COMPOSITIONAL TECHNIQUES IN MICHAEL TORKE'S

ECSTATIC ORANGE

by

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Abstract

COMPOSITIONAL TECHNIQUES IN MICHAEL TORKE'S *ECSTATIC ORANGE*

by

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Ecstatic Orange is the first orchestral work by the American composer Michael Torke (b.1961), and is one of a series of color-inspired pieces Torke wrote in the 1980s. An analysis of the work's formal structure is followed by a discussion of compositional techniques used in the work related to rhythm, texture, pitch, and motivic transformation. The structure of the composition combines elements of minimalist continuous form with Stravinskian block form, and uses a variety of techniques to move between the individual sections including elision, continuation, splicing, and transition, each of which are identified and discussed. The rhythmic language of the piece features an almost continuous sixteenth-note subdivision of the pulse, manipulated by techniques including canon, phase-shifting, additive processes, and attack point techniques based on a recurring 1-2-4-8 rhythmic proportion. These techniques are analyzed and discussed both individually, and in the various combinations present throughout the piece. Textures are created with a variety

of standard 20th-century techniques including heterophony, pointillism, and the contrapuntal layering of different musical gestures. Examples of each technique are examined, followed by analyses of passages that feature combined textural techniques. Three related pitch class series and one principal level of transposition are used to create the intentional monochromatic melodic and harmonic effect of the piece. These series are manipulated with a number of basic techniques including rotation, grid technique, and additive processes, and also feature the consistent use of a [0157] subset of pitches drawn from the original series. These series are discussed in relation to the construction of themes and chords, passages that feature both the original and transposed series are examined, and the relationship of pitch to the structure of various sections of the work is also considered. In *Ecstatic Orange*, Torke combines rhythms derived from popular music and jazz, an intentionally limited pitch-class series and harmonic language, and an array of standard 20th-century compositional techniques to create a unique compositional style.

CONTENTS

INTRODUCTION

Ecstatic Orange (1985) is the first large-scale orchestral work by the American composer Michael Torke. In the 1980s, Torke established himself as one of the leading composers of his generation with a series of color-inspired pieces, which in addition to *Ecstatic Orange*, include the quintet *The Yellow Pages*, and the orchestral works *Green*, *Purple*, *Bright Blue Music*, *Ash*, *Rust*, and *Slate*.

Torke was born in Milwaukee, Wisconsin in 1961 and studied composition at the Eastman School of Music (BM 1984) and Yale University with teachers including Christopher Rouse, Joseph Schwantner, and Jacob Druckman. Although only in his early forties, he has written a wide range of works in a variety of media including chamber music, orchestral music, ballet, and opera. His music has been published by Boosey and Hawkes since 1985 and is regularly recorded on major labels such as Argo/Decca and Naxos. Torke has received many of the most important composition awards including the Rome Prize (1986), and his music has been performed and commissioned by ensembles including the Baltimore Symphony, Milwaukee Symphony, London Sinfonietta, St. Paul Chamber Orchestra, New York Philharmonic, Atlanta Symphony, and the Brooklyn Philharmonic. In 1987, his orchestral works *Green*, *Purple*, and *Ecstatic Orange* were choreographed by Peter Martins as a three-movement ballet for New York City Ballet.

More recently, Torke's one-act opera, *Strawberry Fields* (1999), was premiered by New York City Opera and recorded by the Albany Symphony in 2005.[1]

Torke is still a relatively young composer and it is therefore not surprising that very little has been written about his music. Aside from several musical analyses which will be discussed during the course of my essay, there is also an extended interview with Torke in Geoff Smith's and Nicola Walker's book *New Voices*,[2] and an entry on Torke in the *New Grove Dictionary of Music and Musicians*. In preparation for the writing of this essay, I also conducted a telephone interview with the composer.

Torke's musical language evokes a wide range of historical and current musical styles. In his series of color-inspired pieces from the 1980s, he draws on the rhythmic, harmonic, gestural, and timbral languages of minimalism, contemporary American popular music, and European classical music. Because his music combines elements of these widely divergent styles, he is generally classified as a postmodern or postminimalist composer.[3] Amongst

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[1]Michael Torke's official website, "Biography," http://www.michaeltorke.com/bio.html (accessed February 4, 2005).

[2]Geoff Smith and Nicola Walker, *New Voices: American Composers Talk About Their Music* (Portland, Oregon: Amadeus Press, 1995), 239-250; James Chute, "Michael Torke," in *The New Grove Dictionary of Music and Musicians*, 2nd Edition, Vol. 25, ed. Stanley Sadie (London: Macmillan, 2001), 620.

[3]Jonathan W. Bernard, "Minimalism, Postminimalism, and the Resurgence of Tonality in Recent American Music," *American Music* 21/1 (2003): 112-133.

the American postmodernists, he is most often grouped with composers such as John Adams, Christopher Rouse, Michael Daugherty, Richard Danielpour, and Aaron Jay Kernis--composers whose styles have also been influenced by both European classical and American popular music.

Ecstatic Orange is significant because it is Torke's first mature work to incorporate musical gestures and compositional techniques from minimalism, popular music, and classical music within a coherent and personal musical language. In the most general terms, the minimalist influence in *Ecstatic Orange* can be heard in its frequently consonant, diatonic harmonies and its rhythmic language, which features a constant, steady pulse and the repetition of both short rhythmic gestures, and longer, multi-measure rhythmic structures. The influence of 1980s American rock and pop music is present in its rhythmic language, which consistently features highly syncopated, repetitive sixteenth-note patterns, and symmetrical four-bar phrases. Aside from the orchestral medium, the influence of classical music is most evident in the wide range of compositional techniques employed to manipulate elements of rhythm, pitch, and texture in the work.

My essay will consist of a formal analysis of *Ecstatic Orange* followed by a detailed discussion of the compositional techniques used in the work related to rhythm, motive, and

texture. Many of the points I make throughout this study will be illustrated with annotated score excerpts. But I also assume that the reader has access to a full score to follow other details of my argument. I will conclude my analysis by reviewing the most important features of the work's formal structure, identifying its main compositional materials, and summarizing the principal techniques and musical gestures used to manipulate these materials throughout the course of the work. Finally, I will consider the ways in which these techniques and gestures create the distinctive musical language of *Ecstatic Orange*.

CHAPTER 1

FORMAL STRUCTURE

Ecstatic Orange is cast in one movement which lasts approximately eleven minutes and maintains a single tempo throughout. The form is comprised of a series of relatively short formal sections, all but four of which are titled with a particular shade of the color orange, or an orange-associated image. Ironically, Torke's use of color-inspired titles has drawn the attention of scholars and analysts more than the actual musical content of his works or the compositional techniques employed in them. At the close of my discussion with him, Torke made a point of thanking me for not mentioning his use of titles and instead focusing my discussion on his music. He said that his color-inspired titles have been somewhat of a blessing and a curse; they have been a useful way for audiences and musicians to grasp the expressive spirit and intent of his music, but have also, he feels, led to the oversimplification of his music by some critics and scholars, particularly in Europe. When I suggested that perhaps the notion of a series of color-inspired pieces was no more than an initial inspiration, a way of focusing his musical ideas and a point of departure for these works, he agreed. I continued by offering that I felt there is no attempt in *Ecstatic Orange* to musically demonstrate different shades of a specific color, he also agreed with this, and added that anyone who had read the titles of the individual sections of *Ecstatic Orange*

would realize that they were intended to be "tongue-in-cheek" and not signposts of attempts to depict specific shades of color. Because, as he points out in his prefatory note to *Ecstatic Orange*, the work incorporates relatively little transposition of its basic pitch material (the series <G-sharp, A, D, C-sharp, B, E> with two optional suffixes), the shifting orchestral colors and textures in the individual sections of the work substitute in a sense, for the function of traditional harmonic modulations (see Ex. 1-1).[1]

In this chapter, I will approach the work's formal structure with specific reference to three main techniques by which he juxtaposes blocks of music: splice, continuation, and elision. I will conclude by examining the brief use of exact recapitulation within a scheme that is generally more of a continuous process.

In an essentially harmonically static work such as this, which features limited transposition of the basic pitch material, it is useful to generally consider the role that pitch plays in the form of the work as a whole, before beginning a detailed examination of the relationships between the individual sections in the work. In m. 19, the trombones introduce a T-9 transposition of the work's original series, the most frequently used level of transposition in the work. Here as in many other instances in the piece, the series is treated as a pitch, rather than pitch-class series, its contour being retained when it is

[1]Michael Torke, interview by author, telephone, New York, NY, 28 July 2004.

transposed. From this point on, up to and including the work's conclusion and coda, this transposed series is combined freely both motivically and harmonically with the original series. In one sense it is possible to view the work's continuous block-form as being comprised of alternating sections or groups of sections--those based exclusively on the non-transposed original series, and those which combine pitches from the original series with those from the transposed series. This allows for the creation of harmonic tension and release in the work and also for a sense of an implied tonality, those sections based solely on the original series acting as the "tonic" and those based on the combined series as "dissonances" that are then resolved by a return to a section based only on the original series. This sense of tonality is prominently reinforced by the use of three increasingly lengthened pedals in the low brass in mm. 263-267, 278-285, and 297-309, all of which are on the pitch-class G-sharp, the first pitch of the work's principal series.

Ecstatic Orange contains 317 measures divided into twenty-five titled sections ranging in length from two measures ("Copper," mm. 253-254) to twenty-two measures ("Russet", mm. 29-50), framed by a brief introductory gesture and a coda. In his analysis of Torke's quintet, *The Yellow Pages* (1985), Timothy Johnson refers to a similar formal structure

as"continuous form."[2] This type of formal structure is also related to the "block juxtaposition" Pieter van den Toorn has identified in his analyses of Stravinsky's music.[3] In one sense, the work can be read as a set of twenty-five variations in which the theme (the six-note series) gradually emerges throughout the first four sections and is then clearly presented for the first time as an ostinato at "Sunkist!," in m. 65. The sections are governed by a large-scale formal plan that divides the piece into three principal parts: main body (mm. 1-254), conclusion (mm. 255-312), and coda (mm. 313-317). However, because there is no underlying harmonic structure to the theme, Torke makes a distinction between traditional variations and this work, which he refers to as a one-movement, multi-sectional piece based on a series of motivic transformations (see Ex. 1-2).[4]

Although m. 1 is included within the first titled section of the work, "Burnt orange," it actually functions as a frame to the music that begins in m. 2. The tutti gesture that begins the work, somehow reminiscent of Lutoslawski's Third Symphony (1983), is not integrated into the rest of the music of "Burnt orange," and is separated from the music that follows by an eighth-rest. According to Torke, this gesture was derived from the first two beats of the violin and flute melody in m. 98-101, the first material he composed for

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[2]Timothy A. Johnson, "Minimalism: Aesthetic, Style, or Technique?," *The Musical Quarterly* 78/4 (1994): 742-773.

[3]Pieter van den Toorn, *The Music of Stravinsky* (New Haven: Yale University Press, 1983).

[4]Michael Torke, interview by author, telephone, New York, NY, 28 July 2004.

the piece (see Ex. 1-3).[5]

The main body (mm. 1-254) is the largest of the three parts of the piece; it contains nineteen of the twenty-five titled sections of the work (see Ex. 1-4). Even though several of these sections are relatively brief, for example "Copper", mm. 253-254, because they present new motivic transformations of the series and employ different techniques and processes than the sections that precede them--usually along with marked contrasts in rhythm, texture, harmony, and expressive character--they can be heard as new variations within this portion of the large-scale formal structure. The focal point of the main body is m. 187, the some of which, softest and most lightly scored moment in the work, which begins with the strings echoing a phrase heard in the winds in m. 186. On the fourth beat, the anacrusis to a new phrase in the horns and trombones is dovetailed with the final beat of the string's music (see Ex. 1-5). The overlapping of these two phrases maintains the continuity of the previous music and at the same time creates the impression of a new beginning through a change in both timbre and dynamic. There is a sudden shift from harmony to unison texture in m. 187, reiterating the G-sharp--A dyad that is prominent in the previous section. The music in m. 188 then begins the drive to the next part of the formal structure, the conclusion.

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[5]Michael Torke, interview by author, telephone, New York, NY, 28 July 2004.

As with more traditional variations and works that employ this type of continuous form and block juxtaposition, the short, titled sections of the piece can also be heard in groups that form a series of larger subsections within the work. In this way, the nineteen sections that comprise the 254 measures of the main body can be divided into five subsections: 1) mm. 1-50, "Burnt orange" through "Russet"; 2) mm. 51-97, "Carroty" through "Orange pekoe in flames"; 3) mm. 98-149, "Absinthe and apricot" through "Orange lava"; 4) mm. 150-187, "Accutane for perfect beige" through "Beth's canon"; and 5) mm. 188-254, "Mineral and ore range" through "Copper".

The first subsection begins with "Burnt orange" and "Orange with damsons", both of which consist of dense, contrapuntal music based primarily on the original series. They lead to "Russet", an extended tutti featuring the first occurrences of gestures based both on the original and the transposed series, and of a heterophonic texture.

The music of "Carroty" opens the second subsection with a softer dynamic, and a return to contrapuntal textures and gestures derived primarily from the original series. The texture gradually increases in volume and density as it leads to "Sunkist!", a tutti featuring an eighth-note ostinato which is the first overt statement of the series in the work. The tutti texture is maintained through "Orange pekoe in flames", which consists of a dense, layered, contrapuntal texture, and chromatic lines doubled from an extension of

the original series in the percussion figures. The switch to an essentially homophonic texture with diatonic harmony in the last fours bars of the passage serves as a transition to the third subsection.

The third subsection differs from the previous two in that its four passages are all based on the same repeated four-bar bass line, first heard in mm. 98-101 of "Absinthe and apricot" in the bassoon and low brass. In "Terra cotta" the line is present in the brass; in "Carotene, changing to vitamin A" in the bassoons; and in "Orange lava", in the tuba and timpani.

The fourth subsection is reminiscent of the first. It begins, in "Accutane for perfect beige", with a varied repetition of the work's initial four-voice rhythmic canon, first heard in "Burnt orange", then presents a varied repetition of the first four measures of "Orange with damsons" in mm. 162-165. This leads to "Titian (wet hair)", a section like the first subsection's "Russet", that features heterophony and the combination of the original and transposed series. The sustained Violin 1 line in "Titian" is carried over into the lyrical and intimate "Beth's canon", the final passage in this subsection, and the one true moment of repose in the work. The tranquility of this passage sets up perfectly the last subsection of the main body, which acts as a drive to the work's conclusion.

The fifth and final subsection of the main body begins with "Mineral and ore range,

whose syncopated, angular brass lines are clearly distinct from the music of "Beth's canon", and convey the sense of a new beginning as the piece moves towards its conclusion. The texture gradually expands from one to four parts, two of which are then continued in the four-part texture of "Unripe pumpkin", whose wind lines foreshadow the music of the next passage, "Helianthin on silk". "Helianthin", like "Russet" and "Titian", features a heterophonic texture with combined presentations of the original and transposed series. The recapitulation of passages from the first subsection in the fourth subsection is continued here with a varied repetition of the second subsection's "Sunkist" in "The Orange sunkissed". This ostinato-based tutti leads directly into "Aren't you an orange ewe?" and the brief tutti "Copper"--the culmination of both the fifth subsection and the entire main body of the work. "Aren't you an orange ewe?" resembles "Russet", Titian", and "Helianthin" in that it incorporates combined presentations of the original and transposed series, not however in different gestures as in the three earlier passages, but within the same line, the piano Hauptstimme. In addition, unlike the heterophpony of the three earlier passages, this is the one extended example of a pointillistic texture in the work, which sets it apart from the earlier music and clearly distinguishes it as the culminationof the main body. "Aren't you an orange ewe?" is rounded off by "Copper", a brief tutti in rhythmic unsion, that leads directly to the beginning of the conclusion.

The conclusion (mm. 255-312) differs from the main body in that it consists of three

statements of two alternating formal sections, "First Orange" (mm. 255-267) and "Tumultuous 1" (mm. 267-268). "First Orange" is comprised of a series of three different gestures: a lyrical string theme accompanied by dense, contrapuntal wind figures (mm. 255-258); a varied repetition of the previous contrapuntal wind music, now played by the brass and accompanied by a sixteenth-note ostinato in the strings, (labeled "An Outburst", mm. 259-262); and a sixteenth-note stretto figure gradually moving through each section of the orchestra and sounding over a repeated G-sharp pedal in the low brass (mm. 263-267). "Tumultuous 1," (mm. 267-268), is a tutti orchestral gesture in rhythmic unison which acts as the culmination of each statement of "First Orange". A similar type of modular, or serial formal construction has been noted by Jonathan W. Bernard in both minimalist art and music, along with an emphasis on structural clarity and accessibility, and the use of process-based forms.[6]

An additive process takes place which expands the second and third statements of the music of "First Orange" (see Ex.1-6). Of the four gestures that comprise "First Orange," only the second, "An Outburst," does not contribute to the additive process; it is actually decreased in length to two measures in "Third Orange." This is one of many examples in the work of Torke's manipulation of fairly obvious compositional processes or

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[6]Jonathan W. Bernard, "The Minimalist Aesthetic in the Plastic Arts and Music," *Perspectives of New Music* 31/1 (1993): 86-133.

techniques in order to avoid monotony or predictability in the work. For example, instead of uniformly applying an additive process to all four gestures of "First Orange," it is applied to only three of the four, while the length of the other gesture is treated in the exact opposite manner; it is decreased. In addition, of the three gestures which undergo the additive process, two increase in length with each of their statements, while the other remains the same length for its first two statements then increases in length in its third and final statement.

Interestingly, the music of the conclusion is harmonically static. The pitch-levels and tonality of the four gestures of "First Orange" are essentially the same in the next two statements of this music in mm. 269-286, and 287-312, with the exception of minor differences in individual lines due to the use of phase-shifting. The increases in expressive intensity are achieved here, not through any harmonic or pitch-related means, but through the use of the aforementioned additive process which creates a gradually sustained rhythmic, dynamic, and textural intensity as the music of "First Orange" is extended throughout the conclusion.

The third and last part of the large-scale formal structure is the coda (mm. 313-317), which proceeds directly out of the rhythmic momentum generated by the full orchestra's sixteenth-note rhythmic unison in m. 312. Along with the introductory gesture in m. 1, it

serves to frame the twenty-five internal sections of the main body and conclusion, and also creates a sense of closure by presenting a final statement of the work's principal thematic material played in melodic and rhythmic unison, first by the strings in mm. 313-314, then with diminution in a stretto imitation by the winds and brass in m. 314, altering the third note from D to D-sharp and the seventh note from G to F-sharp, in order to create both a sense of freshness in the melodic line and add to the culminating tension of this last gesture before the final chord of the piece.

Within the three parts of the work's large-scale formal structure there are two significant points of arrival, or climaxes. The first is the expressive climax, which occurs at the section titled "Beth's canon (ochre)" (mm. 178-187), and begins just twenty measures past the midpoint, m. 158. This section differs from the rest of the music of *Ecstatic Orange* in several ways. First, it is the most substantial moment of extended lyricism in the piece. All four voices of the texture consist of lyrical string melodies, accompanied by extremely soft sixteenth-note figures in the clarinet and bassoons. Second, it is the softest, most lightly scored moment in the work and one of the few sections where the brass and percussion do not play. Finally, it is one of only several moments in the piece where the nearly constant sixteenth-note subdivision of the pulse is taken out of the foreground and heard as an accompaniment to longer, more sustained rhythmic values. This pronounced lengthening of rhythmic values in "Beth's canon" contrasts the highly syncopated rhythms, dense,

contrapuntal textures, and generally extroverted expression that characterizes most of the music that precedes this section, and by doing so, creates a sense of arrival at a moment of temporary calm and repose.

The second point of arrival is the work's dynamic climax at "Tumultuous 3," mm. 310-312. These three measures of orchestral tutti function as the dynamic climax as they are the loudest moment in the piece (tutti ffff), the most intense extended gesture in the work, and the culmination of the second of the two main parts of the work's formal structure, the conclusion.

As stated earlier, the music of *Ecstatic Orange* consists of twenty-five formal sections framed by a brief introductory gesture and a coda. The lengths of the sections are often determined by the completion of a specific pattern of repetition or formal process, an approach similar to that noted by Gretchen Horlacher in her analysis of Stravinsky's *Symphony of Psalms*.[7] Horlacher notes that in Stravinsky's music, the relationship between layered ostinatos often determines the length of phrases and formal sections. Throughout the course of the work, the movement from one section to the next is accomplished through the use of four different techniques: transition, continuation, elision

[7]Gretchen Horlacher, "The Rhythms of Reiteration: Formal Development in Stravinsky's Ostinati," *Music Theory Spectrum* 14/2 (1992): 171-187.

(dove-tailing), and splicing. In his essay on the terminology of minimal music, Dan Warburton applies the latter two terms to formal structures in the music of Steve Reich and Michael Nyman.[8] Of these four techniques, splicing is used the most often, occurring fourteen times in the work, followed by six continuations, five elisions, and one transition.

"Splicing" is a technique in which there is an abrupt shift from one gesture or music to another. One instance of splicing is from m. 81, the final measure of "Sunkist!," to m. 82, the first measure of "Orange pekoe in flames." Each of the four elements juxtaposed in m. 81--the bass line, the repetitive sixteenth-note figure, the melody, and the countermelody--completes its final pattern or phrase by the last eighth note in m. 81. The splicing effect in m. 82 is realized in two ways: some instruments continue playing but begin new material on the first beat of the measure, and others separate their new material from the previous music by resting for one beat. On the downbeat of m. 82, the percussion, low brass, and low strings continue playing but introduce new thematic material, and after one beat of rest, the winds, horns, and violins enter on the second beat of m. 82, also with thematic material different from their music in m. 81. Together with the varying motivic transformations of the series in each titled section and the use of different techniques and processes in them, the predominant use of splicing to move between sections of the work creates the

[8]Dan Warburton, "A Working Terminology for Minimal Music," *Intégral* 2 (1988): 135-159.

impression that the piece is structured as set of variations. There are thirteen other examples of splicing in the work.[9]

Given the fact that splicing is used fourteen times to move between sections in the piece, it seems likely that the use of this technique would become somewhat predictable in the work. However, Torke avoids any monotony by never using splices more than twice in a row for roughly the first two-thirds of the piece, through the beginning of "Helianthin on silk" in m. 211. From this point through the entirety of the conclusion, splicing is then used exclusively. The effect this string of splices achieves in the conclusion is significant for a number of reasons. In one way, it helps to both set apart the music of the conclusion from the rest of the work, and to define its sound and character as it is the only transitional technique used in this section. In addition, the splices create a sense of mounting dramatic tension here, sharply dividing "First," "Second," and "Third Orange" as they increase in both length and expressive intensity. Finally, the splices also allow the music to breathe between these three sections, allow the amassed orchestral sound to clear, and perhaps most importantly, provide brief moments of repose after the forceful orchestral tuttis of the three "Tumultuous" gestures.

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[9]Mm. 1-2, 28-29, 50-51, 113-114, 121-122, 149-150, 230-231, 238-239, 254-255, 268-269, 286-287, 309-310, 312-313.

"Continuation" is a technique in which one or more gestures from a section proceed without interruption into the next section, thereby forming a structural link between the two sections. One of the six examples of moving between consecutive sections of the work by continuation is mm. 137-138, the final measure of "Carotene, changing to vitamin A," and the first measure of "Orange lava." In m. 130, the strings begin a twelve-measure melody, the first eight measures of which are part of "Carotene," and the last four of which are part of "Orange lava." The sense that the second section is a continuation of the first, rather than a completely new section, is created in part by this string melody spanning both sections. The impression of continuation is also reinforced by several other instrumental lines. For example, the music in the timpani, brass, xylophone, and piccolo in mm. 134-136 of "Carotene," is repeated in mm. 138-140 of "Orange lava" by the timpani, horns, winds, piano, and percussion. In addition, the contrapuntal flute and clarinet passage in mm. 134-136 of "Carotene" is transferred to the trumpets and horn in mm. 138-140 of "Orange lava." There are five other examples of continuation in the work.[10] These six examples of continuation are significant for two reasons: they offer an important contrast to the more frequently used splicing technique and they also introduce a smoother, subtler means of moving from section to section within the work.

[10]Mm. 202-203, 210-211, 252-253, 266-267, 284-285.

Like continuation, "elision" also forms a structural link between two sections, in this case by overlapping the end of one section with the beginning of the next. An example of elision occurs in mm. 165-166, the final measure of "Accutane for perfect beige" and the first measure of "Titian (wet hair)". These two measures are similar to mm. 81-82 in that the first measure completes one kind music and the second begins another. In this case however, the change from one music to the next is made less abrupt by an elision. In m. 165, the final bar of a four-measure phrase in the the winds is not completed until the first eighth note of m. 166, which creates a connection between these the two sections. In addition, on the first two beats of "Titian," in m. 166, the solo horn completes a phrase it began in the final two bars of "Accutane," reinforcing the elision heard simultaneously in the winds, and smoothing the shift from one music to the next in these two measures. Brent Heisinger has analyzed the use of similar formal elisions in his reading of Reich's *Octet.*[11] Heisinger proposes that the elisions between the sections of the *Octet* are an outgrowth of and related to the process-based and subtle, gradual changes characteristic of the rhythmic, melodic, and harmonic aspects of the work. There are four other examples of elision in the work.[12] Like the aforementioned continuations, these examples of elision also provide a contrast to the more frequently used splices and create a more seamless way

[11]Brent Heisinger, "Compositional Devices in Steve Reich's *Octet,*" *ex tempore* 5/2 (1991): 29-46.

[12] Mm. 18-19, 64-65, 177-178, 187-188.

of moving between sections within the work.

The only instance of a transition between two sections in the work occurs in mm. 94-97, the last four measures of "Orange pekoe in flames." These measures differ from the phrase that precedes them in a number of significant ways. For example, a lyrical melody is introduced in the upper strings which contrasts their more rhythmic music in mm. 90-93; a homophonic texture is featured with winds and brass accompanying the strings, as opposed to the dense, contrapuntal texture of the previous phrase; the meter changes to triple, then duple meter from the quadruple meter of the preceding four bars; and a faster harmonic rhythm is employed, changing harmonies once per measure and contrasting the static bass line and slower harmonic rhythm of mm. 90-93.

It is interesting to note that while the musical language of *Ecstatic Orange* regularly features the direct repetition of both motives and rhythmic patterns, there is very little large-scale formal repetition within the piece. The repetition of music that occurs earlier in the formal structure of the piece is limited to the following four examples:

1) the tutti gesture on the last two beats of m. 28 is repeated in mm. 141-142. Although it is not one of the twenty-five internal sections of the piece, the repetition of this gesture is important because it recalls the first orchestral tutti in the main body of the work.

2) mm. 18-21 are restated in a varied repetition in mm. 161-164. The latter statement differs in both the pitches of the trumpet and trombone figures in mm. 162-163 and the rhythm of the strings in mm. 162-164.

3) mm. 65-72 are restated in a varied repetition in mm. 231-238. The second statement simply changes the rhythm of the first two beats from even eighth-notes to a sixteenth-note/dotted eighth-note rhythm and adds a new trumpet counterpoint to the existing music.

4) the music in the brass and strings in mm. 98-101, and wind's music from mm. 126-129 are restated in the music of "First Orange," mm. 255-262. In mm. 255-258, the winds play a literal repetition of their earlier music, while the horn and trombone figures retain the same rhythm as before, but now take their pitches from the accompanying string counterpoint. The trumpets play a counterpoint to the horns and trombones, the upper voice of which is a repetition of the violin melody from mm. 98-101.

These four examples of repetition are important to the form of the work because they temporarily interrupt the forward progress through its structure by briefly recalling earlier moments in the piece, and in doing so, create a sense of a gradual recapitulation that begins roughly halfway through the piece. A similar approach to formal repetition within a structure based on block-juxtaposition has been noted by Marianne Kielian-Gilbert in her

analysis of the "Soldier's March" from Stravinsky's *L'Histoire du Soldat*, and the first movement of the *Three Pieces for String Quartet.*[13] Kielian-Gilbert suggests that the expanded or contracted time spans found in the repetitions of blocks of music in these works substitutes for motivic likeness between them. Similarly, Joseph Straus has considered the large-scale formal implications of the repetition of individual fragments or "blocks" in Stravinsky's *Symphonies of Wind Instruments.*[14] Straus notes that the repetition of blocks of music in the *Symphonies* correspond to the use of specific successions of pitches in the work, and therefore create structural unity in a seemingly discontinuous formal structure.

The structure of *Ecstatic Orange* is perfectly in line with Torke's post-minimal style and postmodern aesthetic as it is a fascinating and complex combination of formal techniques representative of several different musics: the continuous form typical of minimalism, the block form and juxtaposition found in the music of Stravinsky, and the use of recapitulation typically associated with more traditional formal structures found in pre-minimalist music. Within the work's many process-based formal sections, a sense of forward motion and goal direction is achieved by continually moving towards the climactic

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[13]Marianne Kielian-Gilbert, "The Rhythms of Form: Correspondence and Analogy in Stravinsky's Designs," *Music Theory Spectrum* 9 (1987): 42-66.

[14]Joseph N. Straus, "A Strategy of Large-Scale Organization in Stravinsky's Late Music," *Intégral* 11 (1997): 1-36.

moments in the work, "Beth's canon (ochre)," and "Tumultuous 3," while at the same time occasionally and gradually repeating gestures or sections of music from earlier in the piece. This creates the sense of gradual recapitulation in the work mentioned earlier, a recapitulation that takes place simultaneously with the work's continual forward progress.

CHAPTER 2

RHYTHM

The principal rhythmic feature of *Ecstatic Orange* is a nearly constant sixteenth-note subdivision of the pulse which is continually being rearranged into different rhythmic groupings and patterns. To create these varying patterns, Torke uses a wide range of rhythmic techniques, including canons, additive processes, augmentation, meter changes, asymmetrical meters, and phase shifting--gradually moving fixed rhythmic patterns to different starting points within a measure or group of measures. The repetition of both short rhythmic figures and longer rhythmic structures also features prominently in the rhythmic language of the work. In some cases the repeated rhythmic material is presented individually and at other times two or more different rhythmic structures are superimposed in order to create a more dense, contrapuntal rhythmic texture. In addition, some of the most interesting and expressive moments in the piece occur when the sixteenth-note pulse is either not present, or, is heard in the background of the musical texture as an accompaniment to some other musical gesture.

I will begin by discussing canon and the 1-2-4-8 proportion; next, I will examine techniques related to attack points, phase shifting, additive processes, and other miscellaneous techniques; finally, I will analyze a variety of passages that combine two or

more of the aforementioned techniques.

Rhythmic canon and the 1-2-4-8 proportion

The quintessential compositional technique in Ecstatic Orange is rhythmic canon. In the work, this type of rhythmic structure is usually based on a specific duration series--a rhythmic theme that functions as a subject for canonic, or other types of repetition. Of all the rhythmic techniques in the work, canons are the most often used and therefore, the most characteristic of its rhythmic language. It is also one of the most frequently used rhythmic techniques in the music of some of the most important twentieth-century and contemporary composers. For example, Messiaen's use of rhythmic canons has been noted by several scholars, while Kathryn Bailey has discussed Webern's use of rhythmic canon in the Variations for orchestra, op. 30, and in the op. 31 cantata.[1]

[1]Beverly Decker Adams. "The Organ Compositions of Olivier Messiaen." Ph.D. diss., University of Utah, 1969; Larry Wayne Peterson. "Messiaen and Rhythm: Theory and Practice." Ph.D. diss., University of North Carolina at Chapel Hill, 1973; Paula Ennis. "A Study of Coherence and unity in Messiaen's Cycle *Vingt regards sur l'enfant-Jésus*." Ph.D. diss., Indiana University, 1979; Beate Carl, "Rhythmus, Metrum und die Verknüpfung von Tondauer und -höhe in Olivier Messiaen's Klavierzyklus*Vingt regards sur l'enfant-Jésus*," *Die Musikforschung* 49/4 (1996): 383-402; Kathryn Bailey, "The Evolution of Variation Form in the music of Webern," *Current Musicology*, 16 (1973): 55-70. "Canon and Beyond: Webern's Op. 31 Cantata," *Music Analysis*, 7 (1988): 313-348.

More generally, scholars have discussed canon in the music of Ligeti, Nancarrow, in Bartók's quartets, and in Stravinsky's late music.[2] Examples 2-1 through 2-6 illustrate a selection of canonic passages in the piece that demonstrate different uses of the technique and give a sense of its pervasiveness in the rhythmic language of the work.

Most of the rhythmic canons in *Ecstatic Orange* are in four voices and based on the following proportion: 1-2-4-8. The last three numbers of the proportion represent points of canonic imitation, expressed in the number of either sixteenth-notes, quarter notes, or complete measures of 4/4 time, by which each of the final three canonic entries are delayed. This proportion can also be thought of as a time-point series, used to position a duration series within a measure, rhythmically transposing it either forward or backward in the bar, and producing time-point patterns that I refer to here as proportions. The first example of this type of canon occurs in mm. 2-5 of "Burnt orange" in the strings, winds, brass, and percussion (see Ex. 2-1).

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[2]Jane Piper Clendinning, "Structural Factors in the Microcanonic Compositions of György Ligeti," in *Concert Music, Rock and Jazz Since 1945,* ed. Elizabeth West Marvin, Richard Hermann (Rochester: University of Rochester, 1995), 229-256; Robert L. Rollin, "Ligeti's *Lontano*: Traditional Canonic Technique in a New Guise," *The Music Review,* 41 (1980): 289-296; Margaret Thomas, "Nancarrow's Canons: Projections of Temporal and Formal Structures," *Perspectives of New Music,* 38/2 (2000): 106-133; Clifton Callender, "Formalized Accelerando: An Extension of Rhythmic Techniques in Nancarrow's Acceleration Canons," *Perspectives of New Music,* 39/1 (2001): 188-210; Bernard Rands, "The Use of Canon in Bartók's Quartets," *The Music Review,* 18 (1957):183-188; Glenn Watkins, "The Canon and Stravinsky's Late Style," in *Confronting Stravinsky,* ed. Jann Pasler (Berkeley: University of California, 1986), 217-246.

This is a four-voice canon based on the rhythm of the four-measure phrase in the upper violins and violas initially stated in mm. 2-5, then repeated in mm. 6-9, 10-13, and 14-17. As shown in Example 2-1, a reduction of this passage, the points of canonic imitation follow the 1-2-4-8 proportion with entries on the second, fourth, and eighth sixteenth-notes of m. 2. After all four voices have completed their initial four-measure phrase in m. 6, the four-bar canon is repeated twice more in full in mm. 6-10, and mm. 10-14. A third repetition is begun in mm. 14-16, but in m. 17 the winds, brass, and percussion break their canonic patterns, culminating with a rhythmic unison in m. 18 leading to the next formal section of the piece.

The initial four-bar phrase and its three canonic imitations result in a total of three different rhythmic patterns: 1) the strings begin the pattern on the first sixteenth-note of the bar; 2) the winds begin the pattern on the second sixteenth-note of the bar; and 3) the brass and percussion play the same pattern separated by one beat--the brass begin on the fourth sixteenth-note of the bar and the percussion on the eighth sixteenth-note of the bar. Another interesting aspect of this canon is the composite rhythm created by the accented chords that mark both the entrance of each voice, and one or two other notes in their respective canonic patterns. As shown in Example 2-2, these chords create a composite rhythm in m. 2 and also in mm. 3-4, 7-8, 11-12, and 15-16. In addition, the chords are arranged into interlocking patterns so that in m. 2, the articulation of the first chord in the

piano/percussion occurs simultaneously with that of the second chord in both the winds and brass, and in m. 3, the articulations of the first two chords in the piano/percussion correspond to the articulation of the first chord in the strings and the first chord in the winds and brass respectively. The composite rhythm with its interlocking patterns create the effect of a single chordal line which moves through the sections of the orchestra. A similar canonic technique has been noted by Harold F. Lewin in Schoenberg's *Pierrot Lunaire*.[3] The music of this opening section is also important because it introduces one of the principal rhythmic/structural elements used throughout the work: four-measure phrases consisting of three measures of the same rhythm followed by a different rhythm in the fourth and final measure (3+1), a structure characteristic of much popular music, and which here acts as a "turnaround" leading back to the first measure of the phrase.

As shown in Example 2-3, the 1-2-4-8 proportion is used to create the rhythms of individual lines and to determine the distance of canonic voices. The brass figures in m. 90-92 are created by doubling specific notes of a continuous eighth-note line played by the

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[3]Harold F. Lewin, "Schoenberg's *Pierrot lunaire*: The Rhythmic Relation Between Sprechstimme and Instrumental Writing in 'Eine blasse Wäscherin'", *Theory and Practice*, 5/1 (1980): 25-39.

bassoons. For example, the rhythm of the Horn 1 line in m. 90 is created by doubling only the first, second, fourth, and eighth (1-2-4-8) notes of the bassoon line. This line, beginning on the first eighth-note of the measure, then becomes the first voice in a four-voice rhythmic canon in the horns. The second horn enters on the second eighth-note of the measure, the third horn on the third eighth-note of the measure, and the fourth horn on the eighth eighth-note of the measure. The rhythm of each of the lower three voices is created in the same way as the first horn's line; by doubling only the first, second, fourth, and eighth notes of the bassoon line from their respective starting points within m. 90. In mm. 91-92, an identical four-voice rhythmic canon is played by the low brass, in rhythmic canon with the ongoing horn canon at a distance of four beats, or one measure.

A different use of canon is shown in Example 2-4. In "Orange lava" (mm. 138-149), two canons in the brass are set in counterpoint to the main line in the Violin I/Viola, which is continued here from the previous section, and completes its third and final statement in mm. 138-141. One canon is played by trombones and tuba, the other by the trumpets and horns, and again, the canonic points of entry are determined according to the 1-2-4-8 proportion. Both of the canons in the brass are then repeated in mm. 142-145, and in mm. 146-149, only the low brass canon remains.

Roughly halfway through the piece a gradual recapitulation is initiated by "Accutane for

perfect beige" (mm. 150-165). These sixteen measures combine varied repetitions of music derived from the work's first two formal sections, both of which are based on the rhythm of the Violin/Viola line in mm. 2-5 of "Burnt orange". The four-voice canons in mm. 2-13 of "Burnt orange," and the first four measures of "Orange with damsons," mm. 19-22. In mm. 150-159, the canon is stated by the same instruments and at the same rhythmic distances as in "Burnt orange." As illustrated in Example 2-5, this passage differs from the earlier one in that here, the winds do not remain in a strict canon with the strings for all four measures; instead, they break the canon on beats 2-4 of the fourth measure in each of the three statements, at which point they double the brass rhythm. The repetition of this canon is significant because it achieves a different resultant sound than the earlier canon through a more equal balancing of the instrumental sections. Here, the canon sounds with greater clarity since there are fewer instruments playing the string, wind, and percussion lines. The varied repetition of mm. 19-22 of "Orange with damsons" in mm. 162-165 concerns phase-shifting and will be discussed later in the chapter.

At rehearsal Q of "First Orange" (mm. 263-264), the 1-2-4-8 proportion determines both the rhythm of the low brass-gesture and the canonic points of imitation. As shown in Example 2-6, in the first two beats of m. 263, the rhythm expresses the 1-2-4-8 proportion by articulating the first, second, fourth, and eighth sixteenth-notes of the measure, while the canonic points of articulation occur on the first, second, fourth, and eighth quarter-

notes of mm. 263-264.

Techniques related to attack-points

Like "Burnt orange," "Orange with damsons" (mm. 19-28), is also based on the four measure rhythmic pattern first heard in mm. 2-5. Here however, it is not treated canonically, but instead begins a series of sixteenth-note gestures in the strings, brass, and winds in which the first sixteenth-note of each new gesture overlaps with last sixteenth-note of the previous gesture. On beat three of m. 19, the strings complete the first measure of their initial four-measure phrase, while on the last sixteenth of beat three, the trumpets and trombones respond with a two sixteenth-note gesture. In m. 20, the strings repeat the same rhythm as in m. 19 and the brass again respond, with a sixteenth-note gesture beginning on the last sixteenth of the third beat and continuing through beat four. Finally, on the last sixteenth of the brass figure, the piccolo and glockenspiel enter with a third gesture that completes the series. This same pattern of elisions is repeated in m. 21, and in m. 22, the strings play the final measure of the four-measure phrase, the brass begin their gesture two sixteenths early on the second sixteenth of beat three, and the piccolo and glockenspiel again enter on the last sixteenth of the brass figure on beat four. These elisions are significant for two reasons: first, because they are one way in which the nearly constant sixteenth-note subdivision of the pulse is maintained throughout the piece, and second, because they help to avoid any potential rhythmic or gestural predictability through subtle

variations in the pattern of attack-points.

In "Carotene, changing to vitamin A" (mm. 122-137), the attack-points of a series of contrapuntal lines in the winds are determined by the 1-2-4-8 proportion. As shown in Example 2-7, a reduction of this passage, the proportion is present within a series of consecutive sixteenth-notes in m. 126, from the third sixteenth-note of beat two, through the second sixteenth-note of beat four. All four of the wind entrances in this passage occur within this group of eight sixteenth-notes and their starting points are determined by the 1-2-4-8 proportion. There are two other important differences between this passage and many of the other passages that use the proportion in the work. Most of the other occurrences use the same rhythmic material, either set in counterpoint to itself in rhythmic canon, or, phase-shifted across a measure to a series of different starting points. Here, each of the four voices plays a different rhythmic pattern. In addition, the use of a four-voice contrapuntal texture here results in a composite rhythm created by the simultaneous sounding of four different sixteenth-note lines in the winds. This composite rhythm is then stated as a single rhythmic gesture in one voice, the Violin I/viola line in mm. 130-134.

Example 2-8 shows a new technique which is used to organize the attack-points of the gestures in mm. 263-266 of "First Orange." The initial four low brass gestures in mm. 263-265 consist of a total of 15 articulations based on the 1-2-4-8 proportion. Each of

these articulations (as indicated in the score by the vertical arrows beneath and above the low brass figures) initiates a different repetitive sixteenth-note gesture whose sixteenth-note-starting points within their respective measures corresponds to the same 1-2-4-8 proportion used to arrange the low brass gestures. These sixteenth-note figures begin in the strings, followed by the piano/percussion, then the winds, and finally the upper brass. Similar techniques related to attack-points have been analyzed by Douglass Green in relation to Berg's *Lyric Suite*.[4]

Techniques related to phase-shifting

In phase-shifting--a technique first used by Reich in his tape compositions from the 1960s--two identical, repeated rhythmic patterns begin together with one at a slightly faster tempo than the other, so that with each repetition, one pattern is gradually shifted forward through the bar while the other pattern remains fixed in its original position. The process completes itself when the shifting pattern eventually returns to its original starting point and is once again synchronized with the fixed pattern. Reich later applied this technique to his instrumental music. In this case, the shifted pattern was not played at a faster tempo, but rather, gradually moved forward through the bar at a fixed rhythmic increment with each repetition. Torke applies this later technique to many of the rhythms in this piece, but unlike

[4]Douglass Green, "The Allegro Misterioso of Berg's Lyric Suite: Iso- and Retrorhythm," *Journal of the American Musicological Society*, 30/3 (1977): 507-516.

Reich, presents the phase-shifted pattern alone, without an accompanying fixed rhythmic pattern.

The music of "Carroty" (mm. 51-64), introduces the technique of phase-shifting, a technique which, aside from canon, plays the most significant role in the rhythmic language of *Ecstatic Orange*. Phase-shifting is generally associated with minimal music, and in particular, the music of Steve Reich. Several scholars have studied its use in Reich's music.[5] In addition, Jon H. Appleton has explored its use in electronic music, and Brandon Derfler has studied its use in rock music.[6] Example 2-9 shows the wind phrase in mm. 51-55 which consists of four separate gestures. After the initial gesture in m. 51, the rhythmic pattern is then phase-shifted to increasingly later starting points in each of the next three measures. Each of the last three gestures increases or decreases the duration of one or two of its notes by one sixteenth-note for the purposes of articulation, or ease of

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[5]Richard L. Cohn, "Transpositional Combination of Beat-Class Sets in Steve Reich's Phase-Shifting Music," *Perspectives of New Music*, 30/2 (1992): 146-177; Roberto Antonio Saltini, "Structural Levels and Choice of Beat-Class Sets in Steve Reich's Phase-shifting Music," *Intégral*, 7 (1993): 149-178; Roberto Antonio Saltini. "Theory of Phase-Shift: A Study of Rhythmic and Metric Displacement in Music." Ph.D. diss., State University of New York, Buffalo, 1994; Volker Straebel, "Patterns, Loops und Phase-Shifting: Die Minimal Musik des Steve Reich," *Neue Zeitschrift für Musik*, 160/2 (1999): 50-52; John Roeder, "Beat-Class Modulation in Steve Reich's Music," *Music Theory Spectrum*, 25/2 (2003): 275-304.

[6]Jon H. Appleton, "Commentary I: Electronic Music: Questions of Style and Technique," *The Musical Quarterly*, 65/1 (1979): 103-110; Brandon Derfler, "U Totem's *One Nail Draws Another* as Art Music," *Indiana Theory Review*, 21 (2000): 79-101.

reading. This does not however, distort the resultant sound of the phase shifting-technique being employed in any discernible way. When considered within the context of two consecutive beats, the starting points of these four wind figures occur within a group of eight sixteenth-notes which begin on third sixteenth-note of beat two and end on the second sixteenth-note of beat four. Within this group of eight sixteenth-notes, the starting points of the four wind figures are arranged according to the 1-2-4-8 proportion first used in the four-voice rhythmic canon which begins in m. 2. For example, the figure in m. 51 begins on the first of the group of eight sixteenth-notes (third of beat two), the figure in m. 52, on the second (fourth of beat two), the figure in m. 53 on the fourth (second of beat three), and the figure in m. 54 on the eighth (second of beat four). Throughout this section, the phase shifting-technique is particularly effective because it is heard in relation to a constant sixteenth-note subdivision of the pulse, present in an interlocking pattern in the violins. By placing the wind figures in counterpoint to this continuous sixteenth-note line, the starting point of each figure is highlighted, and therefore, the gradual shifting of the rhythmic pattern across the measure is made particularly clear.

In mm. 56-60, the winds repeat the five measure phrase from mm. 51-55, while the brass and percussion/low strings play figures in counterpoint to them, also using the phase-shifting technique. As illustrated in Example 2-10, the brass enter with a four-note figure in m. 56, which is then phase-shifted in the following three measures. This same

phase-shifting pattern is also used in the percussion and low strings in mm. 56-60, here, set in rhythmic canon with the brass at a distance of two beats. Like the wind phrase discussed in Ex. 2-9, these examples of phase-shifting are also arranged according to the 1-2-4-8 proportion. In addition, in mm. 56-60, the three phase-shifting phrases are arranged so that the brass and wind gestures overlap: the first note of each wind statement precedes the last note of each brass statement by one sixteenth-note. The four percussion/low string-figures interlock rhythmically with those of the winds so that the percussion and low strings either double rhythms in the wind figures exactly, or articulate rhythmic values that are sustained in the winds.

Example 2-11 shows the use of phase-shifting in "Absinthe and apricot" (mm. 98-113). In m. 98, Violin 1 begins a four-measure phrase on the third sixteenth-note of the measure. In m. 102, they repeat this same four-measure phrase, but enter one sixteenth-note earlier than in m. 98, here beginning on the second sixteenth note of the measure. The starting point of the next repetition of the four-measure phrase is also shifted one sixteenth-note earlier than the previous statement, and now begins on the first sixteenth-note of m. 106. In m. 109, the phase-shifting process is completed, the final repetition of the violin's four-measure phrase begins on the last sixteenth-note of the measure, one sixteenth-note earlier than its starting point in m. 106. The use of phase-shifting here differs in two ways from its initial use in mm. 51-55: the phrases in this section are shifted to earlier points in the

initial measures of each repetition, the earlier example shifted them to later points in the initial measures of each repetition, and the shifting of phrases here is always by one sixteenth-note, whereas the earlier example shifted its phrases according to the 1-2-4-8 proportion.

The horns and trumpets begin a four-measure phrase in m. 98-101, which throughout the remainder of this section, is phase-shifted simultaneously with the Violin 1 phrase. As shown in Example 2-12, the phase-shifting in the brass differs from that of the violins in that it shifts the phrase to later starting points within the initial measure of each successive repetition, and shifts the phrase not by single sixteenth-notes, but according to the 1-2-4-8 proportion. The combination of two simultaneous phase-shifting techniques here is particularly effective because they are shifted in opposite directions and by different proportions; so that while the violins shift each repetition of their phrase to an earlier starting point by the proportion of one sixteenth-note (backward), the brass shift each repetition of their phrase to a later starting point according to the 1-2-4-8 proportion (forward).

It is also interesting to note that the brass phrase in mm. 98-101 consists of three measures with the same rhythm (mm. 98-100), followed by one measure with a different rhythm (m. 101), the 3+1 structure used for many earlier gestures in the work. As shown

in Example 2-13, in addition to controlling the large-scale rhythmic patterning in this section, phase-shifting is also used to create the new rhythm in the final measure of the initial brass phrase in m. 101. The rhythm of m. 100 begins on the fourth eighth-note of the measure and in the following measure is phase-shifted to a starting point one eighth-note earlier to begin on the third eighth-note in m. 101. By using this technique for both large- and small-scale rhythmic structure and patterning, the technique of phase-shifting is fully integrated into the rhythmic language of the work.

A varied repetition of the four-bar string gesture in mm. 19-22 of "Orange with damsons" occurs in mm. 162-165 of "Accutane for perfect beige." The rhythm of the first gesture in m. 162 is identical to that of m. 19, while the following three gestures in mm. 163-165 are phase-shifted according to the 1-2-4-8 proportion. After the initial gesture on the downbeat of m. 162, the second gesture occurs on the second sixteenth-note of m. 163, the third gesture on the fourth sixteenth-note of m. 164, and the last gesture on the eighth sixteenth-note of m. 165. In addition, the gesture in the fourth bar of "Accutane" differs from the earlier presentation. Here, the f-p crescendo gesture played by the flutes in mm. 162-163 is transferred to the strings for their final gesture in m. 165 (see Ex. 2-14).

As stated earlier in the chapter, many of the phrases in the work consist of three statements of one gesture followed by a fourth bar with a different gesture, 3+1, or, aaab

Example 2-15 shows the use of phase-shifting to create a different phrase structure in mm. 211-212 of "Helianthin on silk." The two-bar phrase in the flutes is framed by the same rhythm, heard on both its first and last beats. The two longer, internal gestures which comprise the middle-six beats of the phrase also share the same rhythm, the second statement is phase-shifted to a starting point two sixteenth-notes later than the first. Taken together, these four motives create the motivic structure abba. The phrases played by the oboes and clarinets in mm. 211-212 share this same motivic construction,while the rhythms of their gestures double particular portions of the flute motives sounding simultaneously above them: the oboes double either two or three notes of the flute gestures, and the clarinets double either one or two. Repetitions and variations of this motivic structure occur throughout this sections as shown in Ex. 2-15.

Additive techniques

Another of the principal rhythmic techniques of *Ecstatic Orange*, additive rhythm, is introduced in mm. 19-23 of "Orange with Damsons." Like rhythmic canon, additive rhythm is another of the most frequently used rhythmic techniques in the music of many of the most important twentieth-century and contemporary composers. For example, Thomas Dyer Winters has discussed additive techniques in the music of Ives, Timothy Koozin has examined their use in Takemitsu's piano music, Suzanne Maclean Harkins has explored their role in Crumb's music, and John Fitz Rogers has analyzed their presence in

Stravinsky's *Symphony of Psalms*.[7] And, like phase-shifting, additive techniques have come to be associated in particular with minimal music, as discussed by other analysts.[8] As shown in Example 2-16, the trumpets and trombones begin a five-measure phrase with a two-note gesture in m. 19, which is then expanded to include five notes in m. 20, six notes in mm. 21-22, and eight notes in mm. 22-23. The fourth and final gesture avoids predictability by beginning two sixteenth-notes earlier than the previous figures. The trumpets and trombones then repeat this five-measure phrase in mm. 23-27. Further examples of additive processes will be discussed both in the following section on combined rhythmic techniques and in Chapter 4 in relation to pitch and texture.

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[7]Thomas Dyer Winters, "Additive and Repetitive Techniques in the Experimental Works of Charles Ives," Ph.D. diss., University of Pennsylvania, 1986; Timothy Koozin. "The Solo Piano Works of Toru Takemitsu: A Linear Set-Theoretic Analysis." Ph.D. diss., University of Cincinnati, 1988; Suzanne Maclean Harkins. "A Study of Constructional Principles in George Crumb's *Makrokosmos*, Volume I." M.A. diss., The American University, 1974; John Fitz Rogers. "Formal Process and Proportion in Stravinsky's *Symphony of Psalms*." D.M.A. diss., Cornell University, 1996.

[8]Glenn Claude Lemieux. "Construction, Reconstruction, and Deconstruction: *Music in Twelve Parts* by Philip Glass." Ph.D. diss., University of Iowa, 2000; Joan La Barbara, "Philip Glass and Steve Reich: Two From the Steady State School," in *Writings on Glass: Essays, Interviews, Criticism*, ed. Robert Flemming, Richard Kostelanetz (New York: Schirmer, 1997), 39-45; Mark Stephen Bennett. "A Brief History of Minimalism: Its Aesthetic Concepts and Origins and a Detailed Analysis of Steve Reich's *Desert Music* (1984)." D.M.A. diss., University of Illinois, 1993; Martina Homma, "Das Minimale und das Absolute: Die Musik Henryk Mikolaj Góreckis von der Mitte der sechziger Jahre bis 1985," *Musik Texte: Zeitschrift fur Neue Musik*, 44 (1992): 40-58; Paul R. Barsom. "Large-scale Tonal Structure in Selected Orchestral Works of John Adams, 1977-1987." Ph.D. diss., University of Rochester, Eastman School of Music, 1988.

Combined techniques

Additive processes are combined with elements of phase-shifting in the music of "Russet" (mm. 29-50). The underlying rhythmic structure of this section is a continuous eighth-note division of the pulse which is interrupted by a series of seven tutti gestures. The eighth-note division is played by the oboes from m. 29 through the third eighth-note of m. 49, and then elided on the fourth eighth-note of m. 49 with the horns, who complete the gesture in mm. 49-50. The seven tutti interruptions occur between mm. 29-48. The first four of these undergo an additive process--beginning with one note in m. 29, increasing to four notes in m. 32, then five notes in m. 37, and culminating in eight notes in m. 40. The final three gestures then decrease in size, from six notes in m. 41-42 and 45-46, to four notes in m. 48.

The rhythmic patterning of the horn chords in this section is drawn from the oboe's eighth-note line. In m. 29, the oboes begin with a half-step (G-sharp, A) followed by three downward transpositions of these pitches (the following chapter provides a detailed analyses of techniques related to pitch). At the same time, the horns play eighth-note chords on the first, third, fifth, and seventh notes of the measure, which correspond to the first note of the initial half-step and the first note of each of its three downward transpositions. In mm. 30-31, the oboes begin an additive process, adding a third note to the original two-

note half-step gesture of m. 29. This gesture is then also transposed downward three times while the horn chords are shifted from the first note of each two-note group to the second, or penultimate note, of each three-note group, creating a new rhythmic pattern. In mm. 31-50, the additive process in the oboes continues as the initial gestures that begin each of the five remaining phrases gradually expand from four to eight notes. At the same time, the horns chords continue to sound on the penultimate note of each of the four internal gestures of every oboe phrase. Although the relative position of the horn chords remains stationary in these measures, the gradual increase in length of the oboe gestures makes it seem as if the chords are being phase-shifted to begin one eighth-note later in each new phrase. However, because the chords do not consist of the same rhythmic pattern begun at different points within each measure, phase-shifting is not actually employed here. Instead, new rhythmic patterns are created in each phrase as the duration of the rests between each horn chord increases along with the oboe line (see Ex. 2-17). The horn chords and individual pitches within the oboe-line are both omitted whenever they coincide with the tutti gestures in this passage, but the aforementioned patterning is maintained throughout and the horn chords and oboe line resume immediately after each tutti interjection.

The music of "Orange pekoe in flames" (mm. 82-97), begins with the juxtaposition of four different rhythmic patterns, all of which are based upon material from earlier sections of the work. As illustrated in Example 2-18, in m. 82, the low strings play the four-note

rhythmic figure first heard in the brass in m. 56, while the violins are in rhythmic canon with the low strings at a distance of three eighth-notes. This pattern is maintained through m. 86. A second pattern is present in the percussion, who play a series of interlocking motives based on the violin figures in m. 51, creating a continuous sixteenth-note subdivision of the pulse throughout mm. 82-89. The brass state a third rhythmic pattern in m. 82, based on the rhythm of the first measure of work's opening rhythmic canon, first heard in the violins and violas in m. 2. In m. 82, this three-beat figure is set in a four-voice rhythmic canon in the low brass using the 1-2-4-8 proportion as shown in Ex. 2-18. This canonic structure is also present in the horns in m. 82, with the first beat omitted and set in rhythmic canon with the low brass at a distance of one beat. The final rhythmic pattern is played by the winds: it is a four-voice rhythmic canon based on the rhythm first heard in the winds in m. 51. This canon also adheres to the 1-2-4-8 proportion and is arranged so that Flute 2 and Oboe 1 state the rhythmic pattern in m. 82, and then repeat it three times. The canon is concluded in m. 85. Here, the starting points of the four wind gestures created by phase-shifting in mm. 51-55 have been condensed within a single measure in order to create the entrance points of the four voices in this canon.

Several familiar rhythms and rhythmic patterns appear in the music of "Unripe pumpkin" (mm. 203-210). For example, in mm. 203-205, the rhythm in the percussion is derived from the the violin/viola phrase in mm. 2-4. Here, the percussion simply omit the

eighth-note on the downbeat of each measure, creating a new rhythmic pattern (see Ex. 2-19). In addition, the four sixteenth-note gestures that were heard in the percussion in mm. 198-199, and m. 201 of the previous section, now appear in the brass in mm. 203-204, 206-208, and m. 210. The wind's music in this section is based on the 1-2-4-8 proportion, which is now extended to include 16, the next number in the series. Here it is used to determine the rhythmic position of their entrances in m. 203. In addition, the rhythm of the Flute 1 figure is also created through the use of the 1-2-4-8 proportion, with durations of 1, 2, 4, and 8 sixteenth-notes. The subsequent three gestures in the oboe, clarinet, and bassoon are then arranged according to an augmentation canon, each entrance of which doubles the duration of the preceding voice. In mm. 203-204, the Oboe 1 line doubles the rhythmic values of the Flute 1 line so that it adheres to a 2-4-8-16 proportion with regard to the number of sixteenth-notes assigned to each individual note within the gesture. Clarinet 1 then doubles the Oboe 1 proportion so that the rhythmic values of its line are determined by a 4-8-16 proportion, the final number in the proportion, 32, is omitted so that the clarinet line is completed within the two-measures allotted for this canon, mm. 203-204. Similarly, the Bassoon 1 line only doubles the first two values of the clarinet's proportion, again, so that its gesture can be completed within these same two measures. The fifth, and final voice in this passage, Flute 2, breaks the augmentation canon, and reverts back to the original 1-2-4-8 proportion for the rhythm of its line. In mm. 206-208, this augmentation

canon is restated beginning on the fourth beat of m. 206 and without the Bassoon 1, which now sustains a low "A" throughout these measures. Finally, the first two beats of first canon m. 203, are restated on the last two beats of m. 210 to conclude this section.

"Helianthin on silk" (mm. 211-230), combines techniques involving attack-points, augmentation canons, and phase-shifting. The attack-points of the individual string gestures are derived from the sixteenth-note proportion of the seven pitches of the Violin 1/upper Violin 2 line in mm. 211-218: 5-10-13-7-26-14-52. This proportion represents the number of sixteenth-notes assigned to each pitch, including the rests between pitches. These gestures occur within a three-voice double augmentation canon which is arranged so that the proportion of the lower Violin 2/viola line is double that of the Violin 1/upper Violin 2 line, and the proportion of the 'cello/contrabass line is double that of the lower Violin 2/viola line. In addition, the movement from note to note within the second voice always coincides with a motion in the first voice, and the motion from note to note in the third voice always coincides with a motion in both the first and second voices. A second, truncated statement of this gesture begins in m. 226, and is now phase-shifted backward by one eighth-note to begin on the last eighth-note of the measure. The attack-point proportions are kept the same and the duration of the fifth note is shortened by four sixteenth-notes, allowing the Violin 1/upper Violin 2 to double the last two eighth-notes of the brass gesture which concludes this section

. As stated earlier, the attack-points of the second voice, lower Violin 2/viola, are arrived at by doubling the proportions of the those of the first voice. Its first statement takes place in mm. 211-227, according to the following proportion: 10-20-2-14-52-28-104. A second, truncated statement of this gesture is begun in m. 227, and like the Violin 1/upper Violin 2 line, is also phase-shifted backward one eighth-note, and now begins on the fourth sixteenth-note of the measure. The attack points of the first three notes are the same as in the previous statement, and the duration of the third note is shortened by four sixteenth-notes so that it can join the Violin 1/upper Violin 2 in doubling the brass on the final two eighth-notes of m. 230. The 'cello/contrabass's attack-points are created by doubling the proportions used for the lower Violin 2/viola. Their statement takes place in mm. 211-230, according to the following proportion: 20-40-52-28-104. At this point, like the first two voices, the 'cello/contrabass break the augmentation canon in m. 230 and shorten the duration of the sixth note by four sixteenth-notes, allowing their final gesture to align rhythmically with those of the upper voices.

Example 2-20 shows two other rhythmic techniques used in "Helianthin on silk," both of which occur in the last four measures of the section, mm. 227-230. In mm. 229-230, an intensification is created in the final measure of the section by organizing the winds' rhythm so that each instrument plays a different rhythm simultaneously, with the shortest rhythmic values assigned to the highest voice, and gradually longer values

assigned to each of the lower-three voices. The other technique found in mm. 227-230 is a foreshadowing technique used both to integrate the rhythm of this section with that of the next, and to smooth the transition between the two sections. Beginning in m. 227, the horn, trumpet, and trombone play a series of five short gestures, which because of their evenness, stand out in stark contrast to the highly syncopated music played by the rest of the orchestra in these measures. The music of the next section, mm. 231-238, is a varied repetition of mm. 71-78, the one new feature being an added trumpet counterpoint whose rhythm is the same in each of its four statements. The Trumpet 1 line skips up a fourth to the highest note in the gesture between the third and fourth notes, which creates a rhythmic emphasis on the last three eighth-notes of this gesture. These last three eighth-notes have the same even eighth-note rhythm as the five short brass gestures that concluded the previous section. By introducing the rhythm of the new trumpet counterpoint found in mm. 227-230 during the final four measures of the previous section, the rhythm of two sections is more fully integrated which smooths the transition between the two sections.

In mm. 264-267 of "First Orange," the music in the trombones and tuba features a combined use of augmentation and the 1-2-4-8 proportion. Like many of the other rhythmic techniques used in *Ecstatic Orange*, augmentation has been employed by a wide range of important twentieth-century and contemporary composers.

Its has been analyzed in the music of Messiaen, Berg, Varèse, Webern, and Liebermann.[9]

As shown in Examples 2-21, augmentation is used here to create the rhythm of the second gesture and the proportion determines the beats in which its four statements occur. For example, Trombone 1 and 2 begin a new gesture on the last sixteenth-note of m. 264, the last four notes of which are an augmentation of the first beat of their initial figure in m. 263. The four statements of this new gesture are then articulated on the first, second, fourth, and eighth beats within the last beat of m. 264 and the third beat of m. 266. "Tumultuous 1" (mm. 267-268), concludes "First Orange" with the work's first extended rhythmic unison. Here, the orchestra plays a four-beat, sixteenth-note gesture in rhythmic unison, which boldly emphasizes the sixteenth-note subdivision of the pulse that is such an important characteristic of the rhythmic language of the work as a whole.

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[9]Hans Eugen Frischknecht, "Rhytmen und Dauerwerte im *Livre d'orgue* von Olivier Messiaen," *Musik und Gottesdienst: Zeitschrift für evangelische Kirchenmusik*, 1 (1968): 1-12; Lori Jean Wiest. "Olivier Messiaen's *Cinq rechants*: The Importance of Rhythm as a Structural Element." D.M.A. diss., University of Arizona, 1990; David Congdon, "Composition in Berg's Kammerkonzert," *Perspectives of New Music*, 24/1(1985): 234-269; Elliott Carter, "On Edgard Varèse," in *The New Worlds of Edgard Varèse*, ed. Sherman Van Solkema (New York: Institute for Studies in American Music, 1979), 1-7; Kathryn Bailey, "The Evolution of Variation Form in the Music of Webern," *Current Musicology*, 16 (1973): 55-70; Rolf Urs Ringger, "Reihenelemente in Anton Weberns Klavierliederen," *Schweizerische Musikzeitung*, 107/3 (1967): 144-149; Lisa Michelle Garner. "Lowell Liebermann: A Stylistic Analysis and Discussion of the Sonata for Flute and Piano, op. 23, Sonata for Flute and Guitar, op. 25, and *Soliloquy* for Flute Solo, op. 44." D.M.A. diss., Rice University, 1997.

At rehearsal S of "Second Orange" (mm. 278-285), the low brass gestures used in the previous section are featured once again, here with two important differences. As shown in Ex. 2-22, the rhythm of the individual figures has been doubled through augmentation, and once again, the 1-2-4-8 proportion is used, as the Trombone 1 and 2 gesture articulates the first, second, fourth, and eighth eighth-notes of m. 278. In addition, the canonic points of imitation have also been doubled through augmentation, and now occur in half-note, as opposed to quarter-noteintervals, again, according to the 1-2-4-8 proportion. The rhythm of the new low brass-gesture in m. 280-282 is derived from that of the first, and has simply been phase-shifted backward by one sixteenth-note. Here again, the canonic points of imitation occur in half-note groups according to the 1-2-4-8 proportion, and the eight half-note-groups occur between the last sixteenth-note of m. 280 and the second-to-last sixteenth-note of m. 284, due to the aforementioned phase-shifting of the Trombone 1 and 2 gesture in mm. 280-282. As with "First Orange," each of the 15 individual articulations of the low brass-gestures in mm. 278-282 triggers a repetitive sixteenth-note line in a different instrument or section of the orchestra. Here again, these gestures begin with the strings, followed by the piano/percussion, then the winds, and finally, the upper brass. "Second Orange" concludes with an extension of the rhythmic unison which completed "First Orange." Here, in mm. 285-286, "Tumultuous 2" is expanded to nearly twice the length of the previous gesture.

In mm. 297-305 of "Third Orange," the low brass-gestures heard in the previous two sections are featured for a third and final time. The initial gesture is stated in mm. 297-298 by Trombone 1 and 2, and once again, the rhythms are doubled to twice their previous values through augmentation, shown in Example 2-23. The 1-2-4-8 proportion is again evident in this gesture, as its rhythm articulates the first, second, fourth, and eighth quarter-notes of mm. 297-298. It also, as in the last two sections, determines the canonic points of imitation, which now represent eight, four-beat groups, or more specifically, the eight complete measures from m. 297 to m. 304. As in the last section, the rhythm of the second low brass-gesture is created by phase-shifting the rhythm of the first backward by one sixteenth-note. The difference here is that the initial presentation of the second gesture by Trombone 1 and 2 is now combined with and superimposed onto their statement of the first gesture in mm. 300-301. The second gesture is then also treated canonically according to the previously established pattern. As with the last two sections, "Third Orange" also ends with an extended rhythmic unison. "Tumultuous 3," mm. 310-312, at roughly twice the length of the previous gesture and three times that of the initial gesture, serves to conclude both this section and the previous two, which taken together comprise the work's conclusion.

Atypical passages

Torke creates complexity, variety, and unity in the rhythmic language of *Ecstatic Orange* through the consistent use of several key techniques: canon, phase-shifting, additive processes, and the 1-2-4-8 proportion, which is used in relation to both canon and attack points, and also to create individual rhythmic motives. Throughout the work, these techniques are used both individually, and in varying combinations, and along with the nearly constant sixteenth-note division of the pulse, create a rhythmic language that while unified allows for enough flexibility and variety to avoid predictability or monotony in the piece. There are also several atypical moments in the work whose rhythm is not structured according to any of the aforementioned techniques, and are therefore worth examining.

Assymetrical meters are featured in the rhythmic language of "Sunkist!" (mm. 65-81), and create a refreshing contrast to the preceding sections, which, except for one bar of 3/4 in m. 64, are all in either 2/4 or 4/4. A pattern of one measure of 7/8 (2+2+3) followed by one measure of 5/8 (2+3) is stated in mm. 65-66, and then repeated throughout the section, which concludes in m. 81 with one additional measure of 5/8 The work's characteristic sixteenth-note division of the pulse is also present here, in the interlocking patterns of the oboes and clarinets in mm. 65-81, which accompany an eighth-note ostinato in the percussion, piano, and upper winds in mm. 65-72, which is transferred to the upper

strings in mm. 73-81. In a recent article, Steen Kaargaard Nielsen has studied the use of ostinatos in Torke's chamber piece *The Yellow Pages.*[10]

The rhythm in "Beth's canon (ochre)" (mm. 178-187), is interesting for a number of reasons. First, it is one of the few sections in the work where the sixteenth-note division of the pulse is not heard in the foreground. Instead, it is found in the wind's accompaniment to the lyrical string melodies. Here, the wind accompaniment is based on the rhythm of the four-measure violin/viola phrase in mm. 2-5, which served as the basis for the work's opening four-voice rhythmic canon.The version played by the winds here differs from the earlier presentation in that it is comprised of two five-measure phrases, as opposed to the four-bar phrases of the initial statement in the strings.

Like "Beth's canon (ochre)", "Mineral and ore range" (mm. 188-202), stands apart from the rest of the music in the work due to its almost complete lack of sixteenth-note divisions of the pulse. Instead, the main thematic material features eighth-note divisions of the pulse, beginning in the brass in m. 187 and continuing through m. 202. Sixteenth-note rhythms are then gradually reintroduced in this section, beginning in m. 196 in the winds.

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[10]Steen Kaargaard Nielsen, "Hvåd Angar Chaka Khan i De Gule Sider: En Kompositionsteknisk Dissektion af Michael Torkes 'The Yellow Pages' Ledsaget af Stilistiske og Æstetiske Betragtninger," *Caecilia,* 5 (2002): 201-248.

The final five bars of the piece, mm. 313-317, are noteworthy because they feature one of the few examples of rhythmic diminution in the work. As shown in Ex. 2-24, in m. 313, the strings begin a two-bar statement of the work's principal eight-note series, while in m. 314, elided with the second bar of the string gesture, the winds and brass play a variant of the series. The rhythmic value of each pitch in the wind and brass variant is half that of those in the string gesture, therefore, the winds and brass move through the eight-note series twice as fast as the strings and complete their statement of the series together with the strings in m. 314.

Torke uses the rhythmic techniques discussed here, both individually and in combination, to create a variety of patterns that superimpose simple and complex rhythms. When considering the distribution of these techniques throughout the work as a whole, it can be seen that three techniques, once introduced in the work, are nearly always present: canon, the 1-2-4-8 proportion, and Torke's variant of phase-shifting. Canon and the 1-2-4-8 proportion are introduced in m. 2, phase-shifting in m. 51. From this point on in the work, we hear these techniques presented in continually varying combinations, and also contrasted and combined with the other techniques discussed above, such as additive procedures and attack point techniques. In addition, important moments of contrast are introduced in the work through the inclusion of the atypical passages discussed earlier.

These passages feature different approaches to rhythm, such as asymmetrical meter and free canons, which offer brief respites from the consistent rhythmic language created by the regular use of the work's principal rhythmic techniques.

Torke's use of established twentieth-century rhythmic techniques in this work differs in several important ways from that of many other contemporary composers who have used similar techniques. Most importantly, nearly all of the fundamental rhythmic structures in the work are based upon procedures derived from popular music. For example, he frequently sets up rhythmic vamps that serve as the structural foundation of an entire section and which are based on the extended repetition of short, relatively simple, syncopated rhythmic patterns. These patterns then serve as a kind of canvas upon which he can superimpose more complex rhythmic patterns. At other points in the work, a single rhythmic figure is presented, followed by a series of varied presentations that are based on the use of one or more of these techniques, either simultaneously, such as phase shifting coupled with additive processes, or in succession. In these passages, it is as if he is attempting to exhaustively explore the potential for rhythmic variation within a given pattern, to view it from as many sides as possible.

Typical of the postminimal style, the work's rhythmic language is largely reminiscent of pop music and minimalism--heard here for example, in the repetitive, syncopated sixteenth-

note-based style of the work's principal rhythmic motives, and in the persistent use of techniques derived from Reichian phase-shifting. However, when combined with other twentieth-century rhythmic techniques, the work's rhythmic language takes on a new and highly individual sound, one that while referring to these other musics, maintains its own unique profile. Perhaps most importantly while many other contemporary composers have used similar techniques to create more complex rhythms, increase rhythmic tension, and obscure any sense of underlying pulse in their music, here Torke often uses them for the opposite reasons--to create simple, memorable, repeated rhythmic patterns and relaxed vamps, and to establish the strong, steady pulse which is present throughout most of the work.

CHAPTER 3

TEXTURE

The unique sound of Ecstatic Orange is due in large part to the continual use of contrapuntal, heterophonic, and pointillistic textures, and the exclusion of homophonic or chorale-style textures from the work. The contrapuntal textures generally consist of three or more voices and are often based on rhythmic canons, while the heterophonic textures are created by the simultaneous presentation of two or more different variants of the principal motive sounding in counterpoint to one another. The pointillistic textures are by far the most texturally complex of the three types. In these passages, a gesture played by one instrument or instrumental section is divided into short melodic fragments ranging from a single note to an entire measure of music. These melodic fragments are then assigned to different orchestral instruments or sections and played simultaneously with the main line, creating a fragmented, pointillistic texture. I will begin by discussing textures based on contrapuntal techniques; next, I will examine textures featuring heterophony, pointillism, and other miscellaneous techniques; finally, I will analyze a variety of passages that combine two or more of the aforementioned techniques. Because Torke's approach to texture in this piece is closely linked to specific orchestrational techniques, this chapter will also, by extension, examine Torke's approach to orchestration in the work.

Contrapuntal textures

The predominantly contrapuntal texture of the music of *Ecstatic Orange* is immediately audible in its opening section, "Burnt orange" (mm. 2-18), an example of one of the more traditionally organized textures in the work. This passage consists of two distinct elements: a group of four contrapuntal lines derived from a rhythmic canon played by the strings, winds, brass, and percussion, and a sustained chord which accompanies each statement of the rhythmic canon beginning in the strings in mm. 2-5, then moving to the percussion in mm. 6-8, the winds in mm. 10-13, and finally the brass in mm. 14-17. While always some form of [0157], the chords in these measures are subtly varied in terms their pitch-class content, voicing, and register.This passage is typical of much of the work in that we do not actually hear a distinct four-part texture accompanied by sustained chords. Instead, because of the density of the contrapuntal texture and the proximity of the canonic voices to one another the overall effect achieved here is that of a single, kaleidoscopic, pulsating texture in which a succession of short gestures briefly emerge into the foreground from the amassed orchestral sound.

In "Orange with damsons" (mm. 19-28), a contrapuntal texture is combined with textural additive process, a technique in which the individual voices are gradually introduced until the entire texture is complete, a common texture in the work. The section begins with a straightforward, two-part contrapuntal texture: in mm. 19-22, the strings and

winds play a four-bar gesture based on the rhythm of the work's opening rhythmic canon, each measure of which is answered by a short, sixteenth-note brass figure. In counterpoint to this music, the horn plays a sustained, lyrical melody beginning in m. 20. Textural additive process is employed in m. 23, when a third part is added: a syncopated bass line played by the low brass, piano, and contrabass, which coincides with both the beginning of the second statement of the four-bar string/wind gesture, and the continuation of the horn melody. The expansion of the texture here through the addition of a third contrapuntal voice in m. 23 is significant because it relates to the use of other additive processes in the work, in particular, the use of additive rhythm and additive formal structures, all three of which taken together contribute to the characteristic sound of the work.

The music of "Carroty" (mm. 51-64) is noteworthy because it is the first section in the work which incorporates more than one texture. As shown in Ex. 3-1, mm. 51-55 feature a three-part texture consisting of a sustained G-sharp in the violas, a continuous, interlocking sixteenth-note pattern in the violins, and a series of four short, syncopated wind gestures. This arrangement is similar to that of "Burnt orange," in that it is also comprised of sixteenth-note gestures accompanied by a sustained line. In mm. 56-60, the initial three-part texture is expanded through the use of textural additive process with the addition of a two-voice rhythmic canon between the brass and the percussion/low strings. Here the parts are arranged in such a way that while the sustained G-sharp in the violas,

and the sixteenth-note figurations in the violins continue, each of the four wind-gestures is now preceded by brass-gestures and in counterpoint to a percussion/low string-gesture. The gradual increase in textural density, and expressive intensity, that occurs here through the addition of new voices to a repeated phrase is similar to the effect created by the addition of the bass line in the second four-bar phrase of "Orange with damsons" in m. 23. In the final four bars of the section, mm. 61-64, a new texture is introduced with a phrase for strings, winds, and brass that is comprised mostly of rhythmic unisons. This short phrase serves to both contrast the contrapuntal texture of the music in this section and the next, "Sunkist!," and also to smooth the transition from the predominantly sixteenth-note rhythms of "Carroty," to the prominent eighth-note ostinato in "Sunkist!."

Example 3-2 shows a different approach to textural additive process. Mm. 98-104 of "Absinthe and apricot," feature a four-part texture arranged so that two middle-register, contrapuntal voices are framed by gestures sounding beneath and above them: a repetitive, four-bar bass line in the low brass/bassoons drawn from mm. 90-93 of "Orange pekoe in flames," and a high, sustained E-harmonic in Violin 2. The two internal voices are played by Violin 1/Flute 1 and the horns/trumpets, and each consists of four-bar phrases stated once, then repeated with rhythmic phase-shifting. In m. 105, the last measure of the second phrase, a fifth element is gradually introduced into the texture--a sustained, F-sharp in the cellos and Horn 3 and 4. In mm. 106-109, the original four voices continue in the

same manner, while in m. 107, the F-sharp in the horns and cellos becomes a lyrical melody which continues throughout the rest of the section. This use of textural additive process is significant because unlike those earlier in the piece, the added gesture here is gradually introduced into the texture, demonstrating a more subtle use of the technique as the new voice here develops from a single, sustained pitch into a complete lyrical theme which is heard in counterpoint to the other four voices.

The use of textural additive process in "Carotene, changing to vitamin A" (mm. 122-137) is significant because of its relationship to the texture of the first section of the work, "Burnt orange." As shown in Ex. 3-3, "Carotene, changing to vitamin A," is comprised of a series of four-measure phrases, and like "Absinthe and apricot," uses the rhythm of the four-bar bass line in mm. 90-93 of "Orange pekoe in flames" as the foundation of its texture. In the first of the four phrases, mm. 122-125, the three-part texture consists of the bass line played by solo bassoon sounding beneath two rhythmically-interlocking contrapuntal lines in the oboes. In the next phrase, the texture is expanded to include two more contrapuntal lines in the upper winds. Here, in mm. 126-129, the bass line remains in the bassoons while the four-bar gesture played by the oboes in the previous phrase is now transferred to the flutes. Two new contrapuntal lines are added in the clarinets, which along with the flutes, create a four-part, rhythmically-interlocking contrapuntal texture sounding above the bass line--a total of five contrapuntal lines. In the third phrase, mm. 130-133, the

texture once again expands as a sixth part is added, a syncopated, sixteenth-note-based line in the strings. Like the upper winds, the strings' gesture also interlocks rhythmically, the complete line is played by Violin 1 and the violas, while portions of the line are doubled by the Violin 2 and cellos. The last four bars of the section are the culmination of the textural additive process, when in mm. 134, the piccolo, brass, and xylophone introduce the seventh and final part of the texture, a syncopated, three-note gesture that interlocks rhythmically with the second and last notes of the bass line in mm. 134-136. At this point, the texture has become so dense that, although there are actually seven independent contrapuntal lines sounding in mm. 134-137, taken as a whole, they create the impression of a layered three-part texture, each part of which is assigned to a different orchestral section--the winds, brass, and strings. Gretchen Horlacher has noted a similar approach to texture in the layering ostinatos in Stravinsky's music.[1] This type of dense, contrapuntal texture in which the resultant sound is actually less complex than its multi-voice construction would suggest is similar to that of the four-voice rhythmic canon in "Burnt orange," and its frequent use helps to create the distinct textural language of *Ecstatic Orange*.

Example 3-4 illustrates another important textural technique used in the work,

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[1]Gretchen Horlacher, "The Rhythms of Reiteration: Formal Development in Stravinsky's Ostinati," *Music Theory Spectrum* 14/2 (1992): 171-187.

when in "Orange lava" (mm. 138-149), several of the instrumental lines from "Carotene, changing to vitamin A," are reconfigured to create a new four-part texture in this section. The music here is divided into four-bar phrases with three statements of a four-bar bass line serving as the foundation of the texture. In mm. 138-141, the strings continue their gesture from the previous section, now with the violins playing an octave higher. The syncopated, three-note gesture played by the brass in the final four measures of the previous section is transferred here to the winds, piano, and horns, while the bass line is now played by the tuba and serves as the first voice in a four-voice rhythmic canon with the trombones. The fourth part of the texture in the first phrase is also based on a gesture from the previous section, the four-bar figure introduced by the Oboe 1 in mm. 122-125 of "Carotene." Here, it is played by the D Trumpet and imitated canonically by the trumpets and Horn 4 in a second four-voice rhythmic canon sounding in the brass. In the second phrase, mm. 142-145, the two rhythmic canons in the brass continue, while the syncopated, three-note gesture played by the winds in the previous phrase is now transferred to the strings, and after two complete statements in mm. 142-143, omits the third, then the second note of the gesture in m. 144 and m. 145 respectively. The four-note, syncopated gesture first played by the brass in m. 56 of "Carroty," is re-introduced here by the winds in m. 142 and serves as the fourth and final part of the texture in this phrase. The final phrase of the section is significant as it is one of the few instances in the work where the number of parts in the texture is reduced, here to two parts: a third statement of the rhythmic canon in the low

brass, and a repetition of the four-note wind-gesture from the previous phrase, split between the strings, percussion, upper brass, and winds. The reduction in the number of parts in this last phrase also helps to set up the transition to the comparatively light texture which begins the next section.

The texture in"Beth's canon (ochre)" mm. 178-187, is noteworthy because it is one of the few instances in the work where the sixteenth-note subdivision of the pulse is not heard in the foreground, but is instead used to accompany another gesture. As shown in Ex. 3-5 four freely contrapuntal string lines are supported by figures in the winds which are based on the rhythm of the violin/viola-line in the work's opening rhythmic canon, mm. 2-5 of "Burnt orange." The strings are arranged so that each of the lower three voices freely imitate the lyrical gesture in Violin 1, with both phrases using the same order of imitation in the lower three voices.

"Unripe pumpkin," mm. 203-210, divides the four parts of its texture between the percussion, brass, winds, and strings, as shown in Ex. 3-6. The music is structured into two, four-bar phrases underpinned by a rhythmically varied repetition of the violin/viola gesture from mm. 2-5 of "Burnt orange," in the mallet percussion. The second layer of the texture consists of a series of short, sixteenth-note gestures in the brass, elided with the percussion figures and similar to their responses to the string gestures in mm. 19-22 of "Orange with damsons." The third layer of the texture is in the winds, and features four

voices entering in succession from the high to the low. The fourth and final layer of the texture consists of the pizzicato chords in the strings which double various sixteenth-notes of the wind-lines. This technique of creating new instrumental lines in one voice by doubling specific portions of a line in another voice is one of the principal textural techniques in the work and will be discussed further in the following sections on heterophonic and pointillistic techniques.

To summarize, Torke's contrapuntal textures nearly all involve the layering of short, repetitive phrases--either in some voices or all the voices. He creates variety in these textures in several ways: by varying the phrase lengths of the different contrapuntal lines; combining phrases with a variety of basic rhythmic values; occasionally adding sustained, lyrical lines, in counterpoint to the more usual sixteenth-note-based ideas, and by varying the total number of contrapuntal voices present from section to section throughout the work.

Heterophonic textures

Heterophony, the simultaneous variation of a single melodic line, is one of the seminal compositional techniques in twentieth-century music, and is also regularly encountered in both popular and traditional music. Torke's use of this technique, like many other aspects of his musical language, is derived from popular music. Similarly, Jésus

Aguila has identified heterophonic passages in Boulez's *Marteau sans Maître* and considered their relationship to popular music, and Thomas Bösche has written on the combination of heterophony with variation technique in Boulez's *Derive I*, and explored its impact on the relative clarity of textures in the work.[2] Boulez's use of heterophony differs from that of Torke, in that he uses the technique to create simple textures that contrast other more texturally complex passages, while Torke generally uses the technique to create complex textures. Roman Vlad has studied heterophony in the music of Stravinsky, a composer closer to Torke's own aesthetic, and has written on the use of heterophony to create formal structures in *Le Sacre du Printemps*. This concept is similar to Torke's use of heterophony as the structural basis of entire sections of this work, such as "Russet", and "Titian (wet hair)". Similarly, Anton Dogaru has analyzed the relationship between heterophony and form in Romanian composer Stefan Niculescu's *Formanti*.[3]

The first example of a heterophonic texture in *Ecstatic Orange* occurs is "Russet" (mm. 29-50), which features a complex, fourteen-part texture where each of the individual lines is derived from the eight-note version of the work's principal pitch-class series

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[2]Jésus Aguila, "Boulez: Vingt Regards sur une Page du *Marteau sans Maître* ," *Analyse Musicale*, 41/4 (2001): 77-94; Thomas Bösche, "Zwischen Opazität und Klarheit: Einige abschweifende Bemerkungen zu *Derive I*," *Musik-Konzepte*, 96 (1997): 62-92.

[3]Roman Vlad, "L'Architettura di un Capolavoro: Ancora Sulla *Sagra della Primavera*," *Nuova Rivista Musicale Italiana*, 32/1 (1999): 28-69, 32/2 (1999): 193-220; Anton Dogaru, "*Formanti* de Stefan Niculescu," *Muzica*, 23/2 (1973): 22-23.

(see Ch. 4, pg. 99). Within these fourteen lines there are three distinct sub-groups: lines incorporating the pitches of the original series; lines incorporating pitches derived from transpositions of the original series; and lines which combine pitches from the original series and its transpositions. As shown in Ex. 3-7, the first sub-group includes the following six lines: piccolo/Flute 1, clarinets, Trumpet 1/xylophone, glockenspiel, Violin 2, and piano/low strings. The clarinet and Trumpet 1/xylophone lines are noteworthy for their use of an additive process in which the length of their respective sixteenth-note gestures gradually increases throughout the section as new pitches from the series are introduced. The same process is applied to the gestures in the piano/low string line.

Example 3-8 shows the figures of the second sub-group, all of which consist of gestures derived from transpositions of the original series and includes the following six lines: Flute 2, oboes, bassoons, horns, Trombone 1, and violas. These six gestures are unique in that they are all based upon the oboe line, and therefore, interrelated. As discussed in the last chapter, the oboe-line in this section features a group of gradually lengthening eighth-note gestures, each consisting of a statement of a group of pitches from the original series followed by three downward transpositions of that group. The other five lines in this group are created simply by doubling different portions of the oboe-line. Flute 2 and the bassoons undergo an additive process in which the length of their respective gestures gradually increases. In addition, their doublings are arranged in such a way that

while alternating phrases throughout this section, they double almost every eighth-note of the oboe-line. The rhythmic patterning of the horn chords in this section is also based upon the oboe-line and is constructed using a phase-shifting process that gradually increases the length of the rests between the horn chords throughout this section. The rhythm of the Trombone 1 line undergoes a process similar to that of the horns. Finally, like Flute 2 and the bassoons, the violas also alternate their eighth-notes gestures with those in another line, in this case, the piano/low strings, but differ from Flute 2 and the bassoons in that the length of their gestures in this section are not determined by an additive process.

The third and final sub-group consists of gestures whose pitches are derived from both the original series and its transpositions and includes the tubular bells and Violin 1. As illustrated in Ex. 3-9, the gesture in the tubular bells is generated by doubling specific portions of the oboe figure, all of the G-sharps and A-flats. The G-sharps are derived from the original pitch-class series, while the enharmonic A-flats are derived from transpositions of the original series. This technique of creating new gestures by limiting an instrument's or section's doubling of a main line to specific pitch-classes is used more comprehensively later in the work in the section titled, "Aren't you an orange ewe?," mm. 239-253, and will be analyzed in the following discussion of pointillistic textures. The Violin 1 line alternates pitches from the original series played with a fixed rhythmic pattern with a pizzicato eighth-note line derived from the oboe figure.

Despite the fact that this is one of the longest formal sections in the work, and that all of its fourteen parts are based on a limited, eight-note, pitch-class series, the potential for monotony is avoided through regular transpositions of the series in some voices, sounding together with static, non-transposed statements of the series in other voices. The textural clarity of the fourteen individual lines is achieved both by the aforementioned combination of lines based on both the transposed and non-transposed versions of the series, and through the use of four distinct groups of gestures each of which is based on a specific rhythmic value and which fall into the following groups: sixteenth-note-based lines (piccolo/Flute 1, clarinets, Trumpet 1/xylophone, Violin 1); eighth-note-based lines (Flute 2, oboes, bassoons, horns, glockenspiel, tubular bells, piano/low strings, violas); quarter-note-based lines (Trombone 1); and a long, sustained, whole-note-based line (Violin 2).

A heterophonic texture similar to that of "Russet," is featured in the music of "Titian (wet hair)," mm. 166-177. Here, the texture consists of three main lines all derived from the work's principal pitch-class series in either its original or its transposed form. These three lines are accompanied by a number of secondary gestures which are created by doubling specific portions of one of the main lines. Taken together, these two groups create a complex texture consisting of twenty-two individual parts, many of which consist entirely of the repetition of a single gesture.

As shown in Ex. 3-10, the foundation of the entire texture is a continuous,

interlocking eighth-note accompaniment split between the basses, cellos, and violins, which incorporates a combination of pitches from the original series and its transposition down a minor third. In the violins, each of the three four-bar phrases is structured in such a way that the gestures in the first and fourth measures are the same, and frame two statements of a different gesture that occurs in the second and third measures. This particular phrase-structure will assume an important role both in other parts of the texture, and later in the work in the music of "Helianthin on silk," mm. 211-230. Although their gestures interlock rhythmically with the violins, the three, four-bar phrases in the low strings are structured according to a different pattern of repetition. Here, the figure in the first measure of each phrase is repeated in the third bar, and the figure in the second measure of each phrase is repeated in the fourth bar.

The three main lines are distinguished from the aforementioned eighth-note accompaniment in the strings either by their principal rhythmic value, or, by a recurring gesture. As shown in Ex. 3-11, in m. 166, the violas and Clarinet 2 begin a sixteenth-note-based line which combines pitches from the original series and its transposition down a minor third and is structured according to a pattern of repetition similar to that of violins. Here, the second and third measures of each of the first two four-bar phrases are the same, while the figure in the fourth bar is a varied repetition of that in the first bar--it alters the pitch and duration of the final note of the first gesture and adds one additional eighth-note

to the gesture. The two remaining main lines are both based exclusively on the original, six-note version of the pitch-class series. The horn line differs from the other main lines in three significant ways: each of its gestures is limited to a single pitch, each consists of the same rhythmic pattern, and the line is not organized in four-bar phrases with specific repetitive patterns. Instead, it spans a single ten-measure phrase, which aside from the first two gestures in mm. 167-170, does not incorporate any literal repetition. The third and final main line is played by the upper Violin 1 beginning in m. 167, and like the Violin 2 line in "Russet," consists of a sustained, lyrical melody based on the original six-note series, which differs from the other three main lines both in the generally long, sustained rhythmic values of its gestures, and in its expressive and lyrical character. Four-bar phrases are once again employed here beginning in m. 167, and are arranged in such a way that the entire line consists of a statement and two repetitions of the initial phrase, the last of which is left incomplete when the gesture that begins the next section is introduced.

As stated earlier and shown in Ex. 3-11, each of the secondary gestures in this section is created by doubling specific portions of one of the three main lines and include the Flute 1, Oboe 1, Clarinet 1, bassoon, trumpet, trombone, percussion, and piano lines. The trombone gestures are noteworthy, as they are arranged into a repetitive pattern featuring five-bar phrases, a length that differs markedly from the more typical four-bar patterns used in many of the other parts of the texture, and lends an unpredictable

quality to the line.

Another important aspect of the texture in this section deals with the ways in which the various repetitive phrases are arranged. Like the arrangement of the voices in the rhythmic canons in the work, the repetitive patterns here incorporate varied attack points within the first four measures of the section so that their recurring statements are always overlapped. As shown in Ex. 3-12, four different attack points are used for the eight string gestures in mm. 166-167. This offsetting of the attack points of the four-bar repetitive patterns, coupled with the inclusion of a five-bar phrase in the Trombone 1 and a ten-bar phrase in the horns and bassoons, avoids any potential monotony or foursquare heaviness of phrase structure throughout this section.

As stated earlier, the texture of "Titian" resembles that of the earlier "Russet" in a number of ways: it is based on a continuous even eighth-note line, it combines gestures with several different basic rhythmic values, it features a sustained, lyrical violin line, and nearly all of the parts of the texture are interrelated through an intricate pattern of doublings. However, the overall effect achieved here is the exact opposite of "Russet." While the earlier section consists mainly of brief, bold, syncopated gestures, intensified by regular tutti interruptions, the effect achieved in "Titian," is more intimate, sustained, and relaxed; a brief moment of lyrical repose between two more extroverted rhythmic episodes. This is a significant difference as it demonstrates Torke's ability to create music with two contrasting

expressive characters from the same basic textural technique.

To summarize, Torke's heterophonic textures are nearly all based on several sustained main lines, various portions of which are then doubled or elaborated in other voices whose gestures range anywhere from a single recurring note, to short, complete phrases. In this way, he creates textures with multiple independent voices, all of which are subtly linked to one or more of the main gestures in a web-like fashion. He also achieves a harmonic and melodic richness in many of these passages by simultaneously combining gestures based on the original series with those derived from transpositions of the series.

Pointillism

Pointillism is also a basic twentieth-century compositional technique, and is used to create textures in which the pitches of a gesture are presented in varying timbres and or registers in order to obscure the overall sense of linear continuity. Marie Delcambre-Monpoel has written on Ligeti's use of pointillism in several aspects of his orchestral music--texture, harmony, and rhythm--in order to create either stasis, continuity, or arhythmia. This notion is similar to an approach Torke uses in some pointillistic passages here, in which the harmony remains essentially static, while the highly syncopated rhythms

are generated through pointillistic techniques and propelled forward through repetition[4] Gisele Brelet has noted the use of pointillism in Webern's music in order to create discontinuity; the opposite effect of most of Torke's pointillistic passages, where, while the highly syncopated individual lines may sometimes be discontinuous, the overall effect is one of continuity due to the use of repetition coupled with the work's steady, underlying pulse.[5]

The music of "Mineral and ore range" mm. 188-202, features a pointillistic texture which is created by arranging both the attack points and the length of the instrumental lines to create a, cascading, pyramid effect, reflected by the triangular shape they outline in the printed score, and reminiscent of similar shapes used in the first movement of Bartók's *Concerto for Orchestra.* As shown in Ex. 3-13, this shape is present in each of the six brass gestures that begin this section in mm. 188-193. A pointillistic texture is created when each of the final four notes of the gestures are played by different instruments, in succession from the highest to the lowest voice. Although these four pitches are all articulated in the same register, the pointillistic effect is reinforced here as each of the gestures alternate between the final four notes being played subito forte and piano. The

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[4]Marie Delcambre-Monpoel, "Micropolyphonie Obligée dans l'Oeuvre de Ligeti," *Cahiers du CREM,* 8-9 (1988): 87-99.

[5]Gisele Brelet, "L'Esthétique du Discontinu dans la Musique Nouvelle," *Revue d'Esthetique,* 21/2-4 (1968): 253-277.

first, third, and fifth gestures also incorporate a process in which the number of voices in the texture is gradually reduced as each voice drops out after articulating the final note of its line.

A different version of this shape occurs in mm. 193-194. Here, as shown in Ex. 3-14, the individual lines now conclude their gestures in the opposite direction, from low to high. The series of repetitions of this shape which follow in mm. 194-202 differ from the first statement in two significant ways: a hocket effect is employed in Horn 1 when beginning in m. 195, it consistently replaces several notes in each phrase with eighth-rests; and in the first, third, fifth, and seventh repetitions, the final four notes of each phrase are now played as sustained pitches whose durations gradually decrease in eighth-note increments. In this last section, the sound of the pointillistic texture remains fresh due to both the introduction of hocket in the Horn 1 line, a technique which highlights the doublings of selected pitches in the trumpets and creates an interesting timbral effect; and by alternating the articulation of the conclusion of each phrase between short, accented notes, and long sustained ones.

The most memorable and strikingly original texture in the work occurs in "Aren't you an orange ewe?" mm. 239-252, which features an extreme use of pointillistic techniques. The music here consists of three parts: a main line in the piano, labeled *Hauptstimme*, accompanied by a bass line in the contrabasses and timpani, and a series of rimshots in the snare drum, the rhythm of which doubles portions of both the main line and the bass line.

The pointillistic texture is created in such a way that every note of the *Hauptstimme* is doubled by a different combination of instruments so that no two consecutive notes of the *Hauptstimme* ever share the same doubling. This creates a fascinating, shifting pointillistic texture in which each note of the main line is doubled by a different group of instruments with its own unique combined sound. (The specific technique used to achieve this effect will be discussed in the following chapter on pitch and motivic transformation.) The extreme brevity of most of the doublings, which emerge from different parts of the orchestra in rapid succession, creates a shifting, spatial effect that is reinforced by tapering the doublings of the gestures within each section. For example, in m. 242, the figure in the winds comprised of the last five notes begins in the oboes and clarinets, then shifts in the second and third notes to the oboe and flutes. The fourth note is then played by the clarinets, oboes, and flute, and the last note in the gesture by the oboes and clarinets. When applied to all the orchestral sections, this kind of gradual shifting and tapering of timbre within each gesture creates the shifting, kaleidoscopic sound that characterizes this technique. Nick Ramliak has noted similar approaches to the relationship between texture and pitch in orchestral works by Berio, Penderecki, and Lutoslawski.[6] The section culminates in an orchestral tutti titled "Copper", mm. 253-254, which interrupts the fourth, four-bar phrase begun in m. 251, and replaces its final two measures with a unison

[6]Nick Ramliak. "Timbre and Texture in Twentieth-Century Orchestration Techniques." D.M.A. diss., University of Miami, 1995.

rhythmic gesture.

Other textures

The music of "Terra cotta," mm. 114-121, differs from the music that precedes it in that it features the first extended tutti gestures in the work. Example 3-15 shows the eight measures of the section, which are arranged into two four-bar phrases, and the rhythm of the tutti gestures is the same as that of the bass lines of the previous two sections, "Orange pekoe in flames," and "Absinthe and apricot," so that here, a rhythm which was previously in the background of the texture is now heard as the principal foreground element. The most interesting feature of the texture in this section is the way in which the strings double the ascending F-sharp/G-sharp gesture played by the trumpets and horns in each measure of this section. Beginning in m. 114, the doubling of the two sixteenth-note/eighth-note F-sharp in each measure ascends through the divided cellos, violas, and Violins 1 and 2 (a total of eight divided parts), progressing from the lowest voice in m. 114, the lower cellos, to the highest voice in m. 121, the upper Violin 1. Conversely, the doubling of the two sixteenth-note/eighth-note G-sharp in each measure descends through the strings, progressing from the highest voice in m. 114, the upper Violin 1, to the lowest voice in m. 121, the lower cellos. Torke highlights the ascending and descending movement of the two motives through the string section by placing boxes around each doubled figure in the score and connecting them with lines drawn between the boxed figures.

Combined textures

"Sunkist!," features a four-part contrapuntal texture whose gestures are created through the use of both heterophonic and pointillistic techniques. As shown in Ex. 3-16, in mm. 65-72, the four parts of the texture are arranged as follows: an eighth-note-ostinato in the piccolo, flutes, piano, and percussion; a continuous, interlocking sixteenth-note pattern in the oboes and clarinets; brief, lyrical gestures in the violins; and a sustained, chromatic bass line in the bassoons, horns and trombones, and violas, cellos, and basses. As in "Russet," the heterophonic lines here are derived from the eight-note version of the work's principal pitch-class series, and in this case incorporate two different rhythmic values--the eighth-note ostinato in the piccolo, flutes, piano, and percussion, and sixteenth-note figures in the oboes and clarinets. The sustained violin gestures in this passage are derived from the series in a much less direct fashion--in a procedure Torke referred to as grid technique, specific notes in one instrumental line, in this case the eighth-note ostinato, are doubled and sustained by another voice for values longer than their original duration, in order to create a new gesture.[7] Paul Paccione has examined similar uses of grid technique in relation to

[7]Michael Torke, interview by author, telephone, New York, NY, 28 July 2004.

minimal composers such as Riley, Reich, Glass, and Young.[8]

The bass line in mm. 65-72 features the pyramid-like, cascading pointillistic texture discussed earlier in relation to "Mineral and ore range." As shown in Ex. 3-16, the first note of the bass line in m. 65 is sustained in the lower cello, then articulated and sustained by other voices in the strings, brass, and winds, which enter in succession from higher to lower positions relative to their placement in the printed score. This gesture is most clearly visible in the bassoons and horns in mm. 65-66, including their doublings in the low strings and trombones. This texture is used again in later sections of the work including, "Carotene, changing to vitamin A," and "Unripe pumpkin." Unlike the shape in "Mineral and ore range" however, the voices here do not begin together, but instead begin separately and conclude their gestures together, creating the shape of an inverted triangle, the opposite of that in "Mineral and ore range."

As shown in Ex. 3-17, in mm. 71-76, the eighth-note ostinato previously played by the flutes/piano/percussion is now moved to the upper strings/trumpet, replacing the brief, lyrical gestures previously played by the violins. In addition, the flutes/piano/percussion introduce a new line here, consisting largely of eighth-notes in note-against-note counterpoint to the violin/trumpet-ostinato.

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[8]Paul Paccione, "Time-Space Synthesis: The Relationship of the Grid to Twentieth-Century Music," *Ex tempore*, 5/1 (1989): 15-31.

The texture of "Orange pekoe in flames," mm. 82-97, differs from many other sections of the work in that it does not feature a single texture, but rather, four different textures which correspond to each of the four-measure phrases in this section. Mm. 82-85, features a dense, four-part, contrapuntal texture based upon the superimposition of several different gestures initially presented in previous sections of the work. Underpinning the entire texture is a continuous, sixteenth-note figuration in the percussion, based on an extended version of the interlocking, sixteenth-note pattern first presented by the violins in m. 51 of "Carroty." The remaining three parts of the texture are presented in the winds, brass, and strings: the winds play a four-voice rhythmic canon based on their gesture from m. 51 of "Carroty;" the brass state a different four-voice rhythmic canon, based on the canon in mm. 2-5 of "Burnt orange;" and the strings play a two-voice canon, the rhythm of which is drawn from the brass line in m. 56 of "Carroty."

Beginning in mm. 86, this four-part, contrapuntal texture is gradually transformed into the unison rhythm which concludes the second phrase on beat four of m. 89, as portions of the sixteenth-note figuration in the percussion gradually replace the gestures found in all of the other instrumental lines. This process is seen most clearly in the strings in mm. 86-88, where the gestures of their earlier rhythmic canon are gradually phased out, as new sixteenth-note figurations drawn from the percussion are introduced progressively, beginning with the violins in m. 86 and concluding with the cellos in m. 88. This texture is

also significant because it is another, particularly clear example of the pointillistic, inverted triangle shape introduced in the previous section, created here as the new, sixteenth-note string gestures enter from the highest to the lowest voice in succession. The gradual transformation of the texture in the other sections also begins in mm. 86, starting with Trumpet 2 in the brass and Flute 2 in the winds. This type of gradual textural transformation is similar to the use of block additive process in the music of Steve Reich, a technique in which a gesture is assembled gradually, as with each repetition, rests are replaced by notes until the entire figure is heard in its completed form. Anne-Sylvie Barthel-Calvet has noted a similar approach to texture in Xenakis's music, and J. Peter Burkholder has written on a related concept, cumulative form, in Ives's instrumental music.[9]

Like the first phrase, the third phrase, mm. 90-93, also features a four-part contrapuntal texture, which in this case consists of three superimposed gestures sounding above a bass line. As seen in Ex. 3-18, the rhythm of the bass line is the same as that of the brass canon in the first phrase and is derived from the rhythmic canon in mm. 2-5 of "Burnt orange." The three remaining voices are arranged in the following manner: beginning in m. 90, the upper strings play a syncopated gesture whose rhythm is derived from the wind's music in

[9]Anne-Sylvie Barthel Calvet, "De la Dispersion à la Fusion Sonore: Écriture et Perception des textures Xenakiennes," *Analyse Musicale*, 38 (2001): 86-96; J. Peter Burkholder, "The Organist in Ives," *Journal of the American Musicological Society*, 55/2 (2002): 255-310.

m. 51 of "Carroty;" the trumpets and oboes play interlocking sixteenth-note-figurations similar to those first introduced by the violins in m. 51 of "Carroty;" and the horns play a four-voice rhythmic canon whose pitches and rhythm are drawn from a continuous eighth-note line in the bassoons, and which is imitated canonically by the trombones beginning in m. 91.

The final four-bar phrase in this section, mm. 94-97, features a three-part contrapuntal texture in which the main line is played by the upper strings and accompanied by both brass chords and sixteenth-note figurations in the winds. As shown in Ex. 3-19, the strings are divided into two parts: the violins and violas, who play the main line--a series of short, lyrical gestures--and the cellos, who accompany the upper strings with a figure derived from the bass line. In addition, the second beat of each cello gesture interlock rhythmically with the upper strings, an effect which unifies the gestures in the upper and lower parts and creates the impression of one large, sweeping gesture. The brass chords provide harmonic support for the strings in each of the four measures and their texture is made more expressive by having Horn 1 and 2 sustain the bass notes of each chord while the upper pitches are articulated in a unison rhythm by Horn 3 and 4 and the trombones. In contrast to the brass, the winds' music in these measures provides a more rhythmically active accompaniment to the lyrical gestures in the upper strings through the use of a complex textural technique. Beginning with the second sixteenth-note of the first beat in m. 94,

each sixteenth-note in the measure is articulated through the juxtaposition of eight different rhythmic patterns.

This section is significant because it introduces several new approaches to texture in the work. The first and third phrase feature dense, layered, multi-part textures created by superimposing five or six different gestures simultaneously. The texture of the second phrase is based on a single figure which gradually overtakes, or saturates, the entire texture and proceeds according to a specific shape in the printed score. The final phrase of the section is noteworthy because it is one of the few examples of an essentially homophonic texture in the work, with lyrical string gesture accompanied by sustained brass chords and embellished by wind arabesques. The change of texture in each of the four phrases in this section is also noteworthy because it creates an expressive sense of tension and expectation which is then resolved in the essentially static texture of the next section, "Absinthe and apricot."

One of the most complex textures in the work occurs in "Helianthin on silk," mm. 211-230, which combines rhythmic canon with both heterophonic and pointillistic techniques. Like the earlier "Titian (wet hair)," the individual lines of the heterophonic texture here are based on the work's principal pitch-class series in both its original and transposed versions. As shown in Ex. 3-20, three versions of the original series are presented in the form of a double augmentation canon between the upper, middle, and low strings. All three

voices enter in m. 211, creating a cyclical texture in which, above the single twenty-measure statement of the cello/bass gesture which spans the entire section, there are one-and-a-half statements of the lower Violin 2/viola line and three complete statements of the Violin 1/upper Violin 2 line.

The gestures played by the percussion and the piano are both derived heterophonically from the augmentation canon in the strings. The three mallet percussion play a sixteenth-note line which is drawn from the seven pitches of the Violin 1/upper Violin 2 gesture. After the first pitch, each new pitch introduced in the violin line is articulated in the percussion as a single sixteenth-note which is embellished by preceding and/or following it with one or more sixteenth-notes not found in the violin line. For example, in m. 211, the second pitch of the violin line is articulated in the percussion and is preceded by one additional note which restates the previous pitch of violin line. Similarly, the percussion double all three sixteenth-note articulations of the third pitch of the violin line in mm. 211-212, and precede this gesture with two additional sixteenth-notes not played by the violins. This process continues throughout the remainder of the initial statement of violin gesture and both of its repetitions in the section.

This same technique is also used to create the piano line in this section. As shown in Ex. 3-20, the piano doubles the articulation of each new pitch in the cello/bass gestures and after the statement of the initial pitch in m. 211, precedes each doubling with one or more

sixteenth-notes which are not played by cellos and basses. This process continues through m. 226, at which point additional pitches are no longer added to the piano line. It is also interesting to note that, with the exception of the last two sixteenth-notes in m. 212 and m. 215, the piano figures in this section are the same as those in the percussion in mm. 211-215, with the last pitch of each piano figure being sustained before beginning the next.

Of the eight wind gestures in this section, only the piccolo's is not an independent, heterophonic voice; instead, it doubles the mallet percussion throughout the section. The remaining seven wind gestures are derived heterophonically from the pitch-class series and sound in counterpoint to the five lines in the strings, percussion, and piano. As shown in Ex. 3-20, the flute gestures consist of brief figures based on the original version of the series and serve as the basis for all the other wind lines in the first five measures of the winds' initial eight-bar phrase in mm. 211-218. The first four gestures in mm. 211-212 are arranged according to a phrase structure previously seen in the lower Violin 1 and 2 figures of mm. 166-169 of "Titian (wet hair)," the first and fourth gestures of the phrase are the same, and frame two statements of a different gesture that occur between them. This phrase structure is also used to organize the oboe and clarinet gestures in these same measures, the clarinet lines are based on the original series, while the oboe and bassoon gestures are derived from transposing the series down a minor third (with the exception of the fourth note, C-sharp, which is transposed down a major third). In addition, these figures are all

arranged to interlock rhythmically with the four flute gestures. For example, the rhythm of the Oboe 1 lines are derived from the Flute 1 gestures, Oboe 2 from the Flute 2 gestures, Clarinet 1 from the Flute 1 gestures, Clarinet 2 from the Flute 2 gestures, and Bassoon 1 from the first Flute 2 gesture.

The three wind figures in the next gesture, mm. 213-215, are also derived from the Flute 1 line, and are again based on the cascading, pyramid gesture used in several earlier sections of the work, created by the outlining of triangular shapes in the printed score. In the initial gesture in mm. 213-214, the shape is created visually in the printed score as the voices enter in succession from the highest to the lowest, beginning with Flute 1, followed by Oboe 1, Clarinet 1, and Bassoon 1, and then completed as the voices conclude their gestures together in m. 214. In addition, as in the previous phrase, each of the lower three voices doubles the rhythm of specific portions of the Flute 1 gesture.

In mm. 216-218, the winds play a series of tutti gestures which conclude their initial eight-bar phrase of this section. As shown in Ex. 3-21, the first gesture is stated in m. 216-217, then the first gesture is phase-shifted backward by one eighth-note in m. 218. Beginning on the last sixteenth-note of m. 218, the initial eight-bar phrase in mm. 211-218 is repeated, now phase-shifted backward by one sixteenth-note. In m. 226, a second, varied and truncated repetition of the eight-bar phrase is begun, concluding after three measures with a final presentation of the cascading, pyramid gesture that corresponds to the

outlining of an inverted triangle shape in the score.

Pointillistic techniques are used to create the brass gestures throughout this section--the Horn 1 and 2, Trombone 3, and tuba gestures are created by doubling portions of the string lines, while the Horn 3 and 4, trumpet, and Trombone 1 and 2 gestures are derived from the wind figures. The fragmented Horn 1 and 2 line is drawn from the lower Violin 2/viola gesture and used to highlight the articulation of each new pitch in that line. For example, in m. 211, the horns and strings articulate the G-sharp together, then the horns decrescendo and quickly fade out of the texture, while at the same time, the strings crescendo as they continue to sustain the pitch. The remainder of the Horn 1 and 2 line in this section is constructed using the same technique, the articulation of each new pitch in the string gesture is doubled, and some are then sustained briefly, others are sustained for the same duration as the strings, and some are not sustained at all. The Trombone 3 and tuba lines are both derived from the cello/bass gestures, and like the Horn 1 and 2, are used to highlight each new pitch in that line. For example, in m. 211, Trombone 3/tuba double the first sixteenth-note of the cello/contrabass line which is then sustained by the low strings. A more sophisticated pointillistic effect is created in their next gesture in m. 212. Here, the low brass re-enter and sustain the initial G-sharp in order to reinforce the crescendo in the low strings, and then complete this gesture by doubling the articulation of the next pitch in m. 214. This same pointillistic technique is used by the Trombone 3 and tuba throughout

the remainder of the section.

The most extreme use of pointillistic effects in this section occurs in the figures played by Horn 4, the trumpets, and Trombone 1 and 2. As stated earlier, these lines are derived from the wind gestures and consist entirely of brief, syncopated sixteenth-note figures which range in length from one to five notes. In the first eight-bar phrase, mm. 211-218, the doublings are arranged as follows: the Horn 4 line is derived from the oboes; Trumpet 1 and 2 from the flutes; Trombone 1 from the clarinets; and Trombone 2 from the bassoons. The second eight-bar phrase begins in m. 219 and here, the attack points of the brass gestures are phase-shifted backward one sixteenth-note from the initial phrase. Beginning in m. 227, a third statement of the eight-bar phrase is begun as once again, the attack point of the first note in Horn 4, Trumpet 2, and Trombone 1 is phase-shifted backward one sixteenth-note. At this point, however, the pointillistic sixteenth-note figures are abandoned in all but Trumpet 1, and new, even eighth-note lines are introduced which foreshadow a prominent gesture in the following section.

The texture of "Helianthin on silk" creates an effect unique to this section of the work. Here, the sense of forward momentum in the piece, which to this point has been created principally from a nearly constant sixteenth-note subdivision of the pulse, is temporarily suspended. However, Torke achieves this effect not by removing the sixteenth-note subdivision as in earlier sections, but through the combination of cyclic repetitions of long,

sustained pedals in the strings with restless, animated sixteenth-note figures in the winds, brass, and percussion. The rhythmic contrasts created by the combination of the aforementioned heterophonic, pointillistic, and canonic techniques creates a unique, static effect in which we are momentarily uncertain of which direction the music will move in next. This creates a powerful sense of tension which is then resolved by the ostinato-driven forward momentum of the next section, "The Orange sun kissed," a varied recapitulation of the earlier "Sunkist!"

The texture of "First Orange/Tumultuous 1" mm. 255-267, resembles the earlier "Orange pekoe in flames," in two important ways: each of the four phrases incorporates a different texture, and two of these textures are created using the same layering technique found in the first and third phrases of the earlier section. The first phrase, mm. 255-258, is comprised of three distinct gestures: a lyrical violin line, a four-part contrapuntal wind figure, and a bass line. Aside from the planing technique used to derive the pitches of the violin line from the wind figures (this will be discussed in the following chapter on pitch), these are three distinct and separate musical strata which do not relate in any traditional contrapuntal manner, but rather, are superimposed and sound simultaneously, creating a dense, layered, three-part texture. Katherine Russell Covington has analyzed similar approaches to the layering of different musical strata in music by Ives, Stravinsky,

Debussy, Messiaen, Varèse, and Webern.[10]

This same layering technique is used again in the second phrase, mm. 259-262. The texture here consists of four gestures: a bass line in the low brass; a continuous, sixteenth-note figure in the strings, brief sixteenth-note interjections in the trumpets; and a variant of the familiar four-bar phrase first heard in mm. 51-54 of "Carroty," played here by the horns. Once again, aside from the fact that the pitches of both the horn and low brass gestures are derived from the sixteenth-note figure in the strings (this will be discussed in the following chapter on pitch), these four gestures are simply superimposed and sound simultaneously to create a dense four-part, layered texture. It is significant to note that while the three gestures of the first phrase consisted of two familiar elements--the bass line and the wind counterpoint, and one new idea--the violin line, the four-part texture of the second phrase, as in "Orange pekoe in flames," consists entirely of familiar material. The freshness of sound of these two consecutive layered textures is maintained by the inclusion of a new thematic element in the first phrase which draws our attention away from the overall textural effect to the initial presentation of the new lyrical violin theme. In the second phrase, our attention then turns back to the overall layered sound which now, is comprised entirely of familiar thematic material.

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[10]Katherine Russell Covington. "A Study of Textural Stratification in Twentieth-Century Compositions." Ph.D. diss., Indiana University, 1982.

Example 3-22 shows the dense, sixteenth-note texture of the third phrase, mm. 263-267, which is constructed primarily with rhythmic canons, while the culminating gesture of "First Orange," "Tumultuous 1," consists of an orchestral tutti in rhythmic unison. These same four textures are then repeated in the next two sections, "Second Orange/Tumultuous 2," mm. 269-286, and "Third Orange/Tumultuous 3," mm. 287-312.

Torke's approach to texture in the work is noteworthy because he is able to create a unique textural language despite limiting himself almost exclusively to the use of well-established, traditional twentieth-century techniques. He achieves this unique language in two ways; either through the degree to which he applies a given technique to a passage of music, usually pervasively, to the extreme, or, through imaginative combinations of two or more techniques in a given section, used either in succession, or more frequently, simultaneously. In addition, the originality of the sound of his textures also stems from the combination of standard techniques such as heterophony, or pointillism, with his postminimal musical language--which because it features, for example, the regular use of repetition, and the near continuous sixteenth-note subdivision of the pulse--allows us to hear familiar techniques applied to a musical language with which they are not traditionally associated.

As with the rhythm language of the work, which features the regular use of rhythmic

canon occasionally contrasted with different techniques like phase-shifting or additive processes, the textural language of the piece is essentially contrapuntal, and is occasionally contrasted with the use of heterophony, pointillism, or other textures. These contrasting passages include "Russet", mm. 29-50 (heterophonic); "Sunkist!", mm. 65-81 (combined heterophony and pointillism); "Terra cotta", 114-121; (tutti gestures in unison rhythm); "Titian", mm. 166-177 (heterophony); "Mineral and ore range", mm. 188-202 (pointillistic); "Helianthin on silk", mm. 211-230 (combined heterophony and pointillism); and "Aren't ewe an orange ewe?", mm. 239-252 (pointillism).

CHAPTER 4

PITCH AND MOTIVIC TRANSFORMATION

> *Ecstatic Orange* has two main features: a six note tune which itself never varies, but appears in ever-changing contexts (as if it were wearing different kinds of clothes), and a constant breaking up of a sixteenth note pulse into various bits and fragments. The energy is maintained from beginning to end, forming a single musical sweep. The piece never modulates, and very little of the basic material is transposed. Many colors of paint splash around the orchestral forces, but the hue is always some shade of orange.[1]

Ecstatic Orange is a monothematic serial work, based on a six-note diatonic series comprised of the pitch classes <G-sharp, A, D, C-sharp, B, E>, a member of set class [013568] (Hereafter referred to as either Series 1, or, the original series). As stated in Chapter 1, the series also includes two optional, two-note suffixes, and is often treated as a pitch, rather than pitch-class series, its contour being retained when it is transposed. Many of the themes in the work are derived from the original, six-note version of the series, often presenting the pitch classes in their original order and without transposition. Throughout the work, two suffixes are also regularly added to the series: the first adds the pitch classes G-natural and D-sharp to the end of the original series; the second, E-sharp and F-sharp (Hereafter referred to as Series 1a, and 1b, respectively). Example 4-1 illustrates the series and its two optional suffixes.

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[1] Michael Torke, *Ecstatic Orange* (New York: Boosey & Hawkes, 1985).

One of the most impressive aspects of the work is the wide range of thematic material Torke is able to generate from such a limited series. The transformations of the series are achieved through a variety of techniques which include the following: changing the location of the pitch classes within a fixed rhythmic structure; omitting pitch classes from the original series; adding pitch classes to the original series, both those within its A major diatonic collection and those outside of it; the repetition of one or more pitch classes of the series; octave displacement of one or more pitch classes of the series; and changes in the ordering of the pitch classes of the original series. In addition, many of the transformations of the series combine one or more of the aforementioned techniques. Throughout the work, these techniques are used primarily for two purposes, either to create new thematic material, or to assign pitches to gestures within a pre-determined rhythmic process, for example, the rhythmic canons in the work discussed in Chapter 2 above. Several scholars have noted a similar use of motivic transformation in composers including Stravinsky, and Glass, composers important to Torke's own idiom. For example, Milos Raickovich has identified the similar use of a core motive in Glass's *Einstein on the Beach,* John Fitz Rogers has discussed related uses of pitch-based pattern completion and additive processes in Stravinsky's *Symphony of Psalms,* and Kathryn Bailey has examined motivic

transformation in Stravinsky's *Histoire du soldat.*[2]

The pitches of the Violin 1 gestures in mm. 2-19 of "Burnt orange," are derived from Series 1 and 1a, and consists of four phrases, an initial four-bar phrase in mm. 2- 5, followed by three varied repetitions of that phrase in mm. 6-19. The rhythm of the initial four-bar phrase remains the same in each of the following three varied repetitions, while the pitches assigned to the rhythm change in each phrase.

The pitches here are determined by three different procedures, each of which corresponds to a different measure, or portion of a measure, within the initial four bar phrase. As shown in Ex. 4-2, the first note in the first three measures of each phrase gradually move through the first four pitch classes of Series 1. For example, in the initial phrase, the first pitch class of the series is assigned to the first note in mm. 2-4; then the second pitch class is assigned to the first note in mm. 6-8, followed by the third pitch class for the first note in mm. 10-12, and the fourth pitch class for the first note in mm. 14-16. Similar rotational approaches to pitch have been noted by Shafer Mahoney in David Lang's

[2]Milos Raickovich. "*Einstein on the Beach* by Philip Glass: A Musical Analysis." Ph.D. diss., City University of New York, 1994; John Fitz Rogers. "Formal Process and Proportion in Stravinsky's *Symphony of Psalms.*" Ph.D. diss., Cornell University, 1996; Kathryn Bailey, "Melodic Structures in the Overture and Scene-Music of 'Histoire du Soldat,'" *Canadian Association of University Schools of Music Journal*, 4/1-2 (1974): 1-7.

I.B.M, and by John Fitz Rogers in Stravinsky's *Symphony of Psalms*.[3] Joseph Straus has also identified a related approach to pitch rotation within a series in Ruth Crawford Seeger's music.[4]

Example 4-2 also illustrates an additive procedure used to assign pitches to the rhythm comprising the middle-two beats of the first three measures in each phrase. For example, mm. 2-4 of the first phrase consist of the first three pitch classes of Series 1, the second phrase then adds the fourth pitch class in m. 8, the third phrase adds the fifth pitch class in m. 12, and the fourth phrase completes the series by adding the sixth pitch class in m. 16.

As shown in Ex. 4-3, the third process presents statements of Series 1a that involve the first notes in the first three measures of each phrase along with the notes in the fourth measure of each phrase. Here for example, in m. 2-4, the first pitch class of Series 1a is assigned to the first note in each of these measures. Then in m. 5, the series is completed as pitch classes 2-8 are assigned to the first ten notes in the measure. At this point, the series begins again as its first pitch class is assigned to the last two notes in m. 5, then continues with its second pitch class being used for the first notes in mm. 6-8, and is completed in m. 9, with pitch classes 3-8 assigned to the first nine notes in the bar. Similarly, the third

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[3]Shafer Mahoney. "David Lang's *International Business Machine*: An Analysis." Ph.D. diss., University of Rochester, Eastman School of Music, 1999; John Fitz Rogers. "Formal Process and Proportion in Stravinsky's *Symphony of Psalms*." Ph.D. diss., Cornell University, 1996.

[4]Joseph N. Straus, *The Music of Ruth Crawford Seeger* (New York: Cambridge University Press, 1995), 73-76.

statement of the series begins on the fourth beat of m. 9, with its first two pitch classes assigned to the last three notes, continues with its third pitch class assigned to the first notes in mm. 10-12, and is completed with pitch classes 4-8 assigned to the first seven notes of m. 13. The final statement of the series breaks this pattern, it begins with the first three notes of the series assigned to the last five notes in m. 13, and continues with the fourth pitch class assigned to the first notes in mm. 14-16. At this point, with the addition of a measure to the phrase structure in m. 17, the cycles of repetition of the series are broken as pitch classes 6-8 of Series 1a are not stated in either m. 17 or 18, the last two bars of the section.

Both the voicing of chords and the doubling of gestures in "Orange with damsons" mm. 19-28, are derived primarily from Series 1. As shown in Ex. 4-4, the pitches of the trumpet gesture in mm. 19-23 are derived from Series 1; the upper voice plays the pitch classes in their original order while the lower voice simultaneously plays their inversion at I4, breaking the pattern of doubling on the last note in order to adjust the voicing of the final chord. It is interesting to note that the first two new pitches in the I4 inversion of the Trumpet 1 line are G-natural and E-flat, the pitch classes added to create Series 1a, and the next is F-natural, a part of Series 1b. In addition, the trombones play the same gesture as the trumpets in these measures, transposed at T-9.

This transposition of the series at T-9 is the principal transposition used in

the work and it has two important features. The transposed series has three pitch classes in common with Series 1: B, G-sharp, and C-sharp; and Series 1b concludes with the same two pitchclasses that begin the T-9 transposition of the series: E-sharp and F-sharp, creating a link between the two. Because half of the pitch classes of the original and transposed series are the same, a sense of unity and coherence between the two is created and at the same time, allows for both the melodic and harmonic contrast necessary in an extended work such as this.

Some of the lines in "Orange with Damsons" do not clearly expresses the series, but are instead based on subsets of pitch classes from the series. As illustrated in Ex. 4-5, the bass line in mm. 23-28 uses only a select group of pitches from Series 1a and does not adhere to their original order in the series. Aside from the initial E-flat in m. 23, the entire bass line in these measures consists of the set {G-sharp, A, D, E} of Series 1a, a member of set-class [0157], an important subset of the series which is used frequently throughout the work. In addition, mm. 24-25, and 27-28 consist entirely of pitch classes 3 and 6 of the series. This transformation of the series in the bass line is complemented by a statement of Series 1 in its original order, played by the solo horn in mm. 20-26. In this way, we hear a gesture featuring Series 1 in its original order simultaneously with a motivic transformation of Series 1a.

The pitches of the tutti gesture that concludes this section are derived by a different

technique. As shown in Ex. 4-6, in m. 28, the Violin 1/piccolo gesture consists of order positions <2, 1, 6, 3> of Series 1, a reordering of the aforementioned [0157] subset, while the doublings that sound together with this gesture are transposed to begin on pitch classes drawn from either Series 1 or its T-9 transposition. For example, in the lower Violin 1, Trumpet 2, and xylophone, the gesture is transposed to begin on D, the third pitch class of Series 1; the upper Violin 2 and Trumpet 1 begin on G-sharp (A-flat), the first pitch class, and the lower Violin 2 begin on E, on the sixth pitch class. Similarly, the doublings in the winds and horns begin on pitch classes drawn from the T-9 transposition of the series. As with the brass in "Orange with damsons," the final notes of many of these gestures break the pattern of transposition in order to adjust the voicing of the final chord in m. 28.

In "Russet" mm. 29-50, the pitch classes of Series 1a are assigned to five different gestures, each of which repeat pitches freely as they gradually move through the series by the end of the section. As illustrated in Ex. 4-7, the low strings/piano state the series using an additive process which culminates in m. 42-43. From mm. 29-47, Violin 2 plays a long, sustained, lyrical gesture, stating the series in order, without repetition. Violin 1/flute/piccolo also articulate the pitch classes of the series in order without repetition. However, their statement in mm. 29-48, is interrupted both by the tutti gestures and by the secondary pizzicato line in Violin 1. Like the low strings/piano, both the xylophone/trumpet and the clarinets present the series using an additive process, and both complete the process

in m. 46.

In addition, two other techniques are significant in this section. The oboe line incorporates transpositions of the pitch classes of Series 1 arranged in such a way that the intervals of transposition reflect the intervalic content of Series 1. As illustrated in Ex. 4-8, Series 1 consists of the following intervals between its six pitch classes: <1, 5, 1, 2, 5>--a total of three different intervals. In m. 29, the oboe plays the first two pitch classes of Series 1, G-sharp and A, followed by their transposition downward by the three intervals contained in the series--(1), (5), and (2). This process continues throughout the section as the oboe line undergoes an additive process which gradually incorporates the remaining pitch classes from Series 1a to each new gesture and then transposes them downward according to the same three intervals. At the same time, various fragments of the oboe line are doubled by other instruments.

The pitches in the Trombone 1 gestures in this section are also derived from the oboe line. As shown in Ex. 4-9, in m. 29, Trombone 1 articulates a four-note series by doubling the first, third, fifth, and seventh notes in the oboe figure. These four pitch classes, A-flat, G, D, and C, are an I4 inversion of the [0157] subset, the same inversion used by the trumpets beginning in m. 20. They are re-articulated by Trombone 1 each time they occur in the oboe line, with their order varied through rotational technique. For example in m. 29, these four pitch classes occur in their original order <A-flat, G, D, C>; in mm. 30-31, the

series begins with the second pitch <G, D, C, A-flat>, in mm. 32-34 the third pitch <D, C, A-flat, G>, and the rotational cycle is completed in mm. 38-39, with an incomplete statement of the series beginning on the fourth pitch class <C, A-flat, G>. Similar uses of this type of rotational technique have been noted in the music of Stravinsky by Hogan, and Wuorinen and Kresky.[5]

As shown in Ex. 4-10, grid technique is used to determine the pitches of the flute gestures in mm. 51-60 of "Carroty." Here, a continuous sixteenth-note line divided between Violin 1 and 2, comprised of two statements of Series 1a per bar, creates a grid of pitches from which the notes in other gestures are derived. For example, in m. 51, the pitches in the Flute 1 and 2 figure are derived from the pitches of the sixteenth-notes that they rhythmically coincide with in the violin gesture. Notes with rhythmic values longer than one sixteenth-note also double the pitch they rhythmically coincide with in the violins, then sustain the pitch until the articulation of the next note in the gesture. Unlike the tutti gesture in m. 28 which closed "Orange with damsons," the other wind lines in mm. 51-60 of "Carroty," are not derived from transpositions of the flute figures, but instead, are harmonized freely. By using this grid technique to derive the pitches of the flute gestures from the violin line, we hear two different versions of Series 1a

[5]Clare Hogan, "*Threni*: Stravinsky's 'Debt' to Krenek," *Tempoï*, 141 (1982): 22-29; Charles Wuorinen and Jeffrey Kresky, "On the Significance of Stravinsky's Last Works," in *Confronting Stravinsky*, ed. Jann Pasler (Berkeley: University of California, 1986): 262-270.

simultaneously: stated both in its original order, twice per bar in continuous sixteenth-note figures in the violins, and in freely varied combinations and orderings of five-note groups of pitches in the flutes. Although perhaps not immediately audible as being derived from Series 1a, the flute figures here are limited to the pitches played by the violins, and therefore create a subtle unity between the two gestures.

One of the most memorable tunes in the work is the two-bar wind/percussion/piano ostinato in "Sunkist!", mm. 65-81. Here in mm. 65-66, the ostinato is derived from Series 1a and combines the repetition of pitches with changes in the order of the series. As shown in Ex. 4-11, the fifth pitch is repeated once, and the first two pitches are repeated between the seventh and eighth notes of the series. The pitches of the accompanying oboe and clarinet figures are also generated from Series 1a and combine several techniques including changes in the order of the series, the repetition of pitches, and the use of retrograde. The first eight notes of the Oboe 1 and 2 gesture in m. 65 consists of pitches <1, 2, 3, 4, 5, 6, 8, 3> of the series. The next eight pitches, in mm. 65-66, consist of a statement of the series in its original order, which is then followed immediately by the retrograde of the series beginning on the third note in m. 66. Like the flute figures in "Carroty," the pitches of the three, sustained violin gestures in mm. 65-71 are also generated through the use of grid technique and are in this case derived from the eighth-note ostinato.

The pitches of the string, brass, and wind lines in mm. 82-85 of "Orange pekoe in

flames" are also determined by the use of the grid technique. As illustrated in Ex. 4-12, the grid consists of a one-measure, continuous sixteenth-note gesture split between the vibes and marimba, first stated in m. 81. The sixteen notes of the gesture are derived from a combination of pitches from Series 1a and its T-9 transposition, and begin with a statement of Series 1a in its original order. The remaining eight notes of the figure are reordered as shown in the example. This gesture is then transposed at T-3, with each repetition of the figure so that in m. 83 it begins on B, m. 84 on D, and m. 85 on E-sharp. With the T-3 transposition in m. 86, the series returns to its original starting pitch of G-sharp and the following three repetitions of the gesture in mm. 87-89 are transposed in the same way. This passage is also significant because it is the first of only two occurrences in the work of a full aggregate, a logical outgrowth of the additive process begun in Series 1a with the addition of pitch classes G-natural and D-sharp to the original series, and continued with the addition of pitch classes E-sharp, F-sharp, and A-sharp in the T-9 transposition of Series 1. As shown in Ex. 4-11, the full row is present in m. 82, in the combined vibes/marimba line, completing the additive process by introducing the one remaining pitch class, C-natural, derived from the T-9 transposition of Series 1a.

Beginning in m. 86, the continuous sixteenth-note lines in the strings are also derived from the percussion grid. As shown in Ex. 4-13, the upper Violin 1 doubles the figure in the percussion, while the remaining seven string lines, which enter in sucession in mm.

86-88, consist of downward transpositions of the upper Violin 1 gesture. The level of transposition for each of these lines is arranged in the following manner: in the first two beats of m. 89, the Violin 1 plays the T-9 transposition of Series 1a, beginning on its first pitch, E-sharp, followed by the retrograde of the original, non-transposed version of Series 1a on the final two beats of the bar. Each of remaining seven string lines simultaneously plays a transposition of the Violin 1 line, beginning on one of the seven remaining pitch classes of the T-9 transposition of Series 1a. The starting pitches of the lines are arranged in the following order, from the lower Violin 1 to the lower cello: <6, 3, 2, 7, 4, 5, 8>. Here, in each measure, the percussion grid is transposed at T-3, and sounds simultaneously with the string lines, the pitches of which are determined by the T-9 transposition of Series 1b.

Pitches from set-class [0157] found in both Series 1 and its T-9 transposition are used for the brass chords in "Absinthe and apricot," mm. 98-113. As shown in Ex. 4-14, the first three chords draw on pitches from the familiar {G-sharp, A, D, E} subset of Series 1, while the fourth chord uses the same subset of pitches from the T-9 transposition of the series, and voices them in a slightly different way. The {G-sharp, A, D, E} subset from Series 1 is also used for the Violin 1 line in mm. 98-101. For example, the figure in mm. 98 is comprised of the first two pitches of Series 1, and that in mm. 99 consist of the entire subset. This passage is significant because we hear both harmonies and melodies derived

from the series simultaneously. The brass chords complement the ongoing motivic transformations of the series in the violins, reinforcing the motivic unity in the work, and contributing in a new way to its characteristic sound.

The string chords in mm. 114-115 of "Terra cotta" are of interest because, unlike the brass chords in "Absinthe," which consisted of pitches from either the original or the transposed series, they freely combine pitches from the original and transposed series within the same chord. As illustrated in Ex. 4-15, the two brass chords from m. 98 of "Absinthe," which consist of the [0157] subset of both Series 1 and its T-9 transposition, are superimposed in m. 114 of "Terra cotta" to create a new harmony. Similarly, four-note subsets from Series 1a and its T-9 transposition--also members of set-class [0157]--are used to create the first chord in mm. 115. By freely combining and mixing the pitch classes of the original and transposed series in this way, the chords in this section provide the harmonic variety necessary to contrast the many sections of the work based entirely on the pitch classes of the original series. At the same time, these chords also contribute to both the motivic and harmonic unity of the work as they are all derived from the same basic series and T-9 transposition.

Combining pitches from the original and transposed series used to create the harmonies in "Terra cotta," is now used melodically in the chromatic, contrapuntal wind figures in mm. 122-129 of "Carotene, changing to vitamin A." As illustrated in Ex. 4-16, with the

exception of its last three notes, the Oboe 1 line in mm. 122-125 consists of three statements of Series 1 in its original order, while the contrapuntal figure in Oboe 2 draws its pitches from the T-9 transposition of Series 1, and only loosely adheres to the order of the series. Torke freely manipulates the series for reasons of orchestration as shown in the example. In mm. 126-129, the oboe gestures are repeated an octave higher, while the clarinets introduce two new contrapuntal lines; Clarinet 1 draws freely on pitches from Series 1b, the last two pitch classes of which are the same as the first two pitch classes of the T-9 transposition of this series, used in the Clarinet 2 line.

Torke uses a variant of the grid technique discussed in relation to "Carroty" and "Orange pekoe in flames" to assign pitches to the rhythmic canon in the trumpets and Horn 4 in mm. 138-141 of "Orange lava." As shown in Ex. 4-17, the pitches in Trumpet 1 and 2 and Horn 4 are derived from those in the D trumpet line, and are arranged so that whenever Trumpet 1 and 2 and Horn 4 articulate a new note in their respective gestures, they double either the pitch being simultaneously sustained by the D trumpet, or in the case of a rest in the D trumpet line, the pitch that was last played by the D trumpet before the rest. The grid technique used here differs from the two discussed earlier in that this grid is not comprised of a continuous instrumental line with a different pitch on each sixteenth-note of the bar, but rather, a gesture in four distinct phrases which includes both pitches and rests. Because of this, pitches in the grid are now also applied to the rests that follow them. In this way,

when a note in a gesture drawing its pitch classes from the grid corresponds with a rest in the grid, a pitch can be assigned to that note. This variant of the grid technique used earlier in the work is important because it demonstrates how, through a simple change in the conception of one parameter of the original technique, a greater variety of possible pitch classes is made available for the gestures in this section.

The pitches of the four different percussion chords in mm. 146-149 of "Orange lava" are derived from either Series 1a or Series 1b. As illustrated in Ex. 4-18, the first chord in m. 146 consists of the familiar [0157], {G-sharp, A, D, E} subset of pitch classes from Series 2; it is re-voiced to create the first chord in m. 147, and the original voicing is repeated in m. 148. The second chords in mm. 146 and 147 are transpositions of the first chord in m. 146--they are both derived entirely from subsets of pitch classes from Series 1a, {G, A, C-sharp, D} and {A, B, D-sharp, E}, and are also members of set-class [0157]. The only chord in these four measures that is not derived from Series 1a and is not a transposition of the first chord in m. 146 is the first chord in m. 148; it consists of the subset {A, D, B, F} of Series 1b. The three chords in m. 149 consist of a revoicing of the second chord in m. 146, and then repetitions of the first chords in mm. 148 and 146.

The pitch content of the pizzicato bass line which underpins the entire texture of "Titian (wet hair) mm. 166-177, is limited to the subset {E-sharp, F-sharp, B, C-sharp} [0157], from the T-9 transposition of the series. As shown in Ex. 4-19, these pizzicato figures

interlock with the pizzicato lines in the lower Violin 1 and 2, both of which draw their pitch class from Series 1. This combined pizzicato line is significant because it is one of the few examples in the work of a gesture which combines pitch classes from both the original series and its T-9 transposition. In addition, because the three principal melodic gestures in the section in the upper Violin 1, the viola/clarinet, and horns, are all based on pitches from the original series, aside from "Carotene", this is the only section to this point in the work in which we hear gestures based on both the original series and its transposition simultaneously throughout the entire section. For this reason, the resultant sound here stands apart from most of the other sections in the work. The hypnotic, repetitive bass line, sustaining and alternating the first two pitch classes of the transposed series in an almost pedal-like fashion, supports and blends with the animated rhythmic and lyrical gestures derived from the original series played by the upper Violin 1, viola/oboe, and horns.

Like "Titian," "Helianthin on silk" mm. 211-230, features gestures based on pitch classes from both the original series and its T-9 transposition simultaneously. The gestures in the strings are limited to the first seven pitch classes of Series 1b, as are those in the percussion and piano, whose figures double portions of the string gestures. In contrast, the winds and brass play gestures whose pitches are derived from both the original series and its T-9 transposition: the piccolo, flute, and clarinet gestures are all derived from Series 1, and the oboes and bassoons play figures derived from the T-9 transposition of this series.

Just as the percussion and piano lines double portions of the string gestures, the brass figures double portions of the wind lines in this section. Horn 1 and 2, Trumpet 1 and 2, Trombone 1 and 3, and tuba, all play figures based on pitch classes from Series 1, while the pitches of the Horn 3 and 4, and Trombone 2 lines are drawn from the same T-9 transposition of the series used in the oboes and bassoons. The many long sustained notes in the strings from Series 1b serve as a canvas upon which the short, syncopated wind and brass figures, which combine pitch classes from both forms of the series, are heard. As in "Titian," this creates a rich, blended sound which, because of the combined series used throughout the section, stands apart from most other parts of the work.

The derivation of the pitches of the individual lines in "Aren't you an orange ewe?" mm. 239-252, is achieved by limiting the doublings of the piano's *Hauptstimme* in each line to a different range of pitches, so that no two lines share the same range. Each line then doubles only the notes from the *Hauptstimme* that fall within its assigned range of pitches, resulting in 28 different pointillistic lines in the winds, brass, percussion, and strings, which together double the entire main line. Measures 239-250 of the *Hauptstimme* consists of three, four-bar phrases. As shown in Ex. 4-20, the pointillistic doublings of this line in the horns consist of four figures, each of which is limited to a different group of pitches. Horn 1 has a pitch range of two notes, A and B, and articulates these notes whenever they occur in the main line. Horn 2 has a pitch range of three notes, two of

which, A and B, overlap with Horn 1, and it also doubles all the G-sharps in the main line. The pitch range for Horn 3 consists only of A and G-sharp, while Horn 4's pitch range is comprised of three notes, F-sharp, G-sharp, and A. Because each of the four horns is assigned a different pitch range for their doublings of the *Hauptstimme*, no two consecutive notes played by the horns throughout this section ever share the exact same doubling.

The *Hauptstimme* in the piano upon which most of the other lines here are based is also of interest as it is one of the few gestures in the piece which combines pitch classes from the original series and its T-9 transposition within the same line. As illustrated in Ex. 4-21, in m. 239, the five notes in the piano line consist of <A, G-sharp, D> from the original series, and <E-sharp, F-sharp> from the T-9 transposition of the series. Similarly, the next bar is comprised of <D, G-sharp, E> of the original series and again, <E-sharp, F-sharp> of the T-9 transposition of the series. The combining of pitch classes from both series here differs from that discussed earlier in relation to "Carotene," where the pitch classes of the original series were used in one gesture and those of the transposed series in a separate accompanying contrapuntal line. Here, the use of pitch classes from the combined series creates a level of chromaticism in the piano line which starkly contrasts with the many gestures in the piece based entirely on pitch classes from the original series, a contrast which is emphasized by the brilliant pointillistic doublings of the piano line

throughout the orchestra.

The pitches of the lyrical violin theme in mm. 255-258 of "First Orange" are derived from the accompanying wind counterpoint using a variant of the grid technique Torke refers to as "planing."[6] As shown in Ex. 4-22, this example of the technique differs from grid technique in two important ways: the pitches here are drawn from a single-line grid, but from four different contrapuntal lines, which incorporate two different versions of the series, both the original and the T-9 transposition. As in the brass figures in "Orange lava," the pitches in the violin line do not double the rhythmic values of those in the winds, instead, each note is sustained by the violins until the next pitch in the line is articulated.

In mm. 259-262 of "First Orange," the D Trumpet, Trumpet 1, and Trombone 1 restate three themes from "Absinthe and apricot" in a dense, layered contrapuntal texture, doubled by Horn 1 and 2, Trumpet 2, and Trombone 2, who draw their pitches from the violin figure using the grid technique. As shown in Ex. 4-23, the D Trumpet and Trombone 1 restate their earlier gestures from "Absinthe", while Trumpet 1 restates the line originally played by the violins; each of these lines is then doubled with pitches drawn from the grid in the violins, a varied repetition of the grid in m. 51 of "Carroty," which now consists of a statement of Series 1a followed by a statement of Series 1b. This use of grid technique

[6]Michael Torke, interview by author, telephone, New York, NY, 28 July 2004.

differs slightly from other examples in the work in that, in "Carroty," the technique was used to determine the pitches of the thematic material in the flutes which was then harmonized freely in the remaining winds with pitches not drawn from the violin grid. Here, the opposite occurs, the main thematic material is not drawn from the grid, but consists instead of restatements of themes from earlier sections of the work, which are then doubled by pitches drawn from the grid. This is an important distinction as it demonstrates a new, harmonic use of the technique, which contrasts its earlier melodic uses.

The T-3 transpositions of the percussion figure that created the sense of mounting tension in "Orange pekoe in flames," are used in the piano and brass gestures in mm. 263-266 of "First Orange" to create a similar effect. As illustrated in Ex. 4-24, the piano line consists of six notes drawn from Series 1a and its T-9 transposition: <G-sharp, A, D, E, G-natural> from Series 1a, followed by C-natural, the last note of the T-9 transposition of the series. This gesture is transposed at T-3, three times in mm. 263-264, then repeated in the brass in mm. 265-266. In mm. 278-281 of "Second Orange," the piano gesture is expanded to eight notes and again, transposed at T-3 three times. Finally, in mm. 298-301 of "Third Orange," the gesture is extended to 12 notes, and as in the previous two statements, the initial presentation of the figure is followed by three T-3 transpositions.

The additive process that culminated in the statement of a full aggregate in the percussion in m. 82, is now compressed and recapitulated in the three final tuttis of the

work, "Tumultuous 1", 2, and 3, mm. 267-268; 285-286; and 310-312. As illustrated in Ex. 4-25, "Tumultuous 1" states the first 9 notes of the row in mm. 267, omitting the pitch classes C-natural, F, and A-sharp. The A-sharp and F are then added in m. 286 of "Tumultuous 2", and the C-natural in m. 311 of "Tumultuous 3".

The pitches of final chord consists of the [0157] subset of Series 1, the most important and frequently encountered subset in the work. As shown in Ex. 4-26, it serves here as a bold, final harmonic gesture which perfectly complements both the prior melodic statements of Series 1a in mm. 313 and 314, and also the work's opening chord, which superimposes the [0157] subset used here, with the [0157] subset of the T-9 transposition of the original series. In this way, the final chord can be heard as a resolution of the opening chord, which omits the pitches from the transposed series, and incorporates only those from the original series. The sense of resolution conveyed by the final chord is reinforced by placing "E" in the bass, a downward resolution of the repeated G-sharp pedals heard in the low brass in mm. 263-264; 278-282; and 297-309.

Despite drawing on an extremely limited range of pitches in the work, Torke creates the melodic and harmonic contrast necessary in a piece of this length in several important ways. First, he uses three versions of the original series which differ significantly enough from each other to create a sense of melodic and harmonic freshness when they are heard throughout the work. Second, he employs transpositions of the series at carefully chosen

moments throughout the work, contrasting the more regular use of the three original series, and introducing important new melodic and harmonic colors, particularly when the transposed series is combined with the original in the same motive, chord, or section of the work. Finally, he draws upon a wide range of techniques in order to create and feature the different melodic and harmonic possibilities within the series: rotation, additive procedures, variations in order position, subsets, planing, and grids.

By intentionally limiting the pitch content of the work, Torke achieves the monochromatic effect he intended for this work, an effect similar to the other pieces in his series of his color-inspired works including *Green*, *Purple*, *Bright Blue Music*, and *The Yellow Pages*. Because of this intentional limitation, he succeeds in shifting the listener's attention away from pitch and harmony in the work, to its more compelling and original aspects, rhythm and most importantly, orchestral color.

CONCLUSION

In his preface to *Ecstatic Orange*, Torke states that the work has two main features, a six-note tune and a sixteenth-note subdivision of the pulse. Perhaps his most impressive achievement in the piece is the transformation of these two familiar, almost simplistic features into a strikingly original and complex musical language. However, the success of the work also lies in Torke's ability to balance these two main features with a secondary group of materials--themes and motives, rhythms, phrase structures, gestures, and shapes--which recur throughout the piece and both contrast its two main features, and create unity in the composition. The unique sound of *Ecstatic Orange* somewhat surprising, as its materials and techniques are neither new, or particularly innovative. Rather, its characteristic sound is due instead to two overriding aesthetic ideas: the transformation of simple materials with complex techniques and processes; and the degree to which familiar techniques or processes are employed within a given passage or section of the piece.

The work's formal structure, for example, is a unique combination of the seminal twentieth-century concepts of Stravinskian block form and minimalist continuous form, more traditional formal devices such as recapitulation, and a regularly recurring basic four-bar phrase structure derived from popular music. Typical of his postmodern aesthetic,

Torke's originality here stems from his choice and combination of materials, rather than from the materials themselves.

Similarly, the rhythmic language of the piece consists of a variety of standard twentieth-century techniques including canon, augmentation, phase-shifting, additive processes, and techniques related to attack points; all of which are combined regularly throughout the work with the 1-2-4-8 proportion. It is the degree to which these techniques, particularly canon, are employed both within individual sections and throughout the composition as a whole, that creates the originality of Torke's rhythmic language. In addition, the highly repetitive and syncopated rhythms used throughout are derived primarily from popular music and jazz, so that it is the particular combination of materials and techniques--pop- and jazz-based rhythms combined with twentieth-century rhythmic techniques, that creates a unique rhythmic language.

The most original aspects of texture in the piece are found in the heterophonic and pointillistic sections: "Russet", "Titian", "Helianthin", and "Aren't you and orange ewe?". These sections are among the most memorable in the work because of the pervasive degree to which they employ heterophony and pointillism, creating complex textures with more than twenty independent lines. Also, Torke's frequent use of Stravinskian textural layering and stratification allows him to restate earlier materials in new and varying combinations,

creating a kaleidoscopic effect as we continually hear familiar material in new and varied juxtapositions throughout the composition. This is significant as it both creates a sense of thematic and motivic unity in the work and also enables Torke to generate new music and formal sections from material used earlier in the piece in order to extend its continuous form.

As with rhythm, Torke's uses a variety of basic twentieth-century techniques to manipulate pitch in *Ecstatic Orange*, including rotation, planing, additive processes, grid techniques, and techniques related to order position. His use of subsets of the original series, particularly [0157], and of the recurring T-9 transpositions of the series at carefully chosen, key moments in the piece, creates a sense of both melodic and harmonic contrast, while never diminishing the intended overall monochromatic effect of the work as a whole.

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COMPOSITIONAL TECHNIQUES IN MICHAEL TORKE'S

ECSTATIC ORANGE

by

GREGG WRAMAGE

Part II: Musical Examples

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

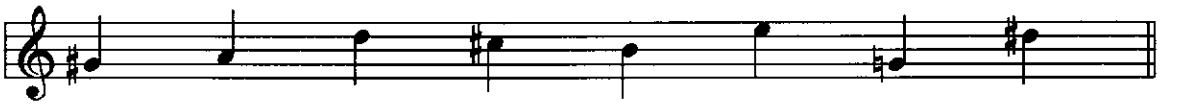
2006

LIST OF EXAMPLES

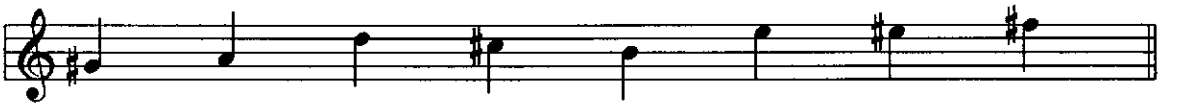
Example 1-1: Original series with two suffixes;
T9 transposition of the series

Original series

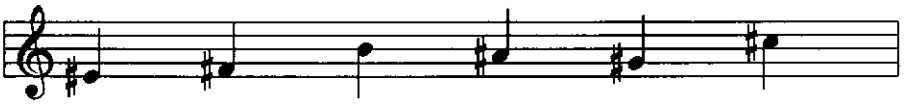
Series with first optional two-note suffix



Series with second optional two-note suffix



T-9 transposition of original series

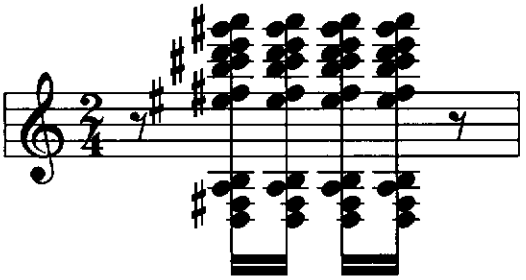


Example 1-2: Formal plan

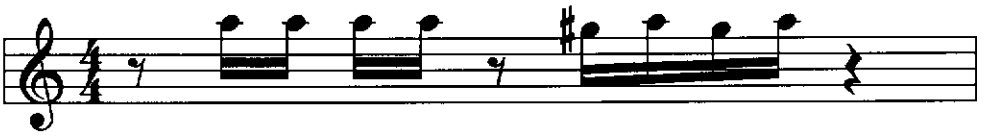
Main body	**Conclusion**	**Coda**
mm. 1-254	mm. 255-312	mm. 313-317
Burnt orange, mm. 1-18	First Orange, mm. 255-266	
Orange with damsons, mm. 19-28	Tumultuous 1, mm. 267-268	
Russet, mm. 29-50	Second Orange, mm. 269-285	
Carroty, mm. 51-64	Tumultuous 2, mm. 285-286	
Sunkist!, mm. 65-81	Third Orange, mm. 287-309	
Orange pekoe in flames, mm. 82-97	Tumultuous 3, mm. 310-312	
Absinthe and apricot, mm. 98-113		
Terra cotta, mm. 114-121		
Carotene, changing to vitamin A, mm. 122-137		
Orange lava,mm. 138-149		
Accutane for perfect beige, mm. 150-165		
Titian (wet hair), mm. 166-177		
Beth's canon (ochre), mm. 178-187		
Mineral and ore range, mm. 188-202		
Unripe pumpkin, mm. 203-210		
Helianthin on silk, mm. 211-230		
The Orange sun kissed, mm. 231-238		
Aren't you an orange ewe?, mm. 239-253		
Copper, mm. 253-254		

Example 1-3: Derivation of opening tutti gesture from m. 98, "Burnt orange" m. 1, "Absinthe and apricot" m. 98

Reduction of m.1 tutti



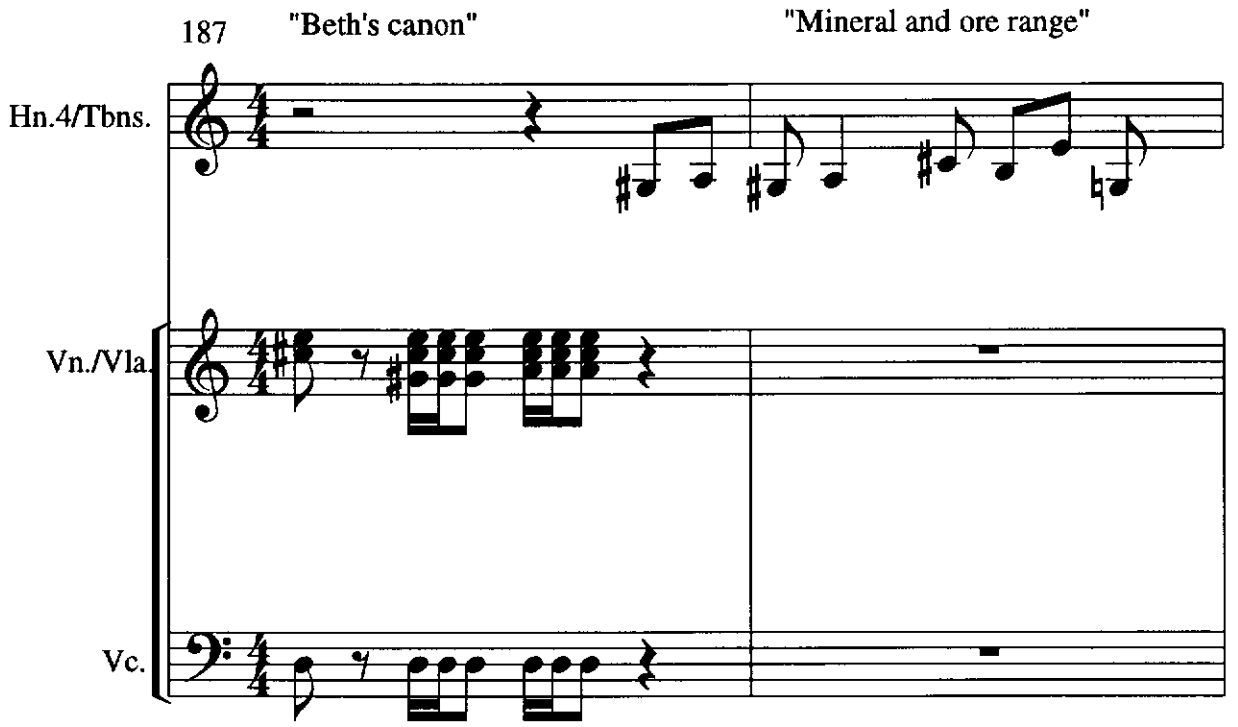
m. 98 Vn.1/Fl.1 gesture



Example 1-4: Main body

Main body: mm. 1-254	
Burnt orange	mm. 1-18
Orange with damsons	mm. 19-28
Russet	mm. 29-50
Carroty	mm. 51-64
Sunkist!	mm. 65-81
Orange pekoe in flames	mm. 82-97
Absinthe and apricot	mm. 98-113
Terra cotta	mm. 114-121
Carotene, changing to vitamin A	mm. 122-137
Orange lava	mm. 138-149
Accutane for perfect beige	mm. 150-165
Titian (wet hair)	mm. 166-177
Beth's canon (ochre)	mm. 178-187
Mineral and ore range	mm. 187-202
Unripe pumpkin	mm. 203-210
Helianthin on silk	mm. 211-230
The Orange sun kissed!	mm. 231-238
Aren't you an orange ewe?	mm. 239-253
Copper	mm. 253-254

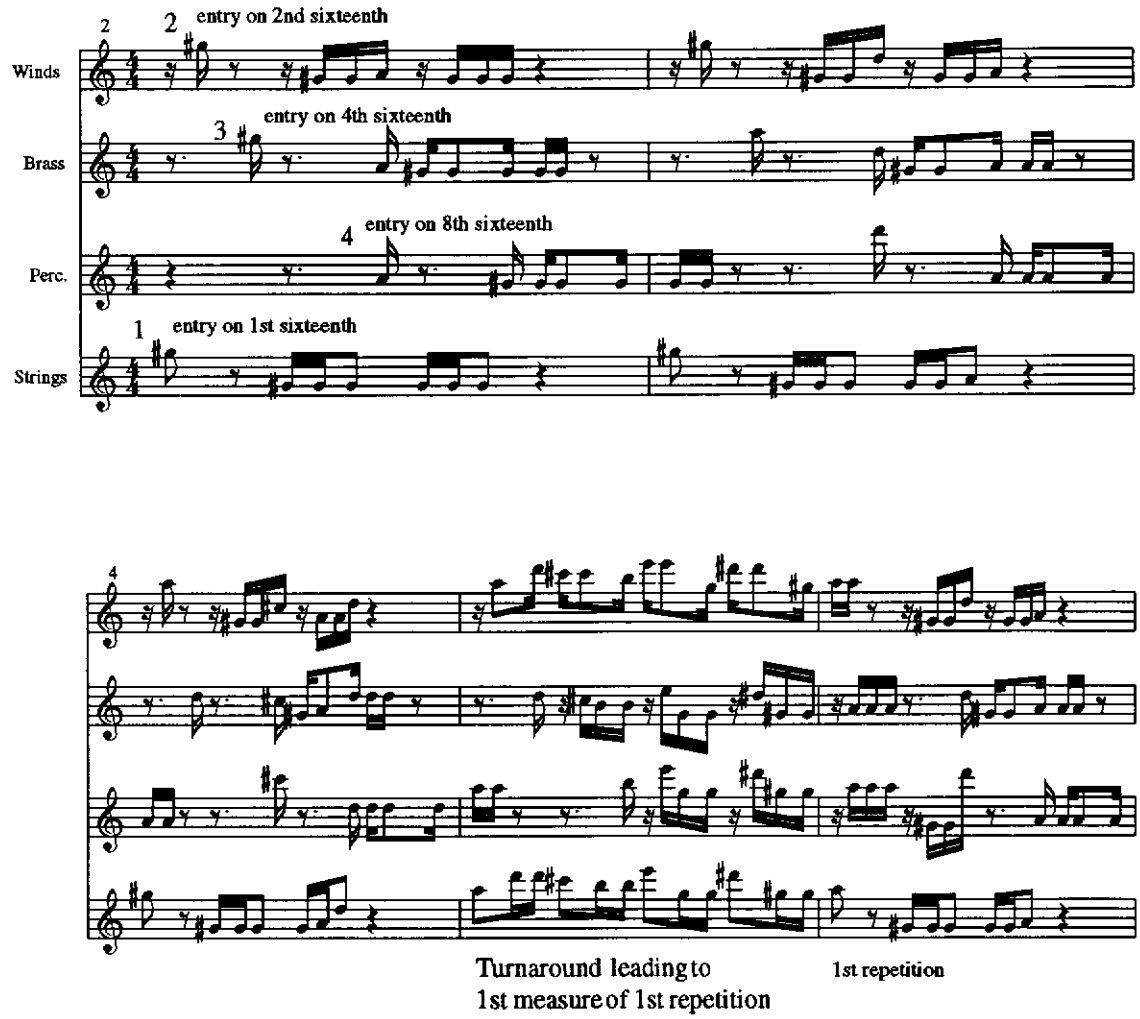
Example 1-5: Dovetailing, "Beth's canon" m. 187
and "Mineral and ore range" m. 188



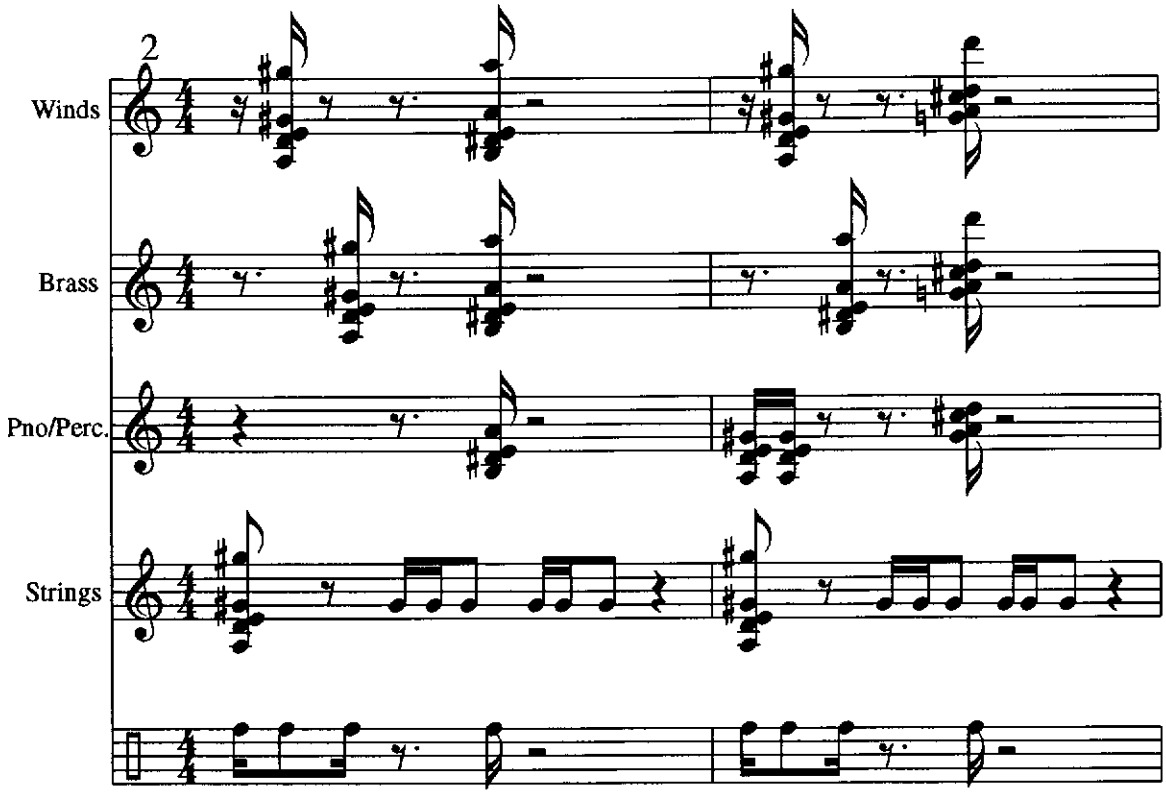
Example 1-6: Conclusion, additive process

	"First Orange" 14 measures	"Second Orange" 18 measures	"Third Orange" 26 measures
lyrical strings with contrapuntal winds	4 measures mm. 255-258	5 measures mm. 269-273	8 measures mm. 287-294
brass and strings: "An Outburst"	4 measures mm. 259-262	4 measures mm .274-277	2 measures mm. 295-296
sixteenth-note stretto figure	4 measures mm. 263-266	7 measures mm. 278-284	13 measures mm. 297-309
"Tumultuous" tutti	2 measures (four beats) mm. 267-268	2 measures (seven beats) mm. 285-286	3 measures (twelve beats) mm. 310-312

Example 2-1: 4-voice rhythmic canon with 1-2-4-8 proportion,
Reduction of "Burnt orange" (mm. 2-6)

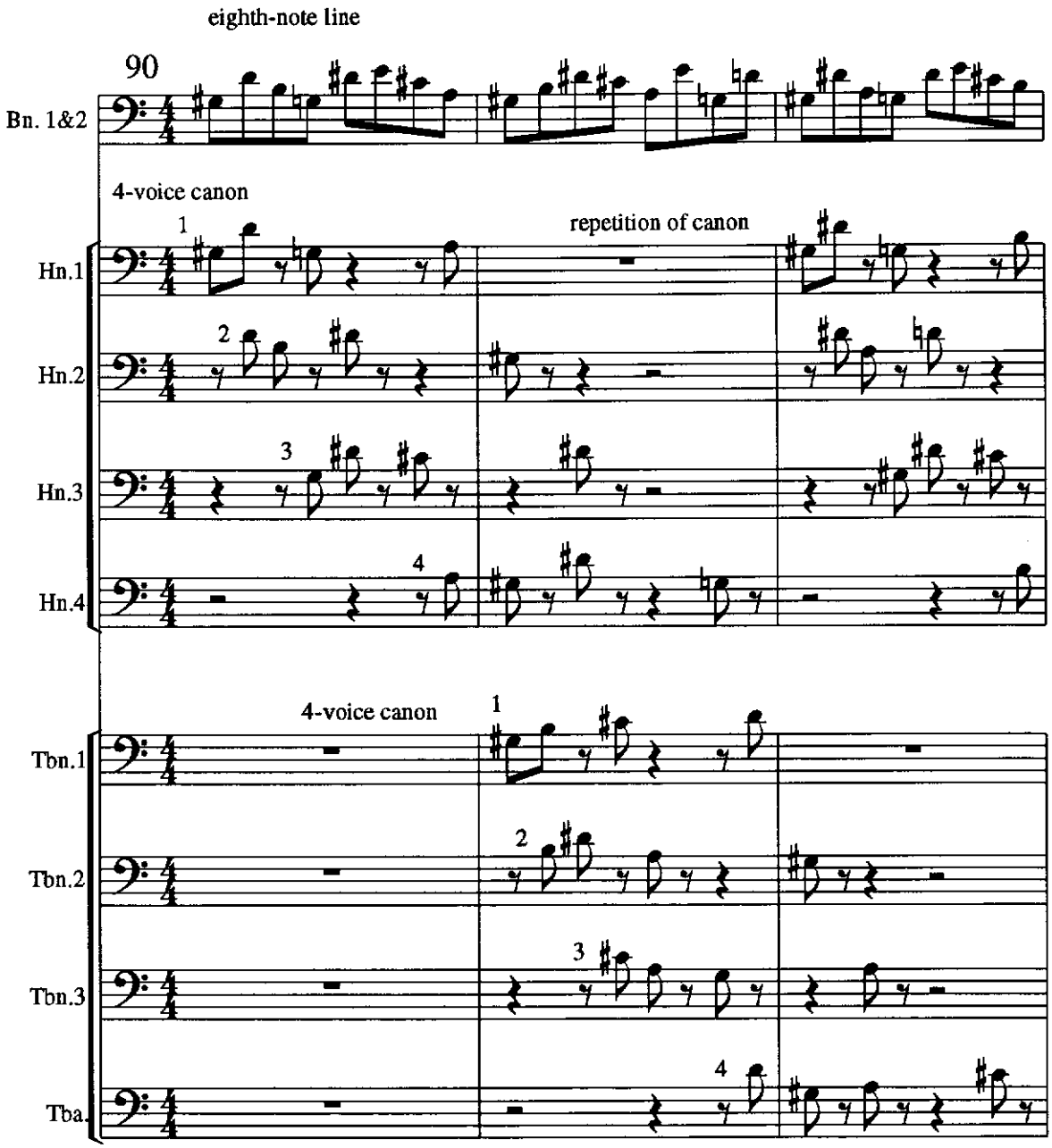


Example 2-2: Composite rhythm of accented chords,
Reduction of "Burnt orange" (mm. 2-3)

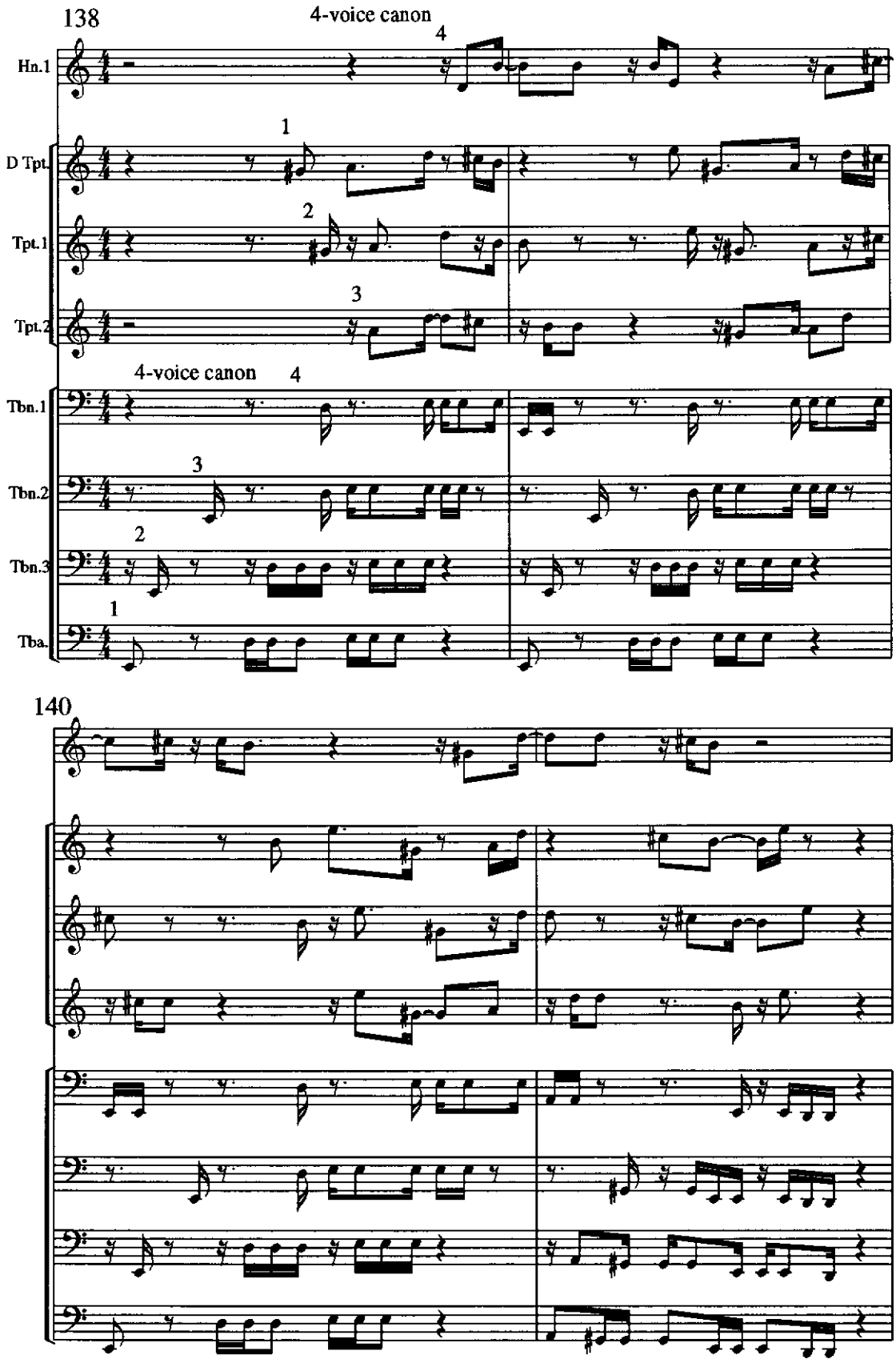


Composite rhythm of accented chords

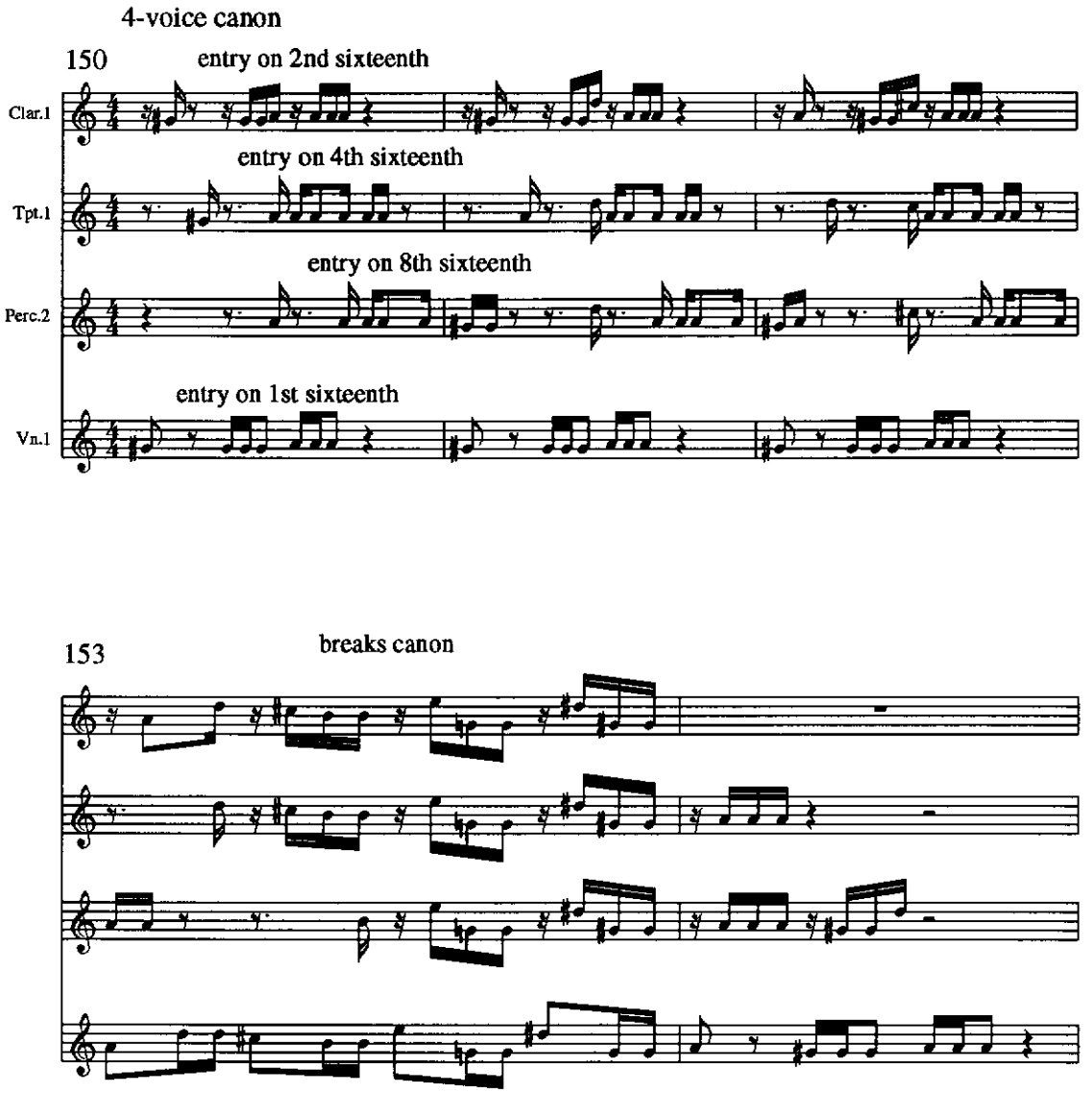
Example 2-3: Rhythmic canons derived from Bassoon line,
Reduction of "Orange pekoe in flames" (mm. 90-92)
Upper winds and brass, percussion, and strings
not shown.



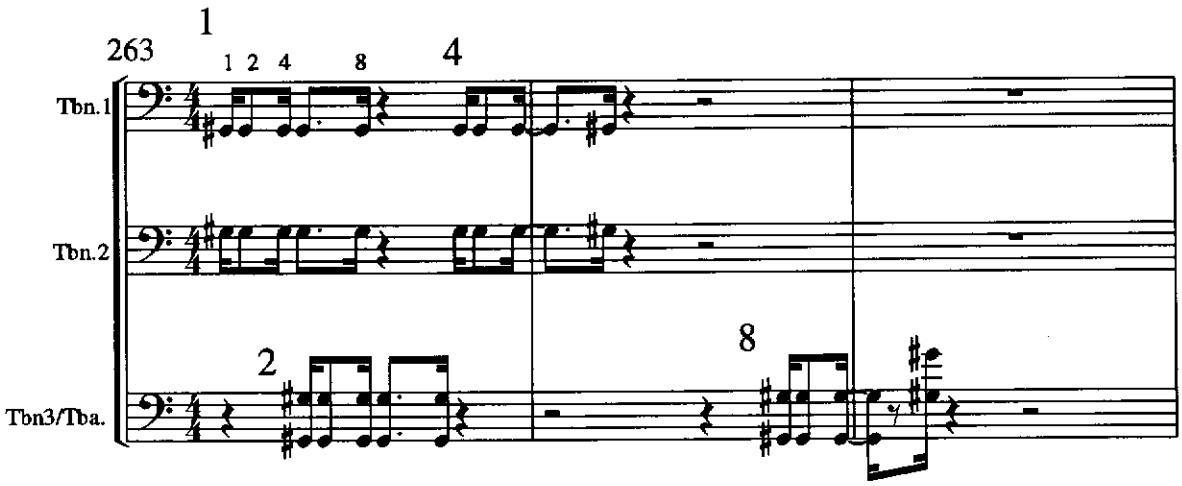
Example 2-4: Brass canons, "Orange lava" (mm. 138-141)



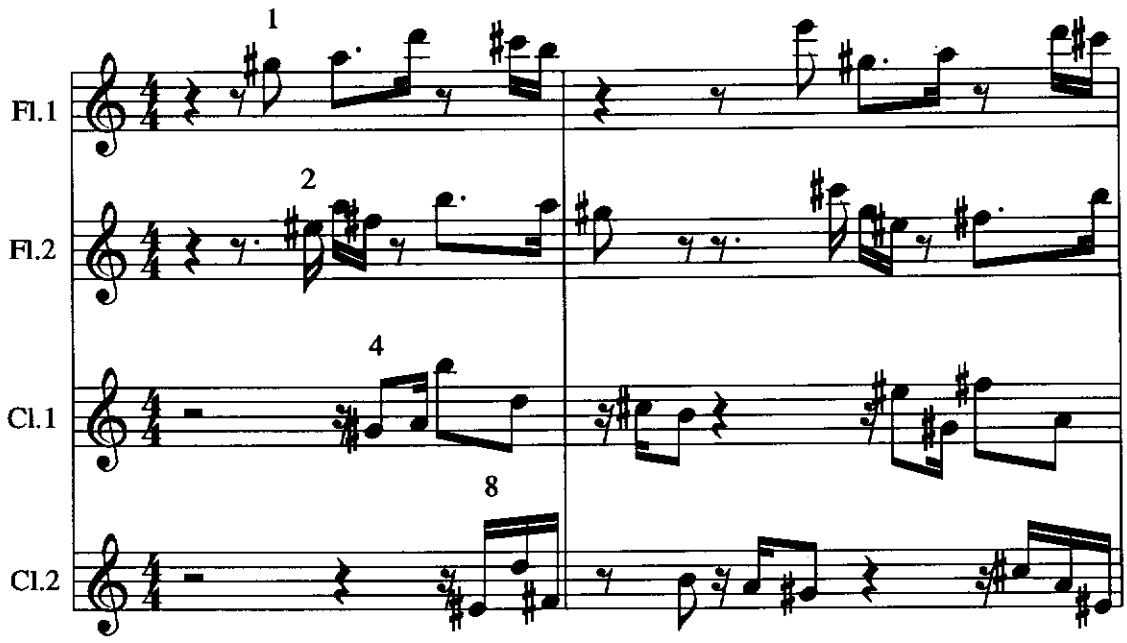
Example 2-5: Varied repetition of rhythmic canon in mm. 2-5 of "Burnt orange", "Accutane" (reduction of mm. 150-154)



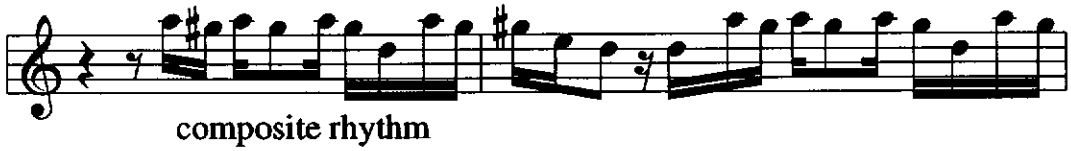
Example 2-6: 1-2-4-8 proportion in trombones and tuba,
"First Orange" (mm. 263-265)



Example 2-7: Violin rhythm derived from wind figures,
Reduction of "Carotene" (mm. 126-127, 130-131)
Bn., Perc., and Cb. parts not shown

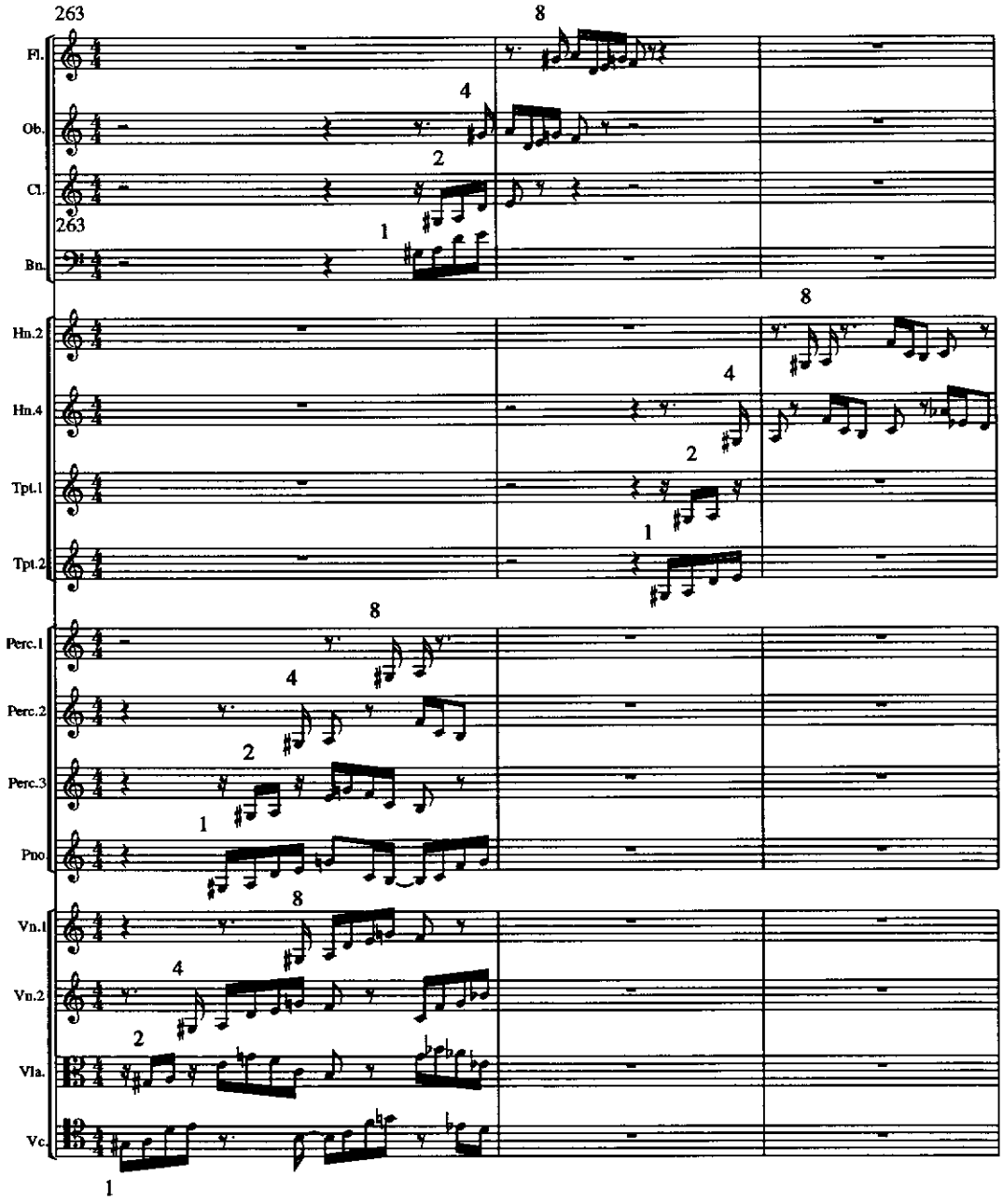


mm. 130-131

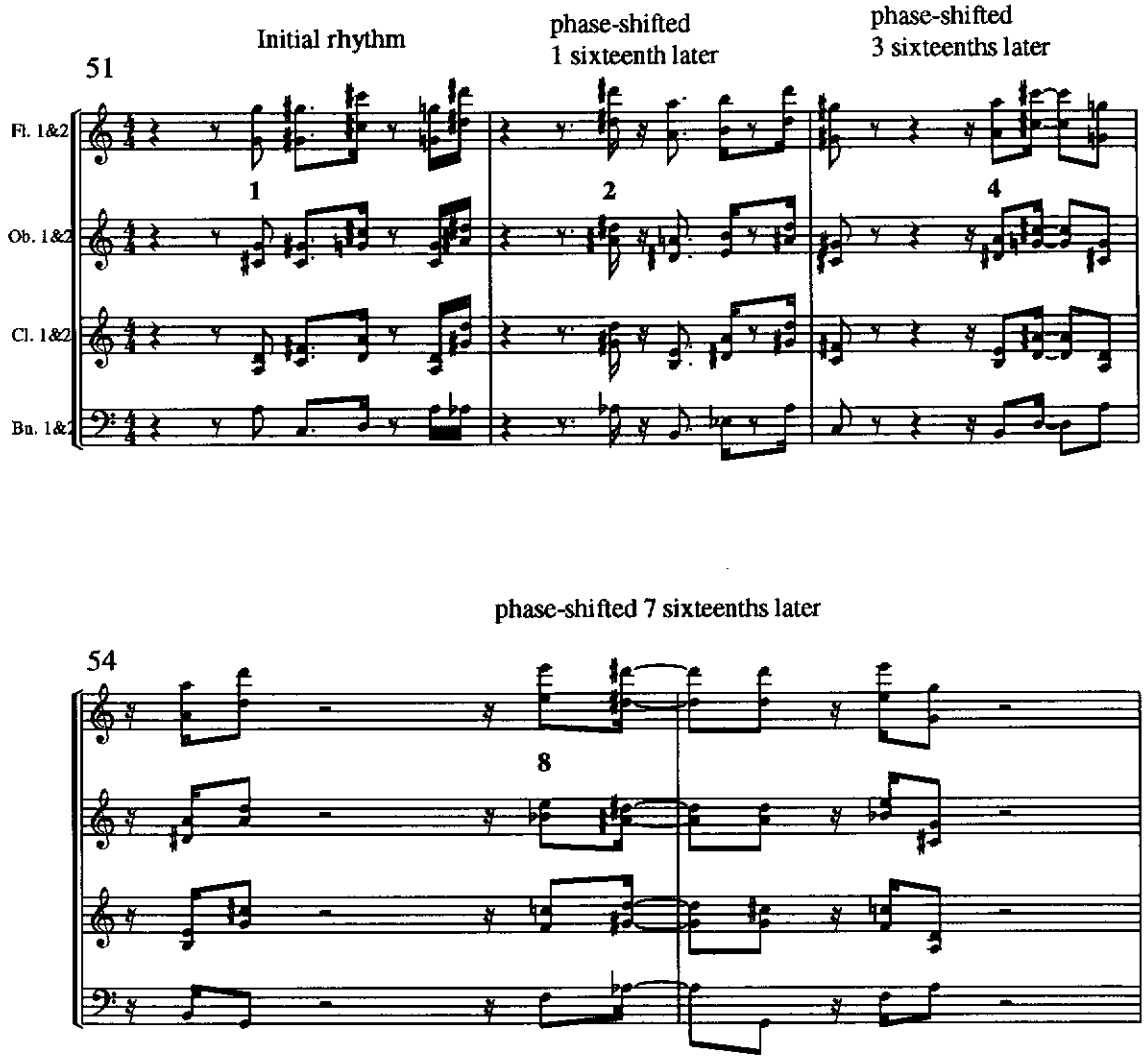


composite rhythm

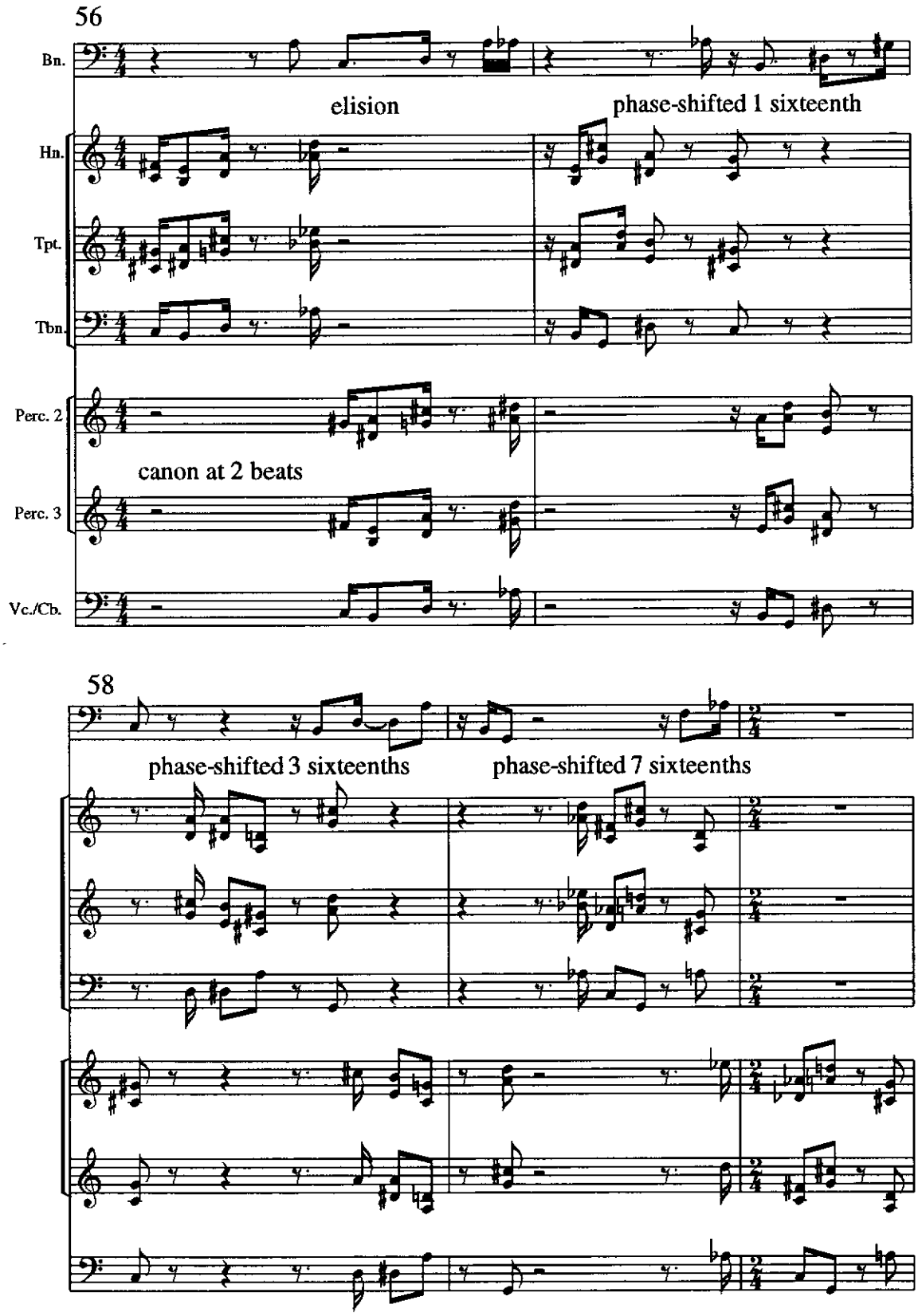
Example 2-8: Attack points with 1-2-4-8 proportion;
"First Orange" mm. 263-265



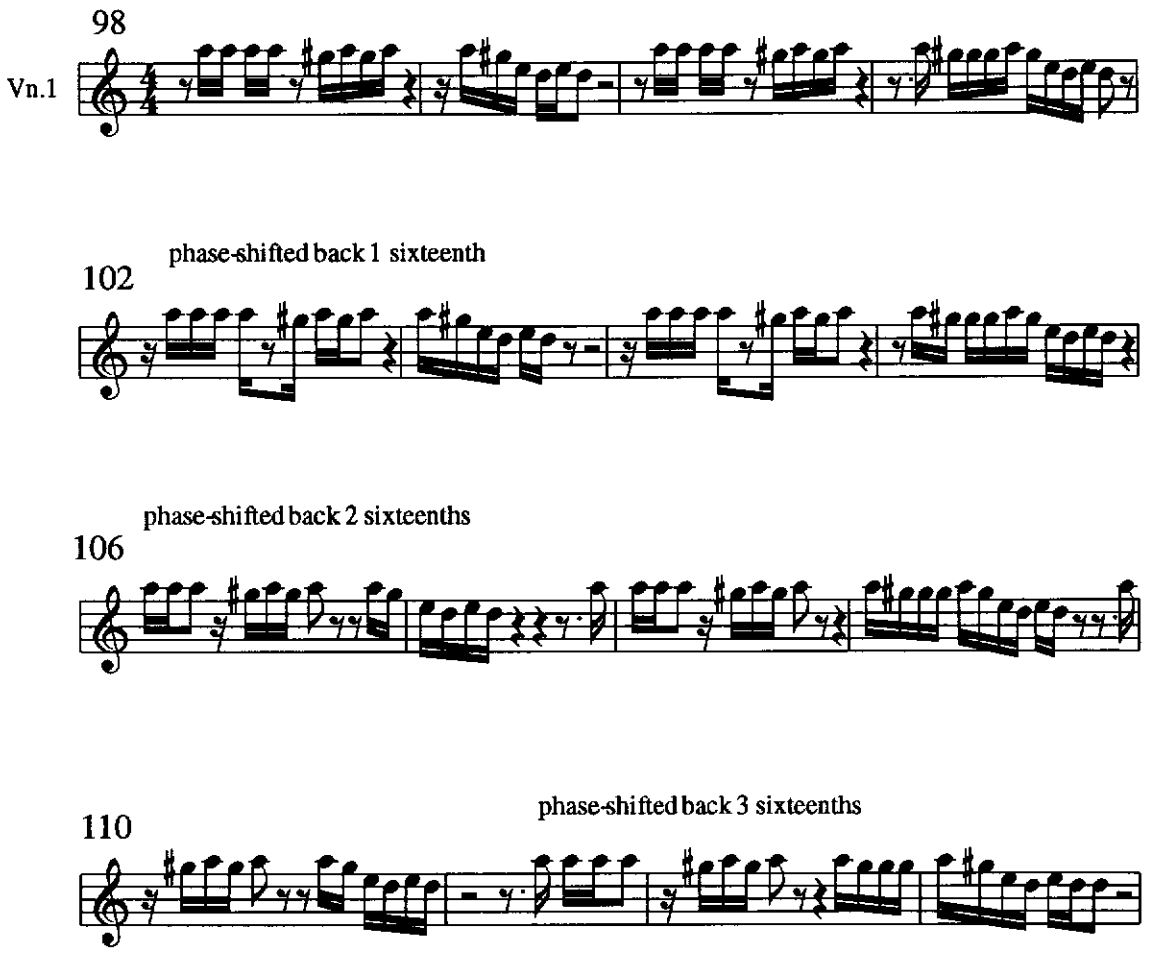
Example 2-9: Phase-shifting of wind gesture, "Carroty" (mm. 51-55)



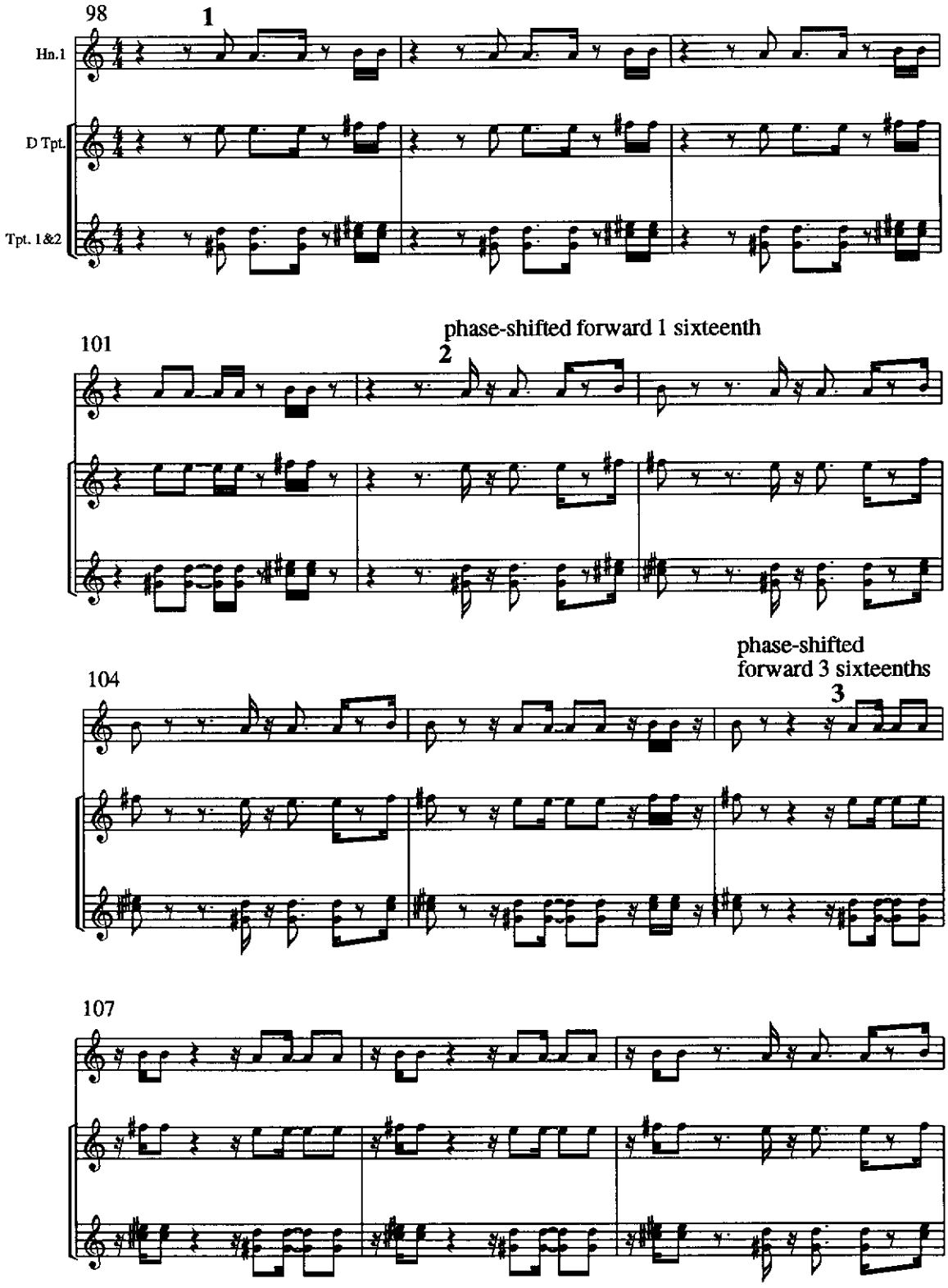
Example 2-10: Phase-shifting of wind gesture, elided with brass and percussion canon, Reduction of "Carroty" (mm. 56-60)
Upper winds, strings, and piano not shown



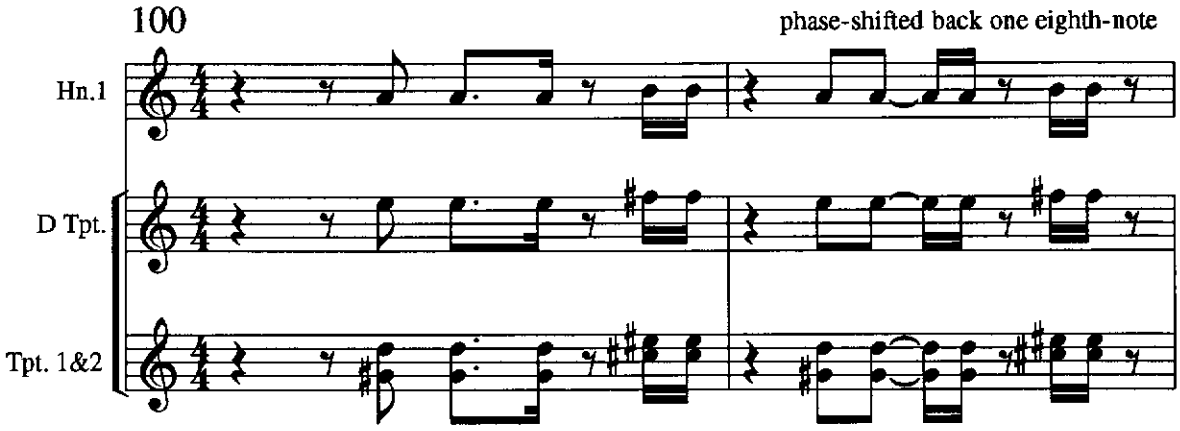
Example 2-11: Phase-shifting of Vn. 1 line, "Absinthe" (mm. 98-113)



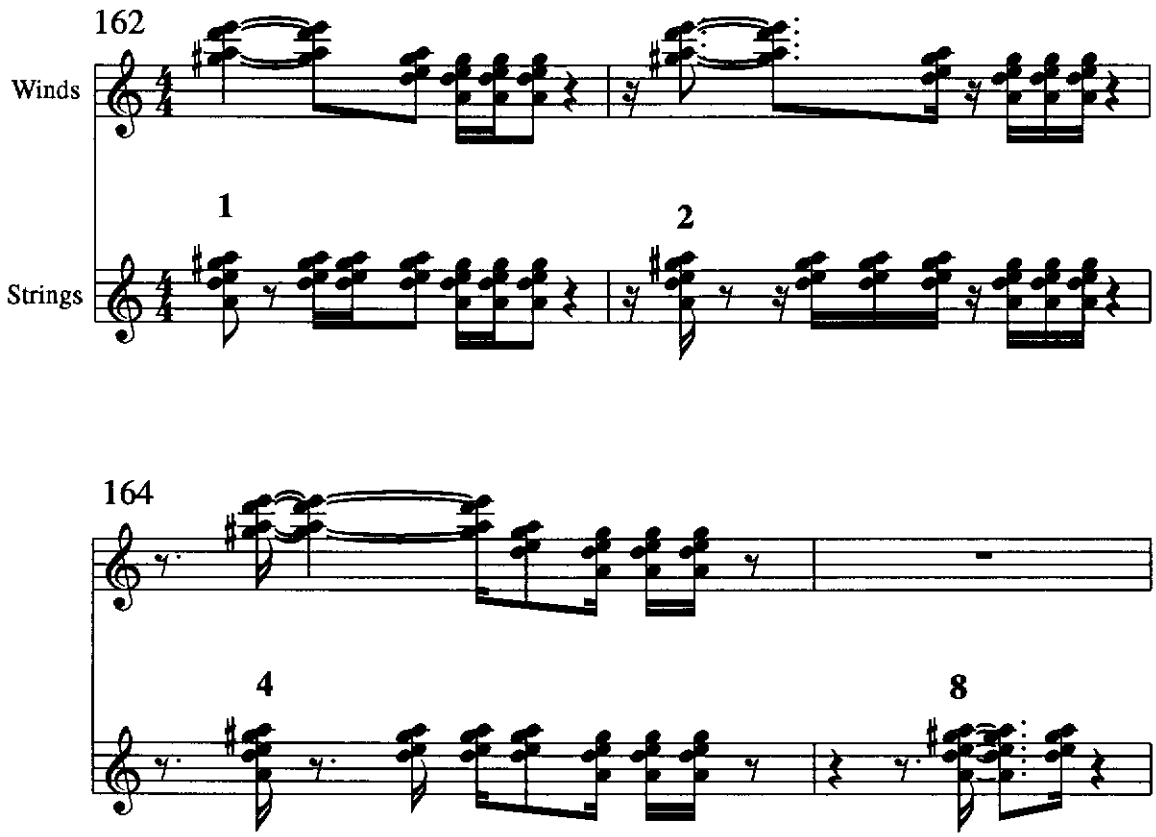
Example 2-12: Phase-shifting of brass gesture, "Absinthe" (mm. 98-109)



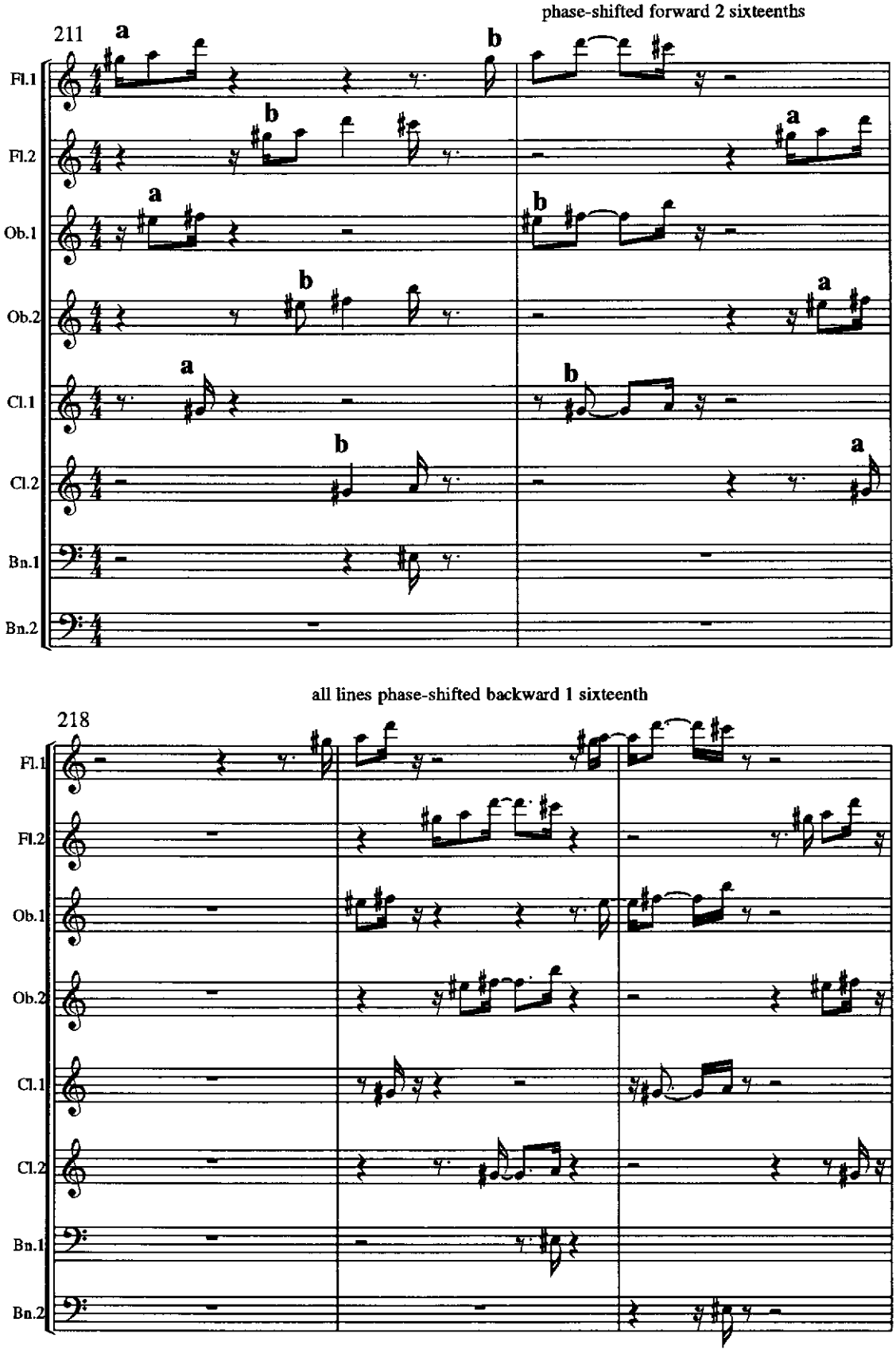
Example 2-13: Phase-shifting in third and fourth measures of brass gesture, "Absinthe" (mm. 100-101)



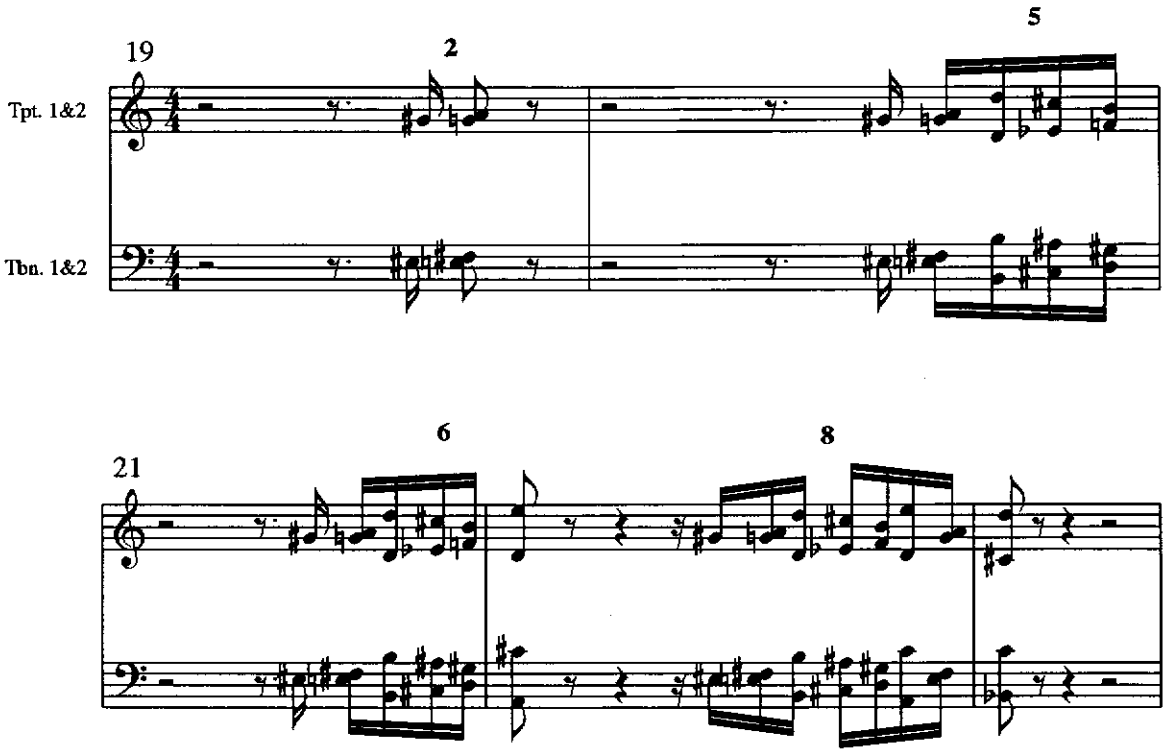
Example 2-14: Phase-shifting of string gesture and transfer of wind figure to strings, Reduction of "Accutane" (mm. 162-165, brass and percussion parts not shown)



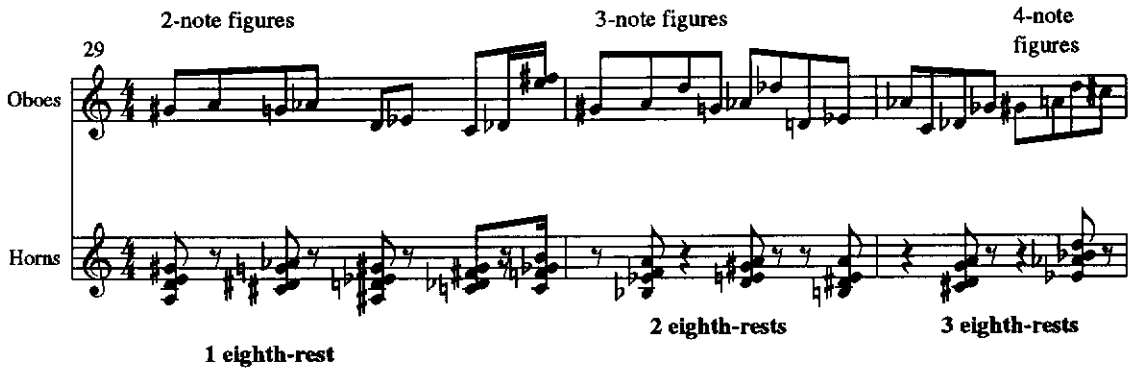
Example 2-15: Wind's phrase construction with phase-shifting, "Helianthin" (mm. 211-212 and 218-220)



Example 2-16: Additive process in brass gestures,
"Orange with damsons" (mm. 19-23)

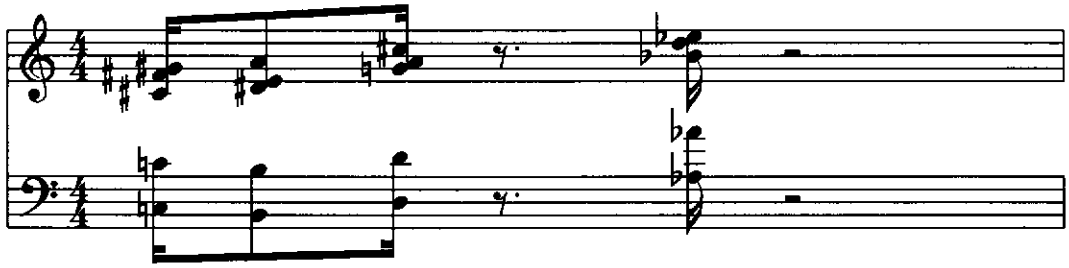


Example 2-17: Continuous eighth-note oboe line with corresponding horn chords, "Russet" (mm. 29-31)

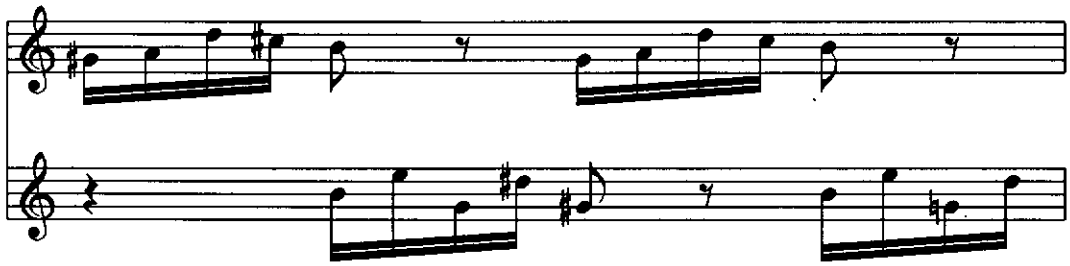


Example 2-18: Earlier getures restated in "Orange pekoe in flames" (m.82)

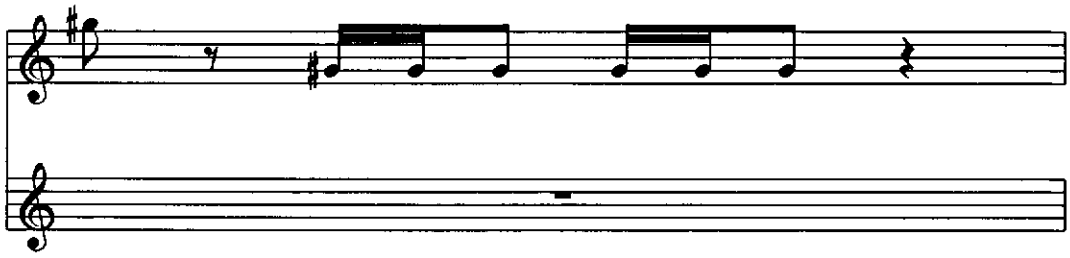
Brass m. 56, now in strings m. 82



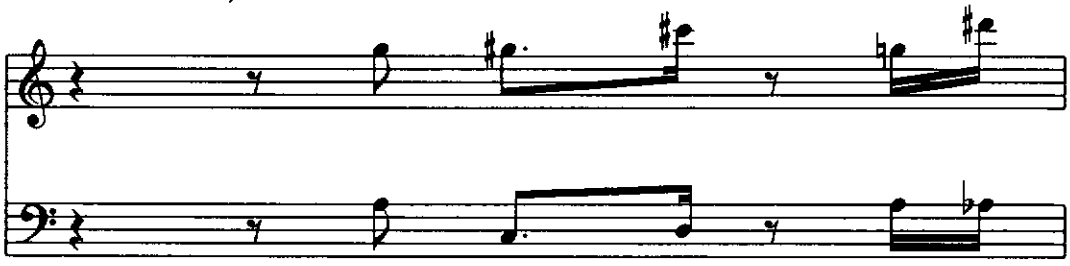
Violins m. 51, now in percussion m. 82



Violins/Violas m.2, now in brass m. 82



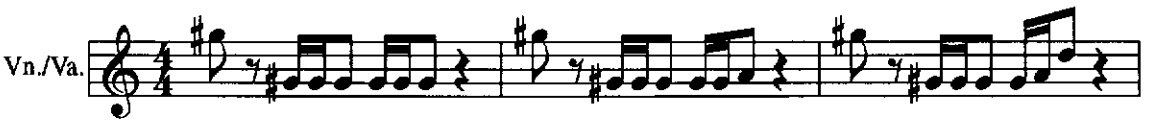
Winds m. 51, now in winds in m. 82



Example 2-19: Percussion figure derived from canon in "Burnt orange" mm. 2-5, "Unripe pumpkin" (mm: 203-205)

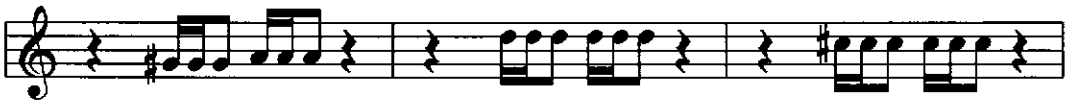
"Burnt orange"

mm. 2-4

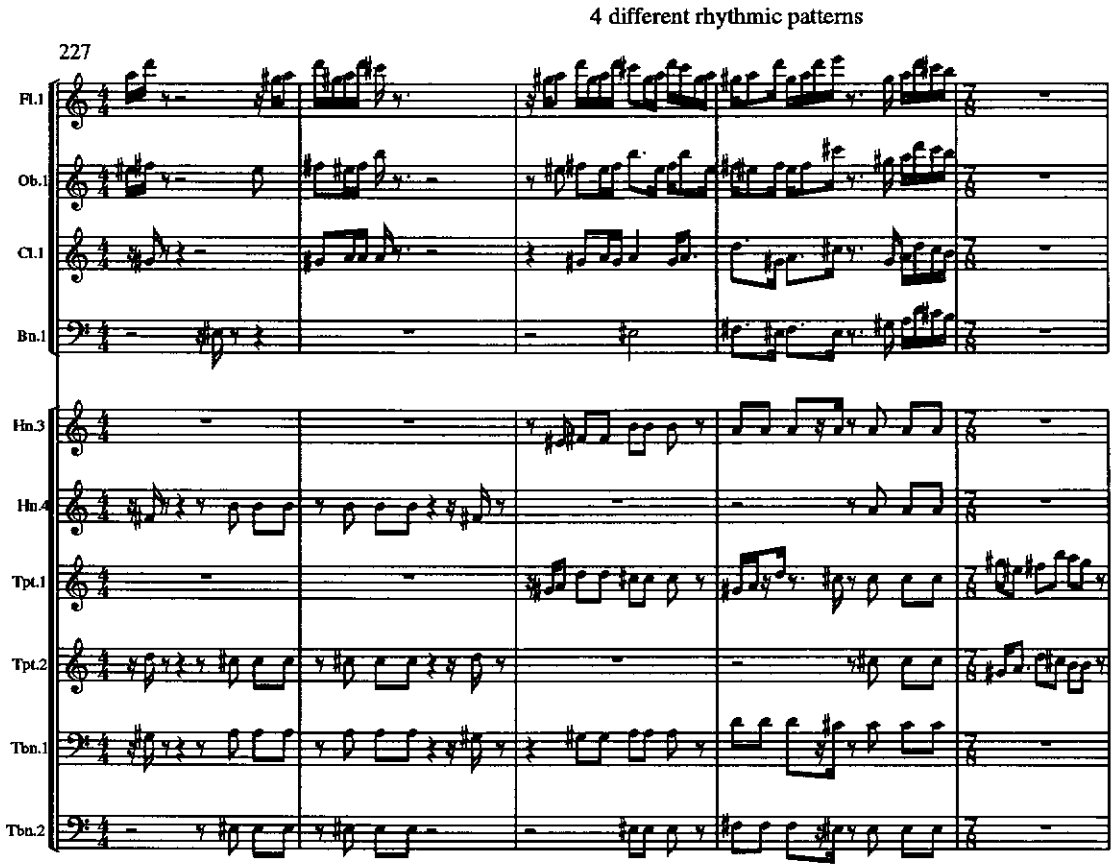


"Unripe pumpkin"

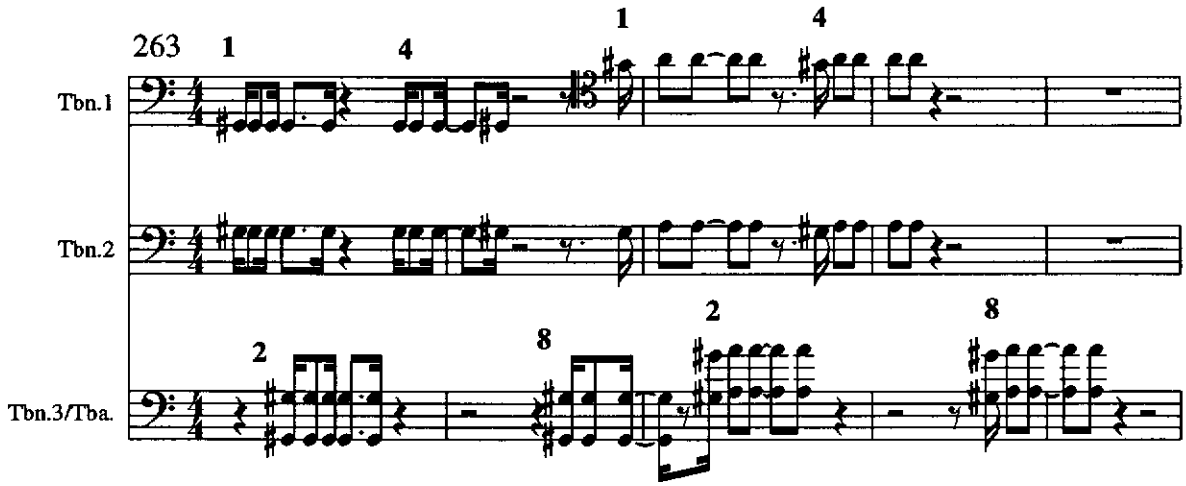
mm. 203-205



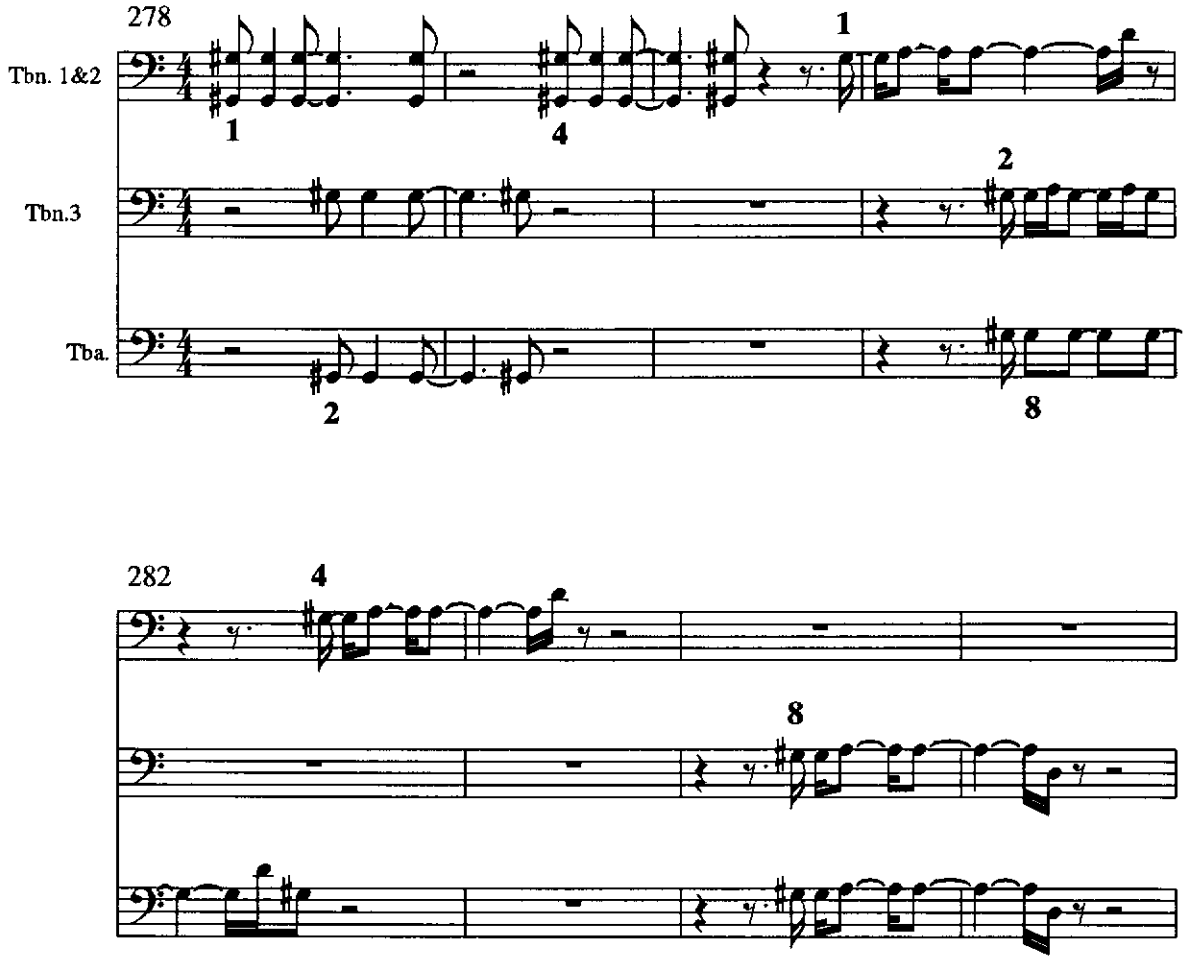
Example 2-20: Wind and brass gestures, (Reduction of "Helanthin", mm. 227-230, and "The orange sun-kissed", m. 231). Strings and Percussion not shown.



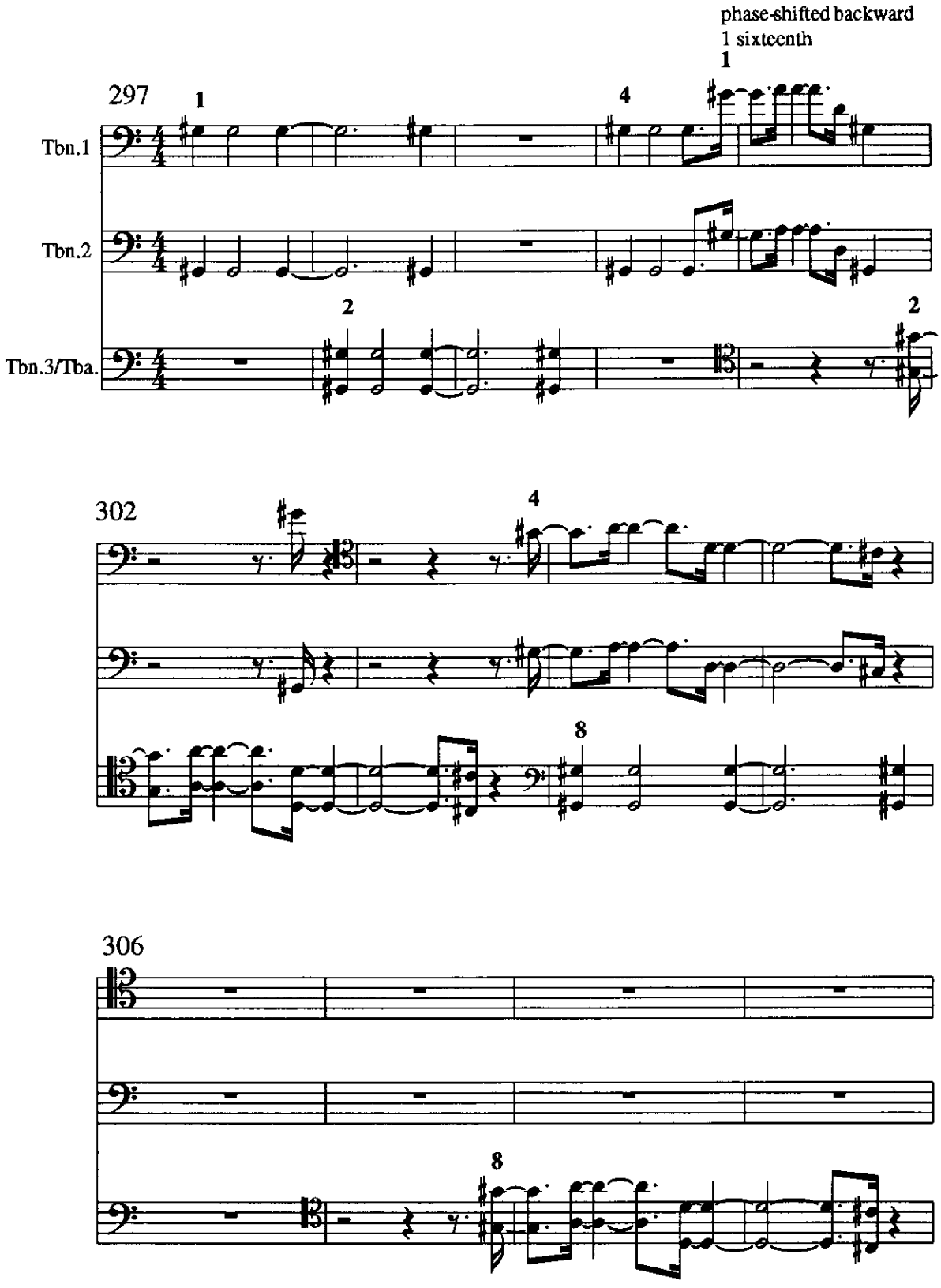
Example 2-21: 1-2-4-8 proportion in low brass, "First orange" (mm. 263-267)



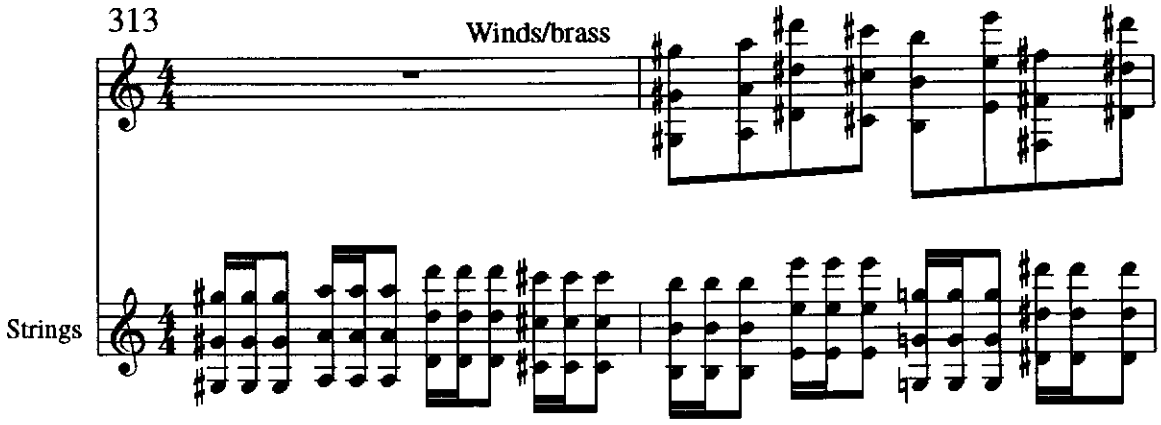
Example 2-22: Augmentation and 1-2-4-8; "Second Orange" mm. 278-285



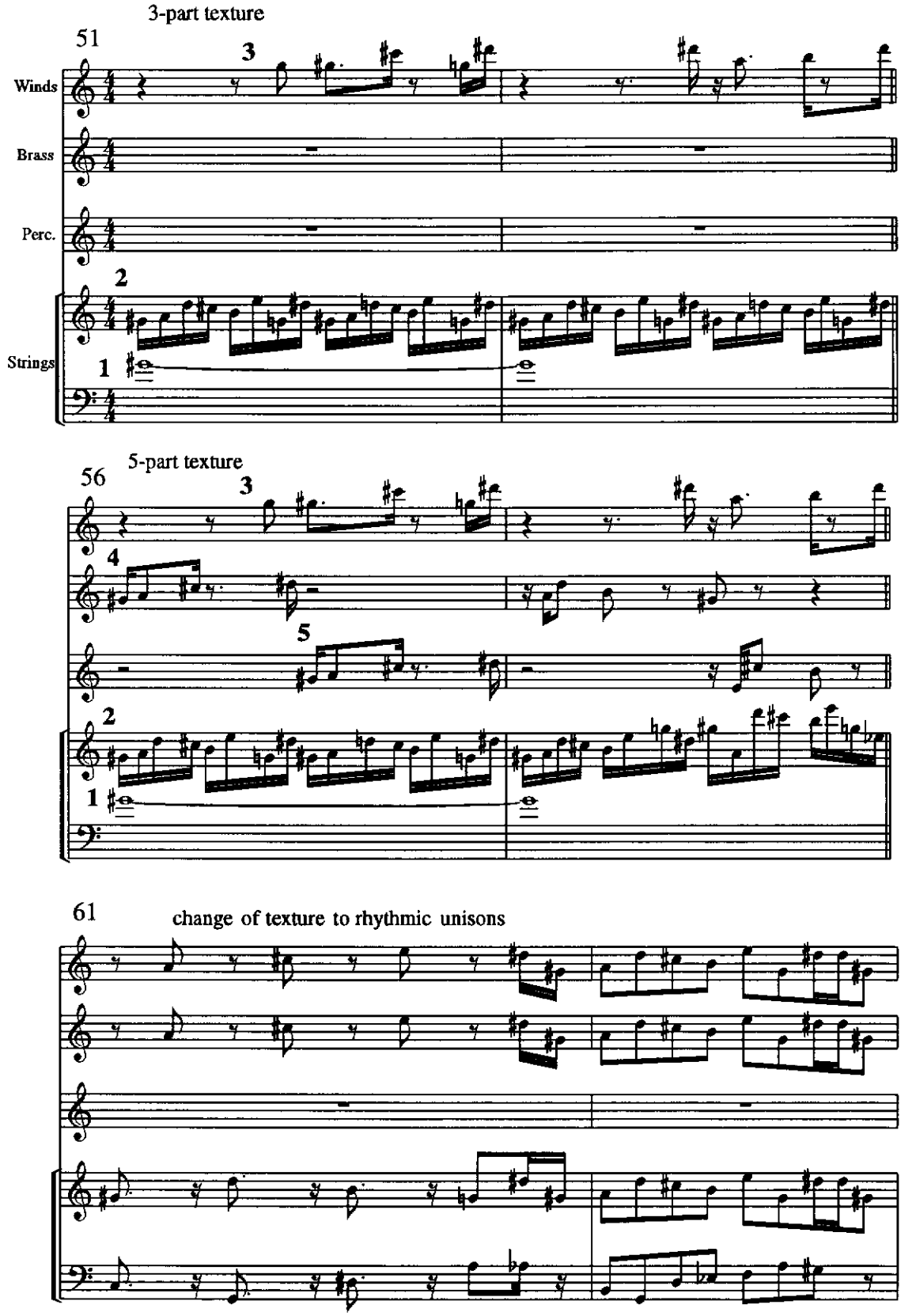
Example 2-23: 1-2-4-8 proportion with phase-shifting in low brass, "Third orange" (mm. 297-309)



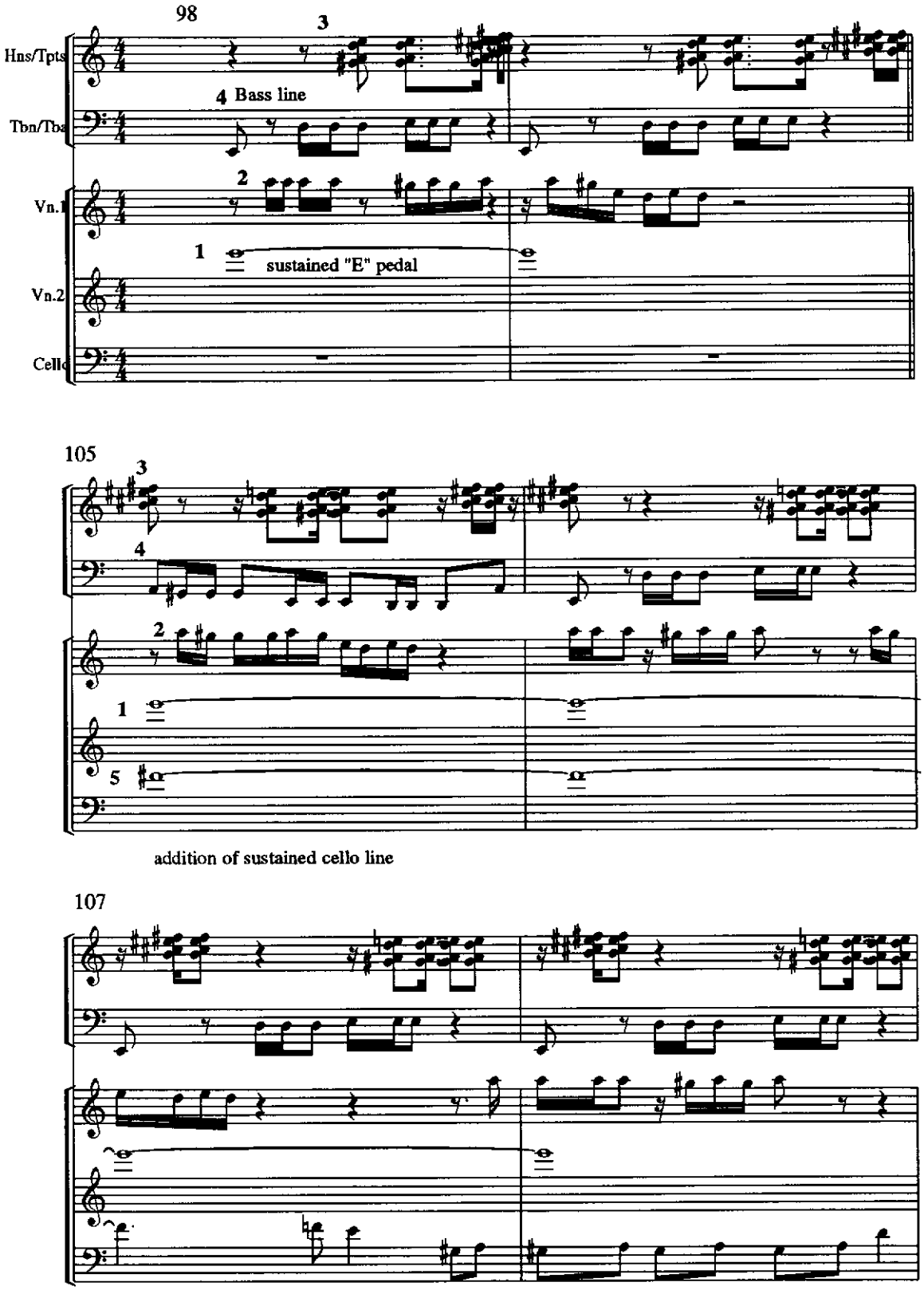
Example 2-24: Diminution of string gesture in winds/brass,
(Reduction of Coda mm. 313-314)



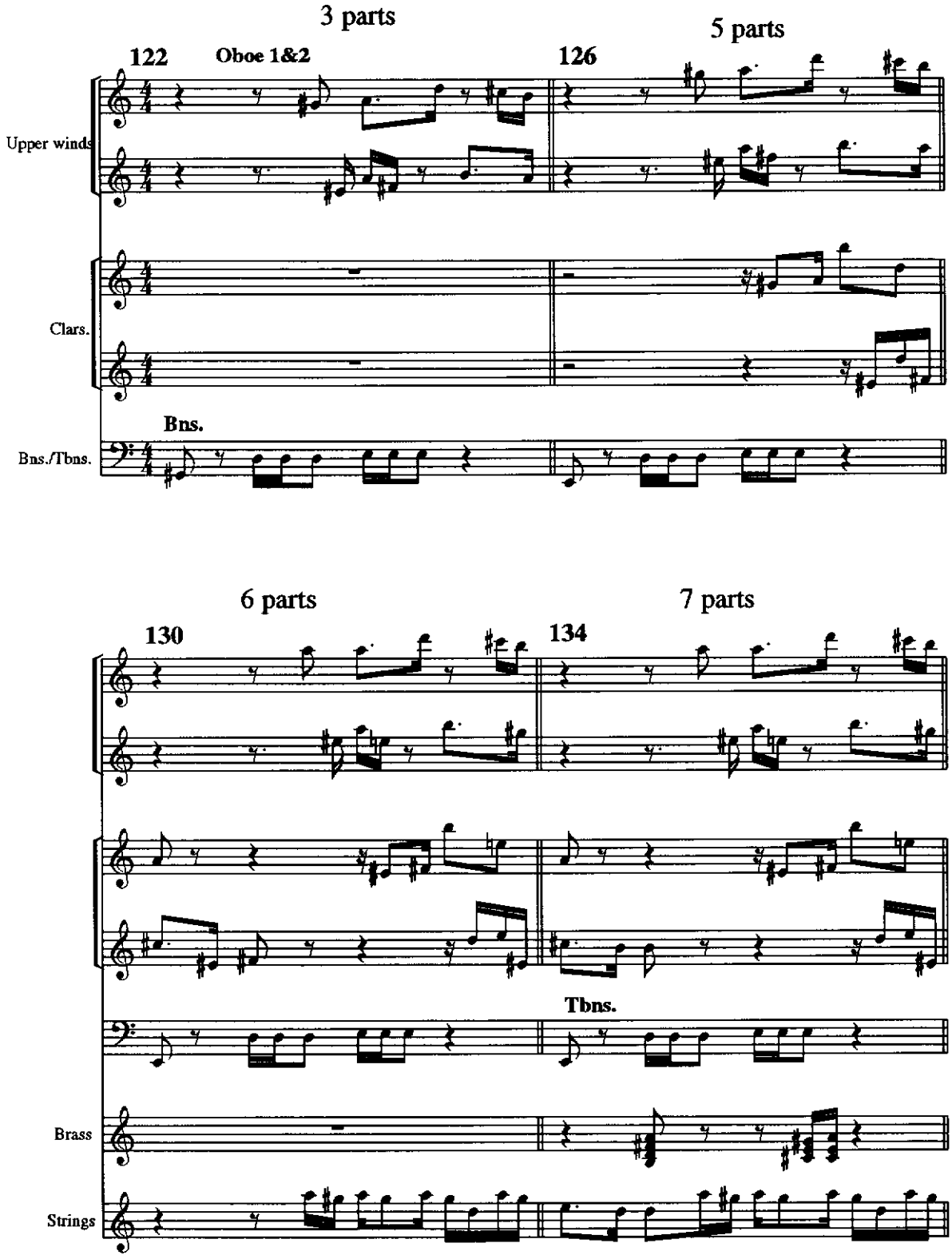
Example 3-1: Textural additive proceess and change of texture, "Carroty" (mm. 51-52, 56-57, 61-62)



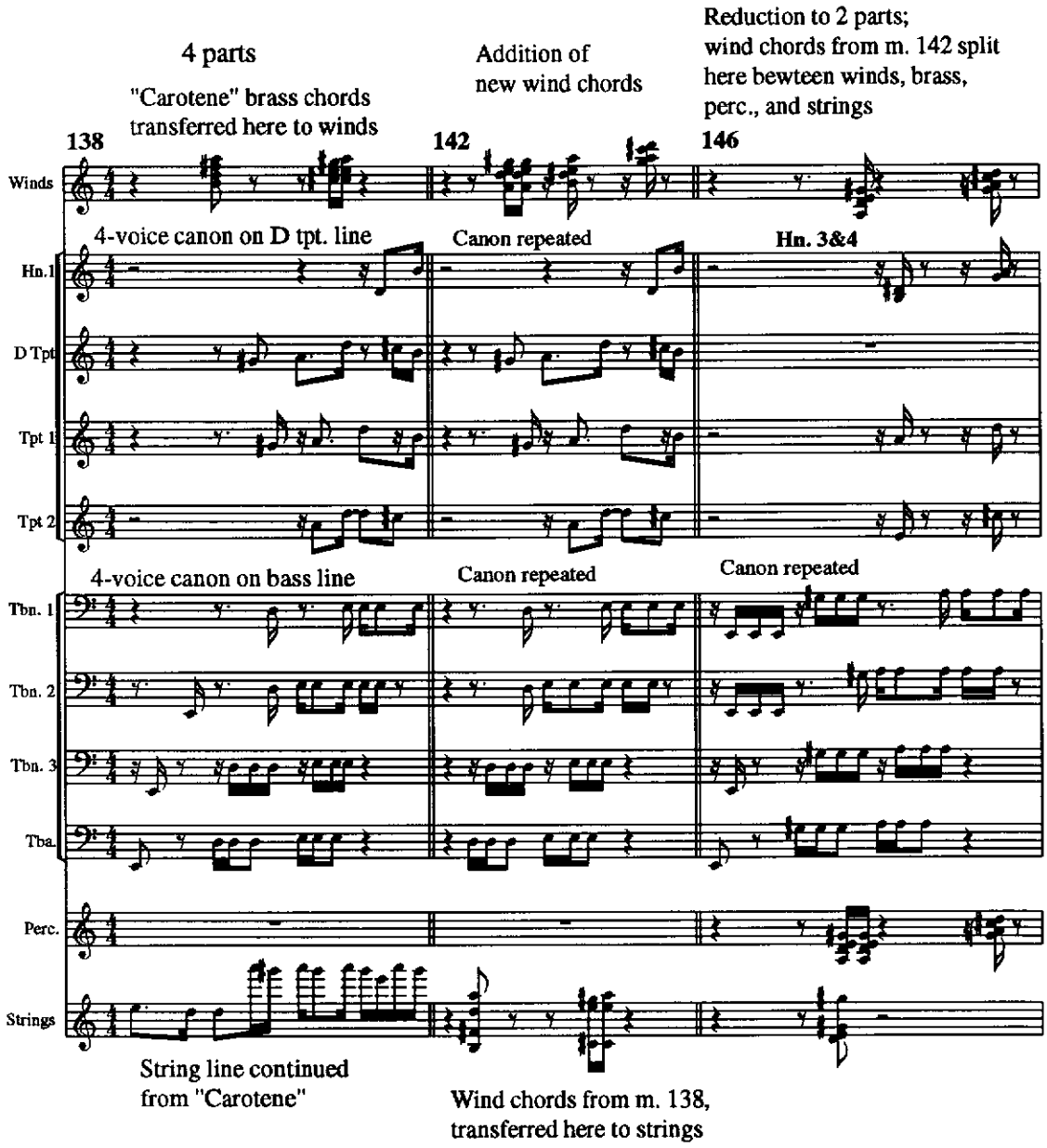
Example 3-2: Textural additive process, reduction of "Absinthe"
(mm. 98-99, 105-108) Winds and perc. not shown



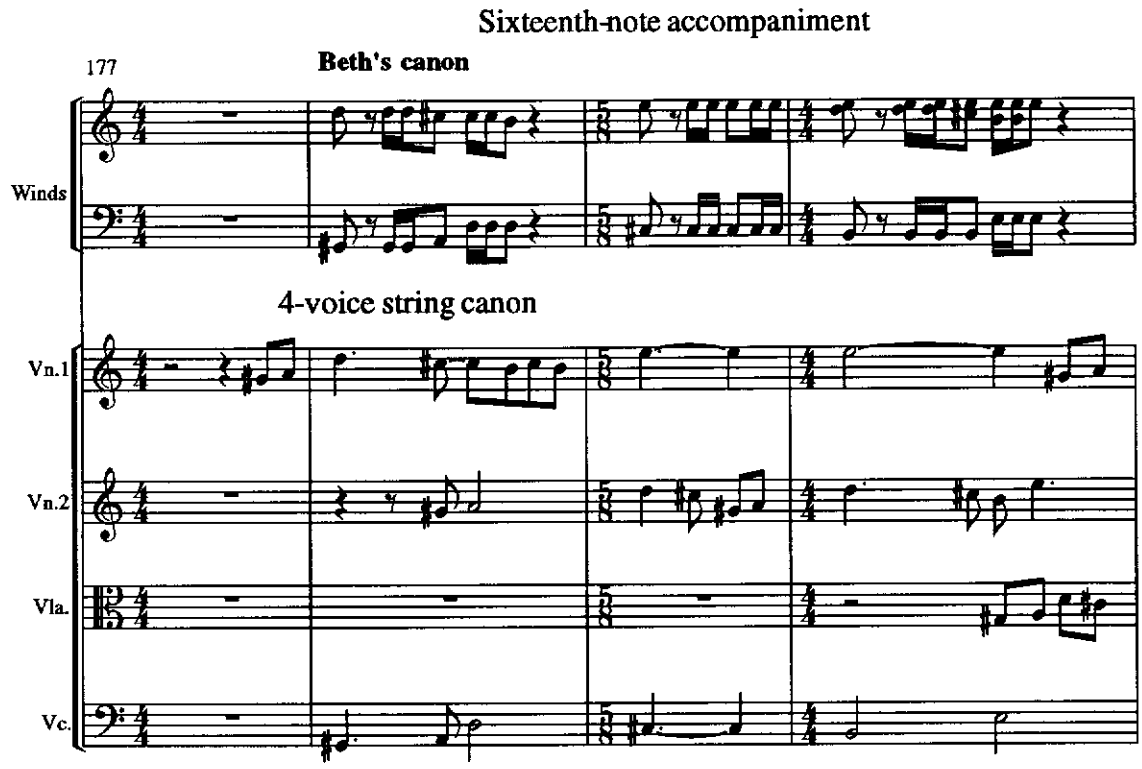
Example 3-3: Textural additive process, reduction of "Carotene" (mm. 122, 126, 130, 134) Perc. not shown.



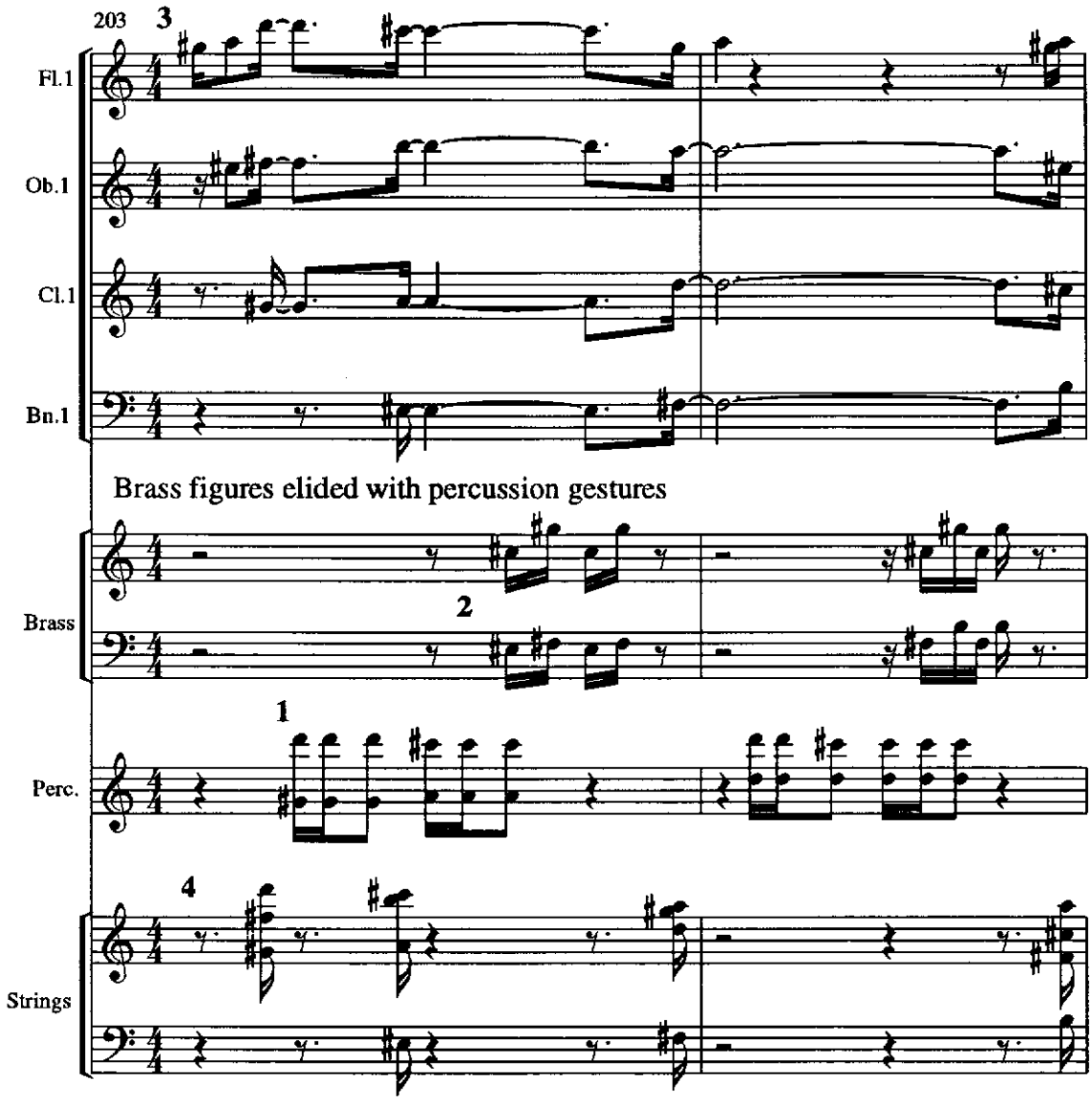
Example 3-4: Reduction of "Orange lava" (mm. 138, 142, 146)



Example 3-5: Reduction of Beth's canon, (mm. 178-180)

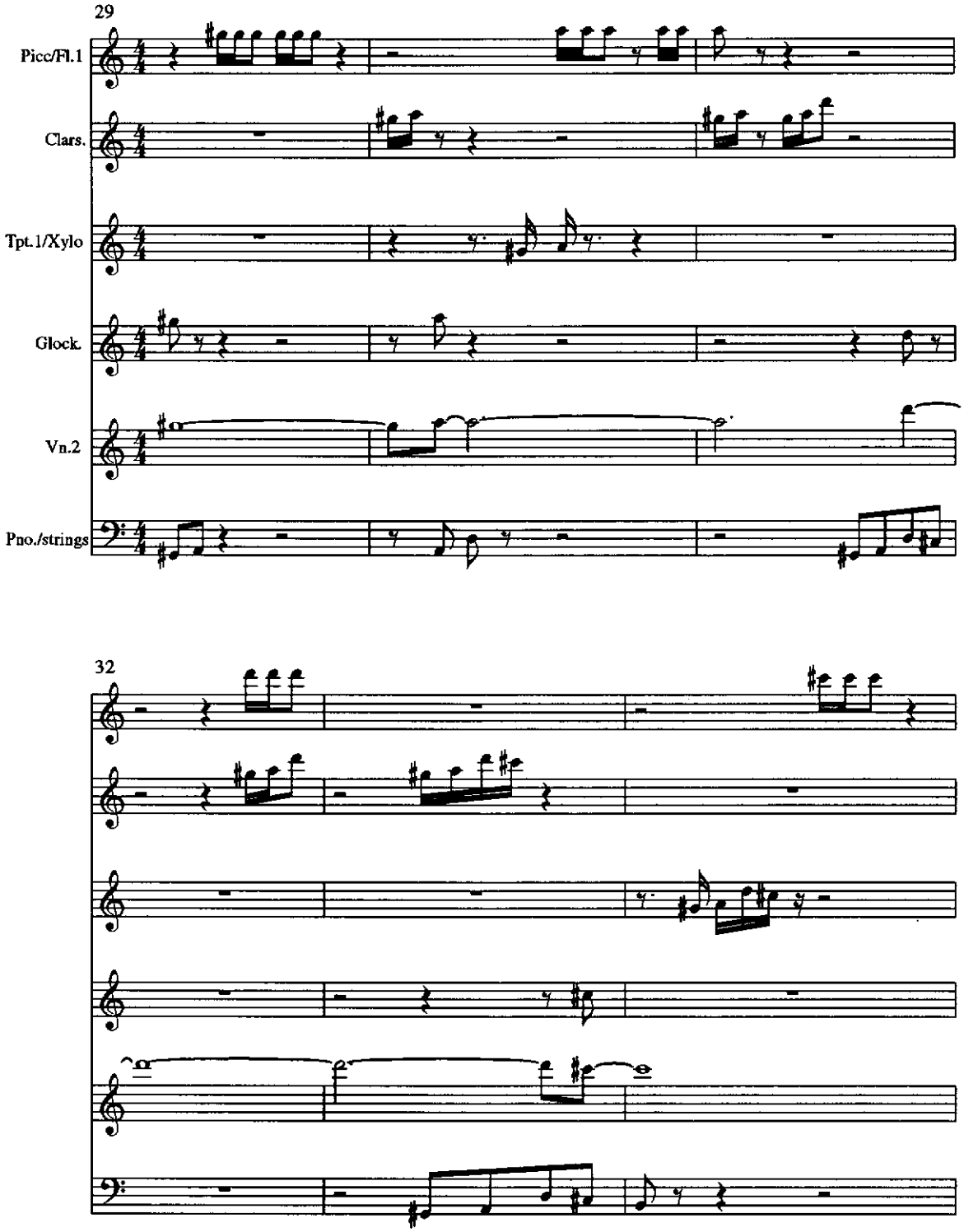


Example 3-6: Reduction of "Unripe pumpkin", (mm. 203-204)

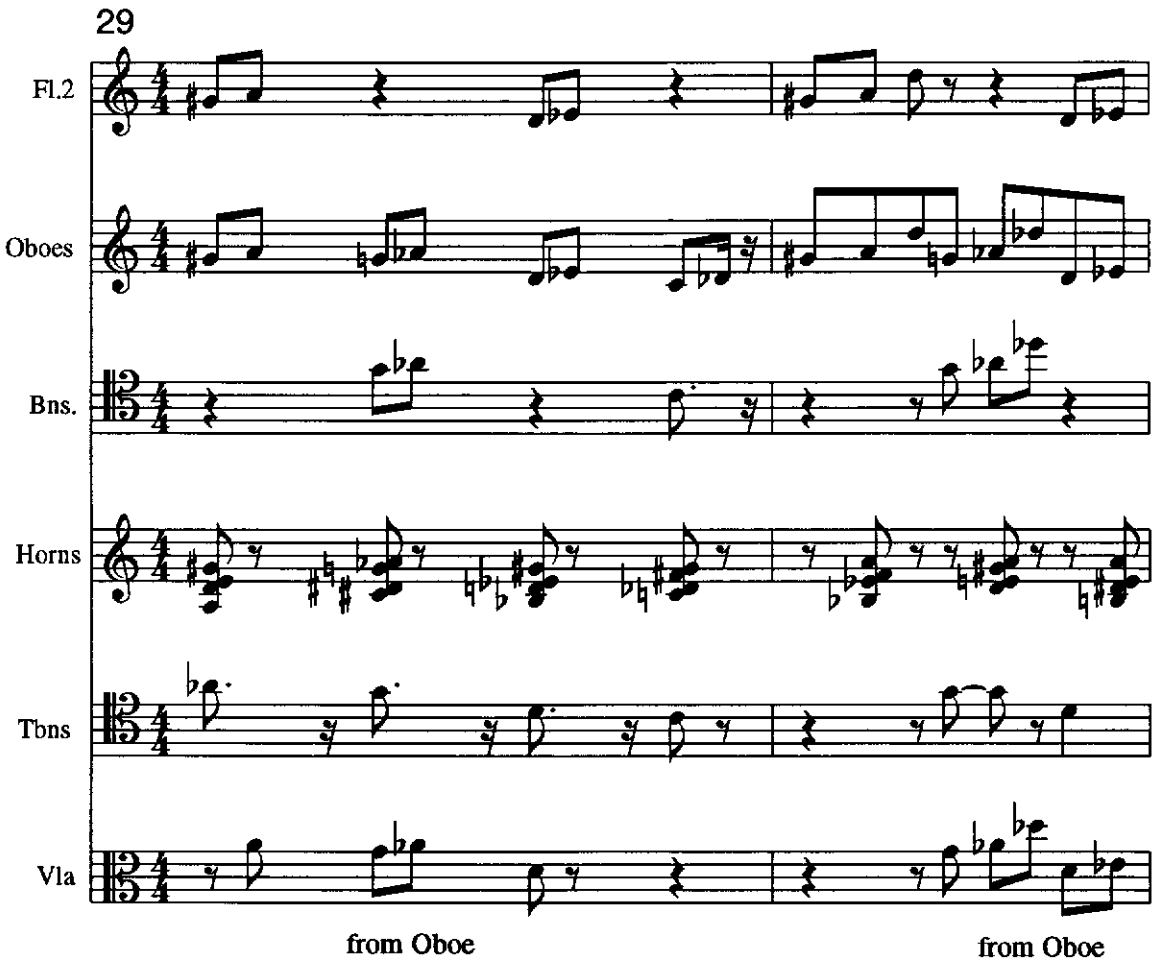


String pizz. doubled from wind figures

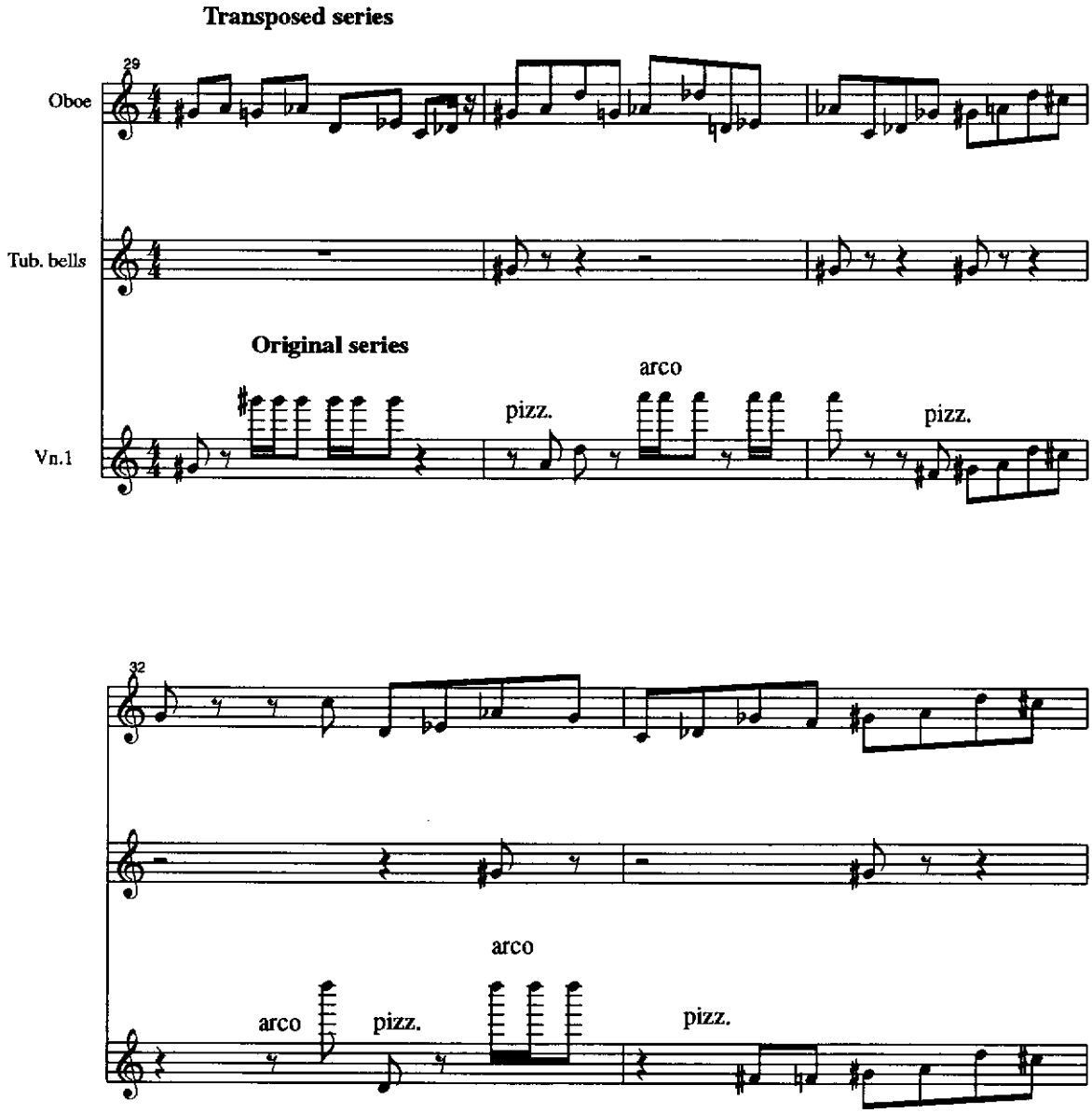
Example 3-7: Six lines based on the original series, "Russet" (mm. 29-34)



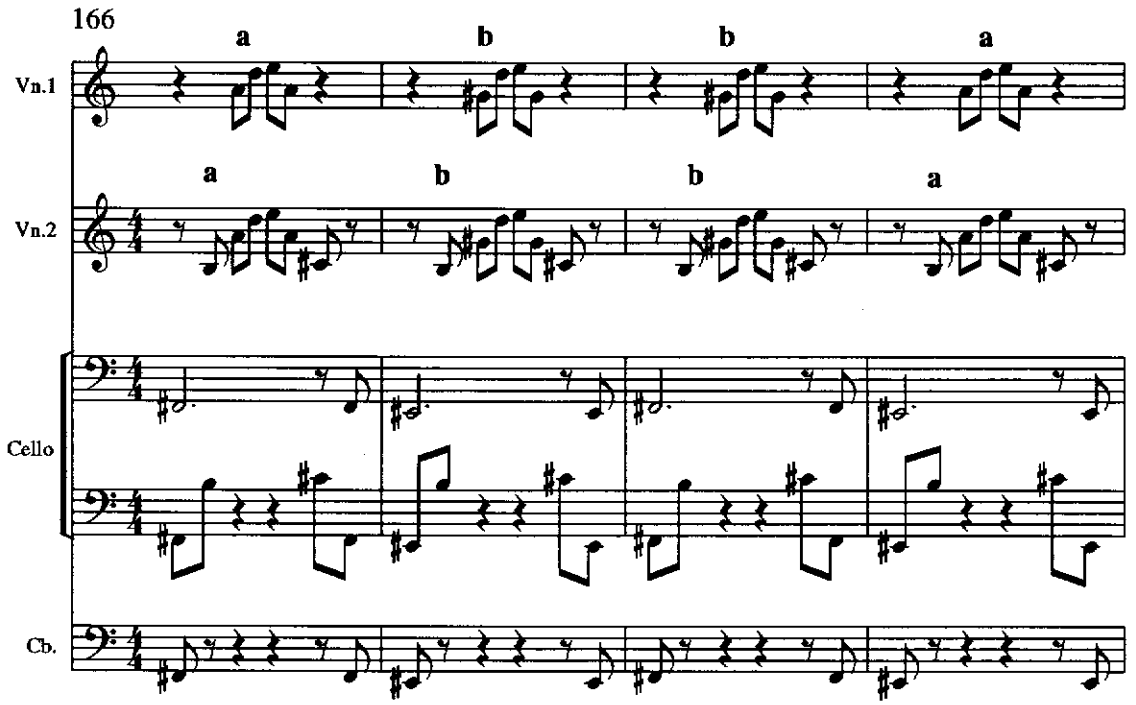
Example 3-8: Six lines derived from the transposed series, "Russet" (mm. 29-30)

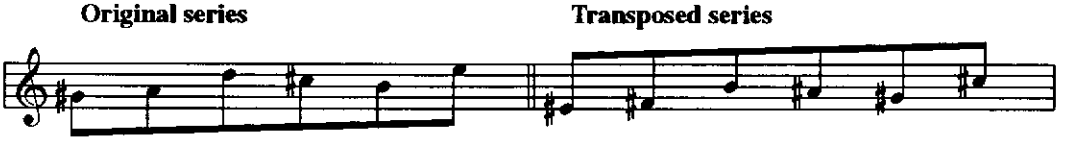


Example 3-9: Two lines derived from combinations of the original and the transposed series, "Russet" (mm. 29-33)

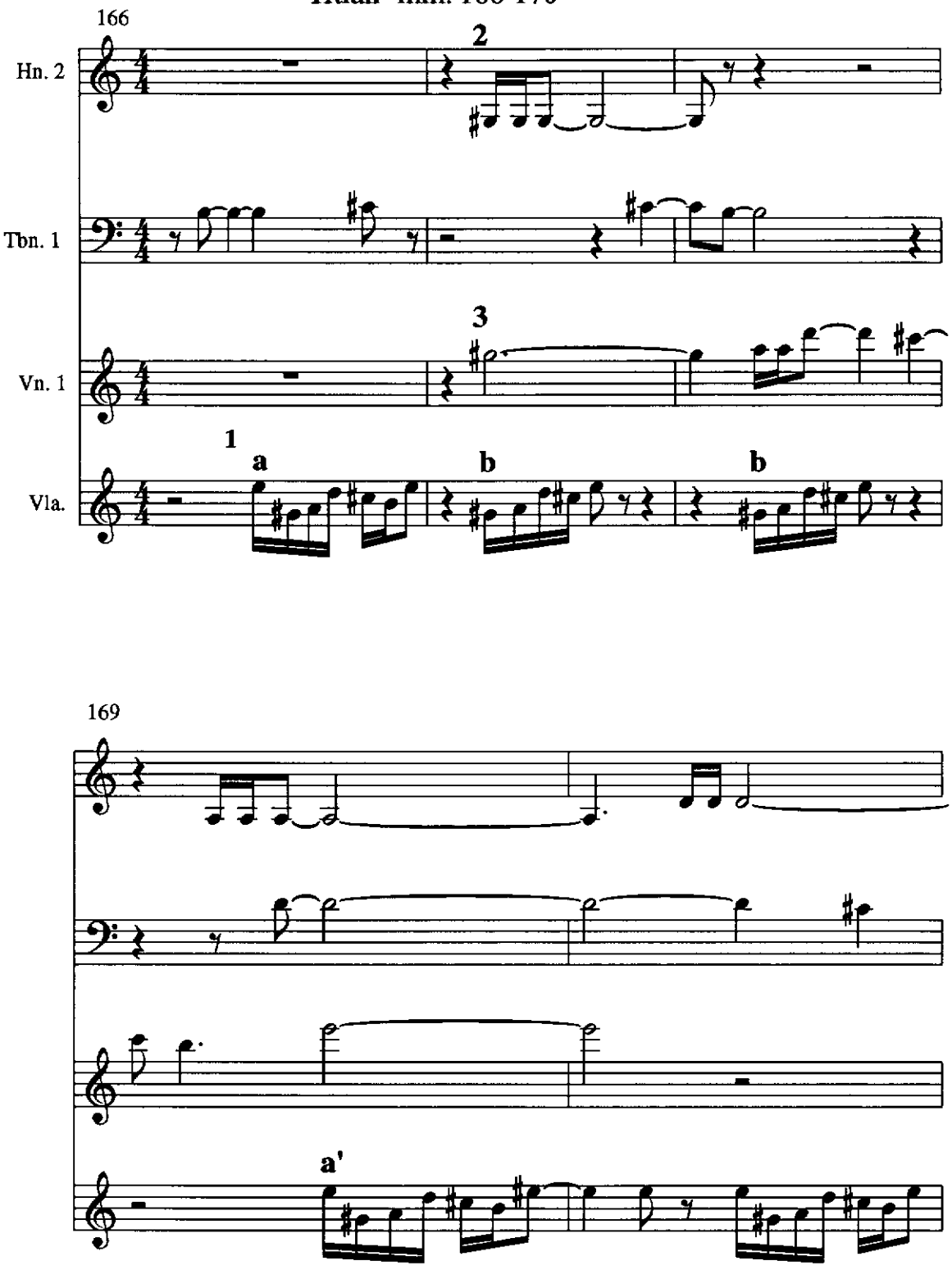


Example 3-10: Eighth-note string accompaniment with abba phrase structure, "Titian" (mm. 166-169)

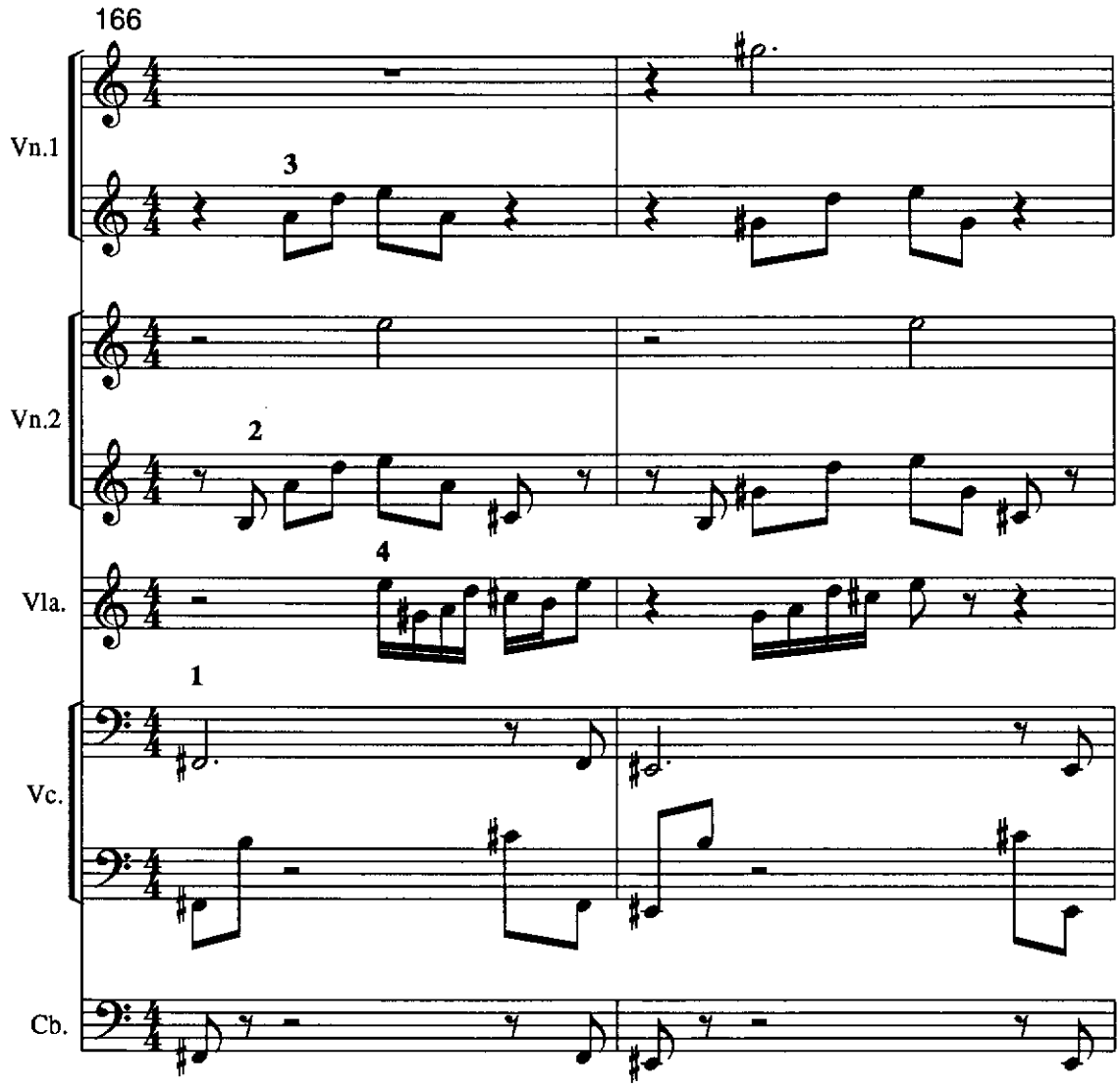




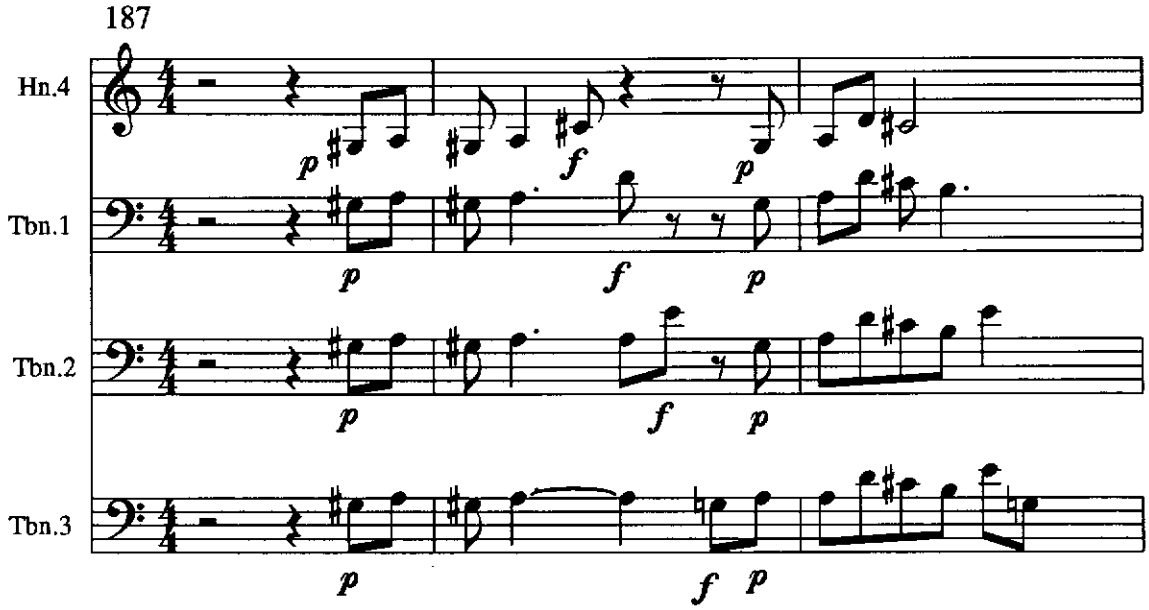
Example 3-11: Three main lines and five-bar trombone phrase, "Titian" mm. 166-170



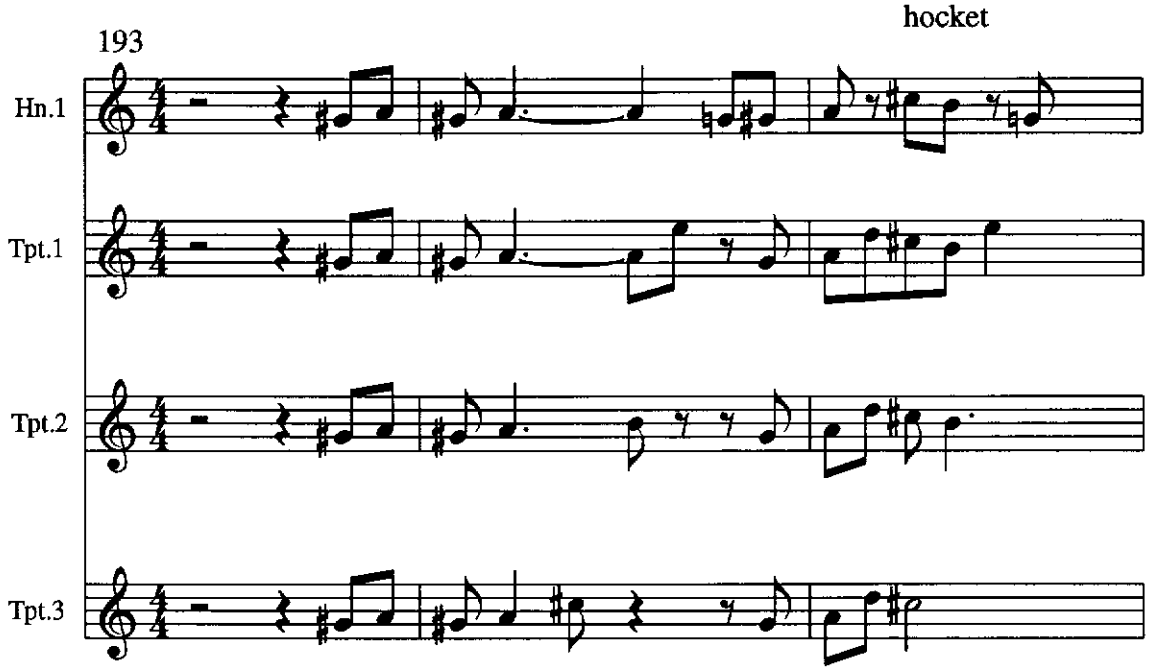
Example 3-12: Offset string attack points, "Titian", (mm. 166-167)



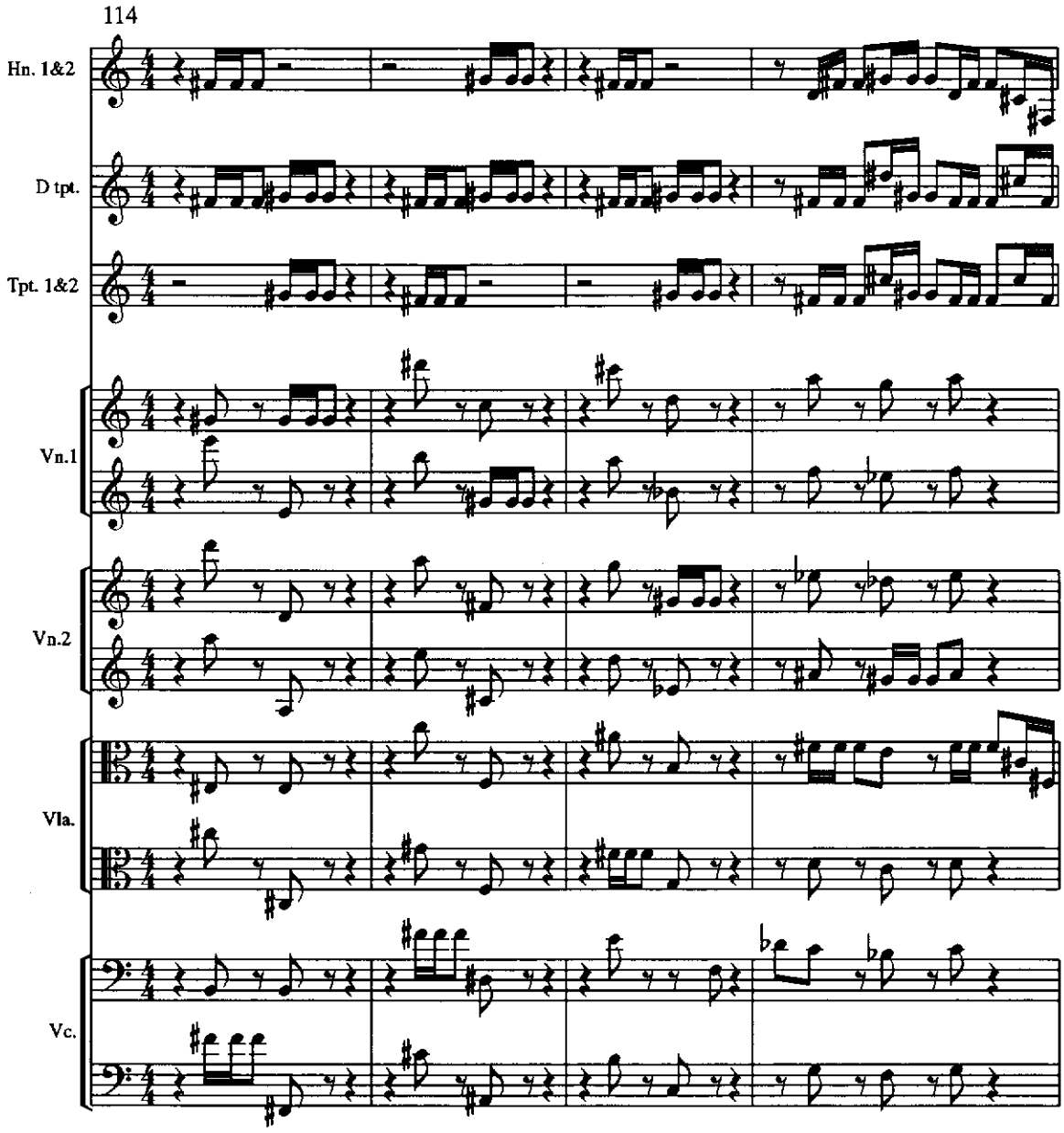
Example 3-13: Brass gestures,
"Mineral and ore range" (mm. 187-189)



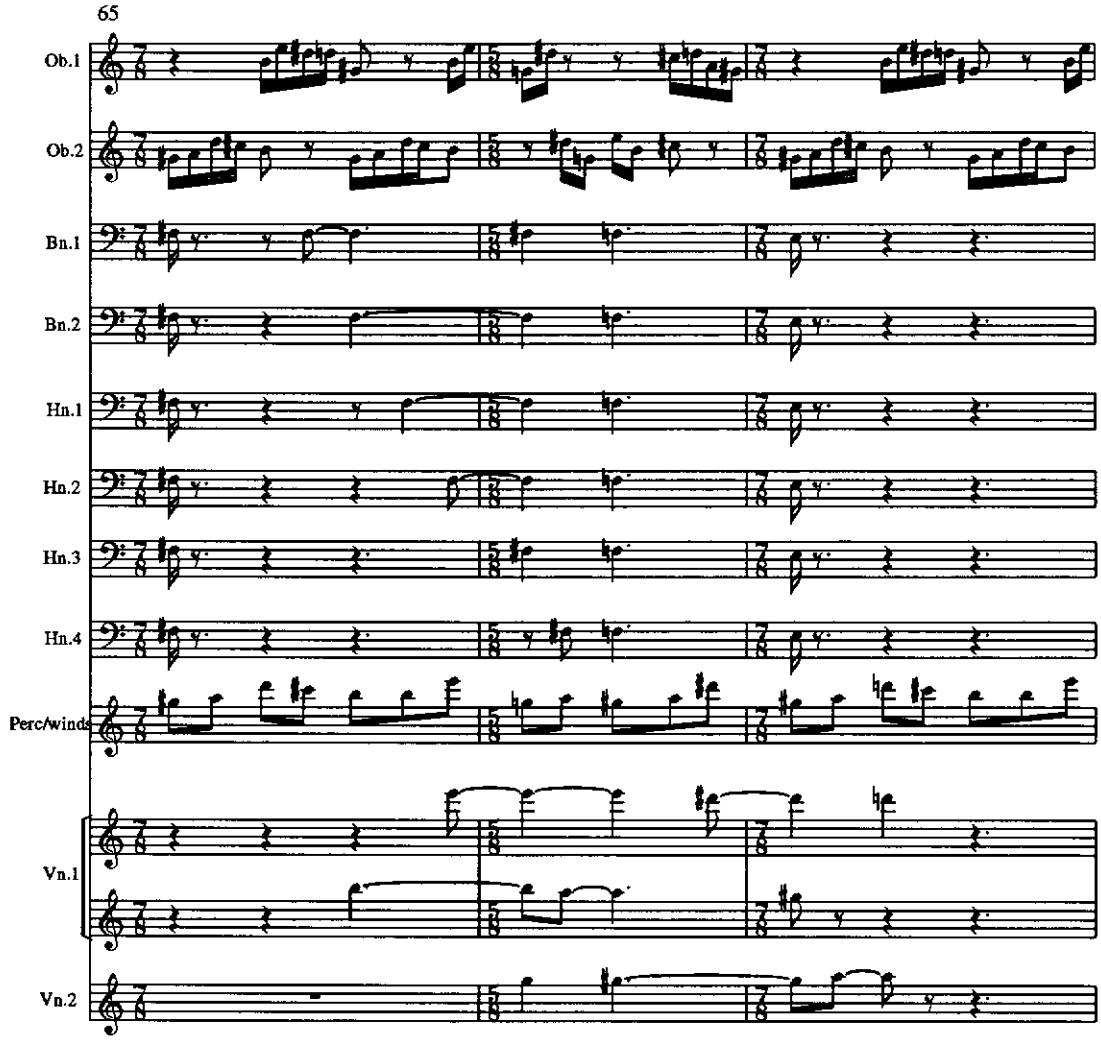
Example 3-14: Inversion of brass gestures, with hocket, "Mineral and ore range" (mm. 193-195)



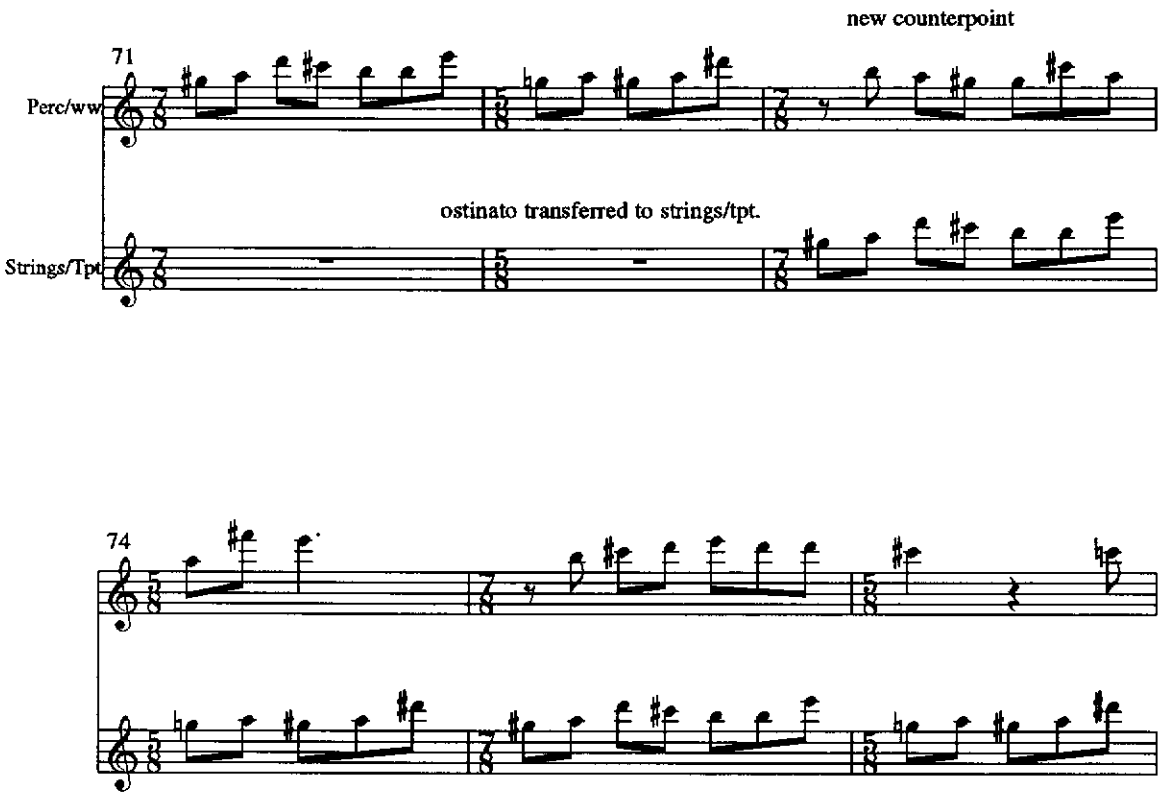
Example 3-15: String doublings of brass gestures, "Terra cotta" (mm. 114-117)



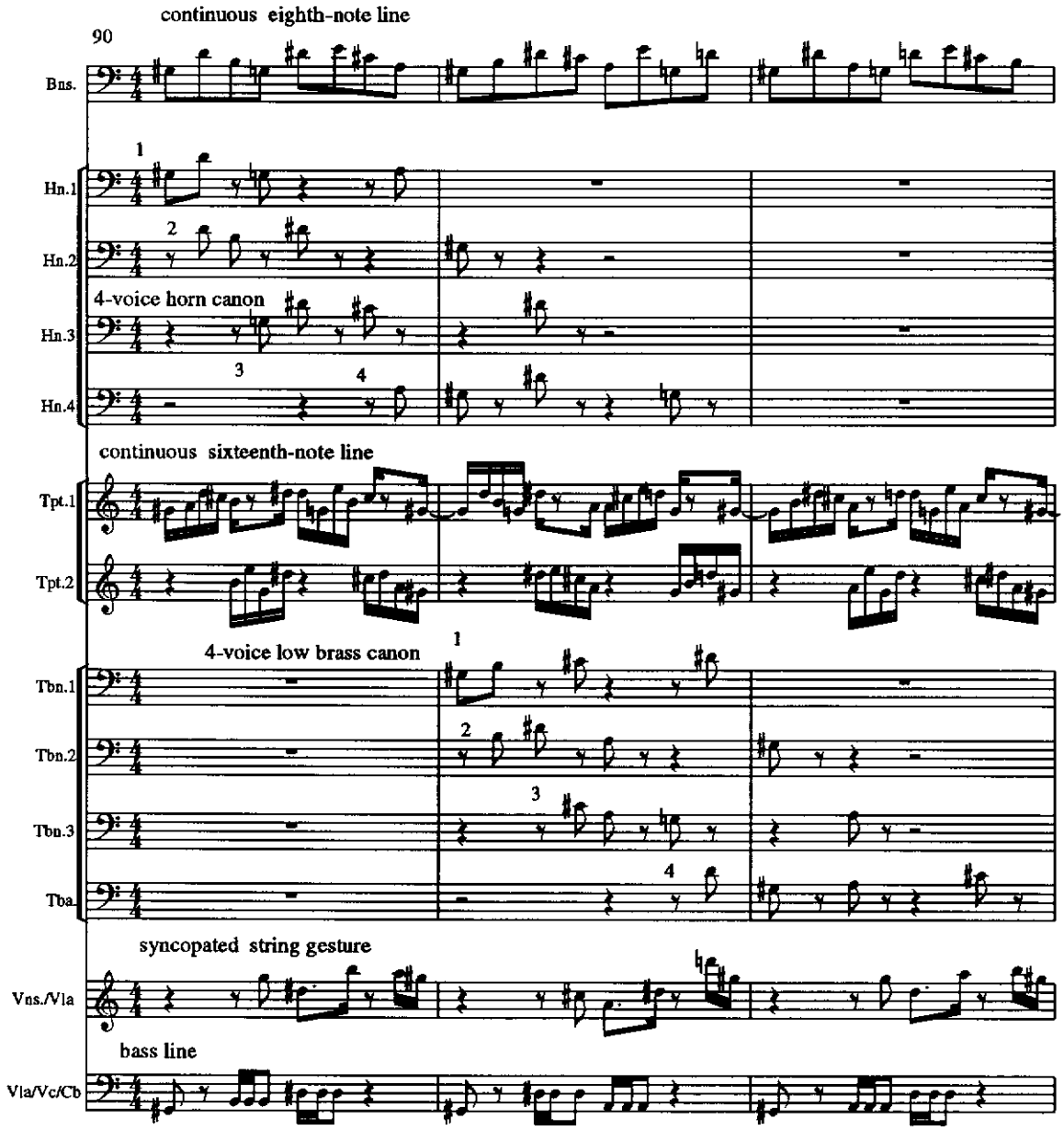
Example 3-16: Grid technique and bass line, "Sunkist!" (mm. 65-67)



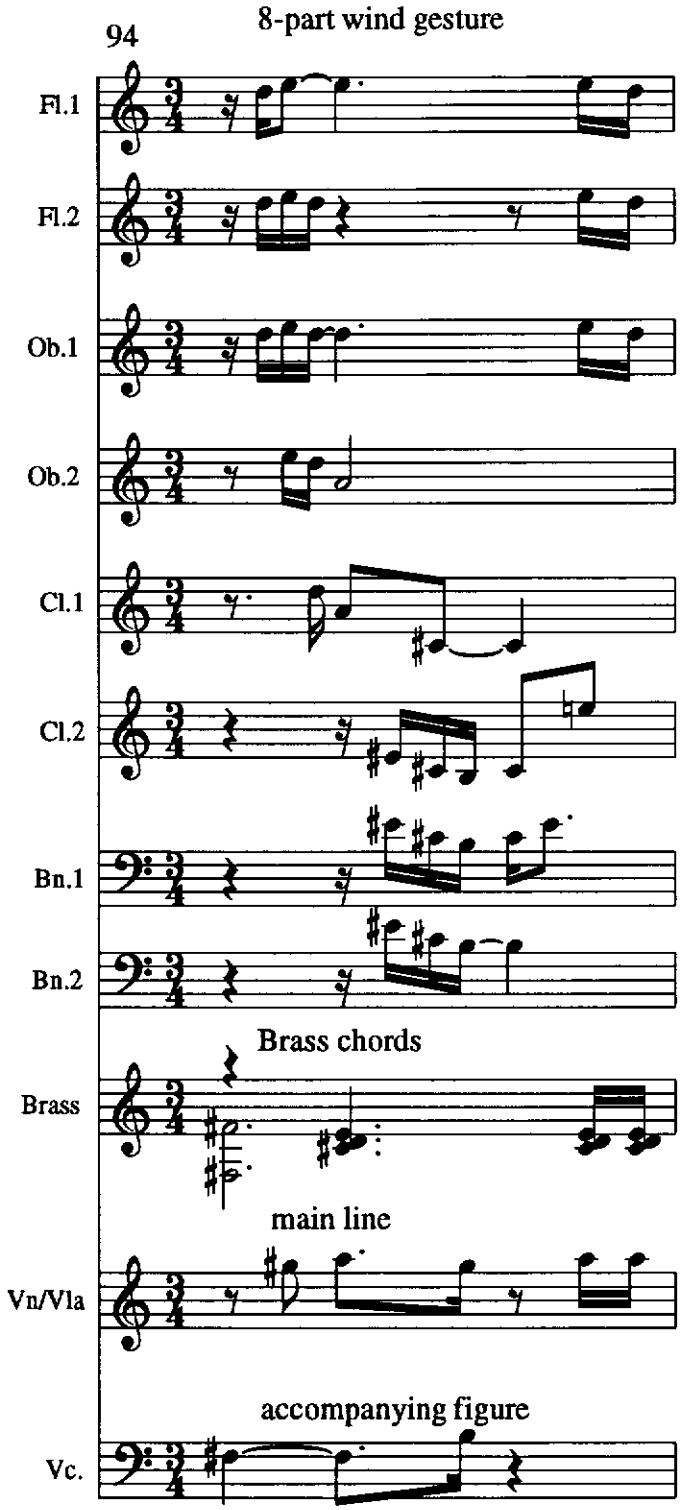
Example 3-17: Eighth-note ostinato with added contrapuntal line, "Sunkist" (mm. 71-76)



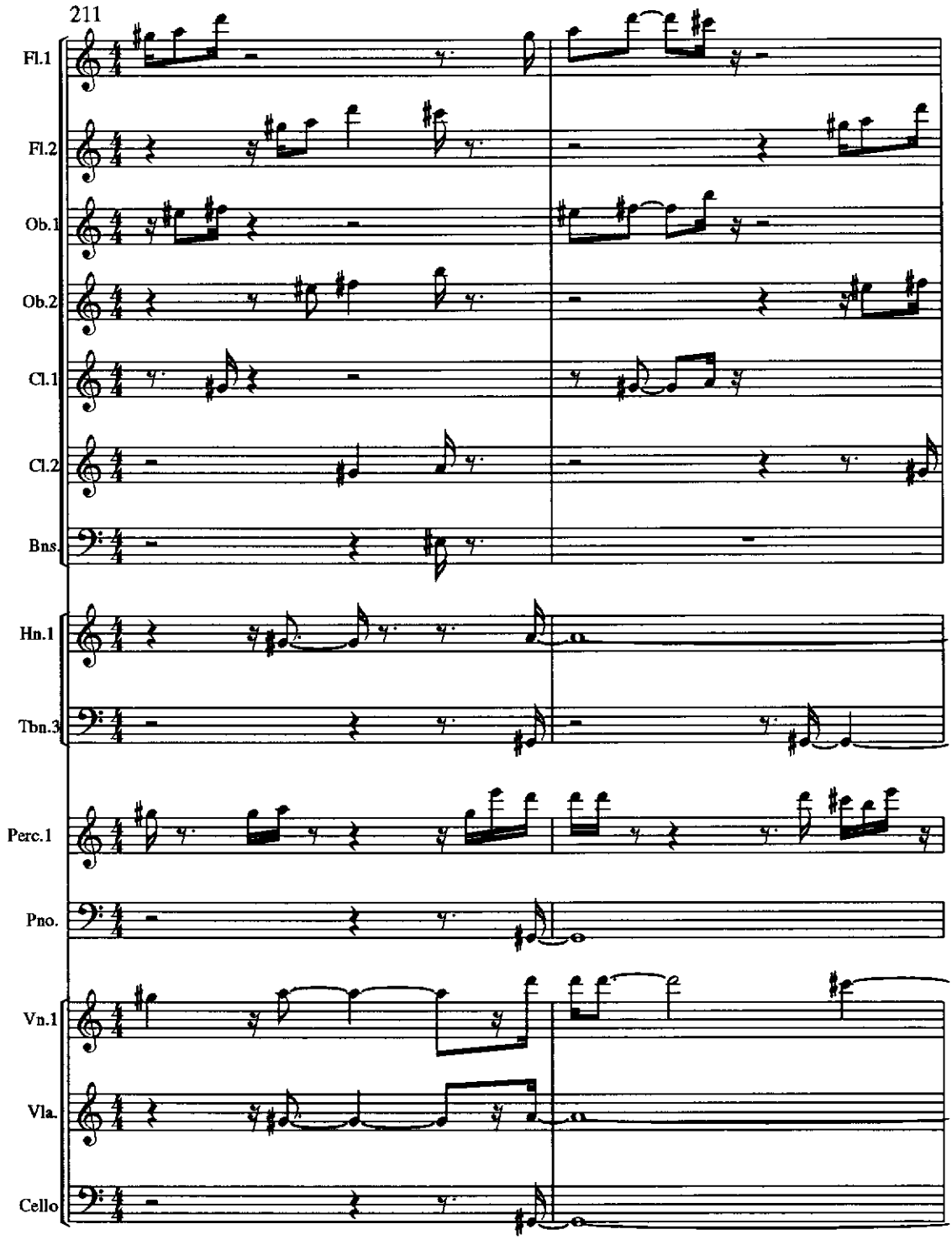
Example 3-18: Reduction of "Orange pekoe in flames", (mm. 90-92)
Wind doublings and percussion not shown



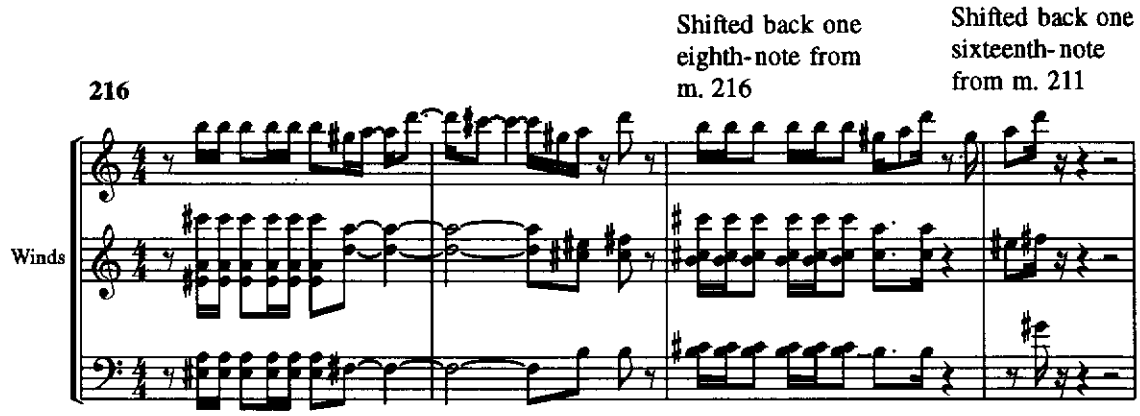
Example 3-19: Reduction of "Orange pekoe in flames", (m. 94) Perc. not shown



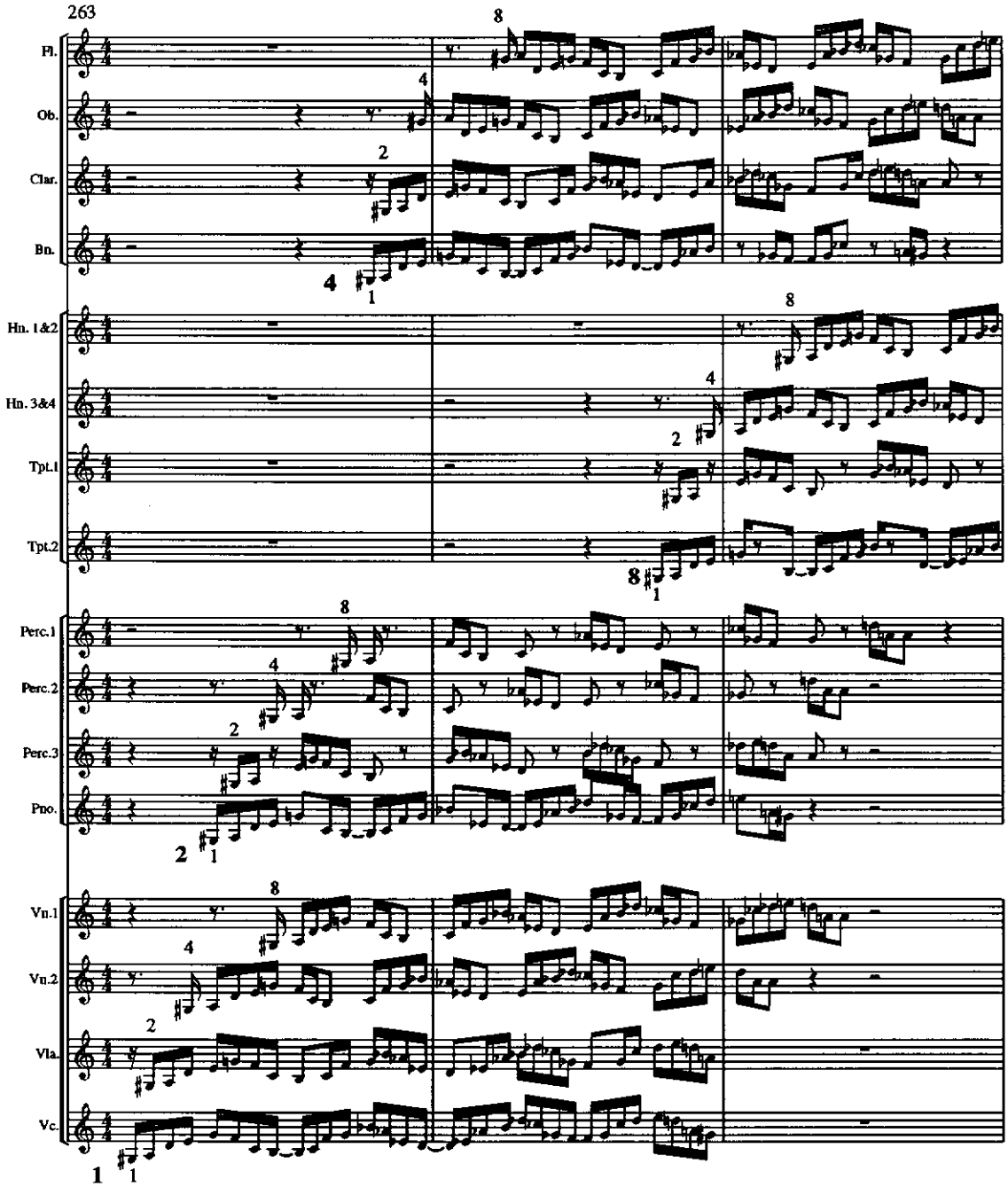
Example 3-20: Canon, heterophony, and pointillism,
Reduction of "Helianthin on silk" mm. 211-215



Example 3-21: Tutti wind gesture with phase-shifting, "Helianthin on silk" (mm. 216-219)

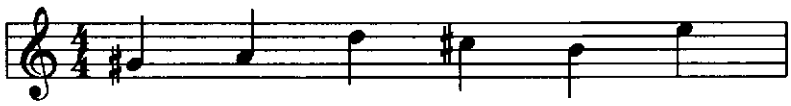


Example 3-22: Reduction of "First Orange" (mm. 263-265)
Low brass parts not shown. (For ease of reading, lines split between 2 players or a divided section, have here been compressed into a single line.)

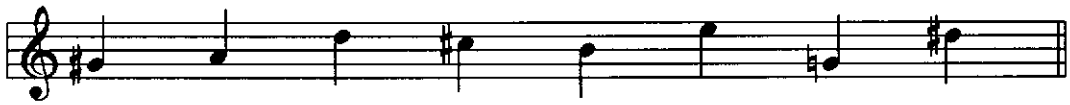


Example 4-1: Original series with two suffixes;
T-9 transposition of the series

Original series/Series 1



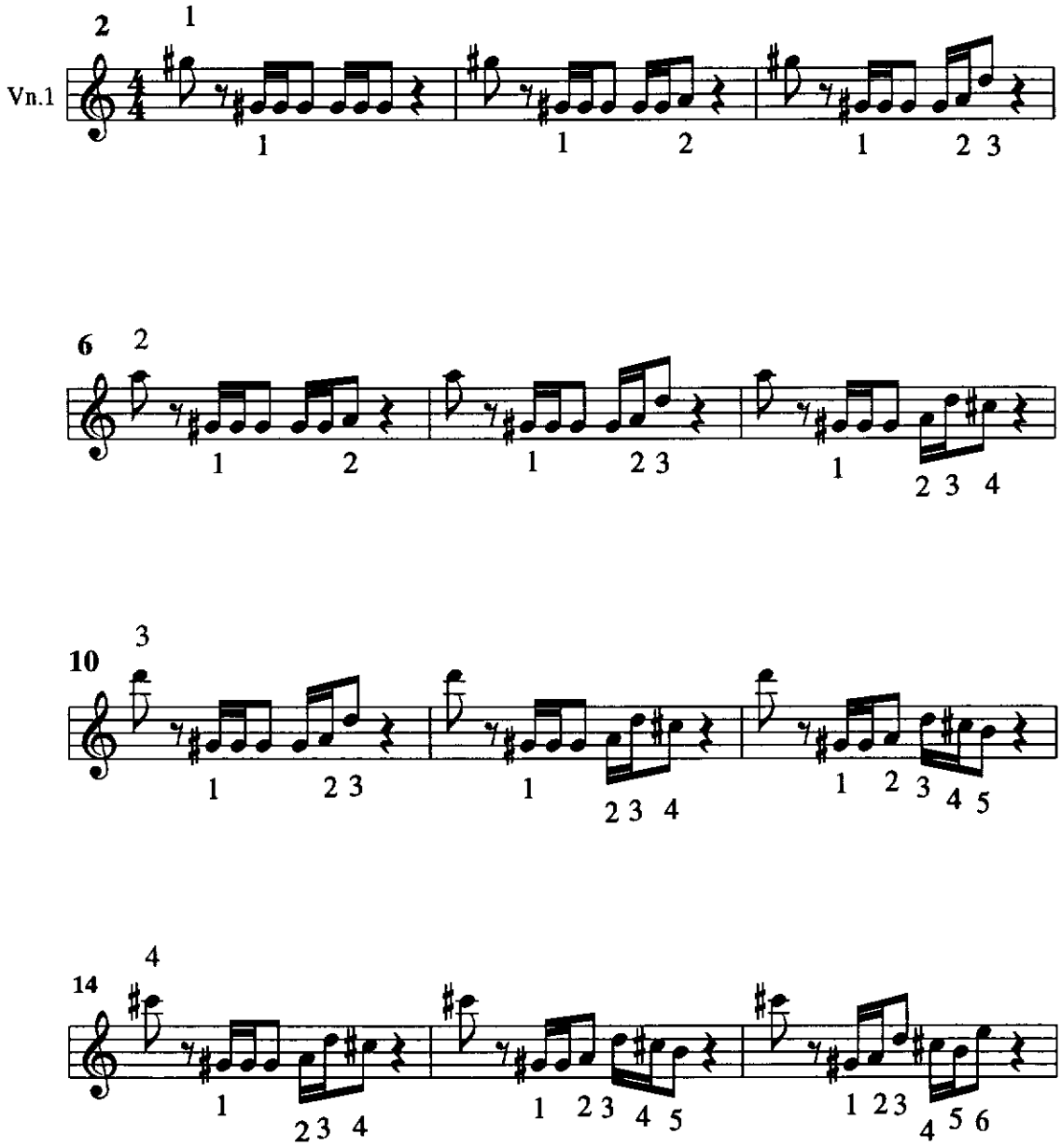
Series with first optional two-note suffix: Series 1a



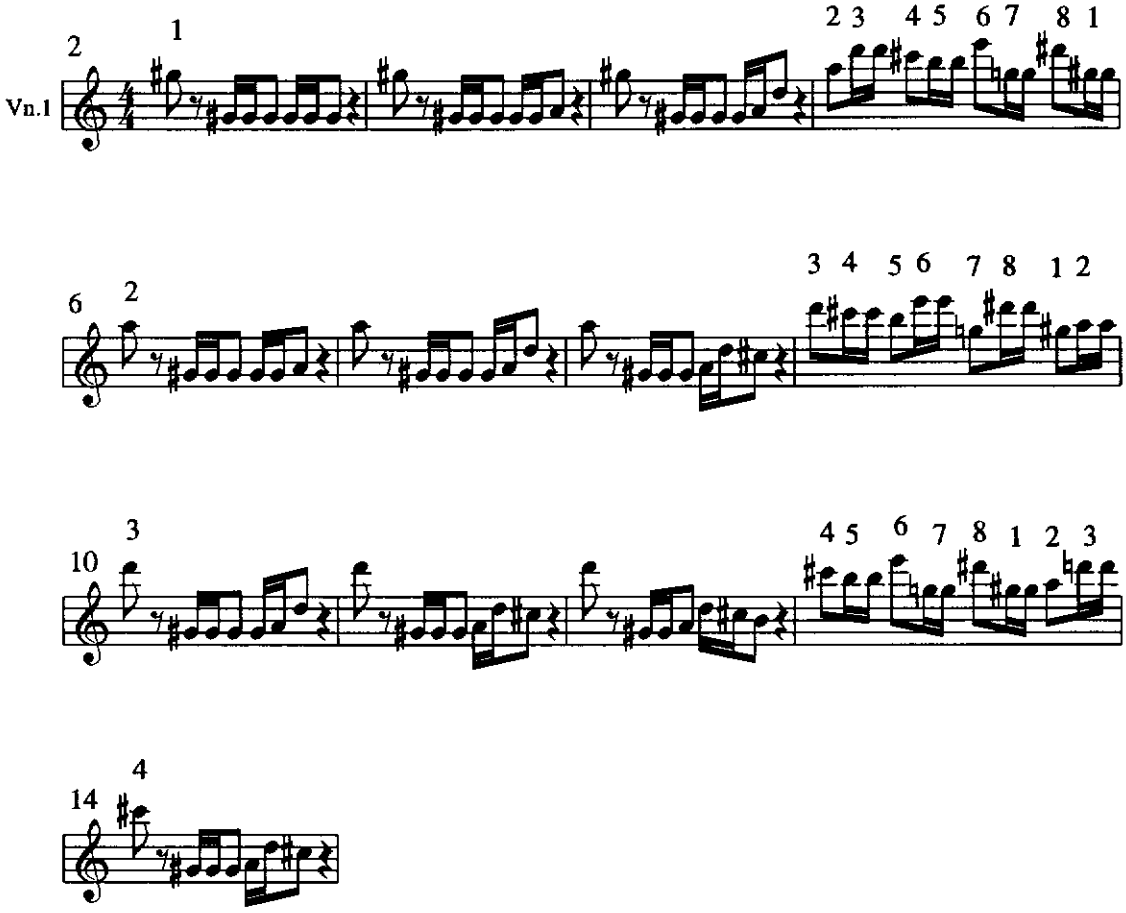
Series with second optional two-note suffix: Series 1b

T-9 transposition of original series

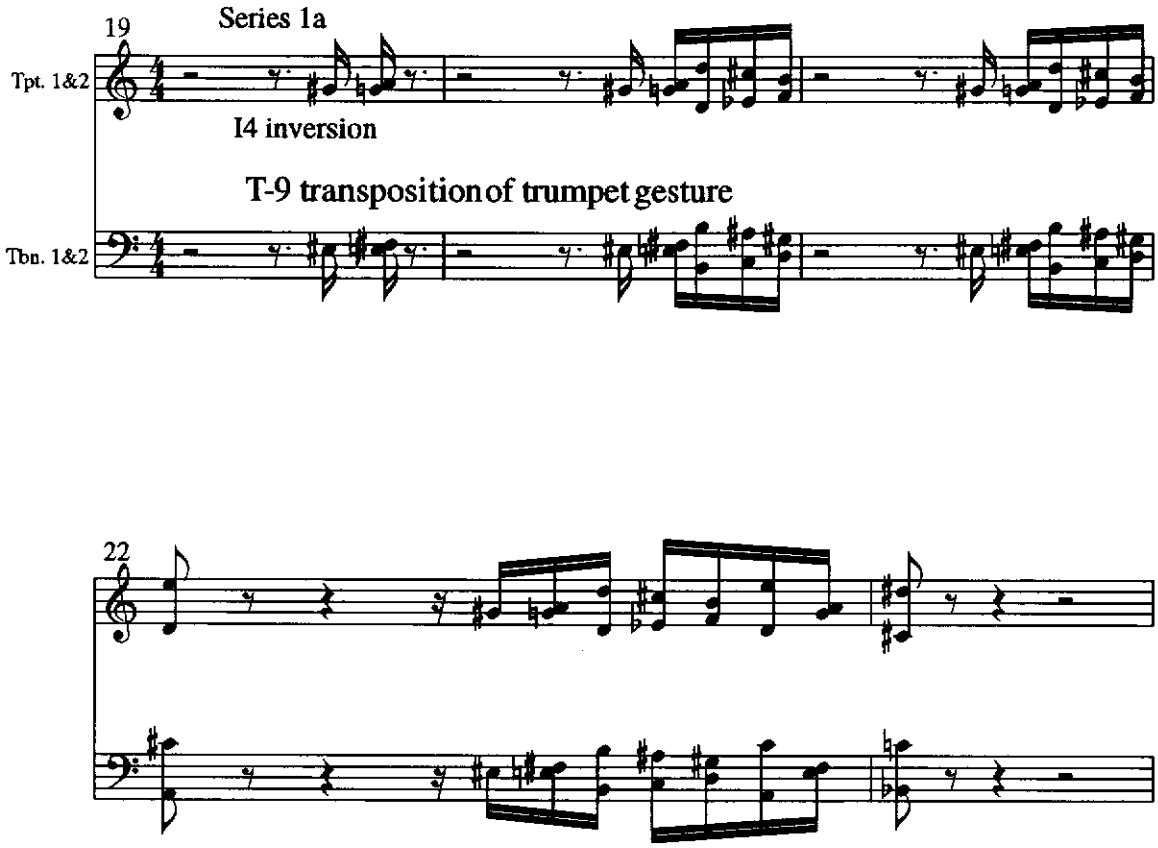
Example 4-2: Additive process in Vn. 1 line,
"Burnt orange" mm. 2-4, 6-8, 10-12, 14-16



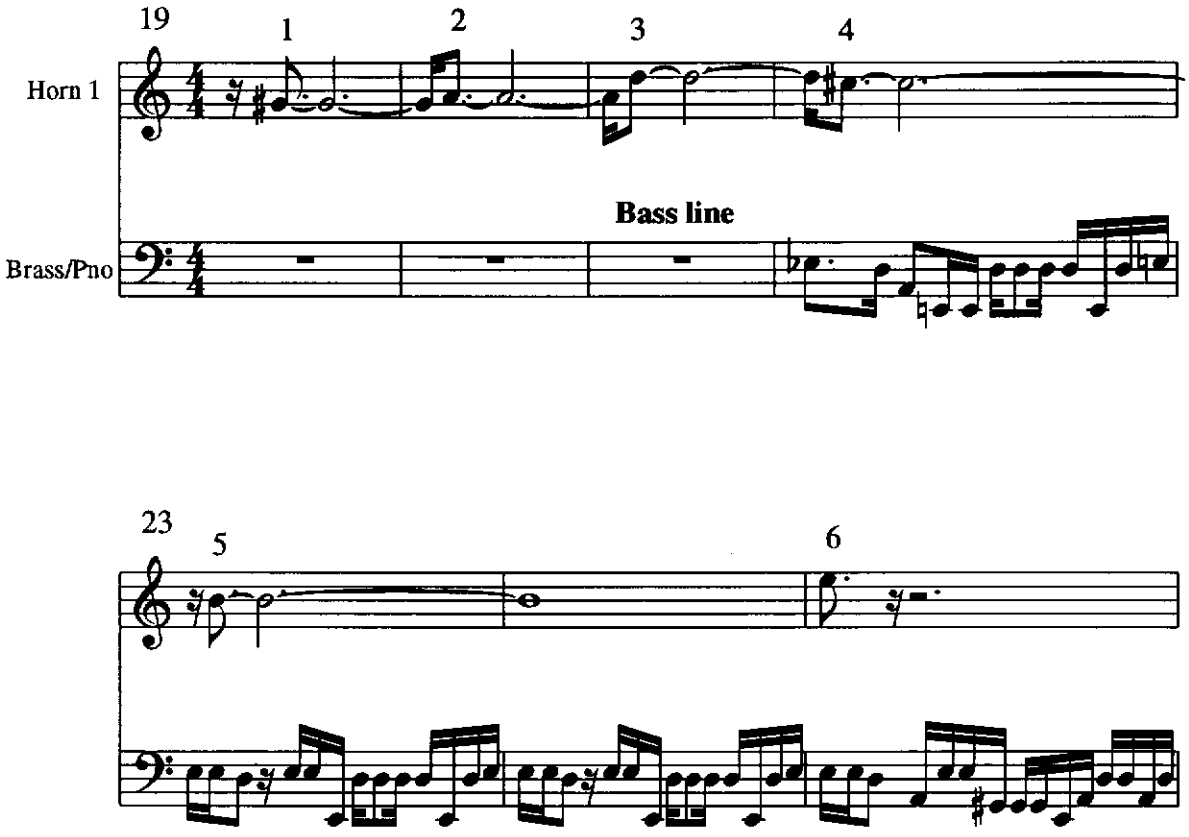
Example 4-3: Series 1a in Vn.1 line, "Burnt orange" (mm. 2-14)



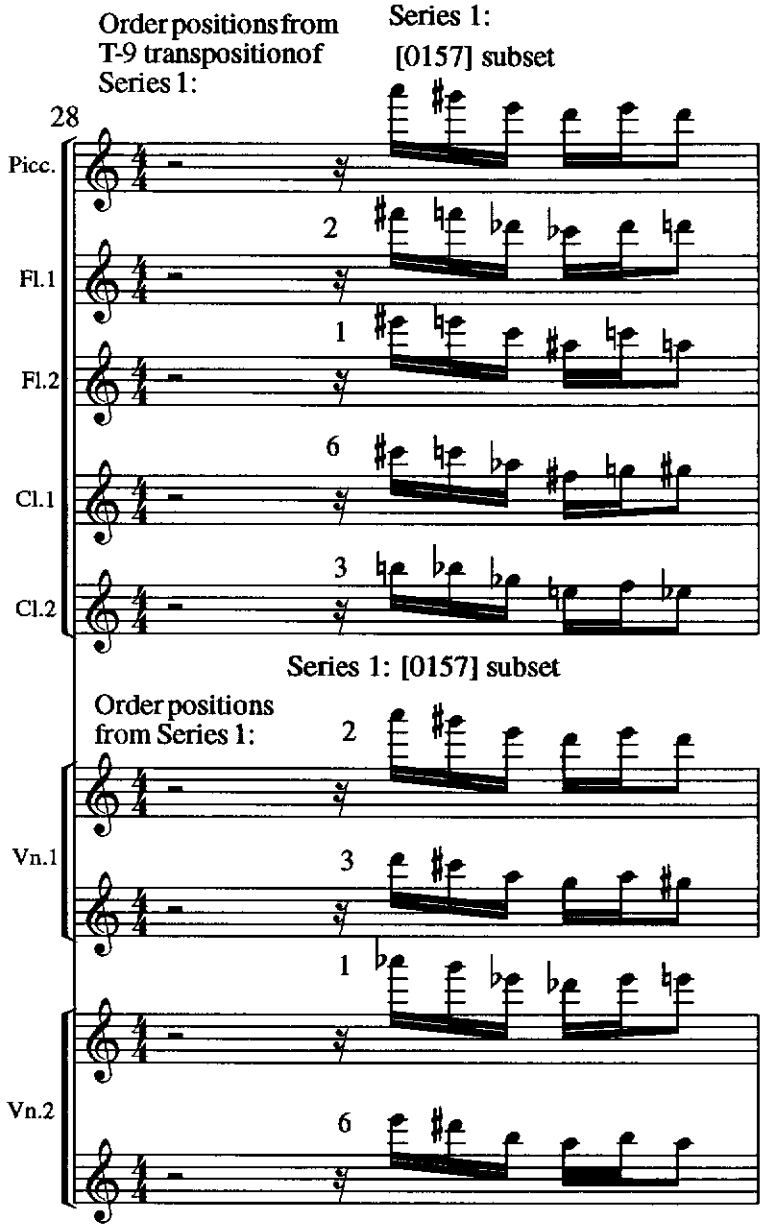
Example 4-4: Tpt. 1 gesture with I4 inversion and T-9 transposition in trombones, "Orange with damsons" (mm. 19-23)



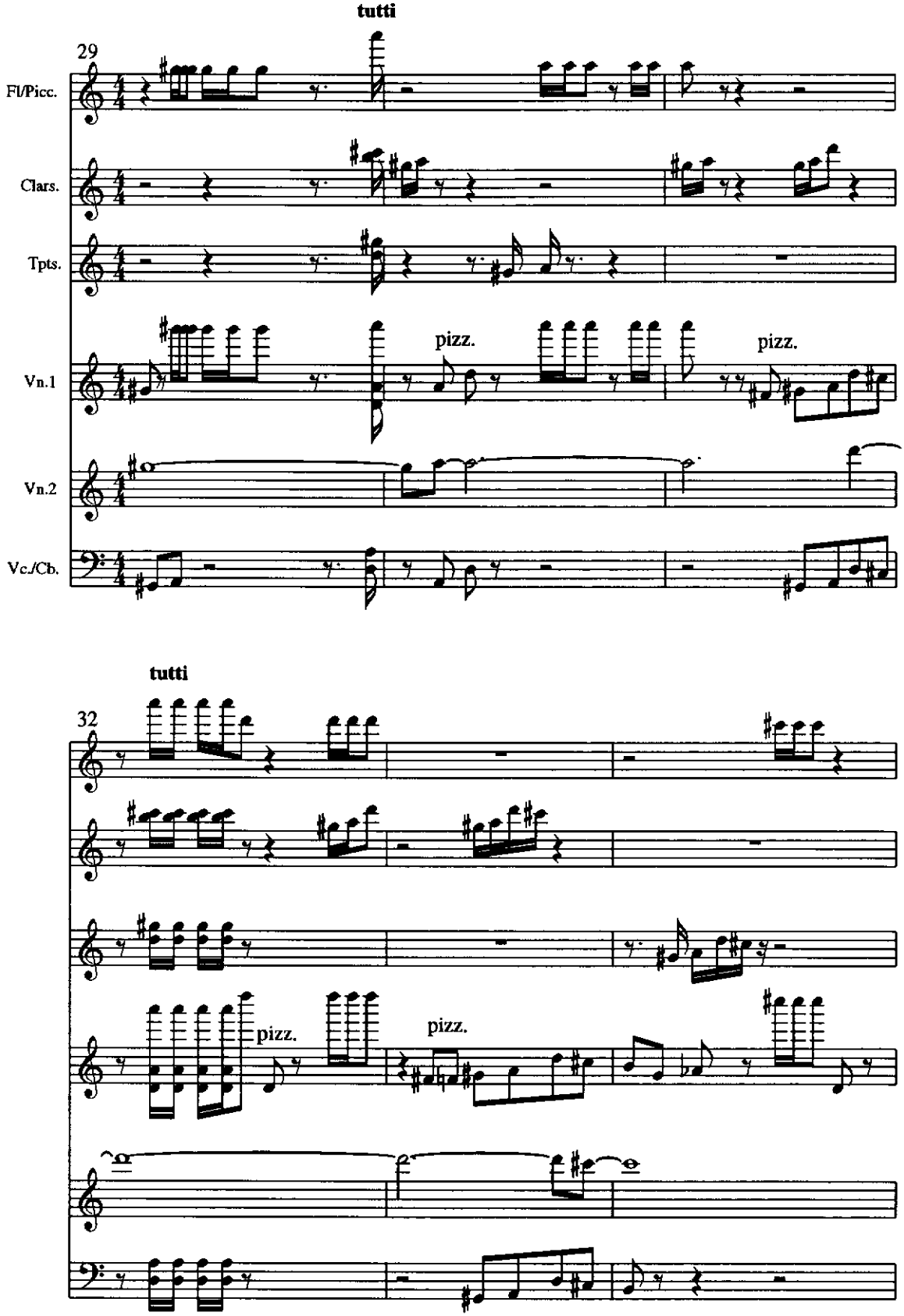
Example 4-5: Series 1 in horn line with bass line on [0157] subset of Series 1, "Orange with damsons" (mm. 20-26)



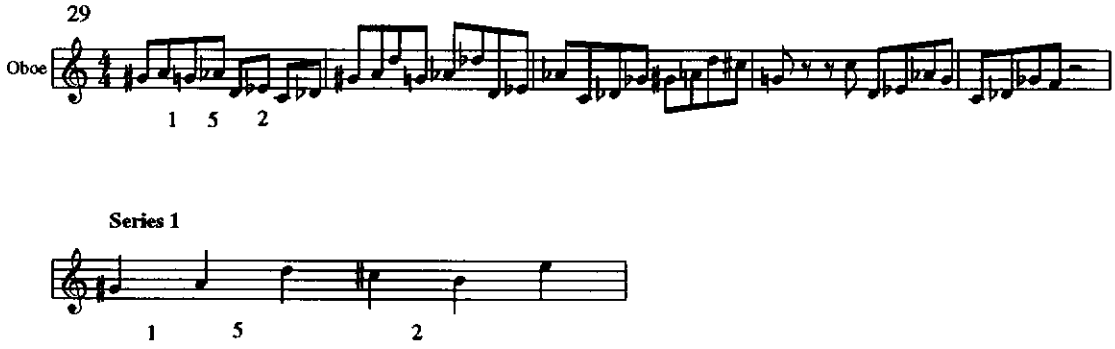
Example 4-6: Tutti gesture from [0157] subset with transpositions from Series 1 and its T-9 transposition, "Orange with damsons" (m. 28)



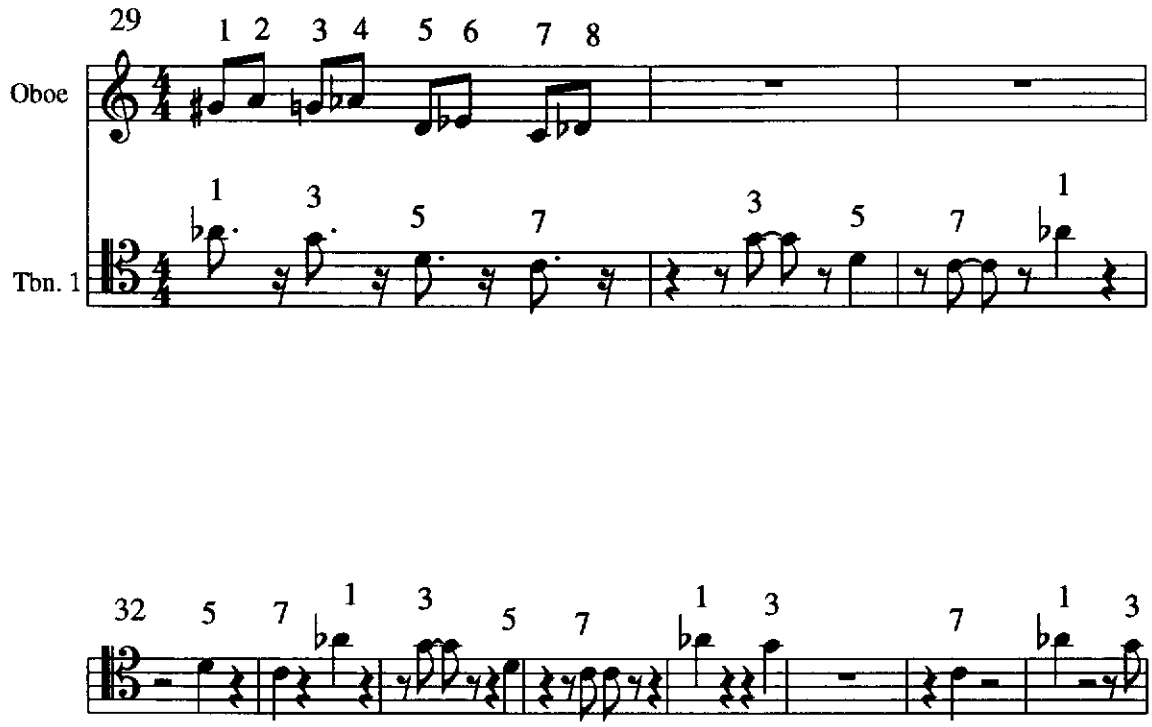
Example 4-7: Gestures derived from Series 1a, "Russet", (mm. 29-34)



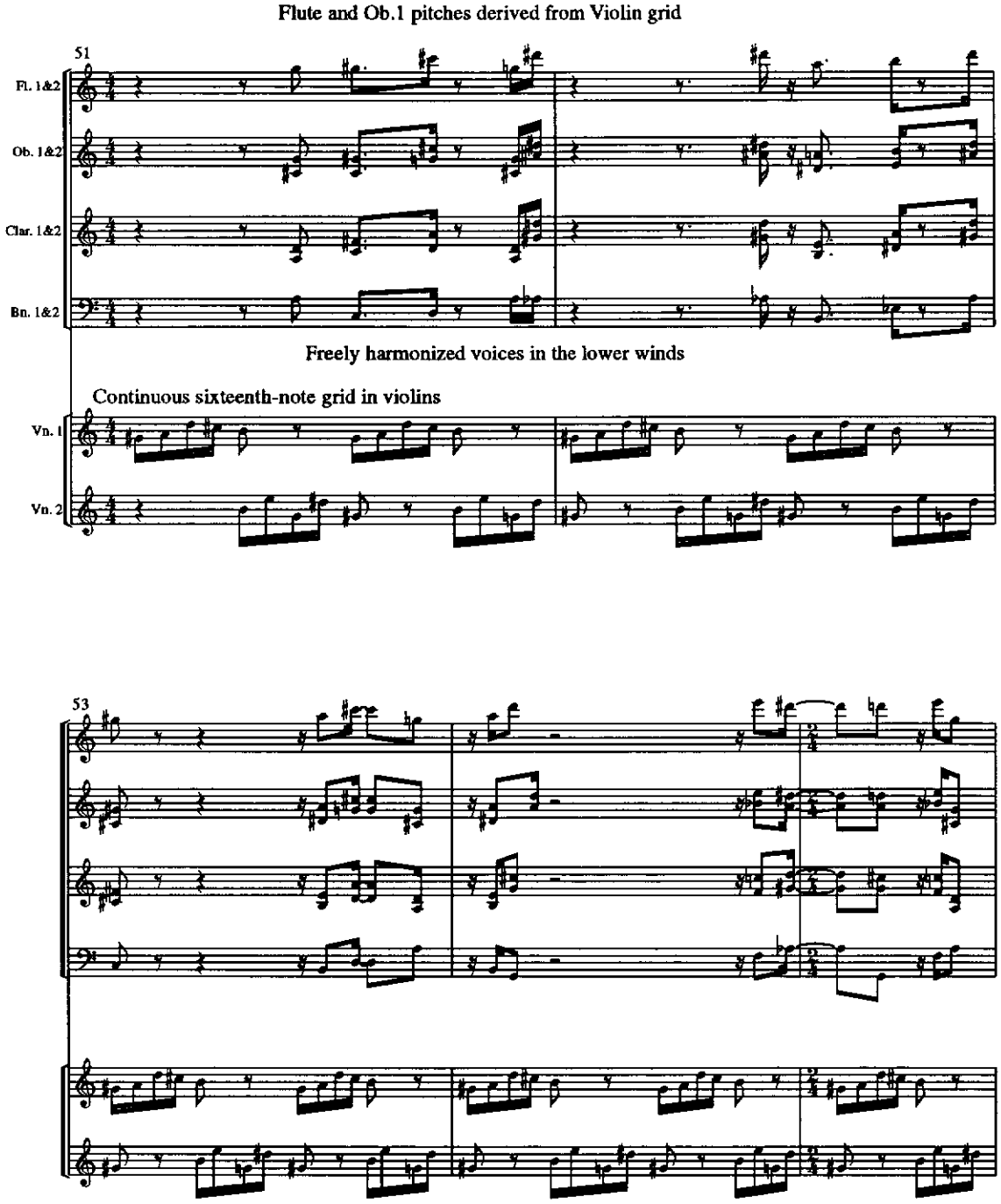
Example 4-8: Oboe line with transpositions and additive process, "Russet" (mm. 29-33)



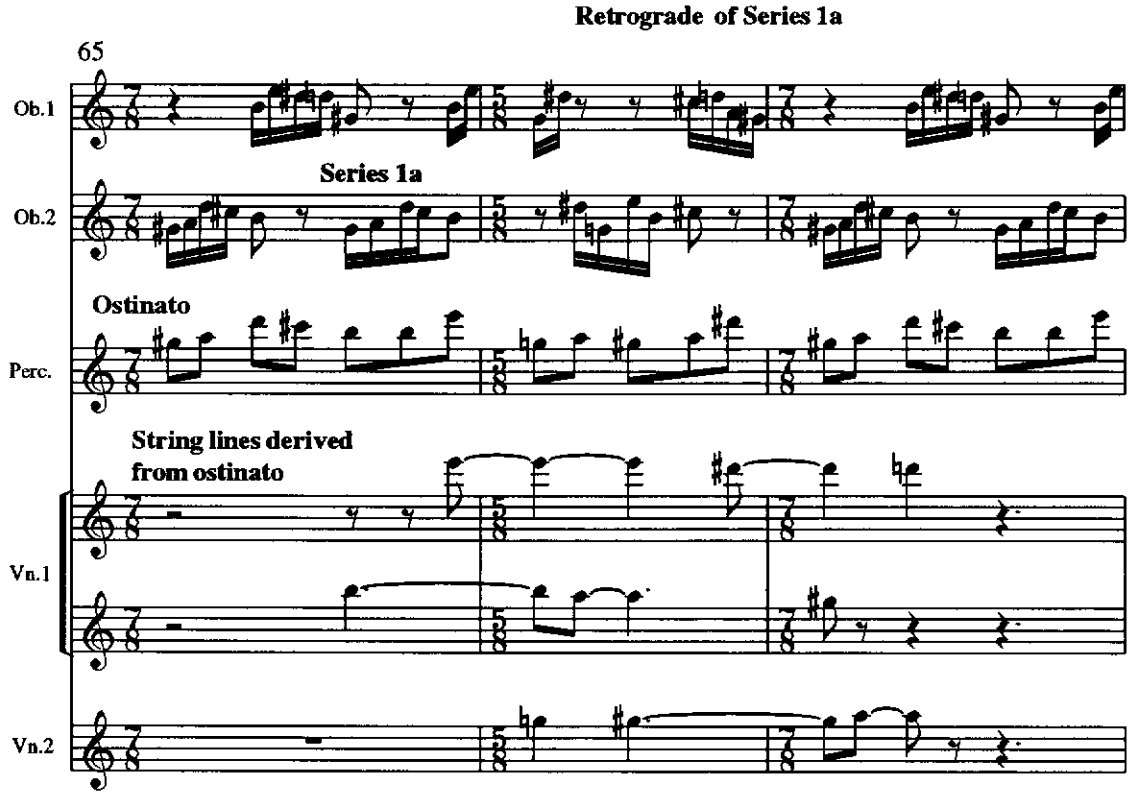
Example 4-9: Trombone gesture with rotational technique, "Russet" (mm. 29-39)



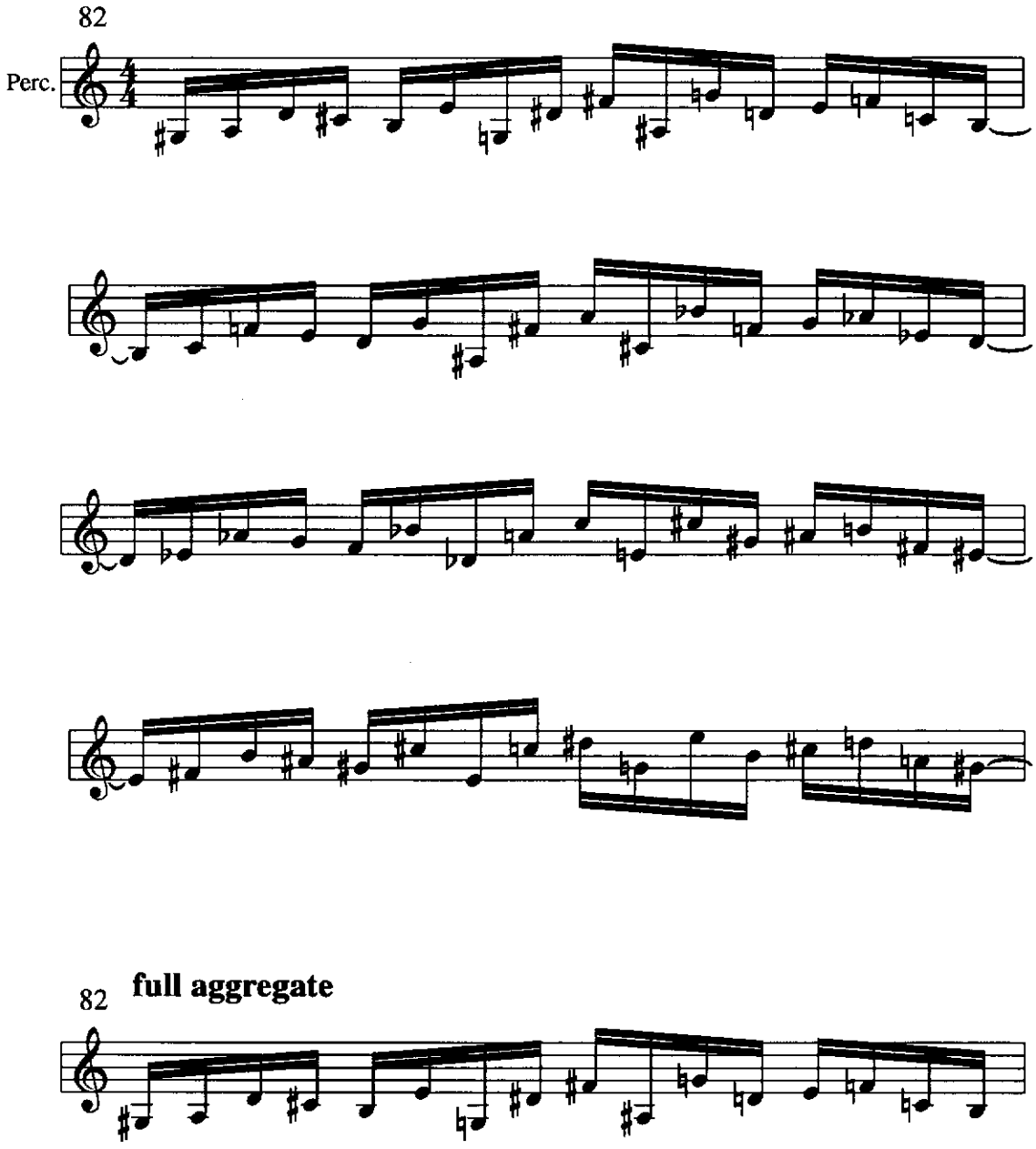
Example 4-10: Oboe pitches and violin grid, "Carroty", (mm. 51-55)



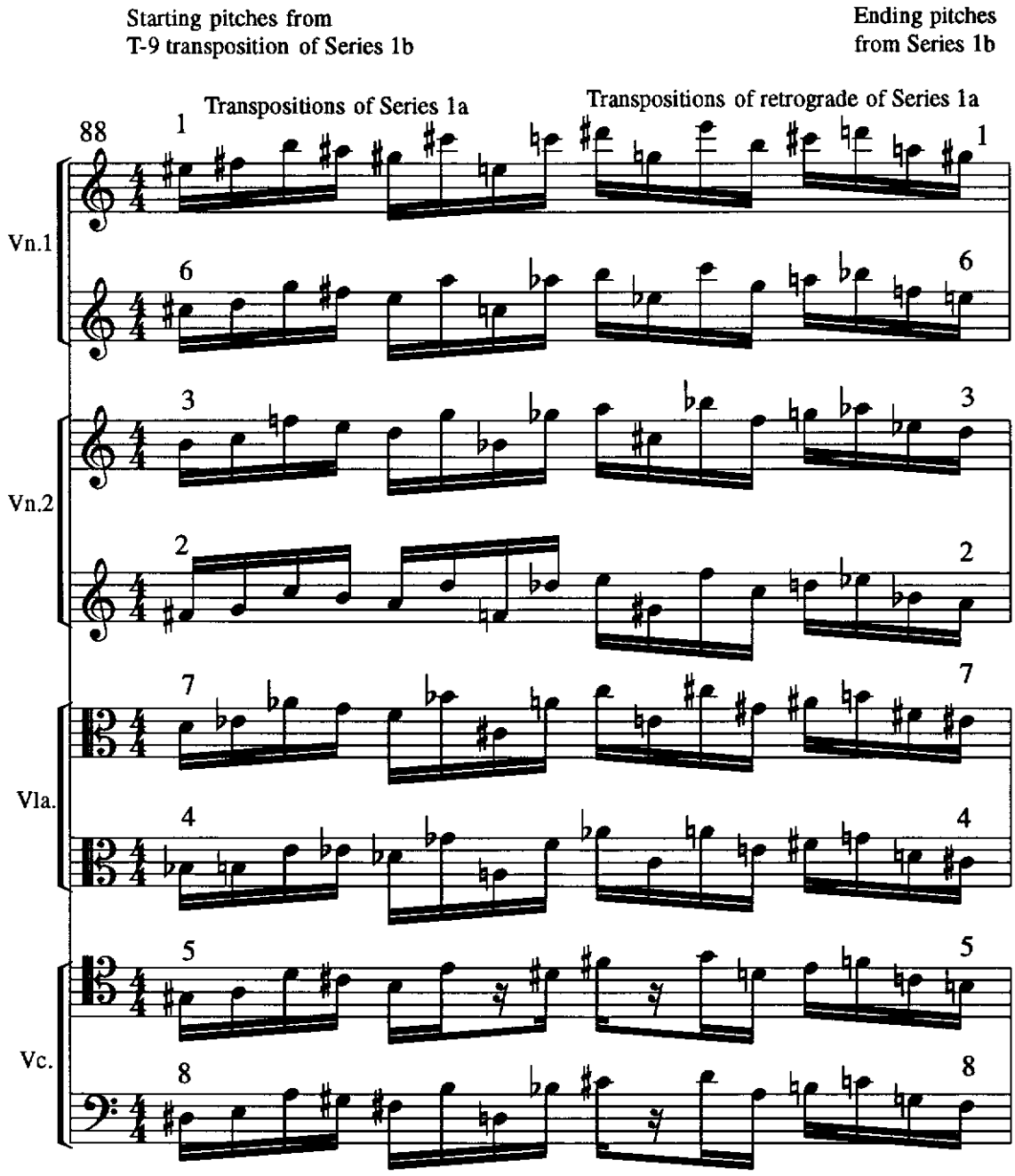
Example 4-11: String lines derived from ostinato, "Sunkist!" (mm. 65-67)



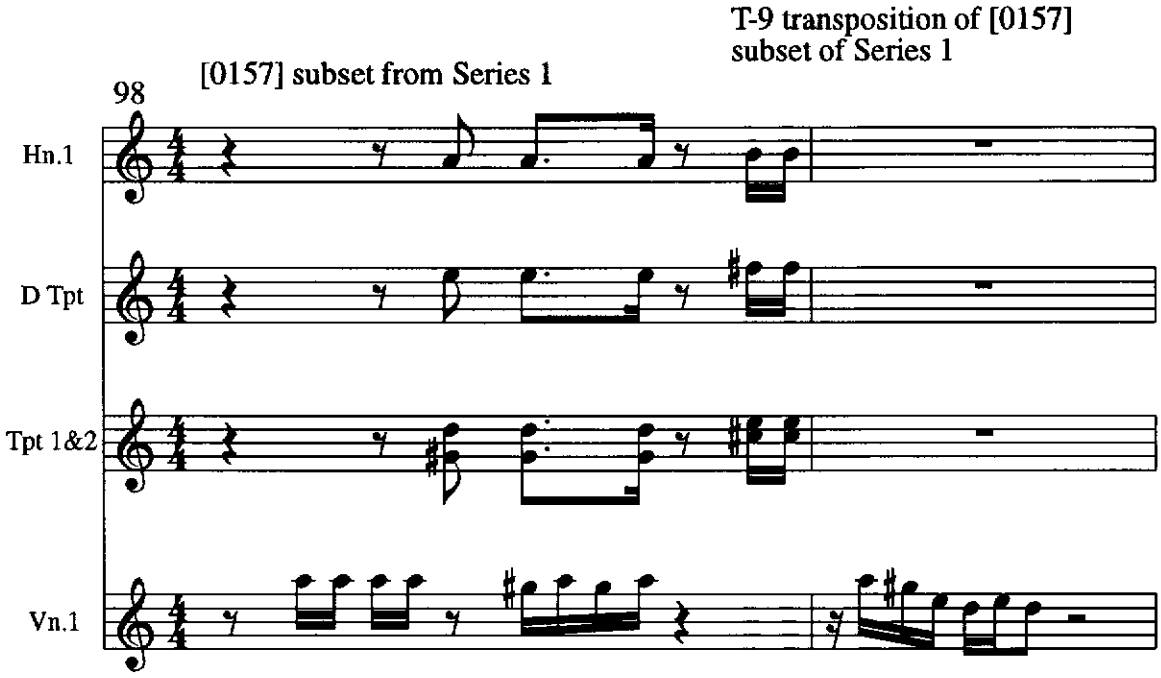
Example 4-12: Percussion grid with T-3 transpositions; first presentation of a full aggregate in m. 82, "Orange pekoe in flames" (mm. 82-85) For ease of reading, the interlocking Perc. 2 and 3 lines have been reduced here into a single line.



Example 4-13: Starting and ending pitches from T-9 transposition of Series 1b, "Orange pekoe in flames", (m. 89)

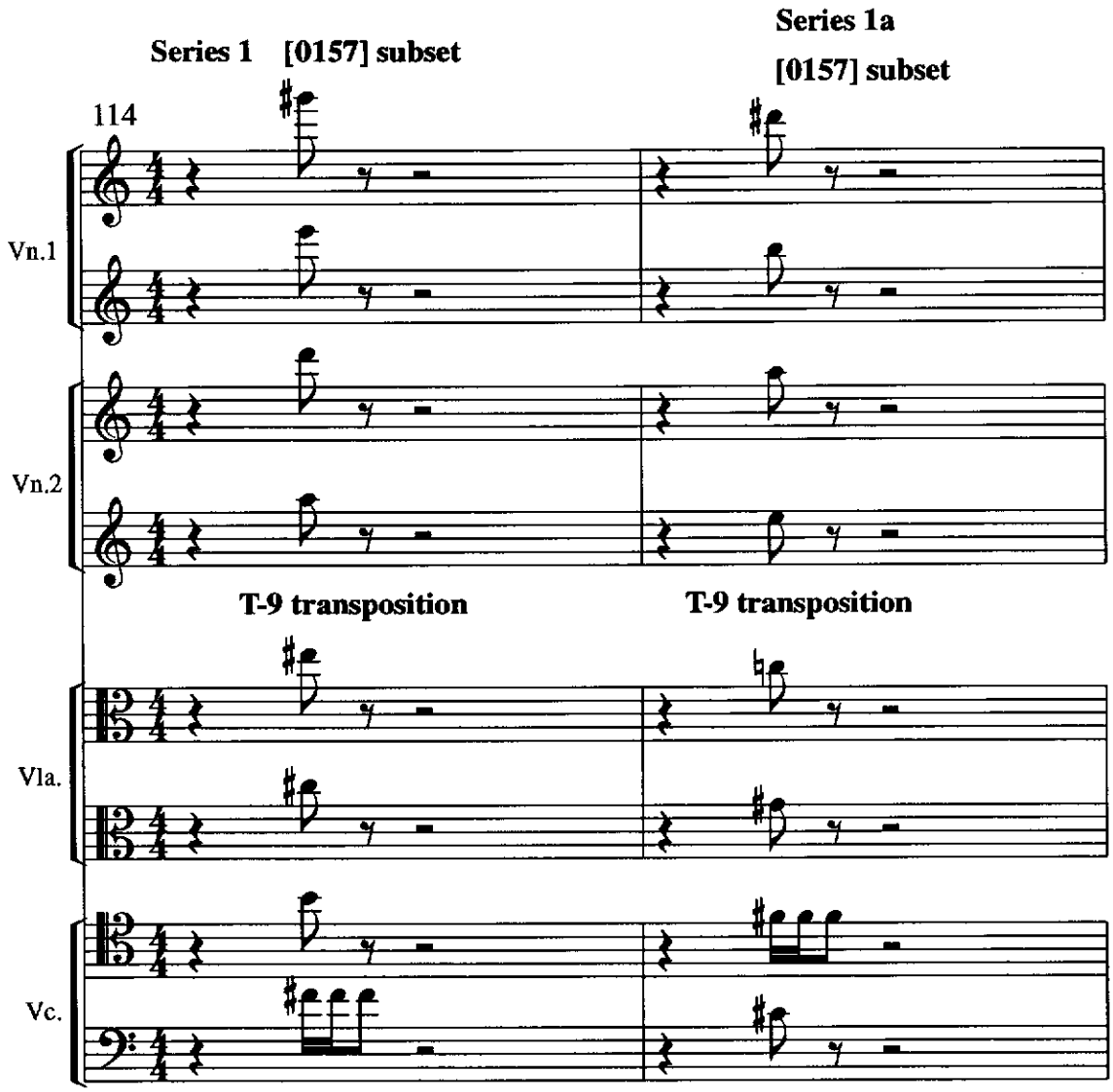


Example 4-14: [0157] subset from Series 1 and its T-9 transposition, "Absinthe and apricot", (mm. 98-99)

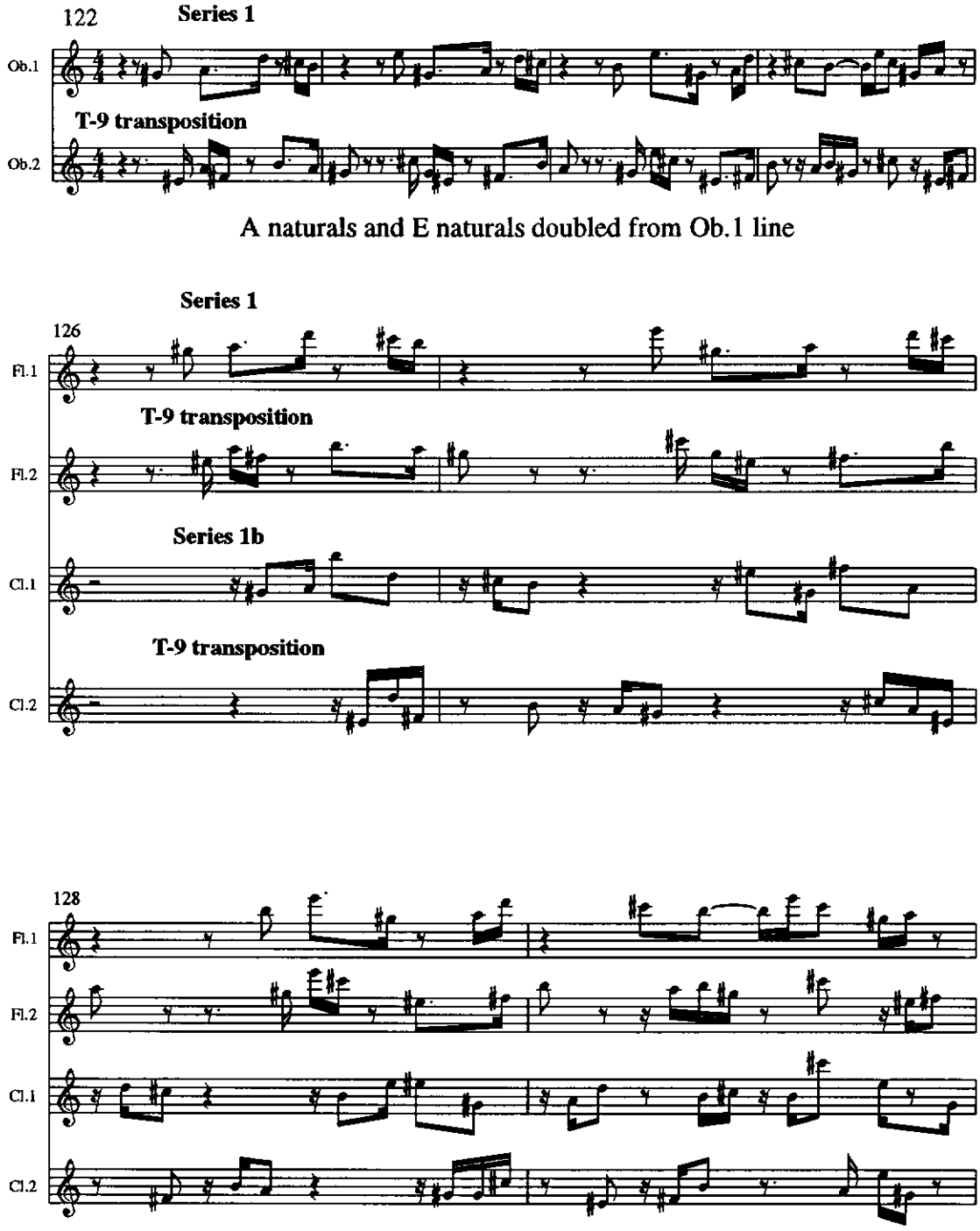


[0157] subset from Series 1

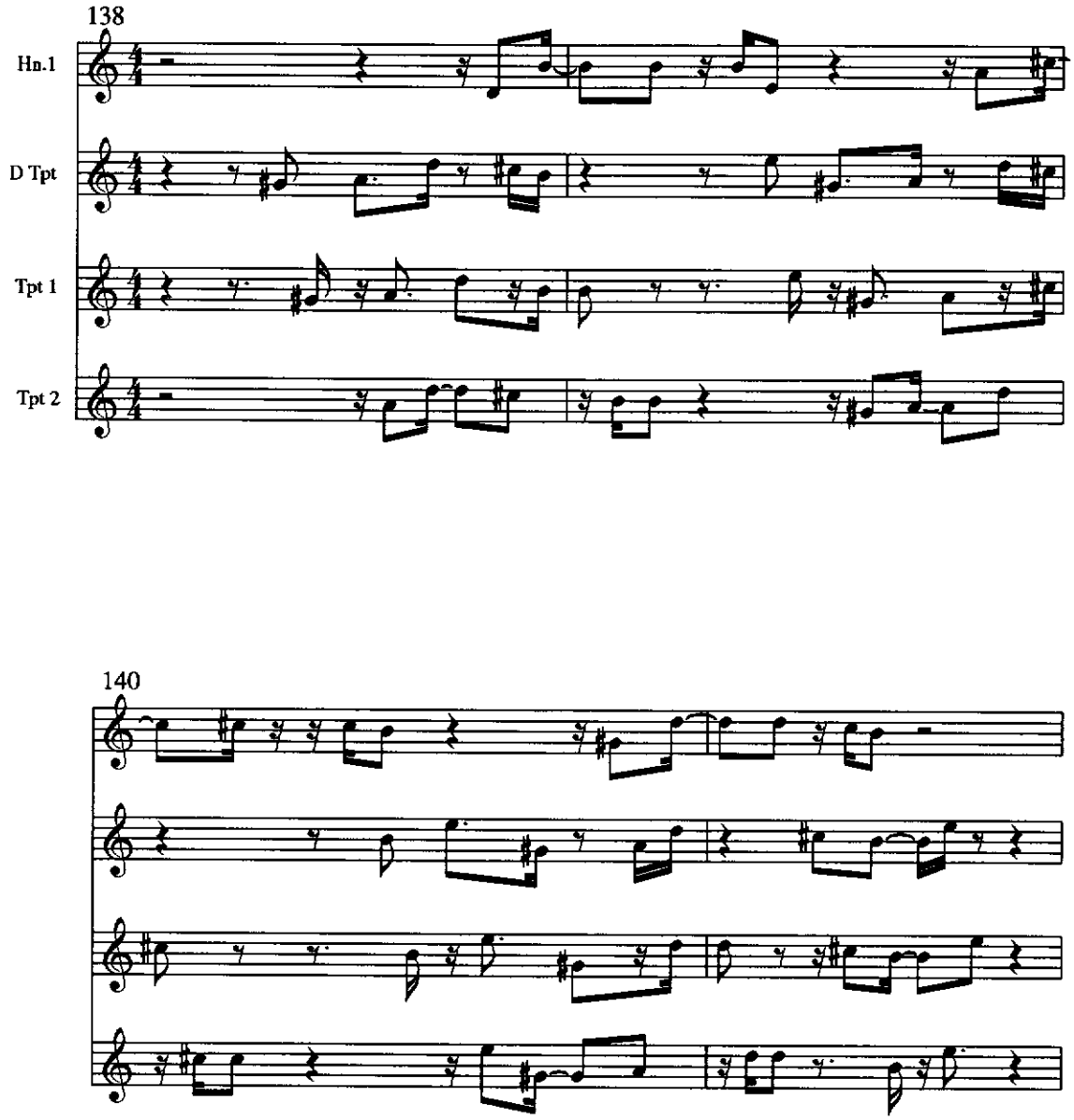
Example 4-15: String chords with [0157] subset from Series 1 and 1a, with T-9 transpositions, "Terra cotta" (mm. 114-115)



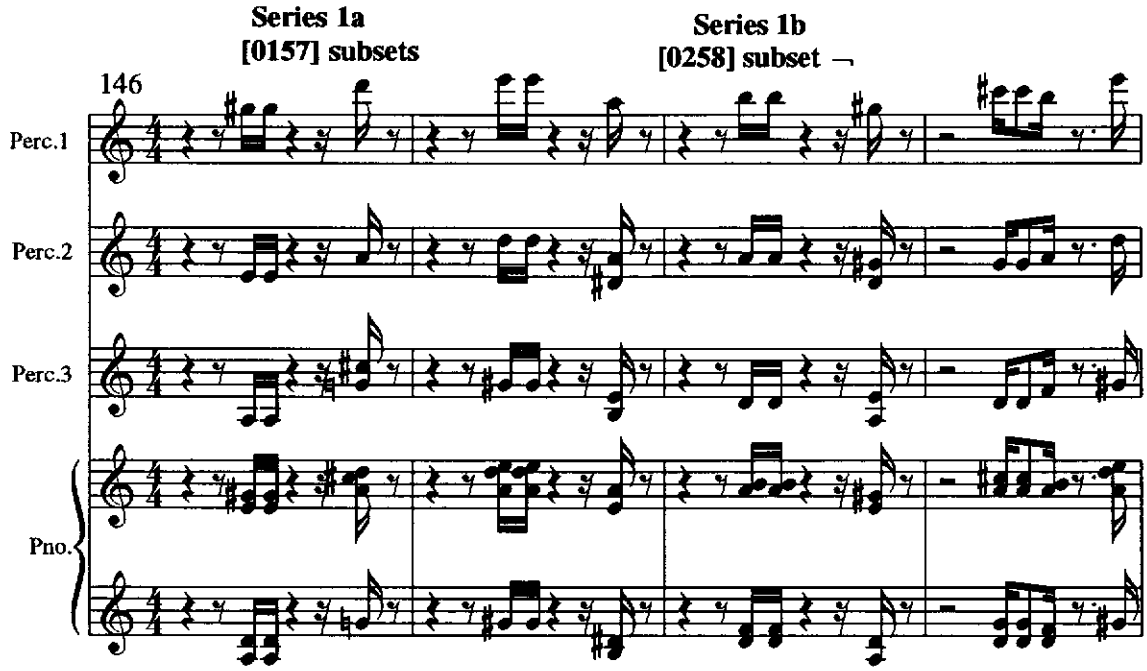
Example 4-16: Original and transposed series presented simultaneously in wind lines, "Carotene, changing to Vitamin A" (mm. 122-129)



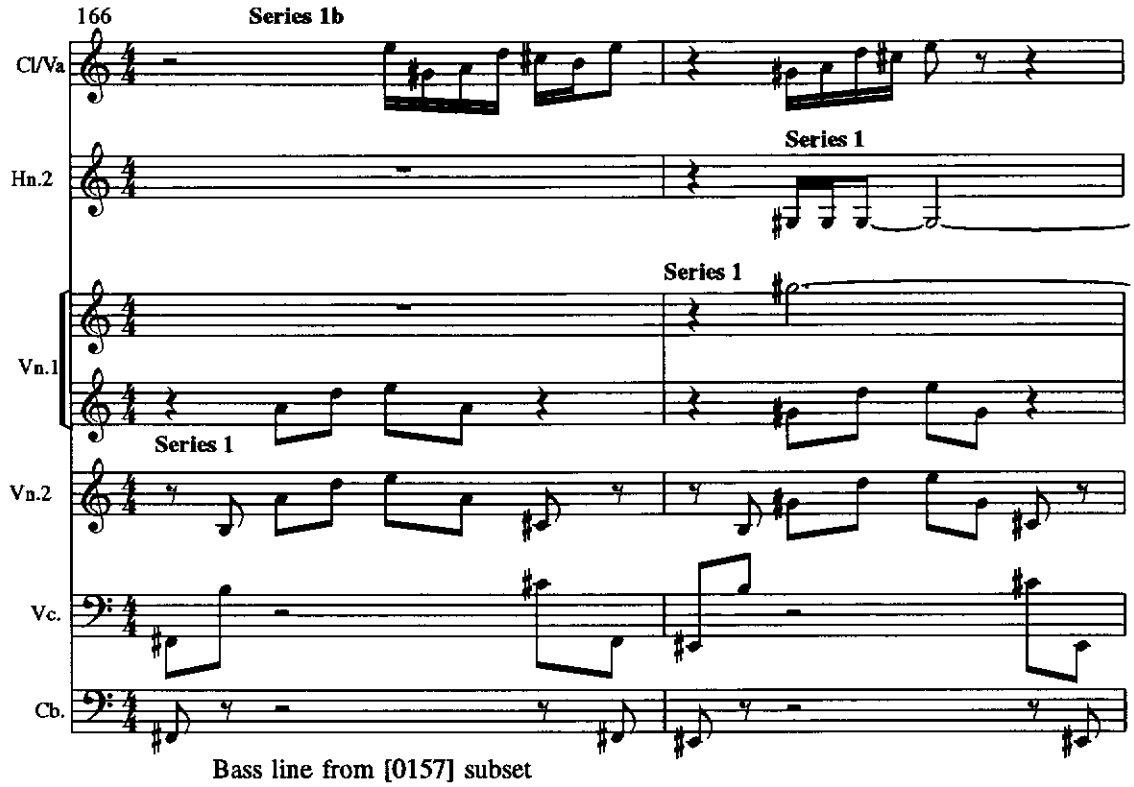
Example 4-17: Variant of grid technique in brass canon, "Orange lava" (mm. 138-141)

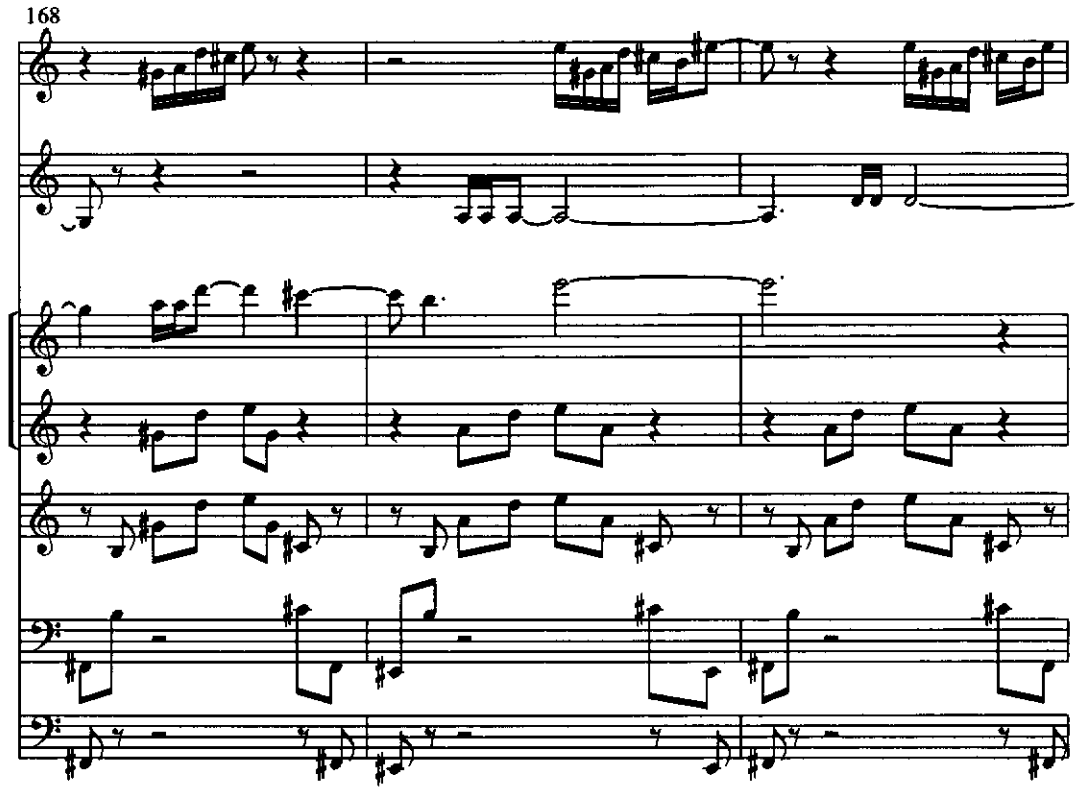


Example 4-18: Percussion chords, "Orange lava" (mm. 146-149)

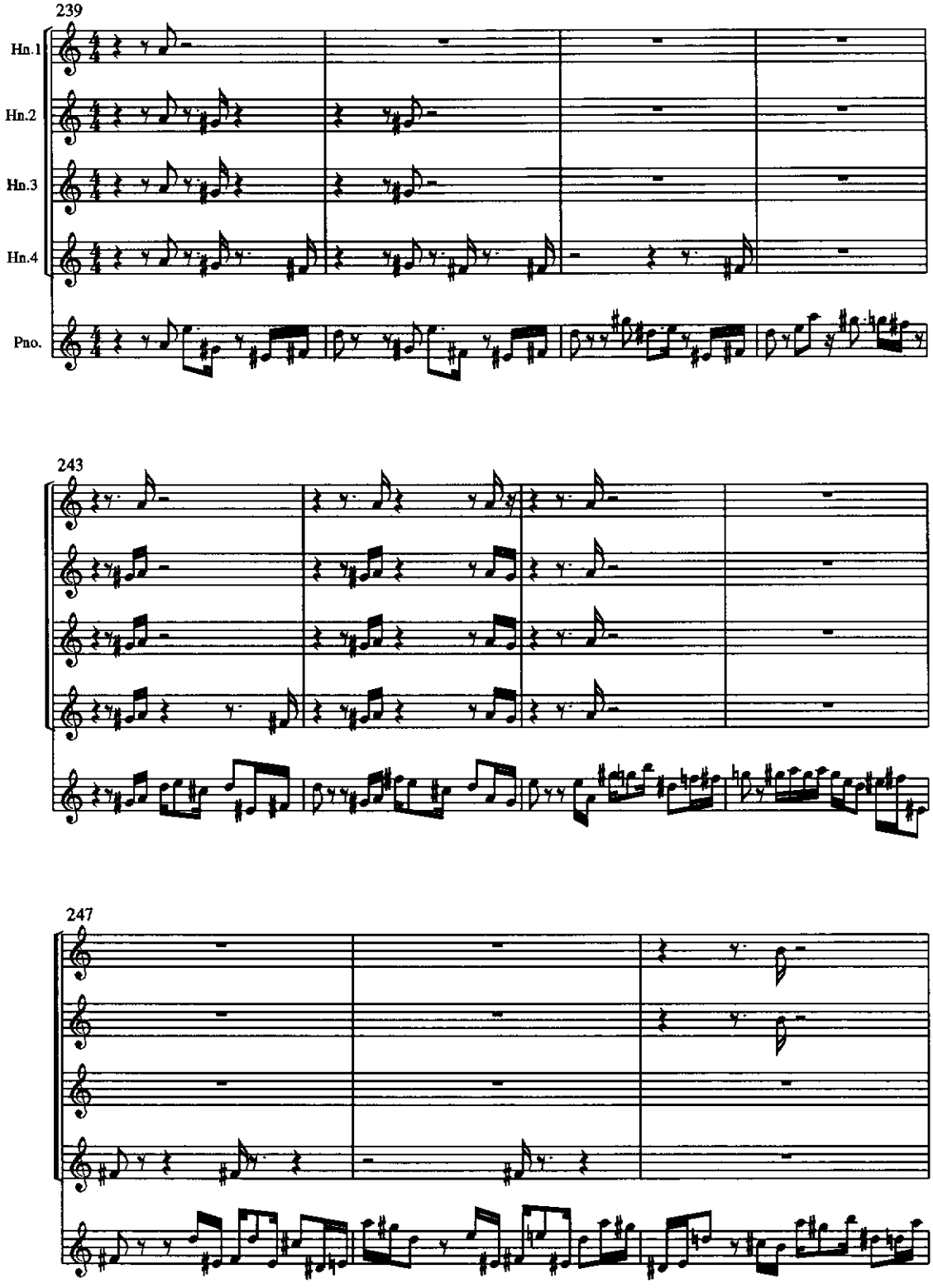


Example 4-19: Pizzicato string accompaniment and 3 principal melodic gestures, "Titian (wet hair)" (mm. 166-170)

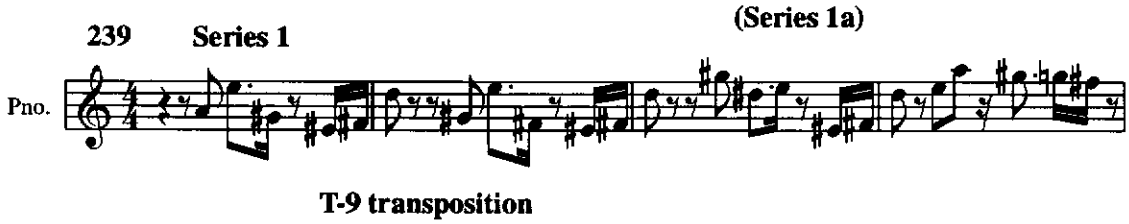




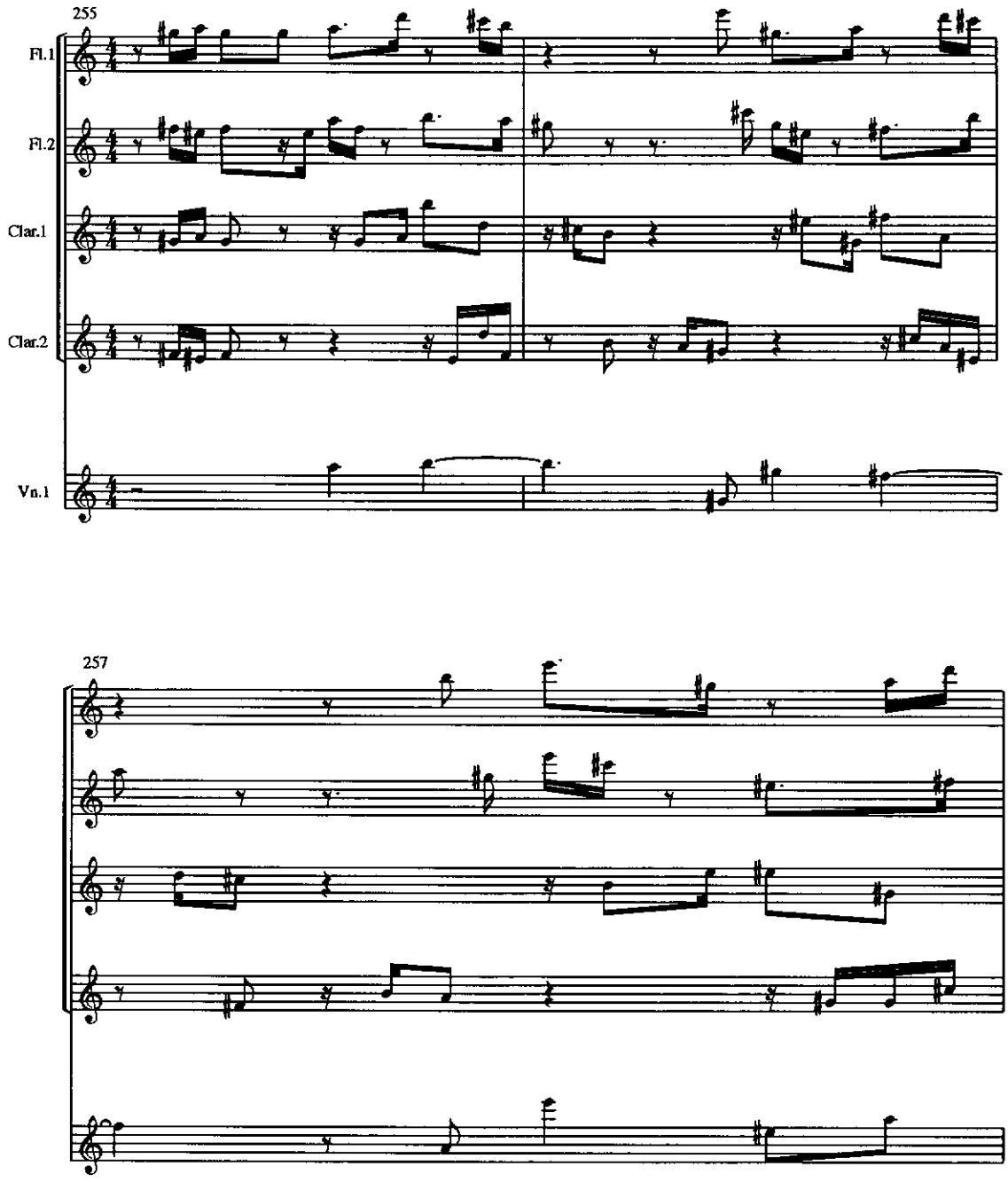
Example 4-20: Derivation of horn figures from the piano *Hauptstimme*, "Aren't you an orange ewe?" (mm. 239-249)



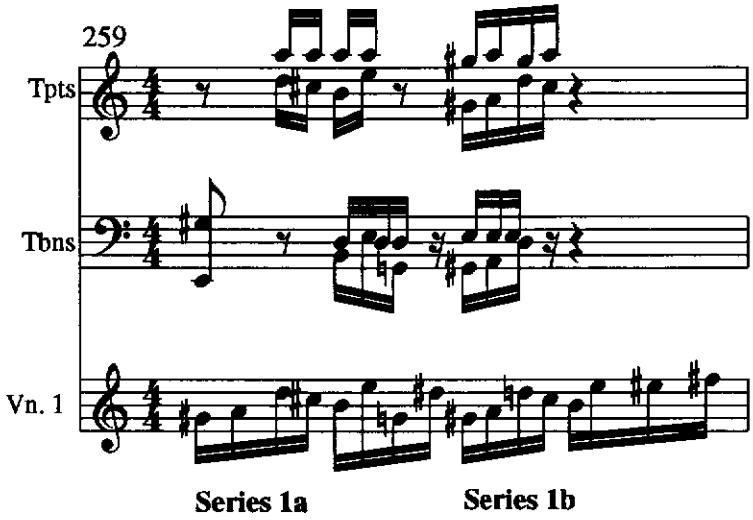
Example 4-21: Piano *Hauptstimme*, "Aren't you an orange ewe?", (mm. 239-242)



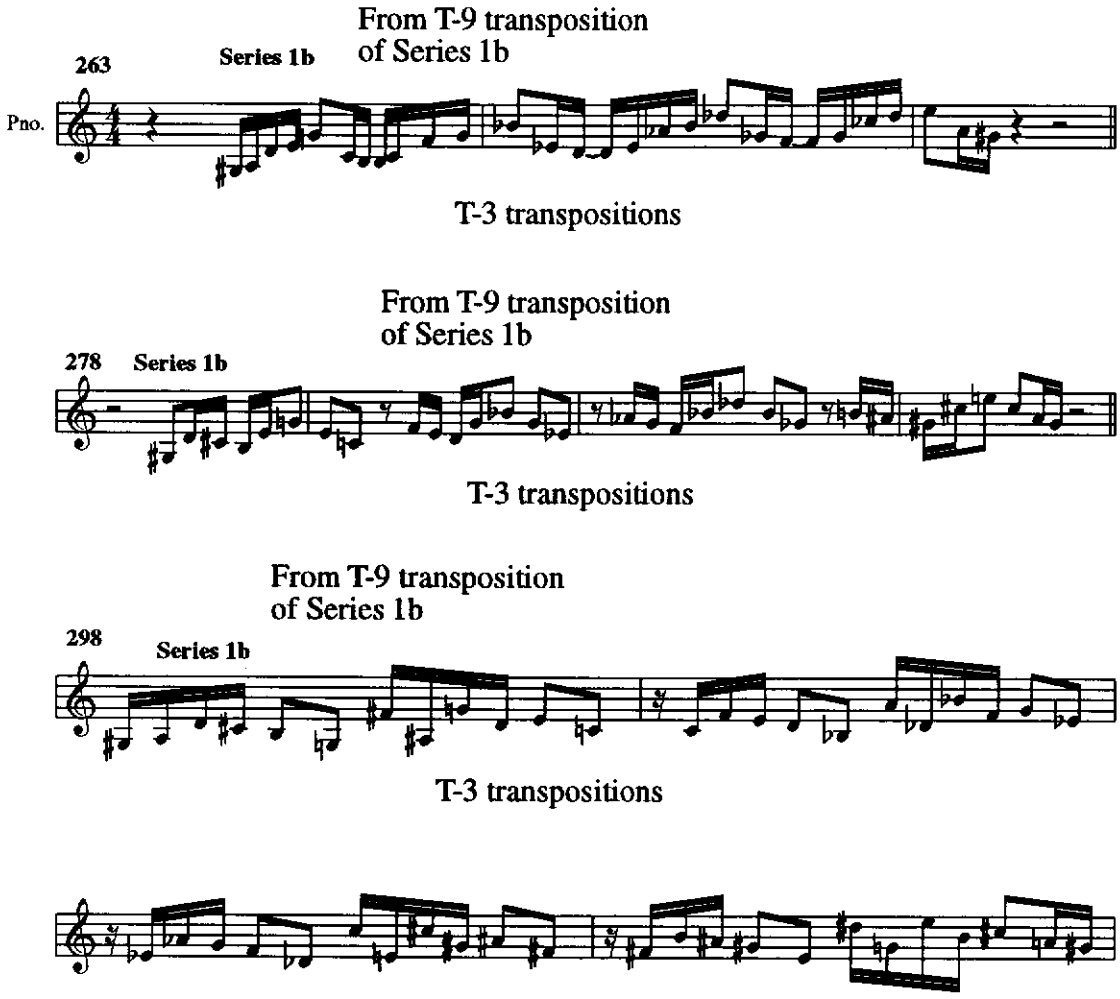
Example 4-22: Derivation of violin pitches from the winds through "planing","First Orange", (reduction of mm. 255-257) Cello and bassoon lines not shown.



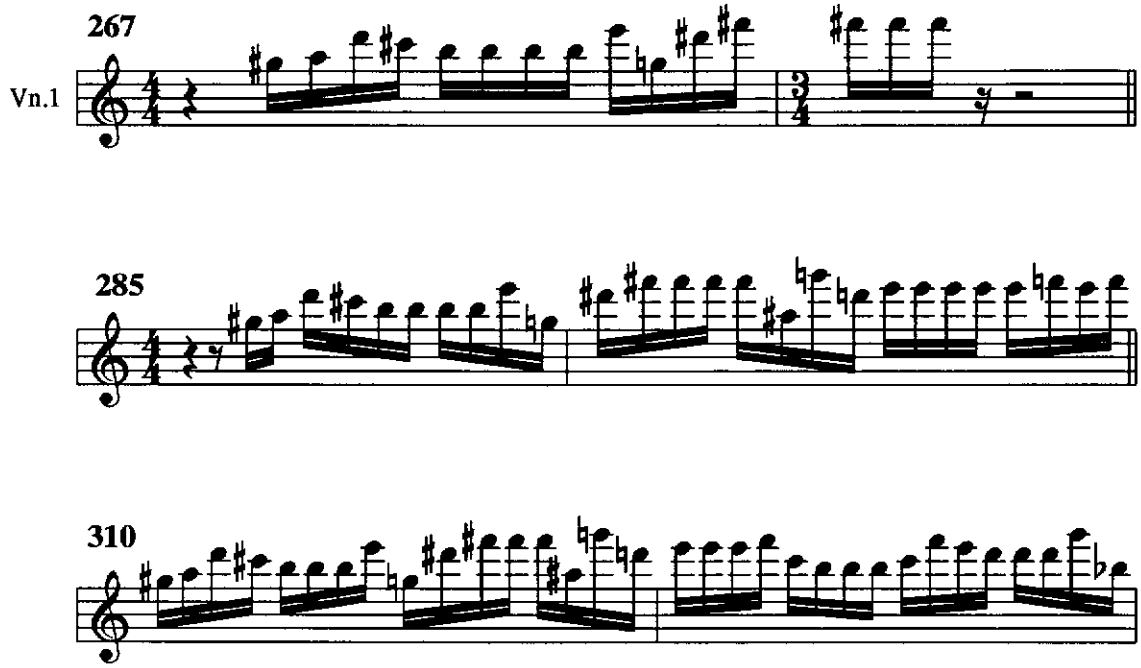
Example 4-23: Harmonization of trumpet and trombone lines from violin grid, "First Orange" (m. 259)



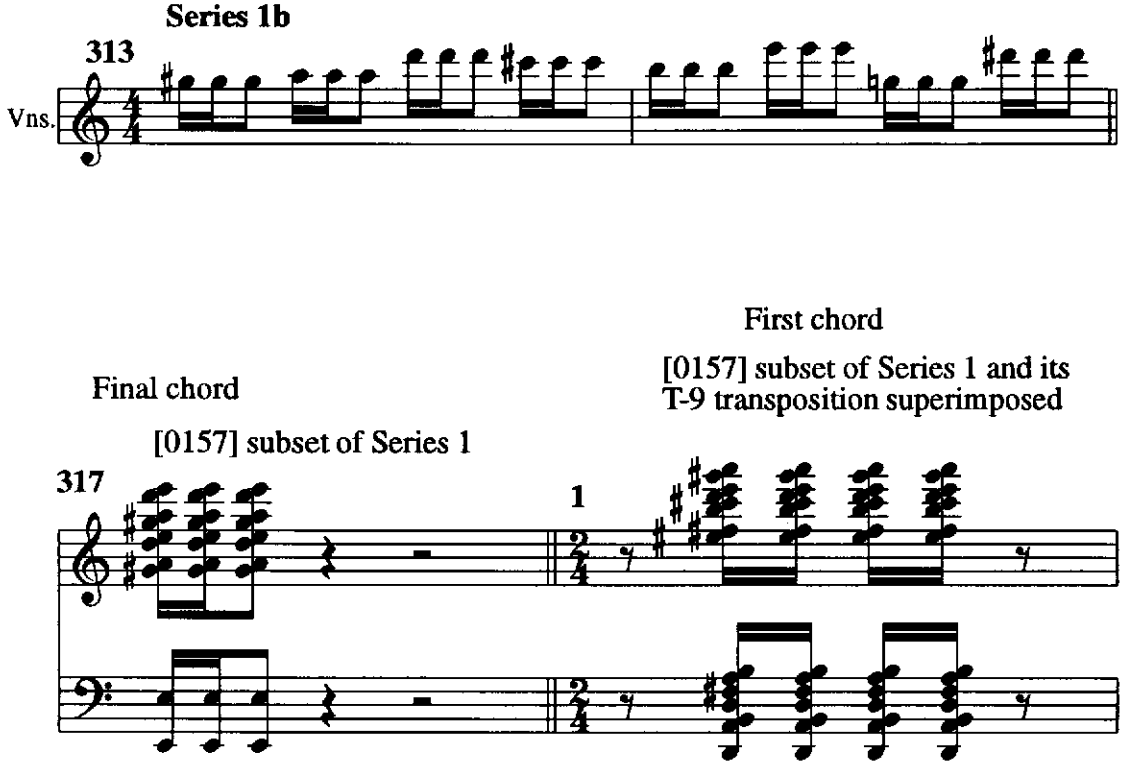
Example 4-24: Piano lines derived from Series 1b and its T-9 transposition, (mm. 263, 278, 298)



Example 4-25: Statement of a full aggregrate in Violin 1 line, with additive process, mm. 267, 285, 310:



Example 4-26: Final chord and first chord from Series 1 and its T-9 transposition, melodic statement of Series 1b, (mm. 1, and 313-317)



in shadows, in silence

for chamber ensemble

by

GREGG WRAMAGE

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

2006

This manuscript has been read and accepted by the
Graduate Faculty in Music in satisfaction of the
dissertation requirement for the degree of Doctor of Musical Arts.

Joseph Straus

Date — Chair of Examining Committee

David Olan

Date — Executive Officer

David Del Tredici

Philip Lambert

Shaugn O'Donnell

Philip Rupprecht

Supervisory Committee

THE CITY UNIVERSITY OF NEW YORK

Abstract

in shadows, in silence

for chamber ensemble

by

Gregg Wramage

Advisor: David Del Tredici

in shadows, in silence is an original composition for flute, clarinet, violin, cello, piano and percussion.

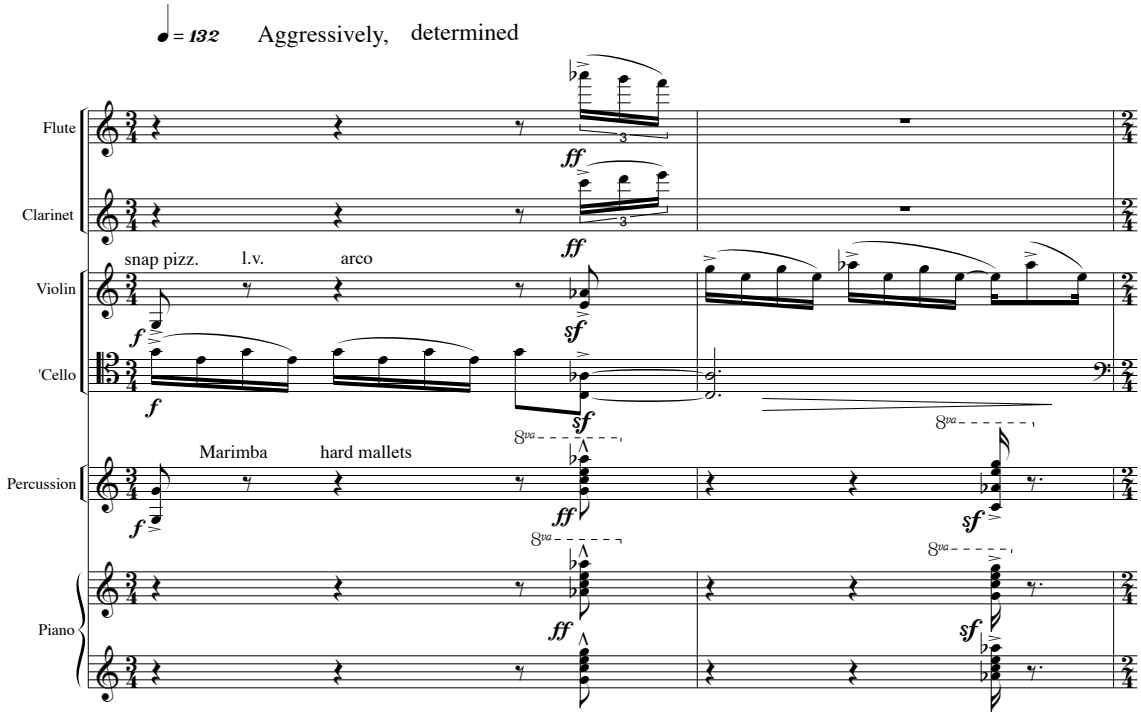
CONTENTS

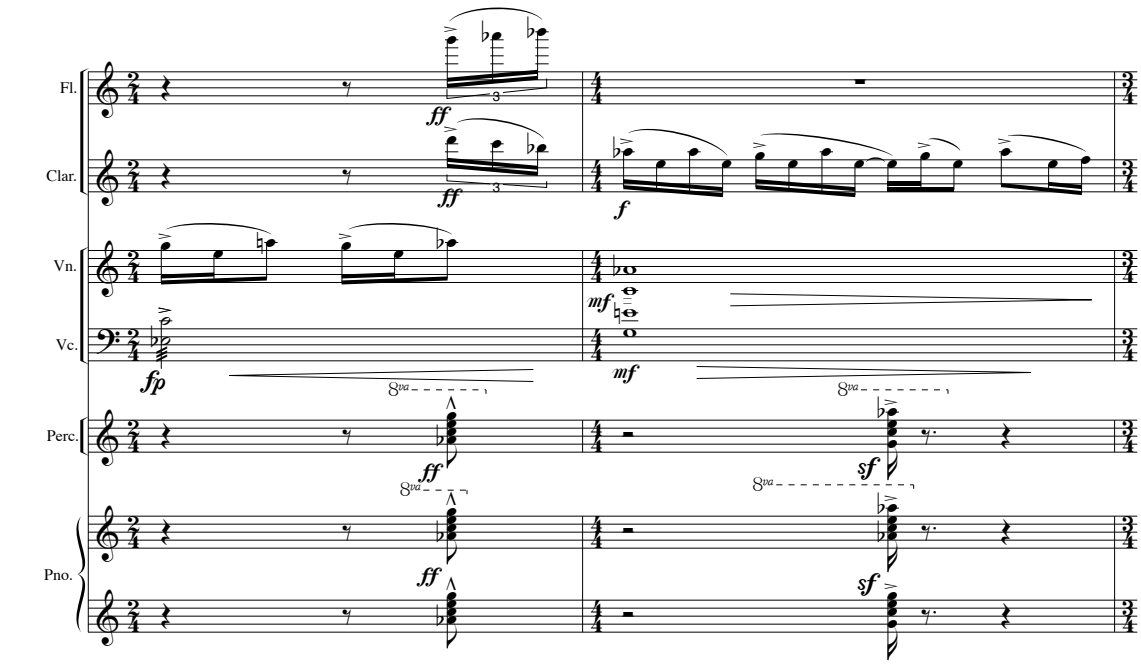
Score in C

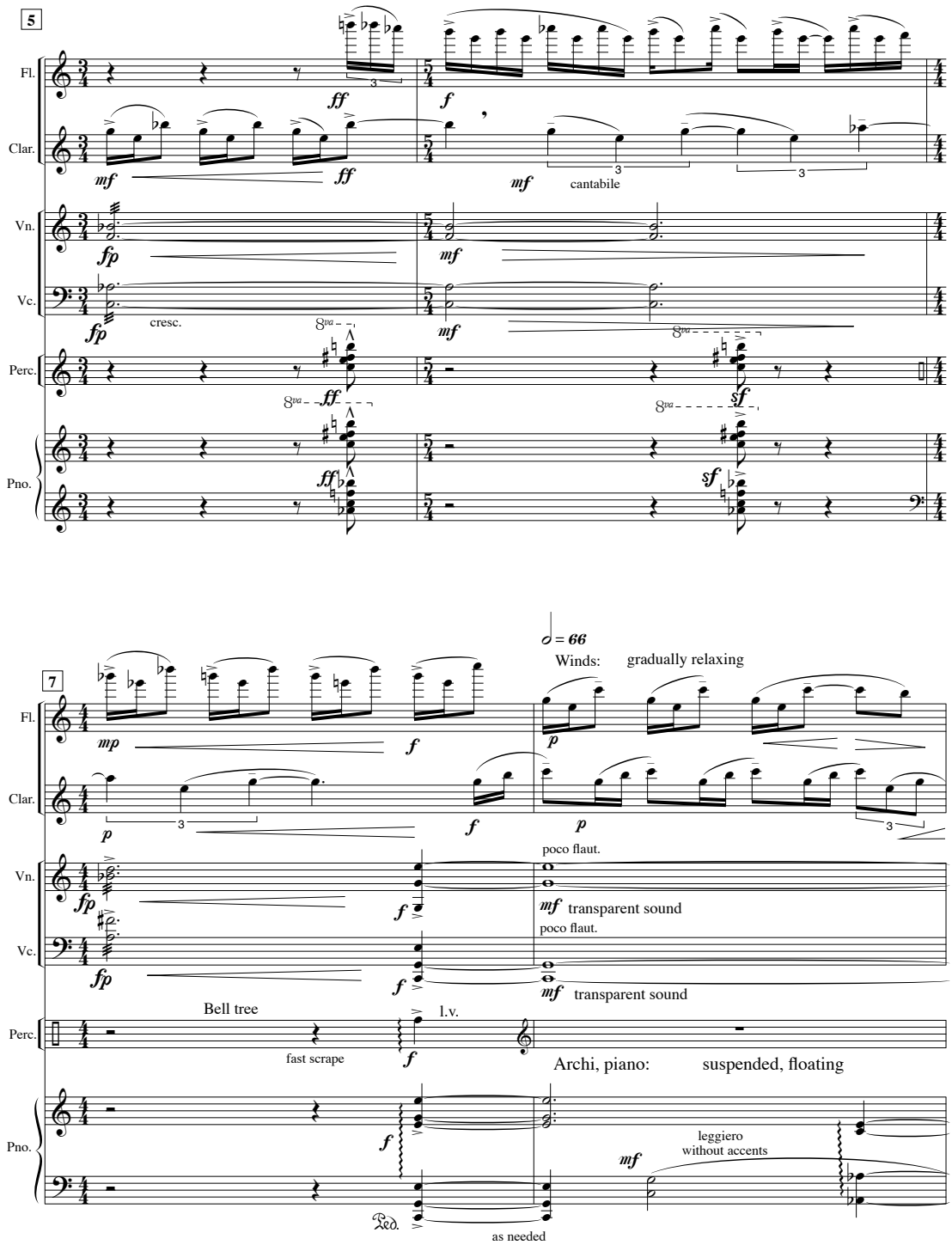
in shadows, in silence

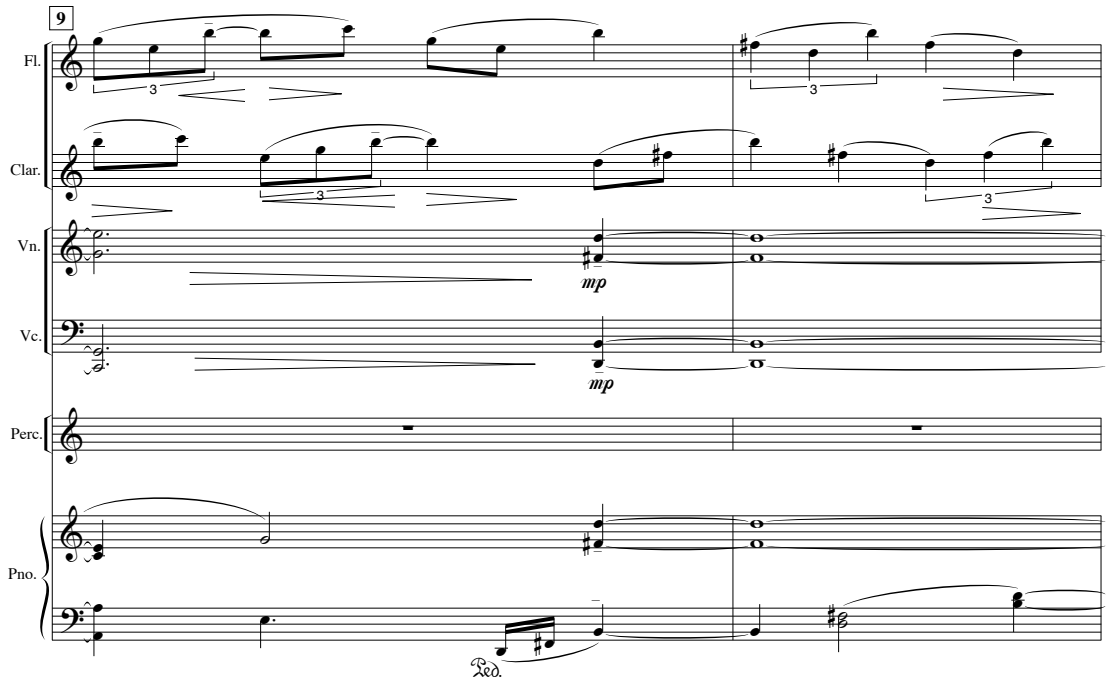
dedicated with gratitude to Joan Tower,
Joan Panetti, and eighth blackbird

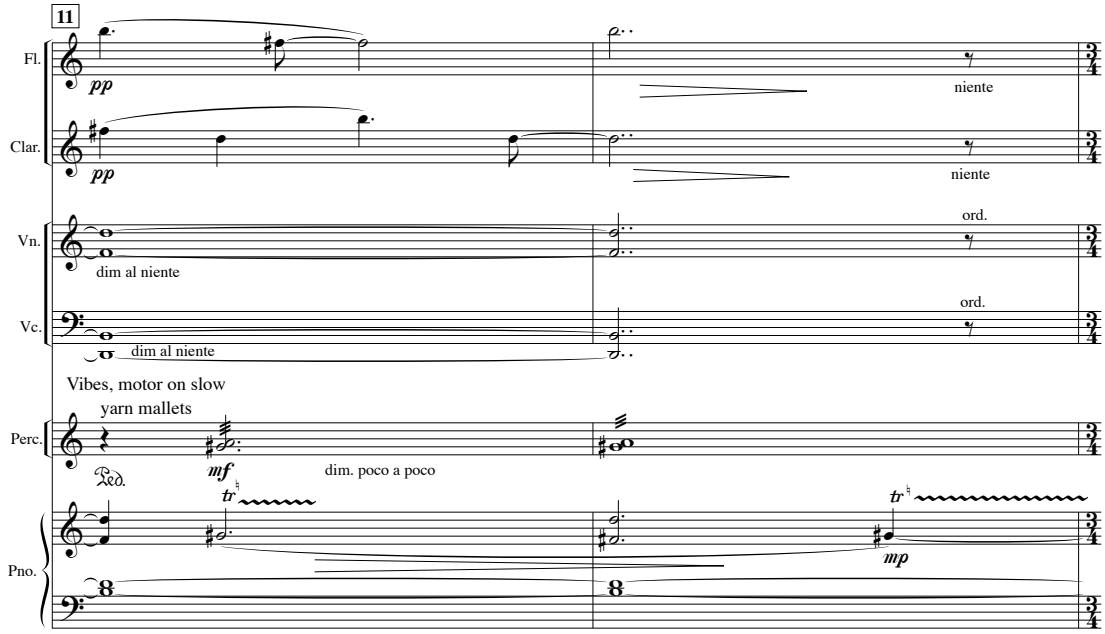
Gregg Wramage
2002

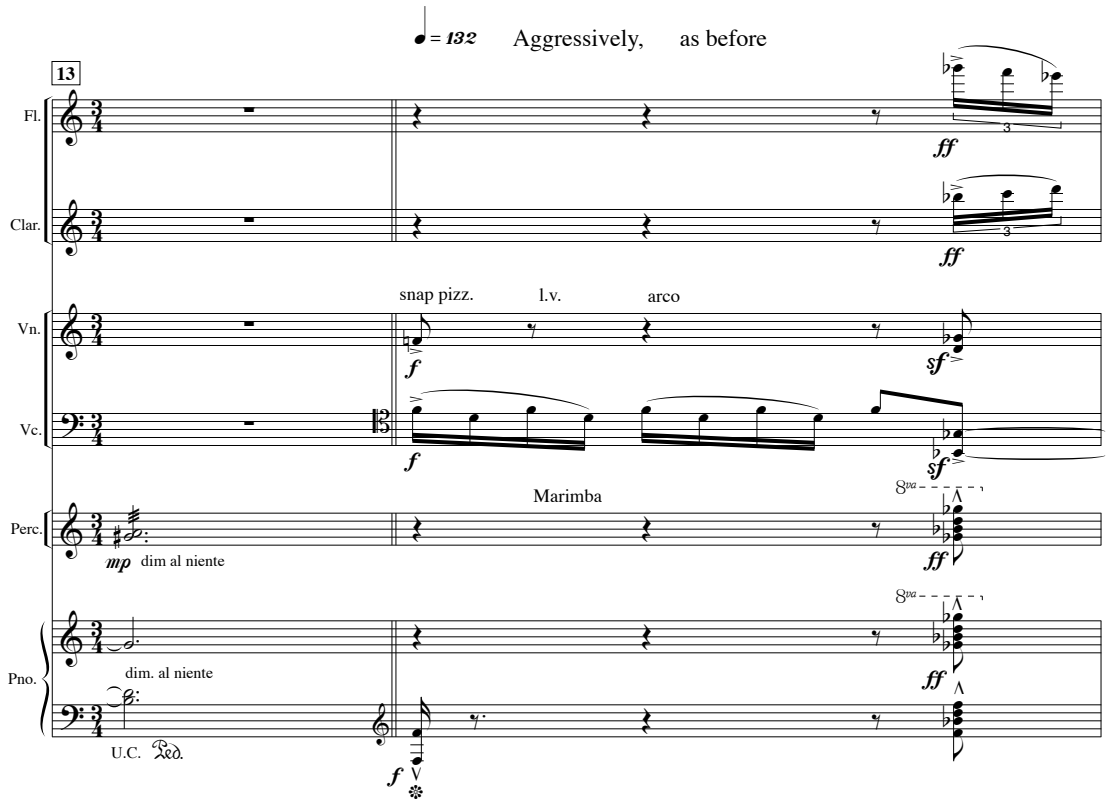


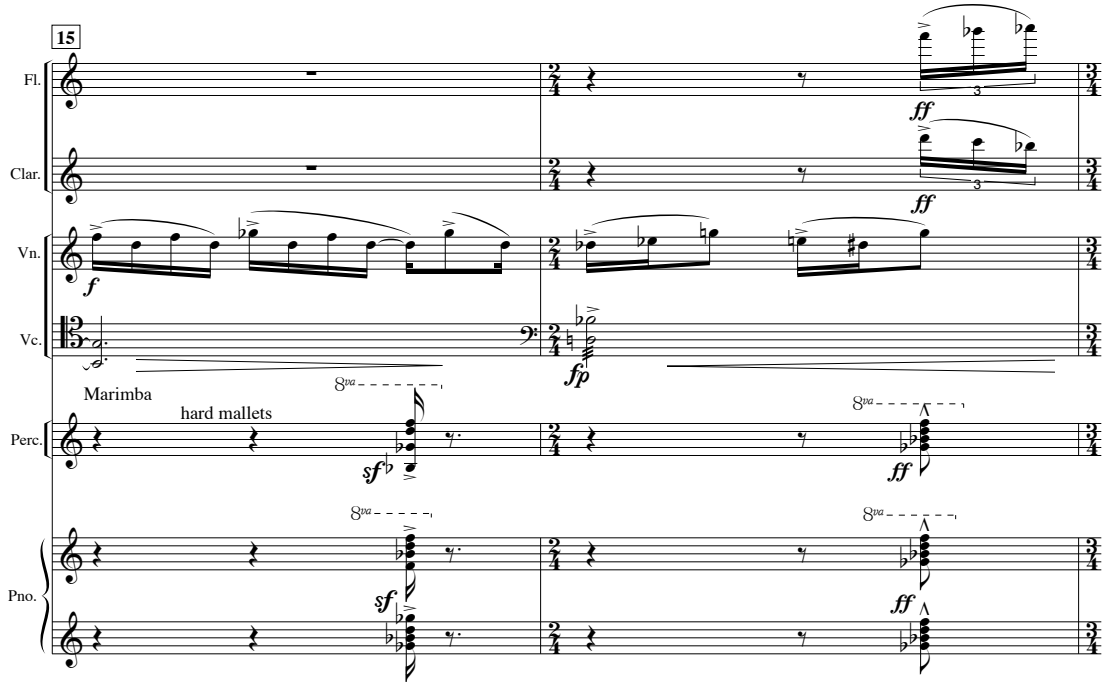


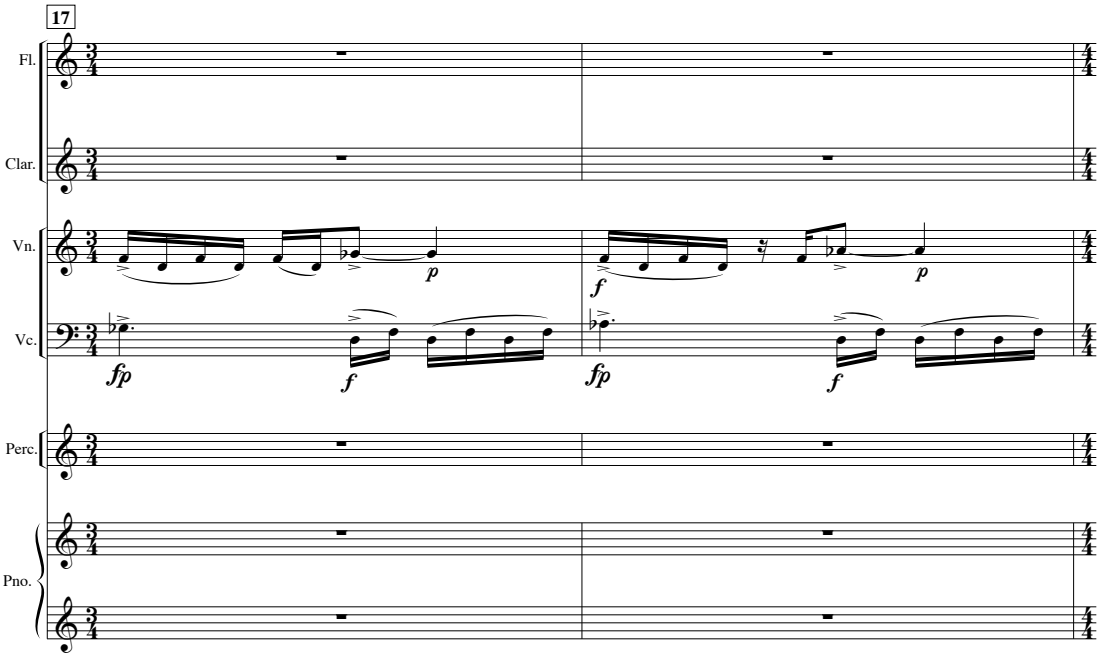

5
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
ff
f
mf
cantabile
fp
cresc.
8va
sf
7
= 66
Winds:
gradually relaxing
mp
p
poco flaut.
transparent sound
Bell tree
fast scrape
l.v.
Archi, piano:
suspended, floating
leggiero
without accents
Ped.
as needed

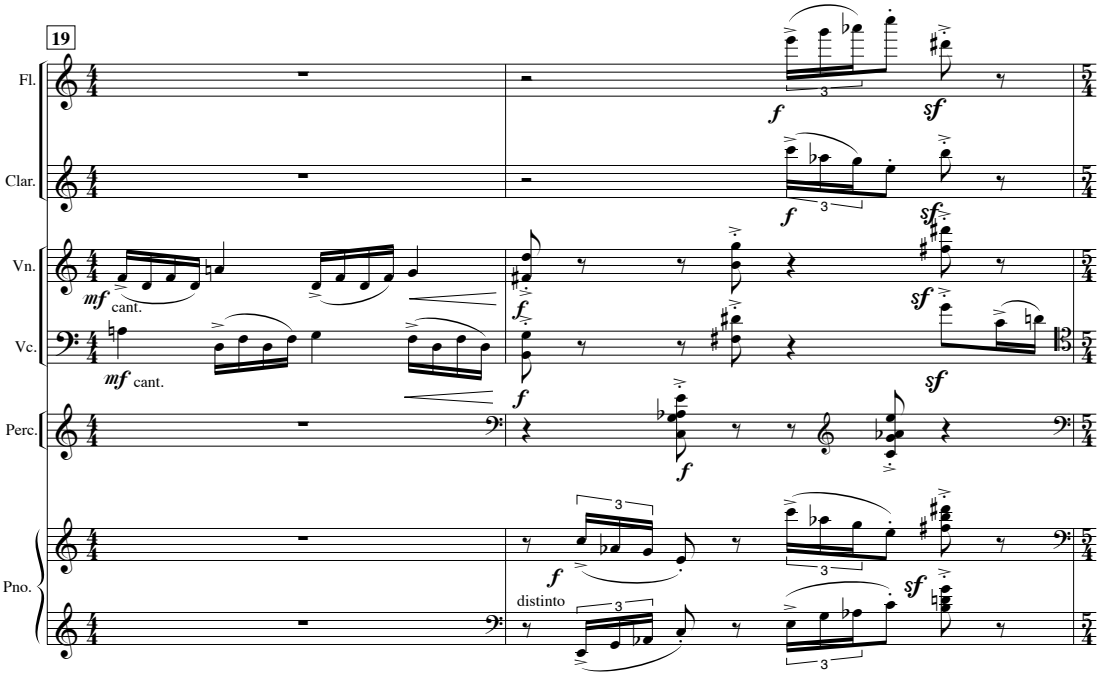

9
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
3
mp
Ped.

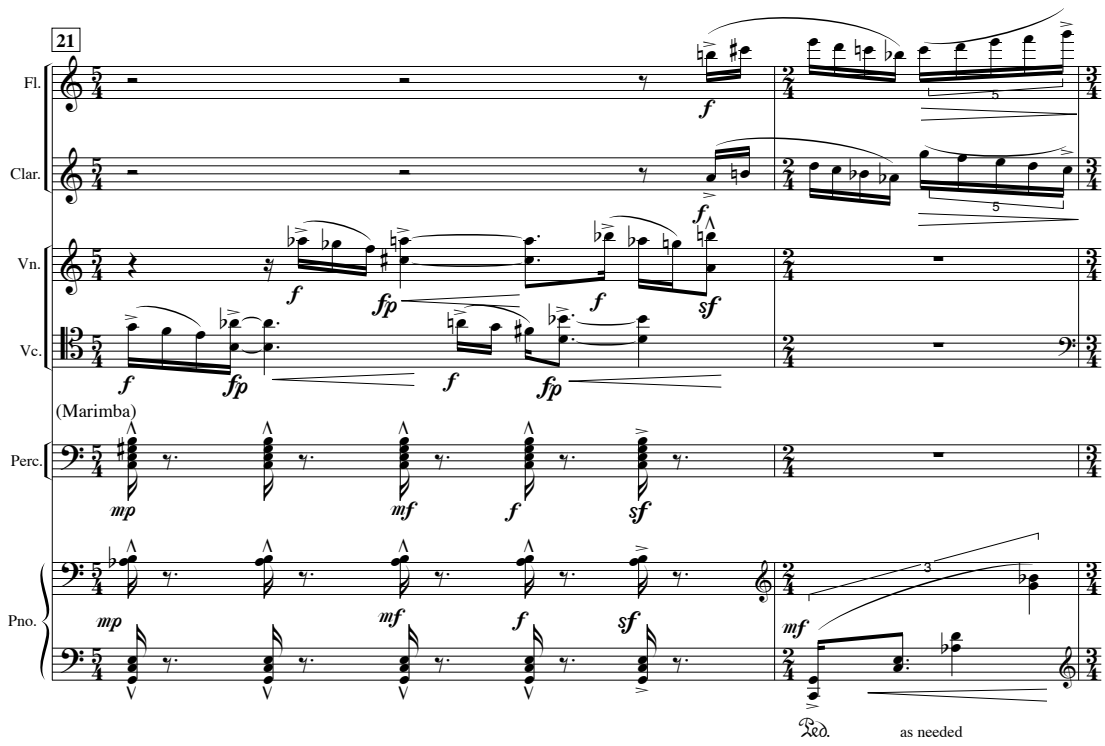

11
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
pp
niente
ord.
dim al niente
Vibes, motor on slow
yarn mallets
mf
dim. poco a poco
tr
mp
Ped.

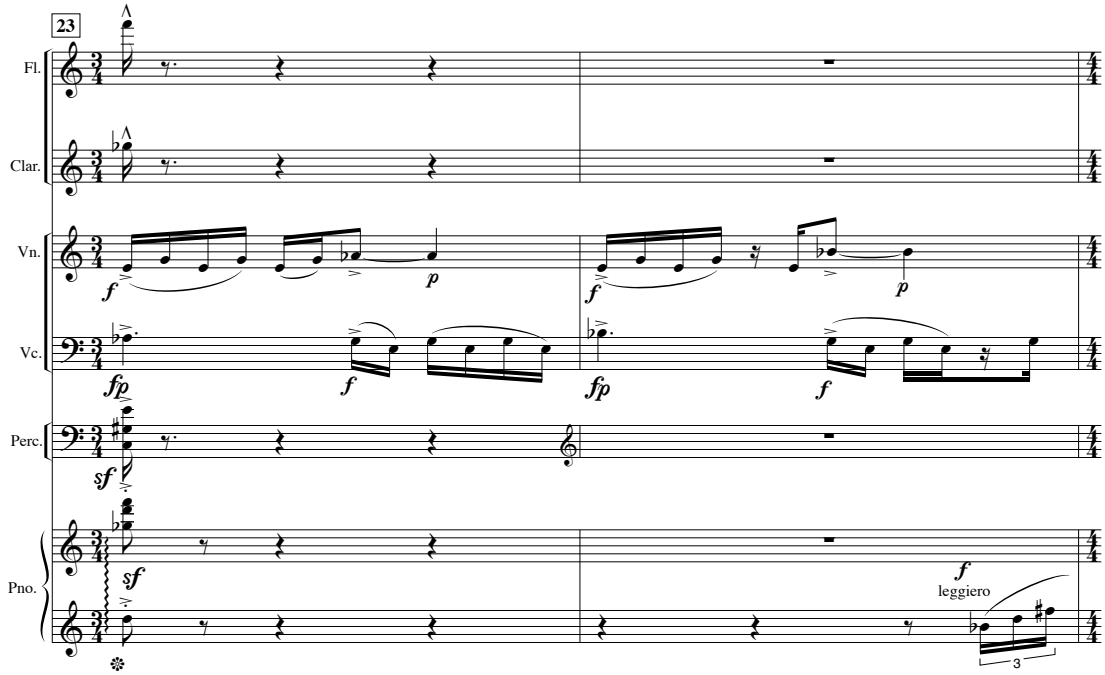

♩ = 132
Aggressively, as before
13
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
snap pizz.
l.v.
arco
Marimba
mp dim al niente
dim. al niente
U.C.
Ped.
ff
sf
f

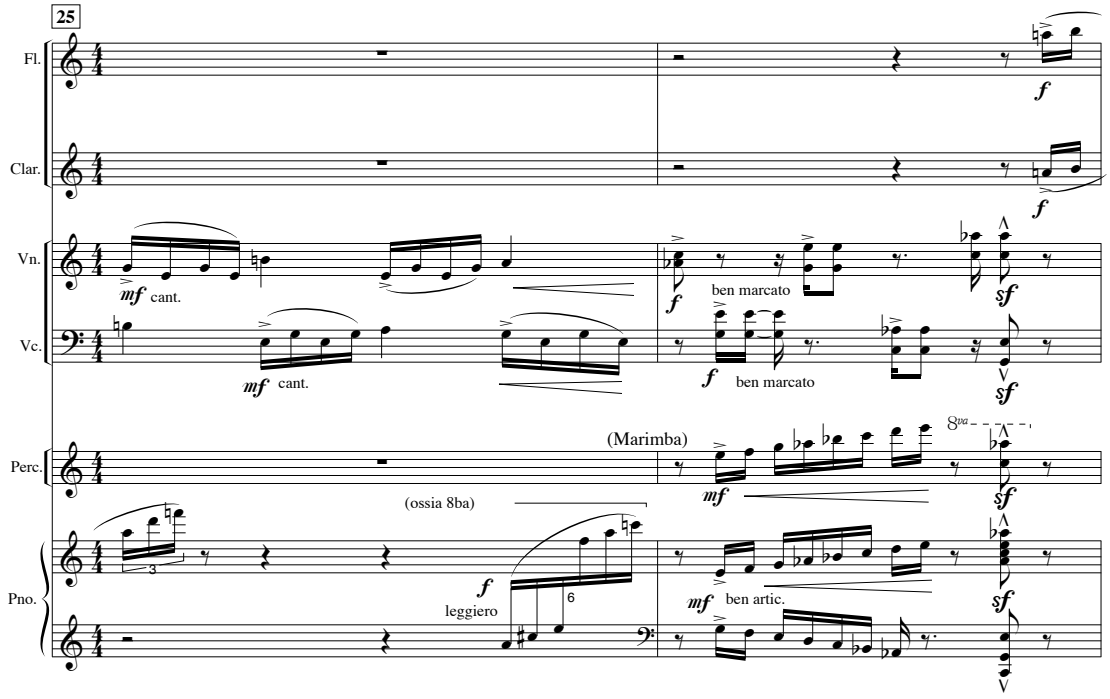

15
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
Marimba
hard mallets
8va
ff
sf
fp
f

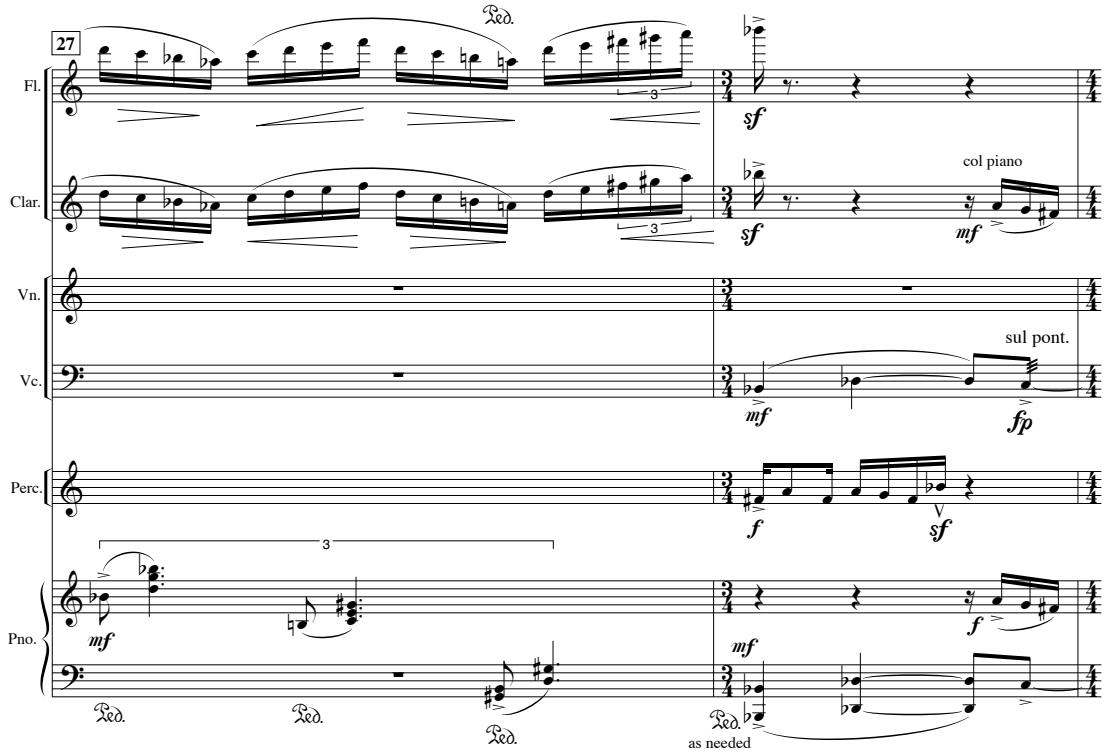

17
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
fp
f
p
fp
f
p

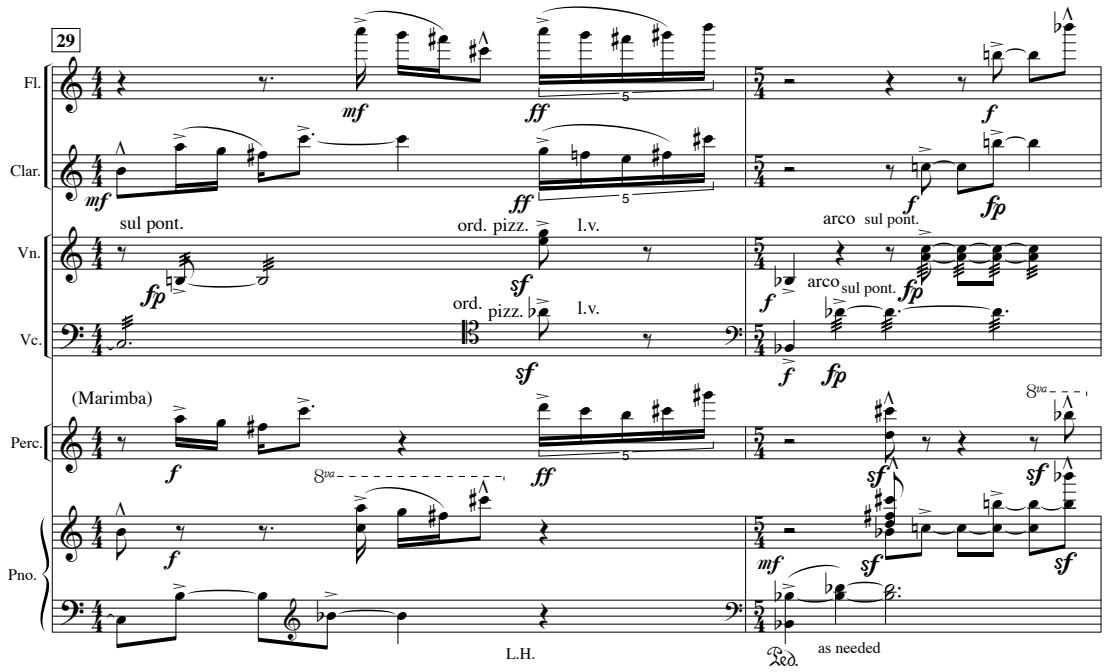

19
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
mf cant.
mf cant.
f
sf
distinto
3

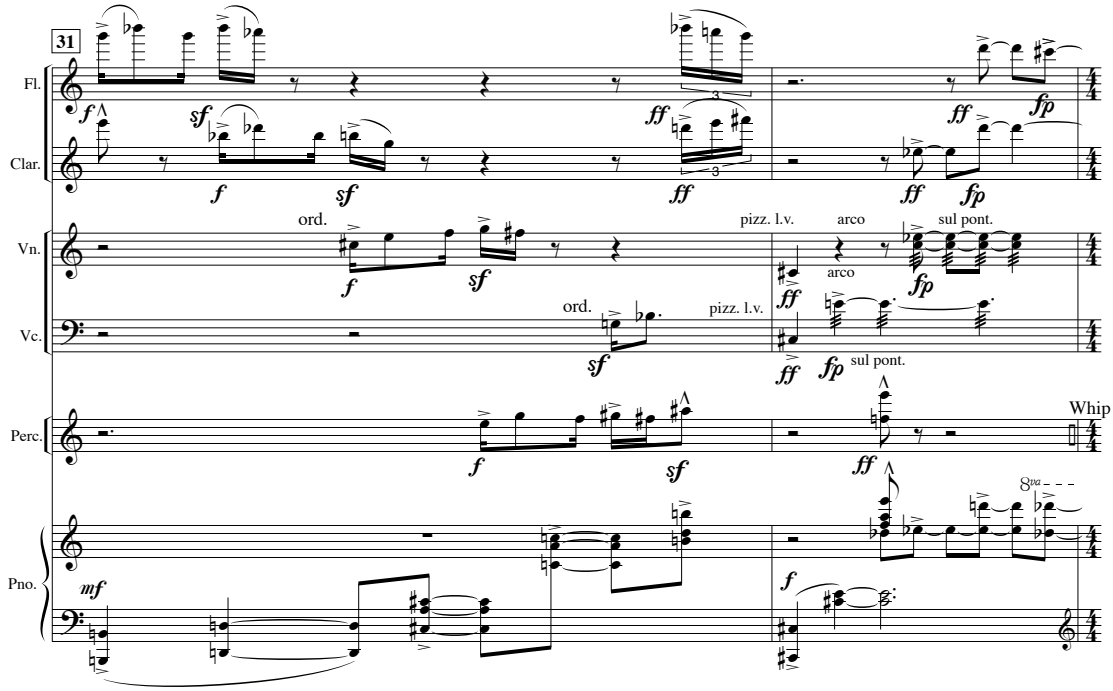

21
Fl.
Clar.
Vn.
Vc.
(Marimba)
Perc.
Pno.
Ped.
as needed

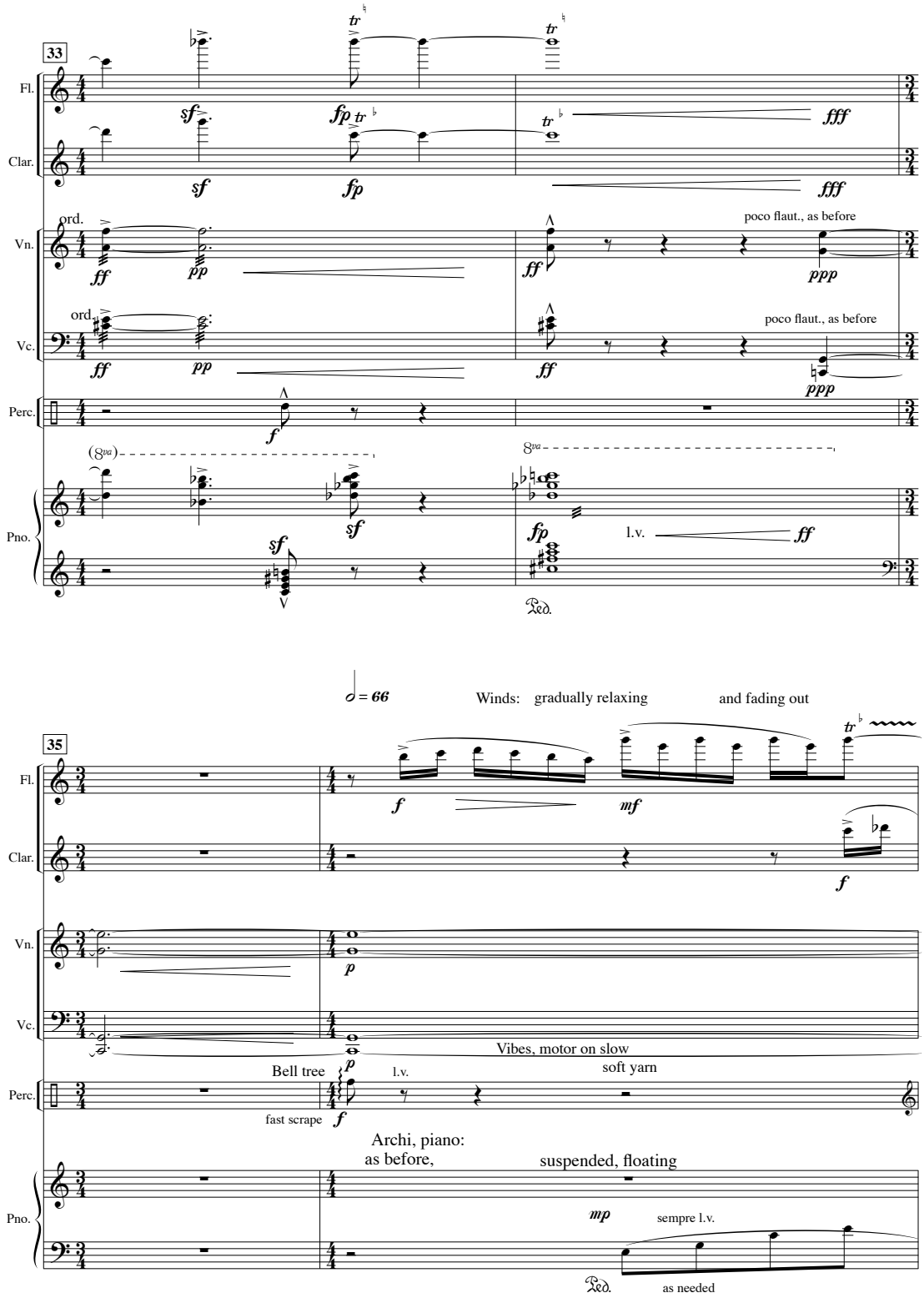

23
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
leggiero

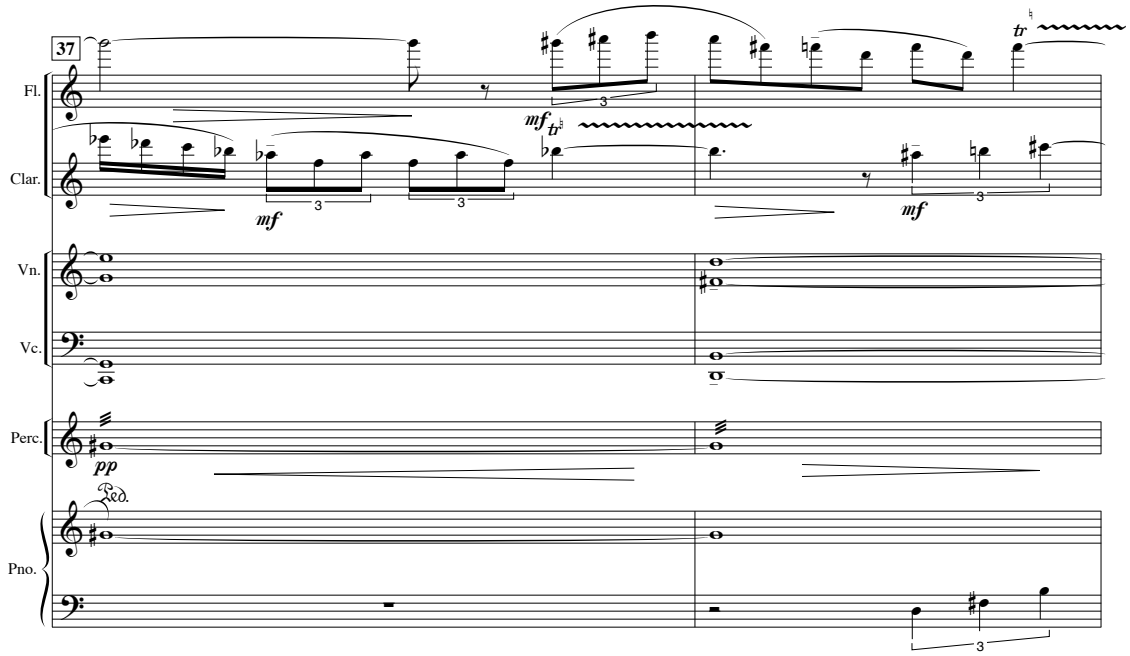

25
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
mf cant.
f
ben marcato
sf
(Marimba)
8va
(ossia 8ba)
leggiero
ben artic.

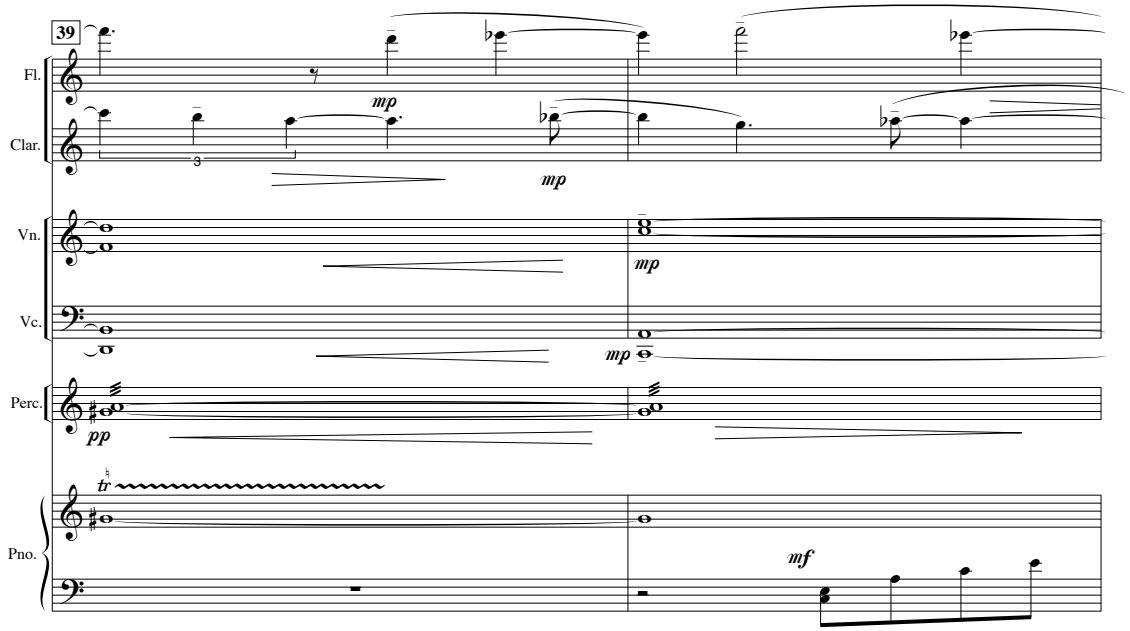

27
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
Ped.
sf
col piano
mf
sul pont.
fp
f
as needed

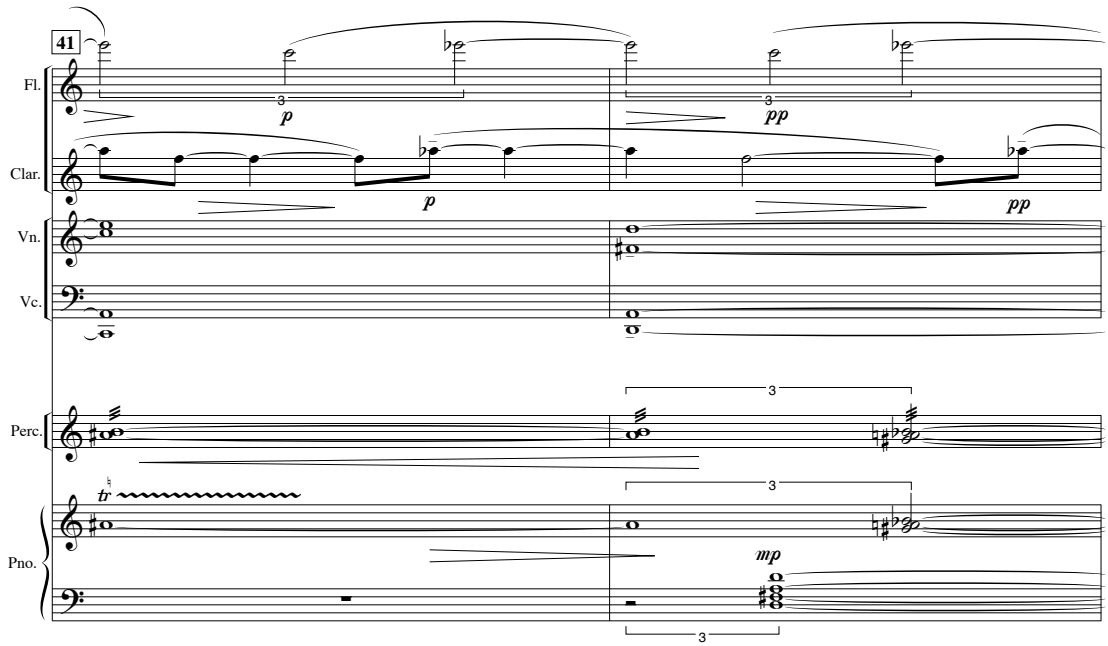

29
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
(Marimba)
sul pont.
ord. pizz. l.v.
arco sul pont.
L.H.
as needed

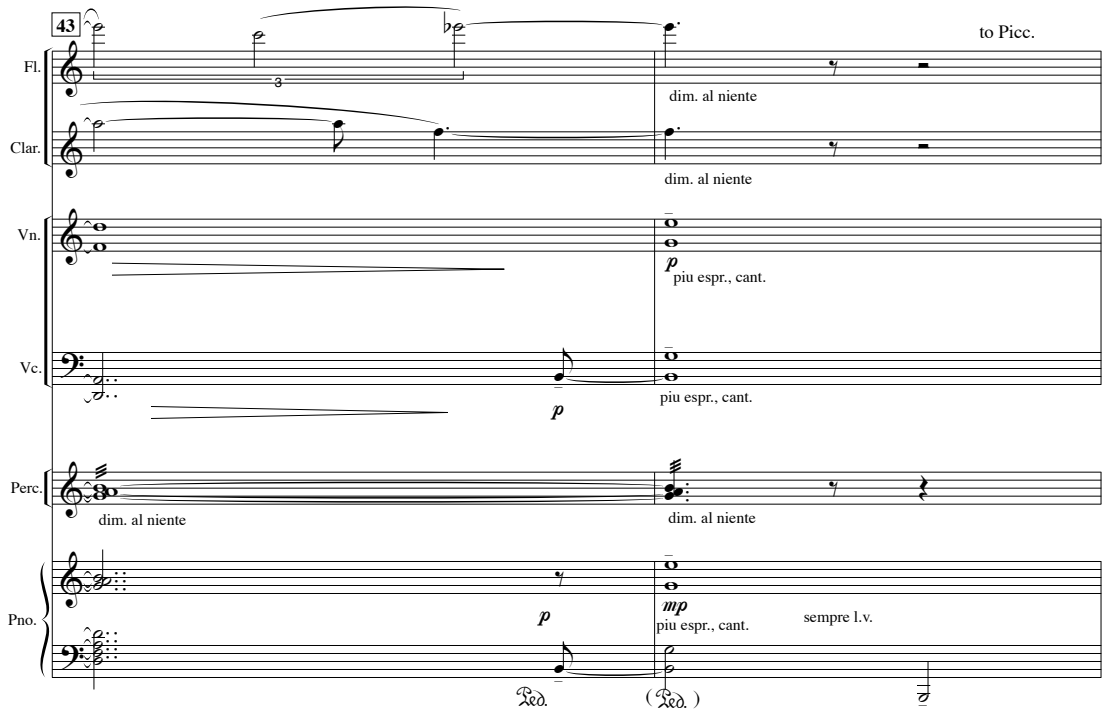

31
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
ord.
pizz. l.v.
arco
sul pont.
Whip

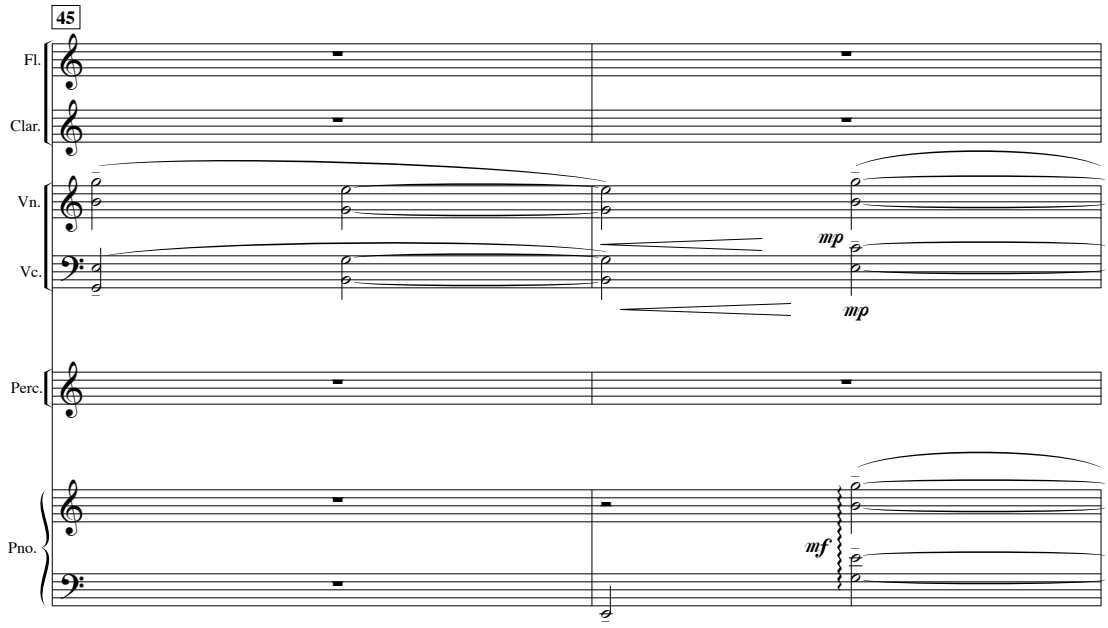

33
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
ord.
poco flaut., as before
(8va)
8va
l.v.
Ped.
35
♩ = 66
Winds: gradually relaxing
and fading out
Bell tree
fast scrape
Vibes, motor on slow
soft yarn
Archi, piano:
as before,
suspended, floating
sempre l.v.
as needed

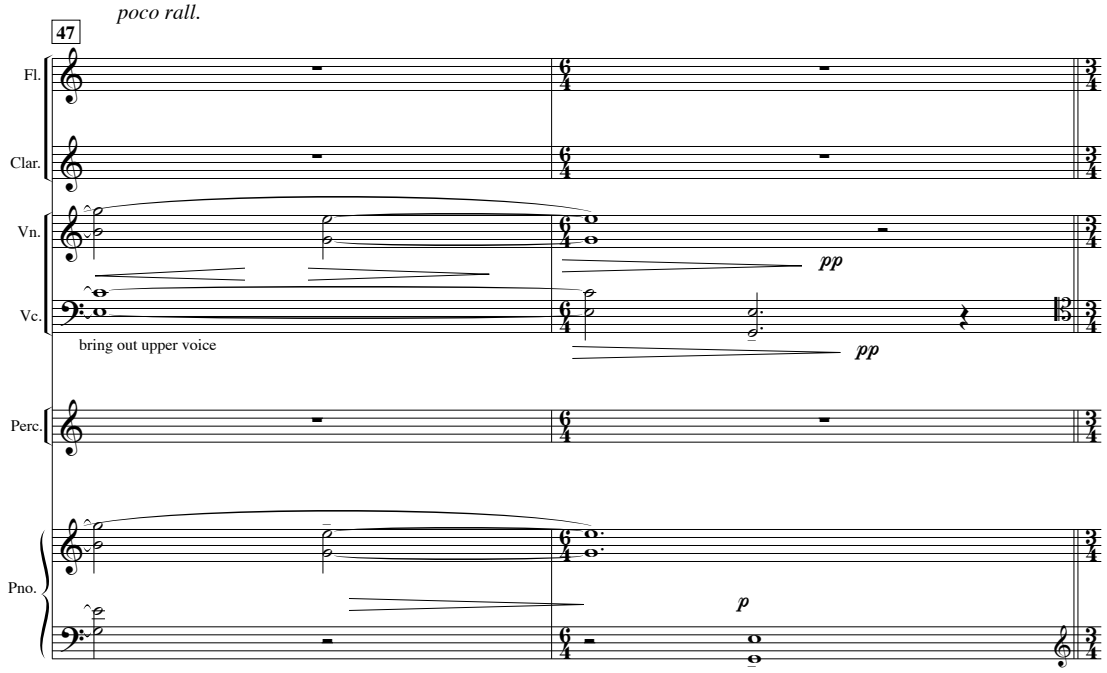

37
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
mf
pp
tr
3

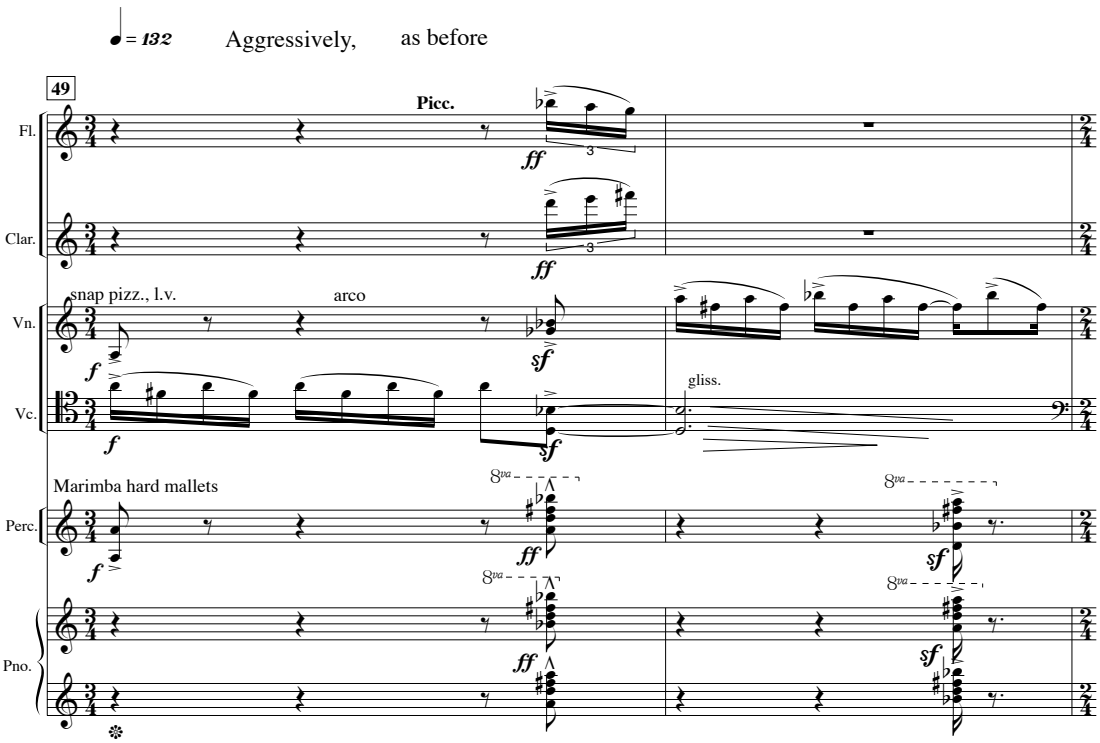

39
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
mp
pp
mf
tr
3

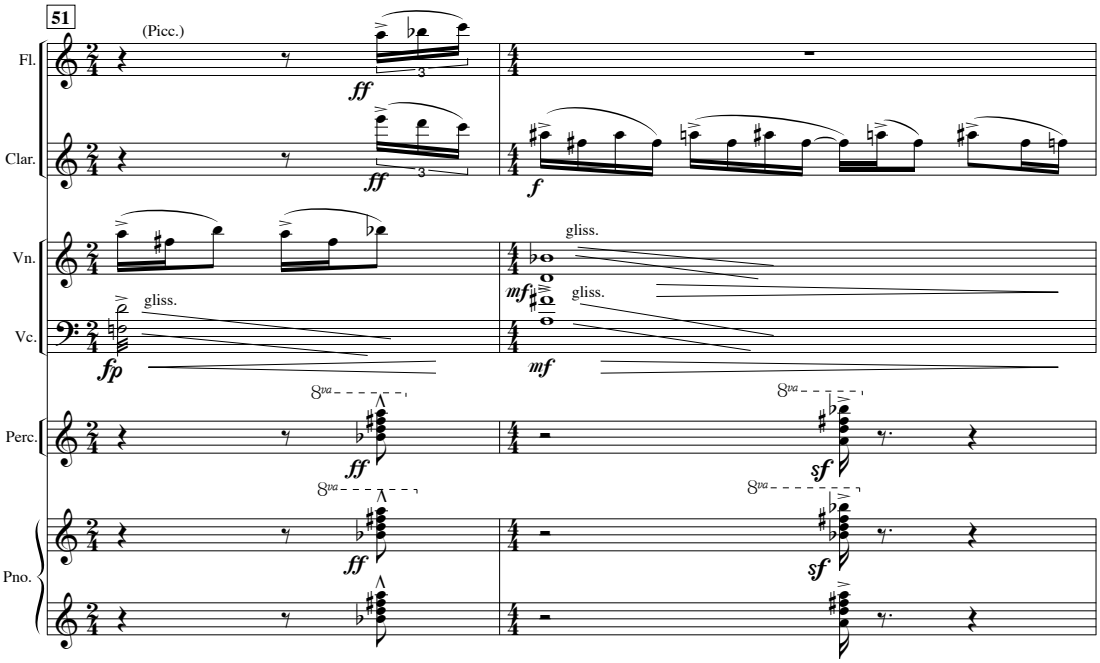

41
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
p
pp
mp
tr
3

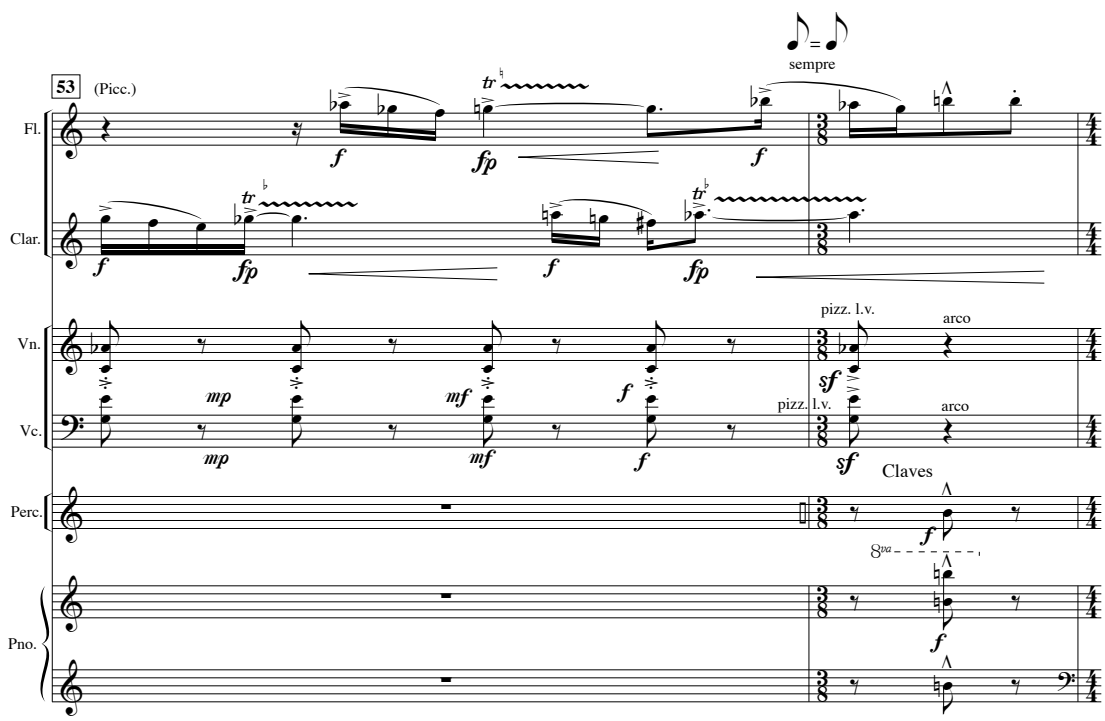

43
to Picc.
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
dim. al niente
p
piu espr., cant.
mp
sempre l.v.
Ped.

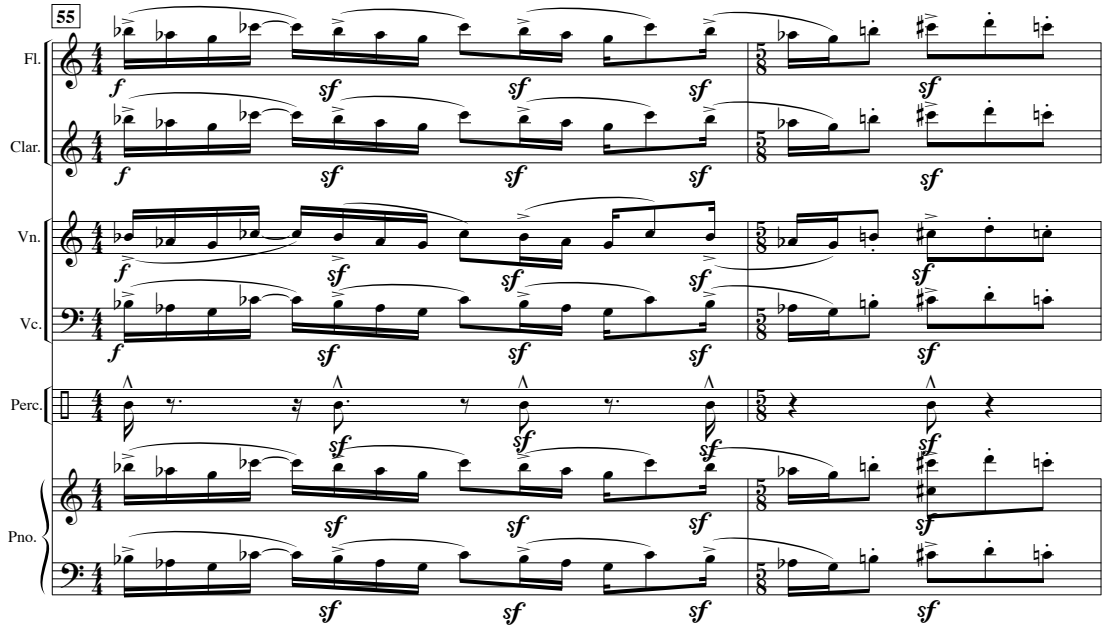

45
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
mp
mp
mf

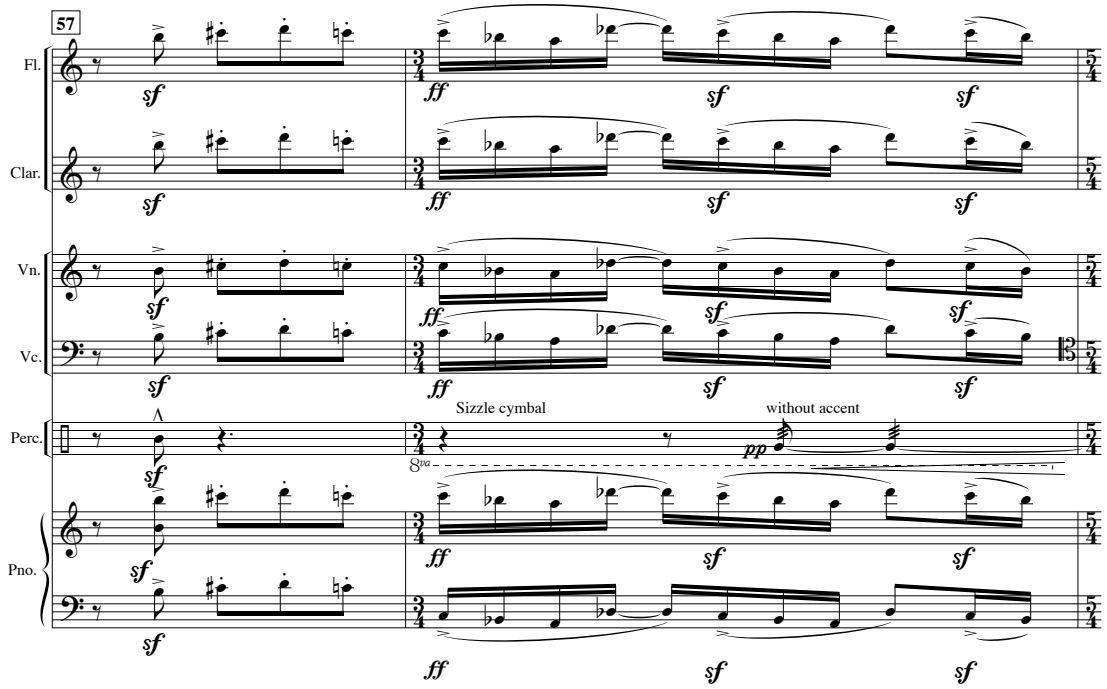

poco rall.
47
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
pp
pp
bring out upper voice
p

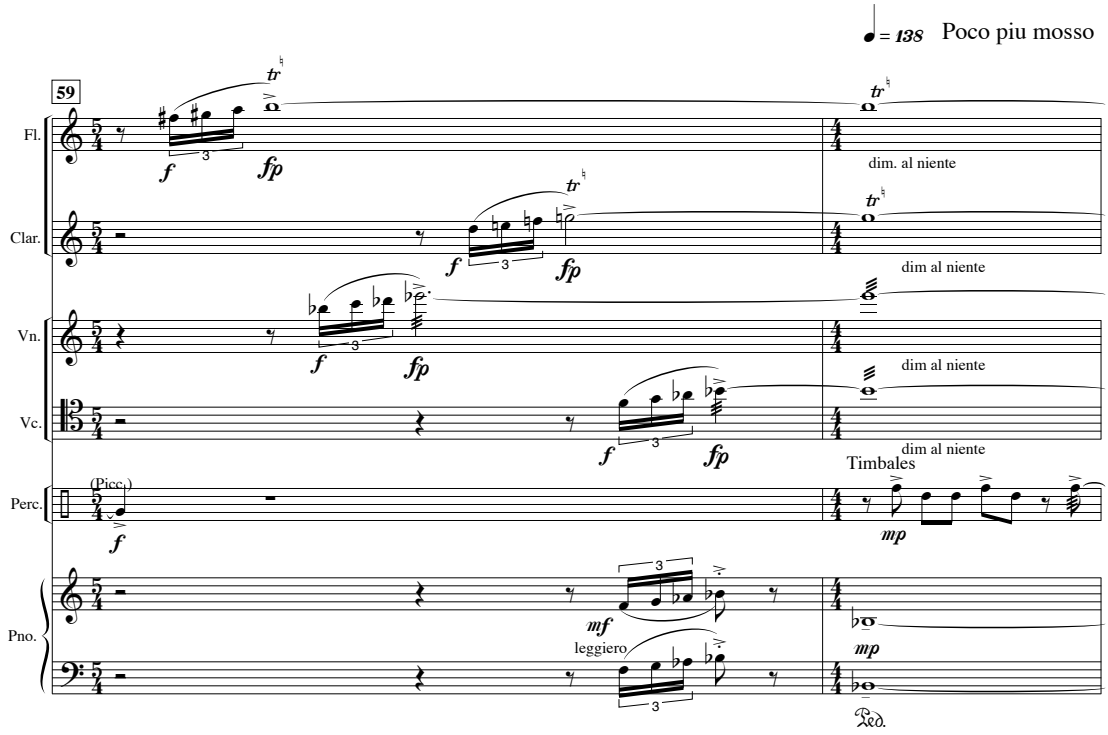

♩ = 132
Aggressively, as before
49
Picc.
Fl.
Clar.
snap pizz., l.v.
arco
Vn.
Vc.
gliss.
Marimba hard mallets
Perc.
Pno.

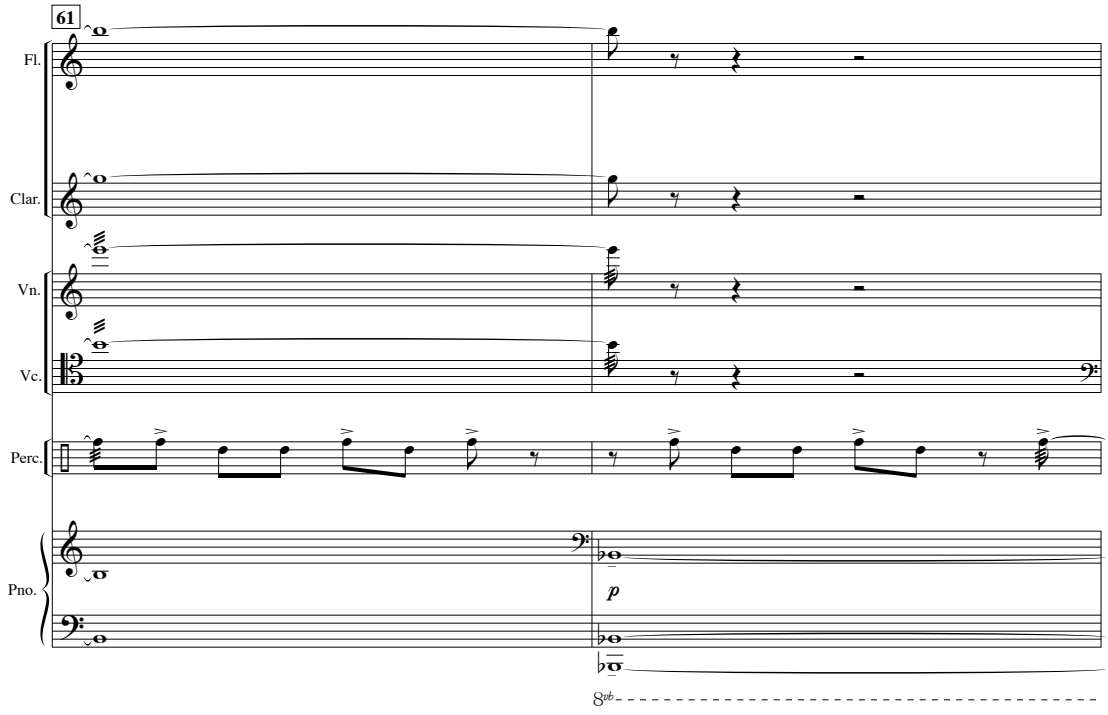

51
(Picc.)
Fl.
Clar.
Vn.
gliss.
Vc.
gliss.
gliss.
Perc.
Pno.

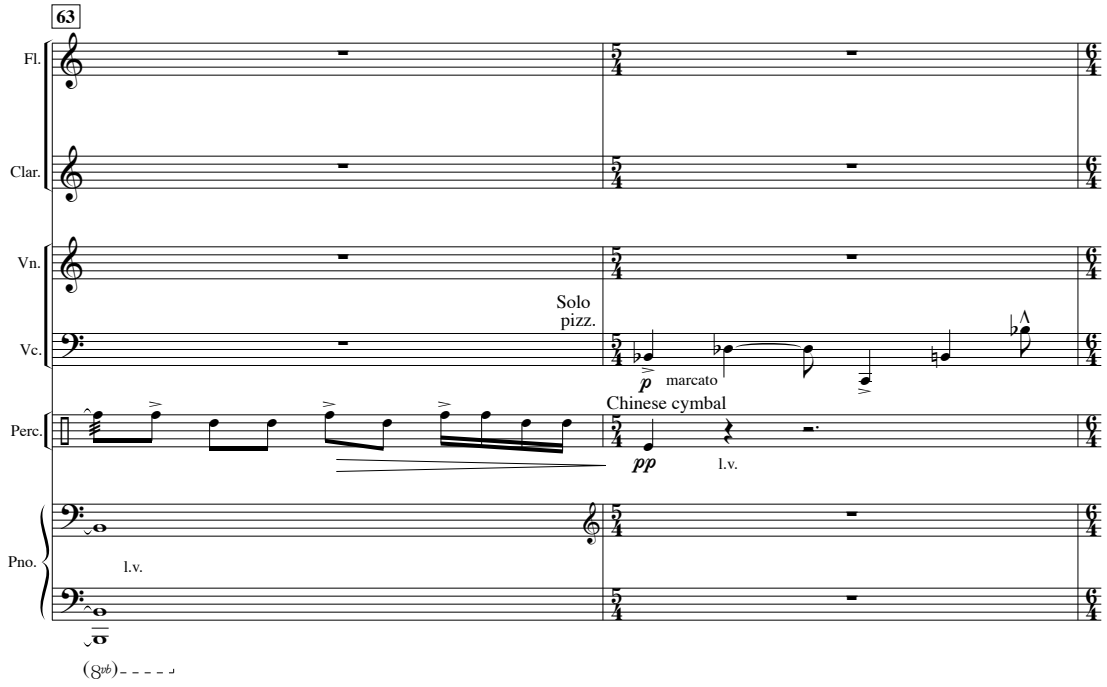

53
(Picc.)
sempre
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
pizz. l.v.
arco
Claves
8va

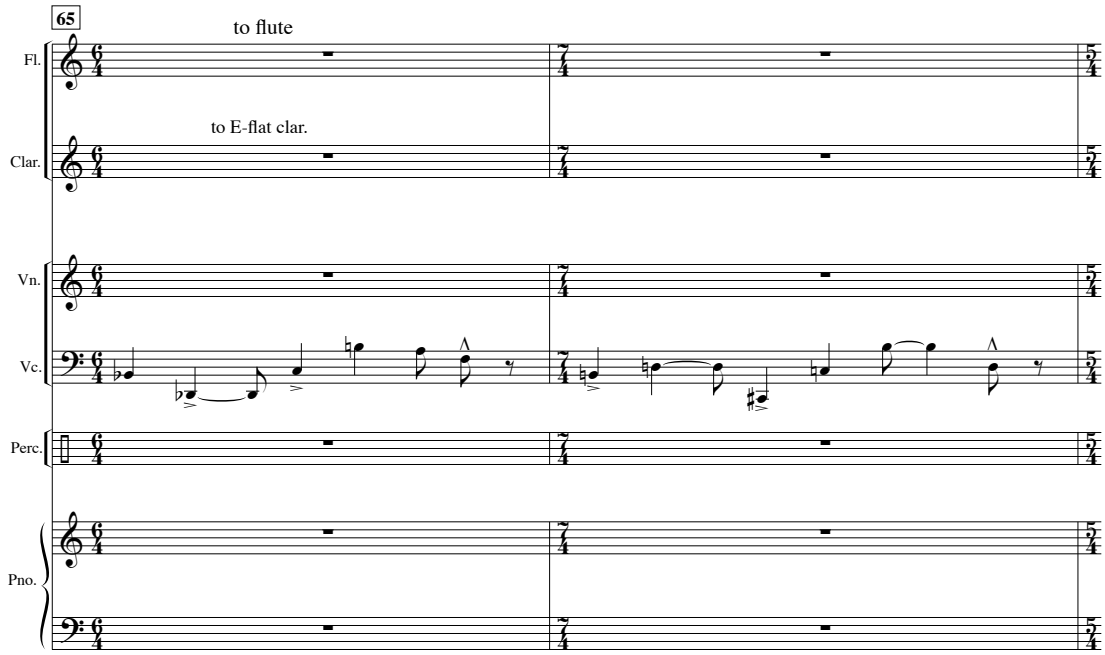

55
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.

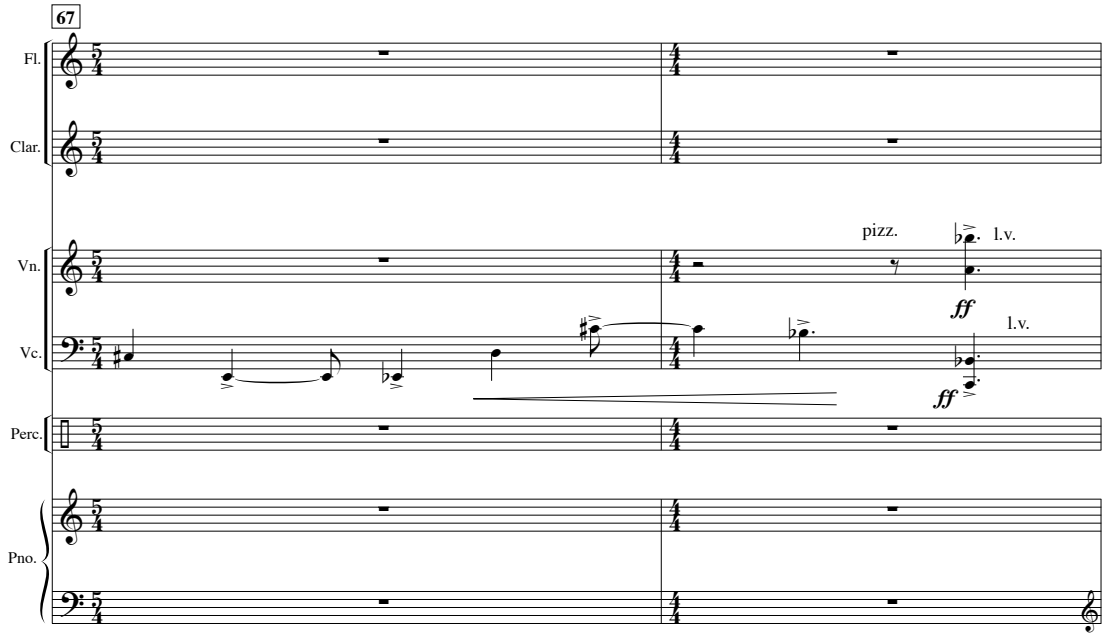

57
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
Sizzle cymbal
without accent

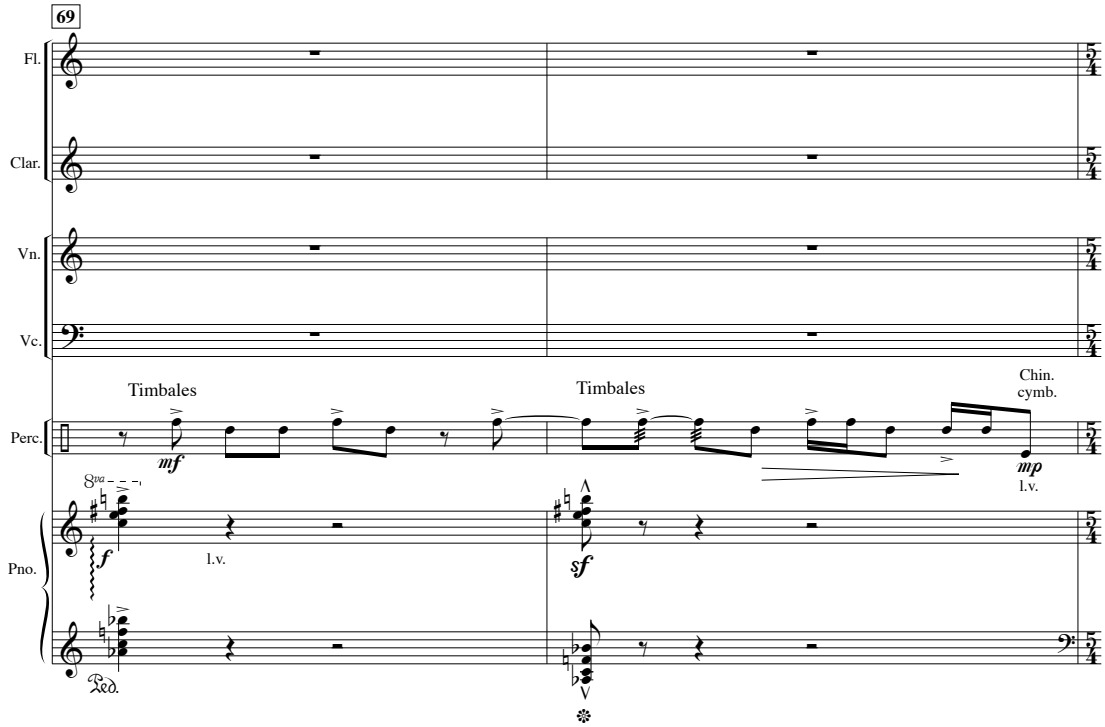

♩ = 138 Poco piu mosso
59
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
dim. al niente
(Picc.)
Timbales
leggiero
Ped.

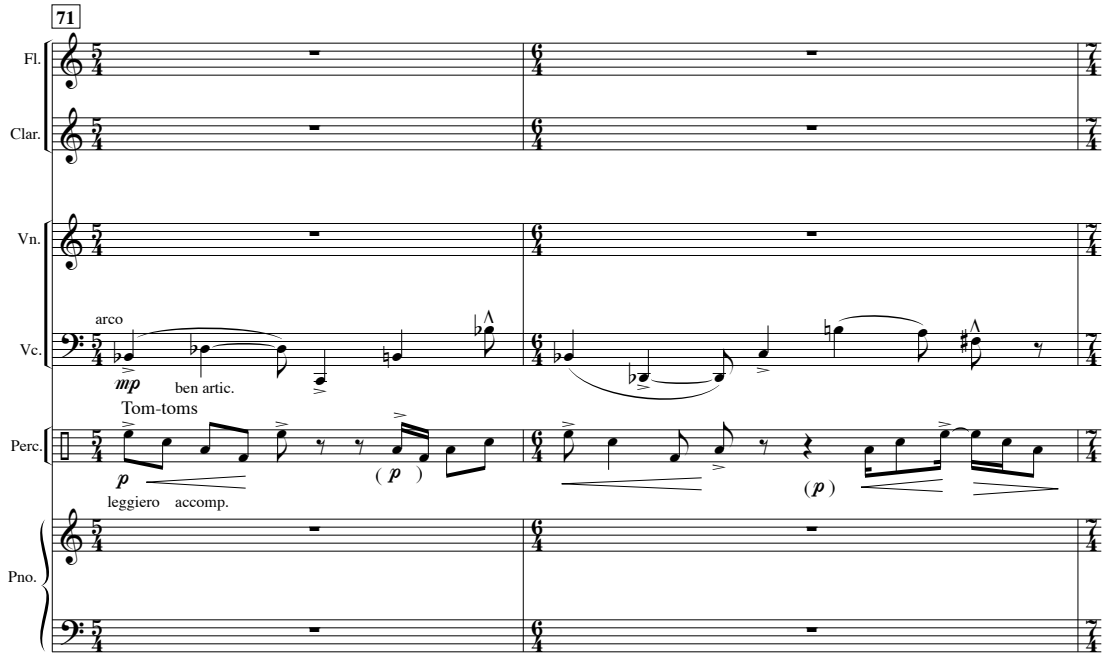

61
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
p
8vb

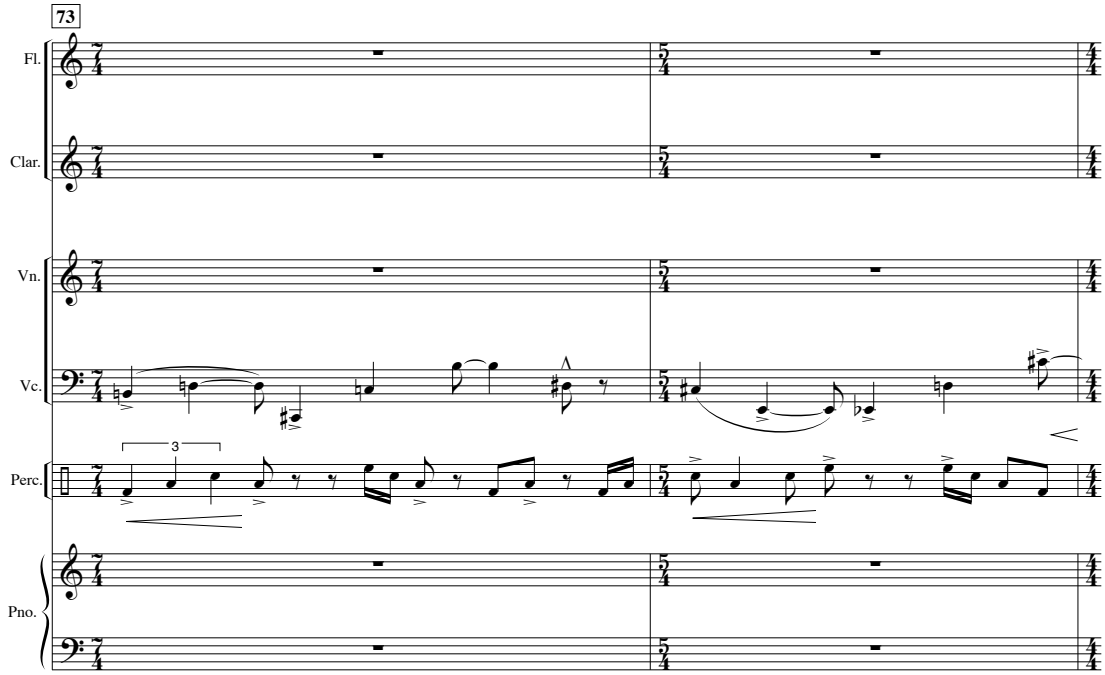

63
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
Solo
pizz.
p
marcato
Chinese cymbal
pp
l.v.
l.v.
(8vb)

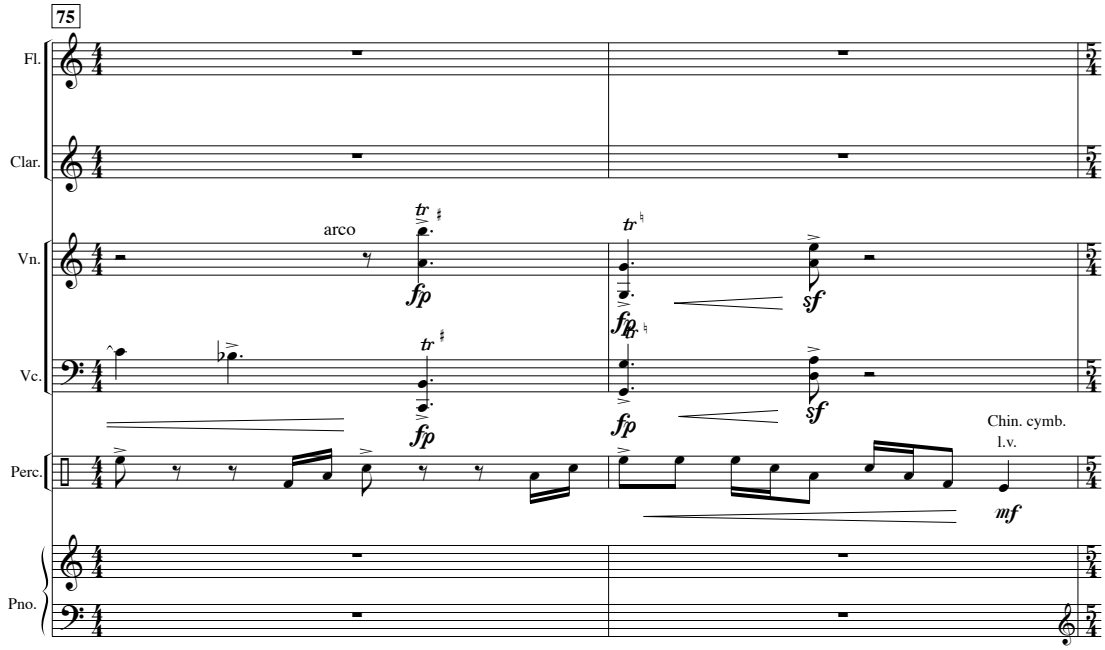

65
to flute
Fl.
to E-flat clar.
Clar.
Vn.
Vc.
Perc.
Pno.

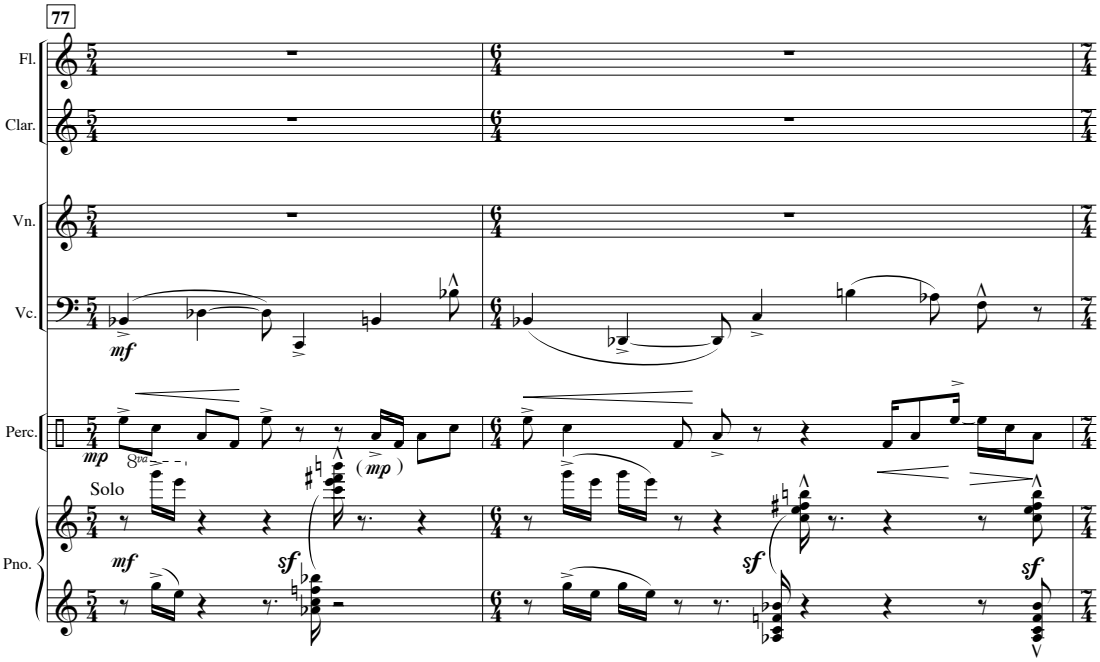

67
Fl.
Clar.
pizz.
l.v.
Vn.
ff
l.v.
Vc.
ff
Perc.
Pno.

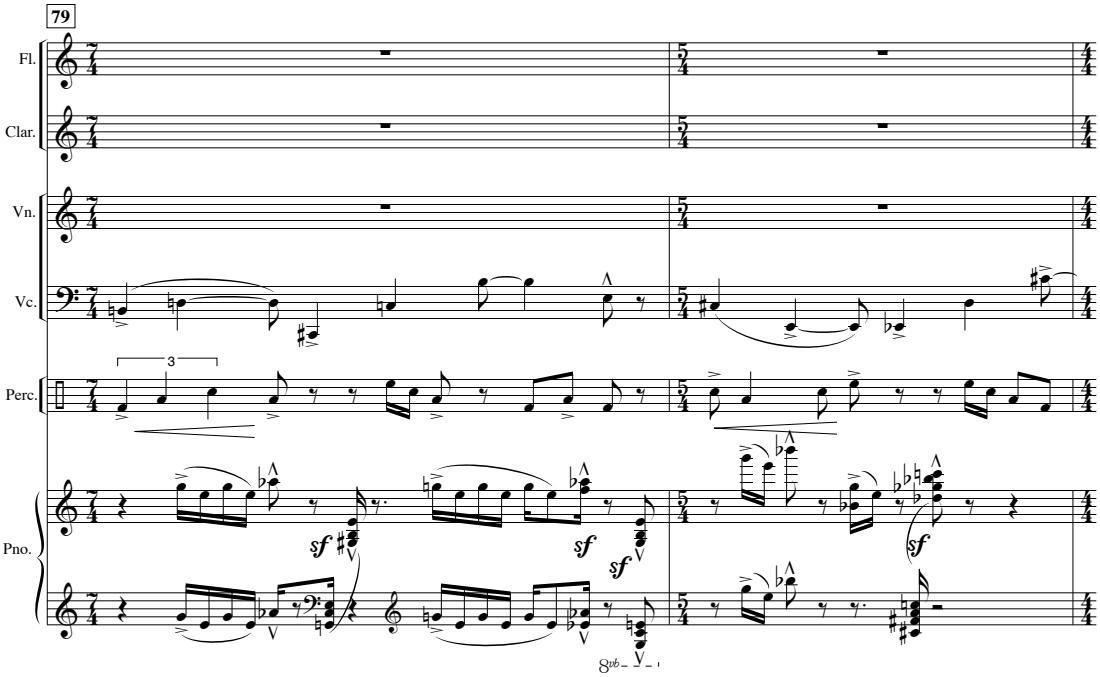

69
Fl.
Clar.
Vn.
Vc.
Timbales
Timbales
Chin. cymb.
Perc.
mf
mp
l.v.
8va
f
l.v.
sf
Pno.
Ped.

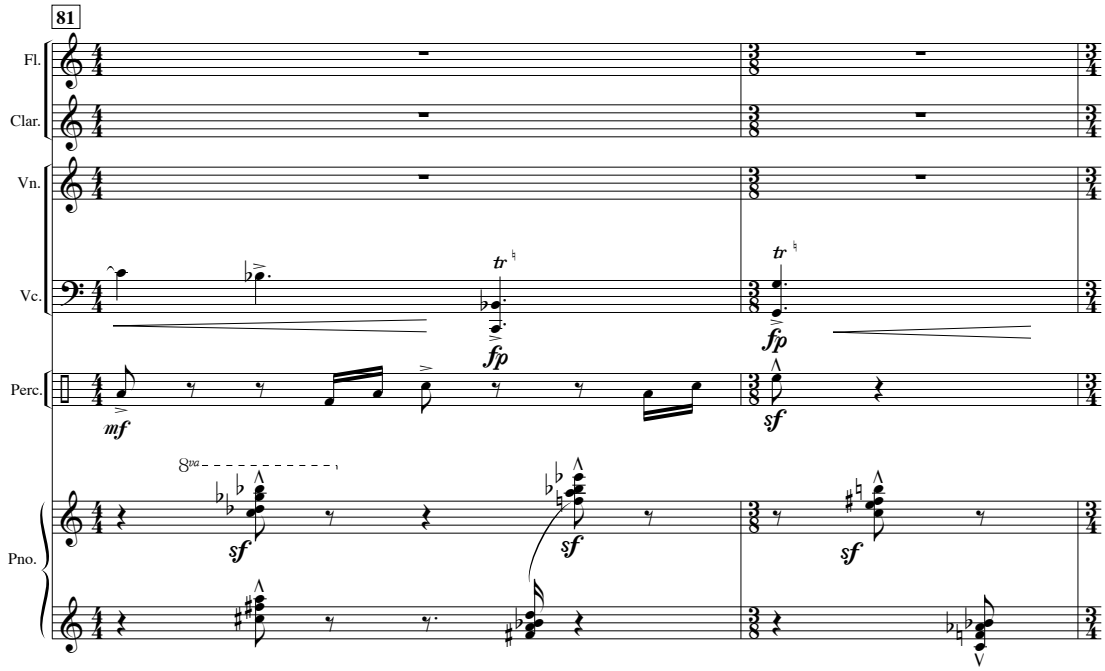

71
Fl.
Clar.
Vn.
arco
Vc.
mp
ben artic.
Tom-toms
Perc.
p
leggiero accomp.
(p)
(p)
Pno.

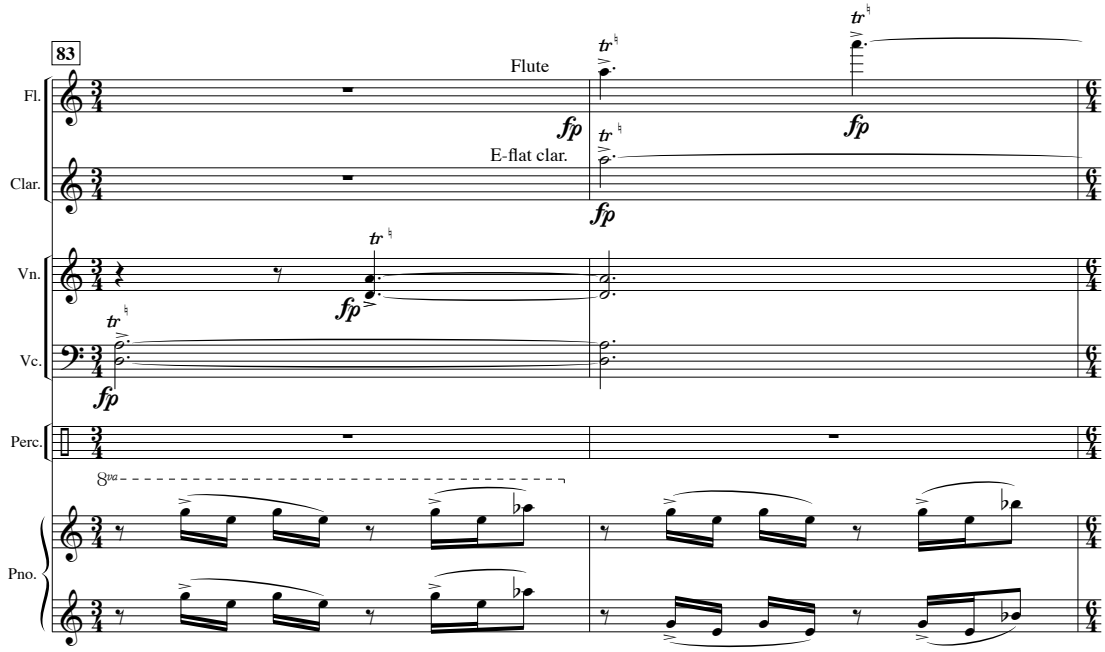

73
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
3

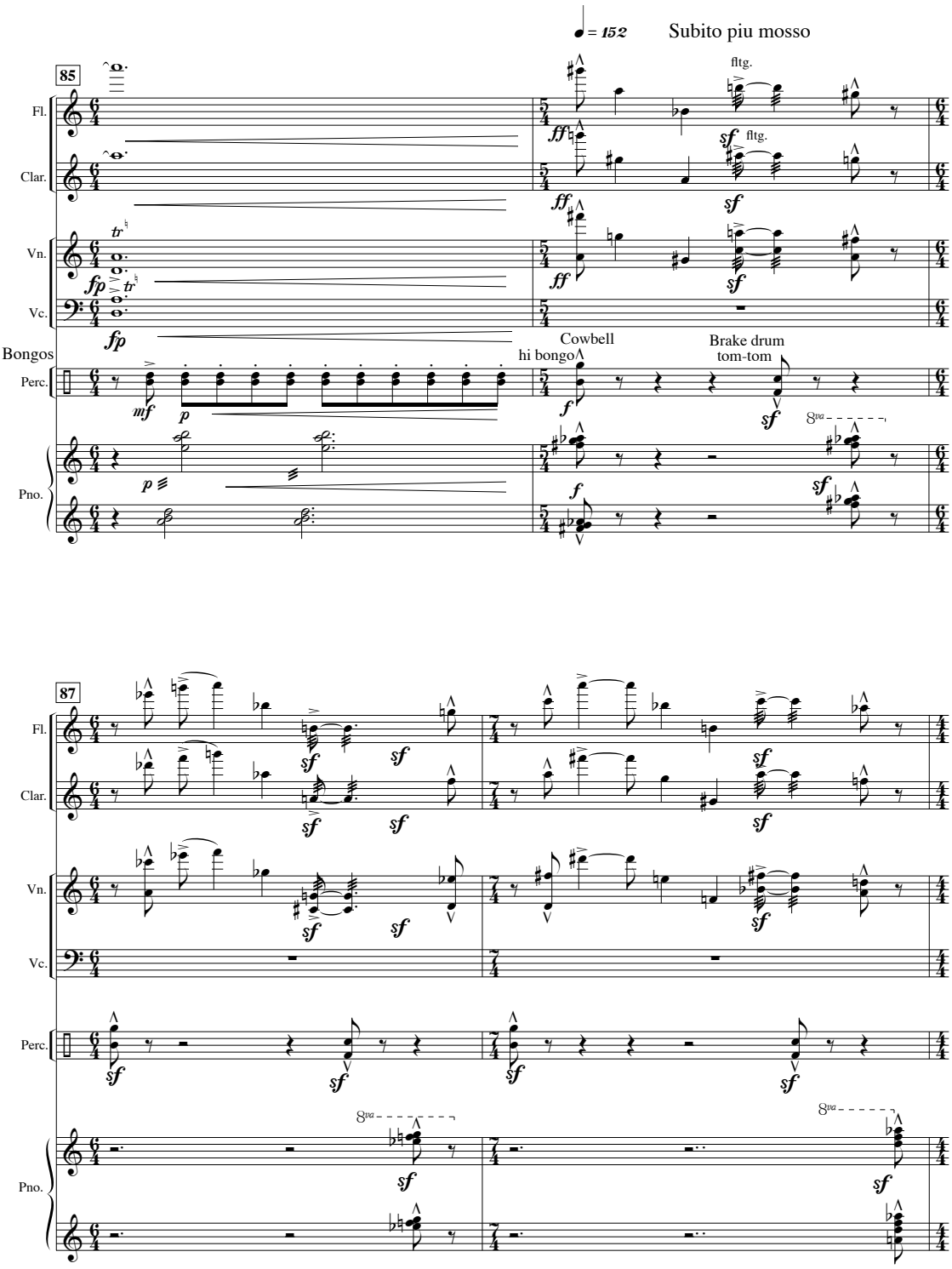

75
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
arco
fp
sf
Chin. cymb.
l.v.
mf

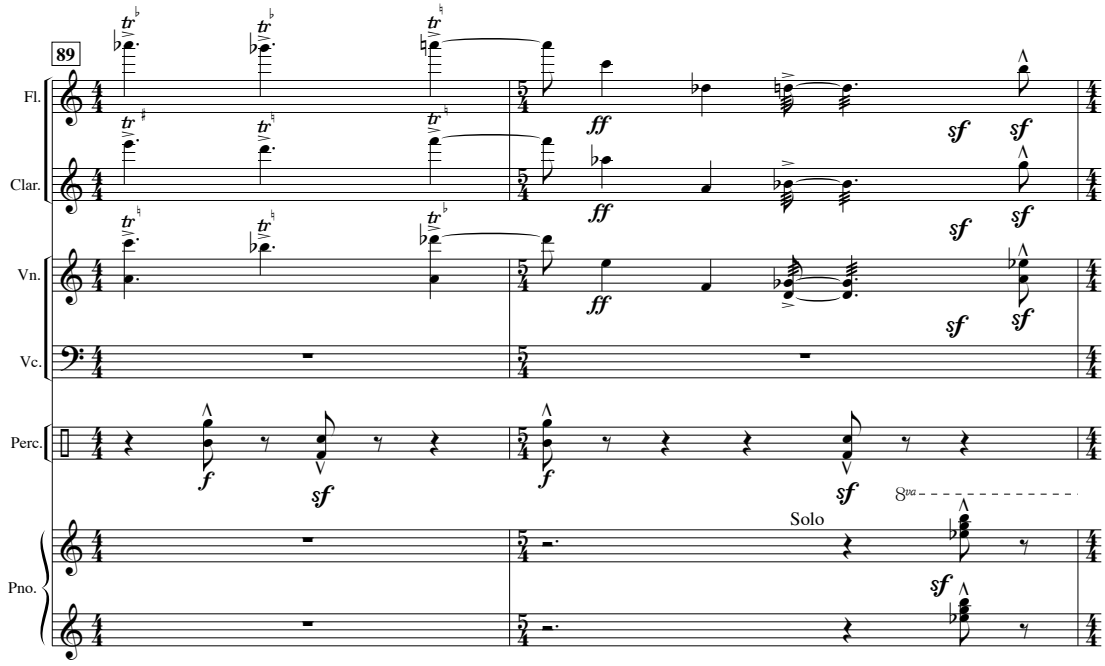

77
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
Solo
mf
mp
(mp)
sf

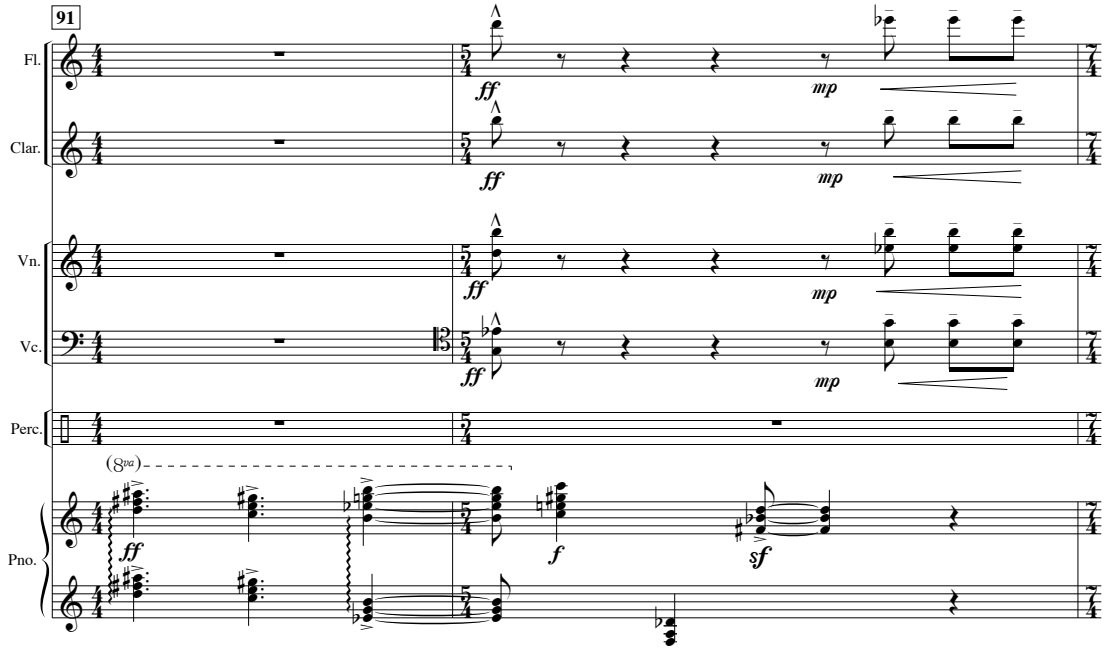

79
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
3
sf

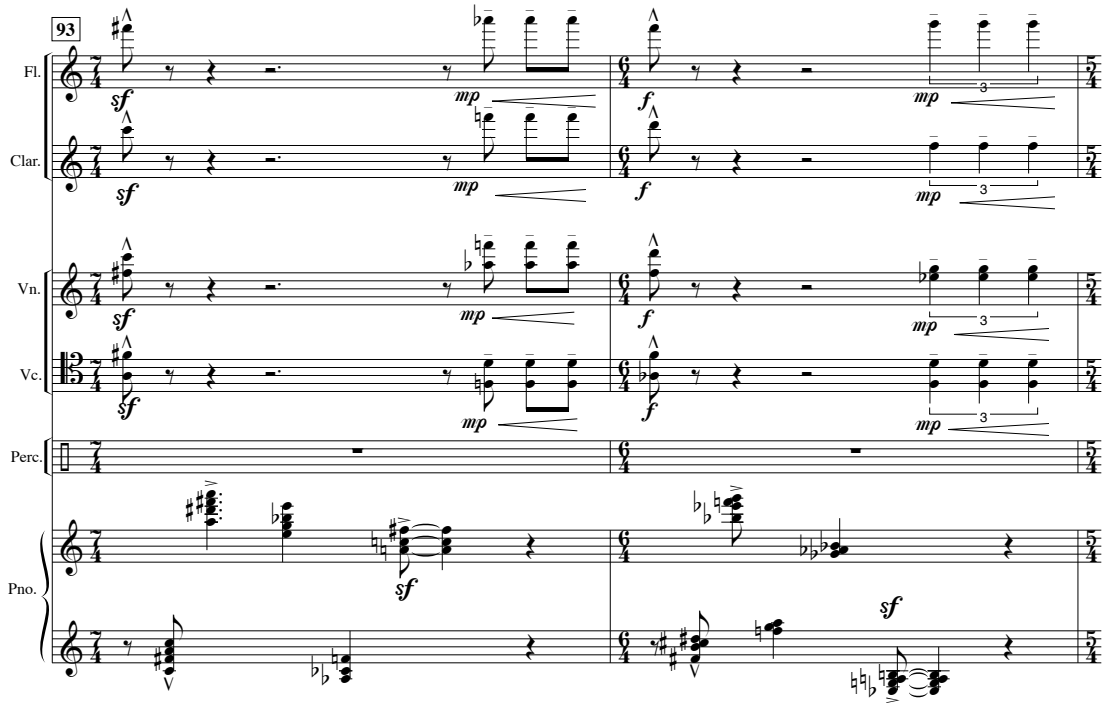

81
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
mf
fp
fp
sf
sf
sf
8va

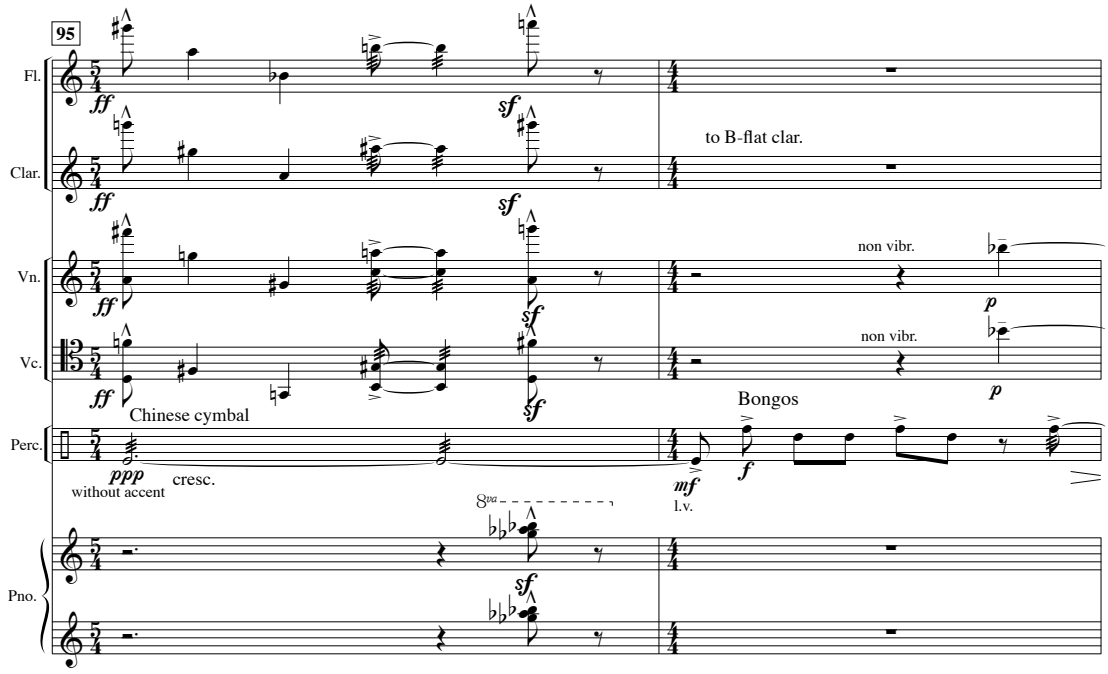

83
Flute
E-flat clar.
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
fp
fp
fp
fp
fp
8va

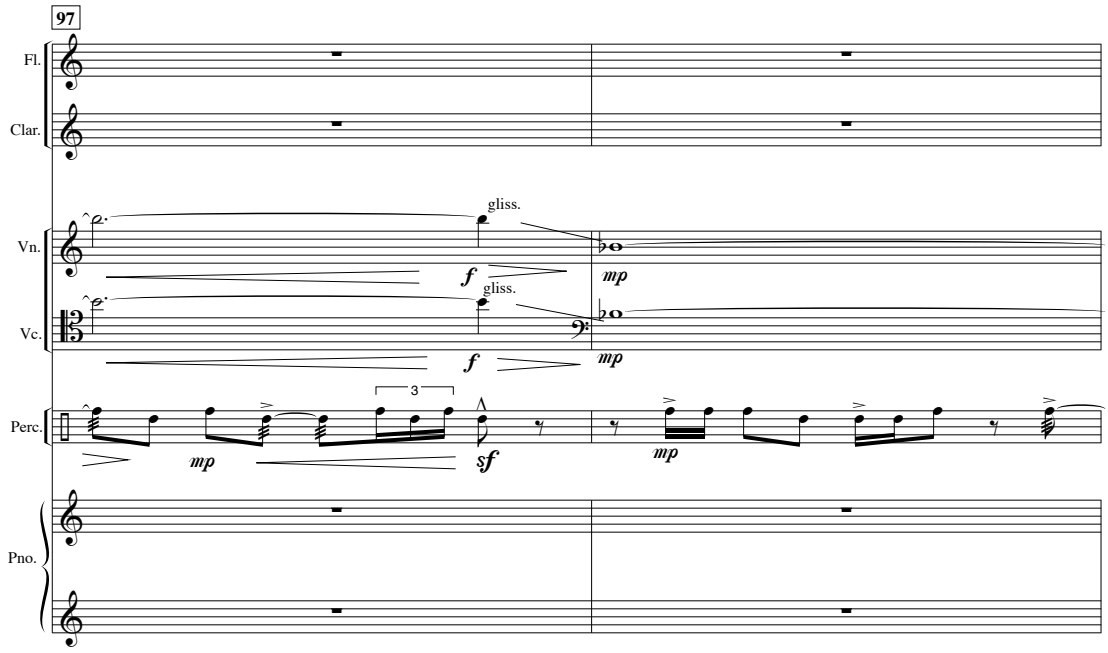

♩ = 152
Subito piu mosso
85
Fl.
Clar.
Vn.
Vc.
Bongos
Perc.
Pno.
fltg.
Cowbell
hi bongo
Brake drum
tom-tom
87

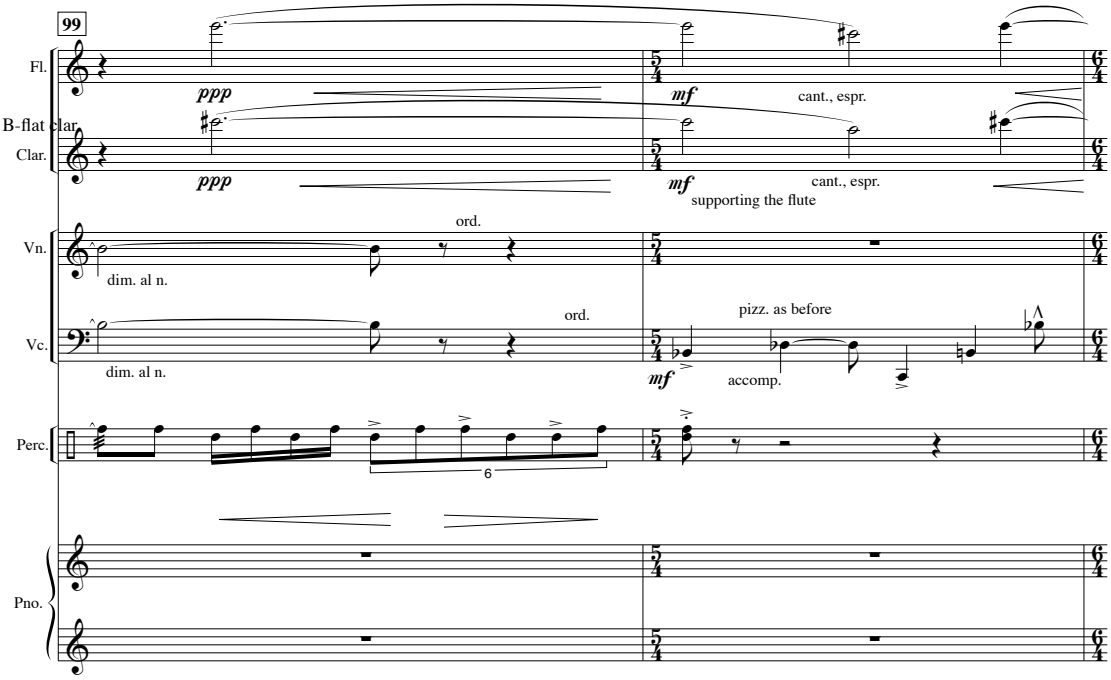

89
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
Solo
8va

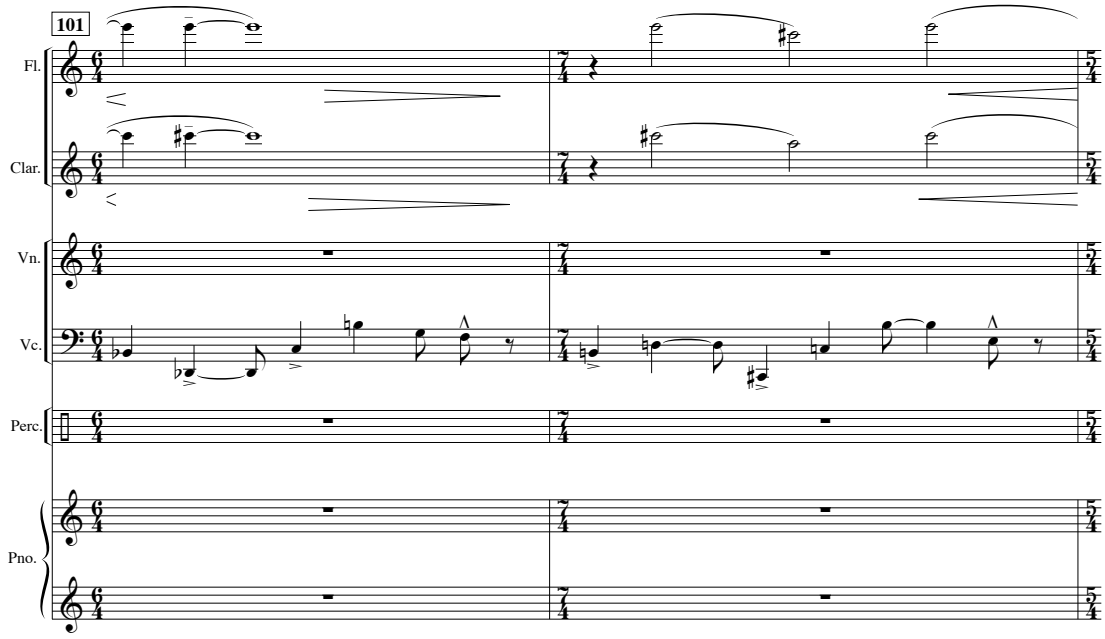

91
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
(8va)

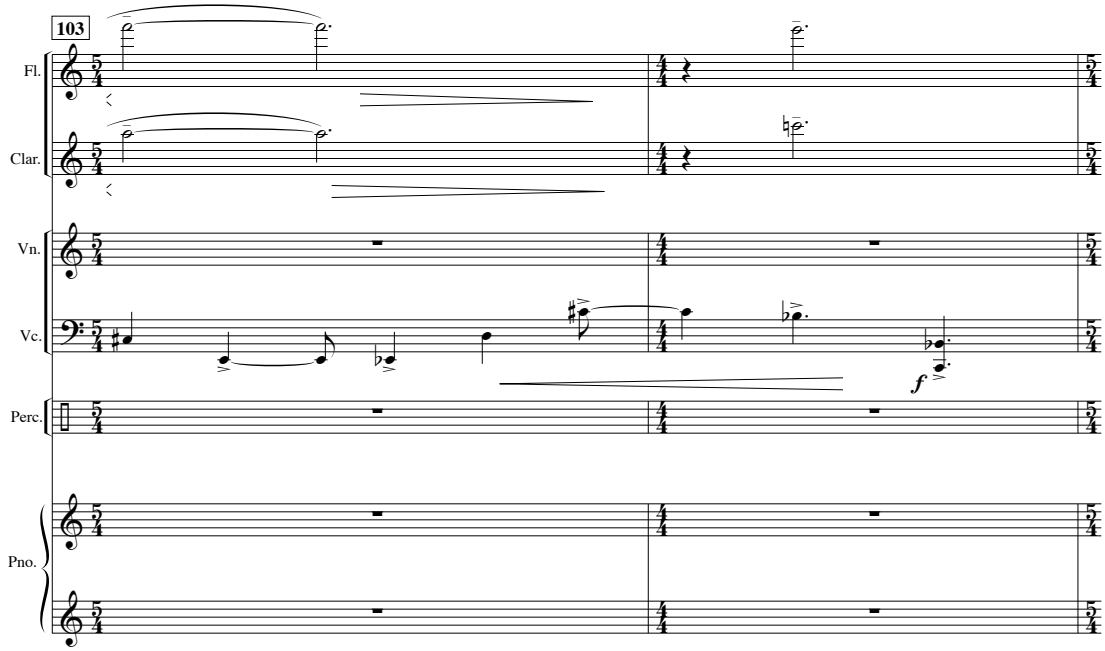

93
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
sf
mp
f
3

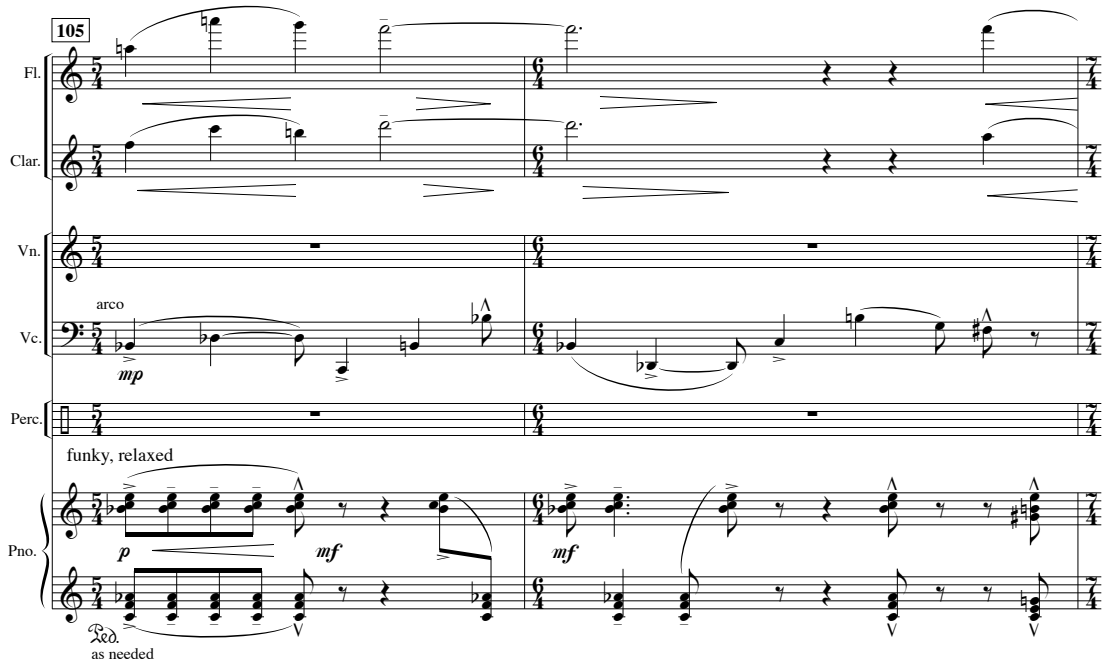

95
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
ff
sf
to B-flat clar.
non vibr.
p
Chinese cymbal
Bongos
ppp
without accent
cresc.
mf
l.v.
f
8va

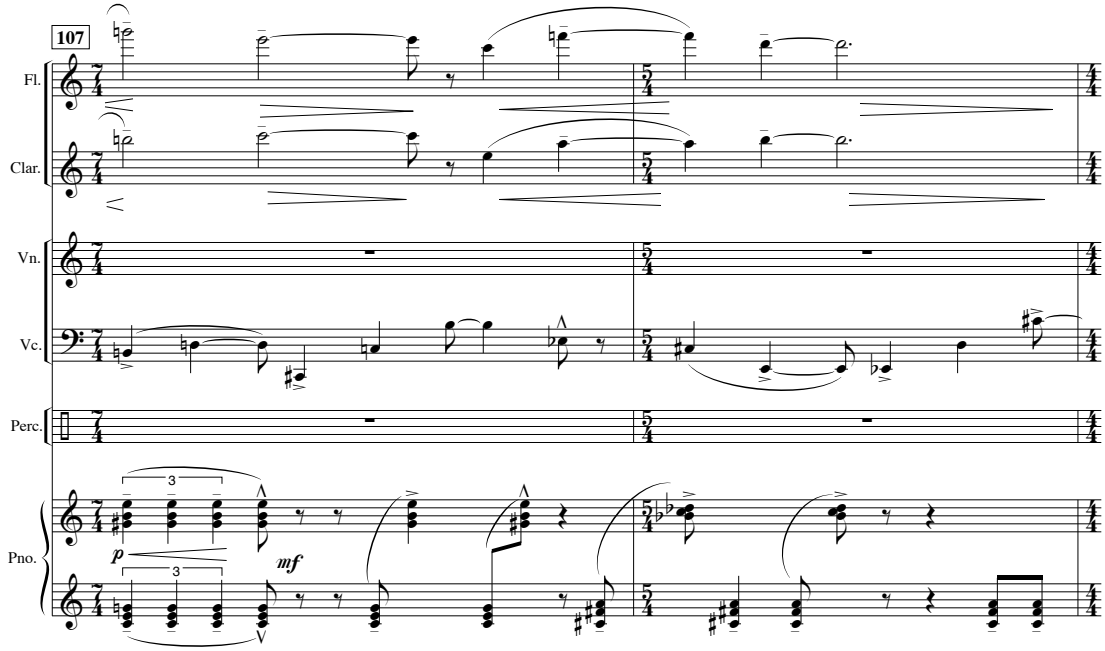

97
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
gliss.
gliss.
3

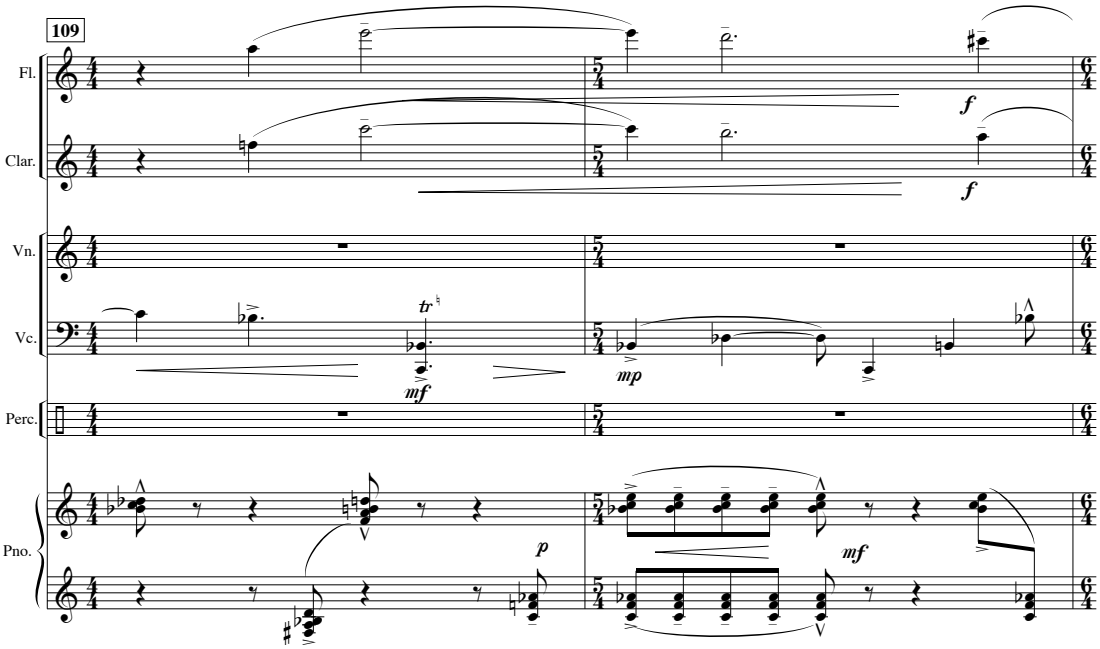

99
Fl.
B-flat clar.
Clar.
Vn.
Vc.
Perc.
Pno.
ord.
dim. al n.
ord.
dim. al n.
cant., espr.
supporting the flute
pizz. as before
accomp.
6

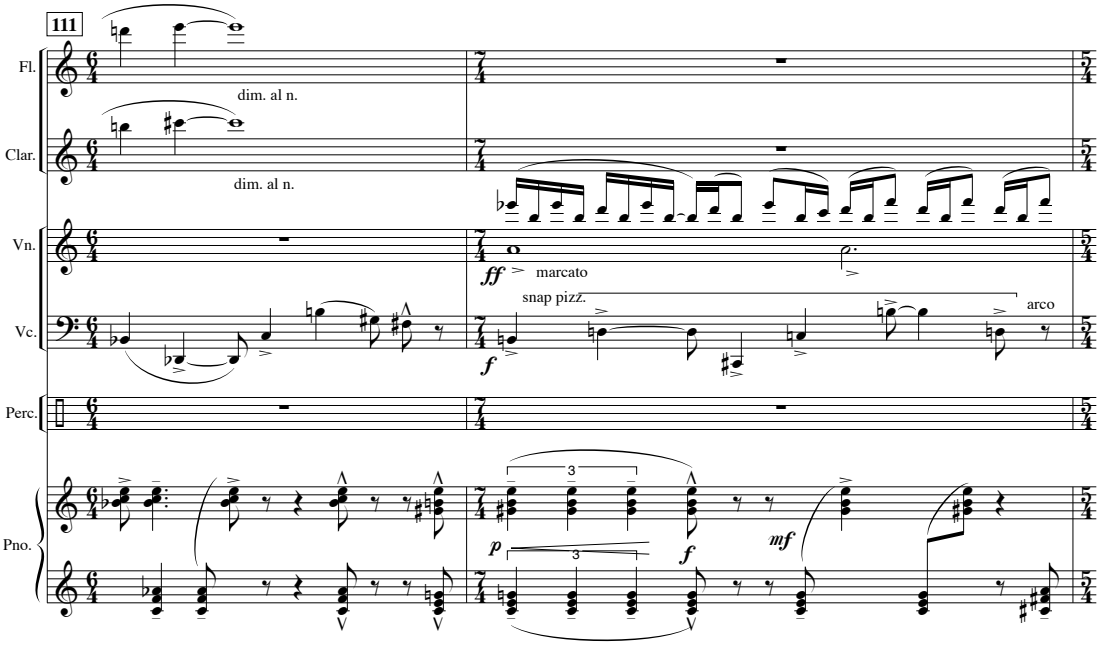

101
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.

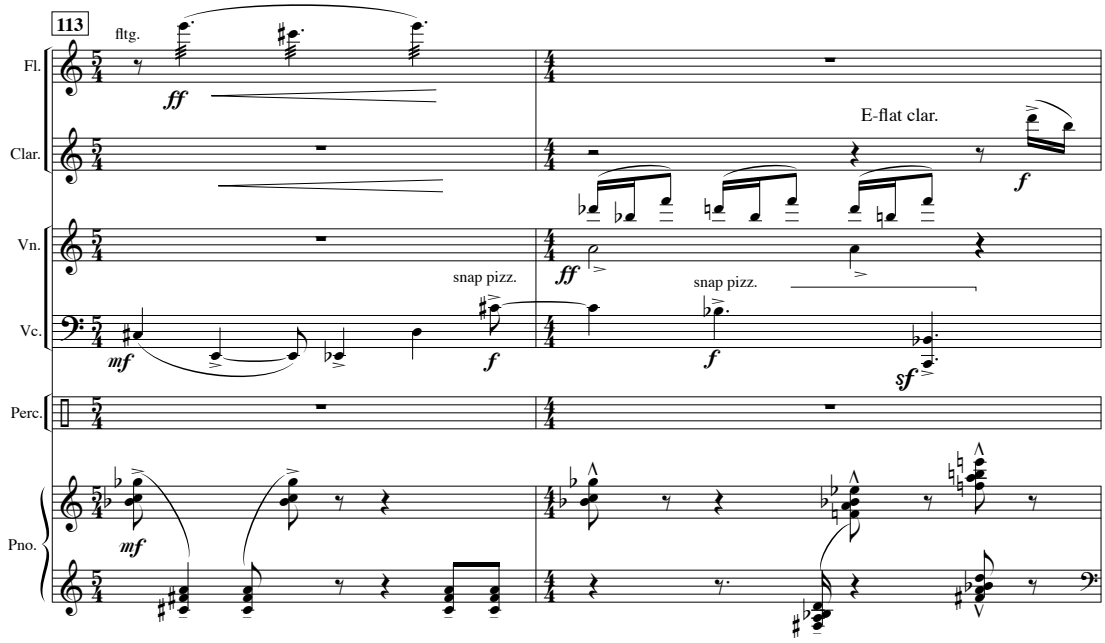

103
Fl.
Clar.
Vn.
Vc.
f
Perc.
Pno.

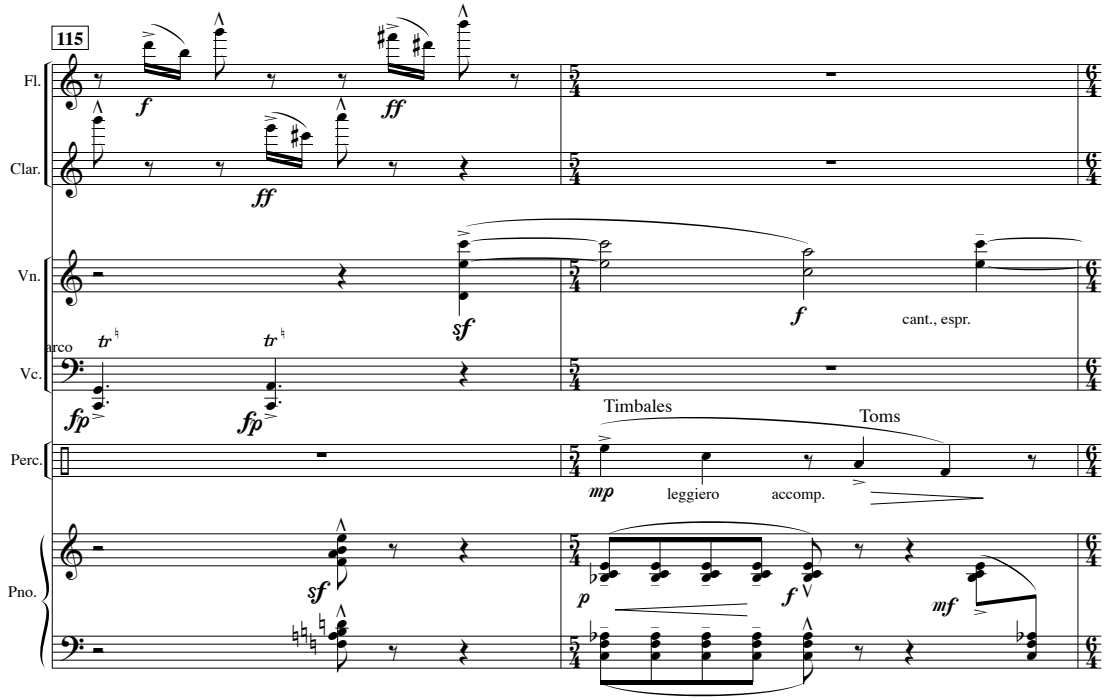

105
Fl.
Clar.
Vn.
Vc.
arco
mp
Perc.
funky, relaxed
Pno.
p
mf
mf
Ped.
as needed

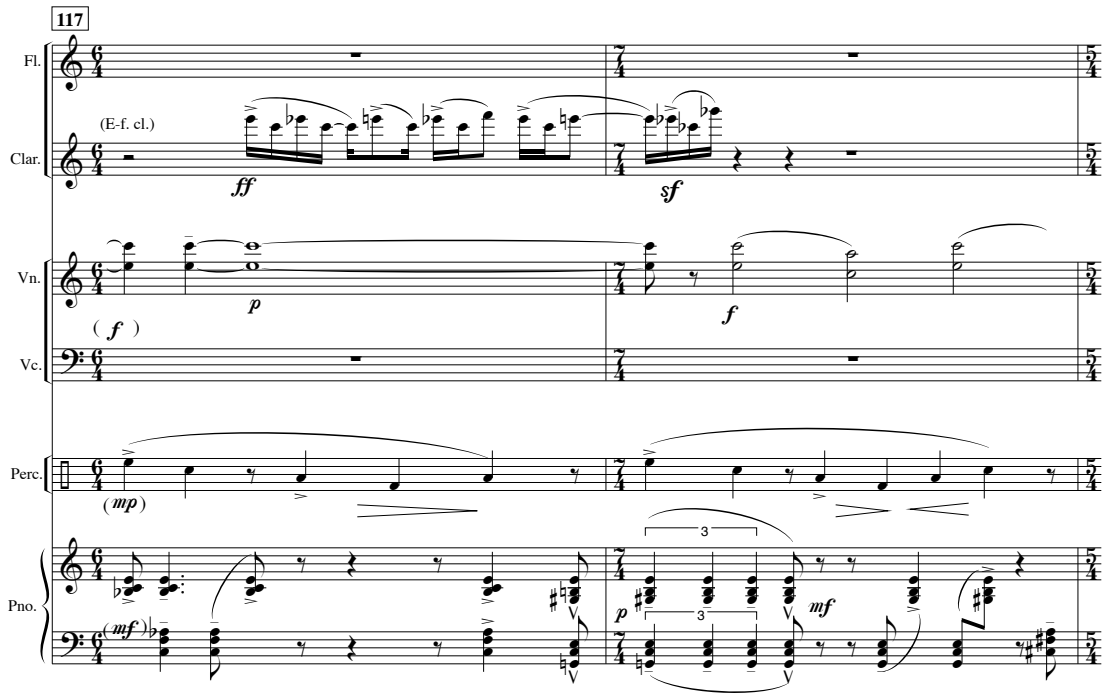

107
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
3
3
p
mf

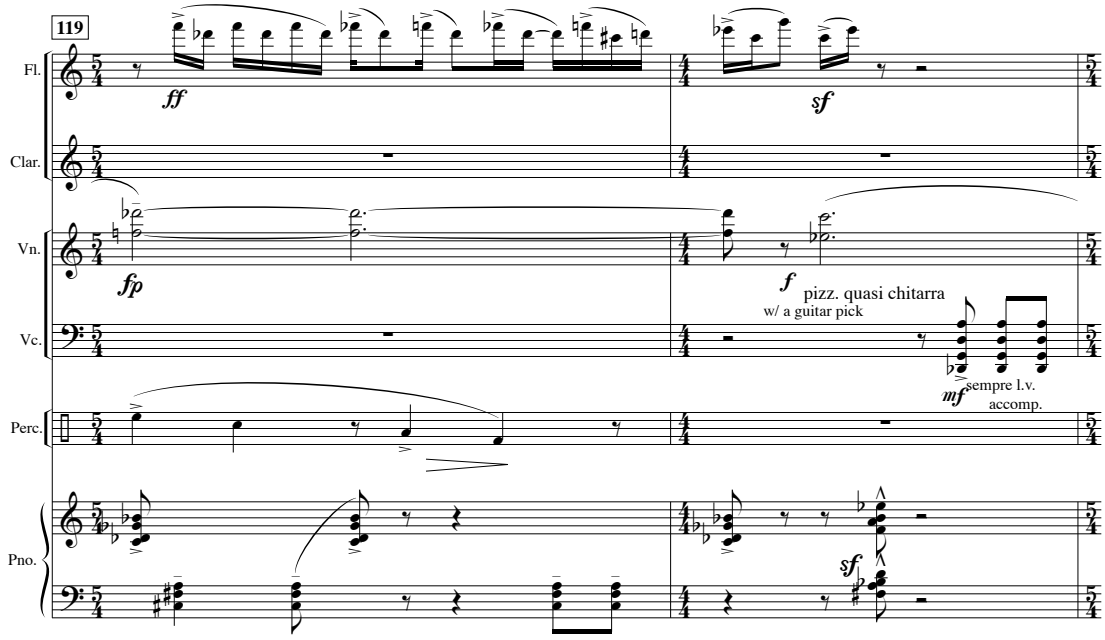

109
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
f
f
tr
mf
mp
p
mf

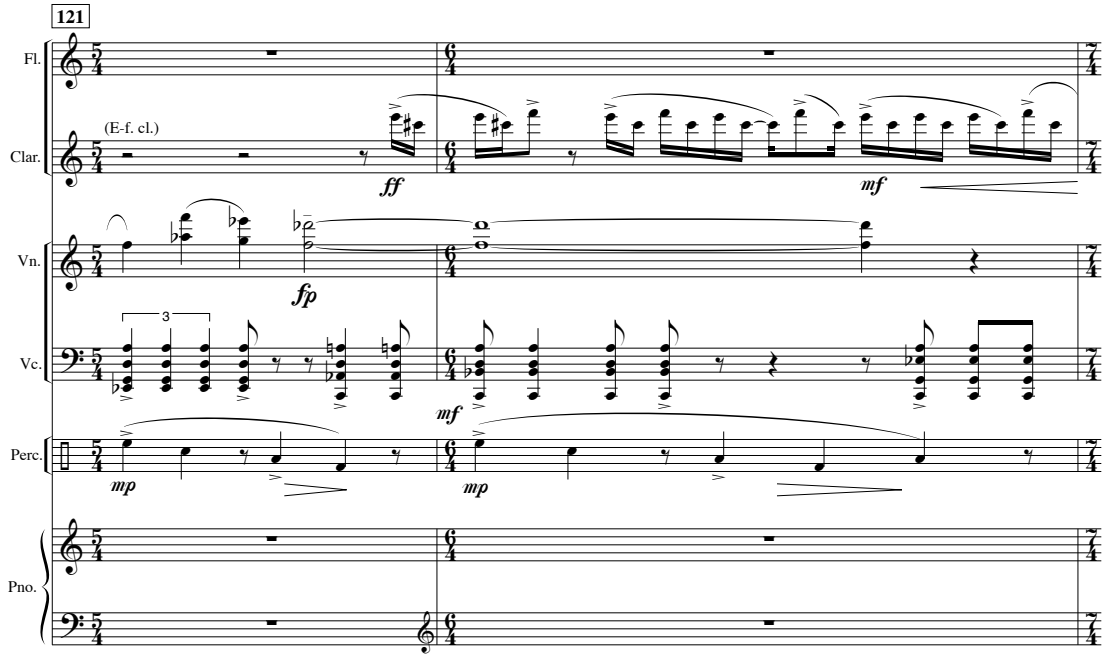

111
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
dim. al n.
dim. al n.
ff
marcato
snap pizz.
arco
f
p
f
mf
3
3

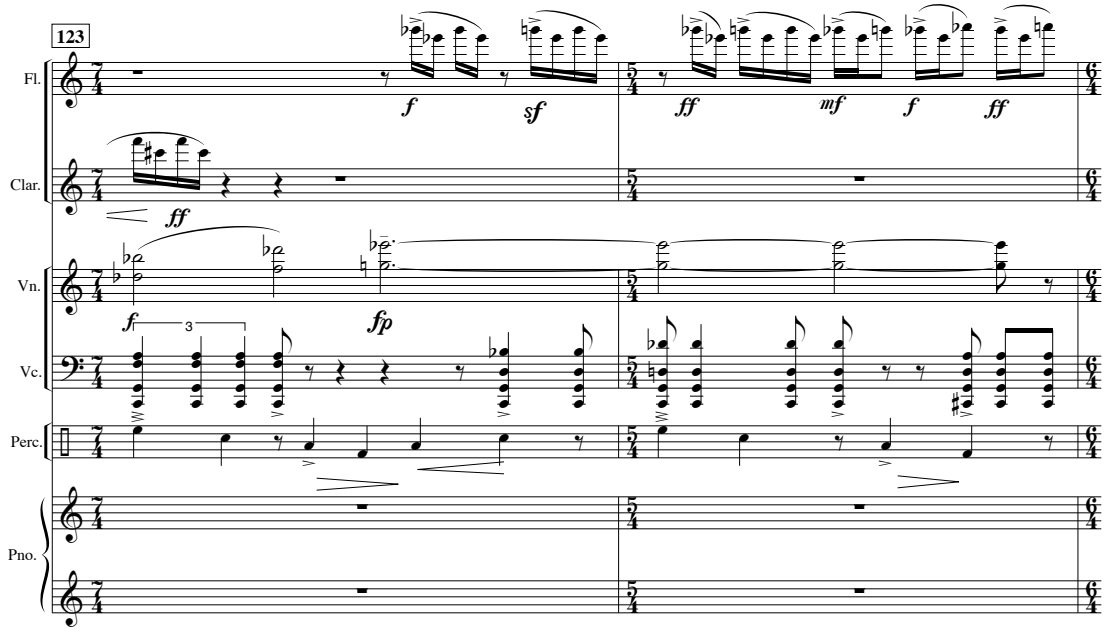

113
fltg.
Fl.
Clar.
E-flat clar.
Vn.
snap pizz.
snap pizz.
Vc.
Perc.
Pno.

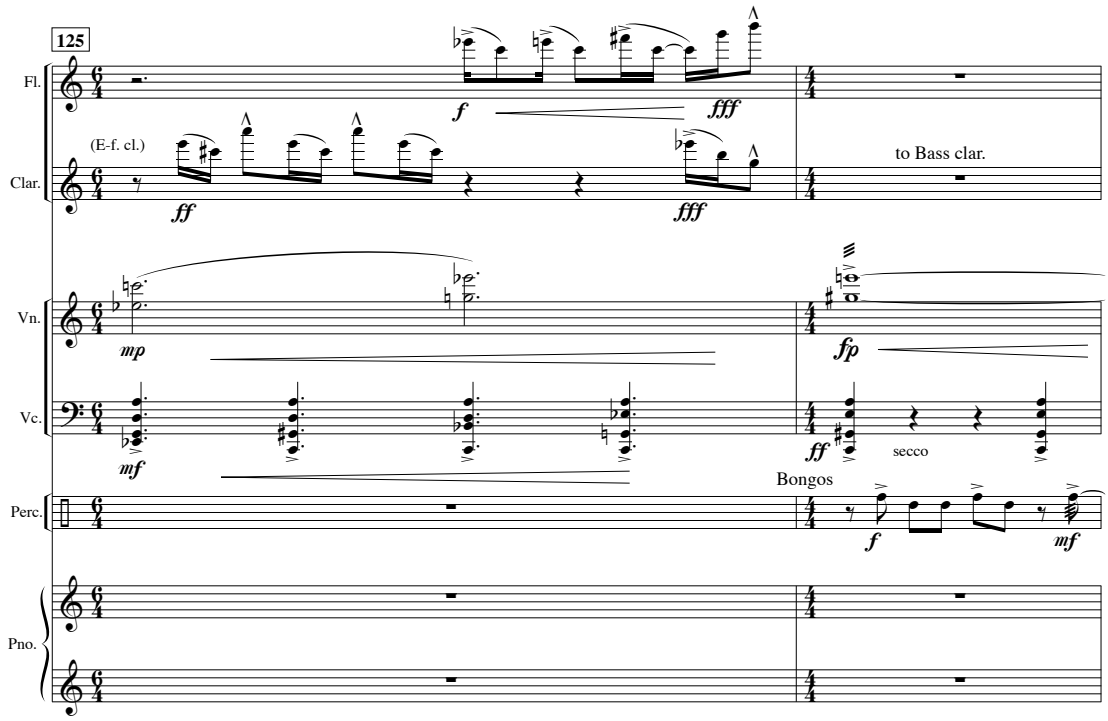

115
Fl.
Clar.
Vn.
cant., espr.
arco
Vc.
Timbales
Toms
leggiero
accomp.
Perc.
Pno.

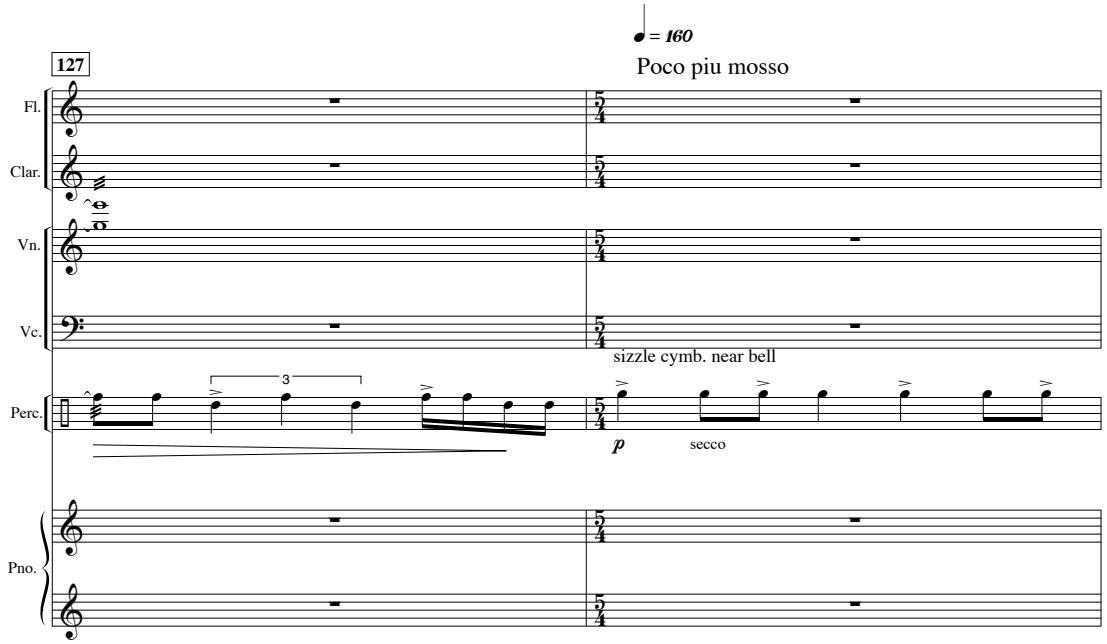

117
Fl.
Clar.
(E-f. cl.)
ff
sf
Vn.
Vc.
(f)
p
f
Perc.
(mp)
Pno.
(mf)
3
p
mf

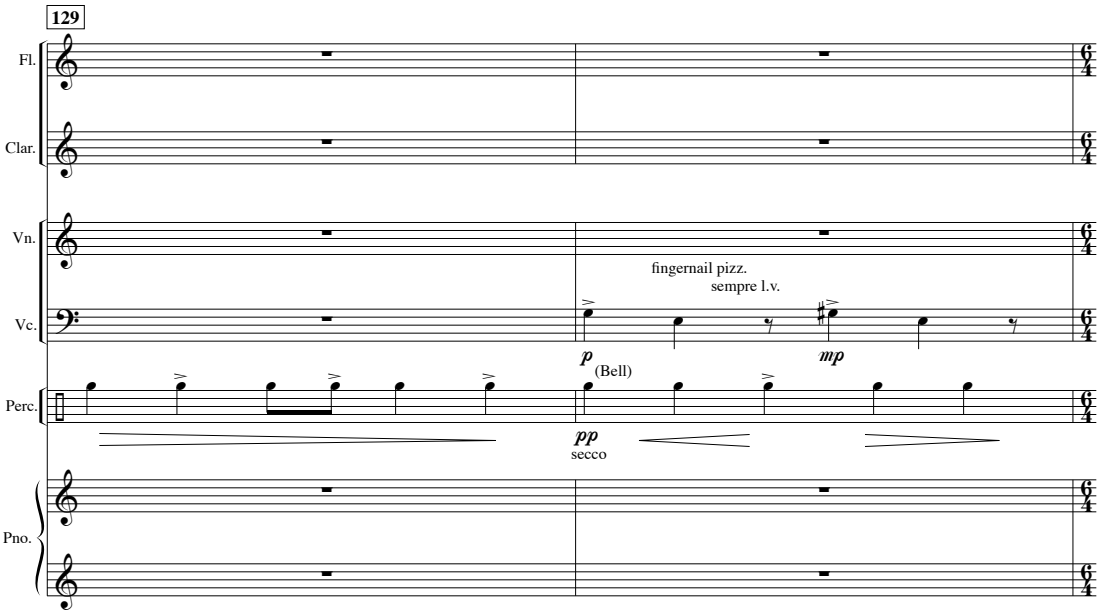

119
Fl.
ff
sf
Clar.
Vn.
fp
f
pizz. quasi chitarra
w/ a guitar pick
Vc.
mf
sempre l.v.
accomp.
Perc.
Pno.
sf

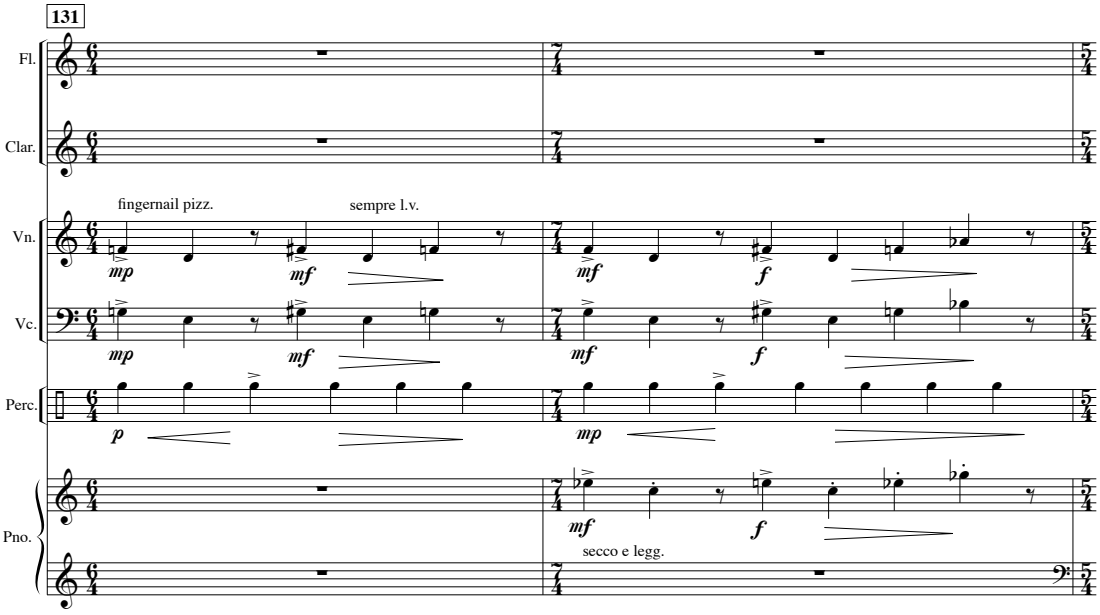

121
Fl.
Clar.
(E-f. cl.)
Vn.
Vc.
Perc.
Pno.
ff
mf
fp
mf
mp
mp

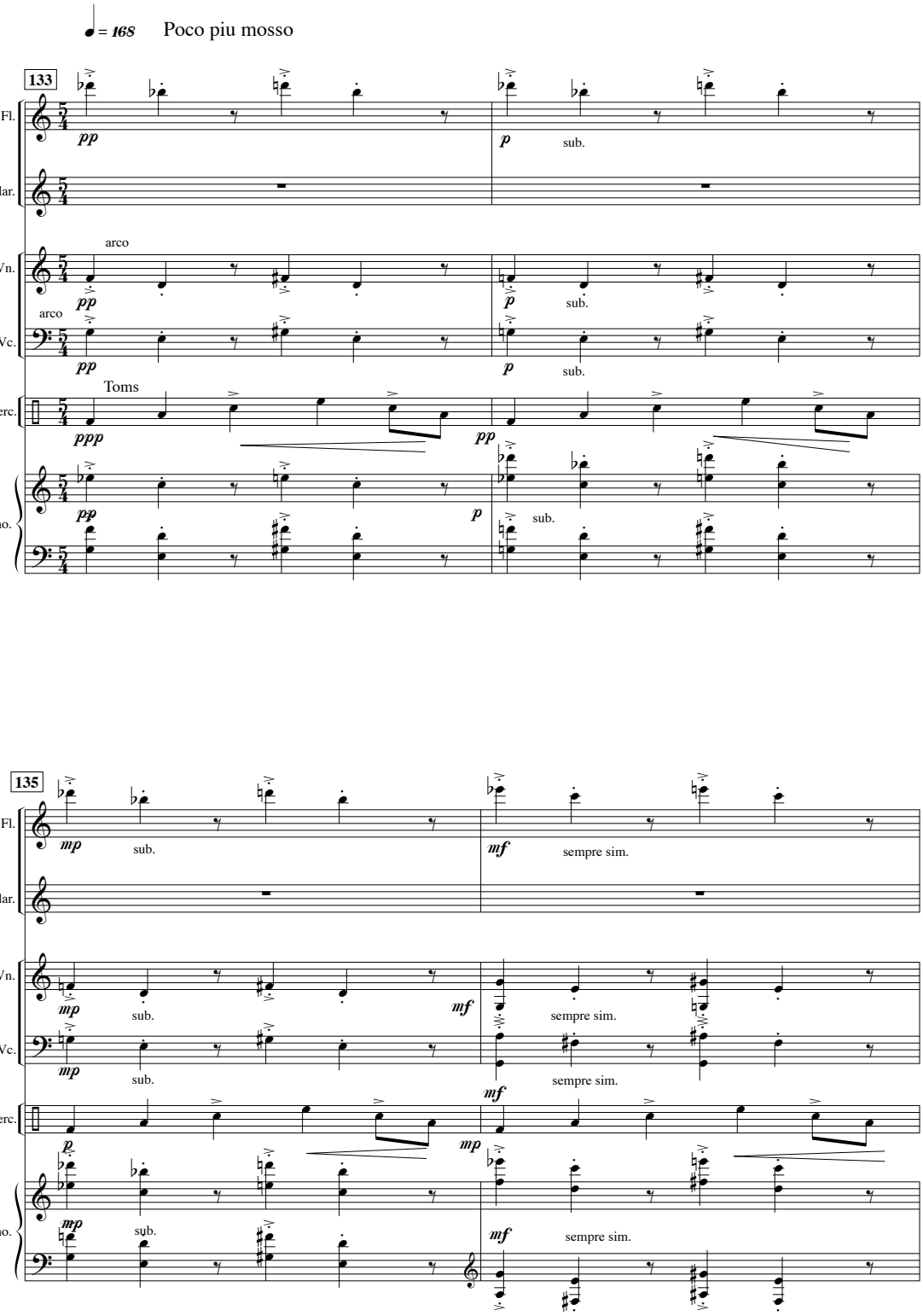

123
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
f
sf
ff
mf
f
ff
ff
f
fp

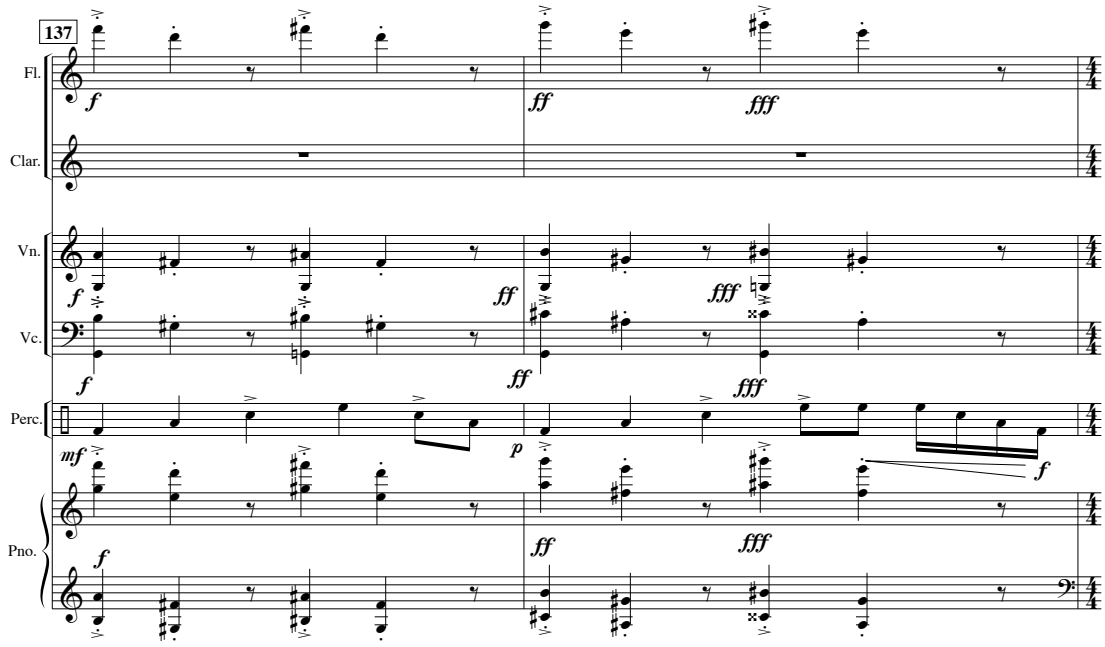

125
Fl.
Clar.
(E-f. cl.)
to Bass clar.
Vn.
Vc.
secco
Bongos
Perc.
Pno.

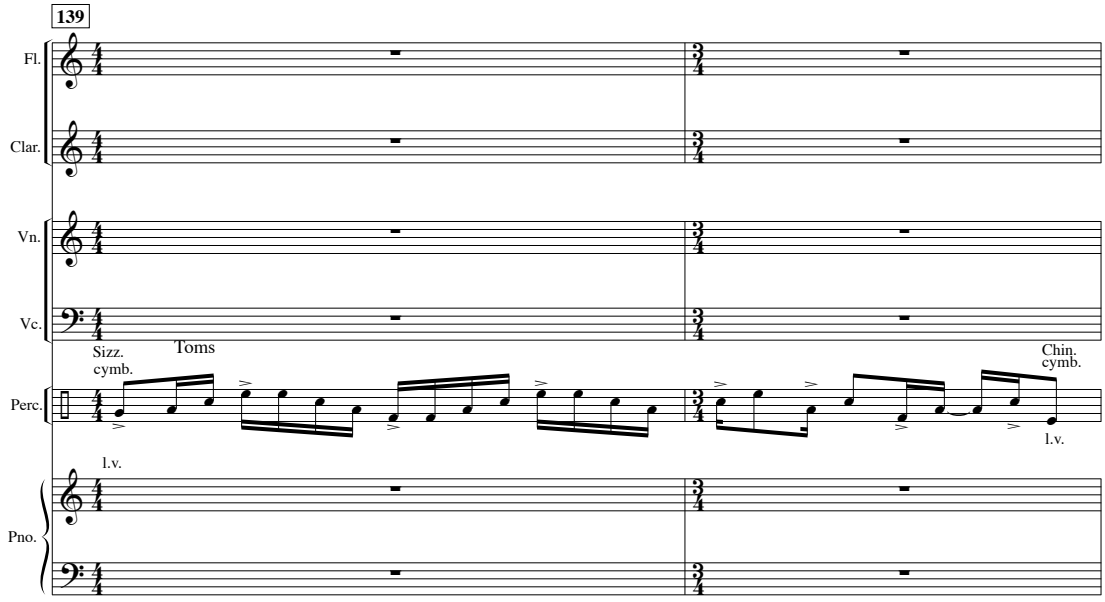

127
♩ = 160
Poco piu mosso
Fl.
Clar.
Vn.
Vc.
sizzle cymb. near bell
Perc.
secco
Pno.

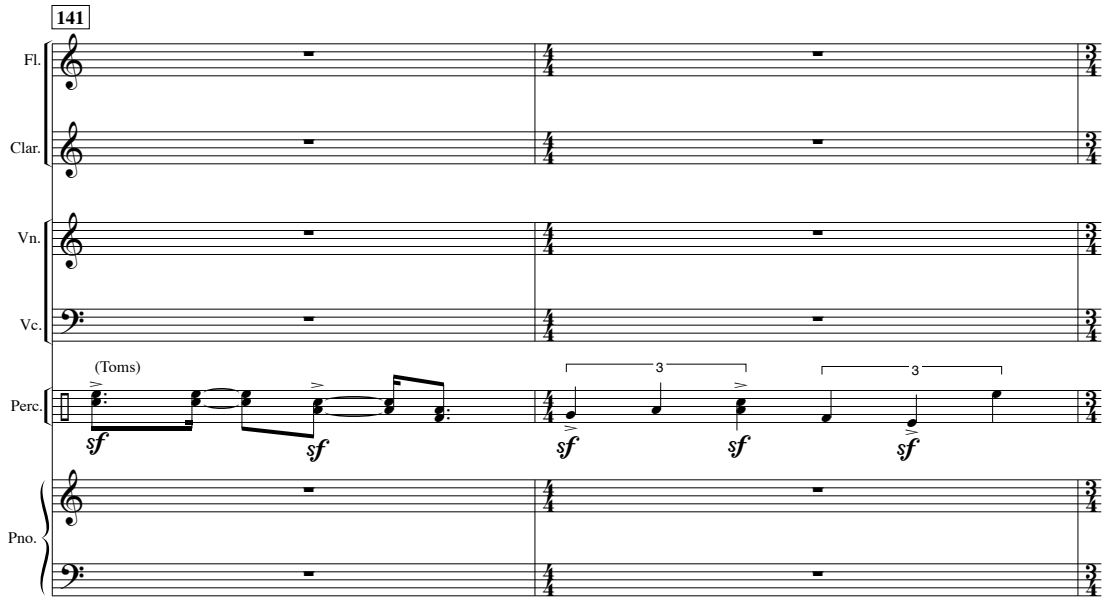

129
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
fingernail pizz.
sempre l.v.
p
mp
(Bell)
pp
secco

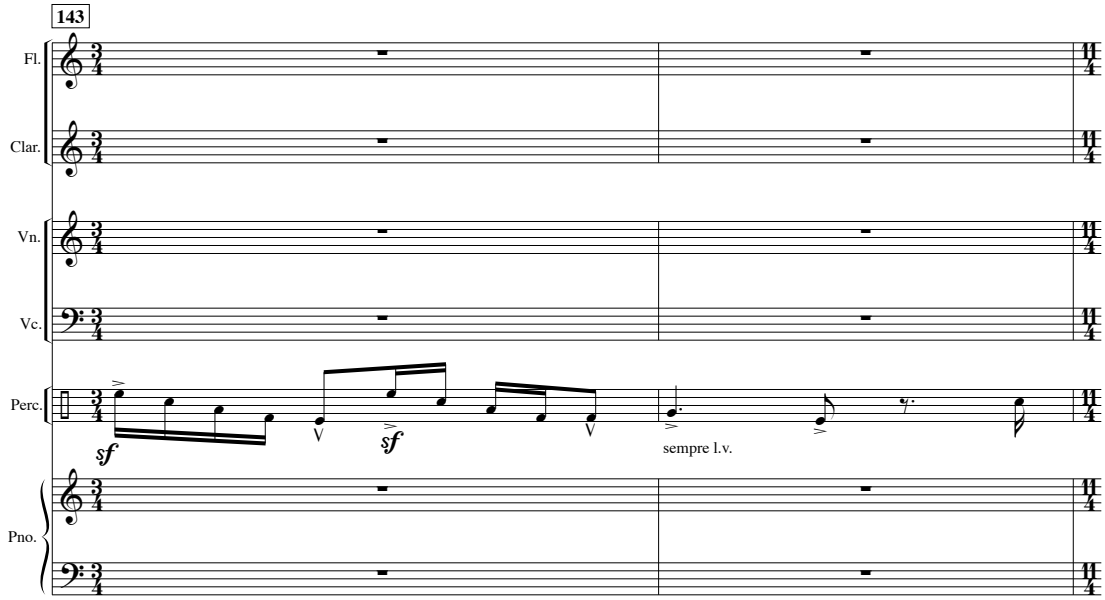

131
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
fingernail pizz.
sempre l.v.
mp
mf
f
p
secco e legg.

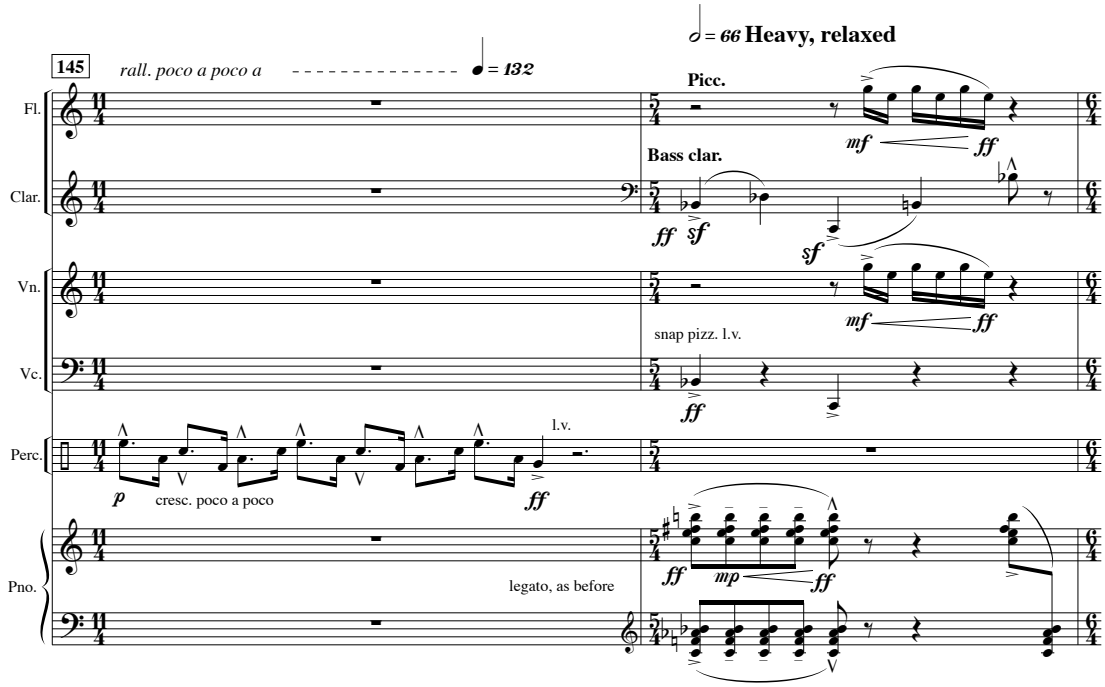

♩ = 168 Poco piu mosso
133
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
pp
p
sub.
arco
Toms
ppp
135
mp
mf
sempre sim.

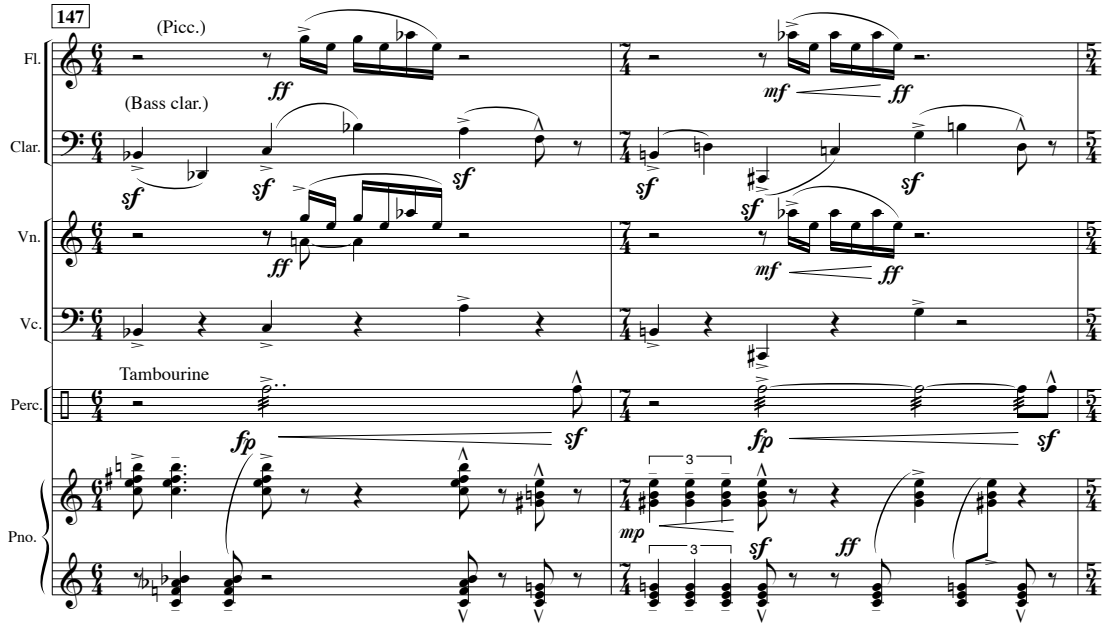

137
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
f
ff
fff
mf
p

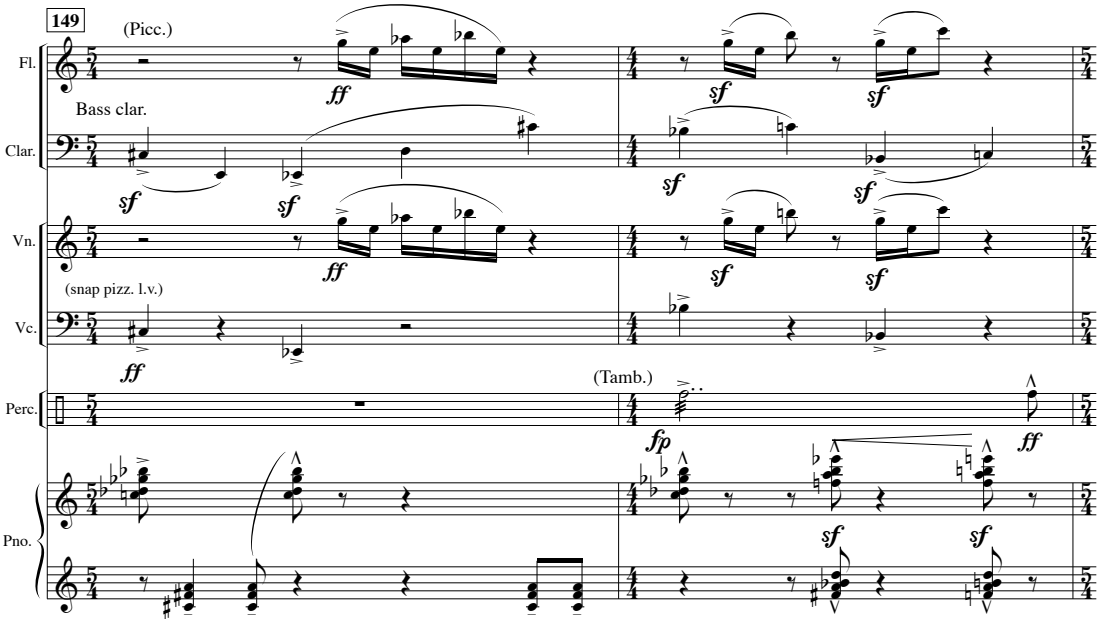

139
Fl.
Clar.
Vn.
Vc.
Sizz. cymb.
Toms
Chin. cymb.
Perc.
l.v.
l.v.
Pno.

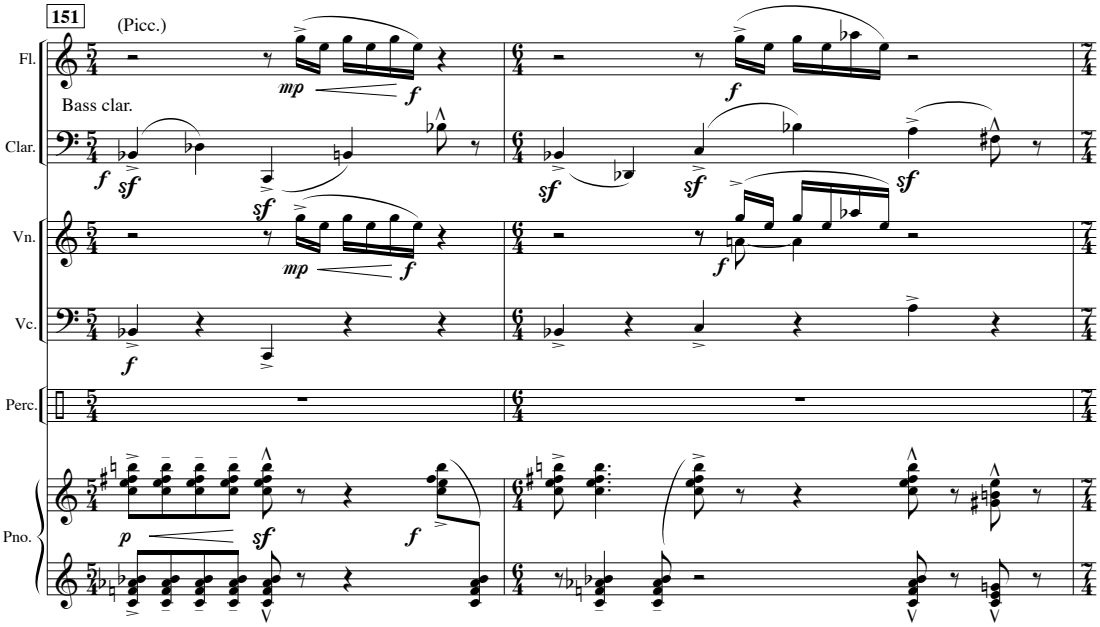

141
Fl.
Clar.
Vn.
Vc.
Perc.
(Toms)
sf
3
Pno.

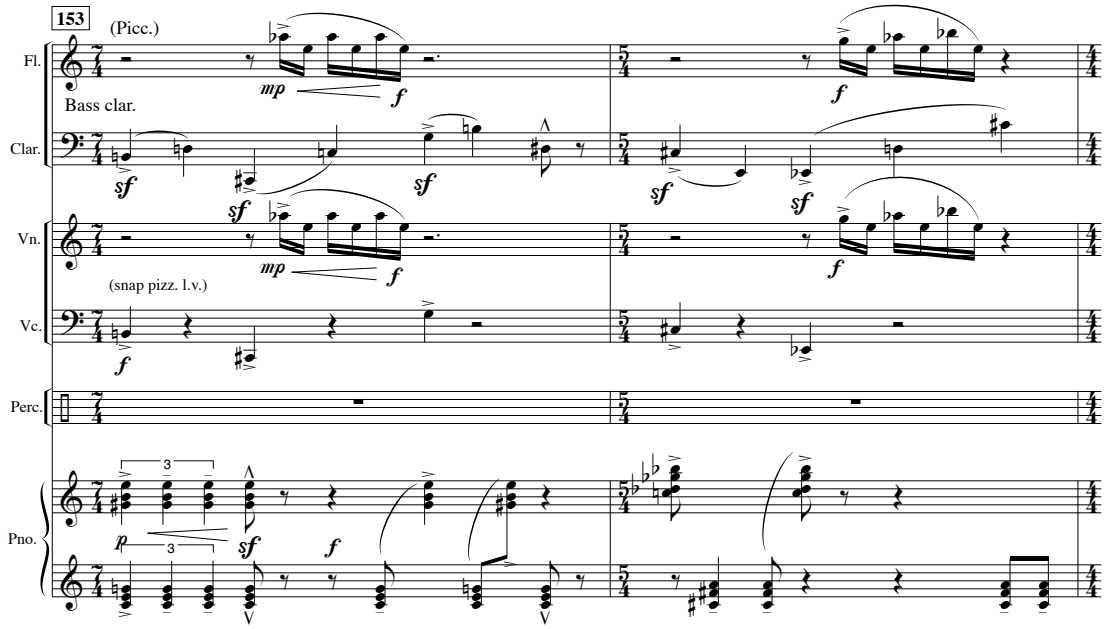

143
Fl.
Clar.
Vn.
Vc.
Perc.
sf
sempre l.v.
Pno.

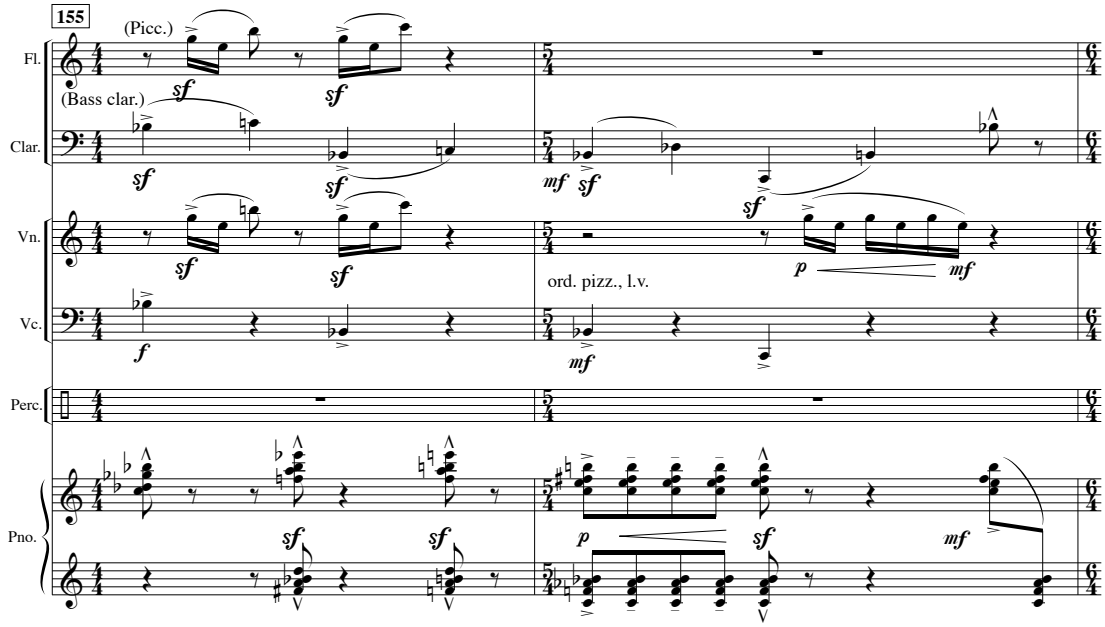

145
rall. poco a poco a
♩ = 132
𝅗𝅥 = 66 Heavy, relaxed
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
Picc.
Bass clar.
snap pizz. l.v.
l.v.
p
cresc. poco a poco
ff
mf
sf
mp
legato, as before

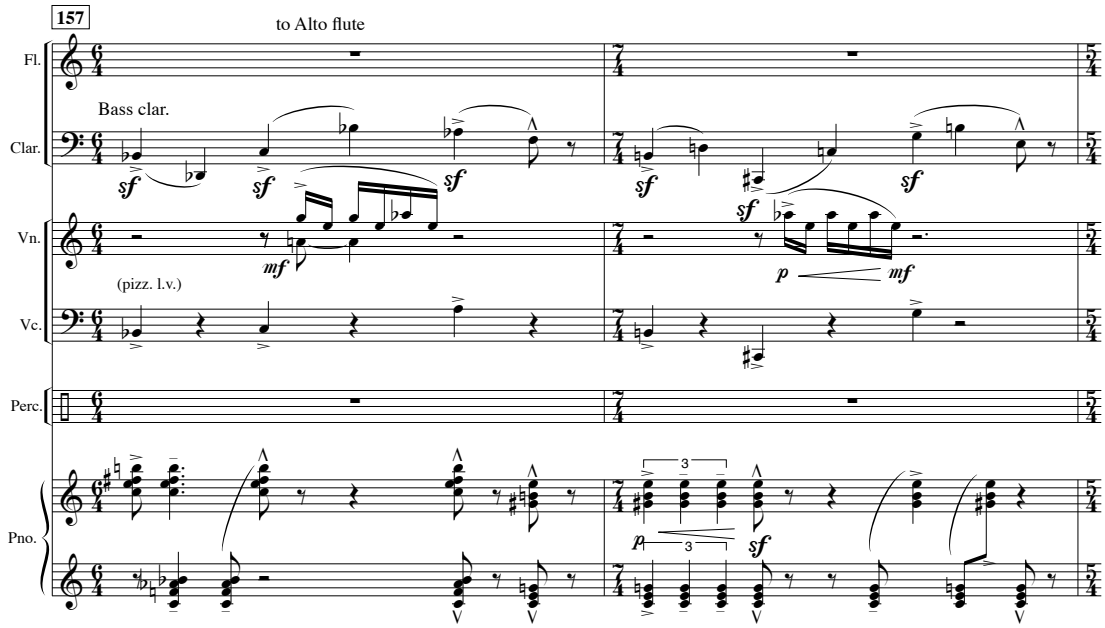

147
(Picc.)
(Bass clar.)
Tambourine
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
ff
mf
sf
fp
mp
3

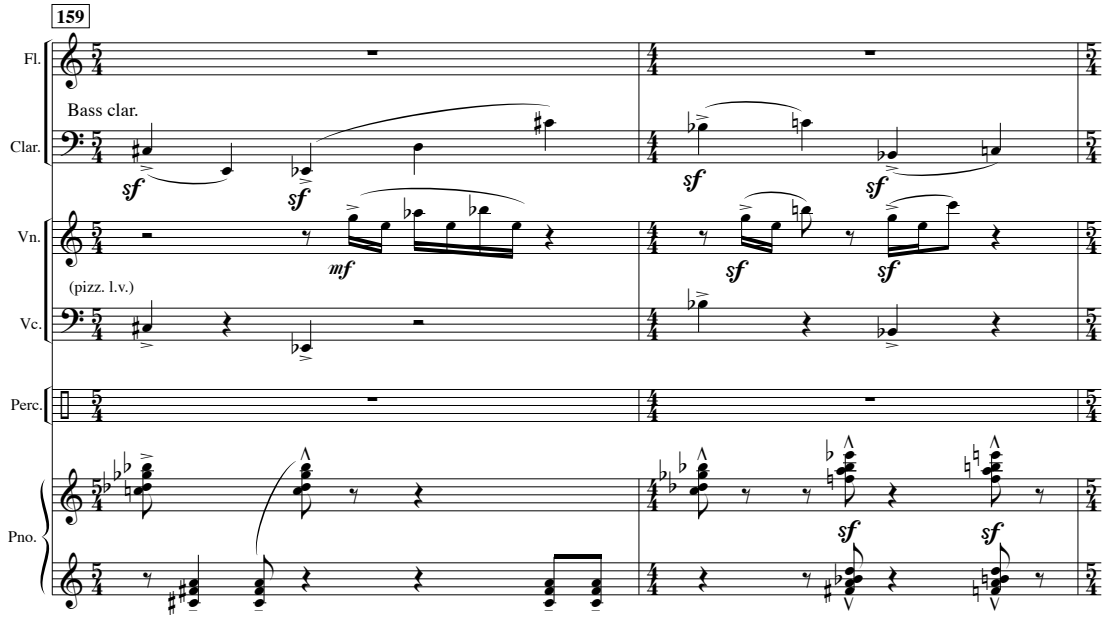

149
(Picc.)
Fl.
Bass clar.
Clar.
Vn.
(snap pizz. l.v.)
Vc.
(Tamb.)
Perc.
Pno.

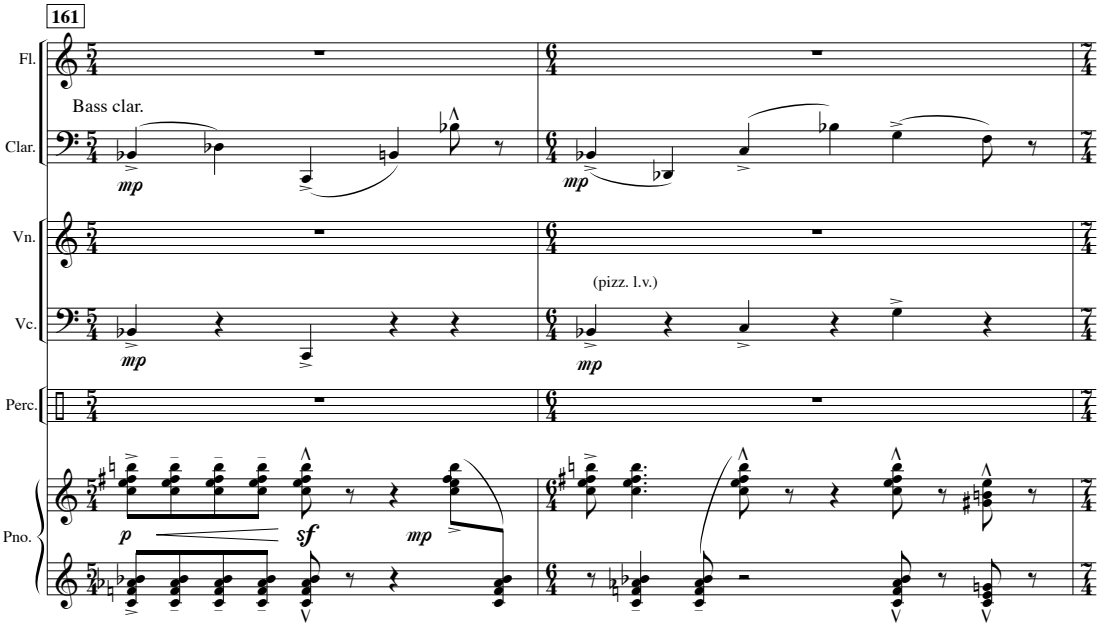

151
(Picc.)
Fl.
Bass clar.
Clar.
Vn.
Vc.
Perc.
Pno.

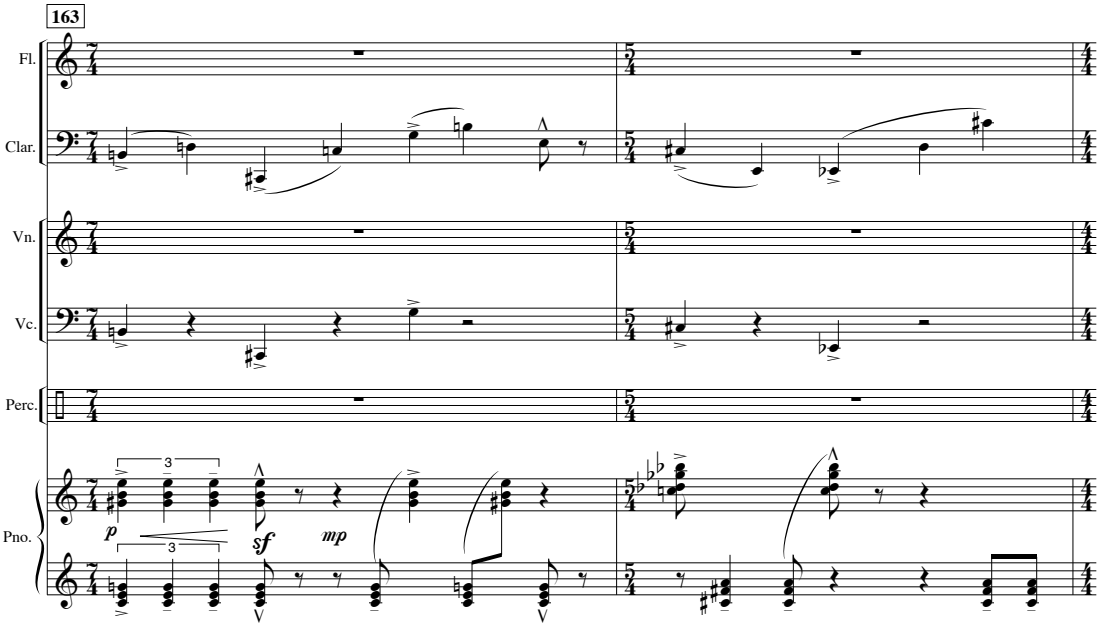

153
(Picc.)
Fl.
Bass clar.
Clar.
Vn.
(snap pizz. l.v.)
Vc.
Perc.
Pno.

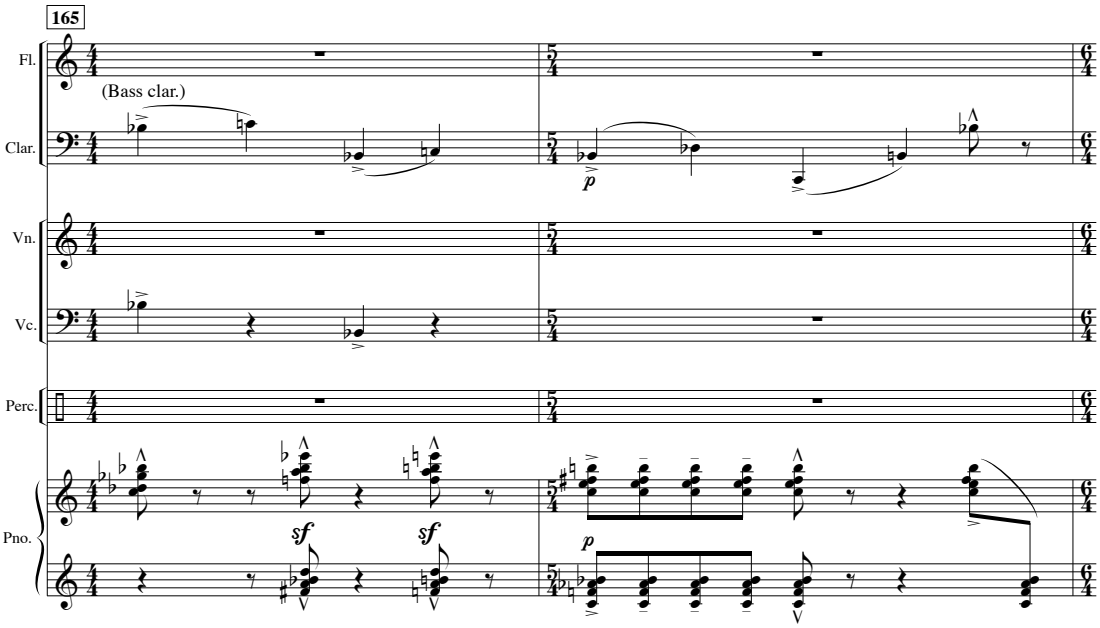

155
(Picc.)
Fl.
(Bass clar.)
Clar.
Vn.
ord. pizz., l.v.
Vc.
Perc.
Pno.

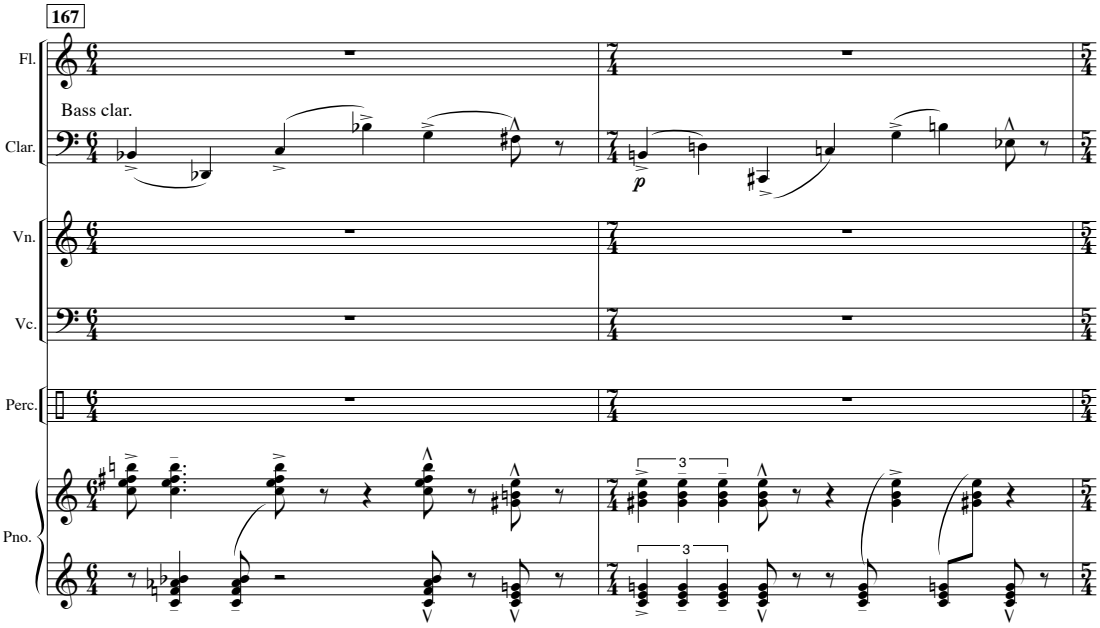

157
to Alto flute
Fl.
Bass clar.
Clar.
Vn.
(pizz. l.v.)
Vc.
Perc.
Pno.

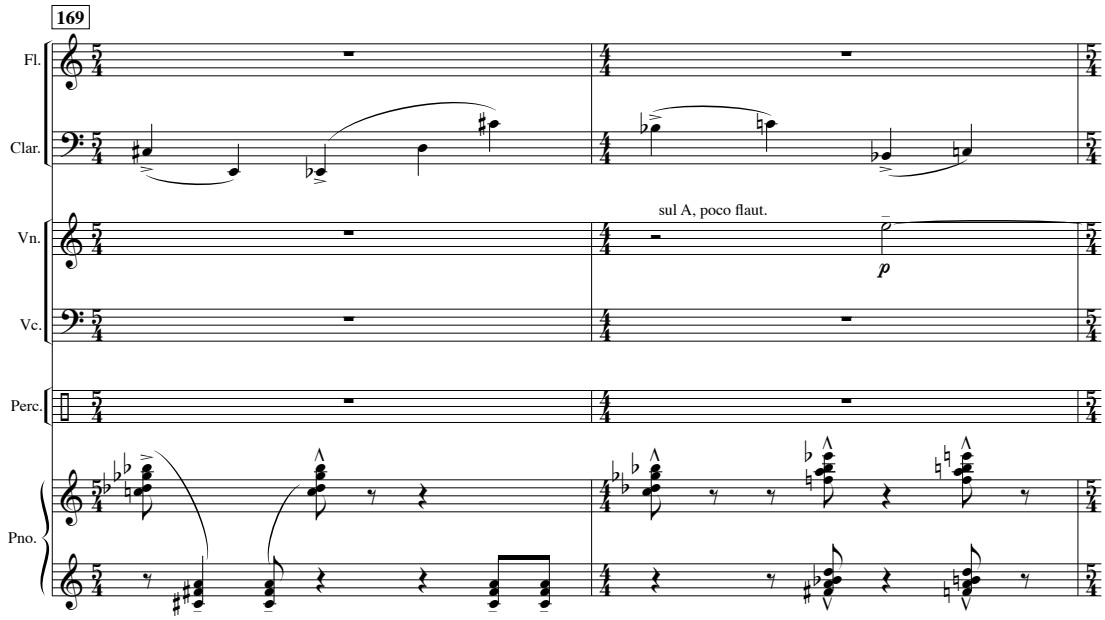

159
Fl.
Bass clar.
Clar.
Vn.
(pizz. l.v.)
Vc.
Perc.
Pno.

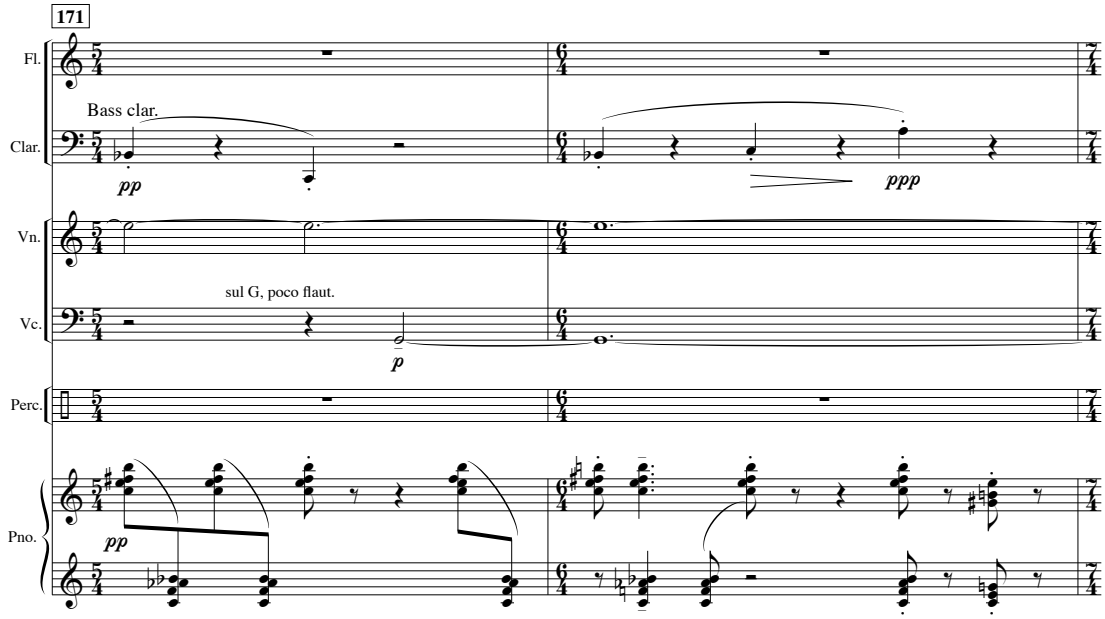

161
Fl.
Clar.
Bass clar.
Vn.
Vc.
(pizz. l.v.)
Perc.
Pno.
mp
p
sf
mp

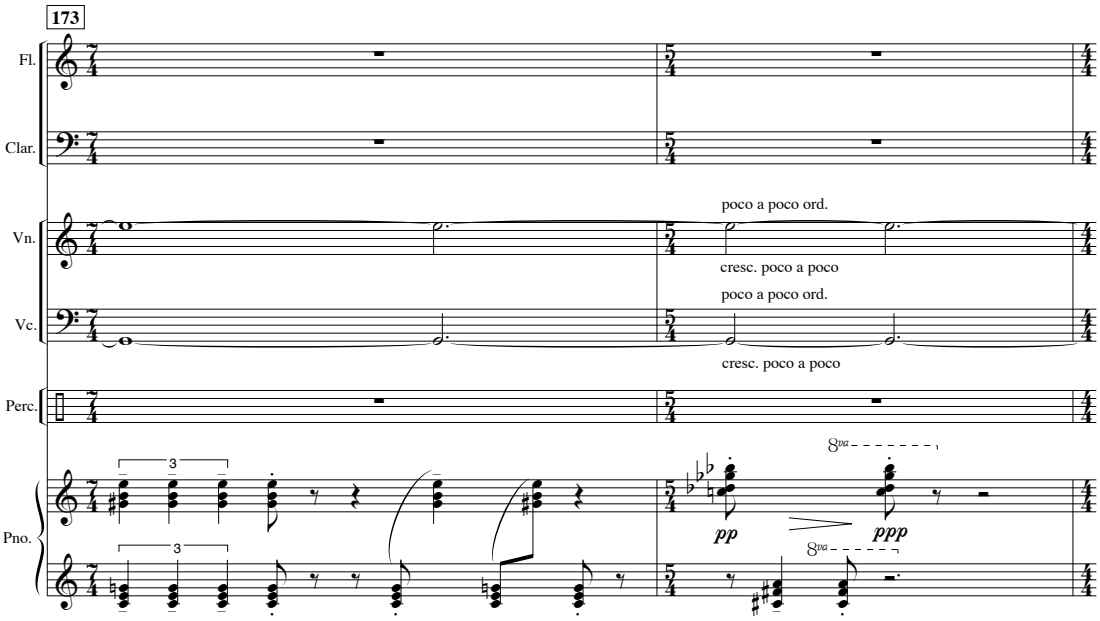

163
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
3
p
sf
mp

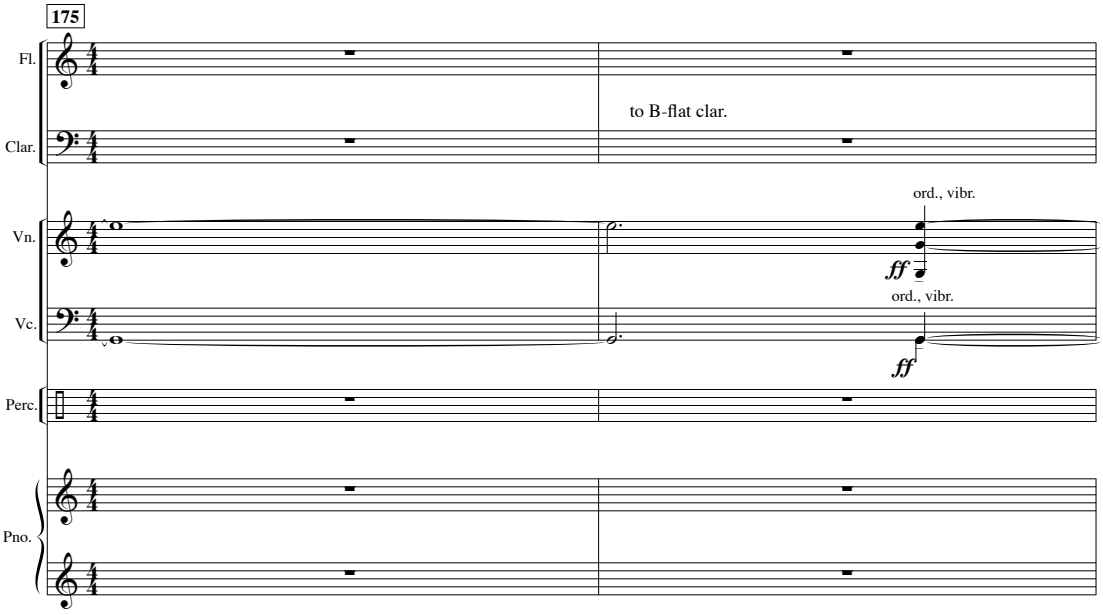

165
Fl.
(Bass clar.)
Clar.
Vn.
Vc.
Perc.
Pno.
sf
sf
p

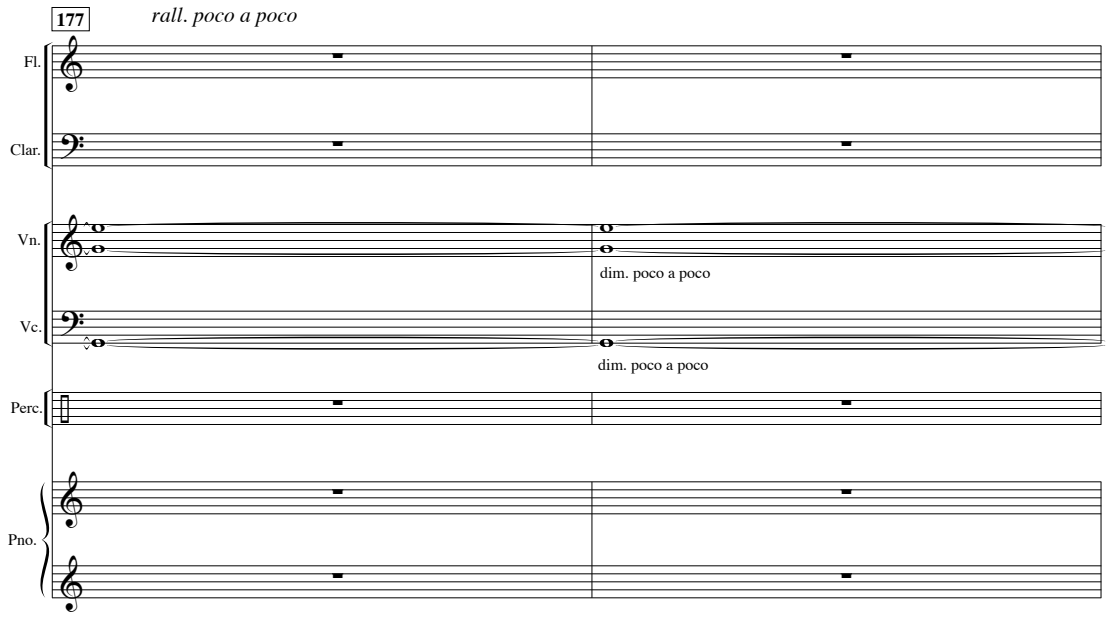

167
Fl.
Bass clar.
Clar.
Vn.
Vc.
Perc.
Pno.
p
3
3

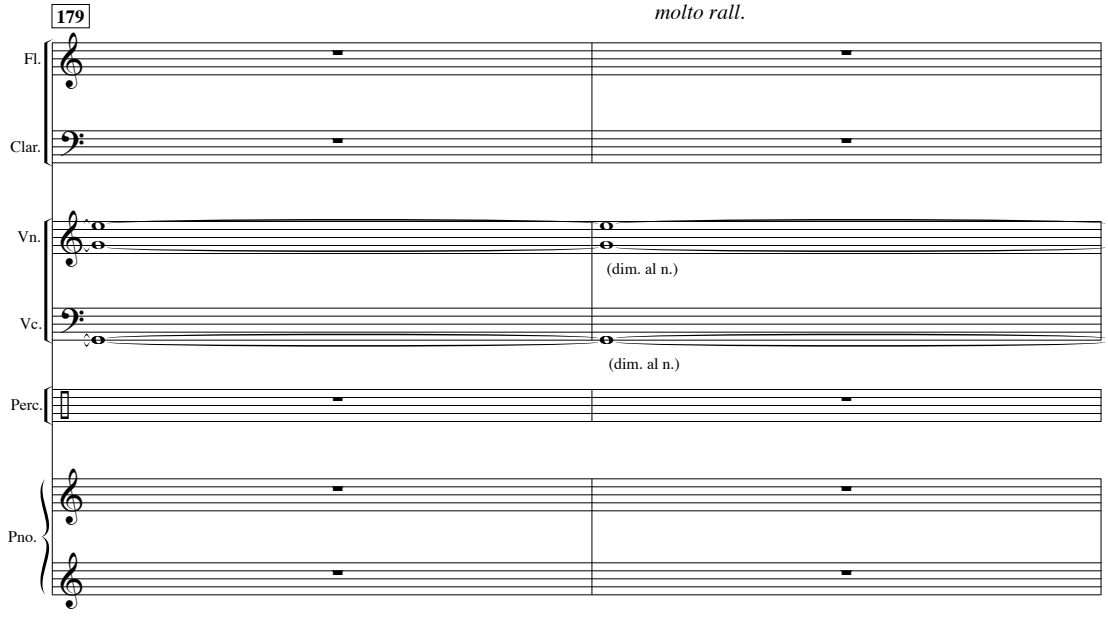

169
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
sul A, poco flaut.
p

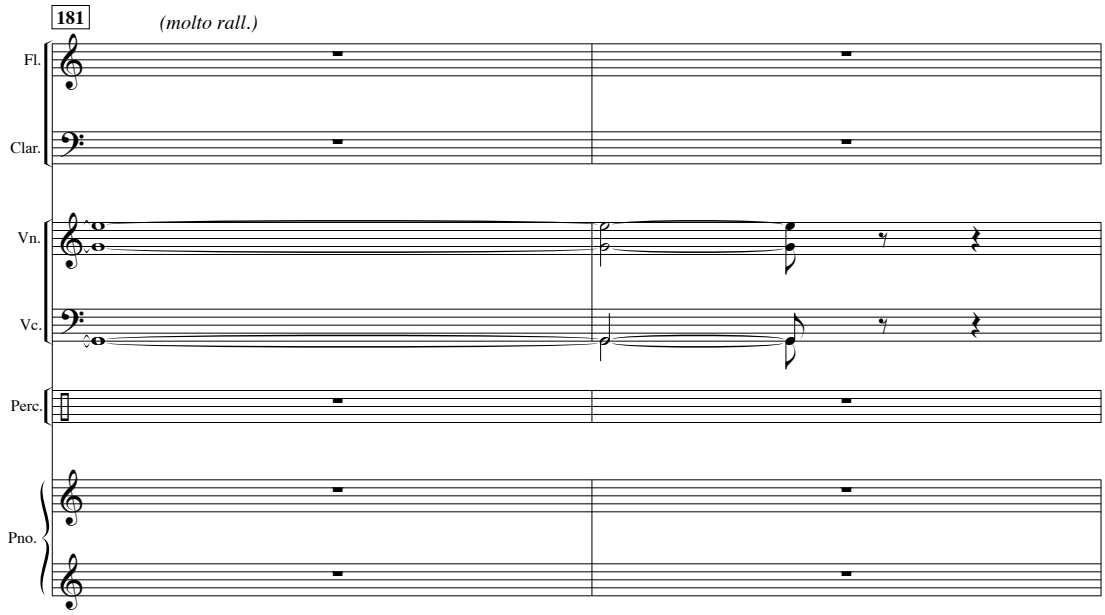

171
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
Bass clar.
pp
ppp
sul G, poco flaut.
p
pp

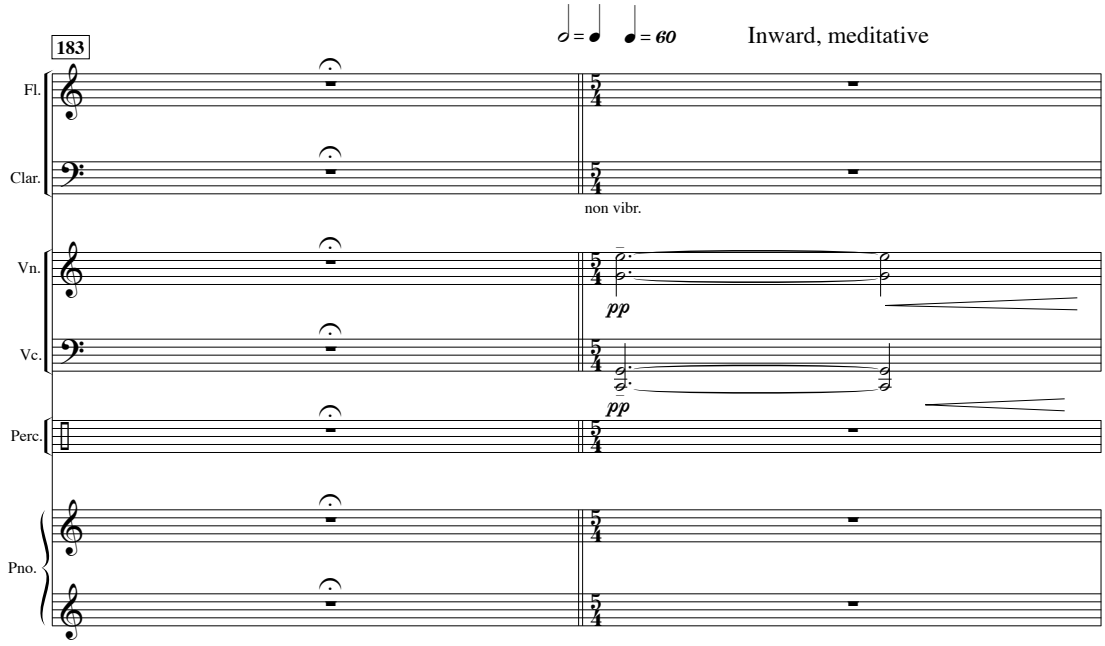

173
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
poco a poco ord.
cresc. poco a poco
poco a poco ord.
cresc. poco a poco
3
3
8va
pp
8va
ppp

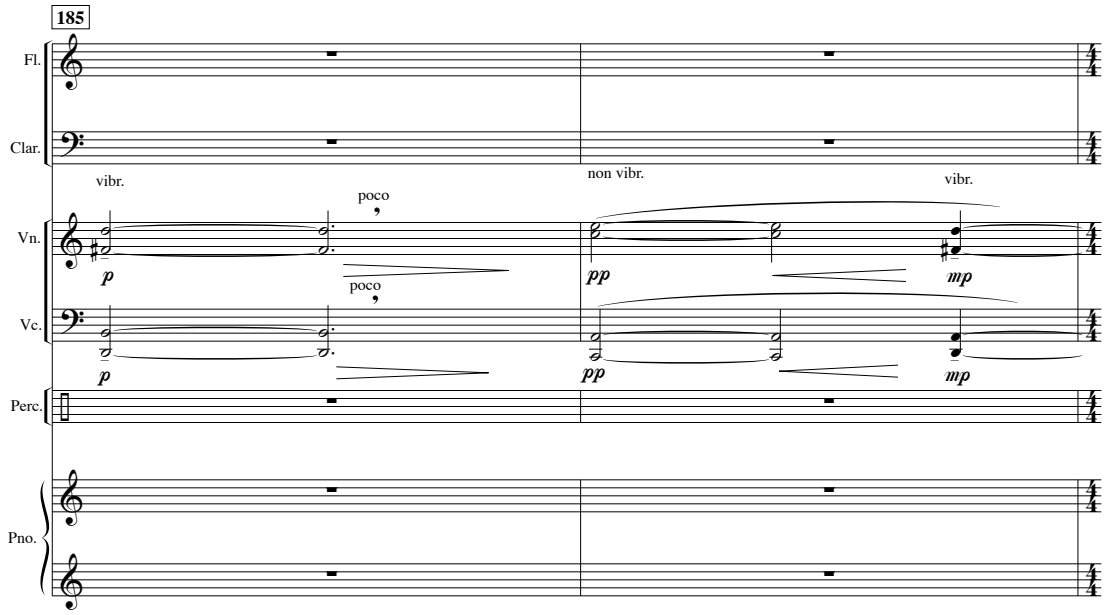

175
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
to B-flat clar.
ord., vibr.
ff
ord., vibr.
ff

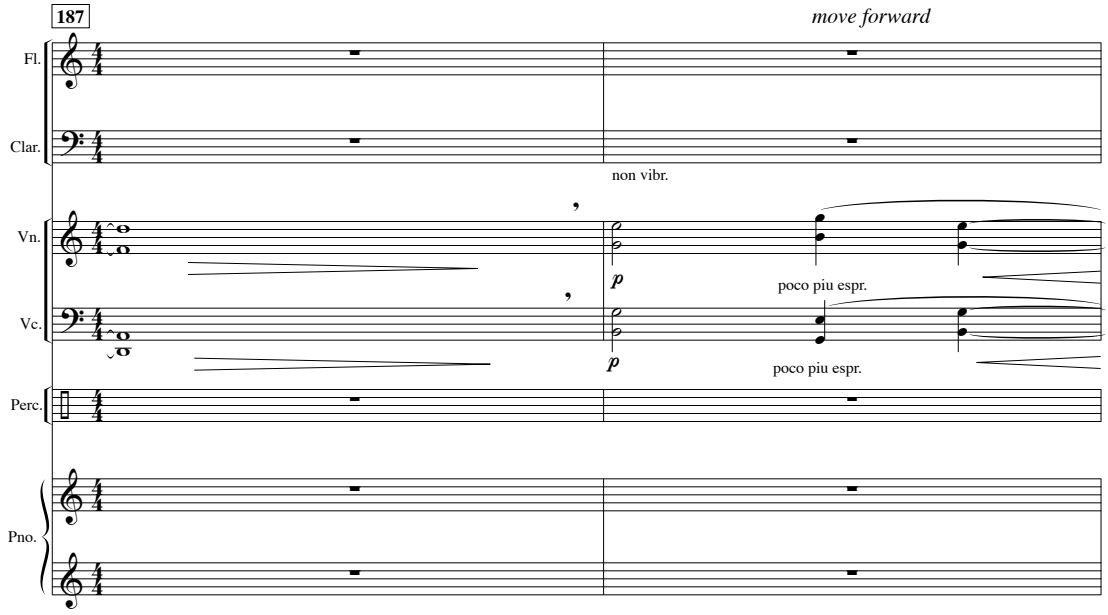

177
rall. poco a poco
Fl.
Clar.
Vn.
dim. poco a poco
Vc.
dim. poco a poco
Perc.
Pno.

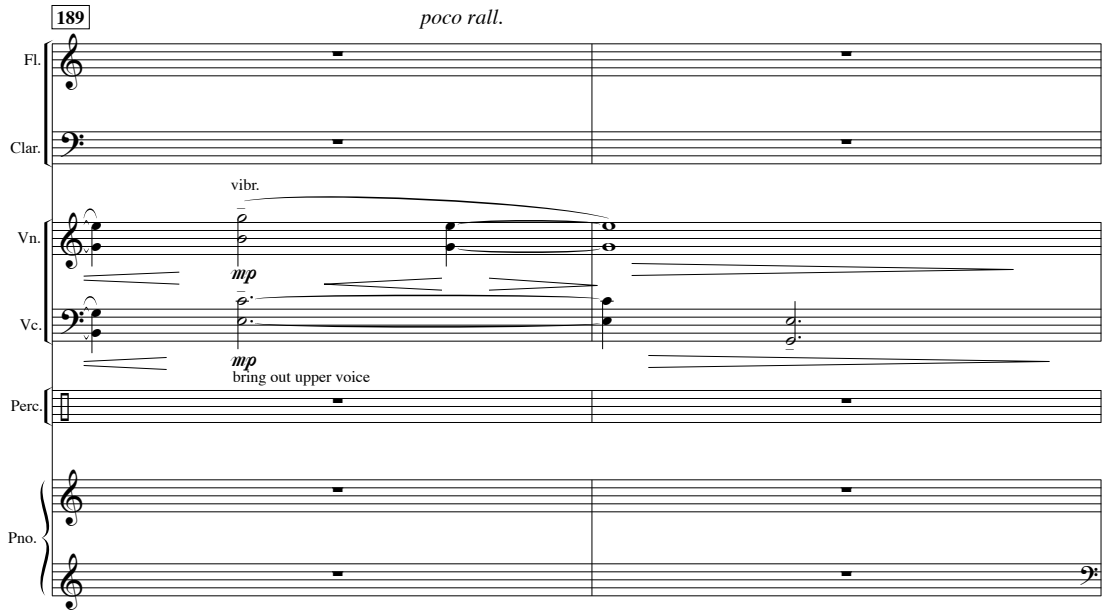

179
molto rall.
Fl.
Clar.
Vn.
(dim. al n.)
Vc.
(dim. al n.)
Perc.
Pno.

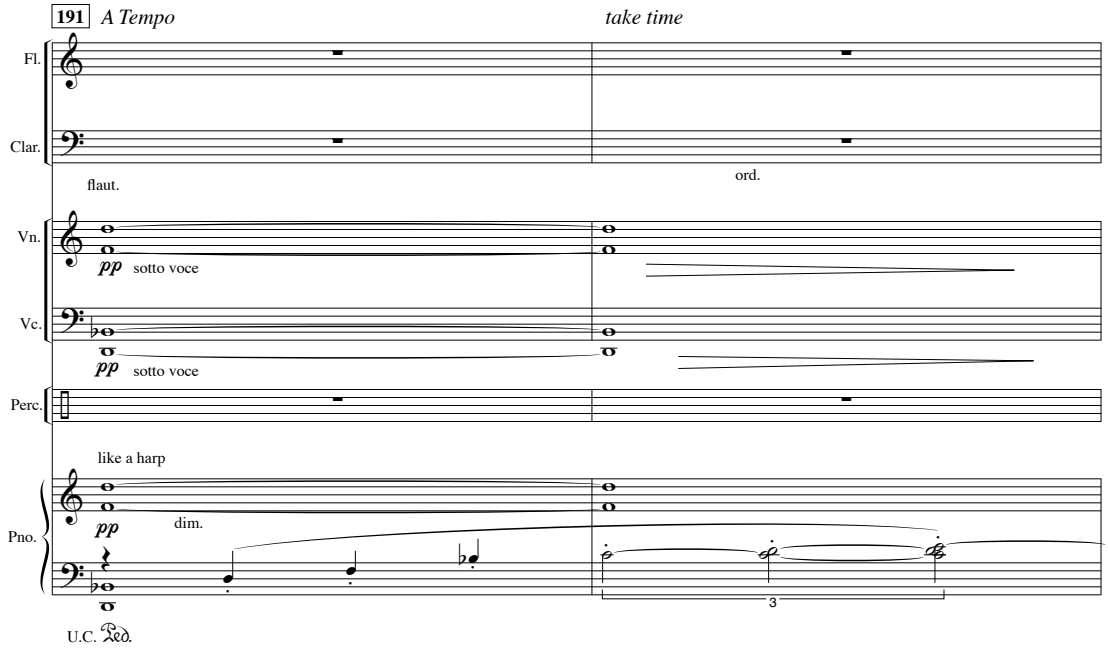

181
(molto rall.)
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.

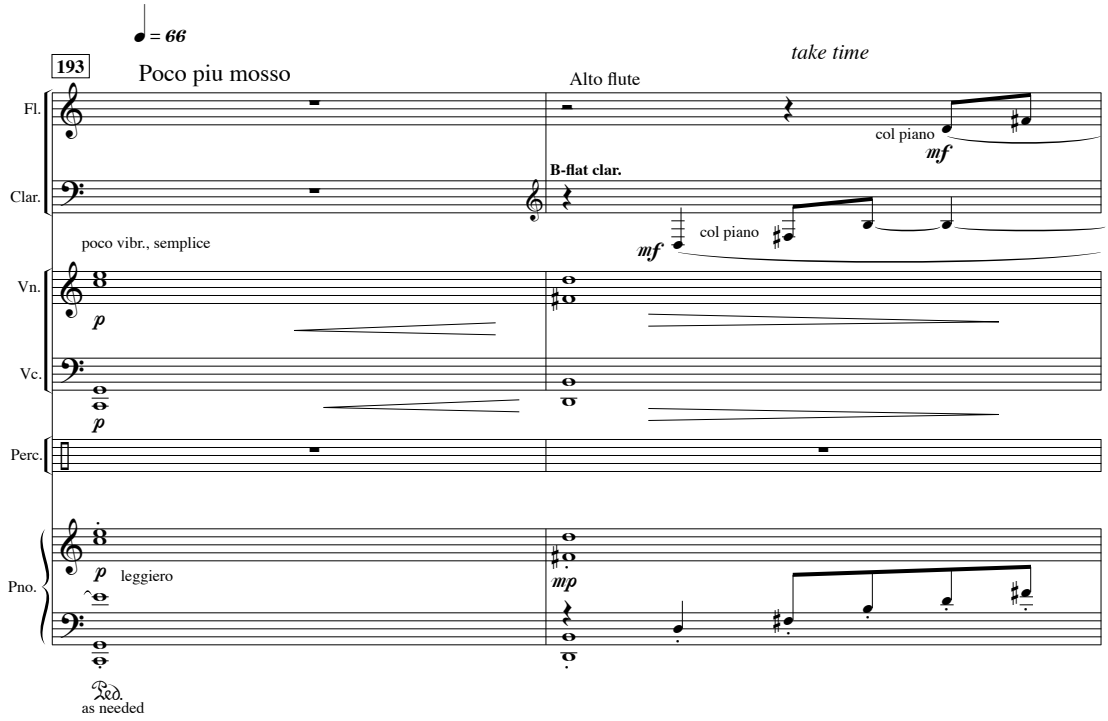

183
= = 60
Inward, meditative
Fl.
Clar.
non vibr.
Vn.
pp
Vc.
pp
Perc.
Pno.

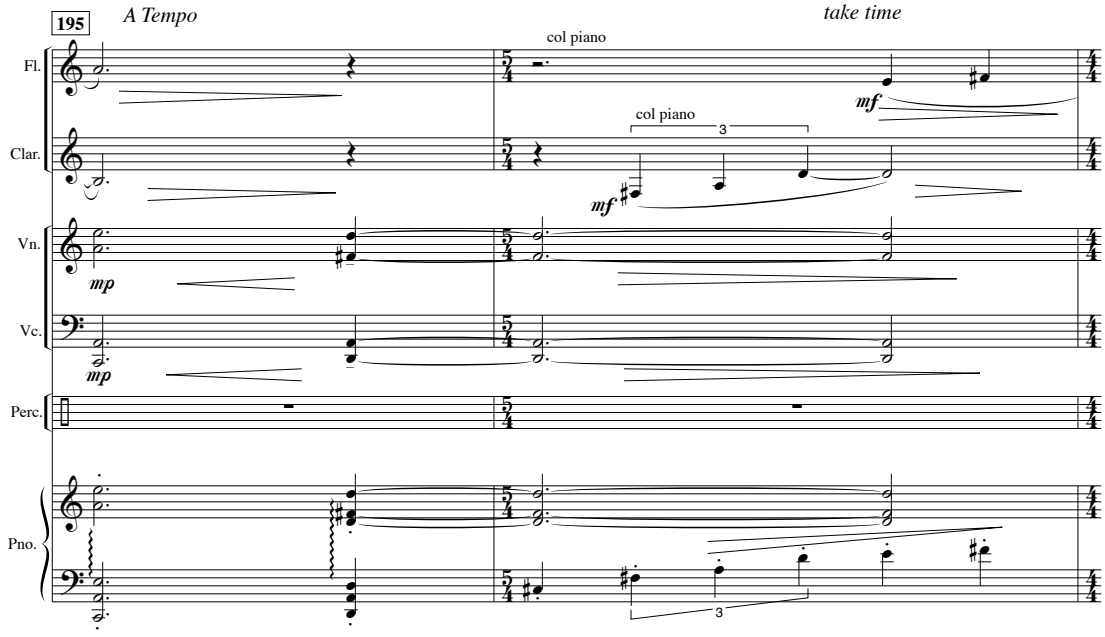

185
Fl.
Clar.
vibr.
non vibr.
vibr.
poco
Vn.
p
poco
pp
mp
Vc.
p
pp
mp
Perc.
Pno.

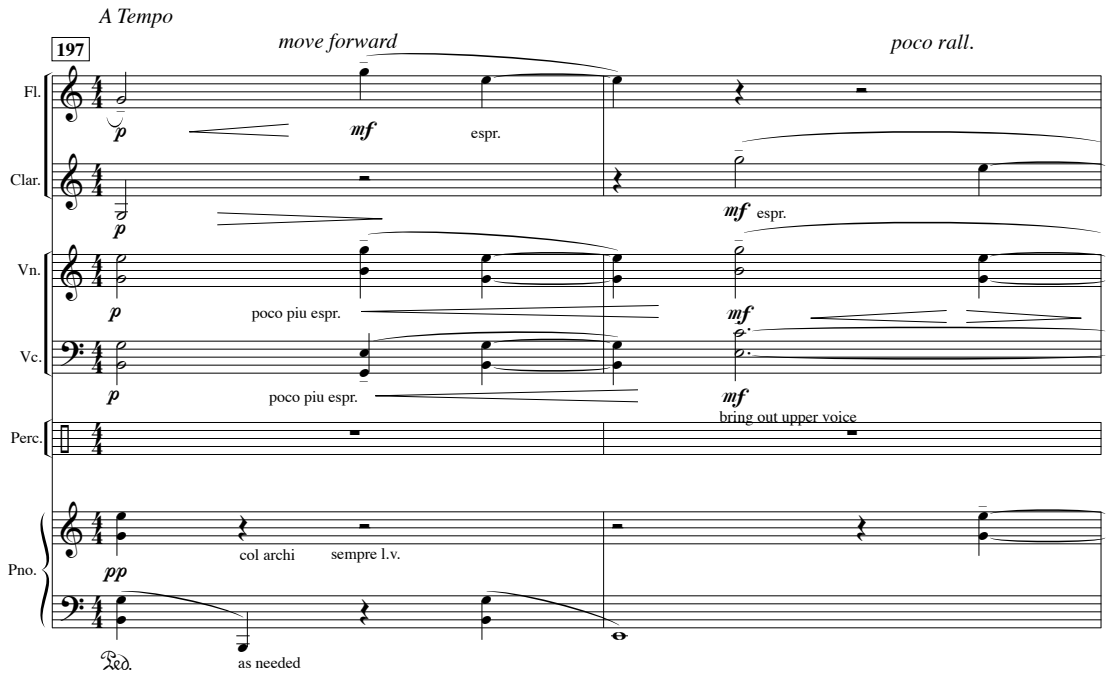

187
move forward
Fl.
Clar.
non vibr.
Vn.
p
poco piu espr.
Vc.
p
poco piu espr.
Perc.
Pno.

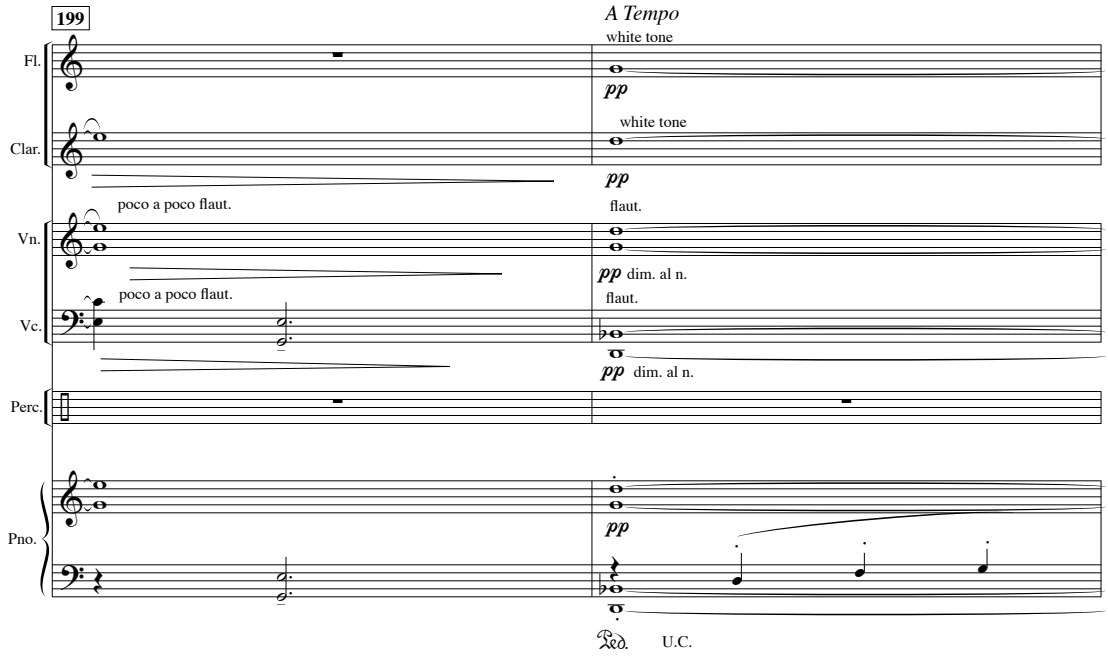

189
poco rall.
Fl.
Clar.
vibr.
Vn.
mp
Vc.
mp
bring out upper voice
Perc.
Pno.

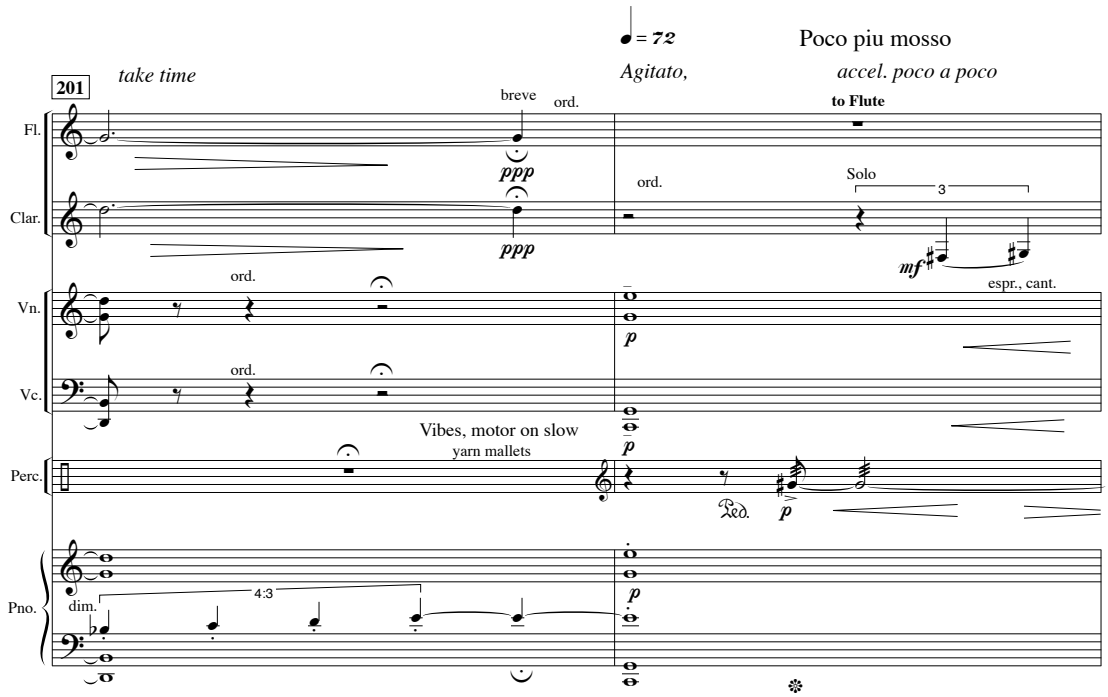

191
A Tempo
take time
Fl.
Clar.
flaut.
ord.
Vn.
pp
sotto voce
Vc.
pp
sotto voce
Perc.
like a harp
Pno.
pp
dim.
3
U.C.
Ped.

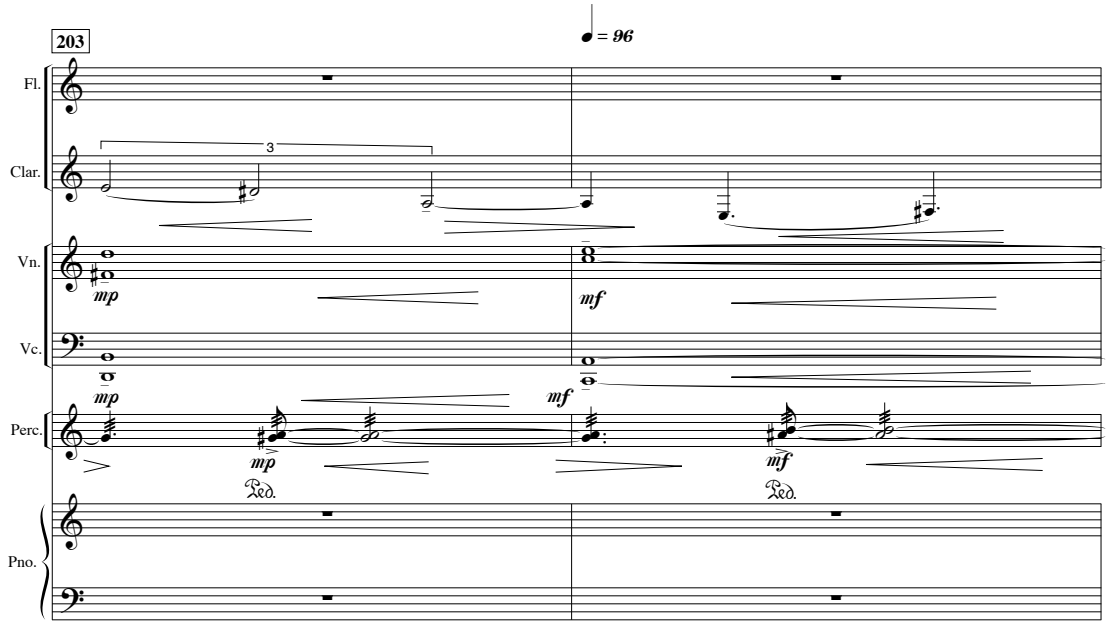

193
♩ = 66
Poco piu mosso
take time
Alto flute
Fl.
Clar.
B-flat clar.
col piano
mf
col piano
mf
poco vibr., semplice
Vn.
p
Vc.
p
Perc.
Pno.
p
leggiero
mp
Ped.
as needed

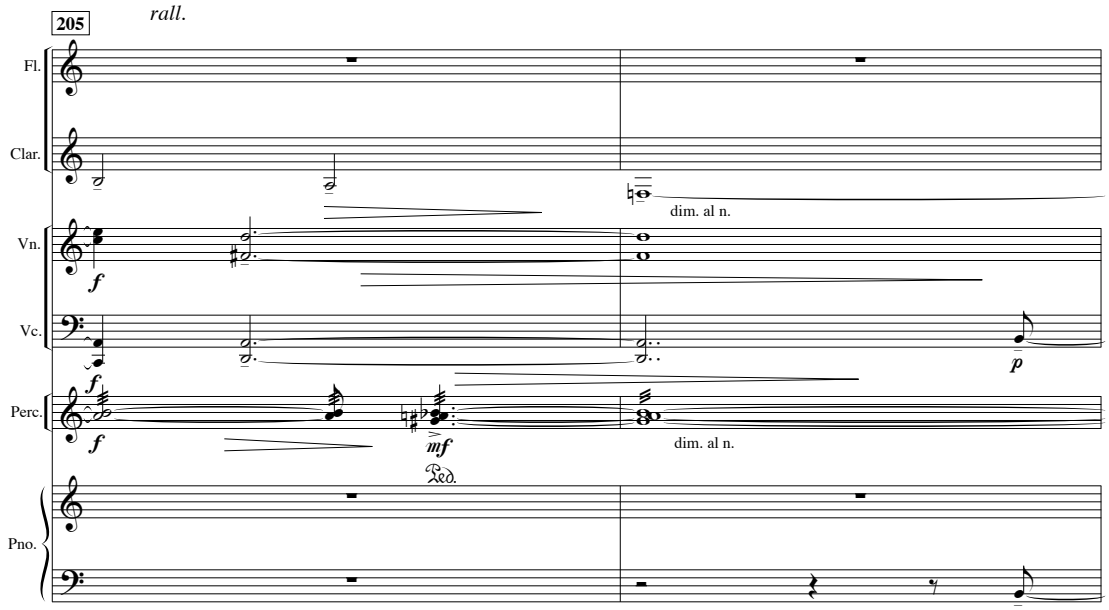

195
A Tempo
take time
col piano
Fl.
mf
col piano
3
Clar.
mf
Vn.
mp
Vc.
mp
Perc.
Pno.
3

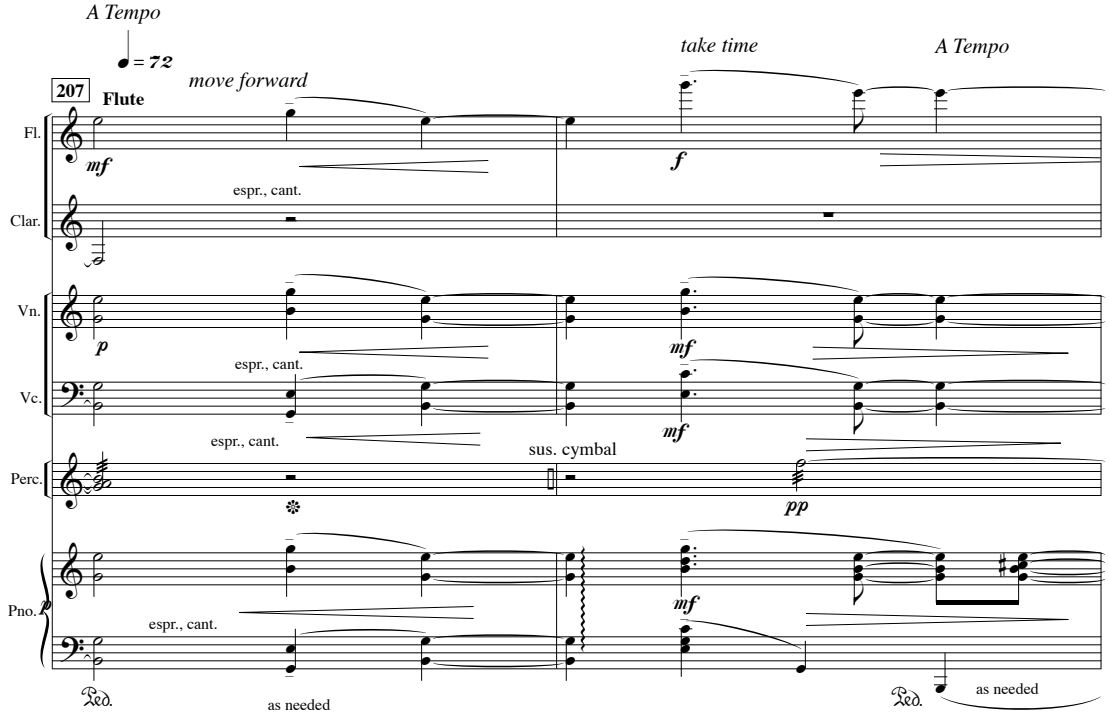

A Tempo
197
move forward
poco rall.
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
p
mf
espr.
poco piu espr.
bring out upper voice
col archi
sempre l.v.
pp
as needed

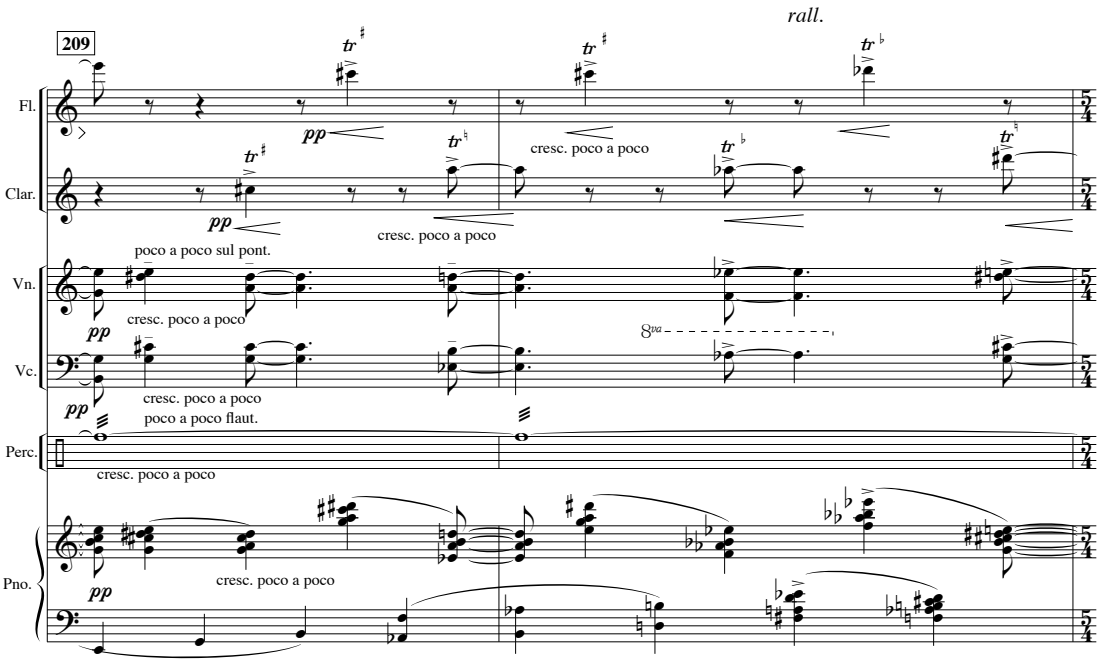

199
A Tempo
white tone
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
pp
poco a poco flaut.
flaut.
dim. al n.
U.C.

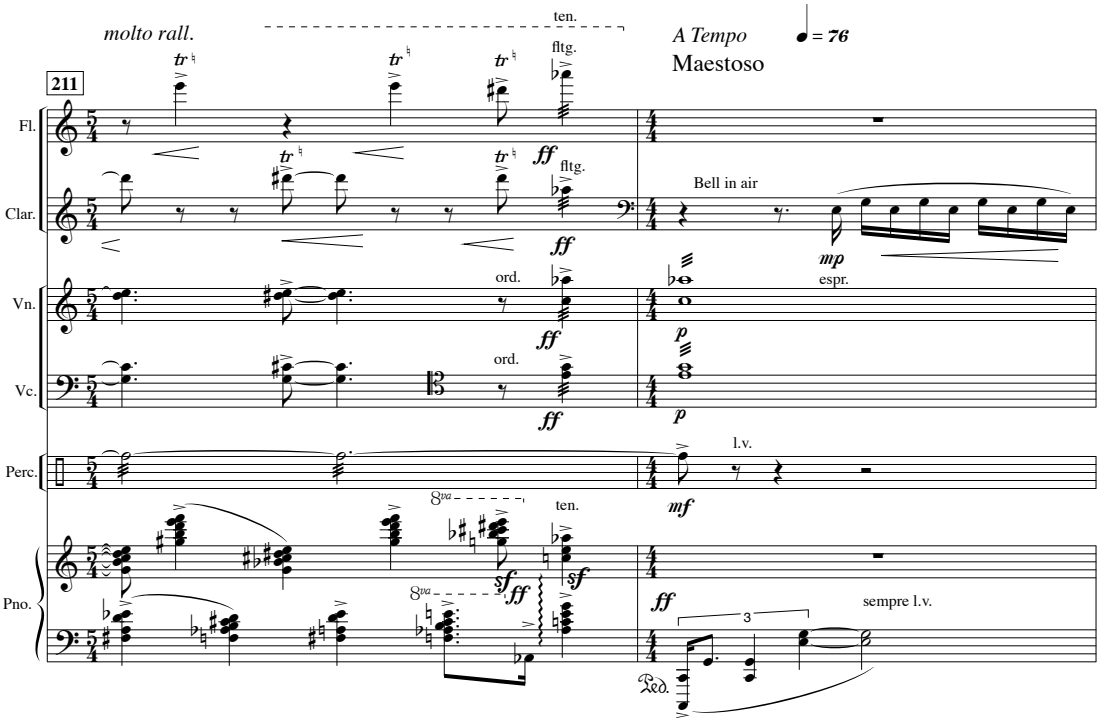

201
take time
♩= 72
Agitato,
Poco piu mosso
accel. poco a poco
breve
ord.
to Flute
Fl.
Clar.
ppp
ppp
ord.
Solo
3
mf
espr., cant.
Vn.
Vc.
ord.
ord.
p
Vibes, motor on slow
yarn mallets
Perc.
p
Ped.
Pno.
dim.
4:3
p

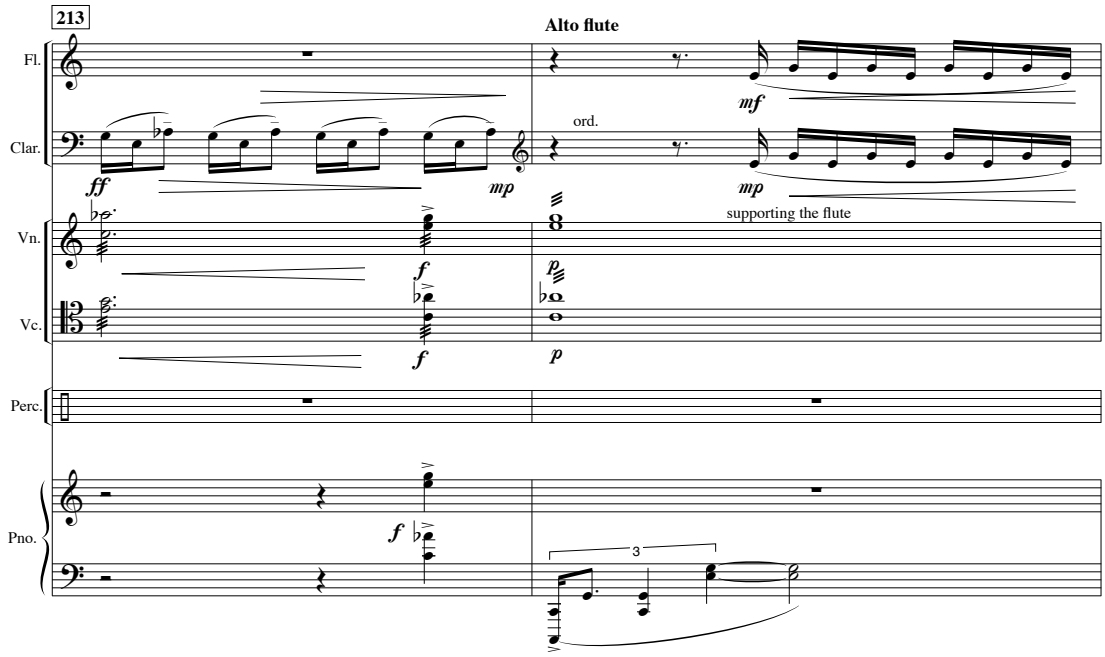

203
♩= 96
Fl.
Clar.
3
Vn.
mp
mf
Vc.
mp
mf
Perc.
mp
Ped.
mf
Ped.
Pno.

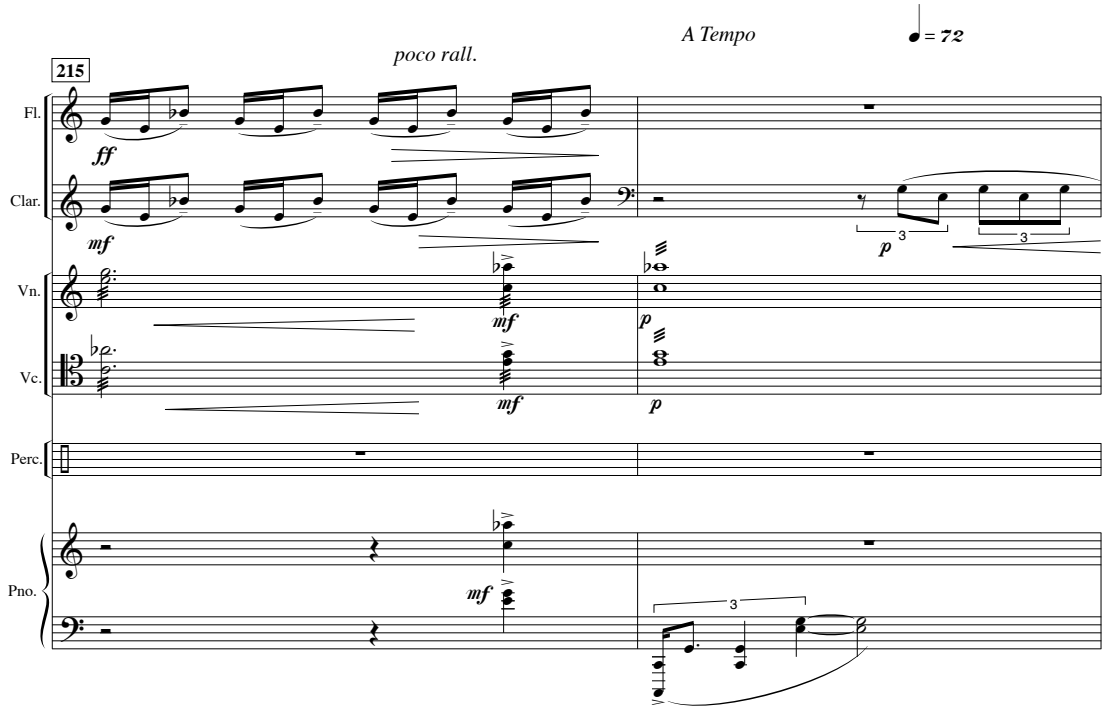

205
rall.
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
dim. al n.
dim. al n.
f
mf
p
Red.

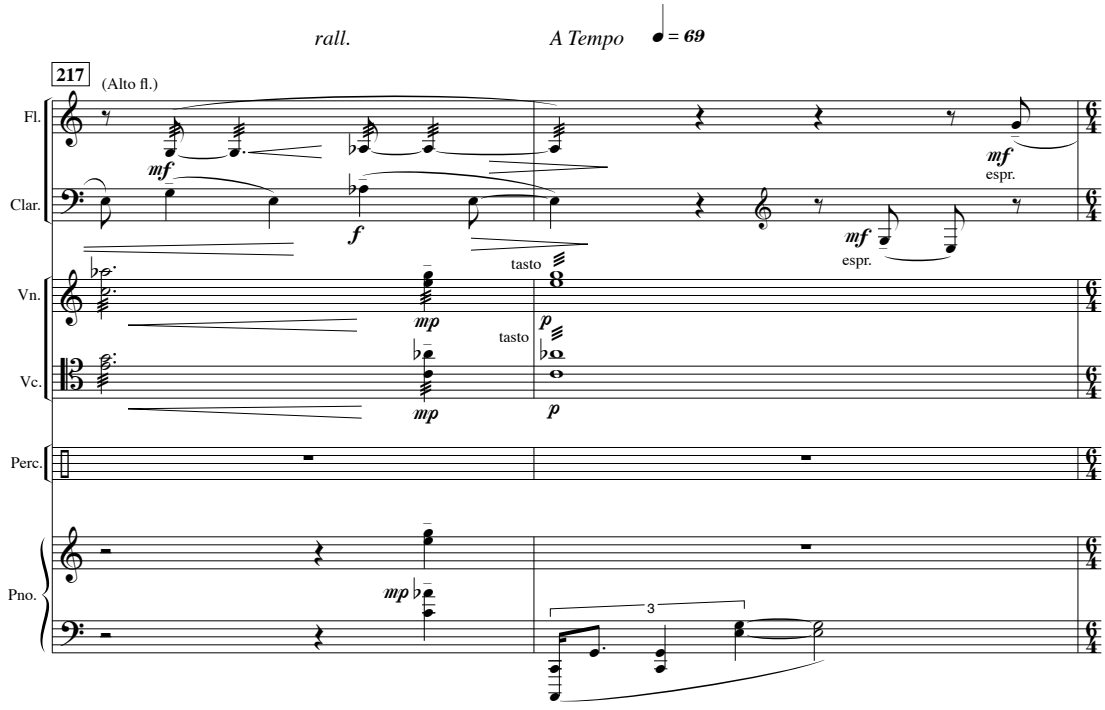

A Tempo
♩ = 72
207
Flute
move forward
take time
A Tempo
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
mf
f
p
mf
pp
espr., cant.
sus. cymbal
Red.
as needed
as needed

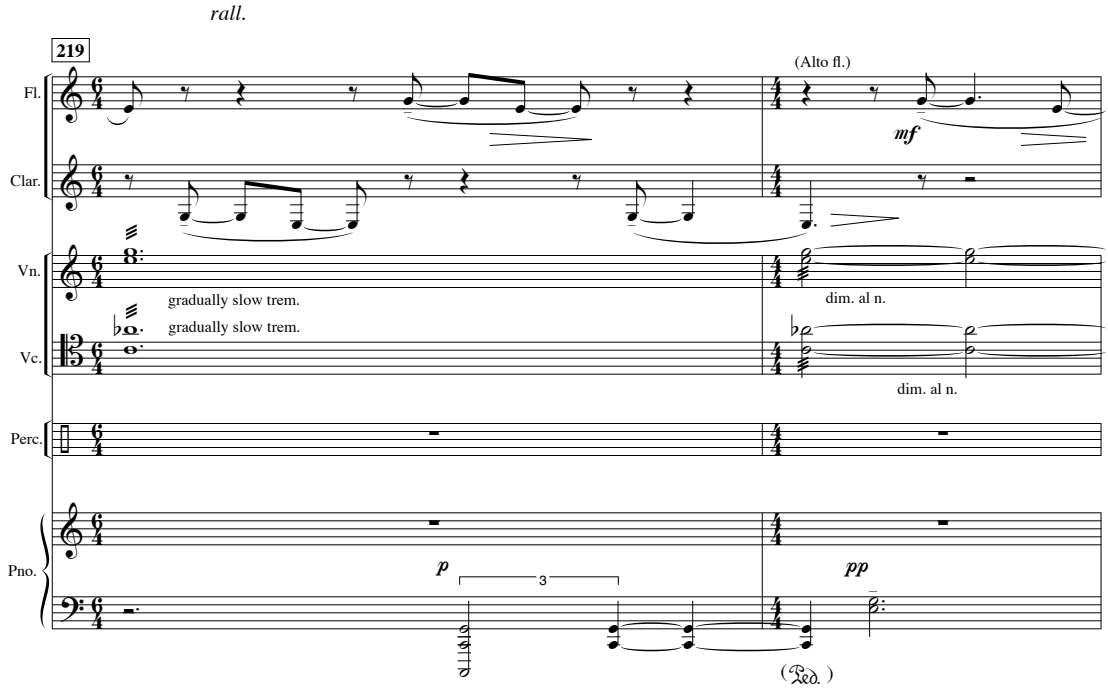

rall.
209
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
pp
cresc. poco a poco
poco a poco sul pont.
poco a poco flaut.
8va

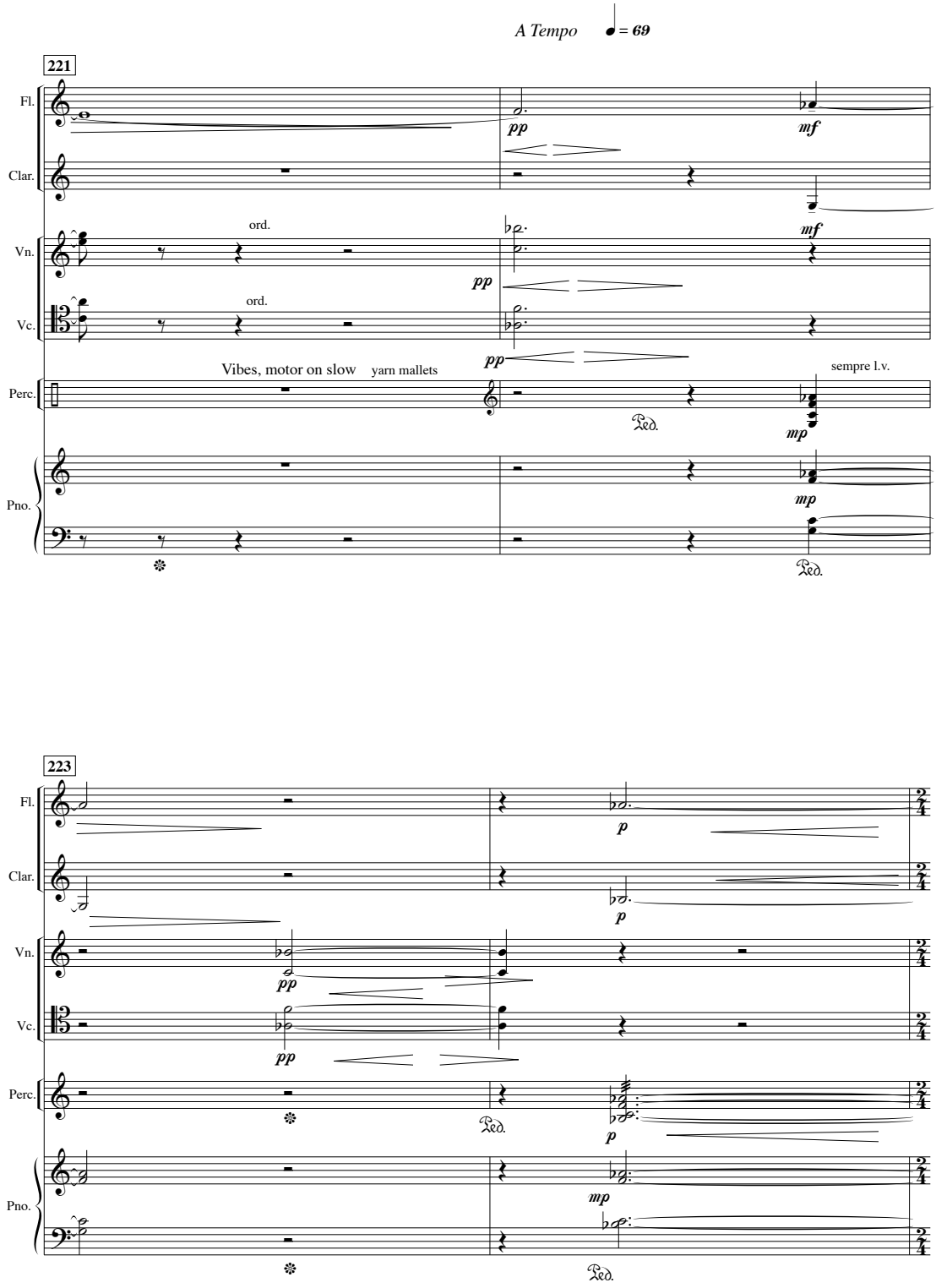

molto rall.
ten.
fltg.
A Tempo
Maestoso
♩ = 76
211
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
ff
mp
p
mf
sf
ord.
Bell in air
espr.
l.v.
sempre l.v.
8va
3
Ped.

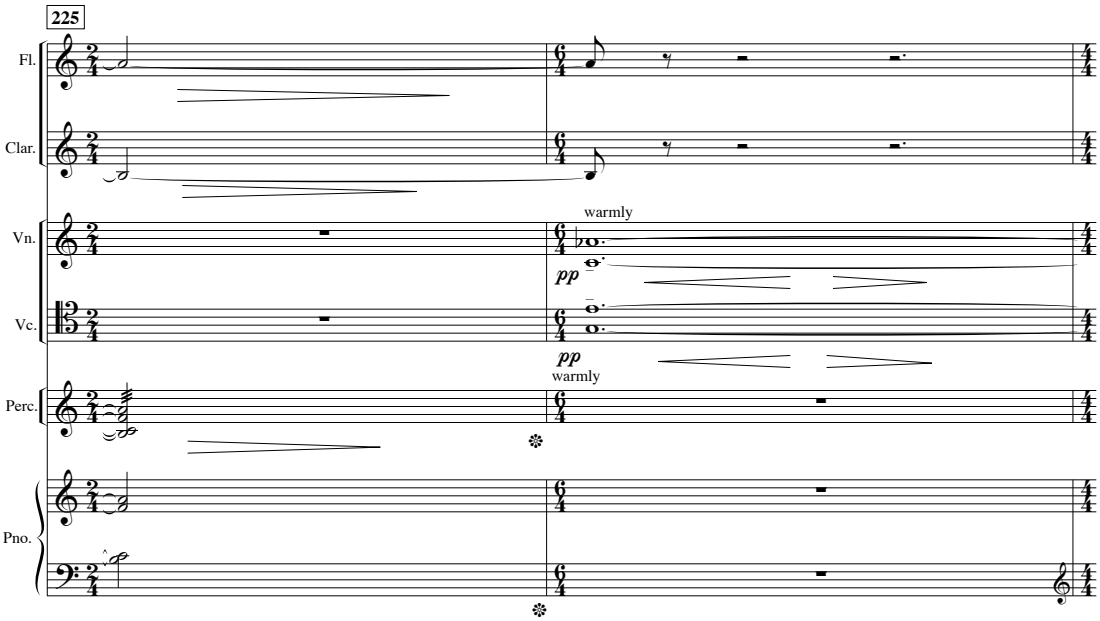

213
Alto flute
Fl.
Clar.
ord.
supporting the flute
Vn.
Vc.
Perc.
Pno.
ff
mp
mf
f
p
3

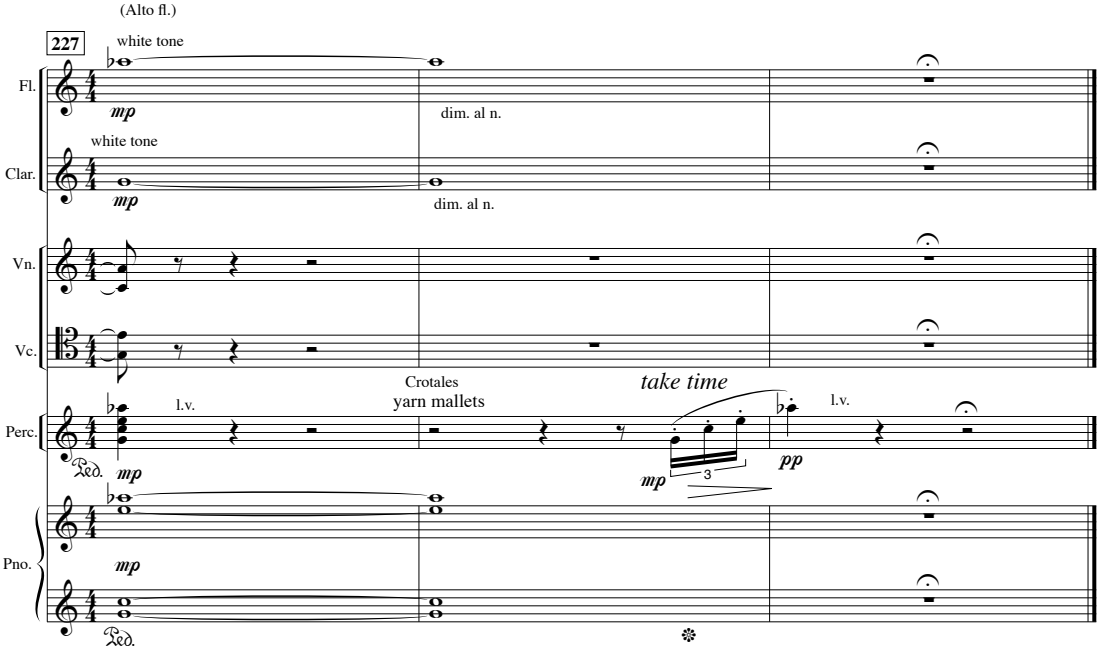

poco rall.
A Tempo
♩= 72
215
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
ff
mf
p
3


rall.
A Tempo
♩ = 69
217
(Alto fl.)
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
mf
f
mp
p
tasto
mf
espr.
3


rall.
219
(Alto fl.)
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
mf
gradually slow trem.
gradually slow trem.
dim. al n.
dim. al n.
p
pp
3
(Ped.)


A Tempo
♩ = 69
221
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
ord.
ord.
pp
mf
pp
mf
pp
Vibes, motor on slow
yarn mallets
sempre l.v.
mp
mp
Ped.
Ped.
223
p
p
pp
pp
p
mp
Ped.
Ped.


225
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
warmly
pp
pp
warmly


(Alto fl.)
227
white tone
mp
dim. al n.
white tone
mp
dim. al n.
Fl.
Clar.
Vn.
Vc.
Perc.
Pno.
l.v.
Crotales
yarn mallets
take time
l.v.
mp
3
pp
Ped.
mp
mp
Ped.