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MUSIC FOR SOLO VIOLIN 1950-1960: A STUDY IN TWENTIETH-CENTURY
NONTONAL MELODIC WRITING AS EXEMPLIFIED IN WORKS BY PERLE,
SHIFRIN, EHRLICH, ZIMMERMAN, AND SESSIONS (AND) "LANDING
LIGHTS"--FOR A SYMPHONIC ORCHESTRA. (ORIGINAL COMPOSITION)

City University of New York

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MUSIC FOR SOLO VIOLIN 1950-1960: A STUDY
IN TWENTIETH-CENTURY NONTONAL MELODIC WRITING
AS EXEMPLIFIED IN WORKS BY PERLE, SHIFRIN,
EHRlich, ZIMMERMAN, AND SESSIONS.

by

MOSHE ZORMAN

A dissertation submitted to the Graduate Faculty
in Music in partial fulfillment of the requirements
for the degree of Doctor of Philosophy, The City
University of New York.

1985

This manuscript has been read and accepted for the Graduate Faculty in Music in satisfaction of the dissertation requirement for the degree of Doctor in Philosophy. There is, in addition, a composition entitled "Landing Lights".

18 July 1985
date

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Chairman of Examining Committee

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INTRODUCTION

The increased volume of solo violin pieces written in the twentieth century is indicative of the renewed interest in the medium after its virtual disappearance in the nineteenth century. Exceptions are some show pieces by Paganini, Ysaye and others. The solo violin medium lent itself to adaptation by neoclassical composers in the first half of the present century. Reger, Hindemith, Nielsen, and Prokofiev tried to mold a new musical language by combining their personal vocabulary with forms and means from the Baroque and pre-Classical periods. The decreased currency of neoclassical ideas after World War II had a negligible effect on the growing popularity of solo pieces in general and solo violin pieces in particular. The list of composers who wrote for the medium includes, among others, the following: Béla Bartók (his sonata was written toward the end of the war), David Diamond, Arthur Honegger, Allan Hovanes, André Jolivet, Jean Martinon, Mordechai Seter, Igor Stravinsky, Ernst Krenek, Stefan Wolpe, Roger Sessions, and Bernd Alois Zimmermann.

This trend is indicative of the interest of post-tonal composers in melodic and polyphonic challenges. The absence of a unifying harmonic unit (like the triad in tonal music) led nontonal composers toward the exploration of more linear

aspects, and the solo piece once again became a challenging vehicle. Stravinsky describes the new tendencies in his Conversations: "The present generation's interests are directed toward music before the harmonic age. Rhythm, polyphony, melody, and intervallic construction are the elements of musical building to be explored today."¹

The purpose of this paper is to determine the forces at play in nontonal melodic writing and to clarify the differences between tonal and nontonal melodic processes. The analyses cover both surface and structural aspects. On the surface level, the subject matter is the ways in which motives function, develop and expand in nontonal music, and the solutions that arise to the problem of phrase construction in regard to articulative devices, points of stability, and cadences. The structural analyses define and explore the new means to control pitch material: the use of minute intervallic cells, of serial and dodecaphonic procedures. The importance to the construction of nontonal melody, of structural step-progression and gap-fill procedures, are also considered.

The main intention of this paper is to demonstrate with a particular range of examples how, in spite of the differences in vocabulary and syntax, the shaping forces in nontonal melodic writing have much in common with those in

1. Igor Stravinsky and Robert Craft, Conversations With Igor Stravinsky (New York: Doubleday, 1959), 121.

tonal writing. The perceptual needs of the human mind for functional, coherent relationship are no less present even when, as in the case of nontonal music, the syntactical norms are still new and, at base, experimental. Motivic construction in both tonal and nontonal compositions is based on the unity of musical material and its potentiality to expand through developmental operations. Phrase construction in both cases is based on the need for rhythmic and melodic closure, gap-fill procedures, and structural step-progressions.

All these parameters are modified significantly in a nontonal environment and thus our traditional analytical tools, used hitherto for tonal music, have to be reexamined and reevaluated. Can linear graphs and reduction processes be used for nontonal melodic writing? And, if so, can they be used with several systems, including serial and dodecaponic? How does structural step-progression operate in the absence of the diatonic scale that formed the basis for step progression in tonal music? How do cadences operate in the absence of tonic-dominant relationships? Are there several levels of organization--background, middleground, foreground--or is the foreground the only level that can be analyzed?

The five composers chosen here do not use the same language; their aesthetic and technical ideas are quite different. Yet, they encounter many of the same difficulties

in using nontonal materials for melodic purposes. George Perle (b. 1915) wrote his Sonata No. 1 for solo violin in 1959. This work is one of a long list of pieces for solo instruments (including works for viola, cello, double bass, flute, clarinet, and bassoon) written in a free, largely intuitive way, combining "various serial procedures with melodically generated tone centers, intervallic cells, symmetrical formations, etc."² Seymour Shifrin (1926-79) wrote his Concert Piece for solo violin (1959) employing a technique that resembles Schoenberg's music of the predodecaphonic period. The entire movement is based on a three-note cell and its various transformations. Abel Erhlich (b. 1915) wrote his Bashray for solo violin in 1953. The music is influenced by the melody and rhythm of Middle Eastern folk music and is typical of the Israeli "Mediterranean" school of the Fifties and Sixties. Bernd Alois Zimmermann (1918-70), a German composer of the postwar generation, wrote his Sonata für Violin Solo in 1951. This is a dodecaphonic piece, but contrary to the postwar composers who tried to expand and elaborate dodecaphonic and serial ideas, Zimmermann's approach is limited in the sense that the first two movements are based almost entirely on one set form without any transposition. Roger Sessions (1896-1985) wrote his Sonata for Violin (which is his first dodecaphonic work) in

2. Leo Kraft, "The Music of George Perle," The Musical Quarterly 57/3 (1971), 444.

1953. His use of the system resembles that of Stravinsky, both in how the set is thought about and in the general approach to texture. For both composers, the early Fifties were a period of experimentation with Schoenbergian serialism and its incorporation into their own musical language.³

One step in the analytical inquiry will be to highlight the essential similarities among these admittedly quite varied compositions. The procedure will yield a set of suggestions for possible analytical approaches that should lend themselves to present and, I would surmise, to future melodic writing. Whatever experimental departures are in store, melody, as a human universal, cannot but continue to play an essential role in future musical styles: "Monody, tonality, polarity are merely provisional means that are passing by and will even pass away. What survives every change of style is melody."⁴

3. Since both Professor Perle and Professor Ehrlich were my teachers, I would like to caution the reader not to consider the analyses of their pieces as authoritative presentations. All the analytical work in this thesis represents my personal point of view.

4. Igor Stravinsky, Poetics of Music (New York: Vintage Books, 1956), 41.

GEORGE PERLE: SONATA NO. 1 FOR SOLO VIOLIN (FIRST MOVEMENT)

George Perle's Sonata No. 1 for solo violin is based on clearly defined motivic material that is developed and explored through the contrasts between the two main motives. Local tone centers mark the different sections in the first movement, and clarify the overall formal scheme. The coherence and flow of the melodic line is achieved through clear phrase construction and stepwise connections between structural notes.

The discussion that follows deals with both surface and structural shaping forces. The different motives and the various developmental processes (fragmentation, rearrangement, repetition) are dealt with on the surface level; the basic intervallic cell that serves as a structural building block for the main motives, as well as the linear reduction graph of the entire movement, are dealt with on the structural level. The graph will serve as a tool for exploring the role of structural step-progression in this piece.

Definitions of basic terminology used in the analyses follow. A motive (according to the Harvard Dictionary of Music¹) is "a short figure of characteristic design that

1. Willi Apel, ed., Harvard Dictionary of Music, 2nd ed. (London: Heinemann Educational Books, 1970), 545.

recurs throughout the composition or a section as a unifying element . . . a motive can include as few as two notes if they are sufficiently characteristic melodically and/or rhythmically." A motive must also have some degree of closure for articulative reasons so it can be differentiated from nonmotivic material. A theme is longer than a motive; it can be broken up into shorter units, which may serve as motives. Since, in most cases the pieces that are analyzed here are based on short motives rather than full-fledged themes, the latter term will rarely be used. A cell is an analytical term used for describing a structural unit. Unlike the motive, it does not correspond with a characteristic design or a recognizable melodic/rhythmic shape in the surface level of the music. A segment is a subset chosen from a given unit. The unit can be a motive, a theme, or, in dodecaphonic music, a twelve-tone set.

Motivic Construction

The Motives

Example 1-1.

The image shows a single staff of handwritten musical notation. The first measure is labeled "MOTIVE A" and contains a sequence of notes with a dynamic marking of "pp". The second measure continues the motif with a dynamic marking of "p". The third measure shows a variation of the motif with a dynamic marking of "p". The fourth measure is labeled "c. minor 9th 7" and shows a variation of the motif with a dynamic marking of "p". The fifth measure is labeled "d." and shows a variation of the motif with a dynamic marking of "p". The notation includes various musical symbols such as notes, rests, and dynamic markings.

The melodic pattern in measure 1 (Ex. 1-1a) is perceived as a motive since it is repeated (though varied and prolonged) three times in the first phrase (mm. 1-8). Motive A appears both as a complete unit and as a source of three segments that are sometimes used independently (ex. 1-1b). The rhythmic properties of segment a' (the grace note and the trill on the first beat) are easily recognizable and are therefore used also for referential purposes in connection with segments a'' and a''' (see separate discussion of rhythmic motives below). The outer range of a minor ninth in motive A (Ex. 1-1c) becomes a motivic element by itself when used in connection with other rhythmic or segmental elements of motive A (see mm. 20, 24).

Motive B, in contrast with the distinct upward motion within motive A, is circular, since it starts and ends on the same note:

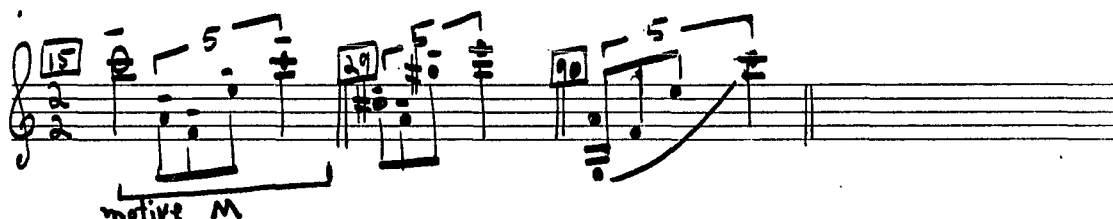
Example 1-2.

The phrase from m. 38 to m. 44 demands consideration because of its length as theme B. The five initial eighth-

notes (see also m. 9) will be considered as motive B. The characteristic features of either motive B or theme B are a relatively steady rhythmic flow (primarily eighth-notes and quarter-notes), and a constant use of minor sixths in a double-stop texture. The quasi-ostinato D-flat-C in the lower register interrupts the melodic flow and is afterwards expanded to longer units (see Ex. 1-6a).

Motive M (see Ex. 1-3) is a special case since, unlike the other two motives, it is not developed or otherwise altered and thus becomes a special referential point:

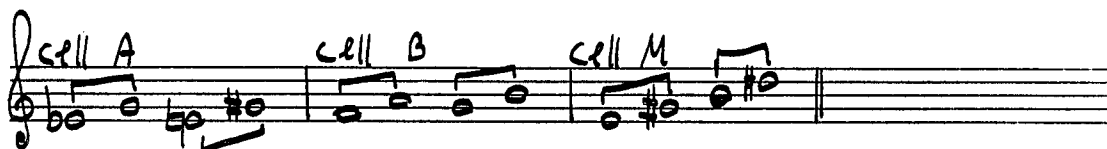
Example 1-3.



The Basic Cells

The basic cells that underline all three motives in this movement are created by interlocking or juxtaposing a single interval - the major third:

Example 1-4.



Cell A (related to motive A) is based on two interlocked major thirds a semitone apart (see also Ex. 1-1d). Cell B is a whole-tone collection based on two interlocked major thirds a whole-tone apart. Whole-tone pitch content is thus a characteristic feature in sections related to motive B (see, for example, mm. 56-57). The structural difference between the two main motives is one of the dynamic forces behind the melodic line in this movement.

Fragmentation, Repetition, Rearrangement

Segments of the basic motives are used as building blocks in developmental areas. They are reordered, transformed, and used as interruptions. The first interruption occurs in mm. 9-11 when motive B interrupts the continuous line of motive A. The parenthetical effect is enhanced by the dynamic contrast between the main line and the inserted segment:

Example 1-5.



Several segments function as interruptions in mm. 38-77, which is a motive B area. First, the half-note ostinato D-flat-C is expanded (Ex. 1-6b), then the interruption is based on a segment of motive A (Ex. 1-6c), and the last elaborate interruption (Ex. 1-6d) contains three units that differ structurally but share the segment a''' (Eb-F-A):

Example 1-6.

In m. 100 segment a''' interrupts a motive B area. The three-note segment is transformed by changes in contour and pitch-order, but it still carries some characteristic

features of motive A such as the grace note (taken from segment a') and the bold upward motion that dominates motive A:

Example 1-7.

Developmental areas are constructed by reordering, transposing, and reiterating motivic segments. The following is a list of events in mm. 78-121, a developmental section that comes after the exposition of both motives:

Mm. 78-81 are similar to mm. 1-6; in both cases, motive A repeats three times; the later section is a transposition at T(10) of motive A.

Mm. 82-89 include segments of motive A transformed by pitch and rhythmic changes (mm. 84-89 are somewhat similar to mm. 6-8):

Example 1-8.

Mm. 92-96: based on the trill of motive A.

Mm. 97-101: motive B interrupted by a single appearance of segment a'''.

Mm. 102-111: segments of motive A, motive B, and motive M, transposed and reordered.

Mm. 112-121: literal transposition of mm. 20-28 at T(2), but with different metric division.

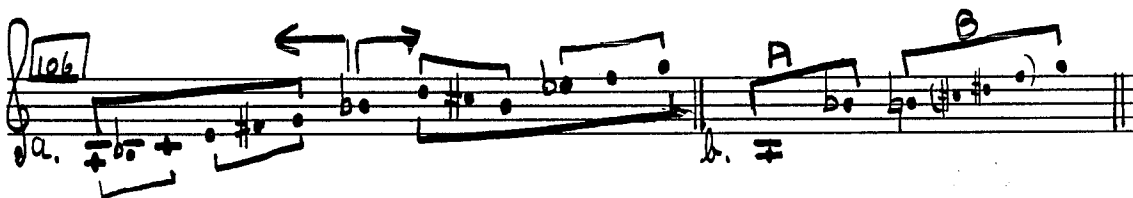
The thirteen-note units throughout the movement (mm. 34-36, 55, 106) reveal special connections with the original motivic material. The large sixteenth-note figure (mm. 34-36) can be analyzed as an elaborate transformation of segment a':

Example 1-9.



The thirteen-note unit in m. 106 is a transposition at T(2) of the unit in m. 34. This unit can be divided into groups of major and minor thirds, with the seventh note as a center of two six-note groups:

Example 1-10.



The ranges of the two groups are equivalent to the characteristic intervals of the two main motives (Ex. 1-10b). The first group's outer range is a minor ninth (the same as motive A); the second group is, with one exception, a whole-tone collection, and its outer range is a minor sixth. Both elements are characteristic of motive-B-related material.

Rhythmic Motives

Motives are characterized by pitch (or interval) content, rhythmic pattern, and contour. These parameters may be used independently from one another, yet still carry latent motivic information. Contour and pitch content can be altered while a characteristic rhythmic unit is unchanged; pitch content and rhythm can be changed while the characteristic contour is reiterated. In both cases motivic implications are kept in spite of the changes.

The trill and grace note are two characteristic rhythmic aspects of motive A. The trill takes several forms and fulfills different functions according to its specific location. It prolongs the A-flat and accumulates energy for the abrupt upward motion in mm. 1-2; in mm. 16-17 it releases all the energy accumulated in the two-and-a-half octaves of upward motion in the first fifteen measures.

The grace note is initially attached to fragment a', but then it is added to the rest of the motive-A segments and becomes a point of reference for all material related to motive A. In m. 84, it is used with the minor ninth (the outer range of motive A); in m. 87 the grace note is used with segment a''' (D-E-G#), and although pitch order and contour are distinctively altered, the addition of the grace note clearly relates the segment to motive A. The grace note is again attached to a''' in measures 100 and 102, thus differentiating the three-note cell from the rest

of the material in the section that is based on motive B. The grace note in m. 67 precedes a four-note chord built of two juxtaposed major thirds, and thus can be related to cell A:

Example 1-11.



Motive M is the only motive that stays virtually unchanged throughout the movement, maintaining the same rhythm, contour, and pitch structure. It thus becomes a special referential point. The motive usually arrives toward the end of a phrase, signaling the approach of a point of closure or the arrival of a high point in a step progression. Here are some examples: motive M leads to the highest point in a step progression that starts at the beginning of the piece and culminates locally in m. 8; the same thing happens in mm. 15, 32, 90 102 (with one note changed), and 111 (see the linear graph for these occurrences).

Structural Analysis

The effectiveness of linear graphs and reduction methods for nontonal music has to be evaluated anew in each case. A linear graph depicts the movement toward certain goals: structural notes, local tone centers, etc. Thus, some degree of differentiation and hierarchic order has to be apparent for the linear graph to be effective. Notes achieve their relative importance through registration, metric position, rhythmic accentuation, dynamic stresses, and repetitive usage. Since Perle's Sonata includes such procedures, structural differentiation between notes is apparent, and a linear graph is useful. The graph clarifies the role of step-progressions, long-range voice leading, and tone centers in this piece. The criteria for making reductions and translating them into graphic signs are as follows: literal repetitions are omitted; encircling devices and nonessential motions into inner voices are reduced; beams are used to connect structural steps; slurs, to define a local melodic motion; dotted slurs are used to connect common tones.

Example 1-12.

Handwritten musical notation on a five-line staff, measures 1-8. The notation includes notes, rests, and dynamic markings such as 'A' and 'M'. There are also some handwritten annotations above the staff, possibly indicating fingerings or articulation.

Handwritten musical notation on a five-line staff, measures 9-18. The notation includes notes, rests, and dynamic markings such as 'A'. There are also some handwritten annotations above the staff.

Handwritten musical notation on a five-line staff, measures 21-31. The notation includes notes, rests, and dynamic markings such as 'A'. There are also some handwritten annotations above the staff.

Handwritten musical notation on a five-line staff, measures 32-44. Labeled "B section" at the beginning. The notation includes notes, rests, and dynamic markings such as 'A'. There are also some handwritten annotations above the staff.

Handwritten musical notation on a five-line staff, measures 57-72. The notation includes notes, rests, and dynamic markings such as 'N.V.'. There are also some handwritten annotations above the staff.

Handwritten musical notation on a single staff, measures 92-95. Measure 92 has a fermata. Measure 93 has a slur over two notes. Measure 94 has a slur over two notes. Measure 95 has a slur over two notes.

Handwritten musical notation on a single staff, measures 96-100. Measure 96 has a slur over two notes. Measure 97 has a slur over two notes. Measure 98 has a slur over two notes. Measure 99 has a slur over two notes. Measure 100 has a slur over two notes.

Handwritten musical notation on a single staff, measures 101-104. Measure 101 has a slur over two notes. Measure 102 has a slur over two notes. Measure 103 has a slur over two notes. Measure 104 has a slur over two notes.

Handwritten musical notation on a single staff, measures 105-109. Measure 105 has a slur over two notes. Measure 106 has a slur over two notes. Measure 107 has a slur over two notes. Measure 108 has a slur over two notes. Measure 109 has a slur over two notes.

Handwritten musical notation on a single staff, measures 110-114. Measure 110 has a slur over two notes. Measure 111 has a slur over two notes. Measure 112 has a slur over two notes. Measure 113 has a slur over two notes. Measure 114 has a slur over two notes.

Handwritten musical notation on a single staff, measures 115-120. Measure 115 has a slur over two notes. Measure 116 has a slur over two notes. Measure 117 has a slur over two notes. Measure 118 has a slur over two notes. Measure 119 has a slur over two notes. Measure 120 has a slur over two notes.

Tone Centers

The preceding graph clarifies the formal role of tone centers in this movement. Each section has only one main center, which appears either in high or low register. The secondary centers (of local events) are functionally related to the main ones, mostly as leading tones.

The first section (mm. 1-36) is built around G, with A-flat (local center in mm. 18-33) as an upper leading tone. The second section (mm. 37-77) is built around F. The main tone center G is thus established through both an upper and a lower leading tones. The next section (mm. 78-121) starts with motive A at T(10) so tone center F remains in effect until the beginning of the recapitulatory section in mm. 122, where motive A appears again in its original level, establishing again G as tone center.

The overall formal plan of the movement considering both tone centers and motivic distribution is as follows: mm. 1-36: exposition of motive A; mm. 38-77; exposition of motive B; mm. 78-121: developmental (or mixed) area; mm. 122-end: recapitulation, involving both motive A (in its original level) and snippets of motive B.

Structural Step Progression

A structural step-progression line connects the important points in a melody: notes that stand out because of registral, metric, and rhythmic circumstances. Most

melodic lines in this movement are governed by structural step-progressions whose main role is to help establish the main tone centers. Even though the lines are sometimes interrupted by wide registral and spatial distribution, their structural role is always of importance. In mm. 33 the upper leading tone G-sharp is more than three octaves above tone center G; in mm 78-86 the stepwise motion from F to C and back (see graph) remains coherent in spite of the wide leaps between successive steps. Two areas of motive A (mm. 1-8; 122-136) have a special feature - both display structural progression based on a cycle of fourths. In the second case, the cycle is broken for four measures (the break is marked with square brackets in the graph) and resumes in m. 130 until it reaches its climax in m. 133.

SEYMOUR SHIFRIN: CONCERT PIECE (FIRST MOVEMENT)

A motive is a recognizable melodic/rhythmic unit with some degree of closure, which is necessary to differentiate it from non-motivic material. A unit meeting that definition does not appear in the first movement of Shifrin's violin piece. There is a structural three-note cell that proves to be the source of most pitch-material, but Shifrin does not connect it to any recognizable contour or rhythmic identity, and thus it remains a structural element. There are, however, some repetitive rhythmic patterns that are used as means of articulation. Rhythm, timbre, dynamics, and their relations to step-progression lines are the important means of phrase construction. The clarity of closure and the regularity of phrases compensates for the lack of unequivocal motivic material.

Rhythmic Patterns

The movement is divided into two contrasting sections. The first (mm. 1-17) is based on long 4/2 measures filled with extended eighth-note units. The second (mm. 18-65) is based on shorter 3/4 measures and isolated, fragmentary units. There are two basic rhythmic patterns in the first section:

Example 2-1.

The image shows two staves of musical notation. The top staff is in treble clef with a 4/4 time signature. It begins with a quarter rest, followed by a series of eighth notes with various accidentals (sharps and naturals). There are two eighth-note rests in the first measure, which divide the stream of eighth notes. The bottom staff is in bass clef with a 3/4 time signature. It features a series of eighth notes, some with accents, and ends with a chain of syncopated notes. The notation includes various musical symbols such as stems, beams, and accidentals.

The two eighth-note rests in the first pattern (Ex. 2-1a) divide the stream of eighth-notes into two parts. The second pattern (Ex. 2-1b) in contrast, employs longer, syncopated rhythmic units. The two patterns, combined and mixed, are the source of rhythmic units in the first section. The most commonly used pattern is the three-note upbeat followed by a stream of eighth-notes. It is used in mm. 5, 8, 13, and 16. Most phrases end with a chain of syncopated notes (second pattern), slowing gradually the dynamic eighth-note motion.

The second section (mm. 18-65) does not have a recurrent rhythmic pattern see (Ex. 2-14). It is based on series of short units organized mainly in four-measure phrases. The movement ends with a short recapitulatory section that uses rhythmic material from the first section.

The Basic Cell

A three-note cell (0 1 4)¹ is the main structural unit in this movement

Example 2-2.



The minor third A-C is the center of a four-note structure created by interlocking cell A with its inversion (Ex. 2-2b); the resultant cell from this operation is 0 1 5 (cell B). The melodic line is created by using transformations (prime, inversion, retrograde), transpositions, and permutations of the basic cell, and by registral distribution, rhythmic patterning, timbral differences, and dynamic changes. Sometimes, the connection between successive permutations is one or two common tones, and by such overlapping a multicellular unit is created. In Ex. 2-3 all pitch-material is rearranged according to the basic three-note cell. The material is represented in its closest, and thus clearest, position:

1. The integers substitute for pitch-class names; pitch class No. 0 will be the first note of the cell; pitch-class No. 1 will be a note half a tone higher, etc.

Example 2-3.

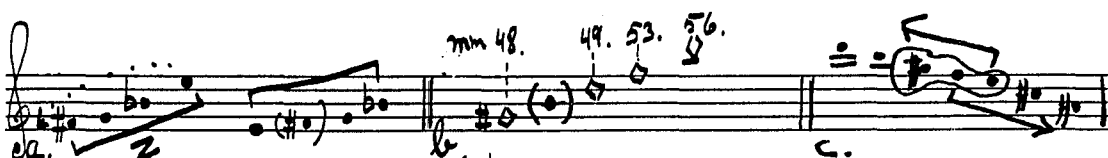
A handwritten musical score for Example 2-3, consisting of 14 staves of music. The notation includes various notes, rests, and accidentals. Key annotations include:

- Staff 1: Measure 1 marked 'A', measure 2 marked '(+)', measure 3 marked 'B', and measure 4 marked 'B'.
- Staff 2: Measure 5 marked '5', measure 6 marked '6', and measure 7 marked '7'.
- Staff 3: Measure 8 marked '8', measure 9 marked '(7)', and measure 10 marked '10'.
- Staff 4: Measure 11 marked '11', measure 12 marked '12', and measure 13 marked '(1)'.
- Staff 5: Measure 13 marked '13', measure 14 marked '(± = +)', and measure 15 marked '15'.
- Staff 6: Measure 17 marked '17', measure 20 marked '20', measure 21 marked '1122', measure 22 marked '(+)', measure 23 marked '(+)', measure 24 marked '24', and measure 25 marked '25'.
- Staff 7: Measure 27 marked '27', measure 28 marked '28', measure 29 marked '29', measure 30 marked '30', and measure 31 marked '31'.
- Staff 8: Measure 32 marked '32', measure 33 marked '33', measure 34 marked '34', measure 35 marked '35', and measure 36 marked '36'.
- Staff 9: Measure 37 marked '37', measure 38 marked '38', measure 39 marked '39', measure 40 marked '40', measure 41 marked '41', and measure 42 marked '42'.
- Staff 10: Measure 43 marked '43', measure 44 marked '44', measure 45 marked '45', measure 46 marked '46', measure 47 marked '47', and measure 48 marked '48'.
- Staff 11: Measure 49 marked '49', measure 50 marked '50', measure 51 marked '51', measure 52 marked '52', measure 53 marked '53', and measure 54 marked '54'.
- Staff 12: Measure 55 marked '55', measure 56 marked '56', measure 57 marked '57', measure 58 marked '58', measure 59 marked '59', and measure 60 marked '60'.
- Staff 13: Measure 61 marked '61', measure 62 marked '62', measure 63 marked '63', measure 64 marked '64', measure 65 marked '65', and measure 66 marked '66'.
- Staff 14: Measure 67 marked '67', measure 68 marked '68', measure 69 marked '69', measure 70 marked '70', measure 71 marked '71', measure 72 marked '72', measure 73 marked '73', measure 74 marked '74', measure 75 marked '75', and measure 76 marked '76'.

Example 2-3 demonstrates the many different techniques of using a single cellular element. Some groups are created by interlocking two or more cells without keeping the pitch order (see mm. 3-4, Ex. 2-3). Sometimes the basic cell is the kernel of a large group that is built symmetrically around it (mm. 48-50, Ex. 2-4c).

Cell Z (mm. 24, 28, 31) is a four-note unit created by adding one note to cell A. The diminished triad, which is the basis for cell Z (Ex. 2-4a), plays a distinctive role in the second part of the movement. All the parenthetical notes (played in harmonics) in mm. 43-65 belong to one diminished chord (Ex. 2-4b).

Example 2-4.



In the two occasions where the three-note cell is not employed (mm. 13 and 43-65), the source of pitch material is a chain of minor and major thirds (see Ex. 2-3). This structural difference is matched by new surface treatment: unique rhythmic patterns, repetitive intervals, and extensive use of double stops.

Pitch class A, either by itself or with neighbor

notes, constitutes most of the "left-over" notes in example 2-3. These notes (marked with parentheses) do not fit into the three-note cell scheme and the function is to reinforce pitch class A as the tone center of this movement. An elaborate description of the ways tone centers are created will be given in the succeeding paragraph.

Tone Centers

The technique of creating tone centers--these referential points of relative stability--has become an important procedure in nontonal music. The availability of all twelve tones and their initial equality on the one hand, and the perceptual need for some differentiation in pitch hierarchy on the other, has led composers to apply a variety of means, hitherto unneeded in the centric tonal system. Tone centers are created through encircling devices, melodic cells, rhythmic devices, registration, structural step progression and instrumental devices.

1) Encircling Devices

Encircling devices include upper and lower leading tones and structural gaps. A structural gap is created when an empty space in the melodic line implies a filling in. The realization of this implication can be immediate or can be postponed. In Ex. 2-5, the gap G-C is filled chromatically by alternating higher and lower notes and thus encircling and

establishing A and Bb as two central notes.

Example 2-5.



2) Melodic Cells

Pitch class A is established as a tone center by the repeated use of two melodic cells: G-A, and G#-A-C. The dyad G-A is used throughout the movement (see mm. 16-17, 24-25, 35, 36). The complete section mm. 43-65 is based on this cell:

Example 2-6.



The two aspects of cell A (G#-A-C or A-C-C#) can be combined to create a symmetrical four-note group with A-C as its central interval:

Example 2-7.



The dyad A-C plays a central role in the movement. The first sentence for example, (see Ex. 2-1), opens and closes with it. The last phrase of the movement begins with one aspect of the cell and concludes with the other:

Example 2-8.

3) Rhythmic Devices

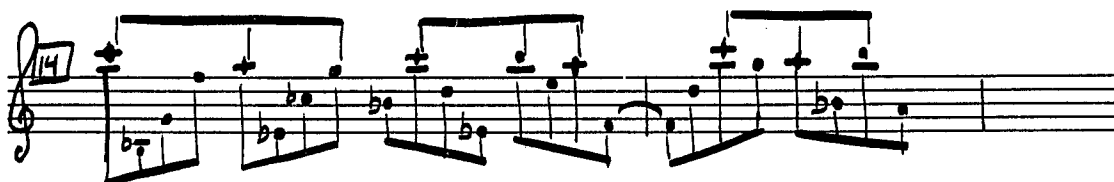
Tone centers can be differentiated from the rest of the pitch material through rhythmic devices, usually by applying longer durations to structural notes. In Ex. 2-9, A and C are the only tied quarter notes (except of F in m. 72) in a section that is entirely built from single quarter notes:

Example 2-9.

4) Registration

Tone centers, as well as contrapuntal lines, can be emphasized by registral differentiation. In Ex. 2-10, the use of the higher register establishes the central interval A-C:

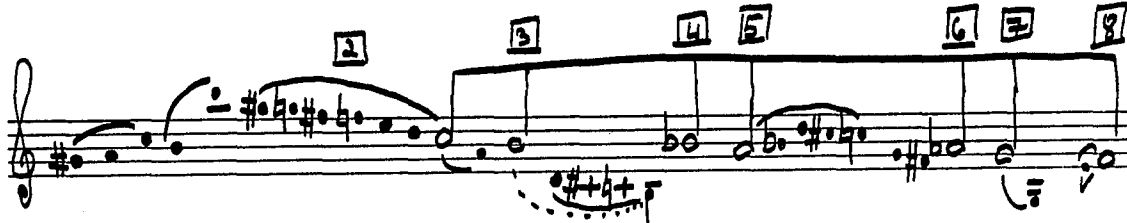
Example 2-10.

5) Structural Step Progressions

The hectic surface of some nontonal music, the tendency to use all twelve pitches and to fill in melodic gaps with chromatic material: all these practices obscure the differentiation between structural and nonstructural tones. By establishing a hierarchy of step progressions, Shifrin directs his melodic lines towards local tone centers.

Ex. 2-11 represents the structural step progression that governs the first eight measures of the movement:

Example 2-11.



Example 2-12 shows the structural step-progression governing mm. 18-25

Example 2-12.

6) Timbre and Instrumental Devices

Sets of special instrumental devices such as pizzicato versus arco, slurred versus detached, sharp versus gradual dynamic contrasts, and multiple stops versus single lines are manipulated in relation to one another, articulating and

establishing structural material in general and tone centers in particular. In Ex. 2-12 above, the structural notes G-A are given emphasis by two kinds of pizzicato. In measures 18 and 23 they are played with left-hand pizzicato (an open-string pizzicato); in m. 21, G and A are the lower and higher notes respectively in a five-note group that is played with a right-hand pizzicato.² The exclusive use of double stops in a single-note texture establishes structural notes A and C in example 2-13:

Example 2-13.



Phrase Construction

Coherence and clarity is achieved by use of articulative devices such as cadential punctuations, interruptions, and contrasts. Due to the fact that basic parameters (harmony, meter) function differently, the technique of building coherent lines in nontonal music differs from techniques workable in the tonal language. Tonal phrases are constructed according to symmetrical

2. It is worth mentioning that this five-note group is singled out since it is the only material unrelated to the basic three-note cell in this section (see Ex. 2-3).

antecedent-consequent scheme, meter is steady throughout large portions of a piece, thus creating regularity of strong and weak beats. Cadences occur when both rhythmic and harmonic progressions come to a relatively stable point. In Leonard B. Meyer's words, "The arrival at relative stability (closure) is a result of the action and interaction among the several parameters of music."³ In nontonal music, dissonant-consonant relations do not function in a closed frame of reference. Meter and phrase length being less regular, there is an increased participation of other parameters in the creating of coherent punctuation marks. Rhythm takes over some of the harmonic functions and becomes the main source of articulation. Timbre and dynamics, secondary parameters in a tonal context, gain new importance as means of articulation and formal design.

The degree of closure, as mentioned above, is a result of an interplay among several parameters. In the first sentence (mm. 1-2, Ex. 2-1), closure is signaled in varying degrees by rhythmic devices and registral arrangement. The first sentence arrives at a relatively stable rhythmic point with the last two notes of relatively long duration. These notes, on the other hand, are in a higher register (the last A is an octave above the initial one) and thus accumulated energy still exists, calling for the continuation of the

3. Leonard B. Meyer, Explaining Music (Chicago: University of Chicago Press, 1973), 88.

line. The next closure (end of m. 4) is determined by the interaction between rhythm, registration, and structural step progression. The phrase closes with a chain of relatively long notes that create some degree of stability and closure. On the other hand, the two-note line B-Bb (see Ex. 2-17) implies a continuity towards tone center A, and the sharp registral change in the last three notes (which covers almost two octaves) weakens the degree of closure and contribute to the need for continuity.

The second section (m. 18 ff.) contains short, isolated events. The first sentence (Ex. 2-14) is eight measures long, divided into two four-measure parts:

Example 2-14

Handwritten musical score for Example 2-14, consisting of two staves of music and a legend below. The first staff is in treble clef with a key signature of one sharp (F#) and a 2/4 time signature. It contains eight measures of music with various notes, rests, and dynamics. The second staff is in bass clef with a key signature of one sharp (F#) and a 2/4 time signature, also containing eight measures of music with chords and dynamics. A legend at the bottom shows a horizontal line with a dash and the word "strong" below it, and a horizontal line with a "u" and the word "weak" below it.

The points of closure in Ex. 2-14 are created by means of both metric and timbral devices. A pattern of strong-weak (accented-unaccented) measures is created by the symmetrical pattern of four-measure phrases and the accented first measure of each phrase. The cadences fall on weak measures and the pizzicato adds a timbral contrast that enhances the closure (m. 21).

Most phrases in this movement are four measures long, and even some longer ones are basically four-measure units prolonged:

Example 2-15.

The image shows two staves of handwritten musical notation. The top staff contains a 17-measure phrase, and the bottom staff contains a 4-measure 'SHORT VERSION'. Both staves are in treble clef with a 5/4 time signature and a key signature of one sharp (F#). The notation includes various note values, rests, and dynamic markings like 'p' and 'mf'. The phrase is divided into four-measure units by vertical lines.

The first section is seventeen measures long. The extra measure (m. 13) is a parenthetical unit that differs rhythmically and structurally from the rest of the material. This unit is developed later on into a complete independent section (mm. 43-65).

To conclude: Shifrin creates an articulated melodic line by using regular phrase length, antecedent-consequent relations, and clear cadential points. This clarity compensates for the lack of motivic material. The balance between the constant change in one parameter and the more schematic phrase construction is crucial to the comprehensibility of this movement.

Voice Leading and Registration

Shifrin's melodic line is characterized by large skips and abrupt registral changes. The presence of large intervals enriches and enlarges the limited material offered by the basic three-note cell, creating the phenomenon of melodic counterpoint: a simultaneous unfolding of several contrapuntal lines by using several registers in one elaborate melody. The lines thus created usually move in step progression. In Ex. 2-16 the melody is represented in two separate contrapuntal lines:

Example 2-16.

The image shows two staves of musical notation. The top staff is in treble clef and contains a melodic line with several large leaps, including a wide interval from a high note to a lower one. The bottom staff is also in treble clef and contains a more stepwise contrapuntal line. The key signature has one sharp (F#) and the time signature is 4/4. The notation includes various note values, rests, and dynamic markings.

The skip from B' to B'' opens a new registral level and from that point forward two contrapuntal lines move towards a common goal (C), which then moves to tone-center A.

The melody in mm. 3-4 is too dispersed to create several contrapuntal lines. The line B-B-flat (which resolves to A in m. 5) is the only apparent linear connection (see Ex. 2-17). The two notes gain their structural importance through placement (they are the first and last notes), and registration (B is the highest and lowest note in the phrase):

Example 2-17.

The image shows a musical score for Example 2-17. It consists of two staves. The upper staff is a treble clef staff with a key signature of one sharp (F#). A thick black line is drawn above the staff, starting at the first measure and ending at the fourth measure, with a dashed line connecting the two points. A note with a flat (B-flat) is marked with a '+' above it at the end of this line. The lower staff is a bass clef staff with a key signature of one sharp (F#). It contains a melodic phrase with various ornaments and dynamics. A note with a flat (B-flat) is marked with a '+' above it in the fourth measure. The phrase ends with a 'p' (piano) dynamic marking.

Tracing the different contrapuntal lines inside an elaborate melody can be a difficult task: lines are constantly changing registers, crossing each other, overlapping part of the time, and obscuring each others goals. Nevertheless, those inner contrapuntal lines are an important factor in a melodic construction and should always be examined.

ABEL EHRLICH: BASHRAV

Abel Ehrlich's Bashrav for solo violin represents a trend in twentieth-century music toward integrating non-European and folk music with elements of the modern Western tradition. Debussy was influenced in part by far-Eastern textures and scales; Stravinsky, by Russian folk melodies; and Bartok, by the folk music of rural Hungary. This trend had a unique influence on the development of Israeli music during the Fifties and Sixties. Composers of European education who immigrated to Israel have tried to mold a new musical language by combining Middle-Eastern (chiefly Arabic) elements into their music. Arabic scales (Maqamat), heterophonic textures, and repetitive rhythmic patterns were integrated into an otherwise European nontonal musical language.

The literature for solo violin written in Israel during that period is astonishingly rich. The violin seemed to be a proper vehicle for experimenting with microtonal elements and instrumental colors. Bashrav represents a large body of violin literature, the common aesthetic goal of which was to combine remote cultures and thus create a new musical sound.

Seeing beyond the cross-cultural program, we still see

in Ehrlich a composer facing much the same challenge as the others in our sample; that is, to derive from the chosen materials appropriate means of establishing expectations and fulfilling them. Bashrav affords an opportunity to look at another important procedure that arose to replace functions that were once satisfied by common-practice Western tonality. Chromatic saturation, as the point at which stability is genuinely felt in this music, lies at the core of phrase construction here.

Motivic Construction

Most developmental processes in Bashrav are the result of a structural difference between the two main motives. The first (Ex. 3-1) is chromatic and is built from an additive chain of short fragments. It is a circular unit that starts and ends on the same note, and since its entire space is chromatically covered, it does not imply any gap-fill processes:

Example 3-1.

The image shows a single staff of musical notation with a treble clef and a common time signature. The notation is handwritten and includes several annotations. The first measure is marked with a box containing the number '1'. A bracket above the first five notes is labeled 'motive A'. The notes are G4, A4, B4, C5, and B4. The dynamics are marked as *mf* and *f*. The second measure is marked with a box containing the number '2'. A bracket above the next five notes is labeled 'subsidiary motive'. The notes are A4, B4, C5, B4, and A4. The dynamics are marked as *mf*. There are also some handwritten markings like '>' and '<' under the notes, and a 'sub' marking at the end of the second measure.

The second motive uses wide intervals (a perfect fifth and a

minor third above it) and because of this open contour it supports continuity and engenders further gap-fill processes:

Example 3-2.

The musical score for Example 3-2 consists of two staves. The top staff begins with a box containing the number 10, followed by a bracket labeled "motive B" spanning several measures. A measure later, a box contains the number 14, followed by a bracket labeled "subsidiary motive". The bottom staff begins with a box containing the number 19. Handwritten annotations include "mp" at the start of the top staff, "p" at the start of the bottom staff, and "poco sfz" at the end of the bottom staff. The music features various rhythmic values and accidentals.

It is the interplay between motive B, which marks the boundaries of a specific space, and motive A, which fills out these gaps, that is the driving force of the piece.

In Ex. 3-3, both motives unfold simultaneously in a polyphonic texture:

Example 3-3.

The musical score for Example 3-3 consists of two staves. The top staff begins with the tempo marking "piu mosso" and a dynamic marking "mp". A bracket labeled "B" spans the first few measures. A box containing the number 36 is present. The bottom staff begins with a dynamic marking "mf". A bracket labeled "A" spans several measures. The music is polyphonic, with both motives unfolding simultaneously. Handwritten annotations include "poco string" at the end of the bottom staff.

In the middle of the phrase (m. 36) the registral space is narrowed down and the two lines converge. In measure 36, F functions both as a part of motive B (F-C-Eb), and as part of the chromatic movement of motive A, which starts in measure 31.

Rhythmic augmentation and diminution are means of motivic transformation. In example 3-4 motive B is used in an augmented rhythm:

Example 3-4.



In the next example, motive B appears in shorter rhythmic values:

Example 3-5.

The closing measures of both motives (mm. 7-9 and mm. 15-17) are the source of some subsidiary motivic material. The

melodic progression in these cases involve cell 5 1 0 and cell 0 1 4 respectively. These cells are the motivic source for measures 110-130 and 250-270.

Phrase Construction

The importance of rhythm, contour, step-progression, and registration as articulative means has been considered above. Another factor contributing to phrase construction is the process of filling structural gaps. In the music we are considering here, the point of stability (closure) can be achieved only by chromatically saturating these gaps. As Rosen so aptly puts it, this concept of the "saturation of chromatic space as a point towards which the music moves, as a point of rest and resolution," lies behind the construction of much of the music written from 1920 on.¹

Chromatic saturation is at the core of phrase construction in Bashrav. Motive A is used to cover the total chromatic material in a given space the boundaries of which are defined by the large leaps of motive B. Chromatic saturation (and thus closure) is achieved when the entire space is filled out and the need for completion is satisfied. The construction of measures 10-22 (Ex. 3-2) exemplify this phenomenon: the range of the entire phrase is marked by the first two intervals G-D and D-F; the higher interval (D-F) is

1. Charles Rosen, Arnold Schoenberg (Princeton: Princeton University Press, 1975), 58.

partially filled in mm. 14-17, and the lower (G-D) in mm. 18-22. The only missing note in the otherwise total chromatic filling-in is E, which turns out to be the principal tone in the succeeding phrase (mm. 25-30). In the next example the space to be filled is outlined by the octave on the first beat of measure 50:

Example 3-6.

The image shows a handwritten musical score for Example 3-6. It consists of two staves. The top staff is in treble clef with a key signature of one flat (B-flat) and a time signature of 4/4. It contains a melodic line with various accidentals and a fermata over the final measure. The bottom staff is in bass clef with a key signature of one flat and a time signature of 4/4. It contains a bass line with various accidentals and a fermata over the final measure. The score is annotated with 'Tpo I' and 'Tpo rubato'.

The C in measure 54 has a dual function: it completes motive B (which is suggested by the fifth D-A in the lower register) and completes the gap-fill process of the entire phrase. Again, as in the preceding example, one pitch (E-flat) is missing from the chromatically saturated octave. This note is then used in measures 56-57 in the progression E-Eb-D, which closes the entire section (mm. 31-59), bringing it back to its initial tone-center.

Heterophony

Heterophony, according to Pierre Boulez is "a superposition on a primary structure of a modified aspect of the same structure."² Heterophony in its standard, narrower definition, implies a distribution of identical pitches differentiated by divergent temporal coordinates. This device is characteristic of middle- and far-Eastern music and has been used by Western composers (Debussy, for example) in their quest for colorful resources.

In the following example, the main line appears in longer durations while the upper line embellishes it an octave higher. The relations between the voices are both horizontal (moving towards the same goal), vertical (going in and out of the octave), and diagonal (as in m. 134):

Example 3-7.



In the next example, heterophony is the result of two voices using the same pitches (A-Bb-B-C) in different rhythmic values:

2. Pierre Boulez, Boulez On Music Today, translated by Susan Bradshaw and Richard Rodney Bennett (London: Faber and Faber, 1971), 117.

Example 3-8.

Tone Centers

Tone centers have structural importance both locally and for the overall formal plan of a piece. Locally, they create stable melodic points towards which the music moves; for the large form, they establish relations between different sections of the work.

These relations in Bashray are based on a cycle of perfect fifths. The piece starts around G (mm. 1-30), moves to D (mm. 31-59), then to A (mm. 60-109). Section 110-125 is a parenthetical unit both texturally and rhythmically, and the original line resumes in measure 125, stressing G-sharp which leads to A. The section concludes with D, which turns out to be the tone center of the entire Scherzo section (mm. 154-248). The last section is unique in that the two-voice texture does not imply a definite center until the last measures. Each voice moves independently the higher towards G and the lower towards C. The last cadence on the fifth C-G (with C being the basic note) is especially strong because of tone-center C, which is used here for the first time. Tone centers throughout the piece are part of the ascending cycle

of fifths, beginning with G (G-D-A[E]). C is a fifth below G, and the move in an opposite direction from the rest of the tone centers creates a formal balance and thus enhances the finality of the last cadence.

BERND ALOIS ZIMMERMANN: SONATE FÜR VIOLINE SOLO (PRÄLUDIUM)

The three works analyzed hitherto can be described as nontonal compositions based on a fundamental cell or a short thematic group, with each composer solving the questions of development, form, articulation, and phrase-construction in his own way. The fact that Zimmermann's sonata is based on a twelve-tone set does not change the basic questions that have to be asked in any analysis of nontonal music: What differentiates motivic from nonmotivic material? How are phrases built without the articulative tools of tonality? Merely identifying a twelve-tone set as a precompositional source does not tell a lot about the surface level of the piece. The set can remain an abstract series of intervals from which linear details are derived without becoming a motive or a melodic prototype. On the other hand, the set (or segments of it) can become a motivic entity through recurring rhythmic units, contour, and registration.

The availability of all forty-eight set-forms (twelve transpositions of the four aspects) creates the problem of choice. In absence of clear compositional standards of harmonic reference, composers have used several devices to limit the number of choices and to create interrelations

within the set-complex. Invariant determinants (using Babbitt's terminology) have been created by constructing symmetrical, semi-combinatorial, and combinatorial sets.¹

Zimmermann, for similar reasons, uses only three set-forms: a prime and inversion starting on G, and a retrograde of the same prime. The constant repetition of one set-form (the prime) creates a kind of melodic ostinato. These do not yet transform the set into a motivic entity; the motivic material is eventually created by selecting certain segments of the set and elevating them to structural importance.

Structural Analysis of the Set

The most fruitful initial approach to a twelve-tone composition is through an examination of the structure of its set, for this structure determines not only the nature of the local event, but those particular invariants that will obtain under the systematic transformation only as a result of the structure of the particular set.²

Taking Babbitt's advice we shall first examine the set and its structural implications. These implications were limited drastically by Zimmermann's decision not to use transpositions in the first two movements. The role of invariant relations is more substantial in the last movement

1. See also George Perle's Serial Composition and Atonality (Los Angeles: University of California Press, 5th edition, 1981), 97-98.

2. Milton Babbitt, "Remarks on the Recent Stravinsky," Perspectives of New Music 2/2 (Spring/summer 1964), 48.

since transpositions are used more extensively. Zimmermann divides the set into three four-note segments:

Example 4-1.



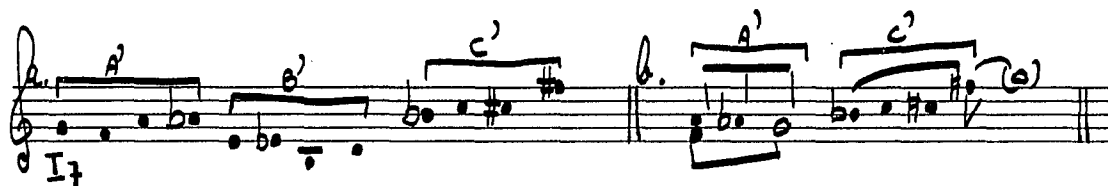
The fact that both segments A and C contain leading notes to pitch class G implies a special structural importance to this note:

Example 4-2.



The implied structural role of G remains valid in the inversion of the set: segment A' still contains the upper and lower neighbor notes; and segment C' now has the lower (instead of the upper) leading tone:

Example 4-3.



Looking at the set as an interval series can reveal some other important features. The interval succession³ of the set contains the following series of interval-numbers:⁴

2 (8) 1 (4) 1 (4) 9 (4) 10 11 7

Interval-number 4 (a major third) and its complement (a minor sixth) are singled out since they are used more often than the others and have a special structural role. The next graph displays the potential role of the minor sixth in this set:

Example 4-4.



3. Interval succession is the series of integers determined by subtracting each pitch-class number from the one following (Perle, Serial Composition and Atonality, 3).

4. Interval-number represents the number of semitones in a given interval; thus, a minor second will be represented by 1, minor third by 3, etc.

The minor sixth is a structural interval in the Präludium for both melodic and harmonic functions. In the second movement (Rhapsodie), the stress shifts to the fourth and the minor second (see Ex. 4-9).

Motivic Functions of the Set

The transformation of the series from an abstract set of pitches to a full-fledged musical piece occurs when rhythm, dynamics, contour and articulation are restored; only then can we see how far the theoretical implications have been realized in the music itself. The first phrase of the Präludium (Ex. 4-5) confirms the division of the set into three tetrachords, and the structural role of the minor sixth:

Example 4-5

Of the three tetrachords, only tetrachord C keeps the same contour, location in the phrase, and texture, and

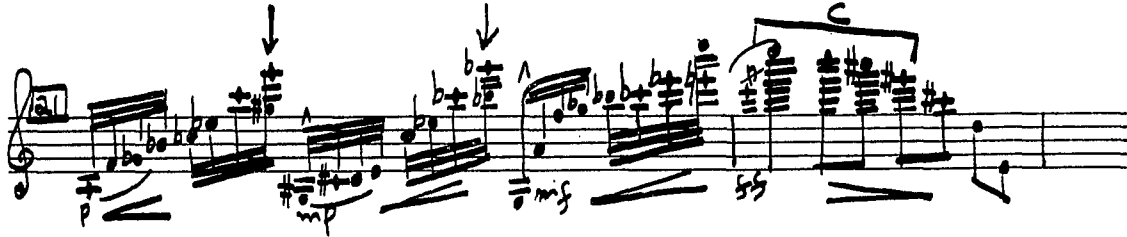
therefore becomes a point of reference. It always keeps the same contour of three descending steps (Ex. 4-6a, 4-6b, 4-6c), the same single note texture (Ex. 4-6b, 4-6c), and the same location in relation to the points of closure (Ex. 4-6a, 4-6b). Dynamics and slurs (Ex. 4-6d, below) come into play as well, as a means of giving special structural emphasis to tetrachord C.

Example 4-6.

The image shows two staves of handwritten musical notation. The top staff is a single melodic line in treble clef, featuring a series of notes with slurs and dynamic markings such as 'p' and 'pp'. The bottom staff is a bass line in bass clef, showing chords and dynamics like 'pizz', 'arco', and 'pp'. Both staves include various musical symbols like accidentals, slurs, and dynamic markings, with some annotations in red ink.

The minor sixth is singled out in m. 1 and m. 6 (Ex. 4-5 and Ex. 4-6, respectively) through rhythmic accentuation and slurring, and is the main interval whenever a double-stop texture is used (Ex. 4-6b, 4-6c). In m. 21 (Ex. 4-7) it appears at all three climactic points, leading to the fortissimo in the next measure:

Example 4-7.



The ubiquitous tetrachord C is itself a minor sixth in stepwise motion (E-G#) with two added notes (D and C#).

In the second movement, Rhapsody, the two structural intervals are the perfect fourth and minor second. They are the motivic elements in the next example:

Example 4-8.



These intervals are again articulated through registral, rhythmic, and dynamic devices:

Example 4-9.



Using a twelve-tone set, then, creates a problem of differentiation since the pitch content remains constantly the same--always the totality of twelve pitches. According to Charles Wuorinen,

The content group, to be identified, must have a small enough number of elements to allow for quick apperception. And of course, the number of elements must be substantially smaller than the total available pitch vocabulary, so that the distinction between it and the rest of the tones available within the system can be immediately grasped.⁵

The content groups in this piece were created by the division of the set to three tetrachords and the different use of each one of them, and by choosing only one interval for motivic purposes. This interplay between variable (tetrachord A and B) and invariable (tetrachord C, minor sixth) elements accounts for the balance between change and repetition, stable reference points and unstable developmental processes.

5. Charles Wuorinen, Simple Composition (N.Y.: Longman Inc., 1979), 21.

Rhythm and Meter

The basic rhythmic entity governing the several hierarchic levels is a three-beat unit with a mildly accented first beat, an accented second beat, and an unaccented third beat. The unit appears in both the measure and the phrase levels:

Example 4-10.

The image shows a handwritten musical score on a single staff. The notation includes a treble clef, a key signature of one flat (B-flat), and a 3/4 time signature. The melody consists of several measures with various note values, rests, and accidentals. Dynamic markings such as 'pp', 'mf', and 'pp' are present. There are also some handwritten annotations below the staff, including a bracketed section labeled '1.' and another labeled '2.'.

The accented element, be it a measure or a beat, is the focal point of the whole unit. The accented second beat in m. 1 is the result (see Ex. 4-10) of the rest that precedes it and its resolution to a shorter rhythmic unit. The accented measure (m. 3) is the climax, both registral and dynamic, of the entire phrase. The same fundamental unit appears in m. 6 (Ex. 4-6a), m. 11 (Ex. 4-6b), mm. 16-17, and even in the first phrase of the second movement (Ex. 4-8). On the phrase level it is apparent in mm. 6-10 and mm. 21-23; the accented units are the downbeats of m. 8 and m. 21, respectively.

The fundamental rhythmic unit can be applied to the formal scheme of the entire movement as well. The middle section, mm. 16-22, is unquestionably the climactic part of the movement; this is where the melodic activity resolves to tone center G, and where the highest point of the melody is reached (m. 22). The opening and closing sections can be viewed as preparation and resolution of the accented middle section. The whole movement, is thus a tightly organized rhythmic as well as formal entity.

Bar Lines

Zimmermann uses the bar line as a structural rather than a metric device. Bar lines are applied in order to clarify structurally important events; for instance, to mark the beginning and end of the fundamental rhythmic unit. The length of the measures is immaterial, as long as the structural unit is clear. For example: the bar line applied before m. 3 marks the downbeat of the accented measure (see Ex. 4-5); bar lines at the beginning of mm. 16, 17, and 18 are applied in order to mark the beginning of the fundamental rhythmic unit, and the establishment of G as the tone center. Generally speaking, Zimmermann uses the bar line to mark off the limits of melodic or rhythmic groups rather than to designate beginnings of metric units.

Phrase Construction

The phrase shown in example 4-5 is of the antecedent-consequent type, with a consequent (mm. 3-5) that is prolonged through repetition in longer durations of segments A and C. The closure in m. 5 involves an interplay between rhythmic and registral stability and melodic mobility. The downward motion, the built-in ritard (m. 4), and the rhythmic stability of the last A-sharp and its registral location between the lower and upper points imply a stable closure. On the other hand, A-sharp is an unstable cadential note since the repeated use of segments A and C prepares the ground for a closure on G, and not on A#. This delicate interplay enables us to balance the need for closure and articulation on one hand, and the need for continuity and fluidity on the other.

ROGER SESSIONS: SONATA FOR VIOLIN (FIRST MOVEMENT)

Roger Sessions Sonata for Violin is a most demanding piece from both instrumental and analytical points of view. It is written in the dodecaphonic system which Sessions employs in a unique manner, resembling in many respects Stravinsky's compositional techniques of the same period. The following discussion deals with Sessions' treatment of twelve-tone techniques and the influence of that treatment on voice leading, step-progression, and phrase construction. Some consideration will be given to gap-filling processes in the dodecaphonic idiom.

Structural Analysis of the Set

The set, similar to many of Schoenberg's, is so constructed that when it is simultaneously stated with its inversion a fifth below, each hexachord will form an aggregate of the twelve pitches with its inversionally related hexachord. Thus the two set-forms in Ex. 5-1 are often used together in a contrapuntal context:

Example 5-1.

The image shows two staves of musical notation. The top staff is labeled 'P₂' and the bottom staff is labeled 'I₂'. Both staves show a sequence of notes representing a twelve-tone set and its inversion. The notes are arranged in a way that demonstrates the relationship between the set and its inversionally related hexachord.

Sessions (similar to Stravinsky in Movements) treats his hexachords as both ordered and unordered pitch collections. It is thus important to note that five of the six notes in each hexachord belong to the same whole-tone collection, and that the only foreign note is the second one in each hexachord:

Example 5-2.



This property creates invariant segments between different set forms. In all transpositions that are an even interval apart, hexachords will remain in their original whole-tone collection and will share most of their pitches. In Ex. 5-2 P7 and P3 are a major third apart (T-4); matching hexachords therefore share four out of six notes. The first two hexachords share also a three-note segment (an augmented triad) because of the unique property of this chord to keep its interval structure in all inversions stages. In this specific case the interval of transposition (a major third)

is also the structural interval of the augmented triad, and thus the triad appears in a different inversion but retains the same pitch content.

Sessions treats segments of the set (again, similar to Stravinsky) as unordered "harmonic" units rather than melodic fragments. The division of the set into four-note segments creates groups that, similar to the complete hexachord, have one foreign note in an otherwise homogeneous whole-tone collection:

Example 5-3.

The image shows musical notation for Example 5-3. It consists of two staves, labeled 'a.' and 'b.'. Staff 'a.' is in treble clef and staff 'b.' is in bass clef. Both staves are in 7/8 time. The notation shows several four-note segments. In staff 'a.', there are three segments of four notes each, with arrows pointing from the first three notes of each segment to the fourth note. In staff 'b.', there are two segments of four notes each, with arrows pointing from the first three notes of each segment to the fourth note. A large curved arrow connects the fourth note of the first segment in staff 'a.' to the first note of the first segment in staff 'b.'. Another large curved arrow connects the fourth note of the second segment in staff 'a.' to the first note of the second segment in staff 'b.'. The segments in staff 'b.' are marked with 'C.' and 'T.' below them, indicating they are homogeneous whole-tone collections.

All four-note segments in Ex. 5-3b share the same structure: a three-note unit from the same whole-tone collection and a foreign note whose location varies in each case. The other two segments (Ex. 5-3c) are homogeneous since all four notes belong to the same whole-tone collection. The implied differentiation between homogeneous and nonhomogeneous segments is used to create tension and relaxation for various

phrase-construction purposes.

Some Examples of Pitch Analysis

In the previous section, the analysis centered on chosen properties of the set and their influence on interconnections between different set forms. Here, the analysis focuses on concrete excerpts and the practical application of the set to different pitch processes.

The original set unfolds in the initial measures, followed by its inversion a fifth below. Set forms in such a relation (as mentioned before) share the same hexachordal pitch content, and thus the five-note group that closes P7 (mm. 2-3) shares the same pitch content with the initial five-note with the initial five-note group of I_0 . Together with rhythmic and contour similarities they offer a smooth connection between the two set-forms:

Example 5-4.

The musical score for Example 5-4 consists of two staves. The top staff is in 4/4 time and contains a complex melodic line with many beamed notes and rests. It includes dynamic markings: *poco rit*, *f*, *Per tempo e poco cresc*, and *mf*. The bottom staff is a simpler melodic line with notes and rests. The key signature has one sharp (F#) and the time signature is 4/4.

Mm. 11-13 are still based on the same set forms (P7 and I₀) but now the hexachords are used simultaneously in their retrograde forms, thus creating a dense texture of all twelve pitches:

Example 5-5.

The image shows two staves of musical notation. The upper staff is a treble clef staff with a complex melodic line. It features many accidentals (sharps, flats, naturals) and is annotated with circled numbers 1 through 7, indicating specific points in the melody. The lower staff is also a treble clef staff, showing a sequence of notes with some accidentals. It is annotated with 'R7' and 'R7' below the notes.

The division of the set into two unordered hexachords, each divided into tetrachords sharing the same property (as shown in Ex. 5-3b), is used in the next example. The duality of the two harmonic areas creates an antecedent-consequent pattern:

Example 5-6.

The image shows two staves of musical notation. The upper staff is a treble clef staff with a complex melodic line. It features many accidentals (sharps, flats, naturals) and is annotated with circled numbers 1 through 7, indicating specific points in the melody. The lower staff is also a treble clef staff, showing a sequence of notes with some accidentals. It is annotated with 'R7' below the notes.

Connections between successive phrases are usually made through common segments. The phrase in mm. 27-29 ends with a repeated trichord of P_7 (C-D-Bb, see Ex. 5-1). The last dyad (D-Bb) is the link to I_4 , which is the source for measures 30-31. The dyad D-B-flat (together with C) functions as an ostinato in the low voice, while the upper voice uses the rest of hexachord I pitches and then moves to hexachord II:

Example 5-7.

The image shows handwritten musical notation for Example 5-7. It consists of two staves. The upper staff contains measures 29 and 30. Measure 29 is marked with a circled '29' and contains a melodic line with a trichord of notes (C, D, Bb) and a dyad (D, Bb). The text 'end of P7' is written below the first part of measure 29. Measure 30 is marked with a circled '30' and contains a melodic line with notes (C, D, E, F, G, A, Bb) and a dyad (D, Bb). The text 'pp. P' is written below the first part of measure 30. The lower staff shows a sequence of notes (C, D, E, F, G, A, Bb) with the label 'I4' written below the first note. The notes are connected by a line, and there are some additional markings below the staff.

The operations discussed above represent some aspects of twelve-tone manipulations in this piece. Pitch-content is kept more often than pitch-order, different segments are treated as individual harmonic and melodic units, several hexachords are sometimes used simultaneously, and links between set-forms are usually established by using common segments.¹

Melodic Units

One of the main purposes of segmentation in twelve-tone music is to divide the totality of pitch material into smaller groups and to attach particular musical functions to them. Contrary to Schoenberg, who uses segmentation to differentiate between thematic and nonthematic material, Sessions' segmentation aims primarily at creating harmonic units the size of which can vary from two to six notes. Each unit can be stated horizontally and vertically, and in most cases is not connected to a repeated contour or rhythmic pattern. In other words, it is not treated as a motivic element. Short melodic fragments are used though, for formal reasons. These fragments are either direct segments or short

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1. I assume here that there is also some connection between the choice of set-forms and the formal design of the piece. The movement is divided into four sections - mm. 1-29, 30-53, 54-84 and 85-end. Each section is clearly defined by a cadential gesture that concludes with a pause and a fermata. I also assume (it is problematic to arrive at a decisive conclusion since some sections are ambiguous and cannot definitely be connected to any set-form) that each section is connected to a specific group of set-forms that share several characteristic features. The invariant segments connecting set-forms that are a major-third apart have been cited already; the entire set-complex can thus be divided into four groups, each containing three transpositions: P7, P3, P11: P5, P1, P9: P4, P0, P8 (we can replace I for P in the above and get the same invariance). The choice of transpositions for each section seems to be related to the above groups of set-forms. The first section (mm. 1-29) includes set-forms of one group (P7, P3, P11), the next (mm. 30-54) includes sets from another group (I4, I0, I8); the third section is ambiguous, since only isolated segments can be traced, and the last (mm. 85-end) is in many respects a recapitulation (including the choice of set-forms) of the first section.

motives that are created by piecing together three or four notes (regardless of their placement in the set) and elevating them to structural importance through registral, repeated rhythmic patterns, and articulation (see Exx. 5-8 and 5-10). The three-note motive in Ex. 5-8 appears three times, at the beginning of each section (see mm. 7-10, mm. 57-59, and mm. 96-98):

Example 5-8.

Handwritten musical score for Example 5-8, consisting of three systems of staves. The first system has a treble clef and a box labeled "R3". The second system has a treble clef and a box labeled "7", with dynamics "p cresc....." and "sf sf". The third system has a treble clef and a box labeled "RI7", with dynamics "pp cresc....." and "foco animato". The notation includes various notes, rests, and slurs.

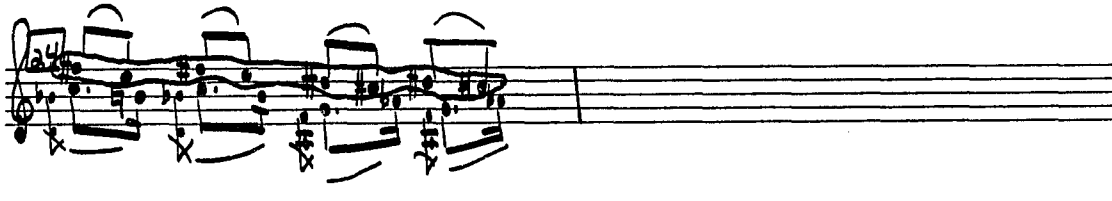
The four-note motive in the next example is another non-segmental motivic unit:

Example 5-9.

Handwritten musical score for Example 5-9, showing a single system of staves with a treble clef and a box labeled "14". The notation features a complex, non-segmental four-note motive with various accidentals and slurs.

The same four-note motive appears a few measures later in a different texture:

Example 5-10.



Three motivic units can be traced in the beginning of the second section (mm. 30 on): a three-note segment of I_4 (E-Eb-Bb); another three-note segment (Bb-Gb-E), which shares two notes with the previous one; and a four-note unit (F#-G#-A-B), which was mentioned already (Ex. 5-9) and functions as a connection between the other units. The ostinato in the lower voice is a three-note segment of P_7 (Bb-D-C):

Example 5-11.

A complex musical score consisting of four staves. The top staff is the vocal line, featuring a four-note motive (F#-G#-A-B) and various ornaments. The second staff is a piano accompaniment. The third staff is a string accompaniment, marked 'poco string'. The bottom staff is a piano accompaniment, marked 'a p p'. The score includes various musical notations such as notes, rests, dynamics, and performance instructions like 'tranquillo subito e molto rubato'.

A three-note segment that contains the fourth, fifth, and sixth notes of the set is the basic motive in examples 5-12 and 5-13. In example 5-12 the cell is a surface element, but later in the section it becomes a background cell for both linear and vertical purposes:

Example 5-12.

Handwritten musical score for Example 5-12. The top staff is in 4/4 time and features a melodic line with notes marked with fingerings 4, 5, 6. Above the staff, the instruction "Un poco lento ad appassion." is written. The bottom staff shows a sequence of notes with labels: P_7 (HEX I), P_6 (HEX I), and $P_5(2)$. The notes are connected by lines, and there are various musical notations such as slurs and accents throughout the piece.

Example 5-13.

Handwritten musical score for Example 5-13. The top staff is in 4/4 time and features a melodic line with notes marked with fingerings 4, 5, 6. Above the staff, the instruction "piano e cresc." is written. The bottom staff shows a sequence of notes with labels: P_7 (HEX I), P_6 (HEX I), and $P_5(2)$. The notes are connected by lines, and there are various musical notations such as slurs and accents throughout the piece.

Phrase Construction

In addition to the resemblance in the way they approach twelve-tone technique, both Stravinsky and Sessions construct their phrases in an additive way. Neighboring, sharply contrasted fragments are connected in order to create a discontinuous, fragmentary phrase construction. The sharp cuts (resembling the "brackets" technique in Perle's and Shifrin's pieces) are created by juxtaposing phrases that differ rhythmically, texturally, and motivically. A reading of the first section demonstrates this point (mm. 1-29). The section starts with a soaring presentation of the set in a single-note texture (mm. 1-6); it continues with a repeated use of the three-note motive in a double-note texture (mm. 7-9); it moves sharply to the dense polyphonic texture of mm. 11-12, measures that differ rhythmically (a march-like 4/4 meter), texturally, and motivically from the previous phrases; it introduces (mm. 13-15) the four-note motive (Ex. 9) and destroys the clear metric division of the previous fragment. The rest of the section (mm. 16 ff.) belongs to another kind of phrase construction (developmental) and is more homogeneous and continuous.

There are two different kinds of phrase construction in this movement: motivic and developmental. The motivic type consists of fragmentary lines containing clearly articulated motivic elements. The developmental type is continuous, its metric and rhythmic features are ambiguous,

the motivic allusions are vague, and the melodic line resembles wave-like forms that constantly move towards new climaxes. The two types are a recurring factor in the formal design of each individual section: each section starting with the motivic type and moving gradually towards the developmental. For example: the first section (mm. 1-29) starts out as a motivic area (mm. 1-15) and turns into a continuous developmental line; the third section (mm. 54-84) is similarly designed, with mm. 54-60 motivic and the rest developmental; the last section (mm. 85-113), is a recapitulation of events in the first section.

Besides the more common devices for articulative closures (rhythmic augmentation, fermatas), Sessions uses another technique resembling in some ways the construction of tonal cadences. Tonal cadences are usually prepared by slowing down the harmonic rhythm (the pace of harmonic changes). Sessions slows down his "harmonic rhythm" (the pace of segmental changes) towards the end of a phrase or a section. For example: the first section ends with a repeated use of the last three-note segment of P_7 (m. 28-29); the second section concludes with a repeated use of another three-note segment (mm. 52-53), etc.

The division of the set into two hexachords, each belonging (due to its pitch-content) to a different harmonic unit, enables Sessions to employ compositional subtleties that would not have been possible otherwise. Whenever an

element from one hexachord is inserted into the other one, it is treated as a foreign and thus a dramatically accented element:

Example 5-14.

The musical score consists of two staves. The top staff is in 4/4 time and contains measures 25 and 26. Measure 25 is labeled 'HEX II' and measure 26 is labeled 'HEX I'. The bottom staff is in 4/4 time and contains measures 25 and 26. The music features a melodic line with various intervals and a bass line with chords and a final dyad (Bb-D) in measure 26.

The dyad Bb-D is a foreign element in m. 26 (which otherwise belongs to hexachord I), and thus is treated as an accented element by its location on the downbeat, its dynamic preparation (by the preparatory crescendo), and the fact that it is the climax of the melodic contour.

Such delicate nuances are possible only because of the division of the set into specific segments that are audibly and structurally different from one another.

Voice Leading and Gap-Fill Procedures

The shaping forces described hitherto were all related to the set, its segments, and their motivic and formal functions. The question to be asked now is how the constant presence of the preconceived interval series (the set)

influences the notion of structural step progression. The primary law governing a smooth melodic line has always been associated with this structural line, which connects highest and lowest points of the melody and notes that stand out for such reasons as metric position. This line moves usually in either minor or major seconds. Will this scaffolding remain intact in a new twelve-tone environment?

Another basic force in almost any musical system is the tendency to create and fill structural gaps. Gaps are created by skipping over a structural note and thus creating melodic incompleteness that calls for a subsequent filling-in. What kind of "melodic completeness" is expected in a dodecaphonic piece? Is it the chromatic scale, the set's pitch-order or some other melodic pattern? Example 5-15 presents both the actual text (mm. 19-24) and its structural step-progression:

Example 5-15.

The image displays two staves of musical notation. The upper staff features a melodic line with a series of notes, some with accidentals (sharps and flats), and dynamic markings including 'cresc'. The lower staff shows a structural step-progression, consisting of a sequence of notes with various accidentals, and dynamic markings such as 'pdim. poco a poco... meno f'. Both staves are connected by a horizontal line at the top, indicating they represent the same time period (mm. 19-24).

We can conclude, then, that structural step-progression and gap-fill processes remain important devices for melodic construction in Sessions' music. His use of the twelve-tone system has not altered the perceptual need for the smallest intervals to connect between structural notes; the chromatic scale seems to represent the melodic completeness in this environment, and thus each structural gap that is wider than a semitone creates a gap that needs to be filled.

COMPARATIVE ANALYSIS AND CONCLUSIONS

Reexamination of Analytical Concepts

As was indicated in the introductory remarks, the purpose of this paper is to investigate the field of forces that shape nontonal melodic writing. It was suggested also that those forces, in spite of the difference in vocabulary and syntax, have much in common with the forces that shape tonal melodies. In stating his point, Edward T. Cone outlines the task:

I contend that, in a more generalized form, they [traditional analytical concepts] are still useful. Regardless of vocabulary, linear and chordal progressions still show striking analogies to older tonal procedures. analogies that are in turn reinforced by rhythmic structure. Only in those rare cases where the music tries to deny the principles of progression [total serialism, chance music] are such analogies completely lacking.¹

I have chosen the solo violin medium so that harmonic, timbral, and textural parameters would be of reduced importance, inviting attention to linear procedures: structural step-progressions, phrase construction, and motivic processes. The sample pieces in this study were specifically chosen so that a wide range of compositional

1. Edward T. Cone, "Analysis Today," Problems of Modern Music ed. Paul Henry Lang (New York: W. W. Norton, 1960), 39.

techniques would be covered, thus allowing the examination of new and old analytical concepts in various styles. The following is a point-by-point summary of the analytical work in the preceding chapters.

Structural Step-Progression

A structural step-progression is the line that connects the important points in a melody: higher notes in a high register, lower notes in a low register, as well as notes that stand out because of metric and rhythmic circumstances. The primary law of melodic construction is that a smooth and convincing melodic outline is achieved only when these important points form a progression in seconds. This progression in tonal music is based on a recognition of the fundamental setting², a stepwise motion of the diatonic scale degrees above a bass arpeggiation, which represents the harmonic progression from dominant to tonic. Although a fundamental setting, with its strict definition, does not exist for the pieces sampled, my conclusion from the analyses of all five pieces is that step-progression continues to play an important role in the construction of melodies in nontonal music. The ear tries to find the simplest, and thus clearest connection between pitches, and moving in steps remains the clearest, simplest progression. Structural steps in nontonal music move in a much freer way. Steps can be of either minor

2. As the Harvard Dictionary translates Schenker's Urlinie, 754.

or major seconds. In the latter case, it normally implies a filling-in (see below). The steps can be far from each other temporally and spatially, and surface activity may obscure their relative position. They retain their structural importance through the interplay of such surface elements as rhythmic accentuation, metric placement, and contour. Step-progression in nontonal music functions on a local level, moving upward and downwards toward a local center (Exx. 1-12, mm. 18-34, 78-96; 2-16, 2-17, 5-16). The structural line does not cover an entire piece, but the network of tone centers is an important element of order in an overall formal plan. Step-progression lines help to create such networks because they move toward the tone centers.

Gap-Fill Processes

There is a behavioral property to melodies as mutually distant as those found in Gregorian chants and Schoenberg: a leap in any direction is, in general, followed by a series of small steps in the opposite direction. The strong tendency for melody to behave in this manner relates to the human need for completion: a point of rest and resolution can be achieved only after the filling-in of the melodic gap.

Each musical system is characterized by melodic gaps of different sizes. Where pentatonic scales comprise the structural framework, major and minor thirds are part of the

scale, and thus leaps covering these intervals do not imply any filling-in. Where the diatonic scale is the norm (as in the tonal system), covering more than one scale degree can engender gap-fill processes. In chromatic music (as in the case of the pieces analyzed here), the use of the entire chromatic scale is the norm, and thus each gap larger than a minor second implies (if circumstances are appropriate, as in the case of structural step-progression) a fill-in process. A gap is experienced as filled in when, and only when, the entire chromatic material in this specific leap is made use of. The tendency of chromatic music to fill chromatic space is encapsulated by Charles Rosen:

Each work of music defines the space implied by the musical language that lies at its basis. The filling of the voids in a chromatic work is evidently as much a natural instinct as the recognition of the perfect triads of tonality. 'When you have written ten notes of the chromatic scale,' a composer once said to me, 'the temptation to add the remaining two is irresistible.'³

Gap-fill processes can be seen in Examples 1-12 (mm. 78-96), 2-5, 2-16, 3-2. In all four examples a leap in the melodic line is followed by a series of steps which fill the gap with chromatic material (see also p. 81 for discussion on chromatic saturation).

Motivic Construction

The unity of musical material and the potentiality for

3. Charles Rosen, Arnold Schoenberg (New Jersey: Princeton University Press, 1975), 61.

development and variation: these are two long-familiar principles of composition valid in both tonal and nontonal music. Motivic development is still a unifying force in both free nontonal, serial and dodecaphonic music. Motives in nontonal music (very much like those in tonal) tend to be brief, providing clear perceptible points of reference, to balance the effect of dense chromatic and rhythmic activity.

Motives in the free nontonal works (especially Perle and Ehrlich) are melodic/rhythmic units with a degree of closure necessary to differentiate them from nonmotivic material. In the dodecaphonic works (Zimmermann and Sessions) the set is divided into segments, and those segments chosen for motivic use are given emphasis through rhythmic framing, consistent contour, and judicious use of repetition.

Most motives subjected to analysis in this paper are constructed from minute intervallic cells. The single interval and the three-note cell acquire a high degree of importance in nontonal music; minute details of even the smallest structures have to be controlled in a system that doesn't have strict guidelines for pitch operations. In Perle's piece the seven-note motive (motive A) is divided into three submotives, which are used both independently and as a single unit; motive B is based entirely on one interval --the minor sixth. In Shifrin's piece, the entire motivic material (and eventually the entire movement) is based on a three-note cell--0 1 4. In Ehrlich's piece motive A

consists of minor seconds, and motive B of a perfect fifth and a minor third above it.

The need for a unifying, controlling cell is less urgent in a twelve-tone piece since the set controls both melodic and harmonic procedures. Even here, the perceptual need for short motives is apparent by the way Zimmermann and Sessions construct the inner structure of the set and by the way the set is handled. In Zimmermann's set, the minor sixth is a structural element (see Ex. 4-4) and only the third tetrachord (E-D-C-G#) becomes a recurrent motive. The motivic elements in Sessions' piece are vague and difficult to perceive because hexachordal pitch-content rather than pitch-order is the main compositional tool; the set is conceived more as a "harmonic" than a linear entity. That is, partially at least, the reason why additional motivic material (Exx. 5-8 and 5-9) is used.

Articulation and Phrase Construction

The move from the traditional syntactical norms of the tonal system to the still-experimental norms of nontonal music brings with it a tremendous change in all aspects of musical articulation and phrase construction: cadential formulas; antecedent-consequent relations; and preponderance of nonsymmetrical versus symmetrical phrases. But for all the changes in articulation and phrase construction, there remain patterns to which certain musical elements remain

subject. Rhythmic and melodic motives, repetitive processes, set transformation (in dodecaphonic music) and cadential processes are operative even in the absence of a traditional frame of reference:

If musical events are patterned at all, the laws of proximity, good continuation, closure, return and the like will operate, making it possible and likely that relationship will be understood as functional even in the absence of a set of traditionally established syntactical norms. This is because the human mind, searching for control through prediction, will discover implicative relationship whenever and wherever a modicum of redundancy exist.⁴

A tonal cadence is based on the interplay between harmony, meter, rhythm, and melody. The point of perfect closure is achieved when all parameters simultaneously reach a stable point--a point of completion and repose. The cadence will have less finality when only some of the parameters are enlisted as "punctuation marks." The abandonment of triadic harmony in the samples studied and the relative abandonment of steady meter and symmetrical periodic phrasing eliminated the viability of traditional cadential formulas but not of the cadential process itself. New formulas arise from the music.

A nontonal cadence is based to an ever greater extent on the interplay of many parameters. A stable point is reached when a given step-progression reaches a specific

4. Leonard B. Meyer, Music, The Arts and Ideas (Chicago: University of Chicago Press, 1967), 298.

goal--be it a local tone center or a climactic point in a contour. However, without reinforcement through rhythmic treatment--accentuation, prolongation, repetitive patterns and the like--it is unlikely that step-progression procedures would have sufficed to bring the phrases to closure.

Rhythmic closure is the main vehicle for cadential procedures. Rhythmic closure is achieved either by gradual prolongation of durations, slowing down of melodic and rhythmic activity, or by fermatas (Exx. 2-1, 3-1, 4-10).

Chromatic saturation is another gap-fill procedure that suggests analogies to articulative tonal procedures. Whereas, the tonal cadence uses the three main harmonic functions (subdominant, dominant, tonic) to cover all seven degrees of the diatonic scale and thus bring harmonic stability, the "voids" in nontonal music are filled and resolution is achieved only after the entire chromatic material is used.

The relation between chromatic saturation, phrase length, and degree of closure is best demonstrated in Ehrlich's Bashray, where the range of the chromatic space is determined by the open intervals of one motive, and the filling-in process is completed by the chromatic movement of the next motive. Closure is reached locally once a space is completely filled, thus allowing arrival at a stable point of chromatic saturation (see Ex. 3-2).

short, cellular elements, which are connected to each other as links in a long melodic chain, makes it possible to reorder individual links or to use one link in different melodic circumstances. In Perle's sonata, the first motive is divided into three cells, which are later used separately in different locations; in the dodecaphonic pieces (Zimmermann and Sessions), the set is divided into short segments (tetrachords and trichords) that are used both independently or as part of the complete set. This mobility of particles contributes to the above mentioned discontinuity of nontonal melodic lines.

Discontinuity is also the result of additive construction: a connection of phrases by way of contrast, rather than by smooth, transitional movement. In Sessions' sonata, for example (first movement mm. 1-29), successive phrases differ motivically, texturally, and rhythmically, bringing out a discontinuous, additive melodic line.

Tone Centers

The need for a structural differentiation between pitches in a basically decentralized system has led composers to seek new and modified ways of establishing tone centers. Local tone centers are used in all five pieces. In Perle's Sonata the two main tone centers (G and F) govern large portions of the piece, each one formally connected to a specific motive. In Shifrin's piece there is only one main

tone center which is established through repetition, registration, and gap-fill processes (see Exx. 2-5 to 2-12). This center becomes a climactic goal for structural step-progressions (Ex. 2-12). In Ehrlich's Bashrav tone centers are organized according to the cycle of fifths. In Zimmermann's Sonata the first note of the set becomes a tone center through a specific tetrachordal structure (Ex. 4-2). In Sessions' Sonata the one clear tone center (G) appears at the beginning and the end of the first movement where the entire set unfolds in a monophonic line. Elsewhere pitch and rhythmic activities are too dense to permit the establishment of distinct tone centers.

When tone centers are present, they are established by means of voice leading (structural step-progression), encircling devices (high and low leading tones, gap-fill processes), repetition of motivic segments, registration (focusing on a centric pitch through registral distribution), and different instrumental and timbral devices.

Reexamination of Analytical Tools

Linear Graphs and Reduction Processes

In the introductory remarks, we raised the question of adopting and applying traditional analytical tools, originally used in a tonal context, for nontonal music in general, and nontonal melody in particular. Linear graphs are used in tonal music to clarify structural step-progressions, to reveal polyphonic inner-voices (polyphonic melody), and to demonstrate long-range connections between specific notes. All these are goals quite conceivable for the nontonal melodic line as well. Thus, the use of linear graphs throughout the analyses turned out to be as necessary as it was appropriate.

Reduction processes are used in tonal music to discover higher levels of organizations. This process is accomplished in stages, reducing gradually the focus on surface events and emphasizing structural processes. The efficiency of such procedures for nontonal music (and particularly to nontonal melody) is limited. In contrast to tonal music, there is no fundamental line built around a fundamental harmonic unit, and there are no a priori structural notes (tonic, dominants) around which the melodic surface is woven. Pitches acquire their relative importance

in nontonal melody only through the interplay of such surface elements as rhythmic accentuation, metric placement, and contour. It is possible, therefore, to use reduction techniques in pieces where tone centers are clear and repetitive processes are an essential element (as in Perle's and Ehrlich's pieces). Use of reduction techniques becomes of questionable value in pieces where tone centers are ambiguous and repetitions are scarce (as in Shifrin's and Sessions' pieces). It was not feasible to use reduction techniques for the dodecaphonic works (Zimmermann and Sessions); the constant use of all twelve tones and the emphasis on pitch order, which is the basic premise of the system, makes it impossible to apply reduction techniques to these works.

APPENDIX

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LANDING LIGHTS--FOR A SYMPHONIC ORCHESTRA

by

MOSHE ZORMAN

A symphonic piece submitted to the Graduate Faculty in Music in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York.

1985

This manuscript has been read and accepted for the Graduate Faculty in Music in satisfaction of the dissertation requirement for the degree of Doctor in Philosophy. There is, in addition, a composition entitled "Landing Lights".

18 July 1985
date

Ar - W. M. M. S.
Chairman of Examining Committee

18 July 1985
date

James S. Jones
Executive Officer

Professor George Perle, Advisor

Professor Allan Atlas

Professor Joel Lester

Professor Sherman Van Solkema
Supervisory Committee

The City University of New York

MOSHE ZORMAN

LANDING LIGHTS

FOR SYMPHONIC ORCHESTRA

(1985)

INSTRUMENTATION

3 flutes (3rd also alto flute)

3 oboes (3rd also English horn)

2 clarinets

1 bass clarinet

2 bassoons

1 contrabassoon

violins 1

violins 2

violas

cellos

double basses

3 trumpets in Bb

4 horns

3 trombones

1 tuba

Harp

percussion: I snare drum; 3 tom-toms; cymbals; marimba.

(2 players) II tom-tom; 2 steel cymbals; II II; Tim-tom; Vibraphone

III tom-tom; 3 wood-blocks; 3 temple-blocks; 3 bongos; glockenspiel; xylophone.

ALL INSTRUMENTS NOTATED AT CONCERT PITCH

Handwritten musical score for a symphony orchestra. The score is written on a grand staff with multiple systems of staves. The instruments listed on the left are:

- Fl (Flute) 1, 2, 3
- ob (Oboe)
- Eng. Hn (English Horn)
- cl (Clarinet) 1, 2
- Bas. (Bassoon)
- con. (Contra Bassoon)
- Hr (Horn) 1, 2, 3, 4
- Trp (Trumpet) 1, 2, 3
- Trb (Trombone) 1, 2, 3
- Perc (Percussion) I, II, III
- Harp
- vi₁ (Violin I)
- vi₂ (Violin II)
- vla (Viola)
- vcl (Violoncello)
- B (Bass)

The score includes various musical notations such as notes, rests, dynamics (e.g., *mf*, *sf*, *pp*), and articulation marks. A tempo marking of $1=70$ is visible at the top left. The score is divided into measures by vertical bar lines.

Handwritten musical score for a symphony orchestra, page 2. The score includes staves for Flute (Fl.), Oboe (ob), English Horn (Eng. Hn.), Clarinet (cl), Bassoon (Bsn), and Cymbal (cym). The Flute part is heavily annotated with dynamics like 'ff', 'p', and 'pp', and includes a key signature change to one sharp (F#). The Oboe and English Horn parts also feature dynamic markings like 'p' and 'pp'. The Cymbal part has a 'pp' marking. The lower staves for Trumpet, Trombone, and strings are mostly blank.

Handwritten musical score for a symphony orchestra, page 5. The score includes staves for Flute (Fl), Oboe (ob), English Horn (eng. Hn), Clarinet (cl), Bassoon (bs), Bassoon (c. bs.), Horn (Hn), Trumpet (Tup), Trombone (Tub), Trombone (tub.), Violin (vi), Viola (vii), Violin (vln), Violin (vln), and Cello (C).

The score is written in a single system with multiple staves. The key signature is one flat (B-flat). The time signature is 4/4. The score includes various musical notations such as notes, rests, dynamics (p, sf), and articulation marks. A rehearsal mark (110) is present at the beginning of the first staff. The score is handwritten and appears to be a working draft.

Handwritten musical score for a symphony orchestra. The score is divided into four measures with time signatures $3/4$, $2/4$, and $3/4$. The instruments listed on the left are:

- Fl (Flute)
- Ob (Oboe)
- Cl (Clarinet)
- Bsn (Bassoon)
- Contra (Contrabassoon)
- Hrn (Horn)
- Trp (Trumpet)
- Trb (Trombone)
- Soco (Soprano Saxophone)
- vt I (Violin I)
- vt II (Violin II)
- vla (Viola)
- vcl (Violoncello)
- C (Cello)

The score includes various musical notations such as notes, rests, dynamics (e.g., pp , mp , f), and articulation marks. A section labeled "Solo" is present in the lower right, featuring a melodic line with triplets and slurs. The bottom right corner contains the sequence of numbers: $L13, L33, L33, L4$.

Handwritten musical score for a symphony orchestra, featuring staves for Flute (Fl), Oboe (ob), Clarinet (Cl), Bassoon (Bsn), Contrabassoon (Cmbn), Horns (Horn), Trumpets (Tupl), Trombones (Tbn), Harp (Harp), Violin I (vi I), Violin II (vi II), Viola (vla), Violoncello (vcl), and Bass (B). The score is divided into three measures. The first measure contains dense, rapid passages for the woodwinds and strings, with dynamic markings such as *f*, *mp*, and *fz*. The second measure continues this texture. The third measure features a change in tempo and dynamics, marked with *rit.* and *pp*, and includes a vocal line for Soprano (Sop) with the lyrics "Uc sop". The time signature is 3/4. A box containing the number "50" is located at the top center of the page.

Handwritten musical score for a full orchestra. The score is written on 25 staves, with instrument abbreviations on the left: Fl., Ob., Cl., Cor., Bsn., Hrn., Trpt., Trbn., Tuba, Perc., Pn., Str., Vln., Vla., Vcl., and C.

The score is in 3/4 time, indicated by a $\frac{3}{4}$ time signature at the top left. The key signature has one sharp (F#). The score is divided into three measures. The first measure contains complex rhythmic patterns and dynamics such as *f*, *mf*, and *ff*. The second measure continues these patterns with some rests. The third measure features a prominent crescendo leading to a fortissimo (*ff*) section, with some notes marked *rit.* (ritardando). The string section (Str.) has a *pp* (pianissimo) marking at the beginning of the first measure. The woodwinds and brass sections have various articulations and dynamics throughout. The percussion (Perc.) and piano (Pn.) parts are indicated with rhythmic notation and dynamics like *f* and *ff*. The strings (Vln., Vla., Vcl.) have a *pp* marking at the start of the first measure and a *rit.* marking at the start of the second measure. The conductor's part (C.) is at the bottom with a *p* marking.

4/4 3/4 2/4

Fl

ob

cl

Bsn

Hrn 1

Hrn 2

Hrn 3

Trp

Tbn 1

Tbn 2

Tbn 3

Perc I

Perc II

Perc III

Harp

vl I

vl II

vla

vcl

db

Handwritten musical score for a symphony orchestra, page 10. The score includes staves for Flute, Oboe, Clarinet, Bassoon, Horns (1-3), Trumpets, Trombones (1-3), Percussion (I-III), Harp, Violins (I, II), Viola, Violoncello, and Double Bass. The score is divided into three measures by vertical bar lines. The first measure is in 4/4 time, the second in 3/4, and the third in 2/4. The music is written in a key signature of one sharp (F#). The notation includes various rhythmic values, dynamics (p, f, sf, sfz), and articulation marks. The percussion part includes specific instructions for H.H. (Hand Drum) and Bgs. (Bongos). The string parts feature complex rhythmic patterns and dynamic markings.

Alto
Pia Mosso
♩ = 84

Handwritten musical score for a symphony orchestra, page 12. The score is written in 4/4 time and includes parts for Flute (Fl), Oboe (ob), Clarinet (cl), Bassoon (Bsn), Horns (Horn 1 and 2), Trumpets (Tpt), Trombones (Tbn), Cymbals (Cym), Percussion (Perc), Harp (Harp), Violins I (vi I), Violins II (vi II), Violas (vln), Cellos (vlc), and Double Basses (Cb). The music features complex rhythmic patterns, including sixteenth and thirty-second notes, and rests. Performance markings such as *Alto*, *Pia Mosso*, and *♩ = 84* are present. The score is divided into measures by vertical bar lines, with some measures containing multiple bar lines. The bottom right of the page includes the number "55" and the word "Pizzicato".

Handwritten musical score for the first system, featuring staves for Flute (Fl), Oboe (ob), Clarinet (cl), Violin I (vi I), Violin II (vi II), Viola (vla), and Violoncello (vlc). The notation includes various notes, rests, and dynamic markings such as *p* and *sempre*. A first ending bracket is present at the top of the Flute staff.

Handwritten musical score for the second system, featuring staves for Flute (Fl), Oboe (ob), Clarinet (cl), Bassoon (B. cl), Bassoon (BSn), Horns (Hns), Trumpets (Trpts), Trombones (Trbns), Violin II (vi II), Viola (vla), and Violoncello (vlc). The notation includes various notes, rests, and dynamic markings such as *p*, *mp*, and *f*. Time signatures of 3/4 and 4/4 are indicated. A section labeled "Sord." is present in the Trombone staff.

Handwritten musical score for a symphony orchestra. The score is written on multiple staves, including woodwinds (flute, oboe, clarinet, bassoon), strings (violin, viola, cello, double bass), and keyboard instruments (harp, piano). The time signature is 3/4. The key signature is B-flat major. The score includes various musical notations such as notes, rests, dynamics (pp, p, f), and articulation marks. There are also some handwritten annotations in the lower staves, possibly indicating performance instructions or corrections.

G.P.

Handwritten musical score for a symphony orchestra, page 16. The score is written on multiple staves for various instruments. The notation includes notes, rests, and dynamic markings such as *pp*, *ppp*, *sf*, and *smo.*. The instruments listed on the left side of the page are:


- Fl (Flute)
- Ob (Oboe)
- Cl (Clarinet)
- Bsn (Bassoon)
- Hrn (Horn)
- Trp (Trumpet)
- Tub 1 (Tuba 1)
- Tub 2 (Tuba 2)
- Percn (Percussion)
- Harp (Harp)
- Str (String section, including Violin I, Violin II, Viola, and Cello)

The score features complex rhythmic patterns and dynamic contrasts across the different sections. A box containing the number '90' is present at the top left of the first staff. The notation is dense, with many notes and rests, and includes various articulation marks and slurs.

Handwritten musical score for a symphony orchestra, page 17. The score is in 4/4 time and features the following instruments and parts:

- Flute (fl):** First staff with various notes and dynamics.
- Oboe (ob):** Second staff with notes and dynamics.
- Clarinet (cl):** Third staff with notes and dynamics.
- Bass Clarinet (B.cl):** Fourth staff with notes and dynamics.
- Bassoon (Bsn):** Fifth staff with notes and dynamics.
- Horn (Hr):** Sixth staff with notes and dynamics.
- Trumpet (Trp):** Seventh staff with notes and dynamics.
- Trombone (Tbn):** Eighth staff with notes and dynamics.
- Percussion (Perc):** Ninth staff with notes and dynamics.
- Harmonica (Harp):** Tenth staff with notes and dynamics.
- Violin I (vi):** Eleventh staff with notes and dynamics.
- Violin II (vi):** Twelfth staff with notes and dynamics.
- Viola (vla):** Thirteenth staff with notes and dynamics.
- Violoncello (vl):** Fourteenth staff with notes and dynamics.
- Bass (B):** Fifteenth staff with notes and dynamics.

The score includes various musical notations such as notes, rests, slurs, and dynamics (e.g., *pp*, *mp*, *mf*, *ff*). There are also some handwritten annotations and markings throughout the score.

Handwritten musical score for a symphony orchestra, page 19. The score includes staves for Flute (Fl), Oboe (ob), Clarinet (cl), Bassoon (B.C.), Bassoon (Bs.), Horns (Hrns), Trumpet (Trp), Trombone (Tnb), Trombone (Tnb.), Percussion (Perc), Harp (Harp), Violin I (vi), Violin II (vi), Viola (va), Cello (vc), and Double Bass (B). The notation is handwritten and includes various musical symbols such as notes, rests, slurs, and dynamic markings like *f* and *p*. There are some corrections and annotations in the upper staves, including a circled '1+2+3' and some scribbled-out notes. The bottom of the page features a copyright notice:  **SUZUKI**® CM-20/2

Handwritten musical score for page 20, featuring the following instruments and parts:

- Flute (fl)**: Handwritten notes in the first measure.
- Oboe (ob)**: Empty staff.
- Clarinet (cl)**: Handwritten notes with dynamic markings *p* and *f*.
- Bassoon (Bsn)**: Handwritten notes with dynamic marking *p*.
- Horns (Hrn)**: Empty staff.
- Trumpets (Tpts)**: Handwritten notes with dynamic marking *ff*.
- Trombones (Tbn)**: Empty staff.
- Percussion (Perc)**: Empty staff.
- Harp (Harp)**: Handwritten notes with dynamic marking *mf*.
- Violins I (vi I)**: Handwritten notes with dynamic marking *mf*.
- Violins II (vi II)**: Handwritten notes with dynamic marking *mf*.
- Viola (vla)**: Empty staff.
- Violoncello (vcl)**: Handwritten notes with dynamic marking *mf*.
- Bass (B)**: Handwritten notes with dynamic marking *mf*.

Fl
ob
cl
B.s.
Bsn
Hns
Tnps
Tb
Tub.
Perc.
Harp
vi I
vi II
vla
vcl
Cb

3/8 4/4 *Pim meno Mosso*
♩ = 58

Fl
 Ob
 Cl
 E. Cl
 Bsn
 Hrn
 Trp
 Tuba
 Tuba
 Perc
 Harp

Pim meno Mosso
(♩ = 58)

Handwritten musical score for various instruments including Flute, Oboe, Clarinet, Bassoon, Horn, Trumpet, Tuba, Percussion, and Harp. The score includes dynamic markings such as *ff*, *p*, and *pp*, and features complex rhythmic patterns and articulation marks.

This is a handwritten musical score for a symphony orchestra. The score is written on a grand staff consisting of 18 staves. The instruments are listed on the right side of the page: Flute (Fl.), Oboe (Ob.), Clarinet (Cl.), Bassoon (Bsn.), Trumpet (Tpt.), Trombone (Tbn.), Horn (Hrn.), Percussion (Perc.), Harp (Harp), Violin I (Vln I), Violin II (Vln II), Viola (Vla), and Cello (Vcl). The score is divided into five measures. The first measure is in 4/4 time, the second in 4/4, the third in 3/4, the fourth in 4/4, and the fifth in 3/4. The first two staves (Flute and Oboe) contain handwritten musical notation, including notes, rests, and dynamic markings such as 'p' (piano) and 'f' (forte). The Harp part is also indicated with 'Harp' and 'p' markings. The rest of the staves are empty, indicating that the other instruments have no parts in this section. The score is written in black ink on white paper.

This is a handwritten musical score for a string quartet and woodwinds. The score is organized into three systems, each containing five staves. The instruments are labeled on the left as follows:

- System 1: Violin I (vli), Violin II (vlii), Viola (vla), Violoncello (vle), and Bassoon (B).
- System 2: Violin I (vli), Violin II (vlii), Viola (vla), Violoncello (vle), and Bassoon (B).
- System 3: Violin I (vli), Violin II (vlii), Viola (vla), Violoncello (vle), and Bassoon (B).

The score includes various musical notations such as notes, rests, and dynamic markings. Key features include:

- Tempo and Meter:** The first system starts with a tempo marking of 3/4 . The second system includes a tempo change to 5/4 and a meter change to 6/8 . The third system includes a tempo change to 3/4 .
- Dynamic Markings:** mp (mezzo-piano) and pmp (pianissimo) are used throughout the score.
- Articulation:** mf (mezzo-forte) and mbff (mezzo-basso-fortissimo) are present.
- Performance Indications:** +be (breathes) and +b (bends) are used for woodwind parts.
- Rehearsal Marks:** Numbers 24, 27, 31, 34, 37, 41, 44, 47, 51, 54, 57, 61, 64, 67, 71, 74, 77, 81, 84, 87, 91, 94, 97, 101, 104, 107, 111, 114, 117, 121, 124, 127, 131, 134, 137, 141, 144, 147, 151, 154, 157, 161, 164, 167, 171, 174, 177, 181, 184, 187, 191, 194, 197, 201, 204, 207, 211, 214, 217, 221, 224, 227, 231, 234, 237, 241, 244, 247, 251, 254, 257, 261, 264, 267, 271, 274, 277, 281, 284, 287, 291, 294, 297, 301, 304, 307, 311, 314, 317, 321, 324, 327, 331, 334, 337, 341, 344, 347, 351, 354, 357, 361, 364, 367, 371, 374, 377, 381, 384, 387, 391, 394, 397, 401, 404, 407, 411, 414, 417, 421, 424, 427, 431, 434, 437, 441, 444, 447, 451, 454, 457, 461, 464, 467, 471, 474, 477, 481, 484, 487, 491, 494, 497, 501, 504, 507, 511, 514, 517, 521, 524, 527, 531, 534, 537, 541, 544, 547, 551, 554, 557, 561, 564, 567, 571, 574, 577, 581, 584, 587, 591, 594, 597, 601, 604, 607, 611, 614, 617, 621, 624, 627, 631, 634, 637, 641, 644, 647, 651, 654, 657, 661, 664, 667, 671, 674, 677, 681, 684, 687, 691, 694, 697, 701, 704, 707, 711, 714, 717, 721, 724, 727, 731, 734, 737, 741, 744, 747, 751, 754, 757, 761, 764, 767, 771, 774, 777, 781, 784, 787, 791, 794, 797, 801, 804, 807, 811, 814, 817, 821, 824, 827, 831, 834, 837, 841, 844, 847, 851, 854, 857, 861, 864, 867, 871, 874, 877, 881, 884, 887, 891, 894, 897, 901, 904, 907, 911, 914, 917, 921, 924, 927, 931, 934, 937, 941, 944, 947, 951, 954, 957, 961, 964, 967, 971, 974, 977, 981, 984, 987, 991, 994, 997, 1001, 1004, 1007, 1011, 1014, 1017, 1021, 1024, 1027, 1031, 1034, 1037, 1041, 1044, 1047, 1051, 1054, 1057, 1061, 1064, 1067, 1071, 1074, 1077, 1081, 1084, 1087, 1091, 1094, 1097, 1101, 1104, 1107, 1111, 1114, 1117, 1121, 1124, 1127, 1131, 1134, 1137, 1141, 1144, 1147, 1151, 1154, 1157, 1161, 1164, 1167, 1171, 1174, 1177, 1181, 1184, 1187, 1191, 1194, 1197, 1201, 1204, 1207, 1211, 1214, 1217, 1221, 1224, 1227, 1231, 1234, 1237, 1241, 1244, 1247, 1251, 1254, 1257, 1261, 1264, 1267, 1271, 1274, 1277, 1281, 1284, 1287, 1291, 1294, 1297, 1301, 1304, 1307, 1311, 1314, 1317, 1321, 1324, 1327, 1331, 1334, 1337, 1341, 1344, 1347, 1351, 1354, 1357, 1361, 1364, 1367, 1371, 1374, 1377, 1381, 1384, 1387, 1391, 1394, 1397, 1401, 1404, 1407, 1411, 1414, 1417, 1421, 1424, 1427, 1431, 1434, 1437, 1441, 1444, 1447, 1451, 1454, 1457, 1461, 1464, 1467, 1471, 1474, 1477, 1481, 1484, 1487, 1491, 1494, 1497, 1501, 1504, 1507, 1511, 1514, 1517, 1521, 1524, 1527, 1531, 1534, 1537, 1541, 1544, 1547, 1551, 1554, 1557, 1561, 1564, 1567, 1571, 1574, 1577, 1581, 1584, 1587, 1591, 1594, 1597, 1601, 1604, 1607, 1611, 1614, 1617, 1621, 1624, 1627, 1631, 1634, 1637, 1641, 1644, 1647, 1651, 1654, 1657, 1661, 1664, 1667, 1671, 1674, 1677, 1681, 1684, 1687, 1691, 1694, 1697, 1701, 1704, 1707, 1711, 1714, 1717, 1721, 1724, 1727, 1731, 1734, 1737, 1741, 1744, 1747, 1751, 1754, 1757, 1761, 1764, 1767, 1771, 1774, 1777, 1781, 1784, 1787, 1791, 1794, 1797, 1801, 1804, 1807, 1811, 1814, 1817, 1821, 1824, 1827, 1831, 1834, 1837, 1841, 1844, 1847, 1851, 1854, 1857, 1861, 1864, 1867, 1871, 1874, 1877, 1881, 1884, 1887, 1891, 1894, 1897, 1901, 1904, 1907, 1911, 1914, 1917, 1921, 1924, 1927, 1931, 1934, 1937, 1941, 1944, 1947, 1951, 1954, 1957, 1961, 1964, 1967, 1971, 1974, 1977, 1981, 1984, 1987, 1991, 1994, 1997, 2001, 2004, 2007, 2011, 2014, 2017, 2021, 2024, 2027, 2031, 2034, 2037, 2041, 2044, 2047, 2051, 2054, 2057, 2061, 2064, 2067, 2071, 2074, 2077, 2081, 2084, 2087, 2091, 2094, 2097, 2101, 2104, 2107, 2111, 2114, 2117, 2121, 2124, 2127, 2131, 2134, 2137, 2141, 2144, 2147, 2151, 2154, 2157, 2161, 2164, 2167, 2171, 2174, 2177, 2181, 2184, 2187, 2191, 2194, 2197, 2201, 2204, 2207, 2211, 2214, 2217, 2221, 2224, 2227, 2231, 2234, 2237, 2241, 2244, 2247, 2251, 2254, 2257, 2261, 2264, 2267, 2271, 2274, 2277, 2281, 2284, 2287, 2291, 2294, 2297, 2301, 2304, 2307, 2311, 2314, 2317, 2321, 2324, 2327, 2331, 2334, 2337, 2341, 2344, 2347, 2351, 2354, 2357, 2361, 2364, 2367, 2371, 2374, 2377, 2381, 2384, 2387, 2391, 2394, 2397, 2401, 2404, 2407, 2411, 2414, 2417, 2421, 2424, 2427, 2431, 2434, 2437, 2441, 2444, 2447, 2451, 2454, 2457, 2461, 2464, 2467, 2471, 2474, 2477, 2481, 2484, 2487, 2491, 2494, 2497, 2501, 2504, 2507, 2511, 2514, 2517, 2521, 2524, 2527, 2531, 2534, 2537, 2541, 2544, 2547, 2551, 2554, 2557, 2561, 2564, 2567, 2571, 2574, 2577, 2581, 2584, 2587, 2591, 2594, 2597, 2601, 2604, 2607, 2611, 2614, 2617, 2621, 2624, 2627, 2631, 2634, 2637, 2641, 2644, 2647, 2651, 2654, 2657, 2661, 2664, 2667, 2671, 2674, 2677, 2681, 2684, 2687, 2691, 2694, 2697, 2701, 2704, 2707, 2711, 2714, 2717, 2721, 2724, 2727, 2731, 2734, 2737, 2741, 2744, 2747, 2751, 2754, 2757, 2761, 2764, 2767, 2771, 2774, 2777, 2781, 2784, 2787, 2791, 2794, 2797, 2801, 2804, 2807, 2811, 2814, 2817, 2821, 2824, 2827, 2831, 2834, 2837, 2841, 2844, 2847, 2851, 2854, 2857, 2861, 2864, 2867, 2871, 2874, 2877, 2881, 2884, 2887, 2891, 2894, 2897, 2901, 2904, 2907, 2911, 2914, 2917, 2921, 2924, 2927, 2931, 2934, 2937, 2941, 2944, 2947, 2951, 2954, 2957, 2961, 2964, 2967, 2971, 2974, 2977, 2981, 2984, 2987, 2991, 2994, 2997, 3001, 3004, 3007, 3011, 3014, 3017, 3021, 3024, 3027, 3031, 3034, 3037, 3041, 3044, 3047, 3051, 3054, 3057, 3061, 3064, 3067, 3071, 3074, 3077, 3081, 3084, 3087, 3091, 3094, 3097, 3101, 3104, 3107, 3111, 3114, 3117, 3121, 3124, 3127, 3131, 3134, 3137, 3141, 3144, 3147, 3151, 3154, 3157, 3161, 3164, 3167, 3171, 3174, 3177, 3181, 3184, 3187, 3191, 3194, 3197, 3201, 3204, 3207, 3211, 3214, 3217, 3221, 3224, 3227, 3231, 3234, 3237, 3241, 3244, 3247, 3251, 3254, 3257, 3261, 3264, 3267, 3271, 3274, 3277, 3281, 3284, 3287, 3291, 3294, 3297, 3301, 3304, 3307, 3311, 3314, 3317, 3321, 3324, 3327, 3331, 3334, 3337, 3341, 3344, 3347, 3351, 3354, 3357, 3361, 3364, 3367, 3371, 3374, 3377, 3381, 3384, 3387, 3391, 3394, 3397, 3401, 3404, 3407, 3411, 3414, 3417, 3421, 3424, 3427, 3431, 3434, 3437, 3441, 3444, 3447, 3451, 3454, 3457, 3461, 3464, 3467, 3471, 3474, 3477, 3481, 3484, 3487, 3491, 3494, 3497, 3501, 3504, 3507, 3511, 3514, 3517, 3521, 3524, 3527, 3531, 3534, 3537, 3541, 3544, 3547, 3551, 3554, 3557, 3561, 3564, 3567, 3571, 3574, 3577, 3581, 3584, 3587, 3591, 3594, 3597, 3601, 3604, 3607, 3611, 3614, 3617, 3621, 3624, 3627, 3631, 3634, 3637, 3641, 3644, 3647, 3651, 3654, 3657, 3661, 3664, 3667, 3671, 3674, 3677, 3681, 3684, 3687, 3691, 3694, 3697, 3701, 3704, 3707, 3711, 3714, 3717, 3721, 3724, 3727, 3731, 3734, 3737, 3741, 3744, 3747, 3751, 3754, 3757, 3761, 3764, 3767, 3771, 3774, 3777, 3781, 3784, 3787, 3791, 3794, 3797, 3801, 3804, 3807, 3811, 3814, 3817, 3821, 3824, 3827, 3831, 3834, 3837, 3841, 3844, 3847, 3851, 3854, 3857, 3861, 3864, 3867, 3871, 3874, 3877, 3881, 3884, 3887, 3891, 3894, 3897, 3901, 3904, 3907, 3911, 3914, 3917, 3921, 3924, 3927, 3931, 3934, 3937, 3941, 3944, 3947, 3951, 3954, 3957, 3961, 3964, 3967, 3971, 3974, 3977, 3981, 3984, 3987, 3991, 3994, 3997, 4001, 4004, 4007, 4011, 4014, 4017, 4021, 4024, 4027, 4031, 4034, 4037, 4041, 4044, 4047, 4051, 4054, 4057, 4061, 4064, 4067, 4071, 4074, 4077, 4081, 4084, 4087, 4091, 4094, 4097, 4101, 4104, 4107, 4111, 4114, 4117, 4121, 4124, 4127, 4131, 4134, 4137, 4141, 4144, 4147, 4151, 4154, 4157, 4161, 4164, 4167, 4171, 4174, 4177, 4181, 4184, 4187, 4191, 4194, 4197, 4201, 4204, 4207, 4211, 4214, 4217, 4221, 4224, 4227, 4231, 4234, 4237, 4241, 4244, 4247, 4251, 4254, 4257, 4261, 4264, 4267, 4271, 4274, 4277, 4281, 4284, 4287, 4291, 4294, 4297, 4301, 4304, 4307, 4311, 4314, 4317, 4321, 4324, 4327, 4331, 4334, 4337, 4341, 4344, 4347, 4351, 4354, 4357, 4361, 4364, 4367, 4371, 4374, 4377, 4381, 4384, 4387, 4391, 4394, 4397, 4401, 4404, 4407, 4411, 4414, 4417, 4421, 4424, 4427, 4431, 4434, 4437, 4441, 4444, 4447, 4451, 4454, 4457, 4461, 4464, 4467, 4471, 4474, 4477, 4481, 4484, 4487, 4491, 4494, 4497, 4501, 4504, 4507, 4511, 4514, 4517, 4521, 4524, 4527, 4531, 4534, 4537, 4541, 4544, 4547, 4551, 4554, 4557, 4561, 4564, 4567, 4571, 4574, 4577, 4581, 4584, 4587, 4591, 4594, 4597, 4601, 4604, 4607, 4611, 4614, 4617, 4621, 4624, 4627, 4631, 4634, 4637, 4641, 4644, 4647, 4651, 4654, 4657, 4661, 4664, 4667, 4671, 4674, 4677, 4681, 4684, 4687, 4691, 4694, 4697, 4701, 4704, 4707, 4711, 4714, 4717, 4721, 4724, 4727, 4731, 4734, 4737, 4741, 4744, 4747, 4751, 4754, 4757, 4761, 4764, 4767, 4771, 4774, 4777, 4781, 4784, 4787, 4791, 4794, 4797, 4801, 4804, 4807, 4811, 4814, 4817, 4821, 4824, 4827, 4831, 4834, 4837, 4841, 4844, 4847, 4851, 4854, 4857, 4861, 4864, 4867, 4871, 4874, 4877, 4881, 4884, 4887, 4891, 4894, 4897, 4901, 4904, 4907, 4911, 4914, 4917, 4921, 4924, 4927, 4931, 4934, 4937, 4941, 4944, 4947, 4951, 4954, 4957, 4961, 4964, 4967, 4971, 4974, 4977, 4981, 4984, 4987, 4991, 4994, 4997, 5001, 5004, 5007, 5011, 5014, 5017, 5021, 5024, 5027, 5031, 5034, 5037, 5041, 5044, 5047, 5051, 5054, 5057, 5061, 5064, 5067, 5071, 5074, 5077, 5081, 5084, 5087, 5091, 5094, 5097, 5101, 5104, 5107, 5111, 5114, 5117, 5121, 5124, 5127, 5131, 5134, 5137, 5141, 5144, 5147, 5151, 5154, 5157, 5161, 5164, 5167, 5171, 5174, 5177, 5181, 5184, 5187, 5191, 5194, 5197, 5201, 5204, 5207, 5211, 5214, 5217, 5221, 5224, 5227, 5231, 5234, 5237, 5241, 5244, 5247, 5251, 5254, 5257, 5261, 5264, 5267, 5271, 5274, 5277, 5281, 5284, 5287, 5291, 5294, 5297, 5301, 5304, 5307, 5311, 5314, 5317, 5321, 5324, 5327, 5331, 5334, 5337, 5341, 5344, 5347, 5351, 5354, 5357, 5361, 5364, 5367, 5371, 5374, 5377, 5381, 5384, 5387, 5391, 5394, 5397, 5401, 5404, 5407, 5411, 5414, 5417, 5421, 5424, 5427, 5431, 5434, 5437, 5441, 5444, 5447, 5451, 5454, 5457, 5461, 5464, 5467, 5471, 5474, 5477, 5481, 5484, 5487, 5491, 5494, 5497, 5501, 5504, 5507, 5511, 5514, 5517, 5521, 5524, 5527, 5531, 5534, 5537, 5541, 5544, 5547, 5551, 5554, 5557, 5561, 5564, 5567, 5571, 5574, 5577, 5581, 5584, 5587, 5591, 5594, 5597, 5601, 5604, 5607, 5611, 5614, 5617, 5621, 5624, 5627, 5631, 5634, 5637, 5641, 5644, 5647, 5651, 5654, 5657, 5661, 5664, 5667, 5671, 5674, 5677, 5681, 5684, 5687, 5691, 5694, 5697, 5701, 5704, 5707, 5711, 5714, 5717, 5721, 5724, 5727, 5731, 5734, 5737, 5741, 5744, 5747, 5751, 5754, 5757, 5761, 5764, 5767, 5771, 5774, 5777, 5781, 5784, 5787, 5791, 5794, 5797, 5801, 5804, 5807, 5811, 5814, 5817, 5821, 5824, 5827, 5831, 5834, 5837, 5841, 5844, 5847, 5851, 5854, 5857, 5861, 5864, 5867, 5871, 5874, 5877, 5881, 5884, 5887, 5891, 5894, 5897, 5901, 5904, 5907, 5911, 5914, 5917, 5921, 5924, 5927, 5931, 5934, 5937, 5941, 5944, 5947, 5951, 5954, 5957, 5961, 5964, 5967, 5971, 5974, 5977, 5981, 5984, 5987, 5991, 5994, 5997, 6001, 6004, 6007, 6011, 6014, 6017, 6021, 6024, 6027, 6031, 6034, 6037, 6041, 6044, 6047, 6051, 6054, 6057, 6061, 6064, 6067, 6071, 6074, 6077, 6081, 6084, 6087, 6091, 6094, 6097, 6101, 6104, 6107, 6111, 6114, 6117, 6121, 6124, 6127, 6131, 6134, 6137, 6141, 6144, 6147, 6151, 6154, 6157, 6161, 6164, 6167, 6171, 6174, 6177, 6181, 6184, 6187, 6191, 6194, 6197, 6201, 6204, 6207, 6211, 6214, 6217, 6221, 6224, 6227, 6231, 6234, 6237, 6241, 6244, 6247, 6251, 6254, 6257, 6261, 6264, 6267, 6271, 6274, 6277, 6281, 6284, 6287, 6291, 6294, 6297, 6301, 6304, 6307, 6311, 6314, 6317, 6321, 6324, 6327, 6331, 6334, 6337, 6341, 6344, 6347, 6351, 6354, 6357, 6361, 6364, 6367, 6371, 6374, 6377, 6381, 6384, 6387, 6391, 6394, 6397, 6401, 6404, 6407, 6411, 6414, 6417, 6421, 6424, 6427, 6431, 6434, 6437, 6441, 6444, 6447, 6451, 6454, 6457, 6461, 6464, 6467, 6471, 6474, 6477, 6481, 6484, 6487, 6491, 6494, 6497, 6501, 6504, 6507, 6511, 6514, 6517, 6521, 6524, 6527, 6531, 6534, 6537, 6541, 6544, 6547, 6551, 6554, 6557, 6561, 6564, 6567, 6571, 6574, 6577, 6581, 6584, 6587, 6591, 6594, 6597, 6601, 6604, 6607, 6611, 6614, 6617, 6621, 6624, 6627, 6631, 6634, 6637, 6641, 6644, 6647, 6651, 6654, 6657, 6661, 6664, 6667, 6671, 6674, 6677, 6681, 6684, 6687, 6691, 6694, 6697, 6701, 6704, 6707, 6711, 6714, 6717, 6721, 6724, 6727, 6731, 6734, 6737, 6741, 6744, 6747, 6751, 6754, 6757, 6761, 6764, 6767, 6771, 6774, 6777, 6781, 6784, 6787, 6791, 6794, 6797, 6801, 6804,

Handwritten musical score for the first system, measures 17-21. The system includes staves for Violin I (vi I), Violin II (vi II), Viola (vla), Violoncello (vcl), and Bass (B). The time signature is 4/4. A box labeled "160" is present above the first measure. The key signature has two sharps (F# and C#). The first measure is marked with a dynamic of *p*. The notation includes various rhythmic values, accidentals, and phrasing slurs.

Handwritten musical score for the second system, measures 22-26. The system includes staves for Violin I (vi I), Violin II (vi II), Viola (vla), Violoncello (vcl), and Bass (B). The time signature is 4/4. A box labeled "160" is present above the first measure. The key signature has two sharps (F# and C#). The first measure is marked with a dynamic of *pp*. The notation includes various rhythmic values, accidentals, and phrasing slurs.

Handwritten musical score for the third system, measures 27-31. The system includes staves for Violin I (vi I), Viola (vla), Violoncello (vcl), and Bass (B). The time signature is 4/4. A box labeled "170" is present above the first measure. The key signature has two sharps (F# and C#). The notation includes various rhythmic values, accidentals, and phrasing slurs.

Handwritten musical score for the first system, featuring staves for Violin I (vl1), Violin II (vl2), Viola (vla), Violoncello (vlc), and Bass (B). The score includes complex rhythmic patterns and accidentals.

Handwritten musical score for the second system, featuring staves for Violin I (vl1), Violin II (vl2), Viola (vla), Violoncello (vlc), and Bass (B). This system contains detailed musical notation with various dynamics and articulations.

Handwritten musical score for the third system, featuring staves for Violin I (vl1), Violin II (vl2), Viola (vla), Violoncello (vlc), and Bass (B). The notation includes complex rhythmic figures and dynamic markings.

3/4 ♯ = 76

4/4

27

Fl.

Ob.

Cl.

Bass.

Bon.

Contra B.

Horns 1, 2, 3, 4

Violin I

Violin II

Viola

Violoncello

Contrabass

Handwritten musical score for orchestra, page 27. The score includes staves for Flute, Oboe, Clarinet, Bassoon, Horns (1-4), Violin I, Violin II, Viola, Violoncello, and Contrabass. The music is in 3/4 time with a key signature of one sharp (F#). The tempo is marked as ♯ = 76. The score shows a complex arrangement with various dynamics and articulations.

Handwritten musical score for page 28. The score is divided into three measures with time signatures $3/4$, $5/4$, and $3/4$. The first measure is marked with a box containing the number 200. The instruments listed on the left are:

- Flute (Fl)
- Clarinet (cl)
- Clarinet in E-flat (cl \flat)
- Euphonium (Eup)
- Trumpet in C (C. Tr.)
- Horns (Hns)
- Violin I (vI)
- Violin II (vII)
- Viola (vA)
- Violoncello (vC)
- Bass (B)

The score includes various musical notations such as notes, rests, and dynamic markings like *mp* and *p*. The Horns section is mostly empty, with some faint markings. The lower sections (Violins, Viola, Cello, Bass) are also mostly empty, with some faint markings. The time signature changes are indicated by vertical lines and the handwritten time signatures above the staff.

Handwritten musical score for a symphony orchestra, page 29. The score includes staves for Flute (Fl), Oboe (ob), Clarinet (cl), Bassoon (Bsn), Horns (Hns), Violin I (vi), Violin II (vii), Viola (vla), Violoncello (vcl), and Bass (B). The music is written in 3/4 time, with a key signature of one flat (B-flat major or D minor). The score features various musical notations including notes, rests, dynamics (p, f), and articulation marks. A boxed number '210' is present at the top of the page. The Flute part begins with a 4/4 time signature, which changes to 3/4. The Oboe part has a 3/4 time signature. The Bassoon part has a 3/4 time signature. The Horns part has a 3/4 time signature. The Violin I part has a 3/4 time signature. The Violin II part has a 3/4 time signature. The Viola part has a 3/4 time signature. The Violoncello part has a 3/4 time signature. The Bass part has a 3/4 time signature.

Handwritten musical score for a symphony orchestra. The score is written on multiple staves, including Flute (Fl), Oboe (ob), Clarinet (cl), Bassoon (Bsn), Horn (Hn), Trumpet (Trp), Trombone (Tbn), Violin I (vln I), Violin II (vln II), Viola (vln), Violoncello (vcl), and Double Bass (B). The score includes various musical notations such as notes, rests, and dynamic markings. A boxed section at the top right contains the number '220' and the fraction '3/4'. The bottom left corner features the logo 'F. T. M. M. CM-24/2'.

3/4 4/4 3/4 4/4 2/4

Fl

ob

cl

cl

Es

cor

Hr

Trp

Tub

trb

vi

vi

va

vc

c

Handwritten musical score for a symphony orchestra, page 32. The score is divided into four measures with time signatures $2/4$, $3/8$, $4/4$, and $5/4$.

Instrumentation:

- Flute (Fl)
- Oboe (Ob)
- Clarinet (Cl)
- Bassoon (Bsn)
- Cor Anglais (C. Eng.)
- Horn (Hrns)
- Trumpet (Tnp)
- Trombone (Tbn)
- Violin I (vln I)
- Violin II (vln II)
- Viola (vln)
- Cello (vcl)
- Double Bass (Cb)

Key Features:

- Flute:** Starts with a dynamic marking of *ff* in the first measure.
- Woodwinds:** Oboe, Clarinet, Bassoon, and Cor Anglais have complex melodic lines with various articulations and dynamics.
- Horns:** Horns 1 and 2 play rhythmic patterns, often with accents.
- Strings:** Violins, Viola, Cello, and Double Bass play sustained chords and rhythmic accompaniment. Dynamics range from *pp* to *ff*.
- Tempo/Style:** The score includes various markings such as *mf*, *f*, *ff*, *pp*, *rit.*, and *dim.*.

Handwritten musical score for a band, page 33. The score includes staves for Flute (Fl), Oboe (ob), Clarinet (cl), Bassoon (B.S.), Horns (Horns), Trumpet (Tup), Trombone (Tub), Drums (Drum), and various string instruments (violin, viola, cello, double bass). The score is divided into measures with various time signatures (3/4, 2/4) and dynamic markings (f, sf). The notation includes notes, rests, and articulation marks.

240/4

3/4

34

Handwritten musical score for a symphony orchestra, page 34. The score is written in 3/4 time and includes parts for Flute (Fl), Oboe (ob), Clarinet (cl), Bassoon (Bsn), Horns (Hns), Trumpets (Trp), Trombones (Tbn), Violins (vl), Viola (vln), Violoncello (vcl), and Double Bass (Cb). The score is divided into measures, with various musical notations including notes, rests, and dynamic markings such as *p* (piano) and *f* (forte). The Flute part begins with a *2* marking. The Oboe part has a *p* marking. The Clarinet part has a *pp* marking. The Bassoon part has a *p* marking. The Horns part has a *3+4* marking. The Violins part has a *5* marking. The Viola part has a *3* marking. The Violoncello part has a *5* marking. The Double Bass part has a *5* marking. The score is written on a system of staves, with the Flute part at the top and the Double Bass part at the bottom. The page number 34 is in the top right corner. The time signature 3/4 is in the top center. The rehearsal mark 240/4 is in the top left corner.

Handwritten musical score for a symphony orchestra, page 35. The score includes staves for Flute (Fl), Oboe (ob), Clarinet (cl), Bassoon (Bsn), Horns (Hrn), Trumpets (Tup), Trombones (Tbn), Violins (vln), Viola (vla), and Cello (vcl). The score features complex rhythmic patterns, dynamic markings like 'p' and 'f', and time signature changes from 2/4 to 3/4. The notation is dense and includes various musical symbols such as accents, slurs, and articulation marks.

Handwritten musical score for a symphony orchestra. The score is arranged in systems with the following instruments listed on the left:

- Fl
- Ob
- Cl
- B.c.l
- Bsn
- C.B.
- Hr
- Trp
- Tuba
- Violins I (vli)
- Violins II (vli)
- Violas (vli)
- Celli (vli)
- Bass (B)

Key features of the score include:

- A rehearsal mark **250** in a box at the top left.
- Dynamic markings such as *pp*, *pp molto*, *pp stacc*, *pp stacc*, *mp*, and *pp*.
- Articulation markings like *stacc* and *stacc*.
- Handwritten notes and corrections throughout the score.
- A copyright notice at the bottom left: **NYRC CM-24/2**.

This is a handwritten musical score for a full orchestra, spanning 37 measures. The score is organized into several systems of staves, each labeled with an instrument or section on the left. The instruments listed are Flute (Fl), Oboe (ob), Clarinet (cl), Bassoon (Bsn), Horns (Hns), Trumpet (Trp), Trombone (Tbn), Violin I (vl I), Violin II (vl II), Viola (vla), Violoncello (vlc), and Double Bass (B). The score begins with a 2/4 time signature, which changes to 3/4 and then 4/4. The music is written in a key signature of one flat (B-flat major or D minor). The notation includes various rhythmic values, accidentals, and dynamic markings such as *mf* and *ff*. The woodwind and brass sections feature complex rhythmic patterns, often with triplets and sixteenth notes. The string section provides a steady accompaniment with eighth and sixteenth notes. The percussion part includes a snare drum and cymbal, with specific rhythmic patterns. The score concludes with a double bar line and repeat signs.

Handwritten musical score for a symphony orchestra, page 38. The score is written in 4/4 time and includes parts for Flute (Fl), Oboe (ob), Clarinet (cl), Bassoon (Bsn), Horn (Hrn), Trumpet (Tup), Trombone (Tbn), Percussion (Perc), Violin I (vln I), Violin II (vln II), Viola (vln), Violoncello (vcl), and Double Bass (Cb).

Key features of the score include:

- Tempo and Meter:** The tempo is marked *Allegro* and the meter is 4/4. A rehearsal mark **260** is present at the top.
- Woodwinds:** Flute, Oboe, Clarinet, and Bassoon parts feature complex rhythmic patterns, including triplets and sixteenth notes. Dynamics range from *pp* to *sf*.
- Brass:** Horn, Trumpet, and Trombone parts include dynamic markings such as *p*, *sf*, and *f*.
- Percussion:** The percussion part includes a section labeled *Messa Messa* and features various rhythmic patterns.
- Strings:** Violin I, Violin II, Viola, Violoncello, and Double Bass parts are present, with dynamic markings like *pp*, *f*, and *sf*.
- Handwritten Annotations:** The score contains numerous handwritten notes, including *sf*, *f*, *pp*, *rit.*, *arco*, and *rit. b.*, along with various slurs and accents.

Handwritten musical score for a symphony orchestra, page 39. The score is written in 3/4 time and includes parts for Flute (Fl), Oboe (ob), Clarinet (cl), Bassoon (bs), Horn (Hn), Trumpet (Trp), Trombone (Tbn), Percussion (Perc), Violin I (vi I), Violin II (vi II), Viola (vln), and Cello (C).

The score is divided into three measures. The first measure contains the beginning of the piece with various dynamics and articulations. The second measure features a prominent instruction: "change to English horn" written in the Oboe part. The third measure concludes the section with a final cadence. The score includes numerous musical notations such as notes, rests, slurs, and dynamic markings like *p*, *mf*, *f*, *sfz*, and *arco*.

4/4

3/4

270

10

Fl

cl

Eng. Hr.

tr

acc.

E♭

Hr.

Trp

Tub.

The image shows a handwritten musical score for a band. The score is organized into systems of staves. The instruments listed on the left are Flute (Fl), Clarinet (cl), English Horn (Eng. Hr.), Trumpet (Trp), Trombone (Tub.), and Percussion (Perc.). The top of the page has handwritten markings: '4/4', '3/4', and '270' in a box. The right side of the page has the number '10'. The music is written in a key with one flat (B-flat) and includes various rhythmic values, including triplets and sixteenth notes. There are also dynamic markings like 'p' and 'f'. The percussion part at the bottom includes drum notation with '4' and '3' above the staff, indicating different drum parts or patterns.

Handwritten musical score for orchestra and strings, page 41. The score includes staves for Flute (fl), Oboe (ob), Clarinet (cl), Bassoon (bs), Trumpet (tr), Trombone (trb), Percussion (perc I, II, III), Violin I (vi I), Violin II (vi II), Viola (va), Violoncello (vc), and Double Bass (cb). The score is divided into three measures with time signatures 3/4, 3/4, and 4/4. It features various musical notations such as notes, rests, dynamics (p, mp, f, sfz), and articulation marks (acc).

This page of a handwritten musical score, numbered 43, contains the following staves and musical notation:

- Fl (Flute):** Features a melodic line with various accidentals and articulation marks. A dynamic marking of *mf* *rit.* is present at the beginning.
- Cl (Clarinet):** Features a melodic line with various accidentals and articulation marks. A dynamic marking of *mf* *rit.* is present at the beginning.
- Bsn (Bassoon):** Features a melodic line with various accidentals and articulation marks.
- Hr (Horn):** Features a melodic line with various accidentals and articulation marks.
- Trp (Trumpet):** Features a melodic line with various accidentals and articulation marks.
- Perc (Percussion):** Features a melodic line with various accidentals and articulation marks.
- Per I (Percussion I):** Features a melodic line with various accidentals and articulation marks.
- Per II (Percussion II):** Features a melodic line with various accidentals and articulation marks.
- Per III (Percussion III):** Features a melodic line with various accidentals and articulation marks.
- vl I (Violin I):** Features a melodic line with various accidentals and articulation marks. A dynamic marking of *mp* is present.
- vl II (Violin II):** Features a melodic line with various accidentals and articulation marks.
- vla (Viola):** Features a melodic line with various accidentals and articulation marks.
- vlc (Cello):** Features a melodic line with various accidentals and articulation marks.
- B (Bass):** Features a melodic line with various accidentals and articulation marks.

Handwritten musical score for a symphony orchestra. The score is arranged in a standard orchestral layout with staves for various instruments. The instruments listed on the left are: Fl (Flute), ob (Oboe), cl (Clarinet), Bcl (Bass Clarinet), Bsn (Bassoon), Hn (Horn), Trp (Trumpet), Tbn (Tuba), Perc (Percussion), I (Violin I), II (Violin II), Vla (Viola), Vlc (Violoncello), and B (Bass). The score includes musical notation such as notes, rests, and dynamic markings. Key markings include *Alc* (Allegro), *rit* (ritardando), *arco* (arco), and *pizz* (pizzicato). The notation is dense, particularly in the lower strings and woodwinds.

Handwritten musical score for a symphony orchestra, page 45. The score includes staves for Flute (Fl), Oboe (Ob), Clarinet (Cl), Bassoon (Bs), Horn (Hr), Trumpet (Trp), Trombone (Tbn), Percussion (Perc), Violin I (Vl I), Violin II (Vl II), Viola (Vla), Violoncello (Vlc), and Double Bass (Cb). The score is divided into two measures with time signatures 3/4 and 4/4. It features various musical notations including notes, rests, dynamics (p, sf), and articulation marks.

Handwritten musical score for a symphony orchestra, page 47. The score is divided into three measures with time signatures $3/4$, $4/4$, and $3/4$. The instruments listed on the left are Flute (Fl), Oboe (ob), Clarinet (cl), Bassoon (bs), Horn (Hr), Trumpet (Tup), Trombone (Tub), Percussion (Perc), Violin I (vi), Violin II (vi), Viola (vln), Violoncello (vcl), and Bass (B). The score includes various musical notations such as notes, rests, and dynamic markings like *sf* and *sfz*. The percussion part includes a snare drum and a cymbal. The woodwinds and strings have complex rhythmic patterns. The score is written in black ink on a white background.

210
4/4

Fl

Ob

Cl

Bsn

Esn

Hr

Trp

Trb

uba

T

Pnc I

II

vi

vi

va

vc

B

1.
SALVO mf

Fl 1
Eng. Hr.
Harp
v/c
B

Fl 2
alto 3
Eng. Hr.
Harp
v/c
B

Fl 2
alto 3
Eng. Hr.
Harp
v/c
B

Handwritten musical score for a symphony orchestra. The score is written on 15 staves, each labeled with an instrument or section:

- Fl** (Flute): Handwritten notes, including a first staff with a treble clef and a second staff with a bass clef. Includes a handwritten *all:ci:* marking.
- ob** (Oboe): Handwritten notes on a single staff.
- Eng. H.** (English Horn): Handwritten notes on a single staff.
- cl** (Clarinet): Handwritten notes on a single staff.
- B. cl** (Bass Clarinet): Handwritten notes on a single staff.
- Bsn** (Bassoon): Handwritten notes on a single staff.
- Hr** (Horn): Handwritten notes on a single staff.
- Trp** (Trumpet): Handwritten notes on a single staff.
- Trb** (Trumpet): Handwritten notes on a single staff.
- perc** (Percussion): Handwritten notes on a single staff.
- Harp**: Handwritten notes on a single staff.
- vi I** (Violin I): Handwritten notes on a single staff.
- vi II** (Violin II): Handwritten notes on a single staff.
- va** (Viola): Handwritten notes on a single staff.
- vc** (Violoncello): Handwritten notes on a single staff.
- B** (Bass): Handwritten notes on a single staff.

The score includes various musical notations such as notes, rests, and dynamic markings like *mp* (mezzo-piano) and *mf* (mezzo-forte). A handwritten *3/4* time signature is present at the top. A circled number **340** is written in the upper right area of the score. The bottom left corner features the publisher's logo and text: **FRYXELL® CM-24/2**.

Handwritten musical score for a symphony orchestra, page 51. The score includes staves for Flute (Fl), Oboe (Ob), Clarinet (Cl), Bassoon (Bs), Horn (Hn), Trumpet (Trp), Trombone (Tbn), Percussion (Perc), Harp (Harp), Violin I (vln I), Violin II (vln II), Viola (vla), Violoncello (vcl), and Double Bass (Cb). The music is written in a complex key signature with multiple flats and includes various time signatures such as 2/4 and 3/4. The notation is dense with notes, rests, and dynamic markings.

Handwritten musical score for a symphony orchestra. The score is written on 20 staves, each labeled with an instrument or section:

- Fl** (Flute)
- ob** (Oboe)
- cl** (Clarinet)
- e. cl** (English Horn)
- Bsn** (Bassoon)
- Hrn** (Horn)
- Trp** (Trumpet)
- Tub** (Tuba)
- Perc** (Percussion) - I, II, III
- Harp** (Harp)
- v. I** (Violin I)
- v. II** (Violin II)
- v. III** (Viola)
- v. IV** (Violoncello)
- B** (Bass)

The score includes various musical notations such as notes, rests, and dynamic markings. The time signature changes from 4/4 to 3/4. There are handwritten annotations above the first few staves: "4/4", "3/4", and "Ld b p". Dynamic markings include "mp" (mezzo-piano) and "p" (piano). The bottom left corner features the publisher's logo and the code "CM-24/2".

Handwritten musical score for a symphony orchestra, page 53. The score is written in 4/4 time and includes the following instruments:

- Flute (Fl)
- Oboe (Ob)
- Clarinet (Cl)
- Bassoon (Bsn)
- Contrabassoon (C. bsn)
- Horn (Hn)
- Trumpet (Trp)
- Trombone (Tkt)
- Percussion (Perc I, II, III)
- Timpani (Timp)
- Violin I (vln I)
- Violin II (vln II)
- Viola (vln)
- Violoncello (vln)
- Bass (B)

The score features various musical notations, including dynamics such as *mezzo*, *cresc.*, *pp*, *ppp*, *sf*, and *ff*. It also includes performance instructions like *rit.* and *rit. a. 2.*. The piece concludes with a double bar line and the number 53 in the bottom right corner.

Handwritten musical score for a symphony orchestra. The score is arranged in staves for various instruments, including Flute (Fl), Oboe (ob), Clarinet (cl), Bassoon (Bsn), Horn (Hn), Trumpet (Trp), Trombone (Tbn), Violin (vi), Viola (vla), and Cello (vc). The notation includes notes, rests, and dynamic markings such as *ff*, *dim*, and *pp*. A rehearsal mark is present at the top of the first staff. The bottom left corner contains the text "Soprano CM-24/2".