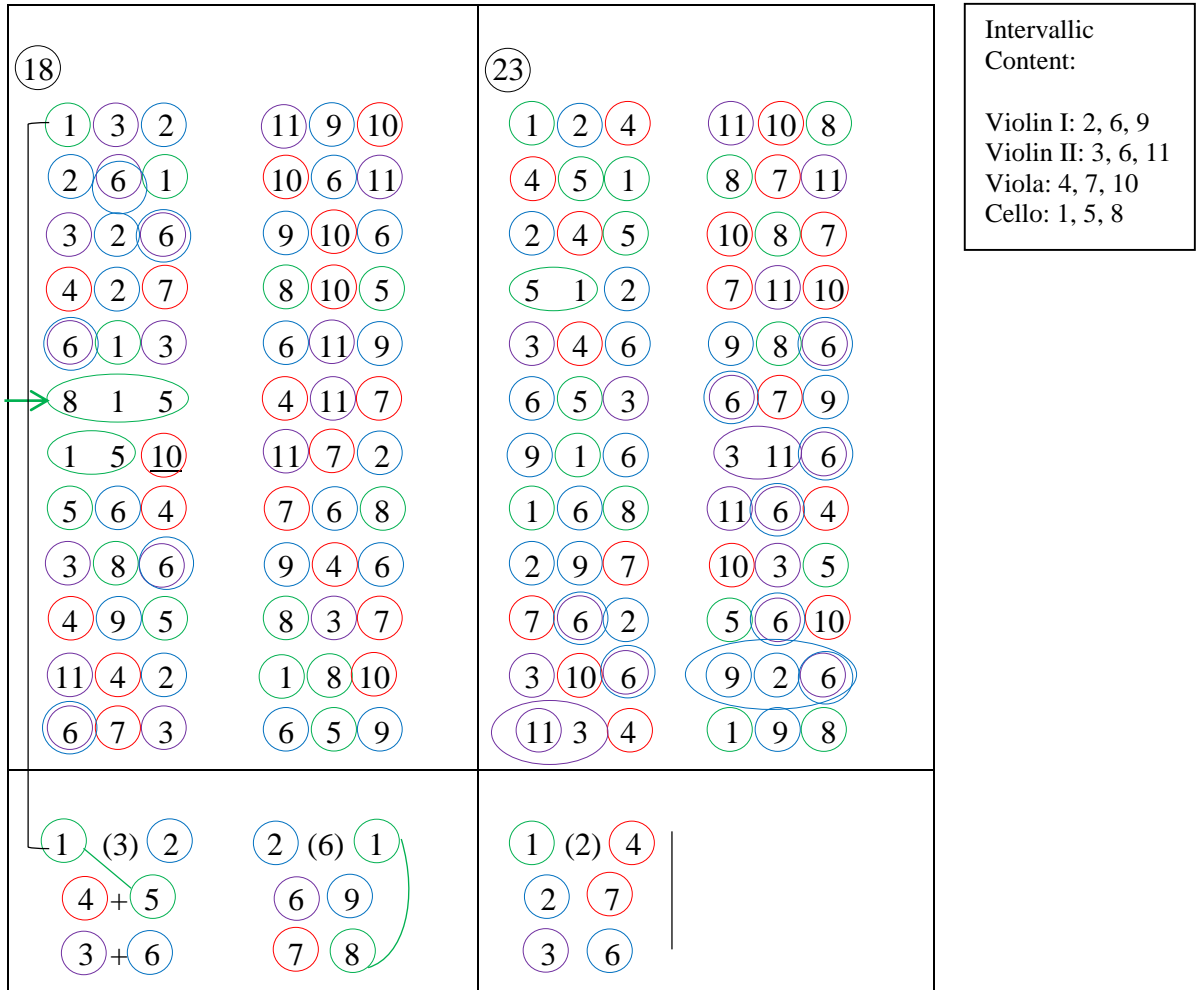
<sup>227</sup> In the First Quartet (1951), Carter considered intervals and their inversions (for instance, a major sixth and a minor third) as having same musical qualities. However, with the Second String Quartet (1959), he started differentiating between an interval and its inversion, considering them two different intervals. He continued to exaggerate their distinctiveness since then. See Bernard, "An Interview with Elliott Carter," 202.

The harmonic sketch transcribed in Example 8 depicts the particular interval distribution among the four parts. Continuing with the color scheme established in the rhythmic sketches (intervals pertaining to the first violin are circled in blue, second violin in purple, viola in red, and cello in green), Carter explores the harmonic properties of intervals. In this example, he writes the interval combinations that produce the two all-interval tetrachords (AITs): (0146), or chord 18 according to his numbering system in the *Harmony Book*, and (0137) or chord 23. The AIT columns are divided into two sets of three numbers. The first set of three numbers in each line represents intervals that combine to yield a particular AIT. Starting arbitrarily on pitch-class (pc) 0 and concatenating intervals 1, 3, and 2, one after the other (column “18,” line 1), creates (0146); in the second line, linking together intervals 2, 6, and 1 creates another statement of (0146); the third line contains intervals 3, 2, and 6 to create (0146), etc. The second set of three numbers in each line is the inversion of the first, so starting on pc 0 on the first line of column “18” and joining intervals 11, 9, and 10 creates tetrachord (0e86), which is T<sub>0</sub>I of (0146), etc. (Figure 5).

The color-coding shows different ways of forming these AITs from the various combinations of intervals from the instruments’ distinct repertoires. For instance, the first line in the “18” column indicates that the cello (1), the second violin (3), and the first violin (2) collaborate to form (0146). The green circle around the sixth line in this column, with an arrow pointing to it, indicates that this ordering uses only the intervals of a single instrument—the cello—as intervals 8, 1, and 5 are all part of its repertoire. A similar observation can be made for intervals 9, 2, and 6, circled in blue in the “23” column, whose ordering produces (0137) using only the first violin’s intervals.



**Example 8:** Elliott Carter, String Quartet No. 4, Intervallic content and distribution



**Figure 5a:** Interval orderings in column “18” of Example 8

<b>Chord 18 (0146)</b>	
Interval ordering on pc 0	Inversions of interval ordering on pc 0
1, 3, 2 → (0146)	11, 9, 10 → (068e) = T <sub>0</sub> I of (0146)
2, 6, 1 → (0289) = T <sub>8</sub> of (0146)	10, 6, 11 → (034t) = T <sub>8</sub> I of (0146)
3, 2, 6 → (035e) = T <sub>11</sub> of (0146)	9, 10, 6 → (0179) = T <sub>11</sub> I of (0146)
4, 2, 7 → (0146)	8, 10, 5 → (068e) = T <sub>0</sub> I of (0146)
6, 1, 3 → (067t) = T <sub>6</sub> of (0146)	6, 11, 9 → (0256) = T <sub>6</sub> I of (0146)
8, 1, 5 → (0289) = T <sub>8</sub> of (0146)	4, 11, 7 → (034t) = T <sub>8</sub> I of (0146)
1, 5, 10 → (0146)	11, 7, 2 → (068e) = T <sub>0</sub> I of (0146)
5, 6, 4 → (035e) = T <sub>11</sub> of (0146)	7, 6, 8 → (0179) = T <sub>11</sub> I of (0146)
3, 8, 6 → (035e) = T <sub>11</sub> of (0146)	9, 4, 6 → (0179) = T <sub>11</sub> I of (0146)
4, 9, 5 → (0146)	8, 3, 7 → (068e) = T <sub>0</sub> I of (0146)
11, 4, 2 → (035e) = T <sub>11</sub> of (0146)	1, 8, 10 → (0179) = T <sub>11</sub> I of (0146)
6, 7, 3 → (0146)	6, 5, 9 → (068e) = T <sub>0</sub> I of (0146)

**Figure 5b:** Interval orderings in column “23” of Example 8

<b>Chord 23 (0137)</b>	
<b>Interval ordering on pc 0</b>	<b>Inversions of interval ordering on pc 0</b>
1, 2, 4 → (0137)	11, 10, 8 → (068e) = T <sub>0</sub> I of (0137)
4, 5, 1 → (049t) = T <sub>9</sub> of (0137)	8, 7, 11 → (034t) = T <sub>9</sub> I of (0137)
2, 4, 5 → (026e) = T <sub>11</sub> of (0137)	10, 8, 7 → (0179) = T <sub>11</sub> I of (0137)
5, 1, 2 → (0568) = T <sub>5</sub> of (0137)	7, 11, 10 → (068e) = T <sub>5</sub> I of (0137)
3, 4, 6 → (0137)	9, 8, 6 → (0256) = T <sub>0</sub> I of (0137)
6, 5, 3 → (026e) = T <sub>11</sub> of (0137)	6, 7, 9 → (034t) = T <sub>11</sub> I of (0137)
9, 1, 6 → (049t) = T <sub>9</sub> of (0137)	3, 11, 6 → (068e) = T <sub>9</sub> I of (0137)
1, 6, 8 → (0137)	11, 6, 4 → (0179) = T <sub>0</sub> I of (0137)
2, 9, 7 → (026e) = T <sub>11</sub> of (0137)	10, 3, 5 → (0179) = T <sub>11</sub> I of (0137)
7, 6, 2 → (0137)	5, 6, 10 → (068e) = T <sub>0</sub> I of (0137)
3, 10, 6 → (0137)	9, 2, 6 → (0179) = T <sub>0</sub> I of (0137)
11, 3, 4 → (026e) = T <sub>11</sub> of (0137)	1, 9, 8 → (068e) = T <sub>11</sub> I of (0137)

In the next stage of harmonic organization (sketch transcribed in Example 9a), using the nomenclature from his *Harmony Book*, Carter writes the content of three-, four-, five-, and six-note chords. This notation consists of a geometric shape with a number placed in its center. The number of sides in a polygon determines how many notes there are in a chord. Accordingly, a triangle corresponds to a three-note chord, a square to a four-note chord, a pentagon to a five-note chord and a hexagon to a six-note chord.<sup>228</sup> The chord charts in the left-hand column are not color-coded, suggesting that Carter is performing purely abstract operations. For example, in the first line, the pairing of trichords 3 (024) and 4 (012) in various transpositions and inversions, forms hexachords 10, 20, and 25 or (012468), (012357), and (012579), respectively. Similarly, in the second line, Carter pairs trichords 2 (036) and 1 (048)

<sup>228</sup> The complete notation is outlined on page 5 of the *Harmony Book*:

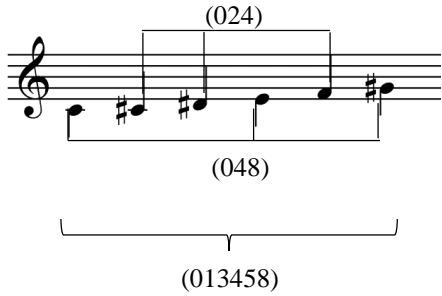




N	=	note	⬡	=	6-note chord
I	=	interval	○ <sup>7</sup>	=	7-note chord
△	=	3-note chord	○ <sup>8</sup>	=	8-note chord
□	=	4-note chord	○ <sup>9</sup>	=	9-note chord
⬠	=	5-note chord	○ <sup>10</sup>	=	10-note chord

and lists the resultant hexachord 21 or (013569) from their various transpositions and inversions.

**Example 9a:** Elliott Carter, String Quartet No. 4, Harmonic distribution using instruments' unordered pitch intervals

		<p><b>Three-note chords:</b></p> <ul style="list-style-type: none"> <li> (048)</li> <li> (036)</li> <li> (024)</li> <li> (012)</li> <li> (027)</li> <li> (037)</li> <li> (016)</li> <li> (026)</li> <li> (015)</li> <li> (025)</li> <li> (014)</li> <li> (013)</li> </ul>
		<p><b>Five-note chords:</b></p> <ul style="list-style-type: none"> <li> (03458)</li> <li> (01458)</li> <li> (01257)</li> </ul>
		<p><b>Six-note chords:</b></p> <ul style="list-style-type: none"> <li> (013458)</li> <li> (012468)</li> <li> (012357)</li> <li> (013569)</li> <li> (013479)</li> <li> (012348)</li> <li> (012456)</li> <li> (012579)</li> <li> (013578)</li> <li> (023568)</li> <li> (023469)</li> <li> (013467)</li> <li> (012369)</li> </ul>

**Example 9b:** Extracted detail (first line, second column) from the harmonic sketch in Example 9a

<p>Hexachord 3: Trichord 1 + Trichord 3 (013458) (048) (024)</p> 	<p>Trichord <math>\triangle 1</math> Red: viola Interval repertoire: 4, 7, 10 (048)</p>  <p>Trichord <math>\triangle 1</math> Green: cello Interval repertoire: 1, 5, 8 (048)</p> 	<p>Trichord <math>\triangle 3</math> Blue: first violin Interval repertoire: 2, 6, 9 (024)</p>  <p>Trichord <math>\triangle 3</math> Red: viola Interval repertoire: 4,7,10 (024)</p> 
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In the next column, Carter implements the color-coding system in his analysis of the chord combinations, indicating that these relationships now pertain specifically to the Quartet. Using only the linear (unordered pitch) intervals available to each instrument's repertoire, Carter works out different possibilities that could be employed for each given set. For instance, on the first line Carter shows the possible trichord pairings that create hexachord 3 (013458). He first pairs trichord 1 (048), circled in red and therefore pertaining to the viola's intervals, with trichord 3 (024), circled in blue, which concerns the first violin. Set (048) can indeed derive its pitch classes by using the viola's interval 4 (Example 9b). Similarly, a combination of two consecutive statements of interval 2, assigned to the first violin's repertoire, creates (024). Below, Carter now shows how a different combination of intervals can yield the same two trichords. This time, trichord 1 is circled in green, deriving its pitch classes using intervals assigned to the cello, while chord 3 is circled in red, thus it implements the viola's intervals; using the cello's interval 8 twice yields (048), while combining the viola's intervals 4 and 10

forms (024). The sketch shows that within this system, there are many possibilities of producing a variety of configurations, depending on the instruments' selected contours.

While most of the harmonic sketches are drafted on unlined paper and use numeric figures, many are also written on manuscript paper, showing symmetrical properties of the chords. For instance, the sketch in Example 10a displays three hexachords in their prime form, followed by their various orderings and inversions. On the top of the page, written in purple pencil, Carter explores the properties of hexachord 3 or (013458), deriving its pitch classes from the second violin's repertoire of unordered pitch intervals—3 and 11, leaving out the interval 6, which the violins share (Example 10b).<sup>229</sup> Following the specific ordering (listing all intervals in ascending order), Carter writes a  $T_1I$  inversion of the hexachord and provides five additional reorderings, each one revealing the hexachords' symmetries. On the staff below, Carter applies the same methods for hexachord 5 or (023457), written in blue pencil, hence using the interval content from the first violin's distinct repertoire—intervals 2 and 9 (Example 10c). Lastly, on the bottom systems, Carter follows the same procedures for hexachord 5 or (023457), which, being sketched in green color, uses intervals from the cello's repertoire—1, 5, and 8 (Example 10d).

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<sup>229</sup> Carter does not equate an interval to its inversion for all purposes to which intervals can be put. In his interview with Bernard, Carter explains: "Spacing in chords is a very important matter in my work, since I distinguish between an interval and its inversion and often use them for very different musical effects. Even in chords of three notes, spacings become as differentiating as mirror inversions—maybe more." See Bernard 1990, 201.

**Example 10:** Elliott Carter, String Quartet No. 4, Harmonic Sketch




(a) Symmetrical hexachords (from the Elliott Carter Collection, Paul Sacher Stiftung, Basel; used by permission)

The image shows a handwritten musical score on 24 staves. The score is annotated with various numbers and symbols. At the top, there are circled numbers 2, 3, 4, and 5. The first staff has a circled 2, and the second staff has a circled 37. The third staff has a circled 5. The fourth staff has a circled 7. The fifth staff has a circled 13. The sixth staff has a circled 14. The seventh staff has a circled 15. The eighth staff has a circled 19. The ninth staff has a circled 21. The tenth staff has a circled 23. The eleventh staff has a circled 25. The twelfth staff has a circled 27. The thirteenth staff has a circled 29. The fourteenth staff has a circled 31. The fifteenth staff has a circled 33. The sixteenth staff has a circled 35. The seventeenth staff has a circled 37. The eighteenth staff has a circled 39. The nineteenth staff has a circled 41. The twentieth staff has a circled 43. The twenty-first staff has a circled 45. The twenty-second staff has a circled 47. The twenty-third staff has a circled 49. The twenty-fourth staff has a circled 51. The score also features vertical lines, a red '1988' stamp, and various musical notations such as notes, rests, and dynamic markings. At the bottom left, there is a logo for 'KING OF QUALITY' and 'KING BRAND' with the text 'M10 - 24 STAVE'.




(b) Extracted detail: Hexachord 3, the second violin

<p>Prime form (013458)</p>	<p>Pitch ordering showing interval content from the second violin's repertoire: 3, 6, 11</p>	<p>Reordered set, superimposed with its inversion <math>T_1I</math></p>
	 <p>11 3 11 11 3</p>	

(c) Extracted detail: Hexachord 5, the first violin

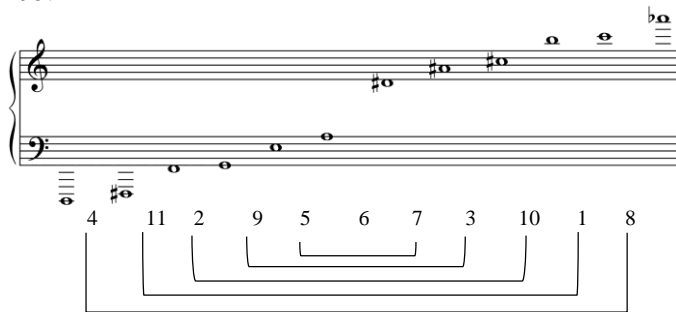
<p>Prime form (023457)</p>	<p>Pitch ordering showing interval content from the first violin's repertoire: 2, 6, 9</p>	<p>Reordered set, superimposed with its inversion <math>T_0I</math></p>
	 <p>2 2 9 2 2</p>	

(d) Extracted detail: Hexachord 4, the cello

<p>Prime form (012345)</p>	<p>Pitch ordering showing interval content from the cello's repertoire: 1, 5, 8</p>	<p>Reordered set, superimposed with its inversion <math>T_0I</math></p>
	 <p>1 1 5 1 1</p>	

Found among the sketches for the Fourth Quartet is a folder that contains a complete list of 1,928 distinct forms of all-interval twelve-tone chords. Some chords, circled in blue, were used in *Night Fantasies* (1980), while orange-circled chords were used in the Fourth Quartet and *Penthode* (1985). Carter's initial interest in such chords was confined to the retrograde-inversional invariance (RI) type, which were used in the *Night Fantasies* (all eighty-eight forms). These RI type chords have a structure in which each interval on the bottom is reflected by its inversion at the top, with the tritone occupying the central position within a sequence of intervals; hence, the inversionally related intervals have a mirror structure.<sup>230</sup> Starting with *Esprit Rude/Esprit Doux* (1984), Carter started using another configuration of these chords, where the two hexachords are arranged around a central tritone, with complementary intervals in parallel order. With the inversionally related intervals in a parallel structure, this ordering is of the parallel-inversional invariance (QI) type.<sup>231</sup> In the Fourth

<sup>230</sup> A diagram of the all-interval twelve-note chord with the retrograde-inversional invariance (RI) structure, used in the *Night Fantasies* (1980), is reproduced by Heinemann, "Melodic invention in Carter's recent concertos," 195.



<sup>231</sup> The QI label first appears in Morris and Starr, "The Structure of All-Interval Series," 370. See Koivisto, "Syntactical Space and Registral Spacing in Elliott Carter's *Remembrance*," 160, for her explanation of how QI invariant chords can be derived from the hexachordal set classes; Heinemann, "Melodic invention in Carter's recent concertos," 194-98, for a detailed discussion on construction and properties of all-interval twelve-tone chords as employed by Carter, namely their retrograde-inversional invariance (RI) and parallel-inversional invariance (QI). Heinemann further notes that one of the best-known examples of RI type all-interval chords is the row from Alban Berg's *Lyric Suite*, represented in pc notation as 5409728136te. This example motivated the Bauer-Mengelberg and Ferentz study, "On Eleven-Interval Twelve-Tone Rows" (1965) that influenced Carter, (see p. 195). Link further adds that Carter had a copy of the Bauer-Mengelberg list of chords, which was made available by request to the authors following their 1965 article in which these chords were first discussed comprehensively. Link quotes Carter saying that at the time he began working on *Night Fantasies*, "I had for a long time that list of all-interval chords that was published in *Perspectives of New Music*" (Link, "The



Quartet, Carter uses the QI type, and further expands his vocabulary with the inclusion of the “Link” chords.<sup>232</sup>

The configurations of all-interval twelve-note chords are the result of careful manipulation and synthesis of component sets, as demonstrated in the earlier sketches. For example, one such sonority in the Quartet is the hexachordal organization [82153] 6 [4te79] in m. 3, the first full coincidence point (Example 11). From the bottom up, the cello plays a double-stop {C#, A}, followed by a statement of pitch B on the second beat of the measure; the viola plays a triple-stop {C, G#, F#} with added pitch F; the second violin has a triple-stop {D, E, D#}; and finally, the violin follows with a double-stop {Bb, G}. Each instrument features intervals from its assigned repertory: 8 and 1 for the cello, 4 and 10 for the viola, 11 for the second violin, and 9 for the first violin.

**Example 11:** Elliott Carter, String Quartet No. 4, Harmonic Design: [82153] 6 [4te79]

(a) Horizontal superimposition of the all-interval twelve-tone chord

Composition of Elliott Carter’s *Night Fantasies*,” <http://www.johnlinkmusic.com/JohnLinkSonusPaper.pdf>, 8; a shorter version of this paper was published in *Sonus* 14, No. 2 (Spring 1994): 67-86).

<sup>232</sup> John Link first generated a list of all-interval twelve-note chords, each of which contains one or more instances of the all-trichord hexachord (012478) as a contiguous subset. For a complete list of “Link” chords, see Appendix 2 in *Harmony Book*, 358-59. David Schiff coined the term ‘Link’ chords in the second edition of his *The Music of Elliott Carter*, 325-27.

(b) Elliott Carter, String Quartet No. 4, m. 3

String Quartet No. 4 by Elliott Carter

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(c) Horizontal layout of the all-interval twelve-tone chord showing two hexachords around a central tritone with complementary intervals in parallel order (QI)

Although Carter limits each instrument to only three intervals, the harmonic possibilities are many. Because the underlying chord contains all twelve pitch classes, any harmonic combination is possible. Furthermore, their unique spatial arrangement covers five and a half octaves, and consequently, each instrument is given a unique timbre. Thus, this

particular twelve-tone chord drives not only harmony, but, as Link notes, covers the entire registral space.<sup>233</sup>

With both rhythmic and harmonic plans of the quartet sketched, the Quartet achieves its general framework. While some of the detail is predetermined in these stages, many rhythmic and harmonic specifics remain to be developed before the composition takes its full shape: not every note in the finished score participates in the definition of the composite large polyrhythm (the notes that do participate are generally marked with accents), and the pitch system allows for many possibilities (for instance, a choice between a chord and its inversion). These particulars are devised in the next stages of compositional process.

#### **FORMAL DESIGN, ARTICULATION, DYNAMICS AND CHARACTER**

In the next compositional stage, Carter plans the general form of the piece—the beginnings of movements and their main characteristics—along with certain dynamics, articulation, and characters of passages. The Fourth Quartet contains four movements which flow uninterrupted into one another: *Appassionato*, *Scherzando*, *Lento*, and *Presto*. Carter uses descriptive language to refer to the overall character of the movements and instruments, or the desired effect. Words and phrases, such as “two measures of rapid rise,” “brief fast spurts,” “burst over,” “each instrument contributes a double stop against single stops,” “interruptions characterized by cello solo,” “expand registers,” and so on, enhance formal designs.

Form sketches also focus on smaller sections. They are written as lists, inventories, maps, and charts. These types of sketches, especially Carter’s “to-do lists,” are most valuable

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<sup>233</sup> See Link, “The Combinatorial Art of Elliott Carter’s *Harmony Book*,” 15; Bernard, “An Interview with Elliott Carter,” 203. Link observes that all-interval twelve-tone chords, which guide both the registral space and harmony of a composition, serve as referential sonorities. Bernard quotes Carter saying that he has always been concerned about the spacing of chords, the idea he has exaggerated over time.

for chronology. Most of the 1,117 sketches for the Quartet are undated and unordered loose sheets, making it challenging to determine the accurate sequence of pages. However, after completing a section, Carter checks the items on his inventories—lists of measures or sections which he has composed, those sections that need to be revised (rhythmically or harmonically), specific dynamics or gestures that define the character of a particular section, and measures that he still needs to compose. One such example is a sketch he titles “Inventory” (transcribed in Example 12). First, Carter labels tasks 1-20 that still need to be completed (on another sheet, not shown in the example). Then, he makes a diagram (as seen in Example 12), showing where each task will be inserted. For instance, task #10 will be used in mm. 134-141, and so on. Carter describes the main characteristics of each task in detailed text. For example, on top of the page, he notes that sketch mm. 134-141 (score mm. 159-167) will be characterized by all four instruments playing wide-spread double-stops, with attacks on nearly every beat, at a tempo of 72. Measures 169-175 (score mm. 198-204), marked at a tempo of 63, will feature primarily a cello solo with occasional beats from other parts, with the viola solo following in mm. 179-184 (score mm. 208-213). Following this type of inventory sketches, Carter proceeds to complete those tasks, one at a time, on the next several pages of sketches. Lastly, once he implements all the tasks on the list, he dates the inventory sheet. Consequently, these inventories play an important role in establishing a chronological sequence of events.

**Example 12:** Elliott Carter, String Quartet No. 4, "Inventory" sketch

<p><b>A</b> #10</p> <p>#8</p> <p>#14</p>	<p>134-141 – double stop – 4 instrument ensemble          moderate ♩ = 72 (attacks nearly every beat) ] widespread</p> <p>169-175 – primarily "cello solo" with accented beats          texture of fast and slow } from the others (fast) ♩ = 63</p> <p>179-184 – "Viola solo" primarily moderate ♩ = 63 (x 5) <span style="float: right;"><u>allegretto?</u></span></p>
<p><b>B</b> #5</p> <p>#7</p>	<p>266-272 – "Violin II solo" (syncopated etc.) (6x) ♩ = 63          attacks about ♩ apart</p> <p>273-282 – (♩ = 63)  <u>(like #10) but slower</u>  <u>very middle register</u> <span style="float: right;"><u>adagio</u></span></p>
<p>#13</p> <p>#11</p> <p>#17</p> <p>#18</p>	<p>286-289- <u>fragmented – fast</u> duet – <u>V. II + cello</u> 30-34          (more spread than m. <u>33-34</u> but similar) <span style="float: right;"><u>Presto?</u></span></p> <p>292-293  <u>fragments fast</u> 4 part          close position – rising</p> <p>307-311 <u>like #10</u>          V. II stammers other hold <del>chords</del> double stops          moderately <u>slow</u> ♩ = 63 (middle-low registers)</p> <p>324 – 328  <u>fast – 4 part fragmented</u> ♩ = 63          spreads from close to open position</p>
<p>not located</p> <p><b>C</b> #9 5 beats of ♩ = 63 like #10 close to wide position, opening wedge</p> <p><b>D</b> #19 8 " " " <u>high</u> medium high, close position</p> <p>#20 8 " of " = <u>(like #18)</u> fragments fill in <u>very close position</u></p>	
<p><b>INVENTORY</b></p>	

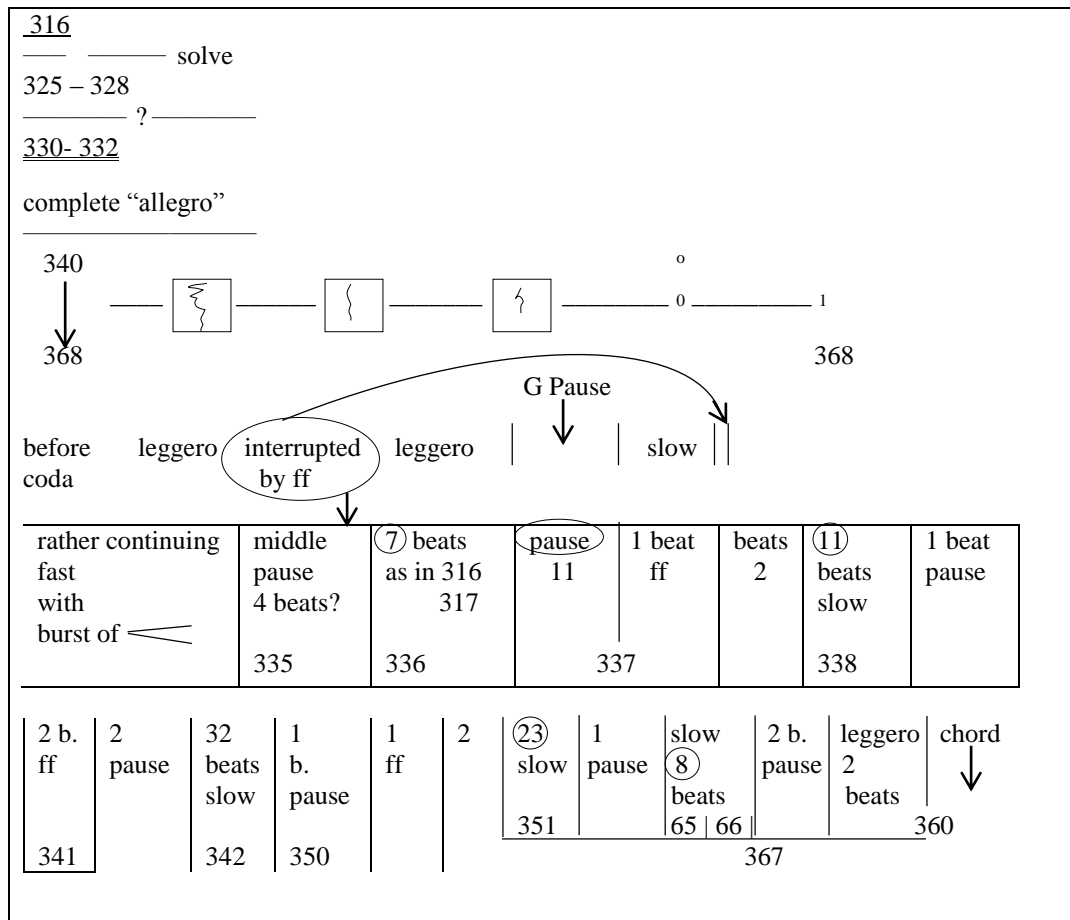
Example 13a is a transcription of a sketch outlining the *Coda* section, which is characterized by a series of short fragments separated by pauses (sketch mm. 340-368; published score mm. 430-464). Here, Carter writes the dynamics markings, their placement in terms of beats, and durations: m. 335 (score m. 431) indicates that the pause lasts for four beats, the *fortissimo* in m. 341 (score m. 437) for two beats, the slow tempo of m. 342 (score m. 438) for thirty two beats, and so on. Above the chart, he writes descriptive phrases of the desired effect, such as “rather continuing fast with burst of crescendo” in m. 334 (score m. 430). On another sheet, Carter adds more explicit detail, stating that the quartet should end “with a series of extremely quiet phrases—each stopping to let in a violent big new chord attack,” and that this section is to be preceded by a “fast, light, brilliant” passage that suddenly stops. The final score, again, confirms this description: the fast, brilliant passage in m. 453 suddenly stops with a pause in m. 454, which onsets extremely quiet phrases, characterized by double-stops. The entire layout of the *Coda* sketched in Example 13a indeed, matches the form, character, gestures, and dynamics of the published score where a pattern emerges: explosive fast *fortissimo* passage – pause - slow tranquil *pianissimo* sustained chords – pause. The pattern is broken in its last statement, when a second consecutive tranquil phrase replaces the expected loud one. Link notes that these fragments alternate with such uncharacteristic regularity that the pattern quickly becomes predictable and its repetitiveness confirms listener’s expectations for longer than any other passage in all of Carter’s music.<sup>234</sup>

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<sup>234</sup> Link, “Elliott Carter’s late music,” 50-51.

**Example 13:** Elliott Carter, String Quartet No. 4: Coda

(a) Formal design



(b) Printed score, mm. 429-464 (Used by permission.)

“Rather continuing fast with burst of  $\langle$ ”

431 con sord.

“Middle pause  
4 beats?  
335”

*ppp* *pp* *ppp < pp*

*pp tranquillo*

\* con sord. *pp tranquillo*

\* con sord. *pp tranquillo*

\* con sord. *pp tranquillo*

436 senza sord. con sord. #

“2 beats  
*ff*  
341”

senza sord. *ff* *f* *pp* *ppp* *pp*

senza sord. *ff* *f* *pp* *ppp* *pp*

senza sord. *ff* *f* *pp* *ppp* *pp*

senza sord. *ff* *f* *pp* *ppp* *pp*

“32 beats  
slow  
342”  
(score min.  
438-445)

con sord. *pp* *p* *pp*

con sord. *pp* *p* *pp*

con sord. *pp* *p* *pp*

con sord. *pp* *p* *pp*

441 senza sord. con sord.

senza sord. *ff* *f* *ff* *pp* *ppp* *pp* *ppp*

senza sord. *ff* *f* *ff* *pp* *ppp* *pp* *ppp*

senza sord. *ff* *f* *ff* *pp* *ppp* *pp* *ppp*

senza sord. *ff* *f* *ff* *pp* *ppp* *pp* *ppp*







Following the last series of quiet passages, the quartet ends abruptly with all instruments playing together a *pianissimo staccato* chord. Aside from the downbeat of m. 3, this is the only other instance where the pulses of all four instruments coincide. The ending is certainly understated, but not entirely unforeseen: ethereal endings have become one of the defining features of Carter's late music.<sup>235</sup> What is truly striking about this ending is that despite the precise mathematical calculations, the Coda sounds intuitive and spontaneous. The sustained chords and pauses contain no audible underlying pulsations; only the effect is heard: a separation of opposing spheres, one characterized by frenzied outbursts, the other by stillness.

Surprisingly, the Coda contains only rhythmic, harmonic and form sketches, aside from one folio with incomplete parts barely covering four measures (mm. 454-457). This accounts for thirty measures of the ending of the piece that lack any notated sketches. A generalization can be made for the entire quartet: it contains very few manuscript-notated sketches. This observation corroborates my argument that once Carter calculated the details of rhythms, charted the harmonic language, and outlined the formal design of the quartet, he could now compose the quartet in traditional notation.

## **SYNTHESIS**

Out of 1,117 pages of sketch material for the Fourth String Quartet, only about 220 sheets consist of continuity sketches that synthesize rhythmic, harmonic and formal graphs into musical material and pertain to a particular section of the Quartet. A large majority of these sketches outline mainly a single instrumental line (typically, first violin) and are never revisited again, even when written with different pitches or rhythms than those in the final score.

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<sup>235</sup> Meyer and Shreffler, *Elliott Carter: A Centennial Portrait in Letters and Documents*, 294.

Measures that do contain two-, three- or all four-parts are rather short and segmented—the voices typically come in or drop out. By revisiting score mm. 91-103 as they are depicted through numerous rhythmic and harmonic stages, it becomes evident how Carter synthesizes all these elements using a notational shorthand.

There are three sketches that correspond to this section of the piece. Carter first drafted the sketch transcribed in Example 14a. Here, he only focuses on the first violin. Rhythm is derived solely from the rhythmic sketches, and the intervallic structure of the melody conforms to the instrument's assigned intervals: 2, 6, and 9. In the next version of this section, Example 14b (transcription), Carter transposes the first violin, which now begins on C5, instead of D5. Although the focus remains on the first violin, Carter uses quadruple staves; the bottom three staves are empty until the instruments enter gradually, one at a time, in the last three measures of the sketch. The parts of the other instruments are not as thoroughly detailed as in the final score, but their characteristic rhythm—triplets and quintuplets—is notated. However, some detail, such as the sound attacks, double-stops, ties and rests, correspond to the ideas Carter previously worked out in earlier stages of sketching. Carter calls for yet another transposition: in the left margin he writes “down i2.” In the fifth measure from the end, he transposes some of the material down a step. Such transpositions are an example of the compositional working-out and ongoing adjustments that remained to be done even once the framework had been determined.

Sketch in Example 14c is the final revision of this section before the fair copy. The measures are not complete in either a harmonic, intervallic, rhythmic or pitch sense, but this sketch is truly a synthesis of Carter's compositional process. He emphasizes the first violin, which is transposed for the final time down a step, as indicated in the previous sketch: it starts

on B<sup>b</sup>4. Its intervallic content, pitches and rhythm correspond exactly to those of the published score (Example 14d). Some pitch and harmonic content from the other three parts is added, but not in accurate detail: Carter alternates between exact pitch-rhythmic notation and a more general one—writing the triplet figures in purple pencil on the second staff, red quintuplets in the viola line, or green septuplets on the bottom staff. Reminiscent of the early sketches, Carter draws a grid of the polyrhythmic superimposition to clarify placement of the pulses. Above the staff, he jots down the pulsation totals. Between the quadruple-joined staves, Carter works out the harmonic content of particular three-, four-, five-, and six-note chords, indicative of his earlier harmonic charts.

**Example 14:** Elliott Carter, *String Quartet No. 4*: First violin, mm 74-82' (score mm. 91-103)

(a) First stage of composite sketching, mm 74-82' (score mm. 91-103)

The musical score consists of five staves of music. The first staff covers measures 74 and 75, featuring a triplet of eighth notes. The second staff covers measure 76, also with a triplet. The third staff covers measures 77, 78, and 79, with triplets in each measure. The fourth staff covers measures 79, 80, and 81, with triplets in each measure. The fifth staff covers measures 82 and 82', with triplets in each measure. The score includes various rhythmic markings such as triplets and quintuplets, and is annotated with measure numbers and prime symbols.

(b) Second stage of composite sketching, mm. 74'-85' (score mm. 91-106)

The musical score is presented in four systems. The first system begins at measure 74' and features a circled annotation "down i2" in the first staff. The second system continues the melodic line with various ornaments and slurs. The third system introduces a piano accompaniment, with a 5-measure rest in the bass staff. The fourth system continues the melodic and harmonic development, featuring complex rhythmic patterns and slurs.

(c) Third (and last) stage of composite sketching, mm. 74'-79 (score mm. 91-97) (Sketch from the Elliott Carter Collection, Paul Sacher Stiftung, Basel; used by permission)

The image displays a handwritten musical score for a string quartet. The title "STRING QUARTET NO 4" and the year "1986" are printed in red ink. The composer's name "E. CARTER" is also printed in red. The score is written on multiple staves with various musical notations, including notes, rests, and dynamic markings. The page is marked with "CM-24/2" in the bottom left corner. The score is a composite sketch, showing multiple layers of notation and some corrections. The page is numbered "223" at the bottom.

(d) Published score, mm. 90-99 (Used by permission.)

Violin I melody begins on B-flat

The image displays a page of a musical score for measures 90-99. It consists of four staves: Violin I, Violin II, Viola, and Cello/Double Bass. The key signature is B-flat major (two flats). Measure 90 is marked with a fermata and a dynamic of *p*. The instruction *sempre molto sostenuto* is written above the Violin I staff. In measure 91, the Violin I staff begins with a dynamic of *f*, followed by *p* and *mf*. A box above the staff notes that the Violin I melody begins on B-flat. The Viola and Cello/Double Bass parts feature complex rhythmic patterns with triplets, quintuplets, and septuplets, with dynamics ranging from *mf* to *pp*. Measure 92 is marked with a fermata and a dynamic of *mf*. The Violin I staff in measure 92 has a dynamic of *mp cresc.*. The Viola and Cello/Double Bass parts continue with complex rhythmic patterns, with dynamics ranging from *pp* to *f*.



94 (F)

Violin I: *f*

Violin II: *mf sub.*, *p*, *f*, *mf*

Cello/Double Bass: *p*, *mf*

Bass: *p*, *mp*, *mf*, *f*, *p*, *mf*

96 (F)

Violin I: *dim.*, *p*, *mf*

Violin II: *mf*, *f*, *p*, *mf*, *pp*, *p*

Cello/Double Bass: *mf*, *f*, *mf*, *mf*, *p*, *pp*, *p*, *mf*

Bass: *p*, *mf*, *f*, *mf*, *p*, *mf*, *pp*, *p*

98 (F)

Violin I: *f*, *pp*, *p*, *mf*, *p*, *mf*, *mf*, *p*, *mf*

Violin II: *f*, *pp*, *pp*, *mf*, *p*, *p*, *mf*, *p*, *f*, *mf*, *f marc.*

Cello/Double Bass: *f*, *pp*, *p*, *mf*, *p*, *f*, *mf*, *f*

Bass: *f*, *pp*, *p*, *mf*, *p*, *mf*, *f*, *mf*, *f*

Even though all methods of the compositional process have come together in this sketch, the excerpt is not complete; the page still looks rather blank, as if it was in the early stages of the compositional process. Yet, this is the last sketch Carter dedicates to this section of the quartet. The next version is the vellum fair copy. This is true for much of the quartet: it is never fully composed-out, meaning that most of the Quartet is not fully sketched before being incorporated into the full score. Some sections contain a single sketch outlining a single melodic line, while others have several versions dedicated to them. But as with mm. 91-101, multiple stages of sketching does not necessarily equate to a fully composed-out excerpt. Rather, rarely are any of them complete, containing all four parts.<sup>236</sup>

## CONCLUSION

In describing his compositional process, Elliott Carter observed: “Compositions are the result of innumerable choices, many conscious, many unconscious, some quickly made, others after long deliberations, all mostly forgotten when they have served their purpose.”<sup>237</sup> While choices and deliberations for this quartet are not evident in the published score, his sketches preserve this process. They capture the first notated inception of the original ideas, and permit a better understanding of his creative personality and working methods. They also offer new dimensions and depth to understanding the evolution of his compositional style. My examination of sketches for Carter’s Fourth String Quartet leads to the following five observations:

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<sup>236</sup> Several small scattered groups of measures bear no sketches at all, as do some longer sections (for example, the previously discussed Coda section). Since Carter meticulously kept all his working material pertaining to the Fourth String Quartet, the compositional stages were deliberately omitted.

<sup>237</sup> Carter, “Shop Talk by an American Composer,” 189.

1. The work was initially conceived with rhythmic and harmonic designs.
2. Carter worked on these elements separately, and one small section at a time.
3. This process was repeated until the entire quartet has been “composed” in this manner.
4. Once all measures have undergone this rigorous and meticulous process, Carter translated some of them into music notation, although not in detail.
5. While all his works from the 1980s emphasized rhythm, this particular compositional process of fully isolating the rhythmic element from the composition was unique to the Fourth Quartet.

The depth and complexity of Carter’s pre-compositional thought for this quartet is evident on many levels. For instance, nearly all of the 700 rhythmic and harmonic sketches utilize a coordinated color system, with each instrument assigned a distinct color. The sketches were not written in pencil and then traced in color as an afterthought; they were originally conceived in color, with each instrument’s ideas worked out separately. This reveals that Carter decided on the rhythmic and harmonic characteristic of each instrument before he even wrote a single idea on the page.

Many of the ideas Carter used in the Fourth Quartet, such as form, its harmonic language and the individualization of instruments, are not new. Carter describes the form of the Quartet as the “traditional four movement plan of the classical string quartet—Appassionato, Scherzando, Lento and Presto—within one constantly changing movement.”<sup>238</sup> Assigning each instrument its own musical identity with distinct repertory of intervals and character began in the Second Quartet (1959). Controlling the overall harmony with recurring

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<sup>238</sup> Carter, “Program Note”; also see text manuscripts, Elliott Carter Collection at the Paul Sacher Stiftung, Basel, Switzerland.

all-interval twelve-note chords was used in the Third String Quartet (1971). Even Carter's technique of focusing on rhythm as the guiding large-scale design dates back to *A Mirror on Which to Dwell* (as discussed earlier). What is truly new about the Fourth Quartet is its compositional process. Carter not only isolated the rhythmic language as the primary focus of the piece, but he also chose to think of rhythmic, harmonic and formal elements individually, before synthesizing them in staff notation.

It is not unusual for Carter to first plan all the details of a composition. In his 1976 lecture, Carter remarked that he would often "carefully work out the basic elements and shape of a piece before writing a single note."<sup>239</sup> A close study of the sketch material for the Fourth Quartet confirms that Carter, indeed, approached the compositional process in this way. Moreover, sketches also shows that Carter worked out the elements individually, starting with the rhythmic design. Evidence suggesting this conclusion is abundant: for instance, there is not a single page in the entire collection of preliminary sketches (excluding continuity sketches) in which both rhythmic and harmonic plans occur simultaneously. Rather, they are sketched on separate sheets, indicating that they were composed and thought of separately.

Further, there are several "to-do" charts in which Carter writes the measures that he still needs to compose, as seen in Example 15. Here, Carter notes that he has not finished mm. 311-316, 316-325, 325-328, 328-330?, and 338-340. A check-mark on the side margin indicates that he did insert the measures at hand. Interestingly, this section of the Quartet does not contain any continuity sketches. However, over the next several pages, Carter composes these measures, but only in rhythm, starting with the general rhythmic design (transcribed in

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<sup>239</sup> Carter made this observation on April 16, 1976, when he visited University of California, Santa Barbara, and gave a lecture in a composition seminar. A description of this event is available in Richard Derby's unpublished notes.

Ex. 16), and then adds more detail, following steps as described earlier. These rhythmic sketches are accompanied by a handful of minimal harmonic charts (such as the intervallic content of a single hexachord used in that particular section), and short descriptive sketches and formal outlines.

**Example 15:** Elliott Carter, String Quartet No. 4: “To-do List” (transcription)

	<u>finish 295-307</u>	also 307-311
	311-316	
	compose 316-325	
	325-328	
	compose 328-330 ?	
✓	compose end of allegro molto	8 or 10 measures
	to about 338-340	

**Example 16:** Elliott Carter, String Quartet No. 4: Rhythmically composed measures 311-340 (transcription)

311                      312                      313                      314                      315

316                      317                      318                      319                      320                      321

322                      323                      324                      325                      326                      327

328                      329                      330                      331                      332                      333

334                      335                      336                      337                      338

30

Lastly, when Carter rewrites certain sections of the Quartet (such as mm. 91-103, discussed in Ex. 14), he changes the pitch or harmony, but never the already-conceived rhythm. This suggests that the established rhythmic design is fixed, whereas the other elements, such as the melody and harmony, can be varied. The speculations for this approach to composing are many: it is possible that Carter sought to develop the logistics of this complex rhythmic language independently. Or perhaps, it was his experience in the craft of composition: by the time he began writing this quartet, Carter was well into his sixth decade of composing. He was quite capable of working out one musical element, such as rhythm, without excluding the awareness of another, such as pitch or harmony. Or it could be that Carter was comfortable experimenting in this genre—the string quartet—and expanding his compositional techniques: the genre carries a long tradition associated with exploration in musical language and serving as a framework for changing aesthetics objective and for self-discovery.<sup>240</sup>

Even though rhythmic expression was the guiding element in his works of the 1980s, all of which contain rhythmic sketches and long-range-polyrhythmic designs, the compositional process and approaches evident in the Fourth Quartet were unique. In other compositions, he intersperses harmonic, melodic and rhythmic motives with fully worked-out excerpts. That is, while he may start with a small harmonic or rhythmic chart, the musical elements are worked-out simultaneously and immediately expanded into notated measures.

For instance, the Oboe Concerto's (1987) first sketches outline melodic motives which are immediately fitted into fragmented measures, containing pitch, harmony and rhythm; only after some 100 pages, Carter begins to focus on purely rhythmic diagrams before continuing

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<sup>240</sup> For instance, in her article, "I try to write music that will appeal to an intelligent listener's ear." On Elliott Carter's string quartets," Schmidt argues that for Carter, the string quartet genre was directly linked to his redefining of his aesthetic position in the 1940s, and that in the Fourth and Fifth Quartets, he systematically brings this self-discovery to an end, 189.

to compose-out the sections of the concerto. Similarly, sketches for *Night Fantasies* (1980), *Triple Duo* (1983), *Espirit Rude*, *Espirit Doux* (1984), *Penthode* (1985), and *The Enchanted Preludes* (1988), all indicate that Carter alternates between small motivic, harmonic or rhythmic ideas and thoroughly-expanded sections.<sup>241</sup>

In his three-decade long search for ways to restructure rhythm, Elliott Carter developed an identifiably unique and intricate rhythmic language. Carter manifested this in his Fourth String Quartet, a pinnacle of rhythmic complexity. He expanded his rhythmic expression without simplifying other musical elements; harmony, counterpoint, and form carry equal importance in their design as rhythm. With all these processes sketched as individual figurations which are then fragmented and repeated, Carter demonstrated a new approach to composing. This process displays the composer's keen ability to think abstractly—to create a final product from numbers, configurations, and scattered dots on the pages. Yet, it is not the calculations that we hear in this quartet, but rather a composition with expressive character where each instrument maintains its identity while engaging in a four-part dialogue. Indeed, Carter was in full control of calculations in the Fourth Quartet, but his intuition was a guiding force.

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<sup>241</sup> *Penthode* (1985) comes closest to the compositional process of the Fourth Quartet in that Carter composed it in small sections and focused solely on individual elements—harmony, rhythm, form and instrument combinations. However, whereas the entire Quartet was composed in this manner, in *Penthode*, Carter immediately rewrote sections into notated measures.

## CHAPTER 5

### A Synthesis: Elliott Carter's Fifth String Quartet

I feel that my Fifth Quartet is my farewell to the quartet. It's a rehearsal of the string quartet. When they come to play, a little bit of the quartet is one of the four quartets I have already written. So, I was rehearsing the quartets I've written. I'm not going to write another string quartet.... I like something new. I didn't write the string quartets one after another, but after ten years of separation because I did not want to repeat some of my pieces in the quartets. I wanted to have a new idea and I waited until I had a good new idea. I think they are very different, each one of them.<sup>242</sup>

In this quote from his last interview, Elliott Carter made two telling statements about his Fifth String Quartet: certain gestures from the previous four quartets come together in his final quartet, which impart an element of retrospection into the new work. As Felix Meyer and Anne C. Shreffler remark, this may be one reason why Carter, after completing this work, regarded his series of string quartets as finished.<sup>243</sup> Further, such synthesis of “old” characteristics yet again generate a novel dramatic structure. Built on the ideas of the past, the Fifth String Quartet (1995) truly lays bare Carter's compositional evolution and process. The harmonic language of the Fifth Quartet is based on the all-interval tetrachordal system Carter employed in the Second Quartet (the idea which he initially developed in the First Quartet). Each instrument is assigned a specific repertoire of intervals, the notion that originated in his Second Quartet and was revisited in the Fourth Quartet. The contrast in textures, polarization of space, and the presence of dualism in the Fifth Quartet are ideas that Carter introduced in the Third Quartet. Associating each theme with a characteristic rhythm, gesture, or intervallic

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<sup>242</sup> Emmery, “An American Modernist,” 25-26.

<sup>243</sup> Meyer and Shreffler, 294.



structure was utilized from the First Quartet on, but here Carter does not accent each instrument's individuality; rather, here he focuses on their cooperation. Even the form of the Fifth Quartet is suggested by its predecessors—music flows uninterrupted through all movements. However, the expression in this piece is distinctive from the earlier quartets, and marks the beginning of Carter's "late late style,"<sup>244</sup> which is characterized by fragmented lines, thinned-out texture, and simplified counterpoint. In other words, Carter strips music down to its essentials. What distinguishes the Fifth Quartet from the previous four, is the philosophical meta-compositional concept he conveys in it: the Fifth Quartet is not only a composition in itself, but it is also captures the processes of a rehearsal, discussion, analysis, and performance, all working together to unfold the composition.<sup>245</sup> In this chapter, I will examine how Carter's techniques in the earlier quartets contribute to both the evocation of the past and the conception of the new. His choice of the harmonic, intervallic and rhythmic constraints, combined with the development of a conceptually novel form, offers insights into the composer's aesthetic objectives and technical preferences in his music of this period.

### **SIMPLIFIED HARMONY**

Carter's musical output during this late period, which begins with his 1980 work, *Night Fantasies*, is diverse—he composed densely textured and rhythmically elaborate pieces alongside music of the utmost transparency and economy. However, what unifies his late *oeuvre* is the compositions' rhythmic and harmonic structure—virtually all pieces between 1980 and 1995 feature long-range polyrhythms and all-interval twelve-tone chords. The Fifth

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<sup>244</sup> Schiff introduces this term in *The Music of Elliott Carter*, 92.

<sup>245</sup> This interpretation of the Fifth Quartet was stated by Carter in his introduction to the Fifth String Quartet, and will be discussed in more detail later in the chapter.

String Quartet is the first piece that appears to abandon both of these features,<sup>246</sup> signaling the beginning of Carter's new compositional style.<sup>247</sup> It may seem paradoxical that the evocation of the old—primarily the use of all-interval tetrachords that frame the Second Quartet—onsets the new period. However, it is not necessarily the return to the old, as it is the absence of the elements that characterized Carter's music from 1980-1995 that indicate the beginning of something different.

Sketches for the Fifth String Quartet, housed at the Paul Sacher Stiftung, curiously reveal that Carter initially thought of basing the harmonic language of the Quartet on all-interval twelve-tone chords. The earliest sketch for the Quartet, dated "Jan. 13, 1995," contains harmonic charts of tetrachords and hexachords that combine to create all-interval twelve-tone chords (Example 1).<sup>248</sup> In this sketch, Carter tries out different variations for the Quartet's two opening (0148) tetrachords. In his first attempt, he combines a (0369) chord, containing pitches {F#, A, Eb, C}, with a (0268) chord, {F, B, Db, G}. Underneath these two tetrachords, Carter adds another four-note tetrachord with exclusive pitch-content, {Ab, Bb, D, E}, which allows him to complete the twelve-tone aggregate, and obtain an all-interval twelve-note chord. Several attempts later, Carter obtains the first opening (0148) chord with the same pitch-

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<sup>246</sup> Carter's new technique of using long-range polyrhythms in the Fifth Quartet will be discussed in the "Rhythm" section of this chapter.

<sup>247</sup> For more discussion on the characteristics of Carter's late style, see Link, "Elliott Carter's late music," in *Elliott Carter Studies*, 33-54; Capuzzo, "Registral Constraints on All-Interval Rows in Elliott Carter's *Changes*," 79-108; Jenkins, "After the Harvest: Carter's Fifth String Quartet and the Late Late Style"; Link, "The Composition of Elliott Carter's *Night Fantasies*," 67-89; Mead, "Twelve-Tone Composition and the Music of Elliott Carter," 67-102; and Schiff, *The Music of Elliott Carter*, 86-95.

<sup>248</sup> In his essay, "After the Harvest," Jenkins notes that the earliest sketch for the Fifth String Quartet is stamped "Jan. 15, 1995" with the word "ANFANG!" (tr., beginning) written on top of the page. However, the sketch to which Jenkins refers contains three different stamped dates on it: Jan. 15, 16, and 17, 1995. While the sketch he points to is an early sketch, it is not the earliest one. Jenkins further continues, "Two days later, on a sketch stamped 'JAN. 17, 1995,' Carter writes 'Links list,'" [8]. Yet, after my scrutinized inspection of this sketch, I found no stamped date on it, but rather a handwritten date of January 13, 1995 on the verso. Hence, it is this sketch, outlining "Link chords," that constitutes Carter's first sketch for the Fifth Quartet. The chronology of sketches for the Fifth Quartet will be discussed in "Form: Opposition within Cooperation" section of this chapter.

content as in the published score, {A, F, C#, E}, which he combines with a partially “correct” second tetrachord, here voiced as {A#, F#, A, F} instead of {A#, F#, D, G}, which appears in the Introduction. Hence, what this sketch reveals is that Carter’s conception of the compositional process for the Fifth String Quartet began with a particular harmonic framework in mind—harmonic structure based on all-interval twelve-note chords, a design that characterizes all of his late-period works—but which he eventually abandoned for a more simplified harmonic language that is based on all-interval tetrachords (AITs) and all-trichord hexachords (ATH).

**Example 1:** Elliott Carter, String Quartet No. 5: Sketch dated Jan. 13, 1995 (transcription): all-interval twelve-note chord in the Introduction

Jan. 13 1995

The image displays a musical score for String Quartet No. 5, dated Jan. 13, 1995. It features a complete 12-tone aggregate in the first system, followed by a sequence of chords labeled with intervallic structures: (0369), (0268), (0268), (0167), (0167)(0268), (0148), and (0145). A box labeled "Complete 12-tone aggregate" encompasses the first system. A box labeled "Opening (0148)" points to a circled chord in the second system. A box labeled "(0145) contains {F#, A#} of the second tetrachord" points to a circled chord in the second system.

The verso of the same sketch affirms Carter's intentions to use all-interval twelve-tone chords by inscribing "Links list," next to the series of superimposed all-trichord hexachord (012478), which according to Carter's chord labeling in his *Harmony Book* corresponds to chord number 35; this chord serves as a subset of the all-interval dodecachord.<sup>249</sup> The same folio also contains superimposed all-interval tetrachords (0146) and (0137), or chords 18 and 23, respectively. These two AITs, along with hexachord 35, are the three hierarchically prominent chords of the Fifth String Quartet. As Carter explains in his *Harmony Book*, his preference for this particular harmonic constraint was deliberate:

There was a certain point, certainly within the last eight or ten years, that I decided to use only a certain very small vocabulary of chords. And I used the chords that I had discovered in the course of searching through the whole system—the two 4-note chords that have all the intervals [4-note chords nos. 18 and 23] and the 6-note chord that contains all the 3-note chords [6-note chord no. 35]. And then I went back to previous work which I used in my Double Concerto combining 4-note chords, either no. 18 or no. 23, and so I made many 8-note chords out of those. It's something I was aware of when I first wrote the Double Concerto. I simply reverted to what I had been doing long ago. I discovered no. 18 entirely by chance when I was writing my First String Quartet. And then when I came to write the Double Concerto I discovered that there was also no. 23, but I never made a list until much later. These 8-note chords exist in almost everything I've written since, well certainly since the Fifth [String] Quartet [1996], and maybe before that. But then also this work combines 4-note chords 18 and 23 within 6-note chord [number 35].<sup>250</sup>

The harmonic structure of the Fifth Quartet is founded on these three chords, which have become a mark of identity in his late musical language. On two different sketches, dated January 17, 1995 (transcribed in Example 2a), Carter explores various combinations of the two AITs to derive eight-note chords, resembling his charts in the *Harmony Book* (Example 2b).

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<sup>249</sup> John Link, who first generated a list of these chords, explains in the *Harmony Book*, "The 'Link' chords are all-interval 12-note chords, each of which contains one or more instances of the all-trichord 6-note chord no. 35 [0, 1, 2, 4, 7, 8] as a contiguous subset. David Schiff coined the term 'Link' chords in the second edition of his *The Music of Elliott Carter*, pp. 325-27," 358. For a complete list of "Link" chords see Appendix I, which is a reproduction of the list from the *Harmony Book*, 358-9.

<sup>250</sup> Carter, *Harmony Book*, 31-32.

When “primary” chords 18 and 23 are combined, what is left over to complete the twelve-note aggregate are the “secondary” four-note chords 5 or (0369), 9 or (0134), 12 or (0268), and 14 or (0358). Combining two transpositions of 18 or two sets of chord 23, leaves the following “secondary” four-note chords: 2 or (0167), 3 or (0235), and 13 or (0347) (Figure 1).<sup>251</sup> On the sketch below, we see that Carter derives chords 5, 9, 12, and 14 by using the “left over” pitches after combining the two forms of AITs with exclusive pitches. On the bottom line, he combines two transpositions of a single AIT with secondary chords 2, 3, and 13, again, to complete the chromatic. Hence, while preliminary harmonic sketches do not contain all-interval twelve-tone chords in the way the sketches for the Third String Quartet do,<sup>252</sup> the combination of tetrachords shows an emphasis on completing the aggregate.

**Example 2:** Elliott Carter, String Quartet No. 5: Harmonic sketch showing formations of primary and secondary tetrachords

(a) Sketch dated Jan. 17, 1995 (transcription)

The musical sketch shows three systems of staves. The first system contains chords 5, 9, and 12. The second system contains chord 14 and a circled chord 12<sup>8</sup>. The third system contains chords 2, 3, and 13. Intervallic structures like (0146) and (0137) are written above the notes. A red circle highlights a specific passage in the first system.

<sup>251</sup> Ibid., 31.

<sup>252</sup> See Chapter 3, “Unifying the Oppositions: Harmony.”

(b) Primary and secondary tetrachords, *Harmony Book*<sup>253</sup>

The image displays musical notation for primary and secondary tetrachords. It consists of three systems of staves. The first system has two staves, each with six chords. Above the first staff are Forte numbers: 18, 18, 2, 18, 18, 3. Above the second staff are Forte numbers: 23, 23, 2, 23, 23, 3. Above the third staff are Forte numbers: 18, 18, 13. The second system has one staff with six chords. Above it are Forte numbers: 18, 23, 5, 18, 23, 9. The third system has one staff with six chords. Above it are Forte numbers: 18, 23, 12, 18, 23, 14.

**Figure 1:** List of the all-interval tetrachords, or “primary” chords, “secondary” tetrachords, and the all-trichord hexachord, according to Forte’s name and Carter’s numbering system in the *Harmony Book*

ALL-INTERVAL TETRACHORDS (AITS)			SECONDARY TETRACHORDS		
Forte		Carter	Forte		Carter
4-Z15	(0146)	18	4-9	(0167)	2
4-Z29	(0137)	23	4-10	(0235)	3
			4-17	(0347)	13
			4-28	(0369)	5
			4-3	(0134)	9
			4-25	(0268)	12
			4-26	(0358)	14
ALL-TRICHORD HEXACHORD (ATH)					
Forte		Carter			
6-Z17	(012478)	35			

<sup>253</sup> This is a reproduction of a chart from *Harmony Book*, 32.

In the above example (Ex. 12a), we see that in the segment circled in red pencil, Carter explores all possible ways to partition chord 12 and combine it with its aggregate complements (see extracted detail in Example 13). First, he combines the 12 chord, (0268), with the two forms of AIT, (0146) and (0137). Underneath, he derives the ATH (012478), the six-note chord 35, by combining the first AIT used on the top staff, {G#, A, C, D}, with the first two pitches of the second AIT {D#, E}. Similarly, he derives the second ATH with exclusive pitches, which allow him to complete the chromatic. On the bottom staff, he combines the above-derived ATH (012478) with a dyad (04), to derive the eight-note chord 12, (0124678t). This particular segmentation of the aggregate is an example of the Complement Union Property, or CUP, as defined by Robert Morris, which has shown to play an important role in Carter's late period compositions.<sup>254</sup> The property of CUP is that if the nonintersecting members of two different set classes always result in the same third set class, this third set class has the Complement Union Property. In other words, combining the ATH with nonintersecting (04), or two transpositions of ATH with exclusive pitches, will always result in a twelve-note chord (0124678t).

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<sup>254</sup> Morris, "Pitch-Class Complementation and its Generalizations," 175-245. For further studies on Carter's use of CUP in his recent music, see Capuzzo, "The Complement Union Property in the Music of Elliott Carter," 1-24; Capuzzo, "Variety Within Unity: Expressive Ends and their Technical Means in the Music of Elliott Carter, 1983-1994"; Jenkins, "After the Harvest: Carter's Fifth String Quartet and the Late Late Style."

**Example 3:** Elliott Carter, String Quartet No. 5: Three derivations and partitions involving chord 12

The image displays three musical staves illustrating the derivation and partitioning of chord 12. The top staff shows a sequence of chords: (0124678t) derived from the combination of AITs (0146) and (0137), and (0124678t) derived from the combination of ATHs (012478). The middle staff shows a partition of the aggregate by combining ATH (012478) with (04). The bottom staff shows a partition of the aggregate by combining ATH (012478) with (04). The number 12 is circled in the first measure of the top staff and the number 8 is circled in the first measure of the bottom staff.

The score analysis of the Fifth Quartet demonstrates Carter's preference for the eight-note chords as the basis of his harmonic language, which are typically derived from the combination of AITs. Carter often combines chords that yield the twelve-note aggregate. For instance, the opening measures of the Introduction show the prominence of tetrachords (0148) and (0137), nonintersecting ATHs (012478), hence the emphasis on completing the aggregate. The quartet opens with two transpositions of (0148), notated as two quadruple-stops in the first violin, followed by a pause. The scattered entrances by the viola's sustained D# (*sul pont.* → *sul tasto*) in mm. 2-3, and the cellos *tenero* trichord, form AIT (0146). The entrance of the viola's sustained harmonic on G# in mm. 4-5, completes the twelve-note aggregate. In these opening measures (mm. 1-13), Carter completes the aggregate three times through the combinations of the secondary tetrachord (0148) with AIT (0146), and also derives the ATH (012478) through the combinations of pitches from two transpositions of (0146) (Example 4).



Example 4: Elliott Carter, String Quartet No. 5: Introduction, mm. 1-13

Complete aggregate

(0148) (0148)

Violin I *nuvido* *ff*

Violin II

Viola *sul pont.* *pp* *sul tasto* *tenero* *pp* *tranquillo* *normale* *pp*

Cello

(0148) (0148)

*ff* (snap pizz.) *ff*

Complete aggregate

*p espr.* *mp* *molto espr.* *f* *leggero* *pizz., normale* *f*

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*pp* *poco* *mf leggero* *pp* *poco* *mp*

(012478) (0146) (0146)

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Both slow movements, *Lento espressivo* and *Adagio sereno*, are characterized by sustained four-part harmonies that form some of the most explicit statements and longest sequences of alternating AITs and secondary tetrachords, by changing only one pitch at a time. For example, at the beginning of *Lento*, the staggered entrances form AIT (0146). The pitch change in the cello, m. 87, transforms the harmony to (0137). The alternation between the two AITs continues for the entirety of the movement, with interspersed secondary tetrachords, whose addition completes the aggregate (Example 6). The careful harmonic planning of this section of the Quartet—the change of one pitch at a time transforming the harmonies to the statements of alternating AITs and secondary tetrachords—is substantiated in several sketches pertaining to this section.<sup>255</sup>

**Example 6:** Elliott Carter, String Quartet No. 5: *Lento espressivo*, mm. 86-88

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<sup>255</sup> See Jenkins' "After the Harvest" discussion pertaining to examples 9-22. Jenkins thoroughly examines all sketches pertaining to the *Lento espressivo* movement, provides transcriptions, and thoroughly examines the details of the harmonic language—the various derivations of the [0124678A].

Similarly, the *Adagio sereno* is characterized by all four parts engaging to form the statements of alternating AITs and secondary tetrachords in a similar manner—with sustained harmonies, where a change in one pitch at a time transforms the harmony. Now, the instruments play the sustained chords entirely in harmonics. Again, this harmonic design frames the entire movement. For instance, by focusing on mm. 279-280, we can see the secondary tetrachord (0167) on the downbeat of m. 279 (Example 7). A single change in pitch by the first violin, from G to E, now transforms the chord into (0146). Another pitch change, now in the viola, forms secondary tetrachords (0268). The cello’s double stop, provides the change in harmony, now forming another statement of (0137). Thus, what we obtain here is a statement of both AITs, intercepted by secondary tetrachords that complete the aggregate.

**Example 7:** Elliott Carter, String Quartet No. 5: *Adagio sereno*, mm. 279-280

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As it is evident both from the preliminary harmonic sketches and analysis of the score, Carter carefully juxtaposes statements of AITs and secondary tetrachords, emphasizing the completion of the aggregate. Thus, by returning to a harmonic design similar to that of the Second String Quartet, rather than using the all-interval twelve-note chords that characterize the Third and the Fourth Quartets, Carter simplifies his harmonic language. Focusing on eight-note chords (with which he was very familiar by this point in his compositional career) rather than dodecachords, allows Carter to direct his explorations to other compositional ideas, besides the harmonic structure. Hence by using what he called an “easily manipulated harmonic structure,” he could emphasize other qualities, such as spacing of chords and musical characterization.<sup>256</sup> Intensifying other elements while simplifying harmony, allows Carter to evade the restrictions imposed by “composing by chords.” This enables him to think in terms of contrapuntal lines and melody, and develop the character of the Quartet.<sup>257</sup>

### **MELODY AND REPERTOIRE OF INTERVALS**

Carter considered himself to be primarily a contrapuntal music composer. Even though one of the main characteristics of the Fifth Quartet is its harmonic language built on AITs, the chords are seldom stated by simultaneous attacks. Rather, the harmonies are typically formed and transformed by staggered entrance of voices. This allows opposing dualities to emerge:

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<sup>256</sup> Carter, *Harmony Book*, 33.

<sup>257</sup> In his *Harmony Book*, Carter further explains why he adopted a simplified harmonic language in the Fifth String Quartet: “I found that...using many of these chord patterns led me to passages that I didn’t like. I didn’t like the sound of them. So then I worked around until I found passages I did like, even if it didn’t follow any of these systems exactly. All through my compositions there are moments when I did things what I thought sounded better than what this chord system produced, because it seemed to be more in character with what I wanted. There were many different intentions fighting together which in the end soon made me feel that maybe this system was not as useful as it had been to me and that there were other matters I was more concerned with. So I simplified my vocabulary and made it into something that was more restricted....The Fifth [String] Quartet certainly is an example,” 33-34.

contrapuntal linearity against vertical harmony; short, fragmented passages are contrasted against long, expressive lines; and densely textured movements differentiate from thinner interludes. In describing Carter’s late music, John Link observes that Carter had become increasingly interested both in the idea of fragments, which are internally vibrant and usually separated from each other by silences, and in long expressive melodies, which persist through frequent and turbulent interruptions.<sup>258</sup> These two types of music are vividly at play in the Fifth Quartet, with expressive lines usually occurring simultaneously with fragments in the other parts. These opposing forces dramatize the overall character of the piece and reveal yet another dichotomy in the creative processes that unfolds: Carter notes that whereas fragmented statements give a sense of the musicians rehearsing the music and then playing it, the patterns of music may be regarded as a metaphor for the act of composition itself.<sup>259</sup>

While Carter himself observed that his music is, above all, based on harmony, the melody is unquestionably essential. In the Fifth Quartet, he assigns each instrument a repertoire of four intervals, which serve as the basis for melodic invention. Carter introduced this technique in the Second Quartet, and reapplied it in the Fourth Quartet. However, unlike its predecessors, now the instruments share some of the intervals (Figure 2).

**Figure 2:** Elliott Carter, String Quartet No. 5: Distribution of intervals among the four instruments

<b>Violin I</b>	2, 3, 5, 8
<b>Violin II</b>	1, 3, 7, 10
<b>Viola</b>	1, 4, 5, 9
<b>Cello</b>	2, 6, 7, 11

<sup>258</sup> Link, “Elliott Carter’s late music,” 10.

<sup>259</sup> See Schiff, 92; Meyer and Shreffler, 294.

A vast majority of Carter's other works since the Second Quartet feature melodic lines that are composed according to the interval-based melodic practice. Since his discovery of this system, Carter found that despite certain confinements, these melodies are nevertheless freed from the spatial confines of the primary chords (the AITs and the ATH), and allow for much expressivity and formation of different characters in his music.

Stephen Heinemann uses the term "interval technique" to describe Carter's compositional method of assigning certain unordered pitch-class intervals to instruments. He notes that it is not the specific intervals between the pitches or intervals between pitch classes that are operative in this technique, but rather the equivalence classes of intervals between pitches, meaning, unordered pitch intervals with octave equivalence.<sup>260</sup> A brief excerpt from *Presto scorrevole* exemplifies this "interval technique" (Example 8). In the Fifth Quartet, each instrument adheres to its assigned repertoire of intervals—for instance, the first violin moves only by intervals of 2, 3, 5 or 8 in either direction—but the pitches are grouped in a way that form either the primary (AITs) or secondary four-note chords.

When Carter applies the combination of intervals in blocks—in triple or quadruple stops—the assigned repertoire is operative only between adjacent pitches in either direction (top to bottom, or vice versa) (Example 9). For instance, the first violin's opening quadruple-stop in m. 1 contains ics 4, {A-C#}, 7, {A-E}, and 11, {F-E}, none of which belong to the instrument's repertoire. However, looking at the adjacent intervals from the bottom to top, the intervals are 8, 8, 3, which are a part of the first violin's repertoire. This observation confirms that Carter thought about harmony both as vertical blocks of chords that would yield the

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<sup>260</sup> Heinemann, "Composition with intervals: melodic invention in Elliott Carter's recent concertos," 191-192.

preferred four-, six-, and eight-note chords, but also as a collection of linear intervals from which he could derive the melodic material.

**Example 8:** Elliott Carter, String Quartet No. 5: Interval technique in *Presto scorrevole*, mm. 133-134

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**Example 9:** Elliott Carter, String Quartet No. 5: Intervallic make-up of the opening quadruple-stop

(a) Non-adjacent pitches with intervals outside of the first violin's repertoire

(b) Adjacent pitches with intervals in the first violin's repertoire



## CHARACTERS AT PLAY

While Link notes that Carter’s harmonic practice in his recent music—in which the instruments share a common harmonic vocabulary—has “unfixed the identity” of instrument and character,<sup>261</sup> the rhythmic and gestural varieties create an abundance of characters in the Fifth Quartet. The sketches indicate that the variety of characters was a pivotal idea in the earliest stages of the composition. For instance, the earliest dated sketch in the collection indicates that while Carter focuses on the opening quadruple-stop harmonies, he also clearly designates some of the desired techniques and gestures, such as the second violin’s snap *pizz.* in m. 7 (see bottom staff in Example 1). In fact, most of the sketches, even in their earliest stages, contain descriptive text, such as “viola arrabiata,” specified articulations (*pizz.*, *arco*, *marc.*, accents), harmonics, and even dynamics markings. It thus becomes clear that creating an identifiable character for each movement was an early conceptual idea, along with the harmonic structure.

The Fifth Quartet contains a total of twelve movements—an introduction, six main movements, and five interludes. The principal movements come in contrasting pairings: two fast movements (movements 1 and 4—*Giocoso* and *Allegro energico*), two slow movements (2 and 5—*Lento espressivo* and *Adagio sereno*), and two scherzos (movements 3 and 6—*Presto scorrevole* and *Capriccioso*). The movements are intercepted by Interludes (Figure 3).

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<sup>261</sup> Link, “Elliott Carter’s ‘Late Music’?,” 7.

**Figure 3:** Elliott Carter, String Quartet No. 5: Order of movements

Introduction	
Giocoso	Fast
Interlude I	
Lento espressivo	Slow
Interlude II	
Presto scorrevole	Scherzo
Interlude III	
Allegro energico	Fast
Interlude IV	
Adagio sereno	Slow
Interlude V	
Capriccioso	Scherzo

Carter tends to introduce characters individually as short, distinct fragments, before joining them. The emphasis of each character alone allows for its identification when it recurs and develops, even when interwoven with several other characters. The Introduction serves as a preview of all characters at play in the Fifth Quartet. In these opening twenty-four measures, the instruments enter one at a time—violin I first, followed by the viola, the cello, and finally violin II—each playing snippets of different articulation and techniques that characterize the Quartet: *sul ponticello*, *sul tasto*, *arco*, *staccato*, *legato*, *pizzicato*, *snap pizzicato*, harmonics, accents, up-bow accents, *marcato*, *tenuto*, and slurs (see Example 4). Expressive marks accompany these technique markings: *ruvido*, *tranquillo*, *espressivo*, *tenero*, *leggero*, *giocoso*, *brillante*, *marcato*, *subito*, with dynamics that range from *pp* to *sff*. Once all characters are stated, Carter typically picks one or two, which he assigns to each movement in order to give them an identifiable character.<sup>262</sup> The interludes intersecting the adjacent movements serve as

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<sup>262</sup> Yeon-Su Kim's dissertation, "Stylistic Analysis of Elliott Carter's String Quartet No. 5: Aspects of Character and Rhythm," contains a list of characters of all the movements of the Fifth Quartet, based on the performance practice (see pp. 104-108).

“connectors,” in that they contain the motives and gestures from both the preceding the following movements.

Although there is much variety of characters and gestures, one single effect prevails in the Quartet: the duality of oppositions. For instance, long expressive melodies are pitted against short, turbulent fragments, and *legato* lines against *staccato* or *pizzicato* parts. In the *Giocoso*, there are two predominant expressive characters—*leggero* and *espressivo*. Carter highlights this contrast of colors by juxtaposing them. Further, *leggero* is characterized by two contrasting bowing techniques—*pizzicato* and *arco*—pitted against *espressivo*. While all four parts cooperate to complete musical ideas and common harmonic language, the first violin dominates this movement and distinguishes itself by being the only instrument not to play in *pizzicato*. Also, the first violin is the agent for metric modulations—not only that it changes its rhythmic divisions of the beat with the frequent changes of meter (unlike the other three parts), but it is the first violin’s rhythmic patterns that instigate the changes in meter and tempo. The first metric modulation occurs on the downbeat of m. 25 (the first measure of *Giocoso*), with the meter change from 4/4 to 6/4, and the change in tempo from ♩ = 72 to ♩ = 96, via the first violin’s rhythmic change, ♩ = ♩ (Example 10). In the following measure (m. 26), the violin initiates yet another modulation, from ♩ = 96 to ♩ = 64, where its rhythmic unit shifts from sixteenth-note to sixteenth-note triplet. The triplet remains its characteristic rhythmic figuration until the next modulation on the downbeat of m. 46, where it changes to a thirty-second note septuplet, at the tempo of ♩ = 73+.

Example 10: Elliott Carter, String Quartet No. 5: *Giocoso*, metric modulations in mm. 23-26

23  $\text{♩} = 72$

*f* *mf* *f*

*pizz., normale*

*f* *mf* *f* *mf*

*f espr., legato* *mf*

*p* *p*

2. *Giacoso*

25  $\text{♩} = 96$   $\text{♩} = 64$

*mf* *p leggero* *mp*

*pp* *poco*

*pp*

*pp*

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(b) Viola: G# harmonics, Introduction mm.3-4 and *Giocososo* m. 30

3 normale *pp* tranquillo

30 *f*

(c) *ff ruvido* quadruple stops: Introduction m. 1 and *Giocososo* m. 64

1 *ff* ruvido

64 *ff* ruvido

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As the *Giocososo*'s texture becomes denser as the movement progresses, it suddenly dissipates into Interlude I, with sparse statements of fragments. The fragments, each displaying a different character, are heard in isolation. Their distinctiveness is exaggerated by being stated one after the other, highlighting their oppositions. For instance, while the second violin plays in *pizzicato* quintuplets, the cello follows in *legato* septuplets. This display of contrast is interrupted by yet another striking sound—the viola's sustained harmonic, marked in *pp* dynamics (Example 12).

Example 12: Elliott Carter, String Quartet No. 5: Interlude I, mm. 65-70

3. Interlude I

65  $\text{♩} = \text{♩} = 55-$

68

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The importance of these isolated fragments in Interlude I is that each one is an obvious statement of AITs or the secondary tetrachords (see Ex. 12). Hence, the instruments' rhythmic figurations (the viola's quintuplets, the cello's septuplets, and the first violin's triplets) and their distinct articulations (*pizzicato*, *arco*, *snap pizzicato*, and harmonics), present in a glimpse

the characteristics of the preceding movement, *Giocoso*, while the explicit statements of AITs preview the movement that follows—*Lento espressivo*.

Schiff describes the *Lento espressivo* as a “Carterian chorale with changing four-to-eight note harmonies.”<sup>263</sup> As discussed in the earlier section, the sequence of suspensions form statements of AITs and the secondary tetrachords combine to complete the twelve-note aggregate (see Ex. 6). Hence, the texture and quality of the harmonies give *Lento* a distinct character. Despite the sustained sound, the rhythmic units of the instruments create a four-strand 3:5:7:4 polyrhythm. The voices drop out, re-enter, and split into double-stops in a staggered manner, resulting in no full coincidence points (that is, there is not a single beat where a simultaneous attack in all four parts is heard).

The *Lento espressivo* is a slow, gradual and arch-shape expansion of dynamics, from *pp* (at the beginning of the movement), reaching *f* in its climax (m. 100), and slowly dying away to *pp*, until the accented quadruple-stop in m. 110, which begins Interlude II. This Interlude, like the previous one, is sparse in texture and features contrasts between long lyrical lines, played by a single instrument and marked in louder dynamics, and sustained chords in the other three parts, often notated in harmonics with *pp* dynamics and *tranquillo* expressive tone.

In contrast, the *Presto scorrevole* is a texturally-dense movement, with all four parts playing in continuous *tutti*, and rapid legato. Although each line is differentiated rhythmically and harmonically, the four parts combine to create a homogeneous texture. Yet, because of its homogeneity, even though the four-strand polyrhythms run throughout the entire quartet, this is the first time where they become prominent. Without any metric modulations, the four parts

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<sup>263</sup> Schiff, *The Music of Elliott Carter*, 93.



maintain the same speed in their characteristic rhythms: quintuplets in the first violin, triplets in the second violin, sixteenth notes in the viola, and eighth-note triplets imbedded within half-note triplets in the cello at the speed of  $\text{♩} = 57.6$ . While the voices drop in and out and enter at various points, the long continuous lines of four rhythmic patterns form several full coinciding points, the first such event in the entire Quartet. At the point of the movement's textural density (mm. 149-160), the instruments' downbeats frequently form AITs or the secondary tetrachords (Example 13).

**Example 13:** Elliott Carter, String Quartet No. 5: Presto scorrevole mm. 155-156, coinciding points

The musical score shows four staves with complex rhythmic patterns. The first staff (Violin I) features quintuplets (5) and dynamic markings *p*, *cresc.*, and *f marc.*. The second staff (Violin II) features triplets (7) and dynamic markings *p*, *cresc.*, and *f marc.*. The third staff (Viola) features sixteenth notes and dynamic markings *p*, *cresc.*, and *f marc.*. The fourth staff (Cello) features eighth-note triplets within half-note triplets (3) and dynamic markings *mf*, *p*, *cresc.*, and *f marc.*. Four coinciding points are circled and labeled below the staves: (0258), (0369), (0146), and (0146). The text "off the string" is written above the staves at the end of the excerpt.

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Toward the end of the movement, the texture gradually starts to thin out from four voices down to one, and from long lines to very short fragments. Interlude III that follows, just like the previous interludes, recaps the motives and characters that were heard in the previous movements, and previews the ones that will follow. The mixture of the material previously heard with the one to come is further differentiated by contrasting articulation—the linear

fragments of the *Presto scorrevole* are always played *staccato*, while the punctuating triple- and quadruple-stops, unique to *Allegro energico*, are bowed (*arco*).

The *Allegro energico* is a loud and more “violent” movement. As Schiff notes, a sketch (dated May 2) bears the inscription “viola arrabiata,” describing the instrument’s angry gestures.<sup>264</sup> Although Carter places emphasis on the viola by giving it expressive lines against punctuating chords, it is these chords that give the movement its identifying character. The most remarkable part of the movement is the ending (mm. 218-222), where the voices individually grow in density: the instruments’ individual texture swells from single pitches (m. 218), to double-stops (mm. 219-221), and finally to intensifying triple-stops in m. 222 (Example 14). Yet, while the density of individual voices increases, the overall texture thins out: by the time all four instruments participate in playing triple-stops, the chords are heard one at a time, with no coinciding points.

**Example 14:** Elliott Carter, String Quartet No. 5: *Allegro energico*, intensifying density and de-intensifying texture in mm. 221-222



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<sup>264</sup> Schiff, *The Music of Elliott Carter*, 93.

Following this dramatic ending of the *Allegro energico*, the ensuing Interlude IV is starkly contrasting. Short fragments, played using a variety of techniques in the upper three parts—*pizzicato*, harmonics, and turbulent quadruple-stops—are unevenly dispersed, while the cello features its longest, uninterrupted, and expressive line of the entire Quartet. One distinguishing articulation in this Interlude, which has gradually increased in prominence from one interlude to the next, is the use of harmonics, which becomes the sole identifiable trait of the *Adagio sereno* movement.

The *Adagio sereno* is notated entirely in harmonics. Similar in character, texture, and harmonic design of the first slow movement, *Lento espressivo*, the harmonies combine to form alternating statements of the AITs and secondary tetrachords. The serenity of the movement is broken at the very end (mm. 279-280), when instruments, one by one, shift from playing sustained harmonics in *pp* dynamics to loud *pizzicato* fragments and arpeggiated quadruple stops (see Example 7).

In m. 281, the *pizzicato* chords in the viola and the cello appear to mark the beginning of the *Capriccioso*, a movement characterized by being notated entirely in *pizzicato* technique. However, the last accented quadruple-stop in the second violin, {Bb, D, C#, B}, marked in *arco* bowing and *ff* dynamics, interrupts the transition into the last movement, and instead leads into the Interlude V. Following the second violin's gesture, the viola and the cello play quadruple-stops, marked with the exact same dynamics and articulation, which begin the last interlude (Example 15).

**Example 15:** Elliott Carter, String Quartet No. 5: Ending of *Adagio sereno* and the beginning of Interlude V, mm. 280-282

The image shows a musical score for String Quartet No. 5 by Elliott Carter, specifically measures 280-282. The score is written for four staves (Violin I, Violin II, Viola, and Cello/Double Bass). The first part of the score (measures 280-281) is the ending of the *Adagio sereno* movement, featuring long, expressive lines in the first violin and shorter fragments in the lower parts. The second part (measure 282) is the beginning of Interlude V, characterized by a contrast between a long, expressive melody in the first violin and short fragments in the lower parts. The score includes various performance instructions such as *pizz.* (pizzicato), *arco* (arco), and dynamic markings like *ff* (fortissimo) and *f* (forte). The tempo marking for Interlude V is 11. Interlude V.

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Once again, the Interlude shows its double function: it creates a contrast between the movements it intercepts, while recapping the main motivic ideas and characters. Both the *Adagio sereno* and *Capriccioso* emphasize the verticality of harmonies (double-, triple-, and quadruple-stops) and thick texture; by contrast, Interlude V is characterized by linearity and sparse sound—typically, the long, expressive lines in the first violin are pitted against short fragments in the lower three parts. While the preceding movement prominently features harmonies based on AITs and secondary tetrachords, Interlude V emphasizes the statements of complete aggregates (see Ex. 15, the first violin in m. 282). However, within itself, Interlude V is built on contrasting oppositions of melody versus accompaniment. The *legato*, lyrical, and expressive melody in the first violin is set against short fragments in the lower parts, which alternate between *legato*, *staccato*, and *pizzicato* at first, and toward the end all three remain in *pizzicato* character, in preparation for the *Capriccioso*. It further foreshadows the rhythmic stratifications of the last movement—the characteristic superimposition of sixteenth notes,

quintuplets, sextuplets and septuplets—which rhythmically frame the *Capriccioso*. This transition illustrates how seamlessly the movements of the Quartet interweave without losing their individual character.<sup>265</sup>

The texture of the *Capriccioso* alternates between a dense four-part counterpoint (played entirely *pizzicato*), which features a four-strand polyrhythm (4:5:6:7), and arpeggiated chords. The *pizzicato* timbre is broken in the last three measures of the Quartet (mm. 329-331), when all four instruments play *arco*. While the final passage—notated by the return to bowing, dissipated texture, and the final double-stop in the first violin marked *pianissimo*—may seem as a typical “undramatic” or “anti-heroic” ending, typical of Carter’s late music,<sup>266</sup> the effect is nonetheless remarkable. Robert Mann, the founding member and first violinist of the Juilliard String Quartet, makes the following observation about the effect Carter achieves in the ending of the Fifth Quartet:

The final three and one-half measures achieve a *ludus tonalis* signature that brings the work to a perfect, cadential end. . . . [P]erforming this brief denouement with the other three players—expiring after a last double-stop ends, *sotto voce*—alone provides me with the answer as to why string quartets are still written after 250 years.<sup>267</sup>

The last measures, indeed, end the work in an organic way by bringing back all the gestures, timbres, textures, intervallic shapes, and harmonies used in the Fifth Quartet. The texture in these last measures contains a four-strand polyrhythmic counterpoint (m. 328) and dispersed notes, separated by pauses, played by one instrument at a time (mm. 328-331). The diversity of articulation and playing techniques demonstrates a microcosm of timbre—following the *pizzicato* passage, the first violin plays a snap *pizzicato* in m. 328, the cello follows with harmonics in m. 329, and then all four instruments play *arco*, techniques which

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<sup>265</sup> Meyer and Shreffler, 294.

<sup>266</sup> *Ibid.*, 294. Also, see the discussion of the Coda section in String Quartet No. 4 in Chapter 4.

<sup>267</sup> Mann, “The String Quartets of Elliott Carter,” v.

were introduced in the opening measures of the Quartet, and featured individually throughout the work. The changes of timbre are accentuated by the novelties in the dynamics—the snap *pizzicato* is notated with *ff*, harmonics with *mf*, *arco* with *p*, which then alternates between *f*, *p*, and *ff*, only to end with *pp* in m. 331. The pitch content in the last three and a half measures gives final statements of the AIT (0146) (in mm. 328 and 330), which is intercepted by the secondary tetrachord (0134) (in m. 329). Hence, the last three measures yield one final complete twelve-note aggregate (Example 16). Bringing the piece to a close, the violins combine to form the pitches of the chord in m.1: {A#, F#, G, D}.

**Example 16:** Elliott Carter, String Quartet No. 5: *Capriccioso*, final measures, mm. 327-331

Four-strand polyrhythm: 4:5:6:7

(0146)

(0146)

fully coinciding

{A#, F#, G, D}

329

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The ending of the Fifth Quartet displays all characters at play, which cooperate to recall the harmonic language, rhythms, gestures, and timbres of the piece. The collaboration among the four parts is evident throughout the Quartet—with the individual character of instruments eschewed, the four parts work together to complete the harmonic language of structural eight-note chords and aggregates, finish lyrical melodies, give each movement its identifiable trait, and contribute to the overall form of the piece. Hence, this collaboration expresses both unity and dual oppositions.

### FORM: OPPOSITION WITHIN COOPERATION

Long-range polyrhythmic structure is the guiding force in the large-scale designs of virtually all Carter's music of the 1980s and mid-90s.<sup>268</sup> However, since the mid-90s, the rigid use of long-range polyrhythms becomes increasingly subtle in Carter's works, as he explores

<sup>268</sup> Long-range polyrhythms, also referred to as large-scale polyrhythms and structural polyrhythms, are rhythms that guide both the large-scale and local rhythmic design of a composition.

a greater flexibility of the form, as is the case in the Fifth String Quartet. John Aylward observes that in the Fifth Quartet, Carter uses constituent parts of a long-range polyrhythm outside the boundaries of the polyrhythm itself. This technique creates contrasts between the interactions of metric layers both inside and outside of a source long-range polyrhythm. Once abstracted from a long-range polyrhythm, rhythmic components freely associate with other metric layers and other musical parameters in more dynamic and spontaneous ways.<sup>269</sup>

The sketch collection for the Fifth Quartet contains only one rhythmic diagram, compared to several hundred pages devoted to the rhythm in the Fourth String Quartet. Sketch study thus indicates that rhythm was not one of the emphasized parameters of the Fifth Quartet, nor the principal guiding force of the overall form of the piece. None the less, rhythmic structure was conceptually conceived during the early compositional stage of the Quartet. A sketch dated February 4, 1995 is a long-range polyrhythmic graph for the *Lento espressivo*, designated by the measure numbers and tempo inscription, “slow.” The graph follows the same practice of notation as his long-range polyrhythmic diagrams of other compositions, including the Fourth Quartet: the basic rhythmic configurations of four polyrhythmic strands are superimposed. The top line, drawn in pencil, subdivides the 4/4 meter beats into sixteenth-note septuplets; underneath, in green, the beat is subdivided into sixteenth-note quintuplets, followed by eighth-note triplets in red, and the sixteenth notes in blue pencil on the bottom (Example 17). The score analysis of *Lento* reveals that the instruments are not stacked up in order, but rather the viola is on top in this sketch (since its rhythmic pattern in the movement is characterized by the septuplets), the second violin underneath it (with its beat division into quintuplets), followed by the first violin (characterized by triplets), and finally the cello on the

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<sup>269</sup> Aylward, “Metric Synchronization and Long-Range Polyrhythms in Elliott Carter’s Fifth String Quartet,” 88.



bottom (with a sixteenth-note beat division). This arrangement yields a polyrhythmic alignment of 3:5:7:4 throughout the entire movement.

Typical of his long-range polyrhythmic graphs, the rhythmic strands do not articulate all pulses. Rather, there is only one rhythmic beat division per measure, which contains only one notehead. Just like in the Fourth Quartet, Carter notates polyrhythmic pulses with filled-in noteheads, some of which are circled. However, unlike any of his previous long-range polyrhythmic graphs, Carter also notates some pulse-strands with open squares. J. Daniel Jenkins suggests that Carter planned for each instrument to consist of two-voice polyrhythm, one notated in his graphs by filled-in noteheads and the other by empty squares, resulting in a structural polyrhythm of eight, rather than four, different pulse strands.<sup>270</sup>

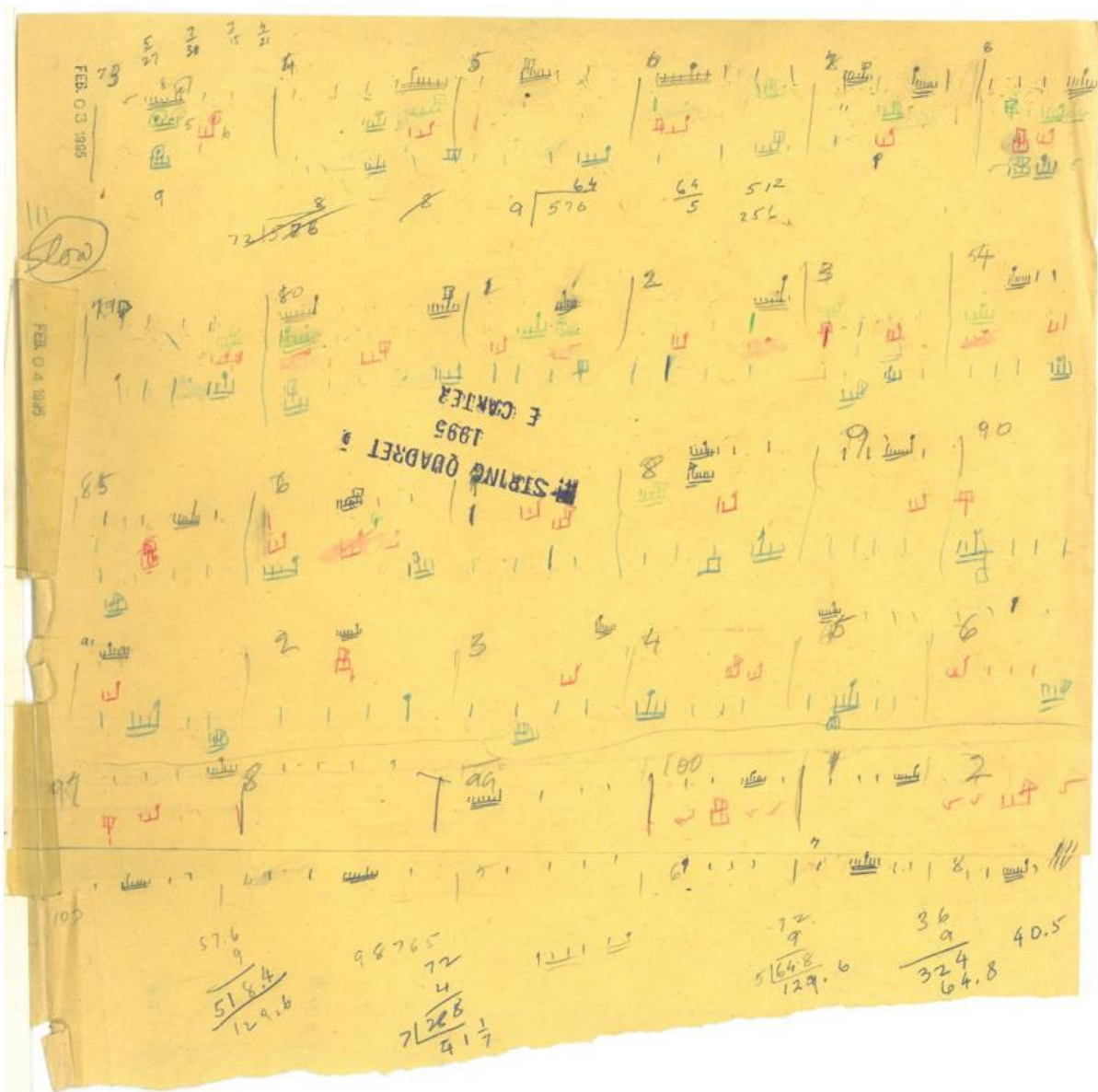
Unlike the long-range polyrhythmic graphs in the Fourth Quartet, where the notated filled-in noteheads corresponded to the sound attacks and the circled noteheads to the attacks created by double-, triple-, or quadruple-stops, the notation in the sketch for the Fifth Quartet is not quite so accurate. Hence, as Aylward observes, sketch study reveals that after composing the central long-range polyrhythm of the Quartet, Carter extracts a key rhythmic component and embeds it into an earlier section of the work where it will be heard and interpreted within a more flexible metric design.<sup>271</sup>

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<sup>270</sup> Jenkins, "After the Harvest," [22].

<sup>271</sup> Aylward, "Metric Synchronization," 89.

**Example 17:** Elliott Carter, String Quartet No. 5: *Lento espressivo*, long-range polyrhythmic graph (Elliott Carter Collection, Paul Sacher Stiftung. Used by permission.)



Aylward attributes the notion of embedded tempo to a method of revealing the relation among the rhythmic layers in the Quartet. For instance, the beginning of the Introduction is marked at a surface tempo of  $MM = 72$ . Snap *pizzicato* attacks in the second violin are articulated every forty-fourth quintuplet-sixteenth-note. Therefore, the embedded tempo of the

second violin in this passage is  $MM = 8.12$ , within the surface tempo indication of  $MM = 72$  (Example 18).<sup>272</sup>

**Example 18:** Elliott Carter, String Quartet No. 5: Introduction: Violin II, mm. 7-16

The image shows three staves of musical notation for Violin II, measures 7-16. The notation includes various dynamics and articulations. Brackets above the staves indicate '44 quintuplet sixteenth-note beats' for specific passages. Annotations include '(snap pizz.)', 'pizz., normale', and 'poco'. The score is written in treble clef with a 4/4 time signature.

In the last two measures of the Introduction (mm 23-24), the second violin undergoes metric *accelerandi*, changing speed from  $MM = 30$ , 40, and 60, before reaching  $MM = 80$  in the first measure of the *Giocoso* (m. 25). These embedded tempi of the second violin are further accentuated by the static tempi of the first violin and the viola, moving at the speed of the surface tempo of  $MM = 72$ .<sup>273</sup> Although the contrast of the metric layers accentuates the rhythmic tension among the four parts, Carter resolves the tension by synchronizing the meters (such an instance is the downbeat of the *Giocoso*), which, as Aylward observes, creates articulating moments analogous to those found within long-range polyrhythms. Carter's practice of using embedded tempi in the Fifth Quartet, with tensions and resolutions in the

<sup>272</sup> Ibid., 89.

<sup>273</sup> For a detailed analysis of the embedded tempi in the Fifth String Quartet, see Aylward, "Metric Synchronization and Long-Range Polyrythms in Elliott Carter's Fifth String Quartet," 88-99; Aylward, "Formal Designs in Elliott Carter's *Fifth String Quartet*: Large-Scale Metric Tensions and the Embedded Tempo."

metric layers, shows his flexibility in beginning and ending tempo streams whenever the composition demands it.<sup>274</sup>

The fragmented nature of the Fifth Quartet most likely contributes to Carter's freer and more flexible use of long-range polyrhythms. Sketches indicate that Carter's compositional process for this piece parallels its form and overall experience: it was written in smaller segments, and not in a linear order—the movements were not written in order, but rather Carter jumps from one movement to another in an unordered manner. Hence, the process suggests a form where musical material moves in both directions, forward and backward. The analysis of the piece itself certainly confirms this observation.

For instance, the first three movements—*Giocoso*, *Lento espressivo*, and *Presto scorrevole*—are not characterized by their use of harmonics. Yet, harmonics are the prominent timbre in the interludes that intercept them—Interludes I and II. It is not until the end of Interlude IV that harmonics return, foreshadowing the characteristic timbre of the movement that follows—*Adagio sereno*. Interestingly, Carter's dating of the sketches reveals that the *Adagio* was composed nearly three months after Interlude II, and one month before Interlude I (Figure 4). Hence, the non-linear compositional process of the movements and interludes is reflected in the motives that appear in various movements, out of sequence.

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<sup>274</sup> Aylward, "Metric Synchronization," 93.

**Figure 4:** Elliott Carter, String Quartet No. 5: The chronology of movements

(a) List by movements in order

Introduction	Opening tetrachords sketches in January; most of the quartet composed in June; revisions in July
Giocoso	Earliest dated sketches are from late March, early April; later sketches (in nearly fair copy draft) in June
Interlude I	Second part of June, mostly in July
Lento espressivo	Long-range polyrhythmic graph sketched in early February; earliest sketches composed in early April (most of it composed on April 9-10); one sketch in May; two sketches in June (mostly Interlude I connecting to Lento) one harmony sketch in July
Interlude II	First week of April
Presto scorrevole	Last week of March
Interlude III	End of June, mostly in July
Allegro energico	Earliest sketches of short fragments composed during the last week of March; most of it composed during end of April, beginning of May
Interlude IV	End of June, mostly in July
Adagio sereno	Mostly composed in during the second half of May
Interlude V	End of June, mostly in July
Capriccioso	Mostly composed during the second half of May

(b) List by chronological order

January	Introduction (opening measure) harmonic sketches
February	Lento espressivo: long-range polyrhythmic graph harmonic sketches
March	Presto scorrevole
April	Interlude II Lento espressivo Allegro energico
May	Allegro energico Adagio sereno Capriccioso
June	Interlude I, III, IV, V Introduction
July	Interlude I, III, IV, V Introduction

This type of consistent fragmentation makes the form of the Fifth Quartet new and unique. Further, with the alteration between seemingly improvised interludes of a solo character and more compact *tutti* movements, Carter aimed to represent a rehearsal of the quartet, as he explains in his introduction to the Fifth Quartet:

One of the fascinations of attending rehearsals of chamber music, when excellent players try out fragments of what they later will play in the ensemble and then stop abruptly to discuss how to improve, is that this pattern is so similar to our inner experience of forming, ordering, focusing and brining to fruition and then dismissing our feelings and ideas. These patterns of human behavior form the basis of the 5<sup>th</sup> String Quartet. Its introduction presents the players, one by one, trying out fragments of later passages from one of the six short, contrasting ensemble movements at the same time maintaining a dialogue with each other. Between each of the movements the players discuss in different ways what has been played and what will be played. In this score the matter of human cooperation with its many aspects of feeling and thought was a very important consideration.<sup>275</sup>

Therefore, the fragments in the Introduction and Interludes, which resemble the passages and characters from the six movements without fully duplicating them, represent the discussions and analyses. On the other hand, the interludes represent the rehearsal, where the snippets of musical ideas are tried out, before they are all put together within movements. The interlude following each movement acts as a discussion session or analysis of what was just played in the previous movement, before small motives from the following movement are rehearsed.

In Frank Scheffer's 2004 film, *Elliott Carter: A Labyrinth of Time*, Carter explains how he derived the notion of "human cooperation," a central idea in the Fifth Quartet:

I think my own music is a picture of a society as I hoped it would be. There are a lot of individuals dealing with each other, sensitive to each other, and cooperating and yet not losing their own individuality.<sup>276</sup>

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<sup>275</sup> Carter, "Note from the Composer" in *String Quartet No. 5* [score].

<sup>276</sup> Scheffer (dir.). *Elliott Carter: A Labyrinth of Time*.

Although there is some sense of the instruments losing their characters in the Fifth Quartet (for instance, there is more duplication of intervals in the Fifth Quartet than in the Second or Fourth Quartets), the rhythms, motives, articulation, and timbers accentuate their individuality. But the four individuals cooperate in forming the common harmonic language, tensions and releases in the metric layers, and contribute to the overall characters of movements. While each movement depicts a unique character, making it unified internally, the Quartet is founded on diverse properties from which dualism emerges. Not only do specific articulations, playing techniques and timbres add to the dualism, such as pitting a lyrical and expressive melody in one instrument against *staccato* or *pizzicato* fragments in other parts (Interlude V), but dualism emerges on a larger-scale: in independence of instruments versus the cooperation among the four parts. That is, while Carter emphasizes the independence of the streams, either by contrasting the instruments' intervals, rhythm, and expressive character, he also focuses on their integration—how to combine all contrasting streams to produce distinctive harmonies and shape their dramatic and expressive trajectories.

In his discussion of the duality of independence and integration in the Fifth Quartet, John Roeder examines how, for instance, in the Introduction, the first violin's *staccato* and *fortissimo* quadruple-stops are contrasted with the viola's sustained single pitch in *pianissimo* dynamics (mm. 1-2).<sup>277</sup> As Roeder observes, this contrast soon leads to cooperation: after the completion of the aggregate (mm. 1-4), the first violin replays its pitches of the quadruple-stops, but now in a linear, slow and expressive manner. However, it does not repeat its highest pitch, G; instead, the second violin supplies that pitch in m. 7.<sup>278</sup> Further, although the violins cooperate here to complete the first violin's pitch collection, the contrast is clear: the second

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<sup>277</sup> Roeder, 129.

<sup>278</sup> *Ibid.*, 130-131.

violin's contribution, pitch G, played as a snap *pizzicato*, is noticeably contrasted against the first violin's expressive line. Such instances of collaboration among the parts can be seen throughout the Quartet on many levels: the instruments share pitches to complete the interval collections and aggregates, they combine their repertoires of intervals to form AITs, and their rhythmic strands form temporal overlaps, while anticipating or continuing each other's pulses. Interestingly, the interaction among the instruments at first seems nonexistent. Yet, the analysis of their oppositions brings to light their cooperation, which is a critical notion of the Fifth Quartet.

## CONCLUSION

The five string quartets of Elliott Carter are his best-known compositions, which have earned him the greatest professional success. His First String Quartet (1951) marks a turning point in his development of musical language and expression. It is characterized by textural conflict with many layers of contrasting speeds and characters, yielding what Carter has referred to in his text manuscripts as his 'most extreme adventure into "metric modulation."'”<sup>279</sup> Each of the quartets that follow, explores in different ways possibilities opened up by the First, developing identifiably Carterian harmonic vocabulary, a polyrhythmic texture and individualization of the instrumental parts. Such gradual progression in musical language and ideas, which yields distinctively new results, makes the study of Carter's five quartets an invaluable genre for tracking the composer's evolution and processes behind his constantly emerging new styles.

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<sup>279</sup> See text manuscripts, Elliott Carter Collection at the Paul Sacher Stiftung, Basel.



In the Second String Quartet (1959), the four instruments are individualized, each given its own character, harmonic intervals and rhythms. The Third String Quartet (1971) is characterized by contrast and conflict of the opposing duos. The long-range polyrhythmic structure is a guiding force in the formal organization of the piece, and the individualization of each player, are the principal ideas of the Fourth String Quartet (1986). Yet, a keen preoccupation with the “democratic attitude in which each member of a society maintains his or her own identity while cooperating in a common effort,” prevails.<sup>280</sup> With his Fifth String Quartet (1995), Carter seeks to embody the elements of the previous four, while making it an identifiably new piece with unexplored ideas. To achieve this, Carter devises an original formal design, which extends beyond the concept of composition—he musically represents the processes of rehearsal, discussions, analysis and performance to show the cooperation of the four players.

Although Carter explains that in his Fifth Quartet the players rehearse all the quartets he has composed, the five quartets are concerned with motion, change, and progression with very little literal repetitions. The First Quartet is perhaps the most complex of the quartets, because at the time he was writing it, Carter was exploring many new ideas. Each that followed can be regarded as a more focused study of the ideas introduced in the First. For instance, in the First Quartet, Carter becomes familiar with the properties of all-interval tetrachords (AITs). By the time he wrote the Third and Fourth Quartets, he elaborated the AITs into all-trichord hexachord and all-interval twelve-tone chords. Yet, by the time he wrote the Fifth Quartet, with the harmonic language based on the eight-note chord that contains two subsets of the AITs, the language is simplified, albeit not simple. The need to simplify his harmonic language

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<sup>280</sup> Carter, “Program Notes,” ix-x.

arose from his interest in exploring other aspects of composition besides harmonic structure, which was already developed in the earlier quartets.

In the Second and Fourth Quartet, Carter uses the technique of assigning a repertoire of intervals to each instrument, hence emphasizing their individuality. In the Fifth Quartet, he allows the instruments to share more intervals among themselves. By doing so, the individual characters of instruments are present, but the emphasis is placed on their integration—they collaborate to create the common harmonic language and complete each other's melodic ideas. This sense of cooperation, which is hidden from the surface of the composition, yet strongly present within different layers of the Quartet, is the driving force in the structure of the Fifth Quartet. Unlike the long-range polyrhythms of the Fourth Quartet, for instance, which function as the formal structure of the piece on all levels, the polyrhythms in the Fifth Quartet are used to emphasize the collaboration of the four parts. Their clashing four-strand polyrhythms and contrasting metric layers emphasize a certain duality. But, unlike the spatial duality of the opposing duos in the Third Quartet, Carter creates a duality on a greater conceptual level in the Fifth Quartet: that of contrast and opposition within unity and cooperation. Indeed, the Fifth Quartet does represent “a farewell to the previous four and an exploration of a new vision.”<sup>281</sup>

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<sup>281</sup> Carter, “Composer’s Note.”

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**Appendix B**  
String Quartet No. 1  
Notated Transcription of Main Themes, *Fantasia*

**Carter's Identification of Main Themes:**

Theme 1 (Theme A): mm. 12 in V II; 22 in V II; 91 in V I; 155 in Cello; 170 in Cello

22 (♩ = 120)

*pizz.*  
*f marc.*

Theme 2 (Theme B): mm. 22 in V I; 58 in V II; 106 in V II; 145 in V I

22 (♩ = 120)

*mp tranquillo*  
*(poco)*

Theme 3 (Theme C): mm. 25 in Viola; 121 in Viola; 231 in Viola; 312 in Cello

25 (♩ = 120)

*f marc., detache*  
*mf*

Theme 4 (Theme D): mm. 27 in Cello; 83 in Cello; 108 in Cello; 236 in Cello; 282 in Viola

27 (♩ = 120)

*f sost. e cant.*

Theme 5 (Theme E): mm. 41 in V II; 181 in Cello; 314 in V I

Musical notation for Theme 5 (Theme E). The score is written on a single staff in treble clef. It begins with a box containing the number 41 and the tempo marking  $(\text{♩} = 150)$ . The first measure is marked *mf espr.*. The music consists of a series of eighth and sixteenth notes, some beamed together. A box containing the number 46 is placed above the staff. The tempo marking  $(\text{♩} = 150)$  is repeated above the staff. The piece concludes with the marking *espr.* and a fermata.

Theme 6 (Theme F): mm. 46 in Viola and Cello; 206 in V II and Viola (varied)

Musical notation for Theme 6 (Theme F). The score is written on two staves, the upper one in alto clef and the lower one in bass clef. It begins with a box containing the number 46 and the tempo marking  $(\text{♩} = 60)$ . The first measure is marked *f cant.*. The music features triplet markings (indicated by a '3' over a bracket) and a *mf* dynamic marking. The piece ends with a *mf* dynamic marking.

Theme 7 (Theme G): mm. 70 in Viola; 112 in V I; 313 in V II

Musical notation for Theme 7 (Theme G). The score is written on a single staff in alto clef. It begins with a box containing the number 70 and the tempo marking  $(\text{♩} = 180)$ . The first measure is marked *f espr.*. The music includes triplet markings and a *cresc.* (crescendo) marking. The piece concludes with a fermata.

Theme 8 (Theme H): mm. 215 in Cello; 235 in V II

Musical notation for Theme 8 (Theme H). The score is written on a single staff in bass clef. It begins with a box containing the number 215 and the tempo marking  $(\text{♩} = 126)$ . The music consists of eighth and sixteenth notes, some beamed together, and concludes with a fermata.

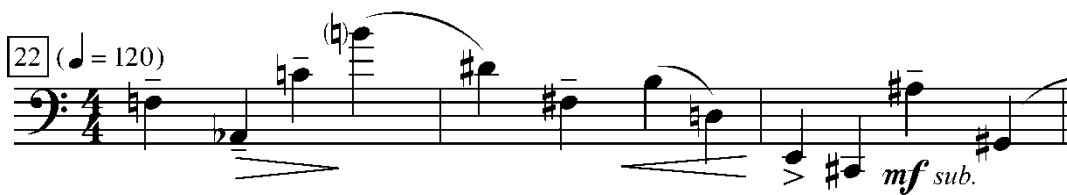
## Schiff's Identification of Main Themes:

Themes 1 -5: same as Carter's

Theme 6:<sup>282</sup> mm. 50-59, 62-77, 103-109, 350-379<sup>283</sup>



Theme 7:<sup>284</sup> mm. 22-26, 44-46, 67-68, 135-139, 144-147



Theme 8:<sup>285</sup> mm. 70-76, 112-138, 312-349



<sup>282</sup> Carter's Theme 6 is omitted in Schiff's classification of principal themes in *Fantasia* and replaced by another one. Yet, this theme is perhaps the most noticeable one because of its characteristic doubling at the octave. Considering that the First Quartet is a contrapuntal composition based on the simultaneity of speeds, polyrhythms, and individuality of characters, a theme characterized by two instruments playing the same melody at the same pitch level with the same rhythm and speed is rather striking.

<sup>283</sup> This theme appears first in m. 105, not in mm. 50-59 or 62-77.

<sup>284</sup> This theme does not appear in Carter's outline of principal themes.

<sup>285</sup> Schiff's Theme 8 corresponds to Carter's Theme 7.

**Appendix C**  
String Quartet No. 1  
Thematic Outline, *Variations*

Variations

A series of ideas are presented that become faster bit by bit throughout the movement. Some get faster more quickly than others and disappear before the end.

A-1, V.II – This figure gets a trifle faster at 40, VI and then is not referred to literally until 294, VII later at 418, V.I – except momentarily at 83, VII and at 320

B – One of the basic themes that appears throughout, each time slightly faster.

2 – Cello	308 – v. II
42 – cello	345 – v.II
70 – cello	381 – v.II
138 – V.I	404 – V.I
179 – cello	451 – V.I
215 – vla.	452 – vla
230 – V.II	

C – This theme contains many ideas that germinate into subsequent themes

6 – V.I., at 12 several important figures appear.

an off-shoot of this is c” at 77, V.I

247-viola

D – a series of chords below an upper pedal

86; 123; 145; 224; 229; 280; 316; 333, 334

E – This theme that opens with a rising scale gets faster more quickly than the above and disappears sooner.

92 – viola	181 – V.I
109 – V.I	209 – made up of the combined tones of V.I & V.II
125 – V.II	237 – Vla & cello
159 – V.I	

F – Arpeggio figure that at 209 combines to produce E

G – scale rising and falling that gets faster very rapidly

109 – cello	304 - cello
222 – V.I	307 – vla.
245 – cello	324 - cello
283 – vla	329 - V.I
300 – V.I	

H – lyrical phrase

281 – V.I	462 – V.I
372 – V.I	expanded intervals 488, 89.
397 – V/I	

**Appendix D**  
**String Quartet No. 1**  
 Notated Transcription of Main Themes, *Variations*

**Carter's Identification of Main Themes:**

Theme 1 (Theme A): mm. 1 in V II; 40 in V I; 83 in V II; 294 in V II; 320 in V I; 418 in V I

1  $\text{♩} = 120$  *senza sord.* *8<sup>va</sup>*

*p* *tranquillo*

Theme 2 (Theme B): mm. 2 in Cello; 42 in Cello; 70 in Cello; 138 in V I; 179 in Cello; 215 in Viola; 230 in V II; 308 in V II; 345 in V II; 381 in V II; 404 in V I; 451 in V I; 452 in Viola

2  $\text{♩} = 120$  *senza sord.*

*f*

Theme 3 (Theme C): mm. 6 in V I; 12 in Viola; 77 in V I; 247 in Viola

6  $\text{♩} = 120$

*p*

Theme 4 (Theme D): mm. 86, 123, 145, 224, 229, 280, 316, 333, 334 (in all four parts)

86  $\text{♩} = 192$

*p* *non vibrato*

Theme 5 (Theme E): mm. 92 in Viola; 109 in V I; 125 in V II; 159 in V I; 181 in V I; 209 in V I with V II; 237 in Viola and Cello

92 (♩. = 192)

*marc.* *ff*

Theme 6 (Theme F): m. 209 in V I with V II

209 Melodic outline of Violins I and II combined:

♩ = 45

5

evenly balanced with Violin II

5

5

♩ = 45

evenly balanced with Violin I

Theme 7 (Theme G): mm. 109 in Cello; 222 in V I; 245 in Cello; 283 in Viola; 300 in V I; 304 in Cello; 307 in Viola; 324 in Cello; 329 in V I

109 (♩ = 144)

*ff marc.*

*ff marc.*

Theme 8 (Theme H): mm. 281 in V I; 372 in V I; 397 in V I; 462 in V I; 488, 489 (all four parts)

281 ♩. = 54  $\vee$  ♩ = ♩ (♩ = 81)

*p un poco espr.*

**Schiff's Identification of Main Themes:**

Themes 1 -3: same as Carter's

Theme 4:<sup>286</sup> m. 12



Theme 5: corresponds to Carter's Theme 4

Theme 6: corresponds to Carter's Theme 7

Theme 7: corresponds to Carter's Theme 8

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<sup>286</sup> This theme is not included in Carter's outline. Further, Schiff does not include Carter's Theme 5, most likely because Carter's both Themes 6 and 7 are derived from it.

# Appendix E

## String Quartet No. 3

### "Fixed Pitches-Rhyme Scheme"<sup>287</sup>

**FIXED PITCH. - (RHYME-SCHEME)**

OCCURS IN: M. 15, 39, 61-62, 113-114, 150-151, 177-178, 229-237, 261-263, 286, 327-328, 334-335, 368

DUO I	FIXED PITCH. - (RHYME-SCHEME)	DUO II
<p><b>FURIOSO</b> 11 (E) major 7th</p>	<p>4m-4m, 4m-4m, 4m-4m and elsewhere from Pauline Mengetberg and recently "The II Interval in Tone Rows" - Perspectives of New Music</p>	<p><b>MAFOSO</b> perfect 5th</p>
<p>5 perfect 4th</p>		<p><b>GRAZIOSO</b> 10 (T) (minor 9th)</p>
<p><b>ANDANTE</b> 8 minor 6th</p>		<p><b>PIU TO</b> 6 (augmented 4th)</p>
<p><b>GIOIOSO</b> 3 minor 3rd</p>	<p>OCCURS IN ALL MOVEMENTS</p>	<p><b>LARGO TRANQUILLO</b> 4 (major 3rd)</p>
<p>2 (major 2nd)</p>		<p><b>APPASSIONATO</b> 9 (major 6th)</p>
<p><b>REPERTORY FOR DUO I</b></p>	<p><b>REPERTORY OF 3 AND 4 NOTE CHORDS FOR EACH DUO</b></p> <p>3 SHARED CHORDS:</p> <p>4 NOTE CHORDS THAT COMBINE THE TWO DUOS:</p>	<p><b>REPERTORY FOR DUO II</b></p>

NUMBERING OF CHORDS IS ACCORDING TO A PERSONAL ORDER

287287 This chart, in Carter's handwriting, is reproduced in Schiff, *The Music of Elliott Carter*, 80.



**Appendix F**  
**String Quartet No. 3**  
**"Combination Chords"<sup>288</sup>**

DUO I (COMBINATION CHORDS) DUO II

**Table: POLYRHYTHMS for DUO II**

LARGO: 63:64		GIUSTO: 4:7	
IN ORDER OF INCREASING MEAS. DIFFERENCE			
MAESTOSO: I		II	
15:16	14:15	5:7	4:7
25:27	25:27	6:7	9:10
9:8	9:8	15:16	15:16
7:8	7:8	14:15	14:15
SCORRIVOILE: I		II	
4:5	4:5	3:7	3:7
7:9	7:9	5:12	5:12
16:21	16:21	2:5	2:5
3:4	3:4	8:21	8:21
5:7	5:7	3:8	3:8
7:10	7:10	5:14	5:14
2:3	2:3	16:48	16:48
APPASS.		III	
2:3	2:3	3:4	3:4
3:4	3:4	5:6	5:6
5:6	5:6	7:8	7:8
7:8	7:8	9:10	9:10
9:10	9:10	11:12	11:12
11:12	11:12	13:14	13:14
13:14	13:14	15:16	15:16
15:16	15:16	17:18	17:18
17:18	17:18	19:20	19:20
19:20	19:20	21:22	21:22
21:22	21:22	23:24	23:24
23:24	23:24	25:26	25:26
25:26	25:26	27:28	27:28
27:28	27:28	29:30	29:30
29:30	29:30	31:32	31:32
31:32	31:32	33:34	33:34
33:34	33:34	35:36	35:36
35:36	35:36	37:38	37:38
37:38	37:38	39:40	39:40
39:40	39:40	41:42	41:42
41:42	41:42	43:44	43:44
43:44	43:44	45:46	45:46
45:46	45:46	47:48	47:48
47:48	47:48	49:50	49:50
49:50	49:50	51:52	51:52
51:52	51:52	53:54	53:54
53:54	53:54	55:56	55:56
55:56	55:56	57:58	57:58
57:58	57:58	59:60	59:60
59:60	59:60	61:62	61:62
61:62	61:62	63:64	63:64

288288 This chart, in Carter's handwriting, is reproduced in Schiff, *The Music of Elliott Carter*, 81.

# Appendix G

## String Quartet No. 3

### "Analytical diagram for the Third Quartet" 289

STRING Quartet  
#3 - Carter





































































MEASURES

MEASURES	DUO I	COMBINATIONS	DUO II	P3
1-16	FURIOSO			MARZOSO
17-20-24	(PAUSE)		"	"
19-27	LEGGERISSIMO		"	"
28-37	"			(PAUSE)
38-47	"			GRAZIOSO
48-49-60	ANDANTE			"
61-63-64-78	"			GIUSTO, MECCANICO
79-89	(PAUSE)		"	"
90-96	GIOCOSO		"	"
97-105	"			(PAUSE)
106-114	"			SCORREVOLE
115-135	(PAUSE)		"	"
136-150	LEGGERISSIMO		"	"
151-172	"		"	GIUSTO
160, 164, 165, 166-9, 172-177	FURIOSO		"	"
178-183	"		etc.	GRAZIOSO
184-196	(PAUSE)		"	"
197-209	GIOCOSO		"	"
(210-218) 219-220	"		etc.	MARZOSO
231-242	ANDANTE		"	"
243-253	"			(PAUSE)
254-265	"			LARGO
266-276	PAUSE		"	"
277-288	LEGGERISSIMO		"	"
289-309	"			APPASSIONATO
(310, 311) 312-321	GIOCOSO		"	"
(322-325) 326-328 329-338	"		etc.	LARGO
339-352	FURIOSO		"	"
353-365	"			(PAUSE)
366-380	"		etc.	SCORREVOLE
381-395	ANDANTE		"	"
396-399	"			APPASSIONATO
402, 405-6, 413, 420, 424, 425	(PAUSE)		"	"
400, 404, 407, 410, 411, 412, 421, 426 - end	FURIOSO		"	"

289289 This chart, in Carter's handwriting, is reproduced in Schmidt, 185.

## Appendix H

### Elliott Carter's Numbering System of Chords<sup>290</sup>

Forte		Carter	Forte		Carter
					
3-1	[0,1,2]		9-1	[0,1,2,3,4,5,6,7,8]	
3-2	[0,1,3]		9-2	[0,1,2,3,4,5,6,7,9]	
3-3	[0,1,4]		9-3	[0,1,2,3,4,5,6,8,9]	
3-4	[0,1,5]		9-4	[0,1,2,3,4,5,7,8,9]	
3-5	[0,1,6]		9-5	[0,1,2,3,4,6,7,8,9]	
3-6	[0,2,4]		9-6	[0,1,2,3,4,5,6,8,10]	
3-7	[0,2,5]		9-7	[0,1,2,3,4,5,7,8,10]	
3-8	[0,2,6]		9-8	[0,1,2,3,4,6,7,8,10]	
3-9	[0,2,7]		9-9	[0,1,2,3,5,6,7,8,10]	
3-10	[0,3,6]		9-10	[0,1,2,3,4,6,7,9,10]	
3-11	[0,3,7]		9-11	[0,1,2,3,5,6,7,9,10]	
3-12	[0,4,8]		9-12	[0,1,2,4,5,6,8,9,10]	
					
4-1	[0,1,2,3]		8-1	[0,1,2,3,4,5,6,7]	
4-2	[0,1,2,4]		8-2	[0,1,2,3,4,5,6,8]	
4-3	[0,1,3,4]		8-3	[0,1,2,3,4,5,6,9]	
4-4	[0,1,2,5]		8-4	[0,1,2,3,4,5,7,8]	
4-5	[0,1,2,6]		8-5	[0,1,2,3,4,6,7,8]	
4-6	[0,1,2,7]		8-6	[0,1,2,3,5,6,7,8]	
4-7	[0,1,4,5]		8-7	[0,1,2,3,4,5,8,9]	
4-8	[0,1,5,6]		8-8	[0,1,2,3,4,7,8,9]	
4-9	[0,1,6,7]		8-9	[0,1,2,3,6,7,8,9]	
4-10	[0,2,3,5]		8-10	[0,2,3,4,5,6,7,9]	
4-11	[0,1,3,5]		8-11	[0,1,2,3,4,5,7,9]	
4-12	[0,2,3,6]		8-12	[0,1,3,4,5,6,7,9]	
4-13	[0,1,3,6]		8-13	[0,1,2,3,4,6,7,9]	
4-14	[0,2,3,7]		8-14	[0,1,2,4,5,6,7,9]	
4-Z15	[0,1,4,6]		8-Z15	[0,1,2,3,4,6,8,9]	
4-16	[0,1,5,7]		8-16	[0,1,2,3,5,7,8,9]	
4-17	[0,3,4,7]		8-17	[0,1,3,4,5,6,8,9]	
4-18	[0,1,4,7]		8-18	[0,1,2,3,5,6,8,9]	
4-19	[0,1,4,8]		8-19	[0,1,2,4,5,6,8,9]	
4-20	[0,1,5,8]		8-20	[0,1,2,4,5,7,8,9]	

<sup>290</sup> This list is a reproduction of a chart, "Consensus of Forte and Carter," in Elliott Carter's *Harmony Book*, 23-26.

**Forte**

**Carter**

- 4-21 [0,2,4,6]
- 4-22 [0,2,4,7]
- 4-23 [0,2,5,7]
- 4-24 [0,2,4,8]
- 4-25 [0,2,6,8]
- 4-26 [0,3,5,8]
- 4-27 [0,2,5,8]
- 4-28 [0,3,6,9]
- 4-Z29 [0,1,3,7]

- 11
- 27
- 4
- 16
- 12
- 14
- 29
- 5
- 23



- 5-1 [0,1,2,3,4]
- 5-2 [0,1,2,3,5]
- 5-3 [0,1,2,4,5]
- 5-4 [0,1,2,3,6]
- 5-5 [0,1,2,3,7]
- 5-6 [0,1,2,5,6]
- 5-7 [0,1,2,6,7]
- 5-8 [0,2,3,4,6]
- 5-9 [0,1,2,4,6]
- 5-10 [0,1,3,4,6]
- 5-11 [0,2,3,4,7]
- 5-Z12 [0,1,3,5,6]
- 5-13 [0,1,2,4,8]
- 5-14 [0,1,2,5,7]
- 5-15 [0,1,2,6,8]
- 5-16 [0,1,3,4,7]
- 5-Z17 [0,1,3,4,8]
- 5-Z18 [0,1,4,5,7]
- 5-19 [0,1,3,6,7]
- 5-20 [0,1,3,7,8]

- 1
- 11
- 14
- 12
- 13
- 27
- 30
- 2
- 15
- 19
- 18
- 5
- 17
- 28
- 4
- 20
- 10
- 35
- 31
- 34

**Forte**

**Carter**





































- 8-21 [0,1,2,3,4,6,8,10]
- 8-22 [0,1,2,3,5,6,8,10]
- 8-23 [0,1,2,3,5,7,8,10]
- 8-24 [0,1,2,4,5,6,8,10]
- 8-25 [0,1,2,4,6,7,8,10]
- 8-26 [0,1,2,4,5,7,9,10]
- 8-27 [0,1,2,4,5,7,8,10]
- 8-28 [0,1,3,4,6,7,9,10]
- 8-Z29 [0,1,2,3,5,6,7,9]

- 11<sup>8</sup>
- 27<sup>8</sup>
- 4<sup>8</sup>
- 16<sup>8</sup>
- 12<sup>8</sup>
- 14<sup>8</sup>
- 29<sup>8</sup>
- 5<sup>8</sup>
- 23<sup>8</sup>



















- 7-1 [0,1,2,3,4,5,6]
- 7-2 [0,1,2,3,4,5,7]
- 7-3 [0,1,2,3,4,5,8]
- 7-4 [0,1,2,3,4,6,7]
- 7-5 [0,1,2,3,5,6,7]
- 7-6 [0,1,2,3,4,7,8]
- 7-7 [0,1,2,3,6,7,8]
- 7-8 [0,2,3,4,5,6,8]
- 7-9 [0,1,2,3,4,6,8]
- 7-10 [0,1,2,3,4,6,9]
- 7-11 [0,1,3,4,5,6,8]
- 7-Z12 [0,1,2,3,4,7,9]
- 7-13 [0,1,2,4,5,6,8]
- 7-14 [0,1,2,3,5,7,8]
- 7-15 [0,1,2,4,6,7,8]
- 7-16 [0,1,2,3,5,6,9]
- 7-Z17 [0,1,2,4,5,6,9]
- 7-Z18 [0,1,2,3,5,8,9]
- 7-19 [0,1,2,3,6,7,9]
- 7-20 [0,1,2,4,7,8,9]








- 1<sup>7</sup>
- 11<sup>7</sup>
- 14<sup>7</sup>
- 12<sup>7</sup>
- 13<sup>7</sup>
- 27<sup>7</sup>
- 30<sup>7</sup>
- 2<sup>7</sup>
- 15<sup>7</sup>
- 19<sup>7</sup>
- 18<sup>7</sup>
- 5<sup>7</sup>
- 17<sup>7</sup>
- 28<sup>7</sup>
- 4<sup>7</sup>
- 20<sup>7</sup>
- 10<sup>7</sup>
- 35<sup>7</sup>
- 31<sup>7</sup>
- 34<sup>7</sup>

Forte		Carter	Forte		Carter
5-21	[0,1,4,5,8]		7-21	[0,1,2,4,5,8,9]	
5-22	[0,1,4,7,8]		7-22	[0,1,2,5,6,8,9]	
5-23	[0,2,3,5,7]		7-23	[0,2,3,4,5,7,9]	
5-24	[0,1,3,5,7]		7-24	[0,1,2,3,5,7,9]	
5-25	[0,2,3,5,8]		7-25	[0,2,3,4,6,7,9]	
5-26	[0,2,4,5,8]		7-26	[0,1,3,4,5,7,9]	
5-27	[0,1,3,5,8]		7-27	[0,1,2,4,5,7,9]	
5-28	[0,2,3,6,8]		7-28	[0,1,3,5,6,7,9]	
5-29	[0,1,3,6,8]		7-29	[0,1,2,4,6,7,9]	
5-30	[0,1,4,6,8]		7-30	[0,1,2,4,6,8,9]	
5-31	[0,1,3,6,9]		7-31	[0,1,3,4,6,7,9]	
5-32	[0,1,4,6,9]		7-32	[0,1,3,4,6,8,9]	
5-33	[0,2,4,6,8]		7-33	[0,1,2,4,6,8,10]	
5-34	[0,2,4,6,9]		7-34	[0,1,3,4,6,8,10]	
5-35	[0,2,4,7,9]		7-35	[0,1,3,5,6,8,10]	
5-Z36	[0,1,2,4,7]		7-Z36	[0,1,2,3,5,6,8]	
5-Z37	[0,3,4,5,8]		7-Z37	[0,1,3,4,5,7,8]	
5-Z38	[0,1,2,5,8]		7-Z38	[0,1,2,4,5,7,8]	



6-1	[0,1,2,3,4,5]	
6-2	[0,1,2,3,4,6]	
6-Z3	[0,1,2,3,5,6]	
6-Z4	[0,1,2,4,5,6]	
6-5	[0,1,2,3,6,7]	
6-Z6	[0,1,2,5,6,7]	
6-7	[0,1,2,6,7,8]	
6-8	[0,2,3,4,5,7]	
6-9	[0,1,2,3,5,7]	
6-Z10	[0,1,3,4,5,7]	
6-Z11	[0,1,2,4,5,7]	
6-Z12	[0,1,2,4,6,7]	
6-Z13	[0,1,3,4,6,7]	
6-14	[0,1,3,4,5,8]	
6-15	[0,1,2,4,5,8]	
6-16	[0,1,4,5,6,8]	



6-Z36	[0,1,2,3,4,7]	
6-Z37	[0,1,2,3,4,8]	
6-Z38	[0,1,2,3,7,8]	
6-Z39	[0,2,3,4,5,8]	
6-Z40	[0,1,2,3,5,8]	
6-Z41	[0,1,2,3,6,8]	
6-Z42	[0,1,2,3,6,9]	

<b>Forte</b>	<b>Carter</b>	<b>Forte</b>	<b>Carter</b>
6-Z17 [0,1,2,4,7,8]	⬡35	6-Z43 [0,1,2,5,6,8]	⬡36
6-18 [0,1,2,5,7,8]	⬡17		
6-Z19 [0,1,3,4,7,8]	⬡37	6-Z44 [0,1,2,5,6,9]	⬡38
6-20 [0,1,4,5,8,9]	⬡2		
6-21 [0,2,3,4,6,8]	⬡12		
6-22 [0,1,2,4,6,8]	⬡10		
6-Z23 [0,2,3,5,6,8]	⬡27	6-Z45 [0,2,3,4,6,9]	⬡28
6-Z24 [0,1,3,4,6,8]	⬡39	6-Z46 [0,1,2,4,6,9]	⬡40
6-Z25 [0,1,3,5,6,8]	⬡43	6-Z47 [0,1,2,4,7,9]	⬡44
6-Z26 [0,1,3,5,7,8]	⬡26	6-Z48 [0,1,2,5,7,9]	⬡25
6-27 [0,1,3,4,6,9]	⬡14		
6-Z28 [0,1,3,5,6,9]	⬡21	6-Z49 [0,1,3,4,7,9]	⬡22
6-Z29 [0,1,3,6,8,9]	⬡32	6-Z50 [0,1,4,6,7,9]	⬡31
6-30 [0,1,3,6,7,9]	⬡15		
6-31 [0,1,3,5,8,9]	⬡8		
6-32 [0,2,4,5,7,9]	⬡6		
6-33 [0,2,3,5,7,9]	⬡18		
6-34 [0,1,3,5,7,9]	⬡9		
6-35 [0,2,4,6,8,10]	⬡1		

## Appendix I

### The "Link" Chords Sorted by All-Trichord Six-Note Chord String<sup>291</sup>

1T794 - 35681T7942E	29658 - 4E29658T317	3862E - 9715T3862E4
1T8E9 - 21T8E956347	29E71 - 329E71T4568	3871T - 54E3871T962
1T8E9 - 267431T8E95	29E71 - 5429E71T368	3871T - 9E3871T4562
1T8E9 - 347621T8E95	2E783 - 2E783T51469	387E2 - 96415T387E2
1T8E9 - 3521T8E9674	32158 - T3215869E74	42167 - 89T421673E5
1T8E9 - 46731T8E925	3268E - 9715T3268E4	42761 - 89T427613E5
1T8E9 - 5267341T8E9	34E52 - 18734E5296T	4316E - 274316E985T
236E8 - 179236E8T54	352E7 - 18T352E7964	43652 - 8E79T436521
25189 - 25189TE7463	352E7 - 416352E7T98	43765 - 214376598ET
25189 - 3625189TE74	352E7 - 4618T352E79	43E25 - 9T43E258671
25387 - 925387T6E41	361T8 - 361T872495E	451T7 - 26E451T7389
25634 - 125634T97E8	36E8T - 2536E8T4791	4916E - 274916E385T
25E43 - T6925E43781	36E8T - 36E8T542971	4952E - T634952E781
289E7 - T654289E731	36E8T - 45236E8T971	49765 - 214976538ET
29658 - 142965837ET	3826E - 43826ET5179	497T1 - E2497T18653

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<sup>291</sup> This is a reproduction of a list in Elliott Carter's *Harmony Book*, 358-359.

52479 - 38E6T524791	85123 - 47E9685123T	9E8T1 - 743659E8T12
52479 - 86E352479T1	85692 - 713T85692E4	9E8T1 - 9E8T1437625
52479 - T6E83524791	85692 - TE738569241	T1783 - 2654T1783E9
52E34 - 176852E34T9	8T163 - E594278T163	T1783 - 269T1783E45
56734 - TE895673412	8E632 - 45T8E632971	T17E9 - 3T17E924568
56794 - TE835679412	8E63T - 14598E63T72	T17E9 - 54T17E92368
568E9 - 712568E9T34	8E63T - 18E63T79452	T36E8 - 25497T36E81
56T97 - 8256T973E41	8E729 - 145638E729T	T36E8 - 27T36E89541
56T97 - 8E43256T971	8E729 - 368E729451T	T497E - 18T497E3562
59817 - 26359817T4E	8E729 - 38E7295416T	T497E - 2618T497E35
59817 - 26E459817T3	8E729 - 38E729T6145	T817E - 94T817E3562
6134E - T96134E7852	8E729 - 415368E729T	T8569 - 4ET85692317
6497E - T36497E2581	8E927 - 38E927T6541	T8E63 - 179245T8E63
65387 - 2965387E41T	91647 - 259164738ET	T8E63 - 179T8E63254
65387 - 2E465387T19	91647 - 2E91647385T	T8E63 - 1974T8E6352
6734E - T96734E2581	91T8E - 25691T8E473	T9E71 - 8634T9E7125
689E7 - 23689E7T145	91T8E - 591T8E26347	E2594 - 187E259436T
6T97E - 8526T97E431	927E8 - 5416T927E83	E2683 - 4E2683T5179
71895 - 3T718954E62	927E8 - T154927E863	E3871 - 2654E3871T9
71895 - E4T71895362	927E8 - T6145927E83	E3871 - 269E3871T45
729E8 - 1456T729E83	927E8 - T927E836541	E4316 - 2587E43169T
74259 - 1T63E874259	927E8 - T927E863514	E4376 - 1852E43769T
74259 - 3E87425961T	95247 - 95247E836T1	E6134 - T589E613472
74619 - T58374619E2	95247 - T1695247E83	E6194 - T583E619472
74619 - TE837461952	9568E - 71329568ET4	E6283 - 9715TE62834
76124 - 5E376124T98	9568E - T19568E3472	E718T - 2653E718T49
78352 - 14E6T783529	9568E - T79568E3412	E7946 - 1852E79463T
78356 - 91T783564E2	9658T - 71329658TE4	E794T - 2653E794T81
78356 - T14E7835692	97425 - 19742538E6T	E794T - 53E794T8162
79451 - 2E86794513T	97425 - 197425T6E83	E79T6 - 134E79T6258
79T65 - 14E379T6528	97425 - 1T974253E68	E8623 - 4E8623T5179
79T65 - 179T65234E8	98152 - 3647ET98152	E8659 - 2143E86597T
7T154 - 9837T154E62	98152 - 47ET9815263	E8659 - 2743E86591T
7E253 - 4697E253T81	982E7 - 1456T982E73	E8659 - 4TE86592317
7E253 - 89T7E253614	9E251 - 4769E251T38	E8T19 - 374E8T19652
7E253 - 97E253T8164	9E71T - 86329E71T45	E8T19 - 74362E8T195
7E289 - 37E289T6541	9E71T - 865429E71T3	
7E431 - 8526T97E431	9E865 - 43T9E865217	
7E431 - 9T62587E431	9E8T1 - 4769E8T1253	
7E431 - T97E4316852	9E8T1 - 529E8T13764	
7E982 - 137E982456T	9E8T1 - 59E8T126743	
7E986 - 541T7E98632	9E8T1 - 59E8T134762	