FORM AND COMPREHENSIBILITY IN PRÄLUDIUM AND MENUETT & TRIO FROM SCHOENBERG'S PIANO SUITE, OP. 25

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FORM AND COMPREHENSIBILITY IN PRÄLUDIUM AND MENUETT & TRIO

FROM SCHOENBERG'S PIANO SUITE, OP. 25

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CHAPTER I

INTRODUCTION

Comprehensibility is the extent to which valid information and inferences can be drawn from different parts of a discourse in order to establish a holistic understanding of a topic or object. Used in the aesthetic sense, comprehensibility of a musical work means that the ideas of the composer are organized in a way to create structural coherence. Schoenberg asserts that comprehensibility is the goal of form: "Form in the arts, and especially in music, aims primarily at comprehensibility."[1] In this study, I will explore the form of the Präludium as well as the Menuett and Trio from Schoenberg's Piano Suite, op. 25 (1923). My primary purpose is to elucidate how musical ideas are organized so as to generate structural coherence in a twelve-tone work.

In Schoenberg's compositional and teaching career, form was a chief preoccupation: his pedagogical publications, including *Fundamentals of Musical Composition* (1967)*, Structural Functions of Harmony* (1969)*,* and *Models for Beginners in Composition* (1942) discuss extensively the compositional process as well as the organizational techniques that create comprehensible form. For example, in the *Models for Beginners in Composition*, all musical examples aim to illustrate the formation of structural units, including sentences, periods, and contrasting middle sections.

[1] Arnold Schoenberg and Leonard Stein, *Style and Idea: Selected Writings of Arnold Schoenberg* (New York: St. Martins Press, 1975), 215.

According to Schoenberg, "form means that a piece is organized; i.e. that it consists of elements functioning like those of a living organism."[2] Schoenberg recognizes the importance of form. He believes that "without organization music would be an amorphous mass, as unintelligible as an essay without punctuation, or as disconnected as a conversation which leaps purposelessly from one subject to another."[3] In the essay "Theory of Form" (1924), Schoenberg points out that form allows the audience to recognize the "artistic product" as something that corresponds to the qualities of their intellect.[4] From Schoenberg's point of view, form is intellectual in nature, yet inseparable from feeling and emotion. Schoenberg asserts that intellect is a criterion of emotion;[5] therefore, an intellectual musical form not only fulfills the demands of comprehensibility, but also releases the power of emotion.

Schoenberg's endeavor to establish extended form in a truly atonal medium is reflected in his twelve-tone compositions. The composer asserts: "Composition with twelve tones has no other aim than comprehensibility."[6] He uses a tone row to generate musical logic and coherence—his chief requirements for the creation of a comprehensible form.[7] Schoenberg's intention in developing the twelve-tone method was to replace those structural differentiations provided by the tonal system.[8] In tonal music, the harmonic structure serves not only as a source of beauty, but also as a means to distinguish the

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[2] Arnold Schoenberg and Gerald Strang, *Fundamentals of Musical Composition* (New York: St. Martins Press, 1967), 1.

[3] Ibid.

[4] Schoenberg and Stein, *Style and Idea,* 253.

[5] Ibid., 255.

[6] Ibid., 215.

[7] Schoenberg and Strang, *Fundamentals of Musical Composition,* 1.

[8] Joseph Straus, *Remaking the Past: Musical Modernism and the Influence of the Tonal Tradition* (Cambridge: Harvard University Press, 1990), 78.

features of the form.[9] In order to replace the form-building function of harmony, "the method of composing with twelve tones grew out of a necessity."[10] The twelve-tone technique organizes atonality on a firm structural basis, which is comparable to the harmonic system in tonal music.

Since form is the overall shape of an entire work, understanding the form requires a holistic analytical approach. Many analyses of the Piano Suite, however, focus on a specific parameter rather than the musical form of an entire movement. The analytical goal of this thesis is to provide a holistic understanding of form in the selected movements: Präludium as well as Menuett and Trio.

[9] Schoenberg and Stein, *Style and Idea,* 217.
[10] Ibid., 216.

CHAPTER II

AN OVERVIEW OF FORM IN SCHOENBERG'S TWELVE-TONE MUSIC

"The chief requirements for the creation of a comprehensible form are logic and coherence."[11] Schoenberg believed that form is the comprehensive view of an entire work that contains mutually related structural units. Therefore, form is about relationships between different structural components. In the article "Composition With Twelve Tones" (1941) from *Style and Idea,* Schoenberg uses some of his early twelve-tone works to elucidate the possibilities of evolving the formal elements of music—melodies, themes, phrases, motives, figures, and chords—from a twelve-tone row. His analyses show that a tone row is capable of generating abundant relationships, and at the same time avoiding any tonal implications.

According to Schoenberg, the method of composing with twelve tones is a procedure in musical construction that aims to replace structural differentiations provided by tonal harmonies, so as to create comprehensible form.[12] The twelve-tone method consists primarily of the constant and exclusive use of a row involving the prime form and its transformations.[13] The constructive properties of a row are based on four

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[11] Schoenberg and Strang, *Fundamentals of Musical Composition,* 1.

[12] Schoenberg and Stein, *Style and Idea,* 218.

[13] Joseph Straus, *Introduction to Post-Tonal Theory* (New Jersey: Prentice Hall, 2005), 183.

compositional aspects: the permutation of the principal row, the intervallic content of tone row, the concept of multi-dimensional spaces, and segmentation of a row. I will discuss each of these aspects in the following paragraphs.

The tone row and its permutations are capable of varying a theme. Schoenberg states that the tone row functions in the manner of a motive. It is the first creative thought of a twelve-tone work.[14] The tone row that appears at the very beginning of a piece is the principal row. It serves as the principal theme of a twelve-tone work, while the permutations of the tone row—the mirror forms—build subordinate ideas.[15]

Schoenberg's Rondo from Wind Quintet, op. 26, exemplifies how the principal row and its permutations can serve as principal theme and subordinate themes in a twelve-tone medium. My examples 1a-e are examples 8a-e from Schoenberg's "Composition With Twelve Tones," which show the principal and subordinate themes of the Rondo.[16] Schoenberg uses the term BS (basic set), as on example 1a, to label the principal row, which is structurally equivalent to the principal theme. Examples 1b-1e are the subordinate themes, which share the same rhythm and phrasing with the principal theme: the rhythm of the first three measures of 1b-e is exactly the same as that of example 1a. Examples 1b, c, and d are retrogressions of the principal row, while example 1e is a retrograde-inversion. In example 1c and e, the second half of the row enters before the first half, but the row orders in each half preserved. Due to permutation, the order of pitches and intervallic content of the varied themes differ from the principal row, showing how Schoenberg uses multiple row forms to create variety within unity.

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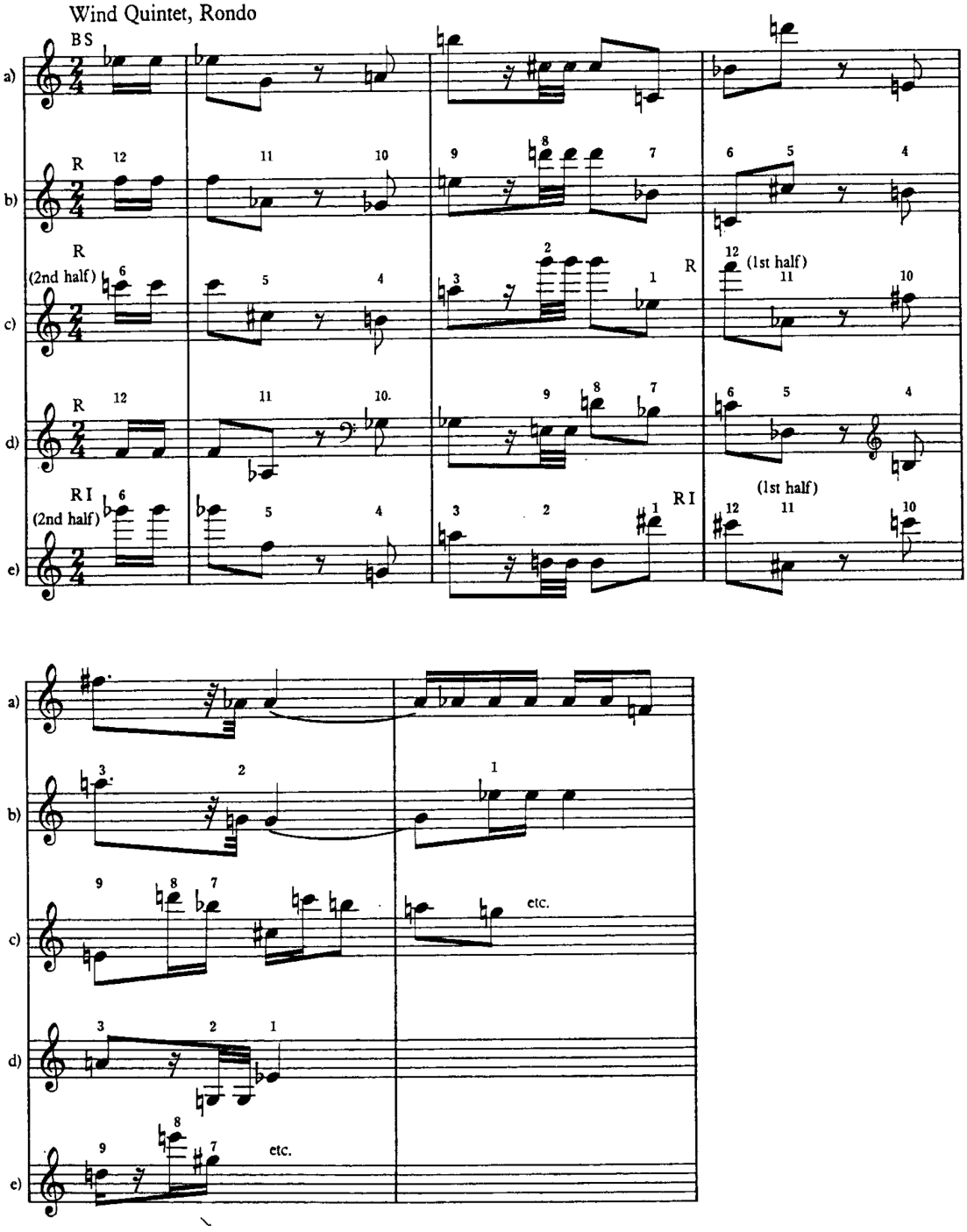
[14] Schoenberg and Stein, *Style and Idea,* 219.
[15] Ibid., 227.
[16] Ibid., 229.



Ex. 1: Schoenberg's Examples Showing the Principal Themes and the Subordinate Themes of the Rondo From Wind Quintet, op. 26

The order of the twelve tones generates a succession of intervals in a row. These intervals are crucial to creating relationships between different row forms, and therefore to creating structural coherence. In "Composition With Twelve Tones," Schoenberg highlights the importance of intervallic content of a tone row. He asserts that intervals create regularity, which is comparable to the regularity and logic of tonal harmony.[17]

My examples 2a-f are Schoenberg's examples 3a-f from "Composition With Twelve Tones," showing the intervallic content of the theme from *Kammersymphonie*, op. 9.[18] This example reveals that the intervallic content of a row connects two horizontal events—the principal theme and the secondary theme. Example 2a is the principal theme of the *Kammersymphonie*, while example 2b is the secondary theme. Example 2c is similar to example 2a, whereas in example 2c, the principal tones of the theme appear as bigger note heads. Example 2d is an analytical reduction of example 2c, showing merely the principal tones. The numbers and arrows in example 2d indicate that the intervals between the principal tones ascend: G♯ by eight half steps to E; E by two half steps to F♯; F♯ by two half steps to G♯; G♯ by three half steps to B. Example 2e is the inversion of example 2d, showing descending intervals: A♭ by eight half steps to C♮; C♮ by two half steps to B♭; B♭ by two half steps to A♭; A♭ by three half steps to F♮. Example 2f is the first five pitches from the bass part of the secondary theme shown in example 2b. It is striking to note that examples 2e and 2f share the same pitches, as well as intervallic content. Thus, the opening five notes of the secondary theme form the inversion of the principal notes in the principal theme. This example shows that the intervallic content of a series of notes can serve as cohesive elements to create thematic relationships.

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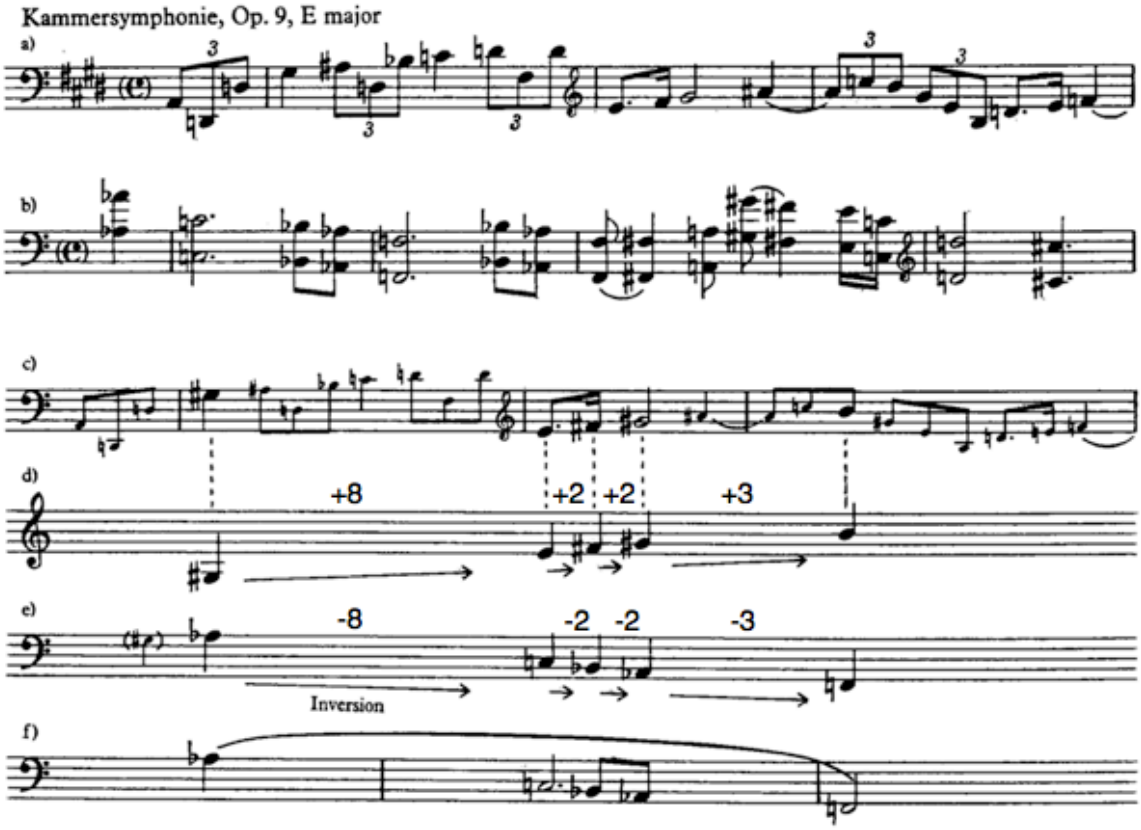
[17] Schoenberg and Stein, *Style and Idea,* 219.
[18] Ibid., 222.



Ex. 2: Schoenberg's Examples Showing the Thematic Relationship in *Kammersymphonie*, op. 9

The concept of "multi-dimensional musical space" is another factor that allows the tone row to generate abundant relationships. Schoenberg asserts that musical ideas must correspond to the laws of human logic,[19] which means that the composer's ideas are a part of what man can apperceive, reason, and express. Proceeding from these assumptions, Schonberg concludes: "The two-or-more-dimensional space in which musical ideas are presented is a unit."[20] Schoenberg states that though the elements of the musical ideas are separate and independent to the eye and the ear, they reveal their true

[19] Schoenberg and Stein, *Style and Idea,* 220.
[20] Ibid.

meaning only through their co-operation.[21] Hence, a musical idea has more than a local effect: it functions not only in its own plane, but also in all other directions and planes. In some cases, the elements of a musical idea are partly incorporated into the horizontal plane as successive sounds, and partly into the vertical plane as simultaneous sounds. For instance, a single pitch can, at the same time, be a member of a linear melody as well as a member of a vertical chord. In a twelve-tone row, the mutual relationship of tones regulates the succession of intervals in horizontal events as well as their association into harmonies. This explains why a tone row in twelve-tone music functions in either dimension, as a whole or in parts, to create both local and remote relationships.

The segmentation or partitioning of a tone row is also a crucial compositional technique that generates relationships. Schoenberg states that in his Piano Suite, op. 25, he intentionally subdivides the tone row into three tetrachords, which are treated independently.[22] The first and second tetrachords of the principal row P4 and its permutations—P10, I4, I10—both end with a tritone. The first tritone pair, D♭-G (or G-D♭), remains invariant among P4, P10, I4, and I10. The pitch content of the second tritone pair, however, is not held invariant in all four row forms: P4 and P10 share invariant pitches A♭ and D, while I4 and I10 share invariant pitches C and F♯. The tritones subdivide each row into three tetrachords,[23] which Schoenberg uses independently to create structural coherence in the Piano Suite.

The tetrachords in P4, P10, I4, and I10 are interchangeable within a row or between rows. For instance, in the excerpt of the Menuett shown in example 3, the

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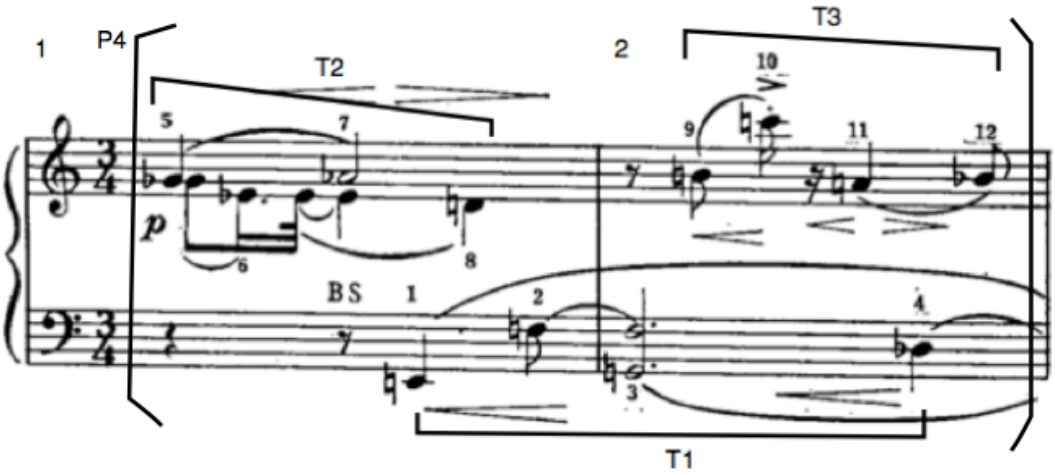
[21] Schoenberg and Stein, *Style and Idea,* 220.
[22] Ibid., 234.
[23] Ibid.

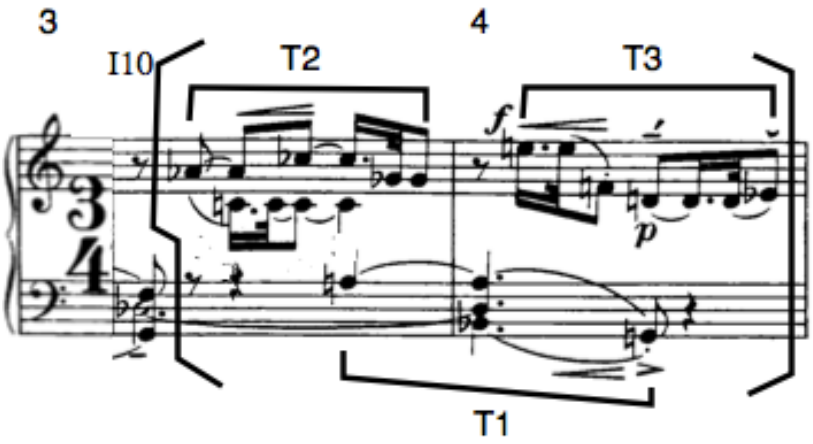
principal row P4 (E, F, G, D♭, G♭, E♭, A♭, D, B, C, A, B♭) occurs segmented as three tetrachords—T1 (order numbers 1-4), T2 (order numbers 5-8), T3 (order numbers 9-12)—according to their registral differences.[24] The right-hand melody begins with T2, while T1 enters one and a half beats later in the left hand, showing that the order of tetrachords from a single row is interchangeable.



Ex. 3: Schoenberg's Example Showing the Placement of Tetrachords in mm. 1-2 of the Menuett

The tetrachords from I10 that appear in mm. 3-4 are also interchangeable as labeled in example 4: right-hand part contains T2, followed by T3, while T1 enters in the left hand on the last beat of m. 3. The placement of tetrachords in mm. 3-4 is similar to mm. 1-2, creating structural coherence in the first four measures of the Menuett.

[24] Schoenberg and Stein, *Style and Idea,* 234.



Ex. 4: The Placement of Tetrachords in mm. 3-4 of the Menuett

The above discussion reveals that Schoenberg considered the twelve-tone method as a means to fortify compositional logic. The composer however refused to explain it more. He states that he did not recall the detailed manipulation of a tone row and its permutations that create structural coherence.[25] He believed that people who are interested in his music can figure out the technical matters and will do so.[26] Thus, scholars have room to elucidate the structural coherence and form of Schoenberg's twelve-tone compositions.

Two scholars who have discussed extensively the form of Schoenberg's twelve-tone works are Andrew Mead and Martha Hyde. They use Schoenberg's ideas as points of departure to elucidate the form-building abilities of tone rows. Mead introduces the concept of mosaic to explain the constructive properties of independent small sets. In the articles "Large-Scale Strategy in Arnold Schoenberg's Twelve-tone Music" and "Tonal Forms in Arnold Schoenberg's Twelve-Tone Music," Mead states that the structural

[25] Schoenberg and Stein, *Style and Idea,* 214.
[26] Ibid.

coherence in a twelve-tone composition depends on the interaction of relationships among row forms. He believes that a twelve-tone mosaic is capable of generating row relations. Pitch-class mosaic (notated as W in Mead's articles) is a parsing of the twelve pitch-classes into discrete collections. Figure 1 shows the principal row P4 of op. 25 and its pitch-class mosaic W. The curly brackets indicate that the tone row is partitioned into three tetrachords, each forming an unordered pitch-class set.

P4: 4 5 7 1 6 3 8 2 e 0 9 t

W: {4, 5, 7, 1} {6, 3, 8, 2} {e, 0, 9, t}

Fig. 1: Pitch-class Mosaic of P4

The concept of mosaic can also be applied to order numbers. In Mead's article, the order numbers of a row are labeled in italics.[27] Figure 2 shows the order numbers of row *P* and its order-number mosaic *W*, in which the twelve order numbers are subdivided into six dyads. As in figure 1, the curly brackets in figure 2 indicate that the dyads are unordered sets.

P: 0 1 2 3 4 5 6 7 8 9 t e

W: {0, 1} {2, 3} {4, 5} {6, 7} {8, 9} {t, e}

Fig. 2: Order-number Mosaic of P

Both the pitch-class mosaic and the order-number mosaic can generate relationships among rows. Mead asserts that such relations involve pitch-class collections

[27] Mead starts order numbers with 0.

or order-number collections held invariant in some way. He introduces four types of invariant sets: segmental invariance, non-segmental invariance, mixture of segmental and non-segmental invariance, and invariance between two pairs of rows. Figure 3 shows the segmental invariance in two rows: X and Y.[28] Each of the rows contains three unordered tetrachords—T1, T2, T3—where T1 from row X maps into T1 from row Y; T2 from row X maps into T3 from row Y; and T3 from row X maps into T2 from row Y.

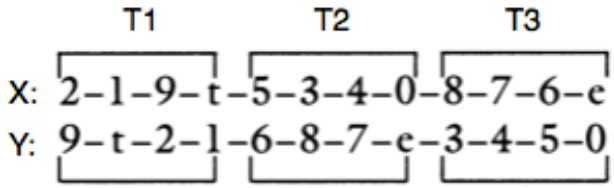


Fig. 3: Mead's Example Showing Segmental Invariance in Rows X and Y

Some row relationships involve non-segmental invariance. Figure 4 shows two different rows, A and B.[29] By extracting the pitch-class content at order positions 0, 3, 6, and 9, each row yields an unordered pitch-class set {9, e, 0, 8}. Thus, the order number collection *{0, 3, 6, 9}* connects rows A and B by sharing the same pitch-class content.

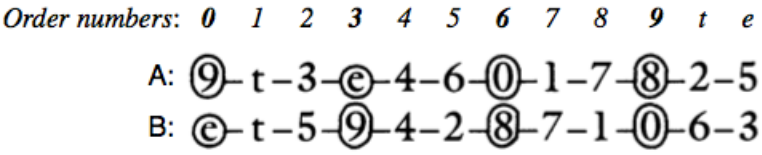


Fig. 4: Mead's Example Showing Non-segmental Invariance in Rows A and B

[28] Andrew Mead, "Large-Scale Strategy in Arnold Schoenberg's Twelve-Tone Music," *Perspectives of New Music*, Vol. 24, No. 1 (1985): 125.

[29] Ibid., 126.

In some cases, a segmental collection is extracted non-segmentally. Figure 5 shows two row forms, A and B.[30] In row A, its first hexachord (order numbers 0 to 5) is extracted non-segmentally from order positions *0, 1, 2, 5, 7,* and *8* in row B.

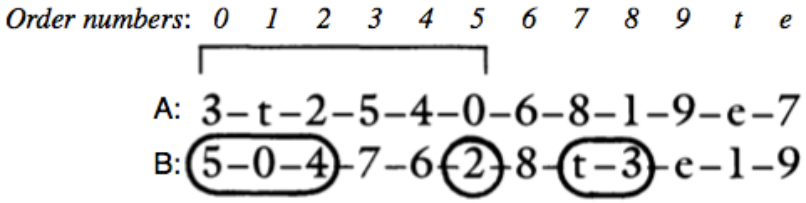


Fig. 5: Mead's Example Showing a Mixture of Segmental and Non-segmental Invariance

Mead also discusses relations established between two pairs of rows. In figure 6, the upper stack of boxes contains two row forms, A and B.[31] Each box contains two dyads from each row, forming an unordered tetrachord. As indicated in the example, rows A and B combine to form five different tetrachords, a, b, c, d, and e, where tetrachord a—{2, 1, 7, 8}—appears twice. The lower stack of boxes is the tritone transposition of rows A and B, yielding rows C and D. Similar to the upper stack, the lower stack of boxes connects rows C and D by combining dyads from each row, forming six tetrachords. This example shows that the tetrachords formed by rows A and B are the same as the tetrachords formed by rows C and D, regardless of the order of the collections.

[30] Andrew Mead, "Large-Scale Strategy in Arnold Schoenberg's Twelve-Tone Music," *Perspectives of New Music*, Vol. 24, No. 1 (1985): 126.

[31] Ibid.

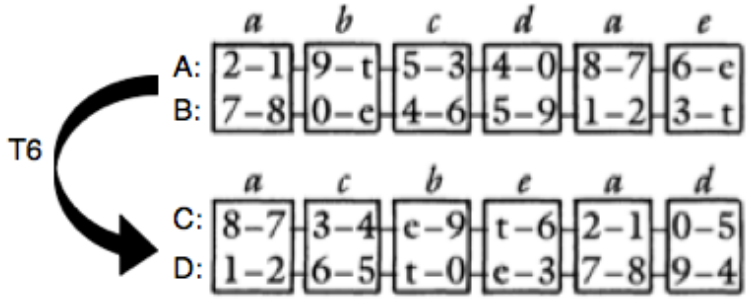


Fig. 6: Mead's Example Showing Invariance Between Two Pairs of Rows: A, B and C, D

Some of the row relationships described in Mead's article can be found in the Piano Suite. Schoenberg uses four row forms exclusively throughout op. 25: P4, P10, I4, I10 as shown in figure 7. The dyad in order positions 2 and 3 is invariant in all four rows and shares the same pitch-class content: 7 and 1. This is the first tritone pair that described previously to signal the tetrachordal segmentation of tone row. In P4 and P10, another pair of dyad in order positions 6 and 7 shares the same pitch-class content: 8 and 2; while in I4 and I10, the dyads in order position 6 and 7 also held invariant by sharing the same pitch-class content: 0 and 6. The dyads with pitch-class content (8, 2) and (0, 6) are the second tritone pair that signal the tetrachordal segmentation of tone row.

Order numbers:	***0***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***t***	***e***
P4:	4	5	7	1	6	3	8	2	e	0	9	t
P10:	t	e	1	7	0	9	2	8	5	6	3	4
I4:	4	3	1	7	2	5	0	6	9	8	e	t
I10:	t	9	7	1	8	e	6	0	3	2	5	4

Fig. 7: Segmental Invariance Among P4, P10, I4, and I10

The relationship between P4 and P10 involves non-segmental invariance. The two rows, shown in figure 8, share the same pitch-class content at order positions *0, 4, 9,* and *e*, which forms an unordered pitch-class set {4, 6, 0, t}.

Order numbers:	***0***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***t***	***e***
P4:	4	5	7	1	6	3	8	2	e	0	9	t
P10:	t	e	1	7	0	9	2	8	5	6	3	4

Fig. 8: Non-segmental Invariance in P4 and P10

Another relationship between P4 and I10 involves a mixture of segmental and non-segmental invariance. The first hexachord of P4 is extracted non-segmentally from order positions *2, 3, 6, 8, t, e* in I10 as shown in figure 9.

Order numbers:	***0***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***t***	***e***
P4:	4	5	7	1	6	3	8	2	e	0	9	t
I10:	t	9	7	1	8	e	6	0	3	2	5	4

Fig. 9: A Mixture of Segmental and Non-segmental Invariance in P4 and I10

Lastly, Mead discusses relation between two pairs of rows: P4-I4 and P10-I10. In order positions *4-9*, P4 and I4 combine to form three unordered tetrachords: {6, 3, 2, 5}, {8, 2, 0, 6}, {e, 0, 9, 8}, labeled as a, b, and c respectively on figure 10. Transposed by tritone, P4 and I4 yield P10 and I10, as shown at the bottom of figure 10. Similar to P4 and I4, in order positions *4-9*, P10 and I10 combine to form three unordered tetrachords,

which are the same as the tetrachords formed by P10 and I10 in the same order positions, regardless of the order of the collections.

Order numbers:	***0***	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***t***	***e***
					a		**b**		**c**			
P4:	4	5	7	1	6	3	8	2	e	0	9	t
I4:	4	3	1	7	2	5	0	6	9	8	e	t
T6												
					c		**b**		**a**			
P10:	t	e	1	7	0	9	2	8	5	6	3	4
I10:	t	9	7	1	8	e	6	0	3	2	5	4

Fig. 10: Relations Between Two Pairs of Rows: P4-I4 and P10-I10

The invariant relationships among rows create structural coherence, as well as comprehensible form in twelve-tone compositions. In Chapter III, I will point out the invariant relationship among rows so as to elucidate the structural coherence in the Präludium.

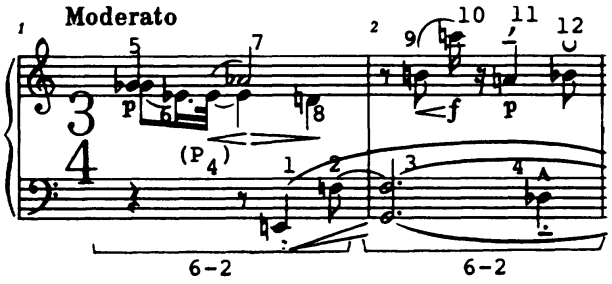
To reveal the form-building abilities of tone rows, Martha Hyde further elaborates the compositional technique that was included in Schoenberg's "Composition With Twelve Tones." She discusses extensively the form of Schoenberg's early twelve-tone compositions in "Musical Form and the Development of Schoenberg's Twelve-Tone Method" (1985). Hyde focuses on harmonic structure, which Schoenberg used to generate extended form in the Piano Suite. The "harmonies" described by Hyde are different from tonal harmonies. Harmonies in twelve-tone compositions refer to pitch-

class sets (pc sets) labeled with Forte names. Hyde states that the construction of form in op. 25 depends on the formation and the use of twelve-tone harmonies, which can be identified as two types: harmonies based on contiguous segments within a row and harmonies based on invariant pc sets shared by two or more rows. Schoenberg uses both types of harmonies to structure single movements, as well as to create coherence among movements.

Hyde highlights Schoenberg's three organizing principles of twelve-tone harmonies. First, twelve-tone harmonies need not be simultaneous; they can be implied by linear melodic events. Second, a single harmonic event affects more than one dimension. Hyde categorizes the harmonic dimension into two levels: primary and secondary. The former one contains contiguous elements of a tone row, while the secondary harmonic dimension contains pitches that are non-adjacent in the tone row, but equivalent to the harmonies in the primary harmonic dimension. Hyde specifies that "equivalent" means that they are not identical, but rather are unordered and related by transposition or inversion or both. Third, the order of the twelve pitch-classes defines the harmonies of the tone row, but it defines them primarily by intervallic content rather than by pitch-class content. Moreover, the harmonies need not be presented by the same succession of intervals. Thus, multiple harmonies are connected through unordered pc sets that share identical intervallic content.

Hyde uses the first two measures of the Menuett from the Piano Suite to elucidate the three principles for organizing harmonic structure. Example 5 shows that mm. 1 and 2 share the same harmony: pitch classes at order numbers *1, 2, 5, 6, 7, 8* in m. 1, and pitch

classes at order numbers *3, 4, 9, 10, 11, 12* in m. 2 form pc set 6-2.[32] The pc set 6-2 comprises melodic events as well as harmonic events. Each individual measure represents the secondary harmony, while every single pitch is a member of the tone row, representing the primary harmonic dimension. Moreover, the harmonies marked 6-2 contain different pitches from those marked 6-2 in the tone row; thus, the identification of harmony merely depends on the intervallic content of the pc set.



Ex. 5: Hyde's Example Showing the Harmonic Structure in mm. 1-2 of the Menuett

Hyde's analyses reveal that the harmonies in op. 25 are derived from the principal row P4. She asserts that Schoenberg intentionally groups non-adjacent pitches in the tone row to create harmonies that are equivalent to the ordered linear segments of the tone row itself. Figure 11 shows the six successive dyads in P4.[33] The association of all pairs of non-adjacent dyads produces tetrachords equivalent to the linear segments of the tone row. For example, the non-adjacent dyads 1 and 3 form a chromatic tetrachord, pc set 4-1, which is equivalent to the last tetrachord of the tone row.

[32] Hyde starts order numbers with 1. Martha Hyde, "Musical Form and the Development of Schoenberg's Twelve-Tone Method," *Journal of Music Theory*, Vol. 29, No. 1 (Spring, 1985): 114.

[33] Ibid., 118.

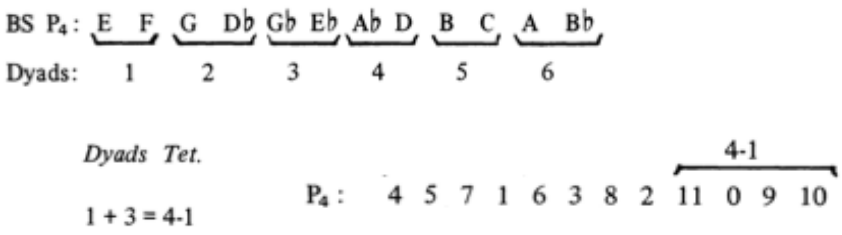


Fig. 11: Hyde's Example Showing the Six Successive Dyads in the Principle Row of op. 25 and Their Formation of pc set 4-1

Hyde states that Schoenberg also applies the same kind of compositional technique to different permutations of the principal row. Figure 12 shows that the first tetrachrod in P4 (P4(1)) and the third tetrachord in P10 (P10(3)) join together to form pc set 6-2, which is equivalent to the two hexachords in the principal row P4.[34]

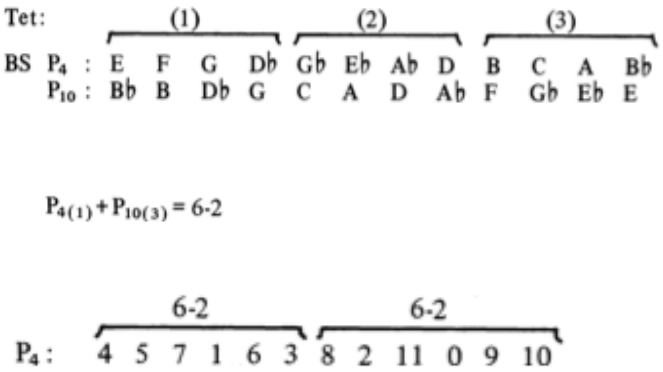


Fig. 12: Hyde's Example Showing Tetrachords of P4 and P10 From op. 25 and Their Formation of pc set 6-2

The second device that Schoenberg uses to create extended form is invariant harmony. Figure 13 shows the four row forms that appear exclusively in the Piano

[34] Martha Hyde, "Musical Form and the Development of Schoenberg's Twelve-Tone Method," *Journal of Music Theory*, Vol. 29, No. 1 (Spring, 1985): 118.

Suite.[35] The underlined dyads are invariant sets shared by two different row forms. For instance, the first dyad of P4 is the same as the last dyad of I10. Invariant dyads combine to form invariant harmonies, which are exemplified at the bottom of figure 13: invariant dyads (9, 10), (6, 3), and (2, 8) join together to form pc set 6-z17.

P_{10}: 10 11 1 7 0 9 2 8 5 6 3 4

P_4: 4 5 7 1 6 3 8 2 11 0 9 10

I_{10}: 10 9 7 1 8 11 6 0 3 2 5 4

I_4: 4 3 1 7 2 5 0 6 9 8 11 10

6-z17: (9 10) (6 3) (2 8)

Fig. 13: Hyde's Example Showing the Formation of Invariant Harmonies From Invariant Dyads

Hyde uses the Intermezzo from the Piano Suite as an example to model how secondary harmonies and invariant harmonies structure phrases. Hyde divides the Intermezzo into two parts according to the harmonic structure. For example, the opening phrase of the Intermezzo produces a harmony that is equivalent to a linear segment of the principal row. The completion of the secondary harmony signals the beginning of a new phrase. The six phrases of the first part of the intermezzo are all derived from pc sets 8-8, 6-2, 8-12. As shown in figure 14, all these secondary harmonies are derived from the principal row P4.[36]

[35] Martha Hyde, "Musical Form and the Development of Schoenberg's Twelve-Tone Method," *Journal of Music Theory*, Vol. 29, No. 1 (Spring, 1985): 122.

[36] Ibid., 118.

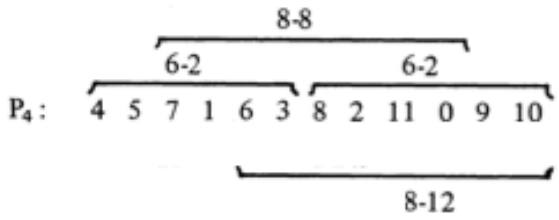


Fig. 14: Hyde's Example Showing Secondary Harmonies Derived From P4

In the second part of the intermezzo, Schoenberg uses four different harmonies to outline the phrase structure. Unlike the first part, invariant harmonies appear exclusively in the second part. As shown in figure 15, the invariant dyads combine to form invariant sets.[37] The first phrase of the second part of the Intermezzo contains invariant harmonies, thus marking the two-part form with a change in harmonic structure.

Invariant Sets	Invariant Dyads
pc set 5-1	(2 5)(3 4)(3 6)
pc set 5-8	(1 7)(3 4)(4 5)
pc set 6-z23	(0 6)(0 9)(2 8)(2 11)
pc set 7-8	(0 6)(2 8)(9 10)(10 11)
pc set 8-25	(1 7)(3 4)(4 5)(9 10)(10 11)

Fig. 15: Hyde's Example Showing the Formation of Invariant Sets From Invariant Dyads

Hyde states that invariant harmonies and secondary harmonies are fundamental devices that Schoenberg used to generate structural coherence in the Piano Suite. She describes the techniques in detail, yet does not provide formal design of an entire movement. Thus, Hyde's ideas entail a holistic analysis of musical form of the Piano

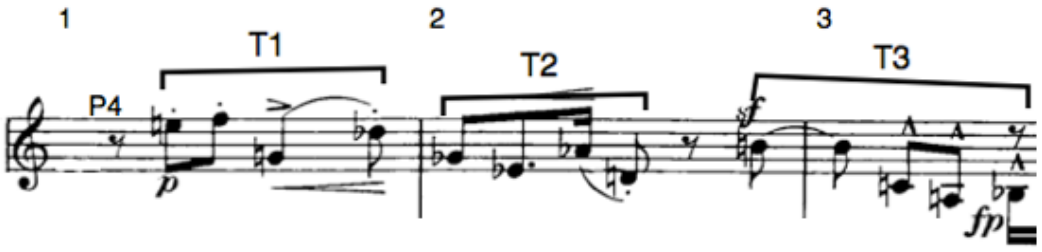
[37] Martha Hyde, "Musical Form and the Development of Schoenberg's Twelve-Tone Method," *Journal of Music Theory*, Vol. 29, No. 1 (Spring, 1985): 130.

Suite. In Chapter IV, I will use Hyde's approach, which is pertinent to harmonic structure, to elucidate the formal design of the Menuett and Trio.

CHAPTER III

ANALYSIS OF PRÄLUDIUM FROM SCHOENBERG'S PIANO SUITE, OP. 25

Schoenberg began and finished the Präludium, the first movement of op. 25, in July of 1921, while the remaining five movements—Gavotte, Musette, Intermezzo, Menuett and Trio, Gigue—were completed between February and March of 1923.[38] As the Präludium is the first completed movement of the suite, it initially presents the musical idea of the entire work, a single row (the principal row P4)—E, F, G, D♭, G♭, E♭, A♭, D, B, C, A, B♭—that appears linearly in the right hand. The initial row not only presents the order of the twelve pitch-classes, but also implies the tetrachordal segmentaion of tone row. In mm. 1-2, the first and second tetrachords (T1 and T2) end with similar articulations: a slur over the last two notes and a staccato note at the end, as indicated in example 6. The eighth note rest in m. 2 separates T2 from T3.



Ex. 6: Tetrachordal Segmentation of the Initial Row P4 in the Präludium

[38] Martha Hyde, "Musical Form and the Development of Schoenberg's Twelve-Tone Method," *Journal of Music Theory*, Vol. 29, No. 1 (Spring, 1985): 88.

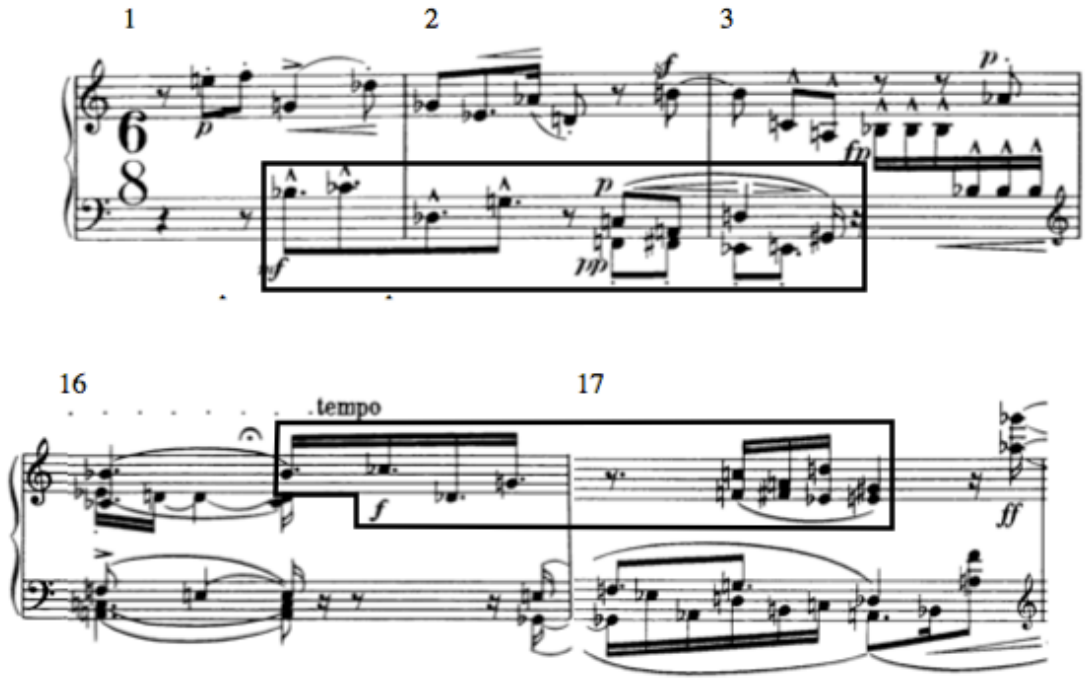
As stated in the previous chapter, tetrachords are crucial in creating structural coherence, and hence, comprehensible form. In this chapter, I will first investigate the formal design of the Präludium from the surface level, followed by the discussion of constructive properties of tetrachords, as well as relationships among rows.

Structure Outlined by Surface Features

The Präludium has a two-part structure: mm. 1-16.3 and mm. 16.4-24.[39] To signal the beginning of Part II, the right-hand materials in mm. 16.4-17.5 share the same pitch-class content and melodic contour with the left-hand materials in mm. 1-3 (see the boxed content in example 7). Despite the fact that the repetition occurs in a higher register and with different rhythms, the right-hand materials in mm. 16.4-17.5 are the only melodic reprises in the Präludium.

The performance directions further support the two-part design of the Präludium. The *rit*. marking from mm. 14.4-16.4 together with the *tempo* marking at m. 16.5 articulate a structural break at the middle of m. 16. Moreover, the *fermata* at m. 16 elongates the first sounding pitches on the downbeat of m. 16 and reinforces the separation of Part I from Part II.

[39] The number after the decimal point represents the beat of a measure. For example, the number 16.3 represents the third beat of m. 16.



Ex. 7: The Melodic Reprise in mm. 1-3 and mm. 16-17 of the Präludium

Just like the two-part structure of the Präludium, Part I divides into two sections: mm. 1-9.4 and mm. 9.5-16.3. Expression marks and contrasting dynamics at m. 9.5 setup a boundary between sections 1 and 2. To compare with the opening, the performance direction at m. 9.5 changes from "rasch" (quick) to "etwas ruhiger" (quieter) and *dolce*. Furthermore, section 2 begins with *piano* at m. 9.5, contrasting with *forte* at mm. 9.1-9.4, the last measure of section 1.

In Part II, the music consists of three two-measure units (mm. 16.4-17, mm. 18-19, mm. 20-21) and a coda (mm. 22-24). Mm. 16-17 highlight the recurrence of the opening left-hand thematic materials. Mm. 18-19, the climax, feature abrupt changes of dynamics and consecutive repeating dyads in both hands. Mm. 20-21 are a transition to the coda (mm. 22-24), which contains frequent meter changes.

Formal Design Pertinent to the Constructive Properties of Tetrachords and Relationships Among Rows

The previous section elucidates the formal design of the Präludium that occurs at the surface level. In this section, I will investigate the constructive properties of tetrachords and the relationships among rows with regard to the delineation of form. As I stated in Chapter II, the Piano Suite features four row forms—P4, P10, I4, I10—and their retrogressions. Rows divide into three tetrachords (T1, T2, T3) as shown in figure 16. Every T1 and T2 features a tritone at the end, regardless of the row form. The four row forms share the same unordered tritone pair {7, 1} in T1, while in T2, prime form rows share the same unordered tritone pair {8, 2} and the inverted row forms share the unordered tritone pair {0. 6}.

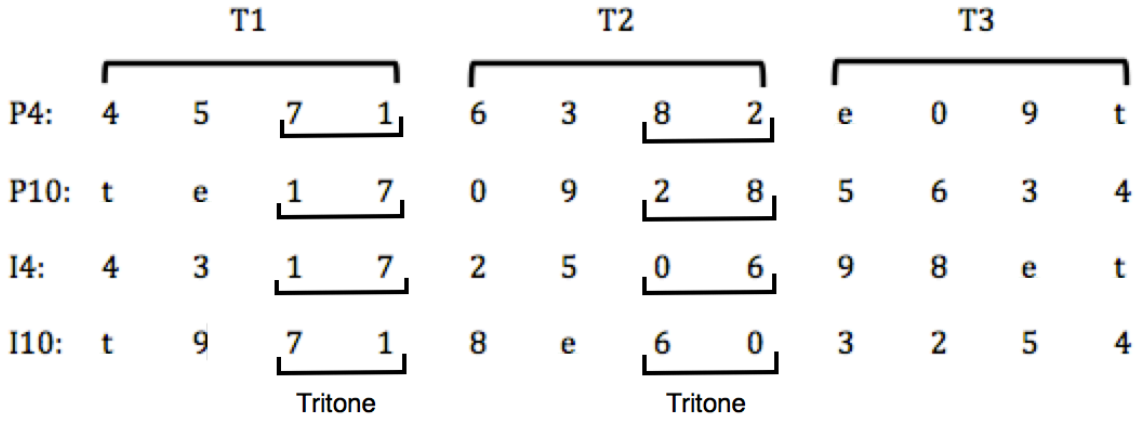
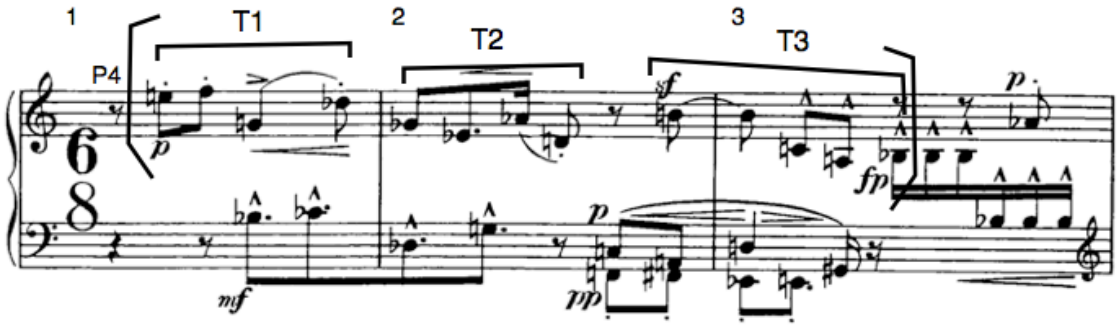


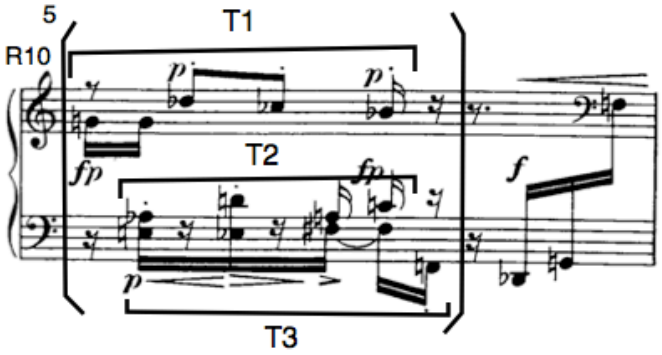
Fig. 16: The Three Tetrachordal Segments in the Four Different Row Forms of op. 25

As discussed in Chapter II, Schoenberg treats the tetrachords as independent sets that appear freely as linear melodic events or vertical simultaneities. The independent tetrachords generate abundant relationships pertinent to the formation of structural units. For example, the three tetrachords of P4 appear horizontally in the right hand of mm. 1-3,

as shown in example 8, whereas the three tetrachords of R10 form a polyphonic twelve-tone aggregate in m. 5, as indicated in example 9.



Ex. 8: The Horizontal Presentation of P4 in mm. 1-3 of the Präludium

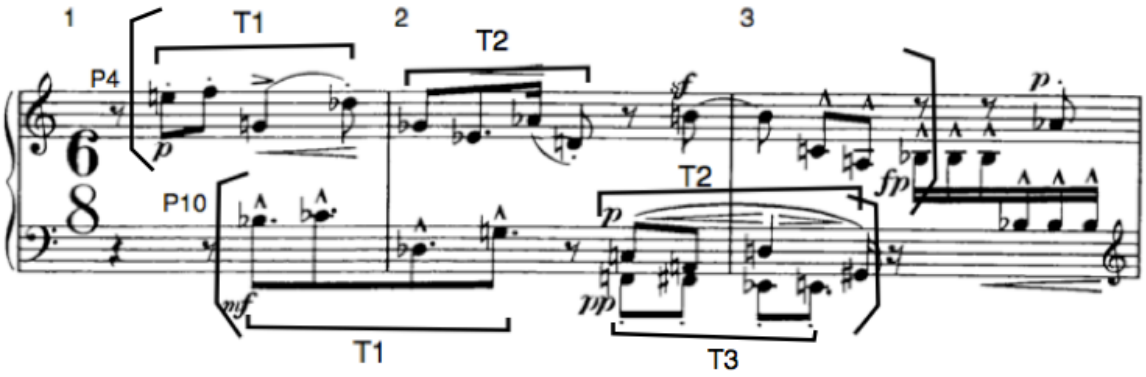


Ex. 9: The Polyphonic Presentation of R10 in m. 5 of the Präludium

In the following paragraphs, I will explore the constructive properties of tetrachords and relationships among rows, with regard to the formal design of the Präludium that occurs at the surface level. My purpose is to elucidate how Schoenberg uses tetrachords in different ways to identify structural units.

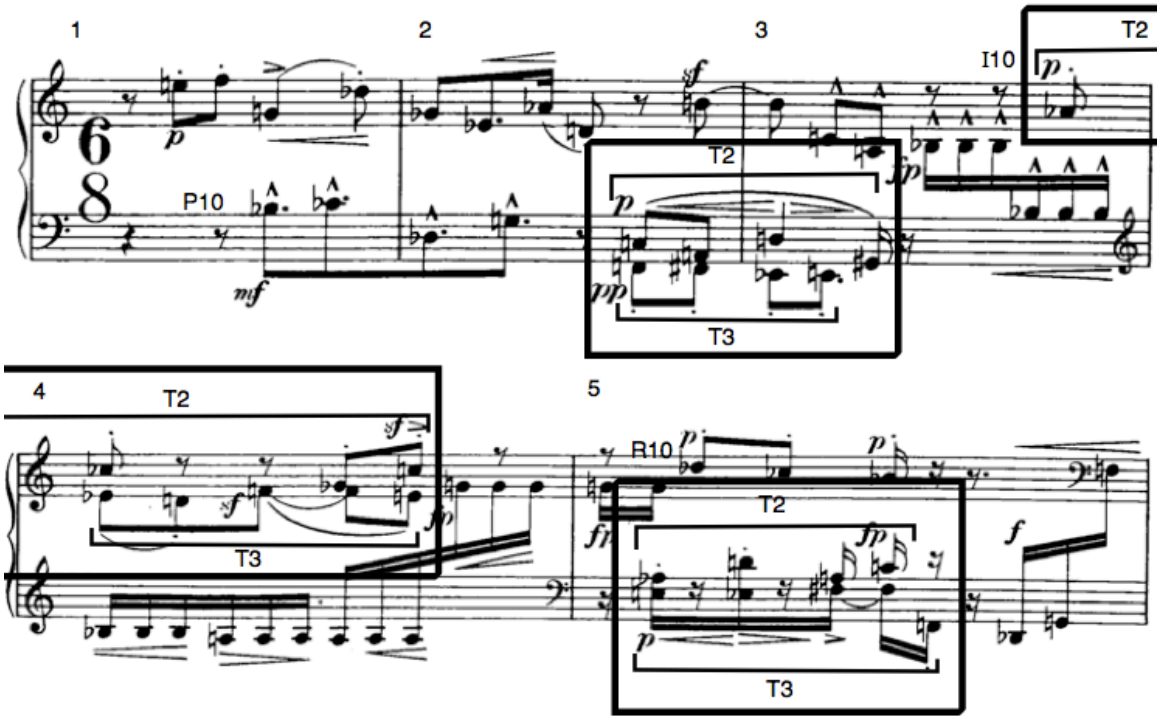
The Präludium opens with a period. The antecedent phrase (mm. 1-3.3) contains a contrapuntal gesture between P4 and P10. The consequent phrase (mm. 3.4-5.4) articulates a steady sixteenth-note rhythm and concludes with the sixteenth-note rest in m. 5.5. The right hand begins with a horizontal statement of the principal row (P4) in

m. 1, while the left hand enters three beats later with a horizontal statement of T1 from P10 ($P10^{T1}$) as indicated in example 10. After the eighth-note rest in the left-hand part of m. 2, concurrent statements of T2 and T3 occur in mm. 2.5-3.3. $P10^{T1}$ and $P10^{T2}$ imitate the melodic contour of $P4^{T1}$ and $P4^{T2}$, creating a contrapuntal gesture between P4 and P10.



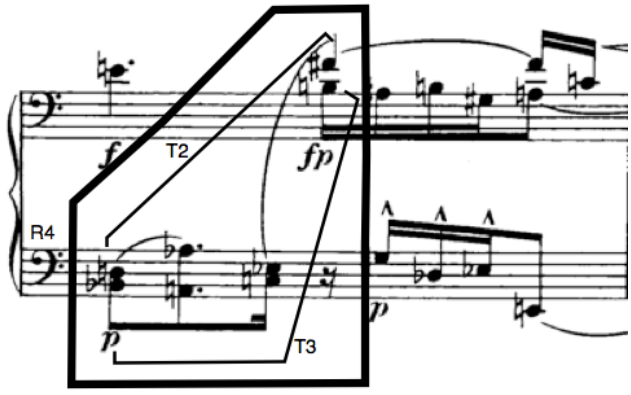
Ex. 10: The Contrapuntal Gesture in mm. 1-3.3 of the Präludium

One unifying feature between the antecedent and consequent is the simultaneous occurrences of T2 and T3, indicated by the rectangles in example 11. Each of the T2-T3 complexes in mm. 1-5.4 forms a two-voice figure: T2 is the upper voice and T3 the lower. The T2-T3 complexes at mm. 2-3 and 5 contain three dyads. They function as an accompaniment to a linear melody that is outlined by another tetrachord. Although T2 and T3 in m. 4 are more independent of each other, they form two dyads (C♭-E♭ and C-E). Moreover, their eighth-note rhythmic articulation contrasts with the sixteenth notes at the bass, showing a connection between T2 and T3.



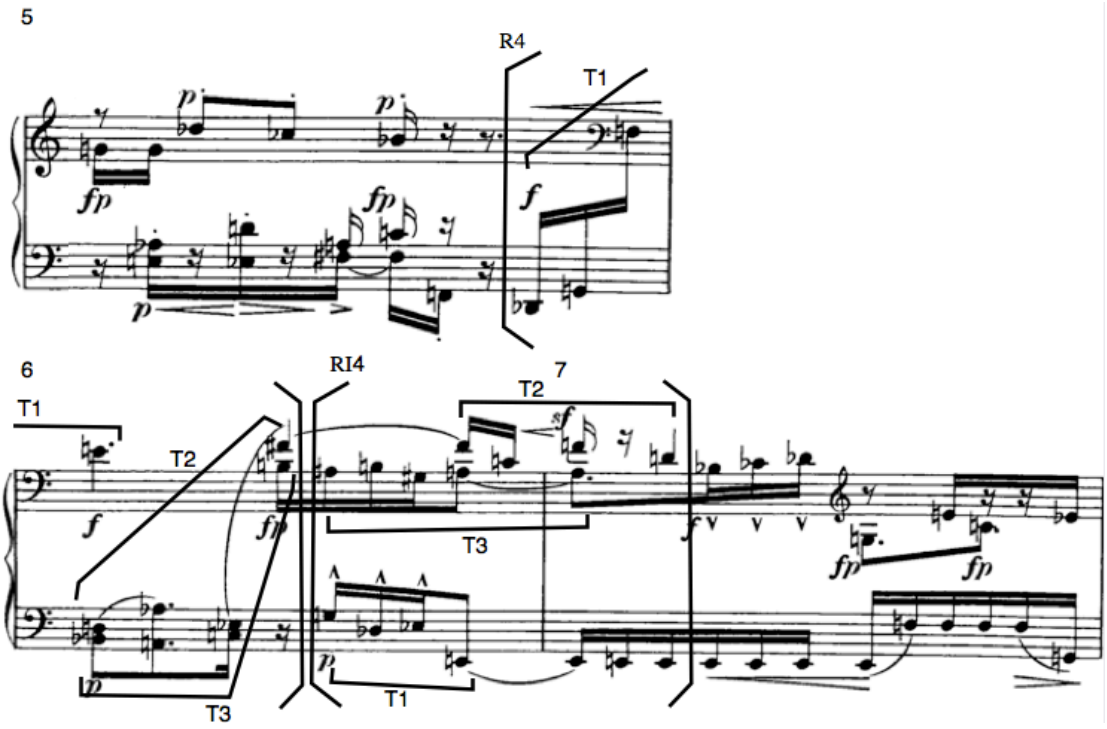
Ex. 11: The Occurrences of T2-T3 Complex in mm. 1-5 of the Präludium

The T2-T3 complex also appears at the beginning of m. 6 (see example 12). In this case, T2 and T3 articulate the same rhythm, forming four consecutive dyads.

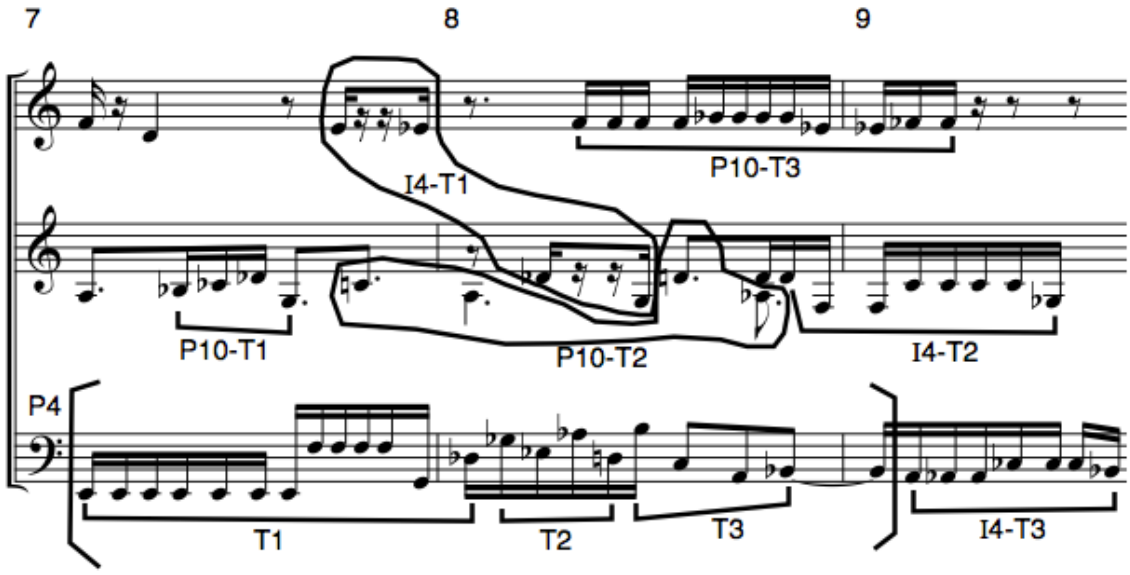


Ex. 12: The T2-T3 Complex in m. 6 of the Präludium

Following the opening period is the second phrase group (mm. 5.5-9.4), in which the row forms occur in two fashions: either individually or simultaneously. Mm. 5.5-7.2 feature one row form at a time, while mm. 7.2-9.4 feature multiple row forms. Example 13 shows that R4 is the only row form to appear in mm. 5.5-6.4, followed by RI4 in mm. 6.5-7.2. Mm. 7.2-9.4 contain three different row forms: P10, P4, I4. They appear simultaneously to form a four-voice polyphonic texture. Example 14 shows the four layers in three staves. The tetrachords from P10 and I4 form the upper three voices as shown on the treble staves, while the linear statement of P4 serves as a bass line in mm. 7-8. This passage highlights the simultaneous occurrence of multiple row forms and concludes Section 1 (mm. 1-9.4) of Part I.

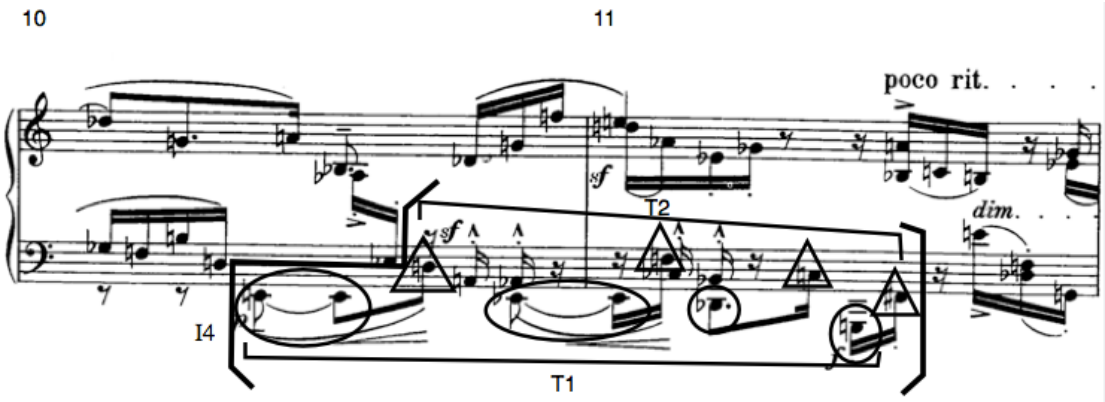


Ex. 13: Mm. 5-7 of the Präludium



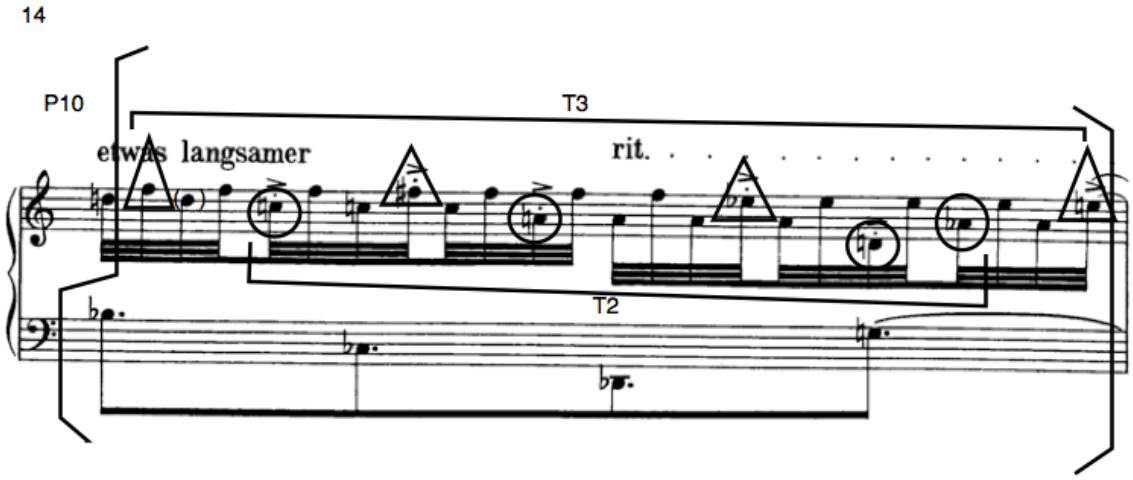
Ex. 14: The Simultaneous Occurrence of P10, P4, and I4 at mm. 7-9.4 of the Präludium

Section 2 (mm. 9.5-16.3) begins with new expression marks—*etwas ruhiger* and *dolce*—as discussed in the previous section. Unlike section 1, members of some tetrachords in section 2 do not appear adjacently; instead, they connect with each other by sharing the same register. For instance, in example 15, the circled notes indicate that $I4^{T1}$ contributes to the lowest register in mm. 10-11. It combines with $I4^{T2}$ (the triangle notes) to form the bass part indicated by downward stems.



Ex. 15: Non-adjacent Statement of Members of Tetrachords in mm. 10-11 of the Präludium

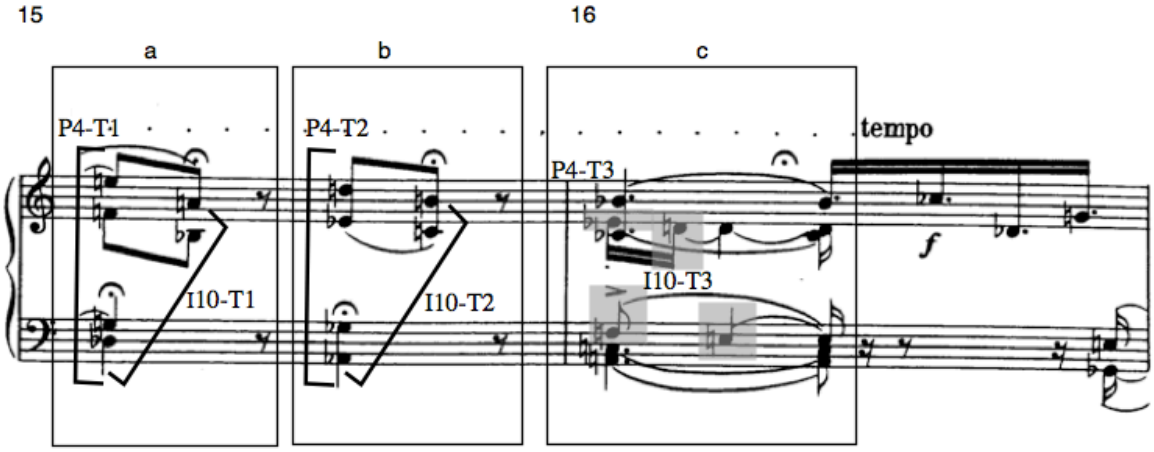
Another instance of registral delineation of tetrachords appears in the right-hand part at m. 14, shown in example 16. The triangles indicate that $P10^{T3}$ contributes to the highest register while $P10^{T2}$ (the circled notes) forms the inner voice. Although the series of 32nd notes look like a single voice, the tetrachords connect the non-contiguous pitches to form a two-voice texture.



Ex. 16: The Tetrachordal Connections of Non-contiguous Pitches in m. 14 of the Präludium

The ending of Part I features three consecutive closing gestures in mm. 15-16.3, labeled a, b and c on example 17. Closing gestures a and b contain three events: a tetrachords on the downbeat, a dyad in the treble staff, and an eight-note rest. Schoenberg uses the invariant dyads G-D♭ and G♭-A♭ in the first and second tetrachords of P4 and P10 to sustain the lower voices. In closing gesture *a*, the downbeat tetrachords is $P4^{T1}$. The treble dyad A-B♭ combines with the G-D♭ dyad in the lower voices to form $I10^{T1}$, highlighting the invariant relationships between P4 and I10. Similar to *a*, the downbeat tetrachord of *b* is $P4^{T2}$. The treble dyad B-C combines with invariant dyad G♭-A♭ to form $I10^{T2}$. In m. 16, closing gesture *c* comprises $P4^{T3}$ and $I10^{T3}$: the four dotted quarter

notes—B♭, C♭, C, A—form the former, while the shaded notes —E♭, F, D, E—form the latter. Since no invariant pitches occur in *c*, the two tetrachords contain eight different pitches.



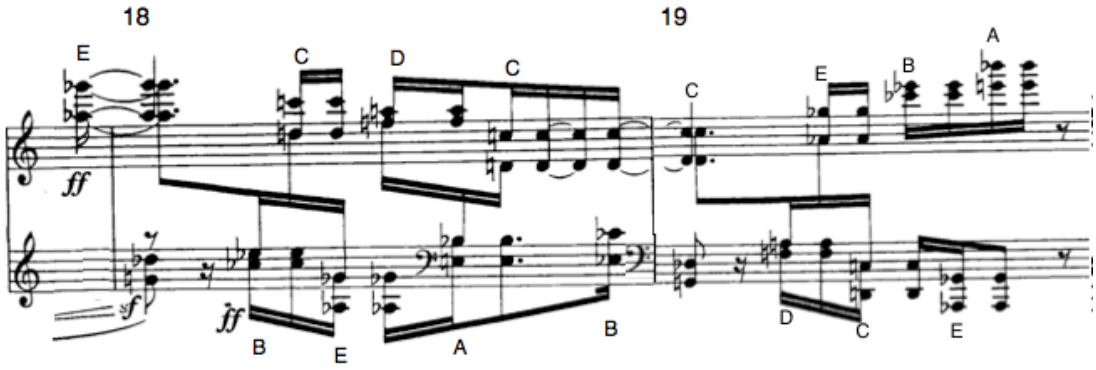
Ex. 17: The Three Closing Gestures in mm. 15-16 of the Präludium

As stated previously, Part II consists of three two-measure units and a coda. These structural units illuminate relationships between rows, as well as the constructive properties of tetrachords. The opening of Part II (mm. 16.4-17) consists of a thematic reprise in the right hand. It is followed by a climax at mm. 18-19, which features dyads formed by two row forms: P10 and I4. Figure 17 lists the pitch-class content of P10 and I4 and elucidates the formation of dyads between two rows. The series of numbers at the top indicates the order positions of the rows. The rectangles show that the two rows combine to form a dyad at a given order position. For instance, at order position 0, B♭ from P10 and E from I4 combine to form an unordered pc set {t, 4}. The dyads formed by P10 and I4 consist of five different unordered pc sets: {t, 4}, {e, 3}, {0, 2}, {9, 5}, and {8, 6}, labeled A, B, C, D and E, respectively.

Order positions:	*0*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*t*	*e*
Unordered pc-set:	A	B			C	D	C	E	D	E	B	A
P10:	t	e	1	7	0	9	2	8	5	6	3	4
I4:	4	3	1	7	2	5	0	6	9	8	e	t

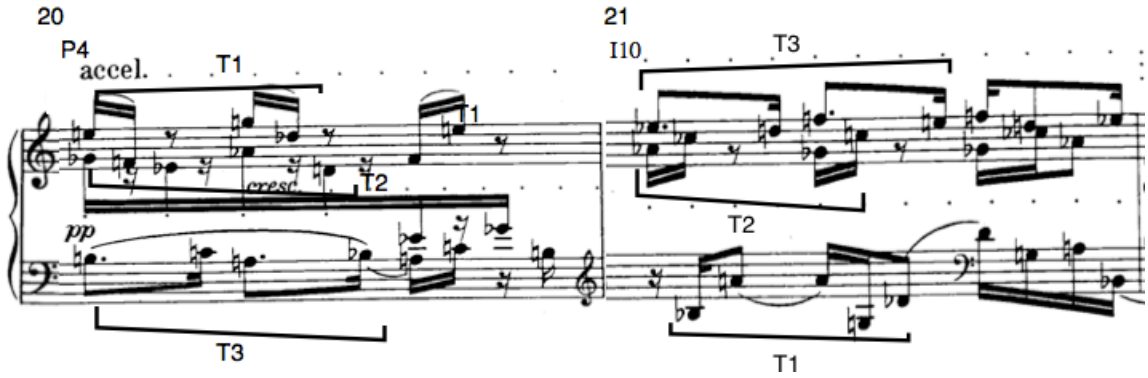
Fig. 17: Dyads Formed by P10 and I4

The dyads formed by P10 and I4 connect the two row forms and create coherence within the two-measure climax. It also serves as a unique twelve-tone technique that differentiates the climax from other structural units. In mm. 18-19, dyads A to E appear in both right hand and left hand. The right-hand dyads combine with the left-hand dyads to form tetrachordal simultaneities, which Schoneberg consolidates into consecutive sixteenth notes. Except for the first left-hand dyad in both mm. 18 and 19 (which is the invariant dyad of P10 and I4), each of the consecutive dyads is formed by P10 and I4. Example 18 shows the distribution of the dyads in mm. 18-19.



Ex. 18: The Distribution of P10-I4 Dyads in mm. 18-19 of the Präludium

The unit that follows the climax is a transition to the coda. This two-measure transition features a three-voice texture, in which the tetrachords from P4 and I10 delineate the layers. Example 19 shows that in m. 20, $P4^{T1}$ forms the top voice, $P4^{T2}$ forms the middle voice, and $P4^{T3}$ forms the lowest voice. To compare with m. 20, the order of tetrachords in m. 21 is inverted: $I10^{T3}$ forms the top voice, $I10^{T2}$ forms the middle voice, and $I10^{T1}$ forms the lowest voice.



Ex. 19: The Tetrachordal Layering in mm. 20-21 of the Präludium

The coda (mm. 23-25) involves complicated twelve-tone techniques, which highlight the generation of vertical trichords from linear tetrachordal segments, as well as relationships among rows. Fusako Hamao provides a detailed analysis of the last two measures of the Präludium in her dissertation "The Origin and Development of Schoenberg's Twelve-Tone Method." Instead of looking at pitches, Hamao works with order numbers. Throughout the Präludium, Schoenberg frequently presents a row as a set of three tetrachords stacked on top of each other, thus producing four vertical trichords: i, ii, iii, and iv, which are the constructive elements for the last two measures of the

Präludium (see figure 18).[40] Arabic numerals are order positions of a tone row: 0-3 represent T1, 4-7 represents T2, while 8-e represents T3. As indicated by the rectangles, order positions 0-4-8, 1-5-9, 2-6-t, and 3-7-e correspond to vertical trichords i, ii, iii, and iv respectively.

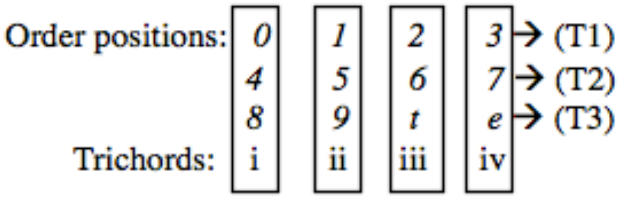
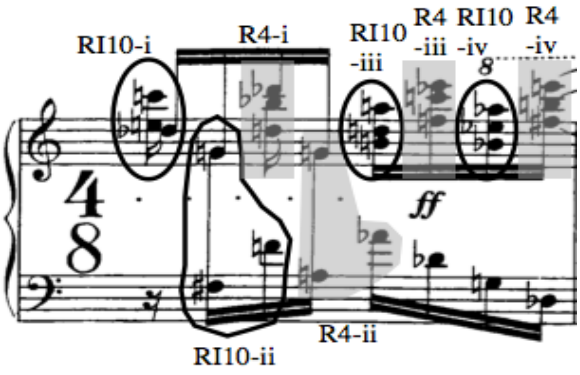


Fig. 18: Hamao's Example Showing the Generation of Vertical Trichords From Linear Tetrachordal Segments

Hamao labels the notes of mm. 23-24 with their order numbers instead of their pitch class numbers. Her analysis reveals that the four trichords of RI10 and R4 appear in alternation in m. 23, as shown in example 20.[41] The circled notes are the trichords of RI10, while the shaded notes are the trichords of R4.

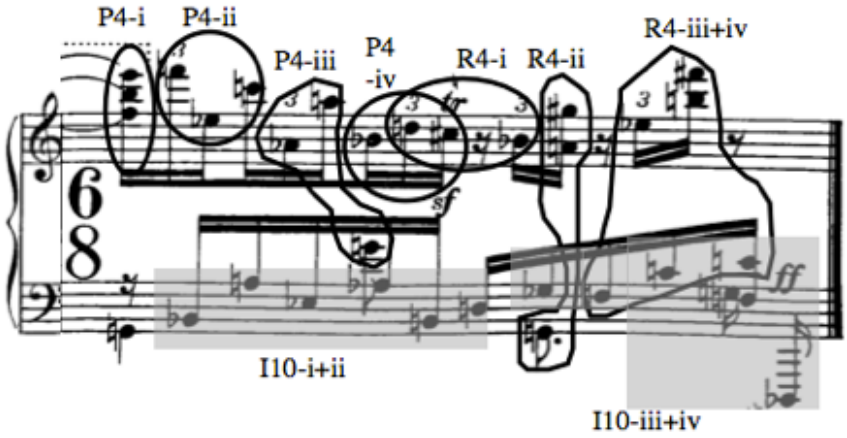


Ex. 20: The Distribution of Trichords of RI10 and R4 in m. 23 of the Präludium

[40] Fusako Hamao, "The Origin and Development of Schoenberg's Twelve-Tone Method." PhD diss., (Yale University, 1988), 206.

[41] Ibid., 207.

M. 24 contains the trichords of P4, R4, and I10 as shown in example 21.[42] The trichords appear as linear melodic events, as well as two-note simultaneities. As some of the trichords occur non-contiguously (such as I10-i and I10-ii), I label two trichords jointly. The circled notes are the trichords of P4 and R4, while the shaded notes are the trichords of I10.



Ex. 21: The Distribution of Trichords of P4, R4, and I10 in m. 24 of the Präludium

Schoenberg prominently uses the P4-I10 row pairing and its retrograde pairing R4-RI10 in the final two measures of the piece, showing that Schoenberg intends to connect two different row forms. The row pairing technique in mm. 22-23 echoes the dyads formed by P10 and I4 in the transition (mm. 20-21) and generates structural coherence.

In summary, my analysis of the Präludium reveals that the surface features are capable of delineating form. The tetrachordal segmentation of tone rows and the relationships among rows are prominent features that fortify the formal design. Schoenberg treats the tetrachords as independent small sets and combines them in

[42] Fusako Hamao, "The Origin and Development of Schoenberg's Twelve-Tone Method." PhD diss., (Yale University, 1988), 207.

different ways to identify various structural units. Another significant feature of the Präludium involves interactions between two rows in two structurally significant units: climax and coda. The row relationships are significant to create structural coherence, and hence comprehensible form.

CHAPTER IV

ANALYSIS OF MENUETT AND TRIO FROM
SCHOENBERG'S PIANO SUITE, OP. 25

The Menuett and Trio are the fifth movement of the Piano Suite. They fulfill classical expectations: triple meter, moderate tempo, and A-B-A tripartite structure.[43] These features match Schoenberg's description of a minuet and trio movement in his *Fundamentals of Musical Composition.* Similar to the full-movement Menuett and Trio, the component Menuett has an A-B-A formal design, while the Trio is in two-part structure. In this chapter, I will first explore the formal design of the component Menuett, followed by the Trio. My intention is to elucidate how musical elements are organized so as to generate structural coherence in the Menuett and Trio.

Formal Design of the Menuett

"A minuet (from a minuet and trio movement) is in A-B-A form, quite similar to the small ternary form."[44] Schoenberg uses the term "recapitulation" to specify the return of the A section, which reinforces his claim that the minuet form is a three-part structure. A similar description of the minuet form appears in Caplin's *Classical Form*: "The vast

[43] The tripartite structure of the Menuett and Trio refers to Menuett, Trio, and da capo.

[44] Arnold Schoenberg and Gerald Strang, *Fundamentals of Musical Composition* (New York: St. Martins Press, 1967), 141.

majority of component minuets in minuet/trio form are organized along lines that closely resemble the small ternary or rounded binary form. Minuet form thus contains the three fundamental functions of exposition (A), contrasting middle (B), and recapitulation (A')."[45] Based on Schoenberg and Caplin's descriptions of minuet form, I propose that the Menuett in the Piano Suite resembles a small ternary form as shown in figure 19. In the following paragraphs, I will first outline the form of the Menuett, followed by the discussion of structural coherence between the initial A section and the final A' section, as well as the contrasting and cohesive elements in section B.

	mm. 1-11	12-16	17-33
Number of measures:	(22)	(5)	(17)
	A :‖	B	A'

Fig. 19: The Organization of the Menuett

The A-B-A Form of the Menuett

As indicated in figure 19, the initial A section (mm. 1-11) concludes with a single repeat sign, which extends the length of section A to 22 measures. The contrasting middle section B spans only five measures, while section A' extends from mm. 17-33. The *rit.* mark at the final measure of section B, m. 16, together with the *tempo* mark at the first measure of A', m. 17, establishes a boundary between sections B and A'. The *ritardando* occurs over the course of m. 16, followed by a *fermata* at the end of the measure. This *fermata* does not elongate a pitch, but rather appears between the last pitch in m. 16 and

[45] William Caplin, *Classical Form: A Theory of Formal Functions for the Instrumental Music of Haydn, Mozart and Beethoven* (New York: Oxford University Press, 1998), 220.

the bar line. This unusual placement of the fermata extends the silence between mm. 16 and 17 and strongly denotes the end of section B.

Structural Coherence Between A and A'

The initial A section is comparable to the final A' section. The corresponding passages in A and A' share similar musical features as summarized in table 1: mm. 1-4 and mm. 17-20 share the same row forms and harmonic content; mm. 5-8 and mm. 21-25 share the same rhythmic articulation; mm. 9-11 and mm. 28-31 share same thematic materials. In this section, I will compare the corresponding passages in A and A' in order to elucidate their structural coherence.

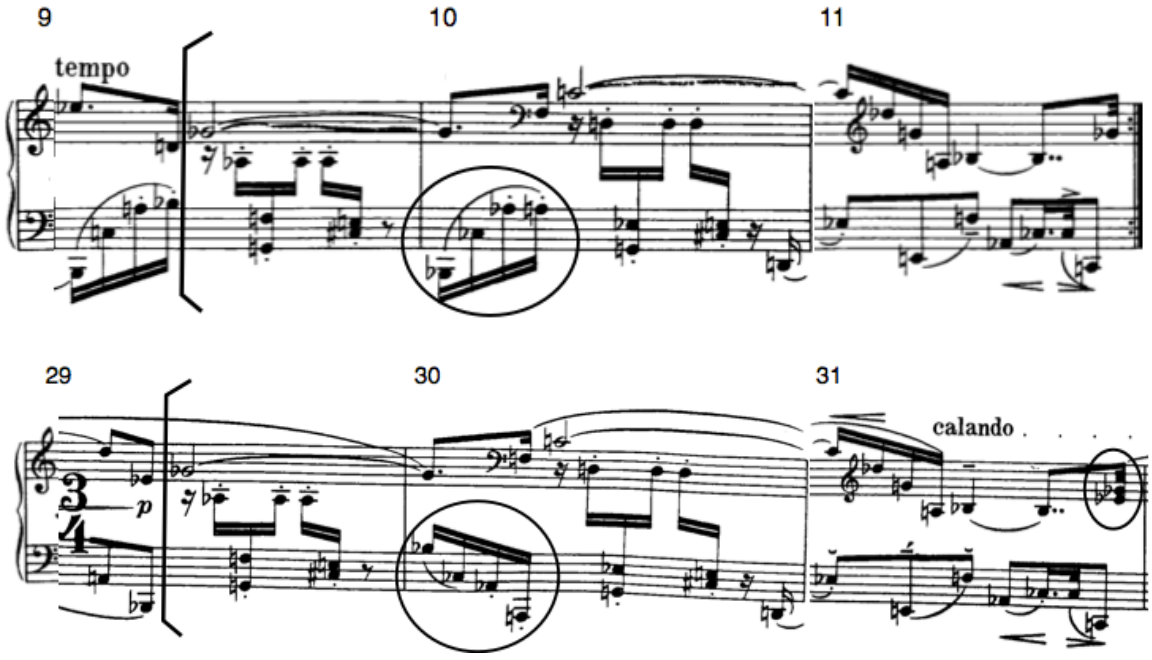
Table 1: Cohesive Elements Between A and A'

Measure no. in A	Measure no. in A'	Cohesive elements
1-4	17-20	Selection of row form Harmonic content
5-8	21-25	Rhythmic articulation
9-11	28-31	Thematic materials (Repetition)

A and A' contain a thematic passage followed by closing materials. In section A, the thematic passage appears in mm. 1-8. It concludes with the *rit.* and *tempo* markings at mm. 8-9, which signal the end of the theme at m. 8 and the beginning of the closing passage at m. 9. Similar to the initial A section, the A' section begins with a thematic passage in mm. 17-26. The *rit…tempo* markings at mm. 23-24 articulate the climax in m. 23.2 to m. 24.1. Another pair of *poco rit…tempo* markings at mm. 26-27 denotes the end of the theme at m. 26, followed by a transition to the closing materials at m. 27.

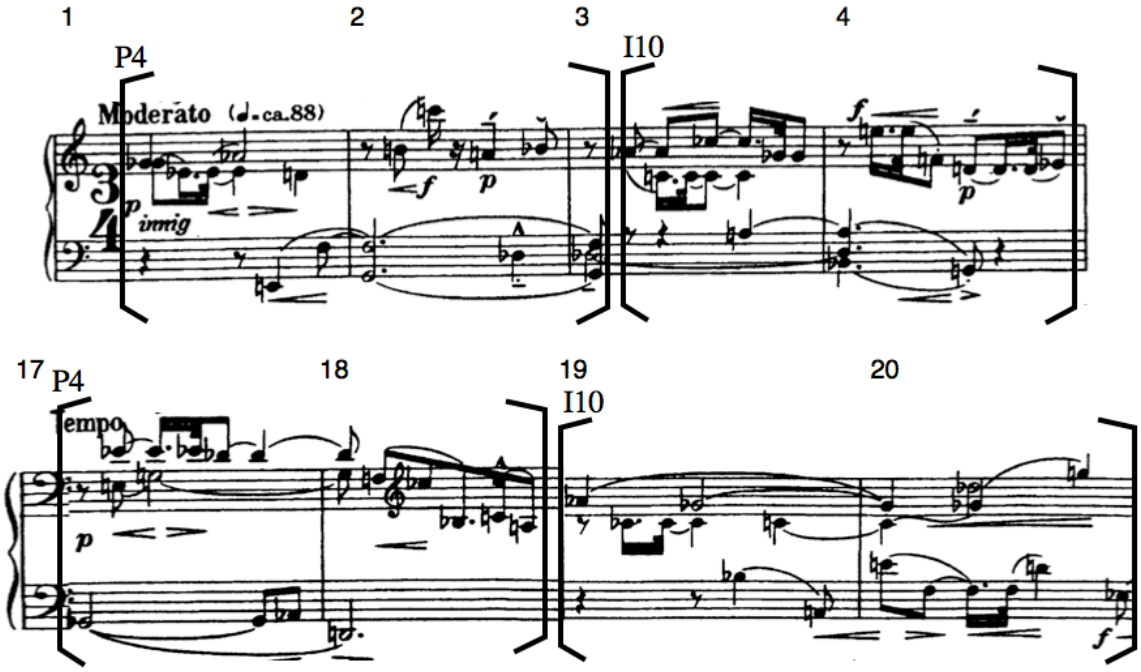
Compared to section A, the additional materials at the climax and m. 26 (in 2/4 meter) extend the thematic passage to be 10 measures in length. After the transition at m. 27, the materials in mm. 28-33 form the closing group. Since the closing materials in A and A' are more similar to each other, I will discuss the structural coherence between the closing materials prior to the discussion on the thematic passage.

The closing materials in A (mm. 9-11) share similar melodic content and rhythm with the closing materials in A' (mm. 29-31). Except for the two slight differences that occur at mm. 30 and 31, the closing materials in A and A' are exactly the same. As shown in example 22, the circled notes in m. 30 share the same pitch-class content with the circled notes in m. 10, but the melodic contour in m. 30 is inverted. The other difference occurs at m. 31, in which the last thirty-second note in the right hand contains an additional E♭4.



Ex. 22: Mm. 9-11 and mm. 29-31 of the Menuett

The thematic passage of A is comparable to that of A'. The same selection of row form connects the first four measures of A and A' as indicated in example 23: mm. 1-2 and mm. 17-18 share the same row (P4), while mm. 3-4 and mm. 19-20 share another row (I10).

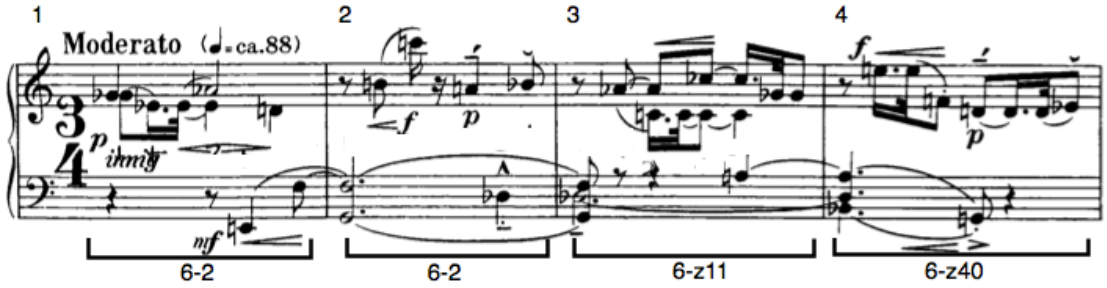


Ex. 23: The Same Selection of Row Form in the First Four Measures of A and A'

The repetition of P4 and I10 connects the opening phrases in A and A'. The two phrases, however, contain different rhythmic and melodic patterns. This indulges my curiosity to explore the harmonic content of mm. 1-4 and mm. 17-20. My investigation of twelve-tone harmonies is based on Martha Hyde's article "Musical Form and the Development of Schoenberg's Twelve-tone Method*"* (1985). As discussed in Chapter II, harmonies in twelve-tone compositions refer to pitch-class sets (pc sets) labeled with Forte names. Hyde states that the form in the Piano Suite depends primarily on harmonic structure. Although the concept of harmony that Hyde refers to is completely different

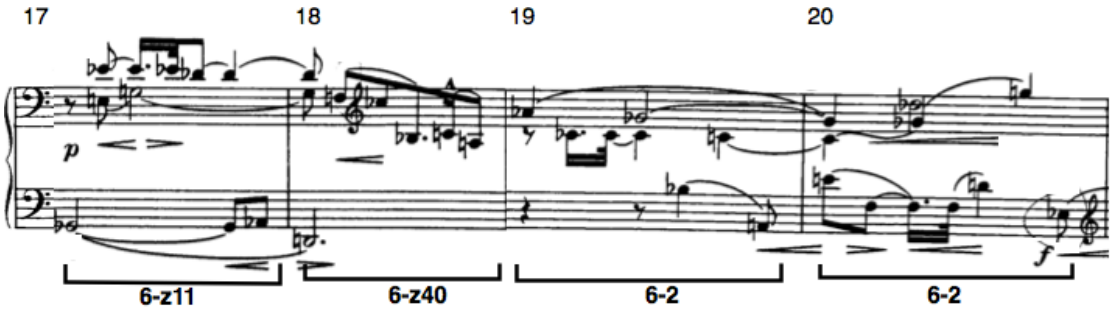
from tonal practice, the harmonic structure in twelve-tone music is capable of generating universal coherence. In the following analysis, I will explore the harmonic structure of two corresponding phrases in A and A': mm. 1-4 and 17-20.

As discussed previously, mm. 1-4 and mm. 17-20 are the opening phrases of A and A', respectively. The two phrases share identical harmonic structure but in a different ordering. In mm. 1-4, each measure contains six different pitch-classes (excluding the notes that are tied across measures), forming four hexachordal harmonies as shown in example 24. Mm. 1 and 2 share the same pc set 6-2, while mm. 3 and 4 form two different z-related sets—6-z11 and 6-z40.



Ex. 24: Harmonic Content of mm. 1-4 of the Menuett

In mm. 17-20, each measure contains six different pitch-classes, forming four hexachordal harmonies as indicated in example 25: m. 17 forms pc set 6-z11, m. 18 forms pc set 6-z40, while mm. 19 and 20 share the same pc set 6-2. The harmonic content in mm. 17-20 is the same as mm. 1-4, but the harmonies appear in different orders. In mm. 1-4, the two 6-2 sets appear prior to the pc sets 6-z11 and 6-z40, while in 17-20, the two 6-2 sets appear after the two z-related sets.



Ex. 25: Harmonic Content of mm. 17-20 of the Menuett

The similar rhythmic articulations in mm. 5-8 and mm. 21-25 further suggest that A' is comparable to A. As I stated earlier in this section, A and A' contain a thematic passage in mm. 1-8 and mm. 17-25. Each of them can be divided into two phrases. For instance in section A, mm. 1-4 form the first phrase and mm. 5-8 form the second. In A', mm. 17-20 form the first, while mm. 21-25 form the second. The second phrase in A and its corresponding passage in A' share a similar rhythmic articulation. It is significant that mm. 5-6 and mm. 21-22 contain identical rhythmic articulations as shown in figure 20. By taking away the extension at the climax in m. 23.2 to m. 24.1 (the materials inside the dotted rectangle), the rhythmic articulation in mm. 7-8 and mm. 23-25 are also the same.

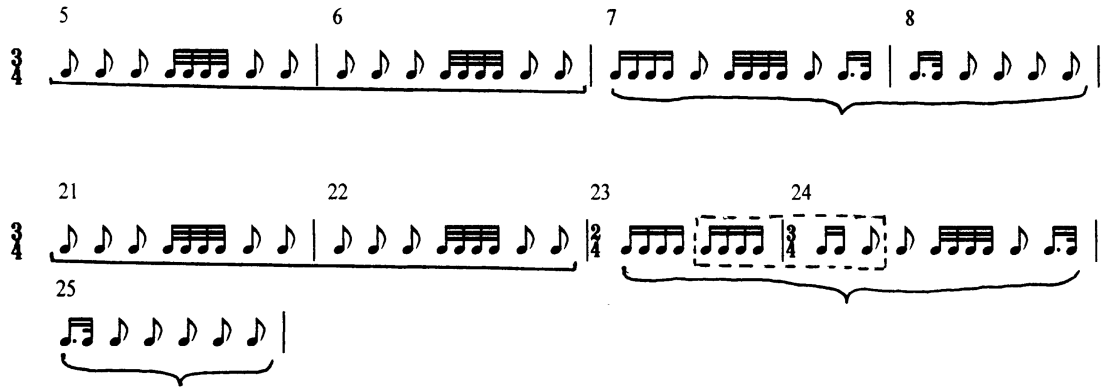


Fig. 20: Rhythmic Articulation in mm. 5-8 and 21-25 of the Menuett

Contrasting and Cohesive Elements in Section B

The Menuett contains a middle section B in mm. 12-16. It contrasts with sections A and A' in dynamics and rhythmic articulations, yet its harmonic organization coheres with the first four measures of A and A'. In the following analysis, I will first explore the contrasting elements—dynamics and rhythmic articulation—followed by the cohesive element—harmony.

The change of dynamics in the opening of the middle section is prominent. Section B begins with *forte* and stays *forte* throughout. In contrast, A and A' both begin *piano.*

With regard to rhythmic articulation, the placement of the dotted rhythm identifies section B from A and A'. The prominent dotted rhythm (𝅘𝅥𝅮.𝅘𝅥𝅯) that first appears in the opening motive of section A also appears in section B. It generates coherence throughout the Menuett, but the placement of the dotted rhythm in the opening measure of section B is unique. In m. 12 the dotted rhythm appears on the downbeats of beat one and beat two, as shown in figure 21. When compared with A and A', the dotted rhythm appears on the upbeat except for the two instances in mm. 8 and 25.

Fig. 21: Rhythmic Articulation in m. 12 of the Menuett

The harmonic content in the middle section exhibits structural coherence on a deeper level. The first four measures of section B (mm. 12 to 15) form a symmetrical harmonic organization, which corresponds to the opening two measures of A and A'. In mm. 12-15, each measure contains six different pitches, forming four hexachordal

harmonies as shown in figure 22. As indicated by the dotted rectangles, the two measures in the middle (mm. 13 ad 14) share the same hexachordal harmonies, pc set 6-z13, while mm. 12 and 15 share another hexachordal harmony, pc set 6-z42, as indicated by rectangles with solid lines. The harmonic content in mm. 12-15 displays a symmetrical design as indicated by the arcs below the rectangles.

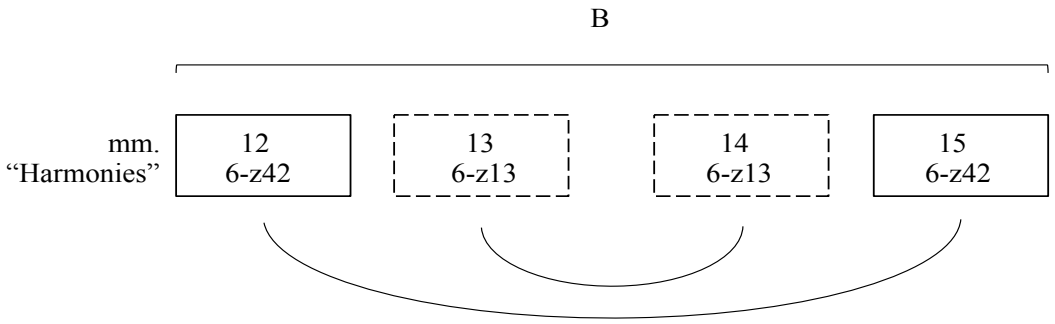


Fig. 22: Symmetrical Harmonic Organization in mm. 12-15 of the Menuett

The symmetrical design in section B is further corroborated by rhythmic articulations. Mm. 13-14 share the same rhythmic articulations: ♪ ♪ ♪ ♬ ♪ ♪, while mm. 12 and 15 share another set of rhythmic articulations: ♬ ♪ ♬ ♪ ♪ ♪.

The symmetrical harmonic organization in section B is a miniature of the harmonic design between A and A'. The harmonic content in mm. 1-4 and mm. 17-20 display symmetrical property, which echoes with section B. As indicated by the solid line rectangle in figure 23, mm. 1-2 and mm. 19-20 share the same harmonic content, pc set 6-2, while mm. 3-4 and mm. 17-18 feature another set of hexachordal harmonies, pc sets 6-z11 and 6-z40.

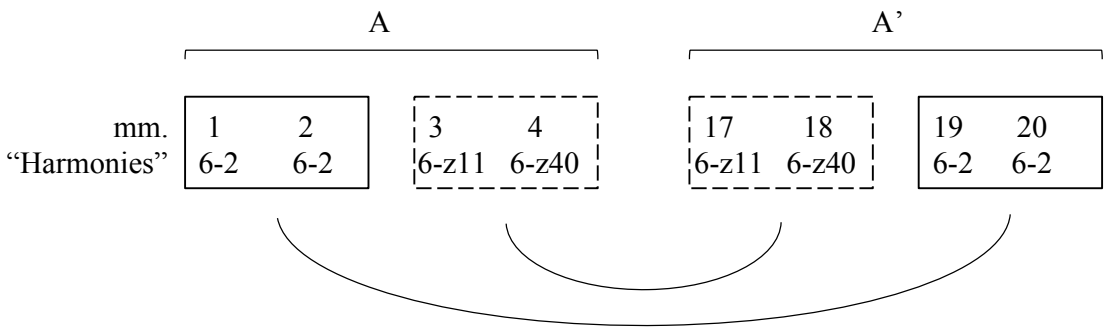


Fig. 23: Symmetrical Harmonic Organization in mm. 1-4 and 17-20 of the Menuett

My analyses of the Menuett shows that A' is comparable to A because of the selection of row form, harmonic content, rhythmic content, and thematic repetition. Section B contrasts with the initial A section and the final A' section in dynamics and rhythmic articulations, yet the harmonic organization connects B with A and A'. My study also reveals that the serial technique works well with other musical elements to generate structural coherence. The cohesive elements outline the form of the Menuett effectively, showing that the formal design of the Menuett resembles the small ternary structure of the minuet in the Baroque instrumental suites.

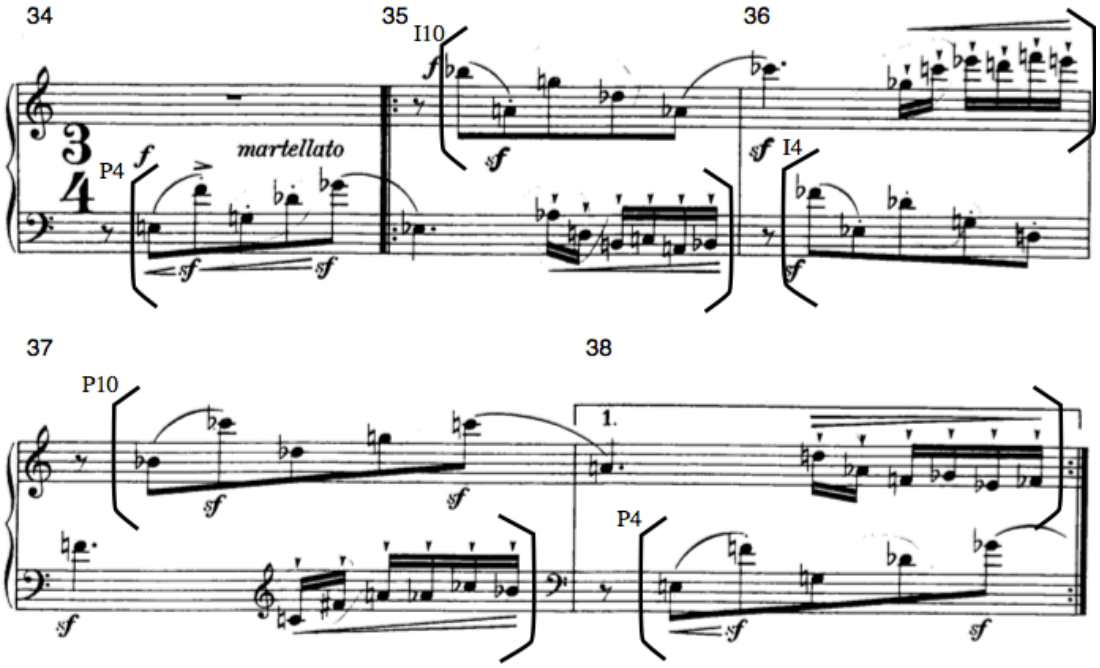
Formal Design of the Trio

In the full-movement Menuett and Trio, the Trio serves as the middle section. Although the Trio is not an independent movement, it has its own formal design. In this section, I will elucidate how musical elements—presentation of tone rows, selection of row forms, hexachordal harmonies—create the structure of the Trio.

The Trio is in two-reprise binary structure. Mm. 34-39 belong to Part A, while mm. 40-44 belong to Part B. The two pairs of repeat signs at mm. 35, 38 and mm. 40, 43 signal the two-part structure. The Trio contains two voices: right hand and left hand. Both

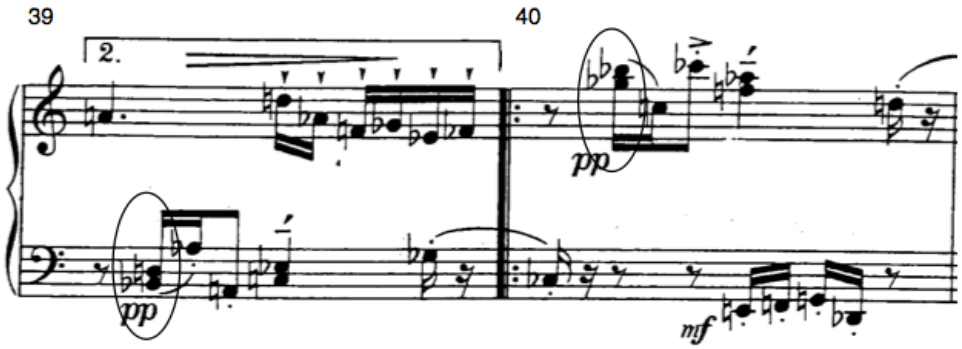
hands share the same rhythm. The right hand enters three beats later than the left hand, featuring the inverted melodic contour of the left hand.

The presentation of tone rows in the Trio is straightforward. In Part A, the tone rows present linearly as motives in each hand, while the opening measures of Part B contain two dyads. Two different row forms appear simultaneously in every measure (except for the opening measure): one row form in the right hand, and the other row form in the left hand. In Part A, the left hand contains linear presentation of P4 and I4, while the right hand contains I10 and P10, as shown in example 26.



Ex. 26: Linear Presentation of Tone Rows in mm. 34-38 of the Trio

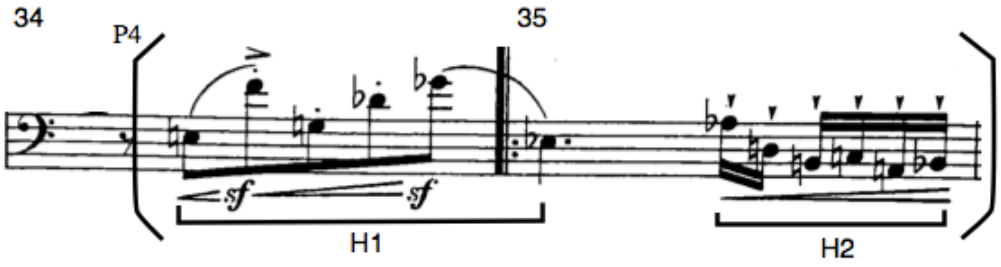
In Part B, the tone rows also appear as linear melodic events, except for two incidents in mm. 39 and 40. The two-note simultaneities—B♭-D♮ and G♭-B♭—occur in the left-hand part of m. 39 and in the right-hand part of m. 40, which provide distinctive sonority to the music; they, hence, signal the beginning of Part B (see example 27).



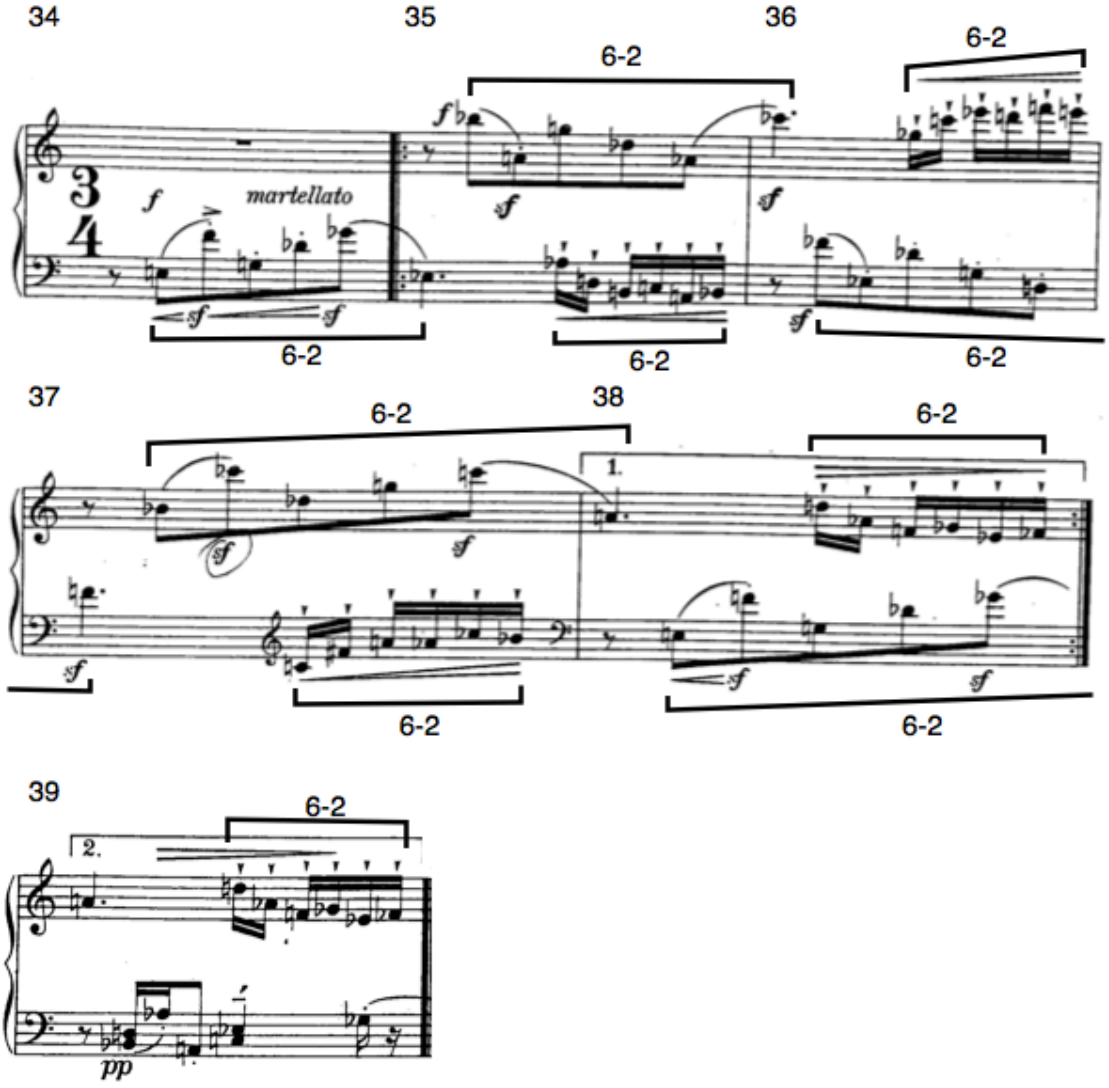
Ex. 27: The Two Dyads in mm. 39 and 40 of the Trio

The selection of row forms outlines the two-part structure of the Trio: Part A highlights prime forms and inversions, while Part B features retrogrades and retrograde-inversions.

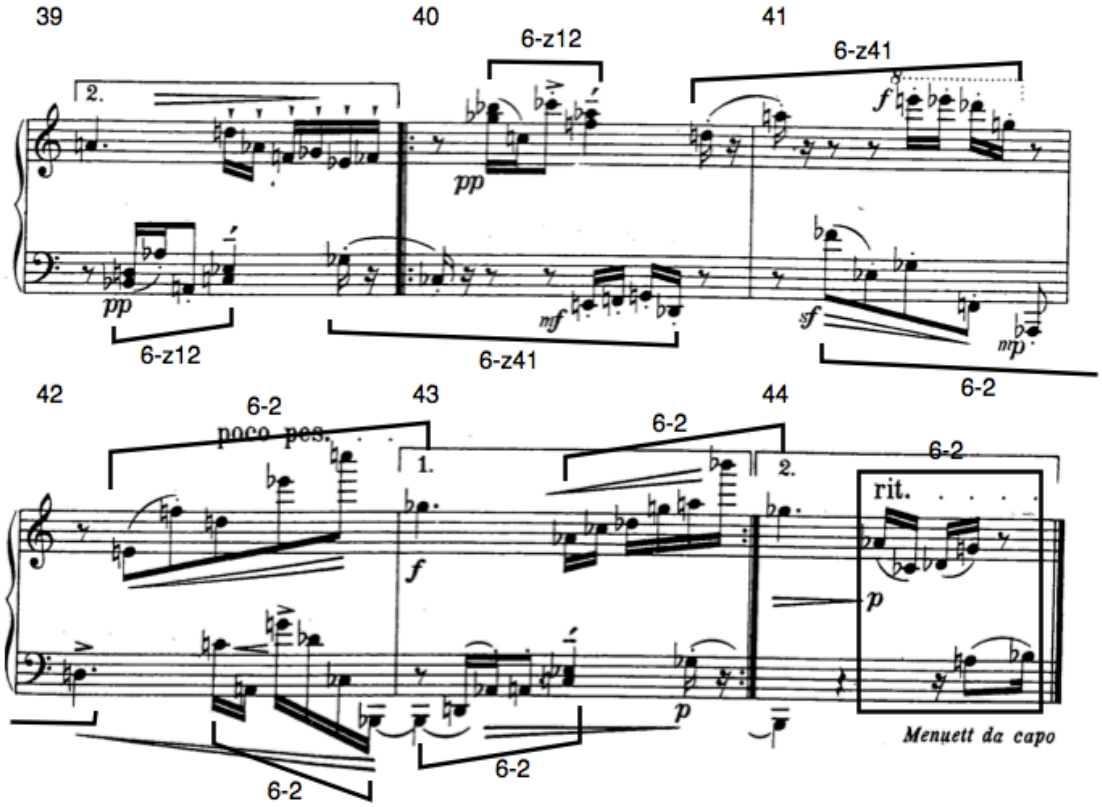
Hexachordal harmony is another crucial device that articulates the two-part structure of the Trio. Both Parts A and B feature hexachordal segmentation of a tone row, in which rhythm is the prominent element that divides the tone row into hexachords. For instance in the left hand of mm. 34-35 (see example 28), the five consecutive eighth notes in m. 34 and the dotted quarter note in m. 35 form the first hexachord (H1) of P4, while the six consecutive sixteenth notes in m. 35 form the other hexachord (H2). The hexachordal harmonies in Parts A and B are different: all hexachords in Part A form pc set 6-2 (see example 29), while in Part B, mm. 39-41 contain z-related sets 6-z12 and 6z-41 (see example 30). The 6-2 set recurs in m. 41 (left-hand part) through m. 44, implying a "modulation" back to the "home key".



Ex. 28: Hexachordal Segmentation of P4 in mm. 34-35 of the Trio



Ex. 29: Pitch-class Sets 6-2 in Part A of the Trio



Ex. 30: Pitch-class Sets 6-z12, 6z-41, and 6-2 in Part B of the Trio

My analyses of the Menuett and Trio exemplify Schoenberg's assertion: "composition with twelve tones has no other aim than comprehensibility."[46] The cohesive elements in the Menuett and Trio create comprehensible forms that fulfill intellectual and emotional satisfaction. Although Schoenberg's twelve-tone works are highly organized, one might fail to gain understanding because of the new medium of organization.[47] In the Menuett, for instance, the opening melody does not repeat in the recapitulation as in tonal music from the common practice period. Instead, the relationships between the exposition and the recapitulation are based upon abstract elements, for example, the twelve-tone

[46] Arnold Schoenberg and Leonard Stein, *Style and Idea: Selected Writings of Arnold Schoenberg* (New York: St. Martins Press, 1975), 215.

[47] Ibid.

harmonies.

Schoenberg believed that the coherence in music is the expression of a musical idea, which creates the totality of a musical work. In the Menuett, for instance, the connection between the recapitulation (A') and the exposition (A) is not based on melodic or thematic materials. It is the musical relation itself that creates the wholeness of a work. In its narrowest sense the idea is a musical relation, but in its broadest sense it is the totality of a piece that makes the music comprehensible.[48]

[48] Julianne Brand and Christopher Hailey, *Constructive dissonance: Arnold Schoenberg and the transformations of twentieth-century culture* (Berkeley: University of California Press, 1997), 148.

CHAPTER V

CONCLUSION

My study of the Präludium and Menuett and Trio highlights the overall shape of an entire movement from the Piano Suite. It reveals how surface features interact with twelve-tone techniques to generate structural coherence and comprehensible form.

Schoenberg uses classical forms—two-part form and A-B-A form—to organize musical ideas in the Präludium as well as the Menuett and Trio. Similar to tonal music, Schoenberg uses common musical elements—dynamics, rhythmic articulations, thematic repetitions, expression marks—to create coherence and contrast among structural units. The musical elements pertinent to the manipulation of the tone row fortify the compositional logic on a firm basis and at the same time avoid tonal implications.

My analyses show that surface features are crucial to signal the constructive properties of the tone row that occur on a deeper level. For instance in mm. 18-19 of the Präludium, the abrupt change of dynamics and the consecutive sixteenth note rhythm animate the row relationship between P10 and I4. Composition with twelve tones depends on abundant relationships generated by a single row. Some relationships, for example twelve-tone harmonies, are too abstract and difficult to comprehend from the surface level. My study illuminates that the understating of Schoenberg's twelve-tone music not only depends on the apperception of constructive properties of a tone row, but also the observation of musical features that appear at the surface level.

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