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WEBERN AND "TOTAL ORGANIZATION": AN ANALYSIS OF THE SECOND MOVEMENT OF PIANO VARIATIONS, OP. 27

PETER WESTERGAARD

IN ONE SENSE of the phrase a Beethoven symphony is "totally organized"; that is, all the characteristics of sound that Beethoven could notate—pitch class, register, timbre, duration, dynamics, etc.—participate in, indeed are necessary to, the organization of the work as a whole. In the usual, slogan, sense of the phrase, only serial music is "totally organized"; that is, only in serial music is the pattern formed by the variations within each separate characteristic easily analyzed and self-contained, only in serial music do the patterns within separate characteristics come from a common scheme. For in such music "total organization" is to be achieved by the application of row procedures not only to pitch class but to other characteristics as well.[1]

Now the champions of serial music have often claimed that Webern's compositional techniques, albeit in a rudimentary or incomplete way, foreshadowed their own. I must say that I have yet to find so primitive a procedure in any of Webern's music. For one thing, in Webern's music (as in Beethoven's music) control of the interaction between characteristics of sound rather than pattern making within nonpitch characteristics is the principal consideration.[2] Consider the patterns within separate characteristics in the second movement of Webern's *Piano Variations*, Op. 27 (see Ex. 1):

> Pitch class: Inversionally related row forms are canonically disposed. The last note of each row form is also the first note of the next row form.

[1] I.e. in the music of the principal European serialists (Boulez, Stockhausen, Nono, e.g.) written in the first half of the last decade. It should be clear from what follows that I am not talking about music in which the interaction of characteristics is controlled or in which nonpitch characteristics retain their differential role (e.g. Babbitt's *Composition for Four Instruments* from 1947-1948).

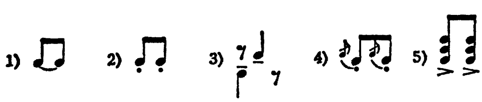
[2] Considering the lack of control of such interaction in most serial music, the shift during the latter half of the last decade from "totally predetermined" to "aleatoric" technique is less radical than commonly supposed.

Ex. 1

Rhythm: The time lag of the canon is constant at one eighth note, forming a succession of figures made up of two eighth notes. The distances between beginnings of consecutive figures (measured in eighth notes) produce the following pattern:

3 ||: 3 3 4 3 3 2 3 3 3 3 3 3 3 2 3 3 :||: 2 3 3 3 2 3 2 3 3 3 3 2 3 6 (3) :||

Articulation (the closest the composer can get to control of piano timbre): The two-eighth-note figures are articulated in five discrete types:



The pattern of succession of these types of articulation is:

1 ||: 2 3 4 5 1 1 2 4 3 4 5 2 1 2 1 :||: 2 2 2 3 5 1 1 2 4 4 2 5 1 4 1 :||

Dynamics: There are three discrete dynamic levels: p, f, and ff. These levels are canonic, *i.e.* the level is constant within any two-eighth-note figure. The pattern made by successive figures is:

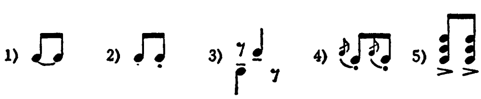
f ||: p f p f p f p ff f p ff p f p f :||: f p p f ff p f p ff f p ff p ff f :||

Thus, while the texture of this music may superficially resemble that of some serial music (note particularly the rapid alternation among a limited number of levels or types of nonpitch characteristics), its structure does not. None of the patterns within separate nonpitch characteristics makes audible (or even numerical) sense *in itself.*[3] The point is that these characteristics are still playing their traditional role of differentiation. They interact with one another and with pitch to clarify pitch relationships, sorting out for the ear those pitch relationships which are to shape the movement.

For purposes of clarity I have divided my analysis into two stages:

I. A codification of the interrelationships among:

i. the seven dyads formed by the inversion symmetry around A (A/A, B♭/G♯, B/G, C/F♯, C♯/F, D/E, and E♭/E♭);
ii. the position of these dyads in the four pairs of row forms;
iii. the registers in which the dyads appear;
iv. the five discrete types of articulation in which the dyads appear:



v. the three discrete dynamic levels at which these articulation types may occur (p, f, and ff); and
vi. rhythmic variables (distance between beginnings of figures, metric position of figures).

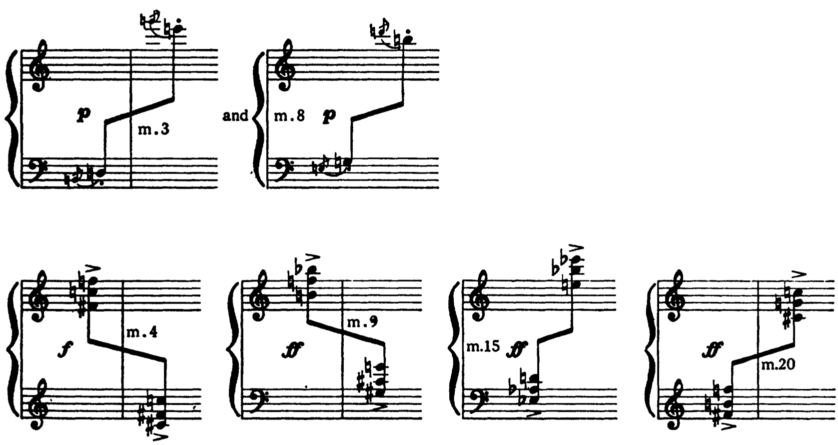
II. An interpretation of the effects of these interrelationships in such traditional terms as: use of the medium, rhythm and meter, intervallic detail, large-scale intervallic structure (harmonic motion), and structure of the movement as a whole (form).

3 I omit register in this "serial analysis." In fact, control of register is of the utmost importance in Webern but has been little used in the primitive serial techniques referred to. Little wonder; it makes too much difference. Imagine all the adjacent or simultaneous octaves that would occur if serial procedures had also been applied to register in the *locus classicus* of primitive serialism: Boulez' *Structures* (1952).

I

A. Invariably:

1. The dyad A/A appears p.
2. The dyad E♭/E♭ appears in figures of more than two notes (or) ff.
3. The first dyad of each row pair is also the twelfth dyad of the preceding row pair and alternates between B♭/G♯ as f and other dyads as the 's of ff. All such figures begin on the second quarter of a measure. Distances between such figures alternate between six measures (to) and five measures (to).
4. The sixth, seventh, and eighth dyads of each row pair are articulated . (With the curious exception of the f in mm. 3-4 they are all ff.) They are the only figures. The lower chord is on the first beat.
5. Where or figures occur at the same point in consecutive row pairs, the register is such that the intervallic structure of 's and 's in consecutive transpositions of the same row form is maintained:



Ex. 2

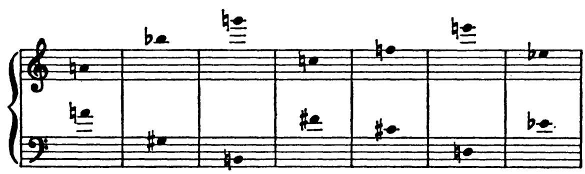
6. All ff figures have more than two notes. In all ff figures the lower group of notes is on the quarter note beat, the upper off.

B. Where not already covered by statements under A:

1. The dyad E♭/E♭ appears as the 's of . (The E♭/E♭ in m. 15 is covered by A4.)

2. The dyad B♭/G♯ appears f. (The B♭/G♯'s in mm. 8-9 and m. 15 are covered by A4.)
3. The ninth dyad in a row pair is articulated p. (The A/A in m. 9 is covered by A1.)
4. Any dyad which is the same as an immediately preceding dyad appears as a two-note figure p, and begins a quarter note after the preceding figure which is f or, because of A4, ff (f or ff p). (The B/G in mm. 8-9 is covered by A4 and the F/C♯ in m. 17 by A3.)
5. Dyads described under B4 have the same register as the immediately preceding dyad.

C. Where not already covered by statements under A or B:
1. The dyad D/E appears in figures. (The first D/E in m. 15 is covered by A4; the D/E in m. 4 and the second D/E in m. 15 are covered by B3.)
2. The tenth and eleventh dyads appear as . (The tenth and eleventh dyads of the fourth row pair in m. 21 are covered by B1.)
3. Dyads keep the register in which they originally occur:



Ex. 3

(The D/E and B/G in m. 8, the B/G in mm. 8-9, the first E/D and the E♭/E♭ in m. 15, and the B/G in mm. 19-20 are covered by A5; the second E/D in m. 15 and the B/G in m. 20 are covered by B5.)
4. is p. (The in m. 12 is covered by B4.)
5. Consecutive figures have contrasting dynamics. (The f-f-p-p in mm. 11-13 is because of A3, B4, and A1.) Where possible the dynamic level alternates between f and p. (The in m. 6 and m. 17 are covered by A3, the 's in m. 8, m. 15, and m. 19 by A4, the E♭/E♭ in m. 21 by A2.)

D. Where not already covered by statements under A, B, or C:
1. The dyads F♯/C and F/C♯ occurring separately appear ; these are the only 's. (The C♯/F in m. 17 is

covered by A3; the C/F♯ in m. 18 will be explained under D2.) Occurring consecutively, F♯/C and F/C♯ are treated like repeating dyads under B4. (The F♯/C and the F/C♯ in mm. 3-4 are already covered by A4.)

2. B♭/G♯ appears as . (B♭/G♯ in mm. 8-9 and m. 15 are covered by A4. A at m. 18 is impossible because of C5. Alternate dynamics for the are impossible: ff because of A6, p because of C5—A/A in m. 19 must be p because of A1.)
3. The dyad B/G appears . (The B/G's in mm. 2-3 and m. 8 are covered by C1, those in mm. 8-9 and mm. 19-20 by A4, that in m. 20 by B4.)
4. Consecutive figures begin a dotted quarter apart. (They begin a half note apart in mm. 2-4 because of A4, a quarter note apart in mm. 5-6, mm. 10-11, and mm. 16-17 because of C2, in mm. 12-13, m. 15, and mm. 19-20 because of B4, and a dotted half note apart in mm. 21-22 because of A3.)

Some comments on the purpose and implications of the above statements are in order:

i. They are redundant. (For example, all occurrences of E♭/E♭ as 's are covered by A3 and C1; B1 is therefore unnecessary. Such redundancy is indicative of a tightly knit organization. The at m. 6 is related not only to the at m. 21 by the common E♭ grace notes [B1] but also to those at mm. 2-3, m. 17 and m. 21 by the common E and D eighth notes [C1] and at m. 17 by regularity of recurrence—m. 6 to the repeat of m. 6, repeat of m. 6 to m. 17, m. 17 to the repeat of m. 17 each eleven half notes [A3].)

ii. They are sufficient, given the succession of pitch classes, to infer every aspect of each moment of the movement. (Indeed, given this row, its canonic disposition without retrograde symmetry, and these statements, we may infer the movement, since these are the only four transpositions of this row which satisfy A3.)[4]

II

A. Use of the medium:

Webern makes considerable demands on the pianist, but these demands never work against the mechanics or acoustics of the instru-

[4] See Milton Babbitt, "Twelve-tone Invariants as Compositional Determinants," *Musical Quarterly*, for April 1960.

ment. The pianist is not asked to play A/A or even (See IA1). The pianist is asked to differentiate between three discrete dynamic levels, as well as five discrete articulation types, but he is never asked to play single notes (, , or) ff (See IA6), or three-note accented chords ( ) p (See IA4). The longest single notes ( ) are always f, while the shortest ( ) are p (See IC4)—with the single exception of m. 12 where the change is made easier to project because of the context: the f directly follows f (the only case where f follows f). and is in turn directly followed by the same pitches in the same articulation, but p.[5]

B. Rhythm and meter:

The frequency (almost three quarters of the time) with which consecutive figures begin a dotted quarter apart constantly tempts the listener to hear the movement in terms of a 3/8 meter. He will, however, constantly be jolted out of such a meter by various irregularities (see the exceptions to ID4). These irregularities, moreover, participate in larger regular patterns, all of which are measurable in integral numbers of halves or quarters and most of which are not measurable in integral numbers of dotted quarters:

i. the distance between terminal figures of both sections and their repetitions (the B♭/G♯ in m. 11 serves as the last figure in the first section and its repetition as well as the first figure in the repetition of the first section and second section) is always eleven halves (See IA3). For the listener this means that no change in meter is necessary to keep the metric position of sections the same for both statements—if he hears the movement in 2/4.

ii. the distances between the lower group of notes in all loud (f or ff, mostly the latter) figures involving more than two notes (and) are (in order of frequency) five, two, twelve, or three quarters. For the listener this helps define the position of the quarter note beat.

iii. the distances between consecutive low, loud chords (the lower of the two in any figure) are either five or six halves

[5] Compare the situation in Boulez' *Structures*. The pianists are asked to differentiate between twelve different ways of playing a note (indicated by >, , ·, , no indication, , , , -, , and) each one of which may appear in any of twelve discrete dynamic levels (indicated by pppp, ppp, pp, p, quasi p, mp, mf, quasi f, f, ff, fff, and ffff). For an explanation of the mechanics of the serial procedure, see György Ligeti, "Entscheidung und Automatik in der Structure Ia," *Die Reihe*, iv, pp. 38-63. Ligeti omits the fourth and tenth articulation type. He asks rhetorically: "Was könnte zwischen · und 'normal' [no indication] oder und eingeschoben werden?" (What could be inserted between · and "normal," or between and ?), but in fact and - exist in those positions in IC.

(See IA5). For the listener this helps define the position of the downbeat.

Thus the written meter is no "pure convention."[6] Nor is it difficult to hear if we hear the movement in context: the eighth-note minimal units in a 2/4 meter at ♩ = ca. 160 are preceded by sixteenth notes in a 3/16 meter at ♪. = ca. 40 at the end of the first movement and followed by quarter notes in a 3/2 meter at 𝅗𝅥 = ca. 80 at the beginning of the last movement.[7]

C. Intervallic detail:

One might suppose that the intervals between consecutive notes of each of the two canonic "voices" (i.e. the row intervals) would dominate the foreground. In fact, however, these "voices" are not voices in the traditional sense, but structural determinants. The effects of the symmetrical disposition of these "voices" on the surface texture are far more readily perceptible than the "voices" themselves. Almost every available factor serves to emphasize the connections between canonically corresponding notes in the two "voices" (the dyads) at the expense of the connections between consecutive notes within the "voices":[8]

i. register: the "voices" cross constantly, while register for four of the dyads is constant and for the other three more or less so (See IC3).

ii. correlation between pitch class and interval class: as a row form is transposed, its interval classes are associated with new pitch classes, but because of the constant axis of inversion, the identity of the seven dyads remains unchanged regardless of row transposition.

iii. dynamics: for the most part, consecutive notes within the "voices" are at a contrasting dynamic level while canonically corresponding notes are invariably at the same dynamic level. Furthermore, two of the seven dyads always keep the same dynamic level (See IA1, IA2), another almost always (See IB2).

iv. articulation: for the most part, consecutive notes within the two

[6] See my more general discussion of this problem for the third movement in the first issue of PERSPECTIVES OF NEW MUSIC.

[7] The frequency of certain interval classes (0, $\pm$ 3, and 6 semitones) at distances of an even number of quarter notes established by David Lewin ("A Metrical Problem in Webern's Opus 27," *Journal of Music Theory*, Spring 1962, pp. 124-133) may also help establish the meter, but is insufficient in itself in that it gives no indication of where the downbeat is.

[8] It seems to be commonly assumed that the "voices" in Webern's structural canons are to be heard as textural voices, e.g. Rene Leibowitz, *Schoenberg and His School*, translated by Dika Newlin, Philosophical Library, New York, 1949, pp. 211-215, 235-238.

"voices" are in contrasting articulation, while canonically corresponding notes are in the same articulation. Furthermore, one of the seven dyads is always in the same articulation type (See IA1), three are in the same articulation type more often than not (See IB1, IC1, and ID2).

v. rhythm: at least for the first three articulation types, notes within "voices" are further apart in time (two or more eighths, usually three) than canonically corresponding notes (always one eighth): thus the one factor which consistently identifies to which of two "voices" a note belongs is its position in a two-eighth-note figure.[9]

The significant exceptions to the above will all be found in figures of the and articulation types; here, notes within a "voice" are to be heard at the same dynamic level, either simultaneously and in the same articulation or closer in time than the canonic time lag and legato, and closer in register than many of the canonically corresponding notes. The intervals emphasized by these figures are:

a. predominantly odd (composed of an odd number of semitones) as opposed to the exclusively even intervals of the dyads, and are
b. the same as the intervals emphasized at the end of the first movement and the beginning of the third.

Ex. 4

D. Larger intervallic structure ("harmonic motion"):

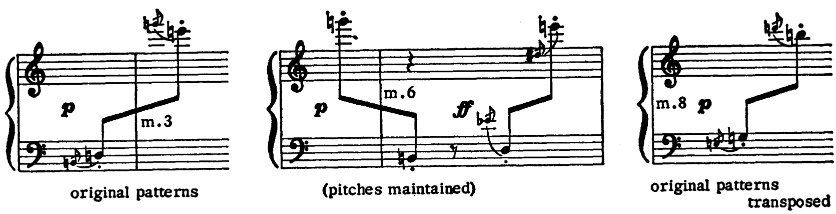
Despite its highly energetic texture (the large intervals, the way the rhythmic detail works against the meter, the constant rapid changes of dynamics and articulation) the movement sounds highly static. The emphasis placed on the seven dyads (See factors ii-v above) and the fact that these dyads stay for the most part in the same register (See IC3) prevents almost all sense of harmonic motion. What sense there is is produced by the transposition of and figures as defined by IA5. Most of the pitch classes that change register because

[9] Although not completely consistent, the disposition of the hands might be considered as an identifying factor, at least for the pianist.

of IA5 participate in figures; hence the harmonic shape of the movement is concentrated in the successive appearances of this figure:

Ex. 5

Various details help these figures emerge from the surrounding figures: The figure at mm. 3-4 creates the first deviation from the norm of dotted quarter between beginnings of figures (See ID4). (I am unsure why this figure is not ff. Perhaps the combination of the first rhythmic and the first dynamic deviation would be too much.) The figure at mm. 8-9 is immediately preceded by the first deviation from the normal register of the dyads (and the only deviation not occurring in a figure):



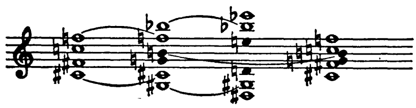
Ex. 6

The figure at m. 15 (the point of climax) is at the end of the only p f ff succession in the movement.[10] Nevertheless, the type of harmonic motion presented by these figures is a limited one. In the first place, most of this motion is within an essentially stationary vertical sonority; that is, most of the dyads in the figures are in their normal register. This is made possible (despite IA5) by the fact that the most frequent interval between adjacent pitches in the vertical ordering of all dyads with invariable register, the fourth,

[10] This point was brought to my attention by Mr. Tobias Robison.

Ex. 7

is also the most frequent relationship between transposition levels of the same row form. (The first and second, second and third, and fourth and first row forms are a fourth apart.) In the second place, this same interval is also present in the chord to be transposed. Thus we have an effect similar to that of arpeggiation without stepwise linear motion in tonal music. There is no linear motion of the kind which produces the strongest effect of motion in tonal music: motion by step from one element of the established vertical sonority to another. Where linear motion by step occurs, it is almost exclusively of the neighbor-note type as, for example, within the figures:



Ex. 8

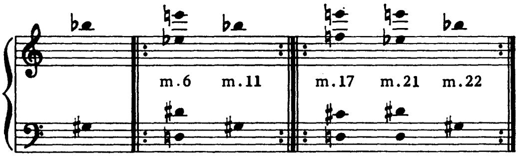
as well as between the pitches of the figures and the fixed pitches of the total vertical sonority, particularly those receiving emphasis through being at the beginning or the end of a section (the  figures) and the other ff figures[11] (see Ex. 9).

[11] The boundaries of each section are presumably made obvious by the exact repetition. Thus each section can be thought of as beginning and ending with a B♭/G♯ figure:

first section — m.11 | repetition of first section — m.11 | second section — m.22 | repetition of second section — m.22

However, in a context in which a number of figures keep recurring exactly, the repetition of an entire section loses some of its obviousness. The terminal B♭/G♯ figures are of immense importance to the structure of the movement, but are in constant danger of being submerged in the surrounding detail in a way that the ff figures are not. The following factors help create a strong sense of identity for the terminal B♭/G♯ figures:

1. Both B♭ and G♯ are so often used as the twelfth tone of one row and the first of the next.
2. B♭/G♯ when used as a terminal figure is always with the B♭ first. Other appearances either reverse the order (m. 5 and m. 15) or change the articulation (mm. 8-9, m. 15, and m. 18). The interrelation between the various



Ex. 9

Note the relationships between the sonority outlined

Ex. 10

and the climax chords:

Ex. 11

E. Structure of the movement as a whole (form):

Here, as in tonal music, large scale intervallic structure is the basis of form; textural details serve primarily to project or clarify this structure and thereby to create form. Here, as in tonal music, an analy-

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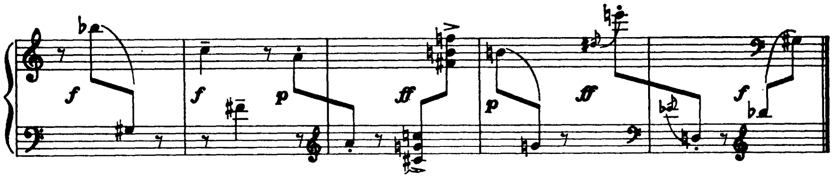
characteristics of sound would have been a simpler one (and simpler to describe; see the last exception to ID2) had the last five measures read:



Such a version, however, not only adds a B♭/G♯ in the order and articulation type otherwise reserved for terminal points but also removes the long rest before the figure in m. 22, thereby making the beginning of the second statement of the second section considerably less obvious. (For another important effect of this rest, see the end of this article.)

sis of form in terms of textural details without reference to the underlying large scale intervallic structure is misleading.[12] Equally misleading are those analyses which assume that such an underlying intervallic structure is automatically provided for by the row scheme.[13] Now in fact the row structure of this movement has a great deal to do with its form. The pitches of the large scale intervallic structure described in Section D (See Exx. 8-11) are made up largely of the first, second, sixth, seventh, eighth, and twelfth tones of the various rows.[14] But the listener does not hear these pitches as participating

[12] Such as Wilbur Ogdon's analysis of this movement ("A Webern Analysis," *Journal of Music Theory*, Spring 1962, pp. 133-138). Ogdon considers form as determined by rhythm and dynamics independent of pitch elements. He mentions "the isorhythmic attitude of this composition" and continues, "The serial progression runs on its own track, as it were, while the rhythmic-formal structure develops independently." Yet not only are relationships between pitch and nonpitch characteristics far too consistent to consider them as developing independently (see section I of this analysis) but the "rhythmic-formal structure" is less regular than Ogdon's abstracts imply, and much less regular than the talea to which he refers. His abstract reads:

A1	A2	A3	A4
a1 a2 b2	a1 a2 b1	a1 b2	a1 a2 b1
B1	**B2**	**B3**	**B4**
a1 b1	a2 b2	b1 a1	a1 a2 b2 (a1)

where

a1 =
a2 =
b1 =
b2 =

followed by a rest
followed by a rest
followed by a rest
followed by a rest

Certain regularities in the abstract are misleading:

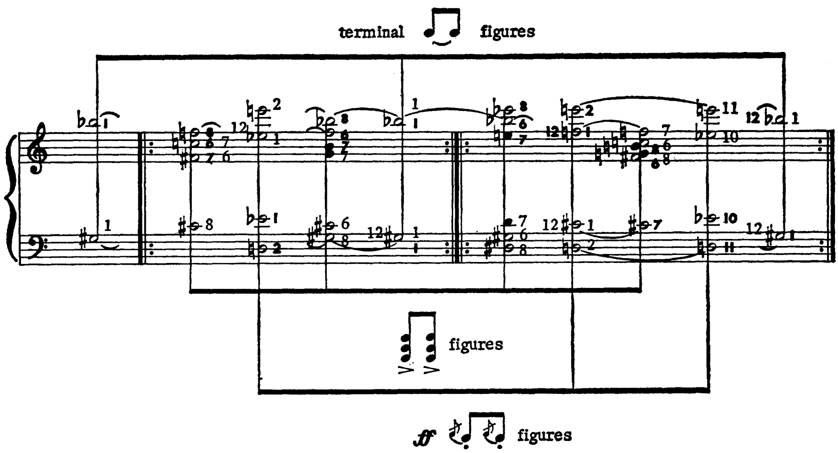
1. the regularity of phrase structure. (No reason is given for the placement of the phrase brackets. The consistency of the factors which tend to produce grouping in the first section—first unit loud, last unit long—disappears in the second.)
2. the alternation of a1, a2, b1, and b2 in B1, B2, and B3. (The numbers have different meanings for a and b.)
3. the symmetrical relationship between the succession of b's in the two sections—b2 b1 b2 b1 and b1 b2 b1 b2—and the identity of A1 and the "recapitulation phrase," B4. (The b2 in B4 is inaccurate. The end should read a1 a2 b1 a1 (a1).)

[13] Such analyses are evidently based on the widespread argument that twelve-tone technique is a substitute for tonality and that hence row schemes are like key schemes. A primitive example of this kind of analysis would be: At the end of the first section tone twelve of row two becomes tone one of row one for the repetition of the first section, but can also become tone one of row three for the beginning of the second section, just as the dominant at the end of the first section of a tonal binary form can lead back to the tonic or lead on to the second section.

[14] The horizontal and vertical relationships in this structure, particularly the identities, are made possible by the frequency of fourths and major seconds both between tones one, two, six, seven, eight, and twelve and between the various transposition levels used.

in the large scale intervallic structure of the movement just because of the regularity of their positions in a succession of rows—he hears them that way because they are sorted out for him and made clear to him by the particular nonpitch characteristics the composer has assigned to them.

The following example indicates the structure of the movement as a whole. (The numbers indicate the position of each note in its respective row; bold face numbers mean that the note comes from an inversion form.)



Ex. 12

The only exception to an otherwise completely regular pattern is the figure at m. 21. Yet it can hardly be ignored simply because it does not fit into the row scheme the way the other figures do, particularly since it is given an important position in the shape of the movement as we perceive it. It is followed by two quarter rests, the longest silence in the movement. For a moment m. 21 might seem to be the end. After all, these pitches in this articulation at this dynamic level have already been used in the first section as interior punctuation (m. 6), and two of these pitches (E and D) have been used in the same position in the same articulation type at the same dynamic level for the same purpose in the second section (m. 17). Indeed, this is the only use of this articulation type at this dynamic level that does not use the first two tones of a row and does not divide a section approximately in half: hence for a moment the ambiguity at m. 21 and hence the Haydnesque wit of the end of the movement.