

THE MAGICAL KALEIDOSCOPE:
Schoenberg's First Atonal Masterwork,
Opus 11, Number 1

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In a well-known article, Schoenberg expressed an opinion with which few who have studied his music intensively could agree:

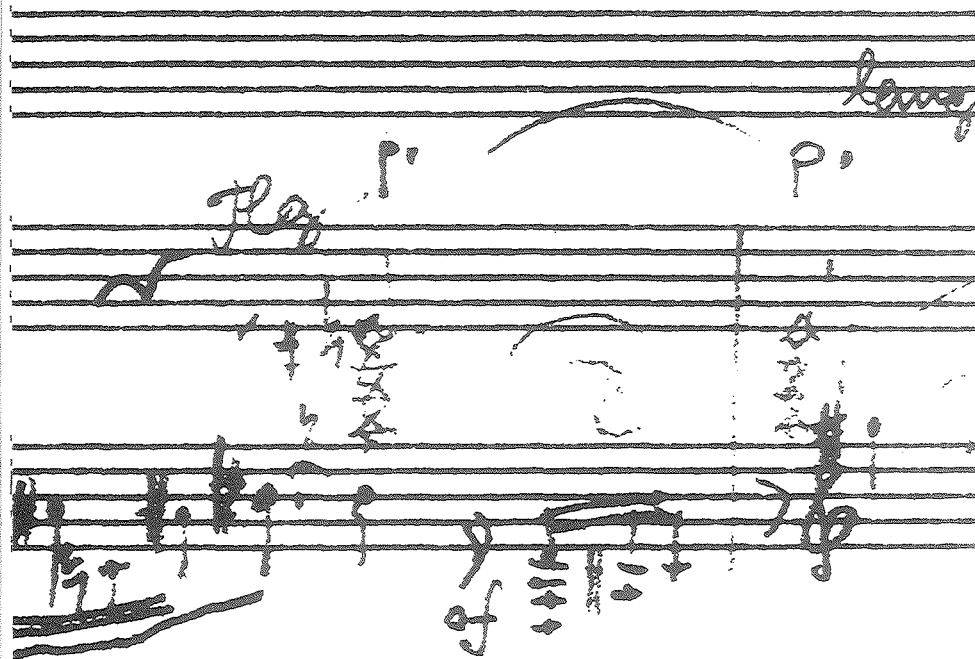
May I venture to say that, in my belief, even works of my third period, as, for example, the *Three Piano Pieces*, Op. 11, or the *Five Orchestral Pieces*, Op. 16, and especially *Pierrot Lunaire*, Op. 21, are relatively easy to understand today.¹

Of the works listed by Schoenberg here, the *Three Piano Pieces*, Op. 11, are crucial to his development—in particular, the first piece of Op. 11, which, as indicated in the subtitle of this article, may be regarded as the first atonal masterwork, the first work without text that depends solely upon its atonal musical organization for its coherence and beauty. Opus 11, Number 1, has challenged analysts since it first appeared, in contradiction to the view Schoenberg expressed above two years before his death. The present study represents a further effort to understand this celebrated, path-breaking, and refractory musical object.

Chronology and Source Documents

Opus 11, Number 1, was completed in Vienna on February 19, 1909. To place this date in proper perspective with respect to Schoenberg's development of atonal techniques, let us consider the two works that bracket it: the song "Am Strande" (completed February 8, 1909) and the final song (Number XV) of *Das Buch der Hängen-*

¹ *Style and Idea*, p. 79. Complete bibliographical data for all citations in the footnotes is given in References.



den Gärten, Op. 15.² After this time there was apparently a hiatus of some two months in Schoenberg's compositional activity. The next work completed was the first piece of *Five Pieces for Orchestra* Op. 16 (particell dated May 23, 1909). The third piece of Op. 11 was not completed until August 7, 1909, about the time he was completing the *Five Pieces for Orchestra*.³

In this chronology, the song "Am Strande" occupies a critical position, for it is a full-fledged atonal work that exhibits the same structural processes to be found in Op. 11/1. As is now generally known, this work was the first to use piano harmonics (not Op. 11/1). Moreover, in general style-use of extreme registers, rapid rhythmic figures, short referential motives—the work strongly resembles Op. 11/1. Opus 15, Number 15, on the other hand is a hybrid in style, suggesting that it may have been started at an earlier date only to be completed after the composing of "Am Strande" and Op. 11/1. However that may be, there are strong indications of reluctance on the composer's part to take what he later called "the decisive steps."⁴ "Am Strande" was set aside after completion and only published posthumously (in the Collected Edition, 1966). And anyone who sees the original manuscript of Op. 11/1 cannot fail to detect in the small pencil handwriting a certain diffidence. This was, of course, not long after the scandal that attended the first performance of the Second String Quartet, Op. 10, by the Rosé Quartet at the Bösendorfersaal in Vienna, and the subsequent uproar in the press.

There are no extant sketches for any of the movements of Opus 11, nor are there any revisions in the manuscript. (There are, however, revisions in the manuscript of Op. 11/3, and these are reproduced by Brinkmann in the Critical Report.) A thorough description of the source documents is given by Reinhold Brinkmann in the Critical Report to the Collected Edition.

²"Am Strande" is dated a year earlier by Maegaard. However, Brinkmann is correct in assigning it to 1909. See Forte, "Schoenberg's Creative Evolution. . . ."

³However, as demonstrated by David Lewin, the third piece represents, if anything, an intensification of the structural processes of Op. 11/1.

⁴"The most decisive steps forward occurred in the Two Songs, Op. 12 [i.e., Op. 14], and in the Three Piano Pieces, Op. 11." *Style and Idea*, p. 110.

Analyses of Opus 11, Number 1

There is a long history of published analyses of this work, beginning soon after the score was published, in October, 1910 (Réti). Those mentioned here are listed in the References. Many of them attempt to place the music in some kind of tonal framework. For example, Leichtentritt writes the following about the first eight measures:

Of atonality there is no trace. One might possibly speak, however, of polytonality, of different tonalities heard simultaneously. The principal melody (a) has the Phrygian tonality, E, F, G, A, B. The alto part has already been identified as B minor. [430]

Brinkmann follows Leichtentritt in emphasizing the compass of a fifth traversed by the melodic theme in mm. 1–3 (B–E) and finds other tonal attributes in the work. However, Brinkmann has a great deal more to say about the piece, and his study is certainly the longest published discussion of this music.

Von der Nüll read the opening three measures in E major-minor, with F on the third quarter of m. 2 as lower neighbor note to F#, the A that precedes it as an upward skip of a seventh above B (hence dominant-related), and so on.

Even as recently as 1977 (Samson), one finds references to "residual tonality" in this music, along with somewhat vague speculations concerning centric pitch functions:

There are indications that the E flat which concludes Schoenberg's Op. 11, No. 1 has a centralizing function in the piece as a whole. [213]

Perle, however, designates Op. 11/1 as "Schoenberg's earliest consistently atonal opus" [12] and includes an extensive analysis based on his idea of the intervallic cell as a generator of structures of larger scale. Ruth Friedberg also views Opus 11 as unequivocally atonal. And Jan Maegaard's rather detailed analysis assumes non-tonal structure.

The most interesting published treatment of Opus 11/1 is Wittlich's article, which employs sophisticated analytical techniques to reveal significant features of the music. Finally, brief mention of the first piece is made in the present author's "Sets and Nonsets. . . ."

No attempt will be made here to evaluate critically any of these analyses. Suffice it to say that the existence of the present article reflects the author's belief that a more comprehensive analytical

treatment of this key work is in order. (It is also the author's firm conviction that this will not be the last published analysis of Op. 11/1.) It is hoped that the analysis will help dispel some of the gross misunderstandings about Schoenberg's atonal music that have been abroad for all too many years now. A short example:

The renunciation of repetitions, even varied repetitions, placed in jeopardy the very fundamentals of the Western musical experience.⁵

As will be apparent in the analysis that follows, repetition is the central musical process in Op. 11/1.

Form

Unlike the last movement of Opus 11, which is virtually 'athematic,' the first movement of the composition has clearly delineated themes and motives which determine the external form of the work. As will be shown, the real internal form is determined by the pitch structures that organize the music; these present a continuum of far greater subtlety and complexity than that indicated in the summary of the succession of parts (Example 1).

The large outline of the movement is ternary, and resembles a short sonata form. Within the large sections is a rapid succession of short sections, often creating strong contrasts in register, dynamics, and rhythm. It is this aspect of the music that lends it its passionate and rhapsodic character.

The classical ternary design pervades the work in an extraordinary way (Example 1). Within the large A B A are smaller A B A forms. Indeed, the Exposition includes a varied repetition of the initial A B A, indicated by square brackets in Example 1. And although the form of the Development is more difficult to discern at first, it resolves, once again, into an A B A, as shown in Example 1. The analytical decisions represented in that reading, however, are based not only on the external configurations (motives), but also take into account the harmonic components. This will become clear as the discussion proceeds.

⁵Stuckenschmidt, H. H., *Schoenberg: Leben, Umwelt, Werk*, Zürich, 1974. [*Der Verzicht auf Wiederholungen, selbst variierte Wiederholungen, stellte die Grundlagen des abendländischen Musikempfindens in Frage.*]

Example 1: Overview of Form

A. Exposition

		1-3	4-8	9-11
A	1-11	a	b	a'
B	[12-14 15-16	Episode ('new material')		
		Transition		
A	[17-18 19-24	Return of a'		
		Return of b		
[A]	25-27	Canonic episode resembling b, with variant on a		
[B]	28-30	Canonic episode related to 12-16		
[A]	31-33	Final statement of a		

B. Development

[A]	34-38	
[B]	39-41	(39 = 12)
[A]	[42-45 46-49 50-52	(49 = 29)

A. Recapitulation

	53-55	a
	56-58	b
	59-64	a

Example 2: *The Harmonic Vocabulary of Opus 11, Number 1;*
The Six Hexachords and Their Complements

6-Z3 [433221] 6-Z36

6-Z10 [333321] 6-Z39

6-Z13 [324222] 6-Z42

6-16 [322421]

6-Z19 [313431] 6-Z44 Es-C-H-B-E-G

6-21 [242412]

The Harmonic Vocabulary of Opus 11, Number 1

The harmonic vocabulary selected by Schoenberg for this extraordinary work is quite restricted. It consists of six hexachords and their complements, six pentachords and their complements, and two tetrachords and their complements.⁶ Example 2 displays the six hexachords (and their complements) and establishes the nomenclature that will be used in this article.⁷ A few words of explanation will help the uninitiated reader follow the discussion.

Each hexachord has a unique name, consisting of the numeral 6 (which designates the number of elements in the hexachord) followed by a hyphen, followed by a number. The alphabetic character Z preceding that number indicates that there is another hexachord which has the same interval content (hence is its complement) but a different referential pitch form. These 'Z' hexachords are paired off in Example 2, so that 6-Z3 is opposite its complement 6-Z36, 6-Z10 is opposite its complement 6-Z39, and so on. The two hexachords not of the 'Z' type are self-complementary: 6-16 and 6-21.

Some of these hexachords were special favorites of the composer's. For example, 6-Z10/39 occur in Op. 23/4. The hexachordal pair 6-Z13/42 is fundamental to *Die Jakobsleiter*, while 6-Z19/6-Z44 occur in every atonal and 12-tone work. And 6-21 is the first hexachord of *Pierrot Lunaire*, Op. 21. Since there are no sketches for Opus 11, and, in general, precompositional sketches for the atonal works are extremely scarce, we do not know how systematically Schoenberg explored the properties of the hexachords. However, from the analytical evidence, it is clear that the intricate manipulation of these hexachordal materials was completely natural to him.

The hexachordal pair 6-Z19/44 occupies a very special position in Schoenberg's *oeuvre* because 6-Z44 is his musical signature, Es-C-H-B-E-G.⁸ Often it occurs in a very concealed way or as an incidental flourish. In Op. 11/1, however, both hexachords are important structural components throughout.

⁶In Op. 23/4, the last atonal composition (except for the *Variations on a Recitative for Organ*, Op. 40), Schoenberg used an even smaller collection of harmonies (sets): three hexachords and their complements account for all the pitch configurations in that work. Given Schoenberg's numerical bent, the selection of exactly six hexachords for Op. 11/1 is more than fortuitous.

⁷See Allen Forte, *The Structure of Atonal Music*, (New Haven and London: Yale University Press, 1973).

⁸As explained in "Schoenberg's Creative Evolution. . . ."

Example 3: *The Harmonic Vocabulary of Opus 11, Number 1;*
The Six Pentachords and Their Complements;
The Two Tetrachords and Their Complements

5-13 [221311] 7-13 [443532]

5-Z17 [212320] 7-Z17 [434541]

5-Z18 [212221] 7-Z18 [434442]

5-21 [202420] 7-21 [424641]

5-Z37 [212320] 7-Z37 [434541]

5-Z38 [212221] 7-Z38 [434442]

4-7 [201210] 8-7 [645652]

4-19 [101310] 8-19 [545752]

Example 3 displays the remaining harmonies of Op. 11/1: the six pentachords and their complements and the two tetrachords and their complements. Like the hexachords, some of the pentachords have special attributes. For example, 5-Z17 has the same interval content as 5-Z37; and 5-Z18 has the same interval content as 5-Z38. And again, some of these collections or *sets*, as they will be called in this article, are special favorites of Schoenberg. For example, 5-21 is expressed as the opening melodic theme of the *Five Pieces for Orchestra*, Op. 16. And 4-19 is found so frequently in his atonal music that it almost acquires the status of a consonant triad in a tonal work.

These harmonies, or sets, are displayed in Examples 2 and 3 in a basic abstract referential form, called Prime Form. In the actual music, they have many different pitch representations and assume various musical shapes. Unlike such collections in the 12-tone music of Schoenberg, there is no fundamental ordering imposed upon or deducible from the set: these are *unordered* sets, which is not to say that order of the components of the sets is unimportant, but that there is no canonical ordering to which other permutations must refer if they are to be properly interpreted in an analysis, as is the case in 12-tone music.

Although successive occurrences of the same set may vary with respect to pitch content, order, and musical configuration, one feature of the set always remains fixed: total interval content. In the displays of Examples 2 and 3, interval content is indicated by the array of numbers enclosed within square brackets: the interval vector. This is an ordered array in which the first (leftmost) digit specifies the number of intervals of class 1 (minor seconds, major sevenths, minor ninths), the second digit specifies the number of intervals of class 2, and so on, until the rightmost digit gives the number of intervals of class 6 (tritones). Evidently Schoenberg selected hexachords of considerable diversity as well as similarity with respect to interval content. This is only one of several technical features responsible for the sonic richness and subtlety of the work. Consider, for example, hexachords 6-Z10 and 6-21:

6-Z10: [333321]
 6-21: [242412]

Set 6-Z10 occurs as the upper voice melodic theme in mm. 1-3, while 6-21 is the upper voice of mm. 9-11, the 'variant' on the theme so often cited in analyses of Op. 11/1. Yet, they are totally different with respect to interval content. Whereas 6-21 has a large number of intervals of classes 2 and 4, thus giving it a 'whole-tone' cast, 6-Z10 has a much flatter intervallic profile, with the same number of intervals in classes 1 through 4 and the same number of intervals in classes 5 and 6.

Readers who are familiar with Op. 11/1 and with analytical studies of the work may wonder why trichords are not included as part of the basic harmonic vocabulary. Trichords will indeed be included in the analysis below, but they lie always at the surface of the music and require no analytical skill to ferret out—hence must be obvious to any reader. In general, trichords are ubiquitous in atonal music and play a role analogous to dyadic motives in tonal music, while the basic structural components are larger sets, in the case of Op. 11/1, hexachords. Just how pervasive trichords are will be suggested by the fact that the first melodic trichord in Op. 11/1, B-G#-G (type 3-3), is found at least once in each of the hexachords of Example 2.

Thematic Statements of the Hexachords

Each of the structural hexachords either comprises a thematic component in the music or (in the case of 6-Z44 and 6-Z19) is a somewhat concealed subcomponent of a thematic statement. Example 4 provides specifics.

Set 6-Z36 is the left-hand accompaniment of the variant on the first theme in mm. 10-11. Its complement then occurs as the left-hand accompaniment when that melodic theme returns in mm. 17-18—a remarkable transformation. In m. 18 the trichord is not identical to its counterpart in m. 11, but it is of the same type. Set 6-Z10, one of the most important hexachords in the movement, is introduced, not surprisingly, as the melodic theme at the very opening of the music. Its complement is the left-hand part of the antecedent phrase in mm. 4-5. Set 6-Z42 is the content of the contrasting phrase in m. 7, and its complement, 6-Z13 is the first hexachord in the dramatic figure at the beginning of the B section in m. 12. Set 6-16 is the left-hand accompaniment of the opening melodic theme, and, together with 6-Z10, is a major component in the entire movement. Sets 6-Z44 and 6-Z19 occur in somewhat concealed form, as shown in Example 4, but as subcomponents of thematic configurations.

And, finally, set 6-21 receives its thematic exposure as the upper voice of m. 9.

Example 4: The Six Hexachords and Their Complements; Initial Thematic Statements

6-Z36/3
[435221]

6-Z10/39
[535321]

6-Z42/13
[524222]

6-16
[522451]

6-Z44/19
[513451]

6-21
[242412]

The coherence of Op. 11/1 as well as its special elusive quality are provided by the dynamic and kaleidoscopic transformations beneath what appears to be a conventional musical surface composed of themes and motives. These transformations create an interlocking of protean musical configurations that forms a multi-leveled and many-faceted object, a kind of structure that Schoenberg introduced for the first time, in an extended way, in this composition, a structure determined by processes unique in music, processes that far transcend the venerable principle *unitas in varietate*.

Schoenberg never discussed this way of composing, nor would he ever have done so; yet, there are hints of a general sort in many of his writings—for example, in many of the essays in *Style and Idea*. These essays also make clear the fact that at the time he composed Op. 11/1 he was not interested in producing tonal music, especially in some kind of contorted tonal idiom. (One recalls the scorn he later vented on the ‘neo-classicists’ in *Three Satires*, Op. 28 [1925].) Also one can see in the writings that Schoenberg was strongly impelled (probably from about 1903 on) to compose special music, new music, “Because: Art means New Art.”⁹ This historical view of Schoenberg’s atonal music informs the analysis that follows.¹⁰

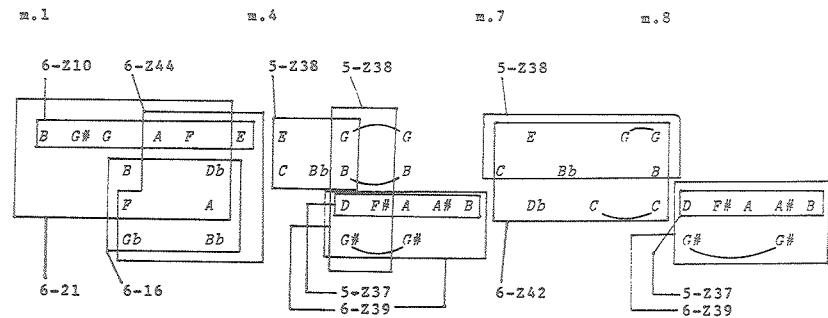
To facilitate discussion of the organization of Op. 11/1, short sections are presented below in music and diagrammatic notation. At the top of each example is the score segment in full notation, and below this are diagrams which give the letter-names of the pitches in the full notation, together with boxes and brackets delimiting the musical components. Each of these components (a set) has attached to it a name, following the convention described above. Thus, in Example 5, the hexachord 6-21 consists of (in letter names): F, F, G, G#, A, A, B, B, Db. With repetitions omitted, this becomes F, G, G#, A, B, Db—a transposition (up five semitones) of the referential prime form given in Example 2. The principal sets, mainly hexachords, but sometimes five- and seven-note sets, are given first in the diagrams, followed by secondary features of interest, including special pitches and trichords. Not everything shown in the examples will be discussed in the article text; it is suggested that the interested reader peruse the examples for further information about structure.

⁹From the essay, “New Music, Outmoded Music, Style and Idea,” in *Style and Idea*.

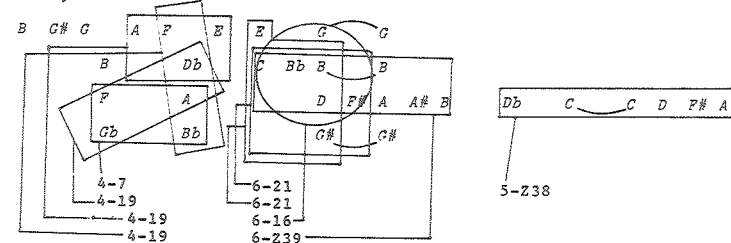
¹⁰As suggested earlier in this article, with the reference to Op. 23/4, the processes that underlie Op. 11/1 are not unique, in the general sense to this work, but are exemplified in every one of Schoenberg’s atonal works. Only in some movements of the *Serenade*, Op. 24, where the crucial factor of the ordered set enters, and the transition to the 12-tone method becomes explicit, is there a change.

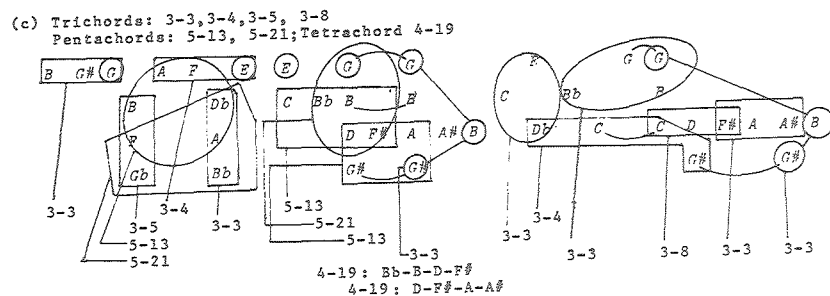
Example 5: Measures 1-8

(a) Principal Sets:
6-210/39, 6-16, 6-244
6-21, 5-237, 5-238



(b) Other Features:
4-7, 4-19, 6-210/39,
6-16, 6-21





Of course, this opening music is of the utmost importance for what follows, since here Schoenberg is still composing in the thematic tradition. However, and this is basic for the analysis, the structural components extend beyond those that assume specific thematic shapes. This concept of multi-level organization is represented in a lucid way in the first three measures. In the diagram at (a) in Example 5, the two thematic components are upper voice (6-Z10) and accompaniment (6-16). However, two other hexachords, which subsequently become important, are also stated here: 6-21, which is the variant on the melodic theme in mm. 9-11 (see Example 6), and 6-Z44, the Es-C-H-B-E-G signature, here transposed six semitones.

The appropriateness of the kaleidoscope metaphor used in the title of this article should now be apparent: the harmonic structure of the music is constantly in flux, constantly shifting, to reveal new facets created by the interlocking of its components. Here, in the opening three measures, four of the six basic hexachords of the piece are stated.

In the consequent phrase, mm. 4-5 (Example 5), the upper parts form the pentachord 5-Z38 (which is related to 6-Z42 and 6-Z44, as will be explained below), while the lower parts bring in a 'new' structural hexachord, 6-Z39, within which 5-Z37 is formed by the line that moves from d to b D to B.¹¹ Again, there is another facet. As the upper parts come to rest on G and B, the three notes below this dyad (trichord 3-8) form 5-Z38 once again. Perhaps most extraordinary, however, is the relation of the left-hand part, 6-Z39, to the

music of the previous phrase, for 6-Z39 is the complement of 6-Z10 (Example 2).¹²

In mm. 7-8, following the modified repetition of mm. 4-5, a new hexachord is formed with the introduction of Db and C in the bass: 6-Z42. Here the dyad Db-C replicates the final dyad of the opening theme, F-E. Now five of the six basic hexachords have been expressed, either as thematic shapes or in more subtle ways.

In Examples 5b and 5c, further details of the organization of the opening music are shown. In particular, observe 6-16 in the pitch form of its first occurrence in mm. 2-3. Also there are two forms of 6-21 and another form of 6-Z39; the two inner voices of the passage.

Tetrachord 4-7 appears here as the combination of the two lower dyads in the left-hand accompaniment: F-Gb-A-Bb. Whenever 4-7 appears in the movement, it is a direct reference to the first theme, since it contains only trichords of types 3-3 (B-G#-G) and 3-4 (A-F-E), a property unique to this tetrachord.

Example 5c offers an even closer look at the set structure. The four main trichords (3-3, 3-4, 3-5, and 3-8) are designated. Special attention is drawn to the trichord B-G#-G at the end of the consequent phrase in m. 5. This, of course, replicates the motivic trichord of mm. 1-2. And another means of local association is provided by the upper voice of mm. 4-5, where the dyad E-G refers to the end points of the thematic trichords in mm. 1-3. (In the sequel, detailed references to such features will not be made, on the assumption that the reader will understand them easily. Rather, attention will be given to aspects of the music that are not obvious and that need special analytical explication.)

Perhaps the most important aspect of structure shown in Example 5c, however, is the appearance of the two new pentachords 5-13 and 5-21, both of which have important roles to play in the music that follows. Set 5-13 relates to 6-16 and 6-21 by inclusion and 5-21 relates to 6-16. That is to say, both are derived from hexachords basic to this composition.

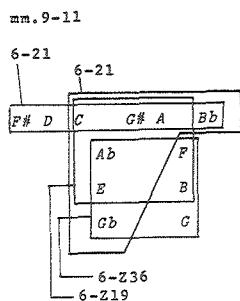
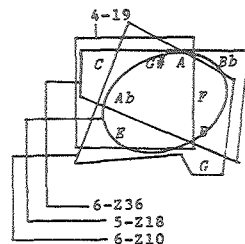
¹²Of course, 6-Z39 here is not the 'literal' complement of 6-10 in mm. 1-3, but a transposition of the 'literal' complement.

¹¹The right-hand part here (5-Z38) consists of the notes C-B-Bb-E-G. With the addition of Eb, this would constitute the Schoenberg signature.

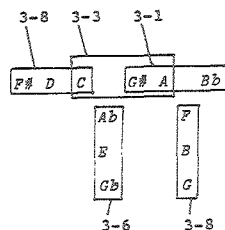
Example 6: Measures 9-11



(a) Principal Sets: 6-21, 6-Z36, 6-Z19

(b) Other Features:
4-19, 5-Z18, 6-Z10, 6-Z36

(c) Trichords: 3-1, 3-6, 3-8, 3-3



In Example 6 we see the three-measure 'variant' of the opening theme, about which much has been written. Schoenberg retains the rhythms of the opening theme, but the intervallic succession, with the exception of the last dyad, is entirely different. How does 6-21 in this context relate to 6-Z10? The answer: it does not relate to 6-Z10 directly, but to the complement of 6-Z10, 6-Z39. Specifically, it relates to the first thematic statement of 6-Z39, in the left-hand part of mm. 4-5 (Example 5). Not only does 6-Z39 differ from 6-21 by only one note (B), but also the thematic shape of 6-21 is so ordered that it retains intact the first two dyads of 6-Z39: D-F# at the beginning of the 'variant' and A-Bb at the end. To state the general relation between 6-21 and 6-Z39 in another way, they share a 5-note set of type 5-13, which occurs as the first five notes of the left-hand part in mm. 4-5. Thus, 6-21 is not a 'variant' on the theme directly, but a variant on the complement of the theme. In the variant, the special note G# (special because of its association

with the opening theme) is highlighted rhythmically and registrally and occupies the middle position in the series of seven attacks, while in 6-Z39 in mm. 4-5 it is the bass note. Moreover, it is the second note in the trichord 3-3 (C-G#-A), just as G# in the first theme is the second note in the same type of trichord (B-G#-G).

The left-hand accompaniment of the 'variant' in mm. 9-11 forms the new hexachord 6-Z36, completing the basic hexachordal vocabulary for the entire movement. Since this has the rhythm of 6-16 in mm. 2-3, one might expect that 6-Z36 and 6-16 are strongly associated. This is not the case, however, nor is 6-Z36 (or its complement 6-Z3) closely associated with any of the other basic hexachords. Its role as an integral structural element of Op. 11/1 is quite attenuated, and its appearance as a prominent component of the Coda (Example 20a) remains enigmatic.

Example 6a shows two additional features of the segment in mm. 9-11. First, there is a second form of 6-21 beginning with the third note of the upper voice melody. Even more interesting, however, is the appearance of 6-Z19, the complement of 6-Z44, also beginning with the third note of the upper voice melody and incorporating the four upper notes of the accompaniment. This is a direct link, by complement relation, back to the opening theme, where 6-Z44 occurred at a secondary level of structure (Example 5).

Examples 6b and 6c show additional features of the variant on the theme, including a concealed form of 6-Z10 (at b), but one that has the same pitches as the opening theme, and the set 5-Z18, which occurs for the first time here. Pentachord 5-Z18 is structurally important here because it is closely related to 5-Z38, the upper part of mm. 4-5 (Example 5). Specifically, as remarked above, it has the same interval content as 5-Z38. Both sets are significant harmonic components of the music. Example 6c shows the variegated trichordal organization of the passage. As in the opening theme, the first trichord of the melodic theme is of the same type as the last trichord of the accompaniment, a means of local association and closure.

Example 7: Measures 12-13

(a) Principal Sets:
6-Z13/42, 6-16, 6-21, 6-Z36

(b) Other Features: 4-19, 5-Z38, 5-13, 7-Z38, 7-13

(c) Trichords and Special Notes

Since the very first attempts to understand Op. 11/1, this passage has perplexed analysts, since it is such a radical departure in every apparent respect from the preceding music.¹³ As shown in Example 7, the first hexachord in the configuration is 6-Z13. This is the com-

plement of 6-Z42, the total content of m. 7. Indeed, it is followed immediately by 6-Z42, as indicated, so that the two complement-related hexachords bisect the pattern. Other hexachords formed as contiguous segments are 6-16, 6-21, and 6-Z36. Thus, in terms of hexachordal content, the passage is a reference to all the major segments of music that have preceded it. With the appearance of 6-Z13 here, all the hexachords listed on Example 4, except 6-Z3, have been stated.

The passage (mm. 12-13) is organized over other spans as well, as shown in Examples 7b and 7c. The large set 7-Z38 (complement of 5-Z38 from mm. 4-5) is formed by the first seven notes and intersects with 5-Z38, as indicated. Set 7-13 is formed beginning with D, and it contains its complement 5-13. The trichordal structure shown in Example 7c is self-explanatory. However, it should be pointed out that the initial 3-3; B-C-B-Eb, is an ordered inversion of the first melodic form of 3-3 in mm. 1-3 about the special axis-pitch B.¹⁴

One final feature of this passage (mm. 12-13) deserves comment. It was noted above that 6-Z13 and 6-Z42 bisect the configuration. As shown in Example 7b, they are joined by a form of the tetrachord 4-19. The occurrence of 4-19 here looks ahead to one of the most striking and novel occurrences in the piece, 4-19 as formed by the harmonics in mm. 14-17 (Example 8). The two forms are symmetrically inverted about C# and E, the peak notes in m. 12 and the top notes of 4-19 in its harmonics manifestation in m. 14.

In the entire movement one of the most difficult passages to understand is the kaleidoscopic configuration in mm. 13-15. The entire upper part forms 7-13, complement of one of the basic pentachords. The six upper notes, excluding Eb, form 6-16, and this 6-16 shares four notes with the original 6-16 in mm. 2-3: C#-A-F#-F, the basic tetrachord 4-19, a further preparation for the coming 4-19 in harmonics (m. 14). Within 6-16 in m. 13 as the five upper notes (excluding G) is 5-21, and this is composed of two forms of 4-19: the one just listed, C#-A-F#-F and one that intersects and precedes it: F-D-C#-A. As shown in Example 8, the peak notes of 5-21 here form 3-12 (the "augmented triad"), and refer specifically in this way to 4-19 in m. 14.

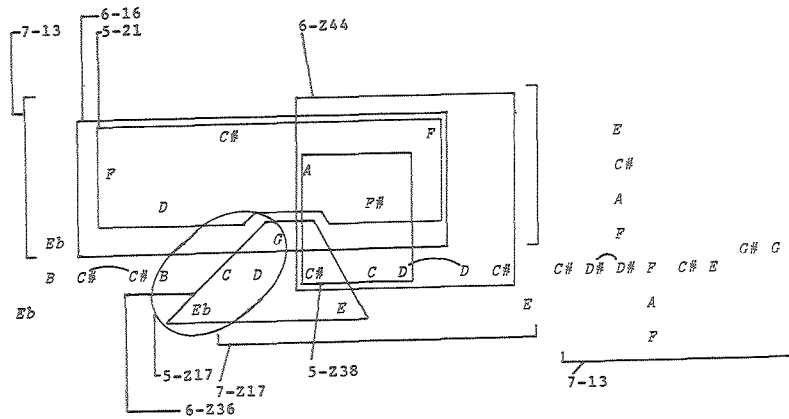
¹³Von der Nüll (*op. cit.*, p. 103) writes: "Measures 12 and 13 show a residue of the harmonic style, exaggerated with respect to the preceding development and rationally understandable only in a few tones." [*Die Takte 12 und 13 zeigen ein Residuum des Klangstiles, gegenüber der vorausgehenden Entwicklung übersteigert und rational nur in wenigen Tönen greifbar . . .*]

¹⁴As Webern has pointed out in *The Path to the New Music*, the appearance of Eb here (the lowest note thus far) completes the total chromatic. Eb is also the bass note at the end of the movement. Here, as elsewhere in Schoenberg's music, such special occurrences of Eb have only one meaning: Es (C-H-B-E-G).

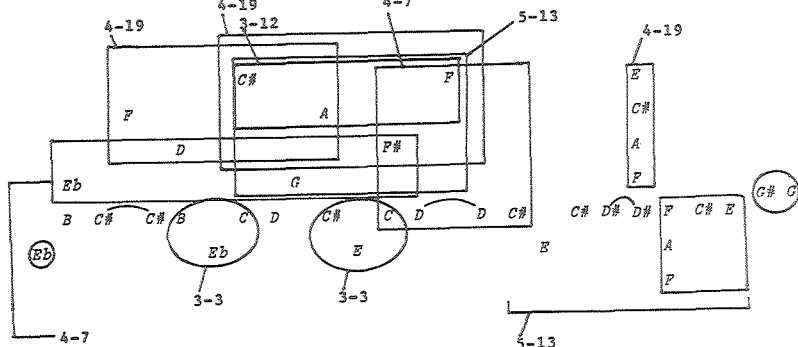
Example 8: Measures 13-15



(a) Principal Sets: 7-13, 7-Z17, 6-16, 6-Z36, 6-Z44, 5-Z17, 5-21, 5-Z38
m.13 m.14 m.15



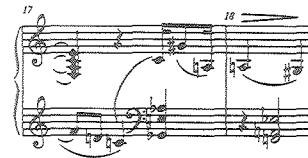
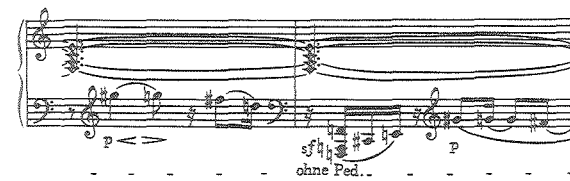
(b) Tetrachords and Trichords: 4-7, 4-19, 3-3



With the appearances of 5-Z17 and its complement 7-Z17, as well as 5-Z38 and 6-Z44, it is clear that this second gesture of the episode is a development of both antecedent and consequent phrases of the opening music (mm. 1-5). Thus, although the reading of the form based entirely on surface aspects of the music (Example 1) understood this as a part of a B section based on 'new material,' a deeper analysis in terms of harmonic content (sets) reveals a different kind of variational and developmental process.¹⁵

Example 8b refines and elaborates the analysis in Example 8a. For instance, every other note of the right-hand part forms the important tetrachord 4-7: Eb-D-G-F#, always a compressed reference to the trichordal structure of the first theme, as remarked above. In m. 14 the harmonics form 4-19, the specific pitch structure of which is identical to 4-19 as it occurs as the upper four notes in m. 3 (Example 5), hence a clear reference to the end of the first subject. This form of 4-19 occurs with 5-13, as indicated in Example 8b, and when the first two new notes, G#-G, enter in m. 15 the complement 7-13 is created.

Example 9: Measures 15-17

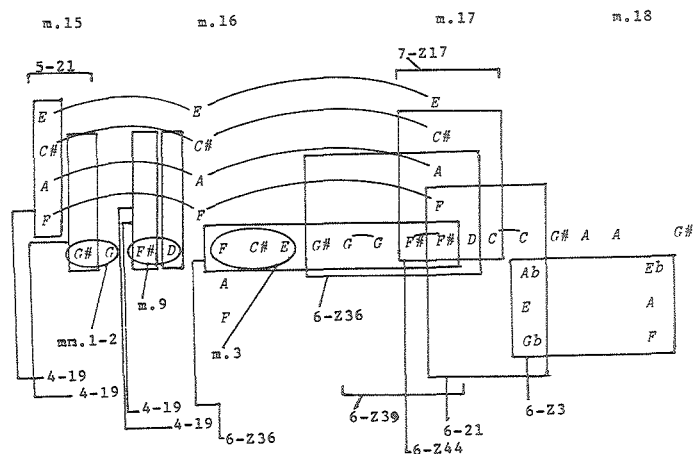


Example continued on next page.

¹⁵Those familiar with Schoenberg's writings will recall how frequently he used the term "developing variation." For example, see the essay "Criteria for the Evaluation of Music" in *Style and Idea*, pp. 129-30.

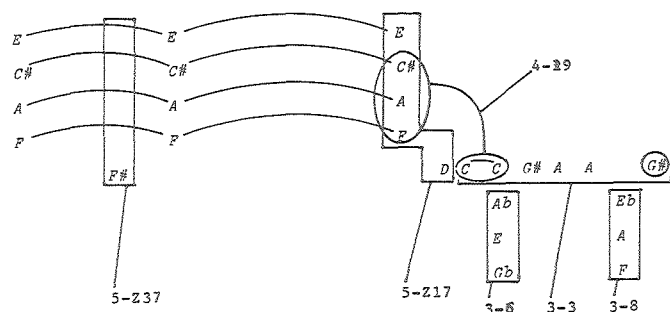
Principal Sets:

(a) Principal Sets: 4-19, 6-Z3/36, 6-21, 6-Z39
6-Z44, 7-Z17



(b) Other Features:

3-3, 3-6, 3-8, 4-19, 5-Z17, 5-Z37

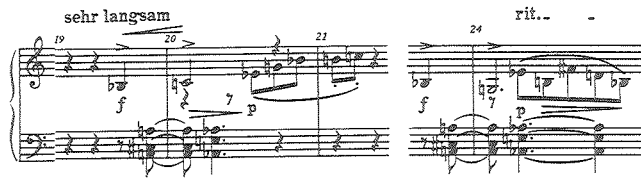


Measures 15-16 comprise the transition from the episode back to the restatement of the first theme in the shape of its variant. The two dyads in the upper part of m. 15 require explanation. The first, G#-G, is a reference to the first theme, specifically to the second and third notes of the melody in mm. 1-2. The second, F#-D, refers to the first two notes of the 'variant' on the first theme in m. 9. Thus, we have motivic condensations of the two sections of the first part of the Exposition here in the transition—a procedure which reflects Schoenberg's roots in the 19th century, particularly in the music of Brahms.

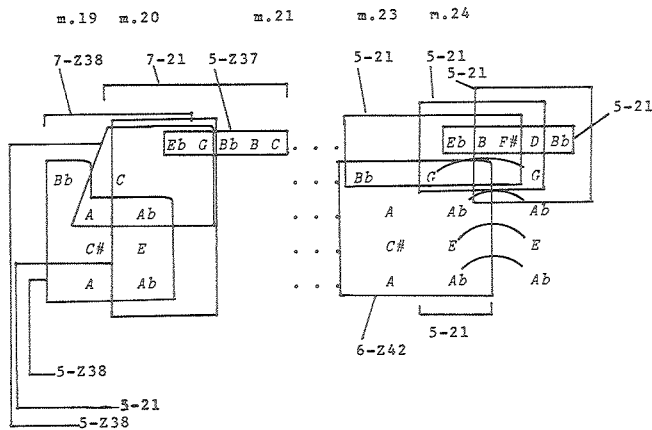
At the beginning of m. 15, in addition to the main form of 4-19 in harmonics, there are three other successive forms at a secondary level, bracketed in Example 9a, echoes of the form that hovers above them. They all share a single trichord, 3-12: F-A-C#. Of the other hexachords formed in mm. 16-17 (Example 9a), perhaps the most extraordinary are 6-Z36 and its complement, 6-Z3. Hexachord/Set 6-Z36 first enters in m. 16, formed by the upper trichord of 4-19 and the two dyadic references to the first theme and its variant described above. Before this form is completed, another is initiated, precisely with the entrance of G#, as shown in Example 9a. Then, even more remarkable, with the return of the variant on the first theme, the second trichord of the accompaniment changes (compare m. 11 and m. 18), although the *type* of trichord (3-8) remains the same. This change replaces 6-Z36 of mm. 10-11 with its *complement* 6-Z3, a striking example of the close association of complement-related hexachords in general.

Example 9b provides additional details. The final note of the upper voice in m. 18 is not Bb (cf. m. 11), but G#, a reference to that special note in the first theme. Also a special circumstance is the juxtaposition of the two related sets 5-Z37 and 5-Z17; the former comes about when F#, the first note of the theme, enters against the sustained 4-19, and the latter is brought in with the entrance of the second note of the theme, D. Here we have a beautiful example of the delicacy with which Schoenberg's kaleidoscope moves: a change of one note creates a new harmony, but the interval content remains constant.

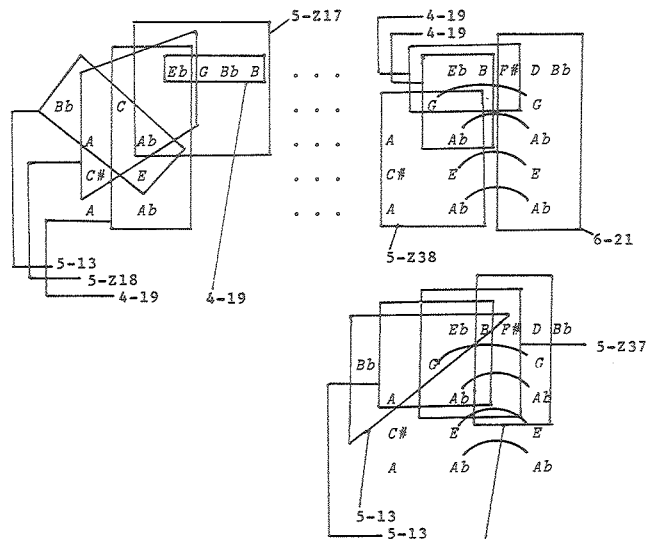
Example 10: Measures 19–24



(a) Principal Sets: 5-21/7-21, 5-Z37, 5-Z38/7-Z38, 6-Z42



(b) Additional Sets: 3-3, 3-12, 4-19, 5-13, 5-Z17, 5-Z18, 5-Z37, 5-Z38, 6-21



The section begins with the large set 7-Z38 and its complement 5-Z38 as the basic harmonic components. The most obvious melodic feature of the section is the upper voice eighth-note figure, Eb-G-Bb-B-C, an ordered transposition of the pattern in mm. 4-5 (Example 6).¹⁶

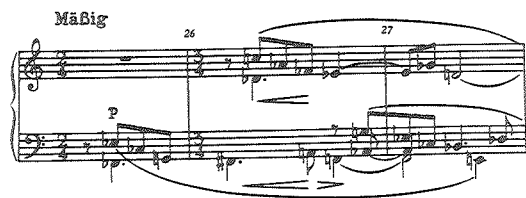
However, set 5-21, which has not been especially prominent up to this point, now comes into its own, beginning on the second eighth note of m. 20. With the new phrase that begins at the end of m. 23, there are multiple forms of 5-21 at the surface level of the music, as shown in Example 10a. Most apparent of these is the eighth-note configuration in the upper voice in m. 24. But, as indicated in Example 10a, four successive forms of 5-21 interlock in linear fashion, beginning with Bb in m. 23: a canon or structural stretto in which the motto set 4-19 plays a significant role (Example 10b).

Set 5-21 is a logical successor to 5-Z37 in this upper-voice pattern, since both contain the motto set 4-19. Moreover, both can be extracted from 6-Z44, one of the principal hexachords.

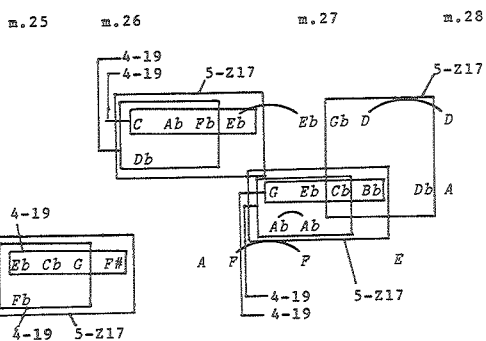
Three remarkable features of this section require attention. First, as shown in Example 10a, 6-Z42, the total content of m. 7 (Example 5) reappears here, formed by the lower voices in mm. 23-24 (i.e., excluding the thematic upper voice 5-21). Second, 6-21, the hexachord of the 'variant' on the first theme, occurs as the last hexachord in the section (Example 10b). Finally, the thematic component here, 5-Z37, intersects with 5-Z17 (as marked in Example 10b). In this situation they share four notes, namely, 4-19: Eb-G-Bb-B. These three events, again, testify to Schoenberg's genius in composing a multi-level musical structure.

¹⁶It might be noted that this set, 5-Z37, like 5-Z38 in the right-hand part of mm. 4-5, lacks only one note to complete the Es-C-H-B-E-G signature. In both cases, the derivation from set 6-Z44 is demonstrated, however.

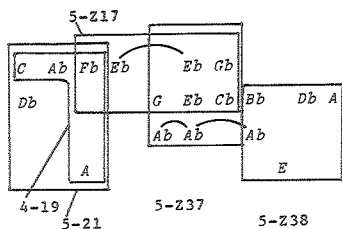
Example 11: Measures 25-27



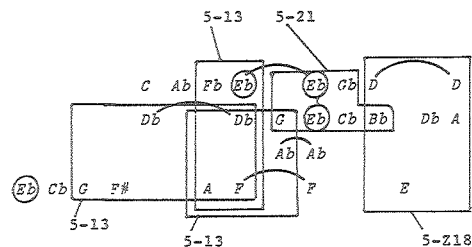
(a) Principal Sets: 4-19, 5-Z17
(Set 6-21 shown below at (d))



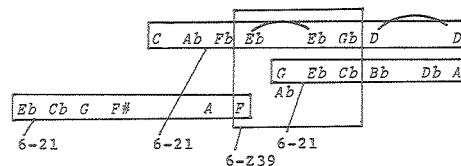
(b) Secondary Formations: 4-19, 5-21, 5-Z17, 5-Z37, 5-Z38



(c) Special pc8, 5-13, 5-Z18, 5-21



(d) Forms of 6-21, 6-Z39



This passage is canonic. Behind this traditional surface feature, however, lies a wealth of relations. First, as shown in Example 11d, each of the three strands of the canon is a form of 6-21; hence the passage relates back harmonically to the variant on the first theme in mm. 9-11. Each strand begins with a descending four-note succession which retains the rhythm but reverses the contour of the voice above the bass in mm. 4-5: 5-Z37, a component of 6-Z39, from which 6-21 derived, as explained in connection with Example 6. The last three notes of the canonic strand, in addition, have the rhythm of the middle of the first theme (m. 2). Indeed, the first strand, has the total rhythmic pattern of mm. 2-3. Thus, the set content of the canonic strand, 6-21, refers to the thematic variant of mm. 9-11, while the rhythmic shapes refer to 6-Z39 (and 5-Z37) of the antecedent phrase (mm. 4-5), from which 6-21 derived, and the tail of the canonic strand refers to the first theme, 6-Z10, from which 6-Z39 derived. Moreover, 6-Z39 is formed right in the middle of the canonic structure, as shown in Example 11d: a brilliant encapsulation of the opening music of the movement. The canonic forms of 6-21 are transpositionally related in such a way that the first *comes* has two notes in common with the *dux*, Eb and F# (Gb), and the second *comes* has one note in common with the first *comes*, Eb. The special role of this note is shown in Example 11c.

Example 11a shows more detail, all of which supports the reading

given above of this passage as a replication of specific portions of the opening music. The first four melodic notes of the passage present 4-19 at the head of the canon, while the accompanying note creates another form of 4-19, as shown—a ‘two-dimensional’ structure. (The two forms are inversionally related.) The linear forms of 4-19 in the *dux* and second *comes* relate directly back to 4-19 in mm. 20-21, since they share three notes with that form, Eb, G, B, which is the first trichord in both *dux* and second *comes* as a result of the ordered transposition (T4).

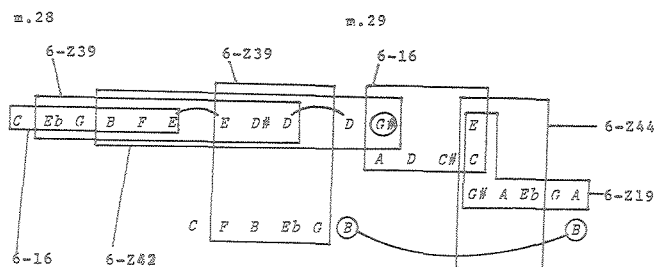
The entire five-note group, which is rhythmically delimited, is 5-Z17. This is a very subtle connection with the ascending five-note figure in mm. 4-5 and mm. 20-21, etc., which forms 5-Z37, since 5-Z17 and 5-Z37, it will be recalled, have the same interval content.

Indeed, 5-Z37 also occurs in this passage in a secondary dimension, as shown in Example 11b, within 6-Z39 (Example 11d), just as it did in mm. 4-5 (Example 5). Even more remarkable is the fact that 5-Z38, which was the upper component in the antecedent phrase in mm. 4-5, also occurs in this passage (Example 11d). Finally, Example 11c may be examined for the secondary formations it contains: sets 5-13, 5-Z18, and 5-21. Every one of the six pentachords (Example 3) is represented in this passage.

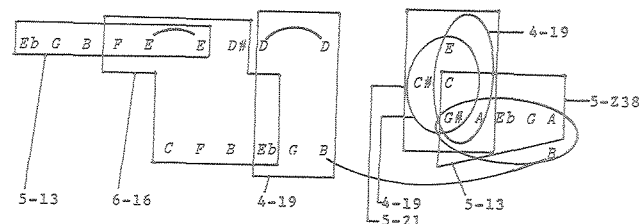
The passage begins with a striking change to a rhythmic and melodic contour strongly reminiscent of m. 12 (see Example 1). However, the first hexachord is 6-16 (Example 12a), the accompaniment to the first theme in mm. 2-3. Thus, while the external shapes point to the episode that began in m. 12, the harmony refers to the

Example 12: Measures 28-29

(a) Principal Sets: 6-16, 6-Z39, 6-Z42
6-Z19/6-Z44, 4-19



(b) Secondary Formations: 4-19, 5-13, 5-21, 5-Z38, 6-16
6-16,



opening music. As Example 12a shows, the principal sets up until the end of this passage, in addition to 6-16, are 6-Z39 and 6-Z42. The latter, which begins on B in m. 28 and extends up to the high G# in m. 29, is the same as the second hexachord in m. 12 and originated in m. 7 (Example 5). Unlike the right-hand part, the left-hand configuration that begins at the end of m. 28 is not a set in its own right. As shown in Example 12b, its first four notes belong to 6-16 in a secondary dimension, while the trichord Eb-G-B (carried forward from mm. 25-27) forms 4-19 with the sustained D in the upper part.

At the end of the passage 6-Z44 and 6-Z19, which have not been strongly represented in the music, compared to the other hexachords, are interlocked. In fact, they share five notes, differing only with respect to G and B.

Of the secondary formations shown in Example 12b, perhaps special attention should be drawn to 5-13, which is the 5-note set shared by 6-16 and 6-Z39 (Example 12a). The fact that these fundamental hexachords can share five notes indicates how similar they are with respect to pitch, although they are dissimilar with respect to interval content.

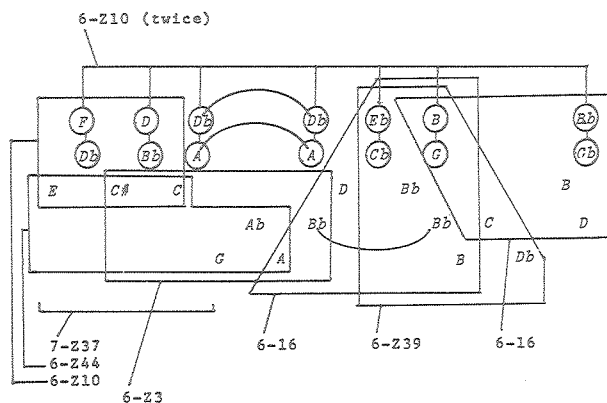
Development

The Development, compared with the Exposition, is relatively complicated! It is not possible to discuss all its interesting or even important aspects of structure within an article. Accordingly, only certain sections will be covered. It is hoped that the reader who wishes to explore Schoenberg's music more deeply will take the time to analyze the missing passages. Their structure is fully consistent with those analyzed in the Exposition.

Example 14: Measures 34–36

(a) Principal Sets: 6-Z10/6-Z39, 6-Z3,
6-16, 6-Z44, 7-Z37

m. 34 m. 35 m. 36



The Development begins with an intensive and completely explicit statement of the first theme, doubled a major third below—thus, two concurrent forms of 6-Z10. Comparing the pitch form of the theme in its first occurrence with the two forms here, only a single pitch is held in common, one of the special pitches throughout the movement, and the first pitch in the composition, B (Cb). The uppermost of the two thematic forms of 6-Z10 here is an ordered transposition, at the tritone, of the original form of the theme. As a result of this, the two tritone-related pitches F and B exchange positions with respect to the original form.

Not only is 6-Z10 represented by the two thematic forms at the beginning of the Development, but there is also a third form of that hexachord at the very outset: the first six notes, as shown in Example 14a. This form is inversionally related to the other two.

The first trichord of the main theme (3-3) is also elaborated here, in two dimensions: the obvious forms in the subject and the less obvious 3-note adjacencies (E-F-Db, C#-D-Bb, etc.).

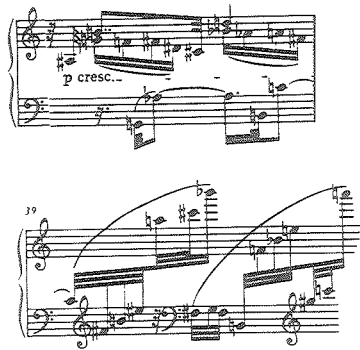
The most striking structural event of this opening gesture, however, is the total set formed up to and including the first attack in m. 35, the 7-note set, 7-Z37. This is the complement of 5-Z37, the by-now familiar component of the consequent phrase in mm. 4-5. There 5-Z37 was within 6-Z39, the complement of 6-Z10; here 6-Z10 is within 7-Z37, the complement of 5-Z37, a reciprocal relation of profound implications for all of Schoenberg's atonal music.

In the remainder of the passage shown in Example 14, there are additional hexachords. All these engage the problematic (from the analytical standpoint) "chromatic" bass line—problematic because it seems to introduce a new and anomalous component. However, its structural meaning does not reside in the configuration taken as a whole; rather, its subsegments contribute to the formation of other, structurally significant, sets. Thus, the first chromatic trichord, G-Ab-A, completes a form of 6-Z44, while the chromatic trichord A-Bb-B belongs to 6-16, the first occurrence in this "accompanimental" hexachord in the Development. Hexachord 6-Z39 intersects two forms of 6-16, sharing 4-19 (Eb-Bb-B-G) with the first, to create a structure that combines the two thematic sets.

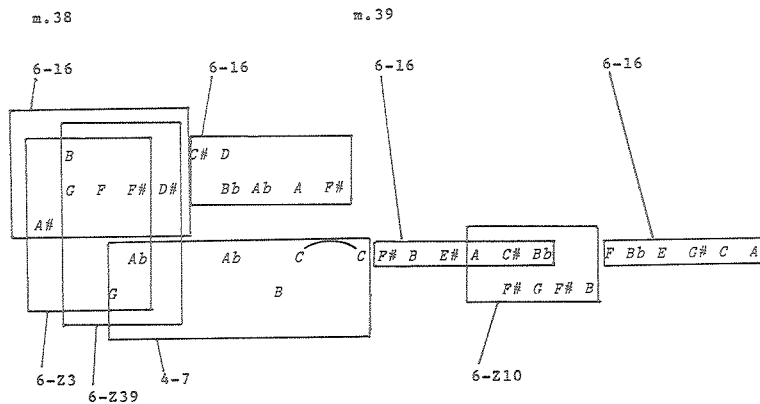
Example 14 does not show the way in which the passage is organized by the pentachordal harmonies, mainly 5-21, but this is easily read from the score. For instance, the two upper strands ending

with D \flat over A in m. 35 form 5-21, as do the corresponding components beginning with E \flat over C \flat and ending with B \flat over G \flat in m. 36.

Example 15: Measures 38-39



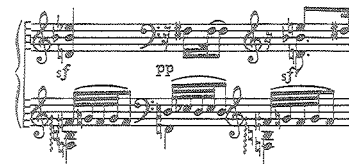
Principal Sets: 6-Z3, 6-16, 6-Z10/6-Z39, 4-7



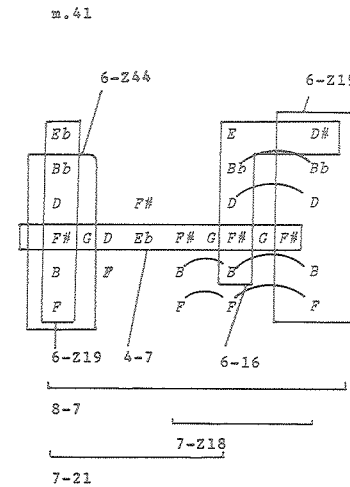
This short section begins with 6-16 in the upper parts, as shown in Example 15, interlocking with 6-Z3 and 6-Z39, which are formed by the entrance of the first dyad in the left-hand part G-A \flat . The first 6-16 is followed by another, transposed up a minor third, and with the continuation of the left-hand pattern, 4-7 is formed, always a condensed reference to the first theme, as explained above. Here the reference is explicit with respect to pitch: the first trichord is the same as the opening trichord in m. 1, while the second trichord is derived by inversion about the axis dyad A \flat -B.

In m. 39 two forms of 6-16 unfold in the configuration of the episode, m. 12 (Example 7). The first of these is identical with respect to pitch with the original form of 6-16 in mm. 2-3. Indeed, the trichordal segmentation is preserved, as well. Most extraordinary, however, is the appearance of 6-Z10, formed by the last trichord of the first form of 6-16 in m. 39 and the bass figure, F \sharp -G-F \sharp -B—the trichord 3-4, which is of the same type as the second trichord in the first theme.

Example 16: Measure 41



Principal Sets: 6-16, 6-Z19, 7-Z18, 7-21, 8-7



In the interest of economy in the analysis, only infrequently has mention been made of the large harmonic sets that span large segments of music. In this measure, however, there is an exceptionally lucid and beautiful instance which must be pointed out. That is the formation of the large set 8-7, the complement of 4-7, over the span of the entire measure. This is particularly striking in view of the fact that 4-7 is formed by the measured trills: F#-G, D-Eb, F#-G.

The vertical formation here is 6-Z19, which interlocks with its complement, 6-Z44, as shown in Example 16. Set 6-Z19 returns at the end of the measure, preceded in the upper voice, by the "neighbor-note" E. As indicated in Example 16, this creates a somewhat concealed form of 6-16. The two hexachords differ by only one note. The shared pentachord is 5-Z18, one of the basic pentachords (Example 3). Here it occurs within its complement 7-Z18.

Not shown in Example 16 are the multiple forms of 5-21, for example, as the top five notes of the vertical 6-Z19. However, the large set 7-21 (5-21's complement) is indicated. This comprises the first seven notes of the measure.

Example 17: Measures 45-46

Principal Sets: 5-Z18, 6-Z10, 6-Z13

m. 45

6-Z10 5-Z18 (5-21)

5-Z18 5-Z18 6-Z13

This section recalls the beginning of the Development, with its multiple statements of the thematic set 6-Z10. However, 6-Z10 is not stated in its thematic shape here, but rather as the totality of the upper components, as shown in Example 17. The "thirds" form a stratum distinct from the short upbeat figures, and they constitute 5-Z18, the only five-note set shared by 6-Z10 and 6-Z19. Two other forms of 5-Z18 are indicated in Example 17: the first five notes of m. 45 and the left-hand configuration, within which 4-7 is a conspicuous member, as the first four notes. It will be recalled that 5-Z18 is closely related to 5-Z38, the upper part of the consequent phrase.

This brief section is an excellent example of the richness which exists in Schoenberg's atonal music just beneath what might be regarded as a simple, perhaps even trivial surface (taken out of context) by the casual observer. This is not some kind of arbitrary pattern that contains major and minor thirds and skips of the ninth, but a musical structure representing a developmental process.

Example 18: Measures 50-52

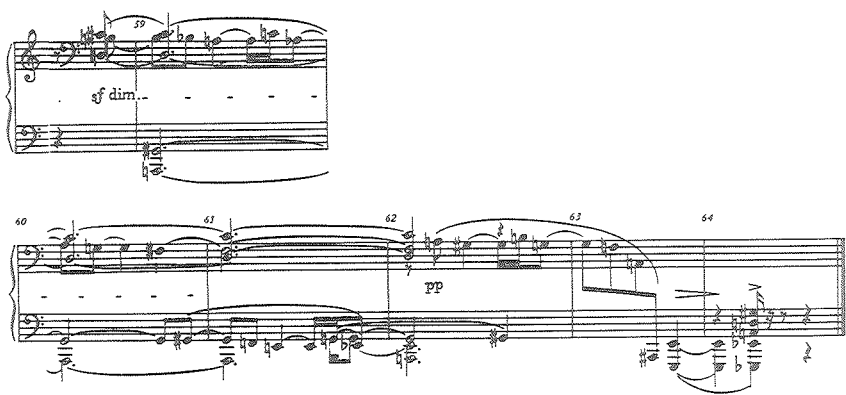
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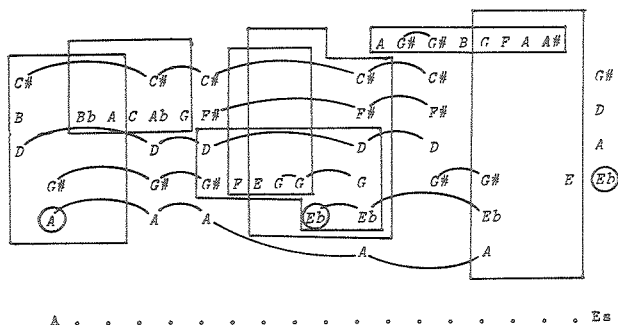
Example continued on next page.

Example 20: Measures 58-64

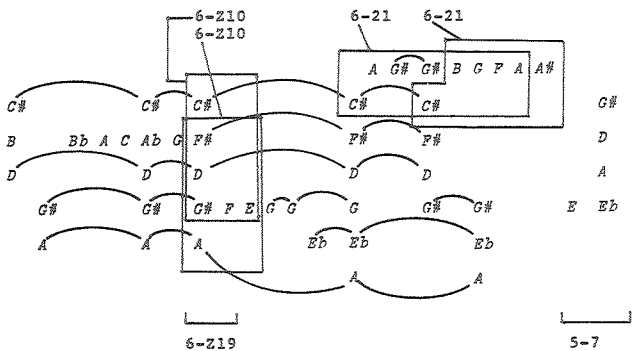


(a) Forms of 6-Z3

m.59 m.60 m.61 m.62 m.63



(b) Additional Principal Sets: 6-Z10, 6-Z19, 6-21



Example 20a shows how multiple forms of 6-Z3 pervade this Coda. As indicated elsewhere, the main structural *raison d'être* of this hexachord is its relation to 4-7, hence to the trichordal content of the first theme and to 6-Z10.

Example 20b shows the structurally more significant hexachords 6-Z10, 6-21, and 6-Z19. Note, in particular, the final interlocking statements of 6-21, the variant on theme 1. The final chord of this movement has perplexed many analysts. George Perle correctly points out that this is a segment of the music of m. 11. More important, perhaps, is the fact that this new set, 5-7, points ahead to the next movement, where the first pentachord is a collection of the same type.

In this first atonal masterwork Schoenberg could not resist including his initials A . . . Es in the lowest strand of the music, as indicated in Example 20a.

As remarked earlier, the musical processes that we find in Op. 11/1 are not unique to that work. Rather, they are exemplified in every one of Schoenberg's atonal compositions after Op. 11/1, and, indeed, can be found in various incipient stages in his music composed prior to Op. 11/1. Op. 11/1 remains, however, the groundbreaking work and the prototype for all the extraordinary music that subsequently flowed forth, including two of the major classics of modern music, *Erwartung*, *Pierrot Lunaire*, and the incomplete oratorio, *Die Jakobsleiter*.

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HOW TONALITY FUNCTIONS IN SCHOENBERG'S OPUS 11, NUMBER 1

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This is not the first investigation of tonality in the Opus 11 of Arnold Schoenberg nor is it likely to be the last. To my own knowledge, Hugo Leichtentritt was the first to explore the tonal basis of Opus 11 which he did in the third edition of his book on Musical Form (1927). Perhaps the most positive exponent of tonal analysis has been Reinhold Brinkmann in his Arnold Schönberg: Drei Klavierstücke: Studien zur Frühen Atonalität bei Schoenberg (1969). The competition among those willing to venture diverse opinions on the tonality of Opus 11 is lively, to say the least, while the scornful, led by George Perle and Alan Forte, offer motivic and set analysis in the place of tonal interpretation.

I intend to offer something to this literature since I am convinced that tonality not only exists but that it functions structurally in Opus 11. In fact, there is evidence that tonality functions in Opus 23, No. 1 some dozen years later. I have also found it irritating when reputable musicians don't understand simple thematic structuring in Opus 11, No. 1 even though they concern themselves with intense intervallic analysis. It is also irritating to read the work of reputable theorists who do not bother to discuss structural relations and functioning in Opus 11 even though they abstract various note sets. In both cases, partial understanding results and, it seems to me, a less significant understanding than a consideration of tonal structuring would provide.

Arnold Schoenberg's Opus 11, No. 1 is based on a traditional conception of a tonal movement: an exposition that establishes a prime tonal region but introduces a rival region before moving on to a central development that loosens tonal ties to competing tonalities by means of roving harmonies although preparing for the return of the principal tonal centers in the recapitulation.

Schoenberg's exposition is defined by a classically structured theme, articulated into balanced segments that imply the structure of a parallel period. This parallel period presents a model which, together with the twice repeating contrasting phrase that follows, forms the antecedent (mm. 1-8). The consequent's model is not followed by the expected contrasting phrase, or a cadential phrase, but by an episode which, during its course, is transformed again into the consequent's first phrase. The consequent then proceeds to close out the extended thematic structure with the expected contrasting phrase.