New Approaches to the Linear Analysis of Music

By ALLEN FORTE

Introduction

By "linear analysis" I refer to the broad spectrum of approaches to the study of music—especially refractory or unusual music, such as much of the music of the late nineteenth century and early twentieth century—approaches which emphasize the contribution of large-scale horizontal configurations to musical form and structure and which may place local harmonic succession, diminutions, and other musical components of smaller scale in a subsidiary category. From the contemporary perspective, linear analysis can be seen developing as a major area of activity and interest among scholars today, especially theorists. A number of recent publications representing diverse points of view and interests, such as those by Baker, Berry, Forte, Lewin, Meyer, Morgan, Rothstein, and Williamson, provide ample witness to the centrality and importance of the topic. It is this burgeoning interest which the present article addresses, not primarily as a survey of what even now comprises a rather complex array of orientations and motivations, but rather as a presentation of recent original work, which I hope will exemplify the advantages as well as shortcomings of linear approaches to the study of music.

Of course, the fountainhead of this approach to analysis resides in the writings of Heinrich Schenker, although no doubt that eminent personage has turned over many times in his final resting place in response to some of the uses to which his concepts have been applied posthumously (see Beach 1985, especially 288–93). Indeed, it is difficult to pick up a recent professional journal or book without finding an article which has musical illustrations that contain Schenkerian beams, slurs, and other notational apparatus.

Although the linear graph is the hallmark of the contemporary linear approach, no uniformity either of analytical intention or result can yet be detected in the literature, as we can see from such recent analytical applications of graphing procedures as those in Ayrey 1982 and Wilson 1984. And while new kinds of linear graphs are serving a diversity of analytical ends, older and more stable methods are being

employed in new ways. Two recent examples of the latter are Forte 1985 and Puffett 1986. Comparison of those studies with studies based upon the more traditional approach exemplified in Salzer and Schachter (1969) is instructive.

It is clear that the Schenkerian influence has become a basic component in the history of music theory in the twentieth century, particularly in the United States. However, the present article is based upon the position that the uncritical application of Schenkerian paradigms to certain kinds of music has often led to poor results, indeed, has misled scholars, in some cases quite seriously, and has obscured important issues that require confrontation (see Straus 1987). This circumstance is the skewed obverse of the one which is all too familiar to battle-scarred Schenkerians, the situation in which one sees the poor application of Schenkerian method to music for which it was actually intended by its founder.

Among the major issues which the present study raises is the conflict between the special characteristics of the individual work and the general model of linear structures offered by Schenkerian theory, hardly a new dish on the menu of music-theoretical controversy. With respect to the presentation offered here, I believe not only that Schenkerian paradigms of linear motion—for example, linear progressions—are often inadequate as components of theories of individual works that lie outside the mainstream of tonal music, but also that when they are applied mechanically they may actually obscure highly significant aspects of those compositions.

At the same time, I remain convinced that the general Schenkerian concept of structural levels remains valid for and perhaps even essential to the development of effective linear methods. Indeed, the examples for this article, an odd assortment of works drawn from late nineteenth-century and early twentieth-century music, are intended to represent the application of this concept in ways that, as the reader will soon recognize, are eclectic, to say the least, drawing upon a variety of sources, some of which are acknowledged at appropriate points in the exposition.

I begin with two short non-tonal passages from the music of a prominent composer for the ballet, proceed to excerpts from a long tonal composition by a well-known nineteenth-century German composer of operas, and end with a work by an exotic and erotic Russian composer, a work which represents a transitional stage between traditional tonality and early twentieth-century atonality. Toward the end of the article I will offer some theoretical observations along with guidelines to linear analysis that I hope will have been convincingly

illustrated. Although syntactic rules that govern the construction of the analytical graphs may be inferred from the analyses, I will not attempt to formalize analytical procedure in this article, but postpone that subject to a subsequent publication.

Stravinsky: Rite of Spring, *Introduction*

In order to supply a historical context for my linear analysis of the opening of Stravinsky's *Rite of Spring*, I would like to spend a moment on an earlier published linear analysis of that music by Roy Travis.

The basis of Travis's analysis, which he makes quite explicit, is provided by Schenker-derived linear and harmonic concepts as transmitted through the writings of the late Felix Salzer. Thus, for Travis, the opening music of *The Rite of Spring* represents a "prolongation" of what he regards as a "tonic" sonority (from the bass up) *A♭-D♭-C*.

Example 1 reproduces Travis's main graph of the excerpt from *The Rite of Spring*. The basic linear features of the analysis are extracted and shown at the lower right of the graph as the succession of descending thirds in descant and bass that prolong what Travis calls a "tonic-sonority" from its initial statement until its restatement and confirmation at the end of the passage.

In one specific sense, this analysis is difficult to evaluate, since Travis has already reduced out a good deal of the melodic detail, beginning with the "e-minor" triad in the very first measure, without telling us why. However, the large outline of his analysis is clear: a series of descending thirds prolongs the upper-voice *c″* until it arrives at *d′*, at which point it proceeds by step to its final destination, *c′*.

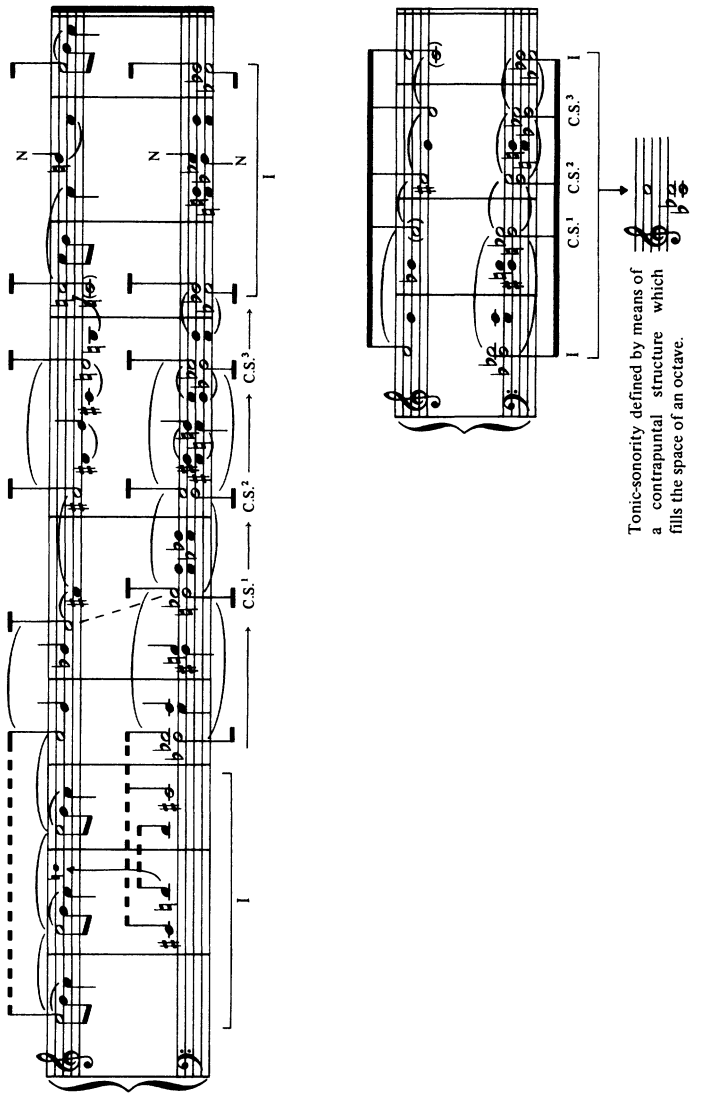
In similar fashion, the two lower constituents of Travis's "tonic-sonority" are prolonged through a series of descending thirds, arriving at their destination via a final stepwise motion. These prolongational motions in their entirety form a "contrapuntal structure" in Travis's language.

There arises a basic question about this contrapuntal structure, namely: how does the substructure of the bass relate to the rest of the music? Put more simply, why has the analyst extracted this particular succession of thirds from the overall chromatic descent and not some other?

Before proceeding, I offer a reminder to the effect that the work of Pieter van den Toorn has provided both important theoretical bases as well as convincing musical evidence from which a new linear approach to Stravinsky's music may be attempted. Indeed, van den Toorn's own analyses are, in large part, linear, although to charac-

Example 1

Stravinsky, *The Rite of Spring*, Linear Graph (Travis)



Example 1

Stravinsky, *The Rite of Spring*, Linear Graph (Travis)

terize them as *primarily* linear would be inaccurate, since he is often interested in fixed verticalities and other features.[1]

Example 2 incorporates some of van den Toorn's ideas in an attempt to construct a convincing linear analysis of the opening music of *The Rite of Spring*. It assumes that both the linear structures of larger scale as well as the details of local motion relate not to a single sonority, as in Travis's analysis, but derive from the dynamic interaction of two underlying constructs: the octatonic octad, pitch-class set 8–28 and the diatonic octad, pitch-class set 8–23. These two sets are shown at the top of Example 2 in pitch-class numeric notation, with the circled numbers in both representing the non-intersecting pitch classes, those distinct with respect to each set.[2]

Introducing pitch-class set notation in this way provides an opportunity to record the fact that a good deal of recent linear analysis has involved pitch-class sets and relations among sets. Studies of this type represent—for better or worse—a synthesis of Schenkerian and pitch-class set analysis and will no doubt continue to appear in our professional publications for some time.[3] (See Baker 1983.)

It is customary in contemporary theoretical writings to regard septad 7–35 as the diatonic pitch-class set. However, since the octatonic octad 8–28 has been assigned a major referential function here, I have increased the size of 7–35 by one pitch-class, making it into the diatonic octad 8–23 and thus equivalent in size to 8–28.[4]

As a result of the approach to the music through these two referential collections, the analysis is at once simpler and more complicated: simpler in that the broad outlines of descant and bass can

[1] See van den Toorn 1983, Example 27.

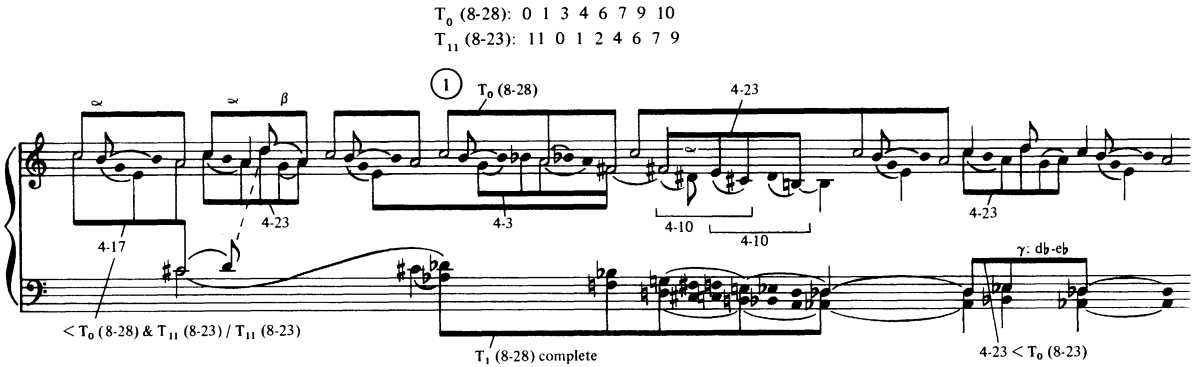
[2] A pitch-class set is a collection of numbers representing a selection from the 12 notes of the chromatic scale. The number 0 is assigned to all notated forms of *C*, 1 to all notated forms of *C♯*, and so on. One form of the octatonic octad, 8–28, for example, consists of all the numbers between 0 and 11, excluding the numbers 0, 3, 6, and 9. Note that the name of the pitch-class set, 8–28, consists of two numbers, the first of which gives the number of members in the set, the second of which is the position of the set name on a list of all the octads (see Forte 1973, 179–81). The pitch-class contents of 8–28 are listed in ascending order (by convention) as: [0,1,3,4,6,7,9,10]. See Forte 1973, 1–3.

[3] In what may have been an authentically prophetic statement John Rahn has written: "Probably, satisfactory analyses of the preserial works of Stravinsky will, when they finally appear, employ theories that graft nontonal referential collections and unique Stravinskian transformation rules into a wildly Schenkerian-derived kind of theory of pc set 'prolongation' in various pitch-structural and rhythmic-structural 'levels'." Rahn 1980, 79.

[4] Pitch-class set 7–35, one form of which is the diatonic scale, occurs within only three octads. Of these, 8–23 has the greatest number of fifths. It can be generated by extending a cycle of fifths to eight terms.

Example 2

Stravinsky, *The Rite of Spring*, Linear Graph



be described in terms of the octatonic domain; more complicated because the details of motion reflect various modes of interaction between diatonic and octatonic elements.

Thus, the initial gesture of the music (Example 2) is circumscribed by the minor third *c″-a′* in the descant and by the first note of the bass *c#′*, both constituents of the octatonic set in its T_0 form. However, set 4–17, beamed and labeled on Example 2, comprising the pitches *c″*, *e′*, *a′*, and *c#′*, belongs both to 8–28 (octatonic) and to 8–23 (diatonic), and in the later music of the ballet it performs a more extended linking function based upon this dual identity. I should say here, in passing, that all the tetrachords labeled on Example 2 are thematic objects in *The Rite of Spring*. The prominent diatonic tetrachord 4–23, for example, is familiar to everyone as the basis of the poignant four-note theme of the "Mystic Circle of the Adolescents."

At Rehearsal 1 in Example 2 we find Travis's tonic surrogate, comprising *A♭*, *D♭*, and *C*, as shown in Example 1. But in the present analysis this vertical formation assumes quite a different cast. The descant *c″* is now the headnote for the motion that extends downward through *a′* to *f#′*, outlining the diminished-triad sonority often so characteristic of octatonic harmony. At the same moment (at Rehearsal 1) the bass begins its descent, describing the diminished-seventh chord beamed on Example 2, which is clearly supported by meter and rhythm. As indicated, the referential collection here is T_1 of the octatonic set 8–28.

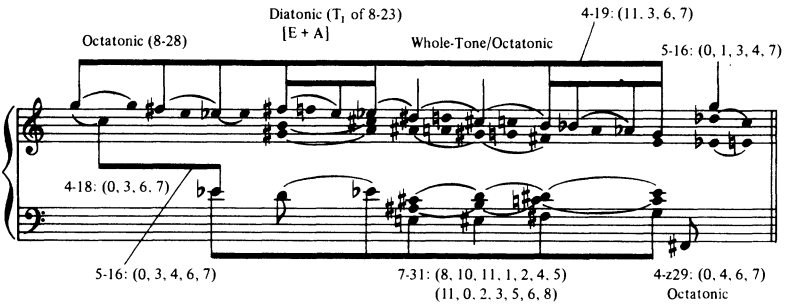
Turning now again to the upper voice of Example 2, I note that the second arrival on *f#′* is followed by a motion that incorporates two temporal levels of structure: first, the beamed form of diatonic 4–23 from T_{11} of 8–23 and within this motion two interlocking forms of 4–10, the first from 8–28 (T_0), the second from 8–23 (T_{11}).

Since tetrachord 4–10 enjoys octatonic as well as diatonic status, the prolongational motion here may be described more simply as the prolongation of an octatonic pitch-class, *F#*, by two diatonic tetrachords, namely, 4–23 and 4–10. There is an obvious similarity between this analysis and Travis's: both regard directly chromatic motions as diminutional detail. But the interpretation of the more basic structures underlying the direct chromatics differs radically from the one reading to the other.

Other features of the graph in Example 2 can readily be observed, and I will comment upon only one of those: the lower parts at the very end. While the bass motion here, *A♭-B♭-A♭*, belongs to T_1 of 8–28, and thus represents a continuation of the preceding bass motion, the lower voices together comprise diatonic set 4–23 and belong to its octadal

Example 3

Stravinsky, *Petrushka*, "Chez Petrushka," Analytical Graph



complement 8–23 in a new transposition. A very special pitch-class motivic feature of the music is associated with this change: the upper dyad of the configuration, *d♭-e♭-d♭*, constitutes the first appearance of a figure that pervades the work, most obviously as the principal component of the ostinato pattern of the "Augurs of Spring" movement that follows this introductory music.

Stravinsky: Petrushka, *Second Tableau*, "*Chez Petrushka*"

Example 3, a graph of the opening music of the Second Tableau of *Petrushka*, shows its linear as well as large-scale harmonic constituents. In succession, these units are octatonic at the outset, then diatonic, beginning with the second *f#″* in the soprano, whole-tone and octatonic, beginning with *d#″* in the soprano, and octatonic again, beginning with *g′* in the soprano.

Each of these harmonic areas corresponds to a "gesture" in the music, making segmentation straightforward. Moreover, the whole passage is closed, in the specific sense that a pentad of the same class begins and ends it, the octatonic pentad 5–16. Of these harmonic areas, the most complex is the mixed whole-tone and octatonic. Notice that the upper voice of that portion, beginning with *d#″*, is whole-tone, while the accompanying parts are octatonic.

I draw your attention now to the linear structures in the upper voice and bass of Example 3. The notes comprising the bass are joined by a beam that begins with *c″* in the "alto" voice. Beginning with *e♭′*, the first note in the bass register, we hear the motion that drives toward *g* at the end of the passage. Here the bass line in its entirety includes two embellishing notes: *d′* as a lower neighboring tone between the two *e♭″*s, and *e#*, a passing note that connects *e* and *f#* of the ordered octatonic set. In this instance and elsewhere in *Petrushka*,

the octatonic substructure is embellished by chromatically related pitch-classes that lie outside the prevailing form of the octatonic set.

The descant of this passage describes a more complex motion. While the initial descending skip from *g″* to *c″* is a special gesture in the passage and one that has multiple implications, the stepwise continuation of the descant reflects the integration of diatonic, octatonic, and whole-tone elements also evident in the large harmonic groupings that I described above. Although the octatonic succession *g″-f#″-e″-e♭″* governs the immediate foreground, the pitch *e″* is understood as a passing tone, primarily because of the bass articulation *d′-e♭′* when the figure *f#″-e″-e″* repeats.

In a similar way, the rhythmic correspondence of upper and lower parts then articulates the upper-voice whole-tone descent *d#′-c#′-b′*, the function of the latter as the terminal note made clear by the change in rhythmic configuration that follows. Again, the bass and accompanying lower voices support the linear reading of the descant at the conclusion of the passage, so that *b′* over bass *f#* arrives on *g′* over bass *g*. This kind of temporal coincidence is of the utmost importance to a linear reading in which the analyst cannot appeal to a priori operative determinants, such as those represented by tonal voice-leading.

The uppermost beam on Example 3 connects the primary constituents of the descant line: *g″-f#″-e♭″-b′-g′*. Thus, as indicated on the example, the line in its entirety projects tetrachord 4–19, whose affiliations are neither diatonic nor octatonic, but whole-tone.[5] Counterpointed by the clear octatonic bass line, this unexpected and apparently conflicting upper voice structure may certainly be construed as yet another musical representation of Petrushka's unbalanced personality, a depiction reinforced by the low bass *f#*, which, sounding against the "c-major triad" prepares for the famous Petrushka chord (hexachord 6–30) that follows. From the standpoint of structural analysis, we accept this as the upper voice at this level, possibly subject to further reduction, but certainly not convertible to a Schenkerian linear progression connecting *g″* with *g′*!

[5] Neither 8–23, the diatonic octad, nor 8–28, the octatonic octad, contains tetrachord 4–19. Because the other large-scale harmony, one that has prominent surface manifestations throughout *Petrushka*, is the whole-tone octad, 8–21, I understand the linear projection of 4–19 here to refer to it rather than to one of a number of other theoretically possible but quite "abstract" octads.

Wagner: Prelude to Tristan

I turn now to a famous work, familiar to all readers, a composition which is perhaps the primary musical experiment of the mid-nineteenth century, and one from which many a research expedition has returned in considerable disarray over the years.

At the end of the operatic version of the Prelude to *Tristan* (mm. 107–9)—as distinct from the concert version—Wagner has the cellos and basses play a linear form of the Tristan chord: *e♭-B-F-A♭*. This final reference to the famous chord in a linear projection is but a brief reminiscence of several highly-charged linear projections that have already occurred during the course of the prelude—forms of the Tristan chord that seem to have gone virtually unnoticed by the many analysts who have studied the Prelude over the years, including such eminent persons as Paul Hindemith and Alfred Lorenz. I attribute these oversights not to any unusual obstacles posed by the music, but rather to the operative analytical approaches, of which the key-oriented, vertical-harmonic may be the most unproductive. I shall return soon to the linear role the Tristan chord plays in the Prelude as a whole. Now, however, as a point of departure for my discussion of the linear aspects of this music and in order to provide historical background (with respect to contemporary analytical practice), I would like to consider briefly the most thorough-going and best known of the published analyses, the study of the Prelude to *Tristan* by William J. Mitchell.[6]

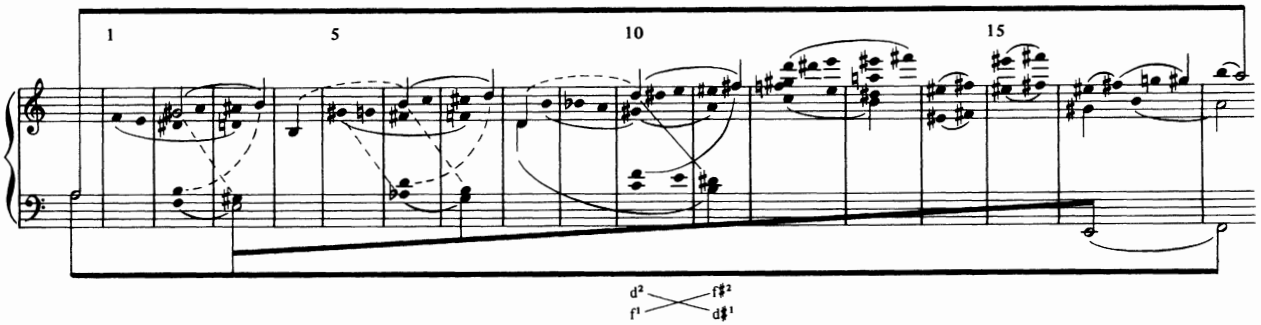
To avoid digressing to discuss a number of details and issues that may be interesting but are irrelevant to the central thrust of this article, I concentrate on Mitchell's reading of the upper voice, beginning with the section that extends from bar 1 through bar 17 (Example 4). He writes (p. 169):

> . . . the upper voice moves from the opening *a* to *a″* of bar 17. The connection between these two points is formed by the *g#′* of bar 3 making an ascent in a stepwise motion consisting of four groups of three notes each until the terminal *a′* is reached.

[6] Mitchell 1967. After Mitchell's analysis of the Tristan Prelude, surely the best known contemporary analytical study of that music appears in Boretz 1972. For an exhaustive and characteristially Gallic chase of the Tristan chord in support of an elaborately conditional philosophy of "relativism," see Nattiez 1985. The combatant to enter this arena most recently is Wagner expert Robert Bailey. Of particular interest is his essay, "An Analytical Study of the Sketches and Drafts," Bailey 1985, 113–46.

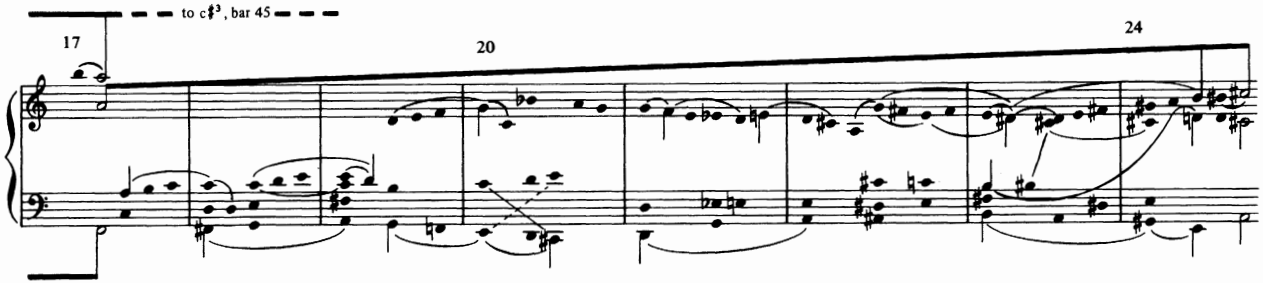
Example 4

Wagner, Prelude to *Tristan*, Linear Graph (Mitchell)



Example 5

Wagner, Prelude to *Tristan*, Linear Graph, continued (Mitchell)



I have reproduced Mitchell's reading of the sequel to this opening passage, bar 17 and forward, in Example 5. Mitchell writes (p. 182):

> Bars 1–17 have, in the structural activity of the upper parts, opened up three octave registers, from *a* to *g#'* and, in bar 17, *a'* and *a''*. Bars 17–24 carry out a first ascent from *a'* to *c#'''* by way of *b'*, as indicated . . . .

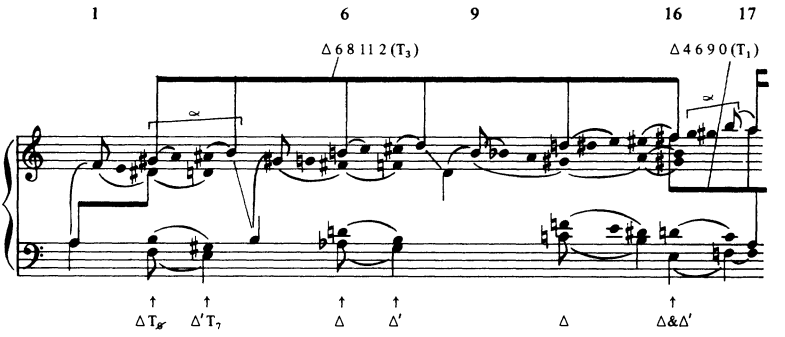
Now, for all the masterful technique that Mitchell brings to bear upon this work and for all the trenchant observations he makes and the interesting questions he raises, it is still possible to consider viable alternative readings, readings which bring out certain features indigenous to this music that are missing from Mitchell's reading.

I will also venture to be critical of Mitchell's general approach and point out that it represents an unreflective Schenkerian orthodoxy insofar as the major constituents of the linear structures (represented by open noteheads in the conventional way on the graphs, Examples 4 and 5) are directly referable to an assumed tonality of A major/minor. Thus, he sees the large-scale descant of bars 1–17 as governed by the octave relation between scale degree 1, as *a*, the opening pitch of the cello, and its counterpart, *a''*, played by the first violin in bar 17. In similar fashion, the primary goal of the large-scale descant motion of bars 17–24 is *c#'''* in bar 24, the third of the major tonic of the entire Prelude, in Mitchell's view (Example 5). This mono-tonal orientation has been questioned by several authors, and I now add my objection to theirs, for reasons which will become clear in the sequel.

First, however, a brief comment or two on Benjamin Boretz's lengthy and very influential study of the Prelude (and other parts of the opera) would seem to be in order at this point. While it is true that Boretz's approach is essentially linear, most convincingly evident in the long linear graph of the entire Prelude which he presents in his Example 10a, his approach differs markedly in methodological approach from Mitchell's, primarily with respect to the structural "background" of the music, which, in Boretz's view, is a non-traditional construct (with respect to tonality) that he describes as a "partitioning" of the total chromatic into mutually exclusive tetrachords of the "diminished-seventh" type. Despite the apparently radically different approach, Boretz's analysis shares with Mitchell's a major flaw: it exhibits an overly rigid adherence to a background model which determines virtually every aspect of the interpretation of the foreground and thereby loses contact with certain important and

Example 6a

Wagner, Prelude to *Tristan*, Linear Graph, bars 1–17



immediate musical apprehensions, most notably with the motivic features of the music that are so essential to both music and drama.

To illustrate an alternative approach, one of the "new approaches" suggested by the title of the present essay, Example 6 offers analyses of a series of five segments of music from the Prelude to *Tristan*. It does not purport to be a complete analysis, whatever that might be, but highlights linear features of the music as they occur at what one might designate, provisionally, as the middleground level. As we proceed, it will be clear that the analysis gives short shrift to harmonic progression and key—matters which, in my view, have proved to be obstacles to the development of more informative observations, and does not reflect serious concern for Schenkerian paradigms, such as linear progressions that span consonant intervals.

The analytical graph, Example 6a, represents a reading of the opening section of the Prelude, but one that stops short of bar 17, which Mitchell regards as the goal of the opening motion. Designated by the Greek letter delta (Δ) on the example is the Tristan chord, an instance of pitch-class set 4–27, the half-diminished seventh chord of traditional tonal harmony. Here and elsewhere in the example symbols that immediately follow Δ serve to modify it. Thus, Δ followed by T_0 symbolizes the first occurrence of the Tristan chord, with T_0 signifying the Tristan chord transposed at level 0, its original pitch-class form. A prime (') after Δ means that the Tristan chord has been inverted, producing a sonority one form of which is the familiar "dominant-seventh" chord.[7]

[7] Compare Boretz (1972, 162), where the two verticals are described as "exact, balanced, simple inverses of one another." Although it is evident from the analytical graph, I should point out that I regard the Tristan chord as a self-standing musical object, not dependent for its meaning upon a resolution to some other sonority, such

I regard the "Tristan Chord" primarily as one possible form of pitch-class set 4–27 for which any other form may serve as surrogate. This view was certainly shared by Wagner's contemporaries, including Liszt, whose cryptic introduction to the piano transcription of the *Liebestod* music of *Tristan und Isolde* features two transpositionally-related forms of Δ not only in a pitch-class form that differs from what is conventionally regarded as that of the "Tristan Chord," but also in a completely different vertical ordering.

Although the "dominant-seventh" here may display some functional significance with respect to an implied tonality and therefore demand attention from Roman-numeral addicts, I elect to place that consideration in a secondary, even tertiary, position compared to the most dynamic aspect of the opening music, which is clearly the large-scale ascending motion that develops in the upper voice, in its entirety a linear projection of the Tristan chord transposed to level 3, *g#'-b'-d''-f#''*.[8]

Perhaps even more extraordinary is the sonority at the conclusion of the linear projection of Δ, above bass *e*. This can be construed as an amalgamation of Δ, in the form just negotiated in linear fashion, and Δ′, the latter being the inversion of Δ as it occurs immediately after the initial statement of the Tristan chord—the "E^7 chord" of bar 3—to produce an extraordinary synthesis of small-scale simultaneity and large-scale linear succession. Although I am aware that this vertical sonority may be read as a "dominant 9th chord," I regard that label as entirely secondary, perhaps even inconsequential, in relation to the dynamic correspondence of horizontal and vertical which derives its significance from features unique to this work, among which the Tristan chord certainly deserves primary consideration as the most intensively expressive musical symbol of the entire opera.

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as the "French Sixth" which succeeds it. Judging from extensive musical evidence, this was the view taken by many composers who quoted Wagner's chord, often in pristine form, a striking instance of which occurs in the Scriabin work discussed later in this article.

[8] See Bailey (1985, 129 and 290), and Boretz (1972, 172, Example 5), where the author displays the first linear projection of Δ as well as the second, *F#-A-C-E*, but apparently failed to discover the subseqent occurrences, probably due to his overriding commitment to a particular "model" of the large-scale structure, namely, ". . . a simple partitioning of the (twelve) pitch-class 'octave' by the (0 3 6 9) construct and its complementary mutually pitch-class exclusive transpositions (1 4 7 10) and (2 5 8 11). . ." (p. 172).

The linear analysis in Example 6b offers a reading of the passage that follows the opening portion of the Prelude.[9] Here, in contrast to Mitchell's reading (Example 4) the high *a″* is viewed not so much as the completion of the opening section as the beginning of a new section, representing a kind of dovetailing so characteristic of Wagner's music. In general, the correspondence between this reading and Mitchell's is minimal and therefore detailed comparison would be pointless. I draw attention to two pitch-class motivic features of this section apparently overlooked by Mitchell: first to the flagged *b♭′* of the "Glance" leitmotive, which is directly associated with Tristan's death, and second to the flagged *e♭′*, which has a "neapolitan" cast to it, but refers to the tritone *E♭-A* that is such an important axis throughout the opera. Moreover, *e♭′* here is a pitch-specific reference to the *d#′* in bar 2 which completes the opening melodic gesture of the cellos. The music is so rich in detail of this kind that I need not apologize to the readers of this journal for staying close to the central topic of this article.

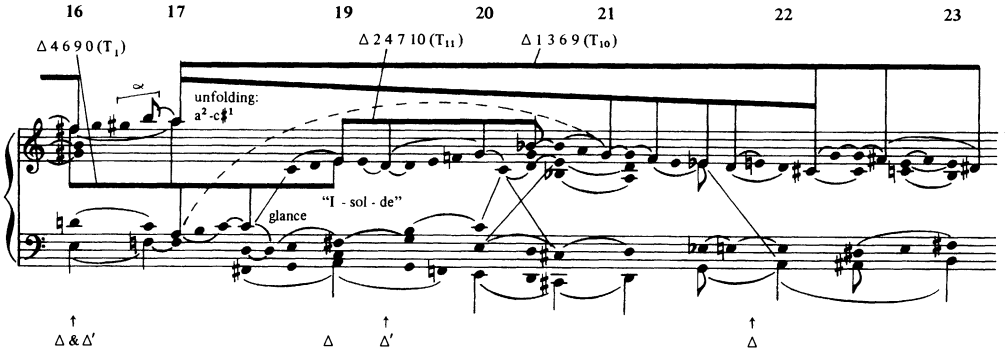
Thus, to return to the linear analysis of this passage (Example 6b), the event of largest scale is again the projection of Δ, the Tristan chord, comprising the pitches *a″* (bar 17)-*c#′* (bar 22)-*f#′-d#′* (bar 23). This is given above the staves in pitch-class numerical notation as 1 3 6 9 and indicated as a transposition of the original Δ at level 10. This form of Δ, T_{10}, shares one and only one pitch-class with the original form, and that is represented by *d#′*, the terminal note of the linear projection of Δ and a pitch that is exactly in the register of the original *d#* of Δ, and is thus not only a pitch-class but also a pitch-specific connection.

Two factors render this second linear projection of Δ more complex than the initial one: first, the long unfolding from *a″* in bar 17 to *c#′* in bar 22 and, second, the slow ascent from *a* to *g′* that coincides with the first appearance of the "Glance" leitmotive, a line which Wagner scores for cello. This was a wonderfully artistic decision, since the headnote *a* of that motion is identical to the first note of the Prelude both with respect to register as well as timbre. This motion incorporates the "Glance" leitmotive with its three-note figure *e′-e′-d′*, on which Tristan sings his final word, "Isolde," in act 3, scene 2 at the moment he dies. Precisely here are two juxtaposed forms of the Tristan sonority, Δ followed by its inversion, Δ′.

[9] For some aspects of this graph, in particular the connection from *a* to *g′* in the descant, symbolized by the Schenkerian dotted-slur notation (coupling), I am indebted to Professor Stephen Hefling of Case Western Reserve University.

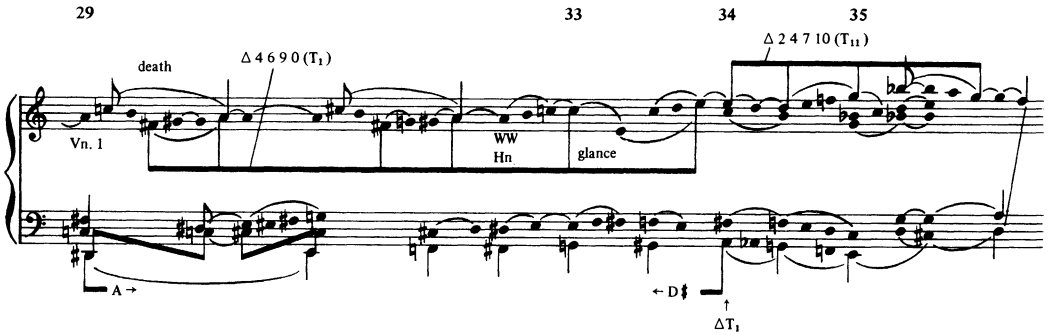
Example 6b

Wagner, Prelude to *Tristan*, Linear Graph, bars 16–23



Example 6c

Wagner, Prelude to *Tristan*, Linear Graph, bars 29–35



Together, these two sonorities have a motivic significance that completely transcends their textbook harmonic role as secondary dominant functions.

Example 6c is an analysis of an intricate section of the Prelude, a section in which the descant joins two large-scale linear forms of Δ in a singular way. As can be read from the example, Δ first ascends from *f#'* in first violin, with the "Death" leitmotive in the foreground, then, with the "Glance" leitmotive in the foreground, continues upward from *a'* through *c''* to its completion on *e''* at bar 34—the latter part of the motion carried by woodwinds and horns.

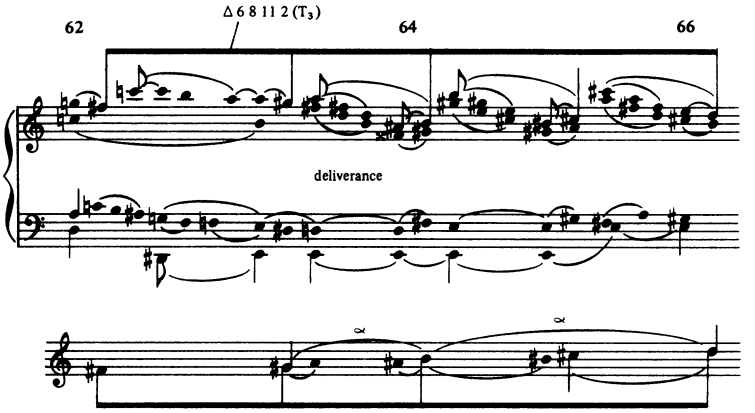
Precisely at bar 34 and coinciding exactly with the completion of the bass motion that has ascended from *D#* to *A*, the second form of Δ begins on *e''*. Obviously, this music repeats the earlier music in Example 6b. But the context differs considerably, because the form of Δ that begins on *e''* at bar 34 has no commitment to another, overriding form as it did earlier. The climactic final pitch of Δ here is *b♭''*, which, as I remarked earlier, is symbolically associated with Tristan's death, an association that provides a further motivic enhancement of this analytical reading.

To sum up, the descant represented on Example 6c joins two forms of Δ, the first a transposition of the original at level 1, the second a transposition of the original at level 11. At the risk of being overly systematic, I point out that inverse-related values of the transposition operator always produce the same number of pitch-class representatives in common with the transposed set—in this case none. Therefore, of more immediate analytical interest is the relation between the two forms of Δ which join at bar 34. The second is an unordered transposition of the first at level 10, with the result that they share only one pitch class, *e''*, the last note of the first form and the first note of the second. It is difficult to believe that this correspondence between abstract transformation (the transposition) and the actual musical location of the common pitch class came about merely by accident.

Example 6d displays an uncomplicated linear projection of Δ in its level 3 transposition with respect to the original form—that is to say, in the same "unordered" pitch-class form as the first linear projection, shown in Example 6a. Here, however, the foreground reflects the leitmotivic development that has occurred in the intervening music of the Prelude, for we find that the leitmotive "Desire" (the original chromatic ascent from *g#'*, labelled α on the examples) again connects the components of Δ as it did at the beginning, but, in addition, now is embedded in the descending arpeggiation of the "Deliverance by

Example 6d

Wagner, Prelude to *Tristan*, Linear Graph, bars 62–66



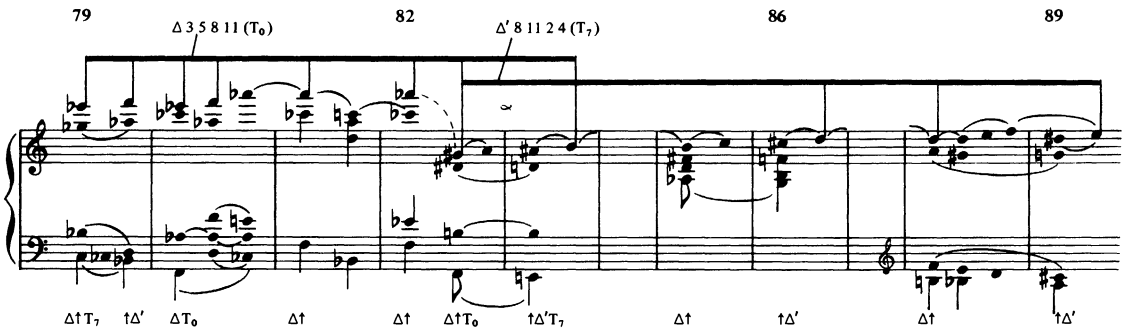
Death" leitmotive. The single stave example below Example 6d provides a simplification.

Finally, in Example 6e we find perhaps the most remarkable large-scale linear manifestation of the Tristan chord in the entire Prelude. Beginning from the vertical form of Δ in bar 79 (T_7), the descant gradually projects Δ in its original form, arriving in bar 81 on the climactic pitch $a\flat'''$ played by violin I. The second occurrence of this climactic pitch is then followed by its enharmonic equivalent $g\#'$, two octaves lower, and a brief return to the opening music. This time the descant does not project a form of Δ, as shown in Example 6a, but rather a form of Δ′! In fact, with respect to pitch-class content this form replicates the vertical form of Δ′ in bar 3. In this extraordinary way, the linear projections of the Tristan chord in the final section of the Prelude correspond exactly to the initial vertical statements of that harmony, a dramatic expression of the relation between vertical and horizontal dimensions and a specific instance of the correspondence of musical events of different temporal scale so characteristic of this remarkable work.

We have encountered the Tristan chord in various linear forms in the excerpts discussed above. Among these, the culmination is surely the interlocking Δ and Δ′ at the end of the Prelude displayed in Example 7. Although the symmetrical arrangement produced by the interlocking of these two forms of the sonority can be viewed in a number of different ways, for example, to stress the central location of set 4–28, the diminished seventh chord, I draw attention to the fact that Δ′ presents a successive interval pattern that is precisely the reverse of the pattern for Δ: the pattern consists of interval classes

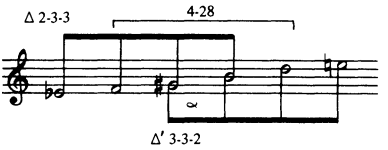
Example 6e

Wagner, Prelude to *Tristan*, Linear Graph, bars 79–89



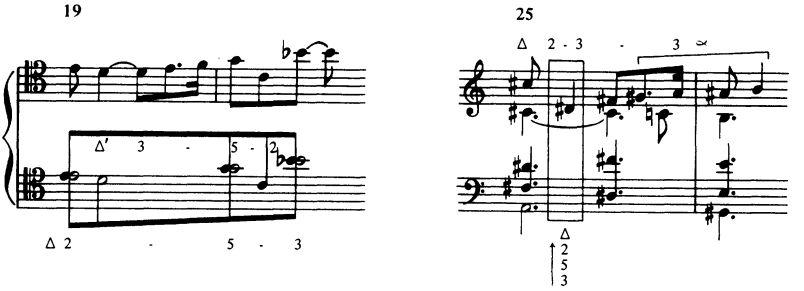
Example 7

Interlocking Forms of the Tristan Chord



Example 8

Forms of the Tristan Chord and their Intervallic Patterns

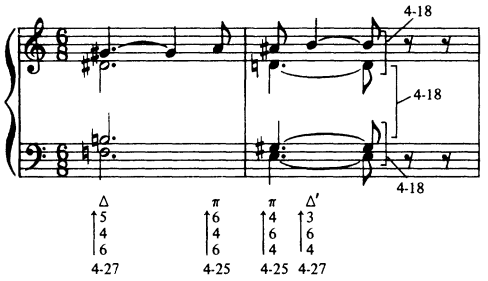


3-3-2 for Δ′ and interval classes 2-3-3 for Δ. This suggests that a more systematic consideration of order relations might shed additional light upon the large-scale linear manifestations of Δ (and Δ′) that pervade the music, as well as upon its many poignantly expressive vertical manifestations. Because anything approaching a complete survey of this dimension of structure would require an extensive theoretical exposition and would entail a digression that would consume considerably more space than is appropriate to the modest intentions of the present article (the study would perhaps be called "A Permutational View of the Tristan Chord"), I restrict myself to a few observations which I hope will lend further support to the analysis and which may also be of interest to readers who wish to pursue the general topic of order relations in unusual 19th-century music as they relate to linear configurations (Examples 8 through 10).

Example 8 shows one of the many correspondences between forms of Δ. At bar 19 the second part of the "Glance" leitmotive carries a slightly concealed linear version of Δ, with linear intervallic succession 2-5-3, as indicated by the numbers below the staff which refer to the beamed open noteheads. This portion of the motive also contains Δ′ in the "silhouette" form represented by beamed closed noteheads. The two intertwined forms are related not only as members of the same set-class type, but also with respect to order, since Δ′ as 3-5-2 presents the reverse of the linear intervallic succession of Δ: 2-5-3.

Example 9

Wagner, Prelude to *Tristan*, Vertical Organization of Opening Music



At bar 25 (Example 8) the leitmotive "The Love Philtre" begins, and it also carries a slightly embellished form of Δ. Again, its linear intervallic succession is far from arbitrary; indeed, it is precisely the reverse of the pattern 3-3-2 associated with Δ in its final occurrence in the Prelude, as shown in Example 7. Further, the second note of the leitmotive, *d#′*, which is a pitch-specific reference to Δ in its original form in bar 2, is set by a vertical form of Δ, as indicated, and the arrangement of intervals is such that the ascending succession 3-5-2 is created, thus effecting an intervallic association between this passage and the one shown in Example 8, in which the 3-5-2 pattern and its retrograde image were combined, and providing a clear instance of the transference of a horizontal statement (bar 19) to a vertical one (bar 25).[10]

The appearance of motive α from the opening music (Example 6a) as a distinct component of the melodic leitmotive here (Example 8) intensifies the association of this music with the horizontal and vertical formations that initiate the Prelude. Indeed, at this juncture it will be instructive to return to that opening music and to consider some of the order relations that it brings into play.

Example 9 shows the vertical ordering of the four "slices" that comprise the opening phrase in its "chordal" aspect. Δ is connected to its inverse, Δ′, by two passing chords, marked π, the second of which is a reordered transposition of the first. Specifically, two of the pitches of the second, *d′* and *e*, are "ordered," in the sense that they follow registrally the pitches from which they derive, while the other two (*g#* and *a#′*) exchange positions, producing a traditional voice

[10] Following contemporary practice, the numbers in the interval successions represent interval classes. Thus, in bar 25 of Example 8, the first interval above the bass, formed by *A* and *f#*, spans 9 semitones. This number is by convention reduced to its numerical inverse, modulo 12, which is 3. This corresponds to the traditional equivalence of major sixth and minor third.

exchange. As a result, the interval successions of the two passing chords π lack any intervals of class 2. In fact, that interval class, together with interval class 1, is totally unrepresented in the "vertical" dimension of this opening music, if direct interval-succession (adjacency) is taken to be the measure of relations. Thus, not only is the progression from Δ to Δ' unified by virtue of the fact that those two sonorities are inversionally related, but also the uniform occurrence of sets of class 4–25 as voice-leading productions bonds the two together.

The basic question remains concerning the relation between the vertical orderings of Δ and Δ' in their initial thematic manifestations. Table 1 summarizes the situation, showing that the circular permutations of Δ (comprising four of the possible total of 24) produce four distinct patterns of interval succession, reduced, in the rightmost column, to a normalized form, called the basic interval pattern, in which the numbers that represent the intervals of the succession are placed in ascending order without intervening hyphens. When Δ' is subjected to the same rotations, each of the resulting interval successions is a retrograde image of an interval succession of Δ. Thus, the fourth rotation of Δ (taking the topmost ordering of Δ as the first rotation) will produce a linear intervallic succession that is precisely the reverse of that of Δ', its inverse image, and both Δ and Δ' then have identical basic interval patterns. This is not true for any pair of inversionally related forms of 4–27, but it is true for any pair of such forms if the intervallic ordering is correctly deployed. For example, under circular permutation the following pitch-class form of 4–27, 7 11 5 2 (IT_{10}), will produce the same set of basic interval patterns as Δ'.[11]

The purpose of the final example devoted to the Tristan Prelude, Example 10, is to set out in terms as precise as possible the relation between the vertical ordering of the Tristan sonority Δ and linear expressions of that sonority at two locations in the music. This example is intended to be illustrative and suggestive only and is by no means offered as a complete and systematic study of such relations in the Prelude (not to mention the entire opera!). The first part of Example 10 shows a two-stage "transformation" of Δ, beginning with the sonority in its original form. The first stage, shown in ordinary music notation as well as in numerical notation below the staff, consists of the rotation of Δ (see Table 1) to create the vertical interval

[11] The number of basic interval patterns varies according to the interval construction of the pitch-class set. Pitch-class set 4–27 has associated with it ten distinct basic interval patterns, four of which are represented on Table 1.

TABLE 1

Circular Permutations of Δ and Δ′, Interval Successions, and Basic Interval Patterns (Bip)

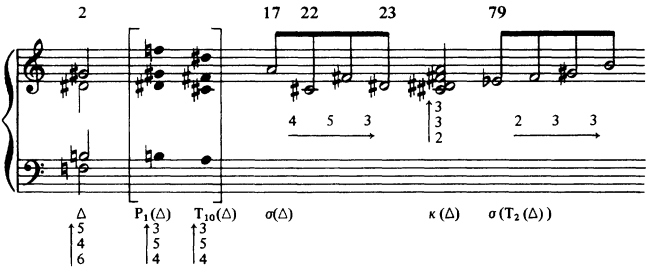
Δ Circular Permutation				Intervals	Bip	Δ′ Circular Permutation				Intervals	Bip
5	11	3	8	6-4-5	456	4	8	2	11	4-6-3	346
11	3	8	5	4-5-3	345	8	2	11	4	6-3-5	356
3	8	5	11	5-3-6	356	2	11	4	8	3-5-4	345
8	5	11	3	3-6-4	346	11	4	8	2	5-4-6	456

succession 4-5-3, symbolized by the Greek letter rho (ρ) with subscript 1 designating the first rotation. In the second stage the new ordering of Δ is transposed down two semitones to produce a new pitch-class form of the harmony while retaining its new ordering 4-5-3. It is this vertical ordering, 4-5-3, which is then projected horizontally beginning at bar 17, a configuration notated as beamed open noteheads accompanied by numbers that represent the linear interval succession. The transformation is represented by the Greek letter sigma (σ).

The next transformation, represented by the Greek letter kappa (κ), is both more novel and more problematic. It compresses the previous linear ordering σ registrally; that is, the horizontal configuration is verticalized in register. The result is startling, for now we have the 2-3-3 ordering that occurs so often in the Prelude (Example 6d), most tellingly at the very end of the Prelude from bar 79 (Example 7), symbolized in Example 10 as the compound transfor-

Example 10

The Tristan Chord in Vertical and Horizontal Configurations



mation σ of T_2 of Δ.[12]

Scriabin: Fourth Sonata, First Movement

Scriabin's Fourth Sonata, composed in 1903, is a work that stands at the very edge of the atonal precipice, as we shall see. Because the music is apt to be unfamiliar to many readers, I have included the opening portion of the score as Example 11. My analytical graph is distributed over Examples 12a through 12d, while Tables 2 through 5 provide information intended to clarify specific aspects of this unusual music, which marks the end of Scriabin's transitional period.[13]

The faint-of-heart may take comfort: I do not intend to offer a narrative account of the graph, but will merely point out certain of its salient features, features germane to the topic at hand. For example, I will not discuss the details of vertical organization, although they beg to be examined. But I will point out that although the piece at first seems to have a tonal cast to it, further study reveals that the vertical sonorities as well as other dimensions belong primarily to other modes of organization. For example, the first section, up to and including bar 7, contains only a single and unadorned consonant triad as a vertical, the *F#* triad over bass *a#* at the end of bar 4.

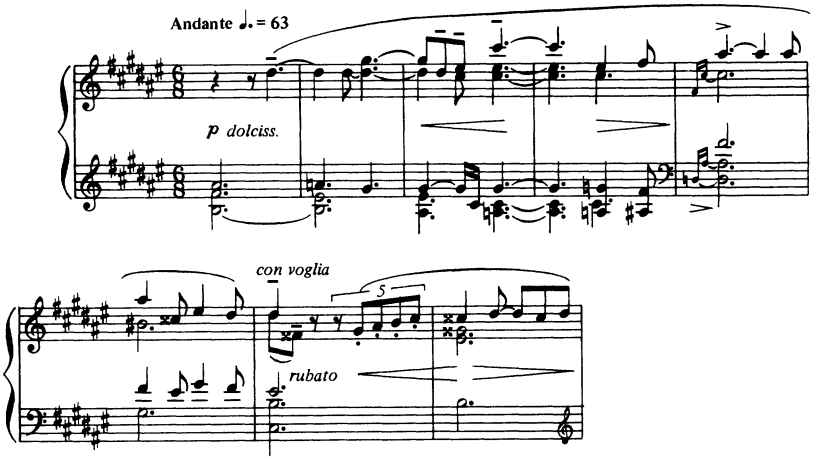
But illusory tonal harmonies abound. For example, the chord above bass *a* in bar 3, which may at first appear to be a hapless *F#* minor chord (with double suspension), is actually a form of atonal pitch-class set 4–19, as is the entire sonority of bar 5 above bass *d*. The presence of 4–19 here, the hallmark of experimental non-tonal music, is but one of many stylistic features that determine the historical placement of the composition. At certain moments it appears to look back to the arcadia of tonality, yet again and again its essentially non-tonal design strongly propels it forward toward the atonal world of the Fifth Sonata.

[12] For an extensive, complex, and suggestive treatment of transformations applied to pitch relations see Lewin 1982–83.

[13] See Baker 1986, 195–202 for a discussion of the relation between this sonata and the Fifth Sonata. As will be apparent from the graph, Example 8, my reading of the form of the first movement differs from Baker's, but does not contradict his, which takes into account the second movement (see Baker 1986, 196–97). In particular, I regard the first 35 bars of the first movement as a miniature, self-contained sonata form, the parts of which are clearly demarcated by differential forms of the octatonic set, to be explained below.

Example 11

Scriabin, Fourth Sonata, First Movement



My Examples 12a through 12d show that the linear analysis of the descant is straightforward, with reduction determined by register and voice membership as the principal analytical strategy. To illustrate, the motion *d#"-g#"-c#"'* over the first three bars appears as the uppermost linear strand on Example 12a, while the return to the inner voice *d#"* and *e#"*in bar 3 is a momentary digression that prepares the *f#"* of bar 4. As a further illustration of this procedure, consider bars 7 and 8 (Example 12a), where the descending leap from *d#"* to *f×* is construed as a motion to the alto voice, with the continuity of the uppermost voice then restored by the stepwise ascent to *c×"* on the downbeat of bar 8. The graph interprets this chromatic note as a lower neighboring tone to *d#"* of bar 7.

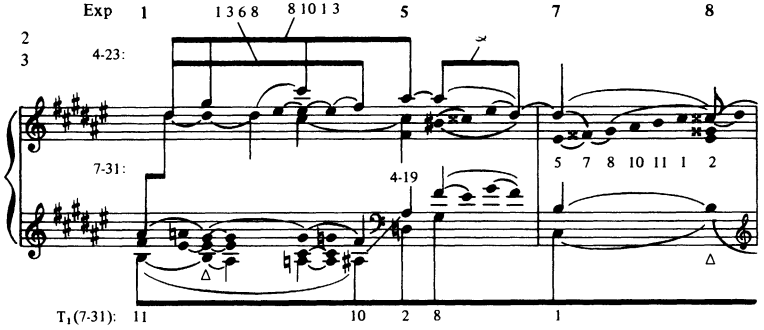
In order to simplify the discussion of this rather complicated series of graphs, I will comment first upon the broad outline of the descant, then say something about the melodic inner voice, and finally offer general remarks on the bass line over the span of the excerpt.

The descant throughout consists of successive and interlocking forms of tetrachord 4–23. In this context I regard 4–23 as essentially non-tonal, since it does not operate within a traditional tonic-dominant tonality, but instead interacts with another structure indigenous to this work which I will explain in a few moments. Still, because of its luxuriant fifths 4–23 must be regarded as the archetypical diatonic tetrachord, and I will designate it as the representative of that harmonic area without assigning it tonal significance in the traditional sense.

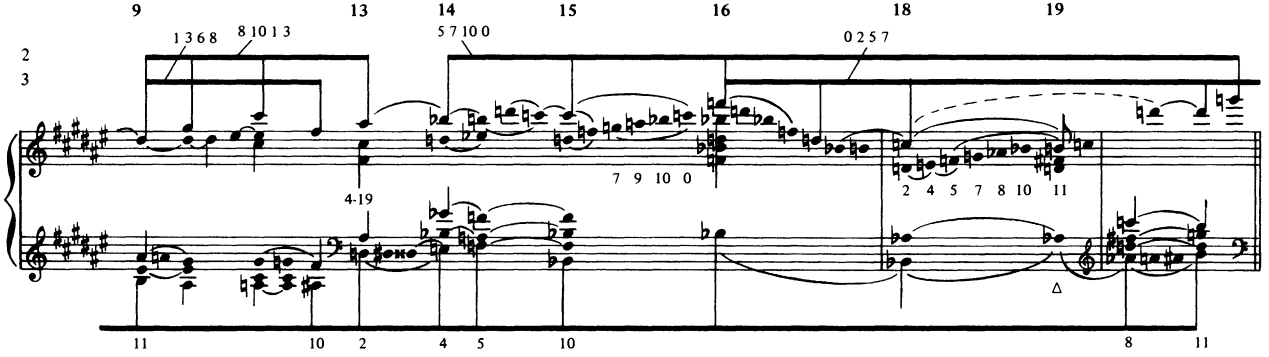
Example 12

Scriabin, Fourth Sonata, First Movement, Linear Graph

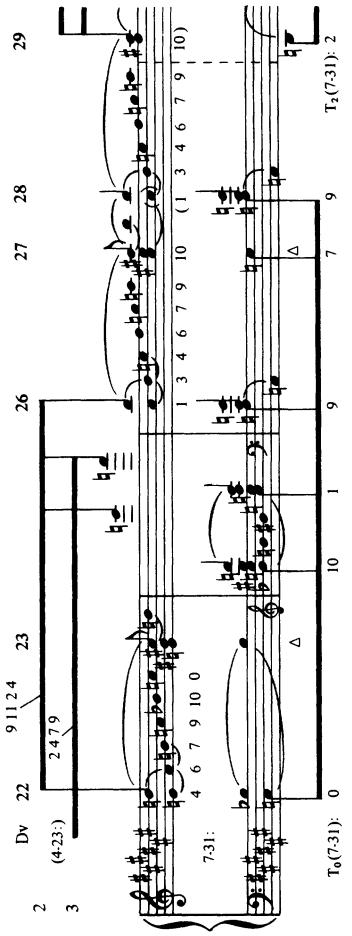
a) bars 1–8



b) bars 9–19



c) bars 22–29



d) bars 29–35

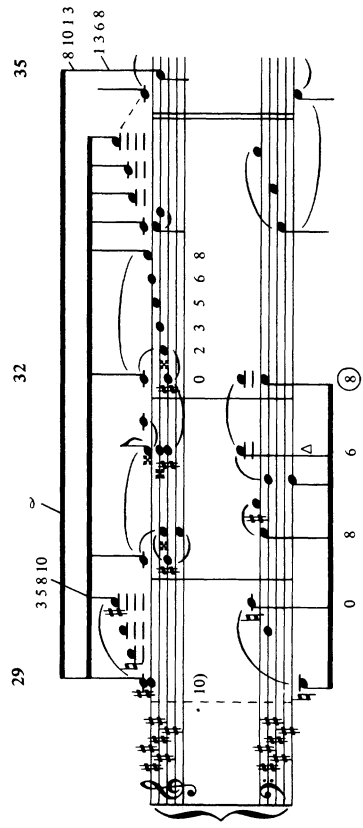


TABLE 2

Forms of 4-23

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

Table 2 lists the twelve forms of 4–23, some of the special properties of which Scriabin seems to have taken into account as he composed this unusual movement. Observe that each pitch-class integer appears in four forms of the set, with this pattern of transposition levels, designating the first form in which it occurs as level 0: 0 2 5 2, a representation of trichord 3–7.

Even more interesting and implicative is the fact that pitch-class set 4–23 contains trichords of classes 3–7 and 3–9 only. But, while any single pitch-class representation of 3–7 occurs only within one form of 4–23, any representation of 3–9 occurs within two forms of 4–23. For example, 0 2 5 (3–7) occurs only within 0 2 5 7, while 0 5 7 (3–9) occurs both within 0 2 5 7 and within 5 7 10 0. Thus, 3–9 is a potential 'pivot' between two forms of 4–23, a feature Scriabin utilizes to organize linear progressions in the descant of this work. It is this pivotal capability of trichord 3–9 that permits two forms of 4–23 to be nested, as at the very beginning of the movement, where the initial trichord *d#"-g#"-c#"'* is completed first by *f#"* at stratum 3 and then at bar 5 by *a#"* at stratum 2, creating the nested structure that sums to pc set 5–35.

I introduced the terms stratum 2 and stratum 3 in the course of the foregoing discussion. The graphs of Example 12 show those two structural strata over the descant in its entirety and give the pitch-class content of their constituents in numerical notation on small platforms placed above the beams of the upper staves.

From Table 3, which summarizes the progression of the forms of 4–23, we can see that, for the most part, the forms of 4–23 are combined at transpositions of fourths and fifths, given as T_5 or T_7 on Table 3. The exception occurs at the beginning of what I have called the Development (Dv), in bar 22 (Example 12c), where transposition T_9 effects a radical change in the pitch-class content of the descant, as reflected by the many accidentals introduced in the notation.

TABLE 3

Forms of 4-23 in Descant of Scriabin's Fourth Sonata, first movement

4-23					T	Invar.
Exposition						
Theme 1						
Level 2:	8	10	1	3		
Level 3:	1	3	6	8	$T_{5\|7}$	[1,3,8]
Theme 2						
Level 2:	5	7	10	0		
Level 3:	0	2	5	7	$T_{7\|5}$	[5,7,0]
Development (m. 22)					T_9	[2,7] w/r Theme 2
Part 1						
Level 2:	9	11	2	4		
Level 3:	2	4	7	9	$T_{5\|7}$	[2,4,9]
Part 2						
Level 2:	3	10	(1	8)		
Level 3:	3	5	8	10	$(T_{7\|5})$	[3,8,10]
Reprise						
Level 2:	8	10	1	3		
Level 3:	1	3	6	8	$T_{5\|7}$	[1,3,8]

The reader may have noticed that I have avoided specifying the content of stratum 1, the "*Urlinie*" of the excerpt. One very strong candidate for this honor would be the single pitch *a#"*, which is very prominent in the upper voice throughout the excerpt and even more so in the reprise of the short movement, which begins just where Example 12d leaves off. I would then select *d#"* as the other component of the *Urlinie*, for both pitches perform special roles in the music. They serve as boundary elements, for example, in the first section, and they link themes one and two, when *a#"* becomes b♭" in bar 14. In the return to the opening music at bar 35, both *a#"* and *d#"* are fundamental, as can be seen from the graph, Example 12d.

The inner voice, the alto, if you will, makes a very subtle and important contribution to the progression of the music. From the standpoint of structural analysis, it provides a major clue to the other fundamental constituent of this music, the octatonic set 8–28. From the music-structural standpoint it provides a measure of connection between the outer-voice linear strands in descant and bass. By "inner voice" I mean specifically the ascending figures which appear at regular temporal intervals throughout the excerpt: in bars 7–8 (Example 12a), 15–16 (Example 12b), 18–19 (Example 12b), 22–23 (Example 12c), 26–27 (Example 12c), 28–29 (Example 12c), and 32 (Example 12d).

Each of these figures is an ordered segment of one of the three octatonic sets. For example, the first of these, beginning at bar 7 on the graph in Example 12a, is an ordered segment of the octatonic set that begins on pitch-class 0. Here the figure begins with *e#′*, the upper note of the left-hand part of the piano, and extends upward to *c×″*. Again, in bar 18, the inner-voice figure begins on *d′* and ascends through the octatonic scale to *b′*, representing pitch-class 11. For convenient reference, the pitch-class numbers of these octatonic gestures are given between the staves on the graphs of Example 12.

That these octatonic figures in the inner voice are not merely "fillers" or arbitrary gestures of some kind becomes evident when we analyze the bass. We then understand that the inner-voice motions are miniature representations of the large-scale underlying set that unfolds in the bass register. Thus, the bass presents five pitches of the octatonic set—*unordered* with respect to the conventional scalar array—ending on *c#* at bar 7 (Example 12a). Precisely at that moment, the inner voice begins its octatonic segment with *e#′* (pc 5) and *f×′* and continues until it has brought in pitch-classes 8, 10, 11, 1, and 2 that have just appeared—in a different order, of course—in the bass. In this way, the octatonic inner-voice figure, which "prolongs" the descant pitch *d#″* amalgamates the large-scale bass from the octatonic collection and the large-scale upper voice from the diatonic collection. This process repeats throughout the excerpt, so that the seemingly disparate fundamental harmonic components, the diatonic and the octatonic, are literally joined.

At bar 22 (Example 12c) a new form of the octatonic set begins on bass *C*, designated T_0. And finally, at bar 29 (Example 12d), the third form of the octatonic set, T_2, begins on bass *D*, coinciding exactly with the onset of the final form of 4–23 in the descant, beginning with the pivotal *a#″*, just as the initial bass note of T_0 in bar 22 coincided exactly with the onset of a new form of 4–23.

Table 4 provides a summary of the octatonic set as manifested in this intriguing and highly innovative composition. Here, instead of a chronological arrangement, I have shown how the ordered forms in the piece correspond to the referential, "background" forms, beginning with the three statements of octatonic segments in the bass. Statements of octatonic segments in the inner voice are shown in the lower part of the example.

Table 4 shows that all three forms of the octatonic scale are represented by linear configurations that span the entire excerpt. It also shows that not all transpositions of the octatonic set appear to be

TABLE 4

Forms of 8–28 in Scriabin's Fourth Sonata, first movement

Reference Forms									Ordered Forms										Bar
									Bass:										
T_0:	0	1	3	4	6	7	9	10	0	10	1	9	7	9					22
T_1:	1	2	4	5	7	8	10	11	11	10	2	8	1	11	2	4	5	10	1
T_2:	2	3	5	6	8	9	11	0	2	0	6	8							29
									Inner voice:										
T_0:	0	1	3	4	6	7	9	10	7	9	10	0							15
									4	6	7	9	10	0					22
									1	3	4	6	7	9	10				26
T_1:	1	2	4	5	7	8	10	11	5	7	8	10	11	1	2				7
									2	4	5	7	8	10					8
T_2:	2	3	5	6	8	9	11	0	0	2	3	5	6	8					32

equally represented. In particular, the form designated T_2 seems especially deprived with respect to its linear representations.

But this situation is remedied at the surface of the music in one of its most startling aspects—no doubt already perceived by many readers: the multiple occurrences of the Tristan chord.

Table 5 provides a list of the occurrences of that supercharged sonority in this work. There are exactly six of these, five of which are ordered vertically in exactly the same way as Wagner's chord. On the graphs, Example 12, an eighth-note flag distinguishes them in their various contexts—with the exception of the first, somewhat concealed instance in bar 2, which has the same pitch-class content as the first chord in the Tristan Prelude.

Interesting though these allusions may be, reflecting, no doubt, Scriabin's interest in erotic symbols, their structural significance lies in their relation to the fundamental octatonic domain, which is expressed most completely in the bass. As Table 5 shows, three of the six occurrences of the Tristan chord are derived from T_2 of the octatonic collection, the form I said was under-represented earlier in the music. Most important, however, is the fact that the recurring chord points up the integration of linear and vertical formations in this work, a general consideration of the utmost significance to linearly oriented analytical studies.

There are a few prominent formations in the foreground of the music that do not fit altogether neatly into the structural picture I have presented so far. I refer, in particular, to the strong statements of the vertical tetrachord 4–19, notably at bar 5 above bass *d*. To resolve this apparent anomaly I suggest that the augmented-triad "core" of 4–19

TABLE 5

The Tristan Chord in Scriabin's Fourth Sonata, first movement

Pitch-class form				Octatonic location
5	11	3	8	T_2
11	5	9	2	T_2
8	2	6	11	T_2
10	4	8	1	T_1
7	1	5	10	T_1
6	0	4	9	T_0

serves as a unifying component with respect to the three forms of the octatonic set, no single form of which can contain 4–19, and points to certain key junctures in the music where the augmented triad occurs—for example, the crux of the development at bar 29.

Conclusion

Three proposed guidelines for linear analysis are exemplified in the analyses I have just presented.

First, an effective reading of the large-scale horizontal dimension should relate in specific ways to the motivic structure of the music. Perhaps the most telling illustration of this is the analysis of the *Tristan* Prelude, in which what surely must be regarded as the primary leitmotive of the opera, the "Tristan chord," extends horizontally over relatively long spans of music. The Scriabin analysis provides a more elusive instance, one in which an emphasized vertical feature of the music, the Δ chord of *Tristan*, reflects the underlying operation of a referential set that governs one of the primary linear strands.

Second, where specific non-tonal referential collections are in operation, as in the Stravinsky and Scriabin examples, the reading should discover precisely how these are expressed in the music, without violating such important musical considerations as phrase groupings, rhythmically determined units, registral and timbral associations, and so on.

Third, the reading of linear structures should take into account onset and closure within the individual linear configuration as well as the relation between linear configurations in combination—"coincidences," as they might be termed. This is perhaps best illustrated in the Scriabin analysis, where the closure of an octatonic segment in the

bass coincides precisely with the closure of a diatonic segment in the descant.

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Abstract

A number of recent studies incorporate linear analysis of non-standard tonal music and non-tonal music. Although the author takes issue with the application of strict Schenkerian paradigms to such music he acknowledges the historical importance of the Schenkerian canon. Invoking new procedures, among them pitch-class set-analytical techniques, the author presents a series of analyses which reveal linear-motivic features held to be essential to the music under consideration over temporal spans of varying length. The study, which includes works by Stravinsky, Wagner, and Scriabin, ends by suggesting three guidelines for subsequent efforts in this new area of analytical research.

[Footnotes]

[6] **The Concepts of Plot and Seriation Process in Music Analysis**
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[7] **Meta-Variations, Part IV: Analytic Fallout (I)**
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[8] **Meta-Variations, Part IV: Analytic Fallout (I)**
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