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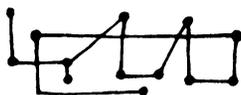
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THE EVOLUTION OF ELLIOTT CARTER'S RHYTHMIC PRACTICE



JONATHAN W. BERNARD

INTRODUCTION

ELLIOTT CARTER'S WORK over the past forty years has made him perhaps the most eminent living American composer, and certainly one of the most important composers of art music in the Western world. This span of time does not encompass his entire career to date—hardly surprising for a man who will soon celebrate his eightieth birthday—but in crucial respects deserves to be treated separately from the period which preceded it. Carter's earliest published works, dating from the late 1930s, are not juvenilia, but they are cast in a rather conventional mold; his music from this period has that neoclassical, "Americanized" sound which is readily recognizable as a feature of the style adopted then by many a former Boulanger student. In the late 1940s, however, Carter struck off in a startlingly new direction.

In retrospect, the Piano Sonata of 1945–46 was a harbinger of change, but the first work which actually *sounds* distinctly different is the Cello Sonata of 1948, Carter's fortieth year.

What had happened? It is true that much of Carter's musical education had been quite traditional, even conservative. But the same can be said, for instance, of Charles Ives, who acquired his formal training from Horatio Parker. At least as important to Ives's eventual development were much earlier influences, notably his father the bandmaster and musical free-thinker. The sources of Carter's nonacademic education lay not quite so close to home, but in his case they didn't need to, for Carter's circumstances during his formative years were distinctly enviable: his family lived in New York and made frequent trips to Paris. From an early age he was fascinated by modern music and heard, by his own account, as much as he could manage.

Of the many musical experiences which can now be assessed as influences upon Carter, one in particular, in light of his course since 1948, stands out. This is his exposure to the work of three composers who are now well known for their innovative work in rhythm: Ives, Henry Cowell, and Conlon Nancarrow. Each affected Carter in different ways; all three are mentioned in his 1955 article, "The Rhythmic Basis of American Music."¹ Here Carter enumerates what he saw as Ives's contributions: (1) superposition of different speeds notated in a common unit; (2) notated rubati played against strict time; (3) unrelated levels heard simultaneously, including the use of a softly played background that could be heard distinctly only during the silences between fragments of louder music, as in *The Unanswered Question*.² In the case of Cowell the influence came by way of his book, *New Musical Resources*, published in 1930. Carter credited the rhythmic techniques described therein with having "furnished me with many ideas."³ As for Nancarrow, Carter knew at least three of the pieces later collected under the title *Study No. 3*, as well as *Study No. 1*; these, presumably, he saw while serving on the editorial board of *New Music Quarterly* during the 1940s (*Study No. 1* was published there in 1951).⁴ In "The Rhythmic Basis of American Music" Carter cites a passage from *Study No. 1* which combines "four distinct planes of rhythm."⁵

But exactly what form did this influence take? Certainly not a desire to adopt others' methods wholesale; for Carter, all three approaches to rhythmic emancipation proved, in one way or another, unsatisfactory. Ives's innovations, for instance, for all the initial excitement they provoked, eventually appeared to him deeply problematic. Beginning in the late 1930s, Carter's attitude toward Ives's music was ambivalent. For example, he has described the orchestral music as consisting of "very large amounts of undifferentiated confusion . . . during which many conflicting things happen at once without apparent concern either for the total effect or for the

distinguishability of various levels.’’⁶ In a review of the New York première of the *Concord Sonata* in 1939 for the periodical *Modern Music*, Carter castigated the work for what he felt were its various shortcomings, including its muddled rhythmic character.⁷ Cowell’s ideas were difficult, if not impossible, to implement using conventional notation; Carter found himself unwilling to contemplate the radical revisions in notation that Cowell advocated, such as new note shapes to represent new divisions of the measure.⁸ He became suspicious besides of the focus of Cowell and others on “purely physical possibilities and their juggling” in their efforts to organize time.⁹

Here Carter’s interest in exploration of new rhythmic territory appears tempered by the concerns of a composer oriented toward more or less traditional performance. From his dissatisfactions with Ives’s methods Carter learned that the introduction of new rhythmic intricacies—specifically, the simultaneous projection of “unrelated” patterns, or patterns related only by complex ratios—posed enormous problems of control, but he did not want to give up writing for human musicians, as Nancarrow, with his player pianos, had done from the 1940s on; nor did he care for the idea of using a machine like Cowell’s rhythmicon, even in combination with an orchestra, as Cowell had done in his work *Rhythmicana* (1931). There can be little doubt, however, that Carter’s exposure to these attempts to develop radically new rhythmic methods impressed him, to the point of convincing him that he could find a solution of his own. The record of his compositions from 1948 on shows no rapid or radical shift in technique; instead, Carter moved gradually, absorbing the lessons afforded by his experience with each new work. His progress along the path to the works of the early 1960s is quite clear; nearly every successive composition from the Cello Sonata (1948) to the Double Concerto (1961) represents a substantial change in the treatment of rhythmic matters.

DEFINITIONS, GENERALITIES, AND AN OVERVIEW

In this essay, the term “simultaneity” refers to the projection during some passage in a composition of two or more distinctly different rhythmic patterns, often taking the form of different *speeds* (see below) and usually occurring as separate strands or parts of the musical texture. By “succession” is meant the temporal arrangement of two or more different rhythmic patterns such that one pattern is followed by a second (and the second by a third, and so on) as the music progresses, either within the same part or from one part to another, with the first pattern either being abruptly superseded by the second or—as in the case of metric modulation, to be discussed—undergoing a transformation or a series of transformations that gradually produces the second rhythmic pattern from the first.

Well before 1948, Carter's acquaintance with the work of Ives, Cowell, and Nancarrow brought him to a realization that, in its recounting, sounds almost epiphanic:

Around 1944 . . . I suddenly realized that, at least in my own education, people had always been consciously concerned only with this or that peculiar local rhythmic combination or sound-texture or novel harmony and had forgotten that the really interesting thing about music is the time of it—the way it all goes along.¹⁰

More specifically, he has stated: "I began as early as 1944, in works like my *Holiday Overture*, to think in terms of simultaneous streams of different things going on together."¹¹ Judging from the significance which Carter himself, in "The Rhythmic Basis of American Music," attributed to the work of his predecessors, it does follow naturally that Carter should have been impelled to attempt the realization of *simultaneity* in his own music. But in charting the evolution of his new rhythmic practice, especially at its beginning, one must distinguish between the general musical problems that engaged Carter's attention and the specific compositional solutions devised for them. The degree to which the *Holiday Overture*, for example, reflects this fascination with "simultaneous streams of different things going on together" is limited by the techniques then at his disposal. The simultaneity, where it exists at all, is of only a rather rudimentary sort. (See Example 1.)

In his recent book on Carter's music, David Schiff asserts that "in the late 1940s Carter developed a new rhythmic language" but then proceeds to discuss it as though all its essential features were already in place by the time of the Cello Sonata.¹² In taking this approach, Schiff seems to disregard an essential point: that Carter at the beginning of this evolutionary period was more preoccupied with techniques of rhythmic *succession* than with those of simultaneity. Schiff is right, though, to remind his readers of the importance of simultaneity to an understanding of what Carter was working toward from the late forties on, for it was precisely through refining the mechanisms of rhythmic succession that Carter eventually solved the problems posed by simultaneity. Simultaneity emerges in an increasingly integral relationship to the substance of the works after 1948, as Carter's confidence in his handling of rhythmic-successive techniques grew.

CELLO SONATA (1948)

Carter's first great stride in the direction of controlling large-scale rhythmic structure was metric modulation, as it has now come to be called.¹³ This

Winds

mf *leggero*

Strings

mf *p* *espress.* *cantando sost.*

(etc.)

(etc.)

EXAMPLE 1: *Holiday Overture*, MM. 103–107

technique was introduced in the Cello Sonata and has been a fixture in his work ever since; it provides a way of moving from one speed to another by means of changes of time signature and redivision of the beat.¹⁴ The speed changes often take place in several steps and are carefully prepared, although they may occur fairly gradually or fairly quickly. In Example 2 (Cello Sonata, III, measures 6–13), the initial value of $\text{♩} = 70$ is transformed into $\text{♩} = 60$. Below the music is indicated the series of steps which produces this transformation.

Metric modulation, then, although it does produce momentarily overlapping speeds, is really a device for composing a *series* of different speeds, each precisely related to its immediate predecessor and its immediate successor. Carter has said that he did not venture into polyrhythms before the Cello Sonata because of a “desire to remain within the realm of the performable and auditorily distinguishable divisions of time. . . .”¹⁵ He does not venture very far in the Cello Sonata either; but even this relatively cautious beginning forecasts future developments, for the Cello Sonata is the

The musical score is divided into four systems. The first system consists of three staves: a bass staff, a treble staff, and a bass staff. It features complex rhythmic patterns with slurs and accents. Markings include *mp* 6 and a tempo of 70. The second system also has three staves, with a *simile* marking and a triplet of eighth notes marked (3). The third system has three staves, with a piano *p* marking and a tempo of 60. The fourth system has two staves, with a forte *f* marking.

The rhythmic patterns are as follows:
1. Tempo: ♩ = 70. Time signature: 3/8. A slur covers six eighth notes.
2. Tempo: ♩ = 70. Time signature: 6/16. A slur covers six sixteenth notes.
3. Tempo: ♩ = 70. Time signature: 21/32. A slur covers twenty-one thirty-second notes.
4. Tempo: ♩ = 70. Time signature: 2/8. A slur covers seven eighth notes.
5. Tempo: ♩ = 70. Time signature: 3/8. A single eighth note.

EXAMPLE 2: CELLO SONATA, III, MM. 6-13

first work in which the idea of “simultaneous streams” is realized to any appreciable extent. Carter himself was somewhat surprised by the form that this work took; twenty years later he told an interviewer, while speaking of the maintenance of distinct characters for the piano and cello in the Cello Sonata and of the generative importance of this distinction to the whole work, “I don’t know how this conception ever originated; it was actually the first time I ever had this idea.”¹⁶ What *is* known is that, typically for him, the immediate impetus came from thinking about a specific compositional problem—the relationship between two very different instruments—and the particular nature of the drama of performance that would result from combining them.

Nevertheless, in the Cello Sonata the feature of simultaneous contrast is not exactly pervasive; it is evident really only at the beginning and the end of the work. The fact that the four movements were composed in the order 2, 3, 4, 1 suggests that the manifestations of simultaneity peculiar to the Cello Sonata found their way into the piece as Carter was working on it.¹⁷ Carter seems to have sought a flexible system, one that would allow him to express similarity as well as difference and that would allow him to move with relative ease back and forth between the two. Beginning at measure 20 in the first movement, the strict contrast established at the outset between the two instruments begins to show some signs of erosion: offbeat attacks in the right hand are set against the “clocklike ticking,” as Carter has called it, with which the piano began the movement and which now continues in the left hand. In measure 27 the two hands unite in syncopation, both against the beat and against the cello’s own syncopated gestures. Example 3(a) shows what happens next: the first metric modulation of the first movement produces the first systematic disruption, in which the piano presents the polyrhythm 5:4 (literally established at measure 35). This leads, after a temporary resumption of the mechanical quarters of the opening (measures 41–48), to a syncopated passage in which the piano actually *imitates* the characteristics of the cello part (Example 3(b): measures 49–54, and until measure 57).

It should also be pointed out that in this passage two features of simultaneous contrast important in Carter’s later works are not to be found. One is simultaneous speeds that are really *speeds*—that is, truly regularized—and actually perceivable as such. The cello at the opening presents long notes, *espressivo*, but at no consistent speed, just in contrast with the perfectly regular quarters at MM 112 in the piano. The other missing feature is a pervasive, structural connection of rhythmic contrast to the domain of pitch. In the later works, specific speeds become associated with specific pitch entities, but in the opening of the Cello Sonata the stark rhythmic contrast is mitigated by the pitch structure. Example 4 shows that the first part of the opening cello phrase can be interpreted as overlapping instances of

(a) mm. 33–41

Musical score for measures 33–41. The score is in 3/4 time and consists of two systems. The first system (measures 33–35) features a cello line with a dynamic marking of *mp molto espress.* and a piano accompaniment with a dynamic marking of *mp*. The piano part includes a *staccato* marking. The second system (measures 36–41) shows the cello line with a dynamic marking of *più f* and a *cresc.* marking, and the piano accompaniment with a dynamic marking of *f*. Both systems include fingering numbers (3, 4, 5) and a *v* (accents) marking.

(b) mm. 49–54

Musical score for measures 49–54. The score is in 3/4 time and consists of two systems. The first system (measures 49–50) features a cello line with a dynamic marking of *più f* and a *cresc.* marking, and a piano accompaniment with a dynamic marking of *(mf sempre)*. The second system (measures 51–54) shows the cello line with a dynamic marking of *meno f* and a *cresc.* marking, and the piano accompaniment with a dynamic marking of *mf*. Both systems include fingering numbers (1, 2, 3, 4, 5) and a *v* (accents) marking.

EXAMPLE 3: CELLO SONATA, I

The image displays a musical score for the first movement of the Cello Sonata, measures 1 through 15. It features two staves: Violoncello (Cello) and Piano. The tempo is marked 'Moderato (♩ = 112)'. The piano part includes dynamic markings such as *mf*, *ff*, *mf*, *f*, *p* (*un poco incisivo*), and *mf*. Performance instructions include *espressivo-quasi rubato*, *mp cantabile*, and *staccato sempre*. The score is annotated with pitch-class sets: 5-11, 4-14, and 4-17. Brackets and lines connect these sets across the piano and cello parts, illustrating their relationships. For example, the piano part contains several instances of 5-11, 4-14, and 4-17, while the cello part features 5-11 and 4-14. Some annotations include circled numbers like 5, 10, and 15, possibly indicating measure numbers or specific set occurrences.

EXAMPLE 4: CELLO SONATA, I, MM. 1-15

pitch-class sets 5-11 [02347], 4-14 [0237], and 4-17 [0347], with 4-14 and 4-17 each expressed once as literal subsets of 5-11. These sets, as pointed out in the example, have several prominent correspondents in the piano part, including—again—literal subset relations. There are also two instances of 4-17 that link the piano and cello parts. (This analysis hardly accounts for everything in the pitch domain, but clearly the correspondence indicated is an important part of the complete picture.)¹⁸

The third movement of the Cello Sonata provides an excellent illustration of Carter's early use of metric modulation. As Carter has said, metric modulation can be used "both as a means of proceeding smoothly or

abruptly from one speed to another and as a formal device to isolate one section from another."¹⁹ This statement carries the clear implication that metric modulation may operate over larger spans of time than the local connection, which is exactly what happens here. The aggregate effect of the changes in tempo—all of which are controlled by metric modulation—is to produce a permanent supersession of the opening speed by another speed whose first expression in the movement occurs in close relationship to the opening. This process can be traced through the occurrences of rapid figuration, which from the beginning of the movement have an obvious thematic significance (see Example 5). From the sixty-fourth notes in measure 2, which at a notated tempo of ♩ = MM 70 move at the speed of MM 560, the figuration shifts to sextuplet thirty-seconds (measure 5). Example 2 has already illustrated the stages by which these sextuplets (MM 420) become septuplets at ♩ = MM 60 (also MM 420). In every ensuing metric modulation but one it is the rapid figuration which serves as the link, continuing at the same actual speed across the notated metrical and tempo changes. Example 6 tabulates these changes and matches them with the speeds of the rapid figuration at each point.

The significance of this information is, simply, that every one of the speeds shown can be expressed as a multiple either of 70 or 60 or both. Thus, while the notated tempi 80, 40, and 48 do actually exist, nonetheless together with 70 and 60 they portray a gradual move from speeds based upon the former to speeds based upon the latter. The very first figurational speed, 560, is a multiple of 70 only; the next, 420, is a multiple of both 70 and 60; 560 and 280 are 70-based; and 240 and 480, which end the movement, are multiples of 60 but not of 70. As if to confirm the decisive nature of this metamorphosis, the final speed, 480, also serves as a specific link to the fourth movement, which sets forth sixteenths at ♩ = 120.²⁰ The third movement of this work is, if not the earliest, at least one of the earliest

EXAMPLE 5: CELLO SONATA, III, MM. 1-3

measure(s)	notated tempo	speed of figuration
1	 = 70	560
5–6	"	420
10–11	 = 60	420
37,40,44–45	 = 80	560
48	 = 70	560
49	 = 70	560
62	"	280
63	 = 40	280
64	 = 40	280
65	"	240
73	 = 48	240
79–80	"	480

EXAMPLE 6: CELLO SONATA, III, FIGURATIONAL SPEEDS

instances in Carter's music of relationships created by multiples of "basic" speeds. MM 280 and 560 can thus be taken to *represent* 70; 240 and 480 to represent 60; and 420, depending upon context, to represent either or both. Representation by multiple continues from this point forward to be of considerable significance in Carter's schemes of rhythmic relationships, and it assumes an absolutely crucial role in the works of the 1960s, where simultaneity finally comes into its own.

In the Cello Sonata, however, the speed relationships are still mainly in the service of succession. The relationship of the cello to the piano is actually rather traditional in the third movement, and although this means that their characters are to some extent contrasted, the figurational common ground is frequently enough expressed to leave no doubt that, rhythmically speaking, the two parts move together and behave more or less alike.

FIRST STRING QUARTET (1951)

In light of Carter's previous works, perhaps the most striking features of

the First String Quartet are its extensive employment of the idea of simultaneity and its strong expression of a tendency toward simultaneous different speeds. Schiff has pointed out examples of rhythmic stratification in this work, a practice which often involves the simultaneous presentation of two or more "themes." The first clear instance of such stratification for the entire ensemble begins at measure 22 in the first movement (see Example 7). As the annotations show, even though the notated tempo is the same in all parts, the actual *speeds* are all different.

MM 96 MM 36

$\text{♩} = 120$ $\text{♩} = 120$

pizz. *mp tranquillo*

$\text{♩} = 120$ $\text{♩} = 120$

f marc. $\text{♩} = 120$

$\text{♩} = 120$

(MM 120)

25

mf *(poco) cresc.* *mf marc. détaché*

mf sub.

MM 180

mf *in fuori* *meno f*

f sost. e cant.

MM 48

EXAMPLE 7: FIRST QUARTET, I, MM. 22–29

This kind of procedure is new to Carter's work, but its application is still fairly limited at this point in his development. The rhythmic situation is in rapid flux: already in measure 27 the set of simultaneous speeds, not even present in its entirety until the entrance of the viola in measure 25, has already begun to dissolve as the cello shifts from MM 120 to MM 48, or half the speed of the second violin. By measure 31 the entire scheme has mutated, and by measure 35 any consistent sensation of simultaneity has been effectively dispersed. This treatment is typical of the use of simultaneous speeds in the First Quartet: their establishment is usually a matter of only a few measures, and quite often not all parts are included. In fact, there is only one extended passage in the first movement composed according to simultaneously deployed speeds: measures 312–50, which occur at the very end of the Fantasia and segue into the *Allegro scorrevole*.²¹ Even this passage, however, has its successive aspects, for over the previous twenty or so measures the speeds to be combined accumulate. Refer to Example 8, which provides a rhythmic reduction of this passage. By measure 295 the speed MM 48 has already begun to be established in the viola, at first as an alternation between MM 24 and 48, as shown (measures 295–300), then uninterrupted as MM 24 (measures 300–305), then basically as MM 48 from measure 306 on, with occasional interjections of MM 24. Meanwhile, MM 180 occurs as two-beat triplets in the other three parts (measures 296–300), then MM 300 as two-beat quintuplets, again in all three parts. Triplets (MM 180) resume at measure 304 and become quarters at the same speed from measure 306 on. Thus, MM 135 in violin II is the only speed of the four that is actually introduced in the passage of simultaneity. At measure 338 the scheme begins to disintegrate as the viola undergoes a series of accelerative steps: MM 60 (measure 338); MM 80 (measure 341); MM 90 (measure 342); MM 120 (measure 344); and finally MM 180 (measure 350). Over the four measures beginning at measure 347 the other three instruments, one by one, defect.

In the case of the passage at measures 22–29, already quoted as Example 7, the role of succession in generating the scheme of speeds is also quite clear, although the method differs somewhat from that used at the end of the Fantasia movement. Here it is the rhythmic characteristics of the opening cello cadenza—specifically, the quintuplet and the series of dotted quarters that immediately succeed the first appearance of the quintuplet—that serve as the source of multiples and fractions which become the set of simultaneous speeds (Example 9). The first of these speeds to be generated is MM 96, in violin II at measures 12–15, with one hiatus at measure 14. This is developed from the cello dotted-quarters (MM 48) by the simple relationship of 2:1. Next, the quintuplet, only an isolated grouping in measure 9, becomes a steady stream of notes at MM 360 in measures 14–18

and serves as the common denominator for the first series of metric modulations in the piece. Its subsequent reductions in speed by one-third, then by one-half (still in the cello) provide a clue to the significance of the speeds of MM 36 (violin I, measure 22) and MM 180 (viola, measure 25): these are, respectively, one-tenth and one-half of MM 360.

The accumulation, as I have termed it, of a set of speeds by such relationships is important to Carter's later work; at this point in his development, however, the connection between speeds that express metric-modulatory relationships and the idea of "simultaneous streams of different things going on together" is still not fully realized. There are plenty of these simultaneous streams, and occasionally they are treated as specific, sharply defined speeds, but not consistently, or for any great length of time. Some of the reasons for this have already been mentioned: the high degree of flux and the consequently frequent dissolution of stratified materials. Another crucial barrier to the consistent employment of simultaneity at this stage is the lack of reinforcing pitch aspects, such as intervallic or pc-set usage that is integral to the stratification. Schiff has enumerated "themes" for the two outer movements of the First Quartet, but in practice these have no very specific identities; further, most of them have no specific association with a single part but instead migrate about the texture. Quite a different state of affairs is found in the Second Quartet, eight years later.

The significance of measures 312–50, however, should not be underestimated. Carter has, after all, placed this passage as the climax of the first movement—"the goal," as he has said, "of the techniques of metric modulation which have been used."²² In other words, the extended use of simultaneous speeds in these measures is *explained* by all that precedes it: the juxtaposition of more or less briefly maintained speeds which leaves in large part an impression of *successive* development. That is, speeds grow out of one another, often in very rapid order, to be sure, but successively just the same. A similar process of explanation could be said to occur in the Adagio movement (the third of Carter's real movements, which takes place within the second literal one, as measures 57–154). Here the dark, rhythmically complex, and passionate music of the viola and cello is contrasted with the remote, high dyads of the two violins, moving serenely in long values. Not until measure 85, however, do these two elements sound together; before this point they are set forth in separate sections (measures 57–66, 66–76, 77–85). In both the Fantasia and the Adagio movements, nevertheless, the force of development is aimed at producing, in the end, a condition of simultaneity, suggesting that the idea has already taken on an importance in Carter's aesthetic which will lead eventually to its employment in a truly integral role.

$\text{♩} = 120$
(♩ = 60)

Vn. I, Vn. II,
Vc.

Vla.

Two staves of musical notation. The top staff is labeled $d = d.$ ($d. = 60$) and the bottom staff is labeled ($d. = 180$). Both staves feature complex rhythmic patterns with various time signatures: $\frac{2}{4}$, $\frac{3}{4}$, and $\frac{4}{4}$. Brackets above the notes indicate groupings of 3 and 5 notes. The notation includes eighth notes, quarter notes, and half notes, with some notes beamed together.

Four staves of musical notation. The top staff is labeled $d = d.$ ($d. = 180$) and the bottom staff is labeled ($d. = 135$). The staves are labeled Vn. I, Vn. II, Vla., and Vc. The notation includes complex rhythmic patterns with time signatures $\frac{9}{8}$ and $\frac{6}{4}$. Brackets above the notes indicate groupings of 5 notes. The notation includes eighth notes, quarter notes, and half notes, with some notes beamed together.

EXAMPLE 8: FIRST QUARTET, I, MM. 295-315, RHYTHMIC REDUCTION

Maestoso ♩ = 72

10

72 × 5 = MM 360

MM 48

MM 96

pizz.

f arraché, marc.

14

♩ = ♩

più f

mf

15

(♩. = 72)

(♩. = 72)

(♩. = 72)

(♩. = 72)

(♩. = 120)

(♩. = 120)

(♩. = 120)

(♩. = 120)

20

EXAMPLE 9: FIRST QUARTET, I, MM. 9-21

VARIATIONS FOR ORCHESTRA (1954–55)

Carter reports: “In the course of exploring metric modulation, the idea of dealing with accelerandos and ritardandos intrigued me. The first notational solution of an accelerando, which speeds up regularly from beginning to end of a piece, occurred in the sixth variation of my *Variations for Orchestra*. . . .”²³ Complementing the sixth variation is the fourth, which treats ritardando in a similar manner. The notational technique is related only indirectly to that of metric modulation, as can be seen from Example 10 (measures 289–99). The composer comments:

. . . a scheme of six measures in $\frac{3}{4}$ time speeds up during its course to three times its initial pace [$\text{♩} = 80$ to $\text{♩} = 240$], at which point there is a switch of notation, and a part previously playing quarter notes is written in triplets of eighths, while in other parts dotted quarters become eighths, dotted halves become quarters, and eighths become sextuplets of sixteenths. Yet, while each of these notational systems sounds as if it were continuing a regular acceleration, the beat has returned to the speed of that of the first beat of the six-measure scheme. The entire variation is projected onto this scheme, which repeats itself over and over.²⁴

Notice the entrance of the cello in measure 295, as if in canon to the clarinet at the tritone below. Carter thus achieves a gradual, almost completely smooth acceleration, in contrast to the shifts of speed in metric modulation, which occur as a series of distinct (even if somewhat de-emphasized) steps. Later in the variation than the passage displayed in Example 10, the “other parts” mentioned above by Carter enter, accumulating as the variation progresses. The acceleration leads, analogously to the movement of the stripe on a barber’s pole, to a resumption of the original speed; but from the beginning of the process, and increasingly as the variation proceeds, the overlap produced by parts that continue to accelerate even as the original notated tempo is re-established succeeds in blurring the boundaries of the six-measure scheme. Furthermore, the thematic strand used consistently throughout begins at some points at speeds slower or faster than MM 80, thus adding several dimensions to the overlapping process. For examples of this technique, see the third entrance of the thematic strand at measure 298 (oboe) in Example 10 and the fifth and sixth entrances at measures 307 (bassoon) and 308 (solo violin) respectively (not shown).

There are further elaborative features which deserve mention. First, as each strand gradually peters out, it decelerates against the current of constant acceleration, sometimes establishing a more or less constant speed before finally ceasing. Second, the thematic strand that begins the variation

NOTE for the CONDUCTOR:

The accelerando extending over each group of six measures should be a very regular speeding up from $\text{♩} = 80$ to three times that speed each time. Figures, such as that of the Clarinet at measures 294-295, which extend over the double-bar and change from quarters to triplets of eighths, should sound as if they were continuing the accelerando in quarters.

VARIATION 6

289 Accel. molto $\text{♩} = 80$ $\text{♩} = 96$ $\text{♩} = 115$ $\text{♩} = 139$ $\text{♩} = 166$ $\text{♩} = 201$ $\text{♩} =$

295 Sub. TEMPO l. - molto accel. $\text{♩} = 80$ $\text{♩} = 96$ $\text{♩} = 115$ $\text{♩} = 139$ $\text{♩} = 166$

EXAMPLE 10: *Variations for Orchestra*, MM. 289-99

appears in recognizable form throughout, but in the course of its multiplication it produces mutated versions of itself which are heard either as continuations of the strand (or some abbreviation of it) or as isolated fragments. In measures 315-38, for example, seven different string parts entering at separate points project closely related fragments in various schemes of deceleration.

In all, the thematic strand along with its derivatives is heard in at least two and as many as six of its phases simultaneously throughout the entire variation (except, of course, during the first six measures). The precisely controlled acceleration and retardation employed here may be thought of as special devices in Carter's work. In this instance, however, the arrival at a scheme of simultaneous versions of identical or similar material through the application of a single, thoroughgoing concept represents a new and powerful kind of compositional control that would permit in subsequent works the definition of simultaneity as the essential fact from which sense and structure devolve.

SECOND STRING QUARTET (1959)

In his published conversation with Allen Edwards, *Flawed Words and Stubborn Sounds*, Carter described his Second String Quartet as follows: "The total notion of the piece is derived directly from the idea of simultaneously interacting heterogeneous character-continuities."²⁵ On the whole, it seems significant that this work, where Carter made simultaneity the basis of structure for the first time, also marks the first wedding of rhythmic aspects with pitch aspects of distinction between parts. It is as if the elevation of simultaneity to its level of importance in the Second Quartet could not have been accomplished without the mutually reinforcing power of pitch and rhythmic considerations. Some of the details are attested to by Carter himself:

Here the four instruments are stratified according to their repertoire of intervals, their repertoire of rhythms, and their repertoire of musical gestures. The first violin, for example, specializes in the intervals of the minor third, the perfect fifth, major ninth, and major tenth. Its fantastic and ornate character is borne out by its rhythmic repertoire, which is extremely contrasted. The second violin, on the other hand, shows very regular motion and moves steadily at its own metronome markings of 140, 70, and sometimes 280. The viola specializes in rhythmic relationships which are usually in the ratio 2:3 or 3:5, and the cello does not move at a steady tempo, but rather has accelerandos and ritardandos built in.²⁶

Like the first violin, each of the other instruments does indeed have its own "repertoire of intervals," even though Carter has not mentioned them here. This feature of structure is displayed in Example II (measures 45–50); accompanying the musical illustration is a tabulation of the relevant intervals. Notice that a distinction has been made between the tritone, or [6], in the viola and the compound tritone, or [18], in the cello. Major and minor seconds, on the other hand, are freely used as melodic connectors in all parts.²⁷ Thus it is clear that some elements are held in common; the intent is not to divorce each part entirely from the other three. The repertoires enumerated by Carter and supplemented in our Example II tend to produce what he would call "characteristic behavior," a formulation which obviously allows exceptions. The limits of behavior defined in this fashion, in other words, are not at all absolute. One notices, for instance, that the cello does not *always* accelerate or ritard; it merely does so more often than the other instruments. And even among the intervals which are not major and minor seconds, not every interval in a given part belongs to the repertoire established for that part. Sometimes, in fact, the entrance of one

3 7 3 7 7 3 14 3 7 3 7 7 3 3

3 3 3 7 3 7 3

14 7

* = important secondary part
wichtige Nebenstimme

interval repertoires

violin I: 3, 7, 14, (16)

violin II: 4, 9, 11

viola: 6, 10, 13

cello: 5, 8, 18

EXAMPLE 11: SECOND QUARTET, MM. 45-50

instrument will complete an interval, with a note already sounding in another instrument, which belongs either to its own repertoire or to that of the other instrument.²⁸ The situation becomes further complicated as the work progresses and each part begins borrowing and acquiring various traits of the others.

As the separate “personalities” of the four parts begin to exert mutual influences, it becomes clear that pitch and rhythm remain intimately associated for the purposes of expressing the recombination and fusion of particular traits. The beginning of the fifth section (Cadenza for Cello, measures 243–60; see Example 12) is an apt illustration of this principle. Carter has said that in this section “the cello, playing in its romantically free way, is confronted by the others’ insistence on strict time.”²⁹ In reality, however, the character of this section is not nearly so simple as Carter’s brief summary, written for the liner notes of a recording, might lead one to believe. The “insistence on strict time” entails the projection of not one but three rhythmic patterns in opposition to the cello’s *rubati*. Two of these, in the two violins, are strict speeds of MM 93.3 and 140 respectively. Recall that at the outset of the Second Quartet it was the second violin that was assigned the role of strict timekeeper. In this respect it differs from all the others, especially the cello, whose constant *accelerandi* and *ritardandi* are the very antithesis of strict time. Here the second violin maintains the role it has held from the start—and, further, does so at the central speed of its original scheme, MM 140. However, its pairing with the first violin is new, and before long the two instruments begin to borrow each other’s intervals, as if in expression of common purpose. From the annotations in Example 12 it is evident that the first violin borrows more frequently than the second—a condition which corresponds to its greatly altered rhythmic character in this passage.

Meanwhile, the viola, like the two violins, begins this section with a statement of strict speed (MM 124.6). Soon, however, comes an unmistakable move away from consistent presentation of this speed. At first (measures 252–55), the multiple values preserve simple relationships to the original speed; here $\text{♩} = 124.6$, and the two durations in question are, in order, three and four times the length of the dotted eighth. But beginning with the pickup to measure 256, no such simple relationship prevails. From here on the viola treads a fine line between freedom and stricture, never surrendering entirely to either. For the most part it may be said to keep to itself, and the maintenance throughout of its original intervallic repertoire is a reflection of this position. However, set in the middle of the extreme contrast created by the other instruments the viola also, perhaps inevitably, assumes some aspects of the role of mediator. For this reason an occasional interval from either the strict side or the free turns up. (Note the major sixth, measure 255; perfect fourth, measure 258; major third, measure 259.)

243 Cadenza for Cello
 = ♩ = 93.3 —

senza sord.

pp

pizz. *mf*

(con sord.) *v*

mf espr.

senza sord.

f

sff → *pp*

248

pp

(pizz.) *mf*

(con sord.) *v*

pp

mp → *pp*

pp

cresc. poco a poco

molto giusto

9

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

EXAMPLE 12: SECOND QUARTET, MM. 243-60

254

4 4 9 11 11 9

senza sord.

f non troppo, accomp. sempre

ff molto espr.

9 11

mp

p

mf

5

11 260 9

p

pp

mf

p

p sub.

pizz.

arco

*sch*erzando

flautato

naturale

DOUBLE CONCERTO (1961)

The next step in Carter's rhythmic development is also the most drastic, although it has been well prepared by what has gone before. The Double Concerto, completed in 1961, marks the first time in Carter's music that the condition of simultaneous speeds becomes *normative* for the compositional fabric. At the same time, each speed is paired with a specific pitch entity—in this case an interval—such that each independently moving line is distinguished in two dimensions at once. The method is clear from the very beginning of the Concerto. As is well known, a texture of ten simultaneous speeds gradually accumulates in the Introduction, beginning at measure 7 and completed in measure 36; entrances are arranged so that shortly after the complete texture has accumulated, the attacks which determine the different speeds coalesce into two successive groups of six simultaneous attacks each, at the downbeats of measures 45 and 46, then disperse again.

Some of the features of this remarkable construction have been exposed in Carter's article, "The Orchestral Composer's Point of View," originally published in 1970 and since reprinted.³⁰ Included in the article is a chart of the speeds, reproduced as Example 13. Carter's aim here was to arrive at a unified, simple expression which would also yield a wide variety of relationships. The bracketing ratio 2:1, represented by the metronomic markings 17.5 and 35, is filled in by eight other speeds to complete a scheme of ratios 5 through 10 and their reciprocals. The remaining relationships, of a more complex sort, are also bracketed by the 2:1 ratio, as their fanlike disposition in the chart reveals. These control the order in which the ten speeds are introduced: the first two are 24.5 and 25, in the ratio 49:50; the next two are 21 $\frac{1}{2}$ and 28, in the ratio 25:32; and so on, moving outwards from the center until 2:1 is reached.

This much is common knowledge, but the actual details of the scheme as it is worked out in the composition have not received the attention they deserve. The procedure followed, as it turns out, is not at all as straightforward as one might expect it to be from Carter's lucid description.³¹ At this point a document included among the Carter manuscript and sketch materials on deposit at the New York Public Library (transcribed here in part as Example 14) becomes relevant. This is Carter's durational plan for measures 7–48 of the Double Concerto, showing the entrances of the speeds as they occur one by one.³² (For the sake of clarity I have added the speeds in MM numbers at the left margin in each system.)

One important detail in the diagram is the comment at the bottom of the first page: "Only those notes marked with \geq are played." By "notes," of course, Carter means durations: the groups linked by ties. Not all written attack points have accent marks. For example, in the line corresponding to the speed 24.5, beginning in measure 7, Carter has indicated the first

RATIO		BETWEEN			SPEEDS		METRONOMIC SPEEDS	PIANO	HARPSICHORD
↓	↓	↓	↓	↓	↓	↓			
2					$\frac{1}{5}$	10	35		
	81					9	$31\frac{1}{2}$		
		25			$\frac{1}{6}$		$29\frac{1}{6}$		
			32			8	28		
				50	$\frac{1}{7}$		25		
				49		7	$24\frac{1}{2}$		
			25		$\frac{1}{8}$		$21\frac{7}{8}$		
		18				6	21		
	50				$\frac{1}{9}$		$19\frac{4}{9}$		
1					$\frac{1}{10}$	5	$17\frac{1}{2}$		

EXAMPLE 13: DOUBLE CONCERTO,
CARTER'S TABLE OF SPEEDS

two attacks, which determine the 24.5. The next two are labeled 12.25, or half of 24.5, because the attack point in measure 9, on the fourth part of the septuplet in beat 1, has no accent mark. This sort of omission, however, does not represent a real problem in terms of the projection of the overall scheme, even though it occurs fairly often. The explanatory notes accompanying the diagrams state that the speeds chosen for this work are also

This musical score is written on a grand staff with two systems of staves. The left system contains the percussion parts, and the right system contains the string parts. The score is divided into measures 7 through 11. Measure 7 is marked with a '7' and a 'cymb. perc. orch I' annotation. Measure 8 is marked with an '8' and a '24.5' annotation. Measure 9 is marked with a '9' and a '12.25' annotation. Measure 10 is marked with a '10' and a '7' annotation. Measure 11 is marked with an '11' and a 'minor 2nd' annotation. The percussion parts include cymbals, snare drum, and tom-toms. The string parts include violins, violas, cellos, and double basses. The score features various rhythmic patterns, including eighth and sixteenth notes, and rests. The tempo is marked 'MM' (Moderato) at the beginning. The time signature is 7/8. The score is annotated with various numerical values (7, 8, 9, 10, 11, 12.25, 24.5, 25) and interval names (minor 2nd, major 2nd). The percussion parts are marked with 'perc. orch I' and 'perc. orch II Sn.Dr.'. The string parts are marked with 'orch I' and 'orch II'. The score is written in a modern, minimalist style with a focus on rhythmic and intervallic relationships.

MM 35
31.5
28
24.5
21
17.5
29 1/6
25
21 7/8
19 4/9

m. 7
24.5
8
9
12.25
10
11
minor 2nd

cymb. perc. orch I
perc. orch II Sn.Dr.
25
12.5
entrance of major 2nd

35
31.5
28
24.5
21
17.5
29 1/6
25
21 7/8
19 4/9

12 13 14 15 16

percussion

entrance of perfect 4th - 28

entrance of percussion

entrance of major 7th

21 7/8

entrance of major 6th - piano 21

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DIAGRAM #1
only those notes marked with > are played.

EXAMPLE 14: DOUBLE CONCERTO, CARTER'S RHYTHMIC PLAN, MM. 7-16

used in multiples: multiples of two for the five speeds assigned to Orchestra I, with harpsichord, and multiples of three for the other five speeds, which are assigned to Orchestra II, with piano. That is, for example, MM 28 in Orchestra I may be presented as MM 56, while MM 35 in Orchestra II may occur as MM 105. Here in the Introduction, where the speeds are not yet thoroughly established, Carter has taken the additional license of presenting them from time to time at half their “true” values. This assures that continuity is preserved: when an “expected” attack does not materialize, as in measure 9 in our discussion above, or instead receives the negative articulation of silence, the speed in question can be said to have dropped momentarily into the background. In more general terms, this procedure corresponds to Carter’s intentions for the entire work: “In a way, all the material is being sounded in vestigial form almost all the time in the background. The idea that there is always a large world going on from which items are picked out, brought into focus, and allowed to drop back, is one of the fundamental conceptions of the piece.”³³

Another noteworthy aspect of the diagram is the information it conveys about the instruments that actually articulate the speeds as they enter. In measures 10–11, for instance, the “entrance of major second” is indicated. One might assume that the interval would appear at the accent right at the end of measure 10, but as Example 15 shows, the attack is made in the third percussion part (Orchestra II), with the first pitch of the major second entering in the violin a full two quarters later. In fact, according to the diagram in Example 14, this speed (MM 12.5, half of 25) enters initially at the end of measure 6 and is carried by percussion 3 to the end of measure 10. Not only that, however, but the percussion *continues* to carry the 12.5/25 speed; the interval itself does not enter explicitly into the scheme but instead remains “associated” by occurring, when at all, only in proximity to the attacks in the percussion.

In order to understand how this is supposed to work, the analyst needs to know that beginning with the Second Quartet Carter conceives the larger design of each of his works according to some dramatic plan which occurs to him in the process of deciding how best to handle a particular ensemble—the string quartet, for instance—or to write in some given genre, however broadly defined, such as the concerto. In the case of the Double Concerto the relevant model is Lucretius’s *De rerum naturae* (Concerning the nature of things), “in which the cosmos is brought into existence by collisions of falling atoms,” a process which is represented in the music by the accumulation and projection of the ten speeds through the climax of measures 45–46 and beyond.³⁴ After this a process of progressive differentiation takes over as smaller numbers of speeds are presented in successive and overlapping combinations. But during the Introduction the music is still emerging from “chaos”—that is, lack of differentiation. Carter has

(105 x 5/42 = 12.5)

The musical score for Example 15, Double Concerto, Orchestra II, mm. 10-14, is presented in two systems. The first system includes Percussion 3 and 4, Violin (Vln), and Viola (Vc). Percussion 3 and 4 have complex rhythmic patterns with dynamic markings like *pp*, *f*, and *mp sub.*. The second system includes Percussion 3 and 4, Piano (Pno), Violin (Vln), and Viola (Vc). Percussion 4 has specific parts for Tom 2, Bgo 2, and coSD. The Piano part is mostly silent. Dynamics range from *pp* to *f*.

EXAMPLE 15: DOUBLE CONCERTO, ORCHESTRA II, MM. 10-14

mentioned that the “gradually changing percussion sounds . . . first ‘give birth’ to a few musical pitches that in turn bring on the sound of the piano and then the harpsichord, which in their turn become more and more articulated and differentiated. . . .”³⁵ Thus the speeds that have been so meticulously worked out do not yet, in the Introduction, engage the intervals in the precision of their workings—not reliably or consistently, at any rate.

Interesting things do happen almost from the first, however, aside from the articulation of Carter’s rhythmic plan as shown in the diagram. For instance, two entrances of the major second, both connected by proximity to the main scheme (also shown in the percussion part), themselves articulate the speed MM 12.5 exactly, but *independently* of the main scheme (see Example 15). Even though this particular progression goes no further, it is clearly an indication of the first tentative movements of the material toward precise rhythmic definition. In Example 16, the speed MM 12.5 is further reinforced—but not by the major second. Instead, two presentations of the major seventh, E-D# in horn 2 and bassoon, are used. Example 15 shows

The image displays two systems of musical notation for the Bassoon and Horn 2 parts of Carter's Double Concerto. The first system, labeled '13', shows measures 13 and 14. The second system, labeled '15', shows measures 15 and 16. The instruments are Oboe (Ob.), Clarinet (Cl.), Bassoon (Bn.), and Horn 2 (Hn. 2). The notation includes various dynamic markings (pp, p, mp) and articulation marks (accents, slurs, and breath marks).

EXAMPLE 16: DOUBLE CONCERTO, BASSOON
AND HORN 2 (ORCHESTRA II), MM. 13-15

where the speed corresponding to the major seventh, MM $21\frac{7}{8}$, first enters: with the *sf* in percussion 4, at the end of measure 13. Obviously, at this very early stage the speed is not at all established, and Carter has apparently chosen to add to the impression of primal chaos by using the major seventh to define the wrong speed, as if that interval did not yet “know” what its proper behavior is.

Carter’s collection of analytical material for the Double Concerto also includes a series of diagrams that he made to illustrate the principal features of the slow movement (measures 313–468). In his article, “The Orchestral Composer’s Point of View,” Carter also mentions these features: slow, quiet music played by a central group made up of instruments from both orchestras, which proceeds seemingly without relation to a succession of accelerandi and ritardandi produced by entrances of the instruments that are positioned at the periphery of the ensemble in its performance disposition.³⁶ Example 17, reproduced from the published score, shows how this disposition is supposed to look.³⁷ One possible interpretation of this seating plan would be to regard the winds as a center, with the percussion, strings, and keyboards stationed along the edges. In Carter’s diagrams of the slow movement, one of which is transcribed in Example 18, this partitioning of the ensemble is in fact realized. The passage diagrammed, measures 331–42, consists of accelerandi only (plus, of course, the central music) and is to be read at all points in counterclockwise direction (ritardandi in other diagrams are notated clockwise). The correspondence to events in the score is exact, as the accompanying rhythmic reduction (Example 19) makes clear.

(*sempre accel.*)

$\text{♩} = 92$ ----- 105 ----- 121 ----- 139 -----

(*sempre accel.*)

$\text{♩} = 70$ ----- 80 -----

159 ----- 183 ----- (210) -----

(140)

92 ----- 106 ----- 122 -----

$\text{♩} = 70$

EXAMPLE 19: DOUBLE CONCERTO, MM. 331–42, RHYTHMIC REDUCTION

Meanwhile, what happens to the speed identities of the intervals? Acceleration and retardation do not exclude the possibility that each successive interval (or pair of intervals, in the case of vertical presentation) could occur at a different speed yet still fit the range of speeds established for it at the outset of the work. Constant speeds, however, are ruled out by definition; this and the difficulties of calculation at a constantly changing speed may be the reasons why interval identities are suspended in the peripheral parts during these sections. The same difficulties apply to the “quiet music,” but, perhaps because these parts are deliberately designed *not* to accelerate or decelerate, the assigned speeds are at least approximated. In Example 20 there are two demonstrations of this: the minor seventh at about MM 35 and the minor third at about MM 19.5 (that is, very close to $19\frac{4}{9}$).

$\text{♩} = 70$ ----- $\text{♩} = 90$ ----- $\text{♩} = 92$ ----- $\text{♩} = 106$ ----- $\text{♩} = 122$ -----

Picc. approx. 35

Hn. I approx. 19.5

Tpt.

Tbn. *senza sord.* *p molto esp.*

EXAMPLE 20: DOUBLE CONCERTO, PICCOLO AND HORN I (ORCHESTRA I), MM. 337–41

CONCLUSION

The projection of simultaneous speeds together with acceleration and retardation in the same passage represents a kind of culmination in Carter's rhythmic practice up to this point. This accomplishment, of course, hardly signaled a halt in Carter's development. His next work, the Piano Concerto, tackles what is in some ways an even more formidable task: composition with all twelve trichords, each of which has a set of speeds.³⁸ Carter's shift in this work from intervals to trichords as the principal pitch-structural components may reflect, not a lack of satisfaction with the Double Concerto, but rather a desire to attempt a different solution to the problem of wedding pitch and rhythm on a formal level. The other fundamental aspect of pitch structure in the Double Concerto—the assignment of the two all-interval tetrachords, one to each orchestra—is also part of this solution and deserves comment at this point. There would seem to be a certain inconsistency in assigning, on the one hand, an all-interval entity to each orchestra, distinguishing one part of the ensemble from the other on that basis, and on the other hand in assigning five different intervals (not interval *classes*) to each orchestra. In fact, Carter found it necessary, as he explains in his unpublished notes on the Double Concerto, to add the tritone to the piano's repertoire of intervals and the minor sixth to the harpsichord's repertoire, *without*, however, identifying them with particular speeds.³⁹ In both cases the added interval supplies the one interval class missing from the collection of five with assigned speeds. Each orchestra's collection of intervals, then, represents the entire universe of interval classes, yet the way in which this universe is constituted is in each case distinctly different; that the two all-interval tetrachords are *different* tetrachords, after all, reinforces this distinction. However, the fact remains that interval class is significant in some ways but not in others. This dichotomy between interval and interval class persists in Carter's later works, but with a different meaning, one which suggests more strongly than does the dichotomy of the Double Concerto a globality of conception.⁴⁰

American music owes a great deal to the fact that Carter was seized, at a crucial time in his career, with the same desire for rhythmic freedom that had infected Ives, Cowell, and Nancarrow. At least as important, however, is that Carter took a different path to that freedom, and in doing so managed to escape the painful appellations of "visionary" and "experimentalist" which have come to represent the isolation, even belittlement, accorded his predecessors. In barely more than a dozen years Carter brought about two major changes in his music: first, a method of control that allowed him to define rhythmic activity on multiple levels while showing clearly and audibly the interrelation of these levels; second, a concomitant focusing of the pitch domain, with the result that definition of structure in terms of intervallic usage became fused with definition in terms of

rhythmic usage, in particular the projection of both simultaneous and successive speeds. From the *Double Concerto* on one really cannot say that the rhythms convey the pitches without adding that the reverse is at least as true. In fact, in an interview conducted in 1968 Carter objected to his interlocutor's reference to matters of rhythm, meter, and duration in his music as "presentational," saying: "I consider [the rhythmic and metric aspect] intrinsic to my music, just as intrinsic as pitch."⁴¹ Clearly Carter is justified in making this claim. And while he did seem to arrive, around 1960, at the "solution" to his problem of integrating rhythmic innovation with the pitch structures of his music, the course of his career since then demonstrates that this solution is hardly formulaic: that it has led Carter to an effectively infinite compositional flexibility practically guarantees that his music will continue to fascinate theorists and composers for a long time to come.

NOTES

1. Elliott Carter, "The Rhythmic Basis of American Music" (1955), in *The Writings of Elliott Carter* (hereafter: *Writings*), ed. Else Stone and Kurt Stone (Bloomington: Indiana University Press, 1977), 160–65.
2. *Ibid.*, 163–65.
3. Carter, liner notes for Nonesuch recording H-71234 (1969), in *Writings*, 270.
4. Conlon Nancarrow, *Rhythm Study No. 1 for Player Piano*, *New Music Quarterly* 25, no. 1 (October 1951): 1–22. According to Rita Mead (*Henry Cowell's "New Music" 1925–1936: The Society, the Music Editions, and the Recordings* [Ann Arbor: UMI Research Press, 1981], 369–78), Carter was on the editorial board of *New Music Quarterly* continuously during the years 1945–58 but was never chairman. Carter himself, however, recalls having succeeded Frank Wigglesworth as chairman, perhaps during the early 1950s (letter to the author, 11 September 1985). Mead has Vladimir Ussachevsky succeeding Wigglesworth in fall 1951 (p. 372).
5. "The Rhythmic Basis of American Music," 165.
6. Carter, "Shop Talk by an American Composer" (1960), in *Writings*, 209.
7. Carter, "The Case of Mr. Ives" (1939), in *Writings*, 48–51.
8. See Henry Cowell, *New Musical Resources* (reprint ed., New York: Something Else Press, 1969), 43–108 *passim*.
9. Carter, "Music and the Time Screen" (1976), in *Writings*, 346.
10. Allen Edwards, *Flawed Words and Stubborn Sounds: A Conversation with Elliott Carter* (New York: Norton, 1971), 90.
11. Edwards, 101.
12. David Schiff, *The Music of Elliott Carter* (London: Eulenburg Books; New York: Da Capo Press, 1983), 24 *et seq.*
13. Credit for coining the term goes to Richard Goldman, who was the first to describe metric modulation in print in his article, "The Music of Elliott Carter," *The Musical Quarterly* 43 (1957): 151–70. The term "metric modulation" is actually a misnomer, since the *meters*, or written time signatures, are only the agents of change, not the objective. The real objective of a "metric modulation" is a *speed* modulation, and

speed is a characteristic which is independent of notated meter (see also note 14 below). However, because the term has stuck, and because even Carter himself now uses it, I follow the general practice here.

14. Throughout this paper I often use the word *speed* to refer to the rate at which a series of (usually) identical values is moving. This can be expressed as a metronomic, or MM, number. *Speed* can also mean, simply, *tempo*, but the latter term by itself is usually meant as a performance indication—an actual, prescribed best rate—which is obviously not the sense intended when one says, for instance, that sixteenths at ♩ = MM 120 move at a *speed* of MM 480.
15. “Music and the Time Screen,” 349.
16. Benjamin Boretz, “Conversation with Elliott Carter” (1968), *Perspectives of New Music* 8, no. 2 (Spring-Summer 1970): 19.
17. Schiff has revealed this order of composition (p. 132).
18. My analysis differs significantly from Schiff’s (see p. 137). Both 4–14 and 4–17 are included in his tabulation of four-note subsets of a controlling six-note set (6–Z43 [012568]), but 5–11 apparently does not figure in his scheme, since it is not a subset of 6–Z43.
19. “Music and the Time Screen,” 356.
20. Schiff has also noted this intermovemental link (p. 141).
21. As Carter himself has noted, the literal divisions into movements of the First Quartet do not correspond to the real movemental scheme: the former is a tripartite arrangement, while the latter is quadripartite. “The reason for this unusual division of movements,” he has written, “is that the tempo and character change, which occurs between what are usually called movements, is the goal, the climax of the techniques of metrical modulation which have been used. It would destroy the effect to break off the logical plan of the movement just at its high point. Thus pauses can come only between sections using the same basic material. This is most obvious in the case of the pause before the movement marked Variations [that is, the third]. In reality, at that point the Variations have already been going on for some time.” (“The Time Dimension in Music” [1965], in *Writings*, 246.)
22. See note 21 above.
23. “Music and the Time Screen,” 356.
24. *Ibid.*, 356–57.

25. Edwards, 101.
26. "The Time Dimension in Music," 247.
27. Numbers in square brackets refer to sizes of intervals in semitones, without respect to order or transpositional level. That is, for example, the pitch order G3–C4 is taken to be equivalent to C4–G3 (or G#3–C#4 or C#4–G#3, and so on), but not to G3–C3 or G3–C5. The list given in Example 11 agrees with Schiff's (see p. 32 of his book) with respect to all but one interval. Orin Moe's article "The Music of Elliott Carter," *College Music Symposium* 22, no. 1 (1982): 7–31, has a similar list, but it is incomplete. William Brandt, in his article "The Music of Elliott Carter," reprinted in *Breaking the Sound Barrier: A Critical Anthology of the New Music*, ed. Gregory Battcock (New York: Dutton, 1981), 221–34, has described a different intervallic distribution among the four parts. His findings, however, are in some instances imprecise and in others simply wrong.
28. For this reason, it remains an open question whether the pitch structure of the Second Quartet can be adequately described with pitch-class sets. In 1959, Carter's tabulation of pitch sets in the Harmony Book was still several years in the future, and it may well be that at this point Carter had not consciously formalized relationships involving groups larger than dyads. There is some evidence opposing this speculation. Carter has stated that he used one of the all-interval tetrachords as a "key" chord in the First Quartet (1951): "This chord is not used at every moment in the work but occurs frequently enough, especially in important places, to function, I hope, as a formative factor." ("Shop Talk by an American Composer," 205.) There is also Carter's postcard to Michael Steinberg, dating from 1960, which displays both all-interval tetrachords and comments that the Second Quartet "is all made up of interval combinations derived from these two 4 note chords—in all movements"; and, further, that the First Quartet uses only the second of these—that is, [0146]. (Reproduced in *Elliott Carter: Sketches and Scores in Manuscript* [New York: The New York Public Library and Readex Books, 1973], 29.) In their efforts to confirm these statements through independent investigation, however, analysts have not yet gotten very far. Schiff, for example, outlines the occurrences of [0146] only in the opening cello solo of the First Quartet and does no more than mention the two tetrachords of the Second. Theorists' general perplexity concerning pitch structure in these works is well voiced by Carlton Gamer in his review of *Flawed Words and Stubborn Sounds* (*Perspectives of New Music* 11, no. 2 [Spring-Summer 1973]: 146–55).

29. "String Quartets No. 1 (1951) and No. 2 (1959)," in *Writings*, 278.
30. "The Orchestral Composer's Point of View" (1970), in *Writings*, 282–300.
31. Rudolph Kompanek, in an unpublished master's thesis completed at Eastman in 1972, has treated the Double Concerto in considerable detail. He too has examined the Introduction and has found discrepancies between the music and Carter's written account of it. However, Kompanek did not have access to certain information which has surfaced among the sketch and manuscript materials on deposit at the New York Public Library, and his findings, for this reason incomplete in certain respects, led him to conclude—erroneously, I believe—that Carter's stated plan does not work as the composer intended it to.
32. "Diagram 1," in a folder headed "Double Concerto: Diagrams and Analyses Made in Early 60's." The diagram, which I have abbreviated in this transcription, actually continues through measure 52. Although the hand is without question Carter's, the plan cannot properly be called a sketch, for it was apparently made sometime after the piece was finished.
 The transcription in Example 14 corrects the line location of the MM 24.5/12.25 speed in measures 7–11, omits a few markings of only incidental importance, and also omits (in measures 12–16) a large amount of crossed-out material that was apparently intended to show, before Carter thought better of it, how the other speeds in the scheme of ten tacitly progress before they actually enter.
33. Boretz, 7–8.
34. "The Orchestral Composer's Point of View," 292.
35. Carter, liner notes for Nonesuch recording H-71314 (1975), reprinted as "Double Concerto . . ." in *Writings*, 326.
36. "The Orchestral Composer's Point of View," 295.
37. Carter, *Double Concerto*, score (New York: Associated Music Publishers, Inc., 1964), iii.
38. See my article, "Spatial Sets in Recent Music of Elliott Carter," *Music Analysis* 2 (1983): 5–34, in which I discuss some of the aspects and implications of this technique as it is used in the Piano Concerto, particularly the first movement.
39. Carter, "Double Concerto," one-page note, in "Diagrams and Sketches."

40. The nature of globality in Carter's recent music is addressed at length in "Spatial Sets" (see note 38).
41. Boretz, 18. Boretz apparently does not view such a state of affairs as possible in music, to judge from his assertions that "a musical duration is necessarily the duration of *something*" and that "while durations are independently specifiable, the question [of] which durations it is relevant to specify hangs on a *prior* identification of the things of which they are durations" ("In Quest of the Rhythmic Genius," *Perspectives of New Music* 9, no. 2/10, no. 1 [1971]: 152). No doubt music does exist for which Boretz's statements hold true—perhaps, for instance, the music of Stravinsky, Boretz's point of departure in this article. But Carter's work since 1960 is more in line with what John Rahn envisioned in his response to "In Quest of the Rhythmic Genius": music in which not only do pitches "provide a framework for the articulation of time" but also times are chosen which "provide a framework for the articulation of pitches"; and, further, "in which *both* processes apply, each *independently* coherent and creating together a new, more complex structure of counterpointed independent structures" ("Rhythm, and Talk about It," *Perspectives of New Music* 15, no. 2 [Spring-Summer 1977]: 238).