Joan Tower’s Hexachords for Solo Flute: An Analysis and Comparison of its Flute Writing to Tower’s Flute Concerto with Three Recitals of Selected Works of Vivaldi, Rivier, Mozart, Davidowsky, and Others. Doctor of Musical Arts (Performance), May, 1993, 65 pp., 2 figures, 22 musical examples, 3 appendices, bibliography, 35 titles.

This dissertation discusses two flute works by Joan Tower (born 1938). The performance medium consists of flute alone, Hexachords for Solo Flute (1972), and flute and orchestra, the Flute Concerto (1989). The discussion on Hexachords consists of a theoretical analysis; discussion on the Flute Concerto pertains to Tower’s flute writing through an investigation into her musical language and specific performance techniques. Numerous examples are included to illustrate various aspects of Tower’s style. Conclusions follow.

The purpose of the paper is, first, to illustrate that basic knowledge of the twelve-tone method can bring a composition out of uncertainty for the performer and allow him to present what is unique within it. Secondly, it is to investigate the stylistic maturation of Joan Tower’s flute works.

In order to facilitate a better understanding of Tower’s music and to provide commentary about the performance of each work, the writer has quoted from personal interviews with the composer and with flutists Carol Wincenc and Patricia Spencer, to whom the works are dedicated.

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DISSERTATION

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

DOCTOR OF MUSICAL ARTS

By

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Denton, Texas
May, 1993
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CHAPTER I

JOAN TOWER: BIOGRAPHICAL INFORMATION

Education

Joan Tower was born in New Rochelle, New York, on September 6, 1938, but grew up in South America where her father was a mining engineer. Although her family travelled extensively and her formal education was frequently sporadic, her father, an amateur violinist, made certain a piano and a teacher were available wherever she went.¹

In 1956 she returned to the United States at age 18 and began her college studies. She received a Bachelor of Arts degree (1961) from Bennington College in Vermont, and the Master of Arts degree (1967) and Doctor of Musical Arts degree in composition (1978) from Columbia University.² Tower says that most of her musical craft developed, not from her time at Columbia University, but rather from her association as pianist with the Da Capo Chamber Players.³ This ensemble was founded in 1969 by


³Ibid.
Tower to specialize in the performance of contemporary music. Later in 1973 it received the Naumberg Award for chamber music. ⁴

Between 1968 and 1971 she studied composition with Henry Brant, Louis Calabro, Wallingford Riegger, and Darius Milhaud. Studies continued at Columbia University under such renowned figures as Otto Luening, Jack Beeson, Vladimir Ussachevsky, Chou Wen-Chung, Charles Wuorinen, Ralph Shapey, Allen Sapp, and Benjamin Boretz.⁵

Career

Tower is a strong advocate for the music of living composers and states her belief in the status of contemporary music as follows:

The composer today is not present, the composer is not a person who is talking to you, saying something, doing something—conducting, playing—there is no person to identify with. To me, that is the main reason music has suffered so much.⁶

In spite of this statement, Joan Tower's career has flourished, and she is currently professor of music at Bard College, Annandale-Hudson, New York, where she has taught composition since 1972. In 1985 she was appointed by conductor Leonard Slatkin to a three-year term as composer-in-residence with the Saint Louis Symphony Orchestra.⁷ Tower has received many


⁵ O'Brien, op. cit., 6.

⁶ O'Brien, op. cit., 8.

distinguished awards, among which are three composition fellowships from the National Endowment for the Arts (1974, 1975, 1980), a MacDowell Colony Fellowship (1974), a Guggenheim Fellowship (1977), commissions from the Koussevitsky Foundation (1982) and the Naumberg Foundation (1985), an award from the American Academy and Institute of Arts and Letters (1983), and the 1990 Grawemeyer Award.8

Compositional Style

Joan Tower's music can be divided into two major stylistic periods: pre-1974 and post-1974. Music written before 1974 features strict serial techniques and relies on the pre-compositional row forms created by four basic operations, including transposition, retrograde, inversion, and retrograde-inversion of the original row form. Tower also employs extended operations such as hexachordal combinatoriality, rotation, and partitioning to emphasize smaller note-groups, which will be discussed in Chapter II. Principal flute works from this period include Movements for Flute and Piano (1968), Prelude for Five Players (1970), and Hexachords for Solo Flute (1972).

Rhythmic variety and rapid meter change are fundamental to Tower's style. The incorporation of a variety of meters in rapid succession often avoids the development of recurring rhythmic patterns; therefore, a continuous pulse marking the meter is not perceived. This disruption of

8Nachman, op. cit., 405.
metric continuity is a constant characteristic of Tower's overall style and can be seen as a link between her pre-1974 and post-1974 works.

After 1974 Tower moved away from serialism. Her recent works exhibit a more traditional emphasis on tonal centers, melody, harmony, and rhythm; Tower, however, combines these traditional elements in a contemporary fashion, creating polytonality, modality, and octatonic formations.

Tower seeks to create a unique musical language by taking certain compositional risks\(^9\), including the reduction of instrumentation and the limitation of compositional elements, creating a simple melody and accompaniment texture. Her thoughts in taking compositional risks are:

Achieving an identity in music depends on risks. If you don’t take any risks, your particular compositional talents never shine through. Of course, the word risk is a very complicated and subjective one, and it can lead you to compose music that is alternately aggressive, lyrical, simple, or complex. Creating high-energy music is one of my special talents; I like to see just how high I can push a work’s energy level without making it chaotic or incoherent.\(^10\)

*High-energy* music features a heightened intensity, created by increasing the use of dissonance and the rate of rhythmic change. Her objective as a composer, however, is to appeal to a broad audience and to make music accessible to the general listener.\(^11\) Consequently, she creates music that is expressive and at the same time is unencumbered with esoteric detail. Her

\(^9\)Humphrey, *op. cit.*, 6-7.
\(^10\)Ibid., 6.
works are often virtuosic as in the Cello Concerto (1984), the Clarinet Concerto (1989), and the Flute Concerto (1989). These representative works, among others, exemplify Tower's status as a prominent twentieth-century composer.
CHAPTER II

HEXACHORDS FOR SOLO FLUTE

Compositional Procedures

Hexachords for Solo Flute (1972) is a composition for unaccompanied flute written by Joan Tower for Patricia Spencer, who premiered it on February 26, 1972. It is in strict dodecaphonic style. This chapter is a theoretical analysis of Hexachords. It explains how the pitch material of the composition is derived from the four basic twelve-tone operations (transposition, inversion, retrograde, and retrograde-inversion) and the extended operations (hexachordal combinatoriality, rotation, and partitioning).

That is, twelve pitches of the chromatic scale are ordered into a row, or series, that provides the basic pitch structure for a given composition and is thus an essential element in the work's fundamental conception.¹

The primary row that Tower uses to create Hexachords is as follows:

D E♭ D♭ C E F F♯ A G♯ B♭ B G. In Hexachords, as in most dodecaphonic works, the pitches of the primary row (Ex. 1) have been prearranged by the composer as the catalyst for the other row forms, which will be discussed as they occur in the score. In this analysis, pitch-classification is utilized. The pitch C is

considered the lowest pitch in a chromatic scale from C to B and is labelled as pitch-class 0. Therefore, the twelve pitches of this chromatic scale correspond to a pitch-class set in its lowest ordered position: {0123456789AB} with A and B referring to pitch classes 10 and 11 (or the pitches B♭ and B).

Example 1. Primary row with pitch order (231045698AB7).²

Tower uses the different twelve-tone operations to mark the form of Hexachords. The changes in twelve-tone procedures are accompanied by specific metronomic markings in Hexachords, and these markings indicate the sectional divisions:

Section I represents m.m. j = 60.
Section II represents m.m. j = 102.
Section III represents m.m. j = 102.
Section IV represents m.m. j = 120.
Section V represents Final m.m. j = 60.

Section I shows the absence of meter and bar lines. The opening passage begins with the primary row (P₂) (Ex. 1) and is followed by the eight basic row forms listed in Figure 1, p. 8.

Figure 1. The basic row forms used in *Hexachords*.

\[
\begin{align*}
P_2 & = 231045698AB7 \\
R_8 & = 154230BA6798 \\
I_B & = 43562109A87B \\
RI_9 & = 40132567BA89 \\
P_3 & = 3421567A9B08 \\
I_6 & = BA0198745326 \\
R_B & = 487563219A0B \\
RI_6 & = 19A0B2348756 \\
R_0 & = 59867432AB10
\end{align*}
\]

Tower treats the row as a pair of hexachords (H₁ and H₂), each containing smaller groups of notes (pitch-class sets) used as a source for recurring cells (motives). In *Hexachords*, the two- and four-note pitch-class sets are called tetrachords and dyads. The tetrachord in both hexachords contains the pitch-class set \{0, 1, 2, 3\} and the dyad contains the pitch class set \{0, 1\}. H₁ contains the tetrachord and the dyad in succession, while H₂ places the tetrachord within the dyad. These sets remain fixed in content but are not fixed in terms of order position and pitch name.

The primary row (Ex. 1) shows the tetrachordal pitches in the order of \langle 2, 3, 1, 0 \rangle and the dyadic pitches are in the order of \langle 4, 5 \rangle. When placed in its lowest order position, the tetrachord \langle 2, 3, 1, 0 \rangle, or D-B-D-B-C, represents pitch-class set \{0, 1, 2, 3\}, or C-D-B-D-E. In the same manner, the dyad \langle 4, 5 \rangle,
or E-F, represents pitch-class set \{0, 1\}, which has been prearranged by Tower in its lowest order position in the primary row. The procedures used to rearrange these sets, \{0, 1, 2, 3\} and \{0, 1\}, in Section I are the basic operations of twelve-tone composition, including transposition, retrograde, inversion, and retrograde-inversion. Example 2 demonstrates the primary row in *Hexachords* under these basic operations.

Example 2. Written notation of the primary row in *Hexachords* under the basic operations of retrograde, inversion, and retrograde-inversion.

Primary row

\[
\begin{array}{c}
\text{Primary row under retrograde.} \\
\end{array}
\]

Primary row under inversion.

Primary row under retrograde-inversion.
Tetrachords and dyads are treated compositionally as *segments*, which are ordered pitch-class sets. These segments appear throughout *Hexachords* as compositional determinants and remain invariant through pitch-class content. Dividing a twelve-tone row into such segments is one strategy of *partitioning*, which will be discussed later in this chapter.

Tetrachordal segments are based on transpositions of set 4-1\(^3\) {0, 1, 2, 3}; the dyads are based on transpositions of the pitch classes {0, 1}.

While Section I is characterized by the treatment of the segments under the basic operations of 12-tone composition, Tower applies the extended operations of hexachordal combinatoriality, rotation, and partitioning to the segments in the following sections. Under these operations the segments recur with altered pitch order and pitch names; however, the pitch-class sets {0, 1, 2, 3} and {0, 1} are constant despite changes in row form.

Section II shows the first appearance of the segments under an extended operation, illustrated in Example 3, p. 11. While the segments occur in succession to each other as in Section I, they now occur adjacently within each hexachord: tetrachord.dyad.tetrachord.dyad, and vice versa. This means that the tetrachords are not placed within dyads.

---

\(^3\)The number 4 refers to the number of pitches in the segment and the number 1 refers to this segment as being the primary one in *Hexachords*. 
Example 3. First appearance of the segments within an aggregate {8AB910354267} in Section II.4

The segments in Example 3, rearranged to form a set of twelve different pitch classes, have an order different from any of the 48 basic row forms listed in the matrix, (see Appendix A); this collection of twelve pitch classes {8AB910354267} is called an aggregate.5 The relationship of this aggregate to the basic operations is evident through hexachordal combinatoriality. This is a process in which a set placed under one of its twelve-tone operations can be transformed so that its first hexachord is equivalent in content to the second hexachord of the original set.6 Figure 2a-g shows hexachordal combinatoriality of various aggregates in Section II that are related to basic row forms through their pitch-class content. The basic rows in Figure 2a-g are shown horizontally and the aggregates are shown vertically, located within the boxes.


Figure 2a-g. Hexachordal combinatoriality. (Use in conjunction with Appendix A).

<table>
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<tr>
<th>Aggregate</th>
<th>Pitch Order</th>
<th>Combinatorial Relationships</th>
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<tr>
<td>1</td>
<td>{8AB10354267}</td>
<td>Inversional combinatoriality</td>
</tr>
<tr>
<td>2</td>
<td>{3102AB867954}</td>
<td>Retrograde and Retrograde-inversional combinatoriality</td>
</tr>
<tr>
<td>3</td>
<td>{BA3102548679}</td>
<td>Has same combinatorial relationships as in b above</td>
</tr>
<tr>
<td>4</td>
<td>{108AB967354}</td>
<td>Has same combinatorial relationships as in a above</td>
</tr>
<tr>
<td>5</td>
<td>{219B0A784653}</td>
<td>Inversional combinatoriality</td>
</tr>
<tr>
<td>6</td>
<td>{5786A9021B34}</td>
<td>Inversional and retrograde combinatoriality</td>
</tr>
<tr>
<td>7</td>
<td>{780A9B215346}</td>
<td>Inversional, retrograde, and retrograde-inversional combinatoriality</td>
</tr>
</tbody>
</table>

Inversional combinatoriality:

\[
\begin{align*}
\text{Row 7} & : P_A: [H1, H2] \\
\text{Column 5} & : I_5: [H2, H1] \\
\text{Row 11} & : I_B: [H2, H1]
\end{align*}
\]

Retrograde and Retrograde-inversional combinatoriality:

\[
\begin{align*}
\text{Row 10} & : R_6: [H1, H2] \\
\text{Column 2} & : R_{11}: [H2, H1] \\
\text{Column 8} & : I_8: [H2, H1]
\end{align*}
\]

Inversional combinatoriality:

\[
\begin{align*}
\text{Row 6} & : P_B: [H1, H2] \\
\text{Column 4} & : I_6: [H2, H1] \\
\text{Row 11} & : P_5: [H2, H1]
\end{align*}
\]

Inversional and retrograde combinatoriality:

\[
\begin{align*}
\text{Row 2} & : R_1: [H1, H2] \\
\text{Column 1} & : I_2: [H2, H1] \\
\text{Row 8} & : R_7: [H2, H1]
\end{align*}
\]

Inversional, retrograde, and retrograde-inversional combinatoriality:

\[
\begin{align*}
\text{Row 3} & : R_3: [H1, H2] \\
\text{Column 5} & : I_4: [H2, H1] \\
\text{Row 10} & : I_{10}: [H2, H1]
\end{align*}
\]
For example, the first aggregate in *Hexachords* (labelled Aggregate 1 in Figure 2a) contains the pitch-class set \{8AB910354267\} and has the same hexachordal content as I5 \{5467321AB980\} and PA \{AB9801254673\}, (refer to Appendix A). H1 in Aggregate 1 <8AB910> is equivalent to both H2 in I5 <1AB980> and to H1 in PA <AB9801> in terms of their pitch-class content. Pitch order is different, but pitch content is fixed. Therefore, combining H2 in I5 and H1 in PA creates an aggregate. The same procedure holds true regarding the relationship between H2 in Aggregate 1 and H1 in I5.

Tower uses a limited number of strategies to create new tetrachords and dyads from hexachords. One strategy is to rotate elements within tetrachords which is called *segment rotation*.

In general, rotation is defined as order transposition—that is, instead of changing pitch classes into other pitch classes, we will here change the position in the ordered succession of pitch classes.\(^7\)

Below, Examples 4a-b and 5a-b illustrate this property of rotation and show the effect of retrograde on the segments.

Example 4a-b. Rotation and transposition of tetrachords in Aggregate 1 in Section II compared to the primary tetrachord D-\(Eb\)-\(Db\)-C.\(^8\) (Notation has been written within one register to facilitate visual comprehension).

\[\text{Free Vibrate} \quad \text{Ret. under Rot. 1} \quad H2\]

\[\text{Rot. 3} \quad \text{Ret. under Rot. 1} \quad H1\]

a. H1 under Rotation 3.

\[\text{Prim. tetra. Rotation 3 Transposition 8}\]

b. H2 under Retrograde and Rotation 1.

\[\text{Prim. tetra. Retrograde Rotation 1 Transposition 2}\]

\(^8\)Reprinted by permission of American Composers Edition, a subsidiary of American Composers Alliance, New York.
Example 5a-c. Rotation and transposition of tetrachords in Aggregate 2 in Section II compared to the primary tetrachord D-\(E^b\)-D\(-\)b-C.\(^9\)

---

a. H1 under Rotation 1.

\[
\begin{array}{c}
\text{Prim. tetra. Rotation 1 No transposition} \\
\end{array}
\]

b. H2 under Retrograde and Rotation 3.

\[
\begin{array}{c}
\text{Prim. tetra. Retrograde Rotation 3 Transposition 6} \\
\end{array}
\]

The first hexachords in both Examples 4a and 5a illustrate the segments under Rotation 1 and Rotation 3. By moving the first pitch of the primary tetrachord \(<2, 3, 1, 0>\), or D-\(E^b\)-D\(-\)b-C and placing it at its end, the tetrachord becomes \(<3, 1, 0, 2>\), or \(E^b\)-D\(-\)b-C-D (see Ex. 4a). This operation is called rotation at the first level, or Rotation 1. By moving the first three pitches of the primary tetrachord and placing them at its end, the tetrachord

---

becomes <0, 2, 3, 1>, or C-D-Eb-D\textsuperscript{b}. This operation is called rotation at the third level, or Rotation 3\textsuperscript{10} (see Ex. 5a).

The property of rotation is also seen under the basic operation of retrograde in both Examples 4b and 5b. In Example 4b, H2 demonstrates how the tetrachord is placed through the property of rotation 1 under retrograde. In Example 5b, H2 demonstrates how the tetrachord is placed through the property of rotation 3 under retrograde.

The tetrachord is found transposed within the aggregates in Examples 4 and 5. In Example 4a, H1 shows that the tetrachord G\#-B-b-B-A has been transposed up by eight half-steps (T8) in comparison to the tetrachord in the primary row under Rotation 3. In Example 5b, H2 shows that the tetrachord A\textsuperscript{b}-G\textsuperscript{b}-G-A is transposed up by six half-steps (T6) in comparison to the tetrachord in the primary row under Retrograde and Rotation 3. Therefore, any pitch-class set can be placed under any twelve-tone operation and still maintain its pitch-class content without regard to its order of presentation. Continuous use of these pitch-class sets provides unity in the melodic structuring of passages.

These elements add focus to a passage, bringing a small set of pitches to the foreground. There highlighted pitch-classes and intervals form networks with one another, connecting phrases and larger sections to one another.\textsuperscript{11}


\textsuperscript{11}Joel Lester, \textit{Analytic Approaches to Twentieth-Century Music} (New York, New York: Norton, 1989), 190.
Section III is the most analytically complex section in *Hexachords* because the registral positioning of pitches within the segments are disjunct, and the position of the pitches for each segment no longer appear adjacent to each other as they were in Section I. When the segments no longer appear adjacent to each other, this technique is called *partitioning*. Tower systematically uses rhythmic and partitioning techniques to display the segments, which together is a procedure called *isomorphic partitioning*. In Example 6, isomorphic partitioning highlights the segments found in Section III.

---


13 Ethan Haimo and Paul Johnson, "Isomorphic Partitioning and Schoenberg's Fourth String Quartet," *Journal of Music Theory* XXVII/1 (Spring, 1984), 47.
Example 6. Isomorphic partitioning in Section III.\textsuperscript{14}

Aggregate 1

Extracted tetrachords and dyads from the example above.

In Example 6, the row is divided into two hexachords. In their lowest order position, each hexachord contains pitch-class sets \{0, 1, 2, 3\} and \{0, 1\}; however, this example shows the segments in their actual ordered position within the row \(<0, 2, 1, 3>\) and \(<1, 0>\). Since these two hexachords contain identical orderings for both the tetrachord \(<0, 2, 1, 3>\) and the dyad \(<1, 0>\), this partitioned aggregate is considered to be isomorphic at the hexachord level.\textsuperscript{15}

This means that the partitions do not cross the hexachordal division. The

\textsuperscript{14}Reprinted by permission of American Composers Edition, a subsidiary of American Composers Alliance, New York.

\textsuperscript{15}Haimo and Johnson, \textit{op. cit.}, 50.
relationship of the segments between the two hexachords is shown by comparing their pitch order and pitch class.

Example 6 shows that the mirror image of its segments in H1 are partitioned in a way that can be \textit{mapped} onto its relative segments in H2. This means that the segments show identical rhythmic positions. Initially, the first eight aggregates relate through the process of partitioning. Secondly, in all eight aggregates in Section III (except Aggregates 3, 7, 8; refer to score) the tetrachord from H1 is equivalent to the tetrachord in H2 at transposition level 8. H1 contains tetrachord C-D-C#-D#, and H2 contains tetrachord G#-A#-A-B. The relationship between the corresponding pitches in each tetrachord is the difference of eight half-steps, therefore, the tetrachord in H1 is equivalent to the tetrachord in H2 by the interval 8. In Aggregates 3, 7, and 8 the relationship of partitioned tetrachords occur by transposition 4.

Section IV is characterized by the combination of the basic row forms and aggregates. Since several of these rows are incomplete, they are difficult to discern, yet the segments are still apparent. Through Sections I-III, the partitioned segments do not cross the hexachordal division; however, in Section IV the partitioned rhythmic positions of the segments cross the hexachordal division, shown in Example 7.
Example 7. Partitioned rhythmic positions of the segments crossing the hexachordal division in Aggregates 3 and 4 in Section IV.\footnote{Reprinted by permission of American Composers Edition, a subsidiary of American Composers Alliance, New York.}

Aggregates 3 & 4 extracted from example 7.

In Aggregate 3, the dyad \(<A-G^\#>\) from H1 is partitioned in such a way that its position crosses the hexachordal division. In other words, the dyad \(<A-G^\#>\) is formed when A from H1 is coupled with G\# from H2. The same holds true for

* pitch Bb is implied to analytically complete the row.
for the dyad \(<G-F^\#>\). In Aggregate 4, the tetrachord \(<E^b-D-C-C^\#>\) from H1 and the dyad \(<* = \text{implied B}^b-B>\) from H2 also crosses the hexachordal division. Although this row form is incomplete by the pitch B^b, it may be analytically inserted to imply the completion of the dyad. These techniques are apparent in surface relationships, but Tower extends them as part of the development and progression of this work as a whole. It appears that Tower introduces completely new material, unfamiliar to the opening passage, because the partitions disguise the segments that are otherwise very recognizable in the basic row forms. The relationships among row forms, however, are enhanced through the preservation of the segments and their role as compositional determinants.

The final discussion regarding partitioning deals with Tower's utilization of a five-note + seven-note overlapping of hexachords\(^{17}\) that refers to the registral positioning of a given row form. The numbers five and seven correlate to the number of pitches that occur in either a lower or a higher register of the flute. The number of pitches, whether five or seven, appear both adjacently and segregated within a complete row form. This type of partitioning appears frequently throughout the entire piece. Example 8a-c illustrates registral positioning of the primary row and two aggregates found in *Hexachords*.

\(^{17}\)Joan Tower, Telephone interview (New York: January 31, 1992).
Example 8a-c. A 5+7 overlapping of hexachords.

a. Opening passage (primary row).

b. Aggregate 1 in Section II.

c. Aggregate 1 in Section III.
In the opening passage (Ex. 8a), the first five pitches of the primary row begin in the low register of the flute with the pitch order <D-Eb-Db-C-E>; the remaining seven pitches of the row, <F-F#-A-G#-Bb-B-G>, are placed in a higher register of the flute. In Aggregate 1 of Section II (Ex. 8b), the tessitura of the flute is highlighted by a superimposition of the 5 + 7 relationship over both hexachords, rather than placing them adjacently to each other as exemplified in Ex. 8a. The higher register is represented by pitches <G#-Bb-E-D-F#> and the low register is presented by pitches <B-A-C#-C-D#-F-G>.

Example 8c indicates that the five pitches, <C-F-D-B>, enclose the seven pitches, <C#-D#-G#-A#-G-A-F#>, within the initial aggregate in Section III. By applying this type of partitioning across the hexachordal division, Tower makes use of the tessitura of the flute. Registral separation is a major feature that Tower utilizes in direct reference to the idiomatic writing of the flute.

Section V formally balances the piece as a whole by eliminating meter and all bar lines as in Section I and also by reinstating the primary row. Example 9 shows the pitches of the final primary row identical to the primary row in Section I, however, Tower incorporates a slight modification in registration.
Example 9. Comparison of the opening primary row to the final primary row.  

Opening primary row

Final primary row

The formal structure of *Hexachords* is summarized as follows: the first section states the basic row forms, the second alters pitch order of the segments under rotation, the third presents aggregates under isomorphic partitioning, the fourth presents the segments crossing the hexachordal division in both the basic row forms and the aggregates, and fifth section balances the piece by reinstating the primary row (P₂). The development of

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formal structure is shown through the relationships between the tetrachords and dyads, which are confirmed through their pitch-class content and their succession to each other. The compositional procedures of the basic and the extended operations of twelve-tone composition explain the existence of specific pitches and their order positions.

**Style and Performance Techniques**

The twentieth century is a cross-current of many styles: impressionism, expressionism, neoclassicism, atonality, aleatory music, serialism and many more. Tower’s earlier works (pre-1974), of which *Hexachords* is representative, stem from the twentieth-century serial style. *Hexachords* is an abstract work consisting of angular melodic passages that utilize complex precompositional factors. Tower relates twelve-tone procedures to performance aspects through style changes, phraseology, and registral separation. She demonstrates her interest in specific performance techniques by exploring various speeds of vibrato, registration, dynamics, and articulation throughout the range of the flute. Sectional divisions in *Hexachords* employ different serial procedures that help the listener comprehend the phrase structure and the form of the piece. In addition, Tower also demarcates sections with the characterizing flute performance techniques mentioned above. To set the mood in a specific passage, Tower applies different vibrato speeds ranging from no vibrato to fast vibrato, which are indicated as follow: N.V. (no vibrato), S.V. (slow vibrato), F.V. (fast vibrato),

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and Free Vibrato. By changing vibrato speeds, the corresponding changes in intensity of tone increase musical variety for both performer and listener. Example 1, page 7, illustrates specific changes in vibrato speed; the use of slow vibrato (S.V.) characterizes a solemn affect, while fast vibrato (F.V.) characterizes higher energy.

Registral changes of the flute are used to highlight phrases.\(^{20}\) Within *Hexachords*, phrases seldom correspond to the lengths of row forms and the hexachordal divisions within rows. Phrases often cross over the demarcation of these formations and, therefore, present challenges to the performer to create direction contrary to serial construction. Patricia Spencer, for whom *Hexachords* was written, states that the phrases are apparent in the music. For example, in Section III (Ex. 6, p. 18) Spencer states the following: "the low notes ought to just *sit* there, they do not provoke motion. Motion is indicated by the immediate explosion of sound produced by a splash of thirty-second notes in the upper register."\(^{21}\) Some serial procedures, such as the 5 + 7 overlapping of hexachords, are emphasized by the registral division of phrases. However, this is not exclusive in determining phrase structure but rather it is the responsibility of the performer to interpret notational indications of registration to help determine phrases (see Ex. 8a-c). A change in registration also signifies the beginning of a new section. Example 10a-d shows that each section begins with a different register that contrasts with the final register used in the preceding section.

\(^{20}\)Patricia Spencer, Telephone interview (New York: July 7, 1992).

\(^{21}\)Ibid.
Example 10a-d. The contrast of registration ending one section and beginning the next section.²²

a. Division of Sections I & II.

b. Division of Sections II & III.

c. Division of Sections III & IV.

d. Division of Sections IV & V.

Registral separation is also used to highlight tetrachordal pitches extracted by the compositional strategy of partitioning. As tetrachordal pitches are often segregated within an aggregate set, Tower frequently highlights these pitches through both the brilliant tonal quality of the upper register of the flute and the dark tonal quality of the lower register of the flute. Example 11a-b shows tetrachordal pitches highlighted by registration.

Example 11a-b. Tetrachordal pitches highlighted by registration.23

a. Tetrachord F-D-E-E^ partitioned in upper register at dynamic level sffz, beginning Section IV.

b. Tetrachord G-F#-G#-A partitioned in lower register at dynamic level ranging from ppp to p, in Aggregate 9, Section III.
Dynamic levels vary within each register of the flute throughout the work; the third octave usually ranges from forte [f] to sforzando [sffz], and the lower- to mid-registers range in dynamics from piano [p] to forte [f]. Dynamics often emphasize tetrachordal pitches within complex treatment of the row. Tower highlights tetrachords through the use of an extreme dynamic spectrum ranging from [pp] to [sffz] (see Ex. 12a-b). Through dynamic contrast, the performer can illuminate these tetrachordal pitches for the attentive listener. Tower uses dynamic changes to emphasize the progression from one section to another. As one section concludes with a loud dynamic level, the following section begins with a soft dynamic level (see Ex. 11a-d).

Dynamics are not exclusive in determining sectional demarcation nor is any one particular performance technique. Throughout Hexachords, many techniques assist in creating sectional divisions and phrases. Articulation is one technique that warrants the performer’s interpretive attention, and different types of articulation outline phrases and sections. Three types of articulation are found: legato, marcato, and flutter-tonguing. Example 10a-d, shows contrasting articulations that end one section and begin the following section. Flutter-tonguing is one non-traditional articulation presented in Sections II, III, & IV in Hexachords to enhance various phrases and cadential points, as seen in Example 12a-d below.
Example 12a-d. Flutter-tonguing to enhance phrases and cadential points.²⁴

a. Phrase structure in Aggregate 2 in Section II.

b. Cadential point ending Section II.

c. Cadential point ending Section III.

d. Cadential point ending Section IV.

These performance techniques used by Tower (vibrato speed, registration, dynamics, and articulation) are not exclusively related to any one particular serial procedure. These performance techniques are often combined to enhance partitioning of tetrachords, sectional division, and phrases as previously discussed.

An important challenge to the performer is to create different tonal colors. The low register with soft vibrato produces a *milky tone*, while soft, high notes produce a *thin silver sound* as if from another instrument.\(^25\) *Hexachords* offers to the flutist the opportunity to *sculpt the sound* through tonal color, registration, dynamics, and articulation.

\(^{25}\text{Patricia Spencer, op. cit.}\)
CHAPTER III

FLUTE CONCERTO

Idiomatic Writing for the Flute

The Flute Concerto (1989), a single-movement work scored for a chamber orchestra, is the smallest among Tower’s concertos and is dedicated to flutist Carol Wincenc. Ms. Wincenc premiered the work in Carnegie Hall on January 20, 1990. Tower combines traditional elements of music (melody, harmony, rhythm, and texture) in a more contemporary fashion that yields her unique musical language.

This chapter explores Tower’s idiomatic writing for the flute through an investigation of her musical language. Areas of investigation include textural density, which demarcates the structure; tonal areas; and the development of intensity through melody, rhythm, textural changes, and dissonance. The discussion of her writing for flute includes both the solo part and its relationship to the orchestral accompaniment with special emphasis on tonal, linear, and vertical functions. These functions further demonstrate that the Flute Concerto stems from a style that is far removed from Tower’s serial practices.

The term concerto refers to the contrast between a large ensemble and a smaller group or a solo instrument. Its traditional form is a descendant from the ritornello and sonata-allegro forms of eighteenth-century concertos. Tower avoided these conventional forms in her Flute Concerto, but this work
exhibits some alternation (or contrast) of soloist and accompaniment. Through these alternations, Tower concentrates on achieving a balance between solo and orchestra with timbres and textures that help determine form and mood.¹

Timbral and textural changes build blocks of distinct sound that create a ternary form, concluding with a coda. (Appendix B charts the formal structure of Tower's *Flute Concerto*). As the flute plays a major role in the textural make-up of this concerto, the question arises as to how the flute assists in establishing form. First, this concerto employs two contrasting styles, rhythmic and lyric, and within these two styles, orchestration alternates from transparent to a dense texture. These alternating textures establish major formal divisions and subsections of Tower's *Flute Concerto*. (Refer to Appendix B). The A sections are characterized by lyrical qualities dominated by the solo flute, while the orchestral interludes feature rhythmical figurations. The B section, also dominated by the flute supported by a heavier orchestral accompaniment, is technically more challenging for the flutist through Tower's use of the flute's high range and rhythmical passages. By acknowledging areas of style differentiation and textural changes, formal divisions can be determined.

The interaction of flute with accompaniment creates progressive and recessive levels of intensity through textures that are significant to the parameters of musical expression and structural development. Progressive homophonic density exhibits a change from transparent to dense textures as orchestration increases. As instruments are added, textural density increases

and, therefore, the level of intensity is heightened. Example 13 illustrates textural progression.

Example 13. Progressive homophonic density, meas. 199-209.\(^2\)

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This phrase is characterized by the interdependence of soloist and orchestra, which together increases the level of intensity and interaction toward ensemble unity.

In Example 13 the homophonic texture initially exposes the flute as the predominant voice. As other instruments gradually appear, the flute rhythmically joins the accompaniment in measure 206-209. The addition of instruments also creates dissonance in measure 205, which intensifies textural density. As the violoncello plays G#, violin I enters on G, while the solo flute centers on the recurring A. Instrumentation expands to include the complete string section in measure 205 and to the full orchestra in measure 209, resulting in an increase of density through dissonance. Throughout this work progressive complexities and diversifications of musical texture create the impression of rising intensity.³

As instrumentation decreases, the reduction of density serves as a contrast to fuller textures.⁴ Example 14 shows a reduction of density created by wide registral separation between the instruments.


⁴*ibid.*, 237.
Example 14. Textural reduction of density, meas. 175-198.:

Example 14 represents the reduction from a full, sonorous orchestral texture (meas. 175-184) to a thin veiling of color resulting from the combination of the solo flute line and the string accompaniment (meas. 185). Although density decreases, a minimal level of intensity still exists via rhythm and texture. The four string instruments enter separately with the bass pattern (two sixteenth-notes followed by an eighth-note) centered on E and eventually converge with the rhythmic pattern. As the flute assimilates this rhythm in measure 196, it joins violin I on D#, creating a dissonance of a minor second with the other string instruments. The gradual combination of rhythm, texture, and dissonance slowly increases intensity to the maximum level in this passage.
Reduction of texture is also seen in an interplay between the soloist and the various treble instruments of the orchestra. Example 15 shows a dialogue between these two bodies of sound.

Example 15. Textural reduction in the interplay between the soloist and the accompaniment, meas. 380-398.⁶

Example 15 (continued).
The soloist and orchestra often act in an antecedent/consequent relationship. Example 15 displays a prolonged interplay between soloist and accompaniment as rhythmic momentum builds and intensity heightens. Tower uses this progressive interplay as a climactic close to the concerto.

Timbres and textures strengthen the fragmented melodic material which characterize the recurring sections. Familiarity of recurring material is also achieved by the persistent use of notes from octatonic scales. Example 16 shows the three octatonic scales that Tower incorporates into the Flute Concerto.

Example 16. Octatonic scales used in the Flute Concerto.

C octatonic scale

\[
\begin{array}{c}
\text{C octatonic scale} \\
\end{array}
\]

C# octatonic scale

\[
\begin{array}{c}
\text{C# octatonic scale} \\
\end{array}
\]

D octatonic scale

\[
\begin{array}{c}
\text{D octatonic scale} \\
\end{array}
\]

\text{Octatonic scales are derived from an alternation of whole-steps and half-steps that create a superimposition of two fully diminished-seventh chords. As these scales can only be transposed three times without duplication, only three different octatonic scales exist.}
The nature of these scales produces an ambiguous sense of tonality due to the absence of functional leading tones, although reference to tonal centers is often implied by the recurrence of certain pitches as represented in Example 17.

Example 17. Reference to tonal centers in the opening flute soliloquy, plus measures 1-9,\(^8\) (Circled pitches denote tonal centers).

The recurrence of the pitches E, G#, and D in the flute imply tonal centers. The recurring D in the flute is reflected in the accompaniment in measures 3-9. Although such lines are recessive in tonal establishment, as octatonic scales do not support functional tonality, these melodic lines provide tonal emphasis by the recurrence of specific pitches.

Tower employs the element of intensity as a primary feature in her flute concerto. Progressive and recessive intensities are created within the solo passages in several ways: melodic ascent and descent; the acceleration of melodic rhythmic changes; texture; rhythm; and dissonance with the accompaniment.\(^9\) Intensity through melodic ascent, which is the frequency in rhythmic change in the melodic line, is seen in Example 18 as the level of energy in the flute line elevates toward a new tonal center on c\(^4\). In measures 52-54 as accelerated rate of melodic rhythm progresses from quarter-note triplets, to eighth-notes, to eighth-note triplets, with the greatest level of intensity reached in measure 55.

\(^9\) Berry, op. cit., 86-87.
Example 18. Melodic ascent, meas. 45-55.\textsuperscript{10} 

When incorporated simultaneously, density and rhythmic motion create the highest level of intensity. This increase in intensity is seen in Example 19.

\textsuperscript{10}Flute Concerto by Joan Tower. Copyright 1990 by Associated Music Publishers, Inc. International Copyright Secured. All Rights Reserved. Used by permission.
Example 19. Acceleration of melodic rhythm changes, meas. 224-242.\textsuperscript{11}

\textsuperscript{11}Flute Concerto by Joan Tower. Copyright 1990 by Associated Music Publishers, Inc. International Copyright Secured. All Rights Reserved. Used by permission.
As Tower employs the flute in rhythmic excursions in the extreme upper register, the energy level reaches its maximum intensity. Triplet eighth-notes, groups of four sixteenth-notes, and sixteenth-note quintuplets contribute to an acceleration of high intensity, and the descent and deceleration of rhythm in the accompaniment brings this climactic passage to repose. As the recurring pitch A in the solo implies a tonal center, the flute ascends into the upper register, creating a driving force supported by the stable rhythmic pattern of the accompaniment. Tonal centers shifting from A
(meas. 224-235), to B♭ (meas. 235-237), and to C (meas. 238) progress to the ultimate climax of intensity as the flute reaches its fourth octave.

Many solo passages use repeated notes to help build momentum, and large intervals and rhythmic motion to provide a sense of growth and development. Example 20 is a solo passage, implying a tonal center on C as it steadily increases the driving momentum through large intervals and rhythmic motion with assistance from the accompaniment.

Example 20. Increase in driving momentum, meas. 14-23.¹²

In measures 14-23, the solo line is based on melodic thirds, which relate to the accompanying string tremolo of a third. With the simultaneous use of a gradual dynamic crescendo and the propelling rhythmic motion (involving eighth-notes and triplets), Tower intensifies energy to a level that eventually leads to a new tonal center on E♭, and therefore, is progressive in intensity.

The amplification of intensity also occurs between the soloist and accompaniment through increased dissonance. On page 48, Example 21a-b displays the dissonance of a minor second between the flute and its accompaniment while interacting on a driving rhythmic pulse comprised of two sixteenth-notes plus an eighth-note.

Example 21a-b. Increased dissonance to amplify the level of intensity, meas. 193-198 and 206-209.13

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Example 21a-b (continued).

b. meas. 206-209

Example 21a, meas. 196, shows an emphasis on D# in the flute part and on E in the accompaniment, creating a dissonance of a minor second. The dissonance is amplified as this passage crescendoes. Example 21b is similar to Example 21a except that the emphasized notes are A in the solo part, G in violin I, B in the viola, G# in the violoncello, and E in violin II. The notes in the string parts spell a triad built on E; however, the tonality is ambiguous to the listener because of the use of both G# and G, which are the third tones in a major or minor triad. The simultaneous use of such notes adds dissonance and increases intensity. Whether consonant or dissonant, the sound quality in this concerto is created by the simultaneous use of two or three octatonic scales, resulting in modal fluctuation. In Example 21b, notes from the C# octatonic scale are used in the solo flute and violins, while notes from the D octatonic scale are used in the viola and cello parts.
Performance Considerations

Each period in music history presents unique concerns in performance practice, and music in the twentieth century has expanded the range of style and performance techniques. After World War II, new experiences evolved through highly complex compositional procedures and unconventional means of performance. Because of unique styles of writing, many contemporary composers have made significant contributions to twentieth-century flute literature in the following works:

Debussy - *Syrinx* (1912)

Hindemith - *Sonata for Flute and Piano* (1936)

Varèse - *Density 21.5* (1936)

Davidovsky - *Synchronisms for Flute and Electronic Sound* (1963)

Messiaen - *Le merle noir* (1951)

Berio - *Sequenza* (1958)

Dick - *Afterlight* (1973)

Tower's *Flute Concerto* is a unique work in the repertoire of the flute, creating high energy through the elements of timbre and texture previously mentioned in Chapter III. Tower wanted to feature certain aspects of flute playing in which Carol Wincenc excels: dexterity, lyricism, and physical endurance. Such aspects challenge the flutist in the areas of technique and variations of sound, which are found within the demands of traditional flute playing; experimentation into extended techniques of flute performance is

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14 Carol Wincenc, Telephone interview (Banff, Canada: July 17, 1992).
Tower's *Flute Concerto* presents these performance aspects through specific idiomatic characteristics of the flute which are as follows: the use of the flute's extreme range, rhythm, tone color, dynamic shading, and intonation.

These characteristics are classified under the categories of rhythm and lyricism. Rhythmic passages are seen in the flute's extreme range, creating difficulty in fast, brilliant passages. The difficulty in the execution of these passages stems from their placement in the flute's highest register. Tower often writes for the flute's highest register to achieve the element of intensity. This concerto is accessible to the flutist, yet difficult technical patterns occur. Because many of these passages present awkward fingerings at a high speed, Wincenc suggests use of harmonic fingerings for greater agility. Through melodic and harmonic analysis, it becomes evident that Tower utilizes specific octatonic and chromatic scale patterns to heighten the musical intensity.

Rhythmic complexity is kept to a minimum. Many phrases depend on small rhythmic units rather than on a melodic line, and the challenge in the execution of these rhythmic units is to maintain steady *pulse*, which the performer can accomplish by subdividing the beat. When metric changes occur between duple and triple meter, irregular rhythmic accents are created which move the accent from the strong down beats to the weaker upbeats. Such rhythmic accents, or syncopation, often disturb the natural placement of the down beat. This rhythmic interruption causes difficulty for the performer and creates an imbalance of rhythmic security to the listener. It is helpful to

place emphasis on the smallest unit of division to maintain a constant pulse. Example 22 shows the solo flute in a metric change from 2/4 to 3/8 time in the passage between measures 211-218. Two sixteenth-notes followed by an eighth-note is the rhythmic unit that is often stable despite metric changes seen throughout the concerto. The eighth-note provides constant pulse within this passage, which enables the soloist to maintain steady pulse.

Example 22. Metric alternations within a solo flute passage, meas. 211-218.16

The same metric alternation occurs in the orchestra in many passages throughout the concerto when the solo flute is at rest. The soloist must concentrate on the pulse that takes place consistently within metric alternations to ensure accuracy in solo entrances.

Tower also incorporates rhythmic changes without changing meter, as seen in Example 19, meas. 224-239. These changes occur as the melodic rhythmic units increase from two- to six-note groupings per beat. Each measure shows changes in rhythmic units, and all changes of rhythmic units occur within the quarter-note unit. If the flutist retains the metric accent via the quarter-note, steady pulse can be achieved and the rhythmic acceleration will be audible to the listener.

A style contrasting to the brilliant rhythmic passages in Tower's Flute Concerto are the soft, lyrical sections presented in the flute's lower register. In the opening soliloquy (see Ex. 17), Tower takes advantage of the natural tendencies of the flute's registers to project a certain mood or affect. Example 17 shows the flute in its lower register, used for its darker, richer resonance because the abundance of harmonic overtones present. A variety of color possibilities is inherent in the tone of the flute allowing freedom for the flutist to develop versatility of mood or sentiment. Vibrato variations and dynamic shadings enhance the slow, lyric passages specifically on the reiterated pitches that reinforce tonal centers. As the supply of different pitches are few, significant changes in tone color are needed to capture the listener's attention. Another passage provides a similar example in a duet between the solo flute and the orchestral flute (Ex. 18). In this example, intonation becomes a concern as the two instruments are written in thirds and fluctuate between major and minor modalities. Because of the inherent pitch flexibility of the flute and certain pitch tendencies, it is necessary for the

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17 For further information regarding specific regimens for developing a versatile color spectrum, refer to Robert Dick's, The Other Flute, Volume 1, pp. 13-21.
flutist to give attention to accurate intonation. As the natural tendency of the flute produces flat, low register and sharp high register in relation to A=440, specific pitch discrepancies persist; therefore, it is apparent that intonation between the solo flute and orchestral flute, or any other instrument, can be problematic in performance.

This concerto is approximately fifteen minutes in length. From a slow, solemn beginning to a level of high energy, the flutist's physical stamina is challenged. One may take passages out of context and perform them perfectly but the ultimate goal is performance of the complete work. Challenges such as the use of the flute's extreme range, rapid passages, lyricism, and extended sequences highlight the physical strength of the soloist through the propelling rhythmic and metric changes, and the extended technical and lyrical passages. If not performed precisely, important details in flute performance can be engulfed; therefore, controlling elements of performance will enhance the concerto's unique characteristics and provide the means to a successful performance.
CHAPTER IV

CONCLUSIONS

Historical Significance in Twentieth-Century Flute Literature

These two works by Tower, Hexachords and the Flute Concerto, are historically significant in twentieth-century flute literature because of their compositional techniques and musical style. To the performer, these two works offer direct contact in experiencing and understanding contemporary practices as their stylistic character is enhanced through the idiomatic writing of the flute.

Because Hexachords is a serial work, it is imperative that the flutist reach beyond the written notation to enhance specific features that are unique to the composition. Through an extensive analysis, it is evident that Tower consciously applies specific flute techniques to enhance the five structural sections of the piece. To the listener, perception of these flute techniques are significant to the understanding of the piece; to the performer, it becomes evident that audience perception relies on the flutist's attempt to relate serial analysis to performance consideration. Hexachords can be considered a turning point in Tower's compositional development as it acquires a more expressive nature through the idiomatic writing for the flute and becomes more accessible to the listener.\(^1\) Phrases, sudden changes in registration, and varieties in tone color are directed to provide excitement and interest.

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\(^1\) Joan Tower, Telephone interview (New York: January 31, 1992).
Compositions are often commissioned by individuals or musical groups who wish to promote their own musical endeavors through audience patronage. Young composers benefit through the exposure of their music; however, in order for music to be received favorably by a broad audience, music must remain within aural perception. Many twelve-tone compositions are difficult to perceive because they lack the traditions of tonal music. Minimal exposure is given to such works as human nature holds fast to what is familiar, and therefore, it is often difficult for composers to present new styles to an audience. Tower bridges the old and the new to satisfy the traditional listener and bring a spark into their appreciation of music. A large crowd cannot be patrons of new music that uses difficult and unfamiliar idioms. Milton Babbitt’s quote, "Who cares if you listen?,"\(^2\) is far from the mind of a composer who depends on patronage for survival.

Tower combines a variety of sounds through timbre and texture in her Flute Concerto to assist in the concept of joining the soloist and the orchestra in the idea of contrast and opposition. Through a formal analysis, it becomes evident that contrast is apparent through the elements of color, rhythm, and texture. Through a melodic analysis, it has been established that Tower incorporates octatonic scales throughout the Flute Concerto, and she manipulates pitches of these scales, creating modal fluctuation.

Throughout the history of music, the significant value of a given work has often not been revealed for years after its inception. Many pieces, however, gain immediate recognition through performances by well-known

artists. Because Carol Wincenc is one of the most noted flutists of today, it is hoped that Tower’s *Flute Concerto* will be received with great enthusiasm by both the audience and performers of the flute. The validity of this concerto stems from its accessibility to the flutist and its perception by the audience. Through nuance shading and technical versatility, this concerto challenges the flutist in all areas of traditional flute performance as previously described. Although this concerto was written within a period of music history when composers frequently experimented with new sounds and techniques, Tower adheres to the traditional sounds and techniques of the flute to gain audience patronage and to promote music that is fresh, exciting, and energetic.

The combination of Tower’s flute writing and her manipulation of musical elements (discussed in Chapter III) cause this *Flute Concerto* to be a distinct work that reflects the modern tone of today’s music.

A work is *modern* if, for one vaguely formulated reason or another, it is thought to reflect the emotional quality, the temperament, and tempo of contemporary life.³

The post-1974 works of Joan Tower may indeed be a significant contribution to twentieth-century music as they capture the progressive and recessive levels of high intensive energy and characterize the twentieth-century life-style. High energy, simplicity, and the concept of balance are major elements that make Tower a unique composer of the twentieth century.

APPENDIX A

MATRIX FOR HEXACHORDS FOR SOLO FLUTE
"A" refers to pitch class 10.
"B" refers to pitch class 11.
APPENDIX B

FORMAL STRUCTURE OF TOWER'S FLUTE CONCERTO
<table>
<thead>
<tr>
<th>Bars</th>
<th>Style</th>
<th>Orchestration</th>
<th>Texture</th>
<th>Division</th>
<th>Form</th>
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<td>Intro.</td>
<td>lyric</td>
<td>fl.</td>
<td>transparent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-22</td>
<td>lyric</td>
<td>fl. &amp; orch.</td>
<td>dense</td>
<td>a</td>
<td></td>
</tr>
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<td>orch.</td>
<td>dense</td>
<td>[orch. interlude]</td>
<td></td>
</tr>
<tr>
<td>36-55</td>
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<td>fl.</td>
<td>transparent</td>
<td>a¹</td>
<td></td>
</tr>
<tr>
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<td>orch.</td>
<td>dense</td>
<td>[orch. interlude]</td>
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</tr>
<tr>
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<td>fl.</td>
<td>transparent</td>
<td>a²</td>
<td></td>
</tr>
<tr>
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<td>orch.</td>
<td>dense</td>
<td>[orch. interlude]</td>
<td></td>
</tr>
<tr>
<td>131-151</td>
<td>rhythmic</td>
<td>fl. &amp; orch.</td>
<td>transparent</td>
<td>transition</td>
<td></td>
</tr>
<tr>
<td>152-172</td>
<td>rhythmic</td>
<td>fl. &amp; orch.</td>
<td>transparent</td>
<td>b</td>
<td></td>
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<tr>
<td>173-184</td>
<td>rhythmic</td>
<td>orch.</td>
<td>dense</td>
<td>[orch. interlude]</td>
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<td>184-239</td>
<td>lyr. to rhy.</td>
<td>fl. &amp; orch.</td>
<td>transparent</td>
<td>b¹</td>
<td></td>
</tr>
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<td>240-265</td>
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<td>orch.</td>
<td>dense</td>
<td>[orch. interlude]</td>
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<td>266</td>
<td>lyr. to rhy.</td>
<td>fl.</td>
<td>transparent</td>
<td>(Cadenza)</td>
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<td>267-279</td>
<td>lyric</td>
<td>fl.</td>
<td>transparent</td>
<td>a¹</td>
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<td>280-319</td>
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<td>orch.</td>
<td>dense</td>
<td>[orch. interlude]</td>
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<td>320-350</td>
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<td>dense</td>
<td>b</td>
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<td>351-369</td>
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<td>orch.</td>
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<td>dense</td>
<td>extended transition</td>
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<td>dense</td>
<td>[orch. interlude]</td>
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<td>453-503</td>
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<td>fl. &amp; orch.</td>
<td>transparent</td>
<td>CODA</td>
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APPENDIX C

JOAN TOWER'S CHAMBER MUSIC FOR FLUTE
1. *Movements for Flute and Piano* (1968) fl, pf


3. *Hexachords for Solo Flute* (1972)

4. *Breakfast Rhythms I and II* (1974-75) solo cl; fl(picc), vn, vc, pf, perc

5. *Black Topaz* (1976) solo pf; fl, cl(b cl), tpt, tbn, 2 perc

6. *Amazon I* (1977) fl, cl, vn, vc, pf


11. *Flute Concerto* (1989) solo fl, cl(b cl), ob, bn, trt in C, bs ,tbn, 2 perc, str
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Books


Articles


_________. "Who Cares if You Listen?," *Hi Fidelity* VII/2 (February, 1958), 38-40, 126-127.

_________. "Twelve-Tone Invariants as Compositional Determinants," *The Musical Quarterly* XLVI/2 (Spring, 1960), 246-259.


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Wincenc, Carol. Telephone interview, Banff, Canada, July 17, 1992.