PIANO SONATA BY ELLIOTT CARTER: A FORESHADOWING
OF HIS LATER STYLE, A LECTURE RECITAL,
TOGETHER WITH THREE RECITALS OF
SELECTED WORKS

DISSERTATION

Presented to the Graduate Council of the
North Texas State University in Partial
Fulfillment of the Requirements

For the Degree of

DOCTOR OF MUSICAL ARTS

By

Carmen Irene Wilhite, B. M., M. M.

Denton, Texas

May, 1977

The lecture recital was given January 22, 1977. A discussion of Elliott Carter's *Piano Sonata* emphasized those compositional techniques which foreshadowed important compositional procedures in many of his later works. The following compositions were discussed: *Concerto for Orchestra*, *Double Concerto for Harpsichord and Piano* with Two Chamber Orchestras, 8 Etudes and a Fantasy for Woodwind Quartet, Holiday Overture, Piano Concerto, Sonata for Flute, Oboe, Cello, and Harpsichord, Sonata for Violoncello and Piano, String Quartet No. 1, String Quartet No. 2, String Quartet No. 3, Variations for Orchestra. The *Piano Sonata* was performed.

In addition to the lecture recital, three public solo recitals were performed.

The first solo recital, performed on April 2, 1973, consisted of works by Bartok, Debussy, and Schumann.

The second solo recital, performed on October 28, 1974, included works by Bach and Liszt.

The final solo recital, performed on March 7, 1976, consisted of works by Beethoven and Chopin.

All four programs were recorded on magnetic tape and are filed, along with the written version of the lecture recital, as part of the dissertation.
Tape recordings of all performances submitted as dissertation requirements are on deposit in the North Texas State University Library.
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**PIANO SONATA BY ELLIOTT CARTER: A FORESHADOWING OF HIS LATER STYLE**

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North Texas State University
School of Music
presents

CARMEN WILHITE, pianist
in
Graduate Recital

Monday, April 2, 1973  8:15 p.m.  Recital Hall

PROGRAM

IMPROVISATIONS, Op. 20  Bartok

ESTAMPES  Debussy
   I. Pagodes
   II. La Soiree dans Grenade
   III. Jardins Sous la Pluie

INTERMISSION

PHANTASIE, Op. 17  Schumann
   Durchaus fantastisch und leidenschaftlich vorzutragen
   Massig. Durchaus energisch
   Langsam getragen. Durchweg leise zu halten

Presented in partial fulfillment of the requirements
for the degree Doctor of Musical Arts
North Texas State University
School of Music
presents

CARMEN WILHITE, pianist

in

Graduate Recital

Monday, October 28, 1974 8:15 p.m. Recital Hall

PROGRAM

Partita 6 in e minor ............................................. Bach
Toccata
Allemande
Corrente
Air
Sarabande
Tempo di Gavotta
Gigue

INTERMISSION

Sonata in b minor ............................................. Liszt

Presented in partial fulfillment of the requirements
for the degree Doctor of Musical Arts
North Texas State University
School of Music
presents

CARMEN WILHITE, pianist
in
Graduate Recital

Sunday, March 7, 1976
5:30 p.m.
Recital Hall

PROGRAM

BEETHOVEN

SONATA IN C MINOR, OP. 111
1. Maestoso: Allegro con brio ed Appassionata
2. Arietta: Adagio Molto Semplice e Cantabile

INTERMISSION

CHOPIN

SONATA IN B MINOR, OP. 58
1. Allegro Maestoso
2. Scherzo: Molto vivace
3. Largo
4. Finale: Presto, non Tanto

Presented in partial fulfillment of the requirements for the degree Doctor of Musical Arts
North Texas State University
School of Music
presents

CARMEN WILHITE, pianist

in a

Lecture Recital

Saturday, January 22, 1977 8:15 p.m. Recital Hall

Piano Sonata by Elliott Carter:
A Foreshadowing of His Later Style

INTERMISSION

PIANO SONATA (1945-46) Elliott Carter

This recital is presented in partial fulfillment of the requirements
for the degree of Doctor of Musical Arts.
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PIANO SONATA BY ELLIOTT CARTER: A FORESHADOWING OF HIS LATER STYLE

Elliott Carter has composed sixteen works since the composition of his Piano Sonata in 1946, and, while the compositional complexity has increased with each new work, many of his later style characteristics were foreshadowed in the Piano Sonata. The compositions of his maturity have received widespread recognition and important awards, including Pulitzer Prizes for both his second and third string quartets. Carter has held faculty positions at the Peabody Conservatory, Columbia University, Queens College, Yale University, Cornell University, and the Juilliard School of Music, and has served as composer-in-residence for the city of Berlin, Germany, and at the American Academy in Rome. He has received numerous academic awards and has been very active in composers' organizations as well as having been elected to membership in both the American Academy of Arts and Letters and the National Institute of Arts and Letters.

Elliott Carter was born in New York City on December 11, 1908. Although his parents were not particularly interested in music and were later opposed to a musical career for their son, they did encourage Carter to take piano lessons when he was a child. Unfortunately, the lessons generated a negative
attitude in the young boy, and he developed a distaste for music which lasted into his high school years.

Carter attended the Horace Mann preparatory school, where he came under the influence of a group of students who, along with their music teacher, Clifton Furness, were vitally interested in contemporary music. Furness introduced Carter to the composer Charles Ives, who took an interest in the young man, often inviting him to his home where he would discuss and play his own and other new music on the piano, occasionally allowing Carter to join him in four-hand works. He also invited Carter to the frequent New York concerts of new music by Varese, Ruggles, Bartok, Stravinsky, Sessions, Copland, and the three Viennese composers, Schoenberg, Berg, and Webern. A classmate of Carter, Eugene O'Neill, Jr., introduced him to many of the artists who were active in the avant-garde culture of the middle twenties in New York, and Carter frequented the Sunday afternoon concerts at the home of pianist Katherine Ruth Heyman, a mystic who was a champion and an interpreter of the later works of Scriabin. During this time Carter also became interested in East Indian and Balinese music and spent one of his summer holidays in Tunisia notating the sounds of Arabic music for Baron Rudolphe d'Erlanger.

Elliott Carter's total absorption in the world of contemporary music led him to Harvard University, whose proximity to Koussevitsky's Boston Symphony Orchestra and
its "modernist activity" was of primary importance in his choice of a university. Furthermore, he had already attempted some composition during his high school years, presenting "a very advanced and complicated piano sonata, as well as some simpler settings of Joyce's Chamber Music" to Charles Ives, who had encouraged him. However, since he still retained his childhood dislike of most pre-twentieth-century music, Carter rebelled against the traditionalism of the Harvard music department and majored in English literature instead of music.

During his undergraduate years Carter sang in the Harvard Glee Club, which was later to commission several of his works, and he continued his studies in piano and solfège at the Longy School of Music in Cambridge. During his senior year he decided to become a composer and enrolled as a graduate student in the Harvard music department, where his teachers were A. T. Davison, Walter Piston, and Gustav Holst.

Carter received his master's degree in 1932, and, at Piston's suggestion, he went to Paris to study with Nadia Boulanger. Through her tutelage in counterpoint he developed the complete understanding and appreciation of older music which had escaped him in his earlier years, and, many years

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2Ibid.
later, he remarked that all this older music constantly fed him thoughts and ideas when he was a student in Paris. While there he composed incidental music for the Harvard Classical Club production of Sophocles' Philoctetes, which was the first of his works ever to be performed. The premiere took place in Cambridge, Massachusetts, in the winter of 1933.

Carter returned to the United States in 1935, settling first in Cambridge, where he wrote more incidental music for the Harvard Classical Club, this time Plautus' Mostellaria. This was followed by a commission from Lincoln Kirstein to write a ballet, Pocahontas, for his Ballet Caravan. A suite from the score received the Publication of American Music Award from the Juilliard Foundation in 1940, the first of the many awards and prizes which have rewarded his subsequent compositional efforts.

Having moved to New York City in the fall of 1936, Carter also wrote articles and reviews for the League of Composers' journal, Modern Music, and became musical director of the Ballet Caravan from 1937 through 1939. Although he wrote several choral works as well as a Canonic Suite for Quartet of Alto Saxophones, a Prelude, Fanfare and Polka for orchestra, and incidental music for a Mercury Theatre production of The Merchant of Venice, Carter's work did not

3Ibid., p. 55.
attract special attention, and he later withdrew some of the pieces that he wrote during the thirties.

In 1939 he moved to Annapolis, Maryland, where, as a faculty member at St. John's College, he assisted in coordinating the teaching of music as a branch of mathematics and physics as well as a medium of expression. Carter moved to New Mexico in 1941, where he wrote his Symphony No. 1 for small orchestra, which was "one of his rare excursions into music with a pronounced American identity." In this work, and in his Holiday Overture of 1944, he attempted to compose music in a deliberately restrained idiom which he hoped could be understood by the general musical public.

After returning to New York in 1943, Carter became music consultant to the Office of War Information. He continued to compose choral works of a significantly more elaborate contrapuntal style than his earlier works. One piece in particular, Musicians Wrestle Everywhere, anticipates the Piano Sonata with its rhythmic displacements and cross-accented counterpoint. Other works of the early forties include several songs to poems by Robert Frost, Walt Whitman, and Hart Crane, a Pastoral and an Elegy for viola and piano,

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5 Edwards, op. cit., p. 58.
and *Elegy for Strings*. These works were written in a predominantly neoclassical vein as a reaction against the German Expressionist point of view, which Carter felt was contributory to the rise of Hitler. He looked upon neoclassicism as "a way of 'returning to reason' and to a more moderate point of view about expression as well as to a more accessible vocabulary."\(^7\)

In 1945 Carter was awarded a Guggenheim Fellowship, which enabled him to compose the *Piano Sonata*, which he completed in 1946. One of Carter's most devoted advocates, Richard Franko Goldman, has referred to his pre-*Sonata* compositions as being representative of a first style period, but he regards the *Piano Sonata* as a mature work which represents for Carter a "new force and coherence, a completed mastering of technical problems and a consequently higher power of clarity and expressiveness."\(^8\)

The *Piano Sonata* has been acclaimed as Carter's first breakthrough into a completely personal, non-derivative idiom. Charles Rosen, who has recorded it, writes that the *Piano Sonata* "represents a new departure in piano writing that has few analogies in the literature of the past."\(^9\) Virgil Thomson

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\(^7\) Edwards, op. cit., pp. 60-61.

\(^8\) Goldman, op. cit., p. 156.

\(^9\) Charles Rosen, record jacket notes for Elliott Carter's *Piano Sonata*, performed by Charles Rosen (Epic LC 3850).
of the New York Herald Tribune reviewed its first performance by Webster Aitken on February 16, 1947, in New York, and stated, "The brilliant toccata-like passages . . . are to my ear completely original. I have never heard the sound of them or felt the feeling of them before."^10

The Piano Sonata comprises two movements, the first in sonata form and the second a ternary treatment in which the middle section is a fully developed four-voice fugue. A diagram of the work is illustrated in Figure 1.

Synopsis (First Movement)

INTRODUCTION (mm.1-32)

Maestoso $ \frac{d}{2}=66$ Legato scorrevole $ \frac{d}{2}=132$ A tempo, maestoso $ \frac{d}{2}=66$

EXPOSITION (mm.32-122)

1st Thematic Area (mm.32-82) | 2nd Thematic Area (mm.83-112) | Closing Material

Scorrevole $ \frac{d}{2}=132$ | Meno Mosso $ \frac{d}{2}=ca.72$

DEVELOPMENT (mm.123-223)

Introductory material (mm.123-133) | 1st Thematic Area (mm.134-223)

Tempo I (Maestoso) | Tempo I (Scorrevole)

RECAPITULATION (mm.223-269)

1st Thematic Area | Introductory Material | 2nd Thematic Area - Tempo II $ \frac{d}{2}=72$

CODA (mm.270-303)

Tempo I $ \frac{d}{2}=132$

Synopsis (Second Movement)

SECTION A (mm.1-75)

Section I (mm.1-24) | Section II (mm.25-51) | Section I (mm.52-75)

Andante $ \frac{d}{2}=69$ | Meno Mosso $ \frac{d}{2}=63$ | Più Mosso $ \frac{d}{2}=80$, mm.62ff $ \frac{d}{2}=88$

SECTION B (mm.76-329)

Fugal Introduction (mm.76-103) | Fugue (mm.103-329)

Misterioso $ \frac{d}{2}=ca.132$ | Allegro giusto $ \frac{d}{2}=120$

SECTION A (mm.330-414)

Section I (mm.330-340) | Section II (mm.340-361) | Section I (mm.362-392)

Andante $ \frac{d}{2}=69$ | $ \frac{d}{2}=69$ | $ \frac{d}{2}=59$

EPILOGUE (mm.299-414)

Fig. 1--Diagram of Piano Sonata

^10Ewen, op. cit., p. 117.
Elliott Carter has described the Piano Sonata as being completely idiomatic for the piano and has based his entire conception on the unique sonority of the instrument and its special virtuoso capabilities. Both movements of the work boldly exploit the overtone possibilities of the piano, which generate not only some striking special effects produced by harmonics, but also the basic musical material of the piece. Melodic figurations as well as vertical combinations of octaves, fifths, and fourths predominate, and, in combination with a frequent use of thirds both melodically and harmonically, produce sonorities of great brilliance.

The closing measures of the exposition of the first movement illustrate Carter's use of several types of sonorous effects. Figure 2 begins with a series of sustained chords, each of which is formed out of a rapid embellishment figure played with alternating hands. Each chord reiterates the tone B-natural in order to re-establish it as the tonal center of the section, and the final chord of the series, B major, is held by the sostenuto pedal for seven measures, over which remnants of preceding melodic figures are stated marcato in various tonalities. The resulting bitonal sonorities are immediately followed at measure 123 by six measures of keyboard harmonics. The interval of a minor third, middle-C

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to E-flat, is silently depressed by the right hand and held with the sostenuto pedal, under which a series of staccato thirds are loudly struck by the left hand, thereby exciting the harmonics of the sustained interval. (See Figure 2)
The expected harmonic sounds are also indicated in the score by the composer, who suggests that they be played softly if they are not clearly audible otherwise.

Although the first movement of the Piano Sonata is in sonata form, it consists of many short sections of greatly contrasting character. There are frequent variations in texture, dynamics, keyboard registers, melodic and rhythmic patterns, and styles of playing. The virtuoso element is omnipresent, exhibited by powerful bass octaves, rapid scale and arpeggio passages, repeated notes, hand-crossings, and staccato effects. Even the fugue of the second movement is presented in a virtuoso manner, culminating with rapid fortissimo octaves in both hands at the final statement of the subject.

Carter's musical language is predominately contrapuntal. However, its dissonant linearity with the resultant cross-relations is utilized primarily as a tension-producing element and is successfully combined with frequent diatonicism and a liberal use of whole-tone and pentatonic scales as well as pandiatonic, modal, and bitonal elements.

Although functional harmony does not exist in the Piano Sonata, the relationships between tonal centers constitute one of the main ideas of the piece. The phraseology is clearly defined, and the cadences are easily identifiable, though they are often elided or obscured. Even though it usually occurs as a result of rhythmic punctuation rather
than harmonic progression, a dominant to tonic movement can be found at some of the more important cadence points.

One of the clearest examples of Carter's utilization of the dominant to tonic function occurs at the cadential extension which comprises the last five measures of the first thematic area of the exposition of the first movement. (See Figure 3)

Fig. 3--Piano Sonata, 1st movement, measures 77-85.
Figure 3 illustrates the patterns of rapidly changing harmonies, arpeggiated in contrary motion, which are abruptly pre-empted at the end of measure 78 by a quick reference to a sonority whose root is G, which functions as the dominant harmony of the following tone C in measure 79. The rhythmic duration of C and its reiteration in measure 80 with an added minor third emphasize its importance. In addition, the cadence is further extended by a clear G-major triad which dominates measures 81-82 and functions as a half cadence closing the first thematic area and leading into the second, marked _Meno mosso_, where the note C is emphatically established by the bass octave as the tonal center of the section.

The _Piano Sonata_ is unified by four motives which generate most of the musical material of both movements. Each of these motives first appears within the first ten measures of the introduction of the first movement. The most important progression of the piece is the movement from the tonal center B, the first note of the piece, to the last note of the first movement, B-flat, followed by a return to B-natural as the last note of the second movement. This progression forms a half-step relationship which first appears in the linear movement of the bass octaves of the introduction. Figure 4 illustrates the movement of the powerful bass octaves from B in measures 1-3 down a half-step to A-sharp in measure 4 and the subsequent return to B in measure 7. (See Figure 4)
The progression recurs at measure 9, descends to A-sharp in measure 10, and returns to B-natural at the beginning of the second section of the introduction, the *Legato scorrevole*. The minor second relationship continues to dominate the bass movement of the introductory sections, and not until the
beginning of the second thematic area of the exposition is a new tonal center of C finally established. C predominates throughout most of the second thematic area, only to return to B at the end of the exposition, thus forming an inversion of the original B-A-sharp-B motive.

The half-step relationship and its inversion are particularly exploited at the climax of the development section, where octave displacements are characteristic. Although the motive is not an important factor in the rest of the first movement, it does reassert itself in octave displacements at the climaxes of the *meno mosso* portions of section A of the second movement and the reappearance of section A at the end of the movement, as is illustrated in Figure 5. (See Figure 5)

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Fig. 5--Piano Sonata, 2nd movement, measures 40-46
Another important motivic cell is introduced in measure 10 of the introduction. It is a descending melodic whole step which is often expressed rhythmically by a note of short duration followed by one of longer duration. In Figure 4 alone two other occurrences of this motive can be seen in measure 13 and in measure 15. In these examples the melodic figure also happens to coincide with the half-step movement of the bass. Many other melodic relationships in the first movement are dominated by the whole-step motive and its inversion; e.g., a prominent theme of the first thematic area is formed primarily from two pairs of major seconds a fifth apart, as can be seen in Figure 6. (See Figure 6)
The second movement of the **Piano Sonata** also abounds in major second progressions both melodically and harmonically. Quotations of the original motivic cell of the first movement occur in measure 65 near the end of the first A section and again during the return of section A in measures 373, 380, 396, and 398. An illustration of motivic inversion appears in Figure 7, which occurs in section B during the coda of the fugue. (See Figure 7)

Fig. 7--**Piano Sonata**, 2nd movement, measures 319-322

Figure 8 illustrates the whole-step relationship utilized as the final melodic progression of the **Piano Sonata**, which leaps from second-line C-sharp in the soprano of measure 412 to the B below middle-C, which is doubled in the bass and firmly established as the primary tonal center of the entire work. (See Figure 8)
A third important motive which appears in the introduction of the first movement is the melodic movement in the soprano of measures 2-4. Its intervals are often expanded or contracted in its later appearances, but its shape is always identifiable. For example, in measures 5-7 of Figure 4 the last interval of the motive has expanded from a fifth to a sixth. In measures 9-10 the initial ascending minor second has been transformed into a perfect fourth. Many passages throughout both the first and second movements refer to this motive, but often only the descending octave or rising fifth is featured. The complete motive is even presented in the harmonics of Figure 2. However, the minor second upbeat of its original statement as well as the inversion of that interval is referred to only in the relationship between the struck tones of the left hand in measures 125-127. Such a procedure presages an important
aspect of Elliott Carter's style in his later works, his predilection for the simultaneous statement of material which has initially been presented successively.

A fascinating juxtaposition of the third motive with the theme which is illustrated in Figure 6 occurs during the development section of the first movement. Even though the composer has previously hinted at this relationship in measure 187 of Figure 9, he does not bring it into prominence until measures 190-194. The fifth through the eighth sixteenth-notes of measure 190 contain the basic intervals of both motives. The ascending perfect fourth of the theme of Figure 6 is stated vertically at the sixth sixteenth-note, followed by its descending perfect fifth at the eighth sixteenth-note of the measure. The third motive begins on G at the fifth sixteenth-note and ends on C of the eighth sixteenth-note. The brackets in measure 190 of Figure 9 indicate the two tones that the motives have in common, and measures 191-194 demonstrate the imaginative rhythmic variations of this motivic combination. (See Figure 9)
The fourth motivic cell of the introduction first appears in measures 3-4 of Figure 4 as an upward-sweeping sixteenth-note figuration consisting primarily of fourths and fifths. It appears frequently throughout the first movement and pervades the figurations of the development section, where its intervals are often isolated and developed as separate elements.
This figure also generates the musical material of the coda, where its intervals are frequently expanded. Many of the more extended themes of both movements are related to this motive, as well as to the others. The theme illustrated in Figure 6, beginning with the last-sixteenth-note in the left hand of measure 35, is directly related intervallically to this motivic cell. Other prominent themes that exploit either the perfect fourth or the perfect fifth both melodically and harmonically are the lyrical first theme of the second thematic area of the exposition of the first movement, as illustrated in measures 83-85 of Figure 3, and the fugue subject of the second movement.

Only one theme in the entire sonata is not developed by being broken up into its component intervals. It occurs in a diatonic context as an episode of the fugue and is actually repeated three times. Although rhythmically varied at each repetition, this is the only instance in which the composer allows successive repetitions of a melody to occur. The melody, which is simple and of a folklike character, contrasts vividly with the dissonant fugue and can be seen in Figure 10, beginning with measure 209. (See Figure 10)
The conclusion of the Piano Sonata illustrates Elliott Carter's predilection for summarizing the main musical material of his compositions, a procedure which he utilized in the closing measures of most of his subsequent works. Figure 11 reproduces the last page of the Piano Sonata, which functions as an epilogue for the entire piece. (See Figure 11).
Fig. 11--Piano Sonata, 2nd movement, measures 393-414

It begins in measures 393-395 with a variant of the melodic motive which first appeared in measures 2-4 of the introduction.
of the first movement. This motive has dominated the music for the preceding one and a half pages. Here, its phrase is concluded at measure 396 by the descending whole-step motive which was introduced at the same pitch level in measure 10 of the first movement. In the following measures 397-398 the whole-step motive is transposed down a fifth. The third beat of measures 399 through measure 402 presents six bass notes in octaves which sound like a varied repetition of measures 386-388, whose melodic shape resembles an ornamented version of the motive from measures 2-4 of the first movement. The vertical sonority in measure 402 juxtaposes the tonal center B with its half-step below and its whole-step above, followed by a transposed inversion of these relationships in the following measure 403. The right-hand fragment beginning at the end of measure 403 is a transposition of the preceding three soprano notes. Its shape is then altered beginning with the last quarter note of measure 404 and, along with the first two soprano notes of measure 405, this constitutes a transposed restatement of the last three notes of the motive from measures 2-4 of the first movement. The last dotted quarter note in the soprano of measure 405 also begins the last three notes of the same motive, but this time they are inverted. Measures 408-409 exploit the octave leap which is such a prominent feature of this motive, while measure 410 continues with a restatement of the descending whole-step motive in the left-hand with the rhythmic relationship
between the two notes reversed. The final statement of the octave motive occurs in measure 411 in its original pitch location but without its characteristic half-step upbeat. It is followed by a verticalization of the whole-step motive C-sharp to B in measures 412-414.

The Piano Sonata’s emphasis on unity through the development of a small number of motives and cells became an important style characteristic of Elliott Carter’s later compositions. When asked if his music ever contained any harmonic plan, Carter replied,

A chord, . . . like a motif, is a combination to be more or less clearly remembered and related to previous and future chords heard in the same work. Whether the composer is conscious of it or not, a field of operation with its principles of motion and of interaction is stated or suggested at the beginning of any work. . . . Once this field of operation is established, its possibilities are explored, interesting new aspects of it are revealed, patterns of action of contrasting types emerge as the work goes along. A work whose world is not clearly defined loses a great deal of possible power and interest. 12

In his Sonata for Violoncello and Piano of 1948 Carter introduces in the first measure of the first movement a chordal aggregation of six tones. Its intervallic structure serves as the basis for the musical material of all four movements of the sonata, generating motives which usually appear in at least two or more movements, just as they do in the Piano Sonata.

Elliott Carter's String Quartet No. 1, which was composed in 1951, also contains a unifying chordal structure which generates both its melodic and harmonic material. According to the composer, this chord is one of the two four-note groups that joins all the two-note intervals into pairs. It is made up of intervals of the second contained within a diminished fifth, as can be seen in Figure 12, and it occurs in important places frequently enough to function as a formative factor. It is also utilized in various kinds of part-writing and intervallic combinations. Figure 12 also illustrates one manifestation of the chord in which its particular sound-quality is repeatedly emphasized. Its intervals are contained in each vertical combination except the last.\(^{13}\) (See Figure 12)

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Fig. 12--String Quartet No. 1, 3rd movement (Variations), measure 477.

\(^{13}\)Ibid., p. 195.
By the time of the composition of String Quartet No. 1, the process of thematic transformation had been thoroughly established in Carter's writing. In the first quartet, as in the piano and 'cello sonatas, instrumental parts frequently evolve in a very independent, linear manner, but, although interchange of material among the parts still exists, there is very little of the recognizable recurrence of motives that can be found in the earlier works. Instead, they evolve polymorphously, in continually varied shapes. However, one similarity between the piano and 'cello sonatas and the string quartet is the composer's deliberate creation of thematic patterns whose components can be separated, a procedure which is particularly exploited in the last movement of the quartet. Another affinity that the quartet shares with the sonatas is a recognizable return at the conclusion of the last movement to the expository material of the opening of the first movement.

Both the Variations for Orchestra of 1954-55 and String Quartet No. 2 of 1959 further refine the process of thematic transformation, a procedure which Carter has compared to the transformation of some marine animals from one life-stage to another.\(^\text{14}\) As in all of his works, both the introduction and conclusion of these compositions summarize their basic musical material. Carter has described his second quartet as

a series of events in time in which the order of happenings is inherent in the properties of the instrumental characters. Recurrence of idea is even less noticeable in the second quartet than it was in the first. All that can be perceived are "certain traits of expression--behavior patterns, speeds, and interval-sounds--that form the basis of an ever-changing series of incarnations but link these together as a group." The result is linear evolution at its most extreme.

Elliott Carter composed three major works in the decade of 1960-1970. He continued to explore his conception of organic unity to its furthest limits by attempting to treat all the characteristics of musical sound as contributing equally to musical statement. To Carter, a tone-color, a chord, or a texture could play as important a role in a composition as did a theme in tonal music. In the Double Concerto for Harpsichord and Piano with Two Chamber Orchestras, which was composed in 1961, he assigned a four-note chord to each of the two solo instruments and their respective chamber orchestras. Each chord combines into pairs all the two-note intervals which have also been assigned to the instrumental group with which it is associated. According to the composer,

15Ibid., p. 116.

16Elliott Carter, record jacket notes for Elliott Carter's String Quartets Nos. 1 & 2, performed by The Composers Quartet (Nonesuch H-71249).

almost all the combinations that the chords can form with themselves and with each other appear during the course of the work.\textsuperscript{18} Each chord serves both a unifying and a demarcating function. The latter function refers to the difference between the sounds of each chord and its respective intervals and serves to "keep the two musical character-groups 'harmonically' distinct as entities."\textsuperscript{19}

These procedures are also utilized in the \textit{Piano Concerto} of 1965 and the \textit{Concerto for Orchestra} of 1969. The \textit{Piano Concerto} is considerably more chordal than his earlier, predominately linear compositions. The composer has pointed out that, in the \textit{Double Concerto}, the various sub-voices within each of the two chamber groups are harmonically differentiated by characteristic single intervals only. In the \textit{Piano Concerto}, however, the sub-voices are differentiated by characteristic chord-sounds.\textsuperscript{20} In addition, the basic material of the \textit{Piano Concerto} consists of twelve triads which are derived from one of two twelve-tone chords in contrasting spacing. One of the twelve-tone chords is assigned to the piano and its concertino, while the other chord is assigned to the orchestra. The composer has explained that, in each triad, one interval is given special prominence, and, since most of the triads appear in only one or two forms,

\textsuperscript{18}Ibid., p. 8. \textsuperscript{19}Edwards, op. cit., p. 107. \textsuperscript{20}Ibid., p. 108.
they can be relatively easily identified by the listener. In both the Double Concerto and the Piano Concerto the unifying chordal sonorities are treated as the resolved state of their intervallic components, and the pitches seem to gravitate towards their respective chords.

Carter's use of twelve-tone sonorities in the Piano Concerto is in no way related to serialistic techniques. During an interview with Allen Edwards for his book Flawed Words and Stubborn Sounds, Carter was questioned about an inversion of a previously stated piano figure which was discovered near the beginning of the second movement of the Piano Concerto. Carter explained that there were actually very few such inversions in the work, and that he had conceived of this particular inversion as a way of "destroying the technique" of the first movement by slowly getting away from its character and atmosphere. This inversion, he felt, would preserve the rhythmic aspect of the figure while inverting the pitch succession and transposing the figure so that none of the pitches would be identical with those of its previous appearance in the first movement. He wished, in the second movement, to treat freely the same materials which in the first movement had been more restricted in their behavior.

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22Edwards, op. cit., p. 110.
The Concerto for Orchestra is vertically even more dense than the Piano Concerto. Its material also derives from a twelve-tone chord, but its components are now utilized in superimpositions of five- and seven-note vertical sonorities. All of Carter's compositions are cyclical, but the Concerto for Orchestra carries this concept to the point that all four movements are going on simultaneously, each one in turn fading in and out of prominence throughout the piece. A similar type of cyclical procedure is also utilized in String Quartet No. 3, which was composed in 1971.

The organic development of the intervallic components of motivic cells and of large vertical sonorities by no means constitutes the only type of unifying procedures to be found in the compositions of Elliott Carter. Rhythmic techniques which deal directly with the speeds at which individual lines of music progress have their origins in Carter's Holiday Overture of 1944 and the Piano Sonata and are directly related to the development of the pitch material in his subsequent compositions. In addition, Carter's choice of pitch material as well as its treatment have been influenced to a large extent by his concern for the unique sonorous and expressive characteristics of the instruments with which he has dealt.

Special types of sonorous effects possible only on the modern piano are emphasized in the Piano Sonata, and much of its melodic and harmonic material is based on the fundamental
intervals of the harmonic series. Elliott Carter once stated in an interview that "the very core of the work revolves around the piano sound as distinct from other musical sounds."\(^{23}\)

In the *Sonata for Violoncello and Piano* Carter has attempted to present the characteristic differences between the 'cello and the piano as one of the main points of the piece by exploiting the possibilities for dramatic contrast between them. He has accomplished this not only by pointing out their obvious differences by assigning to each of them musical situations which are particularly idiomatic, but also by creating situations in which each instrument is compelled to perform "against its nature."\(^{24}\)

One example of this approach can be observed in a comparison of Figures 13 and 14. Figure 13 illustrates the opening theme of the first movement of the 'cello sonata. Here, each instrument is presented in its most characteristic role: the 'cello is playing a long, rhapsodic, singing line which is made up of triplets, syncopations, and notes tied over important beats of measures, thus emphasizing its affective nature. In contrast, the piano is cast in an accompanying role in which its percussive nature is emphasized by its strict ticking of the regularly recurring beats. (See Figure 13)


\(^{24}\) Edwards, op. cit., p. 69.
The theme itself is not developed in the traditional sense. It is continually transformed in its recurrences, and only at the end of the last movement is it allowed to return in its original guise, as can be seen in Figure 14. (See Figure 14)
Fig. 14--Sonata for Violoncello and Piano, 4th movement (Allegro), measures 175-184.

However, the roles of the instruments are now reversed, and their differences in character are thereby more graphically depicted because, although the musical material is the same as the opening of the piece, each instrument has now relinquished its natural role in order to take on the less idiomatic role of its adversary and, in fact, to play against its own nature. So, in this case it is clear that, on one level, the musical idea is inseparable from the instrumental medium, a concept which prevails in the subsequent compositions of
Elliott Carter. In fact, the composer himself has stated that the whole range of musical expression as well as the large form of his Sonata for Flute, Oboe, Cello, and Harpsichord of 1952 were determined by his desire to explore the many colorful possibilities of the modern harpsichord.25

In String Quartet No. 2 Carter decided to present the traditional instrumental combination in a new light by emphasizing the independence of each instrument from the others. He conceived of each instrument as a character in a drama, inventing its material out of its own special characteristics. He therefore assigned to each instrument a different set of intervals, a different tempo, different characteristic rhythms, and a different style of playing. He even directed the players to sit further apart than is customary so that they would be individually audible. The overall form of the quartet was then determined by the development of musical situations based on either the discipleship, companionship, or confrontation of the isolated instrumental characters.26

In the Double Concerto for Harpsichord and Piano with Two Chamber Orchestras Elliott Carter continued the path that

25 Elliott Carter, record jacket notes for Elliott Carter's Sonata for Flute, Oboe, Cello and Harpsichord, performed by Harvey Sollberger, Charles Kuskin, Fred Sherry, and Paul Jacobs (Nonesuch H-71254).

26 Carter, record jacket notes for Elliott Carter's String Quartets Nos. 1 & 2 (Nonesuch H-71249).
he had initiated in the second string quartet by adapting the principle of linear independence to complete instrumental groupings. One of these groups is the solo harpsichord and its chamber ensemble, the instrumentation of which was chosen specifically for its similarity to the character and sound of the harpsichord as well as for its ability to compensate for the harpsichord's limitations in dynamic range. The second chamber group is led by the solo piano, and its instrumental makeup was likewise designed to reinforce and complement the character and unique sonorities of the piano without interfering with the audibility of the considerably smaller harpsichord sonority. Like the instruments of the string quartet, each group is isolated from the other on stage, and each has likewise been assigned its own characteristic tempi and its own specific intervals derived from a unifying vertical sonority. As was also the case in the second string quartet, the form of the Double Concerto then evolved from the various interactions and confrontations of the separate instrumental groups, thus illustrating once again how closely linked are the roles of specific instrumental characters to the pitch material and its development as well as the significance that Elliott Carter attaches to the unique sonorities of individual instruments.

In the Concerto for Orchestra each movement is associated with a particular instrumental combination and register. The composer has stated that, in this work, he was trying to find
new "central sound-bodies from which musical ideas grow and to which they return." The first movement is always associated with the medium-low pitches of the piano, harp, cellos, and wood percussion. The second is played by the highest pitches of the piccolos, flutes, violins, and metallic percussion. The low pitches of tuba, basses, timpani, and bass drum constitute the third movement, while the medium-high pitches of clarinets, trumpets, violas, and snare drums make up the fourth movement. Once again, Carter has indicated a seating arrangement in the score that helps to emphasize the independence of each instrumental group, because elements of the four movements are usually occurring simultaneously.

String Quartet No. 3 is similar to String Quartet No. 2 and the orchestral works in that it deals primarily with the relationships that occur among completely independent instrumental characters or character-groups. In his latest quartet, however, Carter has divided his players into two pairs, instead of the four separate entities of the second quartet. Duo I consists of violin and 'cello and has been directed to play quasi rubato throughout. Duo II consists of violin and viola and has been directed to play in strict time throughout. Each duo has been assigned a certain number of movements which are "broken into substantial fragments." These fragments

27 Edwards, op. cit., p. 74.
appear several times throughout the piece, "so there is a constant interlacing of moods and materials; for the change within either duo from one movement to another always occurs while the other duo is carrying on the same movement." In fact, the sequences of recurrences of the movements are so organized that each of one duo's movements is at some point heard at the same time as each of the other duo's movements.

Perhaps Elliott Carter's most important contribution to contemporary music has occurred in the rhythmic realm. Certainly, more discussion has centered around his rhythmic innovations than any other aspect of his style. He has been credited with inventing a procedure called metrical modulation, even though similar procedures had already been utilized in Roger Sessions' Piano Sonata No. 1 and Charles Ives' Over the Pavements. Nevertheless, Carter was the first composer to make widespread use of this technique.

The term metrical modulation refers to the use of successive metronomic speeds which are related to one another either by proportion or by pulse. This procedure achieves a smooth and subtle speeding up or slowing down of the basic rhythmic pulse and usually involves two steps. First, the

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28 Elliott Carter, record jacket notes for Elliott Carter's String Quartet No. 3, performed by the Juilliard Quartet (Columbia M 32738).

proportional division of the existing pulse is changed; later, the number of units per pulse is altered while the smaller units remain constant in size. Figure 15 illustrates the utilization of a metrical modulation in the last movement of String Quartet No. 1. (See Figure 15).
Fig. 15--String Quartet No. 1, 3rd movement (Variations), measures 373-392.

Measures 373 through the first half of measure 386 are written with a meter signature of 2/4 at the metronome marking of \( \text{J} = 72 \). At the second beat of measure 386 the proportional division of the beat changes from four sixteenth-notes to five sixteenth-notes. The following two measures retain the new sub-division of the beat but alter the meter signature to 10/16 so that the metronomic speed of 72 now equals an eighth-note tied to a dotted eighth-note; i.e., 72 now equals the duration of five sixteenth-notes instead of four. In measure 389 the meter signature and the metronome marking change once again, but the speed of the smallest time-unit
of the preceding measures, the sixteenth-note, is retained. The result is a significant speeding-up of the time-frame from $J=72$ to $J=120$. The aural effect is similar to that of a smoothly effected accelerando, but the rate of speeding up is totally controlled by the composer rather than by the performer.

The technique of metrical modulation did not actually appear in the compositions of Elliott Carter until the Cello Sonata of 1948. However, the composer had already begun to experiment with passages written in speeds not proportionally related to the overall tempo in his Holiday Overture of 1944. Figure 16 illustrates a passage in which each note played by the first trumpet moves at a speed of 55.2 within an overall tempo marking of $J=138$. Similar passages occur occasionally throughout the piece, but none are of thematic significance. (See. Figure 16)
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Fig. 16--Holiday Overture, measures 58-60
In the first movement of the Piano Sonata Carter continued his experimentation with unusual rhythmic techniques. He discarded time signatures altogether in order to compose music which utilizes irregular groupings of a single sixteenth-note unit. This has resulted in passages of continually shifting accents in measures varied in length and has imparted a subtle improvisatory character to the music. However, the most striking aspect of the first movement is the composer's double interpretation of a single tempo. Alternating sections of totally different character and basic pulse are related in that their smallest time-unit, the sixteenth-note, remains constant in speed throughout. However, those sections, of which there are basically two types, are not aurally perceived as being in the same tempo, because the slow, chordal sections of maestoso character display a half-note pulse in contrast to the sixteenth-note pulses of the rapidly flowing contrapuntal sections. In addition, the composer further emphasizes the contrasts between the alternating sections by grouping the running sixteenth-notes predominantly in units of three, five, and seven as well as their multiples in order to obscure the fact that their basic tempo is exactly the same as that of the primarily duple-metered homophonic passages. \(^{30}\)

\(^{30}\)Ibid., p. 32.
In his subsequent compositions Elliott Carter tried to preserve the feeling of improvisatory freedom that the polyrhythms and continually transmuted metrical groupings had produced in the Piano Sonata. These procedures, as well as the brief experimentation with two simultaneous speeds in the Holiday Overture and the utilization of a basic sixteenth-note time-unit which unified contrasting sections in the Piano Sonata, are all basic aspects of the concept of metrical modulation, which allows for the statement of different speeds simultaneously as well as successively.

According to Carter, the 'Cello Sonata was the first of his compositions to use the concept of overlapping speeds as an underlying pattern for the entire work. He conceived of its four movements as one large motion in which all the tempi are inter-related through notated changes of speed utilizing the techniques of metrical modulation. Breaks between movements are de-emphasized by the carrying-over of motives from the end of one movement to the beginning of the following movement. For example, a motive from the piano part at the end of the second movement is restated by the 'cello in the first two measures of the third movement at exactly the same speed, even though the indicated metronomic tempi of the two movements are different. This motive can

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Boretz, op. cit., p. 18.
be seen in the quintuplets of Figure 17 as it appears in the second movement. Here, the metronomic speed is \( d = 112 \), but each note of the motive is moving at a speed of 560. (See Figure 17).

Figure 18 illustrates the first three measures of the third movement in which each note of the motive is also moving at a speed of 560, but this time within a tempo of \( d = 35 \). (See Figure 18)
The 'Cello Sonata also contains some instances in which specific musical material is related to a specific tempo. One example occurs in the third movement, in which the melodic material of the A section recurs later in the movement at the same metronomic speed of its first appearance. Another example of thematic recurrence at an identical tempo occurs at the conclusion of the sonata, where the opening phrase of the first movement appears at its original tempo of \( \textbf{J} = 112 \) with the instrumental roles reversed.

Even though the technique of metrical modulation was not employed in the earlier Piano Sonata, specific relationships between tempo and pitch content had already been utilized in that work. In the first movement, melodic material from the second thematic area of the exposition recurs just before the coda at the same tempo of its original appearance. The second thematic area is the only section of the first movement in which the basic tempo of \( \textbf{J} = 66 \) is altered to \( \textbf{J} = 72 \).

In the second movement the opening section is divided into three parts, each with a different metronomic indication. When material from this section reappears at the conclusion of the piece, its original metronomic indications also recur.

Elliott Carter continued his experimentation with the techniques of metrical modulation in his chamber music compositions of the early fifties and expanded his utilization of specific relationships between tempo and pitch material. In his 8 Etudes and a Fantasy for Woodwind Quartet Carter
integrated musical material from the first, second, and sixth etudes into the Fantasy at their original tempos. Recurrence of material at its original tempo also appears in the second and third movements of the Sonata for Flute, Oboe, Cello and Harpsichord.

By 1951 Carter's utilization of metrical modulation had reached its culmination in his String Quartet No. 1. The concept of the entire work is based on continual changes of speed and character, and the frequency of modulations has not been surpassed in his subsequent compositions. The quartet also explores the various possibilities of polyrhythmic texture built on several different speeds stated simultaneously. The first movement, for example, presents four main themes. Each one is associated with a specific speed but is never stated in passages marked at a tempo equal to its speed. Whenever these themes appear simultaneously, they produce a stratified texture of four different speeds in which the instruments may modulate at different moments, or they may modulate to different speeds at the same moment. These types of textures, however, are contrasted with others which come closer to having one overall tempo.

Even the plan of the movements in the first string quartet is related to the concept of metrical modulation. The composer has indicated pauses in the middle of both the second and the third movements instead of at the end of each movement, because,
in a modulation design, the tempo and character changes which normally occur between movements become instead the climax points of metrical modulation techniques. Therefore, according to the composer, to break off the logical plan of the movement just at its climax would destroy the effect of the modulation. So, in order to avoid this, Carter composed the pauses in the middle of movements so that resumption of the piece could be made in the same tempo and with the same musical material.

Carter's preoccupation with speed also led him to experiment with the systematic acceleration of the several themes of the final movement of the first quartet. Each theme is presented slightly faster at each recurrence, always precisely determined by metrical modulation, until it takes on the appearance of a brief motive and eventually vanishes in favor of other motives which are continuing their accelerandi until they, too, are no longer recognizable.

The rhythmic innovations of the chamber works were not easily transferable to Carter's orchestral compositions because of the large number of players involved. In fact, only one metrical modulation occurs in his Variations for Orchestra. However, the rhythmic style of the first string quartet, with its ability to sustain several different speeds simultaneously, is continued in the Variations. This work has also extended

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the idea of a systematic acceleration of thematic material by applying it to an entire movement. Another of its movements is comprised of the systematic retardation of thematic material. In addition, the first ritornello, which along with the main theme and a second ritornello, unifies the musical material of the Variations, becomes progressively slower throughout the work. Its counterpart, the second ritornello, becomes slightly faster with each appearance.

Figure 19 illustrates the opening measures of Variation 4 in which the continuous ritardandi are utilized. Here, the music slows from $\frac{4}{4}$ = 200 to $\frac{4}{4}$ = 100 during repeated rhythmic cycles of four measures in 2/4 time. At the end of each cycle the composer has specified that $\frac{4}{4}$ = $\frac{4}{4}$, and the same measured ritardando begins again at $\frac{4}{4}$ = 200. Figure 19 illustrates one way in which Carter has attempted to mask the abruptness of the sudden switch from $\frac{4}{4}$ = 100 at measure 216 to a tempo twice as fast in the following measure. He has introduced sixteenth-notes into the viola part at the end of measure 216 so that they will sound as equal notes with the eighth-notes at the beginning of the second cycle at measure 217. Later in the movement the accompanimental lines often speed up or slow down in order to further obscure the true ritardandi of the thematic material. In the last five cycles of ritardandi the note values of the thematic material gradually lengthen from the thirty-two sixteenth-notes per cycle to eight eighth-notes per cycle, thereby emphasizing even further the sense of continuous ritard. (See Figure 19)
Fig. 19—Variations for Orchestra, Variation 4, measures 213-224.
Elliott Carter continued to utilize the concept of a continuous acceleration of the time-frame in all of his compositions written after the Variations for Orchestra through the Concerto for Orchestra. However, he employed the systematic ritardando only once again, this time in the Double Concerto for Harpsichord and Piano with Two Chamber Orchestras. Its Adagio section presents a conflict between the winds and the strings, which attempt to maintain the established rhythmic order on the one hand, and the piano and harpsichord soloists on the other hand, who are aided by the percussion in their efforts to change the rhythmic situation by means of frequently overlapping cycles of ritardandi and accelerandi. However, the conflict is never resolved, because, as can be observed in the five pages of Figure 20, the soloists finally pull from both ends at the same time: the harpsichord and percussion participate in a measured ritardando at the same time that the piano rushes ahead in a non-measured accelerando to the conclusion of the section. (See Figure 20).
Fig. 20—Double Concerto for Harpsichord and Piano with Two Chamber Orchestras, Adagio, measures 451-465.
This same type of effect also appears in the Piano Concerto, but it involves only the soloist accelerating alone against the steady movement of the orchestra.

Carter's most recent orchestral work, Concerto for Orchestra, contains only one accelerating passage which recycles twice. However, no long continuous line carries through the entire passage as was the case in the earlier works. Nevertheless, rhythmic procedures involving the gradual speeding up of themes which were initiated in String Quartet No. 1 and the gradual speeding up and slowing down of the two ritornelli of the Variations for Orchestra, were extended to two full movements in the Concerto for Orchestra. The second movement becomes slower at each successive appearance, while the fourth movement becomes faster at each appearance.

The utilization of stratified textures resulting from four main themes being stated simultaneously at four different speeds in String Quartet No. 1 was expanded in String Quartet No. 2 to the point where each instrument was assigned different melodic and harmonic intervals and different styles of playing as well as its own characteristic rhythms and intrinsic tempos. Figure 21 presents an excerpt from the Introduction of String Quartet No. 2 in which the stratification of the instrumental characters can be clearly seen and heard. (See Figure 21).

33 Geissler, op. cit., p. 91.
The 'cello opens with its characteristic accelerando, which functions independently of the other tempi and is indicated by the notation of dotted lines. Its continuation is dominated by one of its most characteristic intervals, the perfect fourth. In measure 2 the first violin also exhibits both its characteristic rhythm, which usually involves alternations of long and short notes, and one of its dominant intervals, the minor third. The second violin enters in
measure 4 pizzicato and generally maintains a more regular rhythm here and throughout the composition. The viola is also presented in measure 4 molto espressivo, a temperament which it retains in its characteristic glissandi and portamenti. One of its characteristic intervals, the tritone, also appears in this example.

String Quartet No. 2 is also the first of Elliott Carter's compositions in which specific pitch material is not directly related to a metronomic tempo which is indicated in the score. In his subsequent concerti and third string quartet the relationships between his metronomic indications and the musical ideas have become even more tenuous because of his increasing facility in composing music in many different speeds simultaneously. Charles Rosen has observed that, in the coda of the Double Concerto, Carter has gone so far as to remove the central beat so that the bar lines now function purely as a visual aid for the performers. Therefore, since no central beat can be heard, the rhythms no longer cross but move independently instead. Rosen refers to these as cross-tempi or cross-speeds.34

At the same time that the importance of Carter's tempo indications was beginning to wane, a new emphasis on small groups of specific intervals which were associated with specific speeds began to emerge as an outgrowth of Carter's concept of the total independence of instrumental characters.

The **Double Concerto**, written two years after String Quartet No. 2, accorded to the aspect of speed equal importance with that of pitch content. Each of the two chamber groups was assigned five intervals, each of which recurs at the same metronomic speed throughout the composition. The individual speeds assigned to each interval are not indicated in the score, since they range from metronome marking 17.5 to metronome marking 35, speeds which move too slowly for a metronome. However, most of the overall tempo markings which are indicated in the score of the **Double Concerto** are multiples of one of the intervallic speeds.

The ten intervals assigned to the chamber groups are first presented vertically in the Introduction, each one recurring at its own assigned rate of speed. Eventually they combine to form the large polyrhythms and melodic patterns which develop during the remainder of the composition.

Figure 22 illustrates the first fourteen pages of the Introduction of the **Double Concerto**. The snare drum of the piano's orchestra first presents the intervals of a major second, which has been specifically assigned to the piano's ensemble, in measure 7. This interval alternates with the minor second, one of the intervals which has been specifically assigned to the harpsichord's ensemble and which is initially presented in measure 8. The intervals begin in an ornamented way but soon resolve in measure 10-12 to their respective pure lengths and metronomic speeds of $\frac{3}{5} = 25$ and $\frac{3}{6} = 24.5$. (See Figure 22).
Introduction

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Fig. 22—Double Concerto for Harpsichord and Piano with Two Chamber Orchestras, Introduction, measure 1-36.
In measures 13 and 14 the harpsichord speed of $\text{\textfrac{d}{c}} = 28$, which is associated with the perfect fourth, appears along with the piano speed of $\text{\textfrac{b}{a}} = 21\,\frac{7}{8}$, which is associated with the major seventh. They begin to move at their respective rates of speed while both the piano and harpsichord intervals of a major sixth and an augmented fourth enter at measure 17 at their speeds of $\text{\textfrac{a}{b}} = 21$ and $\text{\textfrac{d}{b}} = 29\,\frac{1}{6}$. In measure 20 the harpsichord interval of a minor third begins to move at the speed of $\text{\textfrac{b}{a}} = 19\,\frac{4}{9}$. In measures 23 and 24 the piano interval of the perfect fifth is presented at its metronomic speed of $\text{\textfrac{d}{c}} = 31.5$, followed by the initial entrance of the harpsichord's minor seventh at $\text{\textfrac{b}{a}} = 17.5$ in measure 31. Finally, the entrance of the piano interval of a major third which recurs at a speed of $\text{\textfrac{d}{c}} = 35$ completes the build-up of intervals at measure 36.

Elliott Carter's ability to compose related speeds in which diverse material can be presented at diverse speeds within a single overall tempo has become the crux of his musical style in recent years. The Coda of the Double Concerto is notated at two simultaneous tempos, one belonging to the harpsichord ensemble and the other belonging to the piano ensemble, and it serves as the time-frame for a rhythmic "free-for-all" in which ideas and speeds from throughout the work are recalled.\textsuperscript{35}

\textsuperscript{35}Geissler, op. cit., p. 68.
Carter's **Piano Concerto** was premiered four years after the **Double Concerto**, and, like the **Double Concerto**, its basic material is formed of specific intervals—triads in this case—to which a specific speed or speeds as well as specific rhythmic patterns have been assigned. In an essay which he wrote for the book *The Orchestral Composer's Point of View*, Carter included a table illustrating the twelve-note chord which he had assigned to the piano and its concertino as well as the twelve-note chord which he had assigned to the orchestral instruments. This table, which is reproduced in Figure 23, also illustrates the six triads assigned to each instrumental grouping, their relation to the unifying twelve-note chord from which they are derived, and the speeds at which they move throughout the composition. (See Figure 23)

<table>
<thead>
<tr>
<th><strong>Triads</strong></th>
<th><strong>Intervals, Triads and Metronomic Speeds</strong></th>
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<td><strong>Triads</strong></td>
<td><strong>Intervals, Triads and Metronomic Speeds</strong></td>
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Fig. 23--Intervals, triads, and metronomic speeds of Piano Concerto.
The black notes illustrate other spacings of the triads which are utilized in the Piano Concerto, and the boxed-in two-note intervals show that portion of each triad which is most frequently emphasized. Carter has indicated that each triad has also been assigned a specific character and, therefore, its own kind of continuity. He cites Triad III as an example: it is constantly superimposed on itself in a manner that leads to large and frequent tone clusters in the strings. Carter also points out that these triads contain some intervallic similarities, and that the first movement of the Piano Concerto attempts to emphasize these, while the second movement stresses their differences.36

The writing in the Piano Concerto is as rhythmically fluid as that of the Double Concerto and String Quartet No. 1 and contains many more metrical modulations than the other orchestral works. At times during the second movement as many as eight different layers of speed between the metronome markings of 10 5/13 and 105 are going on simultaneously. Charles Rosen’s comment about the lack of a central beat in the Coda of the Double Concerto is also applicable to the entire Piano Concerto as well as to the later Concerto for Orchestra, in which the large bodies of sound which represent the four movements continually fade in and out of prominence.

"according to a very large-scale cyclical plan . . . which on the highest level governs everything from beginning to end." In this work and in Carter's most recent string quartet of 1971, large sections of musical material, which the composer identifies as "movements," have usurped the function of the intervallic structures and their speeds as the building blocks of the composition.

In reprospect, it is clear that the first composition of Elliott Carter's maturity, the Piano Sonata of 1945-46, is indeed a germinal work. Carter's persistent attempts to achieve total organic unity in all his compositions, his acute sensitivity to instrumental sonority and the unique expressive characteristics of his instruments, the immense ingenuity and complexity of his rhythmic procedures—all are foreshadowed in the Piano Sonata. Yet the Piano Sonata does not deserve to be thought of as merely the seed of Elliott Carter's evolution as a composer; rather, it is an admirable work in its own right and well-deserving of more frequent public performances than it now enjoys.

37 Edwards, op. cit., p. 112.
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