Persistent Notes and Proximity Harmonization

Nachum Schoffman

Several years ago, I published an article about pedal points, in which I attempted to show that the persistent bass notes in the music of Debussy and Ravel helped to engender a new kind of harmony.[1] In the present article, I shall attempt to explore the question of persistent notes in upper voices, and to show that these also were instrumental in the development of new harmonic structures in the twentieth century. For want of a better name, I have called these new harmonies "proximity harmonization" because they are not based on the roots of chords, but on the relative sizes of intervals.

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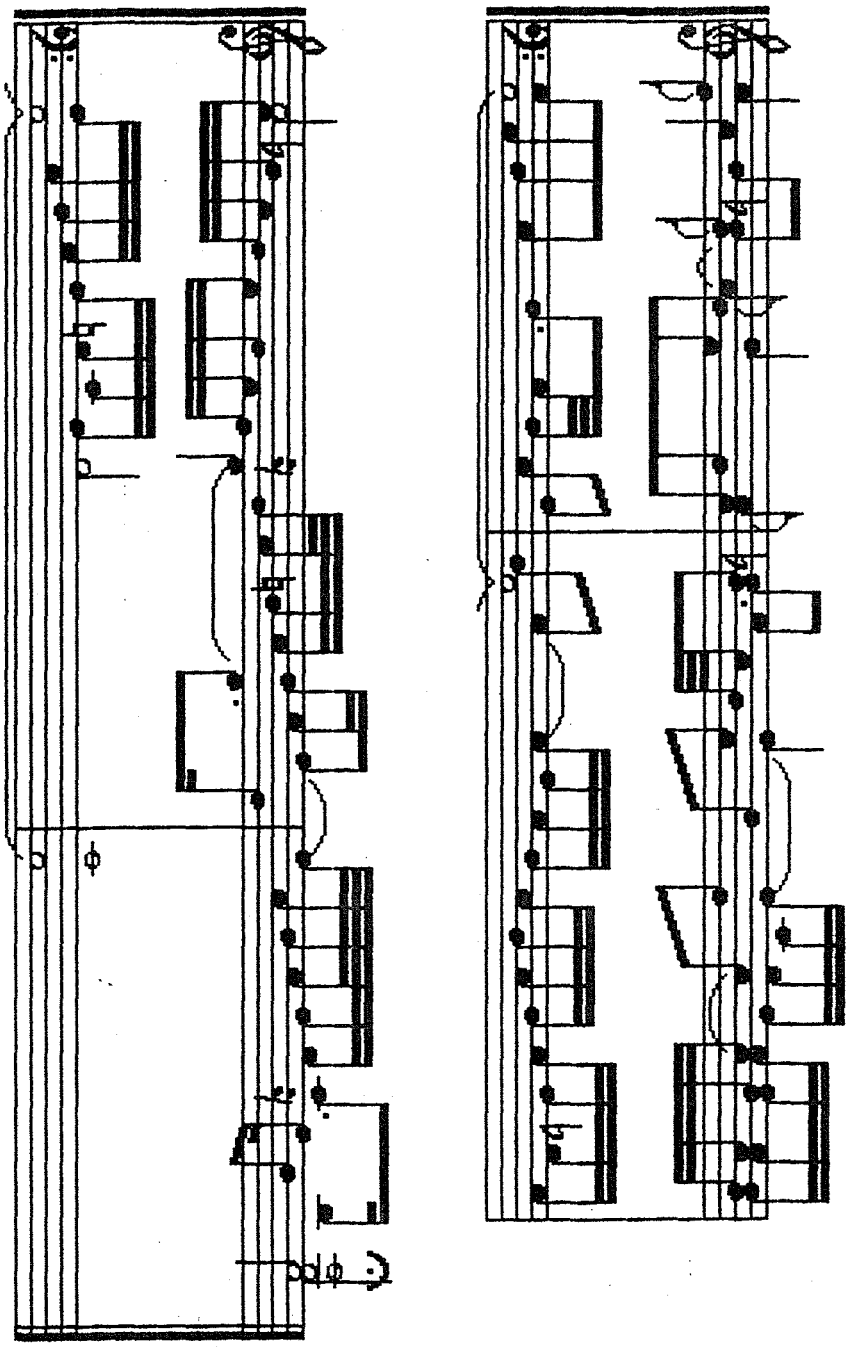
[1]Nachum Schoffman, "Pedal Points, Old and New," *Journal of Musicological Research* 4 (1983), 369-397.

Example 1. Johann Sebastian Bach, *Das Wohltempierte Klavier*, Vol. 1, Fugue No. 1in C Major, mm. 24-27

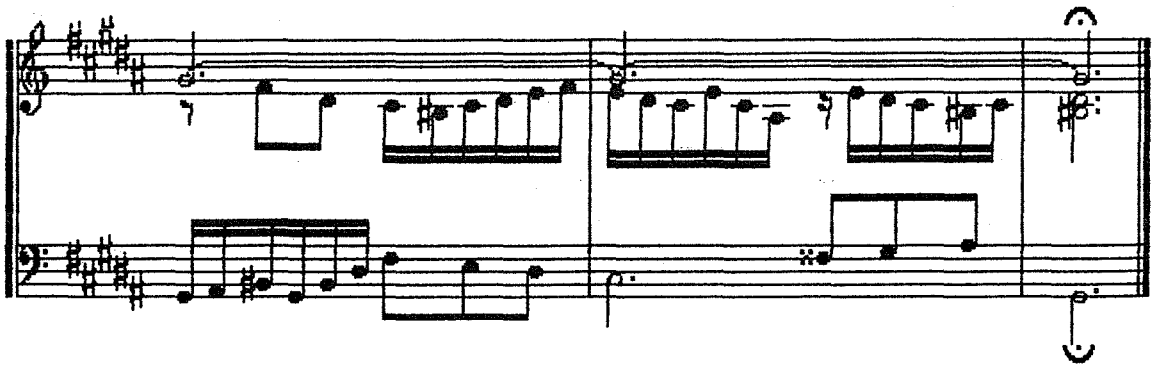


Persistent Melodic Notes

A pedal point is not effective unless it is dissonant with at least some of the chords progressing above it.[2] Without this contradiction between the sustained pedal note and the bass of the momentary chord, a pedal point would be stale and banal. For example, at the end of the C major fugue in Vol. 1 of *Das Wohltempierte Klavier* (Example 1), a lively progression above the pedal note employs all the diatonic harmonies except III, as well as secondary dominants.

In the case of an inverted pedal point, the same principle applies. Even though the pedal note is now in an upper voice, it functions in the same way. Similarly, there must be at least some dissonance between the pedal note in the upper voice and the basses of the chords progressing under it. For instance, at the end of the G# minor fugue in Vol. 1 of *Das Wohltempierte Klavier* (Example 2), subdominant harmonies and the many passing notes produce considerable dissonance with the pedal note in the soprano.

Example 2. J.S. Bach, *Das Wohltempierte Klavier*, Vol. 1, Prelude No. 18 in G# minor, mm. 27-29



[2]See Heinrich Schenker, *Harmony*, trans. Elisabeth Mann Borgese (Chicago: University of Chicago Press, 1954), 314; Arnold Schoenberg, *Theory of Harmony*, trans. Roy E. Carter (Berkeley: University of California Press, 1978), 209.

On the other hand, a note that persists in an upper voice, against the changing basses of the harmony, may be melodic. Then it is, in its simplest form, the opposite of a pedal point. Such a persistent melodic note is common to all the chords of the harmonization. In contradistinction to the pedal point, the sustained melody note is a member of all the chords, and dissonant with none.

A famous example is Schubert's song "Die liebe Farbe" D795/16 (Example 3). Here the device is programmatic. The monotonous sound of the persistent F# in the piano part is a metaphor for the monochromatic "green" of the text: *Alles grün so rings und rund* (Everything green all round about). This device establishes an image that can then be quoted, as it were, in the following song.[3]

From the harmonic point of view, "Die liebe Farbe" constitutes a classic example of the device. The fifth degree of the scale sounds in an upper voice at every moment, dominating and limiting the harmonic scheme. In a sense, the repeated F# is a "melody" to be harmonized. This persistent F# permits the employment of the minor dominant and the major tonic chords so typical of Schubert. On the other hand, it precludes the use of subdominant harmonies, since the fifth degree of the scale is not a member of those chords.

The song "Ein Ton" by Cornelius, Op. 3/3, is an even more cogent example (Example 4). Here the subject of the text is the persistent melody note itself.[4] The persistent note is in the voice part

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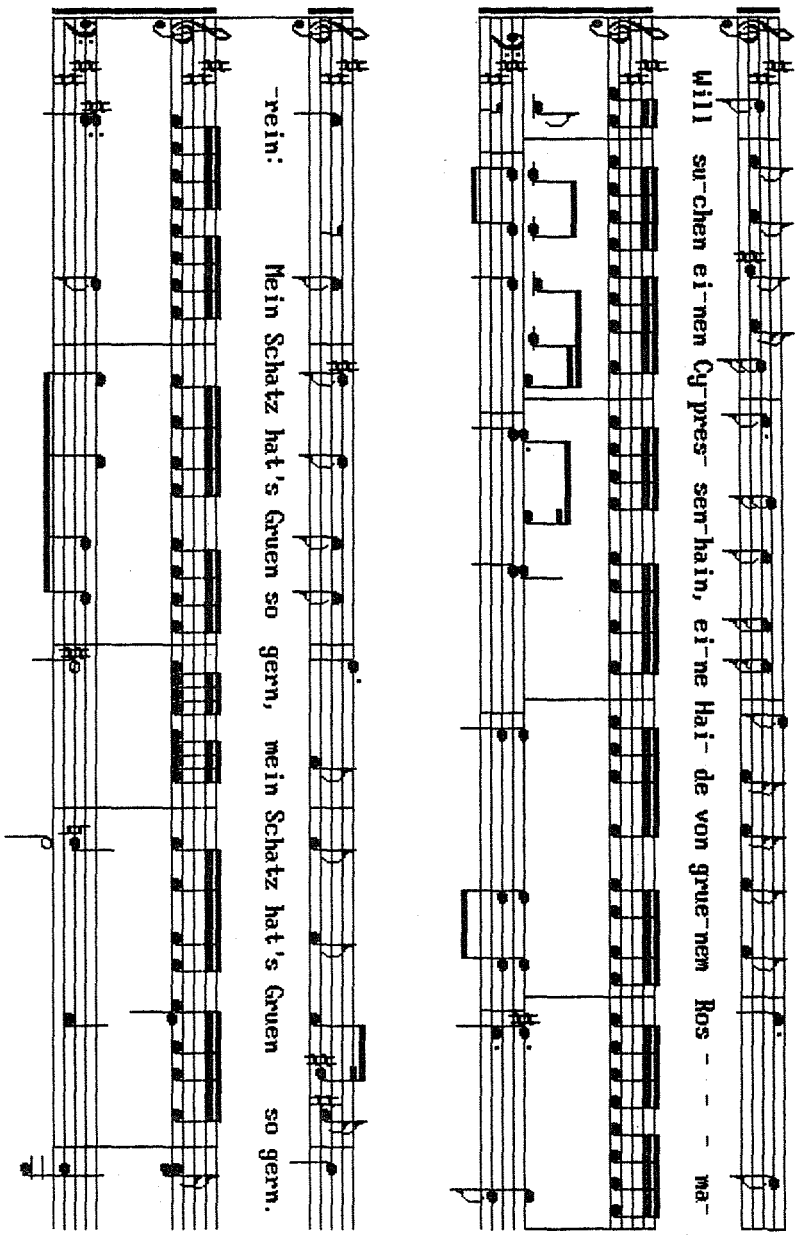
[3]Schubert, *Die böse Farbe*, D795/17, from m. 22, at the words "Ach Grün, du böse Farbe du " (Oh green, thou hateful color).

[4]The complete text of the song is as follows:

Mir klingt ein Ton so wunderbar
In Herz und Sinnen immerdar.
Ist es der Hauch, der dir entschwebt,
Als einmal noch dein Mund gebebt?
Ist es des Glöckleins trüber klang,
Der dir gefolgt den Weg entlang?
Mir klingt der Ton so voll und rein,
Als schlöß er deine Seele ein,
Als stiegest liebend nieder du

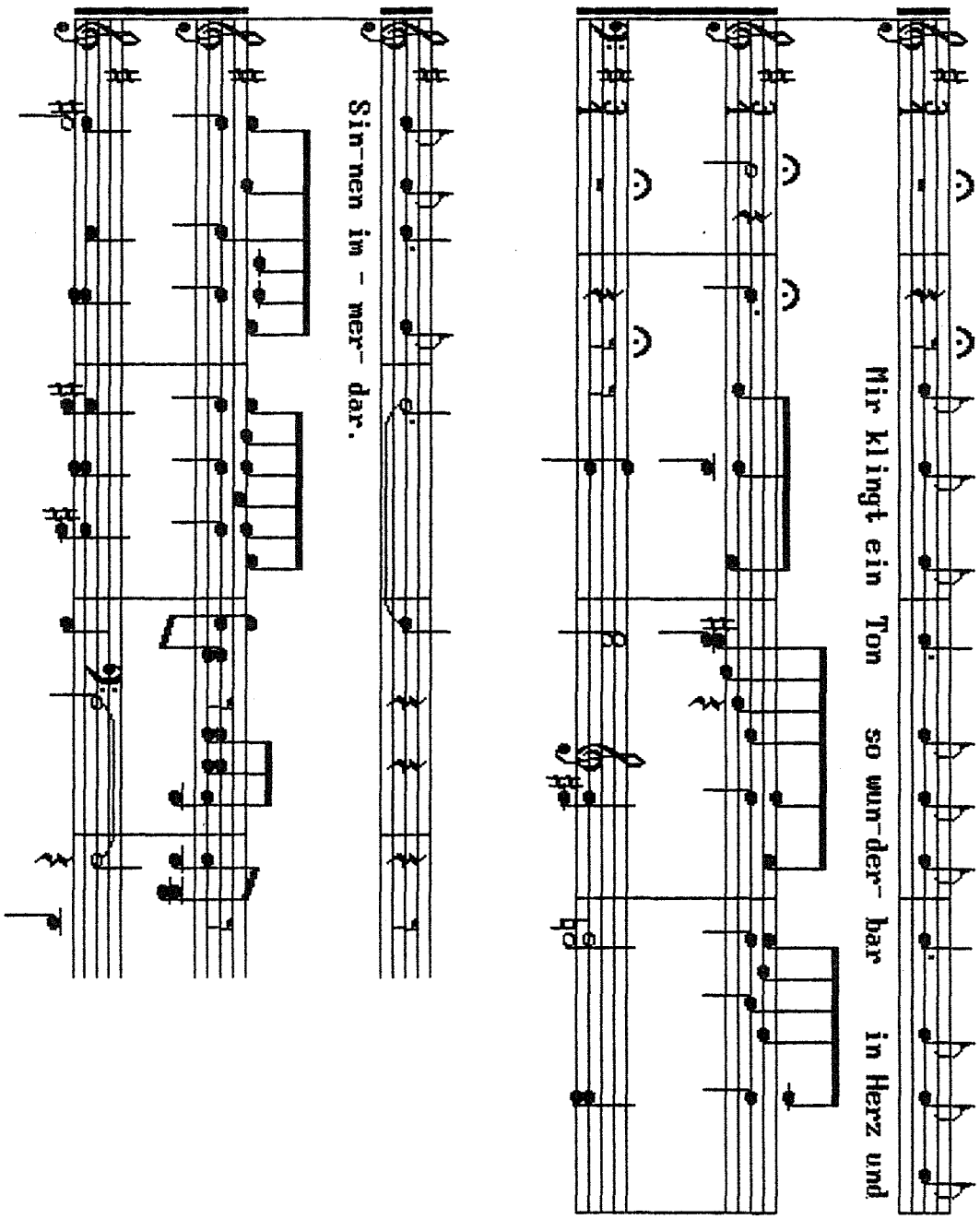
Example 3. Franz Schubert, *Die Schöne Müllerin*, D795/16, "Die liebe Farbe," mm. 14-22



Und sängest meinen Schmerz in Ruh!

(A wondrous tone rings / Incessantly in my heart and spirit. / Is it the last breath, wafted / From your lips as they trembled again? / Is it the mournful tolling of the bell / That accompanied you on your last journey? / That tone rings full and clear in my ears, / As if it enshrined your soul, / As if you had lovingly descended / And, singing, assuaged my grief!)

Example 4. Peter Cornelius, *Trauer und Trost,* Opus 3/3, "Ein Ton," mm.1-8



and thus it is literally a melody to be harmonized. As in the Schubert example (Example 3), the melody note is the fifth degree of the scale, and it is common to all the chords. The harmonic vocabulary, however, is more extensive. Every phrase in the song includes either the mediant, or the chord VI^7, or a diminished seventh.

In the two excerpts from Verdi operas shown in Examples 5 and 6, the persistent melody note is harmonized with even greater freedom. The chords in our examples are almost all chromatically altered inverted sevenths, diminished sevenths, and augmented sixths. Even here, however, the single melody note imposes its limitation upon the harmonization. In Desdemona's prayer from Act 4 of *Otello* (Example 5), the melody note on the fifth degree of the scale is common to all the chords, and so subdominant harmonies are excluded; there are none in our example. Conversely, when the bell rings at midnight in the final scene of *Falstaff* (Example 6), the melody note is the tonic, and consequently there are no dominant harmonies.

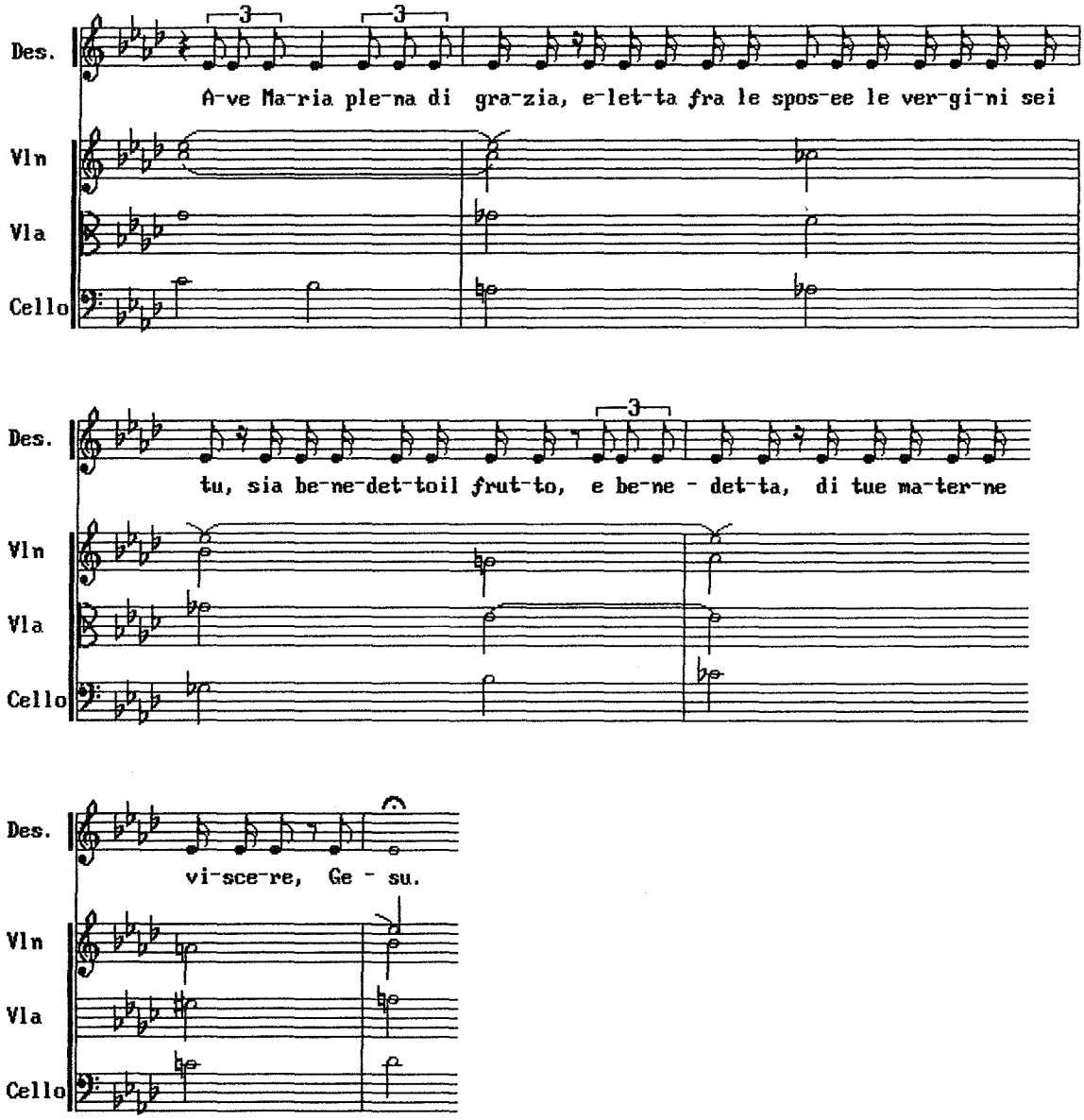
Persistent Melodic Notes in Dissonant Contexts

As the level of dissonance rises, the limitations on the harmonization of a persistent melodic note are relaxed. Beyond some critical level of dissonance, the constraints, indeed the very distinctions, begin to disappear.

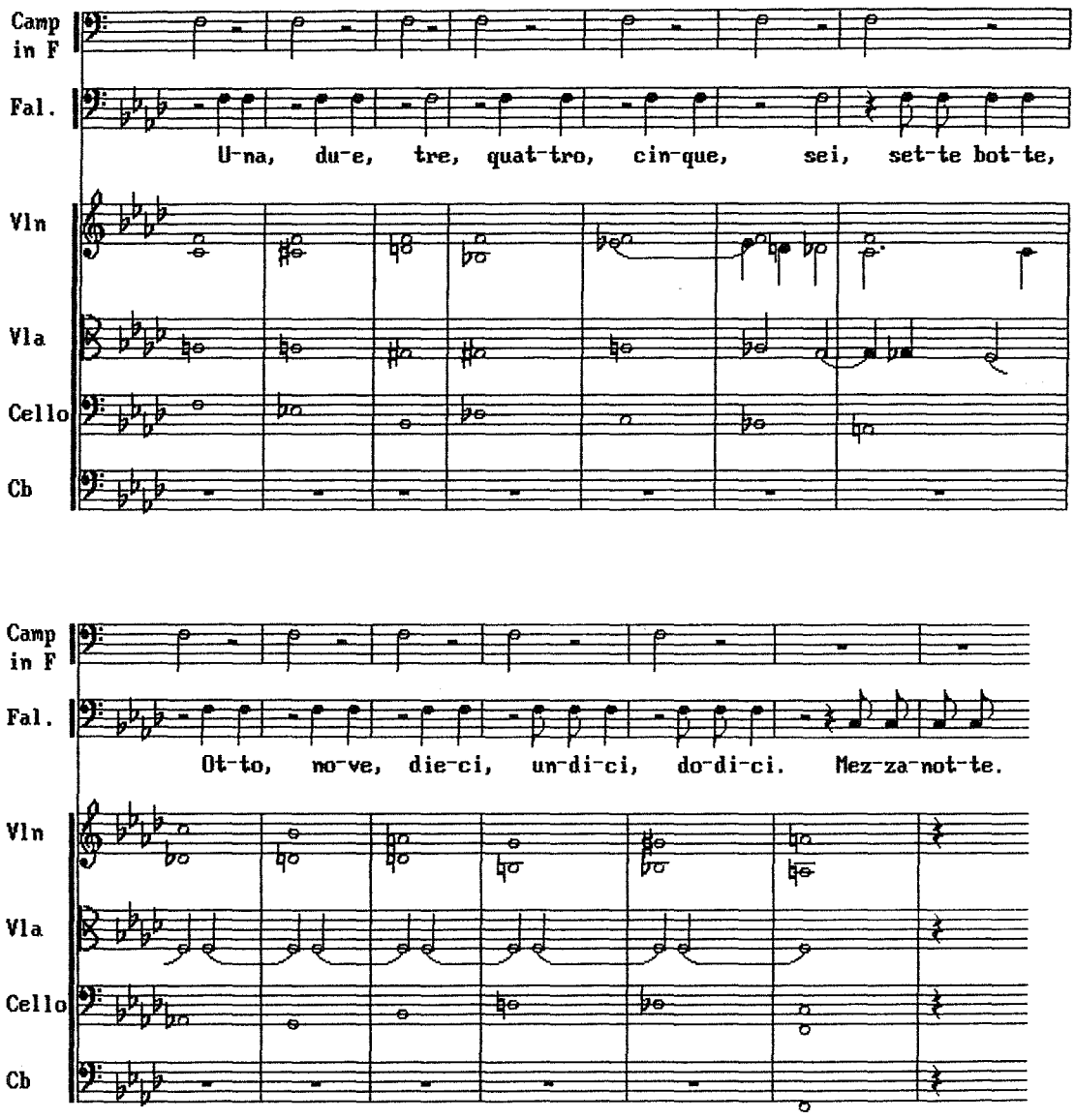
As instructive example is the sacristan's prayer from the first act of *Tosca* (Example 7). The persistent tonic note F would ordinarily limit the harmonization. But the introduction of complex chords circumvents these constraints. For example, the chord on the word "Spiritu," with C in the bass, could be construed as outlining the dominant-eleventh chord: C-(E)-G-Bb-(D)- and the persistent F as its eleventh. In this way, it is possible to construe the melodic F in this passage as a member of every chord. Alternatively, it is possible to construe the melodic F as an inverted pedal point, and the dissonant intervals as clashes between the chords and the pedal note. The distinction has become blurred.

Ravel goes even further along the same route in "Le Gibet" from

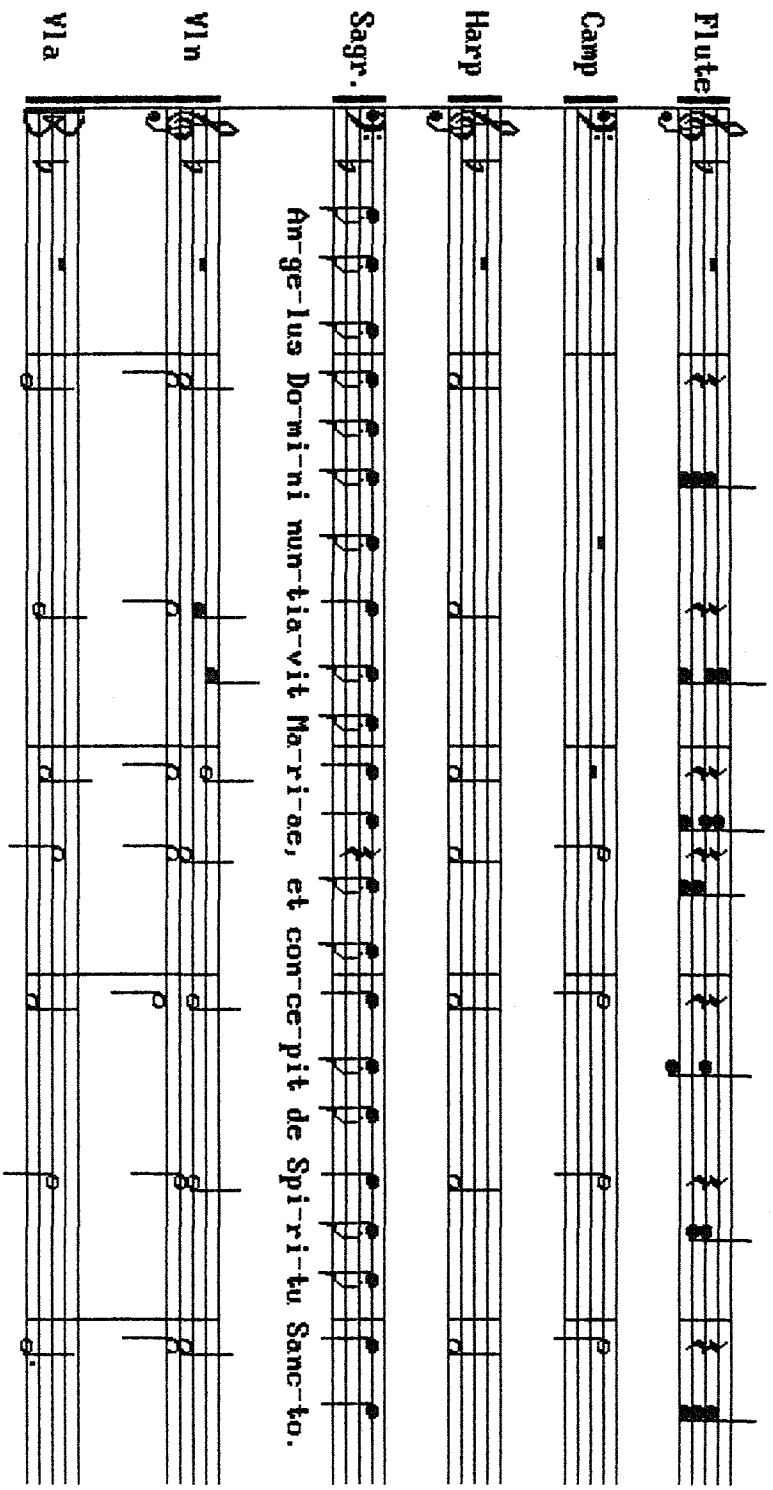
Example 5. Giuseppe Verdi, *Otello*, from Act 4



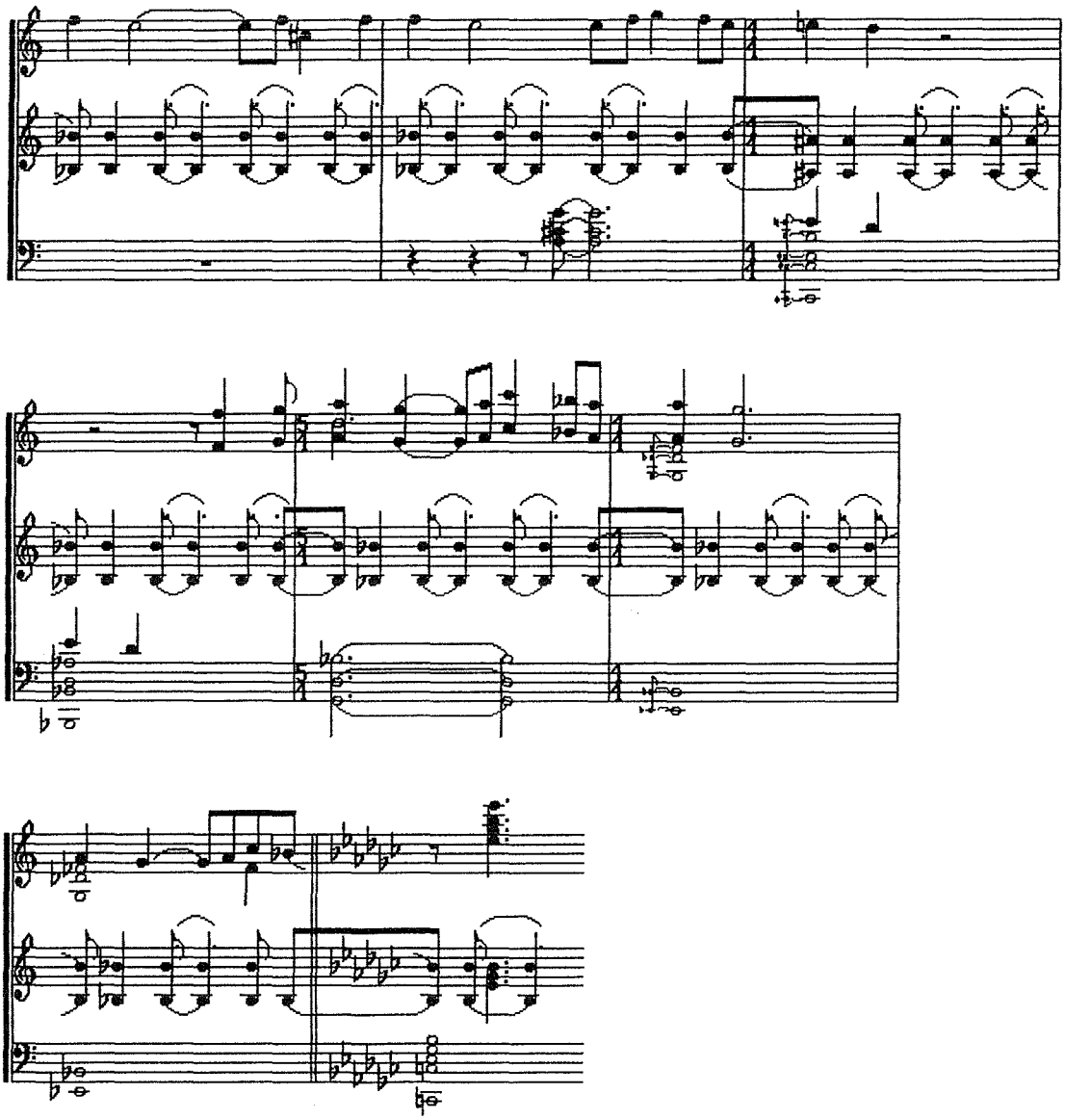
Example 6. Verdi, *Falstaff*, from Act 3, scene 2



Example 7. Giacomo Puccini, *Tosca*, from Act 1



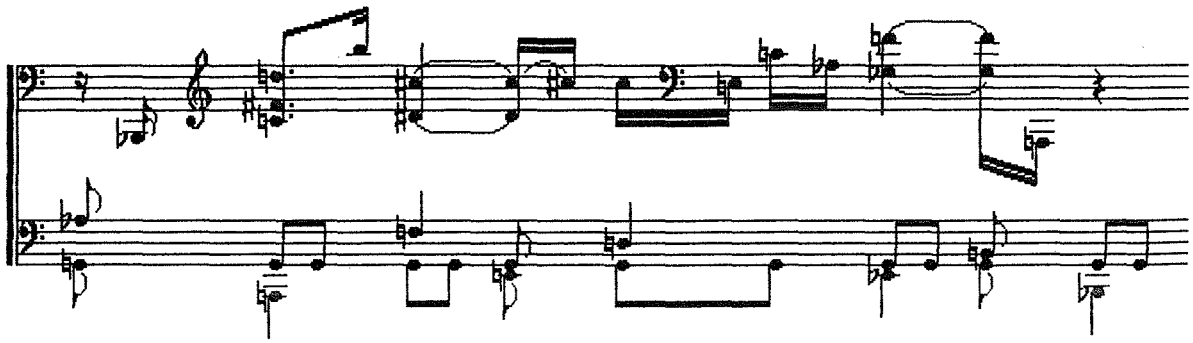
Example 8. Maurice Ravel, *Gaspard de la nuit,* No. 2, "Le Gibet," mm. 28-35



Gaspard de la nuit (Example 8). The texture is actually the same as that in our Schubert excerpt (Example 3). There is a melodic line supported by a harmonic progression with its own functional bass, but there is also a persistent note in an upper voice, written Bb or A# according to the exigencies of the harmony. However, in contradistinction to the situation in the Schubert excerpt, the persistent melodic note no longer dominates and limits the harmonic scheme. The dissonance of the chords themselves obscures the dissonance between the persistent melodic note and the chords. In the third measure of our example, for instance, the persistent A# clashes with the B of the chord. But in the following measures, where the Bb/A# is a member of the chord, there are no fewer dissonances. The seconds resulting from the clash between the persistent note and the harmony are lost among the seconds in the harmony itself.

In the fully dissonant harmony of twentieth-century music, distinctions between different dissonances are no longer of great importance. This phenomenon can be observed in *Soundfigures*[5] by Hayim Alexander. This uncompromisingly dodecaphonic work consists of twelve variations on the same row. In Variation No. 8 (Example 9), the note G is maintained as a persistent note, even during changes in the transpositions of the row. In the context of such total atonality, it is no longer necessary to distinguish between the dissonance caused

Example 9. Hayim Alexander, *Soundfigures*, No. 8, m. 7



[5]The title in Hebrew is *B'not Kol.*

when the persistent note clashes with the chords, and the ambient dissonance of the entire texture. The distinctions that were relevant in tonal harmony are now irrelevant.

In such a dissonant environment, when the bass is no longer functional in the traditional sense, the persistent note can even migrate within the texture. It may be in the bass at one moment, and in the treble at the next. The distinctions between a pedal point, an inverted pedal point, and a persistent melody note have all become blurred.

Bartok's sixth Bulgarian Dance, No. 153 at the end of the *Mikrokosmos* (Example 10) seems almost to have been written to demonstrate this principle. In the second half of our example, the complete texture is inverted. The harmonic progression is organized around the persistent notes, whether they are melodic notes or pedal points.

A prodigious example of such a migrating persistent note occurs in the murder scene in Wozzeck, Act 3, scene 2. Willi Reich, in his commentary on the structure of the work, describes this scene as follows:

> The low B of the contrabasses ... now becomes the unifying factor, the coordinating principle of the murder scene. It appears here again in the greatest variety of ways, as an organ-point, as a stationary middle or upper voice, doubled in many octaves and heard in all conceivable registers and colors.[6]

Example 11 is an extract of several measures from the beginning of this scene, showing how the persistent note B migrates from one instrument to another, and from one register to another. None of the traditional terminology is applicable here. Instead, one might say that Berg has made this note a *Klangfarbenmelodie* to be harmonized and orchestrated.

The piece by Schoenberg that first employed the *Klangfarbenmelodie* was *Sommermorgen an einem See* (*Farben*), Op.

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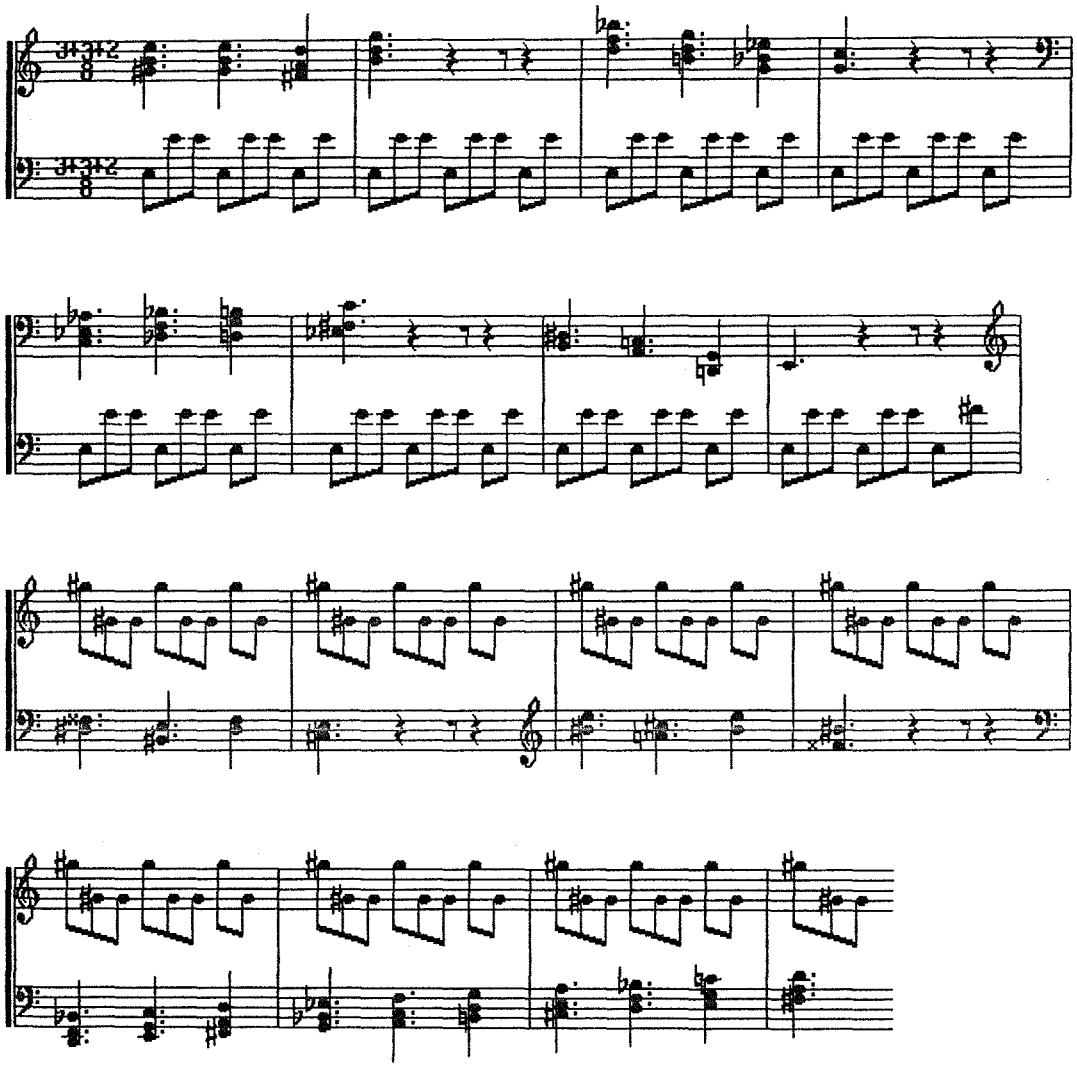
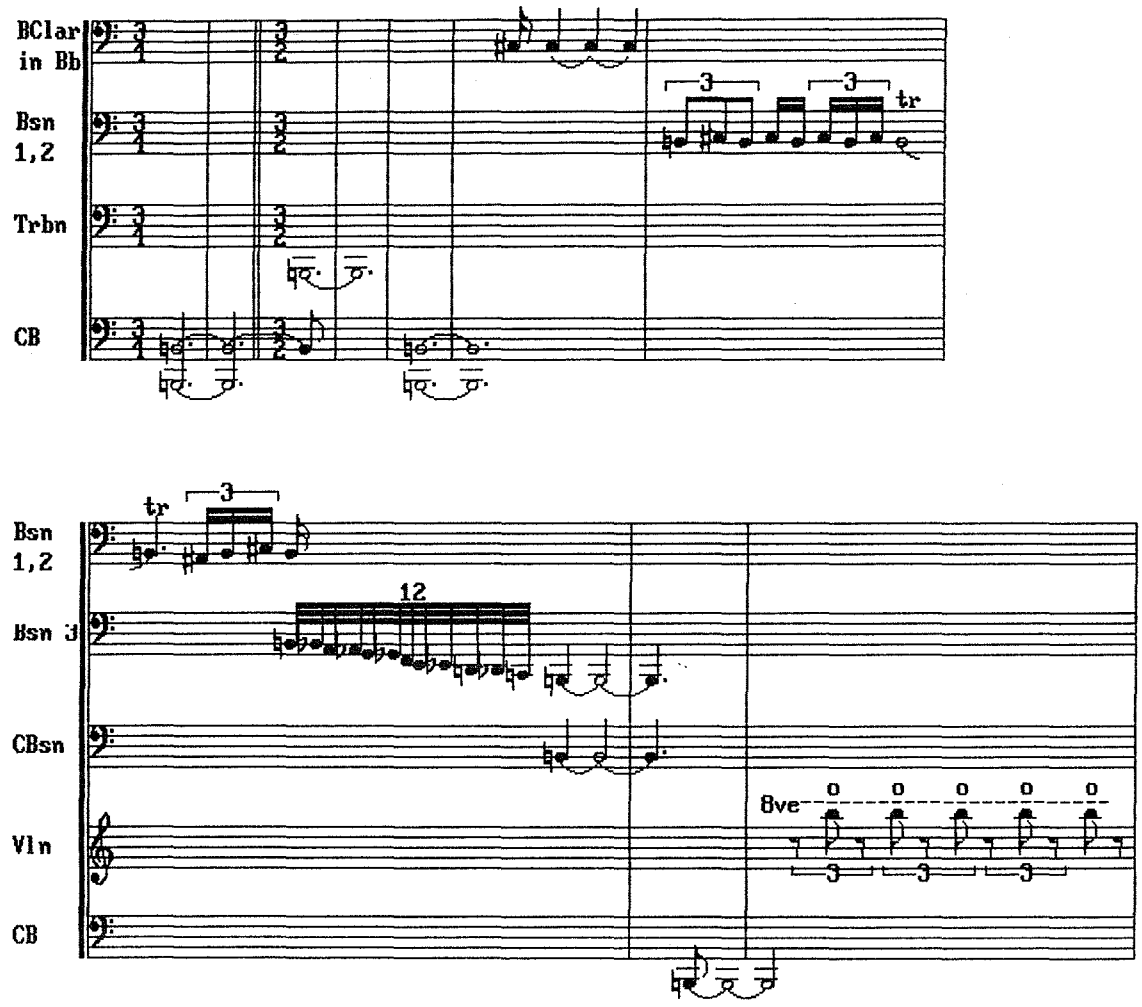
[6]Willi Reich, "A Guide to Wozzeck," *The Musical Quarterly* 38 (1952), 17.

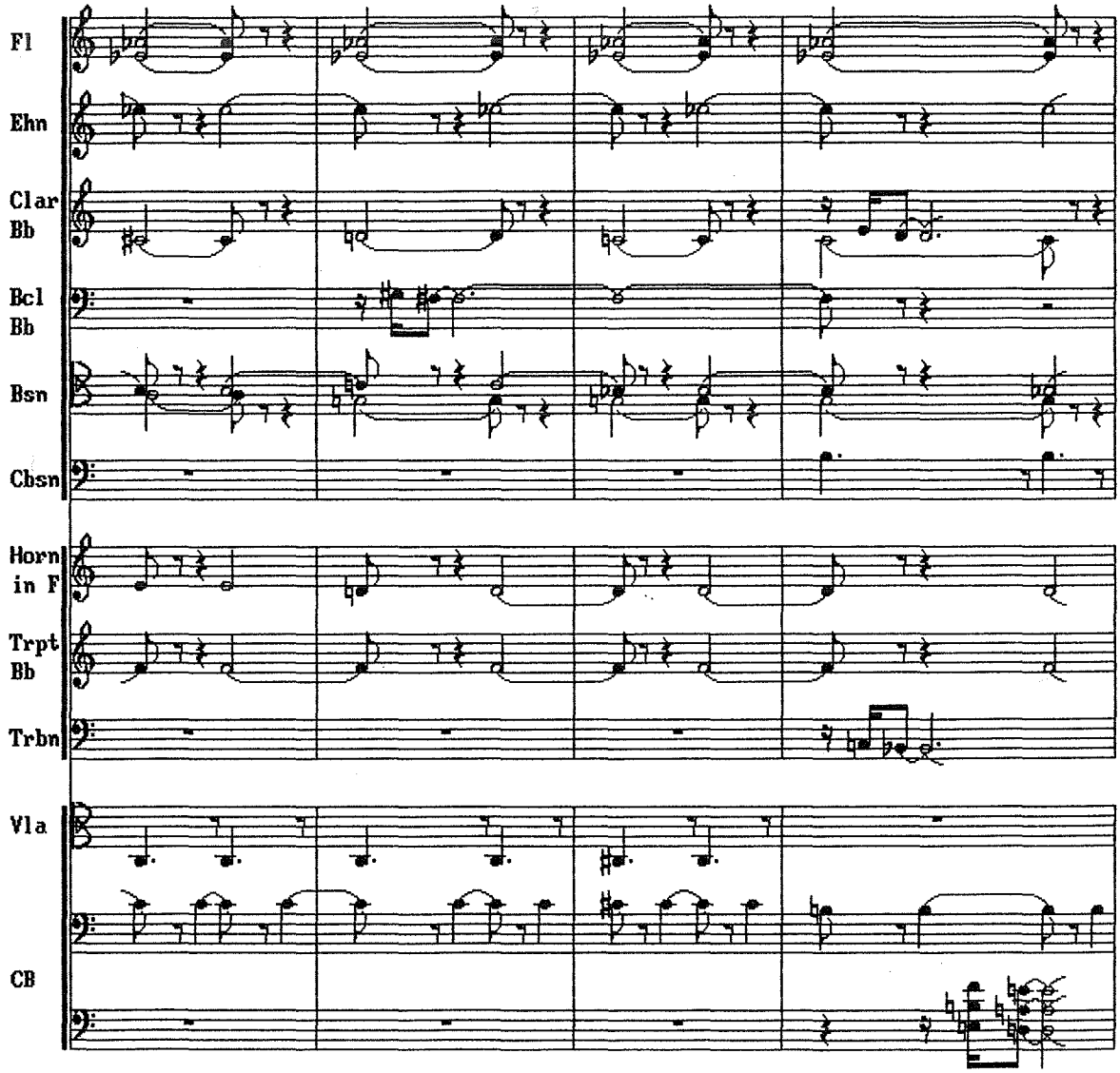
Example 10. Béla Bartok, *Mikrokosmos*, Vol. 6, *Six Dances in Bulgarian Rhythm*, No. 153, mm. 1-16



Example 11. Alban Berg, *Wozzeck*, Act 3, scene 2, mm. 71-80



Example 12. Arnold Schoenberg, *Fünf Orchesterstücke*, Opus 16/3, *Sommermorgen an einem See (Farben)*, mm. 6-9



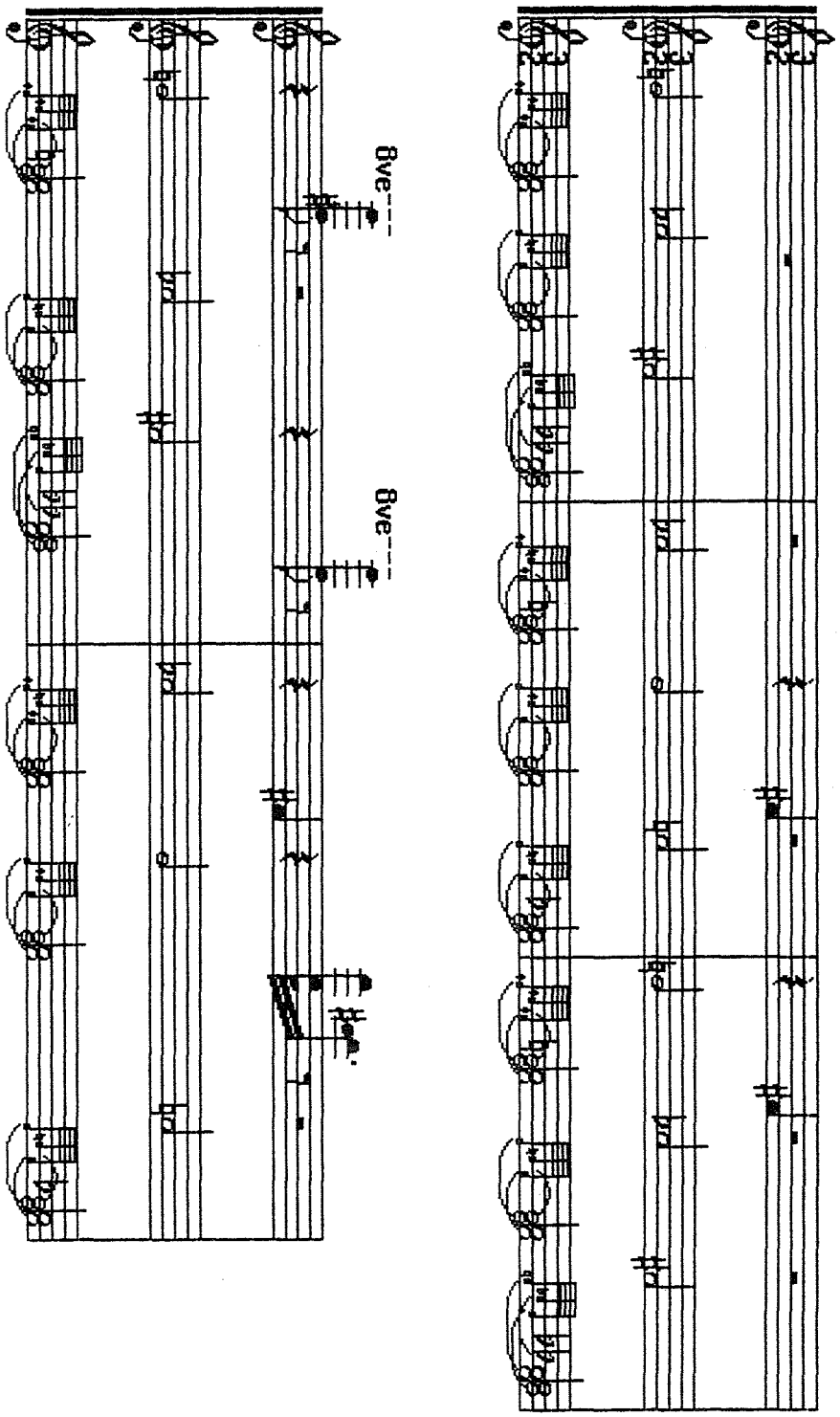
16/3 (Example 12). In this piece, however, Schoenberg actually carries the device a step further. Rather than a persistent single note, there is a persistent chord. Above, below, or within the register of this sustained chord there are disconnected, sporadic little phrases. Such a texture harmonized with traditional tonal chords would be trivial and boring. Here, the absence of harmonic progression is made possible by the atonality. The texture is dominated by a sustained dissonant sonority, static in spite of the shifting notes and tone colors within it. The sporadic phrases are like satellites, momentarily appearing in different registers, but incapable of affecting, or of moving, the central sonority.

Bartok employed the same texture, with the same level of dissonance, for the same programmatic reason. Like Schoenberg's tone picture of a summer morning by a lake, Bartok's *Musiques Nocturnes* from *Out of Doors* depicts the sounds of a summer night (Example 13). The central static sonority consists of five consecutive semitones. This cluster persists throughout the piece; only the order in which the notes are sounded changes. The sporadic little phrases, here imitations of actual night sounds, behave like those in the Schoenberg piece (Example 12). Here also, they appear in all registers, but are unable to alter the central sonority. On the contrary, it is the central, static sonority that dominates the whole texture.

Persistent Notes "Harmonized" by Proximity

In the absence of traditional tonal functional harmony, one possible way of organizing the chordal aspect of the music is to construct the chords around a fixed note or group of notes, and to order their relationships by proximity to this fixed center. In such a structure, the organizing principle is not the degree of consonance or dissonance, nor the distance to a tonic, but the sizes of the intervals separating any note from the fixed persistent note. In such a context, intervals are

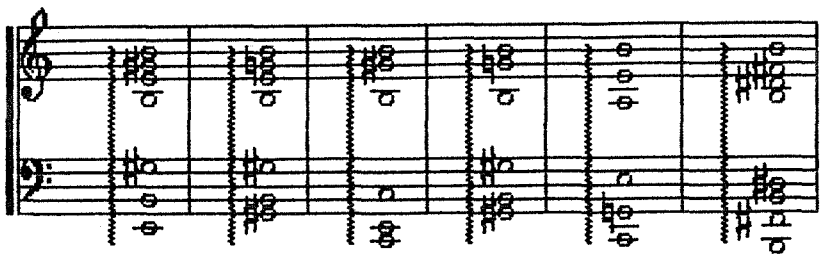
Example 13. Bartok, *Out of Doors*, No. 4, *Musiques Nocturnes*, mm. 1-5



perceived as absolute magnitudes.[7] The size of an interval, the distance between its member notes, seems almost to be a metaphor of physical space.

A simple and amusing example occurs in Menotti's one-act opera, *The Telephone*. As Lucy dials a telephone number, the piano accompanies her (Example 14). This series of chords seems to constitute a harmonic progression in the traditional sense, in that it seems to "vindicate" the persistent B in the treble by resolving to a B-major triad. But no less important is the obvious intention that these arpeggios imitate the motion of the telephone dial.

Example 14. Gian-Carlo Menotti, *The Telephone, or, L'amour à trois*



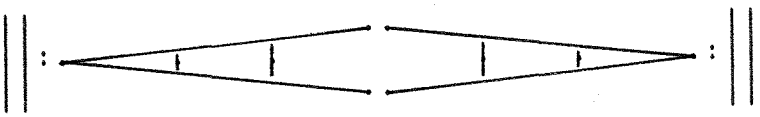
The fixed treble note B represents the rest position of the dial, while the varying distances (as opposed to the intervals) from the bass to the fixed treble note represent the various distances that the dial must revolve when different digits are dialed. If we were to carry Menotti's joke to the extreme, we might assume (quite arbitrarily) that the greatest distance from bass to treble, in the last chord, represents the greatest distance the telephone dial can revolve, namely the digit 0. Then, on the model of the telephone dial, we might assign digits in descending order to to progressively smaller distances between bass and treble. Subtracting one digit for a distance smaller by one scale degree,

[7]For theoretical treatment of intervals as absolute magnitudes, see Allen Forte, *The Structure of Atonal Music* (New Haven: Yale University Press, 1973); David Lewin, *Generalized Musical Intervals and Transformations* (New Haven: Yale University Press, 1987).

and two digits for a distance smaller by two scale degrees, we would arrive at the table: B=0; C=9; E=7; G#=5. Therefore, the number that Lucy dials is 759590.

Once again, an example from Bartok seems almost didactic in its itemization of various possibilities. In the course of the third Bulgarian Dance, No. 150 at the end of the *Mikrokosmos*, the melody is presented in several different settings (Example 15). The initial setting, at m. 5, is a simple, straightforward inverted pedal point. Later, at m. 31, the melody is played together with its inversion. This constitutes a simple proximity harmonization, with the melody receding from and approaching the central sustained note symmetrically. At m. 50 comes the most complex setting, at the climax of the piece. The symmetrical fluctuation of proximity is out of phase, to create a canon, and the central sustained unison has become a seventh.[8]

Charles Ives was perhaps the first composer to employ such proximity harmonizations. Attempting to organize progressions of chords in non-traditional ways, he constructed palindromes of expanding and contracting intervals.

> So – half-tone chords opening up [into] wider and wider chords, and back again:
>
> 
>
> This may not be a nice way to write music, but it's one way! – and who knows the only real nice way?[9]

In verse No. 9 of Ives's *Psalm 90* (Example 16), the organizing principle is the proximity of the notes in the chords to a sustained pedal

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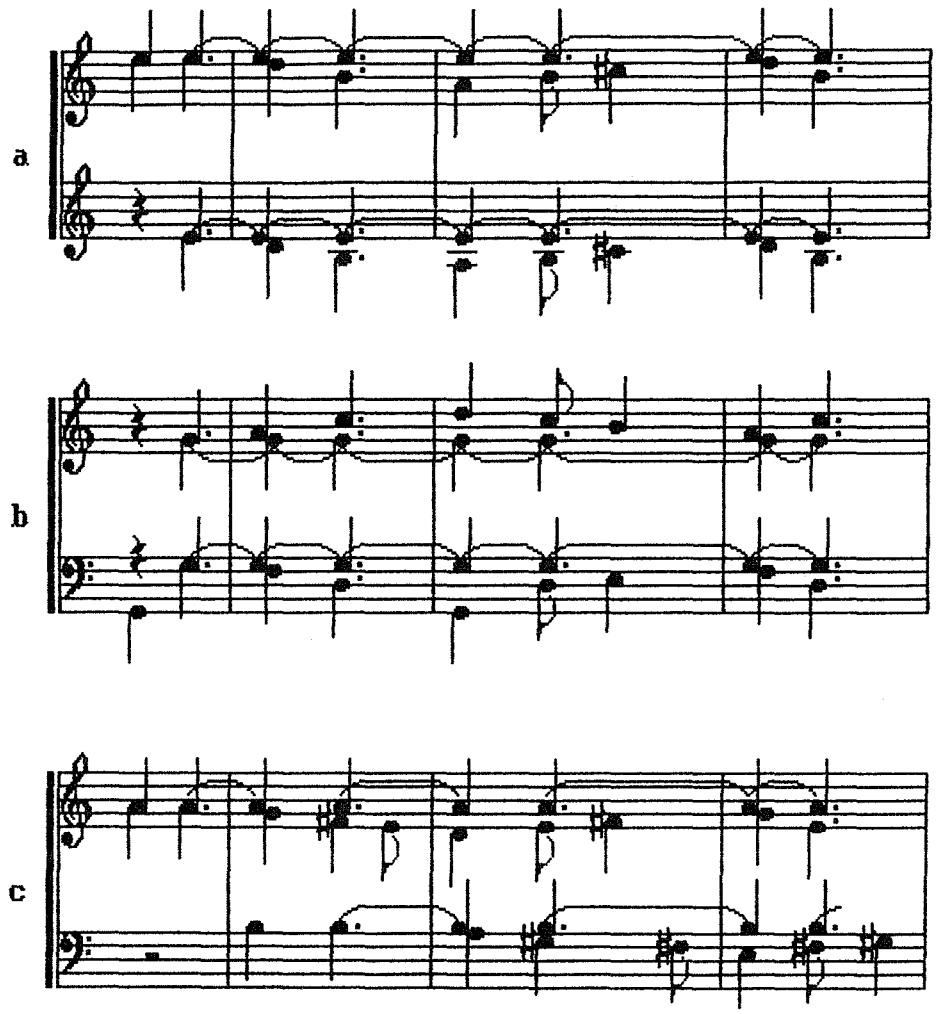
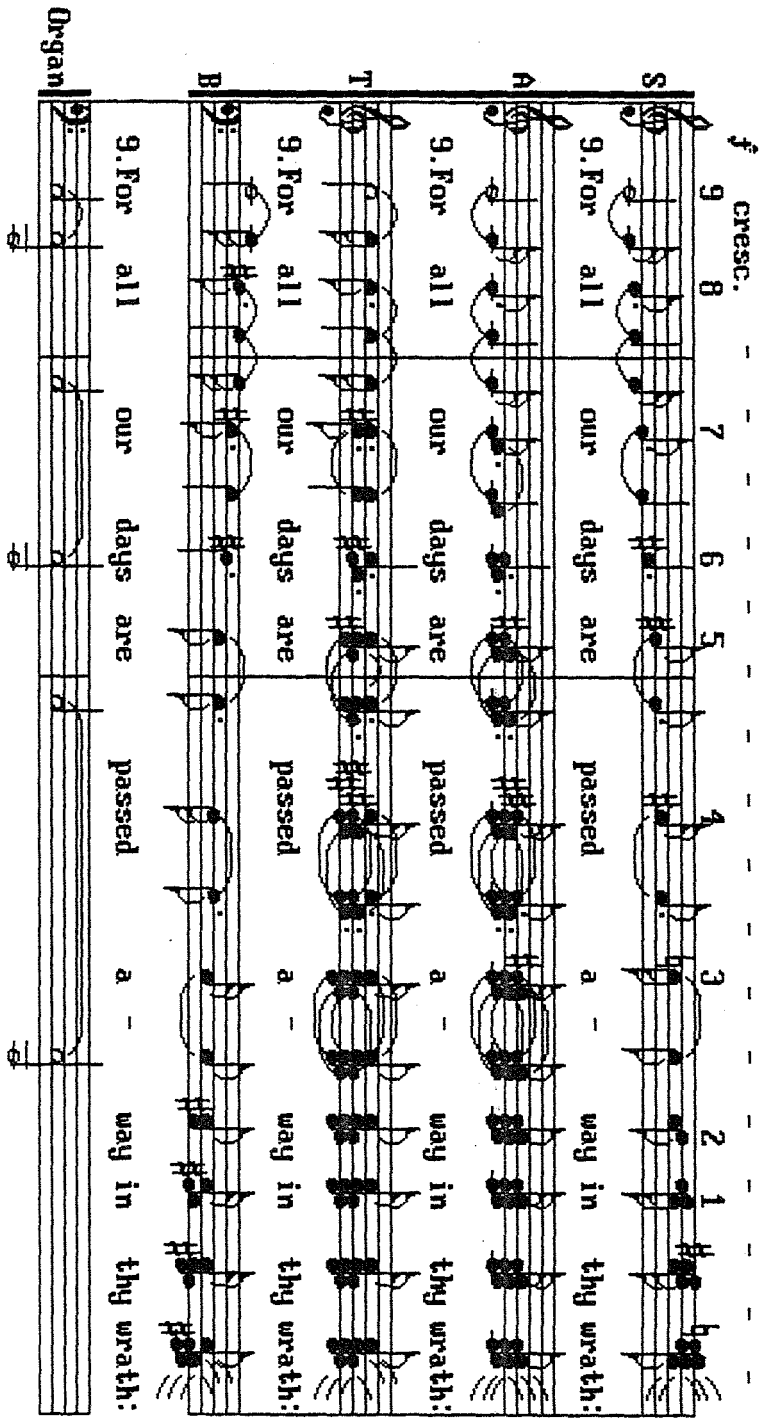
[8]For similar analyses of works by Bartok, see Jonathan W. Bernard, "Space and Symmetry in Bartok," *Journal of Music Theory* 30 (1986), 185-201.

[9]Charles Ives, *Memos*, ed. John Kirkpatrick (New York: Norton, 1972), 64.

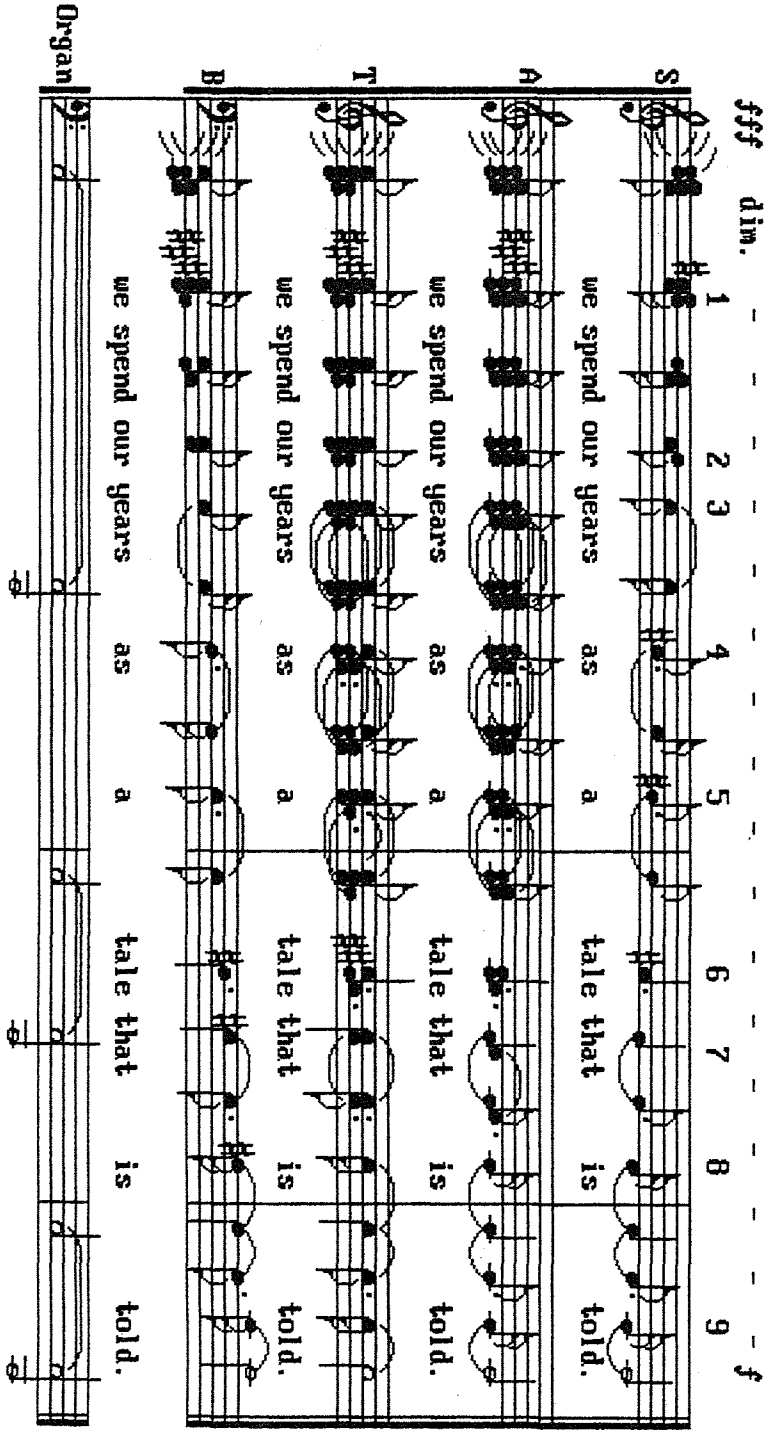
Example 15. Bartok, *Mikrokosmos*, Vol. 6, *Six Dances in Bulgarian Rhythm*, No. 150. a: mm. 5-8; b: mm. 31-34; c: mm. 58-61



Example 16. Charles Ives, *Psalm 90*, mm. 60-65



Example 16 continued



note, and this proximity changes symmetrically. The verse begins on a unison C. At each syllable, the chord expands symmetrically above and below this C, reaching its greatest dimensions at the middle of the verse. Then the chords contract in reverse order, ending on the unison C. Meanwhile, the organ sustains a pedal-point C. The date of this work, 1896-1901, probably establishes Ives's precedence as the first composer to write such a progression.

By the way, the durations of the chords in this passage also constitute a palindrome. The digits above the chords indicate the duration of each chord in number of sixteenth-notes: from 9 to 1 and back to 9. There is also a palindrome of dynamics: a crescendo from *f* to *fff*, and then a diminuendo back to *f*.

This compositional device is carried much further in *Patterns*[10] by Hayim Alexander (Example 17). A central note, C#/Db, persists throughout the work.[11] The sonority consists of an expanding and contracting "bandwidth" of notes contiguous with the fixed note. The progression of chords is accomplished by the addition and subtraction of neighboring notes above and below the fixed note, at increasing and decreasing distances. In this manner the pitch structure of the entire work is governed by the fluctuating proximity of all the notes to the constant central note.[12]

Proximity Harmonization

Once established as a valid compositional device, proximity

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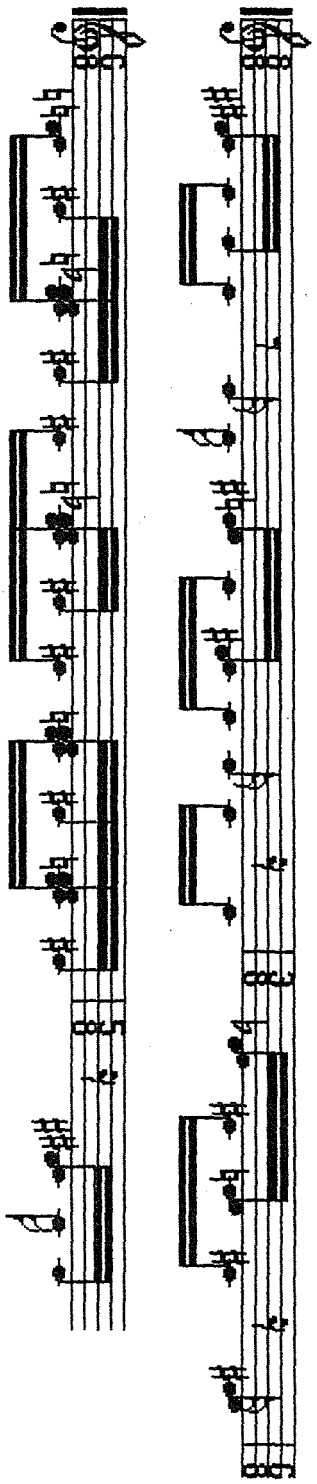
[10]The title in Hebrew is *Tavniot*.

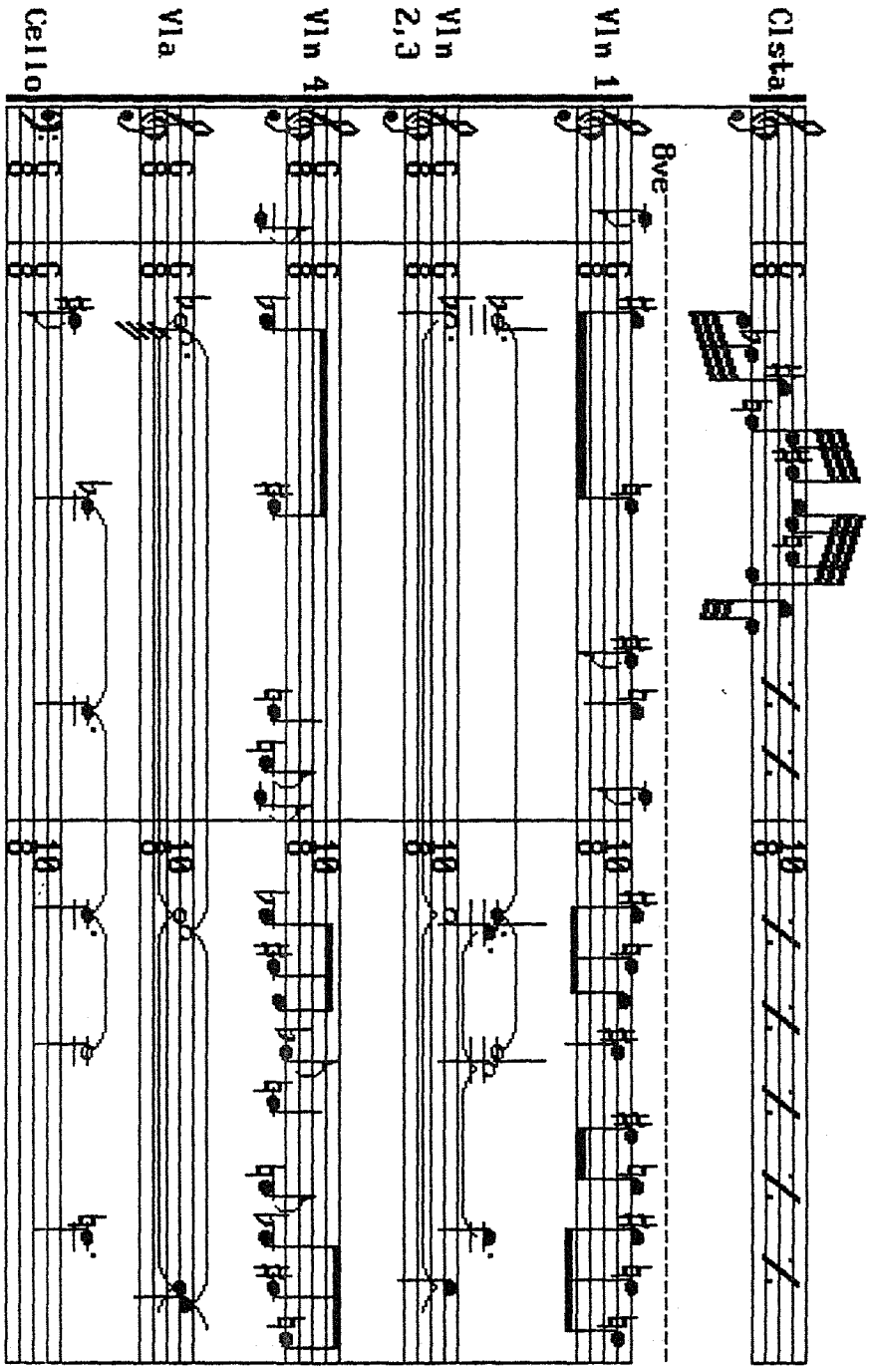
[11]At the first Arthur Rubinstein International Piano Master Competition, held in Jerusalem in 1974, this work was the set piece that all the contestants were required to perform. In this original version, the note C#/Db persisted throughout the piece. In the final published version, the composer added two sections, mm. 50-59 and 73-76, in which this central note is abandoned. My comments refer only the earlier version.

[12]For analyses of works by Stravinsky along similar lines, see Joseph Straus, "Stravinsky's Tonal Axis," *Journal of Music Theory* 26 (1982), 261-290.

Example 17. Alexander, *Patterns*, mm.19-22



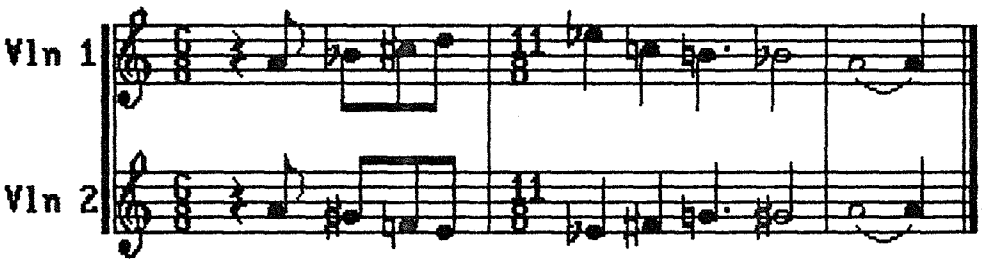
Example 18. Bartok, *Music for Strings, Percussion and Celeste,* Mvt. I, mm. 78-79



harmonization is no longer dependent upon the presence of a persistent note or chord. A coherent pattern of change in the sizes of the intervals may itself serve as the organizing force in a series of chords.

Yet again, Bartok provides a clear example. During the first movement of the *Music for Strings, Percussion, and Celeste* (Example 18) the fugue subject is played together with its inversion against a fixed chord consisting of four contiguous semitones.[13] This produces a symmetrical proximity harmonization, in a texture reminiscent of the *Musiques Nocturnes* (Example 13). But a few measures later, a similar progression is utilized to produce the concluding cadence of the movement, this time without the fixed chord (Example 19). This cadence is not harmonic in the traditional sense. On the contrary, it consists entirely of expanding and contracting intervals that resolve by converging to a final unison.

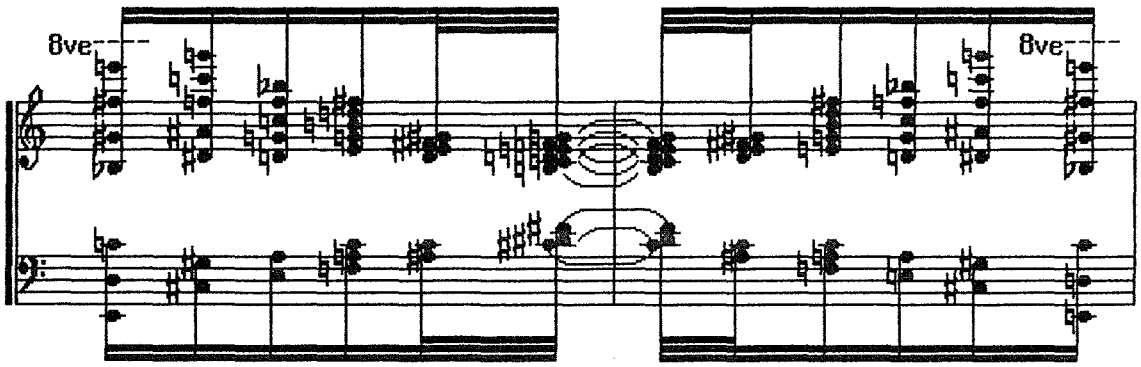
Example 19. Bartok, *Music for Strings, Percussion and Celeste,* Mvt. I, mm. 86-88



[13]For similar analyses of works by Bartok, see Richard Cohn, "Inversional Symmetry and Transpositional Combination in Bartok," *Music Theory Spectrum* 10 (1988), 19-42.

In his song "Soliloquy,"[14] Ives employs another of his palindromes of chords, but this time without benefit of a persistent note or chord. Although the entire song is palindromic, our Example 20 shows only the central measures, containing the central part of the palindrome. The size of the intervals comprising the several chords progress in descending order: minor sevenths, perfect fifths, perfect fourths, major and minor thirds alternately, major seconds, semitones; and then in reverse, in ascending order.[15]

Example 20. Ives, "Soliloquy, or a Study of 7ths and Other Things," mm. 10-11



Resolution to a Major Triad

One of Hindemith's mannerisms was the surprising yet satisfying major triad that he employed to conclude a dissonant work. In some cases, this major triad sounded like a non sequitur. In all cases, it seemed to re-establish traditional harmony as the basis for all his

[14]Ives, "Soliloquy, or A Study of 7ths and Other Things," in *34 Songs*, *New Music* 7/1 (1933), 24. For analyses of this song, see Henry and Sidney Cowell, *Charles Ives and his Music* (London: Oxford University Press, 1955), 157-159; Schoffman, "Serialism in the Works of Charles Ives," *Tempo* 138 (September 1981), 27-28.

[15]In the version printed in *34 Songs*, the second chord in m. 11 contains an additional D#, but this is probably a misprint, so it has been omitted here. Several other irregularities of orthography have also been altered in our example.

innovations, perhaps even to apologize for the preceding dissonances.

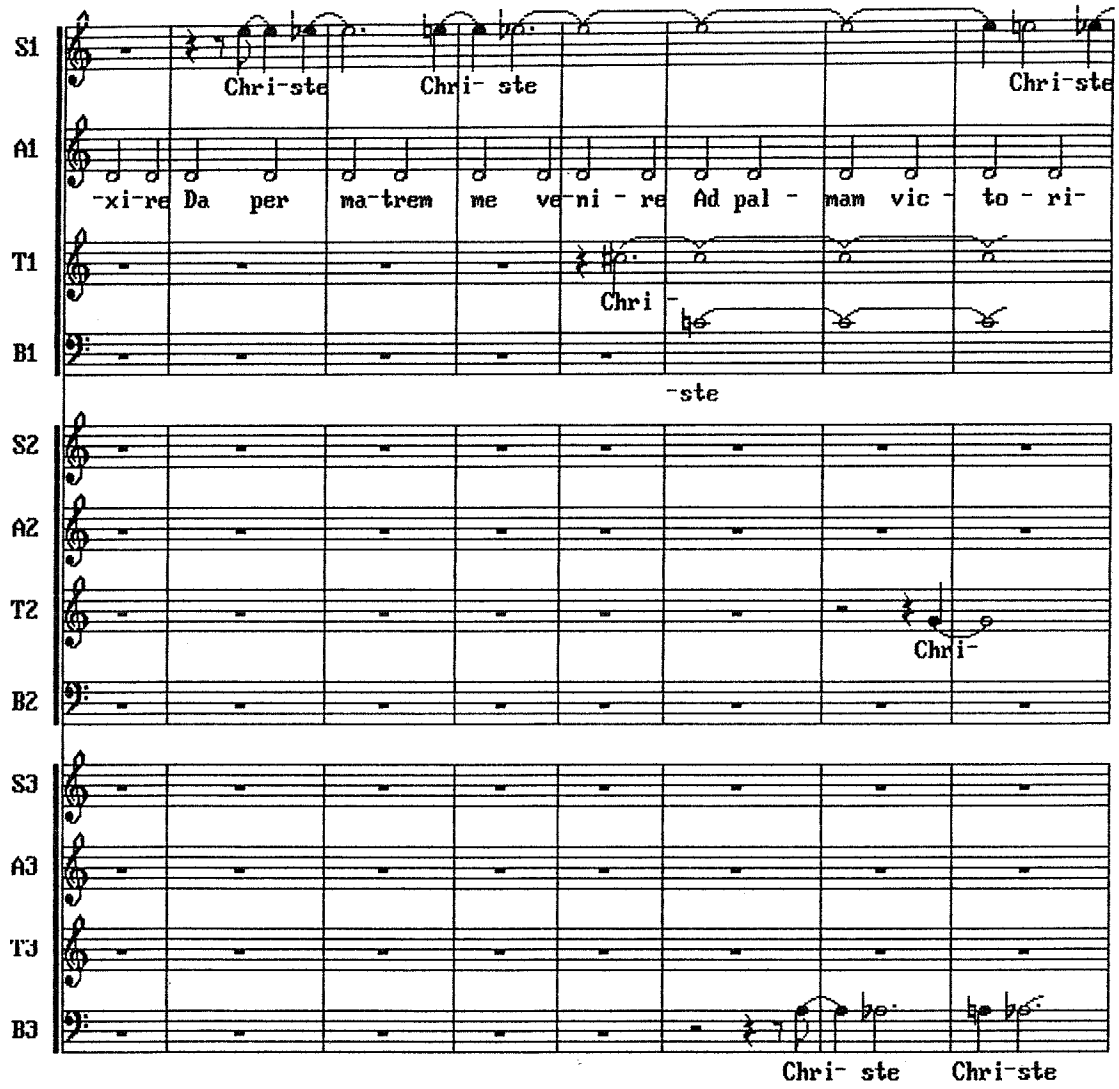
This concluding major triad appears once again in the present context, as the resolution of a progression organized on the basis of proximity. In this case, the logical and consistent motion of the voices is resolved by the final major triad, which suddenly releases the tension in the preceding progression. The proximity harmonization has its own inner logic, derived from the expansion and contraction of the intervals. The final triad, as it were, cuts the Gordian knot, returns us to a happier and more innocent harmony, and provides an eminently satisfying conclusion.

An outstanding example occurs at the conclusion of Penderecki's *Stabat Mater* (Example 21). By the gradual addition of neighboring notes, a chord coagulates, as it were, around the sustained note D. One after another, notes are added, until an extremely dissonant chord has been built up. Then, on the last word, "gloria," a glorious D-major triad brings the work to a triumphant conclusion.

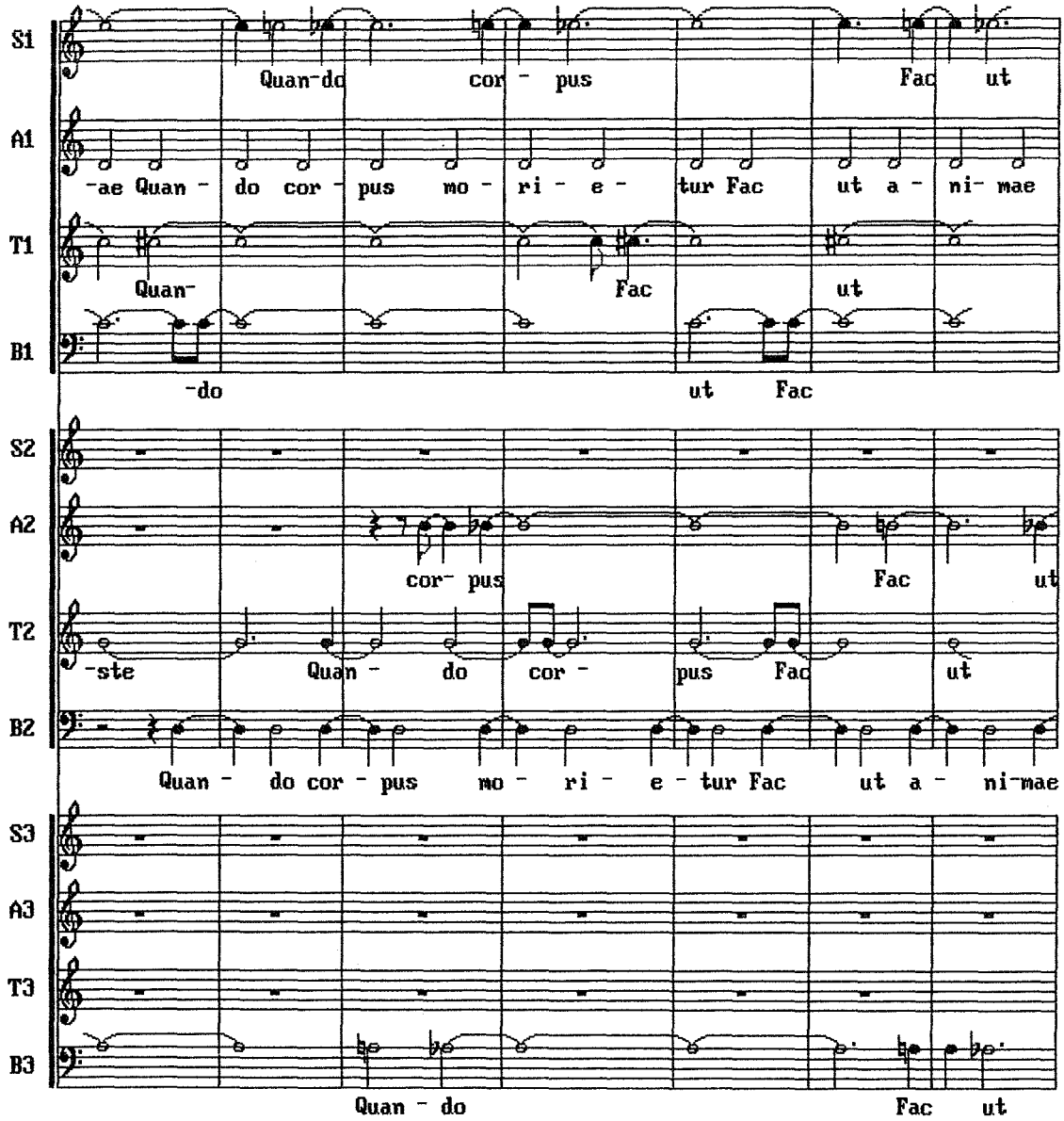
A more complex example occurs in *A Ceremony of Carols* by Britten. In the song "In Freezing Winter Night" (Example 22) the canonic texture of the choir parts creates proximity harmonization, in a manner similar to that observed in Bartok (Example 15c). Here, however, the chords expand in only one direction, upward from the pedal point D. They reach consecutive high points of a minor sixth, an octave, and an eleventh, before sinking back to the pedal note. At the conclusion of the song (Example 23) the same chords, instead of simply falling back upon the pedal note, resolve to a radiant G-major triad.

In Britten's *War Requiem*, a proximity harmonization resolving to a major triad occurs three times, at three crucial moments, in three variants. Example 24 shows the first, which is the simplest. The lower voice, sung by the altos and the basses, consists not of a single note but of parallel fifths. The contrary motion between this and the upper voice, sung by the sopranos and tenors, creates a proximity harmonization. Twice this progression returns to the tritone from which it began. But at the last syllable, the whole structure of dissonance suddenly collapses, as it resolves to a major triad.

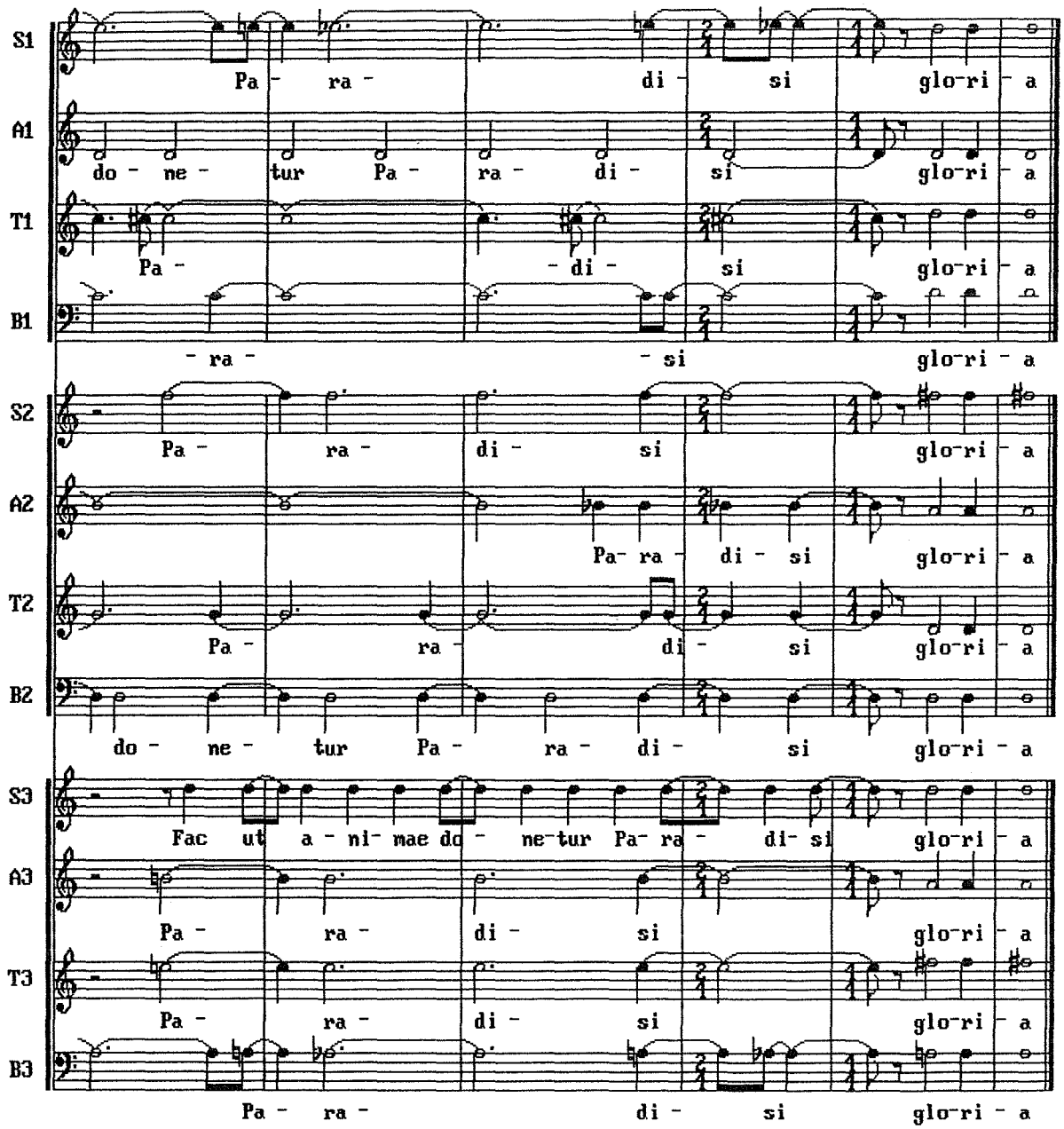
Example 21. Krzysztof Penderecki, *Stabat Mater*, mm. 97-117



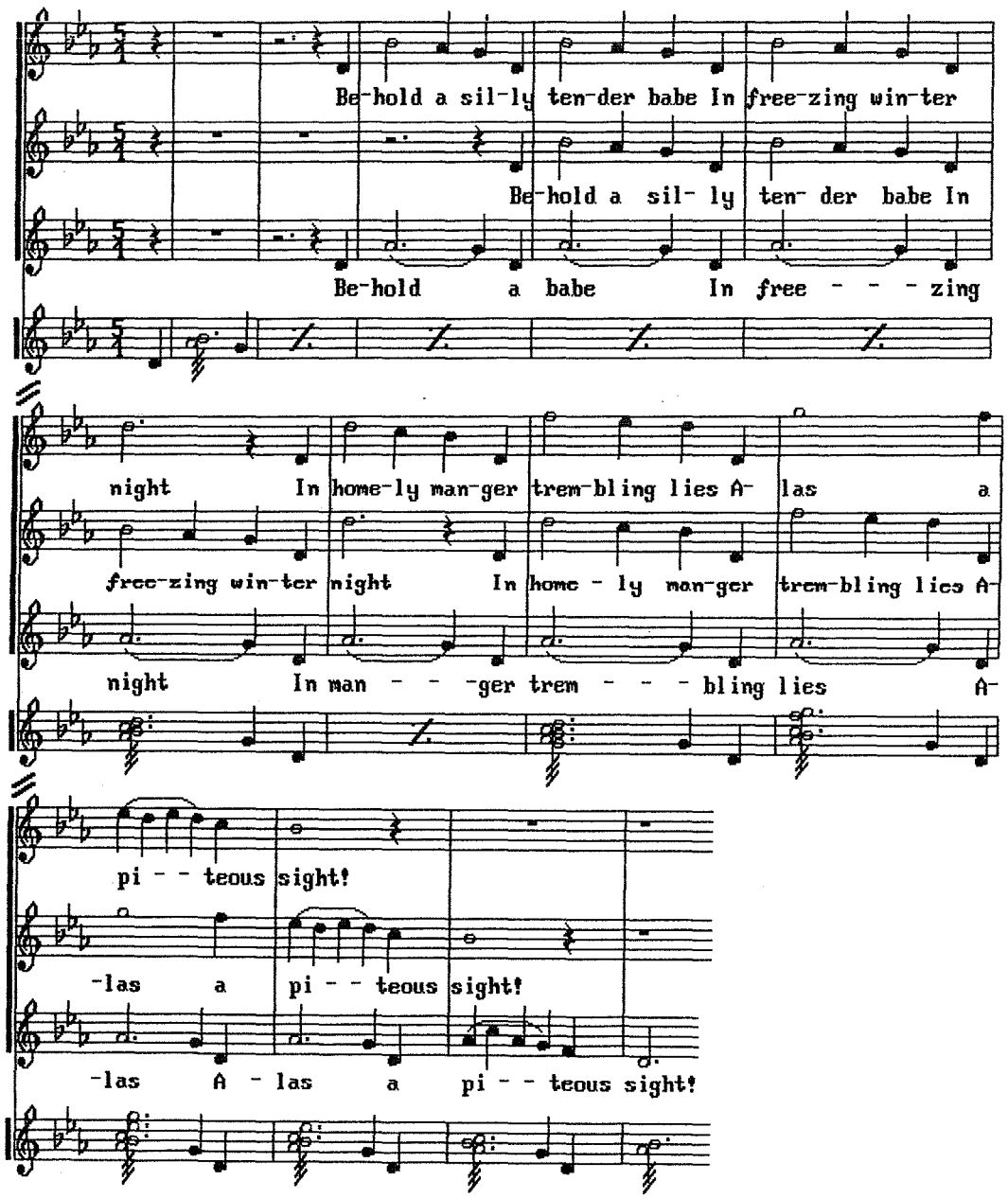
Example 21 continued



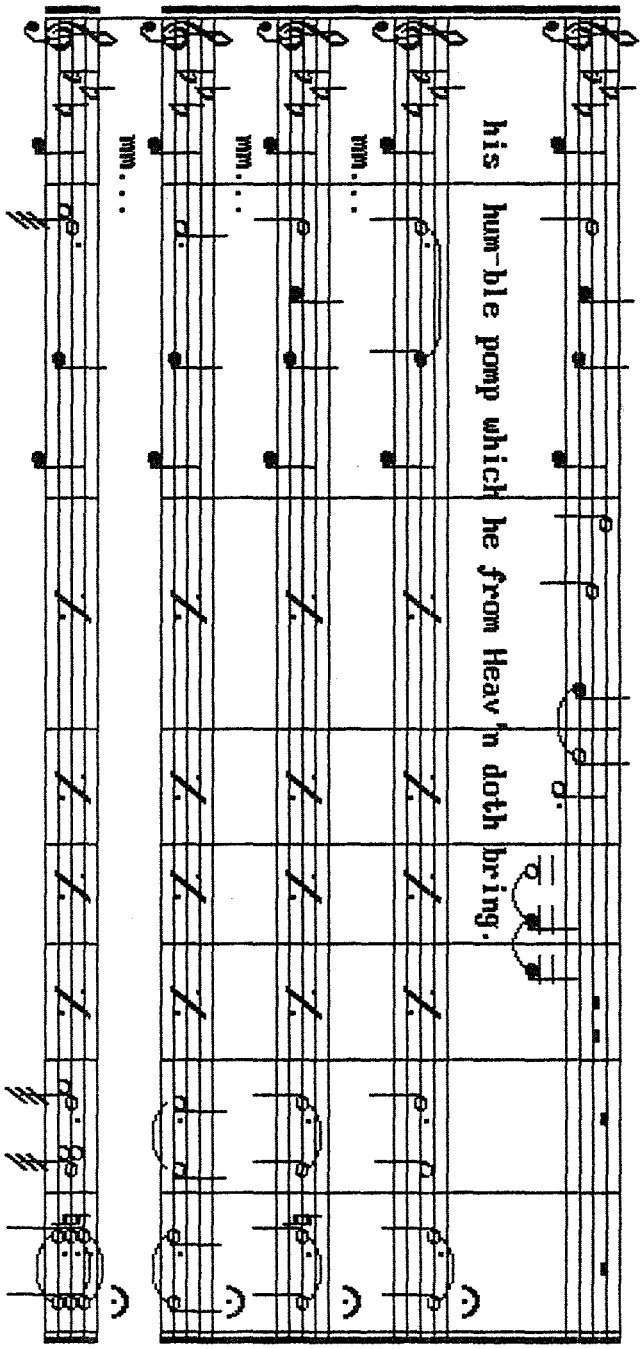
Example 21 continued



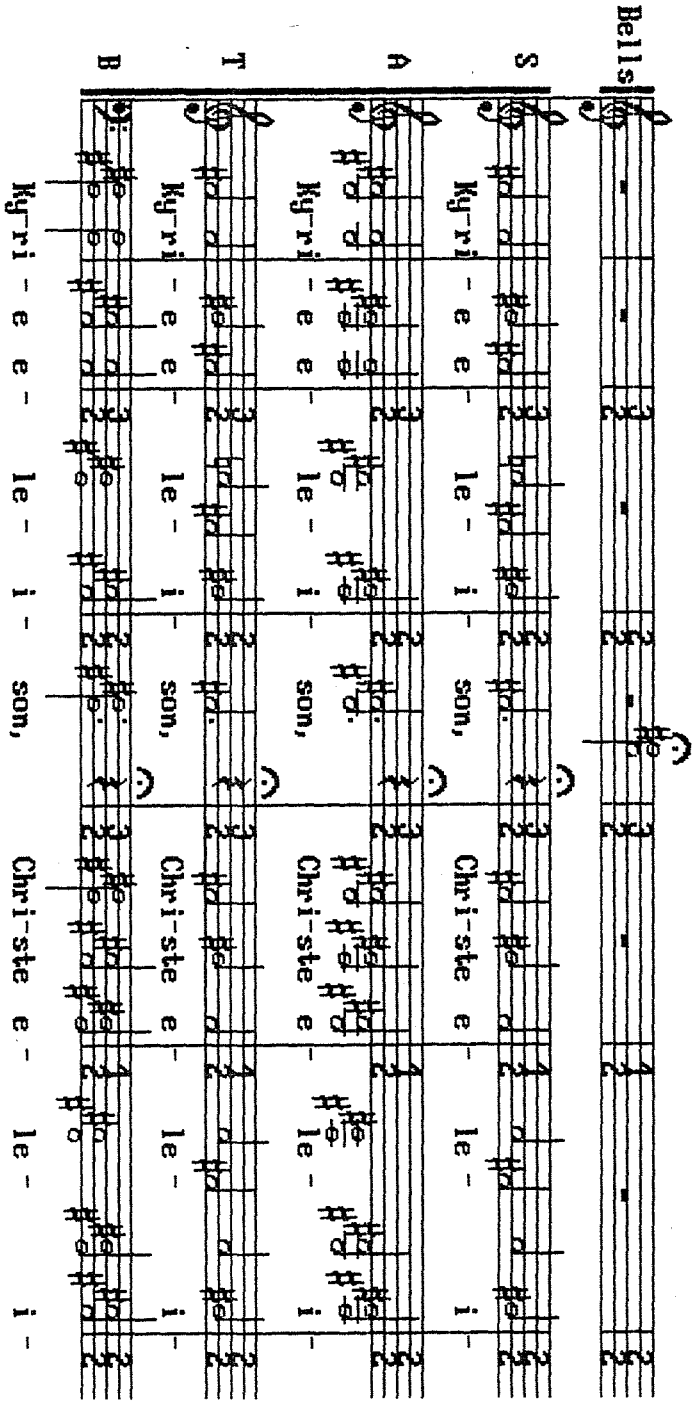
Example 22. Benjamin Britten, *A Ceremony of Carols*, Opus 28/8, "In Freezing Winter Night," mm.1-13



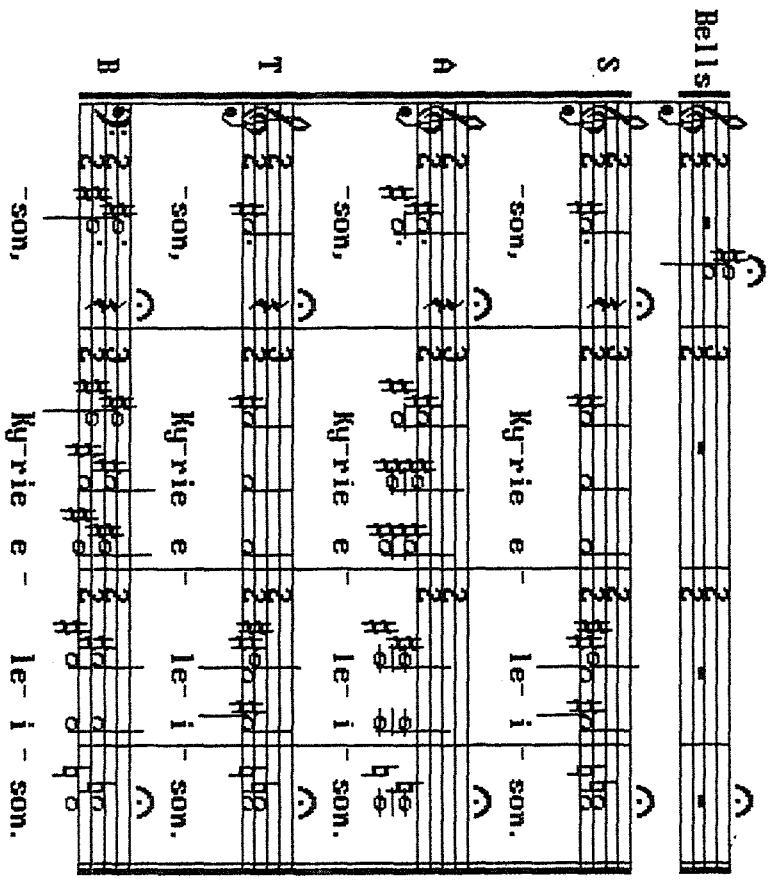
Example 23. Britten, *A Ceremony of Carols*, Opus 28/8, *In Freezing Winter Night*, mm. 49-55



Example 24. Britten, *War Requiem*, Opus 66/1, *Requiem Aeternam, Kyrie*



Example 24 continued



Conclusion

Conventional histories of twentieth-century music often assume that the only systematic alternative to traditional harmony was dodecaphony and serialism. The identification of proximity harmonization reveals that there are – that there always were – other alternatives. Cases of proximity are often perceived as "merely" contrary motion or, at best, as unique occurrences. Actually, proximity constitutes an independent, albeit subsidiary, principle of chordal organization.

The organization of a progression of chords according to the physical sizes of the intervals is independent of traditional consonance and dissonance, no less than is serial organization. In proximity structures, the intervals are also treated as absolute magnitudes. Proximity harmonizations, however, are audible in a way that serial structures are not, and they even permit the inclusion of traditional major triads. The very existence of proximity expands the harmonic horizon.