A Strategy of Large-Scale Organization in Stravinsky's Late Music

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Stravinsky's music is often articulated into discrete, insulated textural blocks that are sharply juxtaposed in time without transition.[1] The *Symphonies of Wind Instruments* (1920; revised 1947) represents an extreme in this regard.[2] It begins with the

[1]This feature of Stravinsky's music has been widely acknowledged. See, for example, Pieter van den Toorn (*The Music of Stravinsky* [New Haven: Yale University Press, 1983]), where the phenomenon, termed "block juxtaposition," is identified as a "peculiarly Stravinskian conception of form" (p. 454). Jonathan Kramer, in his "Discontinuity and Proportion in the Music of Stravinsky" (in *Confronting Stravinsky*, ed. Jann Passler [Berkeley: University of California Press, 1986], 174–94), describes Stravinsky's music as "overtly sectionalized": "Although the delineation of sharply juxtaposed sections has its origin in harmonic stasis, the resulting discontinuity is generally supported by other means—contrast of instrumentation, texture, motivic material, tempo, formal design, and even compositional procedure. Not all of Stravinsky's music is discontinuous, of course, just as not all of his harmonies are static, but discontinuity is crucial to his style" (p. 174).

[2]All of the extensive analytical literature on the *Symphonies of Wind Instruments* identifies its unusual degree of fragmentation. See, for example: Edward Cone, "Stravinsky: The Progress of a Method," *Perspectives of New Music* 1/2 (1962): 18–26; Laszlo Somfai, "*Symphonies of Wind Instruments* (1920): Observations on Stravinsky's Organic Construction," *Studia Musicologica* 14 (1972): 355–83; Jonathan Kramer, "Moment Form in Twentieth Century Music," *Musical Quarterly* 64 (1978): 177–94; Joseph Straus, "A Principle of Voice Leading in the Music of Stravinsky," *Music Theory Spectrum* 4 (1982): 106–24; Pieter van den Toorn, *The Music of Stravinsky*; Christopher Hasty, "On the Problem of Succession and Continuity in Twentieth-Century Music," *Music Theory Spectrum* 8 (1986): 58–74; Jonathan Kramer, "Discontinuity and Proportion"; Jonathan Kramer, *The Time of Music* (New York: Schirmer Books, 1988); Richard Taruskin, *Stravinsky and the Russian Traditions* (Berkeley: University of California Press, 1996); Stephen Walsh, "Stravinsky's Symphonies: Accident or Design?" in *Analytical Strategies and Musical Interpretation*, ed. C. Ayrey and M. Everist (Cambridge: Cambridge University Press, 1996): 35–71; and Alexander Rehding, "Towards a 'Logic of Discontinuity' in Stravinsky's *Symphonies of Wind Instruments*: Hasty, Kramer and Straus Reconsidered," *Music Analysis* 17/1 (1998): 39–65. Kramer (1978) considers the *Symphonies of Wind Instruments* a prototype for "moment form."

music shown in Example 1a, a distinctive fragment that occurs subsequently at two different levels of transposition, as in Examples 1b and 1c.[3]

The opening music is framed by pitch-class F as its lowest and highest notes. Melodically, it features two descending minor thirds, the first from D to B and the second, filled in, F–E–D. When this music recurs, it is first transposed down a semitone, so that E forms the registral frame, and finally down an additional whole tone, so that D forms the registral frame. The large-scale progression F–E–D recalls and composes-out the initial melodic fragment.[4]

This kind of "transposed repetition" is a notable event. Most repetitions in Stravinsky's music are literal, with material repeated at the same pitch level. Ostinatos and intense, obsessive repetitions of short melodic fragments are persistent features of Stravinsky's music and contribute to its sense of harmonic stasis. Transposition of material, on the other hand, is comparatively rare and usually creates a strong sense of purposeful, directed motion. As such, it is an important source of large-scale direction and coherence in Stravinsky's music.[5]

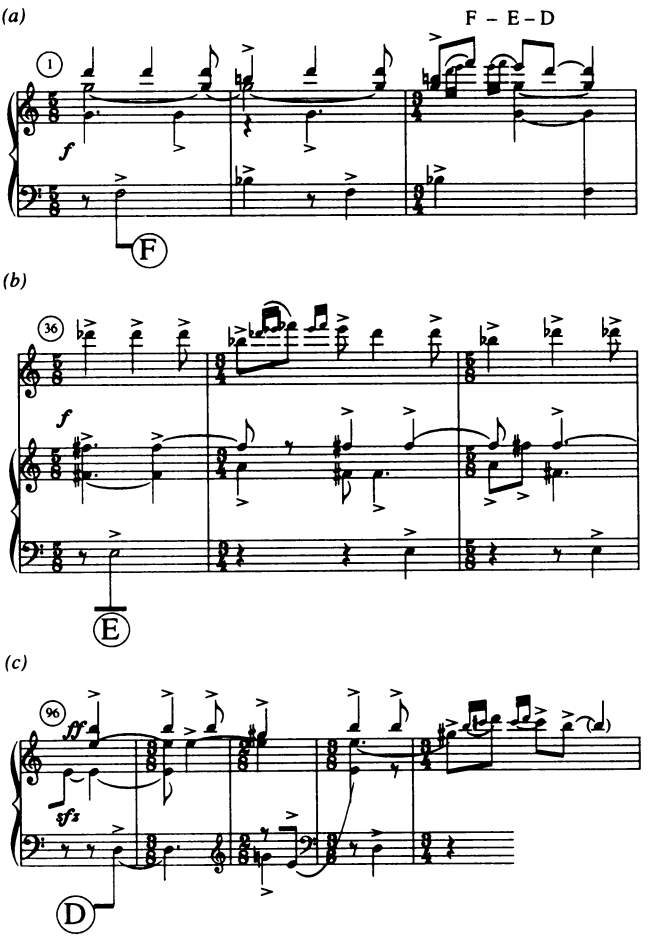
Van den Toorn asserts that "a highly incisive form of abrupt block juxtaposition manifests itself throughout. Indeed, the blocks, upon successive (near) repeats, attain a self-enclosed stability, a distinction and insulation possibly without equal in Stravinsky's oeuvre" (p. 339).

[3]Taruskin (in his *Stravinsky and the Russian Traditions*) interprets this opening fragment as "a psalm or canticle tone" within a larger evocation of a Russian Orthodox office of the dead (see pp. 1488–93). In its initial focus on F, this fragment joins a large family of F-centered references to death in Stravinsky's music, including, among the later works, the Prelude to the Graveyard Scene of *The Rake's Progress*, *Epitaphium*, *Introitus* (particularly its opening chords), and the Postlude to *Requiem Canticles*.

[4]In "A Principle of Voice Leading," I trace this progression and argue that it continues to the C of the final chord in a composing-out of the descending bass tetrachord F–E–D–C. Taruskin identifies the same progression (in *Stravinsky and the Russian Traditions*) and relates it to octatonic structures.

[5]The problem of hearing coherent large-scale structures in music so obviously divided into discrete textural blocks is a central theme in much of the analytical literature on Stravinsky. See, for example: Cone, "Stravinsky: The Progress of a Method";. Hasty, "On the Problem of Succession and Continuation"; Joseph Straus, "The Problem of Coherence in Stravinsky's

Example 1. Symphonies of Wind Instruments.[6]
(a) initial fragment centered on F with melodic descent, F–E–D; (b) transposition down a semitone; (c) transposition down a further whole tone, completing a large-scale statement of F–E–D



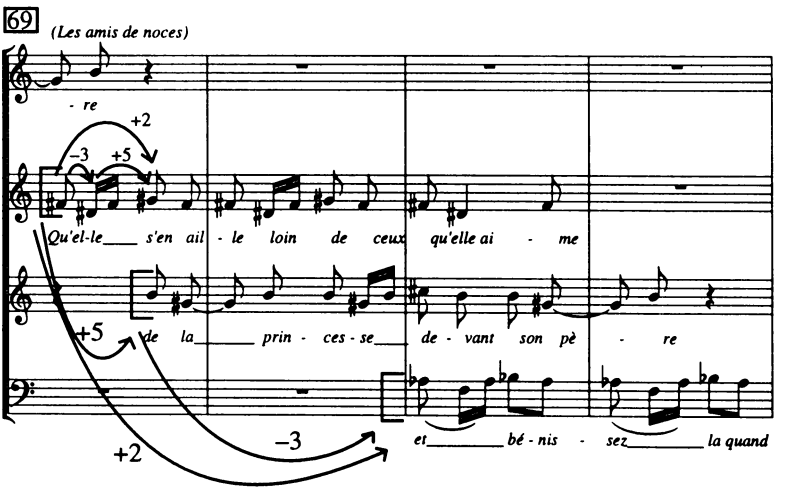
Serenade in A," *Theory and Practice* 12 (1987): 3–10; Pieter van den Toorn, *Stravinsky and "The Rite of Spring"* (Berkeley: Unversity of California Press, 1987); Pieter van den Toorn, "Neoclassicism and Its Definitions" in *Music Theory in Concept and Practice*, ed. James Baker, David Beach, and Jonathan Bernard (Rochester: University of Rochester Press, 1997): 131–56.

[6]Piano reduction by Arthur Lourié.

In general terms, transposed repetition refers to $T_n(X)$ where X is some distinctive bit of musical material, such as a tune, a chord, or—in the later music—a row, a hexachord, or an entire twelve-tone array. The interval of transposition, *n*, is usually found prominently within X, and any longer transpositional path, created by successive transpositions of the same X, tends to mirror the intervallic content of X, and possibly the actual pitch-class content of X. In *Symphonies of Wind Instruments*, the descending minor thirds of the initial fragment, and its concluding descent F–E–D, are both reflected in the larger transpositional path along which the fragment is projected.

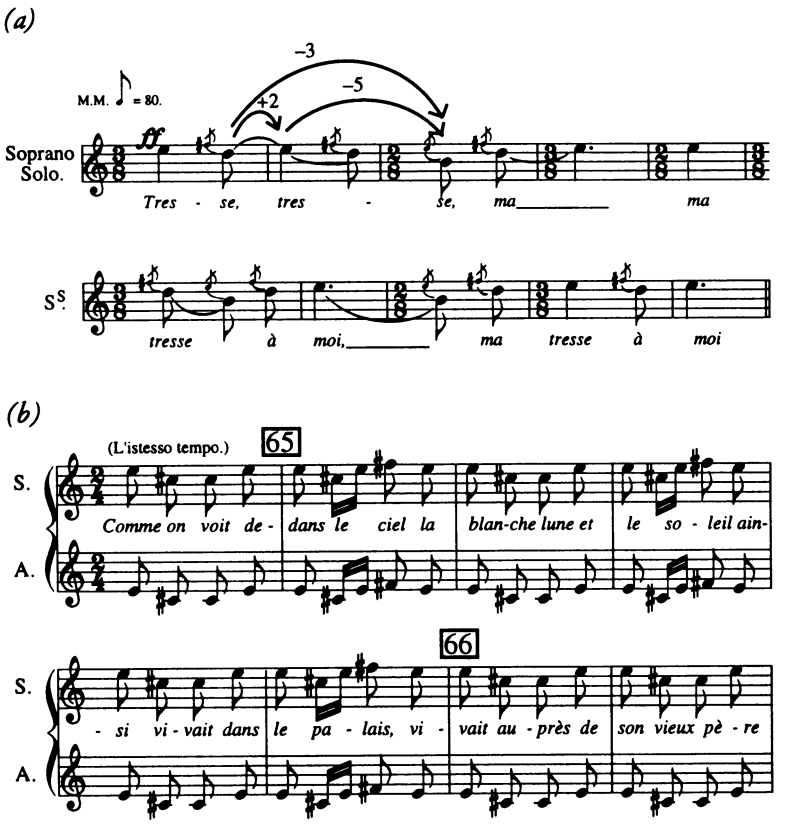
In *Symphonies of Wind Instruments*, this transpositional path takes roughly 100 measures (about one third of the work) to traverse, but paths of this kind may be of any length. In the third scene of *Les Noces*, three successive vocal entries traverse a transpositional path that repeats, in retrograde-inversional order, the shape of the melody being transposed (see Example 2).

Example 2. Les Noces*: composing-out of a melodic fragment.*



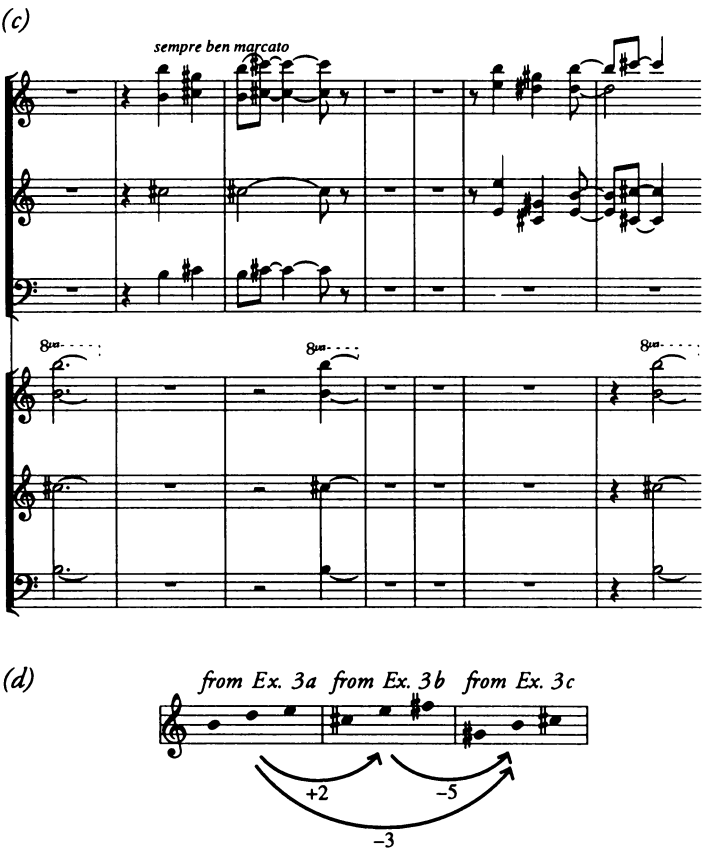
The melodic fragments involved describe forms of T_n-type [035]. This intervallic profile, a perfect fourth with a minor third at the bottom and a major second at the top, is extraordinarily prevalent in *Les Noces*, as in its opening fragment, B–D–E (see Example 3a).[7]

Example 3. Les Noces*: (a) initial melodic fragment, B–D–E; (b) prevalent transposition of the initial fragment, C♯–E–F♯;*



[7]Van den Toorn (in *The Music of Stravinsky*) refers to this trichord-type as "an ever-present 'basic cell'" (p. 159).

Example 3. Les Noces*: (c) concluding coda, G♯–B–C♯; (d) large-scale path that composes-out the melodic fragments.*



While it occurs at many transpositional levels throughout the work, only when it appears a whole tone higher (as C♯–E–F♯) does it approach the persistence of the original form, as at the beginning of the third scene (see Example 3b). The work concludes with one of those remarkable, protracted Stravinskian codas, where time seems to stop amid slow, obsessive repetition of a small melodic fragment, in this case involving the notes G♯–B–C♯ (see Example 3c). The large-scale progression, one that

spans the entire work, thus replicates the intervallic shape of the original motive (see Example 3d).[8]

In the early 1950's, Stravinsky's musical style began to change dramatically as he began to write serial and, eventually, his own distinctive brand of twelve-tone music. This dramatic shift in compositional orientation affected every aspect of his music, from its most immediately apprehensible melodies, harmonies, and rhythms to its deep modes of formation. Many of the most distinctive attributes of his musical style persist in the later music, but adapt themselves to a new musical environment. Transposed repetition remains a potent means of creating a long-range sense of directed motion, but the nature of the transposed material changes, and the transpositional paths change accordingly.

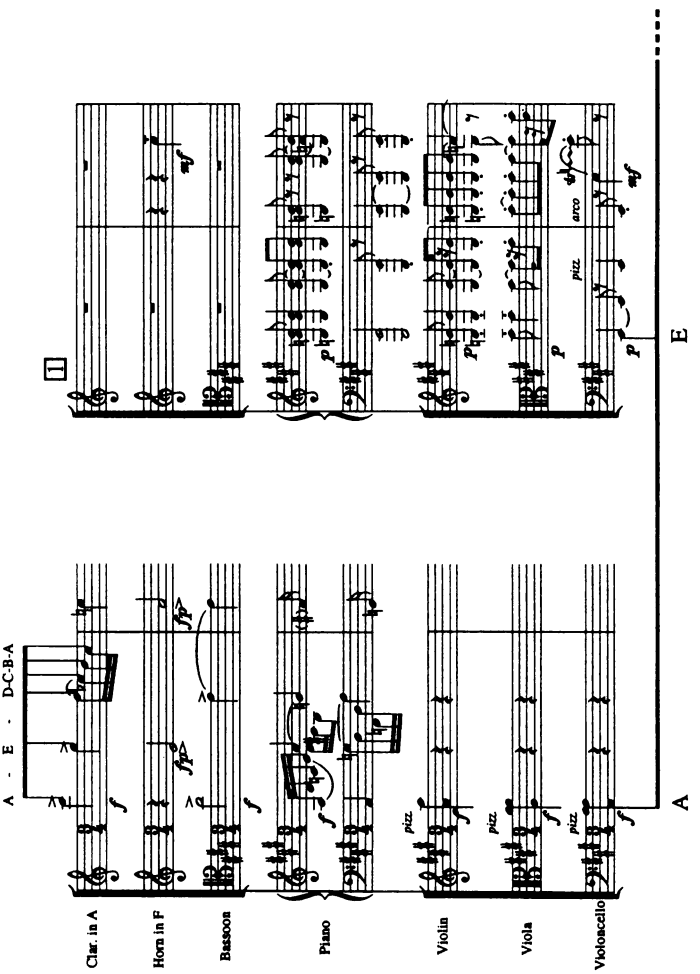
In the first movement of the *Septet* (1953), transposed repetition assists in creating a large-scale composing-out of the initial melody, as shown in Example 4. The movement begins with a bright, A-majorish fanfare, featuring the tune A–E–D–C–B–A–(C♯). In the opening section, strongly centered on A, that tune is treated serially—augmented and diminished rhythmically, and inverted.[9] In the passages that follow, the music moves to E, then D, and the first half of the movement concludes on C♯, a kind of interruption in the composing-out of the motive. At that point, the opening music returns—initiating a complete large-scale statement of the tune that concludes with the last chord of the movement, with both the interrupted form and the complete statement beautifully echoed in the melody of the final measures.

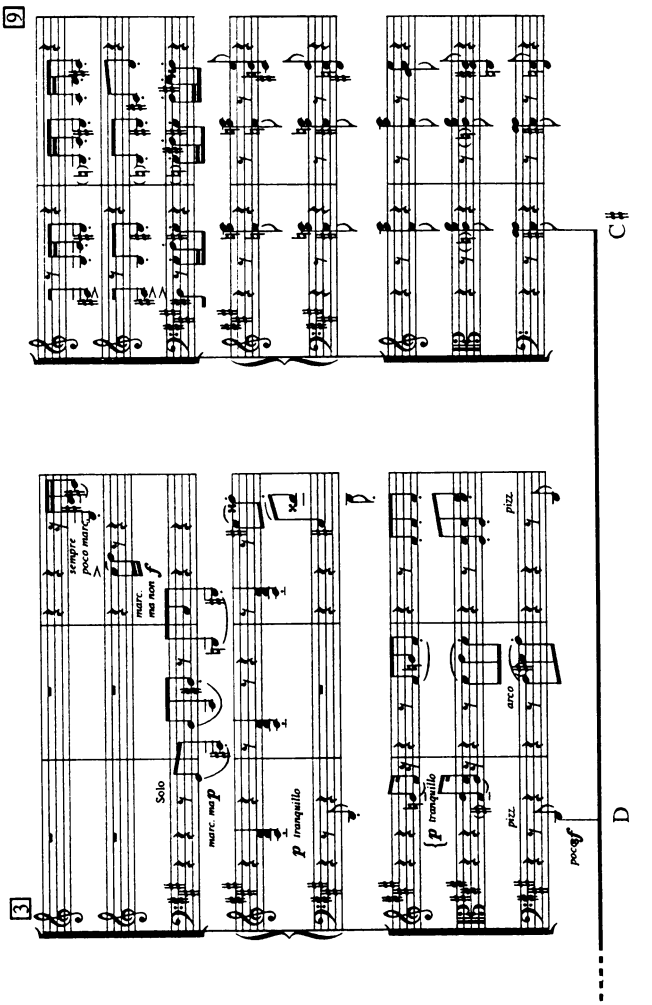
The complete large-scale motivic statement is enabled by the transposed repetition of the E-minorish music from Rehearsal 2.

[8]In my *Introduction to Post-Tonal Theory*, 2nd ed. (Englewood Cliffs, NJ: Prentice-Hall, 1999), I describe a similar piece-spanning motion in *Oedipus Rex* (see pp. 137–38).

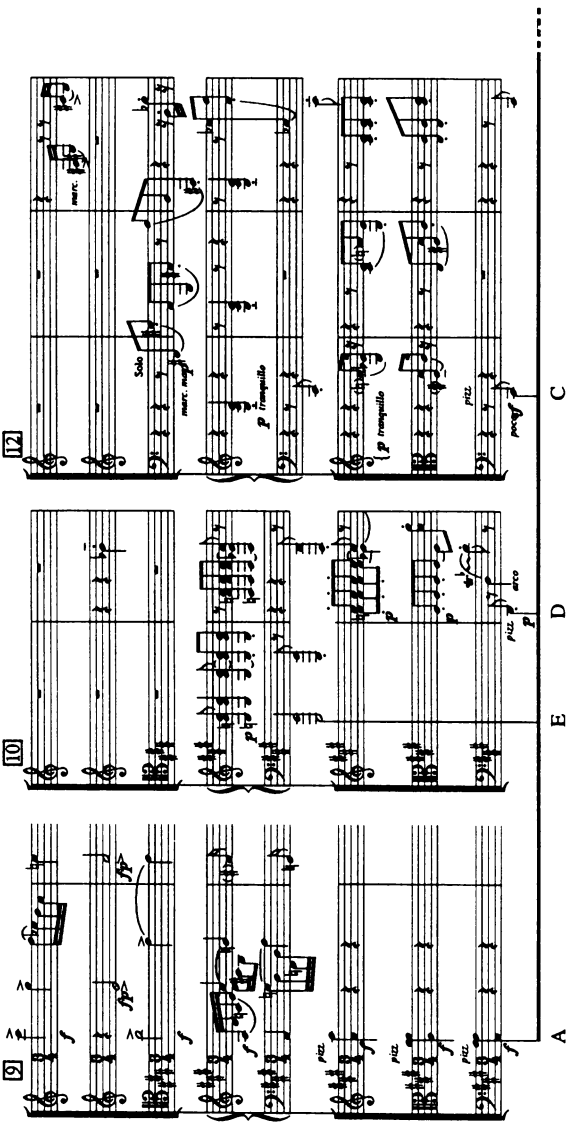
[9]The movement thus belongs to a class of works from the period that treat diatonic tunes in a serial manner, including *Cantata* (1952), "Full Fadom Five," from *Three Shakespeare Songs* (1954), and *Greeting Prelude* (1956). George Perle is incorrect in describing this movement as "entirely nonserial" (on p. 55 of his *Serial Composition and Atonality: An Introduction to the Music of Schoenberg, Berg, and Webern* [Berkeley: University of California Press, 1991]).

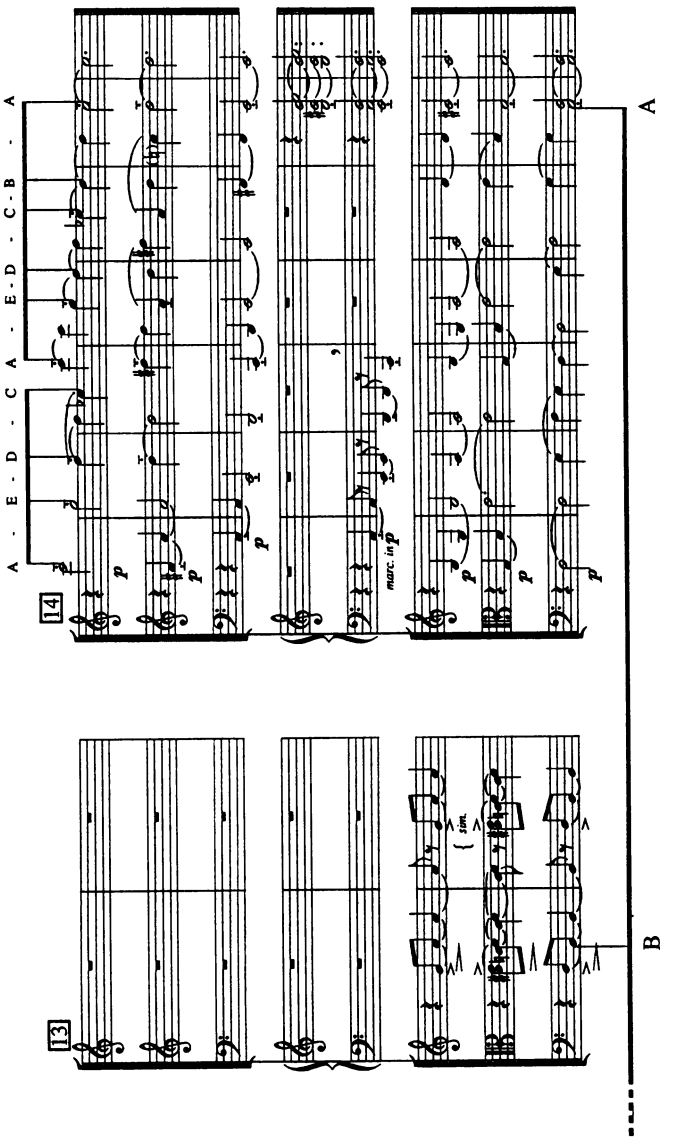
Example 4. Septet, *first movement: melodic fragment and large-scale path.*




9
3
sempre poco marc.
marc. ma non
Solo
marc. ma p
p tranquillo
pizz.
arco
pizz.
pocof
C♯
D

Example 4 (continued).



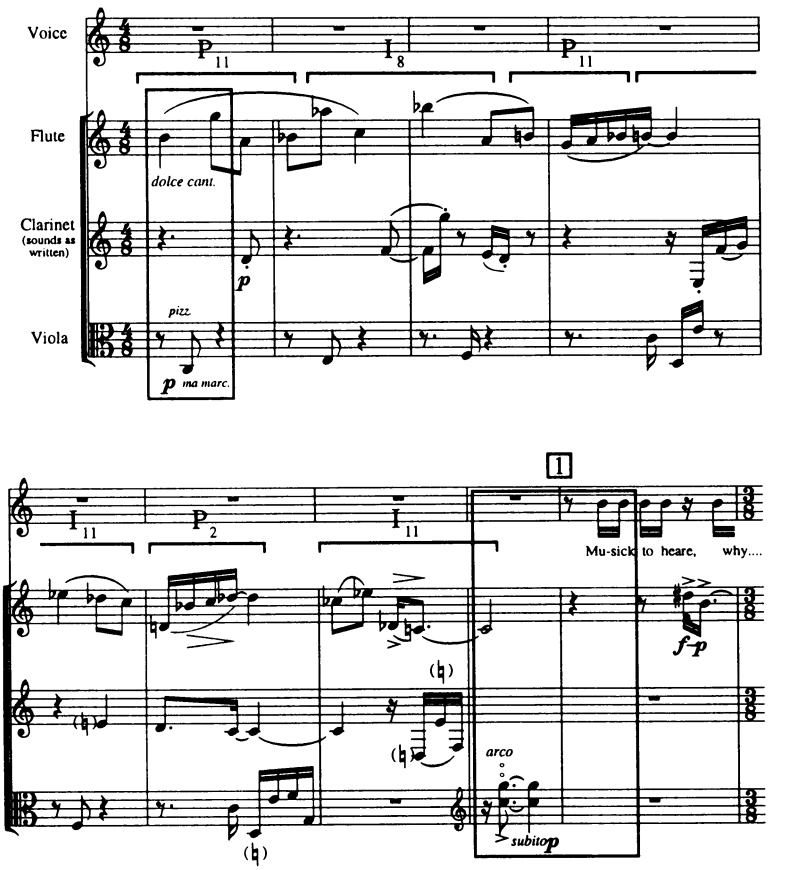

A - E - D - C A - E - D - C - B - A
14
13
marc. in p
sim.
A
B

At Rehearsal 10, that music begins at its original level, then is immediately transposed down a step to D. That dramatic shift impels the music toward the completion of a motivic journey left unfinished in the first half of the movement.[10] In this instance, transposed repetition does not in itself define the larger path; rather, it is invoked to propel the music at one crucial step in its journey.

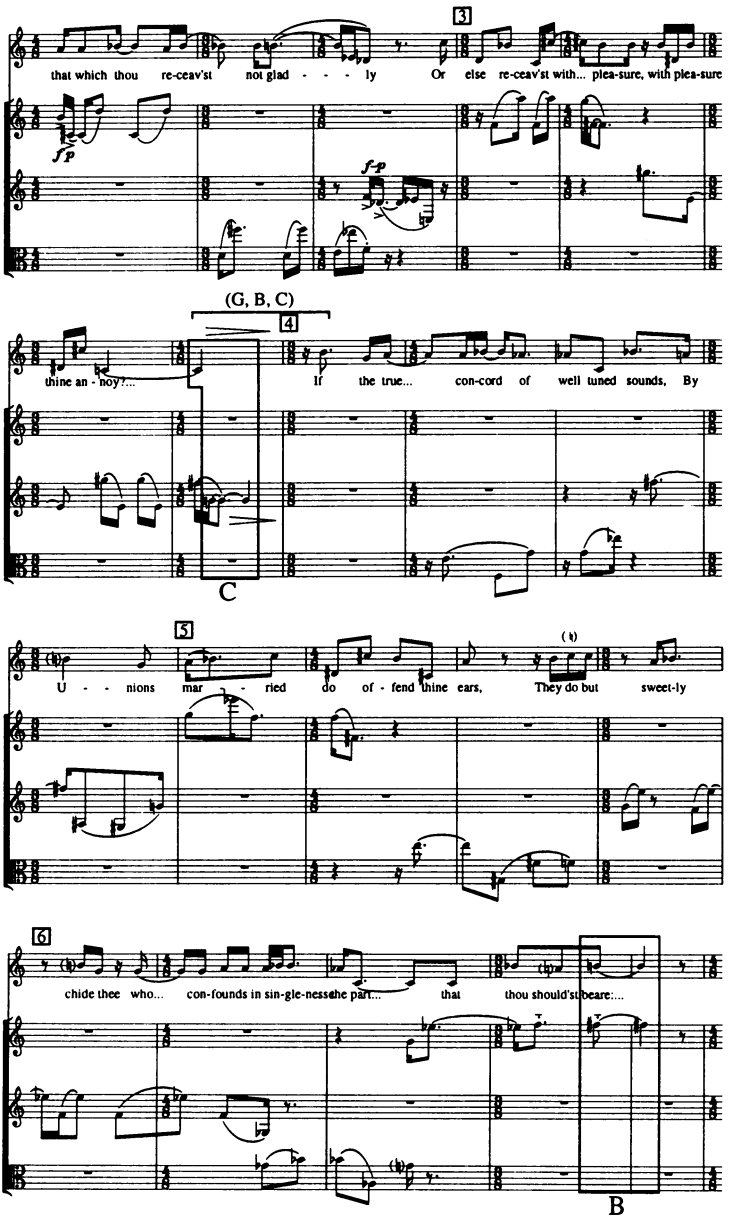
As Stravinsky's music became more intensively serial through the 1950's, his musical style and the audible musical surface changed in significant ways. Amid the striking changes, however, transposed repetition remained an important resource for creating large-scale coherence. "Musick to heare," the first of the *Three Shakespeare Songs* (1954), is organized almost entirely with reference to a four-note series: B–G–A–B♭. At the beginning and ending of the song, melodies derived from that series interact with a contrasting melody that consists of the first five notes of the C-major scale, played in either ascending or descending order. The two kinds of melodies conjoin, at the end of the instrumental introduction and again at the end of the entire song, to make a strong cadence on the perfect fifth C–G, a vivid musical representation of the poetic text, which describes music as "a speechless song being many seeming one" (see Example 5). In the body of the song, series forms are arranged to produce cadential perfect fifths on C (Rehearsal 4), B (Rehearsal 7), and G (Rehearsal 9), as shown in Example 6. That path, and those particular notes, are frequently expressed on the musical surface, as indicated in Examples 5 and 6. The large-scale transpositional path thus composes-out a vivid detail of the musical surface. In this case, the musical material being transposed is not a self-contained textural block, as in the previous examples, but a single interval: the cadential perfect fifth.

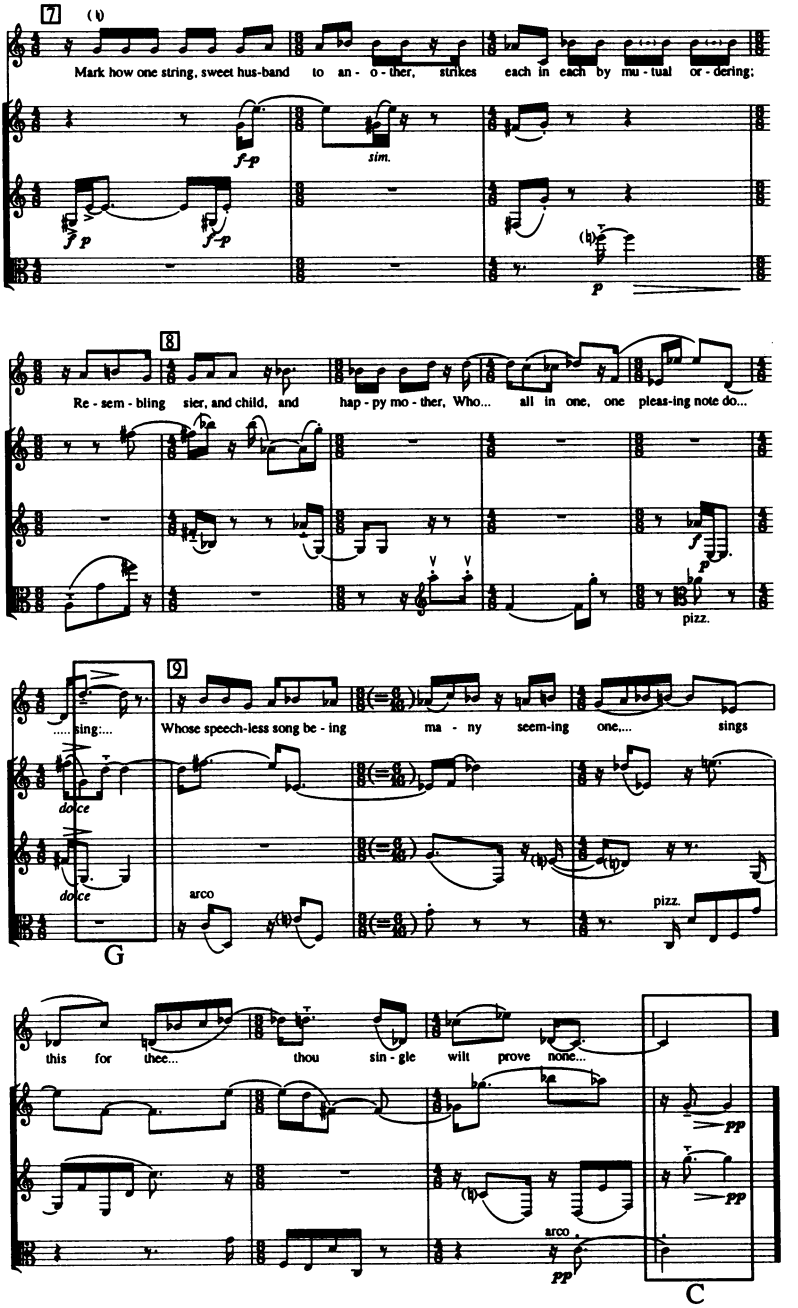
[10]The tonal motion from E (usually inflected as E minor) to D (usually inflected as D major) has a well-established expressive value in Stravinsky's music, normally suggesting a movement from death to a transcendence or acceptance of death. See, for example, the first and last scenes of *Orpheus*, the central scene (Act II, Scene 2) of *The Rake's Progress*, the first movement of the *Cantata*, and the Prelude and Postlude of *In Memoriam Dylan Thomas*. The key signature of three natural signs at Rehearsal 10, the moment of the transposed repetition, is the last key signature to appear in Stravinsky's music.

Example 5. "Musick to heare" from Three Shakespeare Songs*: conjunction of a serial melody and a diatonic melody.*



Example 6. "Musick to heare" from Three Shakespeare Songs*: a progression of cadential perfect fifths.*




7
Mark how one string, sweet hus-band to an - o - ther, strikes each in each by mu - tual or - dering;
sim.
8
Re - sem - bling sier, and child, and hap - py mo - ther, Who... all in one, one pleas-ing note do...
pizz.
9
.....sing:.... Whose speech-less song be - ing ma - ny seem-ing one,... sings
dolce
dolce
arco
pizz.
G
this for thee... thou sin - gle wilt prove none...
arco
C

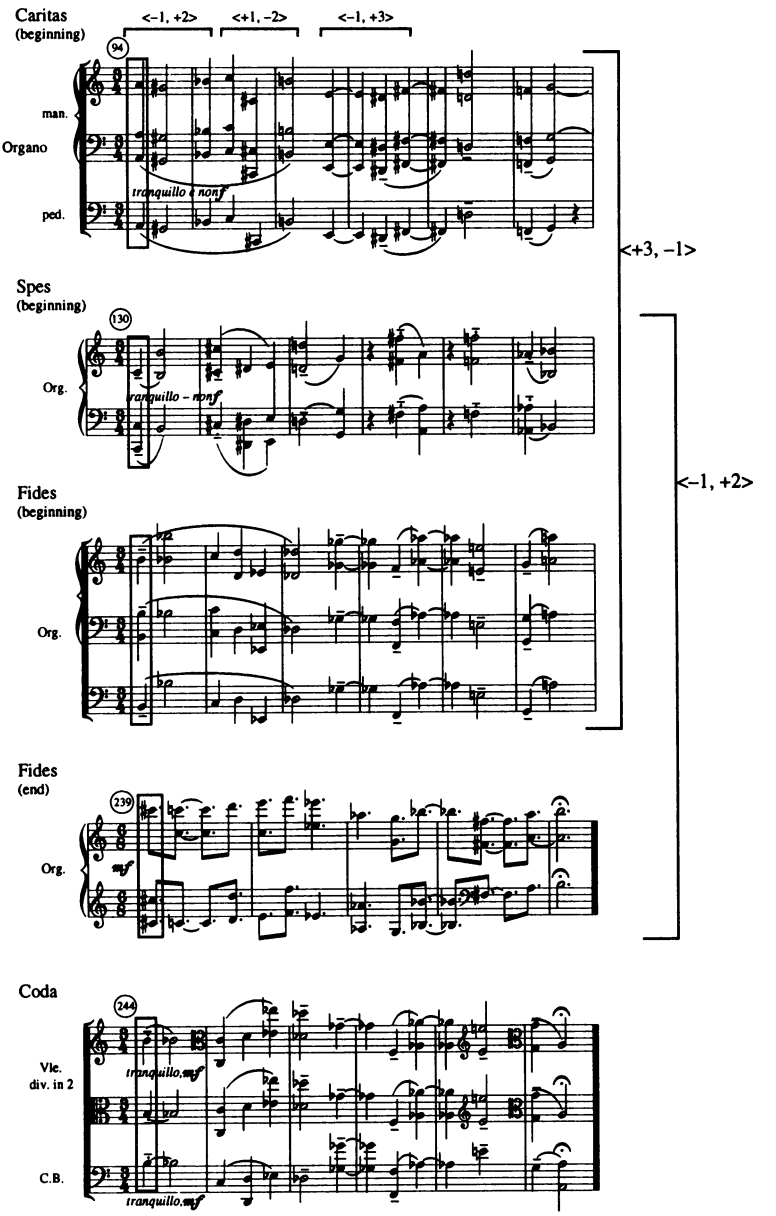
Canticum Sacrum (1956) is Stravinsky's first work to contain complete twelve-tone movements.[11] Transposed repetition continues to operate in these movements, but now the material transposed is the twelve-note series itself. The large central movement is in three sections, which set biblical verses on the three hortatory virtues: charity, hope, and faith. Each section begins, and the third section ends, with a distinctive organ solo in octaves; the movement concludes with a coda in which the same music is scored for violas and contrabasses (see Example 7). The first four statements of this twelve-note melody are at different transposition levels; the coda restores the level of the third statement.[12] The melodies are identical rhythmically except for the fourth, which is a strict rhythmic augmentation.[13] The larger transpositional moves compose-out the intervallic patterns of the melody itself. For example, the first three notes of the first melody, A–G♯–B♭, describe the intervallic succession <–1, +2>, which is heard immediately thereafter in inversion. The same intervallic succession also defines the transpositional relationships among the second, third, and fourth melodies, taken as wholes. Similarly, the three-note fragment E–D♯–F♯ in the first melody describes an intervallic succession, <–1, +3>, which is heard in retrograde inversion in the transpositional relationships of the first three melodies, taken as wholes. Intervallic contours contained within the series thus shape the larger path along which the series as a whole is projected. Within a strictly twelve-tone context, then, transposed repetition continues to have meaning as a determinant of large-scale motion.

[11]For a complete chronology of Stravinsky's early evolution toward twelve-tone writing, see Susannah Tucker, "Stravinsky and His Sketches: The Composing of *Agon* and Other Serial Works of the 1950s" (Ph.D. diss., Oxford, 1992).

[12]The first tune in Example 7 is related at $T_{11}IR$ to the series for the work as a whole.

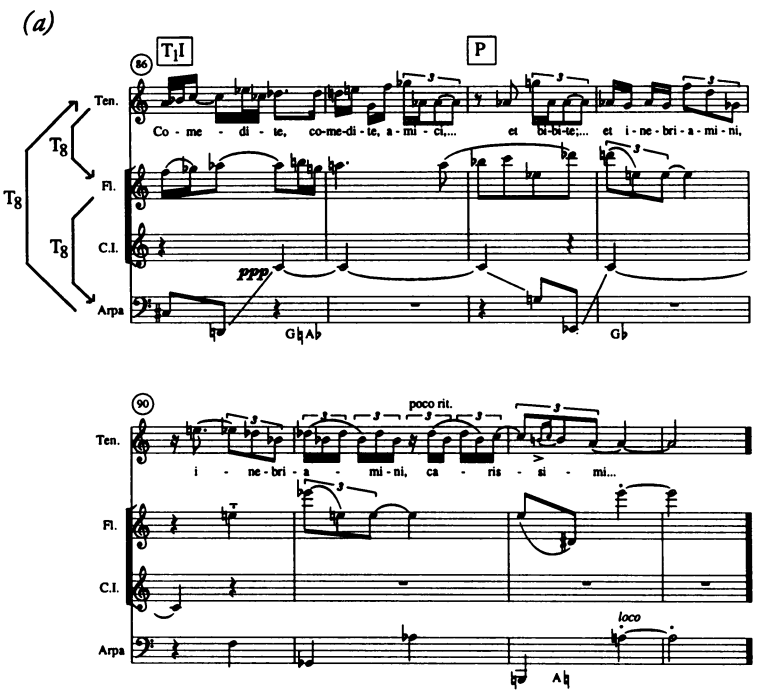
[13]The rhythm is a recurring thematic element throughout the movement, in the manner of a rhythmic *talea* in an isorhythmic motet. See Tucker, "Stravinsky and His Sketches," pp. 124–26.

Example 7. Canticum Sacrum, *third movement ("Ad Tres Virtues Hortationes"): transposition of a twelve-note series.*

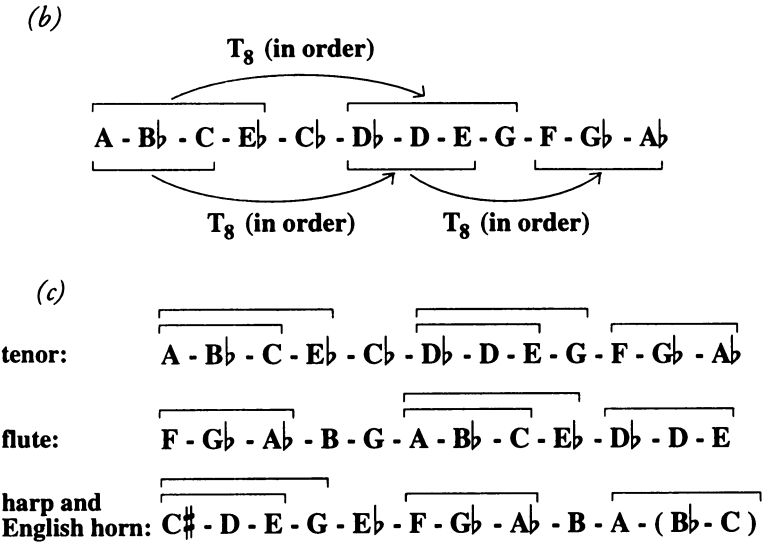


The "Sensus Spei" movement of *Threni* (1958), Stravinsky's first entirely twelve-tone work, provides an even more striking example. It is punctuated by heavily doubled and sustained statements of single notes or pairs of notes which, taken together, describe a series statement that takes virtually the entire movement to unfold. In this case, transposed repetition is stripped down to its bare essentials. A single note, memorably orchestrated, acts as the distinctive bit of musical material to be transposed along a motivic path.

Example 8a. Canticum Sacrum, *second movement ("Surge, aquilo"), mm. 86–93: three-voice canon in augmentation at the interval of eight semitones.*



Example 8 (continued). Canticum Sacrum, *second movement ("Surge, aquilo"), mm. 86–93: (b) T_8 embedded in the series; (c) invariant segments in three canonic voices.*



The notion of purposeful, directed transposition shapes Stravinsky's early twelve-tone music at more local levels as well. The meaningful combination of twelve-tone series is a basic compositional issue in all twelve-tone music. Stravinsky frequently addresses this issue by combining series forms that maintain some kind of significant transpositional relationship. Returning to *Canticum Sacrum*, the second movement, "Surge, aquilo," Stravinsky's first entirely twelve-tone movement, concludes with the three-voice canon in augmentation shown in Example 8. The leading voice of the canon, in the tenor solo, is a twelve-tone series, related by T_1I to the original series for the movement, which immediately follows. Each of the three canonic voices relates to the other two by T_8 (as shown in Example 8a). This interval of transposition also shapes the relations among the segmental subsets of the series (as in Example 8b). One immediate consequence is that there is a very high degree of segmental

invariance among the three canonic voices, as shown in Example 8c. All of the trichords bracketed in Example 8b occur as segments of all three canonic voices—the only exception is the conclusion of the third canonic voice (harp and English horn), which is truncated to permit a final cadence on the perfect fifth A–E. Even apart from segmental invariance, however, the correspondence of intervals found within the series and intervals of transposition found between the series suggests that Stravinsky has adapted the principle of transposed repetition to serve as a principle of serial combination.

In the later twelve-tone music, however, transposition plays a different role. Beginning with *Movements* (1960), every major work is based on rotational arrays derived from what for Stravinsky were the four basic forms of the series: a prime, its inversion beginning on the same note, its retrograde, and the inversion of the retrograde. The arrays provide a wealth of material, and they embed a notion of purposeful transposition, as will be discussed shortly. But from *Movements* on, there is virtually never again an occasion in which a twelve-tone series is transposed as a whole. The major works use rotational arrays derived from untransposed series forms; the minor works use just the untransposed series forms themselves. In all cases, the compositional issue of serial combination, in the sense of combining entire twelve-tone series, is rendered moot.

Transposition of a substantial block of material may still play a role, however, as in measures 7–22 of the first of the *Movements* (see Example 9). Stravinsky constructed this passage in three large blocks, all related to each other by transposition. He began with the flute melody in measures 13–17, written initially a major third lower than its final appearance.[14] This is the melody of which Stravinsky wrote that "No theorist could determine the spelling of the note order in, for example, the flute solo near the

[14]My description of the chronology of the composition of *Movements* and of the compositional sketches is based on Christoph Neidhofer, "Analysearbeit im Fach Komposition/Musiktheorie über die *Movements for Piano and Orchestra* von Igor Strawinsky" (Master's thesis, Music Academy of Basel, Switzerland, 1991) and on my own study of the sketches.

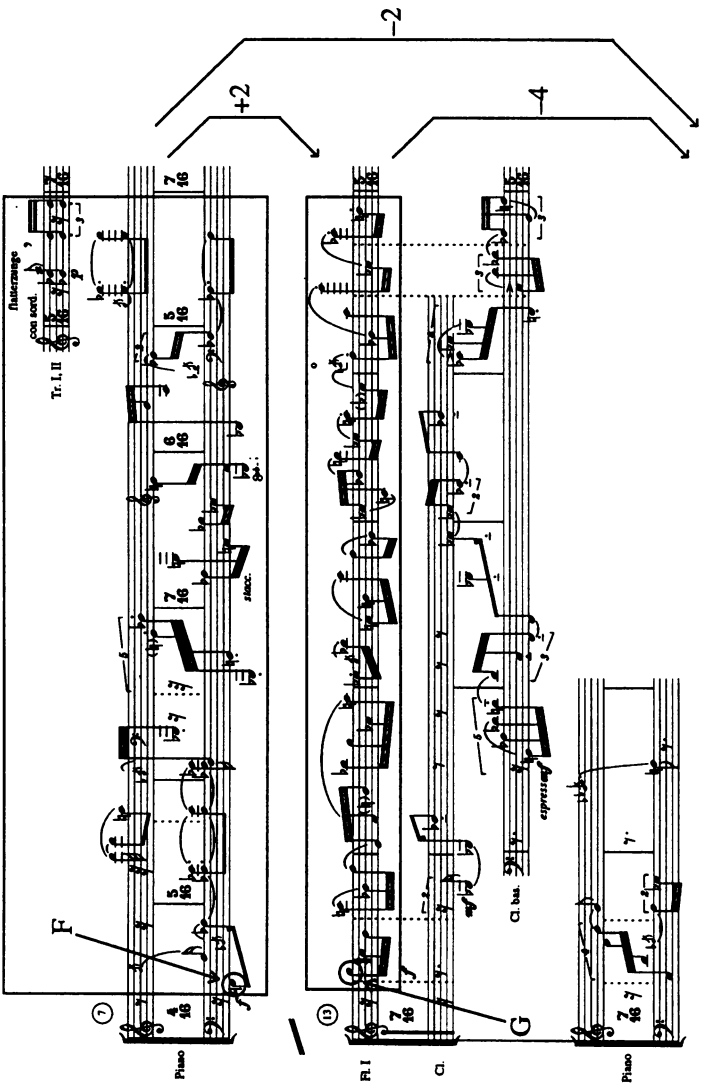
beginning...simply by knowing the original order, however unique the combinatorial properties of this particular series," and, until the sketches became available, he was correct.[15] The serial derivation is elaborate—it involves assembling fragments, none more than four notes in length, from the rotated and transposed hexachords of the original series. Whatever the serial derivation, however, once the melody was written, Stravinsky treated it as a discrete block, subject to transposed repetition.

He began by transposing the melody up a major third into its present position in mm. 13-17, possibly to accommodate the range of the flute. Then he wrote the piano music at measure 7 at the same pitch level before transposing it down a step into its present position. Finally he wrote the music at measure 18 at the original pitch level, indicating on his sketch, "follow the flute solo before (same series)." Thus we see Stravinsky working consciously and deliberately with a block of material, arranging it in a particular transpositional pattern.[16]

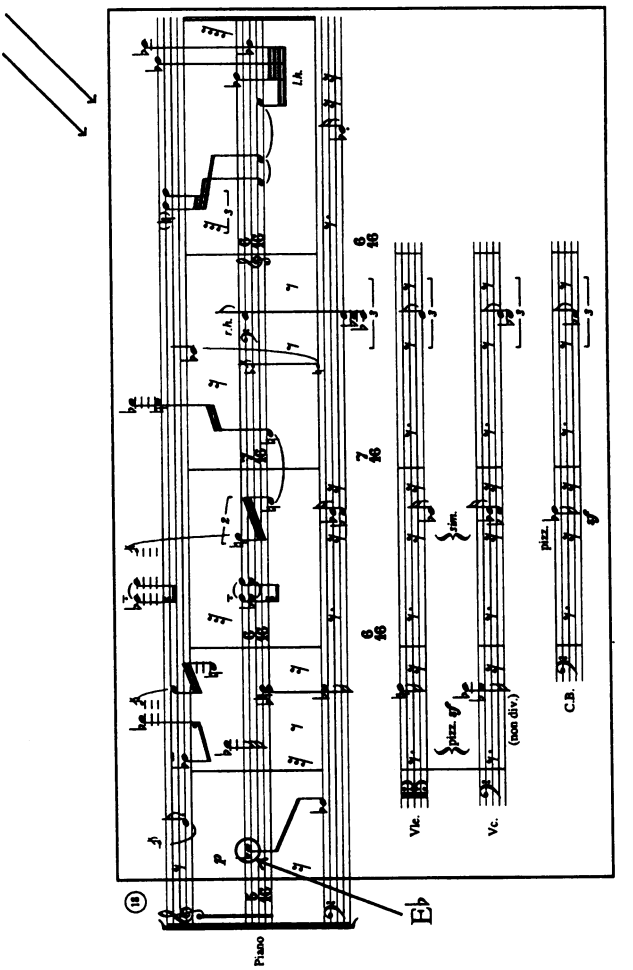
The three blocks are arranged into a pattern whereby from the first block one ascends two semitones to the second and falls two semitones to the third. The three blocks begin successively on F, G, and E♭. The relevant transpositional intervals have two sources, first in the series and second in the flute melody so elaborately derived from it. Within the series, these notes, and the set-type they represent, do not occur together as a segment of the series.

[15]Igor Stravinsky and Robert Craft, *Memories and Commentaries* (New York: Doubleday, 1960), p. 106. The serial derivation is explained by Douglas Rust (in his "Stravinsky's Twelve-Tone Loom: Compostion and Precomposition in *Movements*," *Music Theory Spectrum* 16/1 [1994]: 62–76) and Christoph Neidhofer (in "Analysearbeit im Fach Komposition/Musiktheorie über die *Movements for Piano and Orchestra* von Igor Strawinsky").

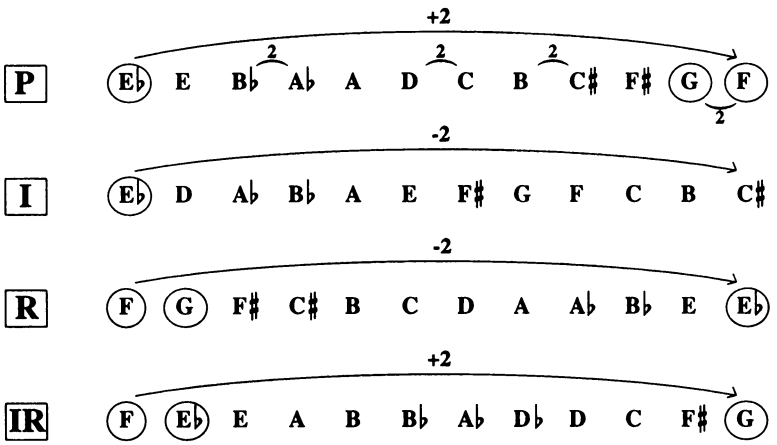
[16]The transpositional relationship among these three blocks of music has been described in: Martin Boykan, "Neoclassicism in Late Stravinsky," *Perspectives of New Music* 1/2 (1963): 155–69; William Walden, "Stravinsky's Movements for Piano and Orchestra: The Relationship of Formal Structure, Serial Technique, and Orchestration," *Journal of the Canadian Association of University Schools of Music* 9/2 (1979): 73–95; Neidhofer, "Analysearbeit im Fach Komposition/Musiktheorie uber die *Movements for Piano and Orchestra* von Igor Strawinsky"; and Rust, "Stravinsky's Twelve-Tone Loom."



Example 9. Movements, *mm. 7–22: three transpositionally-related blocks.*


Piano
Vla.
Vc.
C.B.
pizz.
arco
(non div.)
E♭

Example 10. Four basic series forms for Movements*: pitch-classes E♭, F, and G, and ascending and descending whole tones.*

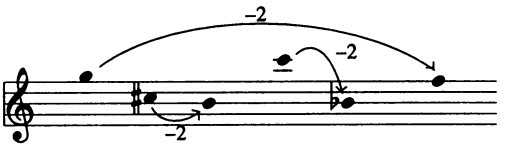


They do, however, occur as a kind of wrap-around: the series begins with E♭ and ends G–F (see Example 10). Furthermore, these are the first and/or last notes of all the principal series forms. Within each series form, the interval from first to last note is two semitones, the featured large-scale interval of transposition. Interval-class 2 is represented five times among the segmental dyads of the series, and no other interval is represented more.

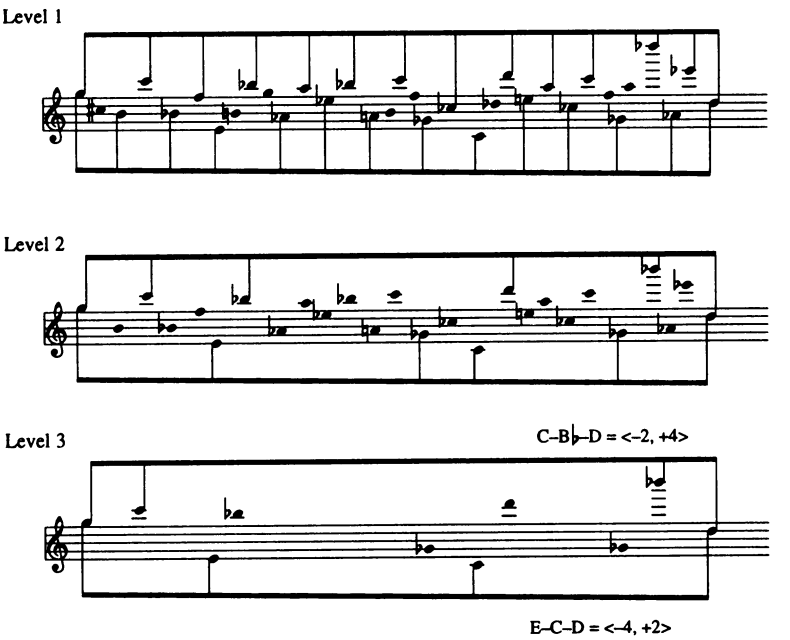
Within the flute melody, there are frequent ascending and descending whole tones delineated either by adjacency or by register. The first six notes of the melody, for example, can be entirely parsed in that way (see Example 11). An even more explicit reference to the transpositional pattern may be found in the overall shape of the flute melody. Example 12 provides a three-level analytical reduction of the melody following the algorithm established by Robert Morris.[17] The first level includes all of the notes of the melody and parses them into two lines, one of local high points (stemmed upward and beamed) and the other

[17]Robert Morris, "New Directions in the Theory and Analysis of Musical Contour," *Music Theory Spectrum* 15/2 (1993): 205–28.

Example 11. Movements, *m. 13: first six notes of flute melody parsed into constituent whole tones.*



Example 12. Movements, *mm. 13–17: flute melody in three levels of analytical reduction according to Morris's contour reduction algorithm.*



of local low points (stemmed downward and beamed). The first and last notes of the melody participate in both the upper and lower lines. The second level eliminates the unstemmed notes from the first level and applies stems to the local high and low points that remain. The third level repeats the process. At the

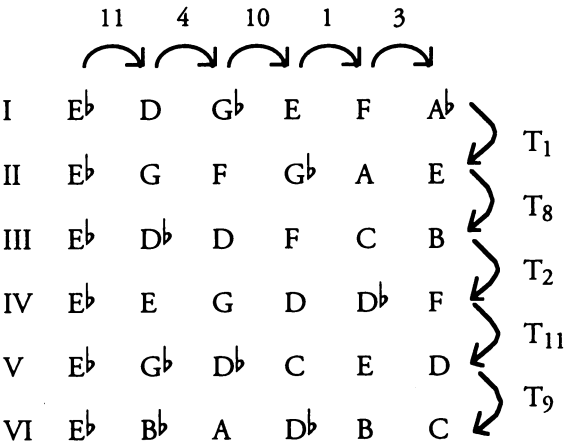
third level, the last three stemmed notes in both lines replicate, to within inversion or retrograde-inversion, the intervallic progression of the transposed blocks from Example 9. In this sense, the pattern of transposed repetition from block to block replicates the pattern of intervals within the block, both in its immediate, note-to-note successions and in its larger design.

Transposed repetition depends on the transposition of identifiable musical material. In the earlier examples, the material was distinguished by rhythm, register, and contour, all of which were retained when the material was transposed. In the passage from *Movements*, however, the material is now a line of pitch classes—the order of the notes and the intervals they describe remain intact, but rhythm, register, and contour do not. Clearly this is a more abstract notion of transposition. As such, it reflects a more general stylistic trend in Stravinsky's late music, as characteristics that were overt in the earlier works, such as canon and ostinato, are sublimated and transmuted in this new, serial environment. Many of the most characteristic features of his music undergo a "sea change into something rich and strange." They do not so much disappear as become transformed, abstracted, sublimated into something that appears new.

The rotational arrays, which shape every major work beginning with *Movements*, embody this process of sublimation. In them, canon, ostinato, and transposed repetition are all present in abstract but musically meaningful form. A Stravinskian rotational array involves taking one of the hexachords of a twelve-note series and systematically rotating and transposing it to begin on the same initial note—see Example 13 for the array derived from the first hexachord of the I-form of the series for *A Sermon, A Narrative, and A Prayer* (1961). The array contains six rows, each of which is related to the others by rotation and transposition. Row II, for example, has the intervallic ordering of Row I beginning on its second note, and the whole hexachord is transposed up a semitone to begin on E♭.[18] The array embodies

[18]These arrays are properly considered Stravinsky's most original and distinctive contribution to twelve-tone theory and there is an extensive literature on them. See John Rogers, "Some Properties of Non-Duplicating

Example 13. A Sermon, A Narrative, and A Prayer*: rotational array derived from the first hexachord of the I-form of the series.*

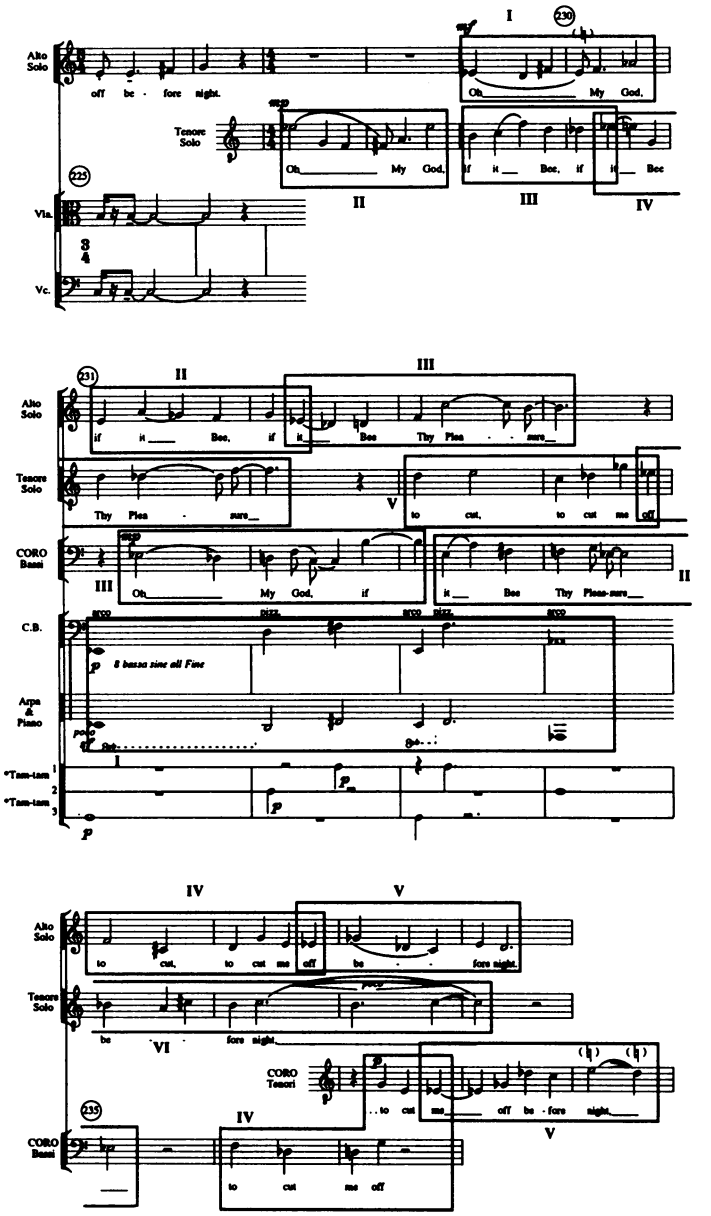


an abstract, six-voice pitch-class canon; each of the rows describes the same succession of intervals (allowing for wrap-around) but begins one note earlier than the row directly above it.

The transpositional relations among the rows reflect the intervallic relations among the notes of the hexachord. To move from hexachord I to hexachord II, you transpose by the complement of the interval between notes 1 and 2, and so on. Music that moves systematically through the array from top to bottom will compose-out the inversion of the generating hexachord. Thus transposed repetition is hard-wired into the array, and Stravinsky exploits this property often in the late music.

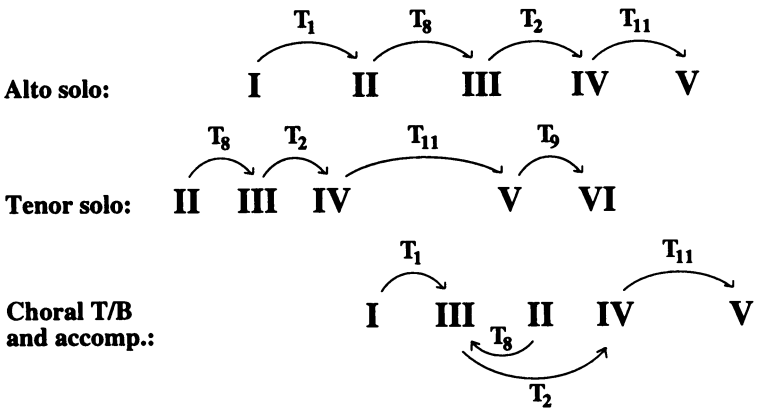
Rotational Arrays," *Perspectives of New Music* 7/1 (1968): 80–102; Charles Wuorinen, *Simple Composition* (New York: Longman, 1979); Milton Babbitt, "Order, Symmetry, and Centricity in Late Stravinsky," in *Confronting Stravinsky*, 247–61; Milton Babbitt, "Stravinsky's Verticals and Schoenberg's Diagonals: A Twist of Fate," in *Stravinsky Retrospectives*, ed. Ethan Haimo and Paul Johnson (Lincoln, Nebraska: University of Nebraska Press, 1987), 15–35; and Robert Morris, "Generalizing Rotational Arrays," *Journal of Music Theory* 32/1 (1988): 75–132.

Example 14. A Sermon, A Narrative, and A Prayer, *mm. 227–39: three simultaneous cycles through the array of Example 13.*



Example 14 reproduces a passage from *A Sermon, A Narrative, and A Prayer* that is based entirely on the array from Example 13. The Roman numerals in Example 14 refer to the rows of the array from Example 13. Within each row, the notes are presented either first-to-last or last-to-first. In moving from row to row, there are three distinct cycles, and thus a kind of free three-voice canon. The alto solo traverses I–II–III–IV–V; the tenor solo, which leads it in canon, traverses II–III–IV–V–VI; the choral basses and tenors, together with the accompanying contrabass, harp, and piano, traverse I–III–II–IV–V. Within each of these cycles, the transpositional relations compose out the inversion of the original hexachord (see Example 15).[19]

Example 15. A Sermon, A Narrative, and A Prayer, *mm. 227–39: transposed repetition of hexachords.*



As in the earlier examples, the music projects some identifiable material along a motivic, transpositional path. Here, however, the musical material is an ordered pitch-class hexachord and the path is embodied in the array derived from it.

[19]Thomas Clifton describes cycles of this kind (in his "Types of Symmetrical Relations in Stravinsky's 'A Sermon, a Narrative, and a Prayer,'" *Perspectives of New Music* 9/1 [1970]: 96–112), but is apparently unaware of their systematic aspect and of the rotational arrays themselves.

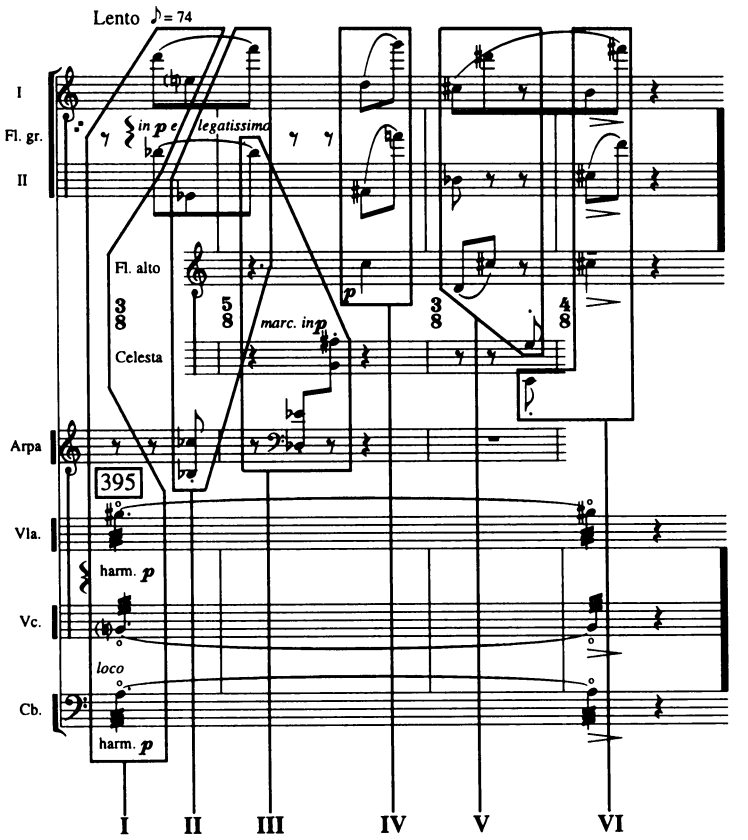
Harmonic or melodic progression by cycling systematically through the array is extremely common in Stravinsky's late music—indeed, in the last works it becomes the principal way of getting musically from place to place. In *The Flood*, for example, progressions of this kind abound. They may be extremely compressed (see Example 16b) or they may unfold slowly over large spans of time (*e.g.*, mm. 294–311 or 358–70, not shown). They may be primarily melodic (as was the case in Example 14, from *A Sermon, A Narrative, and a Prayer*), primarily harmonic (as in Example 16), or some combination of the two (as in Example 17b and 17c). They may involve a single array, or two or more arrays may be traversed simultaneously. In all of these cases, Stravinsky exploits the transposed repetitions inherent in the rotational arrays to create a sense of directed motion over larger musical spans.

The rotational arrays establish the hexachord as the basic harmonic and melodic unit of much of Stravinsky's late twelve-tone music. As a result, when transposed repetition occurs, the transposed entity is normally a hexachord from the array. Systematic progress through the rows of a rotational array accounts for a great deal of Stravinsky's twelve-tone music. There is probably even more music that is based on the rotational arrays but in which

Example 16a. The Flood*: Pa-array.*

I	G♯	G	A	A♯	D	E
II	G♯	A♯	B	D♯	F	A
III	G♯	A	C♯	D♯	G	F♯
IV	G♯	C	D	F♯	F	G
V	G♯	A♯	D	C♯	D♯	E
VI	G♯	C	B	C♯	D	F♯

Example 16b. The Flood*: cycle through the array in mm. 395–98.*



the progress is not systematic. Stravinsky often jumps from row to row and even from array to array in unpredictable ways. But despite their seemingly *ad hoc* nature, these motions also usually involve transposition by significant intervals and create meaningful large-scale transpositional paths. Whether the progress is systematic or more *ad hoc* in nature, the rotational arrays embody a notion of transposed repetition and elevate it from an occasional, if striking, phenomenon to the central source of harmonic and melodic progress.

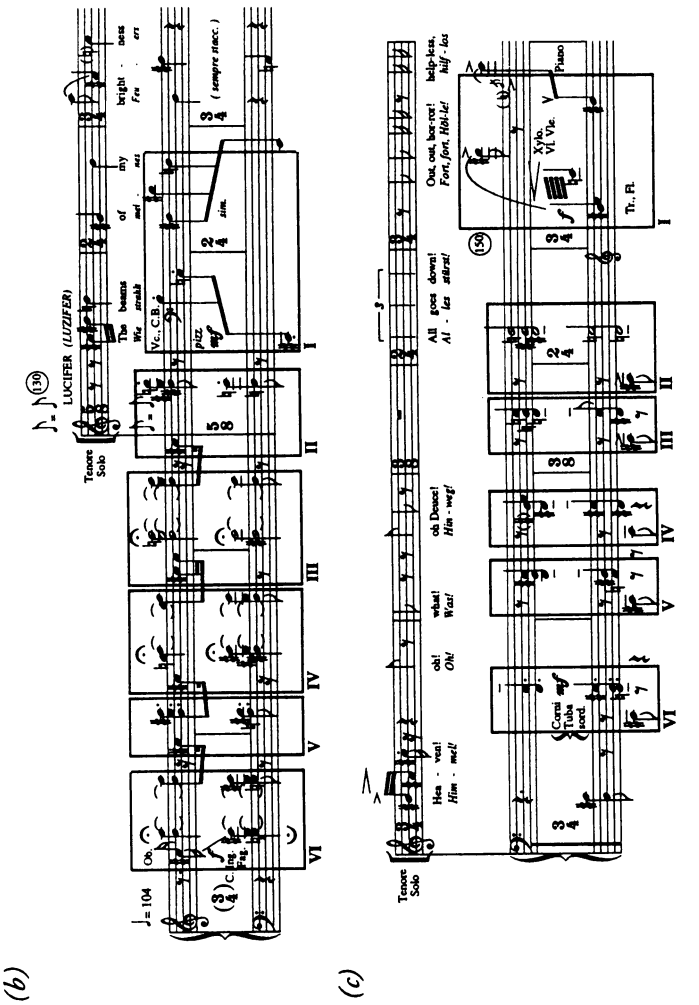
In some works, transposed repetition shapes a still higher structural level. Just as the intervals between the notes within a hexachord may be composed-out as transpositions of entire hexachords within an array, so too may the same intervals shape the relations among the arrays themselves. Stravinsky normally uses eight arrays, derived from the hexachords of his four basic series forms: Pa, Pb, Ra, Rb, Ia, Ib, IRa, and IRb. The Pa-array is related by transposition, in its entirety, to the Rb-array, as are the Pb- and Ra-arrays, the Ia- and IRb-arrays, and the Ib- and IRa-arrays.

Example 18 reproduces a passage from *Abraham and Isaac* (1965) that consists of two complete cycles, first through the IRb-array and then through the Ia-array. The two generating hexachords are transposed retrogrades of each other; their intervals are thus complementary and in reverse order (see Example 19a). The transpositions among the hexachords of the array describe closely related successions of intervals (see Example 19b). The entire arrays are shown in Example 19c. Compare the first row of the IRb-array with the last row of the Ia-array (see Example 19d). The first notes of the two rows are related at T_2—as are the remaining five notes, but in reverse order. The same is true of the second row of the IRb-array and the second-

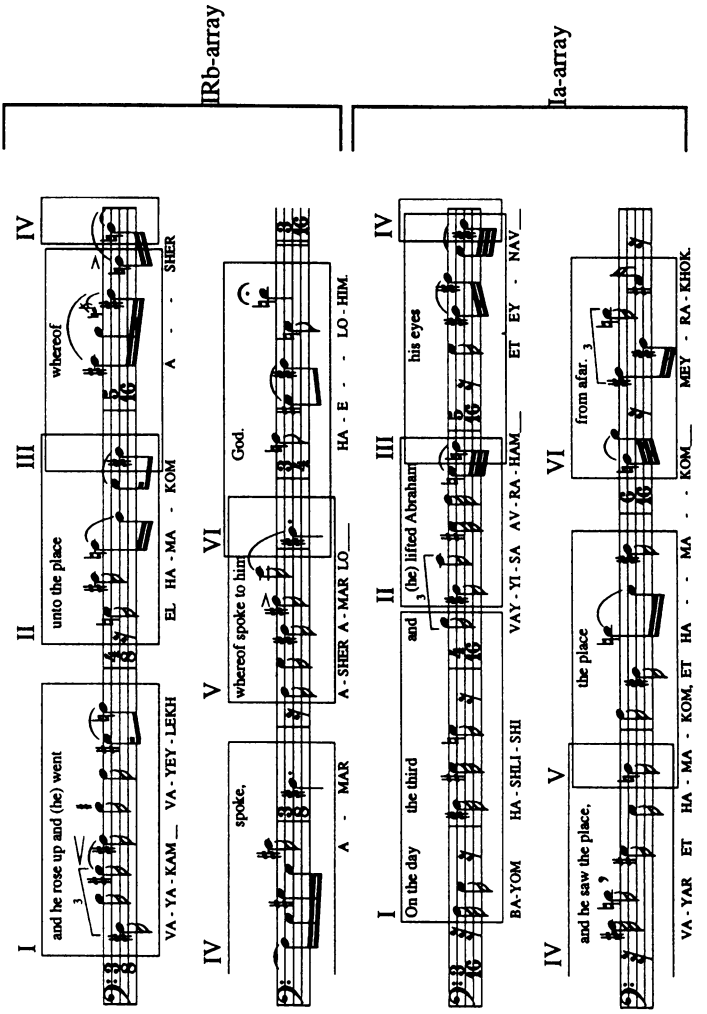
Example 17. The Flood*: (a) Ra-array.*

I	C♯	B	C	F♯	D♯	F
II	C♯	D	G♯	F	G	D♯
III	C♯	G	E	F♯	D	C
IV	C♯	A♯	C	G♯	F♯	G
V	C♯	D♯	B	A	A♯	E
VI	C♯	A	G	G♯	D	B

Example 17 (continued). The Flood: *(b) cycle through the array in mm. 129–31; (c) cycle through the array in mm. 146–50.*

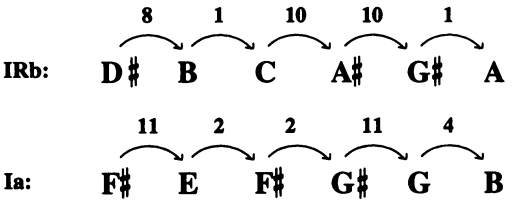


Example 18. Abraham and Isaac, *mm. 65–77: cycle through IRb- and Ia-arrays.*

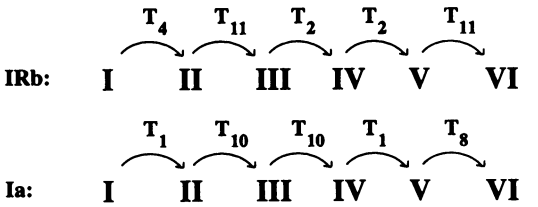


Example 19. Comparison of IRb- and Ia-arrays from Abraham and Isaac*: (a) intervals within the generating hexachords; (b) intervals of transposition within the arrays; (c) interval of transposition between the arrays; (d) comparison of the first row of the IRb-array with the last row of the Ia-array.*

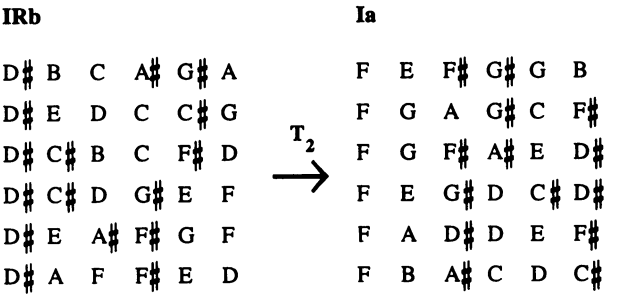
(a)



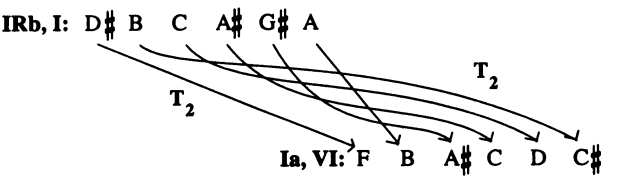
(b)



(c)



(d)



to-last row of the Ia-array, the third row of the IRb-array and the third-to-last row of the Ia-array, and so on. The arrays as a whole are thus related at T_2 in this very precise sense. Interval 2 is represented twice within the hexachord—no interval is represented more—and thus twice also within the transpositional relations among the hexachords. In Example 19c, we see the same motivic interval composed-out at a still higher structural level.

Musical coherence and continuity have always been problematic issues in the theory and analysis of Stravinsky's music. The obvious discontinuities and sharp textural breaks have tended to thwart any sense of directed motion over larger spans. Recently, as a post-modern orientation has become more apparent in musical scholarship, theorists have begun to suggest that, rather than seek large-scale motions that might knit a work into a coherent whole, we should learn to revel in the discontinuities.[20] But it appears that Stravinsky remained enough of a modernist, throughout his career, to create a variety of ties to bind even widely separated moments in his music. Transposed repetition remained a potent source of musical integration throughout his *oeuvre*.

[20]For a discussion of these issues, see Arnold Whittall, "The Theorist's Sense of History: Concepts of Contemporaneity in Composition and Analysis," *Proceedings of the Royal Musical Assoication* 112/1 (1986–87): 1–20.