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*Instrumentation and Register as Form-Articulating
Features in Elliott Carter's Concerto for Orchestra*

Abstract

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Keywords

Carter, Concerto for Orchestra, analysis, form, instrumentation

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Instrumentation and Register as Form-Articulating Features in Elliott Carter's Concerto for Orchestra

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Elliott Carter's Concerto for Orchestra (1969) is often regarded as one of the composer's greatest achievements. Its musical surface is a rich patchwork of contrasting rhythms, dynamics, harmonic sonorities, and instrumental combinations. This is the outcome of a tireless compositional process that is reflected in approximately 3,500 pages of sketches.¹ Despite being overtly complex, this music is in fact built on quite straightforward principles and is also aimed at clearly expressing its general "internal dramaturgy." Carter's music is often (and rightfully) approached in terms of pitch relations and rhythmic innovations. The analysis presented here, however, focuses on instrumentation (timbre) and register.² I will show how these surface features are deeply embedded in the underlying structure of the piece, and how Carter uses them to render this structure and the resulting form more apparent to both listeners and performers.

Carter's distinctive approach to the piece's form, which has been widely discussed in the literature, results in a persistent stratification of musical material.³ He composed the Concerto in four movements, which are framed by an introduction and a coda. These

1 I would like to express my gratitude to the Paul Sacher Stiftung, where I was able to study the microfilms and original sketches of the Concerto for Orchestra in September 2012.

2 These aspects belong to the realm of the so-called secondary parameters as defined and discussed in Leonard B. Meyer, *Style and Music: Theory, History, and Ideology* (Philadelphia: University of Pennsylvania Press, 1989).

3 Jonathan W. Bernard, "Spatial Sets in Recent Music of Elliott Carter," *Music Analysis* 2/1 (1983), 5–34, doi:10.2307/853950; David Harvey, *The Later Music of Elliott Carter: A Study in Music Theory and Analysis* (New York: Garland, 1989); David Schiff, *The Music of Elliott Carter* (New York: Cornell University Press, 1998); Jonathan W. Bernard, "Poem as Non-Verbal Text: Elliott Carter's Concerto for Orchestra and Saint-John Perse's Winds," in *Analytical Strategies and Musical Interpretation*, ed. Craig Ayrey and Mark Everist (Cambridge: Cambridge University Press, 1996), 169–204; Rosario Santana, "Musical Discourse and Rhythm in Elliott Carter," *Ex Tempore* 9/1 (1998), 37–83; and Larson Powell, "The Character of Polyphony: Carter's Concerto for Orchestra," in *Polyphony & Complexity*, ed. Claus-Steffen Mahnkopf, Franklin Cox, and Wolfram Schurig (Hofheim: Wolke Verlag, 2002), 11–37.

movements not only follow one another, as in the traditional concerto, but are also simultaneously present throughout the composition—at least conceptually. To make this possible, Carter divides the orchestra into four groups, which he assigns to the different movements. Medium-low instruments such as the piano, harp, cellos, and wood percussion dominate the first movement. The second movement belongs to the high instruments—piccolos, flutes, violins, and metal percussion. In the third movement, the lowest instruments come to the fore (tuba, basses, timpani, and bass drum), and in the final movement the remaining instruments—the medium-high ones—take the lead. To each instrumental group a specific rhythmic profile is assigned, as well as a set of three characteristic intervals and chords (adding up to a chromatic cluster when movements are combined). Most of the musical surface is based directly on these materials, providing each movement a distinct character.

In the following paragraphs, I consider how Carter shapes the form and discourse of the Concerto by carefully balancing the different available sonorities of the large orchestra. First, I will briefly discuss the underlying structure of the piece and show how Carter realizes the simultaneity of movements. Secondly, I will illustrate which strategies of instrumentation Carter employs to emphasize the formal plan of this elaborate composition.

STRUCTURAL POLYRHYTHM

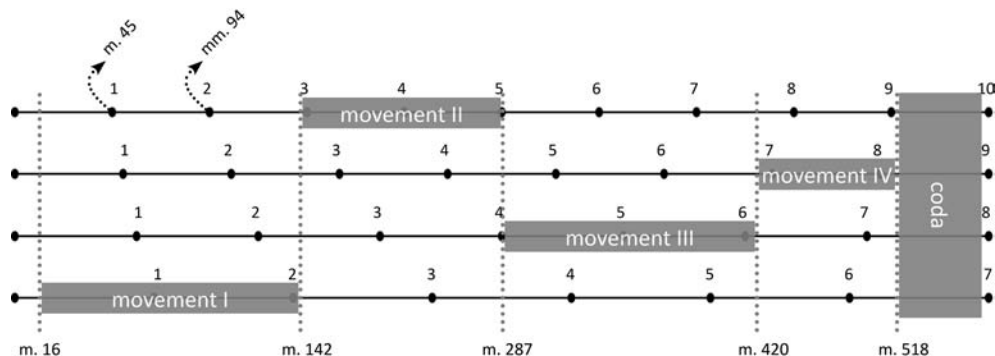
The simultaneity of the four movements is created by allowing the instruments of one movement to appear during the other movements. In fact, the entire orchestra is involved from beginning to end, but each of the four orchestral groups is clearly dominant during the movement in which Carter features it.

The organization of this puzzle depends on a so-called large-scale or structural polyrhythm. This is a feature of Carter's compositional practice that involves combining two or more periodic pulse layers in a very slow polyrhythm that often spans the entire duration of a composition.⁴ Although some local applications of this technique can be seen in the composer's Double Concerto, the Concerto for Orchestra is the first large work in which the overall organization of the composition is based on an underlying structural

4 The theoretical implications of this technique are discussed in John F. Link, "Long-Range Polyrhythms in Elliott Carter's Recent Music" (Ph.D. diss., City University of New York, 1994); and Andrew Mead, "Time Management: Rhythm as a Formal Determinant in Certain Works of Elliott Carter," in *Elliott Carter Studies*, ed. Marguerite Boland and John Link (Cambridge: Cambridge University Press, 2012), 138–67. In some cases the polyrhythm can be longer or shorter than the actual composition.

polyrhythm. The structural polyrhythm for this composition consists of four “limbs” in a 10:9:8:7 ratio. The exact beginnings and endings of the four movements are the subject of some debate, but the overall form of the composition is clearly recognizable.⁵ We can map the four movements onto the polyrhythmic scheme as shown in Figure 1.

Figure 1: Form of the Concerto for Orchestra, mapped onto the structural polyrhythm



As this visualization makes clear, each timeline is connected with one movement and accordingly with one orchestral group. The manifestations of one movement during another are governed by this scheme. To give an example: elements 1 and 2 of the timeline on top (which is assigned to the second movement) occur during the time span of the first movement. At or around these moments in the composition (mm. 43–50 and mm. 92–94, to be specific), the high instruments of the second movement make a noticeable appearance, as Example 1 shows.⁶ The broken-line boxes indicate how the material of the second movement intrudes into the first, eclipsing the instruments of the first movement (piano, marimba, cello, and, in this instance, the violas as well).

In the same manner, all other dots in Figure 1 correspond with actual appearances of the respective movements' material. It is important to emphasize that such appearances last longer than just an instant. Sometimes the onset of an appearance will coincide with

5 Writings by Carter himself (Elliott Carter, “Music and the Time Screen,” in *Elliott Carter: Collected Essays and Lectures, 1937–1995*, ed. Jonathan W. Bernard [Rochester, NY: University of Rochester Press, 1997], 262–80) and others (Santana, “Musical Discourse and Rhythm”; and Harvey, *The Later Music*) give different and sometimes contradictory interpretations of the exact places in the score where movements begin. In an analytical chart reproduced in Bernard, “Poem as Non-Verbal Text,” Carter mentions a total of 619 measures, rather than the 600 in the actual score. Based on the original sketch material and a close reading of the score, I decided to adhere to the division as indicated in the foreword of the published score: Elliott Carter, *Concerto for Orchestra* (New York: Associated Music Publishers, 1969).

6 For the sake of concision, I have not included the many calculations required to reveal the exact correspondence between the abstract structure and its projection in the Concerto's musical time here. For a more in-depth analysis, see Klaas Coulembier, “Multi-Temporality: Analyzing Simultaneous Time Layers in Selected Compositions by Elliott Carter and Claus-Steffen Mahnkopf” (Ph.D. diss., University of Leuven, 2013).

Example 1: Concerto for Orchestra, mm. 42–45, with annotations

The image displays a page of a musical score for Elliott Carter's Concerto for Orchestra, specifically measures 42 through 45. The score is arranged in a standard orchestral format, with woodwinds and percussion at the top, strings in the middle, and cellos/basses at the bottom. The woodwind section includes Piccolo, Flutes (Fl 1), Oboes (Obs 1, 2, 3), Clarinets (Cl 1, 2), Bassoons (Bns 1, 2), Horns (Hns 1, 2, 3, 4), Trumpets (Tpts 1, 2, 3, 4), Trombones (Tbns 1, 2, 3), and Tuba. The percussion section includes Xylophone (Xylo), Gongs (CY Guro), and various other percussion instruments (L. Ratchet Gong, CY, Trng, and Tamb). The string section is divided into Violins I (V.L.N.S. I), Violins II (V.L.N.S. II), Violas (V.L.A.S. div a 3), Cellists (CELLLOS div a 3), and Basses (BASSES div a 2). The score is annotated with performance instructions such as 'Presto volando' and 'div 3'. The page number 105 is visible in the bottom right corner.

the theoretical point in time, but on most occasions appearances are situated around a structural pulse. A more detailed analysis of the musical surface would reveal further subdivisions of this scheme, but that lies beyond the scope of this investigation.

Looking more closely at the pivotal points in the composition—where one movement ends and another begins—we can see that these moments are carefully aligned to the structural polyrhythm as well. The most obvious case is the transition from the second movement to the third, which comes at the exact midpoint of the polyrhythmic cycle. This midpoint is shared by the respective timelines of the second and third movements, which have an even number of elements (10 and 8). The transition between the first and second movements is situated around a near-coincidence point between their timelines. The same goes for the beginning of the last movement as well as for the coda, which sets off right after the very last element of the polyrhythmic cycle. The fact that the transition from one movement to another is situated at or around (near-)convergences in the polyrhythmic structure implies that there will be an overlap of the different orchestral groups. Since each orchestral group has a specific timbral and registral (as well as intervallic) profile, this means that the structural elements underlying this composition immediately translate into a change of instrumentation and register (and harmony).

FEATURES OF ORCHESTRATION

Previous analyses of the Concerto for Orchestra have revealed interesting harmonic and temporal aspects of the work.⁷ Given the composition's distinctive form, it makes analytical sense to focus on the presence of the different instrumental groups at the musical surface. This allows us to look through the many local details and intricacies and get a bird's-eye view of the work.

The first movement begins in m. 16, after a slow build-up in the introduction. The theoretical starting point of the structural polyrhythm, at which the four timelines are perfectly aligned, is not articulated as such. Mathematically, this point would occur in m. 4, but Carter chooses not to emphasize this structural element at the surface. Instead, not unlike the opening of his Double Concerto, the music develops from nearly inaudible percussion sounds to a big climax in mm. 12–13, where the entire orchestra is engaged in a jumble of polyrhythms. This is the first tutti passage in the piece, and it opens up and presents the entire range of orchestral possibilities. From m. 16 onwards, the instruments of the first movement take the lead, although they are regularly interrupted or overshadowed

⁷ See the overview in footnote 3.

by elements from the other movements, as indicated above. All the orchestral groups make appearances during this movement, but never do they all play together. Near the end of this movement, from m. 137 onwards, more and more instruments join forces and create a climax in mm. 140–41. The strings and winds engage in a huge chord from which the lowest pitches drop out and leave the highest notes; these in turn give way to the characteristic whirlwind in the violins that opens and dominates the second movement (see Example 2).

For the next tutti we again have to wait for the end of the movement. There is a brief explosion of sounds in mm. 285–86 before the bass, in the tuba, gets the low third movement going. In m. 292 the timpani are presented as a bass instrument, playing a characteristic motive that will return in varied form around the middle of the movement. By now the expectation is raised that another tutti passage will mark the transition from the third movement to the fourth—and indeed, the next fully scored climax is saved for mm. 412–19. In an almost Mahlerian fashion, the French horns signal the advent of a giant cluster, followed by a timpani motive reminiscent of the beginning and the middle of the movement.⁸

The fourth and last movement develops similarly to the earlier movements and seamlessly flows into the coda in m. 518. Against all expectations, there is no real tutti scoring at this point, though all instruments remain fairly active from this point onwards. Carter has characterized the coda as “rapid alternations of I, II, [and] III, dominated by IV.”⁹ These alternations tend to overlap more and more and build up to another climax in measures 550–58, which provides the tutti expected at the end of the fourth movement. Carter postpones the formal marker he had established throughout the composition to play with listeners’ expectations and to blur the transition from the last movement to the actual coda. The relative dominance in the coda of the fourth movement adds to this ambiguity. This eight-measure climax appears similar to the very first climax in mm. 12–13. The first instrument to take the lead after this passage is the piano, not unlike what happened in m. 16. It seems as if Carter wanted to suggest a kind of false recapitulation before bringing the piece to a close. The remainder of the coda is characterized by a high degree of activity in all instruments, leading to a broad cluster in the string section (m. 593) that then disintegrates into isolated pitches at a soft dynamic level.

The use of different registers in Carter’s Concerto for Orchestra is closely related to the arrangement of the orchestral groups. The way in which Carter organizes the four

8 The articulation of this timpani motive and the accompanying chromatic cluster at the beginning, middle, and end of the movement is a strong marker that divides the third movement in two equal parts.

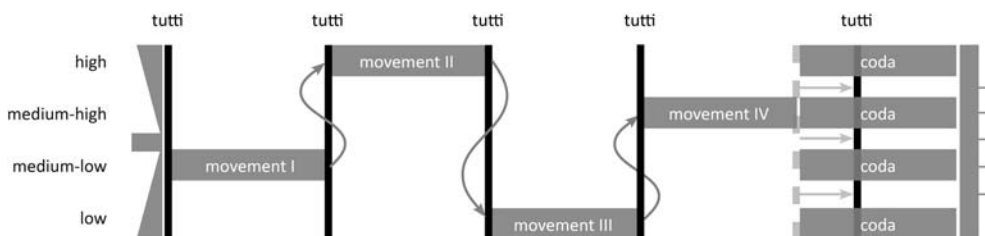
9 This is indicated in the aforementioned analytical chart. Closer examination would reveal that the rapid alternation of materials is also governed by a 10:9:8:7 polyrhythm (Coulembier, “Multi-Temporality,” 76–83).

Example 2: Concerto for Orchestra, tutti in m. 141 and beginning of second movement

The image displays a detailed musical score for the Concerto for Orchestra, specifically the tutti section starting at measure 141 and the beginning of the second movement. The score is arranged in a standard orchestral format with multiple staves for each instrument family. The top section includes woodwinds (Piccolo, Flute 1, Oboe, Clarinet in C, Bassoon, Contrabassoon, Horns, Trumpets, Trombones, Tuba) and percussion (Xylophone, Gong, Snare Drum, Triangle, Tom-tom). The middle section features strings (Violins I and II, Violas, Cellos, Basses) and a double bass line. The bottom section includes a Basses line. The score is marked with a tempo of 'Presto volando' and a time signature of 3/4. The key signature is one flat (B-flat major/D minor). The score includes various musical notations such as notes, rests, dynamics (e.g., *mf*, *pp*), and articulation marks. The page number 108 is visible in the bottom right corner.

movements expresses a clear dramaturgy. The first sounds of the composition are high and low non-pitched percussion sounds (snare drum and bass drum). When the orchestral instruments enter the scene, the first sounds are also very high and very low pitches, as if to open the registral space of the composition. Gradually, the middle register is filled in and leads to the *tutti* in mm. 12–13. The four movements of the composition follow a clearly balanced, almost wavelike trajectory from medium-low to high register, followed by a sudden drop to the lowest regions of the orchestra, to end in a medium-high register. The concluding coda brings all forces together and covers the entire range of the orchestra. The composition ends with a disintegration of the sound, returning to a medium register. Figure 2 is a schematic representation of the orchestration and registration of the Concerto for Orchestra in relation to its form.¹⁰

Figure 2: Schematic representation of registers and orchestration in the Concerto for Orchestra



CONCLUSION

This analytical vignette has shown how the Concerto for Orchestra, which is considered as one of Carter's greatest achievements for its sophisticated combination of different temporal and harmonic layers, is in fact based on a number of quite straightforward strategies. First, one polyrhythmic cycle lays the foundation for both the successive and the simultaneous arrangement of the four movements. Secondly, the transitions between movements are emphasized by using the orchestral force at maximum capacity at these moments, and only at these moments. Thirdly, owing to the specific division of the orchestra in orchestral groups and the assignment of selected interval classes, such moments also span the largest ambitus and contain chromatic clusters.

¹⁰ This scheme is based on the registral qualities of the four movements in terms of their most important instruments. It is not based on a spectrographic analysis of the actual sound, in which the appearances of other movements would to a certain extent obscure the dominant sonorities of each movement.

These formal demarcations express a clear and balanced dramaturgy in an audible way. Regarding register, the biggest moment of contrast is positioned exactly in the middle of the composition's structure, where the deepest sounds of the orchestra establish the third movement and overrule the highest pitches of the second movement. If the structural polyrhythm defines the horizontal and temporal boundaries of the composition, this moment, at the structural midpoint, marks the vertical boundaries.¹¹

Though undeniably a complex and challenging piece for performers and listeners alike, Carter's Concerto for Orchestra is an example of the composer's concern for a comprehensible musical discourse. This connection between form and instrumentation is not the only one in Carter's oeuvre. As I have discussed elsewhere, the song "Anaphora," from *A Mirror on Which to Dwell* (1976), shows a similar use of the instrumental ensemble.¹² The well-considered use of orchestral groups and the positioning of tutti climaxes are in both cases the primary means of conveying the dramatic discourse of the music. This observation can perhaps add some nuance to the fact that Carter organizes his music primarily by means of intervallic and rhythmic relations. In linking these abstract features with specific instrumental combinations, he enhances the palpability of his musical structures and is able to effectively emphasize important moments in the musical discourse.

Abstract

This analytical vignette offers a survey of the overall formal organization of Elliott Carter's Concerto for Orchestra, showing how surface phenomena such as instrumentation and register are deeply rooted in the composition's structure and can help to clarify the intricate formal outline of Carter's 1969 masterpiece.

About the author

Klaas Coulembier is a Postdoctoral Research Fellow of the FWO (Research Foundation Flanders) at the University of Leuven. He earned his Ph.D. in Leuven with a dissertation entitled "Multi-Temporality: Analyzing Simultaneous Time Layers in Selected Compositions by Elliott Carter and Claus-Steffen Mahnkopf" (2013). He has published in the *Revue belge de musicologie*, *Tempo*, and the former *Dutch Journal of Music Theory*.

11 Although the effect is less immediate, this "grand gesture" brings to mind the famous leap into the abyss of György Ligeti's *Atmosphères*.

12 Coulembier, "Elliott Carter's Structural Polyrhythms in the 1970s: A Mirror on Which to Dwell," *Tempo: A Quarterly Review of Modern Music* 66/261 (2012): 12–25, doi:10.1017/S004029821200023X.