Conflicting Lines, Cohesive Structures:
Multiple-Directed Linearity in Witold Lutoslawski's Third Symphony
and
Proximate Spaces for Piano and Chamber Orchestra

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***Proximate Spaces* for Piano and Chamber Orchestra**

James Joseph Ogburn, Ph.D.

University of Pittsburgh, 2009

Witold Lutoslawski is widely recognized as having contributed numerous innovations to the twentieth-century canon of "Western" avant-garde music. His contributions include new approaches to notation and aleatoric technique (especially in *ad libitum* sections), formal structure ("chain technique" and unusual four movement forms), and pitch organization (interval pairing and non-serial twelve-tone approaches). While emblematic of many of these qualities, Lutoslawski's Third Symphony also demonstrates an overlooked aspect of his late compositions: multiple-directed linear processes. In my essay, I focus on linear processes within several levels of the musical structure (pitch, rhythm, orchestration, register, texture, and form), applying contour theory, set theory, and statistical analysis where appropriate.

In Lutoslawski's Third Symphony many levels of the structure arrive at their goal in distinct places, are simultaneously oriented in different directions, or otherwise subvert each other. In addition, singularly directed linear passages interrupt each other in horizontal succession. These types of multiple-directed linearity are the objects of my

study. Although multiple-directed linearity is not exclusive to Lutoslawski's music, it is a facet that has been overlooked or mentioned only in passing within Lutoslawski studies.

The composition component of my dissertation is *Proximate Spaces* for piano and chamber orchestra. The formal continuity of *Proximate Spaces* was suggested to me by competing ideas of the 1990's surrounding the search for a unified theory to explain the fundamental forces, dimensional composition, and existence of matter in the known universe. Much of the pitch material derives from a two-octave mode (18 pitches in series) and three subset hexachords of that mode. The work develops the tension between mechanistic devotion to this mode and episodes of free chromaticism, between strictly repeating rhythmic patterns and rhythmic variation, between instrumentation according to families and a free exchange of musical ideas regardless of instrumental relation. Initially aligned with the mechanistic paradigms of mode and regular rhythmic patterns, in several places the piano breaks free and attempts to incite revolt against the piece's system by abandoning strict adherence to these structures. Although some other members of the ensemble briefly depart from the system, ultimately the machine prevails.

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PREFACE

I feel indebted to so many people for the completion of this work that I am overwhelmed by the prospect of acknowledging everyone. Matthew Rosenblum's direct oversight – both of the paper and composition sections of this project – have fostered in me a sense of inestimable gratitude. I am appreciative of all of my teachers but would especially like to thank my committee members Eric Moe and Amy Williams for their aid in this work's completion, as well as for their support of my compositional development over the past five years. The fourth member of my committee, Josh Ellenbogen has provided indispensible insight into my concept of linearity and time perception. Mark Polishook, John Pickett, and Marek Choloniewski also had a profound influence on the early stages of my musical career and I would be remiss if I did not explicitly thank them.

There are some to whom my gratitude bridges the gap between professional and personal and, of these, Federico Garcia stands out as a tireless advocate for contemporary music, a sounding wall for my ideas and opinions, and for the opportunities he has provided me through the ensemble under his artistic direction. I am grateful to all members of ALIA MUSICA Pittsburgh for the premiere of *Proximate Spaces* but would especially like to thank Matt Gillespie for his dedication to the task and for his friendship. To Ivan Jimenez I owe an exceptional debt for our countless conversations on composition, music theory, and life and for his extended notes on the early stages of this study. Kerrith, Kelsey, Chris R., Colter, Zumrut,

Jenny, Matt P., Brenden, Cliff, Maria, Laurie, Ben H., Andrzej (Stary Fiucie), and Adam T.: thank you all for your friendship over the years. I extend special thanks to Amy for her love and support during the completion of this project. Finally, to my family – Mom, Dad, Pat, Matt, and Chris – I love you all and owe you for everything that I am.

1.0 INTRODUCTION

Witold Lutoslawski is widely recognized[1] as having contributed numerous innovations to the twentieth-century canon of Western *avant-garde* music. His contributions include new approaches to notation and aleatoric technique (especially in *ad libitum* sections), formal structure ("chain technique" and unusual four movement forms), and pitch organization (interval pairing and non-serial twelve-tone approaches). While emblematic of many of these qualities, Lutoslawski's Third Symphony also demonstrates an overlooked aspect of his late compositions – namely, multiple-directed linear processes. In this paper I focus on these processes within several levels of musical structure (pitch, rhythm, orchestration, register, voice density, and form), primarily applying set and contour theory as the basis for my argument.

Multiple-directed activity is a significant factor in the formal structure of this work, both as a product of discontinuities in the linear connection of large-scale gestures and where different levels of the structure contradict the goal-orientation of other levels. These multiple-directed episodes within different levels of the structure are analogous to contrary and oblique motion in species counterpoint. Contrary motion occurs where one level, such as density of texture is directed towards a climax while another, such as orchestration dissolves. Oblique motion is

[1] See Charles Bodman Rae, *The Music Of Lutoslawski*; Zbigniew Skowron, *Lutoslawski Studies*; and Steven Stucky, *Lutoslawski and His Music*.

found where one level, for example additive rhythms, moves toward a goal and another, such as register, remains static.

Whereas more traditional modes of linear design fuse most layers to support and articulate the local and structural goals[2], in Lutoslawski's Third Symphony many levels of the structure arrive at their goal in distinct places and contradict one another in the motion towards these goals. Although multiple-directed linearity is not exclusive to Lutoslawski's music[3], it is a facet that has been overlooked or mentioned only in passing within Lutoslawski studies. In addition, Lutoslawski's application of linear processes at different levels of the structure provides interesting ramifications to the large-scale form not found in other music.

By elaborating upon directional processes within the work, I expand on the existing scholarship and place the previously acknowledged innovations – chord aggregates, pitch complementation, formal design – in a different context. I establish the interdependent relationship between each level of the musical structure and that of virtually every other level. In contrast to other scholars' analyses of orchestration in Lutoslawski's music, which often treat this level of structure as an isolated element, my study places it within a larger theoretical framework involving pitch, rhythm, register, and form. As opposed to other studies, which have largely avoided rhythmic analysis, I investigate rhythm as an aspect of multiple-directed linearity. In this way, I develop a *gestalt* approach to Lutoslawski's Third Symphony with germinal processes of linear direction at the epicenter of a more complete understanding of the work.

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[2] See the *Allegretto* of Beethoven's Seventh Symphony, the *Lento e Deserto* of Ligeti's Piano Concerto, and the *Andante Tranquilo* of Bartok's *Music for Strings Percussion and Celeste*, for example.
[3] See Jonathan Kramer's *The Time of Music* for other examples.

1.1 THEORETICAL MODEL

As indicated above, this essay relies heavily upon distinctions of linearity/ nonlinearity in different levels of the Third Symphony's structure. Perhaps the most influential work on my concept of linearity/ nonlinearity has been Jonathan Kramer's *The Time of Music: New Meanings, New Temporalities, New Listening Strategies*. In the following passage, I discuss Kramer's concept of linear processes and nonlinear strategies in the context of my own analysis.

1.2 JONATHAN KRAMER'S LINEAR/ NONLINEAR TYPES

> Throughout history, time has been regarded as being and/ or becoming by various philosophers and cultures. The arts have reflected these concerns. In music the strongest representative of becoming is tonal progression, though any movement through time, whether goal-directed or not, exemplifies becoming. I identify becoming with temporal linearity. Nonlinearity is more like being. Nonlinearity is a concept, a compositional attitude, and a listening strategy that concerns itself with the permanence of music: with aspects of a piece that do not change, and, in extreme cases, with compositions that do not change.[4]

The dual nature of time, as posited by Jonathan Kramer, embodies contemporary Western attitudes fairly accurately. Linear structures have been a part of that culture for most of its history and the concept of nonlinear temporal schemes erupted in its consciousness in the late

[4] Jonathan Kramer. *The Time of Music: New Meanings, New Temporalities, New Listening Strategies*. New York: Schirmer (1988), 19.

nineteenth-century[5]. Linearity in Western art music, as Kramer points out, is most clearly articulated through tonal progression. In the same breath, however, Kramer acknowledges that operating within the tonal system is not the only means for creating the impression of linearity.

In truth, tonal structures rely upon and articulate a "listening strategy" to create the sense of linear directedness in basically the same way that nonlinear types do. For listeners of any given musical system, it is the strategy of the listener – in conjunction with his/her familiarity with the norms of the system – that determines the listener's understanding of whether a phrase, passage, or entire work is linear or nonlinear.

Kramer's discussion of time goes further than the dialectical oppositions of "being and/ or becoming," In fact, he proposes that composers manipulate time in a variety of ways, ultimately providing listeners with five archetypes for perceiving time: directed linear time, stasis, non-directed linear time, multiple-directed linear time, and moment time. In this paper, I apply contour and set theory to Lutoslawski's Third Symphony to determine the linear/ nonlinear qualities of several phrases, passages, and sections, as well as – in the case of linear passages – to determine the relative direction of line according to the locus of the implied goal. Primarily, I am here concerned with the multiple-directed nature of several significant passages in the work. However, I have expanded Kramer's concept of multiple-directed linearity beyond his definition to include simultaneous independent strands, some of which are differently directed, others entirely nondirectional or nonlinear.

Before detailing my differences with Kramer in this matter, it is important to define linearity and nonlinearity:

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[5] The emergence of nonlinear thinking in Western culture, although an extremely interesting topic in and of itself, is not the focus of this paper. Readers curious about this aspect of my assumptions might be interested in: Wolfgang Schivelbusch. *The Railway Journey: The Industrialization of Time and Space in the 19th Century.* Berkeley: University of California Press (1986).

> Let us define linearity as *the determination of some characteristic(s) of music in accordance with implications that arise from earlier events of the piece*. Thus linearity is processive. Nonlinearity, on the other hand, is nonprocessive. It is *the determination of some characteristic(s) of music in accordance with implications that arise from principles or tendencies governing an entire piece or section.* Let us also define linear time as the temporal continuum created by a succession of events in which earlier events imply later ones and later ones are consequences of earlier ones. Nonlinear time is the temporal continuum that results from principles permanently governing a section or piece.[6]

The concept of implication and consequence over time should be readily familiar to any reader schooled in Western music education. Fundamentally, the discussion of linearity centers upon expectations set up according to the syntactical structure of a given musical system.

Nonlinear structures, by contrast to linear events, operate according to a "listening strategy" wherein the listener abandons (or relaxes) expectation surrounding past and future events within a piece. Once again, in tonal contexts cultural norms must act as cues for the listener; however, in order for nonlinearity to succeed as such it must somehow convey an *absence* of expectation to the listener. Basically, this musical structure must convince the listener to expect no change at all or to suspend anticipation of discernible change. In many cases, this translates to a suspension of change in activity or stasis in virtually every level of the structure.

It is a simple matter to conceive of goal-directed, linear structures in tonal music. This is because conventions surrounding harmonic goals – such as the ones I have already mentioned – have been clearly established, articulated, and confirmed for most listeners countless times. In a similar way, melodic processes in tonal music are shaped by the expectations surrounding resolution of tones within the diatonic system, as well as according to the simultaneous harmonic context of a given passage. The real challenge comes in preparing listeners for a targeted outcome in the absence of these conventions:

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[6] Kramer. 20, his emphasis.

> For a posttonal composition to be temporally linear *with goals*, there must be a clear sense of continuity, provided by voice leading or perhaps by other directional processes in other parameters. Furthermore, goals must either be established contextually… or established *a priori* ... In either case, the arrival of goals is usually supported by rhythmic and textural means.[7]

In other words, it helps for nontonal music to be consistent across a number of levels of the structure to obtain linear coherence. In Lutoslawski's Third Symphony this is sometimes true, especially early in the piece. Goals are achieved by the careful manipulation of disparate elements of the piece's structure – for example by the careful control of instrumentation, texture, and register as supportive structures to voice-leading at the level of pitch. In addition, the local voice-leading elements establish a very clear sense of goal-orientation in the harmonic and melodic layers and the piece establishes its own, clear conventions concerning goal-orientation at the level of pitch.

Linear processes and expectations of "harmony" in nontonal music – in the absence of functional identity for specific sonorities – are difficult to establish for the listener. In many ways, the normative procedures of a musical system are reduced to the microcosm – to the conventions of the single, solitary work. In order to develop listener expectation of linear events, each piece develops its own linear conventions for vertical sonorities, as well as for melodic events in the absence of diatonic structures. As I demonstrate, Lutoslawski establishes clear expectations about the outcome of linearly directed pitch events in the Third Symphony. One focal point of this essay is the issue of how he progressively subverts listener expectation by establishing specific outcomes in the early movements and then contradicting the anticipated outcome in later stages of the work. At times in this work, all or most of the other levels coordinate with pitch structures to move towards a collective goal. At other times, the goals are

[7] Kramer. 39, his emphasis.

distinct. This brings me to my concept of multiple-directed linearity and how it differs from Kramer.

For Kramer, multiple-directed linearity connotes: "pieces in which the direction of motion is so frequently interrupted by discontinuities, in which the music goes so often to unexpected places, that the linearity, though still a potent force, seems reordered."[8] In this view, clearly articulated, cooperative goal-orientation at many levels of the structure combine to form definitively linear structures that interrupt each other and are placed "out of order." Identifying exactly this type of discontinuity for the Third Sympony's climax, James Harley wrote: "…the climactic fulfillment of the weightiest section of the work is leashed back, creating a tension which carries through the epilogue, producing enough energy to build up to another high point which at last fulfills the listener's expectations, coming quickly to a close thereafter."[9] However, Harley failed to identify precisely which qualities of the climax (rehearsal 77) are "leashed back." His argument is not explained with precision. Is the linear momentum prematurely stunted, to be completed later in the manner described by Kramer? Or are other processes at work in this piece that lend the large-scale formal structure a sense of ambiguity?

I operate from the premise that this piece demonstrates Kramer's concept of multiple-directed linearity but that it also demonstrates another type of multiple-directed orientation, especially during the Main movement and in the drive towards the structural climax. During the Main movement, different levels of the structure demonstrate independent goal-orientation during the same passage. For example, the melodic level clearly articulates motion towards a goal where the level of register has already reached its climax and is waning. In addition, many

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[8] Kramer, 46.
[9] James Harley. "Considerations of Symphonic Form in the Music of Lutoslawski." *Lutoslawski Studies*, Zbigniew Skowron, ed. Oxford: Oxford University Press (2001), 182.

passages exhibit nonlinear structures or nondirected linear structures at some level of the texture while other levels pointedly move toward or away from a goal. For example, the duration space between successive sonorities remains static while the harmonic level progresses toward a local goal. I argue that this type of contradiction between different levels of the structure, in conjunction with Kramer's concept of multiple-directed linearity, contributes to the sense of formal ambiguity on the large-scale. Ultimately, episodes such as these have led Charles Bodman Rae and others to identify the high point of the work as "transitional rather than concluding."[10] For me, these types of multiple-directed linearity necessitate closer scrutiny than has been given in previous studies.

1.3 LEVELS OF MUSICAL STRUCTURE AND LINEARITY

In my application of Kramer's linear and nonlinear types, I have carefully divorced several layers of the musical structure from each other to map out distinct linear strands. In this manner, I draw comparison between each level of the structure and every other in order to elucidate episodes of uniformly directed linearity, as well as those containing multiple-directed linear streams. In the following section, I distinguish the levels of musical structure from one another by describing their internal structure, the normative implications for each, and the psychoacoustic ramifications upon the listener of certain procedures within each strand. In addition, I here indicate my predilections about directedness within each level, that is, which

[10] Bodman Rae. *The Music of*, 176.

general forms of activity within a given level ideate goal-orientation, stasis, and movement away from a goal.

1.3.1 Pitch

Linear processes of melody are often defined by either ascent or descent. In this sense, it is difficult to divorce register from melody when discussing multiple, independent linear streams. However, registral direction is not the only property of melody to determine the linear quality of a passage or the locus of the arrival. In fact, the proximity of interval in the melodic domain significantly impacts the relative effect of the prevailing linear process. For example, the final melodic interval of a local or structural climax is often stepwise. In passages where a series of intervallic distances is "pointilistic," that is where few or none of the intervallic distances span stepwise motion, linear processes of melody must be ascertained from large-scale voice-leading, where stepwise connections are fabricated in the listener's ear[11].

Linear processes of harmony largely rely upon the normative procedures of a given musical system. In the case of Western music, normative procedures are closely tied to the melodic layer. Tonal voice-leading, for example, is largely based upon the contrapuntal resolution of semitones. This interval type is the single factor differentiating a given tonal center from every other, in part because the semitone is the less common type of stepwise motion in the major mode.

[11] This is similar to the issue of redundancy as discussed by Leonard Meyer: "In short, because of the redundancy present in musical styles we are able to understand incomplete musical events, if what has been omitted is statistically probable." (Leonard Meyer, *Music the Arts and Ideas: Patterns and Predictions in Twentieth-Century Culture*. Chicago: University of Chicago Press, 1994, p. 16)

As a result of this highly-ordered system I have come to agree with Fred Lerdahl's conjecture that Western listeners "expect a dissonant pitch to anchor on a subsequent, registrally proximate, and more stable pitch."[12] The resultant implication for the 'harmonic' layer of non-tonal music[13] becomes readily apparent where relative dissonance and consonance are present and recognizable. In spite of his desire to explore non-tonal paradigms, I believe Lutoslawski was extremely sensitive to the concepts of consonance and dissonance in the harmonic layer of his music. As he said: "the traditional scale, with its twelve notes, has not been fully exploited in terms of harmony."[14] While not relying on functional tonality, Lutoslawski carefully manipulated the listener expectation for consonant and dissonant interval types between and within vertical sonorities.

In addition to dissonance resolution by stepwise motion, I believe that certain, larger melodic interval types have such clear, tonal implications that culturally programmed listeners often cannot divorce them from their implied function between successive sonorities. The most dramatic example of this is the descent of a perfect fifth in the bass voice, associated with the authentic cadence for most Western music listeners. Of course, this type of leaping interval appears in myriad non-cadential places in the canon of music literature. Yet, the ubiquitous cadential usage sometimes biases listeners' expectation of this specific gesture – in the absence of contradictory structures – within any Western musical work.

Finally, the normative structures of voice-leading also have important ramifications for non-tonal systems. It remains unclear whether this is a result of psychoacoustic phenomena or

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[12] Fred Lerdahl. "Prolonging the Inevitable." *Revue Belge de Musicologie/ Belgisch Tijdschrift voor Muziekwetenschap,* 52 (1998): 307.
[13] Of course the term 'harmonic' usually implies tonal function which seems to contradict the idea within the context of non-tonal music. Here, I am applying a more general description of 'harmony' to mean simultaneous sonority.
[14] Bodman Rae. *The Music of.* 201.

cultural education. Whatever the cause, vertical interval types deeply impact the listener's sense of relative motion. For example, motion from relative dissonance to the perfect octave or unison between prominent voices tends halt the linear momentum of a phrase, whether in a Bach chorale or a post-modern piano work. Lutoslawski's sensitivity to and manipulation of these facts are certainly manifold in his late music.

As may be apparent from this discussion, pitch is not a monolithic linear process. In fact as regards goal-orientation and stasis, the layers of harmony and melody often operate independently of one another within the same passage, thus providing multiple-directed linearity within this singular level of the structure. In addition, melodic and harmonic events can adhere to pretty much every type of linearity and each type can be achieved in a variety of ways. Pitch, then, may be understood as the most flexible means of manipulating linear processes within a given piece of music. Certainly it is the level of structure which has received the most attention in musical analysis and pedagogy and, for this reason alone is probably the most identifiable in terms of linear/nonlinear coherence for trained musicians.

1.3.2 Rhythm

The study of rhythm, especially in non-tonal music, does not depend upon standard principles and procedures in the same way that pitch does. In fact, studies on rhythm perception have proved inconclusive about how listeners structure successive durations in their mental image. Many theoreticians now agree that listeners tend to group durations hierarchically, that is according to an overriding common denominator of duration. I have come to conclude that this is probably the case but I disagree with some scholars on their concept of the fundamental building blocks for these hierarchical structures.

One model involves reducing all rhythmic values to "tallied multiples of a composition's smallest durational value."[15] This model provides an extremely useful means of meting durational proportions on the local level. However, this understanding of rhythm does not coincide with a realistic rendering of the listener's experience of an entire work unless the 'smallest durational value' is easily divisible by or is the same as the pulse. As an entire work, the Third Symphony does not consistently adhere to this model. This is partially because episodes without a clear pulse remain one of the work's significant features, thus the model cannot be applied to all passages of the work. In addition, lengthy works such as this do not adhere to the same "smallest durational value" throughout. Instead, proportional relationships based upon relative values within an enclosed phrase-grouping offer a more accurate means for drawing comparison, both within the local phrase and between disparate passages. In enclosed passages where the tempo fluctuates, I assume that the listener's sense of the smallest durational unit will adjust to accommodate fluctuations in tempo.

In analyzing duration streams, this paper relies heavily upon the concept of rhythmic contour[16]. In contour theory, rhythmic proportions are measured according to duration space (d-space), which is "a type of temporal space consisting of elements arranged from short to long… [i]n numbering [durations] from short to long, the determination is made from the onset of one [duration] to the onset of the next."[17] In this model d-space is measured between attack points and values are assigned according to the relative proportions of a given phrase, passage, or section.

[15] Marvin. "The Perception of Rhythm," 63.
[16] See Lerdahl, Lewin, Marvin, and Morris for essays devoted to a theoretical model of rhythmic contour.
[17] Marvin, "The Perception of Rhythm," 66.

At times the rhythmic level may, itself, be multiple-directed if it contains individual contrapuntal layers operating in distinct, hierarchical proportions. This provides interesting challenges to the determination of attack points. In recognizing this fact, I follow the general principle that "the farther apart two pitches are and the less similar their acoustical characteristics, the more the ear assigns them to separate streams."[18] On a case-by-case basis, then, I account for register and timbre in my determination of d-space strands within a given passage. Where appropriate, my analytical approach affords the opportunity to treat each strand as a different layer of the structure and to apply my understanding of the linear properties of each layer individually.

Fundamentally, I believe linear processes of duration embody one of three properties: static, goal-directed, or non-directed. Where d-space is equal across a passage, the level of rhythm can be defined as static. Passages of uniformly increasing or decreasing d-space are goal-directed at the level of rhythm. The rhythmic level is non-directed where d-space varies throughout without clearly directed changes of proportion. For the most part, the Third Symphony demonstrates static and goal-directed linearity at the level of rhythm.

1.3.3 Texture: Timbre/ Instrumentation and Density of Voices

In my analysis, texture refers to the number of distinct voices present at any given moment within the music. However, 'voice' in this context may actually apply to a few different properties or levels of musical structure. Texture will sometimes refer to the number of distinct pitch-classes present within a given sonority. At other times, texture refers to the number of

[18] Lehrdahl, "Prolonging," 307.

instrumental colors present at a given moment and is more closely aligned with timbre and instrumentation than pitch-class content. To avoid confusion, I will divorce these two elements from one another in my analysis; however, generally, they will coordinate under the same general topic of texture.

Where ‘voice’ refers to the number of distinct pitch-classes present within a given sonority, texture indicates both 1) a qualitative summary of traditional voice-leading (i.e. homophonic, polyphonic, etc.) and relative motion descriptors (i.e. oblique, contrary, parallel, etc.) and 2) a statistical measurement of the pitch-class content of a given sonority with zero as the least and twelve the greatest possible density. Linear processes at this level of the structure are primarily found where the density of voices changes over time. As indicated above, orchestration and timbre shall be quantified by a statistical measurement of the total number of instrumental colors present at a given moment. The identity of a specific color is ascertained by instrument type and, where techniques effecting timbre are involved, by different colors within the same instrument or family.

Linear processes of texture are primarily found where the density of individual colors or vertical pitch-classes changes over time. Texture, like rhythm and pitch can undergo processes of accretion, dissolution and stasis. Generally speaking, movement towards greater or lesser density shall be understood as goal-directed, in the first case toward and the second away from structural or local goals. Where the number of voices remains constant, this level of the structure is understood as static.

It is possible to achieve non-directed linear shifts of texture without a large-scale goal or process within that specific level. In this type of process, shifts of texture may not be clearly identified as directional if small-scale direction is achieved without the overriding motion

yielding a specific goal. Episodes such as this confound the other levels of the structure, making it quite difficult (though not impossible) to establish large-scale goals of pitch, rhythm, or register. More often in this work, texture and orchestration conform to directed linear and static structures. However, static structures at these levels do not usually contravene the perception of directed-linearity in other levels of the structure, probably because static texture and orchestration is such a ubiquitous event in the canon of Western music. As listeners, we are used to hearing goal-directed melodies within homogeneous and unchanging textures/ timbres without perceiving a dramatic contrast between the two levels of structure. One obvious example of this is the clear goal-orientation of pitch in the keyboard setting of a Bach chorale, wherein the number of voices/ instruments remains constant and the goal-orientation remains absolutely clear. Texture/ timbre directed towards a goal can, and often does operate independently of goals at other levels of structure, however. This type of contrast between this level of the structure and others provides the most interest for this study.

1.3.4 Register

As mentioned above, register is quite difficult to divorce from pitch. However, since other properties define the linear/ nonlinear nature of a passage at the level of pitch, I have chosen to analyze the parameter of register as an independent stream. Extremes of register are usually identified as goals. Within any defined phrase, passage, or section, register is either static (i.e. constant) or directed towards or away from the highest or lowest point. It follows that movement towards or away from extremes of register may be described as directed linear episodes. A passage may feature either a clear linear motion in either the top or bottom voice, a general shift in one direction between both voices, or a constriction or expansion of the registral

span between voices. In order for register to be goal-directed as an independent level, this motion towards extremes must be clearly articulated. Essentially, this means that registral motion at one layer of a defined section or large-scale process must contain only one, uninterrupted trajectory and the goal of register must be removed enough from the phrase's origin to be perceived as a dramatic change.

Of course, different textural and rhythmic layers may be defined by registral separation, so that two layers of a polyphonic texture may be understood as directed towards separate registral goals (or lacks of goal) or towards separate arrivals at the implied goal. In this manner, register may also contain internal, multiple-directed layers. Finally, register may be described as nondirected if a passage contains no predictable set of outcomes (either high or low) or contradictory goals over the large-scale. Register may also be perceived as static where it does not significantly change over time.

1.4 METHODOLOGY: CONTOUR AND SET THEORY

This analysis relies primarily upon set and contour theory as the theoretical basis. In the following section, I explain the selection, outline some of the basic principles, and define key concepts and terminologies for each model.

1.4.1 Contour Theory

Contour theory provides an exceptional vehicle for the study of linear processes in music and for the contrast of these with the nonlinear because the entire system is developed around the

relative relationships between successive elements *over time* and analyzes these processes using graphically linear models. In addition, "[p]erception of contour is more general than perception of pitch, and for those listeners who have difficulty grasping the complex world of pitch, interval and set-class relationships as outlined in atonal theory, the contour of a musical unit may be the melodic parameter that is *most easily grasped and related to other musical features*."[19]

Contour theory offers a means of comparison between different levels of musical structure within the same passage and across large time-spans. This is because the model may be applied to virtually every level of musical structure as an independent stream, including most of the levels I focus upon in this essay. As Elizabeth West Marvin wrote: "each dimension may also be perceived separately in its own musical space, with its own 'individually coherent' structure. Thus, for example, the succession of durations may have its own inherent structure in a 'duration-space' that is differentiated from, but possibly parallel to, the pitch-class structure."[20] It is the "individually coherent structure" that provides the most fruitful means of comparison for this study, since I am attempting to draw comparison between linear/ nonlinear structures at distinct levels within the same passage. Contour analysis can also be applied to every proportional unit of a piece (i.e. cell, phrase, passage, section, movement, whole work), making it exceptional for comparisons between disparate passages, pieces, etc.

In practice, contour analysis involves applying numerical values to successive time-points within a specific level of the musical structure. Generally speaking, the placement of values at time-points is determined by a surface change within that level. For most levels of structure, this change may appear in a different place from the other levels. Where this type of

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[19] Michael L. Friedmann and Schoenberg. *Journal of Music Theory*. 29:2 (Autumn 1985), 223-5, my emphasis.
[20] Elizabeth West Marvin. *A Generalized Theory of Musical Contour: Its Application to Melodic and Rhythmic Analysis of Non-Tonal Music and its Perceptual and Pedagogical Implications*. Dissertation, (Rochester NY: University of Rochester, 1989), 10-11.

difference occurs, at the very least it indicates a different rate of change in the linear process between levels; hence, it implies a multiple-linear structure. In the case of duration, surface changes are often perceived where there is a change of pitch. A new d-space value is applied in the duration space contour where a new pitch appears. However, in certain circumstances where successive reiterations clearly articulate the same pitch or vertical sonority, the d-space layer may change over time where the pitch does not. This occurs at a few key moments in the Third Symphony, which I will discuss in more detail below.

A few of the comparative tools applied in contour theory warrant explanation here. Unlike set theory, the numerical values applied to contour are not measured according to an absolute or fixed value. Instead, they are based upon the relative proportions of a specific unit of the piece, described as the contour segment (CSEG). CSEG is defined as an ordered succession of pitch height position, within a defined musical unit, measured as relative values. Within any given CSEG, the time-points are selected according to relative relationships of high and low so that the lowest value is zero and the highest is n-1, where n is the total number of distinct time-points included within that CSEG unit. CSEGs are represented by a temporally ordered series of numbers within angled brackets. Contour interval succession (CIS) is an ordered succession of values for a given CSEG, indicating both direction (+ or -) and relative distance. Contour adjacency series (CAS) is an ordered succession of positive and negative values, which indicates the successive direction of interval contained in a given CSEG. Analogous labels to that of pitch contour are applied in the study of rhythmic contour. Of these, the one of prime importance in this essay is the measurement of rhythmic contour according to Duration Segments (DSEG). A DSEG is defined as an ordered succession of attack point position, within a defined musical unit, measured as relative values. As the graphic example demonstrates below, the DSEG will always

contain one fewer member than the number of attacks, since the duration of the final attack cannot be measured by an ensuing attack. In this essay, I also apply the Voice Density Segment (VDSEG), which is my invention. The VDSEG is an ordered succession of values representing the number of voices present for a series of sonorities, within a defined musical unit, measured as relative values.

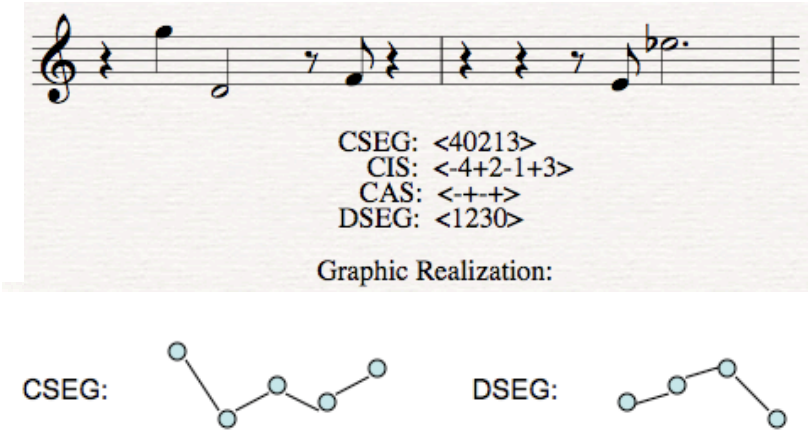

Figure 1. Example of Contour Theory: Notation for a Melodic Event

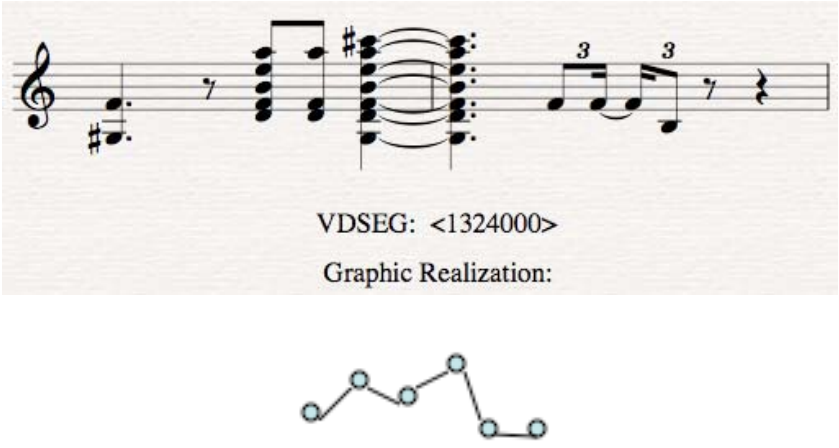

Figure 2. Example of Contour Theory: Notation of Voice Density

1.4.2 Set Theory

Set theory is clearly an established, conventional approach to the analysis of nontonal music. I will not occupy the reader's time with either the justification or application of this analytical method other than to say that it provides a useful means for comparison of motivic structures, chord aggregates, and voice-leading in the work under scrutiny. It is important, however, to establish some of my conventions concerning the application of set theory in this paper, since the numerical abstractions have not been applied or quantified in a universal manner.

In this essay, I apply integer notation to pitch-class (pc) according to a fixed set of numerical values, with the first nine represented with a whole number, such that C=0, C#/D♭=1… B♭=T, B=E. Intervals are measured according to the semitone distance between pitches. Ordered pitch intervals (ip) indicate the absolute distance between two pitches and indicate direction (+ or -). Unordered ips indicate the semi-tone distance without regard to direction. Ordered pitch-class intervals (pci) assume octave equivalence so that the absolute distance between two pitches is reduced by mod 12. Unordered pitch-class intervals, also referred to as interval-class (ic), reduce the ordered pci value to the lesser of that pci and its complement. The interval vector, also known as the ic content, represents the number of occurrences of each of the six interval classes within a specified collection. The interval vector is listed as a string of six values, representing the occurrence of each ic from lowest to highest.

Pitch class sets represent an unordered collection of pitch classes and can refer to pcs in both the vertical and horizontal domains. PC sets are placed within parentheses, with commas between members. In normal order, pc sets are placed so that the shortest ic distance is spanned

between the first and last member and all other members are placed in ascending order between them. Normal order is represented within parentheses, with no commas between members. Where necessary for describing successive pcs in the melodic layer, serial order is shown as a string of integers separated by hyphens. A set class represents a group of sets related by transposition and inversion and contains between 2 and 24 members. Set classes are reduced to the prime form member, which is determined by comparing the normal order of all possible permutations and their inversions. Whichever contains the shortest distance between T0 and each subsequent member is identified as the prime form of that set class. The prime form is represented as a string of integers, between hard brackets, with no separation between members. All of the relationships concerning pc collections described above are represented by examples in the following figure:

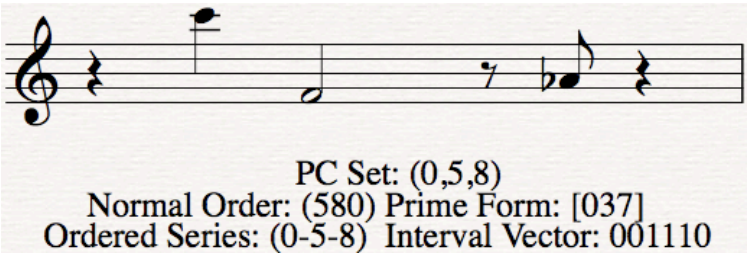

Figure 3. Example of Set Theory Notation for a Melodic Event

1.4.3 Form and Listening Strategies in the Third Symphony

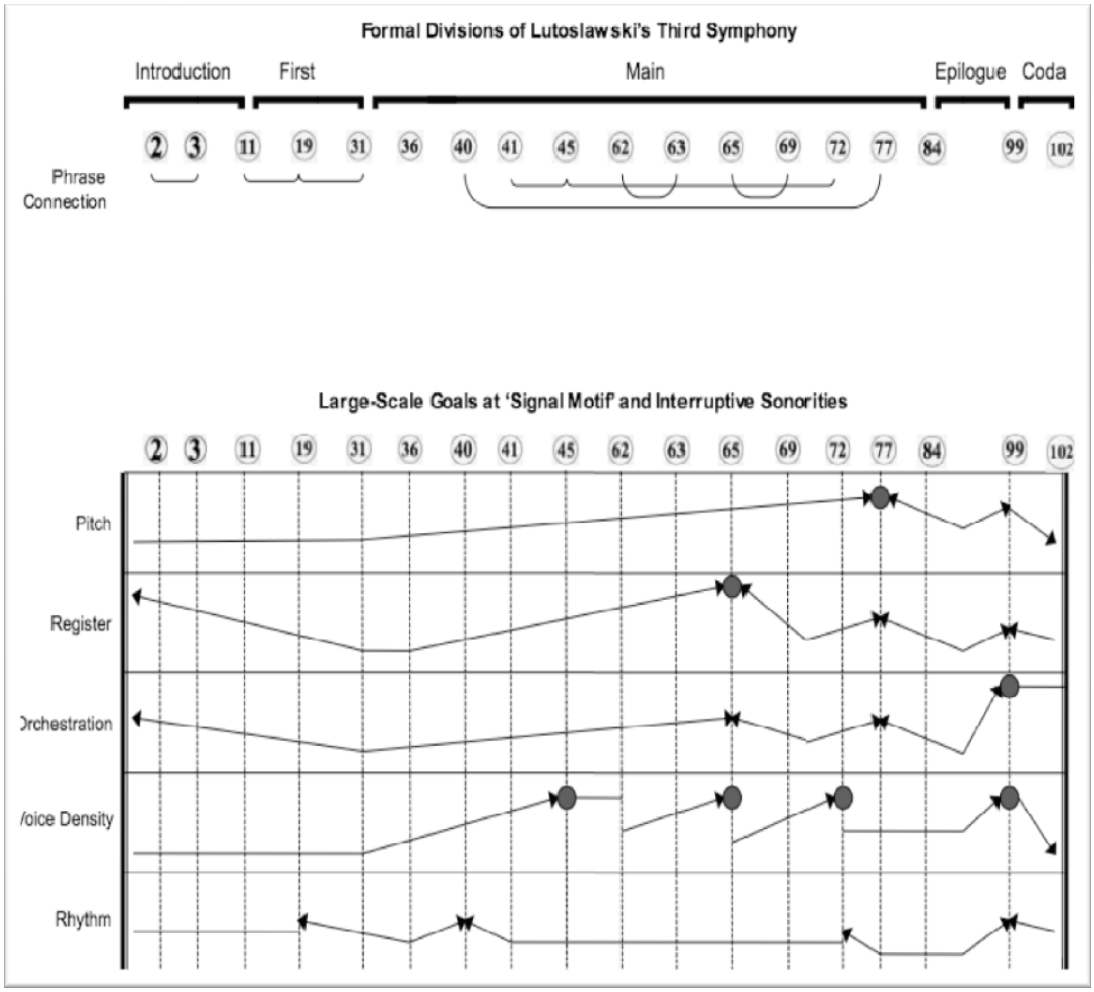

Figure 4. Form and Large-Scale Goals of Individual Layers in the Third Symphony

I have provided the above figure as a roadmap of the formal structure of the work under scrutiny. In addition to the formal divisions, I have indicated the phrase groupings upon which I focused and the textural similarity between these with appropriate rehearsal numbers. As indicated above, one of the central tenets of my approach is that the different levels of structure arrive at peaks in different places throughout the work. The figure above demonstrates this

clearly, with each structural level divorced from every other and with the goal(s) at each level indicated by a large dot.

At this point, I feel it would be prudent to acknowledge that this type of hearing – wherein individual levels of structure are understood as independent of one another – represents a rather unconventional approach to listening. In fact, Western listeners are probably maladapted to (or perhaps incapable of) listening to music in precisely this way. The reality is that we hear these structural levels as a composite whole, with each of the components contributing to or detracting from a general sense of linearity, stasis, etc for a given passage. My thesis is not that we focus on these levels individually and perceive the distinct goals at different structural levels as independent. Rather, I propose that wherever contradictions between structural levels occur, wherever one level arrives at a goal and others are oriented differently, the linear impulse and impact of the goal is subverted in the listener's subconscious. This is especially true when compared with passages wherein the goal is singularly articulated at several levels. In this work, this explanation of subconscious perception accounts for the fact that some scholars have identified the structural climax as "leashed back"[21] or "attempted rather than achieved"[22] and that many listeners may find the climax of the work to be unfulfilled.

Much of this essay is dedicated to the listener's expectation. I contend that, as any piece of music progresses the listener forms expectations about the outcome of events according to the style of music within which the music operates and his/her familiarity with that style: "In short, the probability relationships embodied in a particular musical style together with the various modes of mental behavior involved in the perception and understanding of the materials of the style constitute the *norms* of the style. Latent expectation is a product of these probability

[21] Harley, "Considerations of…"
[22] Bodman Rae *The Music of.*

relationships."[23] In addition to these preconceived expectations on the part of the listener, Lutoslawski establishes conventions that are unique to the piece and, therefore, he places additional expectations upon the listener about the probable outcome of recurring[24] events. Finally, as the piece progresses through the early stages, the probability of predictable outcomes increases and the latent expectation becomes less "meaningful."

It is my contention that Meyer's concept of "hypothetical" and "evident meaning"[25] play an important role in the basic formal structure of this work and that this process operates primarily within the work as the result of a series of unique conventions. Briefly, Meyer argues that: "*Hypothetical meanings* are those attributed to the antecedent tone or pattern of tones when consequents are being expected. Unless deviation is present, hypothetical meanings will not arouse uncertainty or give rise to information… *Evident meanings* are those which are attributed to the antecedent stimulus in retrospect, after the consequent has become a tonal-psychic event and when the actual relationship between the antecedent and consequent is apprehended."[26] In the first two movements of this piece, Lutoslawski establishes conventions about the outcome of clearly linear events (which I label as the 'signal motif'[27]), lending hypothetical meaning to each of the linear passages. At later stages of the work, the listener's expectation of linear episodes is subverted through the arrival to unexpected results (which I label as interruptive events). As the work progresses, this evidence creates a second hypothetical meaning for linear phrases and the

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[23] Leonard B. Meyer. *Music the Arts and Ideas: Patterns and Predictions in Twentieth-Century Culture*. 2nd ed. Chicago: University of Chicago Press (1994), 9.
[24] I use the term recurring here with some reservation. Texture and orchestration play a larger role in establishing the listener's recognition of (and, therefore, expectations surrounding) the outcome of episodes within the Third Sympony than do melody and motive – traditionally identified with recurrence through variation and repetition.
[25] Meyer, *Music the Arts and Ideas*, 5-21.
[26] Meyer, *Music the Arts and Ideas*, 12.
[27] I borrow this term from Charles Bodman Rae's discussion of the Third Symphony in *The Music of Lutoslawski*.

internal tension between these two classes of probable outcome underpins the formal design of the work on the large-scale.

Of particular interest in this regard is the fact that both the outcomes (in the later stages of the work) and the linear phrases preceding them (throughout) are rather unpredictable in the traditional sense. The linear phrases preceding both the 'signal motif' and interruptive gestures are, in many cases, unrelated in the domain of pitch. Instrumentation, register, texture, and the like determine the identifiable features of recurring events. The interruptive gestures of later stages have similarly unorthodox relationships to each other. Lutoslawski does not often rely on motivic or harmonic relationships to establish these connections, which often work in conjunction with non-pitch parameters in more traditional models. In this way, both the linear passages and their outcomes in the Third Symphony obtain a remarkable degree of variety and, thus, meaning. Speaking of this type of event, Meyer wrote: "…less expected routes toward 'probable' events and less probable events reached in a more or less expected fashion (or some combination of these) will be more meaningful than predictable events that arrive in probable ways."[28]

In the following chapters, I will discuss these linear episodes and the outcomes within the context of expectation. As much as possible, I will reserve my perspective as a frequent listener of this work until the conclusion. There I will attempt to provide my view from the perspective of "determinate meaning," which is defined by Meyer as the "totality of relationships existing on several hierarchic levels between hypothetical meaning, evident meaning, and the later stages of

[28] Meyer, *Music the Arts and Ideas*, 45.

the musical situation."[29] At that stage of this essay, I will return the discussion to figure 4 and the implications of multiple-directed linearity upon the listener's expectation.

[29] Meyer, *Music the Arts and Ideas*, 14.

2.0 SINGULARLY DIRECTED LINEAR PROCESSES I: INTRODUCTION AND FIRST MOVEMENT

Several passages early in Lutoslawski's Third Symphony illustrate singularly directed linearity in most levels of their structure and provide contrast with the multiple-directed episodes appearing in the Main movement. Singularly directed passages are fairly common at the beginning of the piece and, in conjunction with the 'signal motif' – a group of four staccato eighth notes on E natural, with octave doubling – establish syntactical norms from the outset. In the Introduction (opening through rehearsal 10) and First (rehearsal 11 through rehearsal 30) movements, the passages immediately preceding this 'signal motif' demonstrate Lutoslawski's use of clearly directed linearity in most, if not all levels of the structure. Perhaps of greatest significance, this 'signal motif' functions to demarcate sectional divisions and to separate groupings within sections. For this reason, then, the easily identifiable figure becomes associated with phrase divisions and singularly directed activity from the outset. In the first two movements, the 'signal motif' functions as the highly probable outcome of directed linear passages. In later stages it assumes the role of initiator.

2.1.1 Pitch

In the first two movements, polyphonic passages precede each iteration of the 'signal motif' and, at the level of pitch, strongly support linear progress towards the motif as a point of arrival. In most cases, the coordination of individual melodic strands supports goal-directed linear motion forward in time. When taken as a composite whole, these passages are also clearly directed toward E as a functional arrival, the only pitch class present in the 'signal motif' throughout the first two movements. This is achieved primarily through stepwise linear progress toward 1) F and D# which, at a semitone distance from E, then resolve to the 'signal motif' and 2) B, which consistently resolves by a perfect fifth to E in the Introduction and First movements.

In the following figure, I have reduced the texture of several passages to emphasize the goal-orientation of pitch material preceding the 'signal motif' throughout the Introductory and First movements[30]. In the more complex, polyphonic and *ad libitum* passages (at rehearsal 1 and the last phrase of rehearsal 2), I have selected pairs of lines from a multiple-voice texture and chosen not to include all layers of the texture. However, all layers of the texture in these passages function in much the same way and for the purposes of clarity, two lines are sufficient to illustrate my points regarding linear directedness. In these two passages, several lines work towards melodic goals independently of one another, in every case arriving at the vertical pairing of E and B at the end of the phrase, immediately preceding the 'signal motif.' In actual fact, the register of these passages probably guides the listener's perception of pitch goals more than the absolute pitches present. This is largely due to the texture of each passage – rhythmically amorphous, multiple-voice counterpoint characterized by large leaps in individual voices.

[30] See appendix 1 for a formal diagram of the whole work.

However, the pitch structure not only does not contradict the registral goal in each case but, through the use of hocket, certain pitches sustain and connect with neighbor instruments in succession creating the sense of linear continuity. I have provided the reduction of the top two layers of this texture to represent the descending/ascending lines in all layers.

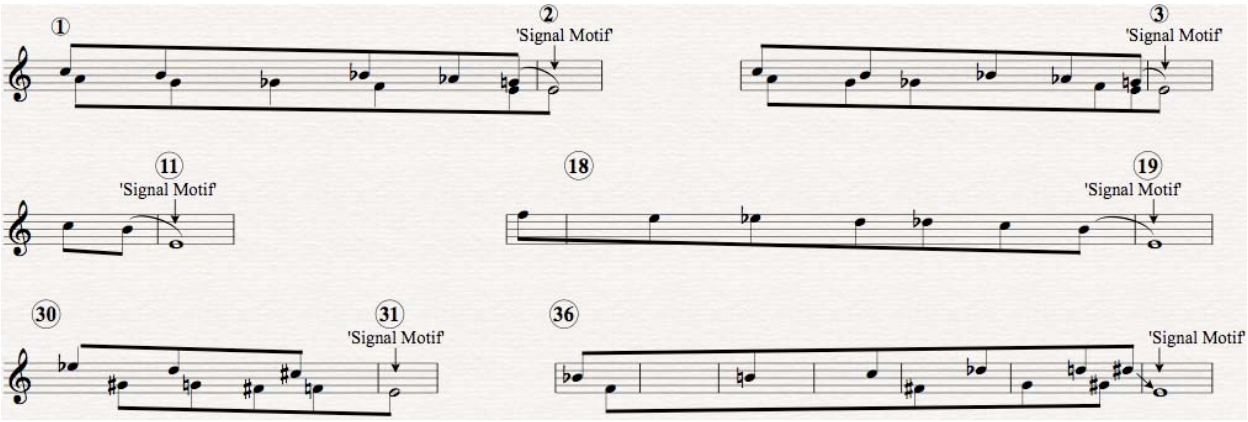

Figure 5. Melodic Reduction: Clearly-Directed Episodes Leading to the 'Signal Motif'

As this figure shows, the melodic level of the texture in each passage clearly articulates stepwise motion in preparation of the 'signal motif,' which functions as an arrival at the level of pitch – either through stepwise/ chromatic approach, fifth relation, or by thirds. Interestingly, although a linear pitch connection has clearly been established for E as the arrival, in each case the 'signal motif' also contrasts the linear progress through a dramatic shift of texture, dynamic, and color. However, as I shall demonstrate below, these levels of structure do not interfere with the goal-directed nature of the melodic element at passages preceding the 'signal motif.'

In the passages before rehearsal 2 and 3, the stepwise, mostly chromatic descent in the woodwinds to the 'signal motif' (9-7-6-5-4) appears in the alto voice. In both phrases, the top voice moves obliquely, at the distance of major and minor thirds from the alto voice. Preceding

rehearsal 11, the alternation of C and B is resolved by the distance of a perfect fifth to E (the 'signal motif'). Although the alternation of C and B is not a clearly linear event, the inflection by semitone, beginning with the top note, does manage to establish a generalized sense of downward motion for the phrase. The impression of descent is further reinforced by the sixteenth-note, chromatically descending triplets which appear after each sustaining B (not included in my reduction because they are strictly foreground elements). At rehearsal 19, the chromatic descent in imitative polyphony between the clarinets (5-4-3-2-1-0-E) once again resolves by a perfect fifth to E. At rehearsal 30, the top three voices outline two chromatically descending lines. In my graph, I have consolidated the piccolo and bass clarinets into one line (8-7-6-5-4), since the entrances between voices alternate in a hocket effect. Finally, at 36 the 'signal motif' is approached by linear ascent in the highest voice (T-E-0-1-2-3), perhaps the clearest example of stepwise (chromatic) approach to the 'signal motif,' since, by comparison to rehearsals 1, 2 and 30, the chromatic neighbor to E is in the top voice and the entire line consists of ascending semitones.

In each successive passage, the process of goal-orientation in the melody becomes more clearly defined. In the first two passages, the pitch structure is rather amorphous in the sense that it remains unclear which line represents the functional melodic descent. The texture is perceived by the listener as multiple voices descending in parallel. In this sense, the lines I have chosen for my reduction are somewhat arbitrary. I might just as easily have selected one of the other layers of the texture to illustrate the stepwise descent and it is only *ex post facto,* in the context of the arrival, that my eye preferred these two melodic layers[31]. Before the next appearance of the 'signal motif' at rehearsal 11, the melody can be described as only marginally directed in a linear

[31] Register certainly played an important part, as well – the melody beginning on C is most often the highest voice present within any given moment.

sense and, certainly, unfulfilled. In the progress towards rehearsal 19 and 31, the melodic motion towards a goal becomes yet more clearly articulated. Finally, by the arrival after 36, the listener has come to expect the ‘signal motif’ and the pitch language in the preceding passage supports this expectation by clearly articulating a linear chromatic ascent to D#, acting as a tendency tone, leading to the fulfilled E of the ‘signal motif.’

Unlike other passages, which demonstrate Lutoslawski’s late period proclivity towards clearly divorced melodic and harmonic layers, these sections do not contain a clearly defined, separate harmonic layer. More than pitch, it is the level of register (in conjunction with rhythm, and color/ instrumentation) that most clearly articulates the directed linear nature of each passage. The goal is defined more by the relative direction of the line than by the targeted pitch-class or the voice-leading towards that target.

2.1.2 Register

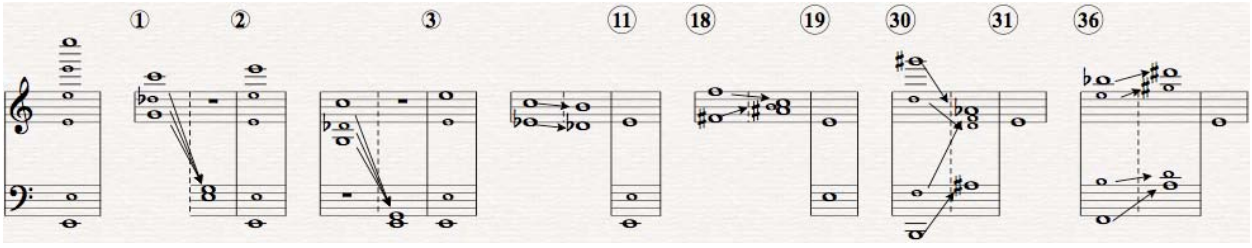

Figure 6. Vertical Sonorities at 'Signal Motif' and Preceding Phrases' First and Final Sonorities (Opening to Rehearsal 36)

During the course of the Introduction and First (rehearsal 11 through 30) movements of this work, successive iterations of the ‘signal motif’ articulate a large-scale, clearly directional linear process. However, until rehearsal 40, the pitch content of this rhythmically and texturally

defined phrase remains static: it contains only E. The only factors differentiating each occurrence from every other and, therefore, defining the directed nature of the event are register, instrumentation/ timbre, and, in the last two instances, rhythm. In the first six appearances of the 'signal motif,' register and instrumentation/ timbre coordinate to articulate a gradual process of dissolution over time. The phrase preceding each occurrence of the 'signal motif' undergoes a slightly more complex set of changes over the course of these sections. I will discuss this in more detail below.

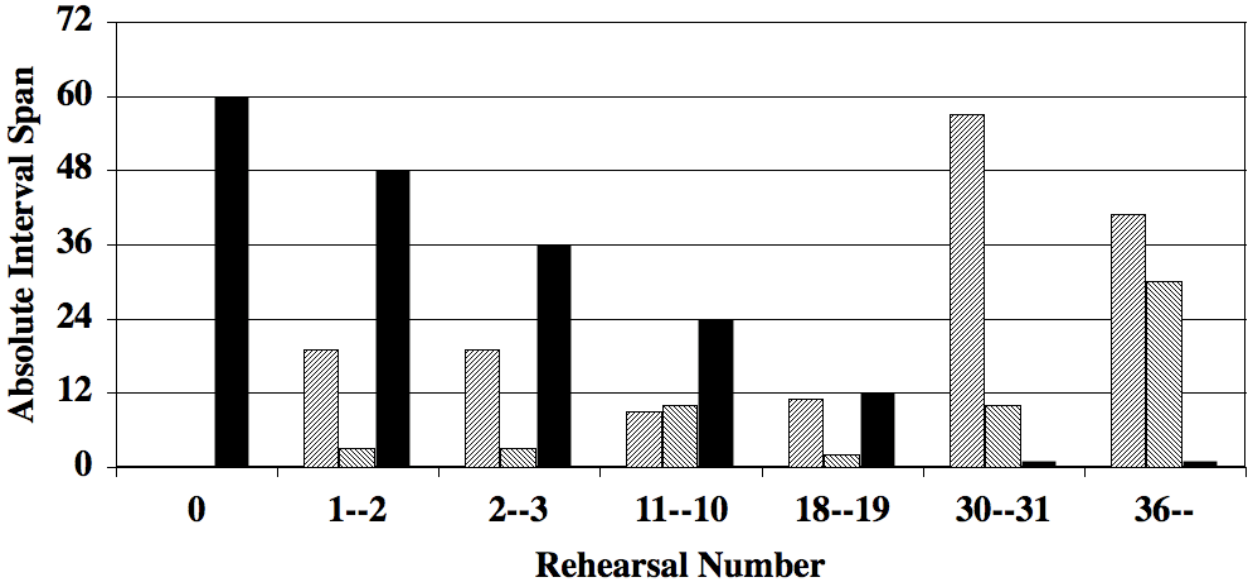

Figure 7. Absolute Interval Span of 'Signal Motif' and Preceding Phrases' First and Final Sonorities (Opening to Rehearsal 36)

The above figure measures the interval spanned at specific moments of the work, ignoring the actual pitches involved and not accounting for the relative relationship of register between sonorities. The most striking aspect this figure demonstrates is the decay of the 'signal motif' over time. In the opening of the work, this gesture spans five octaves. At rehearsal 31 and

immediately before 37, the ‘signal motif’ appears in five instruments, with no octave doubling. In the interim, each successive appearance features a reduction of one octave so that the figure undergoes a gradual process of dissolution. By comparison, each preceding phrase, which is directed linearly to the ‘signal motif’ at the melodic level (discussed in section 2.1.1), maintains a fairly consistent register span until the ‘signal motif’ is reduced to one octave (rehearsal 19). At that point, the opening of this gesture enlarges greatly to span almost five octaves, a shift which inverts the relationship between the registral span of the ‘signal motif’ and the directed linear material.

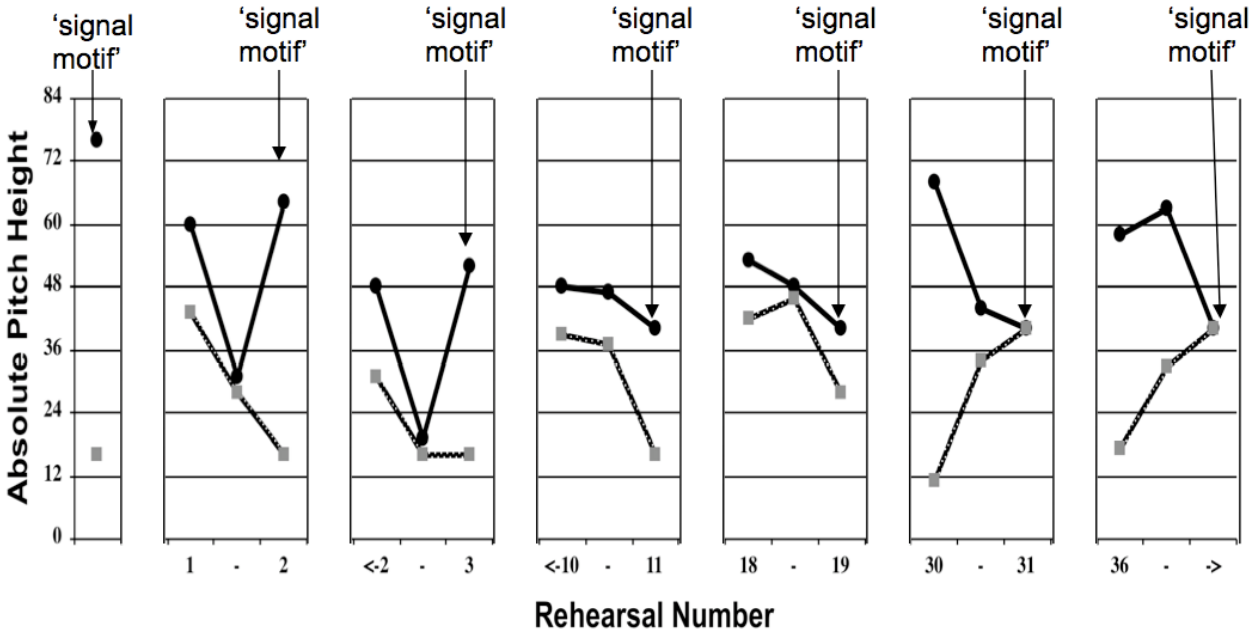

Figure 8. Relative Pitch Height of Outer Voices: 'Signal Motif' and Preceding Phrase

In terms of the absolute pitch height, the opening sonority is only surpassed twice during the course of the entire work. Interestingly, the two places where a higher pitch appears (rehearsal 65 – piccolo G7 & rehearsal 73 – xylophone G7), although local arrivals, are not significant in the large-scale structure but serve as interim high-points directed towards the true

climax of the work at rehearsal 77. At the other end of the registral extreme, the choice to omit E1 (the lowest note in the orchestra –found only in the contrabass) in the opening sonority is based upon the contrabass' function within the surrounding context, as much as upon considerations of register within the large-scale form - all of the strings sustain E until the next appearance of the 'signal motif.' The careful manipulation of the lowest register fulfills a significant function later in the work. I will discuss these sections in more detail below. Suffice it to say that the opening iteration of the 'signal motif' contains a relatively large span of register which contrasts the linear passages interceding the first several interceding phrases.

The above figure demonstrates how the phrase preceding each iteration of the 'signal motif' undergoes a registral collapse. In the first two instances (rehearsals 1-2 and 2-3), the first and final sonorities of the phrase feature a uniform descent by two and one half octaves with a simultaneous collapse between the outer voices. The 'signal motif' follows each of these collapses with an abrupt registral expansion. At rehearsals 10-11 and 18-19, the phrase hovers around the middle register of the orchestra and the 'signal motif' interrupts, both as an expansion of the outside interval span and by lowering the absolute register. In the penultimate phrase under scrutiny, although still articulating an interruption through instrumentation/timbre, dynamics, and rhythm, the 'signal motif' is drastically reduced as regards absolute interval span. The last phrase to precede an occurrence of the 'signal motif', at rehearsal 36, features a similar, drastic reduction of absolute interval span. It is clear in all cases that the 'signal motif' functions as a significant interruption of the phrase that precedes it through a dramatic shift of register at the moment of arrival.

At rehearsals 1, 2, and 30, the approach to the 'signal motif' features clearly directed lines of register. In the large-scale, all of these passages combined also demonstrate a linear

progression of register across two movements. This linear structure is enhanced further by Lutoslawski's treatment of color/ instrumentation in these passages.

2.1.3 Texture: Instrumentation and Voice Density

The large-scale linear process of instrumentation and voice density for the 'signal motif,' across the first six iterations (opening and rehearsals 2, 3, 11, 19, and 31), roughly adheres to the lines of register. As the figure below demonstrates, the number of distinct voices and instrumental colors diminishes in precisely the same proportions to the registral diminution with each occurrence.

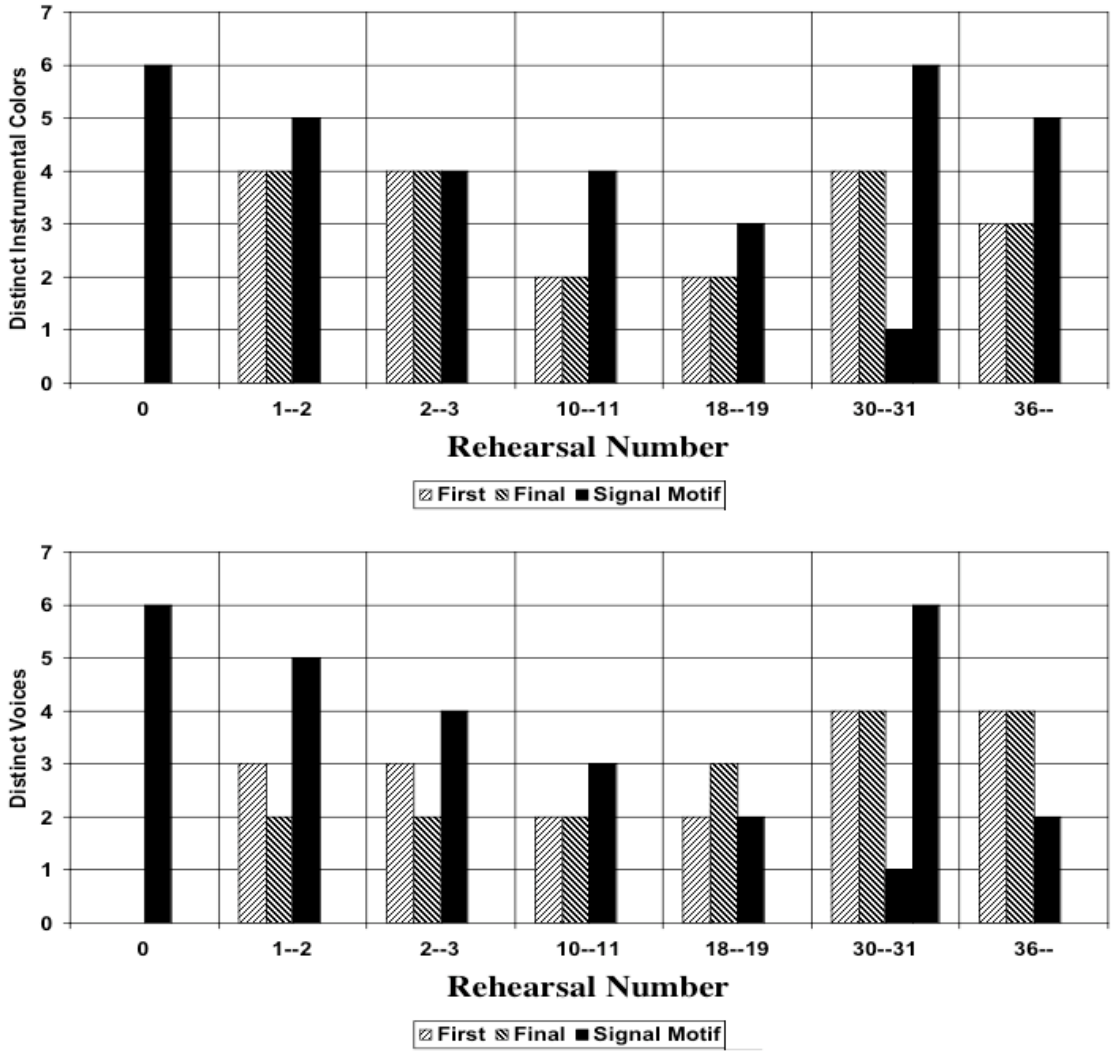

Figure 9. Density of Texture at 'Signal Motif' and Preceding Phrase

For most of the passages preceding the ‘signal motif’ in the opening movements, both aspects of texture either support the goal-orientation of other levels of the structure or remain static. The local linear processes of voice density preceding the ‘signal motif’ represent the only exception to the directed quality of every other level of the structure. This exceptional circumstance only appears in the first two phrases, in which the motion is away from the ‘signal motif,’ which features a greater density of voices than that which follows it. I will discuss this in greater detail in the final section of this chapter, wherein I draw comparisons between all levels

of the structure to determine the coordination of goal-orientation for each passage as the composite of all levels.

2.1.4 Duration Space

When comparing each of the first seven appearances of the ‘signal motif’, a large-scale linear structure becomes apparent at the level of rhythm. The d-space of the ‘signal motif’ is identical for each iteration until rehearsal 31, where the Main movement begins. To this point, the figure appears each time as four repeating eighth notes at a tempo of ca. 108. Across the entire Introductory and First movements, then, the d-space layer for this figure is static. As mentioned previously, stasis at one level does not necessarily contradict the directional nature of simultaneous linear processes at other levels of the structure. However, a significant shift appears at the beginning of the Main movement and, it is at this point and in the absence of linear processes at other levels that the rhythmic aspect of the ‘signal motif’ significantly alters its functional role. Here, by elision, the ‘signal motif’ both interrupts the preceding material and propels the motion towards a new goal.

Rehearsal Number	First Note	2	3	11	19	31	←36
Absolute Duration (𝅗𝅥=1)	1	1	1	1	1	1-3-5	2-2-7
D-space Contour	○	○	○	○	○	○⟋○⟋○	○_○⟋○
CSEG	<0>	<0>	<0>	<0>	<0>	<012>	<001>

Figure 10. D-space: First Six Iterations of the 'Signal Motf'

On the downbeat of the Main movement (rehearsal 31), the 'signal motif' appears to arrive at and fulfill the linear diminution of all levels of the structure within previous iterations of this gesture. This arrival features the reduction of the 'signal motif' to the thinnest point of the entire work. While pitch-class and d-space remain static, the texture arrives at its absolute minimum – both in terms of instrumentation and voice density – and the register is reduced to one pitch. After the following fermata, however, instead of progressing to new material as it had after each four-note iteration of the gesture to this point, the 'signal motif' is reiterated and reinvigorated in texture and d-space creating a sense of forward orientation.

Intriguingly, the rhythmic level within the 'signal motif' at rehearsal 36, while propelling the motion forward by the simple of fact of several repetitions[32], arguably features a reduction in tension by comparison to the static activity preceding it. This is due to a general property of duration: the increase in d-space between successive attacks correlates to a decrease in tension[33]. The attack points in a gesture such as this are spaced further apart, which creates a relaxation of tension in the absence of other significant factors. This is precisely what happens within the rhythmic groupings immediately preceding rehearsal 37.

Rhythm in the phrases immediately preceding each occurrence of the 'signal motif' provides similar support for the other levels of structure to those accompanying the 'signal motif'. These phrases' duration streams never contradict the linear motion of other levels and, in some cases act in support of these other levels. Before rehearsals 1 and 2, the d-space for each layer of the texture – although distinct from the other layers – is equal across the entire phrase.

[32] Up to this point, of course, the 'signal motif' has only appeared as four repeating eighth notes followed by a new, unrelated section. Here, the motif itself repeats three times, with differentiated rhythmic activity for each iteration.
[33] I acknowledge that this claim deserves closer scrutiny and I have yet to encounter a scholar who has asserted or verified this fact. However, I believe this assertion appeals to the readers intuition and trust that s/he will allow me a modicum of leeway in the absence of psychological investigation as evidence.

The successive attack points are, therefore, equally spaced for the texture as a combined whole creating a sense of undifferentiated, amorphous rhythm for the listener.

At rehearsals 10-11, 18-19, and 30-31, however, the rhythmic texture is quite different. These passages feature between three- and four-voice counterpoint, characterized by sustaining notes alternating with sixteenth-note triplets. Analysis of the d-space between successive attacks – for each long note and the first of each triplet figure – yields some support for the notion of directed linearity in the passages. In the following figure, I have reduced the top layer of each passage (representative of the general trend in each layer) to numeric values representing the absolute d-space and the contour for each. The absolute d-space is measured in eighth notes:

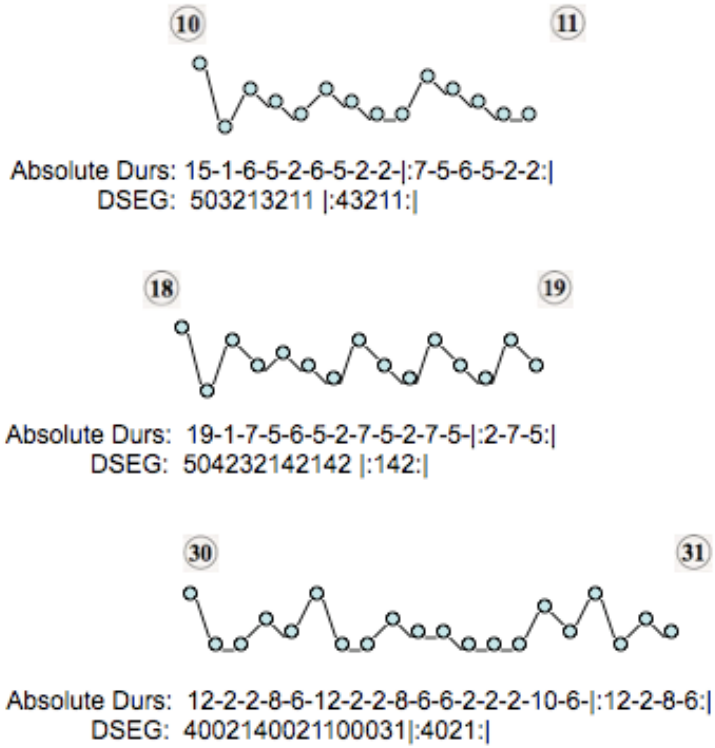

Figure 11. Rhythmic Contour Preceding 'signal motif' (Rehearsals 10-11, 18-19, &30-31)

As this figure shows, there is a general decrease in d-space across each phrase. In addition, each phrase features a fair amount of repetition and each repeating cell also features an internal decrease in d-space. However, this analysis does not adequately represent the increasing tension created through decreasing d-space in each passage. In order to represent this clearly, all layers of the texture must be accounted for, compared, and viewed as a composite whole. Since the passage is *ad libitum* and every performance will be rhythmically distinct, however, reducing all layers to numerical abstraction would not be entirely fruitful. Even were it possible to include the other textural layers of each passage, this would not yield an accurate measurement for discussion. To this end, I have created abstract visual models to represent the increasing density of attacks across all layers of the texture in each passage.

In the following graphs, the dots represent attacks for sustaining pitches and the shaded rectangles indicate each inception of the sixteenth-note triplet figure. The boxes at the end of each layer account for the repeats, which operate independently within each layer. I must, again, acknowledge that these graphs represent one of several possible realizations because the passages in question are *ad libitum* and each instrument must interpret tempo and attack in the absence of a unifying force (conductor). I have assumed the interplay between voices in an "ideal" performance, wherein each instrument moves according to a precisely fixed beat and in conjunction with the others as written. That said, the general property of the passages remains roughly the same, regardless of interpretation in performance. These figures provide a useful means for viewing this general property in detail and comparing the passages with one another.

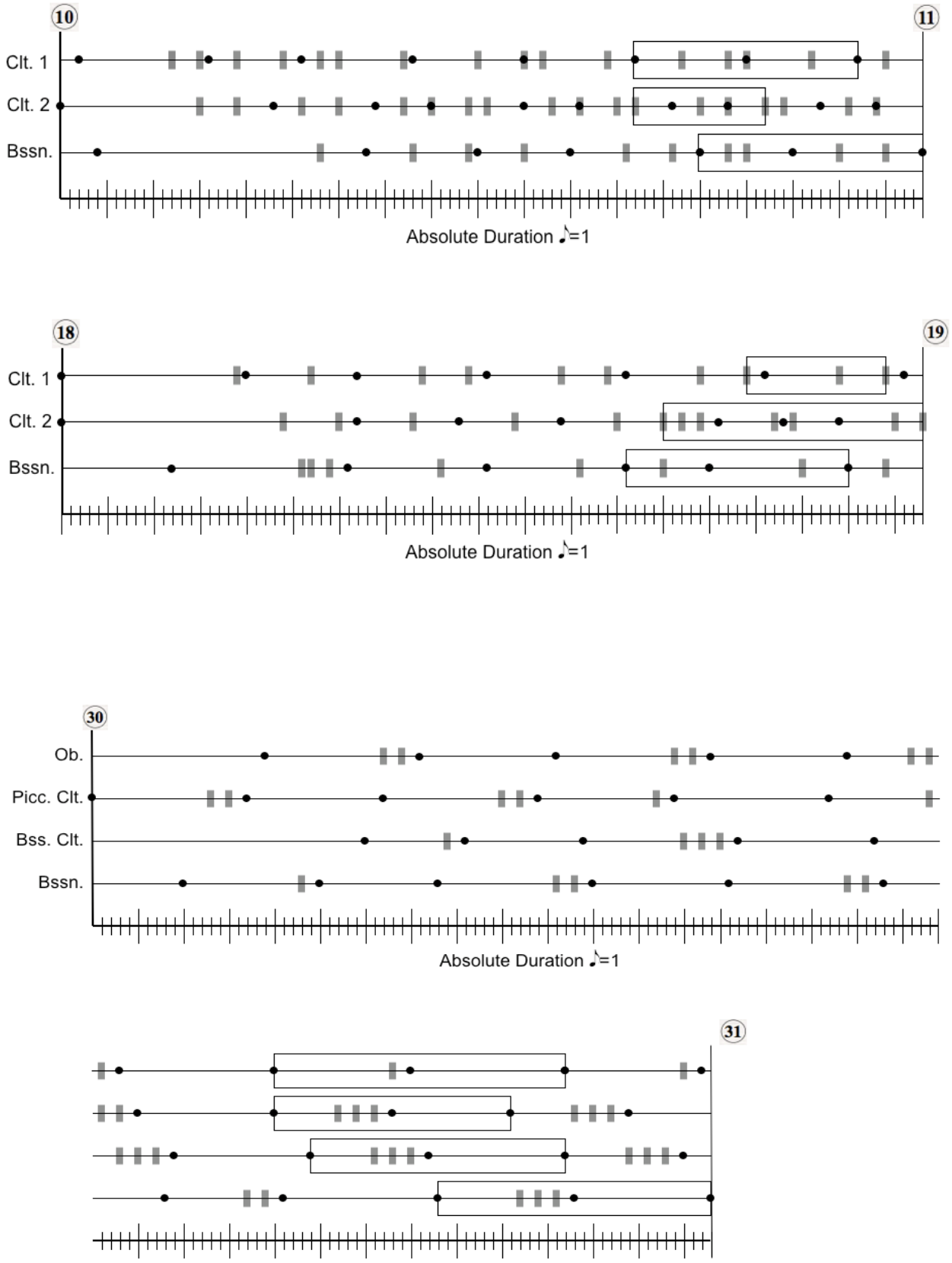

Figure 12. Attack Points at Phrases Preceding the 'Signal Motif'

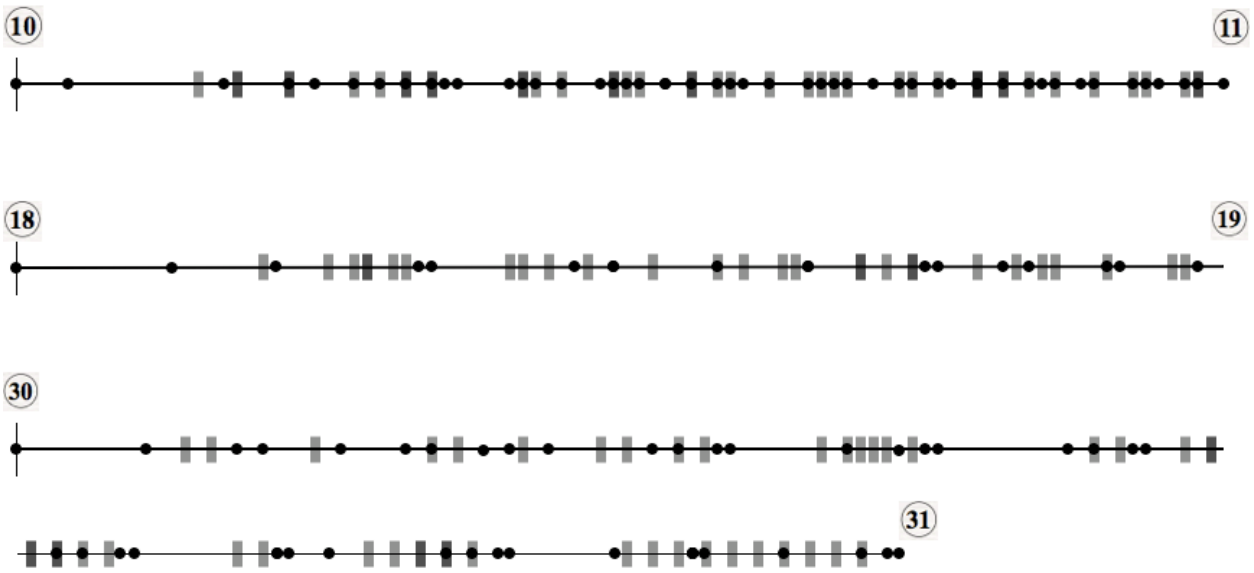

Figure 13. Composite of Attack Points at Phrases Preceding the 'Signal Motif'

As these figures demonstrate, the d-space between attack points across combined layers of the texture generally decreases in each passage. In all three passages, the most significant change in d-space occurs towards the beginning of the phrase. In this way, then, the passages feature an increase in tension and then fall into a pattern of repeating cycles in each layer with alignment between distinct layers creating unpredictable patterns. All of this takes place within an amorphous rhythmic texture. This amorphous texture would probably appear non-directed to the listener if the attack points weren't differentiated by two distinct textural elements: long tones alternating with rapid triplets in groups of three. The general motion across each passage, from sparse rhythmic activity to more dense, demonstrates goal-directed linear motion forward in each case. The absolute rhythmic comparison of all passages is difficult to achieve, given the *ad libitum* quality of each; however, it is reasonable to conclude that each passage functions in essentially the same way. Generally, the rhythmic activity supports motion forward in time as a linear process.

The final passage under scrutiny, at rehearsal 36, contains a similar rhythmic drive forward in time. This passage appears at the end of the first of two imitative polyphony sections in the Main movement. In this case, the material in question occurs *a battuta*, which affords the opportunity for a more precise rhythmic contour analysis. Here, the motion towards a goal is more poignant, but comparable to the previous examples. The line in all voices features a clear, uninterrupted reduction of d-space across the gesture and the composite whole also features a clear reduction in d-space between attacks:

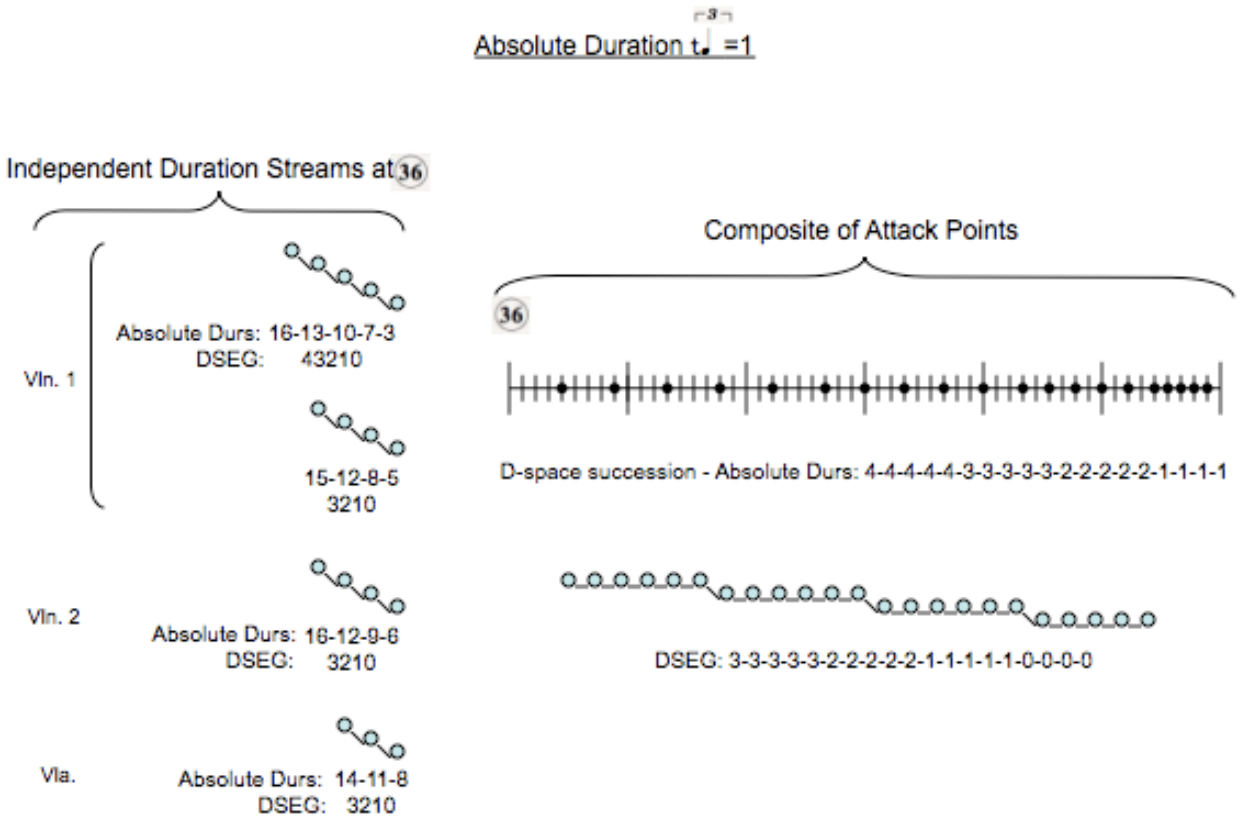

Figure 14. D-space at Rehearsal 36

2.1.5 Summary: Comparison of Contour at Different Structural Levels

As the previous sections demonstrate, the passages preceding these six occurrences of the 'signal motif' feature singularly directed, linear progress towards the motif. In each passage preceding the 'signal motif,' all levels of the structure either support or do not contradict the directed linear quality of the passage. These passages establish listener expectations at an early stage in the work's progress by creating a tangible connection between clear, linear structures and the 'signal motif.' According to the phrase which precedes it, in the first two movements each iteration of the 'signal motif' establishes two functional roles for the motif and these roles are defined differently for different levels of the structure. At the level of pitch, the passage preceding each occurrence is clearly directed towards E, either by neighbor or fifth relation. In this way, the 'signal motif' fulfills the role of functional arrival at the level of pitch. At other levels of the structure, however, the 'signal motif' obtains a dramatic, surprising role and functions not as an arrival but as an interruption of the linear momentum. As later chapters of this paper shall evidence, the syntactical implications obtained between clearly linear episodes and interruptive events significantly impact the form of the work. The listener's expectation of the 'signal motif' as the logical outcome of clearly goal-oriented passages – and the frustration of this outcome by less predictable interruptions within the Main movement – plays a significant role in defining the piece.

In the following figure, I have summarized the linear goal-orientation of each level of the structure, at each passage preceding the 'signal motif'. I have chosen to delineate goal-orientation by including an arrow pointing towards the goal, whether before during or after the material represented. Generally speaking, one can assume that left-right comparisons in this figure represent tension, with greater tension to the right and lesser tension to the left. If a goal is

forthcoming, tension is increasing. If it has already occurred, tension is relaxing. The placement of relative high and low represents distinct aspects for different levels of the structure. At the level of pitch, I have divorced pitch height (a factor of register) from the direction of arrows so that goal-orientation is strictly reduced to temporal placement of the goal. The relative angle of the line indicates the degree of melodic tension inherent in the passage. For register, pitch height is represented by vertical placement. Vertical placement for texture, both orchestration and density of voices, indicates greater and lesser density. At the level of d-space, the direction of the arrow is in inverse proportion to the d-space between attack points since, as indicated earlier, I contend that relative tension at the level of d-space occurs in inverse proportion to d-space.

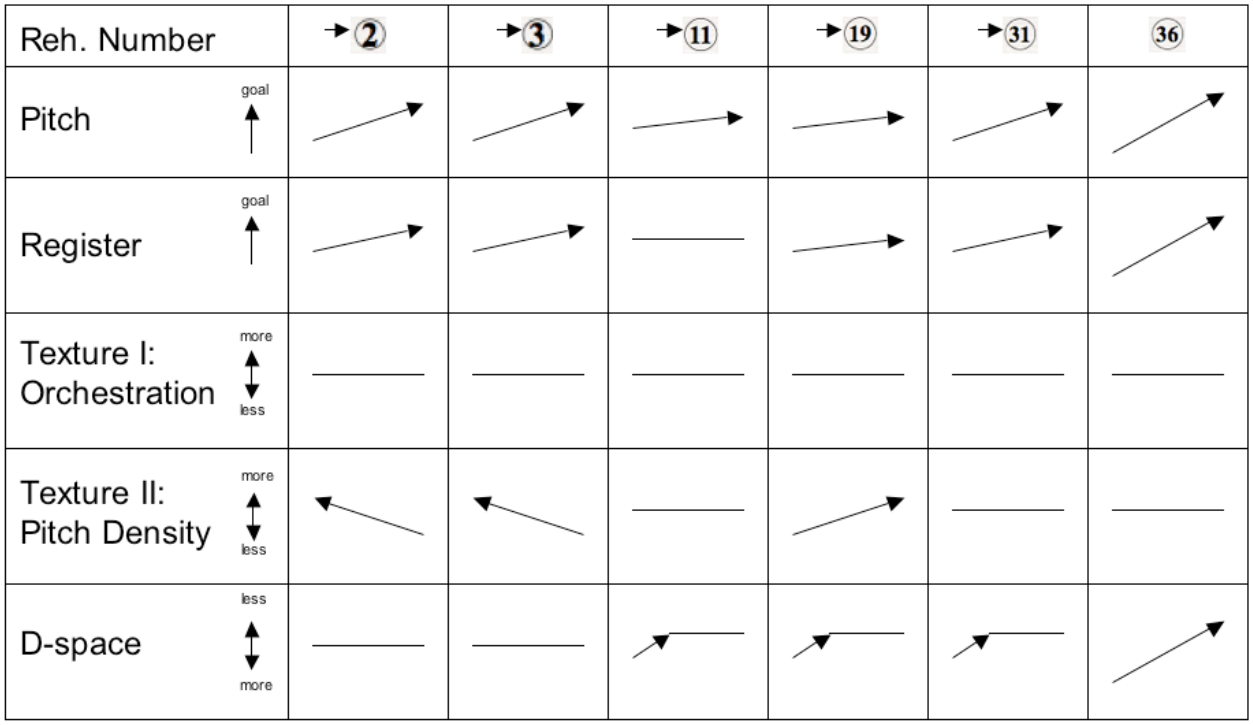

Figure 15. Goal-Orientation for Passages Preceding the 'Signal Motif': Introductory and First Movements

As this figure shows, goal-orientation at the local level remains remarkably consistent, immediately before the 'signal motif,' throughout the Introduction and First movements. In all but two cases – pitch density before rehearsal 2 and 3 – all levels of the musical structure either 1) support the goal-orientation of the passage forward in time or 2) remain static, neither contributing to nor contradicting the linear nature of the passage in question. This graph also demonstrates that the impulse towards a goal increases with each precursor to the 'signal motif'. In the first two phrases, the forward momentum is hindered by contradictory goal-orientation in pitch density. The apex, in these two cases occurs in the previous iteration of the 'signal motif.' In the next two phrases, the level of pitch does not contain a significant impulse towards a specific goal – the pitch class emphasized (B in both cases) is noteworthy largely for its placement at the end of the phrase and in being the lowest in register – but d-space and pitch density significantly contribute to the direction of the line. In the phrase preceding rehearsal 31, the melodic orientation of the passage is more directional and oriented towards the goal. Finally, at rehearsal 36, pitch, register, and d-space are clearly directed, guiding the listener's ear towards the interruption with greater urgency than at any other time to this point.

Of course, one factor contributing to the linear nature of this passage and to the overall form is simple repetition. Since the listener has come to expect the 'signal motif' following these clearly directional passages and since the material preceding each 'signal motif' is similar, the listener reasonably assumes the motif will appear and function as an arrival. As we shall see below, these expectations factor into Lutoslawski's treatment of the ensuing passages.

In addition to the local goal orientation of individual passages, I have also discussed large-scale processes within the 'signal motif' itself. In the following graph, I have accounted for

the directional quality as a large-scale process encompassing the first seven occurrences of the 'signal motif.'

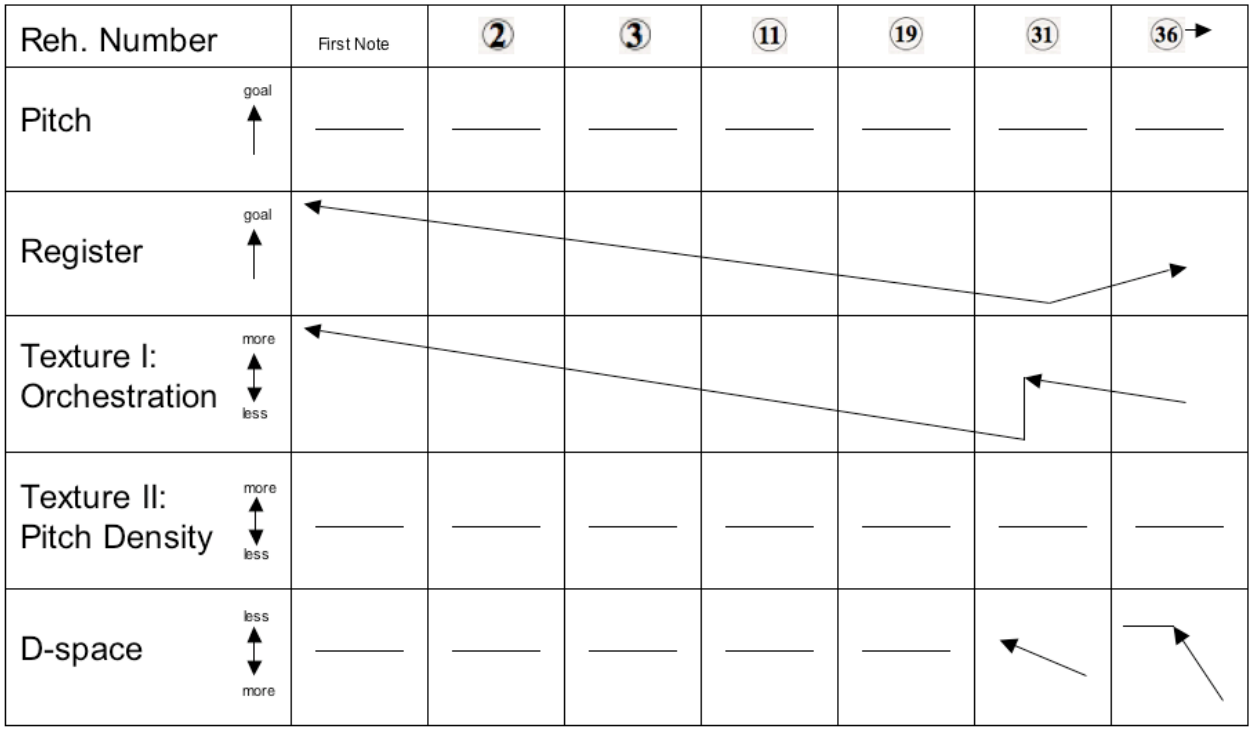

Figure 16. Large-Scale Linear Processes in the Introductory and First Movements: 'Signal Motif'

This figure demonstrates that large-scale processes, especially at the level of register and texture are clearly directed across the first two movements of the work. No level of the structure contradicts the motion of decreasing tension/ away from a goal in these two levels of the piece's structure. At rehearsal 31, these goal-directed processes becomes less clearly defined and the formal ambiguity of the Main movement ensues. From this point forward, passages featuring clear goal-orientation function very differently in terms of defining local phrases, sectional divisions, and the structural climax.

3.0 MULTIPLE-DIRECTED LINEARITY: LOCAL AND LARGE-SCALE CONFLICTING LINES IN THE MAIN MOVEMENT

The Main movement of the Third Symphony features a great deal of formal ambiguity. This results from Lutoslawski's treatment of the levels of musical structure as individual strands, with each level operating independently of the others, and from large-scale processes of interruption and re-ordering in the work. In many cases and – most significantly – at key moments in the movement's form, 1) different levels contradict the goal-orientation at other levels by having differently placed (or implied) temporal goals, 2) the goal-orientation is subverted by some levels, which significantly impose stasis upon the otherwise linear and directed passage, 3) levels coordinate in a clearly goal-oriented manner across a passage only to be interrupted by radically different material, and 4) where linear ideas are interrupted, they often reappear but their recurrence is not coordinated in a logical order according to large-scale goals at some or all levels of their structure. These types of multiple-directed linearity provide an interesting insight into Lutoslawski's careful manipulation of formal structure.

3.1 LOCAL GOAL-DIRECTION AND INTERRUPTION IN THE MAIN MOVEMENT

During the Main movement of the Third Symphony, Lutoslawski subverts the listener's expectation surrounding clearly linear passages by inserting radical interruptions – leaps of register, texture, pitch and orchestration. In several places, goal-directed phrases recur in variation, temporally separated across the movement. In this way, the goal-directed passages are actively interrupted by other, differently directed passages, demonstrating one facet of Kramer's concept of multiple-directed linearity. The directed aspect of linear passages is carefully prepared within most levels of the structure under discussion but is especially emphasized by goals of pitch and register. In the following sections, I will discuss these interruptions, the sonorities they contain, and the phrases preceding them within the context of goal-orientation in individual levels.

On the large-scale, linear goal-orientation in the Main movement is much less clear than the linear connections of the opening two movements and the connections obtained at the local phrase level. This is because the locus and characteristics of interruption in the Main movement are much less predictable and the variation and separation of goal-directed material is not as consistent as in the opening movements. In the Introduction and First movements the goal-directed material preceding the 'signal motif' appears in a logical sequence offering the astute listener a context for recognizing each passage's function as both 1) preparatory to the 'signal motif' and 2) part of a large-scale process: the texture preceding rehearsal 2 and 3 is analogous, as is that before 11, 19, and 31. In each case, the relationship between the directed passage and the 'signal motif' is apparent because the texture is unique to these moments and they appear in relatively close succession, without other significant and differently directed passages

intervening. In addition, the 'signal motif,' while clearly subverting the linear motion and acting as an interruption, also takes on the role of arrival because of the linear pitch connections described in section 2.1.1. In the Main movement, goal-directed passages are not as clearly defined texturally, do not have the same obvious pitch connection to the ensuing interruptive passages, are interrupted by other linear passages, and are not placed in as transparent sequence as they are in the opening movements. All of these factors alter the linearity of these passages, creating multiple-directed goal-orientation on the large-scale.

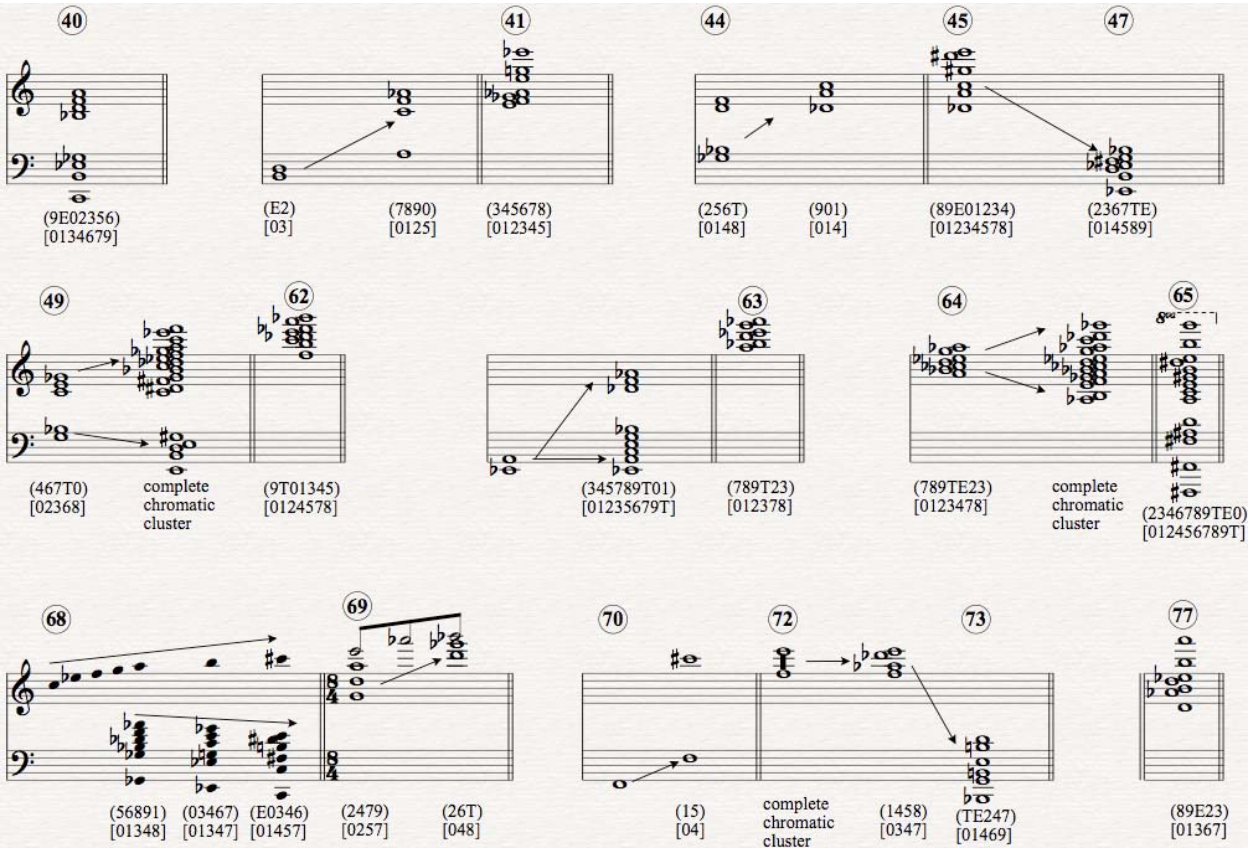

Figure 17. Goal Direction and Interruption in the Main Movement

In the figure above, the interruption of linear progression is, in each case, placed between double barlines in order to distinguish it from the preceding, linear impulse. In some cases

(rehearsal 45-7, 69-70, and 72-3), the interruption is prolonged by directed linear motion projecting forward, so that more than one sonority appears between double barlines. The first sonority presented in this figure is the only iteration of the 'signal motif' in the Main movement and is discussed in greater detail as the 'false summit' in section 3.2. Rehearsal 73 is oriented forward, initiating the drive to the structural climax at rehearsal 77 and will also be discussed in greater detail in section 3.2.

As a point of clarification, I have identified each of the passages preceding these interruptive sonorities as motion *towards* a local goal. Of course, many of the initiating sonorities of each directed gesture may be viewed retrospectively, that is as interruption of or motion away from the previous passage. However, in my view the clear linear direction within local passages of this movement, despite subtle contradictions at some levels of the structure, remains consistently oriented *forward* in time, towards an implied local arrival of some kind. Instead of arrival, as shall be demonstrated, the ensuing sonority acts more as a disruption of the linear, goal-directed impulse, one facet of the 'signal motif' function in the opening movements.

In the following table, I have identified some of the relationships connecting disparate passages of the Main movement. In all cases, the material in question immediately precedes an interruptive sonority or passage. I have also identified some relationships with materials of the First movement:

Rehearsal Number Approached	41 45 72	16 18 62 63	65 69	40 77
Identifying Features	Oblique motion in the brass, characterized by ascending tertiary harmonies.	Additive orchestration in brass on repeated notes.	Melodic material in the strings provides a clear referential connection.	Three distinct passages in succession with similar melodic, textural, orchestrational, d-space, and registral organization.

Figure 18. Relationships between disparate materials in the Main movement

The relationships in the above figure demonstrate the superficial similarities between passages separated in time in the Main movement. In the following sections, I will focus on these passages within the context of their local interruption.

As I will show in due course, the 'false summit' and structural climax provide the most dramatic examples of similarity between separated passages as they contain analogous features in virtually all levels of their structure and the passage preceding are each comprised of three phrases, each with a clear parallel within the other passage. For connections between passages where the relationship is less transparent, texture (as descriptive terminologies) and orchestration often help identify the similarities between passages. In addition, melodic events sometimes provide clues about the coherent relationship. Also, some of the arrival sonorities are connected by aggregating structures, set relationships, or general qualities of intervallic/ orchestrational setting. In my discussion of these passages and their function as a large-scale, composite unit, I shall also address the large-scale implications of these relationships where they may be found.

3.1.1 Pitch

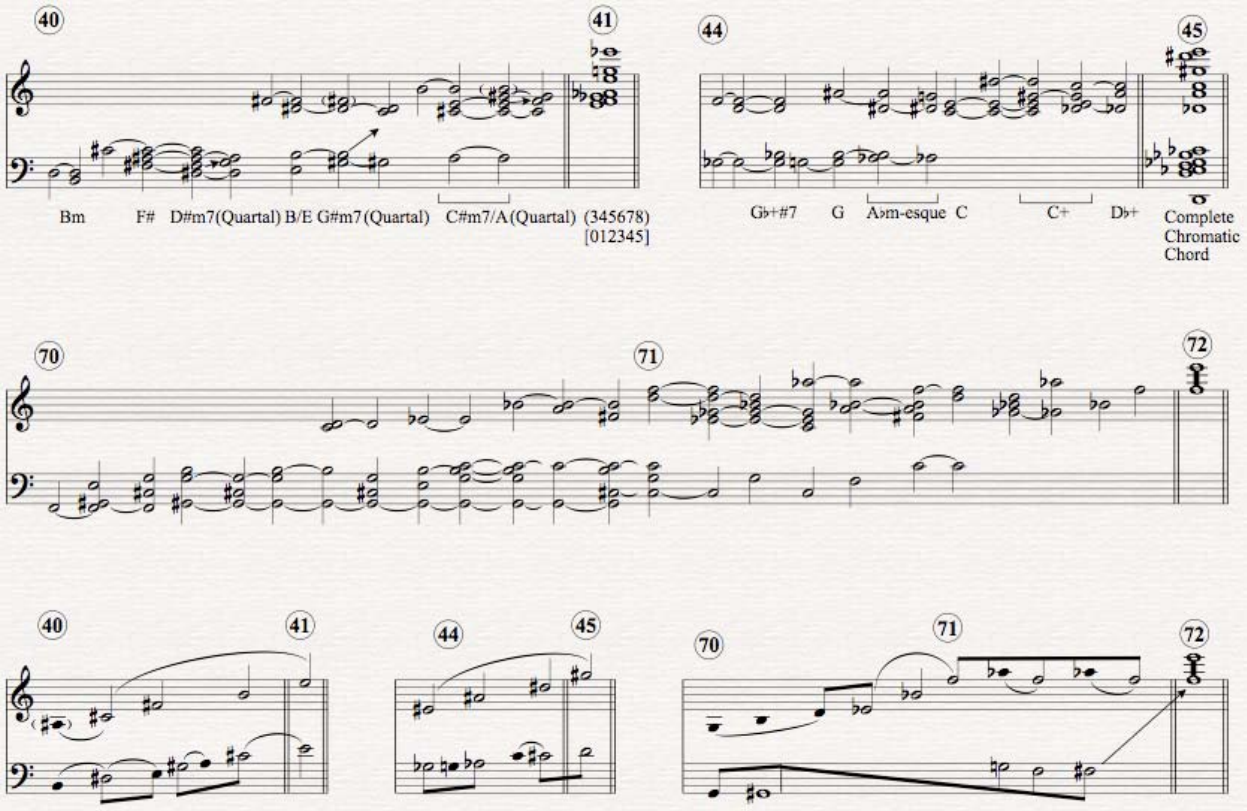

Figure 19. Harmonic Structure and Melodic Reduction of Outside Voices: Rehearsals 40-1, 44-5, and 70-2

As this figure demonstrates, the pitch materials approaching rehearsal 41, 45, and 72 contain many obvious similarities. In these three cases, all voices move by ascent. The top voice cycles upward by the distance of ic5 in all three phrases and the bass-line in the first two features chromatic ascent alternating with major thirds. The first two phrases also feature clearly tertian harmonies unfolding across all four voices as they ascend[34] for most of the phrase. In all three cases, the cyclical/ chromatic motion in the outside voices clearly articulates a structural linear

[34] The labels I have given here are not intended to indicate functional relationships, but simply to demonstrate the consistency in voicing selected by Lutoslawski. In the first phrase especially, each descending arpeggio contains only ac3 and ac4, if one ignores the bass voice.

connection, with the exception of the bass voice in the third passage. Despite the differences between passages, the level of pitch structure in all three cases strongly suggests goal-oriented linear motion in all voices.

Consistent with my previous observations about interruption in the Main movement, however, in each case the clear linear momentum of the passage is preempted by the appearance of an interruptive sonority or a passage composed of very different material. The fact of interruption is clearly articulated at the level of pitch by the basic fact of contrast between simpler tertian harmonies in the preceding phrase shifting to complex chromatic harmonies at the point of interruption. Although the interruptive sonorities demonstrate Lutoslawski's disposition toward clarity in the vertical intervals of complex chords[35], the sonorities they contain are extremely dense by comparison to those of the preceding phrase in each case; thus, a stark contrast.

In each case, the linear structure also fosters the sense of interruption because clearly implied pitches in the melodic domain are obscured in the sonority of interruption. As demonstrated by my reduction, the next pitch implied by tonal cycles in the top voice is present in each case, within the interruptive sonority but it is buried. At rehearsal 41, the melodic line strongly suggests E natural and, more precisely, the absolute pitch E5 as the next logical pitch since it is the natural successor in the chain of ascending perfect fourths beginning at rehearsal 40. E5 is present in the sonority at rehearsal 41. At rehearsal 45, the preceding melody suggests G#5 for the same reason – ascending perfect fourths in the previous phrase – and it is present. At rehearsal 72, C6 would fulfill the continuing chain of perfect fifths in the previous phrase and it

[35] This quality of Lutoslawski's music is most readily apparent in his vertical interval pairings and use of chord aggregates, which bestow a characteristic sound quality to much of his harmonic language. For a more detailed account of this, see Bodman Rae, *The Music of Lutoslawski*, p. 49-57.

is to be found here, as well. However, none of these phrases emphasizes the anticipated melodic outcome through registral placement within the vertical sonority, nor do they suggest resolution at other levels of the musical structure. In each case, the next pitch of the melodic layer is buried within a sonority that is either partially or entirely chromatic and is not placed in either of the outside voices.

Taken as a connected unit and in the order of succession as it appears in the piece, the process of variation for each subsequent passage seems to degrade the clarity of linear progression at each appearance of this texture. In the first phrase, the arpeggiated harmonies and the motion by perfect fourths in the top voice and perfect fifths in the bottom are quite clear, in spite of the slight blurring achieved by intervening, non-structural tones in the bass voice (E and A – identified as pedal/ non-chord tones in the fifth and eighth harmonies). At rehearsal 44, the harmonies are more difficult to discern, as the pattern of oblique motion is more irregular, creating unpredictable rhythmic patterns in the arpeggio. However, the outer voices still clearly articulate a logical progression of linear ascent and aid the listener in identifying the passage as composed of arpeggiated tertian harmonies, especially within the given context of having already encountered analogous texture/ timbre. This time the top voice still moves in a chain of perfect fourths, as it had before 41, but the bass moves in stepwise ascent. In the final phrase the structural lines are much less clear and attempts to label the harmonies as tertian are futile and needless (especially in the absence of tonal function), in spite of the clear textural connection to the other two passages. The bass voice is not clearly cyclical, as is demonstrated by my reduction and, although the top voice still articulates a cycle (this time by perfect fifths), it is now obscured by numerous intervening tones and the pattern is not as systematic as the previous two phrases had been. In general, the final passage features the most liberal exploitation of the material.

Although still recognizable as related, the relationship is emphasized more by texture, register and orchestration than it is at the level of pitch.

Parallel to the large-scale degradation of clarity for each successive linear phrase, the interruptive sonorities become increasingly chromatic. The overarching progress of these interruptions across all three phrases may appear oriented towards the complete chromatic cluster achieved at rehearsal 72[36]. However, the voicing treatment of successive sonorities balances this process across the first two phrases since the sonority at rehearsal 45 is significantly spread out by comparison to rehearsal 41 and the composer maintains clarity for the bass voices by greater spacing in the lower register. By comparison, the twelve-tone chord at 72 is concentrated into the upper register so that the effect is a blur of extremely high pitches, radically different from the interruptions at 41 and 45.

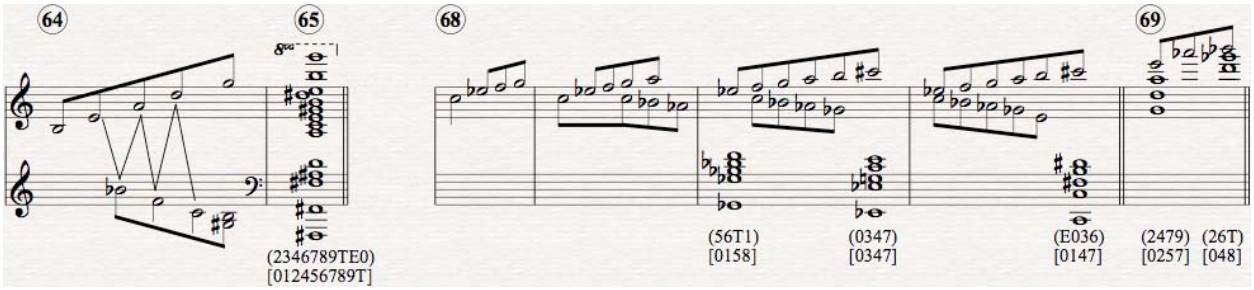

Figure 20. Linear Pitch Material at Rehearsals 64-5 and 68-9

The passages leading to rehearsals 65 and 69 are similar (once again) because of their textural context. Both feature chromatic triplets moving in opposition to the linear propulsion of their structural melodies. They are, however, distinct for the content of their successive

[36] Although it is worth noting that the approach to this complete chromatic sonority is not achieved by aggregating pitch structures, a feature much discussed in Lutoslawski's late music.

intervallic structures. The passage leading to rehearsal 65 once again demonstrates Lutoslawski's penchant for cycling perfect fourths, in this case moving in contrary motion between outside voices. Preceding rehearsal 69, the outside voices traverse two whole tone scales moving in contrary motion. In this way, both passages demonstrate clear linear momentum in contrary motion between both voices, yet are quite distinct in their effect because of the interval class content of successive melodic events.

Much like rehearsals 41, 45, and 72, the interruptive sonority at rehearsal 65 contains the anticipated melodic event – implied by the linear gesture preceding it – and this melodic event is buried within the texture. At 65, the preceding material implies C and it is present. However, unlike 41, 45, and 72, which feature the structural melodic pitch in the octave implied by the preceding cyclical operation, the registral placement of this melodic event is one octave lower than anticipated. The cycle has consistently moved upwards at the distance of a perfect fourth, which would lead to C6 at rehearsal 65 (a perfect fourth from G5). In this case it moves down by a perfect fifth, resolving to C5. At 69, the preceding melodic ascent by whole steps implies D# and this pitch is not present in the interruptive texture. Instead, E appears in the top voice, significantly subverting the listener's expectation as it is not directly connected with the linear passage preceding it in the manner implied by the preceding whole-tone ascent.

The nearly complete chromatic cluster at rehearsal 65 is best understood as a continuation of the process articulated at rehearsals 41 and 45. The harmonic structure of 68-9 is, similarly, connected to the phrases leading to 41 and 45. In all three cases, the harmonic content alternates between tertian harmonies with traditional tonal implications and those with less clear functional roles. The first harmony at 68 is a root position G♭ M7 chord. The next is a bit more ambiguous – C/E♭ or a C triad with both major and minor qualities. The harmony immediately before

rehearsal 69 functions as a B Major chord over a C pedal tone. Given the dominant implications throughout the work for B Major, created by the consistent use of a repeated E as a functional arrival (most significantly at appearances of the 'signal motif'), this harmony feels very much like a dominant chord with an extremely pronounced pedal tone a second above the root. The ensuing harmony does feature a very significant B (with much emphasis in the upper register), almost fulfilling the anticipated resolution of a dominant function but the phrase does not end at this point. Instead, it is prolonged toward the final arrival of D#, which functions in a very unresolved manner. The effect at 70 is extremely unfulfilling, both because of the rhythmic structure – the phrase sort of trails off on beat three – and because of the harmonic implications discussed here.

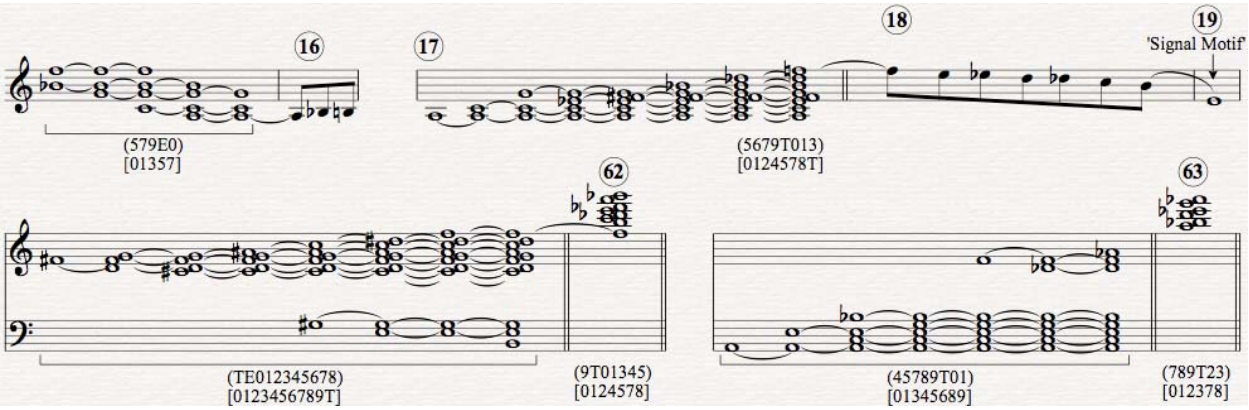

Figure 21. Linear Pitch Structure Preceding Rehearsals 16, 18, 62, and 63

At rehearsals 16, 18, 62, and 63, the linear motion towards an implied goal is very clear. These four passages are united by the fact that each passage attains linear sensibility through a gradual unfolding of vertical sonorities. At rehearsals 62 and 63, the composite sonority created by the *ad libitum* contrapuntal texture at the point of interruption represents a radical shift from the preceding linear propulsion just as it does for the other analogous, linear passages in the

Main movement. Preceding rehearsal 62, the unfolding sonority suggests a melodic arrival to A, since this is the only pitch class not present in the preceding, nearly complete chromatic sonority[37]. Although A is present in the interruptive gesture at rehearsal 62, it is displaced by an octave from the locus of anticipated arrival (absolute pitch = A5) and – similar to the interruptions at 41, 45 and 72 – buried within the texture of the interruptive sonority. These two facts contribute to the unfulfilled quality of the linear passage's goal-orientation. Even less fulfilling, the anticipated arrival to C at rehearsal 63 (the top voice features a chain of perfect and diminished fifths across the phrase) is not present anywhere in the interruptive gesture. At rehearsal 16 and 18, by contrast to every other passage discussed in this section, the ensuing phrase is not a vertical sonority or *ad libitum* texture comprising a composite sonority. In fact, at this point the composer simply introduces a different texture – the pre-'signal motif' material in clarinets and bassoon described in section 3.1.1, which, in effect, *prolongs rather than subverts* the linear propulsion of this phrase. Further, the new passage is directly connected in each case by elision: the lowest pitch of the passage preceding rehearsal 16 is elided with the first pitch of rehearsal 16, as the highest pitch preceding rehearsal 18 is with the first of 18. The relationship described here between rehearsal 16 and 18 and those passages preceding them further emphasizes my point about the comparably greater connection between linear impulses and their arrivals in the opening movements and those of the Main movement.

[37] It is worth noting that A natural is present in the strings (Violin I, 3), not included in my reduction. Although the listener will certainly be conscious of this pitch class at some level, I have chosen to omit the strings from my reduction because they are linked to the preceding passage in a quasi-'chain technique' scheme. Although Lutoslawski did not employ this formal technique in the Third Symphony, the Main movement does feature several structural overlaps, relegated to separate orchestral families. Where such overlaps occur and, especially in the context of my discussion of singularly goal-directed passages, I feel it is important to divorce separate ideas from one another, in spite of their simultaneity. Regarding perception, I think my choice is also justified. Wherever contrasting material appears in such a starkly different texture, it will probably consume the listener's attention as a foreground event and relegate any lingering materials to the background.

All four phrases' harmonic structures may best be understood in the context of their implications upon the large-scale. Generally, though, the linear phrases preceding interruption may be viewed as chromatic chords composed of stacked thirds. Since each phrase features a gradual unfolding of the chord, the motion across each passage is from clear tertian structures to chromatic clusters. The sonorities of interruption at rehearsal 62 and 63 feature a consistent pattern of voicing for clusters in the work: adjacent minor seconds spaced by a major second.

Generally, the previous section shows that clearly directed passages in the Main movement feature interruption of the linear propulsion at the level of pitch, whereas the First movement passages had been linearly connected to that which followed them. In the First movement, the interruption appears in the form of the 'signal motif,' which contains a clear pitch connection to the directed phrase it is interrupting. In the Main movement, the pitch content of the interruption is comparably difficult to predict. Since relationships between the linearly directed material of each movement are transparent, the listener may be assumed to anticipate the 'signal motif' as appearing in the Main movement with a similar function as that of the First. This type of variation – wherein the listener expects clear, linear progress to the 'signal motif' and is, instead, shocked by an unpredictable, interruptive gesture – underpins the entire formal design of the Main movement and, as shall be demonstrated, has significant implications for the integrity of the structural climax.

In terms of the contour of each phrase, the following figure demonstrates the clear, linear goal-orientation of all of the passages examined above:

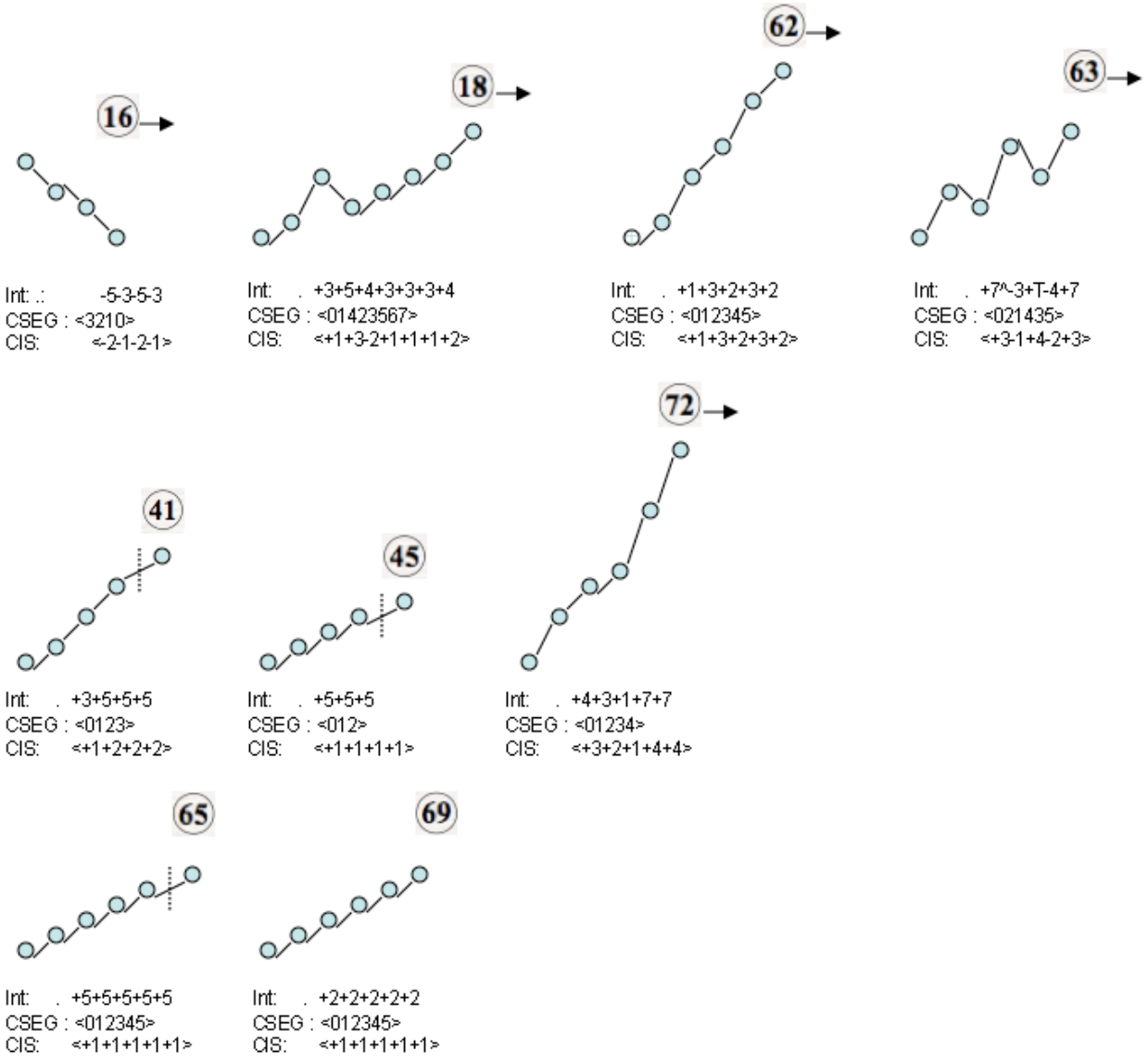

Figure 22. Melodic Contour: Linear Passages in the Main Movement

As this figure shows, the linear propulsion of each phrase clearly articulates motion forward, across each phrase. In only two cases (preceding rehearsal 18 and rehearsal 63), a single interval moves in contrary motion to the overall direction of the phrase. Otherwise, the level of pitch is absolutely goal-oriented in each phrase until it is interrupted.

3.1.2 Register

Perhaps the most significant contributor to the sense of linear propulsion in the Main movement is register.

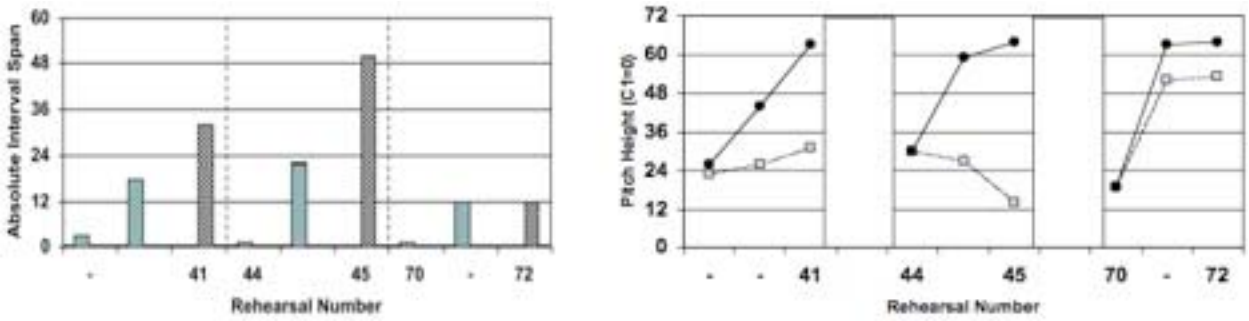

Figure 23. Absolute Interval Span and Pitch Height: Rehearsals 40-1, 44-5, and 70-2

Within each of these passages, the directed motion towards greater absolute pitch span is clear. As the first graph demonstrates, the most dramatic example of registral expansion over time is the middle phrase. These three phrases, which are extremely similar in texture and orchestration are not placed in a clearly goal-directed order across the movement. In other words, it is not as if the interruptions and intervening passages disrupt a coherent ordering of the material. In fact, the final passage of this group of similar passages is the least dramatic regarding register, which supports the idea that large-scale linear processes are disrupted through a re-ordering of events. I will discuss this in more detail in my summary of linear processes across the movement.

Another contrast between these three passages is represented in the second graph. Here, it is apparent that the first and third phrases contain parallel, unified motion of register across the phrase, in the same direction as the eventual interruption. The middle passage, however, features

expansion of register, with the outside voices moving in contrary motion. In this case, the outside voices both demonstrate motion towards the eventual interruption but the motion is towards different goals. In all three phrases, the top voice reaches roughly the same absolute pitch height at the point of interruption and features a leaping approach, yet the distance of leap at the point of interruption is less for each successive phrase.

In spite of these differences, all three phrases demonstrate an internal, clearly directed linear structure. In each case, the linear impulse of the clearly directed phrase is interrupted at the level of register.

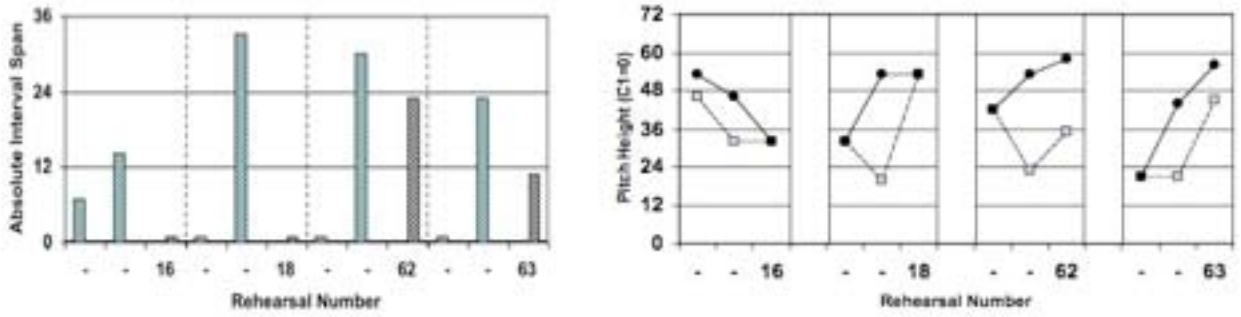

Figure 24. Absolute Interval Span and Pitch Height: Rehearsals 15-6, 17-8, 61-2, and 62-3

The phrases preceding rehearsals 16, 18, 62, and 63 each feature a different goal-directed focus at the level of register. Preceding rehearsal 16, the outside voices demonstrate a slight registral expansion and are directed down. The phrase which follows does not interrupt this process – other than the 'signal motif,' interruption is not a feature of the First movement – but rather elides the bottom voice into another goal-directed passage. Before 18, the phrase begins at a unison pitch, expands in both directions in the outside voices, and then resolves to unison. This time, the top voice sustains into the following phrase and the other voices drop out. Before 62, the phrase begins at a unison pitch, expands outward in both directions and then collapses while

ascending in both voices at the point of interruption. At rehearsal 63, the phrase begins again at the unison, with the bottom voice sustaining across the phrase, the top voice ascends creating an expansion and, ultimately both voices leap upward at the point of interruption.

All four phrases feature gradual, goal-directed structures at the level of register. Consistent with the Main movement, at rehearsals 62 and 63 this goal-direction is interrupted with a dramatic shift of register. As a combined process across the piece, though, the registral processes do not have a clear goal-orientation.

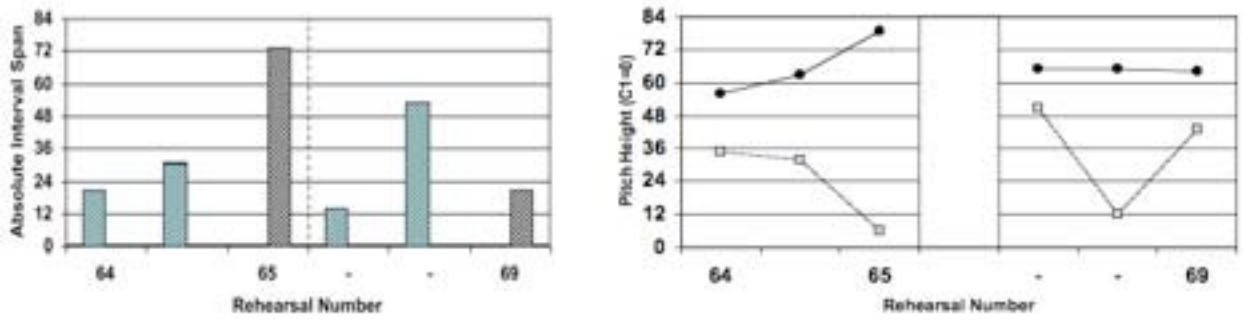

Figure 25. Absolute Interval Span and Pitch Height: Rehearsals 64-5 and 68-9

Preceding rehearsal 65 and 69, goals of register are not as clear in individual voices because each contains other events competing for the foreground. Both phrases feature expansion of register leading to the interruptive gesture. However, leading to rehearsal 69 the expansion is emphasized by the appearance of a separate, downwardly directed harmonic layer. In the foreground layer, these phrases certainly feature registral directedness – gradual expansion in the outside voices (trombones and horns leading to 65, strings leading to 69). However, the registral goal-orientation is not as clear because of the existence of other layers of texture during these passages.

3.1.3 Texture: Instrumentation and Voice Density

The following figure demonstrates the shift of orchestral color at each of the interruptive gestures in the Main movement. The process of instrumental unfolding is gradual in each of the phrases leading to interruption, whereas each interruption features a radical shift of instrumentation. This, of course, provides a clear support for the radical shift in other levels of structure at each interruption. Generally speaking, within a given passage doubling occurs between families of instruments and, within a given family, individual instruments sound individual notes or melodies.

Rehearsal Number	⇨	41	⇨	45	⇨	62	⇨	63
Instruments Present	Brass, Strings	W. Winds, Piano	Brass, Strings, Glockenspiel	W. Winds, Brass, Timpani	Brass, Strings	W. Winds, Percussion, Piano, Strings	Bassoons, Brass, Timpani, low Strings	W. Winds, Xylophone, Glockenspiel, Violins

Rehearsal Number	⇨	65	⇨	69	⇨	72
Instruments Present	Trumpets, Horns, Piano, Strings	W. Winds, Brass, Timpani, Piano, low Strings	Piccolo, Brass, Percussion, Piano Strings	W. Winds, Trumpets, Horns, Strings	W. Winds, Brass, Percussion, Strings	High W. Winds, high Strings, Xylophone, Piano

Figure 26. Instrumental Groupings at the Interruptive Gestures and Preceding Phrases

Each of these passages features clear linear processes at the level of instrumentation and voice density. In the following section, I discuss each passage in more detail according to the passages already identified as correlated.

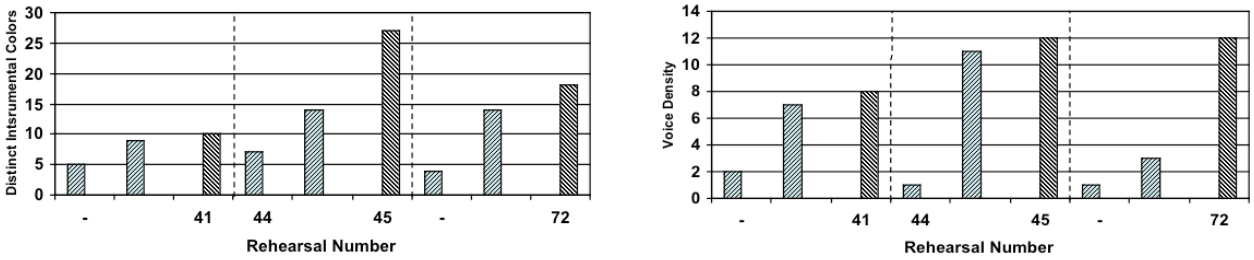

Figure 27. Voice Density and Instrumentation: Rehearsals 40-1, 44-5, and 71-2

As this figure clearly demonstrates, the passages before rehearsals 41, 45, and 72, both at the level of voice density and density of instrumentation, feature expansion across the phrase. This demonstrates clearly directed linear activity. In each case, the interruptive material features even greater expansion of these two levels of the structure. Although not shown in this figure, the process of accretion across each phrase is gradual until the interruptive sonority appears. In general, this is true for all phrases under discussion here.

Consistent with the level of register, the most striking change of density – within the linear passage and at the moment of interruption – occurs in the middle passage. At the point of interruption, this linear passage features the largest grouping of instruments from the most families and contains the greatest number of pitch-classes. The passage leading to 72 features a reduction of these elements by comparison with the analogous passages leading to both 41 and 45. This process contains two significant components. First, given that the linear passage preceding 72 begins with roughly the same number of voices and instruments as the other two passages, the lack of change in this regard across this passage is pronounced. Second and as a byproduct of the first observation, there is a stark shift at this level of the structure at the point of interruption.

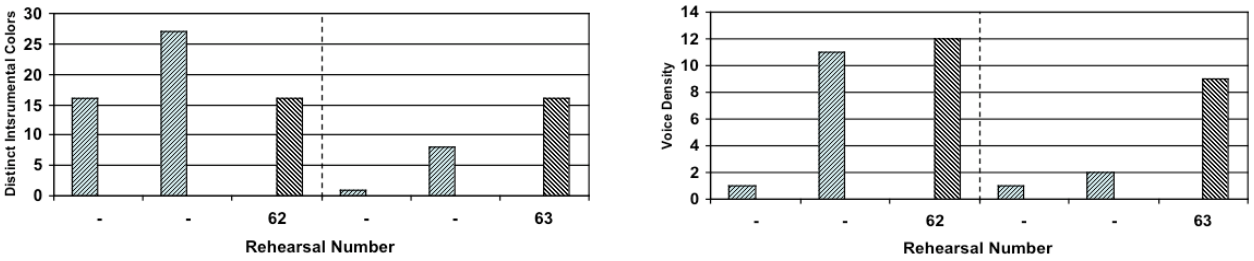

Figure 28. Voice Density and Instrumentation: Rehearsals 61-2 and 62-3

The passages leading to rehearsals 62 and 63 demonstrate, once again, linear directed processes of density by accretion. In both cases, this process occurs gradually across the phrase. The only contrast to this clear linear orientation toward the interruptive gesture can be found at rehearsal 62. Here, the number of distinct instruments present at the point of interruption is less than it had been the preceding phrase.

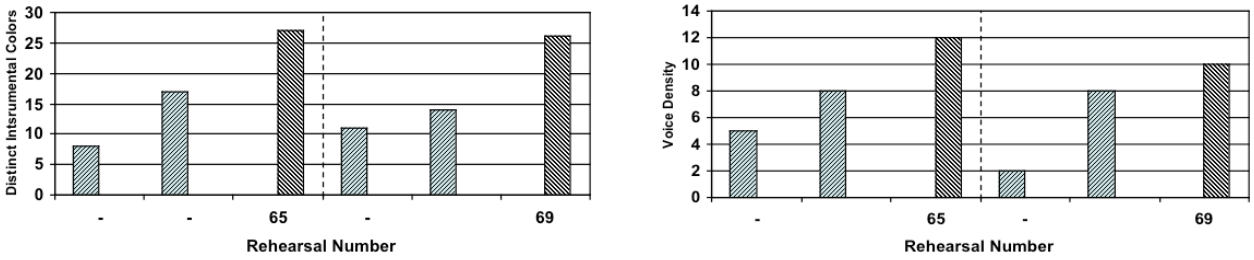

Figure 29. Voice Density and Instrumentation: Rehearsals 64-5 and 68-9

Once again, the passages preceding 65 and 69 demonstrate clearly-directed, goal-orientation. In each case and within both levels of the structure, there is no contradiction to this principle.

3.1.4 Duration Space

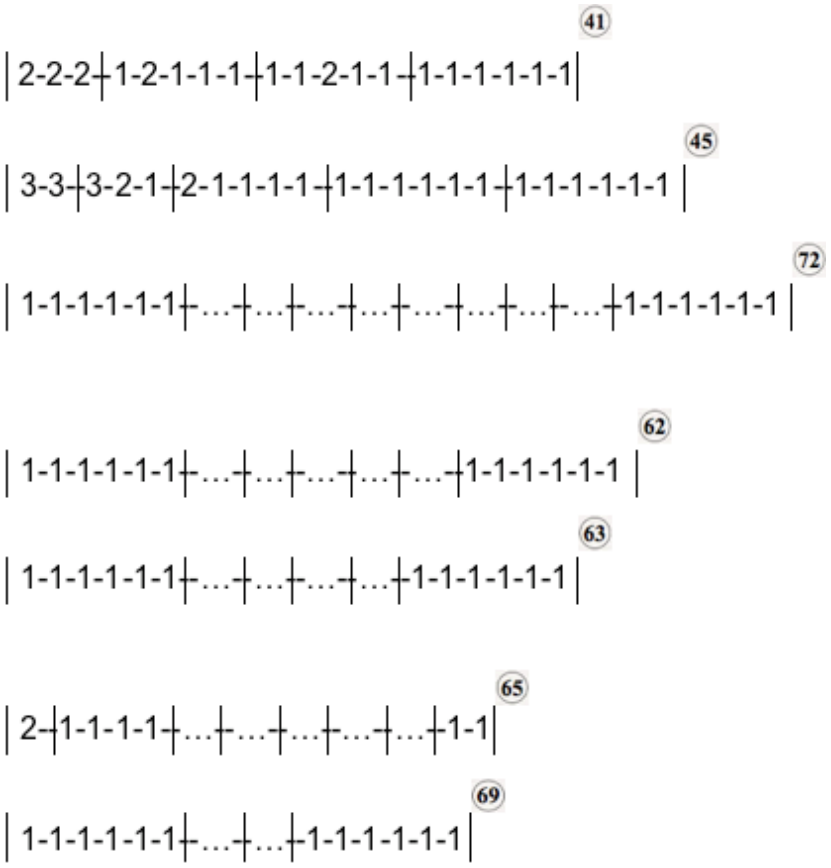

Figure 30. Absolute Durations: Directed Linear Passages in the Main Movement

This figure shows the relatively static activity of the rhythmic layer in all the linearly directed passages. One may conclude from this that, in the Main movement at least, the rhythmic layer does not support the linear activity at other levels of the structure (nor does it subvert it). Rehearsals 41 and 45 demonstrate the only exception to this, featuring a slight degree of linear activity at the beginning of each phrase with diminishing distance between attack points. Consistent with my observations concerning rhythmic contour in section 2.1.4, Lutoslawski demonstrates his proclivity towards increasing rhythmic tension at the beginning of the phrase

followed by stasis[38]. This type of activity propels the phrase forward and, perhaps, prepares the listener for directed linear activity at other levels of the structure before rhythmic contour recedes to the background of the listener's perception. In every case, the interruption that follows either features a rhythmically undifferentiated sound mass or a single sonority. Therefore, the rhythmic activity for the interruption is also static.

3.1.5 Summary: Multiple-Directed Linearity in the Main Movement

In the following graph, I have reduced each directed linear phrase of the Main movement and placed it within the context of the subsequent interruption:

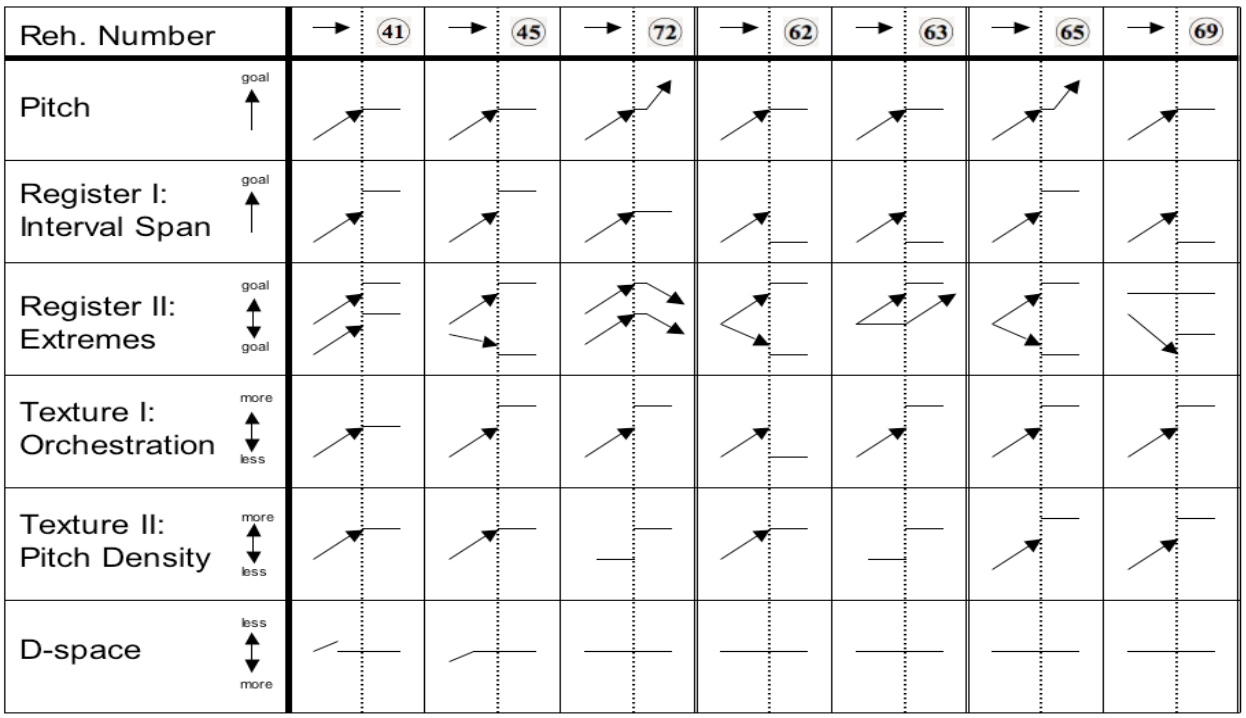

Figure 31. Linear Directed Activity in the Main Movement

[38] See my observations of rhythmic contour at rehearsals 11, 19 and 31 for precedent examples of this in the Third Symphony.

As the figure above demonstrates, all of the phrases under scrutiny feature a high degree of linear directedness at most levels of their structure followed by a radical disconnect which preempts resolution to the implied goal. In these phrases, the linear activity reinforces the expectation of a clear arrival, to be connected with the passage in question because of the norms of the piece up to this point. After all, in the Introductory and First movements the 'signal motif,' although functioning in a somewhat interruptive manner, contained a clear connection – especially at the level of pitch – with the preceding linear phrase. Instead of fulfilling this expectation in the Main movement, however, Lutoslawski subverts it and creates a process of systematic interruption by undermining the connection at several levels of the structure between the linear phrase and the subsequent vertical sonority or "sound mass" passage.

The following figure demonstrates the large-scale motion of register, throughout the main movement. This large-scale motion contradicts a potentially unified drive towards the structural climax simply because there is no clear linear direction toward rehearsal 77, in the manner of the 'signal motif' within the Introduction and First movement (see figures 4 and 15):

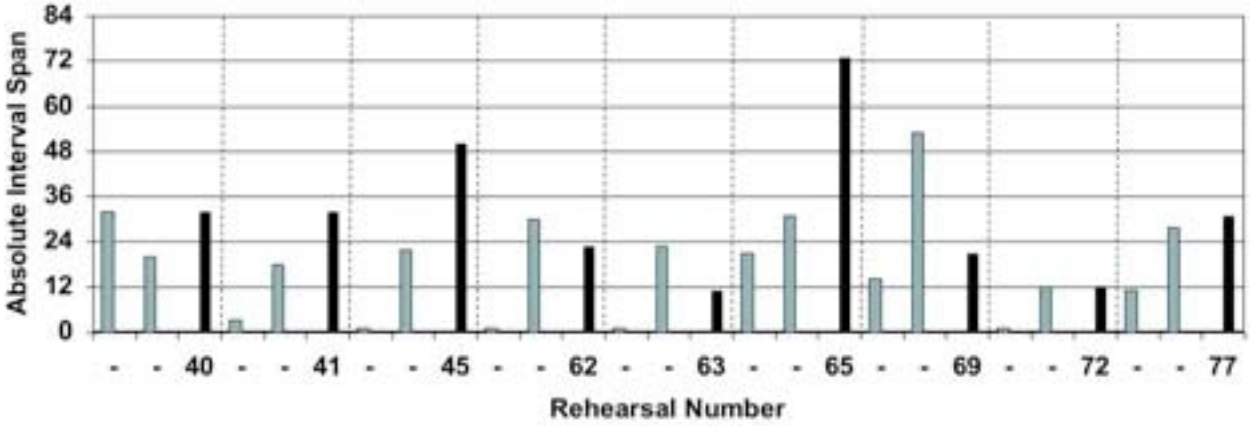

Figure 32. Absolute Interval Span: Goal-Orientation and Interruption in the Main Movement

As this figure reiterates, at the local level in the Main movement most phrases move from smaller to larger span, at the level of register. Most often this motion is carefully prepared by linear motion in the direction of the arrival. At other times, at the point of arrival the shift is dramatic and unexpected. In all cases, there is a general, gradual expansion within the local phrase. Some (rehearsals 40-1, 44-5, 64-5, and 70-2) feature a moderate, uninterrupted expansion of register followed by a further expansion at the interruption. Others (rehearsals 49-62, 62-3, and 68-9) feature an expansion followed by a slight or, in the last case, radical registral contraction within the passage. It is clear, however, that the motion in each phrase is clearly directed as an expansion across the phrase preceding each interruption.

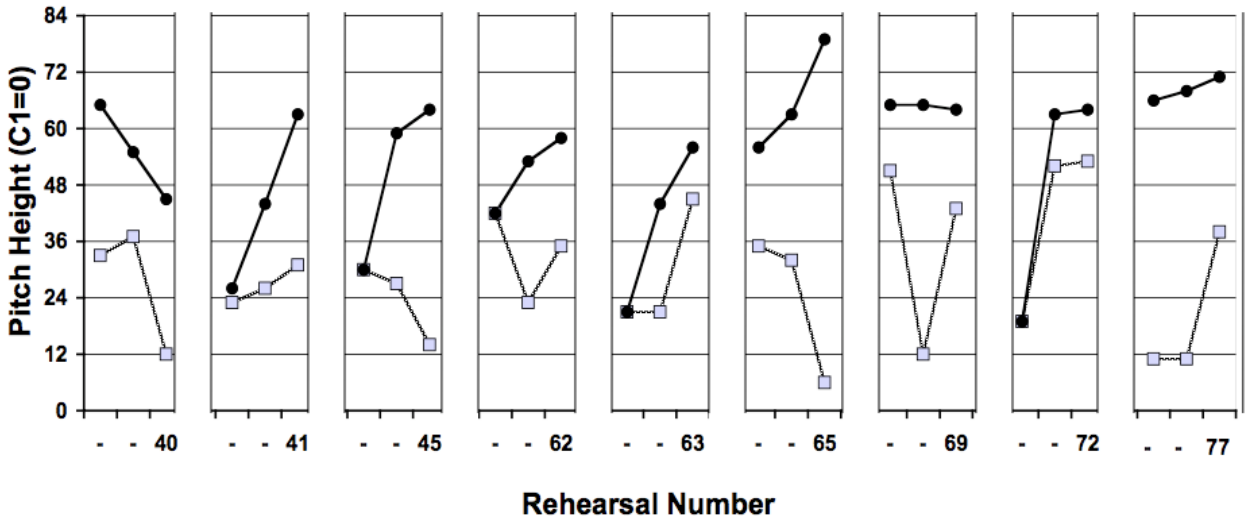

Figure 33. Relative Pitch Height: Goal-Orientation and Interruption in the Main Movement

Similar to interval span, the motion of absolute pitch height also articulates the local goal. With only two exceptions (rehearsals 49-62 and 64-9) the motion in the outside voices is

unidirectional. In addition, each passage features at least one clear shift of register and Lutoslawski has chosen to exploit the extremes of register (especially the high end) to articulate local goals in the Main movement.

From both figures, however, it is apparent that the overarching motion of register towards the structural climax at rehearsal 77 is not unified. The largest register span to this point (and, in fact, of the entire work) is achieved not at 77, but rather 65. In the opening movement, the large-scale progress of registral diminution in the recurrences of the 'signal motif' had been absolutely clear and linear. By comparison, the large-scale motion of register throughout the main movement is not singularly directed. This is best understood by comparing the interruptive sonorities in the above figures. In spite of the local goal-orientation throughout the movement, there is no large-scale, unified linear momentum towards the structural climax at the level of register, either in terms of absolute interval span or pitch height.

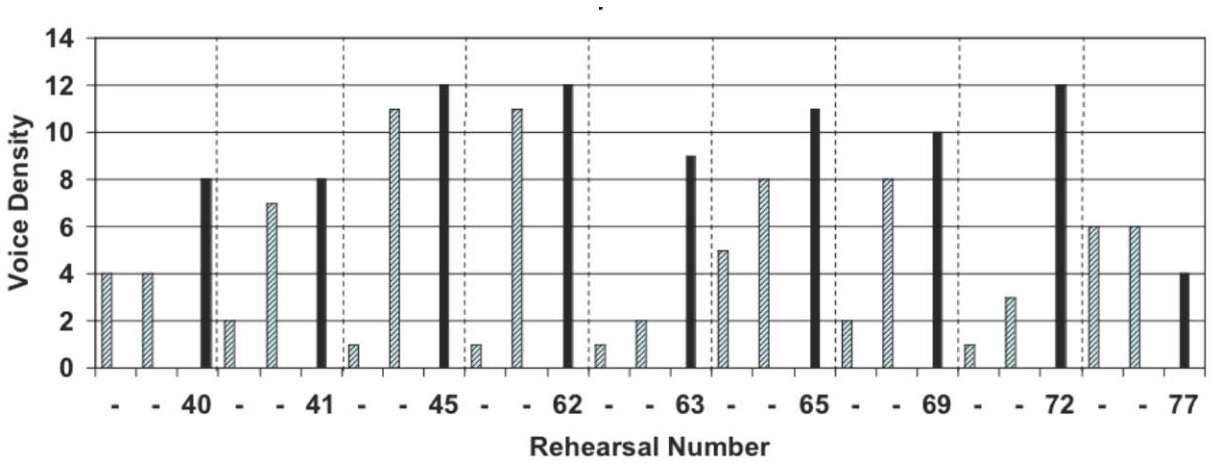

Figure 34. Voice Density: Goal Direction and Interruption in the Main Movement

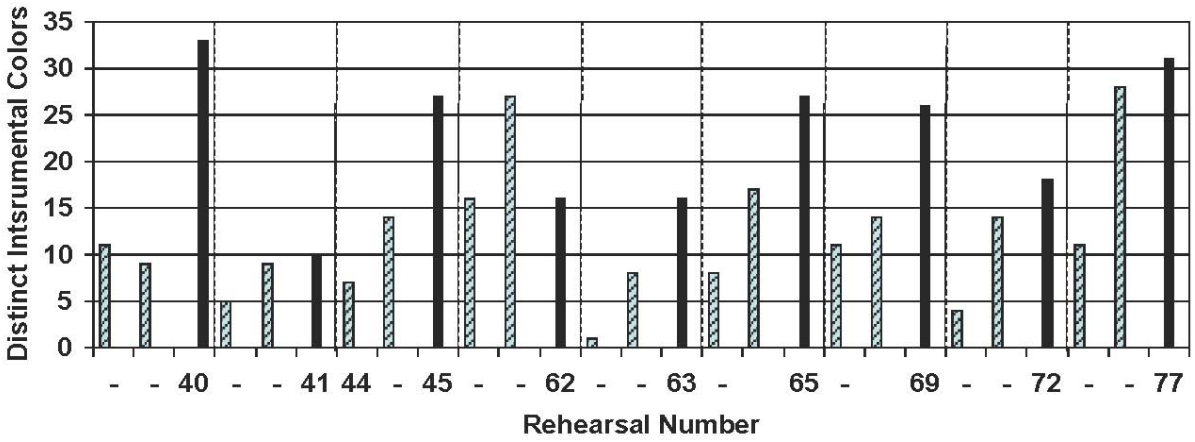

Figure 35. Instrumentation: Goal Direction and Interruption in the Main Movement

As these figures demonstrate, similar to motion of register, there is no large-scale, clearly articulated linear process of texture leading to the structural climax at rehearsal 77. Each of the local phrases demonstrates accretion but they do not connect to each other to form a coherent linear drive to the climax. Instead, they are ordered so that there appears to be no clear, large-scale goal.

As mentioned previously, the level of duration-space remains mostly static in local phrases throughout the Main movement. For this reason, it can hardly be said to support a linear drive towards the structural climax, either.

Rehearsal 65 greatly subverts the clear goal-orientation towards the structural climax at 77. At rehearsal 65, Lutoslawski included the greatest extremes of the work, at most levels of the structure. As previously mentioned, this is the widest distribution of register in the entire work. In addition as the graphs of texture demonstrate, this passage also features a relatively dense number of voices and instruments. The level of pitch is a noteworthy exception to the extreme nature of this sonority. First of all, the immediate approach is not linearly connected to this climactic event so that, on the local level at least it functions as an interruption instead of

fulfillment of goal orientation. Second and, perhaps most importantly, the passage does not conclude or resolve in a clear manner. Instead, it propels the motion forward to the following section. When this passage continues forward and leads to the recognizable material at rehearsal 73, it becomes apparent that the structural event is yet to come. Finally, this passage does not fulfill the large-scale tonal implications of the work in order to seem fulfilling as the structural climax. The sonority here is a nearly complete chromatic chord, firmly rooted on F#. This pitch class has not received enough emphasis in the work to be warranted a structural role. As a result of this fact and of the fulfillment of a more logical tonal outcome at rehearsal 77, the movement obtains a multiple-directed linear structure on the large-scale since there is a misalignment between structural arrivals at different levels of the structure.

As mentioned previously, the aggregate pitch structures common to Lutoslawski's late music are not present to form a large-scale linear process in this work. As the following graph demonstrates, there are essentially three types of harmony at each of the interruptions in the Main movement, tertian structures, those composed of minor seconds spaced by minor thirds, and sonorities containing substructures composed of each interval type and separated by register. All three types are, of course, emphasized by the registral placement of individual voices:

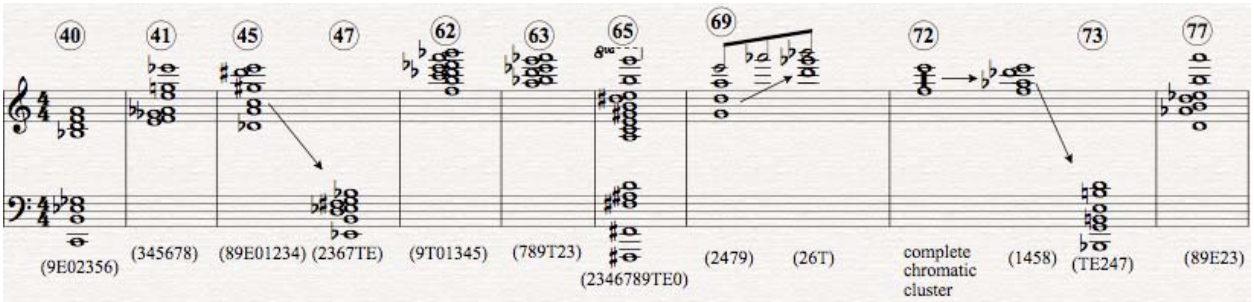

Figure 36. Vertical Structures: Interruptive Sonorities in the Main Movement

Normal Order	(9E02356)	(345678)	(89E01234)	(2367TE)	(9T01345)	(789T23)	(2346789TE0)	(2479)	(26T)	(0-E)	(1458)	(TE247)	(89E23)
Prime Form	[0134679]	[012345]	[01234578]	[014589]	[0124578]	[012378]	[012456789T]	[0257]	[048]	[0-E]	[0347]	[01469]	[01367]
I.C. Content	336333	543210	655552	303630	434442	421242	888984	021030	000300	12-12	102210	113221	212122

Figure 37. Interruptive Sets in the Main Movement

This work does feature complete chromatic sonorities in places (immediately before rehearsal 62, immediately before rehearsal 65, and at rehearsal 72). However, Lutoslawski did not develop these twelve-tone sonorities by relating them to one another on the large-scale. Instead, they usually occur as gradually unfolding sonorities (one pitch at a time), within a local, clearly directed linear phrase. Perhaps most significantly in this regard, the sonority at rehearsal 77 does not fulfill linear propulsion towards an aggregate, twelve-tone sonority. Instead, the sonority at the structural climax is remarkably sparse.

These complete chromatic chords appear to have been fairly freely composed. Each functions according to the preceding phrase, either as a complement, expansion or contraction of that which precedes it. They do not function as part of the large-scale unfolding of a linear process.

Finally, in addition to the above observations many of the linear episodes of the Main movement illustrate a fascinating example of Kramer's contention that "…music can divorce the past-present-future [subjective time] from the earlier-simultaneous-later [absolute time]."[39] As he shows with his own analysis of Beethoven's Opus 135, the Mozart Jupiter Symphony, and other tonal examples, "[w]hile we are listening to a piece, its past is represented by its beginning

[39] Kramer, *The Time of Music*, 161.

profile(s) and its future by its ending profile(s). These temporal conventions retain their identities *no matter where in the piece we encounter them*."[40]

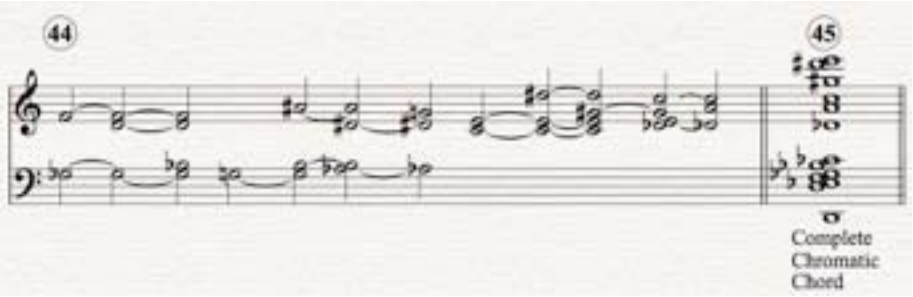

Figure 38. Linear Phrase Preceding Rehearsal 45

One example of this type of displacement of a structural moment can be found at rehearsal 45. In the previous discussion, I identified the sonority at 45 as an interruption of the preceding phrase's linear momentum, as a linear discontinuity with that which precedes it. However, in this case the linear phrase preceding rehearsal 45 does not stop at the point of interruption. The material of interruption (the *ad libitum* texture in the woodwinds) actually overlaps with the preceding linear phrase and the combination of these two elements creates a climactic sonority, largely out of proportion with its placement within the work, as well as within the context of the preceding phrase's momentum. The linear momentum preceding rehearsal 45 is too short (it lasts for only approximately 30 seconds) and too early (to use Kramer's distinction between early and past) within the context of the work's form to warrant such an imposing event. In this way, the moment feels markedly out of proportion with the surrounding material and, from a certain point of view, this can be explained by the displacement of a future event that surfaces at an early stage in the development of the movement.

[40] Kramer, *The Time of Music*, 161, my emphasis.

Of course, I am not arguing that this moment is the structural downbeat, which would be much closer to Kramer's contention about the first movement of Beethoven's Opus 135– namely that the finale appears in measure 10 and is subsequently followed by its own past[41]. In order for this to be the structural downbeat, by definition the upbeat – the preceding phrase – would have to be much more significant and, in fact, the sonority would have to re-contextualize everything before it as upbeat. My ears simply do not lead me to believe this to be the case, here.

Kramer's case about the Beethoven work is strongly supported by the recognizable features of '*finale'* within the tradition of Western Art Music. In the absence of this context, I am here forced to propose somewhat subjective observations about the relative breadth of such a gesture within the linear progression of the work under scrutiny. This subjectivity results from the fact that, in the absence of the tonal tradition, the terms conclusive, structural, etc. are much more flexible within the listener's perception. However, I contend that composers outside the tonal idiom can still achieve multiple-directed linear structures according to the paradigms of a singular work and this is how I hear the event at rehearsal 45. The linear progress toward this goal arrives at the second largest interval span of the movement (see figure 33), the second of only three complete chromatic chords in the movement, and a relatively large grouping of distinct instrumental colors. Because it appears relatively early in the movement, these factors appear out of proportion with the linear progress of the movement as a whole, thus may be viewed as displaced in absolute time.

This passage also provides another poignant example of discontinuity and, thus, of multiple-directed linearity in that the linear progress leading to rehearsal 45 and that leading to rehearsal 72 are disrupted by unrelated, interceding passages. Here we find an example of "[t]he

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[41] Kramer, *The Time of Music*, 150-163.

thread of discourse… [being] broken off as unrelated events pass by, only to be picked up later." This is different from the 'false summit' and structural climax discussed below because when the recognizable event recurs at rehearsal 70, it does not represent the recapitulation or variation of a prominent theme. The passage at 70-71 truly continues the line which had begun at rehearsal 44 and been interrupted at 45.

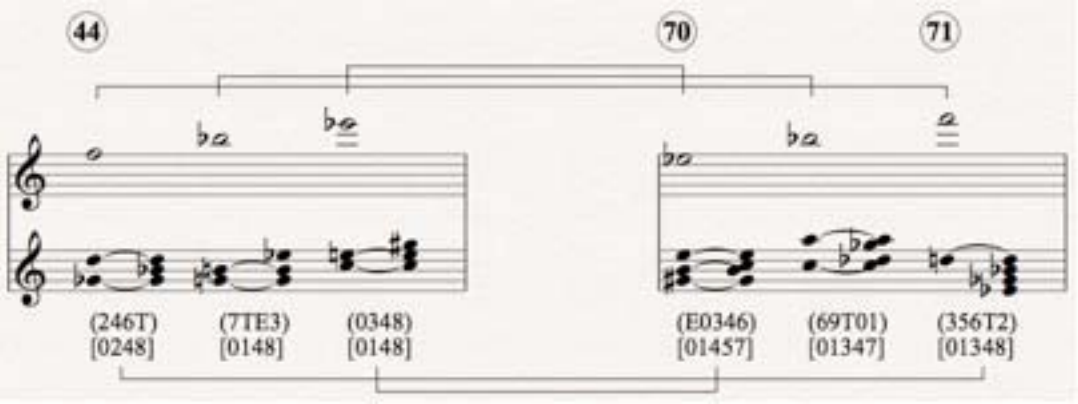


Figure 39. Comparison of Pitch Material between Rehearsals 44-5 and 70-2

As I discussed in section 3.1.1, the texture of these two passages is quite similar – they are composed of essentially the same instrumentation, unfold vertical sonorities in approximately the same manner, etc. In this way, the material will appear readily recognizable to the astute listener. As figure 39 shows, the relationship of pitch material is also very similar. The harmonic layer of rehearsals 70-1 may be viewed as an expansion of the harmonic material at rehearsal 40 but in retrograde. The pitch classes of the melody at 70-1 also represent a retrograde of the material at 45. In this way, there is a direct and intimate connection between the two passages at the level of pitch. In addition to these similarities, there is a contiguous element directly connecting the two passages as an unfolding linear event.

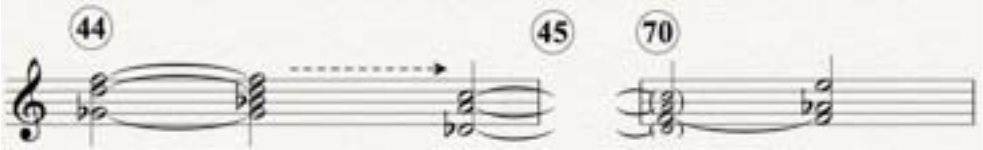


Figure 40. Contiguity between Temporally Separated Passages

As figure 40 demonstrates, the passage at rehearsal 44 begins with an extended tertian harmony (Gb+#7) with no third. The third is then filled in by a fourth voice. At the end of the passage, a similar chord appears a Perfect fifth above (Db+#7) but the third motion remains unfulfilled[42]. The passage at rehearsal 70 begins with a lone F natural (the missing third at the end of rehearsal 44) in the bass voice and this pitch initiates the ensuing passage. Here we have clear continuity between the disparate passages at the level of pitch, drawing an explicit connection between the two events. The F at rehearsal 70 literally connects the sonority at the end of rehearsal 44 with the ensuing passage at rehearsal 70. Although the other pitches of the sonority are not present, the pitch connection, the expectation of arrival to this Db+#7 is fulfilled by the arrival at this specific pitch class and by the clear connection at the level of texture. This fact is further reinforced by the predominance of G# throughout the next few measures, since G#/Ab had also been implied as the next note in the cycle of ascending perfect fourths in the melody at rehearsal 44.

This discontinuity represents exactly the type of multiple-directed linear process as described by Kramer. Coupled with the fact of constant interruption of linear momentum in the Main movement, this process fosters a sense of disorientation in the listener creating a tension between absolute time and subjective time and the listener is confronted by simultaneous reality

[42] At rehearsal 45, an F natural does appear in the trombone 1; however, this note is buried within the texture of the complete chromatic sonority, similar to the implied pitch of the melody discussed in section 3.1.1.

of both. The line between past-present-future and earlier-simultaneous-later becomes distinctly drawn so that the listener is left to wonder where the formal continuity of the work may lie.

3.2 'FALSE SUMMIT' AND STRUCTURAL CLIMAX: REHEARSALS 37-40 AND 73-77

The Main movement of the Third Symphony features the structural climax (rehearsal 77). As has been noted by many Lutoslawski scholars, this climax is different from most of the other works of his middle and late period:

> The climax of the Third Symphony is radically different to the equivalent moment in Lutoslawski's earlier orchestral works, both in treatment and in function. Most of the pieces of the 1960s and 70s reached a point of collective *ad libitum* on a *fortissimo* twelve-note chord, or twelve note chord aggregate. In this case, the climactic harmony is less dense. It is metered and immediately moves beyond a highpoint that is attempted rather than achieved.[43]

In spite of the relatively reduced proportions of this climax at many levels of the structure by comparison with other works of the same period, this moment functions as a structural downbeat. By this, I mean that this moment represents a convergence of harmonic and melodic material that re-contextualizes everything that comes before it in the piece. As I shall discuss in more detail below, the level of pitch (especially in the melodic layer) articulates this climax and its preparation with a modicum of clarity. Ultimately, this is due to the predominance of B in the sonority found here – which acts much like a functional dominant in the work – and the linear processes of melody in the three phrases preceding it. However, the textural and rhythmic levels of the passages preceding the climax subvert the impact of the moment by contradicting the

[43] Bodman Rae, *Music of*, 173.

linear impulse. This feature is amplified by comparison between the three phrases preceding it and three similar passages earlier in the movement.

In my discussion of singularly directed linear processes (chapter 2), I established a clear syntagmatic relationship between the material preceding each occurrence of the 'signal motif' and the motif itself. Unlike the opening movements, the Main movement does not feature a clear, linear process for the interruptive gestures across the large-scale. Instead, the interruptions appear in no clear order, with no clear linear process connecting them on the large-scale. Before the Main movement begins, the material immediately preceding the 'signal motif' has attained its own, predictable identity. The lack of this identity across the Main movement subverts the impact of the structural climax at the end of the movement because the listener is largely unprepared for a structural moment by the intervening material, which does not have a transparent, linear structure.

A passage with analogous contour to that preceding the structural climax appears early in the Main movement and, by comparison, also serves to diffuse the impact of the structural climax. This results from the differences in linear impulse at many levels of the structure other than the melodic. In the following sections, I draw comparison between these two passages in order to demonstrate how multiple-directed linear structures can occur with different levels of the structure contradicting the directed linear impulse of other levels.

3.2.1 Pitch

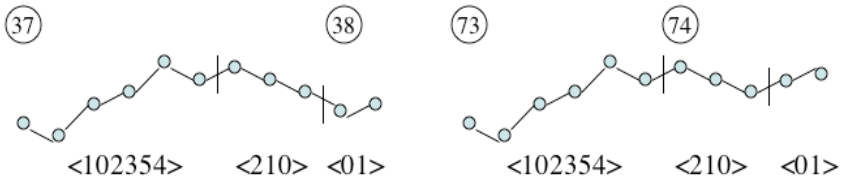


Figure 41. Melodic Contour: Comparison of CSEGs at 37-8 and 73-4

As this contour graph demonstrates, the melodic layer at rehearsal 37-8 contains many similarities with that at 73-4. In fact, each subphrase group of the former section – separated by vertical lines in this figure – contains an analog with identical Contour Segment (CSEG) in the latter and these analogous units appear in precisely the same order with precisely the same durational proportions (excluding the interruptive gestures in the second passage, discussed in more detail below). In fact, the only significant difference in contour between the two passages is the direction of interval between the penultimate and final suubphrase units. At 38, the last subphrase is approached by descent. At 74, by contrast, the final one is approached from below.

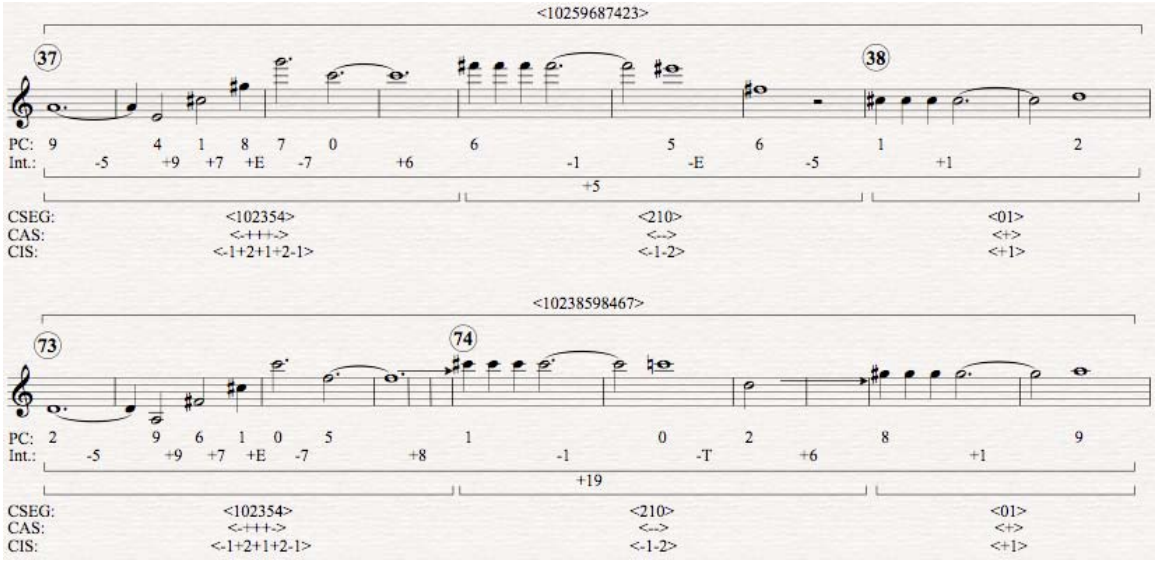


Figure 42. Comparison of Melodic Layers at 37-8 and 73-4

In the above figure, the principle differences of melody between these two passages are shown to be the absolute interval content spanned between successive pitches (only slightly altered), the transposition level of each phrase (the second passage begins a perfect fifth lower than the first), the treatment and placement of the highest note within the phrase, and the direction of interval between the final two subphrase groups of each passage. In addition to the graphic representation of contour, this last element is demonstrated by the absolute interval distance between the first and last note of each passage – five semitones up for the first phrase and nineteen up for the second. Of the three distinctions elicited here, the last has the most striking impact. It dramatically alters the overall contour of the large phrase group, as well as – on a larger phrase level – affects the continuity between each passage and the passage succeeding it. The melody of the ensuing passage is approached by a large leap in the first case and is linearly connected in the second (+E at rehearsal 38 and +1 at rehearsal 74-5, demonstrated in the table below with a barline between passages). This treatment lends the

melodic layer a clearly directed focus between phrases for the second passage that had been lacking in the first.

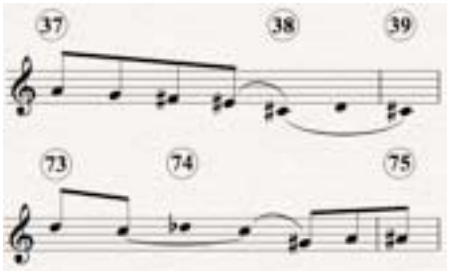


Figure 43. Reductive Analysis – Foreground Melody at 37-8 and 73-4

My reductive analysis demonstrates that the melodic direction of each passage is quite distinct, in spite of the countless superficial similarities between them. After the highpoint at rehearsal 37 is reached, the melody undergoes a clear linear descent for the first two subphrase groups. When the C# is reached at rehearsal 38, the direction of the line becomes relatively static, hovering around C# for the following 'chorale-like' section. In the passage beginning at rehearsal 73, the first subphrase does not contain the same directed descent as had been clearly articulated between rehearsals 37-8. The clearly directed part of the figure (G#-A) comes at the end and functions, primarily, to connect this passage with that which follows by chromatic ascent.

Interestingly, each of these gestures supports the relative direction of the ensuing, sectional climax. Just as 37-8 is characterized by descent, a sustained linear descent appears in the top voice at the local climax of rehearsal 39 (8-7-4-3-0-E-8-7).

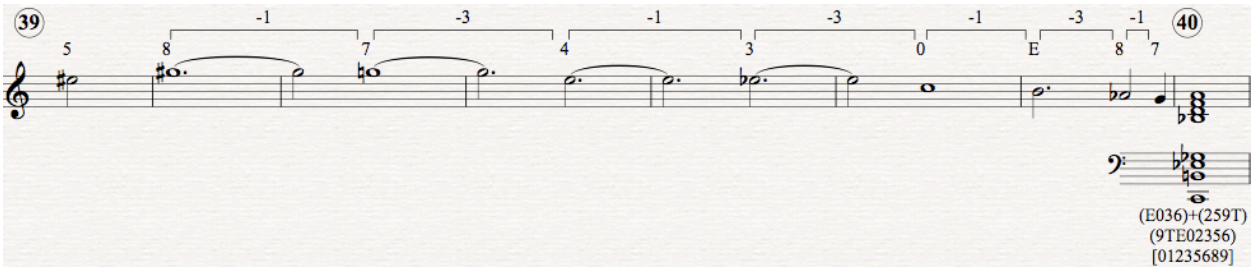


Figure 44. Melodic Descent to Local Climax at Rehearsal 40

This gesture strongly suggests resolution to the 'signal motif' at rehearsal 40, since the note which would appear next in the cyclic rotation of alternating minor seconds and minor thirds in the melody would be pitch class 4 and since passages with analogous melodic, textural and rhythmic structures have always resolved to the 'signal motif' up to this point (see rehearsals 1, 2, 10, 18, 30, 32-6). The texture, dynamic, timbre, and rhythmic quality of rehearsal 40 clearly adhere to the 'signal motif' but this is the first appearance of that texture containing something other than pitch class 4. The arrival at a different sonority (9TE02356) is reminiscent of some alternative cadence type in tonal music, essentially a deceptive cadence. A half cadence is suggested by the fact that this sonority is actually a chord aggregate (E036+259T), with the triadic sonority in the lower voices (E036) functioning as the dominant of E. However, the lack of a clearly dominant sound – after all, an aggregate does not sound like a dominant seventh chord – leads my ear to the deceptive cadence analogue[44].

By contrast, at rehearsal 73-4 the high point of the gesture followed by a momentary relief (0-1-0-9), projects forward in a linear ascent across the ensuing passages (T-1-0-2-5-6-7-8), all of which drives towards the true climax of the work at rehearsal 77, (234689E).

[44] Lutoslawski's choice to move away from E at this point in the piece conforms to a very traditional model of form. The opening movements have essentially reinforced the tonic much like the A section in a tripartite structure. According to a traditional formal context, it is necessary at this point in the work to venture into a different tonal area.

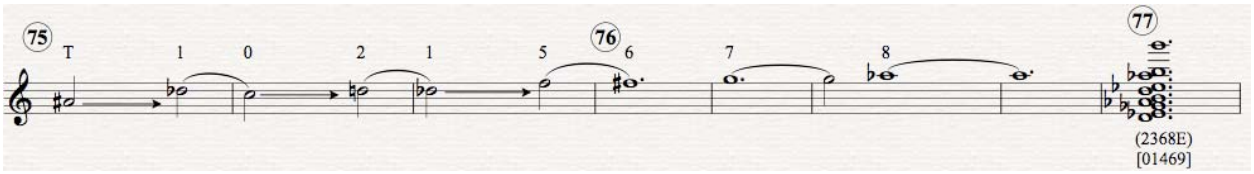
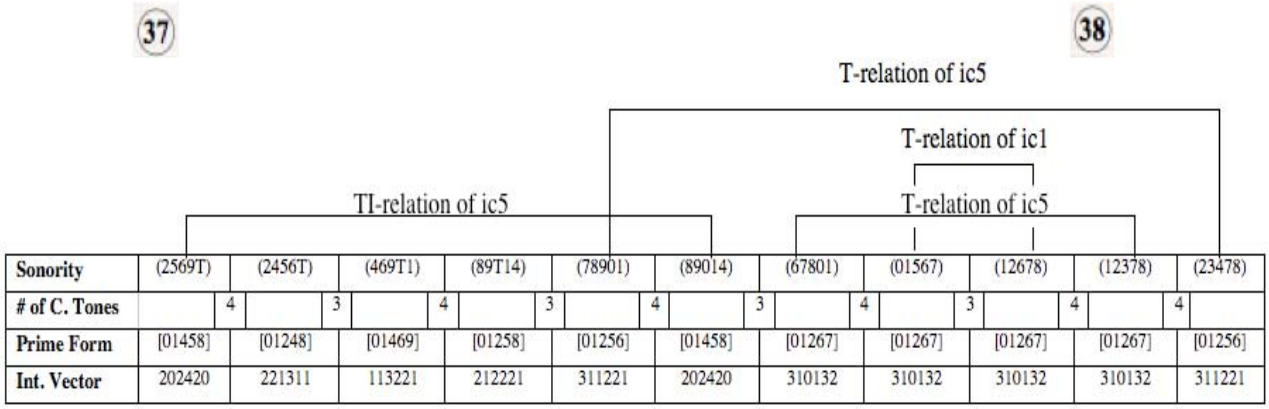


Figure 45. Melodic Ascent to Structural Climax at Rehearsal 77

Interestingly, the listener expectation is almost certainly directed towards some iteration of the 'signal motif' at 77, especially in the levels of texture/orchestration and rhythm, primarily because of the similarity between the three preceding phrases and those preceding rehearsal 40 which had led to a variation of the 'signal motif.' However, none of the levels of structure at rehearsal 40 allude to the 'signal motif' other than dynamics and even these are effected by the *tutti* orchestration, which has not appeared in the motif to this point. Although the harmonic structure does not strongly merit parsing into a bichordal, aggregate structure as had appeared at rehearsal 40, this sonority does contain all three notes of the functional dominant (B, D#, F#). In addition, the root of this dominant is emphasized by doubling and registral placement.



Sonority	(2569T)	(2456T)	(469T1)	(89T14)	(78901)	(89014)	(67801)	(01567)	(12678)	(12378)	(23478)
# of C. Tones	4	3	4	3	4	3	4	3	4	4	
Prime Form	[01458]	[01248]	[01469]	[01258]	[01256]	[01458]	[01267]	[01267]	[01267]	[01267]	[01256]
Int. Vector	202420	221311	113221	212221	311221	202420	310132	310132	310132	310132	311221

Sonority	(79TE24)	(479TE)	(9TE2467)	(679TE124)	(6789TE0124)	(45679TE12)	(12378)	(78012)	(89T23)	(9TE23)
# of C. Tones	5	5	7	8	7	3	4	2	4	
Prime Form	[012479]	[01247]	[0124579]	[0134578T]	[012345679E]	[01235679T]	[01267]	[01267]	[01267]	[01256]
Int. Vector	233241	222121	344451	456562	898884	667773	310132	310132	310132	310132

Figure 46. Set Structure of Sonorities at 37-8 and 73-4

As the previous figure demonstrates, the first subphrase at 37 begins and ends with sonorities composed of inverse-related collections. The two transpositions of this prime form set feature an interesting characteristic in that they are almost entirely exclusive of each other. In fact, they only share one common tone. However, each sonority of this subphrase contains either three or four common tones with its successor. Given that each only contains five pitch classes, the fact of three or four common tones between successive sonorities provides tonal stability at the immediate level, while maintaining a unique quality (as demonstrated by the ic content) for each, despite the overarching progression to a distant collection. In tonal music, the same effect might be achieved by progressing through a series of closely related harmonies, say by fifth relations, until arriving at an extremely distant one. Finally, the sensation of phrase resolution is here achieved by a descending perfect fourth in the bass voice, motion by perfect fifths and

major thirds in all other voices, the point of highest registral tension in the penultimate chord resolving downwards, and the relatively large d-space afforded the final sonority by comparison to the rest of the subphrase.

The remainder of this passage features transpositions and transposed inversions of a prime form collection (01267) resolving to a final collection (01256). In this final resolution, two voices (violin II, 2 and Viola I, 2) remain static while the remaining voices resolve up by semitone. Consistent with the beginning of the passage, the number of common tones between successive sonorities in these final five sonorities is, alternately, three and four. The final sonority of the passage actually functions as a leading chord to the passage which follows, a relationship already established by the placement of a transposed variant of the set as the penultimate chord to the previous resolution (in my figure, this relationship is demonstrated by the tallest bracket, which connects the fifth sonority of 37 with the last one at 38). Finally, the opening sonority of the ensuing passage is approached by an ascending major seventh in all voices – a textural pattern which further reinforces the cadential quality of the figure since the simultaneous motion of a major seventh is also a prominent feature of the subphrase resolution before 38 (although there it is motion by descent).

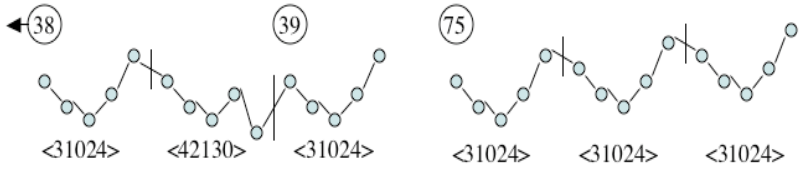


Figure 47. Melodic Contour: Comparison of CSEGs at 38-9 and 75

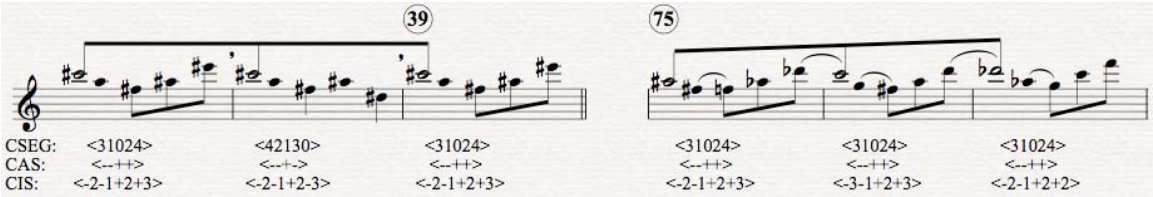


Figure 48. Melodic Reduction of 38-9 and 75

As the above figures demonstrate, the prevalent Contour Segment (CSEG) in the melodic layer of the "chorale-like" texture at rehearsal 38-9 and 75 (<31024>) is identical for all but one of the subphrase groups, as is the Contour Adjacency Series (CAS). The melody of each passage is differentiated only by the absolute interval spanned within subphrases and across the entire group, the intervallic distance between subphrase groups, and the placement of a different CSEG in the middle of the first passage. This exceptional subphrase is related to the surrounding material – its Contour Interval Succession (CIS) is differentiated only by the direction of the final interval. It should be noted that, in every other case, within both passages the final pitch of each subphrase group is the highest pitch of that group and is approached by two successively rising intervals. This fact lends each subphrase the sensation of increasing tension. However, this tension is unresolved in the first passage, since each iteration of this CSEG begins on the same pitch class, within the same register (C#6). In addition, each subphrase entrance is approached by a leap and the three subphrases appear in nearly exact repetition. All of these factors lend the overarching phrase a feeling of non-directed stasis, both within the context of the surrounding passages and by comparison to the second appearance of this texture (at rehearsal 75). The directional nature of the latter episode is reinforced by the transposition level of each of the subphrase groups. Here each subphrase is approached from above by a semitone (giving the whole phrase a more connected feeling and resolving the tension produced by the preceding ascent) and the beginnings of each subphrase outline a stepwise ascent (T-0-1), as the melodic

reduction demonstrates. At the structural level of pitch, the result at rehearsal 75 is perceived as increasing tension/ goal-directed linear motion, which had been lacking in the first iteration of this “chorale-like” texture.

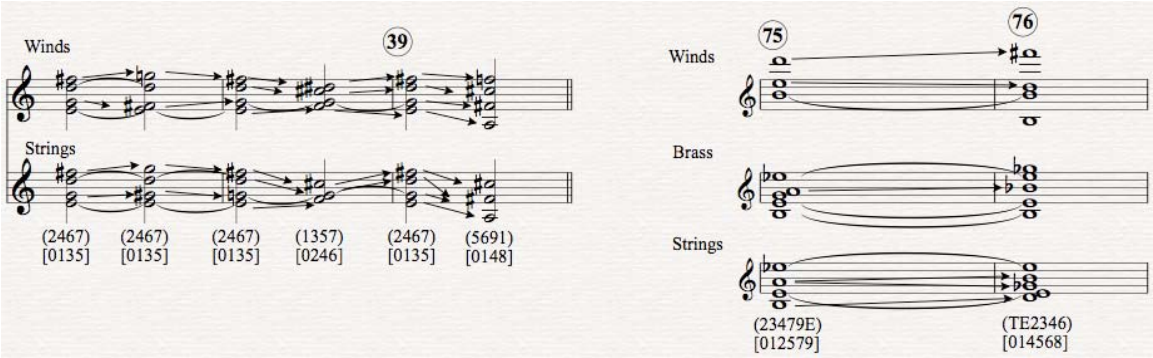


Figure 49. Harmonic Layers at 38-9 and 75

At the local phrase level, the harmonic layer of each of these passages subtly contradicts the above observations concerning linear motion. The voice-leading of the first passage can be described as progressing – and ultimately arriving – although not entirely according to a highly predictable, functional harmony. Here, the stepwise motion combined with the predominance of C# and E# in the melody and the ultimate resolution to an F#m+7 triad (with a leaping fifth motion in the bass voice) give the passage a feeling of harmonic progress and eventual resolution. Of course the arrival sonority is unusual and the progression does not strictly conform to tonal structures. However, my point is that voice-leading in the harmonic layer alludes to tonal directedness in a manner consistent with a Western listener’s expectations.

By contrast, the harmonic layer of rehearsal 75 is entirely static until the downbeat of the next section. This passage might be viewed as analogous to a pedal passage in tonal music except that the sonority that appears at that ensuing downbeat does not embody a significant

change. The most dramatic change to the harmony (D-F#, in the top voice) is probably best understood as an event exclusive to the melodic layer (i.e. embellishment, thus not a harmonic event at all). As figure 44 demonstrates, the final pitch of the melody leading to 76, F, combined with the stepwise motion of the three subphrase melodies, is almost certainly perceived as leading to the F# in the top register at 76 by semitone ascent. Since the event occurs in the melodic layer, it is perceived as detached from the harmonic layer and, therefore, does not contribute a sense of harmonic resolution.

Thus, within the level of pitch each of these passages provides an example of one layer of the texture subverting the linear propulsion towards a goal within a separate layer. The goal-orientation of harmony at rehearsal 38 is subverted by the melodic layer's stasis in the same passage and these roles are reversed in the similar phrase at 75. In effect, these passages contain a similar contradiction between the harmonic and melodic layers as did the passages at 37-8 and 73-4 but the roles are reversed.

At both 38-9 and 75, several other levels of the structure either support or negate the overriding motion towards a goal. Dynamics in each section are clearly directed towards the following passage, with a unified crescendo in each case. Regarding rhythm and texture, both passages are relatively static, neither containing significant changes across the phrase. Neither passage contains significant, internal shifts in orchestration, timbre, or register. All of these static levels of structure support the passages' function within the larger grouping of section where, in both cases the preceding and ensuing passages more clearly articulate the motion towards a goal. In this manner, these sections serve as a sort of relief along the linear momentum towards the ensuing local (in the first case) and structural (in the second) climax.

At rehearsal 75, the increased emphasis on goal-orientation in the melodic layer surpasses the other levels of the structure so that the overriding perception is of increasing tension. The astute listener will almost certainly hear the difference between this passage and the comparable, earlier one as either more or less directional. The melodic event – being the most pronounced, different level of the structure – will invoke the sensation of comparably greater goal-orientation, since it is the most recognizable difference between the two passages and since most listeners are attuned to melodic goal-orientation over other structural elements[45]. Consistent with most of the piece, however, it is the contradiction in the other levels of structure which provides a sense of ambiguity to the form.

3.2.2 Register

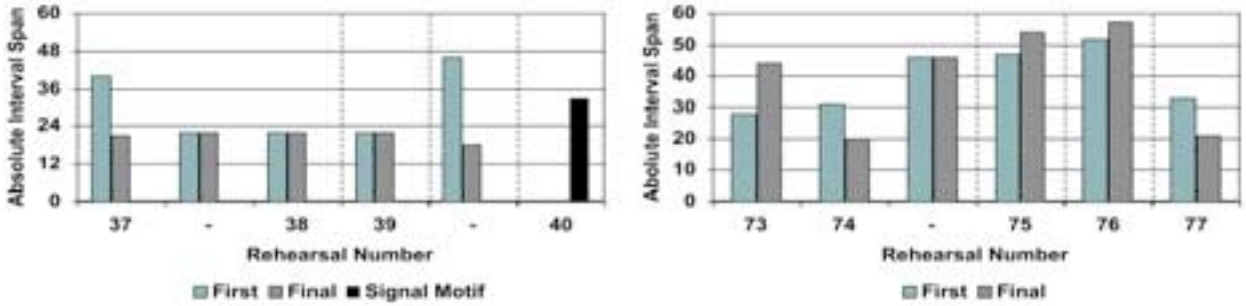


Figure 50. Absolute Interval Span Preceding 'False Summit' and Structural Climax

[45] As other scholars have observed, there is a significant difference in listener perception between the syntactical and statistical structures of a musical work: "Usually in a complex musical work the highest level – that which characterizes the form as a whole – is both formal (in that established and relatively stable themes are repeated) and syntactical (in that such stable themes are functionally related to less stable parts)." (Leonard Meyer, *Music the Arts and Ideas: Patterns and Predictions in Twentieth-Century Culture*, Chicago: University of Chicago Press, 1994, p. 308). In this case, the melodic event represents a syntactical event driving towards the climax of the work and the other levels of structure are largely subsumed by this predominant element. However, the opposition they pose to the clear, goal-orientation of the melodic events has an impact on each passage's linearity.

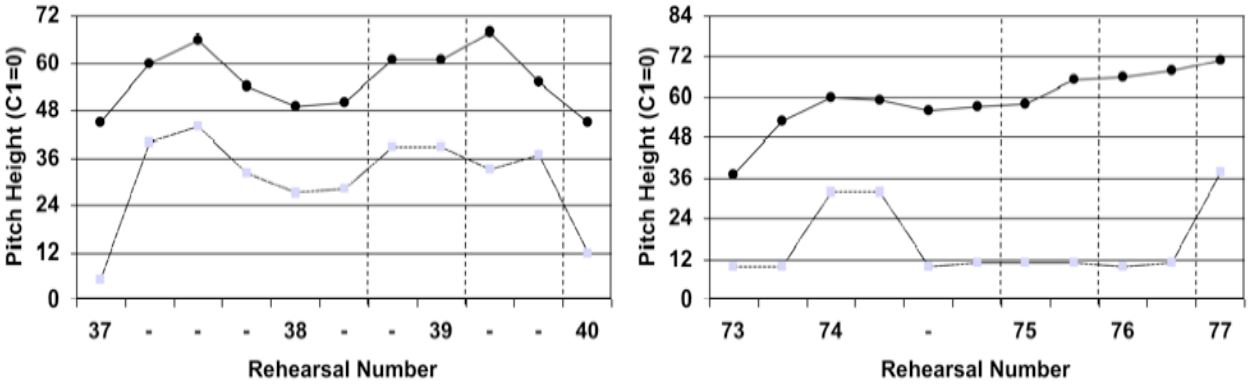


Figure 51. Relative Pitch Height at 'False Summit' and Structural Climax

In the first passage under question, the interval span between the first and last sonority of each subphrase demonstrates that the bass voice moves in parallel with the melody throughout most of the passages preceding the 'false summit.' This motion does not feature a clear, directional gesture but, rather, undulates across the course of the entire passage. In addition, each phrase group does not contain a clearly directional line towards the ensuing subphrase, at the level of register. As demonstrated by the absolute interval span, these three phrases do not feature clear goal-orientation by means of a clear shift in constriction/ expansion of register.

In the three phrases immediately preceding the structural climax, the level of register does not demonstrate a significant directional quality. In the first phrase, the registral span roughly follows the melodic contour except that the expansion leading to the third subphrase group is far out of proportion with the melodic line and the return to the tessitura in the bass voice from the opening sonority robs the passage of a specific goal-orientation. The result is non-directed linear activity for this subphrase. The second subphrase does not feature a significant change of register. In the third, the slight shift upwards in the melodic layer coincides with a contraction of the registral span. This type of motion, wherein the outside voices move in (and in ascent), demonstrates a thinning of the registral domain. From one point of view, the fact of

upward motion in both voices functions as progress *towards* a goal – relative pitch height. However, the simultaneous constriction of register acts as movement *away* from a goal – relatively greater absolute interval span.

3.2.3 Texture: Instrumentation and Voice Density

In the following section, I will focus primarily upon the density of pitch-class content since the instrumental color for each passage remains consistent for most of the two passages in question.

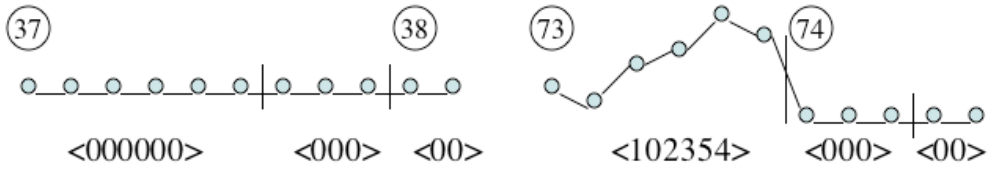


Figure 52. Textural Contour: Comparison of VDSEGs at 37-8 and 73-4

In the above figure, textural contour is measured by the number of distinct voices present in successive sonorities of subphrase/ phrase groups, within the harmonic layer. In the first passage, the texture of the harmonic layer remains roughly static and, thus, entirely independent of the melodic contour. In the second passage, the density of sonorities follows the general contour of the melody during the first subphrase; that is, the density of voices increases and decreases in exact proportion to and simultaneously with the contour of the melodic layer. In this subphrase, the contour for both layers adheres to the CSEG <102354>, as demonstrated by comparison between the textural contour and the melodic contour graphs (figure 37). After this, the harmonic layer shifts dramatically to a constant, reduced texture for the remainder of the

passage. However, the other facet of texture then assumes the increasing proportions of density with the staggered introduction of several instruments from the woodwinds and brass. As a continuation of this process, each of the subsequent phrases features increasing instrumental colors. This occurs as a large-scale process with each successive passage featuring more instruments and no change within the passage.

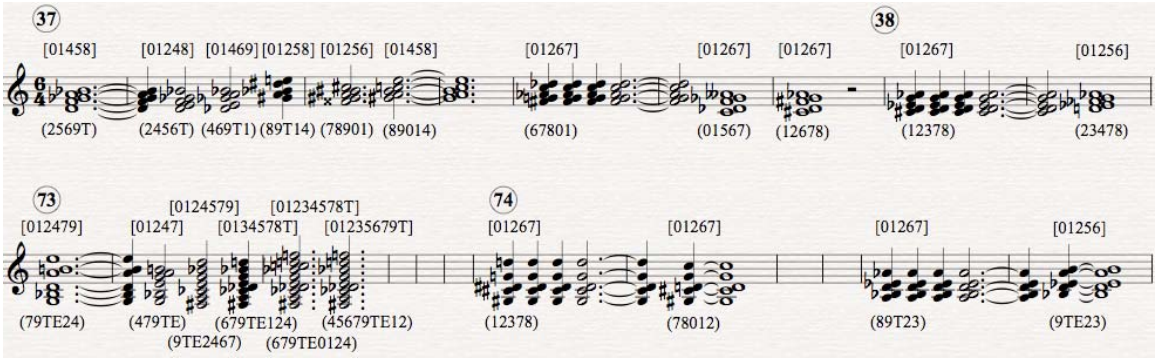


Figure 53. Comparison of Pitch Class Content in the Strings at 37-8 and 73-4

As mentioned previously, the number of distinct voices remains static throughout rehearsal 37-8. No shifts of orchestration or texture effect the degree of tension contained within any given moment of the gesture, since the timbre remains constant – the homogenous string family defines the harmonic layer – as does the number of distinct voices. At rehearsal 37-8, every voice of the homophonic texture follows the same melodic contour, in other words the passage exhibits entirely parallel motion. The only exception to this is that the upper voices move obliquely against a fixed bass between the first two sonorities. By comparison, the first six sonorities of rehearsal 73 contain essentially the same pc content, with one or two pitch-classes added or subtracted between successive sonorities (usually in the violin – the top voice). The result is entirely oblique motion with the melody featured prominently against a static

background. In addition, this section features a linear process of increasing instrumentation in the latter half of the phrase.

Intriguingly, the linear process of voice density at rehearsal 73 follows the contour of the melodic layer for the first subphrase group and then abruptly shifts to stasis through the remainder of the passage and through the structural climax. The fact that voice density is noticeably linear at the beginning of the passages produces a gap in the listener expectation during the latter half. By contrast with what happens in the first subphrase, the lack of linear motion in the voice density layer during the second and third subphrases creates a noticeable absence. This is true in spite of the additive instrumentation during the second and third subphrases.

3.2.4 Duration Space

The following figure draws comparison at the rhythmic level between the passages leading to the 'false summit' (rehearsal 37 – 39) and to the structural climax (rehearsal 74 – 76) of the work:

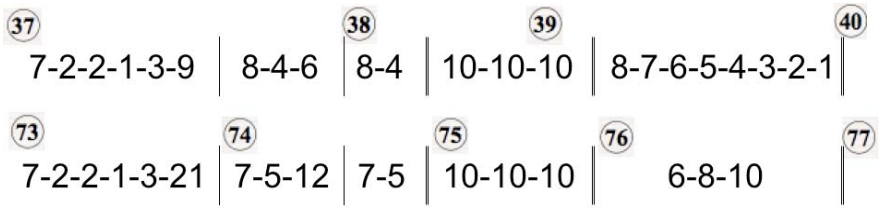


Figure 54. Absolute Durations: Rehearsal 37-39 & 73-76

The numeric values represent hierarchic proportions based upon the quarter note as the smallest durational value in both cases[46].

I must acknowledge a rather significant factor: between rehearsal 37 and 39, the tempo remains constant; however, between 74 and 76, there are several tempo changes between phrase groupings. Although this fact has apparent ramifications for comparing the *absolute* duration of each passage, as well as for comparisons between phrase groups, most listeners probably do not hear proportions of duration according to *absolute* time. Simply put, listeners – at least Western listeners – are innately drawn to the hierarchical structure of pulsed music as a means for meting time[47].

Figure 50 demonstrates how the durational proportions within each passage are quite similar. Each phrase and subphrase is rhythmically defined in roughly the same manner, the major differences between them being the ending of each subphrase group at rehearsal 73 and

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[46] It is worth noting that the half note unit actually corresponds to the "intermediate level in which the beats pass by at a moderate rate" on which "[t]he listener tends to focus on… the *tactus.*" (Ray Jackendoff and Fred Lerdahl. "On the Theory of Grouping and Meter. *The Musical Quarterly* 67:4, October 1981, p. 489) However, since the quarter note unit is a simple subdivision of this perceptible *tactus* and since it precludes the necessity for fractional values, basing this figure upon the quarter note provides the simplest means of drawing numeric comparison.

[47] As Povel and Essens concluded in their study of perception modeling for rhythm: "…if an internal clock is used as a basis to specify the temporal structure of a pattern, an adequate representation results. If no clock is used, temporal structure is not represented adequately: detailed information about the relative durations of intervals will be lacking… the internal representation of a temporal pattern critically depends on whether or not a metrical interpretation is evoked." (Peter J. Essens and Dirk-Jan Povel. "Metrical and Nonmetrical Representations of Temporal Patterns" *Perception and Psychophysics* 37, 1985, 6) Essentially, the internal clock these authors found crucial to accurate differentiation of durational proportion is present wherever a pulse is provided. A "metrical interpretation is evoked," where a pulse is perceived. In the case of these passages, the pulse changes but it is the pulse, itself, which provides the basis for the listener's modeling of durational proportion. This corresponds to Andrew Imbrie's concept of a 'radical hearing' of metrical structures. According to this viewpoint: "In a conservative hearing, the listener seeks to retain the previous pattern as long as possible against conflicting new evidence. In a radical hearing, he immediately readjusts according to new evidence." (Jackendoff and Lerdahl. "On the Theory," 493) In most cases, I tend to believe that a conservative hearing predominates. This passage is exceptional, however, for the reasons cited above. In the above figure, I assume that the listener will be conscious of the shift in tempo at the downbeat of each subphrase group so that the smallest durational value of each subphrase remains constant in his/her perception. Therefore, I believe it sufficient to draw comparisons between and within these passages based upon this fundamental unit of measurement, regardless of the *absolute* time of each phrase group.

74, as compared to rehearsal 37, and the generalized direction of rhythmic contour for the final phrase in each case – immediately preceding rehearsals 40 and 77[48].

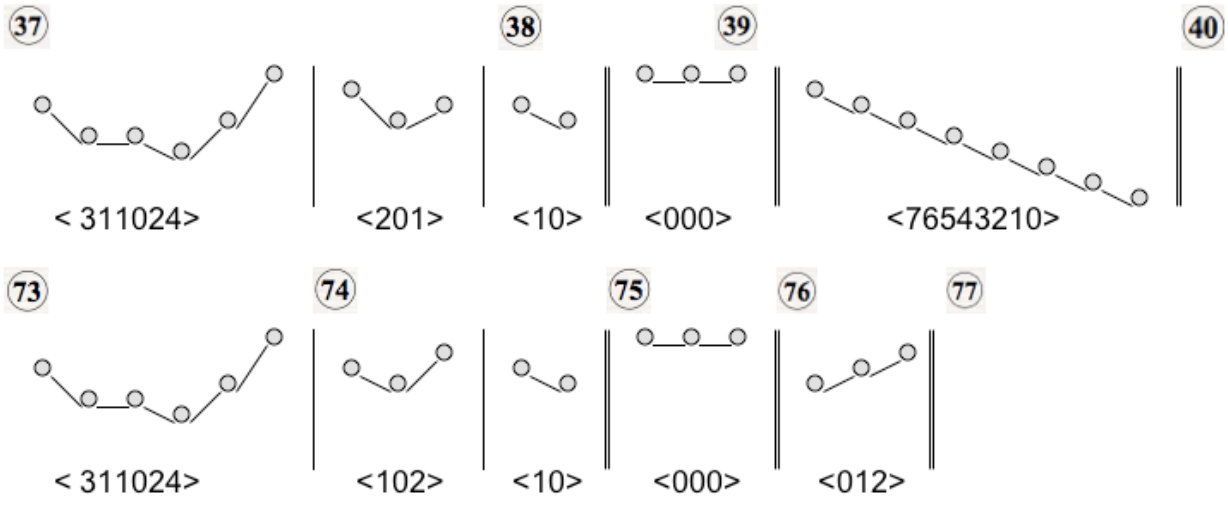


Figure 55. Rhythmic Contour: Comparison of DSEGs at 'False Summit' and Structural Climax

As the rhythmic contour demonstrates, these two passages have rather similar directional qualities. In both cases, the most clearly articulated, directional gesture appears at the end of the passage, immediately preceding the climax. The rhythmic proportions from rehearsal 39 to 40 establish a clear drive towards the variant of the 'signal motif,' which appears on the downbeat of rehearsal 40. As I have indicated previously, this type of change in duration proportion, wherein successive d-spaces become increasingly shorter, provides the most clearly articulated motion towards a goal. In this case, as it does throughout the piece, the arrival to the 'signal motif' serves the dual function of goal and interruption. By comparison, the drive towards the

[48] It should be noted that the first difference results from an 'interruptive gesture,' which suspends the last note of each subphrase. In both cases, I have excluded this interruption from my discussion because it operates in a separate duration stream, defined by distinct texture (imitative polyphony ascending across the string family) and smallest durational value. In addition, this layer of the texture functions only as an interruption and does not draw comparison with other passages in the same manner of the rest of the phrase group.

actual climax at rehearsal 77, that to which Charles Bodman Rae consistently refers as the "abortive climax,"[49] is less linearly defined at the level of d-space. The successive d-spaces of the preceding subphrase groups (rehearsal 73-4) are actually prolonged and, in the final phrase (rehearsal 76), successive d-spaces move in the opposite direction of the listener's expectation, as established by the previous syntagmatic relationships.

Supportive of the melodic contour, the duration space of each subphrase at 37-8 contains an exact analog at 73-4. The contours follow the pattern <311024>, <102>, <10> and the order is the same for each passage. The main difference in duration space pertains to the interruptions contained in the second section which lend the absolute duration of the passage a much greater proportion relative to the passages which precede and follow each (especially given that the tempo for each section is roughly the same). It takes a significantly greater amount of time for the second passage to progress because of the interruptive gestures in the strings between each subphrase. In effect, the increase in proportion for the entire section and the larger gaps between subphrases, although filled in with the interceding frenetic activity, actually decrease the tension of motion towards the following structural climax. In this manner, the rhythmic level for the second passage contradicts the melodic level as regards relative tension.

3.2.5 Summary: Comparison of Contour at Different Structural Levels

In many ways, the impulse towards the 'signal motif' is stronger at rehearsal 39 than at any prior point in the work. As the figure below demonstrates, at rehearsal 39 all levels of the

[49] Bodman Rae. *Music of*, 165-178.

structure apart from texture[50] are clearly directed towards arrival at the familiar, repeating eighth notes on E:

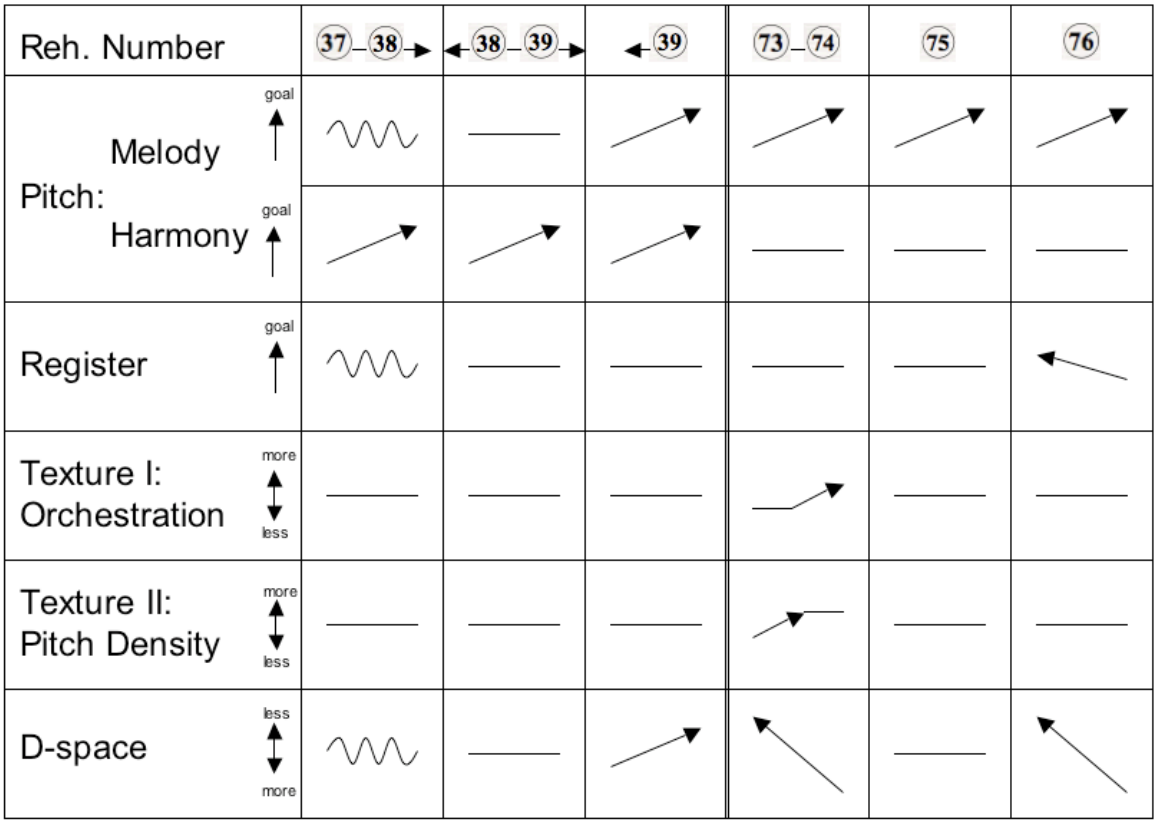


Figure 56. Comparison of Different Structural Levels: Rehearsals 37-39 and 73-76

The arrival at rehearsal 40 does not feel conclusive, however, because the sonority is radically different from the listener expectation. Not only does it not consist exclusively of E, but it comprises a chord aggregate (see above). For the first time, at rehearsal 40 the 'signal motif' contains a pitch *collection*, a fact that, in and of itself implies perpetuation rather than conclusion. This collection simultaneously interrupts the preceding phrase and initiates a new

[50] As noted previously, stasis at the level of texture does not significantly impede the linear propulsion towards a goal in other levels of a work's structure.

section. Operating as an elision, this collection propels forward into a new section, which the listener may reasonably expect will contain a clear large-scale linear process analogous to that found in the opening movements. This demonstrates the first significant frustration of expectation in the work, prolonging the tension towards the final passages. Frustration is here achieved both because the arrival collection is unanticipated and because the arrival not only concludes the previous phrase but, also, functions as the inception of something new.

At the approach to rehearsal 77, several levels of the structure undermine the linear approach to the structural climax of the work within each phrase group. This fact depends, for the most part, upon comparison with all prior approaches to the 'signal motif' (the texture of which the listener probably anticipates at the structural climax), with the other clearly directed episodes of the Main movement, and, especially, by comparison to the analogous material preceding rehearsal 40. The levels of texture that cooperate and direct towards the goal at rehearsal 77 are diminished by comparison with those approaching rehearsal 40 and are even less coordinated than the previous approaches to the 'signal motif' and the interruptions in the Main movement. Whereas the harmonic layer at 37-39 propels the motion towards a goal at rehearsal 40, at 73-76, the harmonic layer remains noticeably static. By comparison with the registral motion at phrases preceding the 'signal motif,' register remains relatively non-directed before the structural climax. Additionally, both d-space and register actively contradict the motion towards a goal in two of the three phrases approaching the climax. It is, of course, worth acknowledging that the differences between the two analogous passages essentially demonstrate variation, a fundamental principle of repetition in Western music. In addition, the approach to a functional climax often features a *ritard* within the tradition and, when viewed as an intact group these three passages feature accretion by tier. However, the norms of the piece to this point lead the

listener to expect certain coordination between the distinct levels of structure when approaching a local goal. This coordination is noticeably lacking in the approach to the structural climax.

With the linear passages of the Introduction, First and Main movements as precedent examples, the listener expects decreasing D-space and dramatic changes of texture and register within passages featuring a clear, linear impulse. In the absence of this coordination between levels, the propulsion of rehearsal 73-76 is primarily achieved in the melodic layer. The result is that the moment is still climactic (truly not interruptive); however, because of the contradictions at several levels of the structure, the climax seems remarkably unfulfilled. Perhaps of greatest significance, the arrival at rehearsal 77 is not conclusive because the sonority at rehearsal 77 does not entirely fulfill the listener's expectations concerning register or return to the texture of the 'signal motif.' Most noticeably, the bass voice is entirely absent. In the lack of this level of register, the structural climax remains incomplete, a fact which allows the relative girth of the epilogue to sustain the listener's attention for an extended period.

4.0 SINGULARLY DIRECTED LINEAR PROCESSES II: EPILOGUE AND CODA

In many ways, the linear episode leading to the coda (rehearsal 99 to the double bar) compensates for the lack of momentum that had lead to the structural climax at rehearsal 77. This relationship is not overtly indicated by the set structure, melodic events, or textural make-up of the two disparate sections. Rather, the relationship between these two passages emphasizes two alternative drives toward separate structural events, with the second inevitably drawing comparison about relative fulfillment since it appears later in the work. The passage leading to rehearsal 99 is extremely linear at most levels of the structure. By comparison with rehearsal 77, the arrival sonority at rehearsal 99 clearly connects to the preceding material at most levels. Here the levels of structure do not contradict each other in their forward progress, the momentum is sustained over a proportionally appropriate amount of time and the rhythmic layer does not contradict the impulse towards the high point. In addition, the climax of the epilogue features a prominent B in the lowest voice which resolves to E in the texture of the 'signal motif' in the final chord; thus, functioning as a dominant-tonic resolution and fulfilling the listener's expectations concerning the syntactical implications of the preceding phrase.

4.1.1 Pitch

The final climactic gesture of the work begins just prior to rehearsal 95 and drives toward the complete chromatic chord at 99-100. The momentum is achieved at most levels of the structure, just as it had been in previous episodes throughout the work. In this case, however, the sonority at rehearsal 99 does not interrupt the structural momentum as similar sonorities had throughout the Main movement, nor is the sonority merely connected by pitch to the preceding phrase, as it had been throughout the Introduction and First movements. Here, most levels of the structure coordinate to achieve linear momentum and the arrival sonority is undeniably connected to that which precedes it.

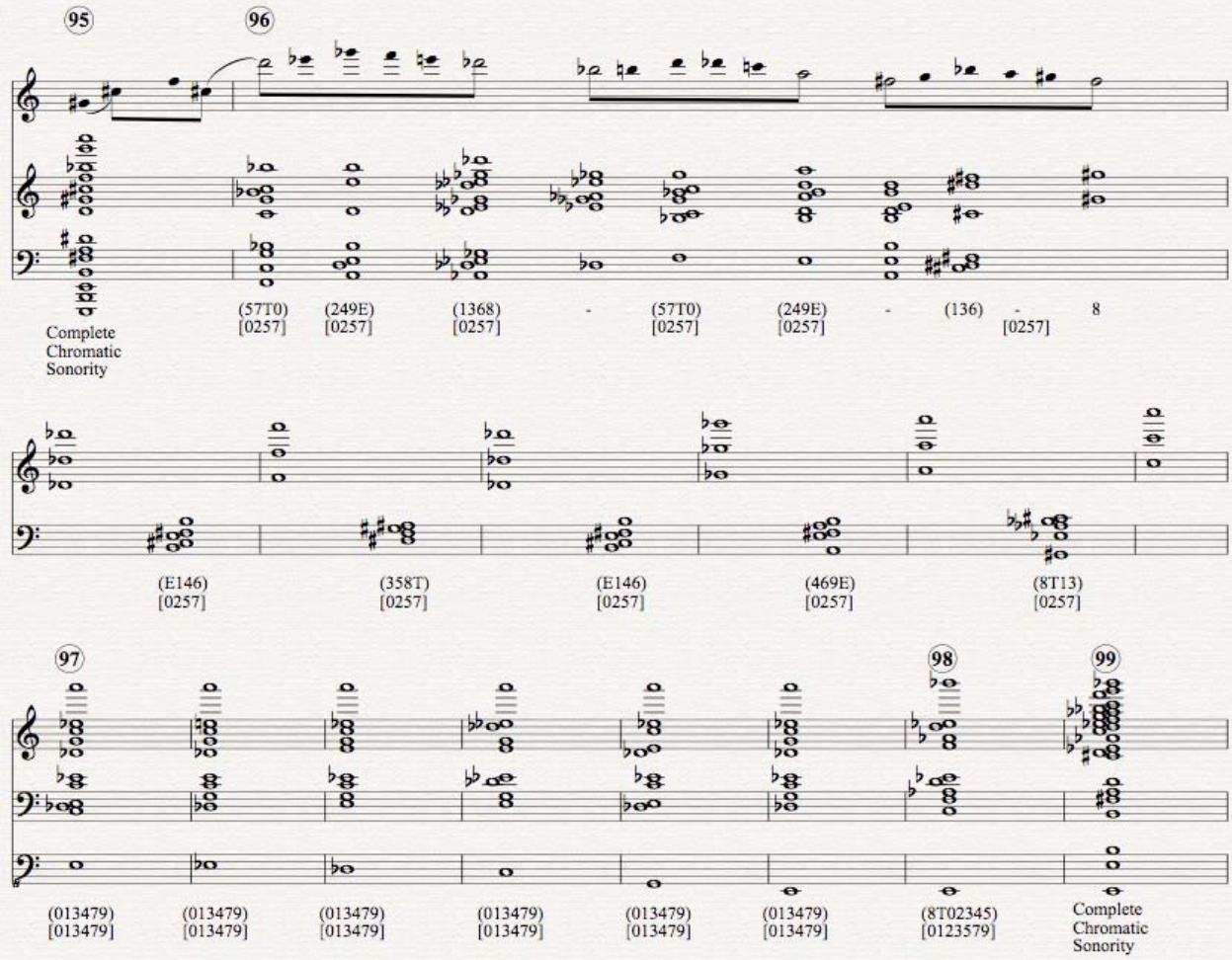


Figure 57. Final Climactic Event: Approach to Complete Chromatic Chord of Epilogue

This passage begins with a gradual unfolding of the sonority at rehearsal 95. Here the sonority unfolds from the bottom upwards as a tertian structure, similar to the sonorities at rehearsals 15, 17, 61, and 62 (see figure 18). The chord unfolds beyond a recognizably tertian harmony and, in this case opens into a complete chromatic chord at rehearsal 95, which is greatly similar to the eventual arrival sonority at rehearsal 99. Perhaps the most significant aspect of this unfolding can be found in the pitches which appear first. The chord lays heavy emphasis upon E and B, simply by virtue of their orchestrational reinforcement and their temporal placement

within the phrase. These pitches are, of course, significant because of the tonal implications of both throughout the work.

The key to understanding the pitch motion in this passage is in the pedal tone. Regardless of the density of pitches present at rehearsals 95 and 99 (which includes all twelve in both cases), the orchestrational treatment still places heavy emphasis upon the open fifth in the bass voice. Not only is E emphasized, as might be expected, but the bottom voices also heavily emphasize B – the dominant note according to the functional tonic. The fifth and sixth pitches above the bass (F#3 and A3) do not fit within the overtone series for E2 at that register. They do, however function as the sixth and seventh harmonics of a series based on an imagined B1. In this way, the harmony places noteworthy emphasis upon the dominant root, despite the lowest note present, and is not merely an unfolding of the overtone series for E. Although there is certainly a tonic pedal at the bottom, the dominant harmony is clearly implied by the segregated grouping of the set (B, F#, A) in the bass clef, which suggests a B dominant seventh chord (minus the leading tone, which is in the middle register)[51].

As figure 51 shows, the melodic event initiating this passage alludes to the linear impulse towards rehearsal 40. This may be the only literal connection between the structural climax and the climax of the epilogue – although this must be viewed as extremely tenuous since the texture is so different, the passages are greatly separated over time, and the connection actually exists between the 'false summit' – which, by extension connects to the structural climax – and the

[51] It is important to point out that this is not a tonal work. The hierarchically important pitch class in this case is not even a triad but, in fact, a single pitch. For this reason, although the analog of tonal music is certainly evident through the prominent pitches and their apparent tonal relationship, the lack of a clear leading tone in the sonority at rehearsal 99 does not preclude my reading. The important factor is the fifth relation to E natural – as seen in the introduction and first movement – which is prominent in this sonority and which resolves, as anticipated, to the final iteration of the 'signal motif.' Although borrowing from the tonal paradigms to achieve linear 'harmonic' structures, Lutoslawski is not restricted to traditional voice-leading and can, therefore, choose not to emphasize the leading tone in this context.

epilogue. In the phrase immediately preceding rehearsal 40, the melody undergoes a successive chain of alternating minor seconds and minor thirds (see figure 38) and, as my reduction shows, this is exactly the cyclic motion present at rehearsal 96.

Regarding the sonorities that comprise this passage, this represents a relatively simple approach to harmony within the work. The sonorities for the first two phrases (rehearsals 96-99) are quartal – they can all be reduced to interlocking stacked fourths – and the passage is composed of transpositions of the same prime form tetrachord. Beginning at rehearsal 96, successive transpositions of the tetrachord, in groups of three, are complementary with each other. Taken as a composite whole, they comprise a twelve-note sonority across the phrase which functions as supportive of the melody in the winds and brass. In the second phrase, the complementary function disappears and the vertical sonorities themselves recede further into the background, with the strings predominantly featured as the foreground melodic event. Although the tetrachords are no longer strictly complementary, they still consist of the same prime form set and do not contain more than one common tone between successive sonorities. At rehearsal 97, the texture shifts and the set is enlarged to a hexachord, septachord, and, eventually, complete chromatic sonority (rehearsal 99).

The lowest four notes (469E) of the complete chromatic sonority outline a transposition of the tetrachord as it had appeared in the previous passage. Yet, more crucial to the tonal implications of the work as a whole, the sonority is carefully spaced in the interest of emphasizing E and B. It would be tempting to dissect the complete chromatic sonority and conclude that it is composed of aggregate tetrachords of the prime form set [0257]. Certainly the pitches are there to support this reading (since all pitches are present to support any reading), especially in the bass voices. Yet, the upper voices are packed so tightly together that such an

interpretation would represent prescriptive analysis and would not remain true to this work. It goes without saying that Lutoslawski utilized aggregating structures to construct twelve-note chords in many of his late works. This sonority shows a faint similarity with this compositional method, since the bottom four notes do emphasize the tetrachord, but the upper voices do not fully support such a point of view. Instead, the sonority is best understood as a carefully orchestrated vertical structure, with lots of space at the bottom for clarity and to place emphasis on certain pitches, and a modicum of space at the top in the interest of divorcing the top voice from the rest of the texture. The two pitches in the lowest register, which obtain special emphasis, provide a modicum of ambiguity about whether the tonic or dominant is present here.

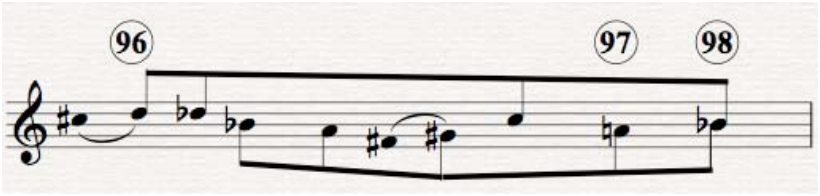


Figure 58. Melodic Reduction: Rehearsals 95-99

As this reduction demonstrates, the melodic drive to the apex of this gesture represents a linear connection, as well. However, the pitch of arrival is not entirely what may be anticipated. The entire passage contains a pedal tone in the bass, since the lowest note throughout is E at the lowest register possible within the orchestra (in the contrabass). The exception to this pedal is between rehearsal 96 and 97. Here, the harmonic emphasis is upon the aforementioned tetrachords of the prime set [0257], which cycle through a total of seven transpositions. Taken in succession, these transpositions are, as I mentioned earlier, largely complementary to each other so that within a short period of time, all twelve pitches are present in the harmonic layer. This functions as preparation for the twelve-tone chord at 99. The emphasis on E and B for most of

the section implies an arrival to one of the pitches of the tonic or dominant triad in the melodic layer. The actual arrival, to Bb functions as a surprise, especially since it does not continue in motion towards a firmer, structural arrival – it would be quite a simple thing for the semitone approach to continue upward to B, for example.

4.1.2 Register

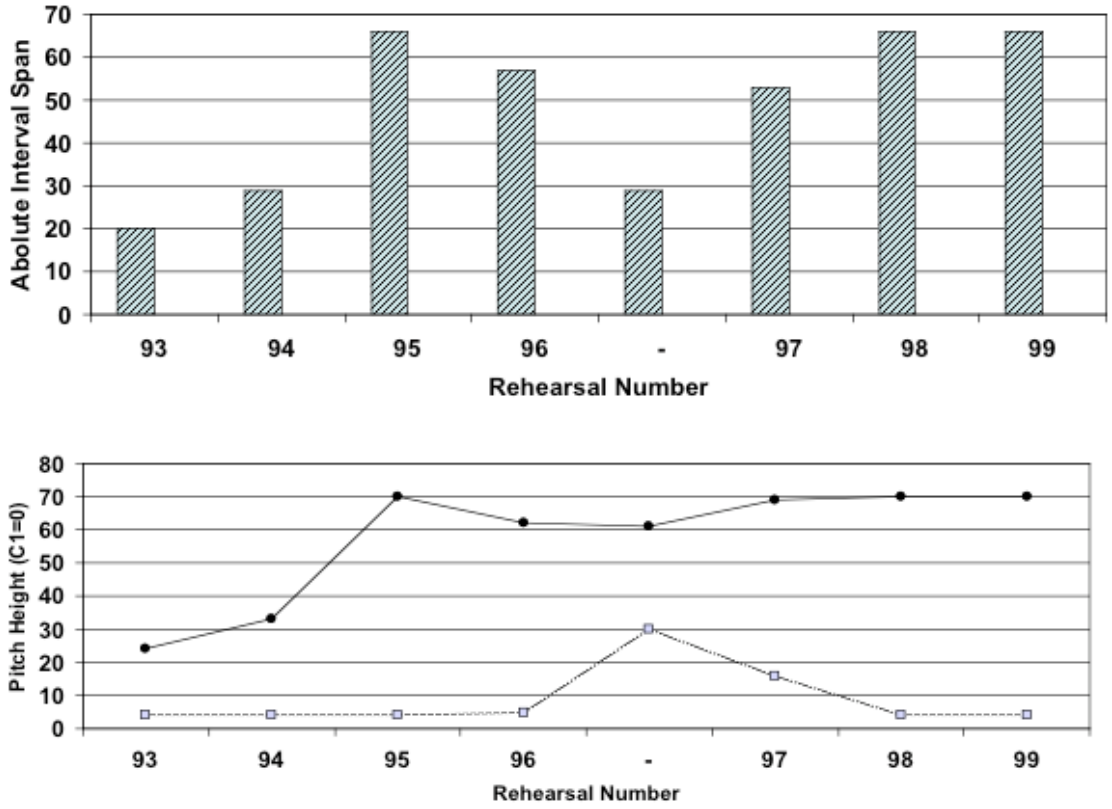


Figure 59. Absolute Interval Span and Relative Pitch Height: Rehearsals 93-99

As these graphs demonstrate, the motion towards the apex of the Epilogue is clearly linear and directed. The opening phrase (to rehearsal 95) features an unmitigated expansion towards the sonority which, as discussed in section 4.1, is closely related to the eventual arrival

at rehearsal 99. The intervening phrase features a relaxation of tension before building to the climactic event. The progress towards the local climax is very clear in the layer of register.

4.1.3 Texture

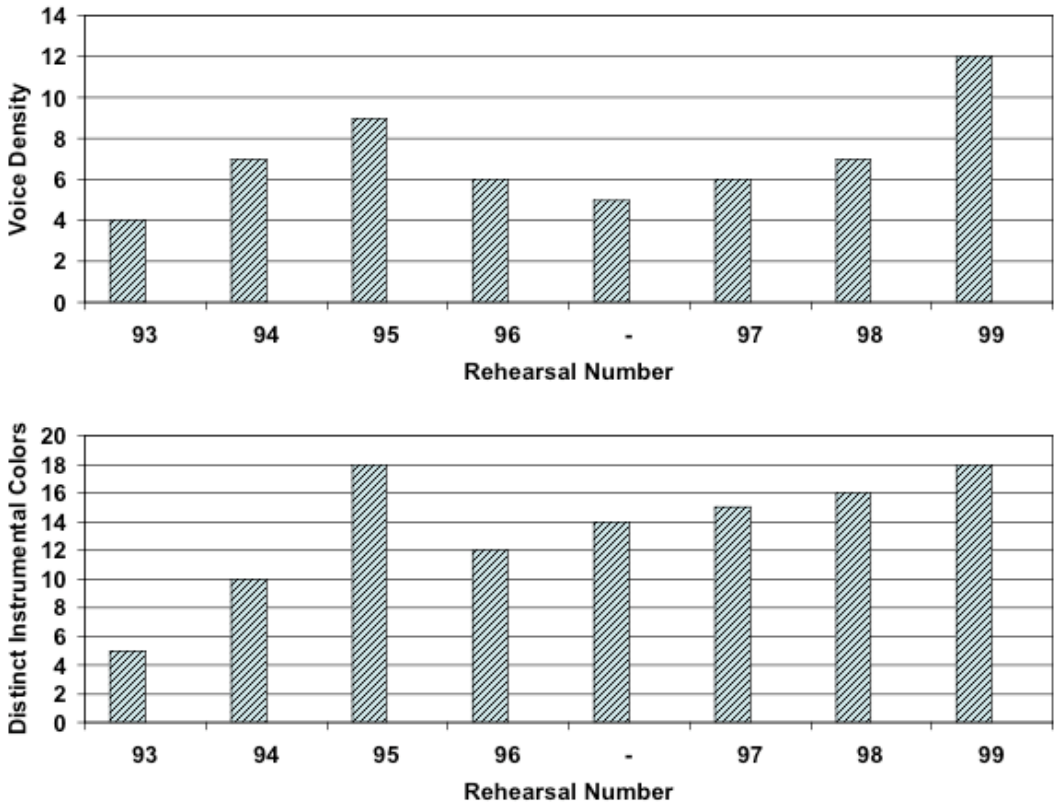


Figure 60. Voice Density and Instrumentation: Rehearsals 93-99

As this figure demonstrates, the contour of voice density and texture is similarly directed to that at the level of register. The linear impulse at the level of texture is clearly oriented towards the local climax at rehearsal 99.

4.1.4 Duration Space

Most of the passage in question features static d-space within individual passages. Leading to rehearsal 97, each subsequent phrase features a shift of d-space so that the d-space between attacks is reduced with the result that there is an increase in tension at the level of rhythm as the material approaches the climax of the epilogue. From 97 to the climax, the melodic layer features the only shift in this general feature as the phrase features a slight shift in d-space in the final approach to the climax of the epilogue.

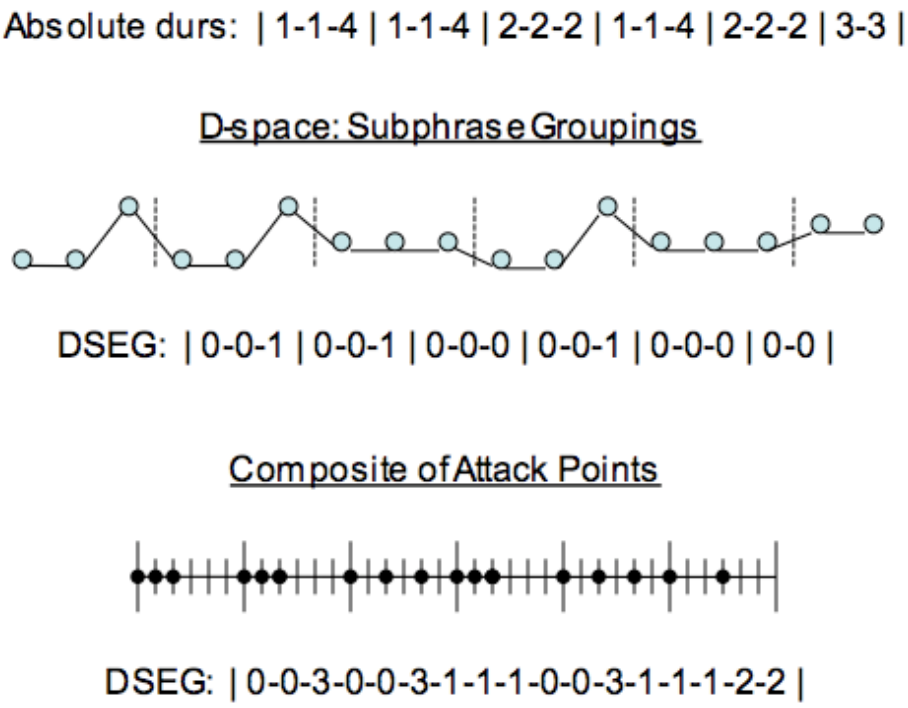


Figure 61. D-space Contour: Melody at 97-98

As this figure demonstrates, there is a slight *ritard* in the melody of the final phrase before the climax of the Epilogue. In this case, the slowing of rhythm in the approach to a moment of climax probably serves to build the tension. Unlike the approach to the structural

climax which had a previous similar passage by which to compare the approach, in the absence of a comparable passage with decreasing d-space, this passage functions as progressive linear momentum.

4.1.5 Summary: Comparison of Contour at Different Levels of Structure in the Epilogue

As is apparent from my analysis, all levels of the structure undergo a similar, unified contour in their drive to the local climax of rehearsal 99. This local climax contains such a clear focus, by comparison with the structural climax at rehearsal 77, that the piece can finally come to an end. Each level of the structure aligns with all others so that no contradiction exists at this structural moment in the same way as had at the structural climax of rehearsal 77. In addition, the melodic material of the epilogue is unified in its drive towards this event. Essentially, the epilogue contains one melodic event – a gradual unfolding and repeating tertian harmony by ascending thirds and fourths and an inverse-related tertian structure by descent.

5.0 CONCLUSIONS

In the opening sections of this essay, I discussed the concept of linear structures as defined by the conventions of either a musical system or within a single work. In the Introduction and First movement of the Third Symphony, Lutoslawski establishes clear conventions concerning the outcome of clearly linear events, especially where all levels of the structure either cooperate to achieve goal-orientation or do not contradict the other levels in their orientation towards a goal. Throughout these two movements, linear events rely on conventions of Western music. Leonard Meyer identified these conventions as "statistical… based on what he calls secondary parameters such as tempo, texture, dynamics, and so on."[52] The clear linear events of the first two movements arrive at and are interrupted by the 'signal motif,' which itself appears as part of a large-scale linear diminution of register and orchestration.

Throughout the two opening movements, wherever the levels of structure cooperatively progress towards a goal, the 'signal motif' appears. In each case, the 'signal motif' is clearly connected with the preceding linear momentum by implications in the melodic domain. The interruptive aspects of this event at each appearance are achieved in other levels of structure – a dramatic shift of orchestration, a radical expansion or contraction of register, a significant change in texture, etc. However, the pitch connection between the linear phrase preceding it and the 'signal motif' itself remains clear. By the time the Main movement begins, Lutoslawski has

[52] Harley, p. 169.

established a set of expectations surrounding the goal of clearly linear events. Each and every time a clearly linear event appears, the listener may reasonably expect resolution to the 'signal motif,' a fact which is further reinforced by the recurrence of analogous linear events – each type of linear episode appears in close proximity to similar material (the material preceding rehearsal 2 is similar to that preceding 3, that preceding 11, 19, and 31 is similar, as well).

The Main movement begins with a radical shift in the 'signal motif.' For the first time (at rehearsal 31), the 'signal motif' does not simply appear as four eighth notes with locally static texture, register, and orchestration. Instead it appears three times, separated by *fermati*, with increasing eighth note iterations each time and with an expansion of orchestration for each successive recurrence. At the final appearance (rehearsal 40) before the Epilogue, the 'signal motif' is altered yet further so that it is comprises one of two prominent chord aggregates of the work (bottom strand – diminished triad with a perfect fourth above; top strand – major seventh chord[53]). In every case up to this point, though, the melodic connection between the preceding material and the 'signal motif' is clear.

In place of the 'signal motif,' the interruptive gestures of the Main movement dramatically alter the listener's capacity to predict the outcome of linear processes in the work. Clearly linear events with all levels of the structure contributing to (or, at least, not contradicting) the sense of linear propulsion appear in the Main movement and are analogous to the clearly linear events preceding each occurrence of the 'signal motif' in the earlier movements. In each

[53] According to Bodman Rae's classification system for the chord aggregate structures in Lutoslawski's music, the first of these is identified as type J and the second as type D. In this classification, chords "can be determined by the intervals they contain when in closed position… labeled from A to K in four categories: the first [A] contains only the minor third; the second [B-D] has the three patterns that combine two minor thirds with one major third; the third [E-G] contains those that combine two major thirds and one minor third; and the fourth category [H-K] has those with two minor thirds and one perfect fourth." (Bodman Rae, *The Music of*, 54). Although this classification system is useful for dealing with aggregate structures in the formal structure of much of Lutoslawski's music, in analyzing the Third Symphony they are not as useful since aggregates play virtually no role in defining the formal structure of the work.

case, there is a radical shift of register, texture, etc. at the point of interruption. Here, however, the pitch connection between the preceding passages and the interruptive gestures is not present, is displaced by register, or is obscured.

In addition, the interruptions themselves are highly unpredictable. They do not conform to the listener's expectation of a singular structural idea, in the manner of the 'signal motif,' nor do they strictly resemble one another, other than for their surprising and interruptive quality. In terms of pitch content, some are comprised of vertical interval pairings or pairings with one exceptional interval (rehearsals 62, 63 and 69), one is a chromatic cluster (rehearsal 72), two (rehearsals 40 and 65) are aggregate sonorities, and a few are less conventionally organized sonorities (at least for Lutoslawski) probably organized around their sound quality (rehearsals 41, 45, and 77). Regarding register, they tend to the extremes but do not represent a clear pattern as a large-scale linear event in the same manner as the 'signal motif' across the first two movements. The texture of each event is markedly different, as is the rhythm. Some are single chords, others are composed of an *ad libitum* texture, wherein individual parts combine to comprise a sound mass.

The implications for the shift in expectation from the opening movements to the Main movement are clear. In the absence of predictable outcomes in the Main movement, the listener is forced to construct a new set of normative procedures within the work. Just as the opening movement contains similarity of material preceding each iteration of the 'signal motif,' each of the clearly linear events of the Main movement has at least one parallel phrase, identified by a similarity of texture, register, and orchestration. These recognizably similar events, however, do not arrive at predictable outcomes in the same way as in the Introduction and First movement. Instead, the material interrupting each linear gesture is highly differentiated by texture, register,

and the like. The result is a series of linear events, which arrive at highly unpredictable interruptions by comparison with the opening. In each case, they are clearly oriented forward in time as linear structures but each seems oriented towards a different outcome. In addition, in several cases the recognizably similar linear passages are greatly separated in time, with disparate material appearing inbetween. In this way, the Main movement represents the classic example of Kramer's multiple-directed linear structures.

Multiple-directed linearity and the expectations surrounding clearly linear events play a large role in subverting the conclusive impact of the structural climax, as well. This process truly begins with the 'false summit.' At the level of pitch, the listener's expectation is dramatically contradicted by the chord aggregate (E036 + 259T), which appears instead of a single pitch class. Despite the radical difference in pitch structure of the 'false summit' however, the interruption at rehearsal 40 is recognizable as the 'signal motif' because of orchestration, rhythm, register, etc. Because of this, the listener might reasonably expect the arrival of the structural climax to resemble the 'signal motif.' After all, the three phrases leading to both rehearsals 40 and 77 are recognizably similar. In addition, the significance of the 'signal motif' throughout the work has been clearly established by this point in the piece. One might expect that, since the work is clearly driving towards a moment of great climactic implications, this significant moment will be defined by the 'signal motif,' probably not at the level of pitch but perhaps at the other syntactical levels. Consistent with the rest of the Main movement, however, the interruption at rehearsal 77 does not feature the texture of the 'signal motif,' in spite of these factors.

The climax of the Third Symphony represents a dramatic shift in Lutoslawski's compositional output. Although it is approached by a linear event with a (tenuous) pitch connection to this arrival, the approach is relatively tempered as a linear impulse by comparison

with other linear events of the first three movements. The limited fulfillment of this structural goal – the sonority is comparatively sparse, approached by rhythmic contour in contrast to the linear development of the line, and registrally reduced – creates the sense that the work has yet to achieve a clear, directional goal. By limiting the fulfillment of goal orientation at this moment of the structure, Lutoslawski maintains the dramatic interest of the work and allows for a lengthy and weighted epilogue.

In this way, one can see how multiple-directed linear structures – wherein linearity is differently directed at different levels of the structure – can fulfill a very significant purpose within a complex formal structure such as this. In this case, the multiple-directed nature of the material immediately preceding the structural climax (rehearsals 73-76) restricts the finality of this climax and allows the work to continue beyond it. I must stress that this material appears multiple-directed largely according to the context within which it appears. As my analysis has shown, the general nature of this material is oriented forward as a linear event at several levels of the structure. However, the individual levels of structure do not cooperatively achieve momentum to the same extent as many of the surrounding linear events and some are noticeably absent, especially by comparison with other linear passages of the Main movement. In spite of these considerations, in hindsight the poignancy of the melodic domain combined with the immediate aftermath – the *cantando* passages which follow – leaves little doubt that the structural climax is here.

The climactic gesture of the Epilogue does not contain the same contradictions in its linear structure as the structural climax. In the passage preceding it, all levels of the musical structure are unified and, by comparison with rehearsals 73-77, strongly directed forward to this apex. In fact, the contour leading to this event is virtually identical for all levels of the structure

up to rehearsal 99, with the exception of rhythm. This high point is, itself, a fulfilling event by comparison to the earlier, structural moment at rehearsal 77. Whereas rehearsal 77 is a reduced sonority by comparison to many of the interruptive events of the Main movement, the sonority at rehearsal 99 is a complete chromatic chord, emphasizing B natural in the top voices. The tonal implications of the work strongly suggest arrival to this sonority because: 1) B natural has been granted a quasi-dominant function from the opening passages of the work because of the role of the 'signal motif' throughout the first two movements, 2) the structural climax strongly emphasizes B through doubling and register (top voices), and 3) the ensuing passage fulfills a fifth resolution to E in the final iteration of the 'signal motif,' lending it a quasi-dominant implication. At this point, all that is needed to achieve finality is the return of the 'signal motif' in its most clearly recognizable form so that the piece can end.

This piece demonstrates multiple-directed linearity in unique and interesting ways. To some extent, it relies on the normative conventions of Western music to achieve this goal, especially concerning the role of tendency tones and fifth relations. In other ways, Lutoslawski established expectations within the work surrounding linear structures and interruption and these processes become conventions in their own right within the work. As I have shown, Lutoslawski carefully manipulated the different levels of structure in order to construct these linear processes. The result is a formal structure that, may at first appear elusive to the listener, but eventually reveals a unique and coherent narrative.

BIBLIOGRAPHY

Carter, Elliott. "Music and the Time Screen." *Elliott Carter: Collected Essays and Lectures, 1937-1995*. ed. Jonathan W. Bernard. Rochester, NY: University of Rochester Press, 1997, p. 262-280.

Casken, John. "The Visionary and the Dramatic in the Music of Lutoslawski." *Lutoslawski Studies*, Skowron, Zbigniew, ed. Oxford: Oxford University Press, 2001, p. 36-56.

Cook, Nicholas. *A Guide to Musical Analysis.* Oxford: Oxford University Press, 1987.

Essens, Peter J. and Dirk-Jan Povel. "Metrical and Nonmetrical Representations of Temporal Patterns" *Perception and Psychophysics* 37:1 (1985), p. 1-7.

Forte, Allen. "Foreground Rhythm in Early Twentieth-Century Music." *Music Analysis,* 2:3 (1983), p. 239-268.

Friedheim, Philip. "Rhythmic Structure in Schoenberg's Atonal Compositions." *Journal of the American Musicological Society*, 19:1 (Spring 1966), p. 59-72.

Friedman, Michael L. and Arnold Schoenberg. "A Methodology for the Discussion of Contour: Its Application to Schoenberg's Music." *Journal of Music Theory* 29:2 (Autumn 1985), p. 223-248.

Harley, James. "Considerations of Symphonic Form in the Music of Lutoslawski." *Lutoslawski Studies*, Skowron, Zbigniew, ed. Oxford: Oxford University Press, 2001, p. 163-193.

Hines, Robert Stephan, ed. *The Orchestral Composer's Point of View: Essays on Twentieth-Century Music by Those Who Wrote It*. Norman, OK: University of Oklahoma Press, 1970.

Jackendoff, Ray and Fred Lerdahl. "Generative Music Theory and Its Relation to Psychology." *Journal of Music Theory*, 25:1 (Spring 1981), p. 45-90.

Jackendoff, Ray and Fred Lerdahl. "On the Theory of Grouping and Meter." *The Musical Quarterly*, 67:4 (October 1981), p. 479-506.

Kramer, Jonathan. *The Time of Music: New Meanings, New Temporalities, New Listening Strategies*. New York: Schirmer, 1988.

Langer, Susan. *Feeling and Form*. New York: Charles Scribner's Sons, 1953.

Lerdahl, Fred. "Prolonging the Inevitable." *Revue Belge de Musicologie/ Belgisch Tijdschrift voor Muziekwetenschap,* 52 (1998), p. 305-309.

Levitin, Daniel J. *This is Your Brain on Music: the Science of a Human Obsession*. New York: Dutton, 2006.

Lewin, David. *Generalized Musical Intervals and Transformations*. Oxford: Oxford University Press, 2007.

London, Justin M. "Rhythm in Twentieth Century Music Theory." *The Cambridge History of Western Music Theory* (2002), p. 695-725.

Madkour, Ahmed Abd Alla. *Compositional Control and Psychological Experience: An Analysis of Witold Lutoslawski's 'Mi Parti' For Orchestra*. PhD Dissertation, Pittsburgh, PA: University of Pittsburgh, 2002.

Marvin, Elizabeth West. "The Perception of Rhythm in Non-Tonal Music: Rhythmic Contours in the Music of Edgard Varése." *Music Theory Spectrum* 13:1 (Spring 1991), p. 61-78.

Marvin, Elizabeth West. *A Generalized Theory of Musical Contour: Its Application to Melodic and Rhythmic Aspects of Non-Tonal Music and Its Perceptual and Pedagogical Implications*. PhD Dissertation, Rochester, NY: University of Rochester.

Meyer, Leonard B. *Music, the Arts, and Ideas: Patterns and Predictions in Twentieth-Century Culture*. 2nd ed. Chicago: University of Chicago Press, 1994.

Morris, Robert D. *Composition with Pitch Classes*. New Haven, CT: Yale University Press, 1987.

Nordwall, Ove, ed. *Lutoslawski*. Stockholm: Wilhelm Hansen, 1968.

Rae, Charles Bodman. "Lutoslawski's Sound World: A World of Contrasts." *Lutoslawski Studies*. Skowron, Zbigniew, ed. Oxford: Oxford University Press, 2001, p. 16-35.

Rae, Charles Bodman. "Lutoslawski, Witold." *Grove Music Online*. ed. L. Macy (Accessed 4 November, 2006), <http://www.grovemusic.com>.

Rae, Charles Bodman. *The Music of Lutoslawski*. London: Faber and Faber, 1994.

Reichling, Mary J. "Intersections: Form, Feeling and Isomorphism." *Philosophy of Music Education Review*. 12:1 (Jan. 2004), p. 1-9.

Reichling, Mary J. "Susan Langer's Concept of Secondary Illusion in Music and Art." *Journal of Aesthetic Education*. 29:4 (Winter 1995), p. 39-51.

Jones, James River. "Some Aspects of Rhythm and Meter in Webern's Opus 27." *Perspectives of New Music*, 7:1 (Autumn/ Winter 1968), p. 103-109.

Schivelbusch, Wolfgang. *The Railway Journey: The Industrialization of Time and Space in the 19th Century*. Berkeley: University of California Press, 1986.

Seashore, Carl E. *Psychology of Music*. New York: Dover, 1967.

Skowron, Zbigniew, ed. *Lutoslawski Studies*. Oxford: Oxford University Press, 2001.

Straus, Joseph N. *Introduction to Post-Tonal Theory*. 2nd ed. Saddle River, NJ: Prentice Hall, 2000.

Stucky, Steven. "Change and Constancy: The Essential Lutoslawski." *Lutoslawski Studies*, Skowron, Zbigniew, ed. Oxford: Oxford University Press, 2001, p. 127-63.

Stucky, Steven. *Lutoslawski and his Music*. Cambridge: Cambridge University Press, 1981.

PROXIMATE SPACES

James Joseph Ogburn

Proximate Spaces, for piano and chamber orchestra

to Matthew Damien Gillespie

Program Note:

The formal continuity of *Proximate Spaces* was suggested to me by competing ideas of the 1990's surrounding the search for a unified theory to explain the fundamental forces, dimensional composition, and existence of matter in the known universe. I am no physics expert but I just find the idea of parallel universes and their influence upon each other to be enthralling. Much of the pitch material of this work derives from a two-octave mode (18 pitches in series) and three subset hexachords of that mode. The work develops the tension between mechanistic devotion to this mode and episodes of free chromaticism, between strictly repeating rhythmic patterns and rhythmic variation, between instrumentation according to families and a free exchange of musical ideas regardless of instrumental relation. Initially aligned with the mechanistic paradigms of mode and regular rhythmic patterns, in several places the piano breaks free and attempts to incite revolt against the piece's system by abandoning strict adherence to these structures. Although some other members of the ensemble briefly depart from the system, ultimately the machine prevails.

Duration: ca. 15 min.

Instrumentation:

Flute/ Piccolo
Oboe/ English Horn
Eb/Bb/Bass Clarinet
Bassoon

Horn in F
Bb Trumpet
Tenor Trombone

Percussion (Vibraphone, Crotales, Snare, High Hat, Susp. Cymbal, Kick, Two Toms)
Piano

Strings (4,3,2,2,1)

All instruments are written at sounding pitch except Piccolo, Crotales, and Double Bass.

Score in C

Proximate Spaces

for Matthew Damien Gillespie

1a. Strings

James J. Ogburn

Moderato ♩. = 96

12/8

Picc./ Flt.

Oboe/ English Horn

Clt. in B♭/E♭/ Bss.

Bassoon

Horn in F

Trumpet in B♭

Tenor Trombone

Percussion

Piano

8va

pp

p

mp

mp

12/8 **Moderato** ♩. = 96

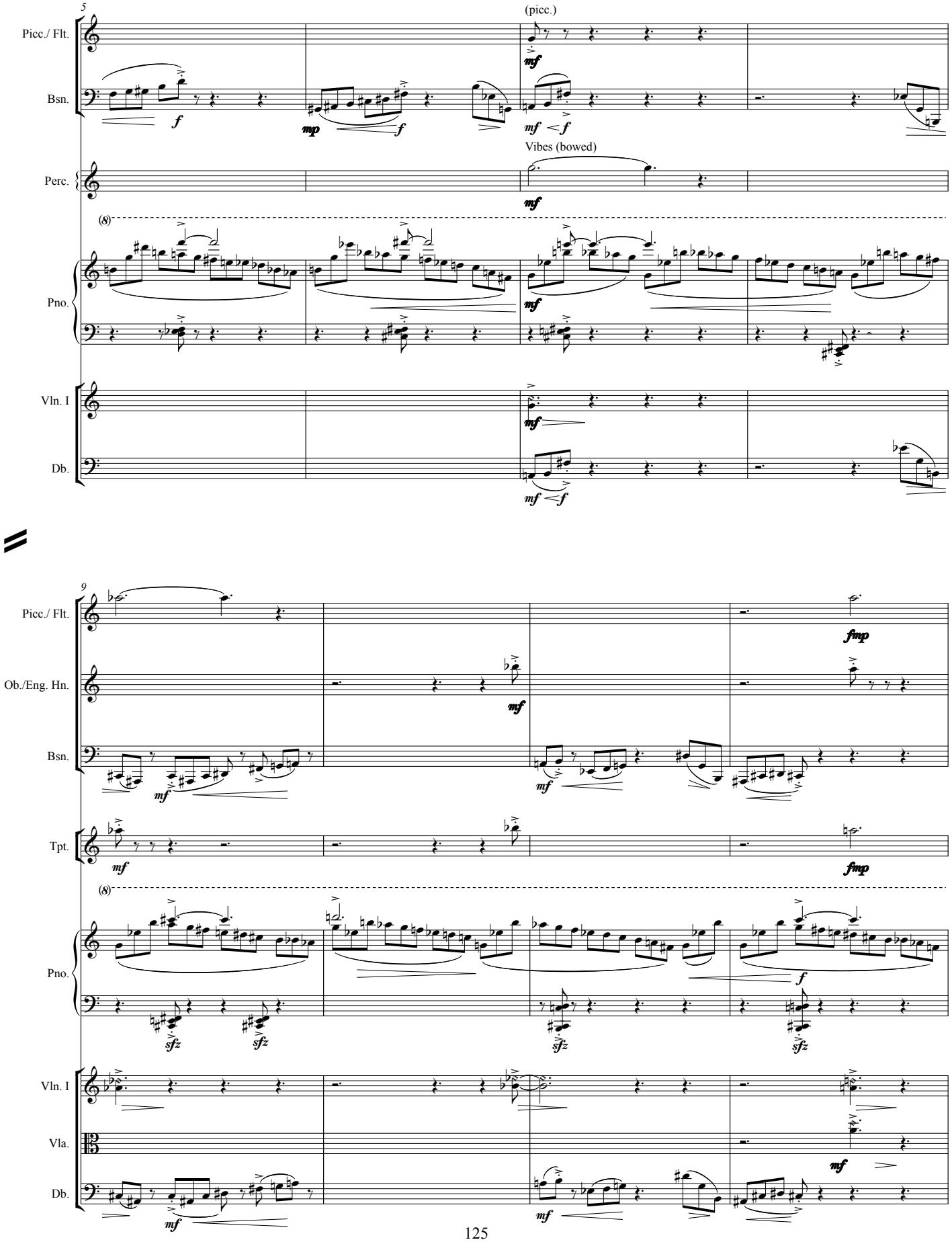
Violin I

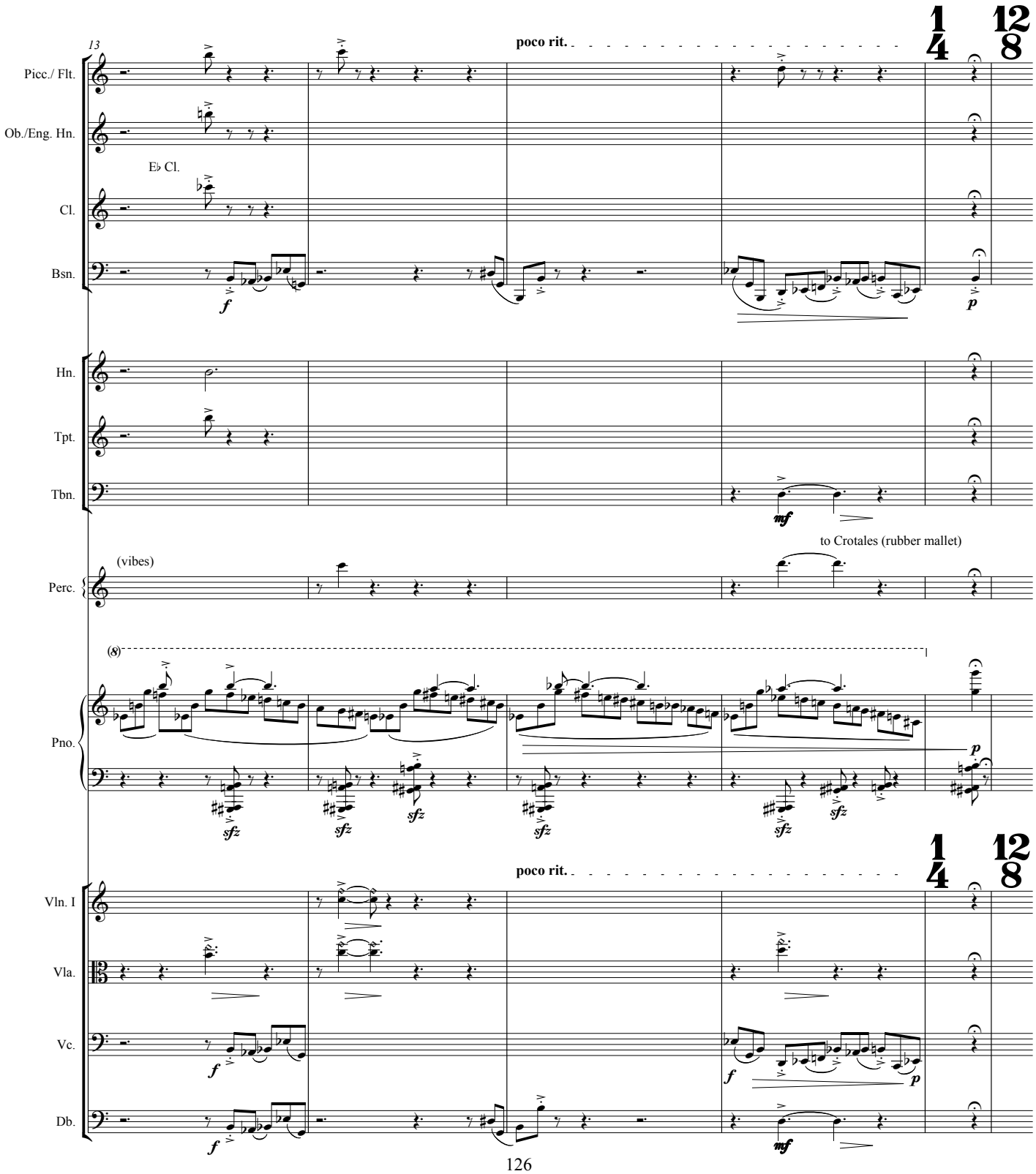
Violin II

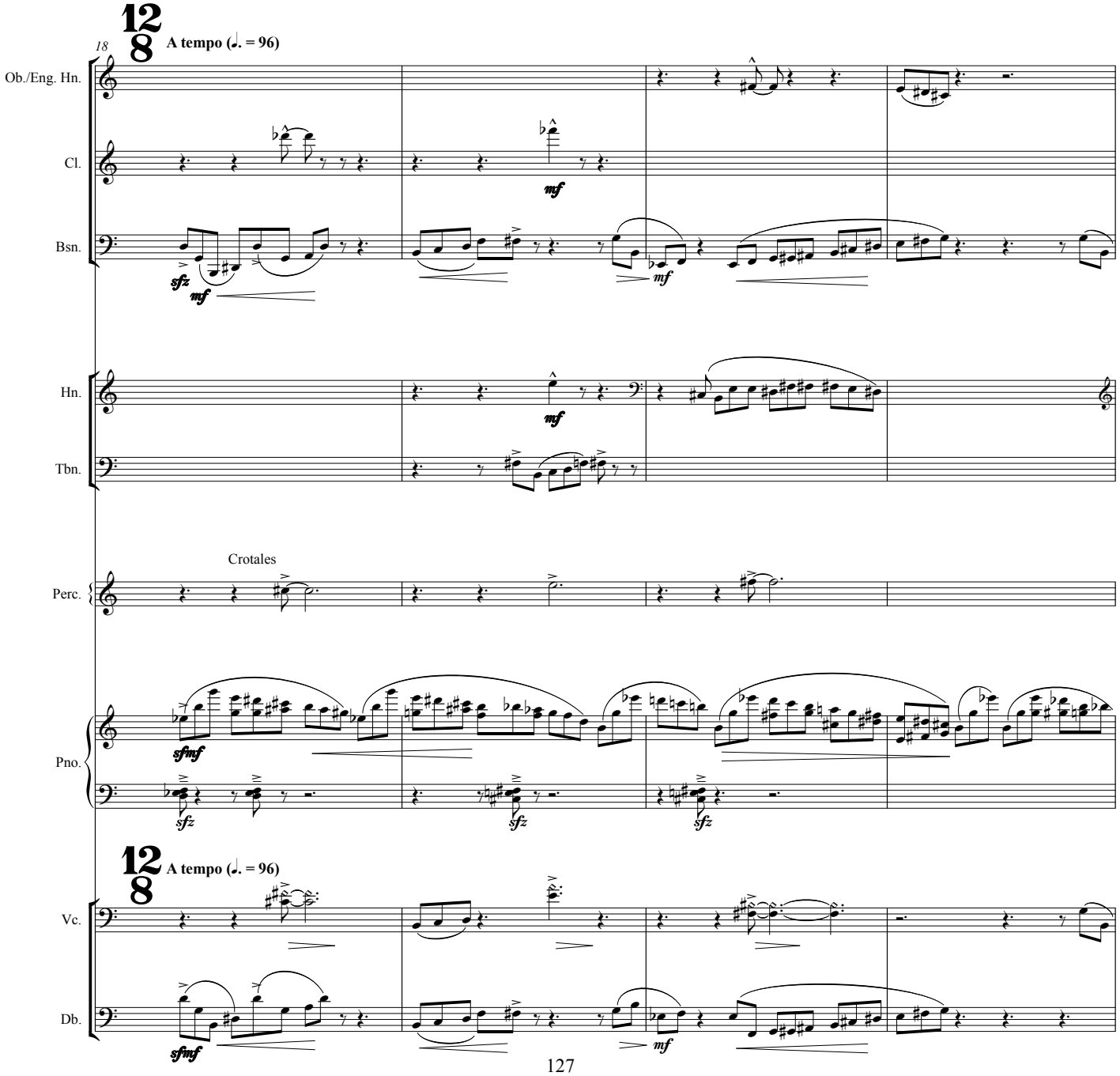
Viola

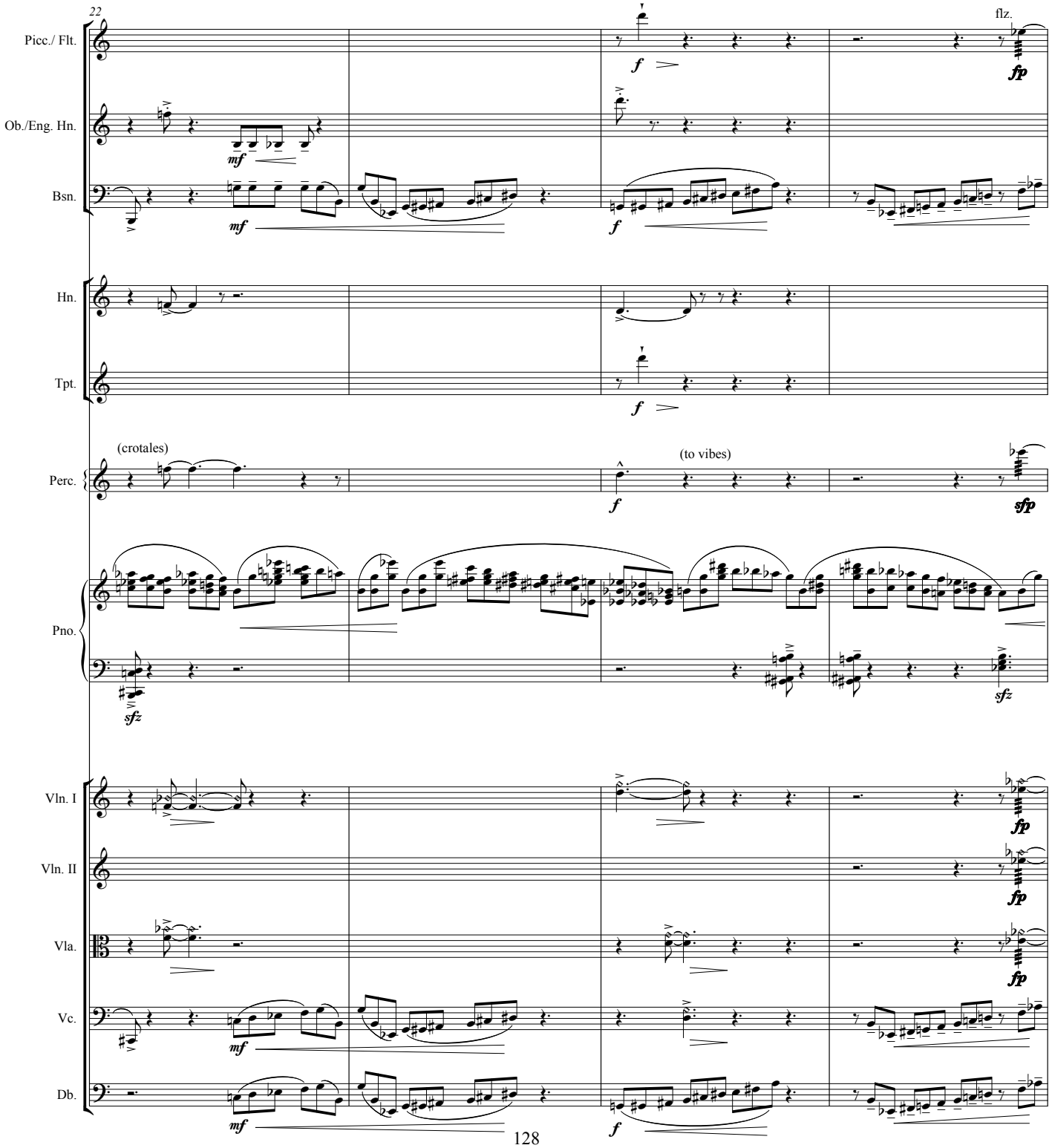
Violoncello

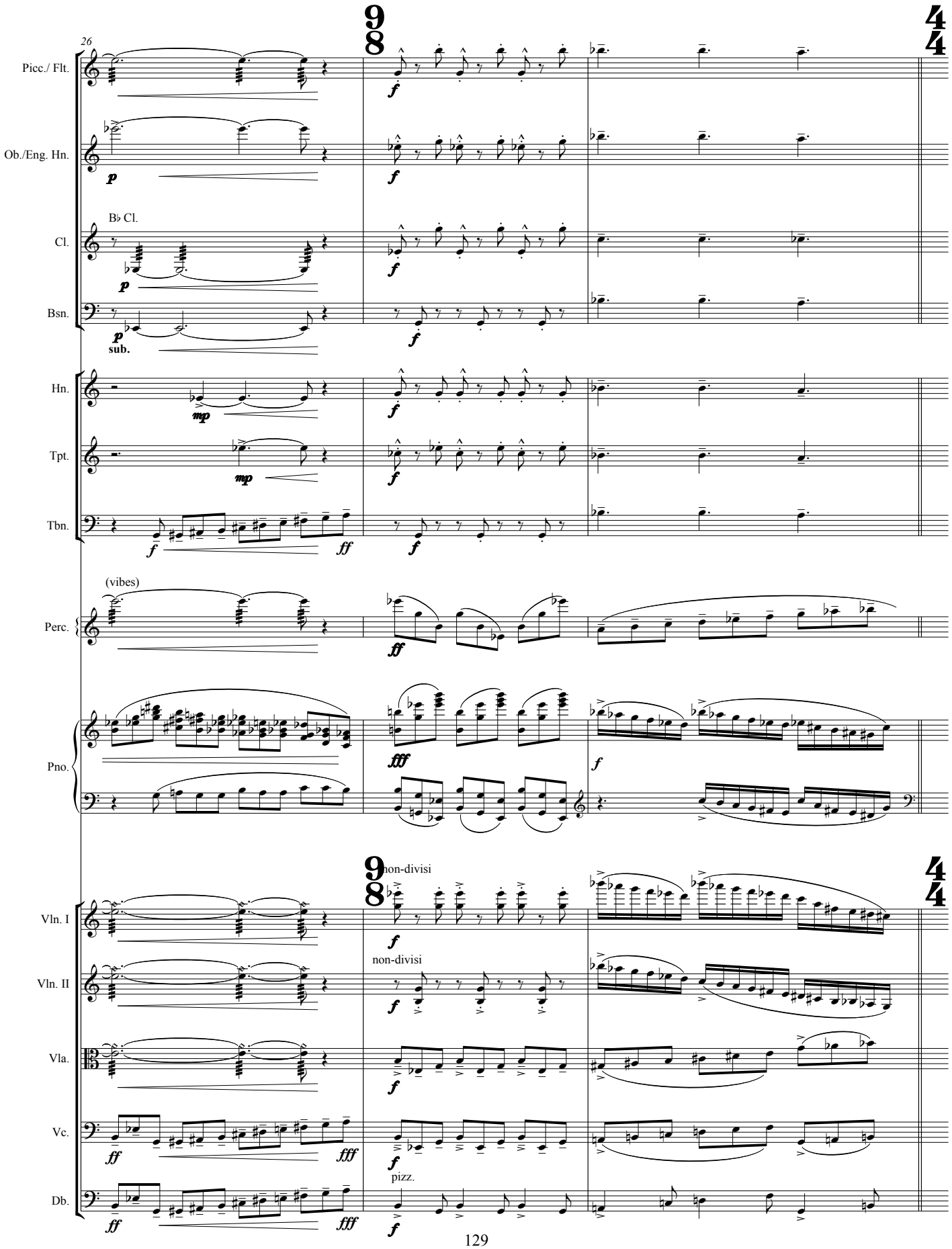
Double Bass

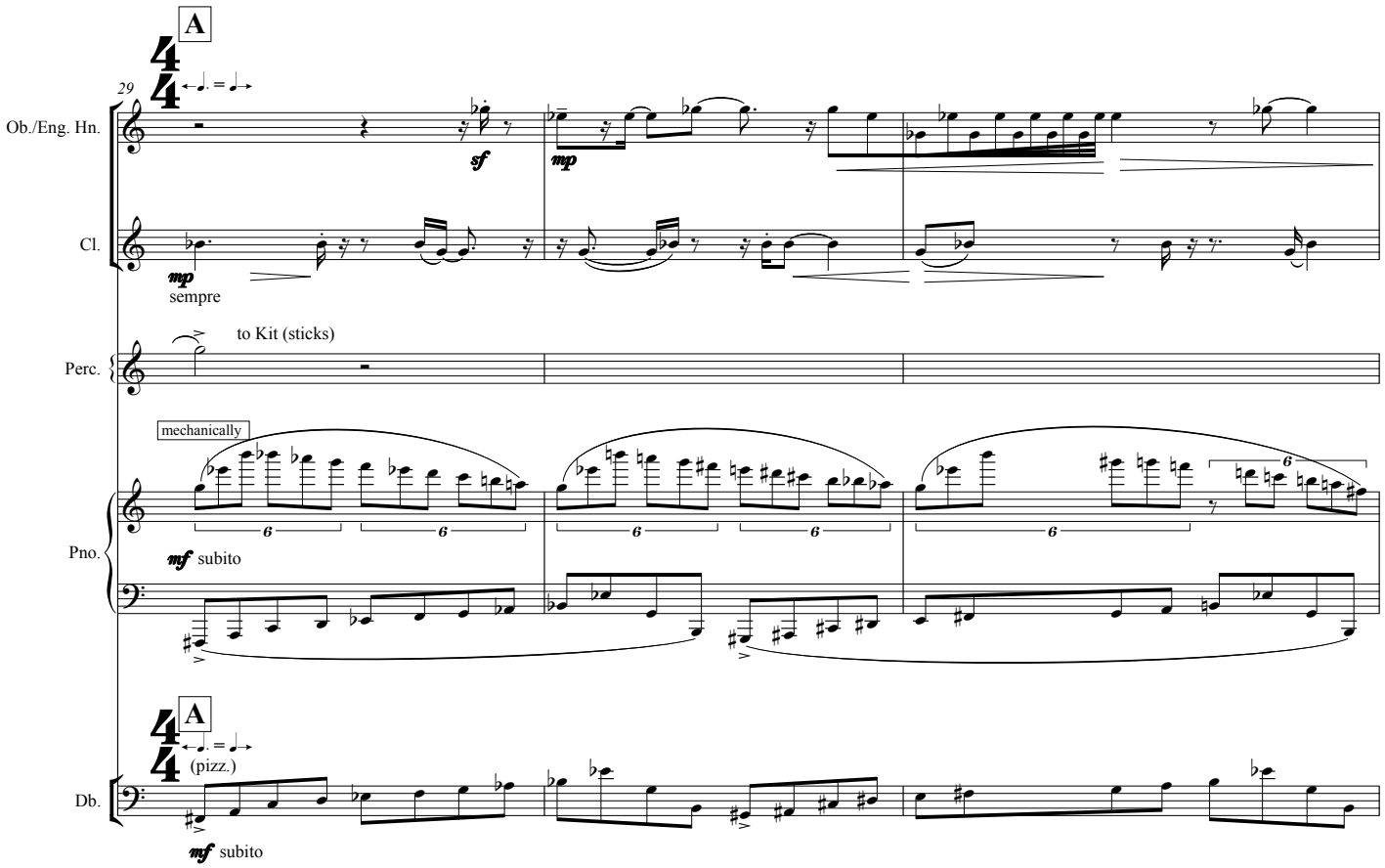

5
(picc.)
Picc./ Flt.
Bsn.
Vibes (bowed)
Perc.
Pno.
Vln. I
Db.
9
Ob./Eng. Hn.
Tpt.
Vla.

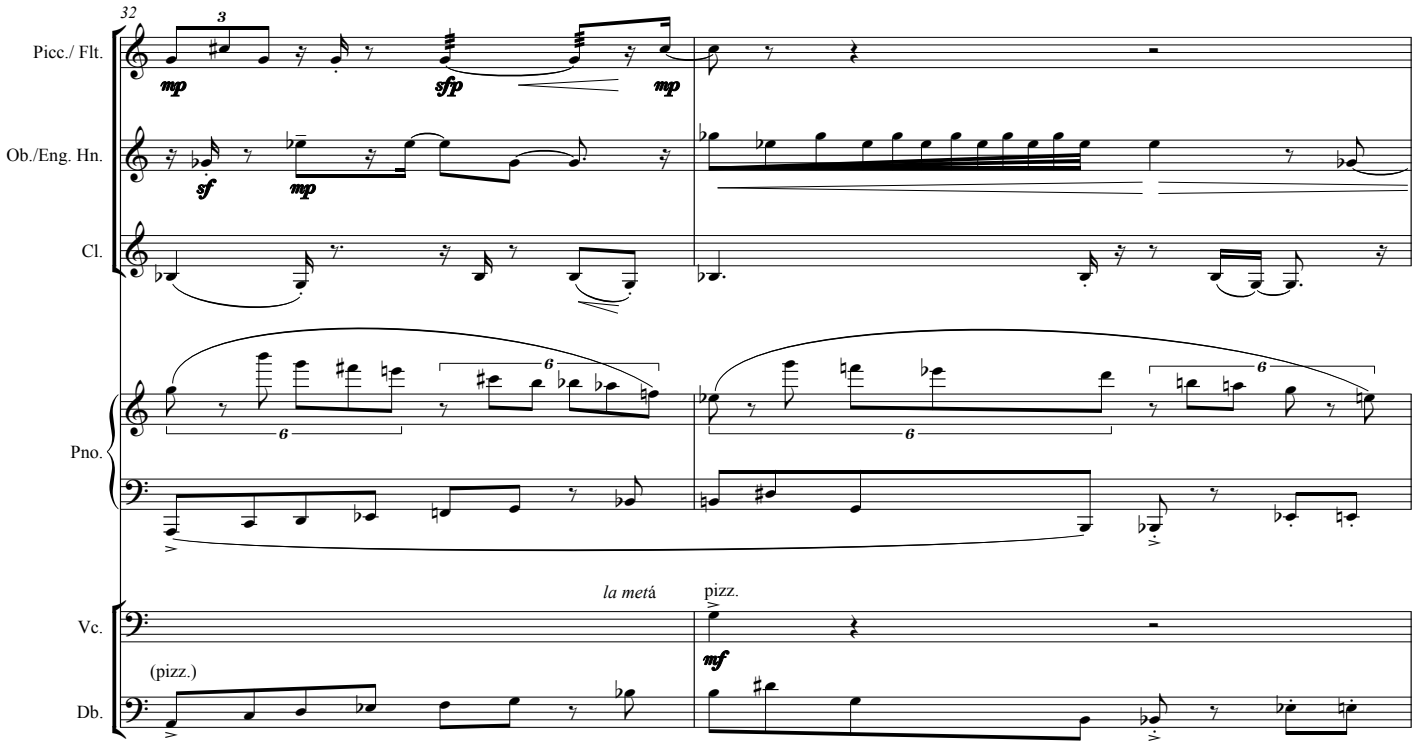

13
poco rit.
Picc./ Flt.
Ob./Eng. Hn.
E♭ Cl.
Cl.
Bsn.
Hn.
Tpt.
Tbn.
(vibes)
to Crotales (rubber mallet)
Perc.
(8)
Pno.
poco rit.
Vln. I
Vla.
Vc.
Db.

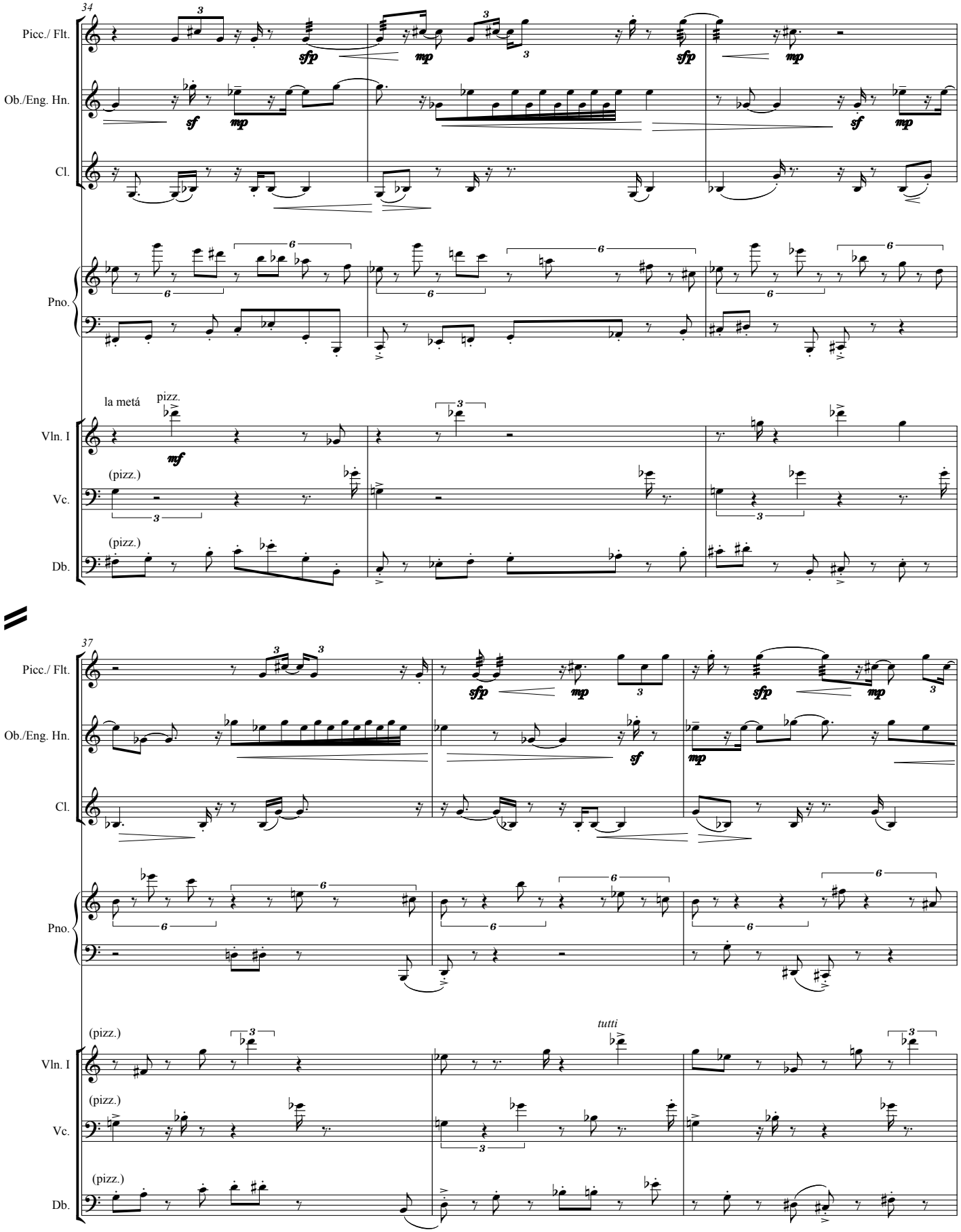

18
12/8
A tempo (♩. = 96)
Ob./Eng. Hn.
Cl.
Bsn.
Hn.
Tbn.
Crotales
Perc.
Pno.
12/8
A tempo (♩. = 96)
Vc.
Db.
sfz
mf
sfmf

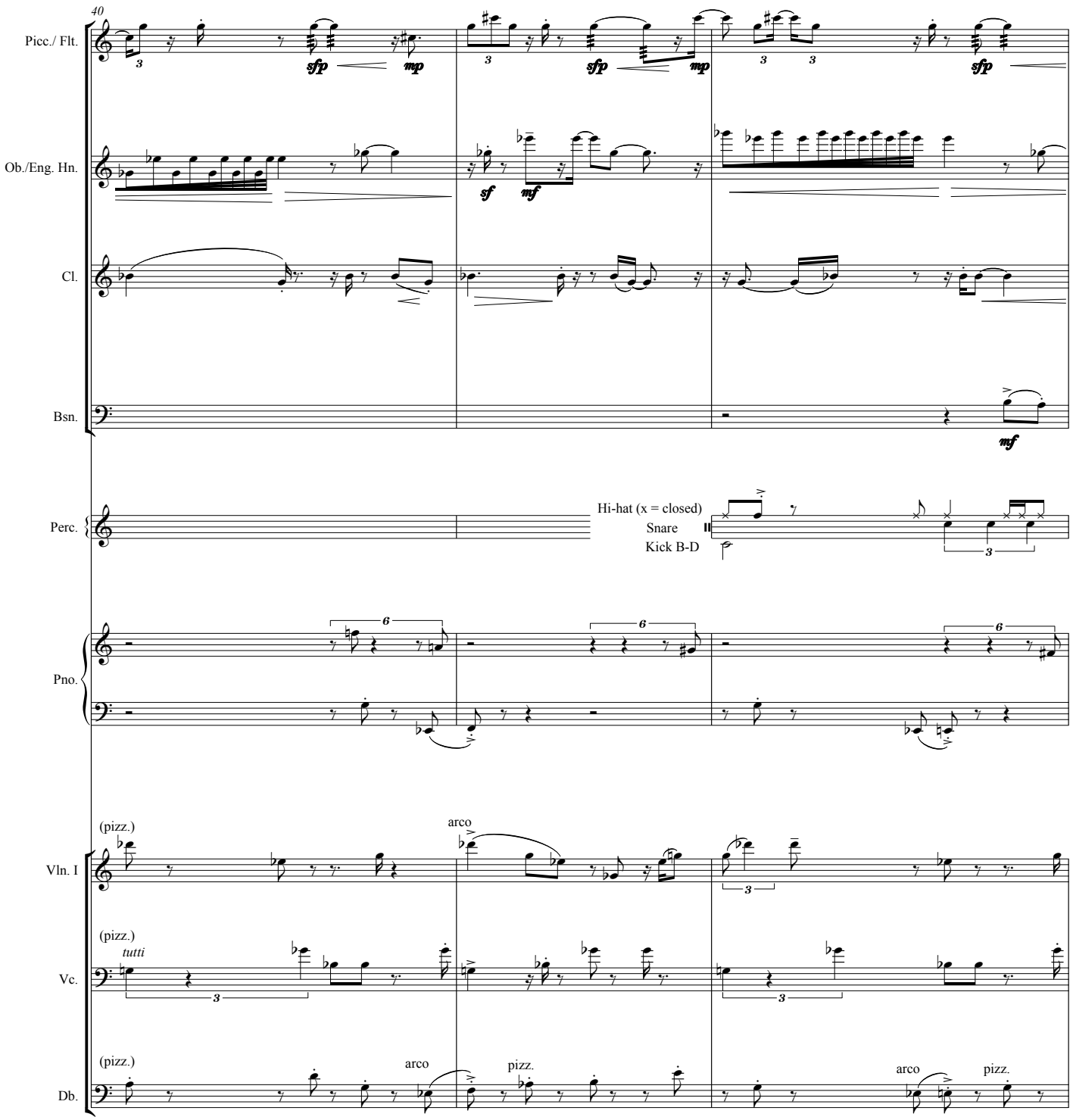

22
Picc./ Flt.
Ob./Eng. Hn.
Bsn.
Hn.
Tpt.
Perc.
Pno.
Vln. I
Vln. II
Vla.
Vc.
Db.
(crotales)
(to vibes)
flz.
mf
f
fp
sfp
sfz

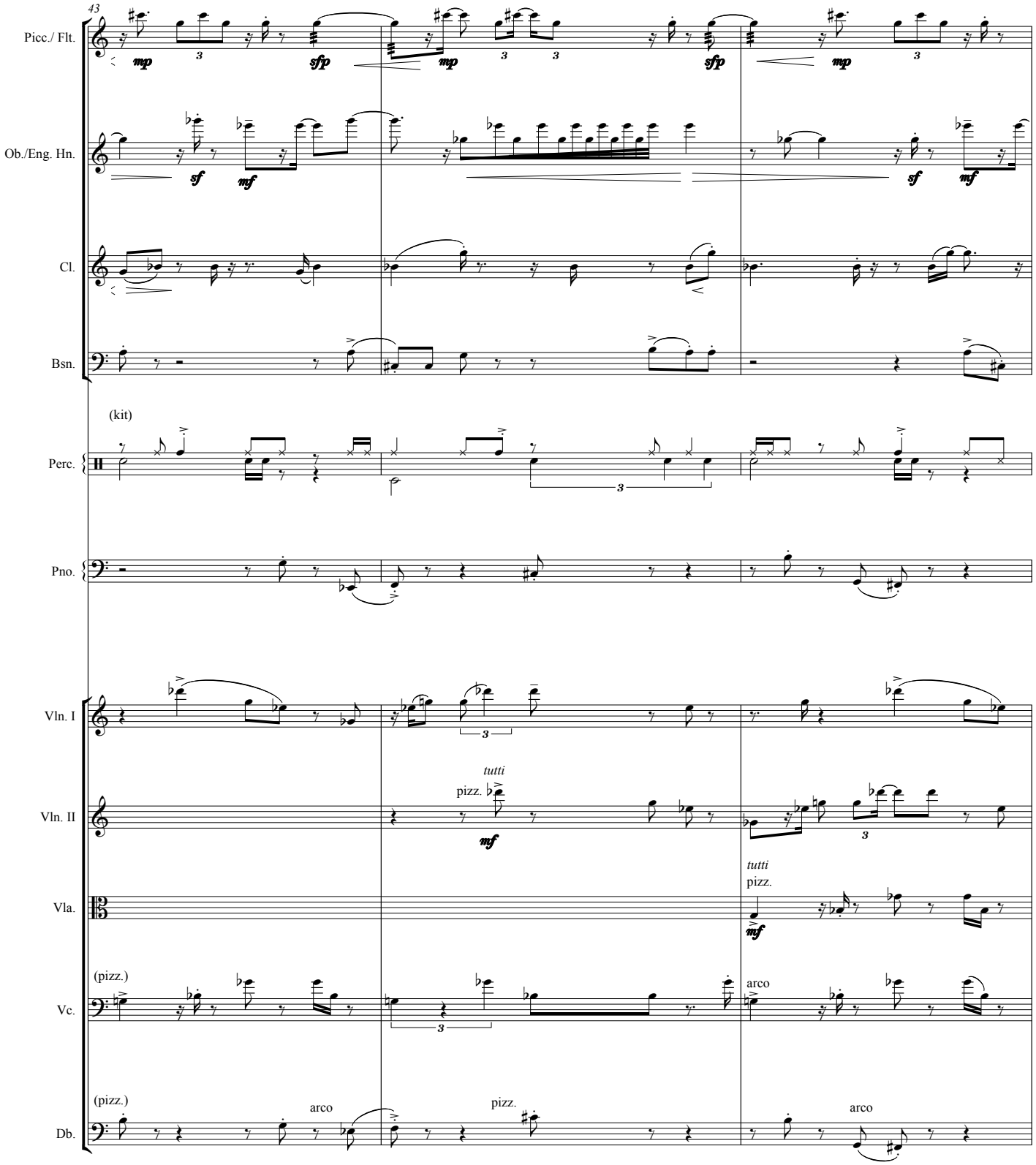

26
9/8
4/4
Picc./ Flt.
Ob./Eng. Hn.
B♭ Cl.
Cl.
Bsn.
sub.
Hn.
Tpt.
Tbn.
(vibes)
Perc.
Pno.
non-divisi
Vln. I
Vln. II
Vla.
Vc.
Db.
pizz.

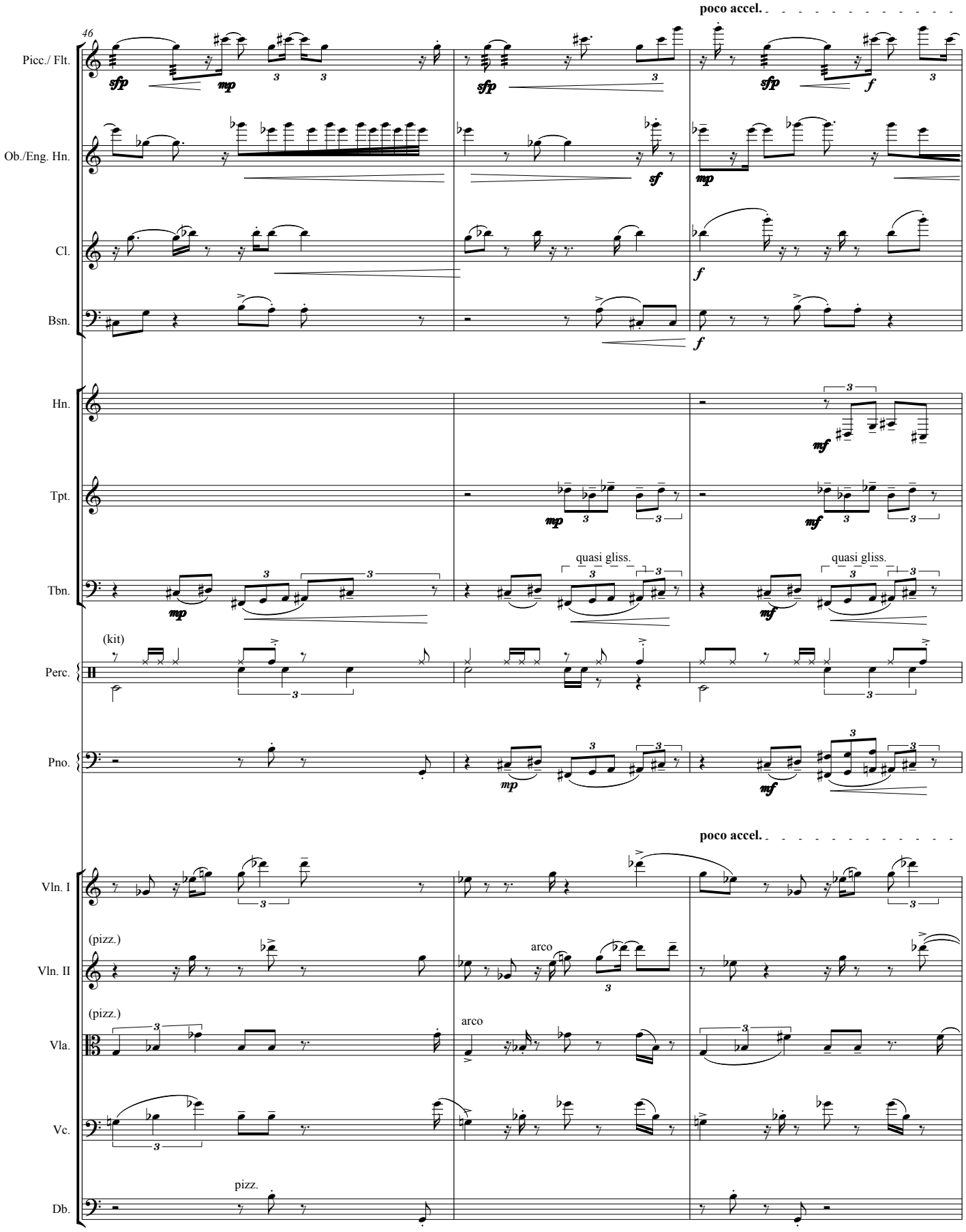

A
29
Ob./Eng. Hn.
Cl.
sempre
to Kit (sticks)
Perc.
mechanically
Pno.
subito
A
(pizz.)
Db.
subito

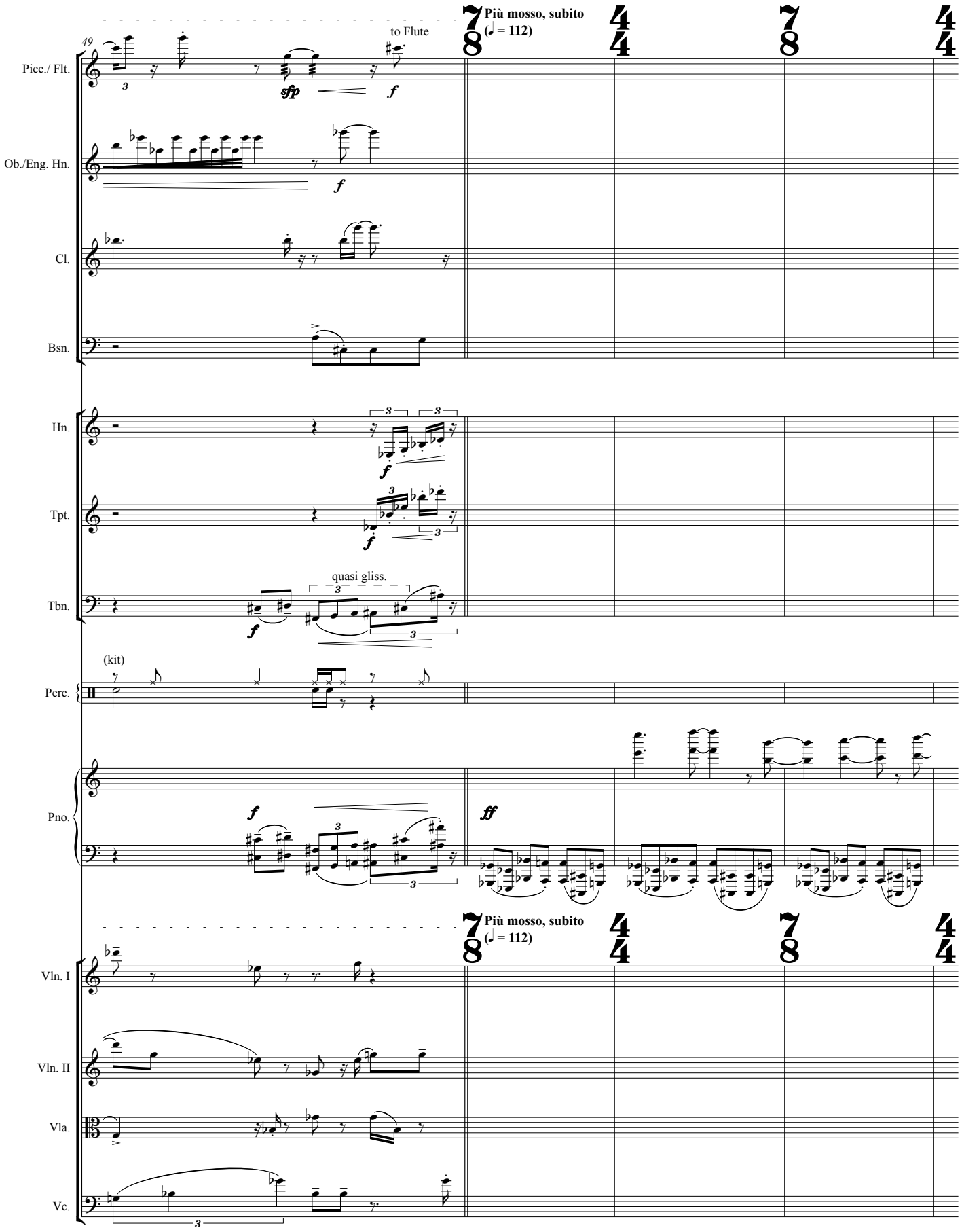

32
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Pno.
la metá
pizz.
Vc.
(pizz.)
Db.

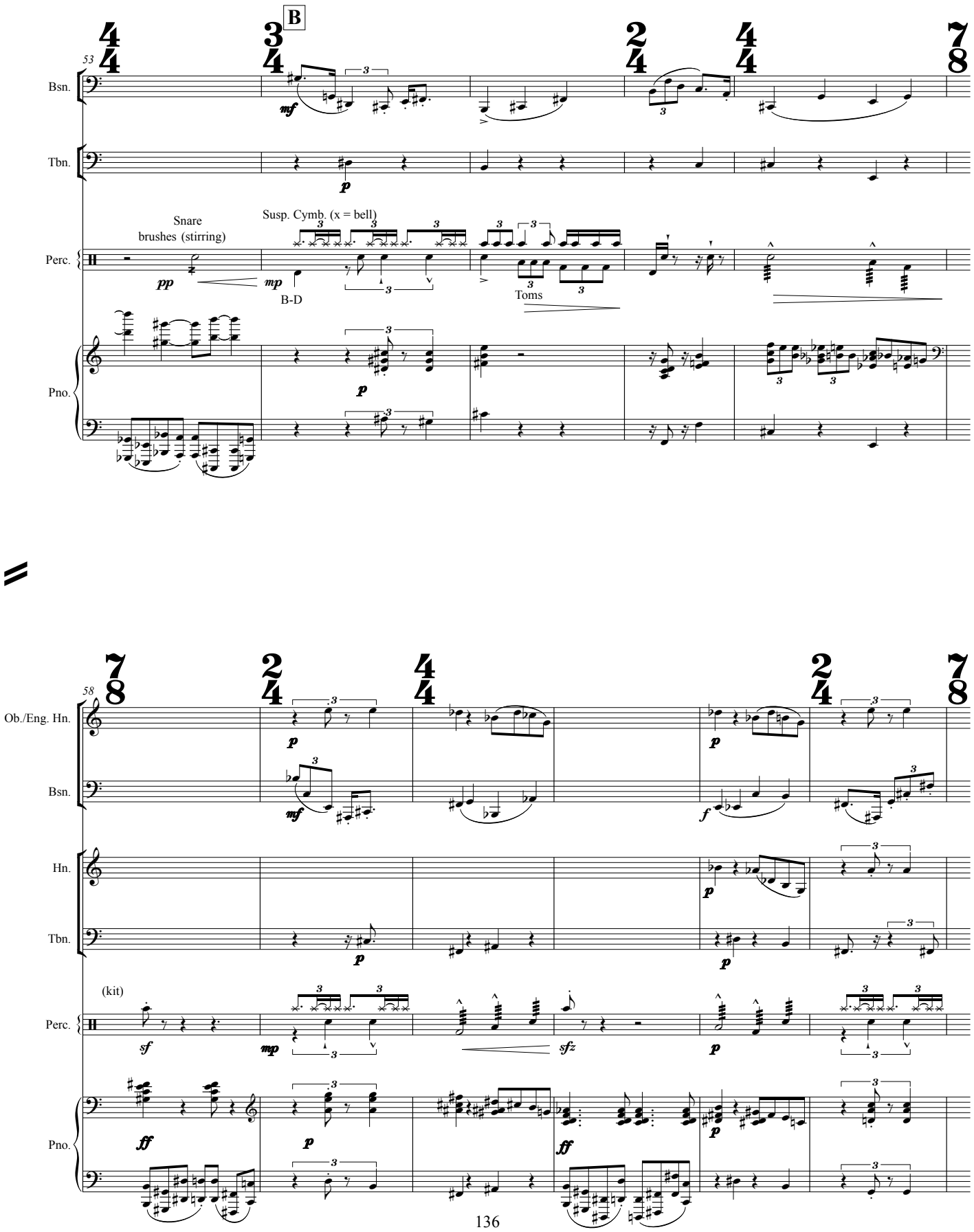

34
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Pno.
la metá
pizz.
Vln. I
(pizz.)
Vc.
(pizz.)
Db.
37
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Pno.
(pizz.)
tutti
Vln. I
(pizz.)
Vc.
(pizz.)
Db.

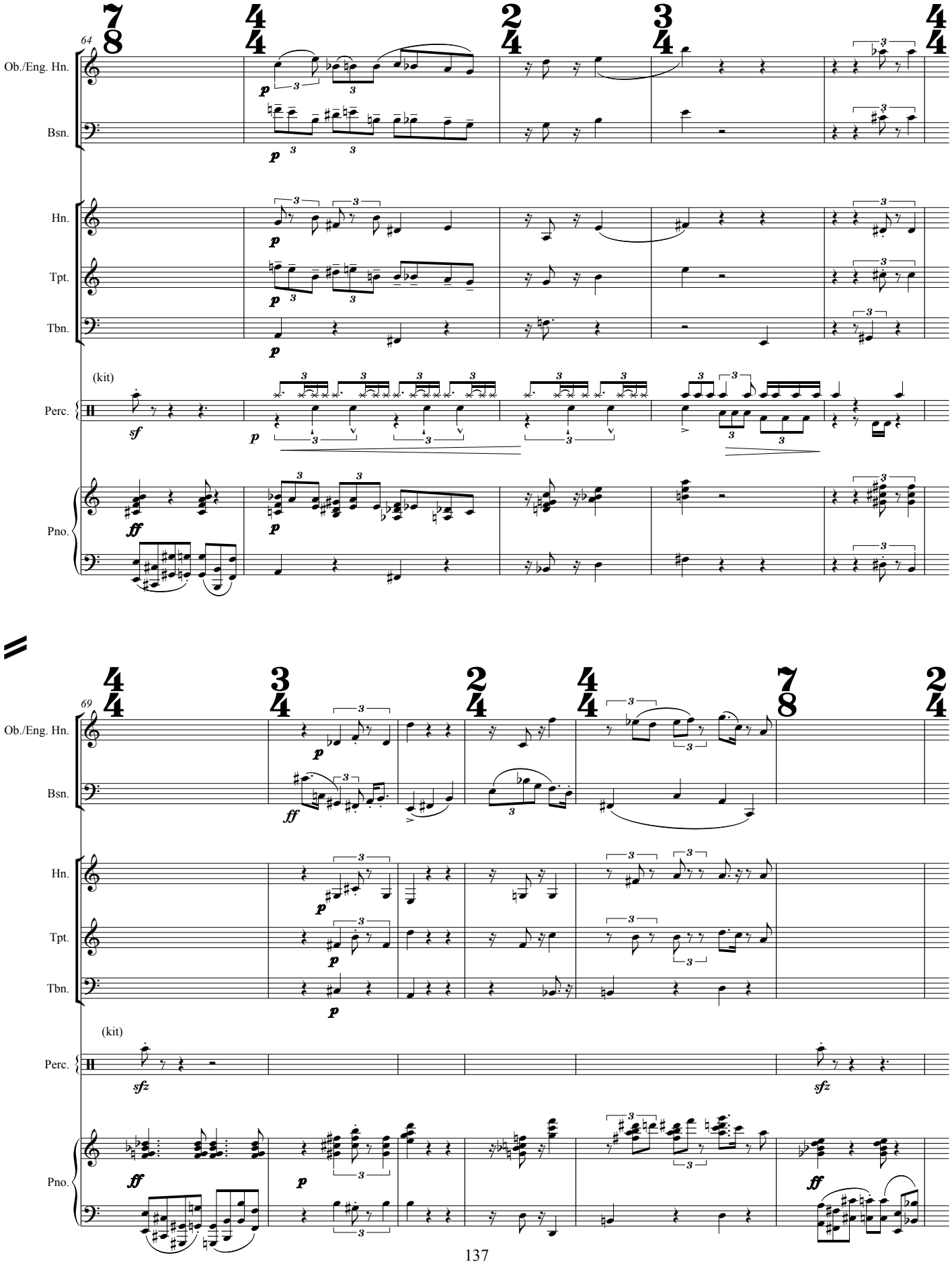

40
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Bsn.
Perc.
Hi-hat (x = closed)
Snare
Kick B-D
Pno.
Vln. I
Vc.
Db.
(pizz.)
arco
tutti
pizz.

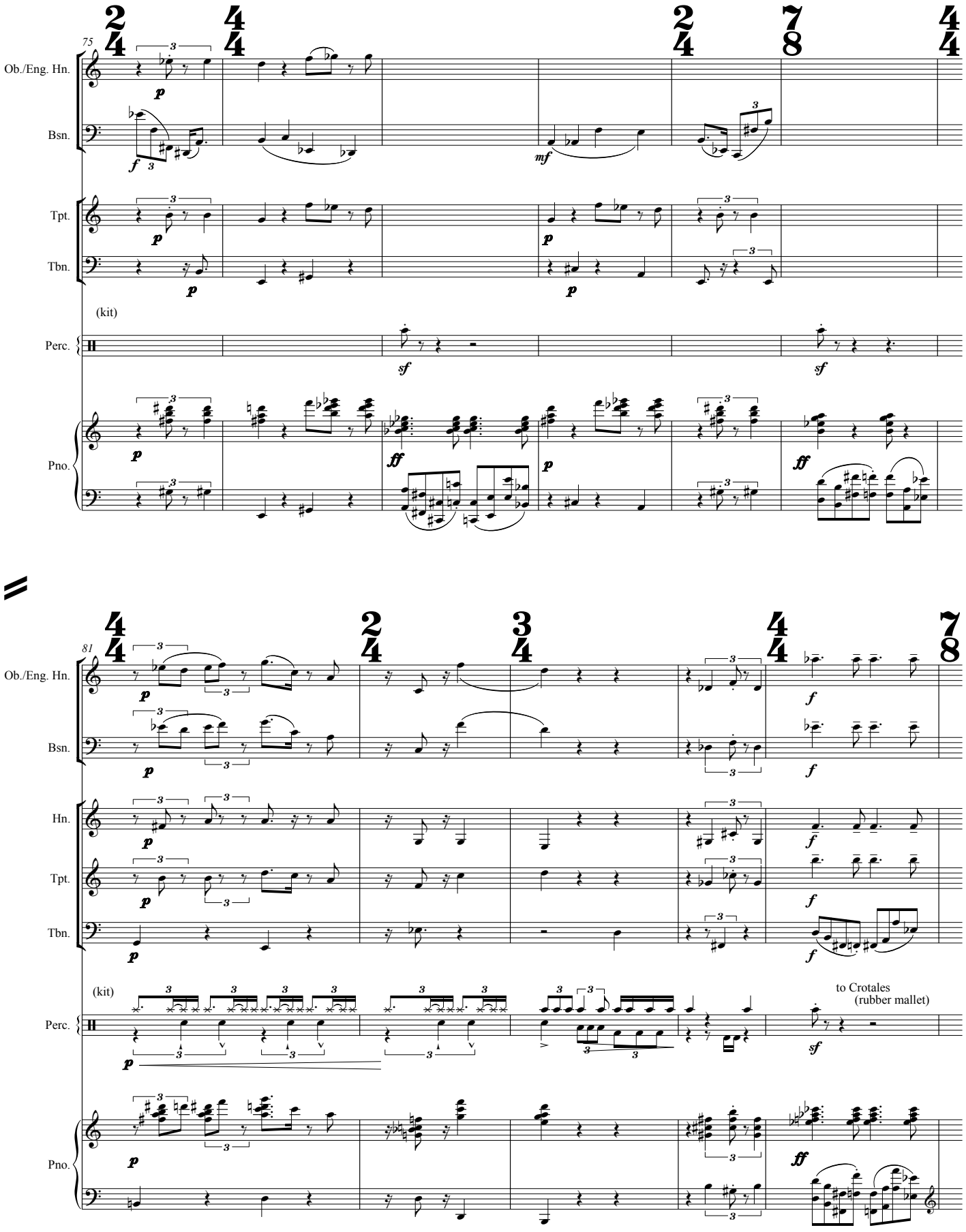

43
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Bsn.
(kit)
Perc.
Pno.
Vln. I
Vln. II
Vla.
Vc.
Db.
mp
sfp
sf
mf
tutti
pizz.
(pizz.)
arco

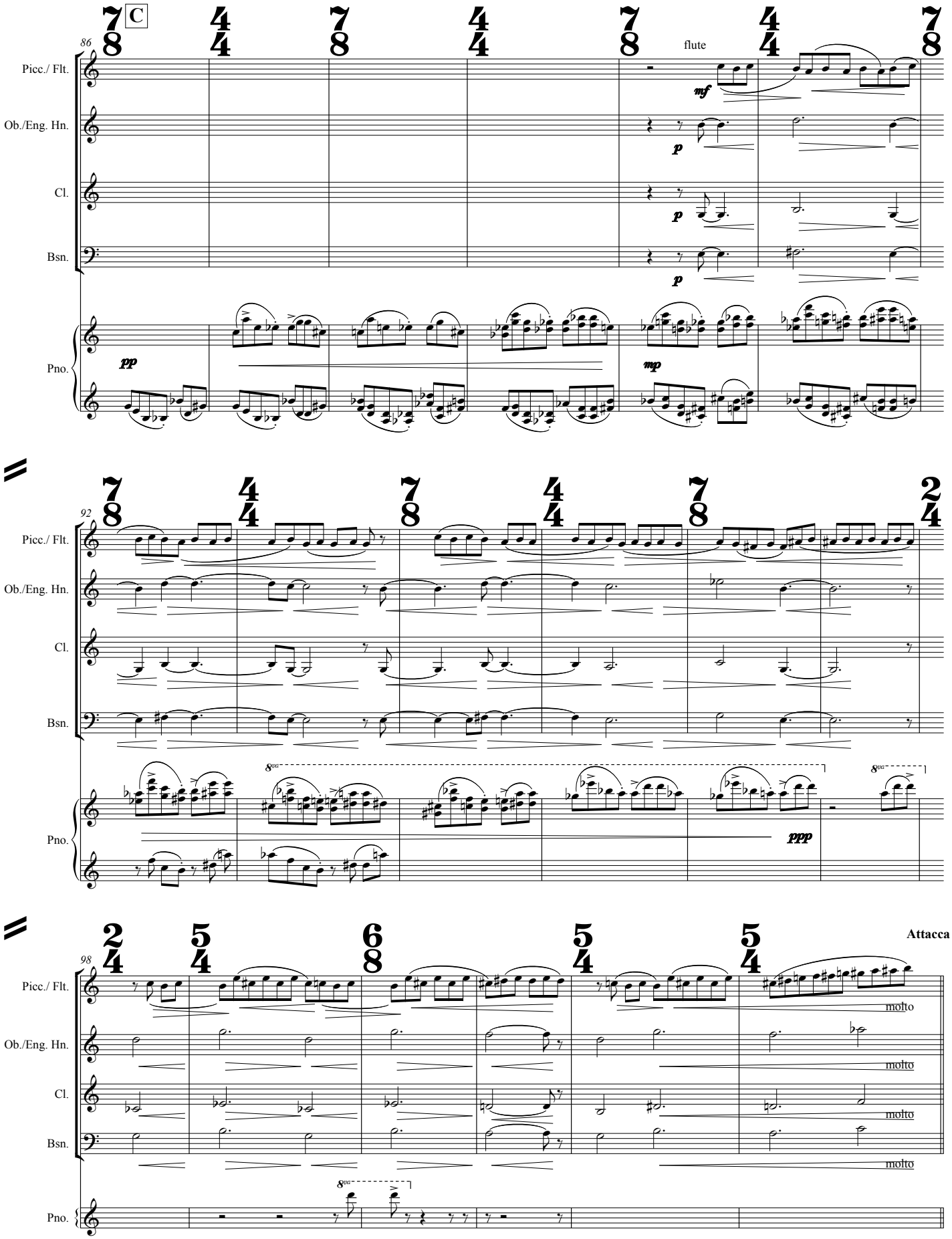

poco accel.
46
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Bsn.
Hn.
Tpt.
Tbn.
quasi gliss.
(kit)
Perc.
Pno.
poco accel.
Vln. I
(pizz.)
Vln. II
arco
(pizz.)
Vla.
arco
Vc.
pizz.
Db.

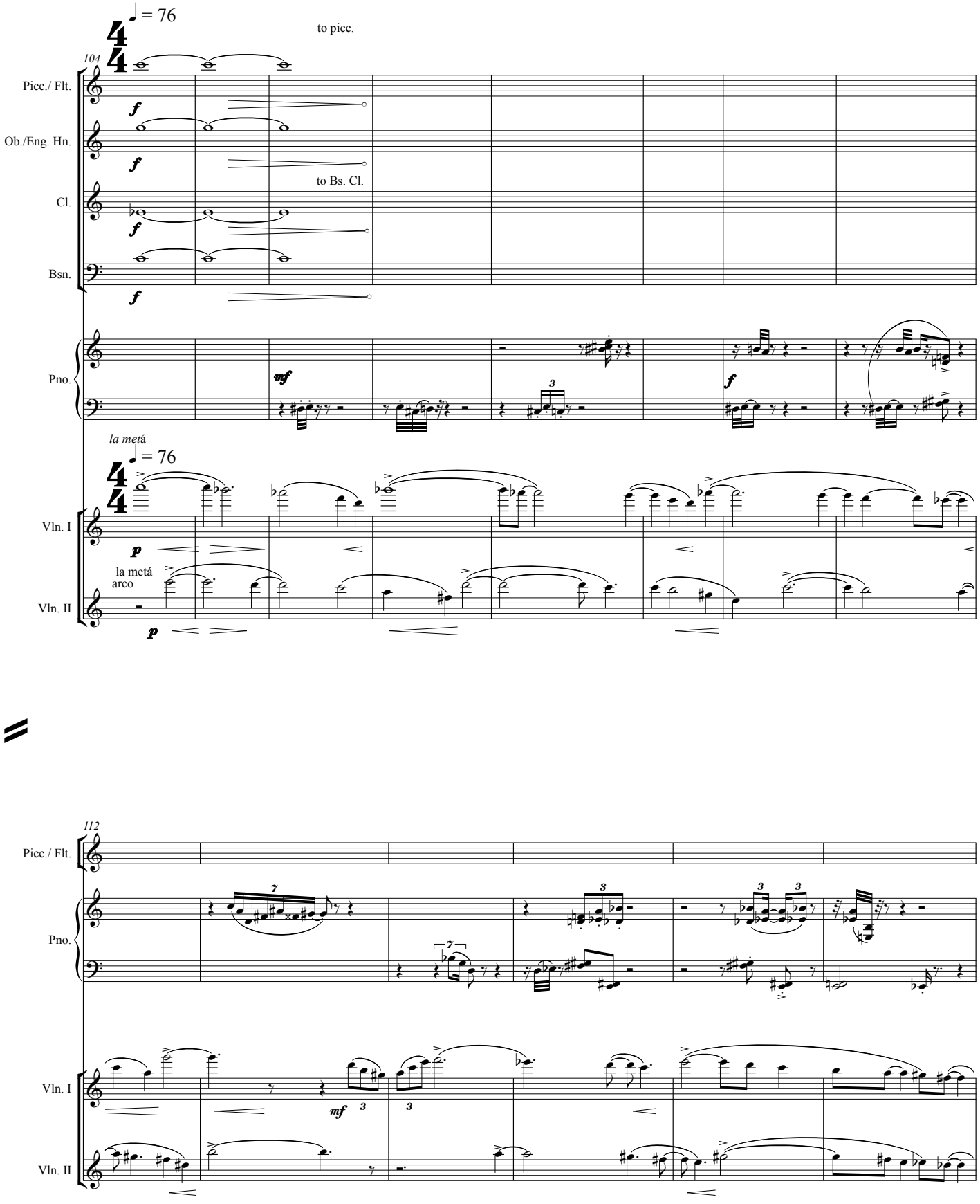

49
Picc./ Flt.
to Flute
sfp
f
Ob./Eng. Hn.
Cl.
Bsn.
Hn.
Tpt.
Tbn.
quasi gliss.
(kit)
Perc.
Pno.
ff
Più mosso, subito
(♩ = 112)
Vln. I
Vln. II
Vla.
Vc.

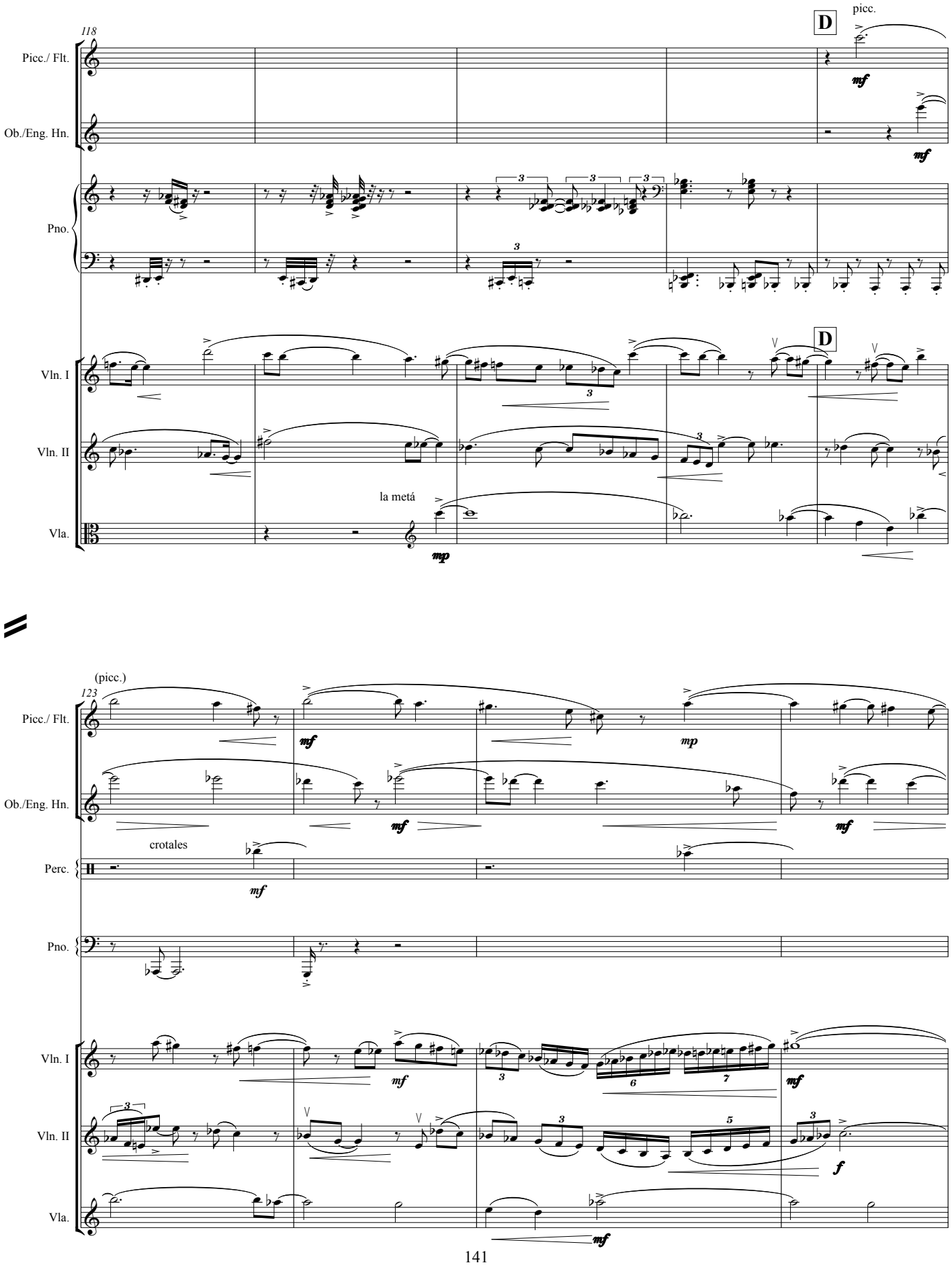

B
53
Bsn.
Tbn.
Snare
brushes (stirring)
Susp. Cymb. (x = bell)
Perc.
B-D
Toms
Pno.
58
Ob./Eng. Hn.
Bsn.
Hn.
Tbn.
(kit)
Perc.
Pno.

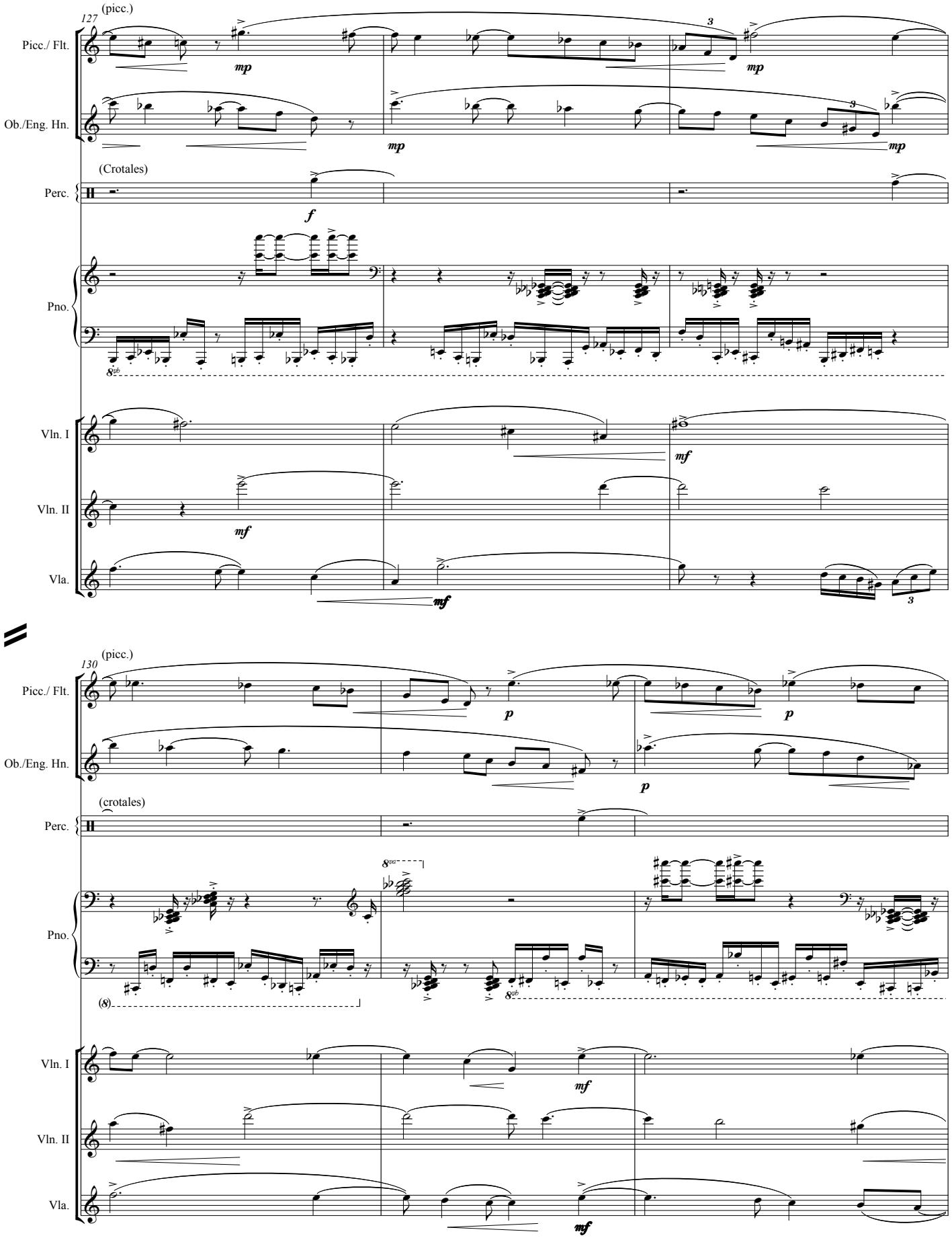

64
Ob./Eng. Hn.
Bsn.
Hn.
Tpt.
Tbn.
(kit)
Perc.
Pno.
69
Ob./Eng. Hn.
Bsn.
Hn.
Tpt.
Tbn.
(kit)
Perc.
Pno.

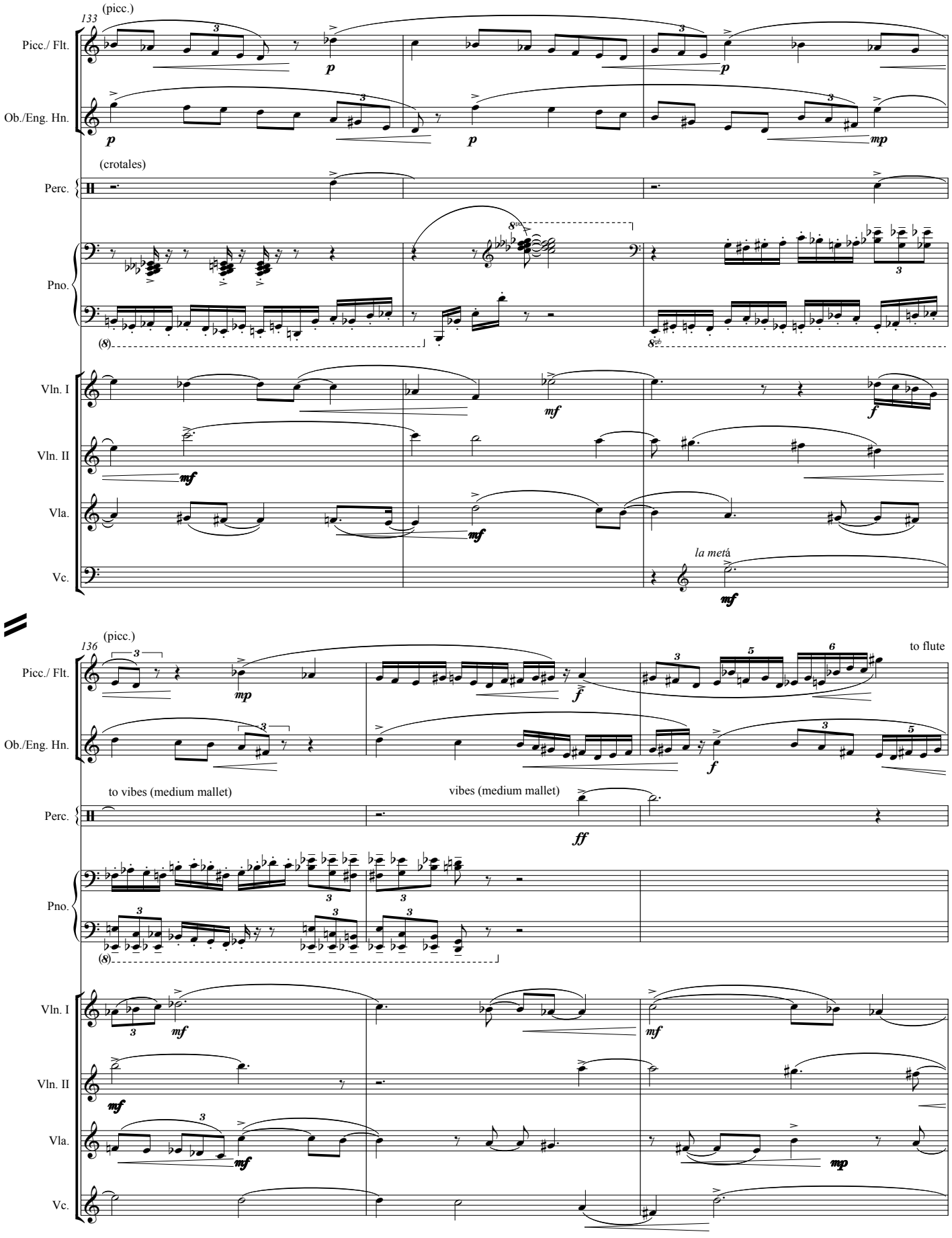

75
Ob./Eng. Hn.
Bsn.
Tpt.
Tbn.
(kit)
Perc.
Pno.
81
Hn.
to Crotales
(rubber mallet)

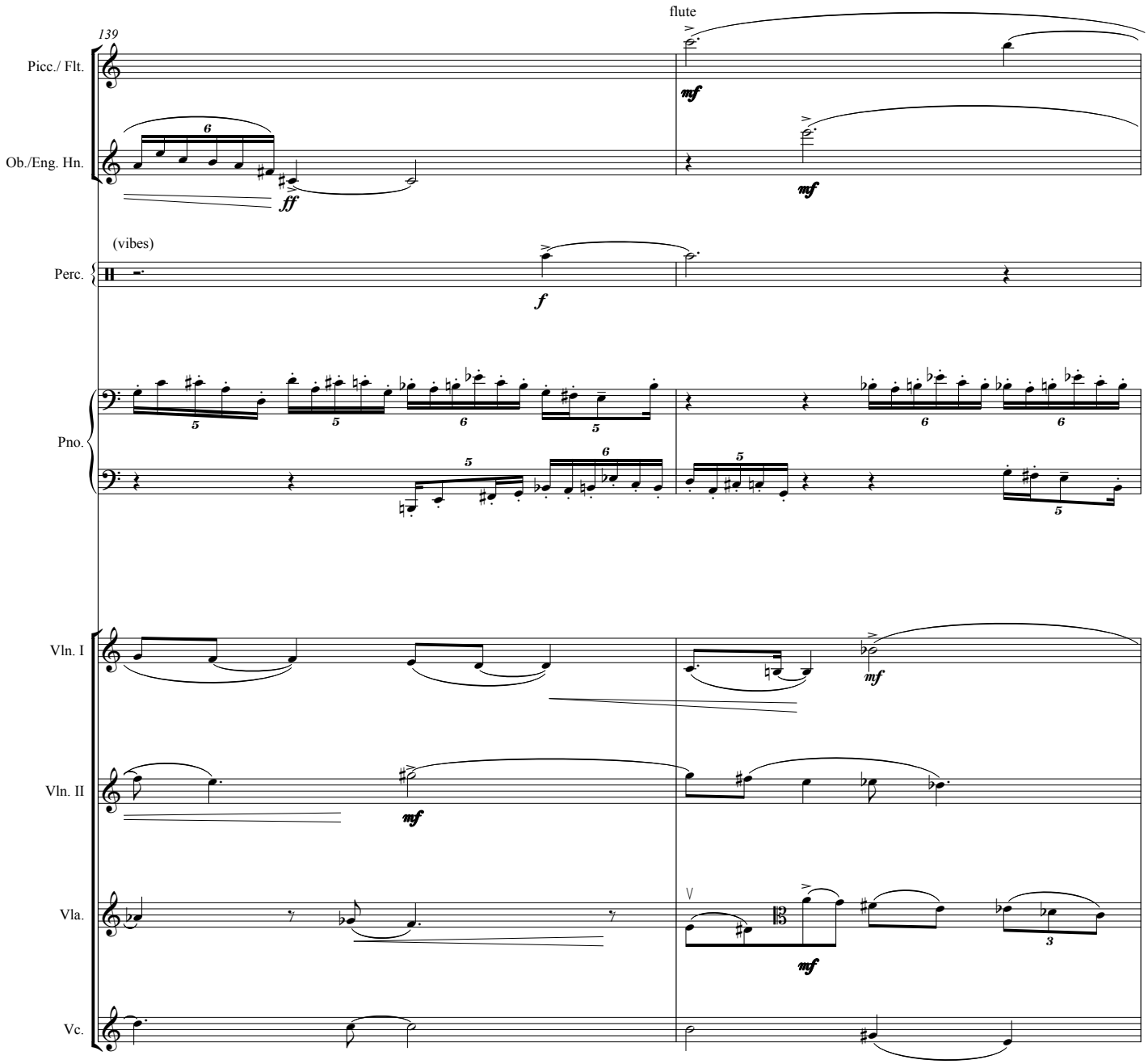

C
86
flute
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Bsn.
Pno.
pp
mf
p
mp
92
ppp
98
molto
Attacca

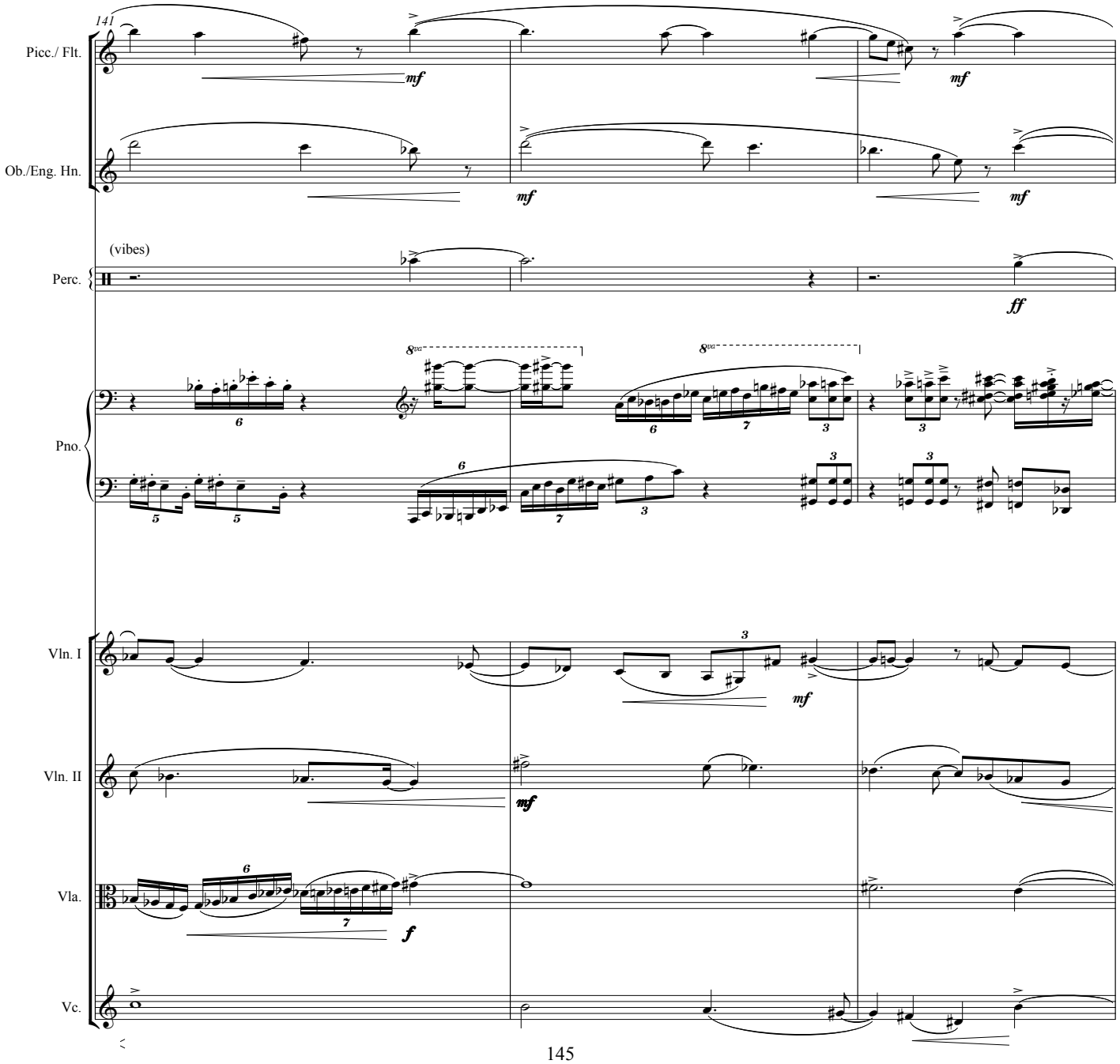

104
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Bsn.
Pno.
Vln. I
Vln. II
♩ = 76
to picc.
to Bs. Cl.
la metá
la metá
arco
112

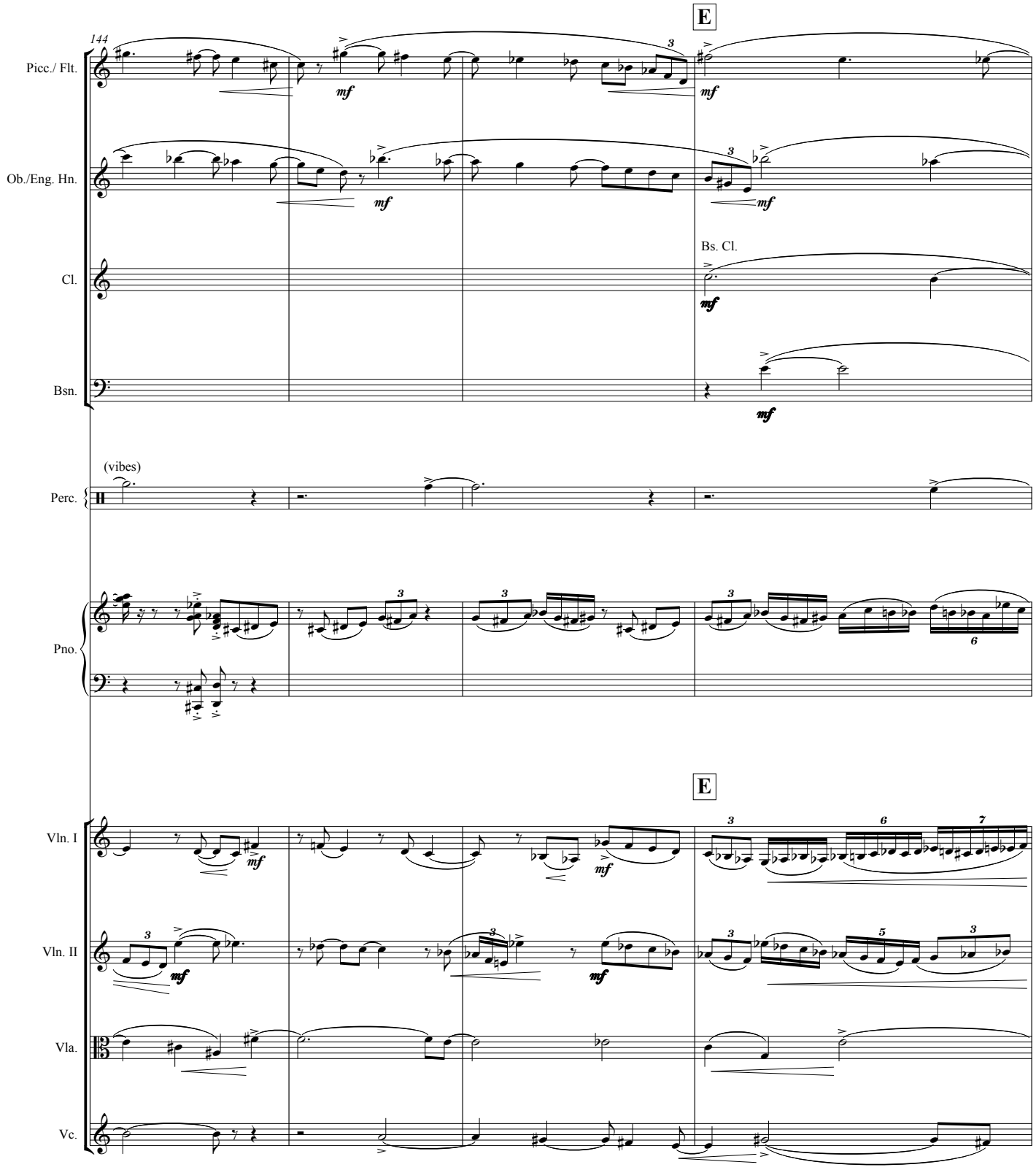

118
Picc./ Flt.
Ob./Eng. Hn.
Pno.
Vln. I
Vln. II
Vla.
D
picc.
la metá
(picc.)
123
crotales
Perc.

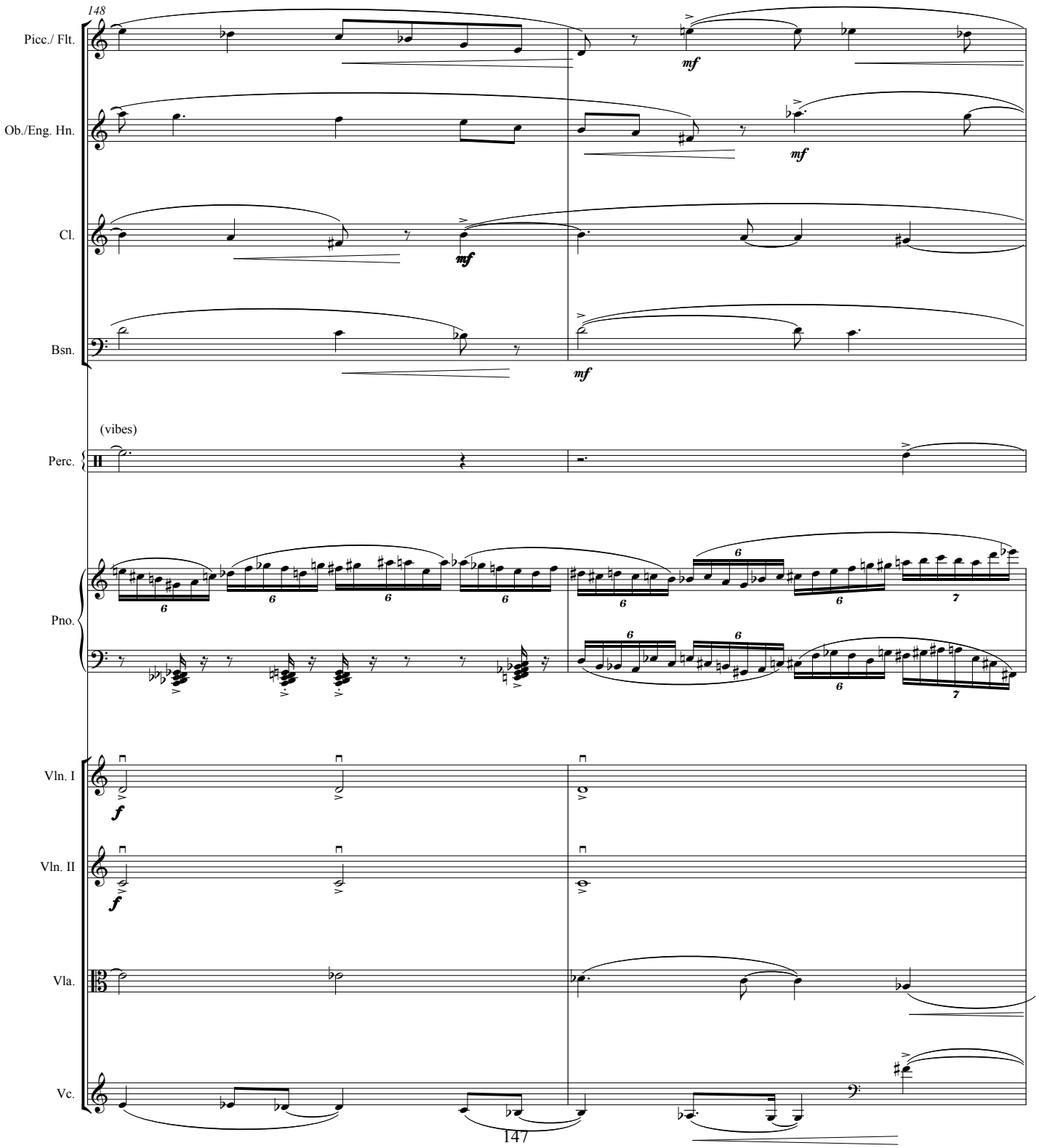

127
(picc.)
Picc./ Flt.
Ob./Eng. Hn.
(Crotales)
Perc.
Pno.
Vln. I
Vln. II
Vla.
mp
f
mf
130
(crotales)
p

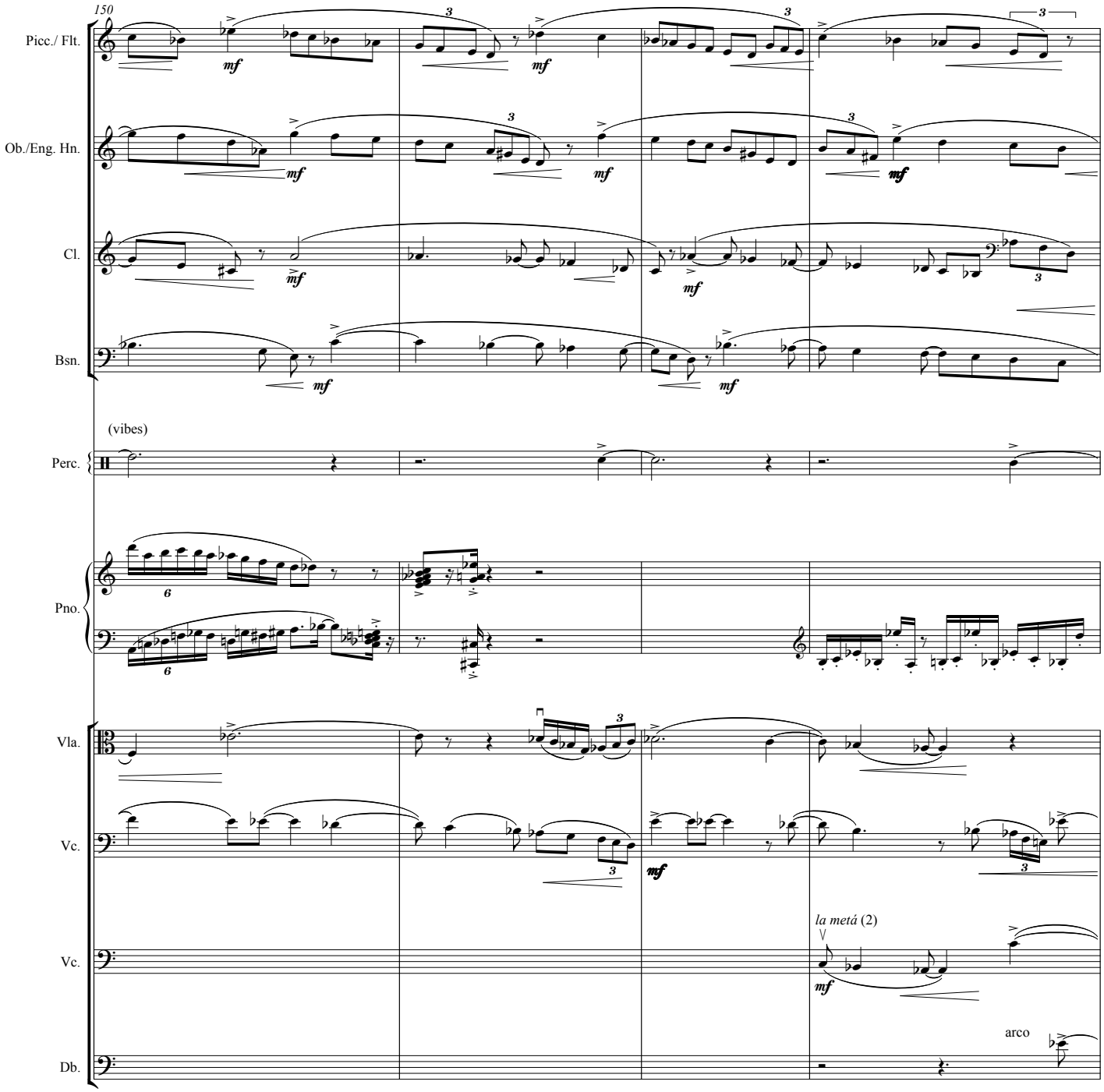

133
(picc.)
Picc./ Flt.
Ob./Eng. Hn.
(crotales)
Perc.
Pno.
Vln. I
Vln. II
Vla.
Vc.
la metá
136
(picc.)
to flute
to vibes (medium mallet)
vibes (medium mallet)

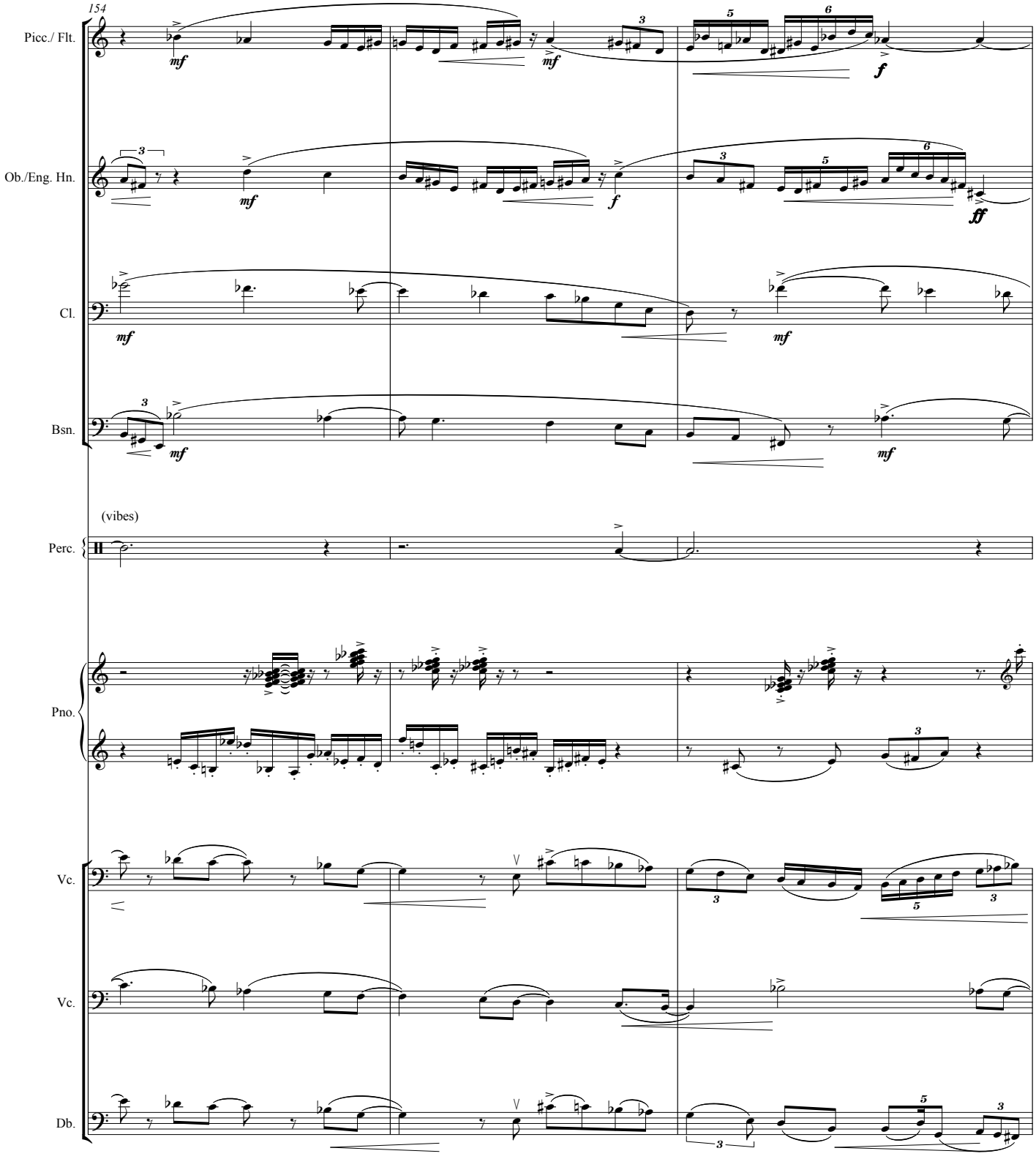

139
flute
Picc./ Flt.
Ob./Eng. Hn.
(vibes)
Perc.
Pno.
Vln. I
Vln. II
Vla.
Vc.
mf
ff
f

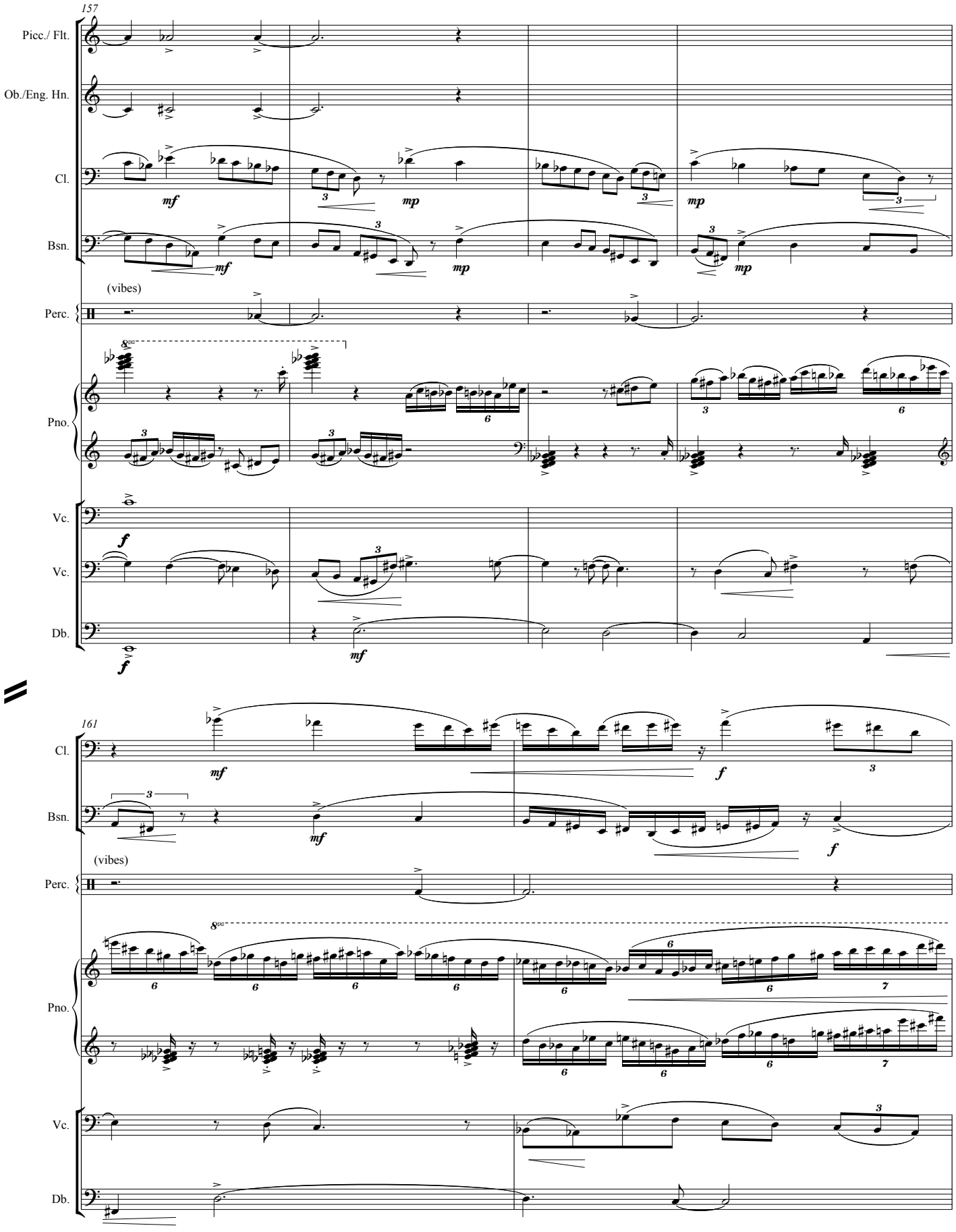

141
Picc./ Flt.
Ob./Eng. Hn.
(vibes)
Perc.
Pno.
Vln. I
Vln. II
Vla.
Vc.
mf
ff
f
8va

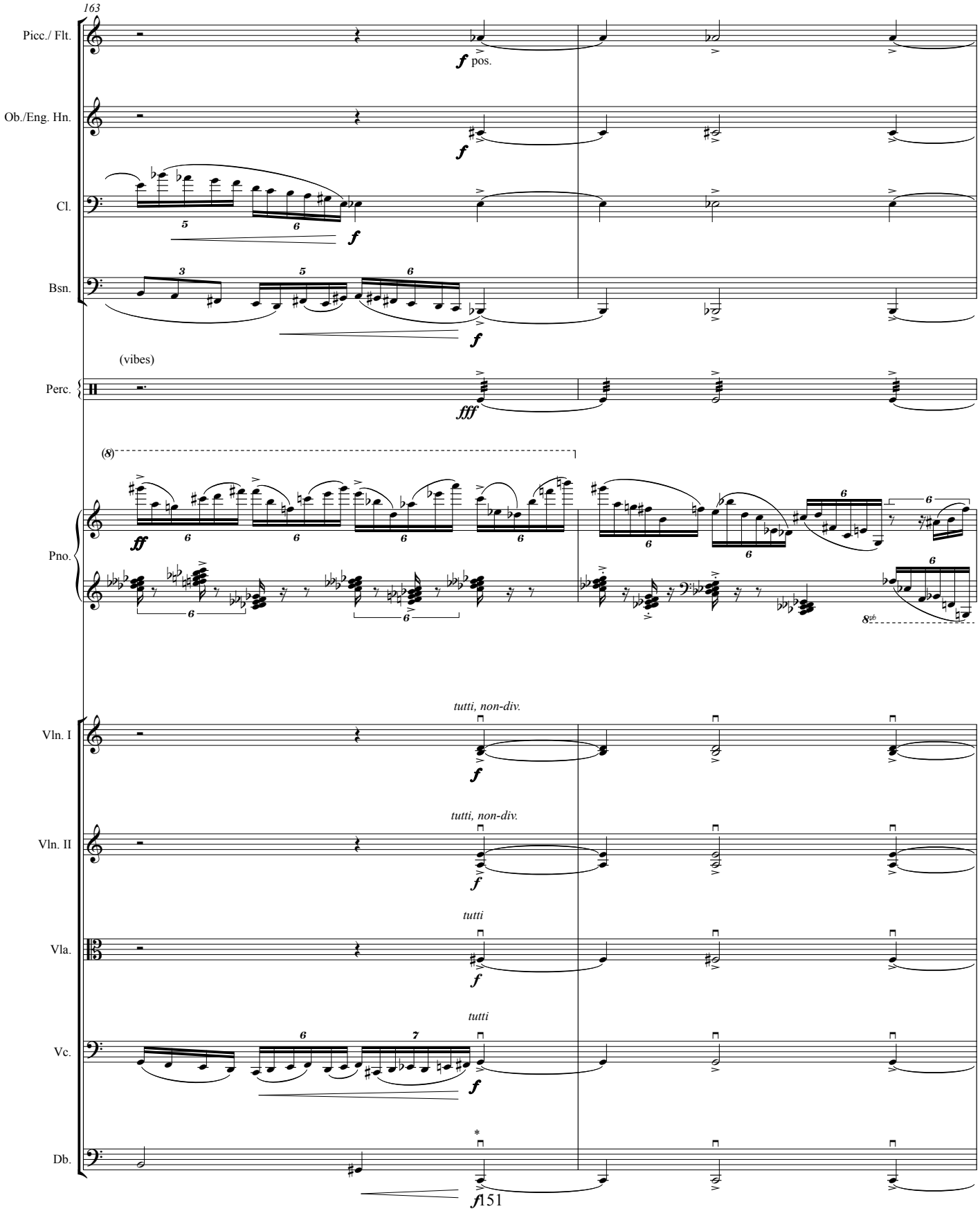

144
E
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Bs. Cl.
Bsn.
(vibes)
Perc.
Pno.
E
Vln. I
Vln. II
Vla.
Vc.

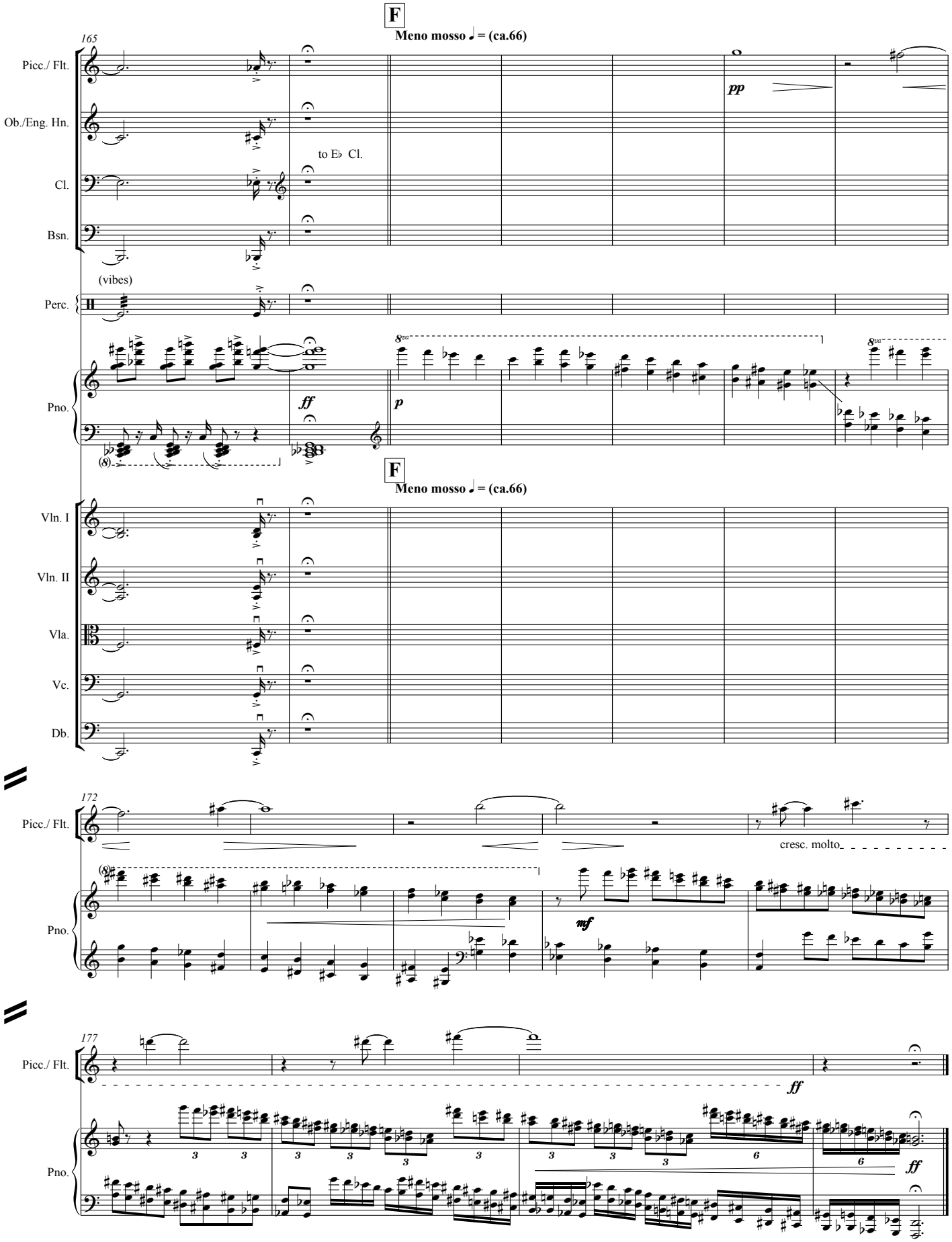

148
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Bsn.
mf
(vibes)
Perc.
Pno.
Vln. I
Vln. II
Vla.
Vc.
f

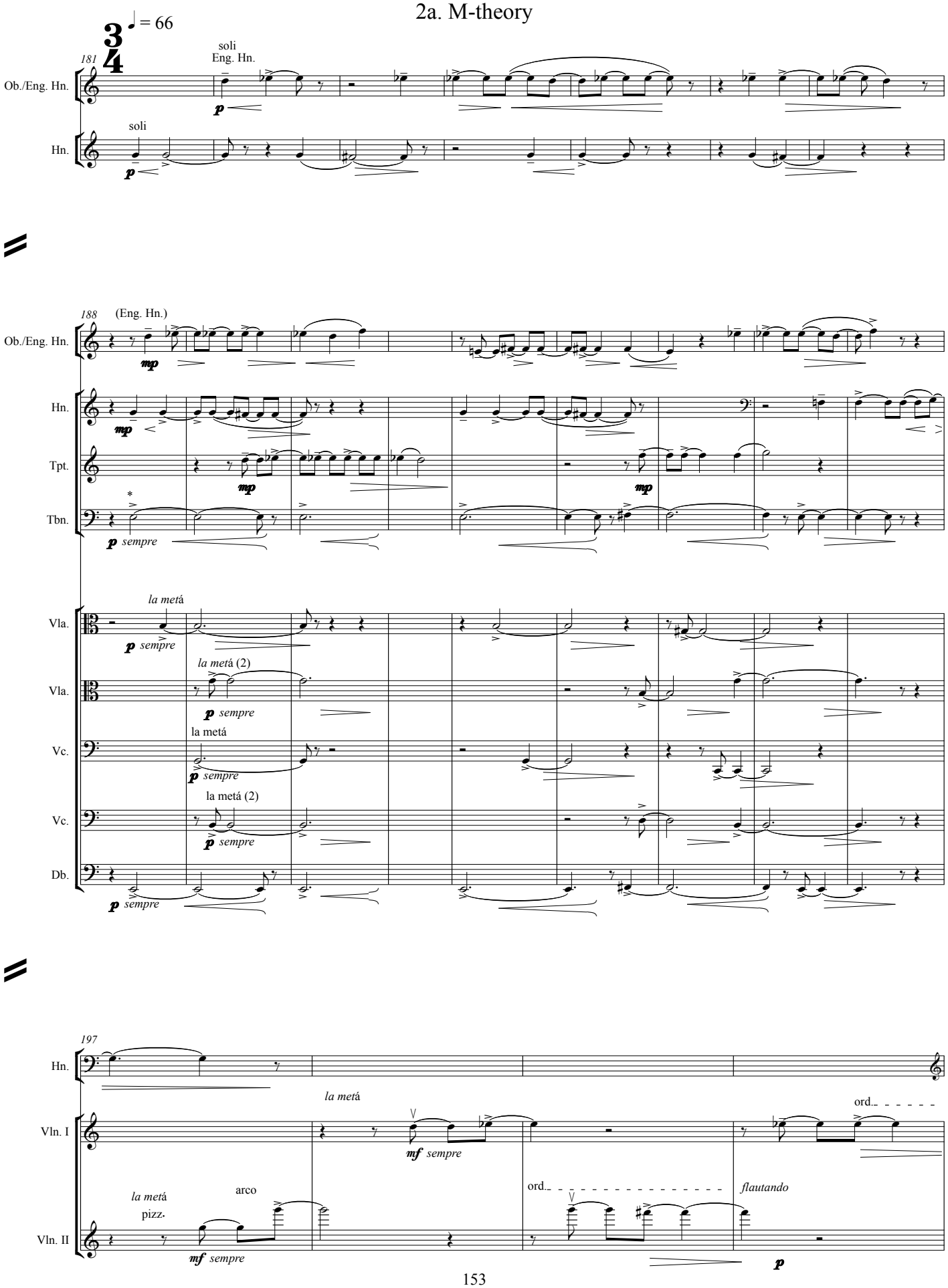

150
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Bsn.
(vibes)
Perc.
Pno.
Vla.
Vc.
Vc.
Db.
mf
la metá (2)
arco

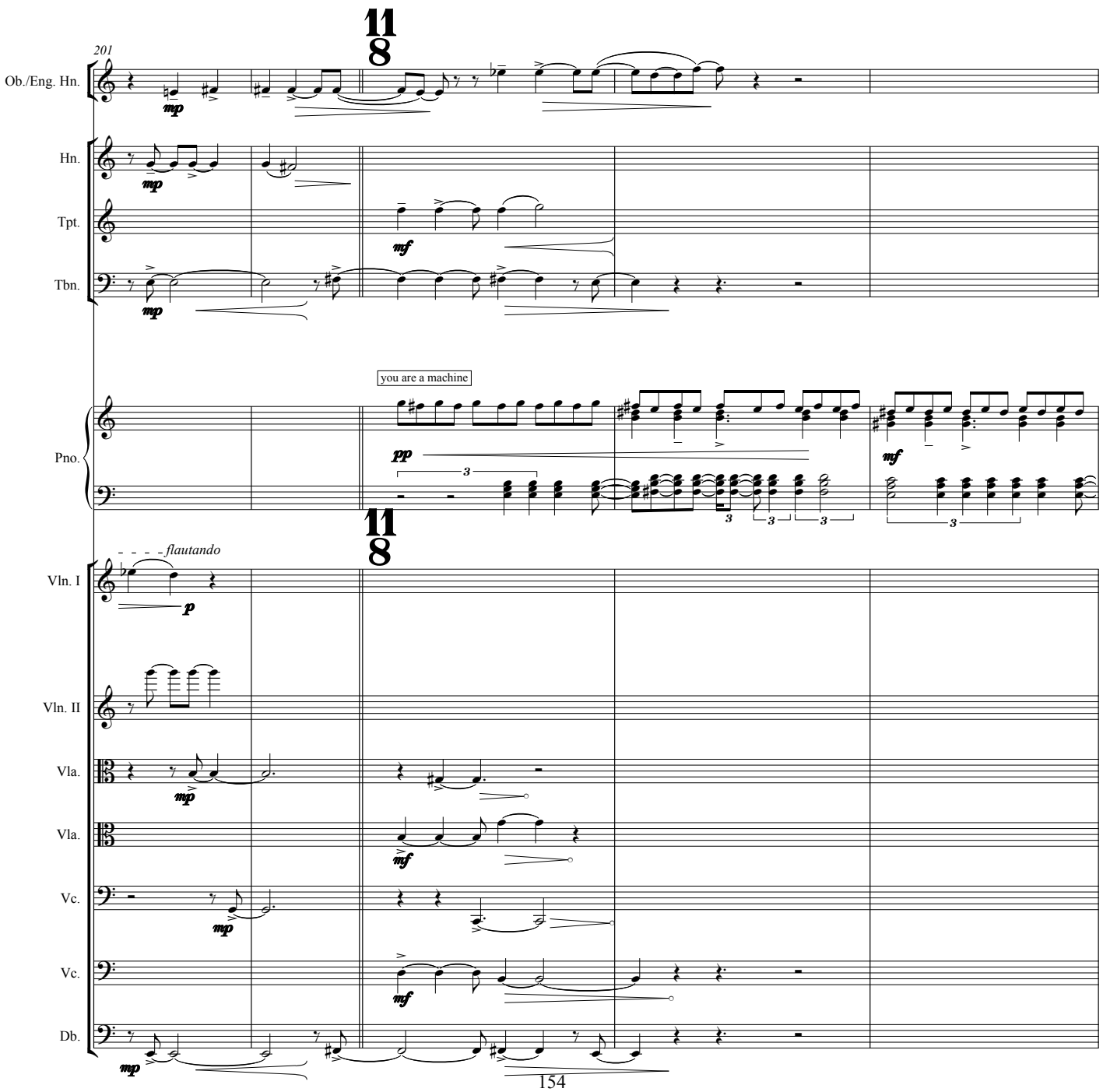

154
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Bsn.
(vibes)
Perc.
Pno.
Vc.
Vc.
Db.
mf
f
ff

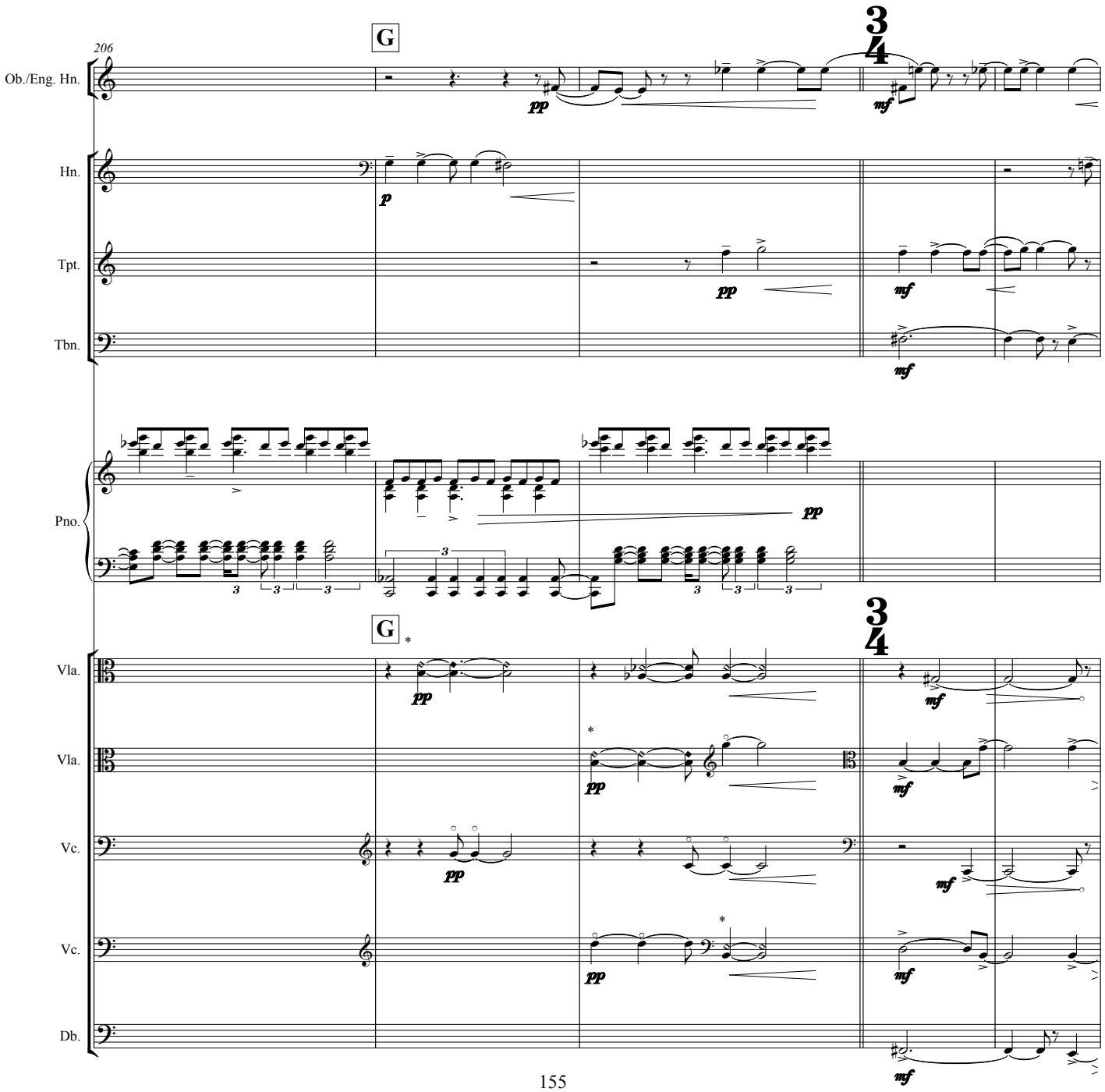

157
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Bsn.
(vibes)
Perc.
Pno.
Vc.
Vc.
Db.
161
Cl.
Bsn.
(vibes)
Perc.
Pno.
Vc.
Db.

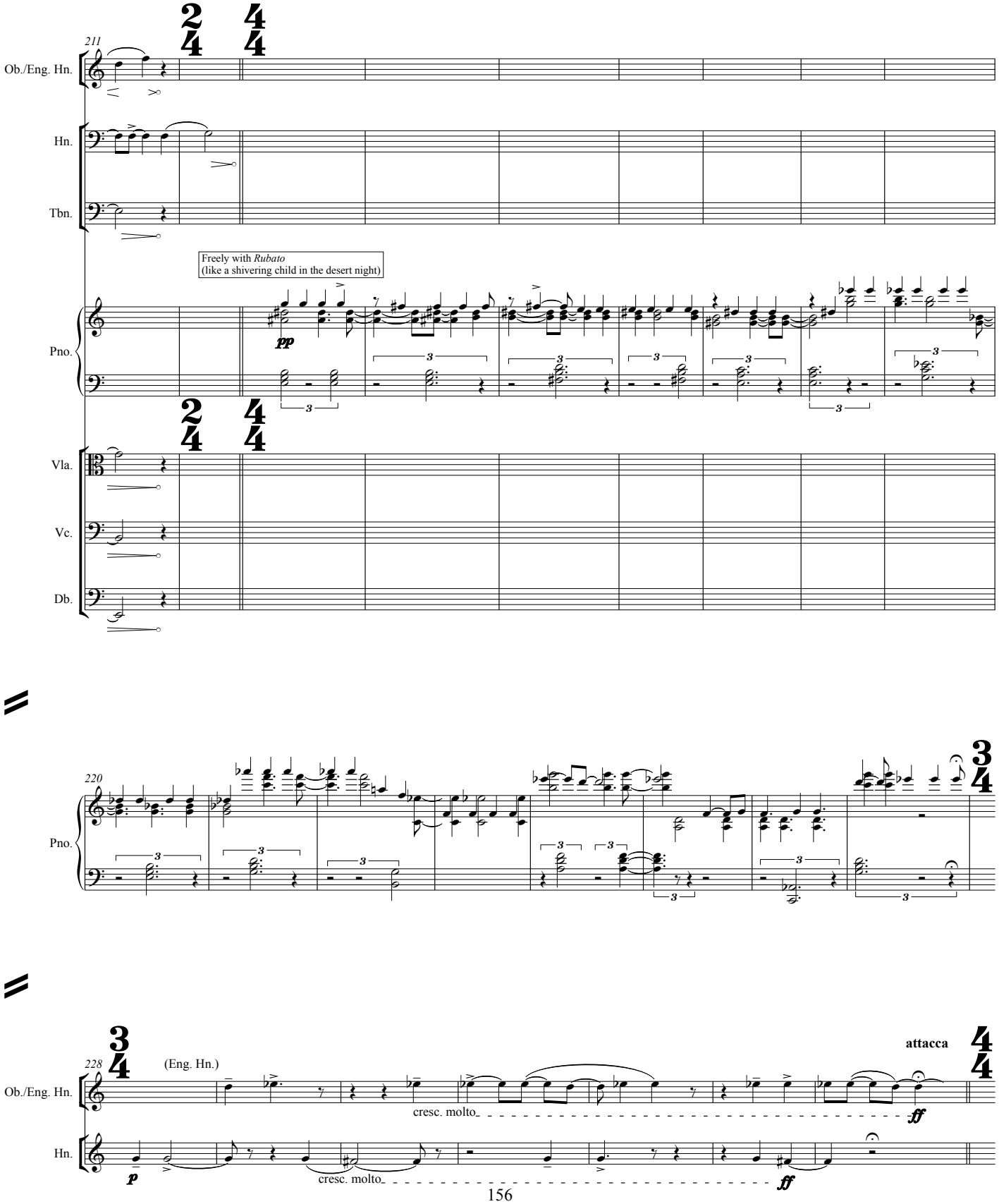

163
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Bsn.
(vibes)
Perc.
Pno.
Vln. I
Vln. II
Vla.
Vc.
Db.
pos.
tutti, non-div.
tutti, non-div.
tutti
tutti
8va

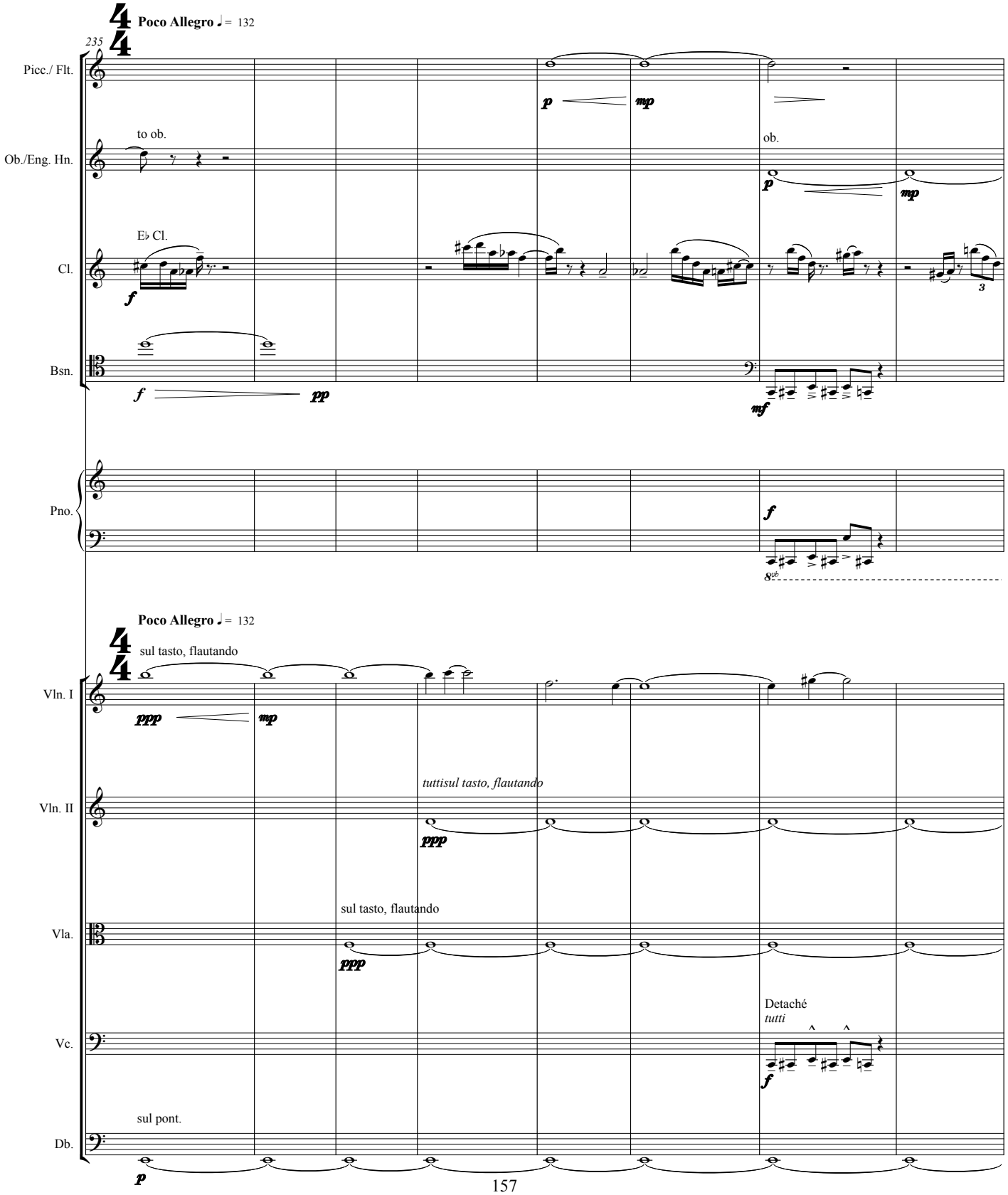

F
Meno mosso ♩ = (ca.66)
165
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Bsn.
to E♭ Cl.
(vibes)
Perc.
Pno.
pp
ff
p
F
Meno mosso ♩ = (ca.66)
Vln. I
Vln. II
Vla.
Vc.
Db.
172
Picc./ Flt.
Pno.
cresc. molto
mf
177
Picc./ Flt.
Pno.
ff
ff

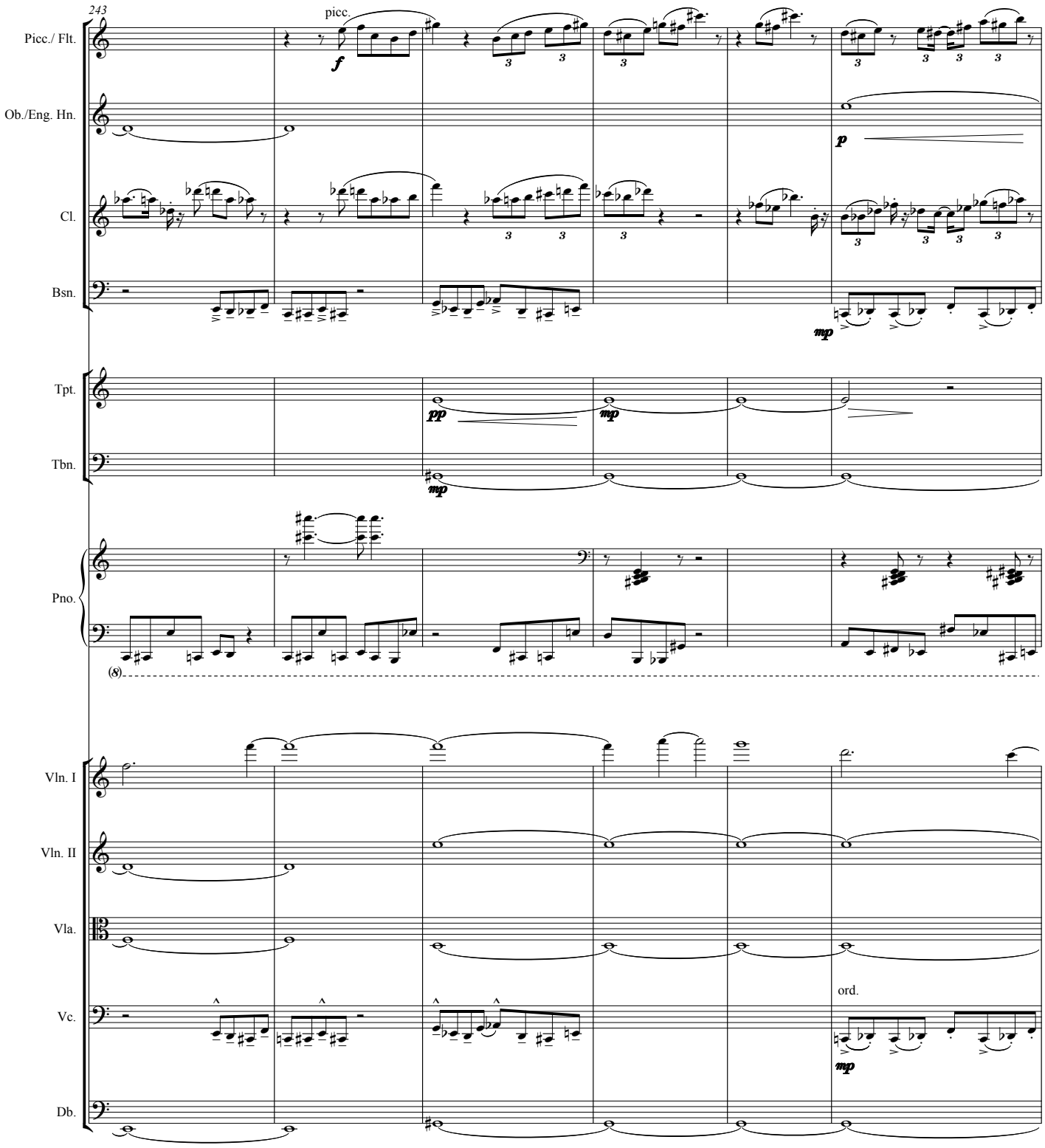

♩ = 66
181
soli
Eng. Hn.
Ob./Eng. Hn.
soli
Hn.
188
(Eng. Hn.)
Ob./Eng. Hn.
Hn.
Tpt.
Tbn.
sempre
la metá
Vla.
la metá (2)
Vla.
la metá
Vc.
la metá (2)
Vc.
Db.
197
Hn.
la metá
Vln. I
ord.
la metá
pizz.
arco
Vln. II
flautando

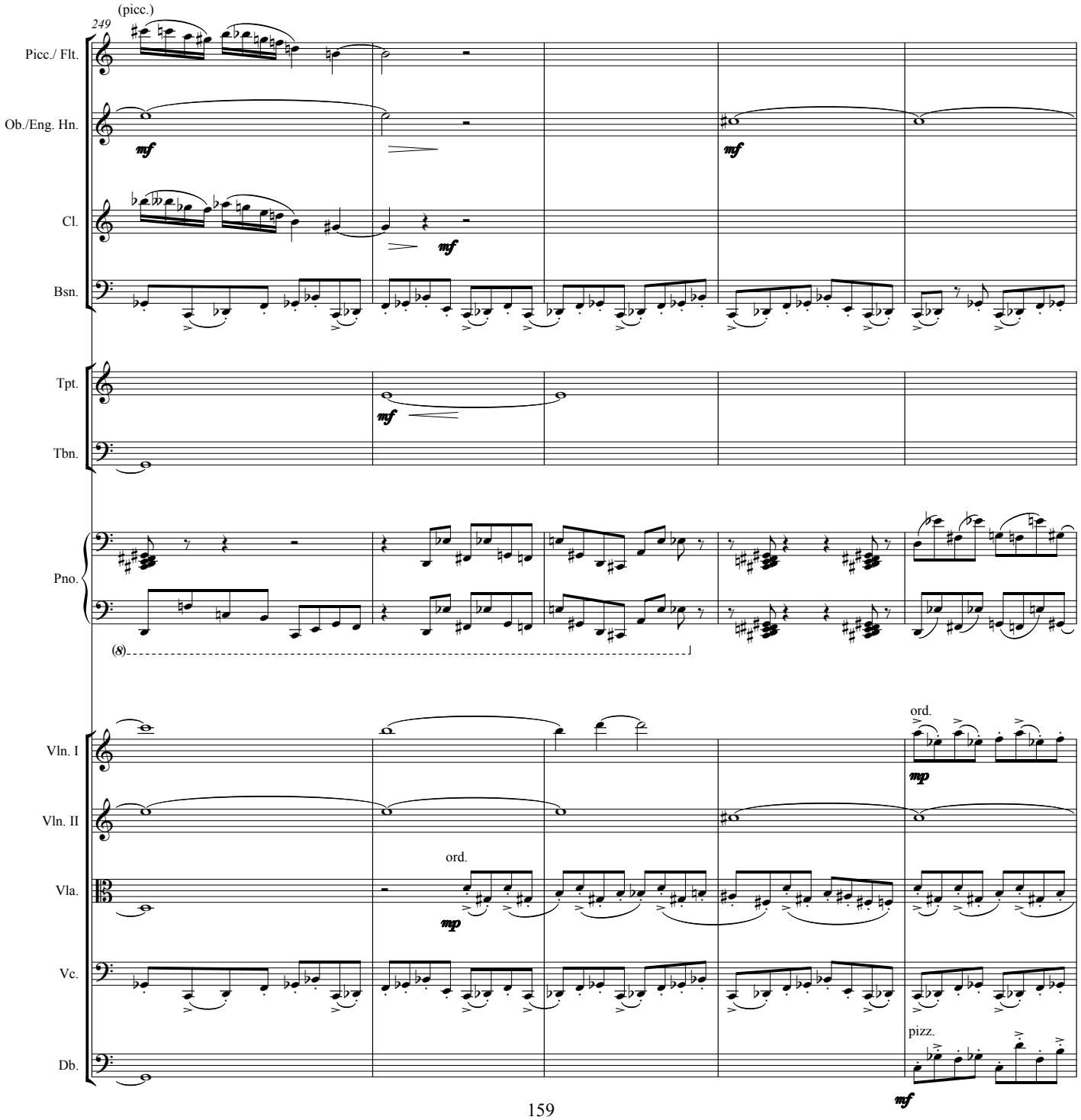

201
11/8
Ob./Eng. Hn.
Hn.
Tpt.
Tbn.
you are a machine
Pno.
flautando
Vln. I
Vln. II
Vla.
Vla.
Vc.
Vc.
Db.

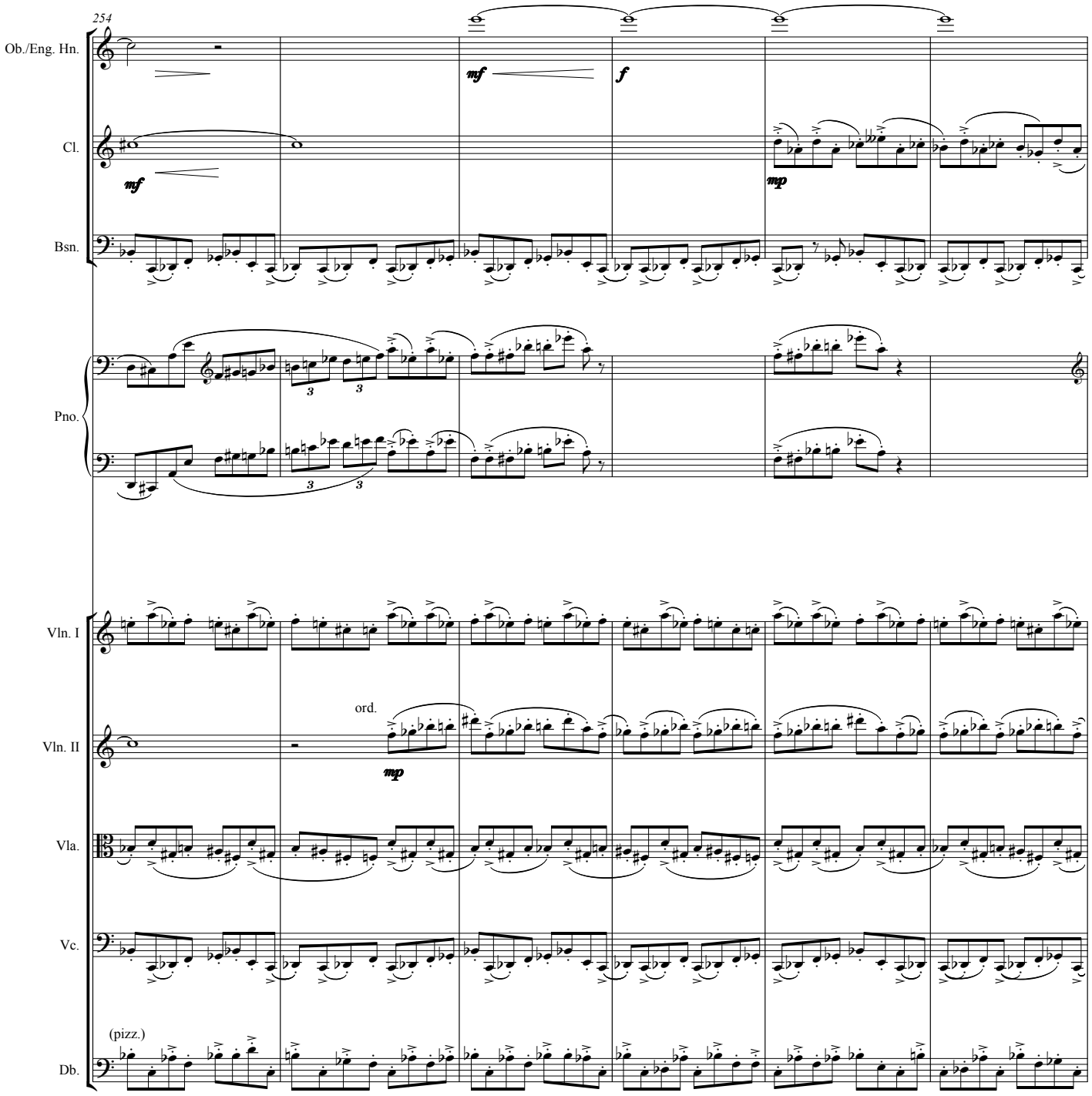

206
G
3/4
Ob./Eng. Hn.
Hn.
Tpt.
Tbn.
Pno.
G
3/4
Vla.
Vla.
Vc.
Vc.
Db.

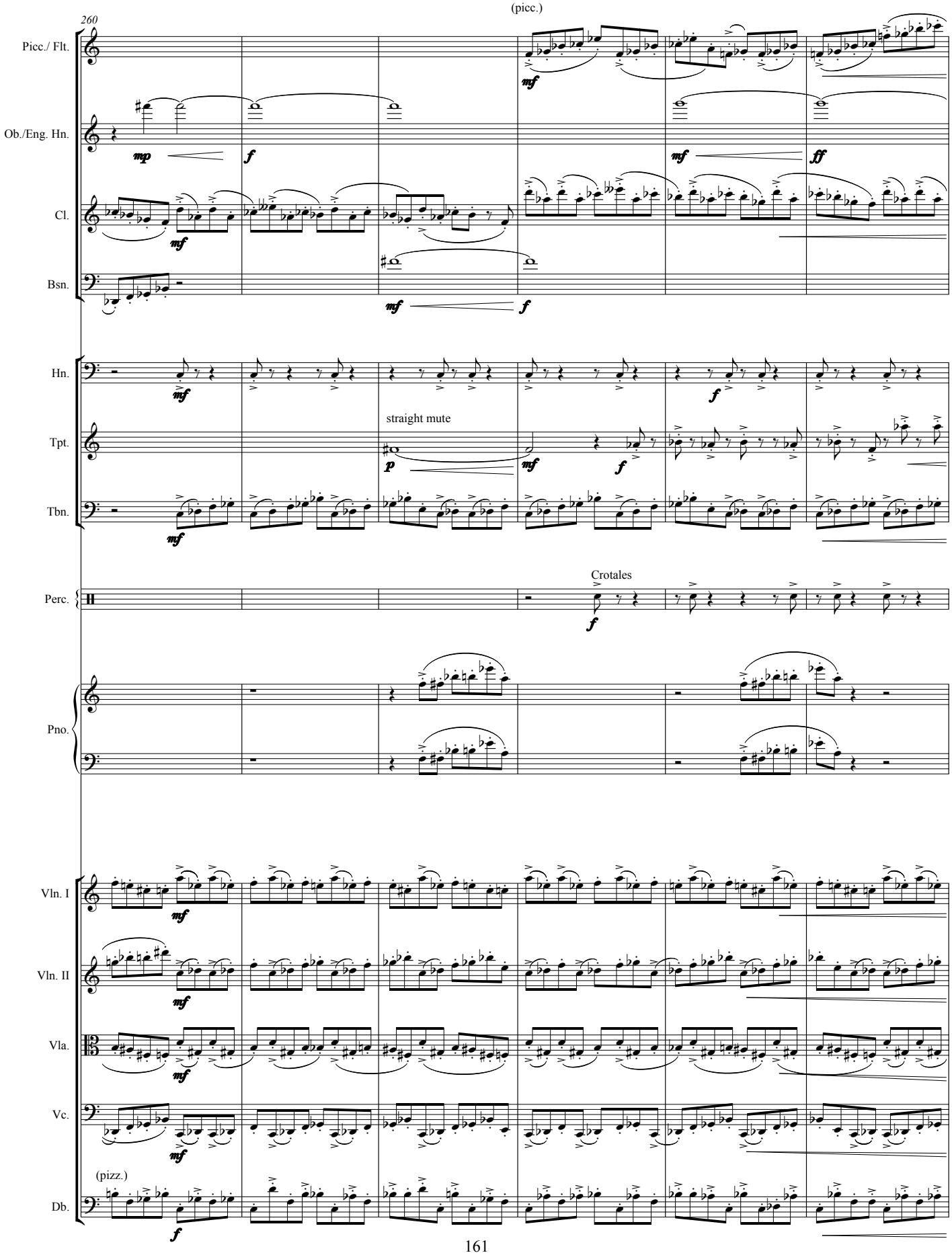

211
Ob./Eng. Hn.
Hn.
Tbn.
Freely with *Rubato*
(like a shivering child in the desert night)
Pno.
Vla.
Vc.
Db.
220
Pno.
228
(Eng. Hn.)
Ob./Eng. Hn.
cresc. molto
attacca
Hn.
cresc. molto

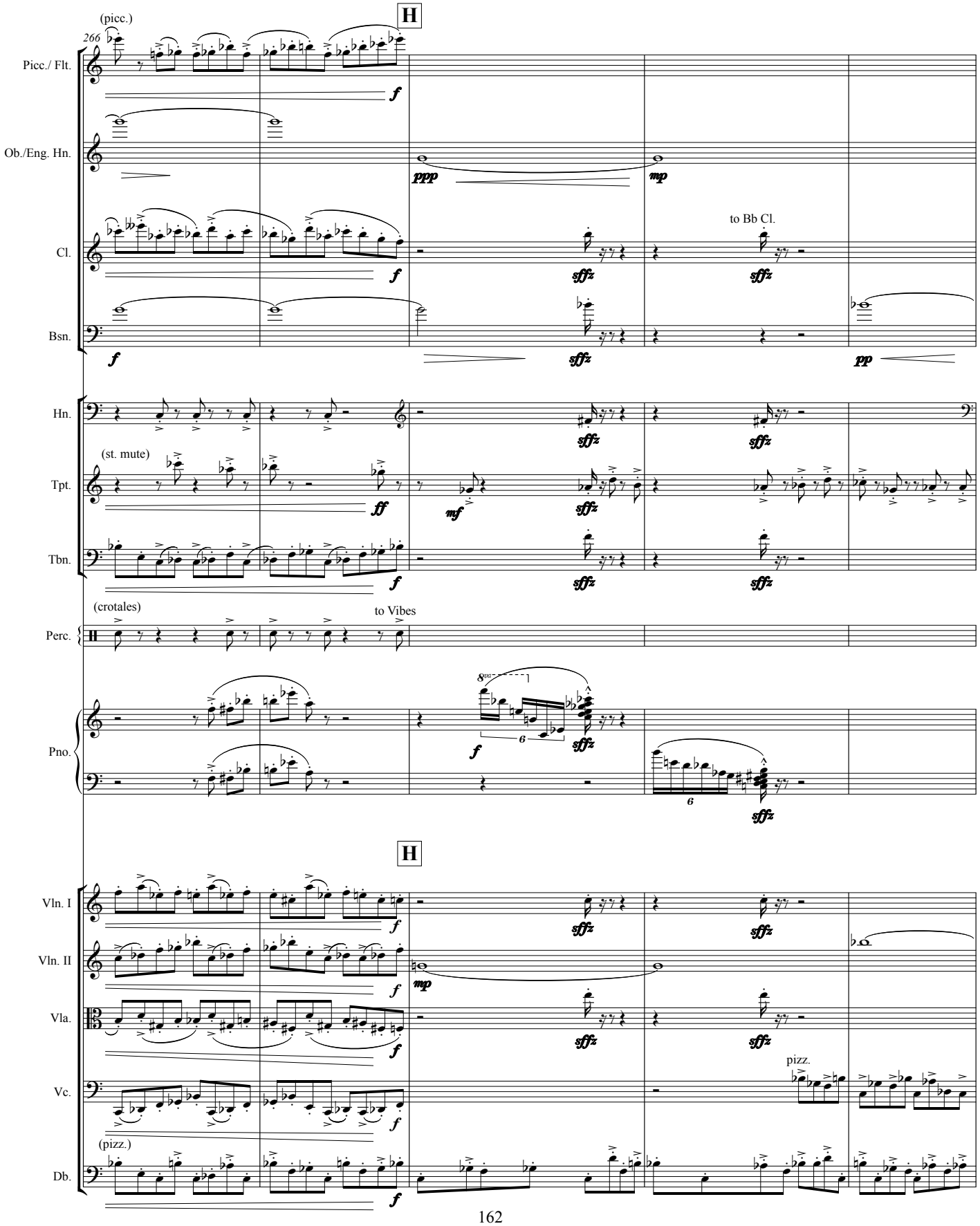

Poco Allegro ♩= 132
235
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Bsn.
Pno.
to ob.
E♭ Cl.
ob.
Poco Allegro ♩= 132
Vln. I
Vln. II
Vla.
Vc.
Db.
sul tasto, flautando
tuttisul tasto, flautando
sul tasto, flautando
Detaché
tutti
sul pont.

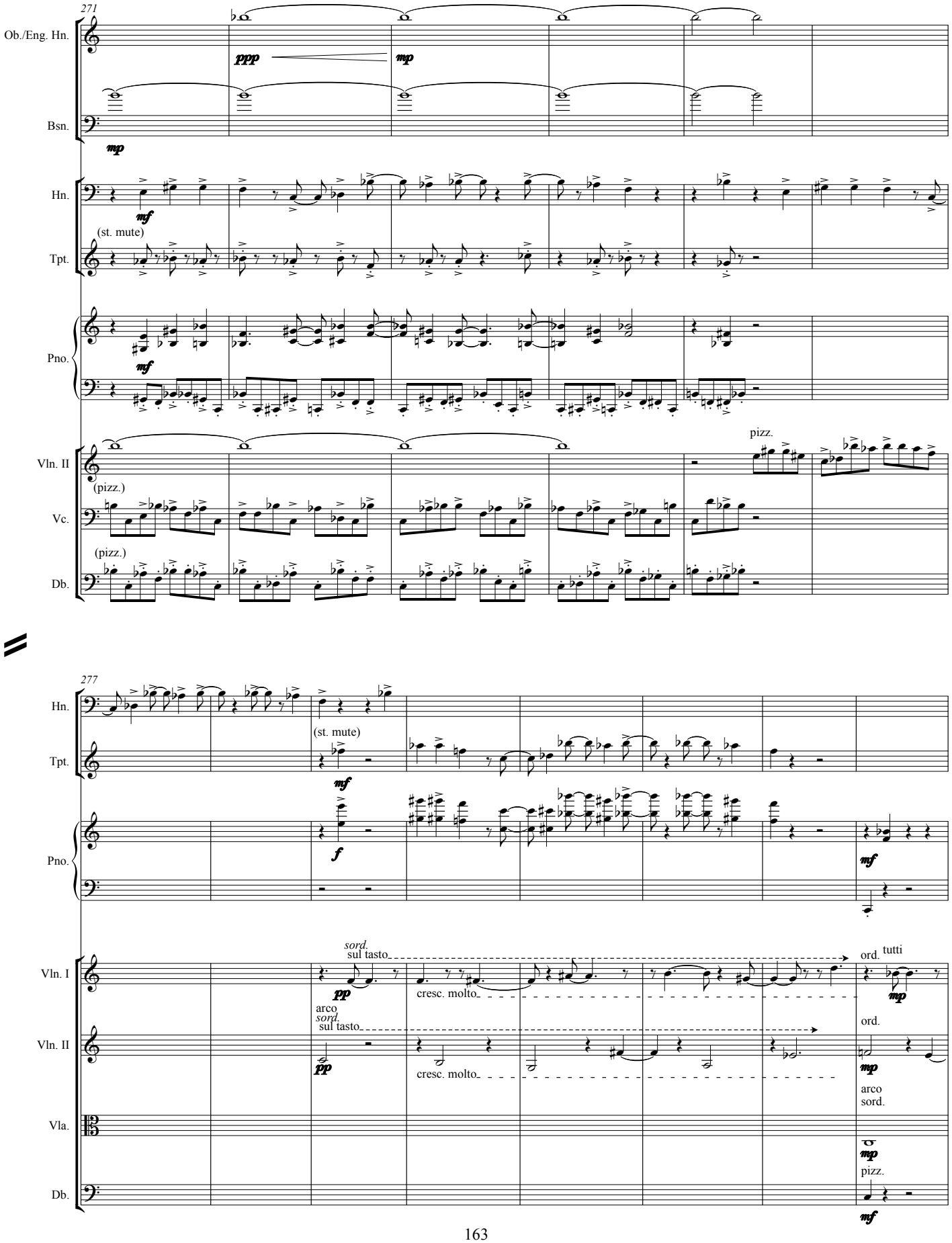

243
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Bsn.
Tpt.
Tbn.
Pno.
Vln. I
Vln. II
Vla.
Vc.
Db.
picc.
ord.

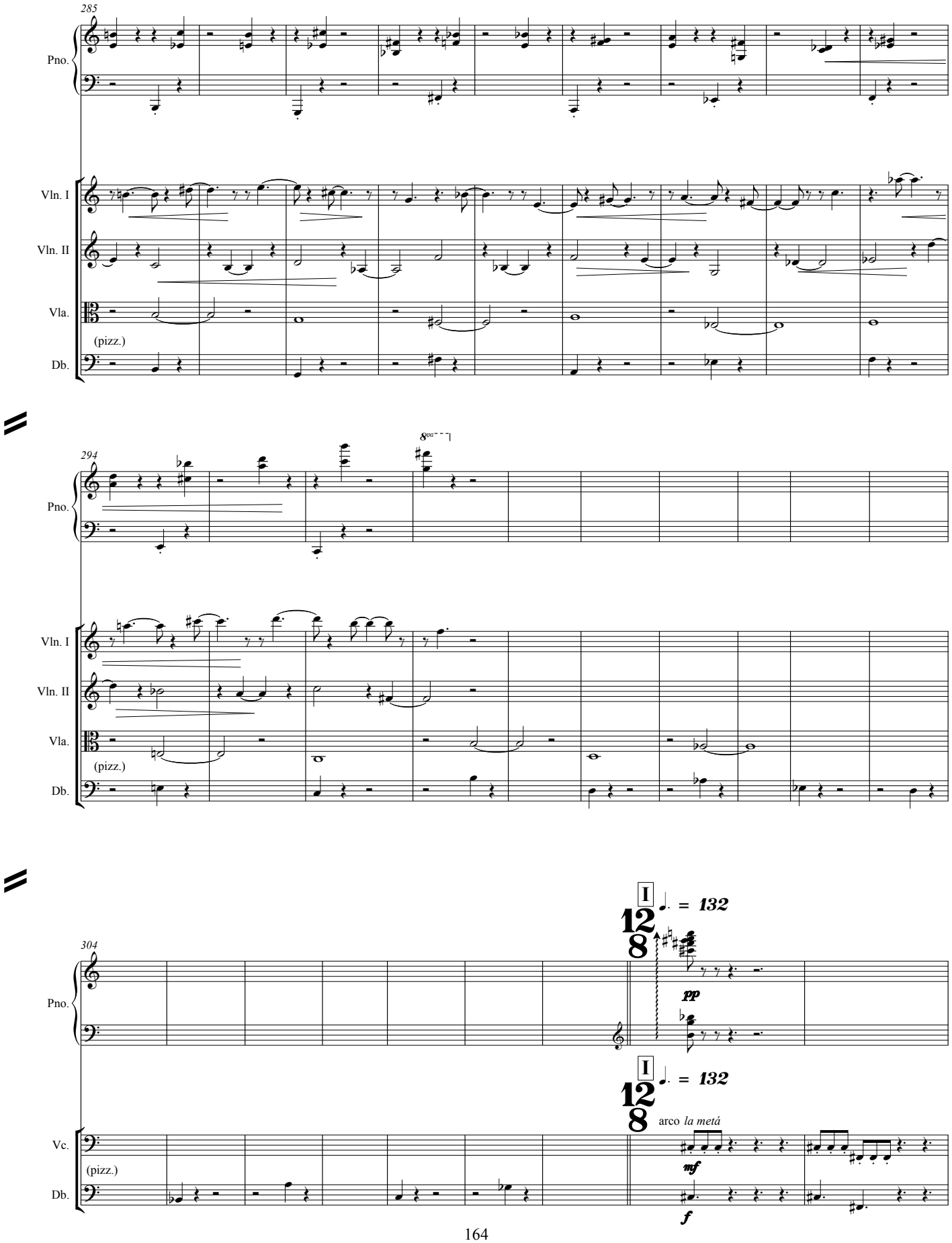

249
(picc.)
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Bsn.
Tpt.
Tbn.
Pno.
(8)
Vln. I
Vln. II
Vla.
Vc.
Db.
mf
mp
ord.
pizz.

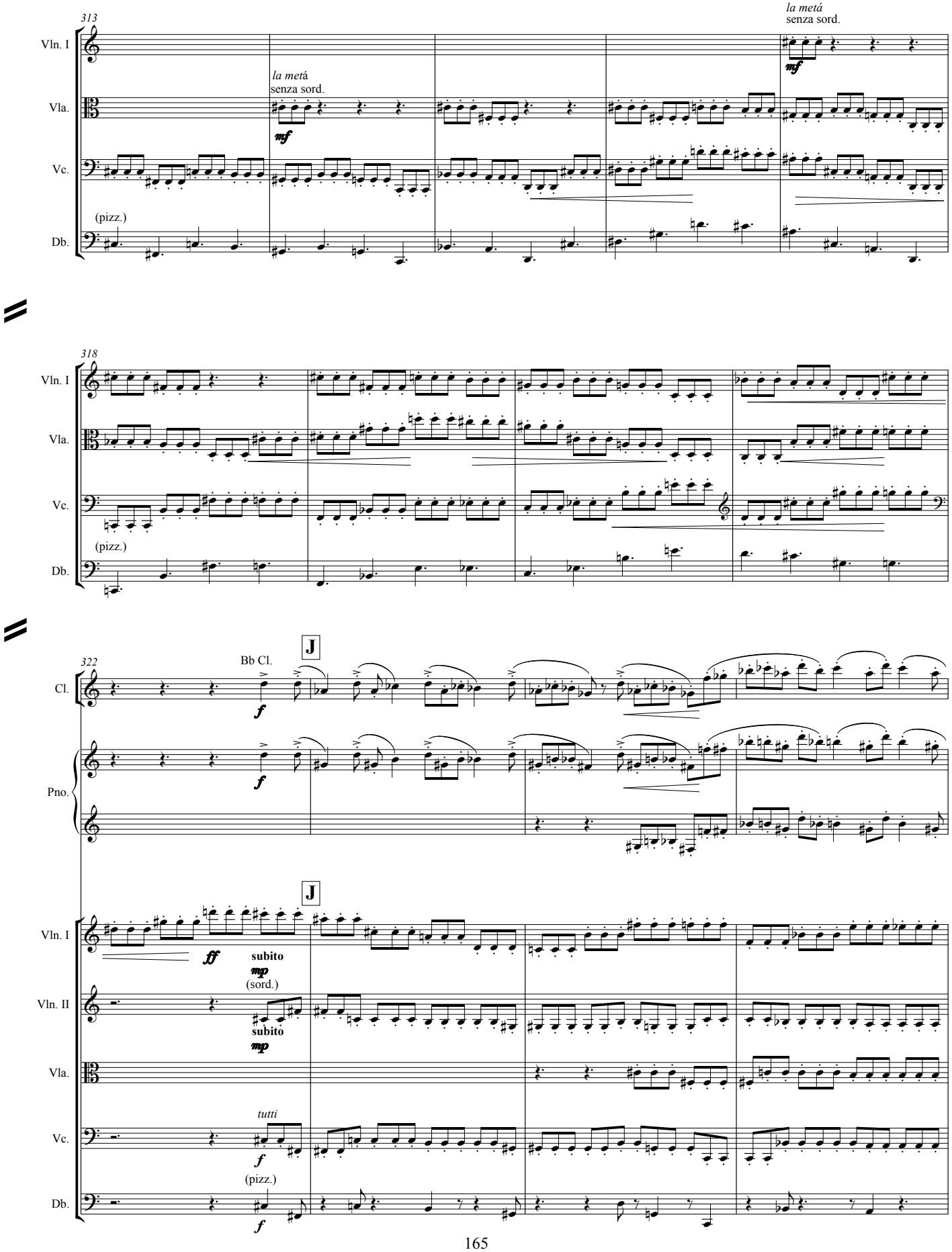

254
Ob./Eng. Hn.
Cl.
Bsn.
Pno.
Vln. I
Vln. II
Vla.
Vc.
Db.
mf
f
mp
ord.
(pizz.)

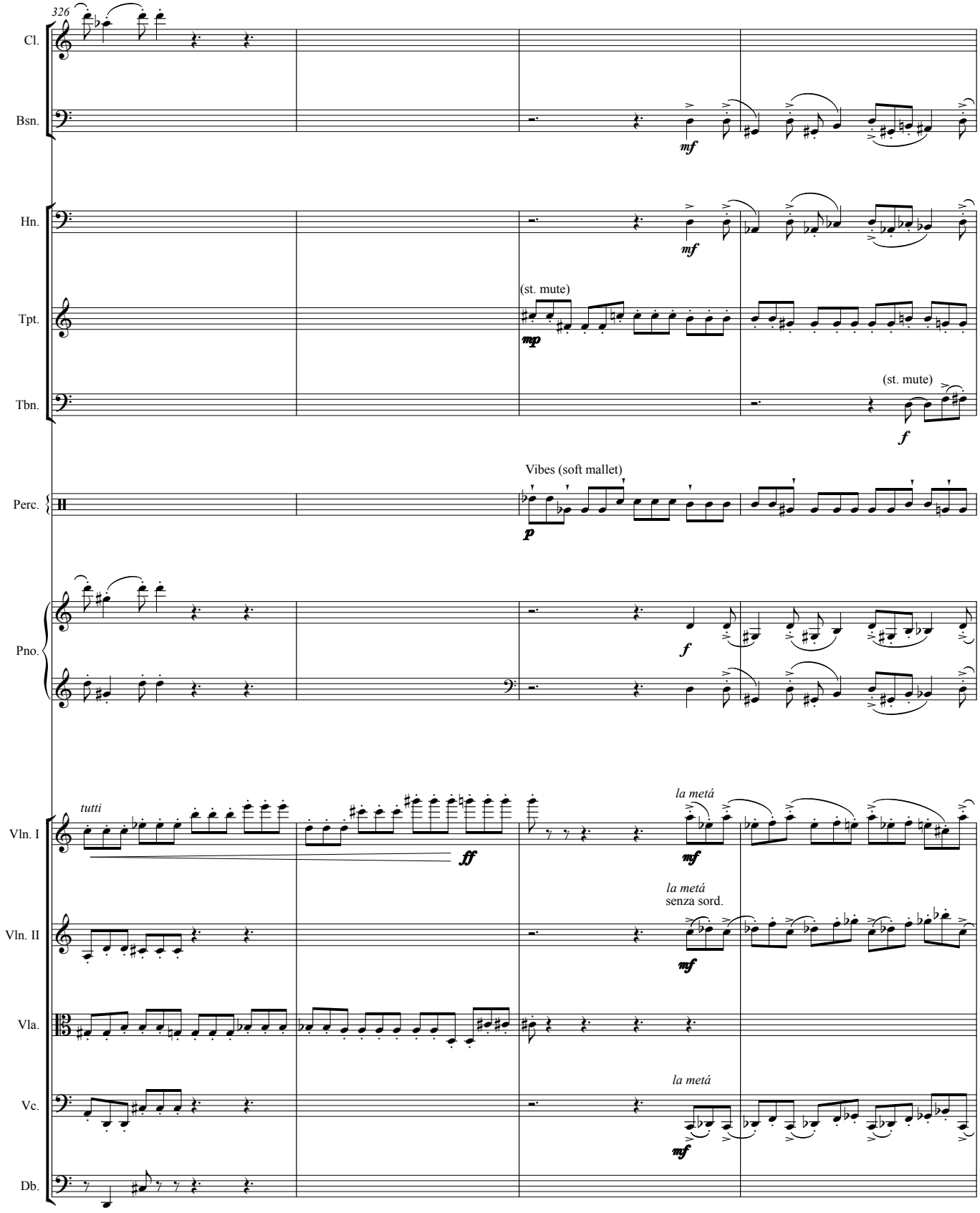

260
(picc.)
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Bsn.
Hn.
straight mute
Tpt.
Tbn.
Crotales
Perc.
Pno.
Vln. I
Vln. II
Vla.
Vc.
(pizz.)
Db.

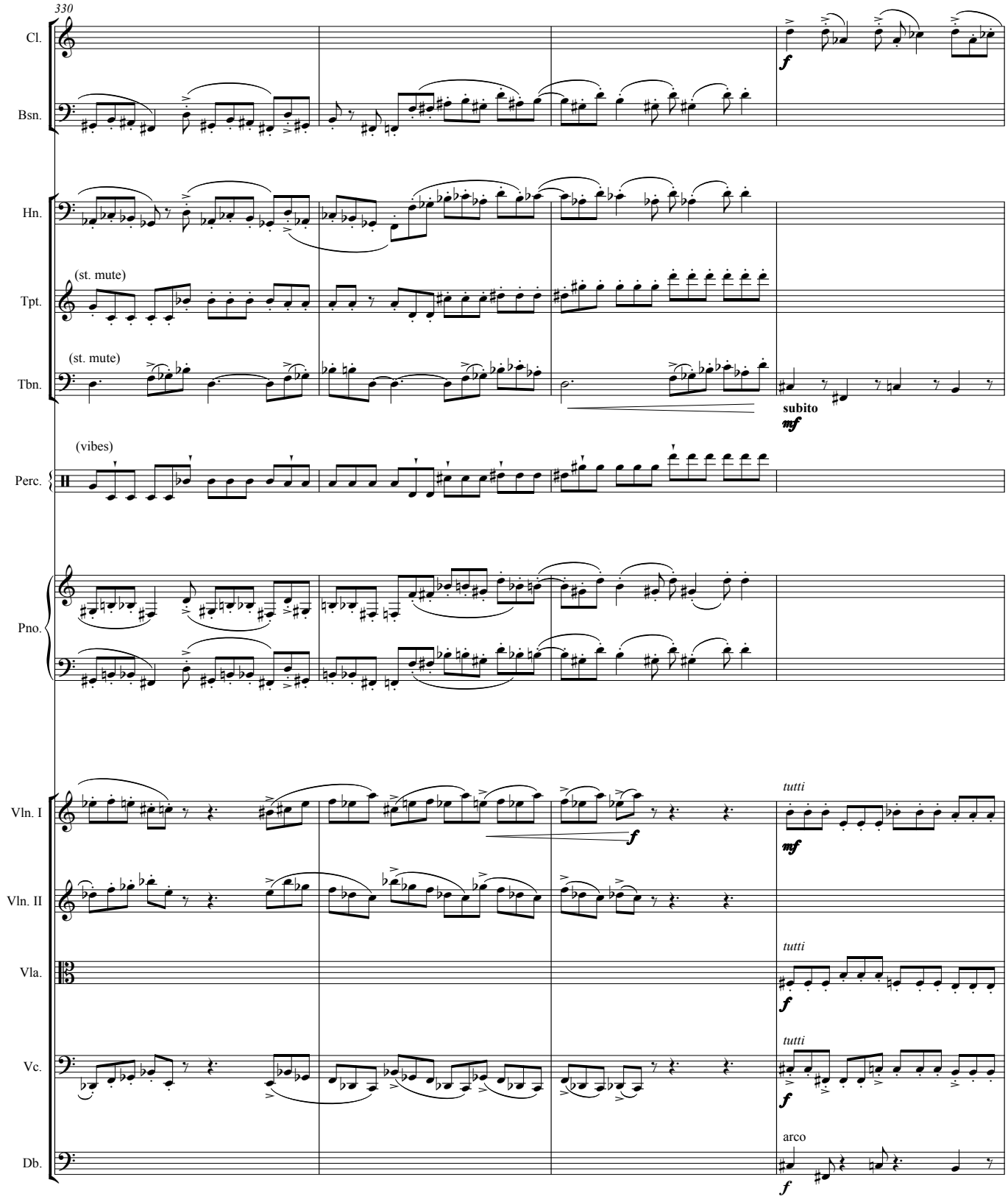

H
(picc.)
266
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Bsn.
Hn.
Tpt.
Tbn.
Perc.
Pno.
Vln. I
Vln. II
Vla.
Vc.
Db.
(st. mute)
(crotales)
to Vibes
to Bb Cl.
pizz.
(pizz.)
f
ppp
mp
sffz
ff
mf
pp
8va
6

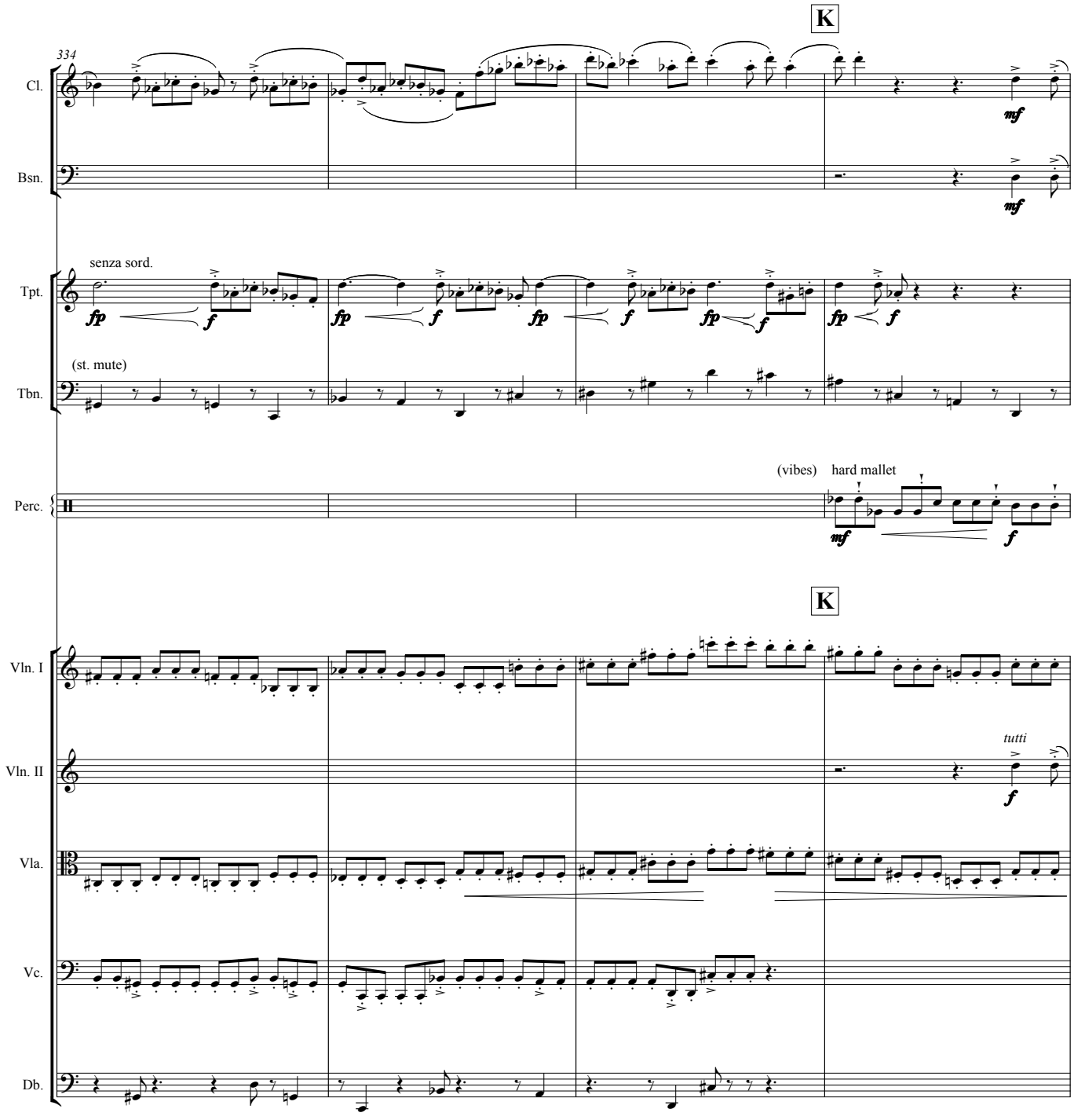

271
Ob./Eng. Hn.
Bsn.
Hn.
Tpt.
Pno.
Vln. II
Vc.
Db.
ppp
mp
mf
(st. mute)
(pizz.)
pizz.
277
Vln. I
Vla.
sord.
sul tasto
arco
cresc. molto
ord.
tutti
f
pp

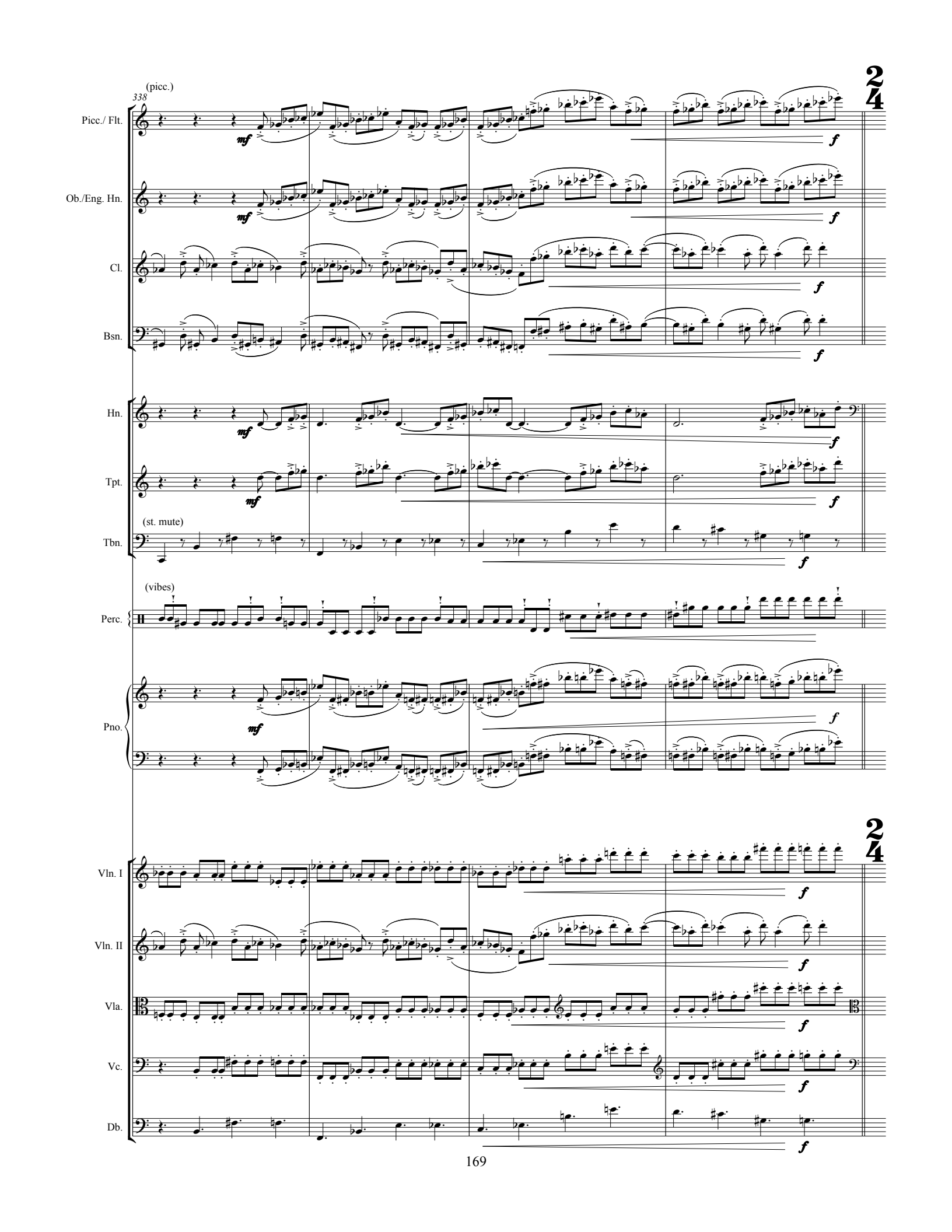

285
Pno.
Vln. I
Vln. II
Vla.
(pizz.)
Db.
294
8va
Pno.
Vln. I
Vln. II
Vla.
(pizz.)
Db.
304
I
12/8 = 132
Pno.
pp
I
12/8 = 132
arco la metá
Vc.
(pizz.)
Db.
mf
f

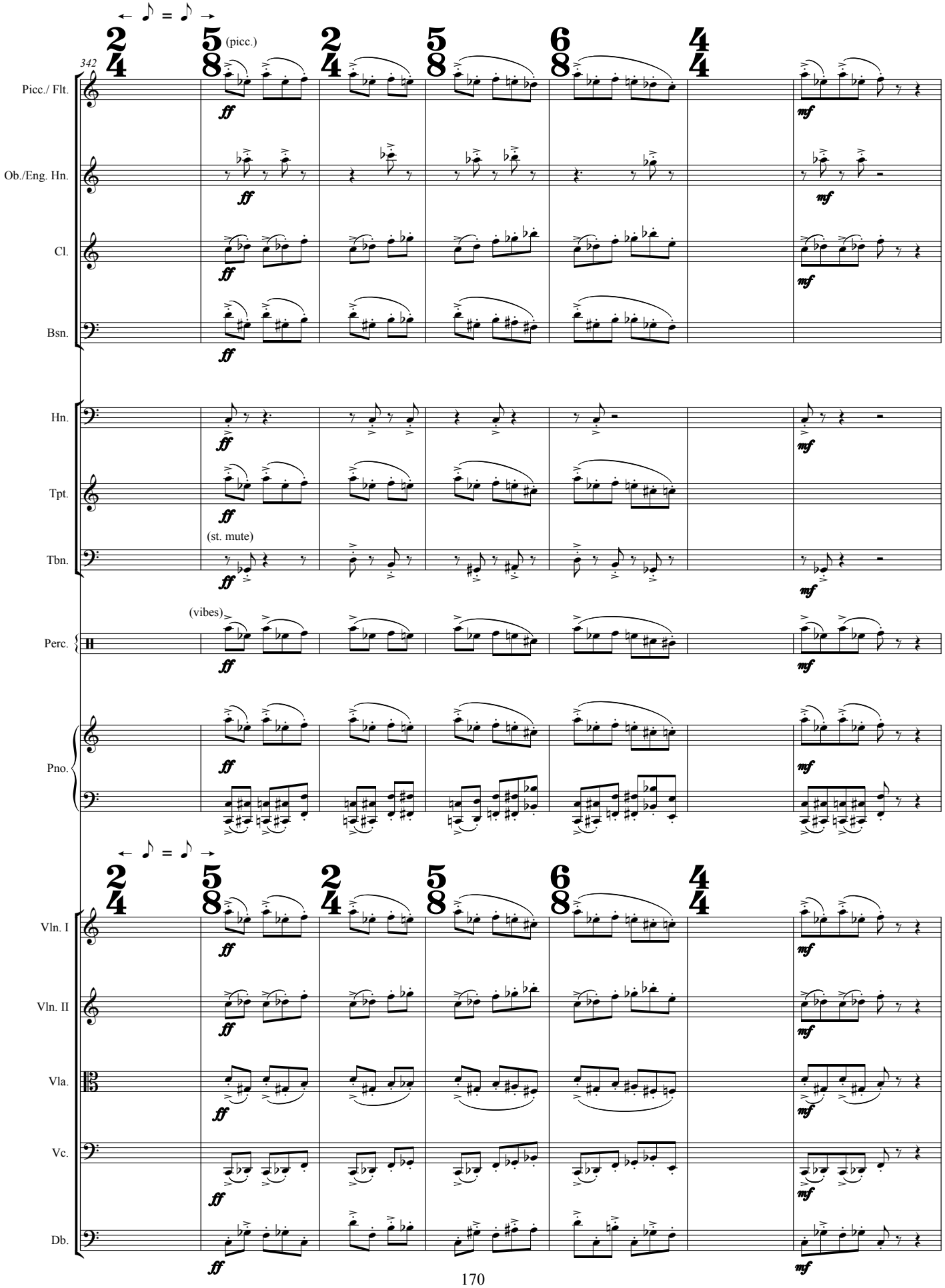

313
Vln. I
Vla.
Vc.
Db.
la metá
senza sord.
mf
(pizz.)
318
322
Cl.
Bb Cl.
Pno.
J
f
ff
subito
mp
(sord.)
Vln. II
tutti

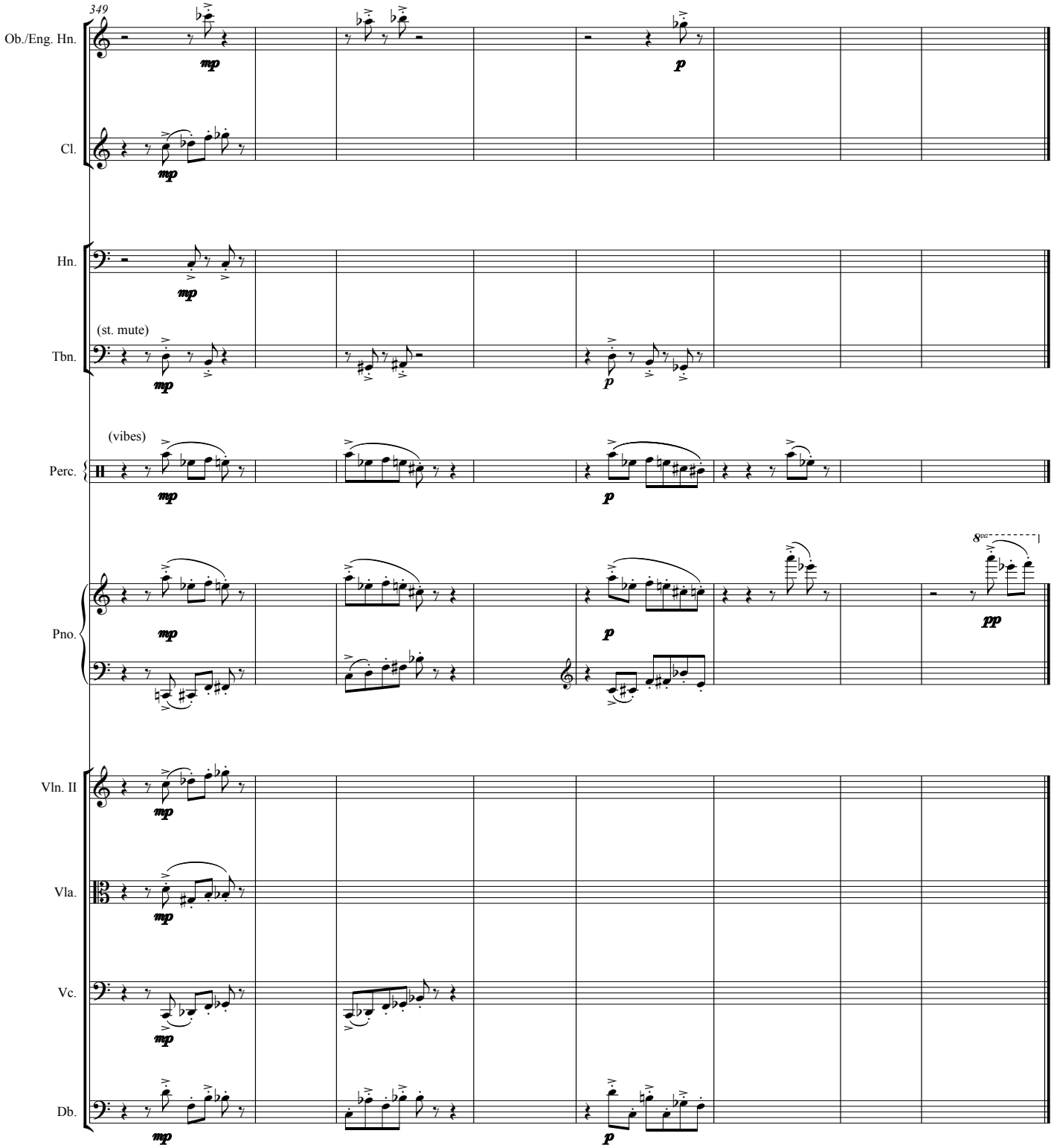

326
Cl.
Bsn.
mf
Hn.
mf
(st. mute)
Tpt.
mp
(st. mute)
Tbn.
f
Vibes (soft mallet)
Perc.
p
Pno.
f
tutti
ff
la metá
mf
la metá
senza sord.
Vln. I
Vln. II
mf
Vla.
la metá
Vc.
mf
Db.


330
Cl.
Bsn.
Hn.
Tpt.
(st. mute)
Tbn.
(st. mute)
Perc.
(vibes)
Pno.
Vln. I
Vln. II
Vla.
Vc.
Db.
f
subito
mf
tutti
arco


K
334
Cl.
Bsn.
mf
mf
senza sord.
Tpt.
fp
f
(st. mute)
Tbn.
(vibes)
hard mallet
Perc.
mf
f
K
Vln. I
tutti
Vln. II
f
Vla.
Vc.
Db.


(picc.)
338
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Bsn.
Hn.
Tpt.
(st. mute)
Tbn.
(vibes)
Perc.
Pno.
Vln. I
Vln. II
Vla.
Vc.
Db.
mf
f
2
4


342
Picc./ Flt.
Ob./Eng. Hn.
Cl.
Bsn.
Hn.
Tpt.
Tbn.
Perc.
Pno.
Vln. I
Vln. II
Vla.
Vc.
Db.
(picc.)
(st. mute)
(vibes)
ff
mf


349
Ob./Eng. Hn.
Cl.
Hn.
(st. mute)
Tbn.
(vibes)
Perc.
Pno.
Vln. II
Vla.
Vc.
Db.
mp
p
pp