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Osmosis/Zymosis: The Integration of Eastern Mediterranean Music Elements in Contemporary Composition

by

Michalis Andronikou

A THESIS

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Abstract

Osmosis/Zymosis is a work of twenty minutes duration, for a mixed chamber ensemble (augmented "Pierrot ensemble") comprising flute, clarinet, violin, violoncello, piano and percussion. The underlying concept of the work is based on the integration into contemporary Western music practice of musical gestures derived from the Eastern Mediterranean tradition. The title consists of two scientific terms used to describe chemical and biological processes: "Osmosis" refers to the gradual absorption of one solution by another, and "Zymosis" refers to both the process of fermentation and the development or the spread of an infection.

These Greek words are also useful for the description of the blending of cultures and especially for individuals who face displacement or immigration. A related concept in anthropology would be the rite of passage, a ritualistic event that marks a person's transition from one status to another. A music composition that incorporates elements transferred from one culture to another is even more than that. Both the process and the resulting work are steps towards musical maturity and openness. In many ways the integration of music elements from one culture into another is a glimpse to the future, which could be helpful in bridging cultural and aesthetic differences.

In this compositional project, a clear, balanced and intuitive combination of elements from both cultures is attempted. One of the things that I have learned through this experience is that this path is always inviting and endless for anyone who is willing to take one more step.

Acknowledgements

Although a music composition seems to be a very personal project, the compositional process of this particular work is far from this concept, since it came as a result of a systematic collaboration with my supervisor Dr. David Eagle. His significant role in advising and guiding my studies from the beginning of the program will always be a great example for me. Both as a composer and an educator, Dr. Eagle influenced my work and thinking in a unique way, and therefore I am very grateful for his approach, guidance and supervision.

Furthermore, Dr. Friedemann Sallis, Prof. Allan Bell, and Dr. Laurie Radford played a key role in my studies and influenced me in many different ways. To mention a few of them, Dr. Sallis helped me immensely in improving my doomed relation with English. His belief that "Musicology encompasses everything" encouraged me to combine what I have learned from my previous studies for the benefit of the studies at the University of Calgary. Prof. Bell showed me how to focus on the essence of a compositional project, while at the same time, he insisted that "God exists in details."
Dr. Radford talked to me about sound in a totally new way. The discussions we had for issues pertaining to my improvisations and contemporary music, were very enlightening for me.

I would also like to acknowledge the contribution of Drs. Jennifer Eiserman and Kenneth Fields in opening new ways for artistic expression and thinking for me. Their originality, devotion and strong intuition in their fields was a great inspiration for me.

I owe many thanks to the musicians John Lowry, Beth Root Sandvoss, Lucie

Jones, Andrew Morrow, Kyle Eustace, Eric Bumstead, Matthew Blackburn, as well as the conductor Laura Jayne Bowler, for their tireless rehearsals, and their beautiful performance of the premiere of the work, at the "2013 Happening Festival of New Music and Media," at the University of Calgary.

Finally, the congenial atmosphere at the Music Department of the University of Calgary contributed to making my stay a pleasant one. I was privileged and honored to study, work and feel a part of this vibrant Music Department.

To my wife, Aleka

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1. Introduction

1.1 Intent

Aiming for a unified expression, I used idiomatic elements from Eastern Mediterranean culture merged with contemporary compositional techniques. Improvising with various instruments was a significant source of inspiration for this piece. The result of this intuitive approach was then filtered, organized and shaped into the material for a new music work, with the addition of new ideas that came out of the compositional process itself.

My decision to choose this particular orchestration was based on the varied palette of colours that this ensemble provides, as well as the fact that the "Pierrot ensemble" is a significant ensemble of Western contemporary music. The use of a folk instrument or a sound file with direct references to Eastern Mediterranean music culture would imply a dichotomy, or at least a comparative approach embedded in the creative process. On the other hand, the use of gestures within this ensemble evokes instrumental sonorities, techniques, modes and rhythms of Eastern Mediterranean traditions that have existed since antiquity.[1] This approach is related to idiomatic patterns and gestures in traditional performance practice, with respect to the theoretical system of tetrachords, modes and maqams.

Being musically bilingual (trained and exposed in both Eastern and Western music) helped me to perceive and understand music in many ways. However, this created an aesthetic challenge for the balance or the equality of roles of the cultures, as well as for shaping and communicating the results of the synthesis of these elements. This

[1] Foivos Anogianakis, *Greek Traditional Musical Instruments* (Athens: Melissa, 1991).

challenge was one of the main reasons for the prolongation of my studies in various fields such as musicology, ethnomusicology, composition, Byzantine music, and performance studies in Western and Eastern Mediterranean instruments.

The need to have equal roles for all the instruments as a parallel to the equal roles of the two cultures led to the focus on each of the instruments and the emphasis on their unique characters. However, the polyphonic texture that is prevalent in the piece as a symbol of Western culture aims to show the complementarities of the voices and the roles of the instruments.

Finally, the process aims to achieve a personal development towards the maturity of my musical thinking and composing, with the intention of sharing the outcomes of this experience and encouraging others to follow this path.

1.2 The Gesture and Its Importance

The basic compositional approach for *Osmosis/Zymosis* is related to the integration of idiomatic patterns and gestures as used in the traditional performance practice of Greek folk music. Tetrachords, modes and maqams are combined with atonal material in a quest for balanced sonorities. In this approach, a gesture or chironomia (Greek: χειρονομία) is a living object, which carries the seed of the compositional process. The reason I call it a "living object" is its connection with a living tradition, which strongly influences me aesthetically, as a composer, musicologist and performer.

My experience in Greek folk, Byzantine, and traditional music along with studies in Western music have shaped my aesthetic world. These parallel studies led me to realize that the main material that Greek folk musicians use is a gesture or a chironomia,

and not a phrase, a motive, a special technique, or an effect – terms that are used in Western music. In fact, the word 'gesture' is widely used by numerous Western contemporary composers, without having a common meaning.

But how can a gesture or a chironomia be defined in the compositional process? The etymology of the word chironomia (from chira [χείρα] = hand and nemo (νέμω) = allocate) may be useful for understanding its nature and its effect on the development of traditional music. A gesture is a form of non-verbal communication through a movement of the hands, face, or other parts of the body. Chironomia, originally a hand movement, also became a broader term, which is synonymous to gesture.

The use of gestures in the compositional process may result in a passage with a special sound colour, which is another broad term with various meanings in Western music tradition. The starting point for my methodological framework is an attempt to redefine sound colour as a broader concept and specify the parameters that relate to it. In my work, the term sound colour is not used to denote timbre or spectral analysis, but to express the cultural resonance that comes directly out of the use of gestures and the musical material they consist of. Sound colour may therefore also pertain to nuance, various types of attacks, or other aspects of performance practice. The wide vibrato used in *Osmosis/Zymosis* is a characteristic example of a specific performance practice with a sound colour that comes from the traditional practice of Eastern Mediterranean music. In a way, everything that is conceived as inserted music material from a different culture could be understood as an object, while the practices that are used for this integration constitute the "process." Such a combination of object and process may yield a particular sound colour. According to Philip V. Bohlman,

> [m]usic may be embedded as an object or as a process; adumbration, similarly may be recognizable through the objects it leaves or the processes it unleashes. It is, moreover, the interaction between and among these conditions that makes their metaphysical routes so complex and so difficult to chart.[2]

Composing with the use of gestures constitutes a potential pathway for cultural communication. This specific exploration of sound colour from Eastern Mediterranean sources within Western contemporary music represents a transmission of cultural capital and is important for connecting cultures. According to Graeme Sullivan,

> [t]he expanding landscape of imaginative and critical inquiry pursued by artists, cultural commentators and teachers is purpose driven, where the need to explore new opportunities for creating and critiquing knowledge is being taken up by the challenge of personal belief and public need. This process is being shaped in part by artists who see structures that define traditional discipline areas, not as boundaries or as barriers but as potential pathways that can link ideas and actions in new braided ways.[3]

The communication among composers, performers and audiences through the musical gestures facilitates intercultural communication. This happens because of the emphasis on the active coexistence of various cultural backgrounds for the shaping, the performing and the reception of these gestures, through a music work. In fact, this is an aesthetic premise embedded in the concept of Western art music.

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[2] Philip Bohlman, "Ontologies of Music," *Rethinking Music*, edited by Nicholas Cook and Mark Everist (Oxford: Oxford University Press, 1999), 19.
[3] Graeme Sullivan, *Art Practise as Research: Inquiry in Visual Arts*, 2nd edition (Los Angeles, London, New Delhi, Singapore, Washington DC: SAGE Publications, 2010), 156.

> For the Romantics, [...] whereas great music serves to mediate the local and the universal, lesser music remains perforce contained within its local sphere. In his 1836 review, Robert Schumann famously observed that Fryderyk Chopin was a great composer because he was able to transform the raw musical characteristics of his national (i.e., local) heritage into individual works of universal value.[4]

Thinking of compositional process with musical gestures as the border between music and language led me to explore the challenges of persuasion through the rhetoric of music gestures. This process was enlightening in connecting the idea of gesture with the form of the work. Rhetoric, the art of persuasion in ancient Greece and Rome, was also taught in late Renaissance and Baroque schools, and contemporary theorists noted its application to the new style of music presented by a soloist (whether singer or instrumentalist) as expressive declamation. Classical rhetoric proposed that a speech should have six sections:

1) Exordium (introduction)
2) Narratio (factual statement)
3) Divisio or propositio (outline of points to be affirmed)
4) Confirmatio (confirmation)
5) Confutatio (rebuttal)
6) Peroratio or conclusio (conclusion)

Musical treatises in the Baroque period would often advise composers to plan their works in a similar way and to intensify their music with figures analogous to those

[4] Friedemann Sallis, "Introduction," *Centre and Periphery, Roots and Exile: Interpreting the Music of István Anhalt, György Kurtág, and Sándor Veress*, edited by Friedemann Sallis, Robin Elliott, and Kenneth DeLong (Waterloo: Wilfrid Laurier University Press, 2011), 4.

of rhetoric, such as anaphora (reference], or catabasis (descending line). In *Osmosis/Zymosis,* the classical rhetoric scheme for speech was not followed in a strict manner, because it contradicted the primary plan of the piece. Nevertheless, the scheme was of great importance for me in shaping the gestures as "arguments" for the construction of an interesting "musical mosaic."

Another example of a rhetorical figure used in *Osmosis/Zymosis* is metaphor. As I see it, metaphor not only is a figure of speech, it is also an important compositional tool. The use of the marimba and the piano as a zither-like Greek instrument (santur and kanun) in my project is not an imitation. It is closer to metaphor since the performers are playing gestures written in a way that reflects the impression of specific techniques of repetitive notes or ornaments used on the traditional instrument. This is how the impression of the Eastern Mediterranean sound colour is transmitted through the gestures.

In Byzantine music, neumes are symbols of musical gestures. The neume was the basic element of the Western and Eastern systems of musical notation, prior to the invention of five-line staff notation. The word is a Middle English corruption of the original Ancient Greek word for both breath and spirit (πνεῦμα - *pneuma*). The earliest neumes were inflective marks which indicated the general shape but not necessarily the exact notes or rhythms to be sung.

The earliest Western notation for chant appears in the ninth century. These early staffless neumes, traditionally called *chironomic,* appeared as freely formed wavy lines above the text. Various scholars see these as deriving from chironomic hand-gestures, from the ekphonetic notation of Byzantine chant, and from punctuation or accent marks.[5] A single neume could represent a single pitch, or a series of pitches all sung on the same

[5] Constantin Floros, *Universale Neumenkunde* (Kassel-Wilhelmshöhe: Bärenreiter-Verlag, 1970).

syllable. Chironomic neumes indicated changes in pitch and duration within each syllable, but did not attempt to specify the pitches of individual notes, the intervals between pitches within a neume, or the relative starting pitches. In Byzantine music practice, the chanter weaves together the notes in order to better serve the meaning of the text. This is not shown in the notation, and that is why there are numerous interpretations of the same work that sound like variations of the same theme. This approach to interpretation can be compared to improvisation, since every time one chants a Byzantine hymn it can be done differently. This practice is a basic tool for the elaboration on gestures.

Another important aspect of gesture is its relation to "kinesis" and "ethos." In Aristotelian philosophy, kinesis refers to the transformation of the state of potentiality to that of actuality. Ethos is "the distinguishing character, sentiment, moral nature, or guiding beliefs of a person, group, or institution."[6] The ancient Greeks also used this word to refer to the power of music to influence an audience's emotions, behaviour, and even morals. Gestures often convey the atmosphere of a different place or a different time. This is why a simple rebetiko song from Greece consisting of gestures can be so strongly connected with a certain isolated community, an inviolable code of conduct, a unique dance, and determined aesthetic values and qualities, and be communicated to listeners from other places.

The title of the piece relates to two complementary concepts, division and combination, which are used as rhetoric tools. In fact, the "Osmosis" part begins with a division of a gesture, while the "Zymosis" part begins with a combination of various gestures, aiming toward a symbolic connection between the two major parts of the work.

[6] http://www.merriam-webster.com/dictionary/ethos?show=0&t=1366948690, (accessed April 25, 2013).

A basic idea about the shaping of the form in relation to gestures is that "musical form is centrally a matter of cogency of succession, moment to moment and part to part."[7] This idea implies a linearity of the musical moments. Musical linearity takes place when some musical events, like gestures, are determined by implications that arise from earlier events in the piece. This results in linear time, in which new events succeed earlier ones. The gestural concept described above aligns with Schoenberg's concept of developing variations with respect to motivic development, where "the changes proceed more or less directly toward the goal of allowing new ideas to arise."[8] This principle of linear time relates to the title *Osmosis/Zymosis*. The latter comes as a result of the former.

In a way, "Osmosis" is the interplay between sounds and gestures in search of a deeper balance, while "Zymosis" is the fermentation or the result of that process into a personal understanding of symmetry. In this work, symmetry is related to balance as suggested by Kleobulos ("μέτρον ἄριστον" [*metron ariston*] – moderation is best). This is the moral meaning of the word symmetry. It is a balance between constructive and intuitive logic, research and creation, as well as East and West, or even art and folk music.

For this work, symbols play a significant role for the balance between East and West. The "Pierrot Lunaire" ensemble – for instance – is a significant ensemble of Western contemporary music, not only because of the reference to the particular work composed in 1912 by the leading composer of the Viennese school. Many contemporary works employ this instrumentation for a chamber music ensemble. "The Fires of London," a chamber music ensemble created to play "Pierrot Lunaire" and other works

[7] Jerrold Levinson, *Music in the Moment* (Ithaca: Cornell University press, 1997), 11.
[8] Arnold Schoenberg, *The Musical Idea and the Logic, Technique, and Art of its Presentation*, trans. and ed. Patricia Carpenter and Severine Neff (Bloomington: Indiana University Press, 2006), 247.

composed for this ensemble, existed between 1965 and 1987 in London, and after 1967 was under the direction of Peter Maxwell Davies and Harrison Birtwistle. This ensemble was the "Pierrot Lunaire" ensemble augmented by the addition of one percussionist. Adding one more percussionist for *Osmosis/Zymosis*, playing the marimba (a pitched percussion of Latin American origin), is a symbol of augmentation of this ensemble, a priori. However, my chosen ensemble does not include voice.

For this twenty-minute piece, the part of the "Osmosis" is approximately the first half which leads to a climax. The highest point of the climax approximates the golden section of the whole piece, and is followed by the "Zymosis" part.

While "Zymosis" is more or less based on the material presented in the "Osmosis" part, the nature of this part is more abstract, either in a poetic or a dramatic way. Here the material is being filtered and refined into a personal language that balances the various musical aspects into complete statements. The musical processes predominate over the material that is used (see table 1).

Table 1 Characteristics of the "Osmosis" and the "Zymosis" Parts

Osmosis	Zymosis
Interplay	Fermentation
Linearity	Abstraction: Poetic or dramatic nature
Unfiltered material	Filtered material

The "Osmosis" part relates to Bartók's ideas about the influence of peasant music on modern music. According to Bartók,

> [t]wo main types can be distinguished among works of this character. In the one case accompaniment, introductory and concluding phrases are of secondary importance and they only serve as an ornamental setting of the precious stone: the peasant melody. It is the other way round in the second case: the melody only serves as a "motto" while that which is built round it is of real importance. […] Another method by which peasant music becomes transmuted into modern music is the following: the composer does not make use of a real peasant melody but invents his own imitation of such melodies.[9]

In *Osmosis/Zymosis,* I follow the last method and invent my own material. I use the material in some cases as a precious stone and some other cases as a motto. I invent the material by exploring Greek traditional music in various ways and by improvising, chanting, playing traditional songs, paraphrasing them and filtering them into new ideas. This is how the material itself is "asked" to provide the answers for every compositional problem.

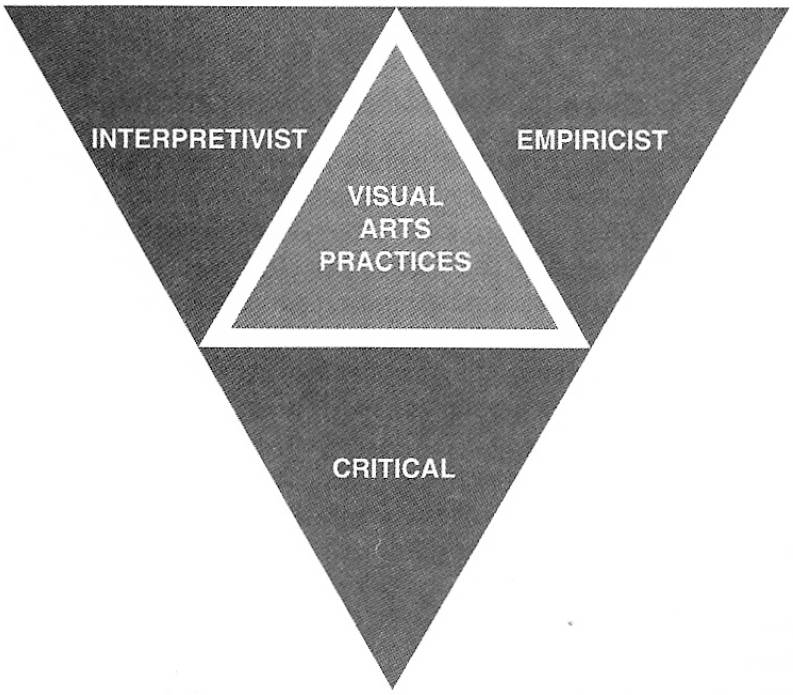
The main concern with the development of the music material with the gesture as an element of cohesion is to integrate it organically into a contemporary music work. The musical gestures carry the seed of constant development and variation. Traditional music practice is a kind of compact wisdom of generations that is conveyed through these gestures. A real challenge for the composer today is to find the way to best continue his or her tradition into a modern creative process. György Kurtág is an example of a contemporary composer who employs gestures in many of his works, such as *Játékok* I

[9] Benjamin Suchoff (ed.), *Béla Bartók Essays* (Lincoln and London: University of Nebraska Press, 1993), 341-343.

(1973-78), a collection of pedagogical performance pieces for piano, or *Grabstein für Stephan* (1989), for guitar and instrumental groups.

With the use of the following figure, the art critic Graeme Sullivan points out that the artist is also the critic, the interpreter and the empirical observer of the work he or she produced. The artist is at the centre of this figure, and the other three approaches exist because of the art practice and research (see fig. 1).

Figure 1 Visual Arts Research: Braided Relationships[10]



Although Sullivan writes about critical, interpretive and empiricist traditions with respect to visual arts practices and research, a parallel relationship seems to hold with the composer, who is conceiving, evaluating and interpreting a new concept. According to Sullivan,

[10] Sullivan 112.

> […] art practice is the core around which inquiry unfolds. Research draws on knowledge and experience and uses structure of inquiry designed to increase the human capacity to intervene, interpret, and act upon issues and ideas that reveal new understandings. [...] When seen in relation to surrounding empiricist, interpretivist, and critical research traditions, different practices emerge as artistic inquiry twists and braids in response to purposes and possibilities. This dynamic process opens up several *relational* and *transformative* research practices that are found *within* and *across, between* and *around* the framework[…][11]

This idea could be seen as a general theory to approach a music work as an 'open work.' Although *Osmosis/Zymosis* is a fully composed work, this term can be useful to describe the interaction among the composer, the performers and the audience. This is a term that Umberto Eco uses to refer to works that are open to multiple realizations.

> The *possibilities* which the work's openness makes available always work within a given *field of relations*. As in the Einsteinian universe, in the "work in movement" we may well deny that there is a single prescribed - point of view. But this does not mean complete chaos in its internal relations. Therefore, to sum up, we can say that the "work in movement" is the possibility of numerous different personal interventions, but is not an amorphous invitation to indiscriminate participation. The invitation offers the performer the opportunity for an oriented insertion into something which always remains the world intended by the author.

[11] Sullivan 102.

> In other words, the author offers the interpreter, the performer, the addressee a work *to be completed*.[12]

In other words, a creative artist shares the new experience, the activity, and the original idea with the addressee. The composer communicates music to people in the form of new knowledge and experience, without necessarily providing the answers to the questions that have been raised within the work. In that sense, composers are also the educators of the new knowledge they offer, by suggesting ways of perceiving and understanding new music, in an "open" relation with the audience. The idea of an "open work" inspired many composers, among them Luciano Berio, a close friend of Umberto Eco's, who emphasized the importance of openness as an approach to the music work:

> In 1962 Umberto Eco published a book which since has become a classic: *Opera Aperta* (translated into English as *The Open Work*). This book was partially inspired by "open" or relatively open musical experiences such as my flute *Sequenza,* and it develops, within a vast framework, some of the problems I am approaching here. I say problems because such they really are, especially when we avoid a proper distinction between musical and literary concepts.
>
> Without attempting to sum up this important book, let me mention a few points. Eco says: "The form of the work of art gains its aesthetic validity precisely in proportion to the number of different perspectives from which it can be viewed and understood. These give it a wealth of different resonances, and echoes without impairing its original essence."

[12] Umberto Eco, *The Open Work,* translated by Anna Cancogni (Cambridge: Harvard University Press, 1989), 19.

He also says that a musical work can be open in a tangible sense, and that it can be concretely unfinished.[13]

In the age of globalization and rapidly changing musical landscapes, sociologists use the concept of hybridization to analyze this type of contemporary cultural dynamic. Fusion is another trend where the roots are melted together into a new idiom, where the sources are submerged. Musicologists will often compare the original folk song with the new art-music work, in order to understand the impact of the original material on the new work. Composer Luciano Berio knew that the creation of a unity between folk and art music is a utopian dream. However, the intertextuality between these two genres in a new work is of potential benefit, providing a significant external source for the enrichment of art music per se.

Berio's utopian dream to achieve a unity between folk and art music could be considered an attempt to cancel Clement Greenberg's critical categories of "Avant-Garde" and "Kitsch," as seen in his eponymous article, one of the most influential twentieth-century essays on aesthetics and art.[14] By that Berio would conceptualize in a theoretical framework his new approach to folk music. For Greenberg, social estrangement was a criterion of historical validity of the work of art. In my work, art and folk music are of equal importance, and the latter is used to enrich the former.

1.3 The Idea behind *Osmosis/Zymosis*

The idea behind *Osmosis/Zymosis* is shaped by a personal belief that the composer should stimulate the audience. A composer invites the audience to share in the artistic

[13] Luciano Berio, *Remembering the Future* (Cambridge: Harvard University Press, 2006), 82-83.
[14] Clement Greenberg, "Avant-Garde and Kitsch," *Partisan Review* 6:5 (1939), 34-49.

experience, and by that he or she affects the way people listen. A composer is also an educator responsible for the communication of his or her music to the audience and in this way influences the aesthetic world of the audience.

Composers today must face the lack of interest of mainstream audience in contemporary art music. The simplicity and the clarity of the music can be a solution to this challenge. In a way, contemporary music may become simpler in order to better educate and communicate with the audience. This is the framework within which *Osmosis/Zymosis* was composed.

2. Overview of *Osmosis/Zymosis*

2.1 *Osmosis/Zymosis* through the Theory of Gestures

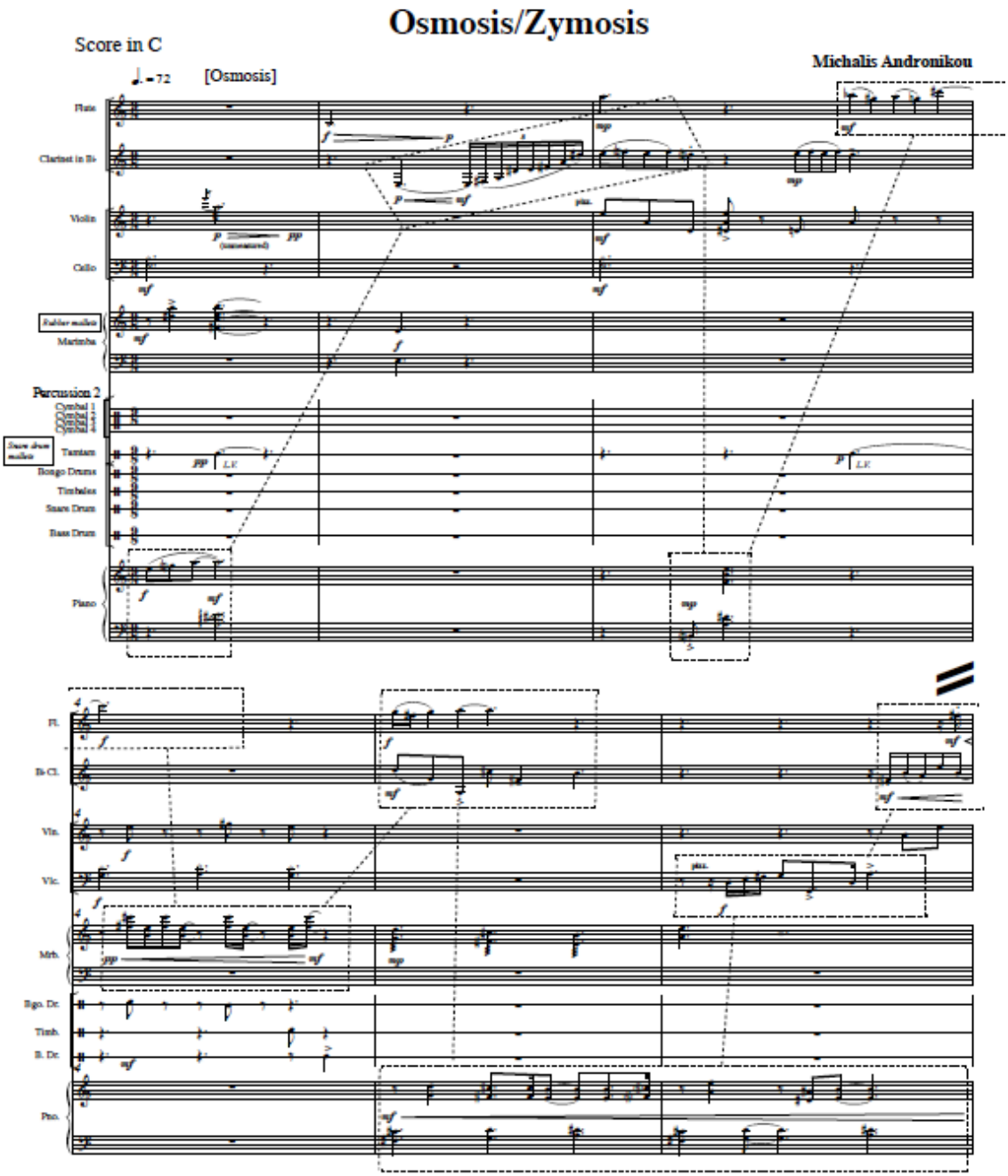
The piece unfolds through the interplay of gestures within the compositional process. The "Osmosis" section sets the stage for the subsequent development in the "Zymosis" section. The construction of the "Osmosis" section is mostly based on the technique of the mosaic, where every gesture sets the need for the appearance of another one. As a result of that, the "Osmosis" section follows a fragmentary development, while the processes in the "Zymosis" section that are based on the blending of gestures are more complete. This is already evident from the first measures of each major section. In the beginning of the "Osmosis" section, events satisfy the action-reaction axiom and, in some cases, there exist simultaneous reactions (m. 5). Every music event sets the need for the appearance of its consequent event, as marked by the dotted lines in Example 1. In this process, gestures provide the need or the reason for the continuation of the process.

In the "Zymosis" section, on the other hand, the gestures are merged from one substance into another, resulting in passages with certain directions or shapes. At the beginning of the Zymosis" section, the focus on the clarinet line is gradually formed with the blending of layers of passages as shown in Example 2.

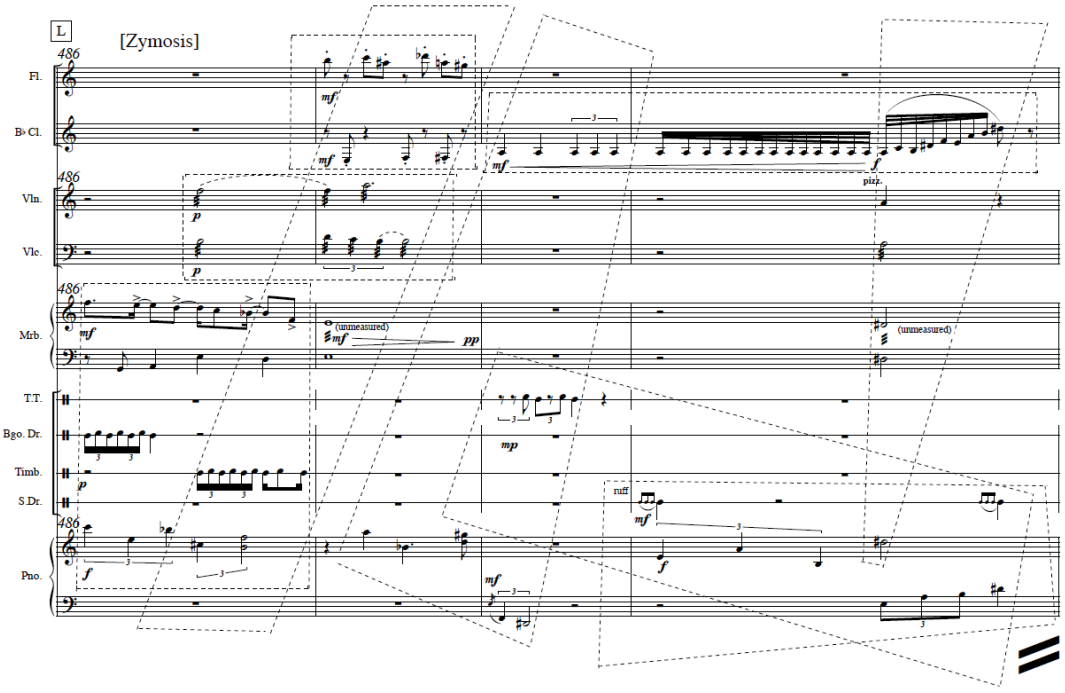
The overall form follows the pattern of a gesture, from its beginning, representing the absorption of ideas, or the "Osmosis," towards the conclusion, the fermentation or the transformation of the ideas as reflected by the term "Zymosis." The common characteristic in both sections is the constant interplay of gestures, which provides

cohesiveness, momentum and variety to the piece. This process relates to the moment to moment reception of music, as described above.

Example 1 The beginning of the "Osmosis" part, mm. 1-6.



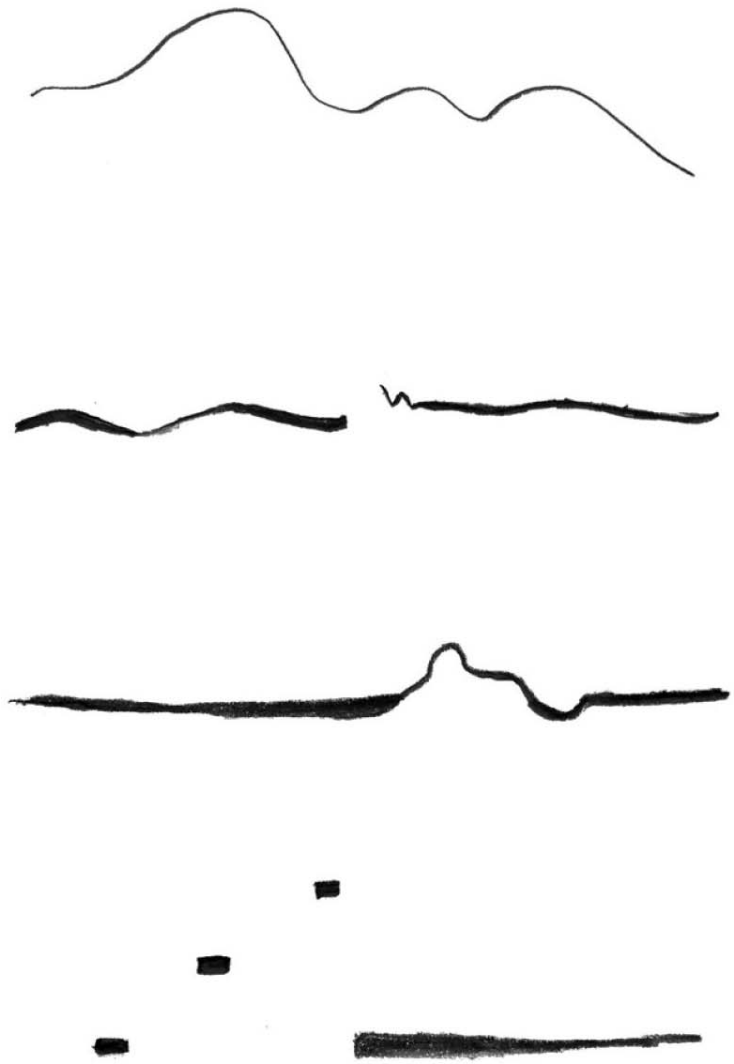
Example 2 The beginning of the "Zymosis" part, mm. 486-489.



Osmosis/Zymosis employs a large number of gestures, the most important of which are shown in a synoptic table (see table 2). Drawings have been used to graphically illustrate the motion, direction and function of the gestures. The idea and the inspiration for the creation of these graphical illustrations have been drawn from the shapes of the neumes of Byzantine chironomic notation. The synoptic table allows one to understand the different nature and character of these gestures. The first nineteen gestures ("Osmosis" section) relate to simple, linear ideas, while from the twentieth onwards ("Zymosis" section), there are more complex forms and surfaces. The relation between the first type of gestures (1-19) to the second type (20-30) is similar to that of a line to a three-dimensional geometric shape. The gestures in the "Zymosis" section are depicted as surfaces or non-linear formations, with the addition of greyed or shaped areas (see table 2).

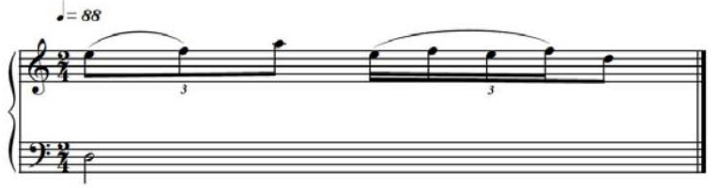
Table 2 Synoptic Table

Synoptic Table



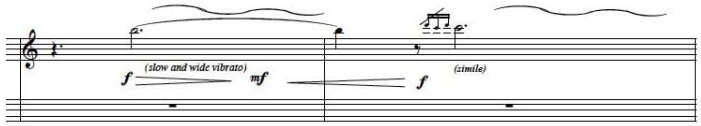
1

Example 3 Gesture A.



2

Example 5 *Osmosis/Zymosis*, Gesture B, mm. 12-13.

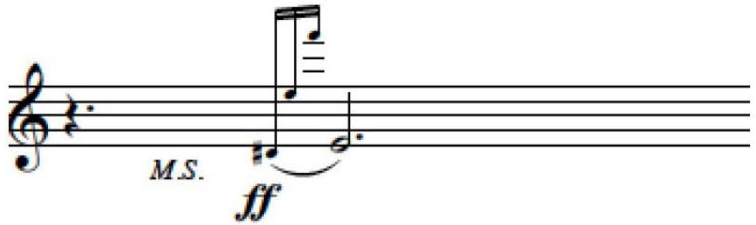


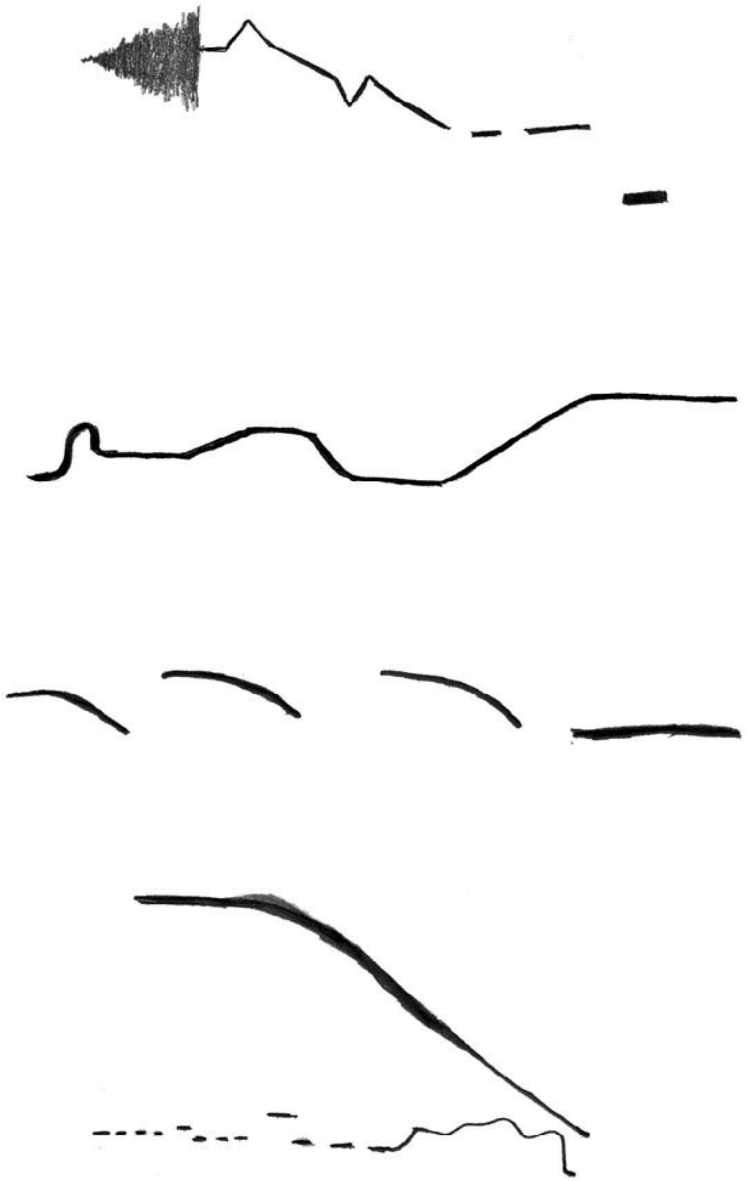
3

Example 6 *Osmosis/Zymosis*, Gesture C, m. 14.

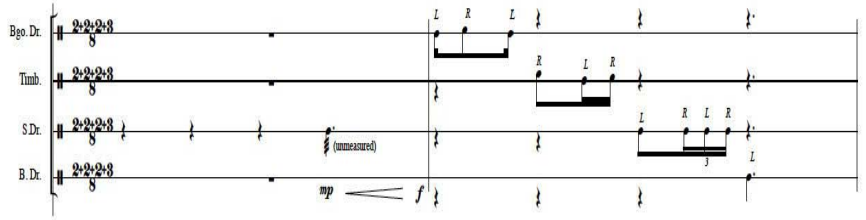
4

Example 7 *Osmosis/Zymosis*, Gesture D, m. 20.

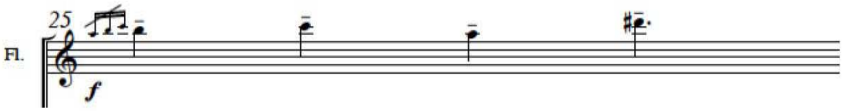




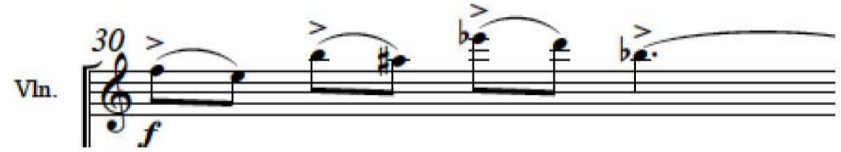
5 **Example 10** *Osmosis/Zymosis*, Gesture E, mm. 23-24.



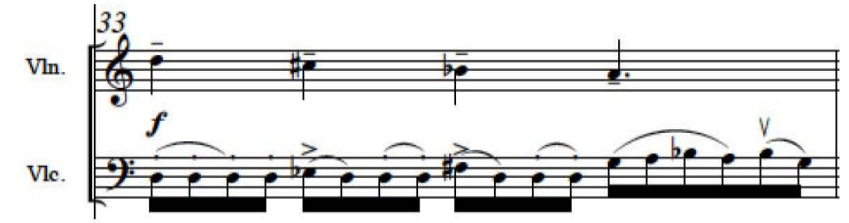
6 **Example 11** *Osmosis/Zymosis*, m. 25.

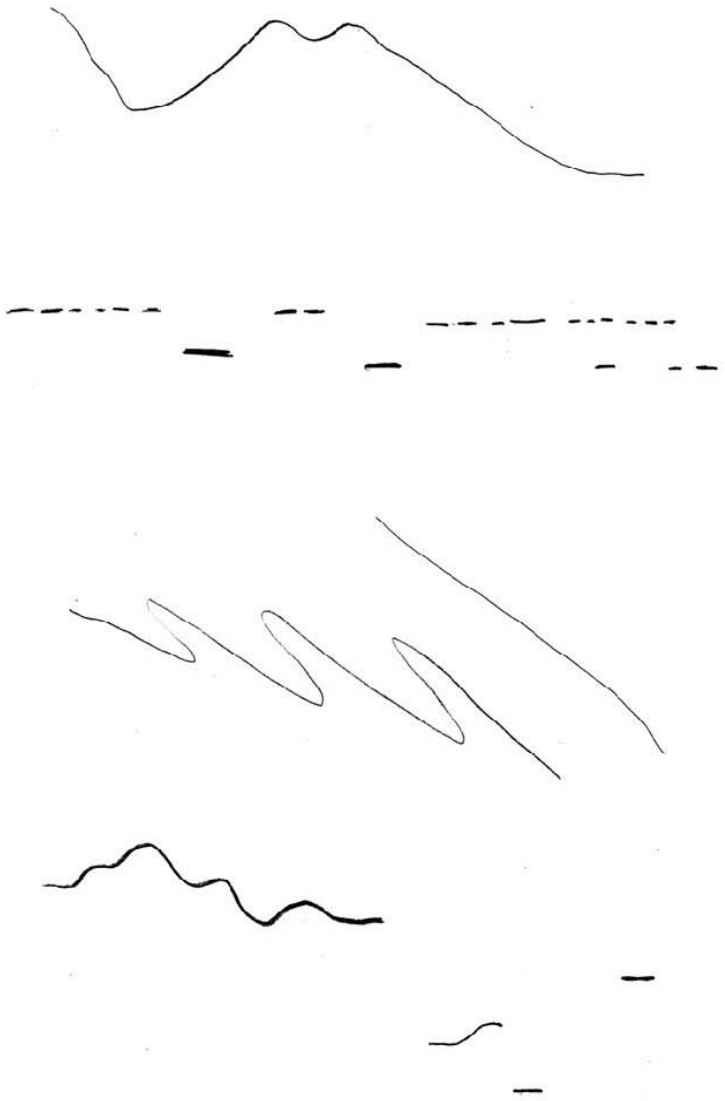


7 **Example 12** *Osmosis/Zymosis*, m. 30.

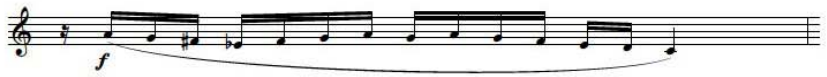


8 **Example 13** *Osmosis/Zymosis*, m. 33.

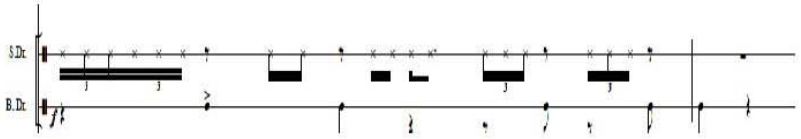




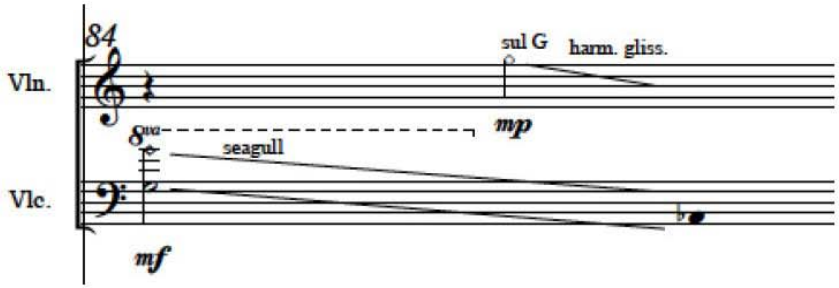
9 **Example 14** *Osmosis/Zymosis*, Gesture F, m. 49.



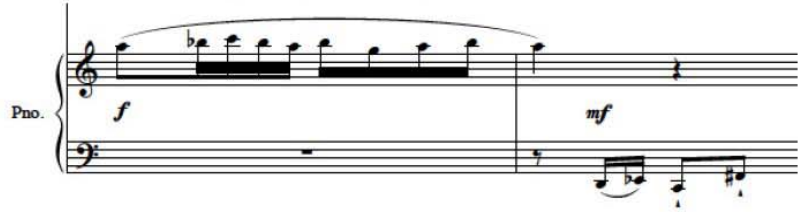
10 **Example 19** *Osmosis/Zymosis*, Gesture G, mm. 71-74 & mm. 75-78.

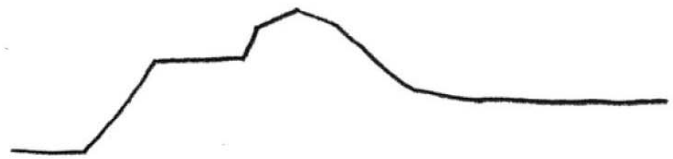


11 **Example 22** *Osmosis/Zymosis*, Gesture H, m. 84.

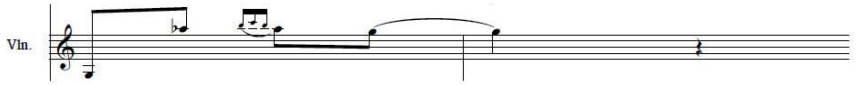


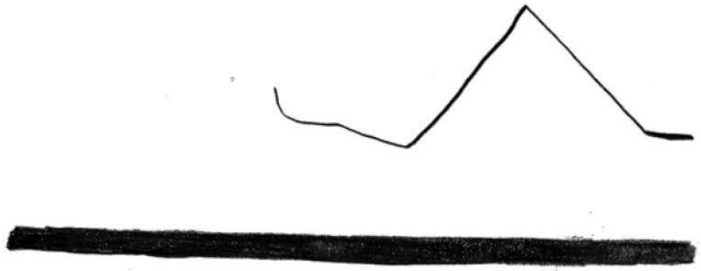
12 **Example 23** *Osmosis/Zymosis*, Gesture I , mm. 90-91.



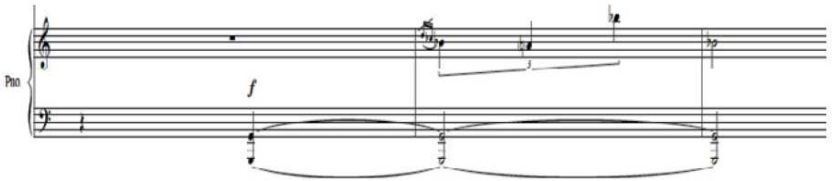


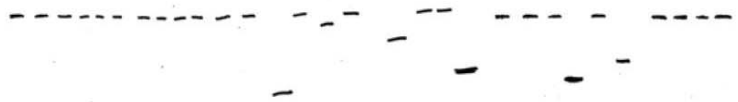
13 **Example 26** *Osmosis/Zymosis*, Gesture J, mm. 142-143.



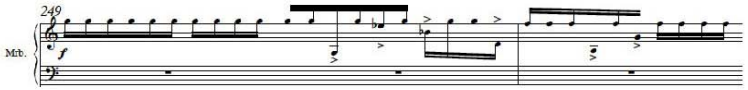


14 **Example 27** *Osmosis/Zymosis*, Gesture K, mm. 151-153.

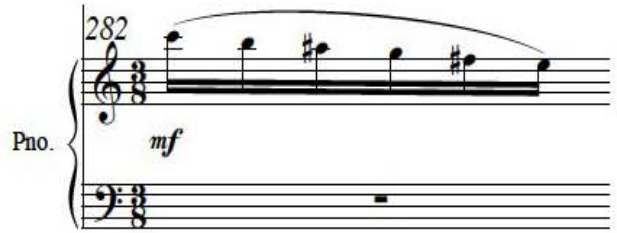




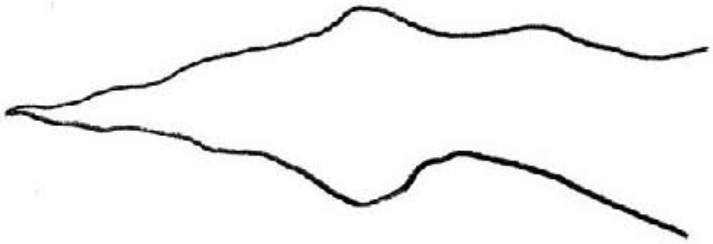
15 **Example 33** *Osmosis/Zymosis*, m. 249-251.



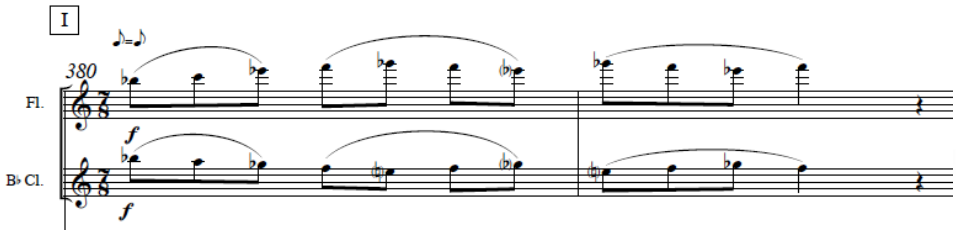
16 **Example 34** *Osmosis/Zymosis*, Gesture L, m. 282.

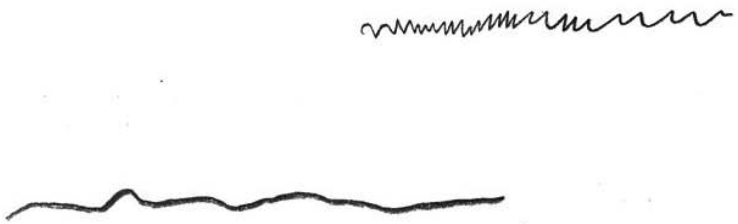


17 **Example 38** *Osmosis/Zymosis*, Gesture M, m. 326.

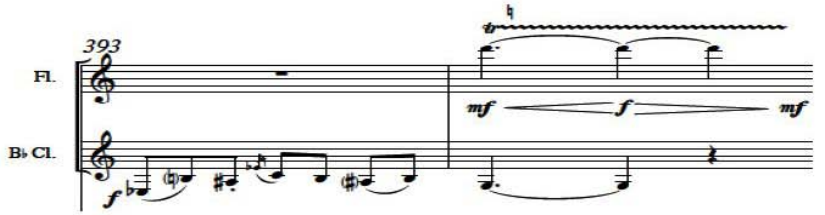


18 **Example 40** *Osmosis/Zymosis*, Gesture N, mm. 380-81.

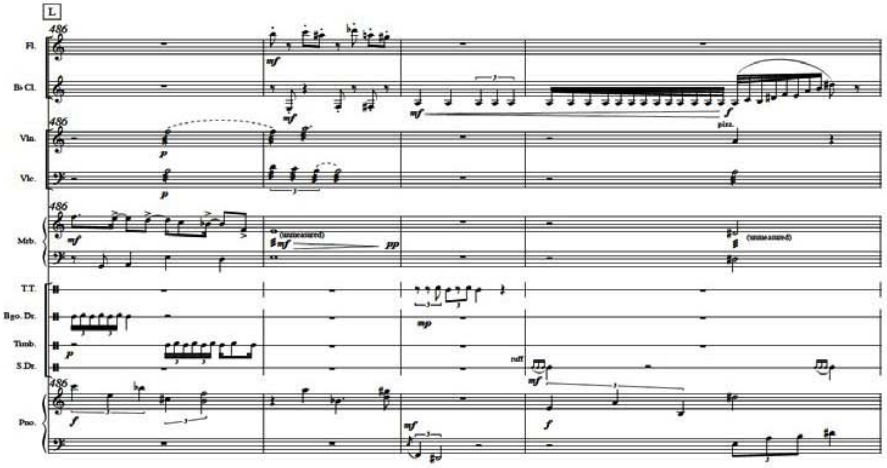




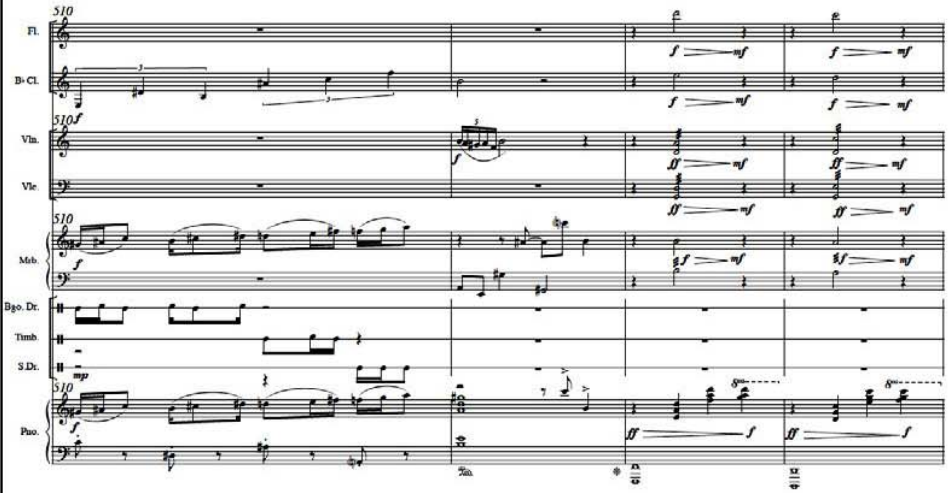
19 **Example 41** *Osmosis/Zymosis*, Gesture O, mm. 393-94.



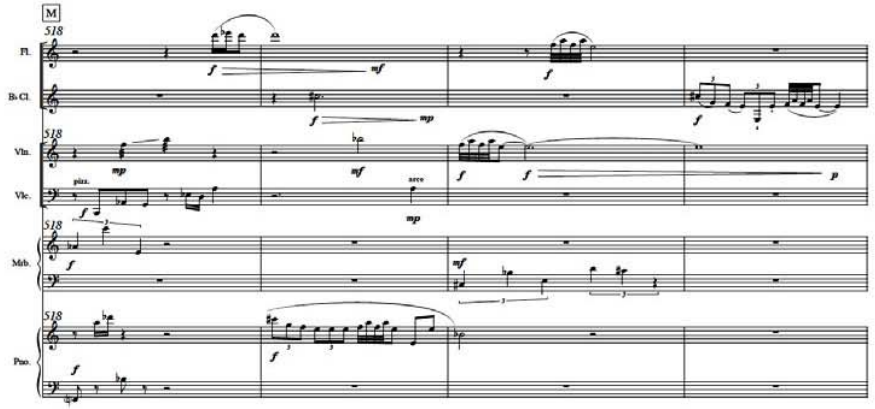
20 **Example 46** *Osmosis/Zymosis*, Gesture P, mm. 486-489.



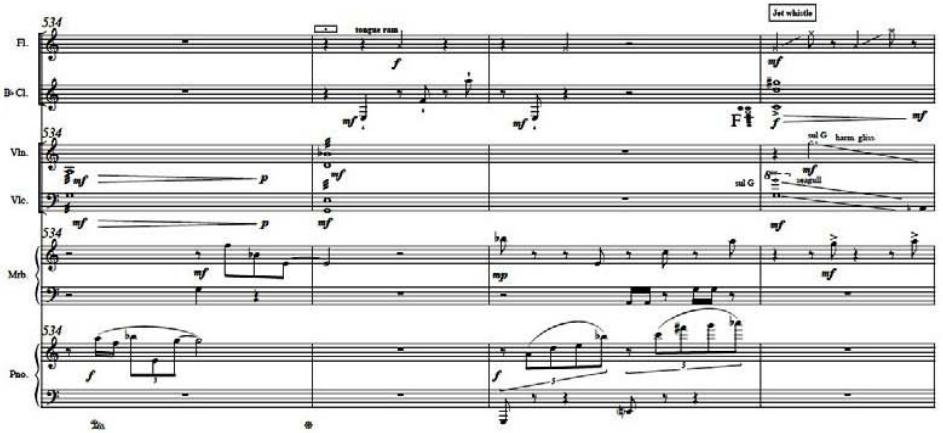
21 **Example 47** *Osmosis/Zymosis*, Gesture Q, mm. 510-513.



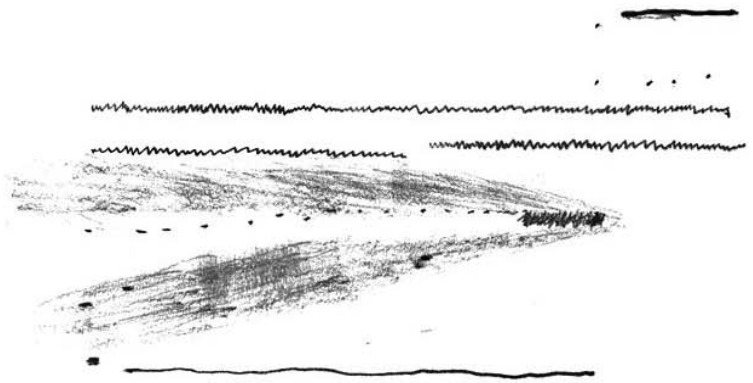
22 **Example 48** *Osmosis/Zymosis*, Gesture R, mm. 518-521.

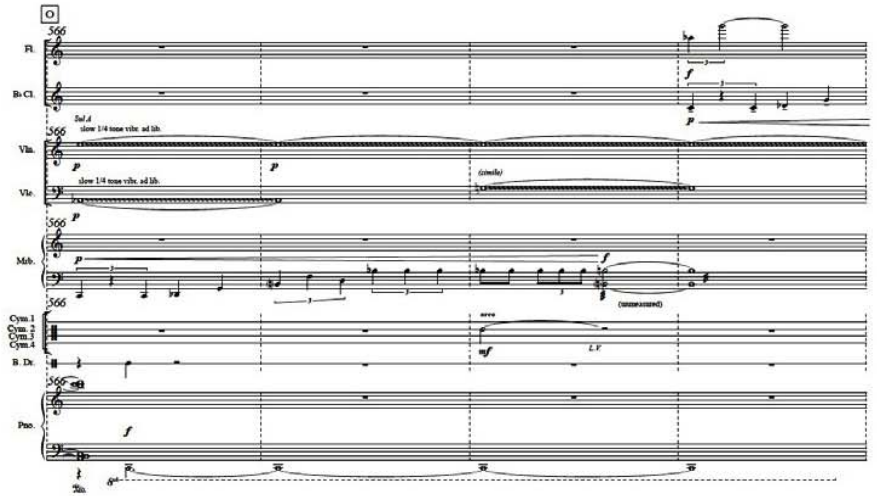


23 **Example 49** *Osmosis/Zymosis*, Gesture S, mm. 534-537.



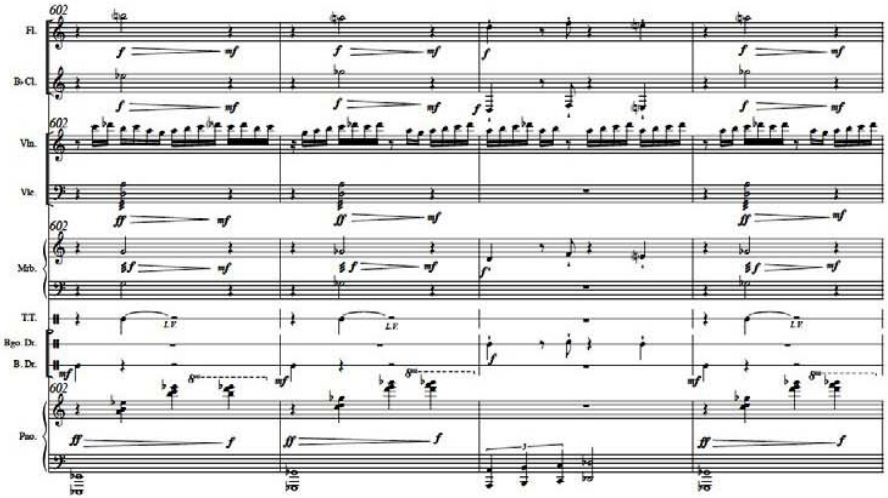
24 **Example 53** *Osmosis/Zymosis*, Gesture T, mm. 566-569.





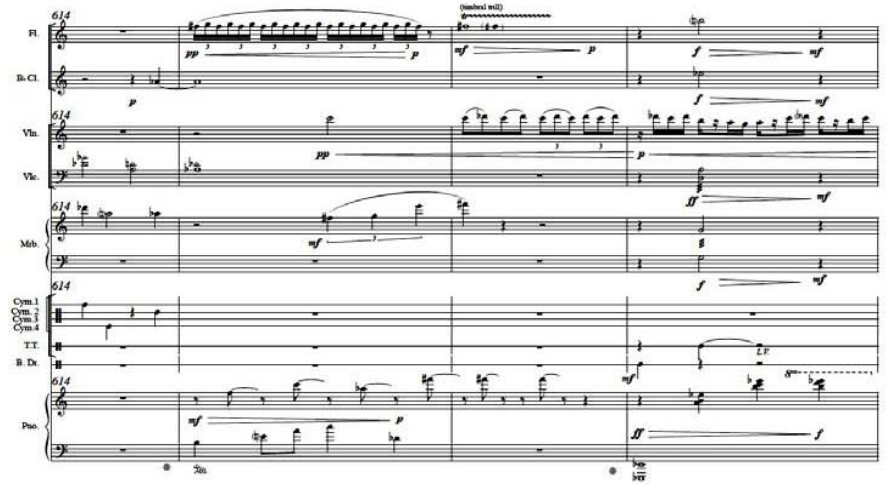
25

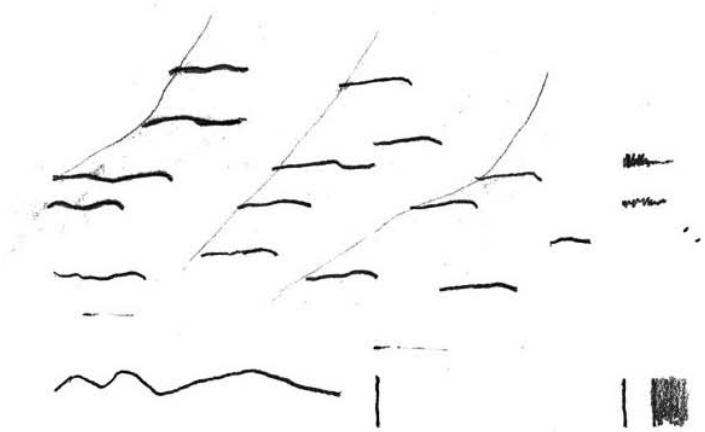
Example 57 *Osmosis/Zymosis*, Gesture U, mm. 602-605.



26

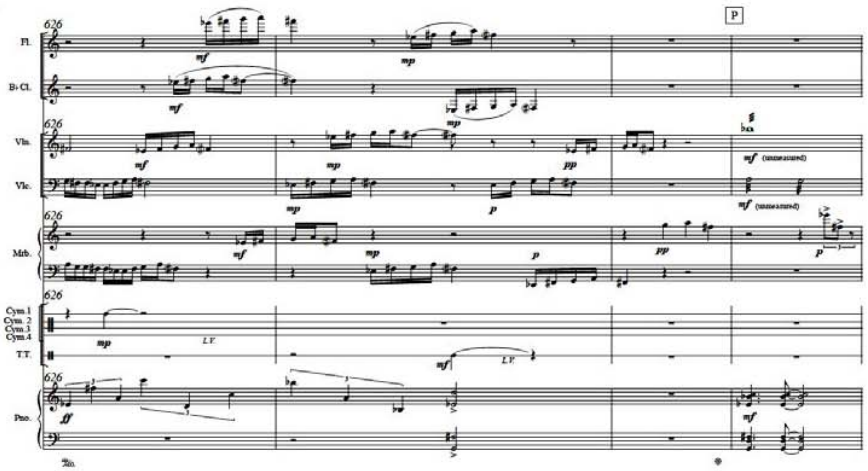
Example 58 *Osmosis/Zymosis*, Gesture V, mm. 614-617.

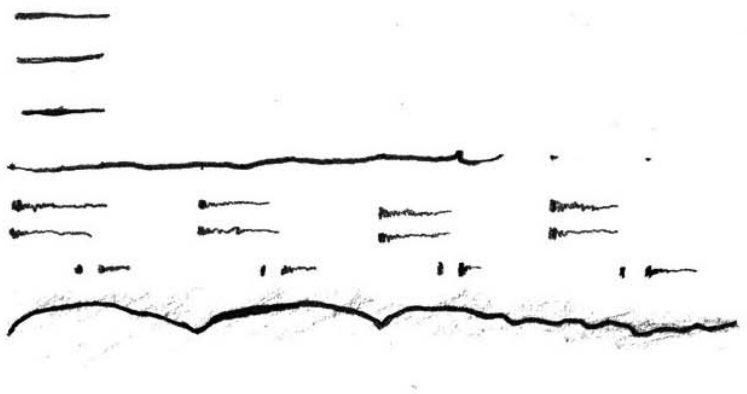




27

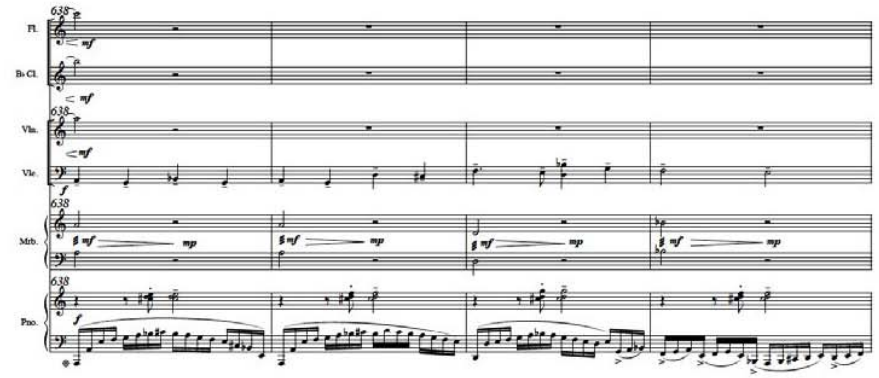
Example 60 *Osmosis/Zymosis*, Gesture W, mm. 626-629.

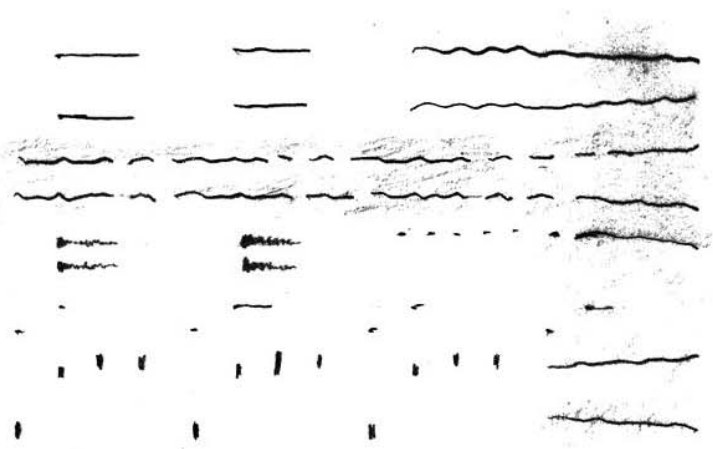




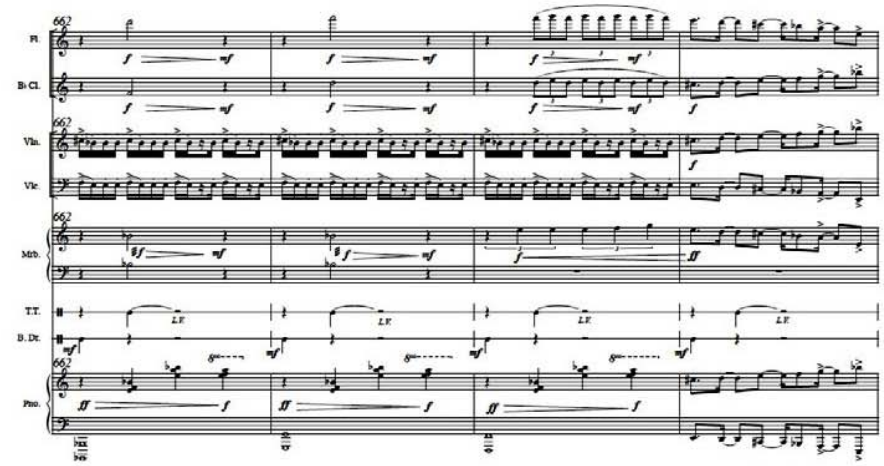
28

Example 61 *Osmosis/Zymosis*, Gesture X, mm. 638-641.

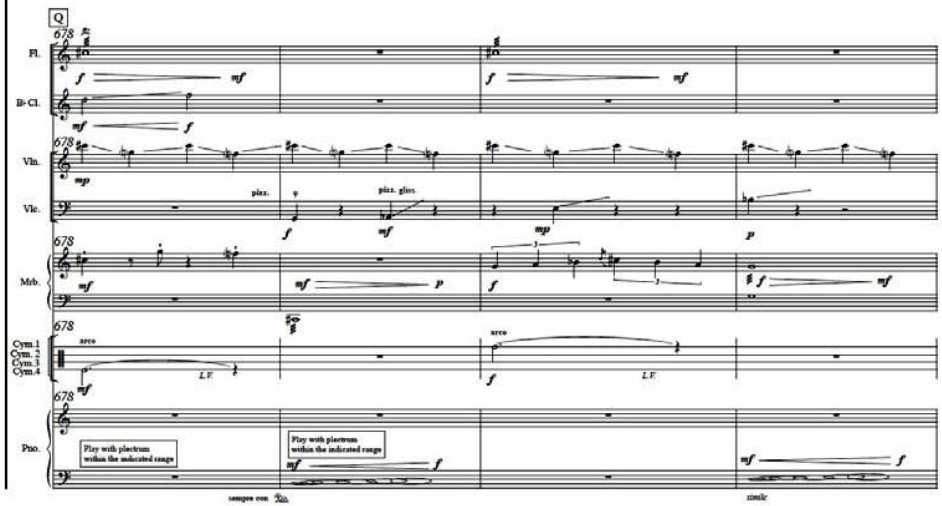




29 **Example 62** *Osmosis/Zymosis*, Gesture Y, mm. 662-665.



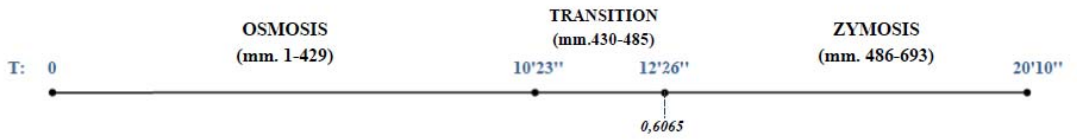
30 **Example 63** *Osmosis/Zymosis*, Gesture Z, mm. 678-681



2.2 Form

The “Osmosis” part (mm. 1-429) is transformed into the “Zymosis” part (mm. 486-692) through a climactic transition passage (mm. 430-485), essentially a bridge or a gesture of change. The end of the transition passage (mm. 486-693) is the approximation of the golden section (see fig. 2).

Figure 2 *Osmosis/Zymosis*, Form

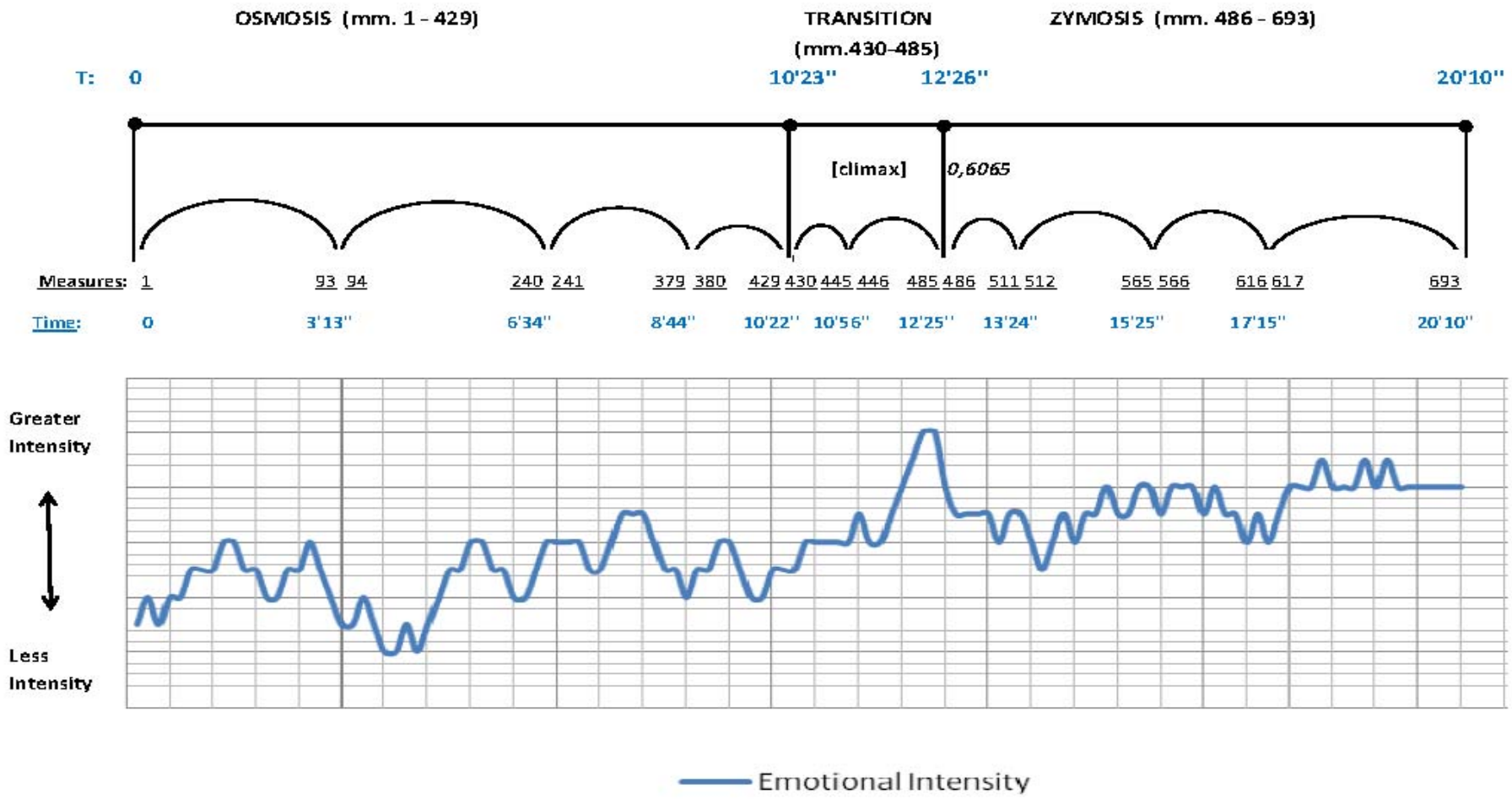


“Osmosis” (mm. 1-429) can be divided into four major sections: A (mm. 1-93), B (mm. 94-240), C (mm. 241-379), D (mm. 380-429). The transitional part (mm. 430-485) can be divided into two sections: E (mm. 430-445), F (mm. 446-485), and the “Zymosis” part can be divided into four major sections: G (mm. 486-511), H (mm. 512-565), I (mm. 566-616), J (mm. 617-693). Each section has a distinct character, which nonetheless functions as an inherent part of the work that has an organic relation with the rest of the sections. Section A (mm. 1-93) for instance, ends with an abrupt interruption, followed by a relaxed and fairly static passage. Another abrupt ending with an accented repetition of a chord, occurs in m. 240, at the end of section B, before the beginning of the marimba solo, in section C. Measure 379 signifies the beginning of a dance-like theme in 7/8 in m. 380 (section D). The end of this section coincides with the end of the “Osmosis” section. By accenting the last two quarter-note beats of the 7/8 metre, the “Osmosis” section is naturally connected with the following 4/4 metre of the transitional part.

The first section of the transitional part (mm. 430-445) begins the motion to the climax, which ends with the appearance of a triplet rhythmic pattern. This rhythmic pattern is the basic element for the climax, which coincides with the following section (mm. 446-485). The last section of the transition ends at the highest point of intensity, which is sustained by the repetition of the strongest point of the climax in m. 484, and the two pauses that surround it. This dramatic silence at the end of the climax imposes a way of listening, which is necessary for the reception of the diffused gestures at the "Zymosis" section.

The first section of the "Zymosis" part (mm. 486-511) ends with the beginning of a short passage that employs a homophonic texture, as a symbol of the unity of the various elements used in this work. The following section (mm. 512-565) ends with the replacement of the bar-lines with dotted bar-lines, for coordination only. The ad libitum and slow ¼ tone vibrato starting in m. 566 serves as a "glue" for all the loose gestures that appear in this section (mm. 566-616). The beginning of a set of repetitive, oscillating or obsessive gestures from the violin in m. 616 signifies the end of this section and the beginning of the last section J (mm. 617-693), which combines the previous homophonic texture with the obsessive gestures from the violin, foreshadowing the conclusion of the piece. Diagram 1 is a subjective graphical representation of the changing emotional intensity of these passages as the work unfolds.

Diagram 1 Emotional Intensity in Relation to Form



2.3 Detailed Descriptive Analysis

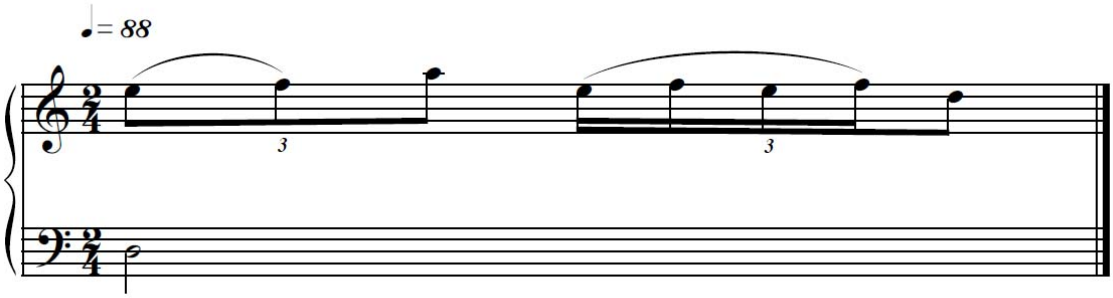
In order to have a closer look at the function of some important gestures, the sections can be further divided into smaller units.

OSMOSIS (mm. 1 – 429)

Measures 1-11

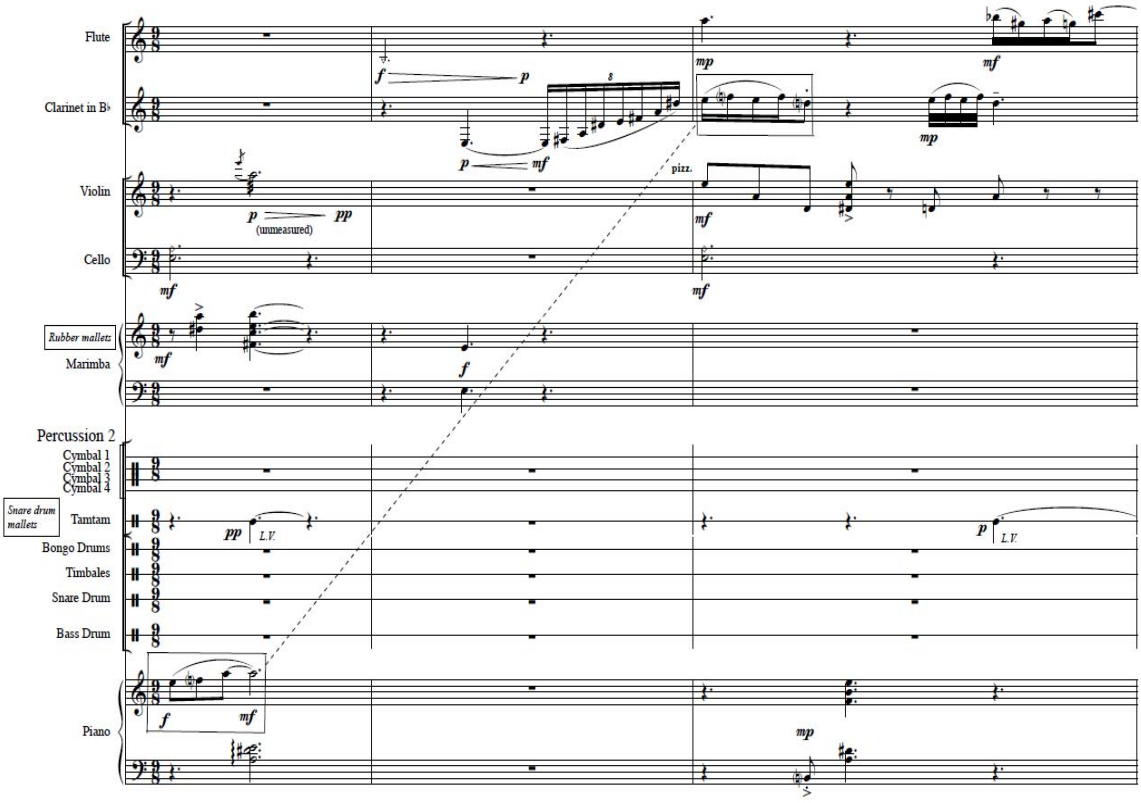
The first section of the piece is an investigation of the division of gesture A (see ex. 3).

Example 3 Gesture A.



This introductory gesture employs an underlying stepwise motion from E (the first note) to D (the last note of the gesture). However, there is a more important characteristic inherent in this gesture, in relation to its development. The leap to its highest note (A) produces the energy that results in the lively motion towards its conclusion. But what if this gesture was divided right in the middle? Would that action result in having two gestures? One approach to this rhetorical question is given by the first three bars of the piece, where this gesture is divided and separated or prolonged by a bar (see ex. 4).

Example 4 *Osmosis/Zymosis*, The Division of Gesture A, mm. 1-3.



The music material used after m. 3 is mostly derived from this gesture. The emphasis on the perfect fourths and fifths relates to the most important notes of the gesture; the first one (E), the higher (A) and the last one (D). The strongest point of this section is in measure 7, underlined by the accented polychords – again consisting of fourths and fifths – in the marimba. From this point onwards there is a fade out until m. 11, where this section is concluded.

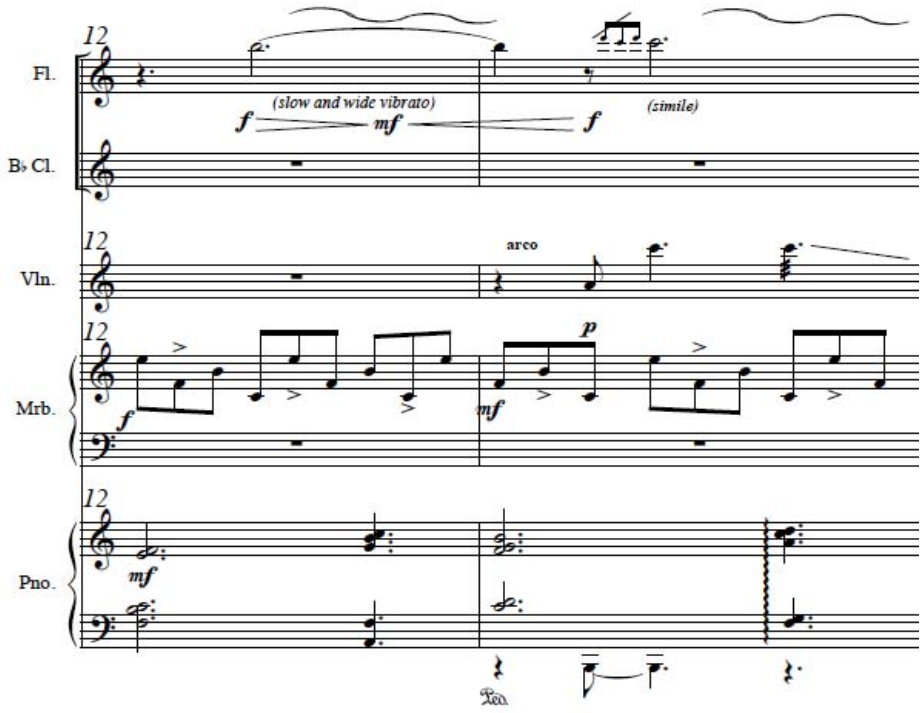
The texture is mainly polyphonic, with the exceptions of the first and the last bars of this section, in which the texture is homophonic. In the first bar the chord functions as an accompaniment of what was heard up to that point, while in the last bar the homophonic texture is homorhythmic.

Measures 12-22

An ‘unfolding’ process begins with the marimba imitating the steady beat of a clock on a four-note ostinato (E-F-B-C), varied with accents. This ostinato sounds as the source for gestures B and C, which share two common notes with the ostinato.

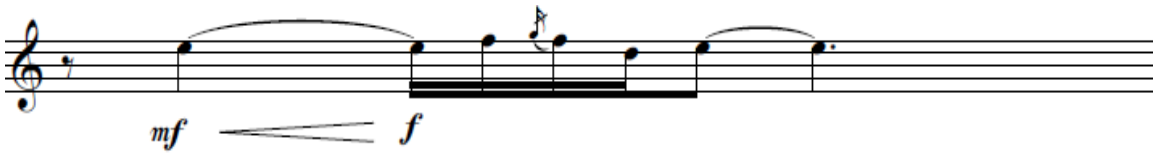
The logic behind the piano accompaniment for this section is based on this feature of the common notes of the gestures with the ostinato. Beginning with a chord that has all four notes of the ostinato (m. 12), I gradually added new notes in order to color the gestures in a way that does not relate to their nature. However, by enhancing the common notes, the harmonic material is more cohesive (see ex. 5).

Example 5 *Osmosis/Zymosis*, Gesture B, mm. 12-13.



The slow and wide vibrato used in gesture B by the flute is a typical characteristic, of vocal and instrumental Eastern Mediterranean music. This characteristic practice relates not only to the expressiveness of the sound itself, but also to the genesis and the development of the ornaments. The vibrato often results in complex groups of ornaments with neighbouring notes that shape gestures by adding character to them (see ex. 6).

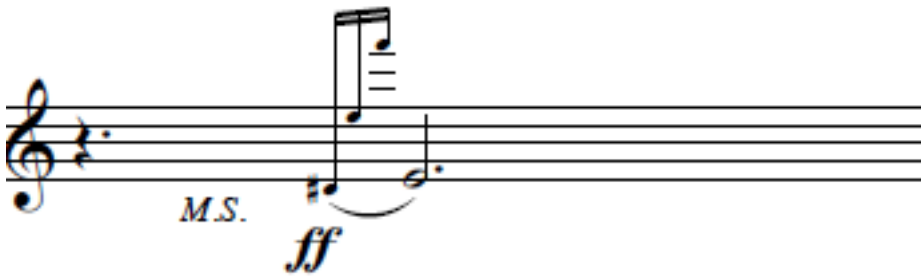
Example 6 *Osmosis/Zymosis*, Gesture C, m. 14.



The most dissonant chord of this chord progression is found on the last beat of measure 15, in order to interrupt the ostinato and introduce the spiccato passage on the violoncello. The spiccato passage leads to the bowed, suspended sound from the cymbal (m. 18), which imitates the slow and wide vibrato from the flute and the violin.

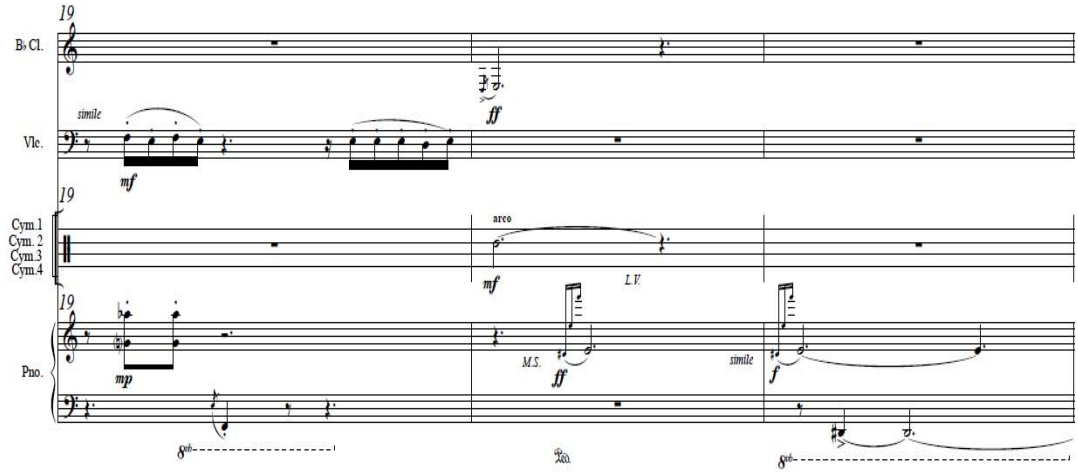
The second appearance of the sound from the bowed cymbal is accompanied by gesture D, which is heard three times before the conclusion of this section. This gesture is based on a technique used in santur and kanun, the two zither-like instruments of Greek traditional music. This specific technique is basically the expansion of a turn trill with the parallel use of the pedal, to suspend the dissonance, resulting in a mysterious sound effect (see ex. 7).

Example 7 *Osmosis/Zymosis*, Gesture D, m. 20.



Although the expanded turn implies a tonicization of E, the appearance of a $D^{\#}$ pedal note in the repetition of the gesture intensifies the mysterious atmosphere (see ex. 8).

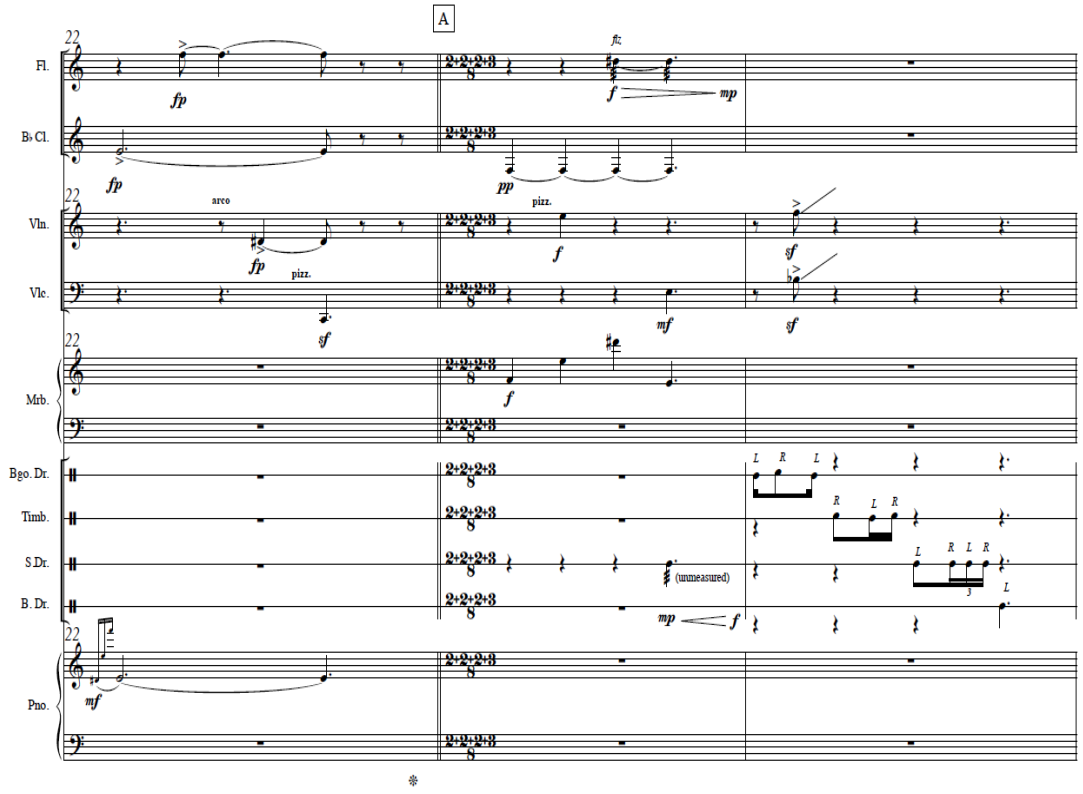
Example 8 *Osmosis/Zymosis*, mm. 19-21.



Measures 23-66

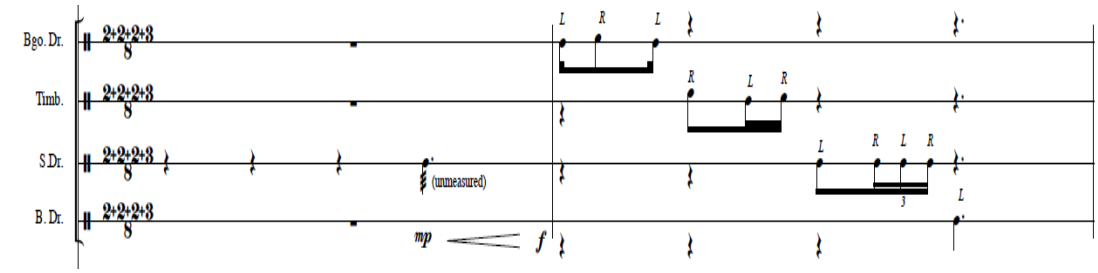
This mysterious moment is resolved by the appearance of the asymmetrical 9/8 rhythm. The use of the same notes of the expanded turn trill on m. 23 serves the cohesion of the piece at this point of a significant change (see ex. 9).

Example 9 *Osmosis/Zymosis*, mm. 23-25.



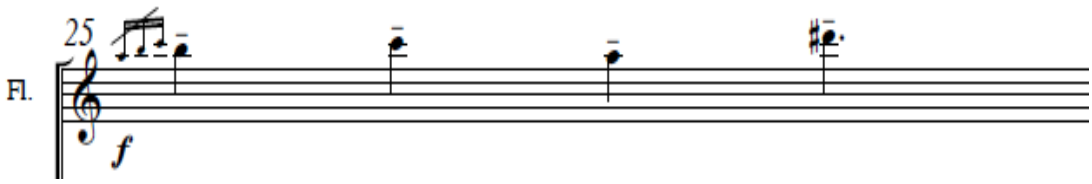
This change from the regular 9/8 to the irregular (asymmetrical) is confirmed and marked by gesture E from the percussion, which emphasizes each of the four parts of the meter with a different rhythmical pattern (see ex. 10).

Example 10 *Osmosis/Zymosis*, Gesture E, mm. 23-24.



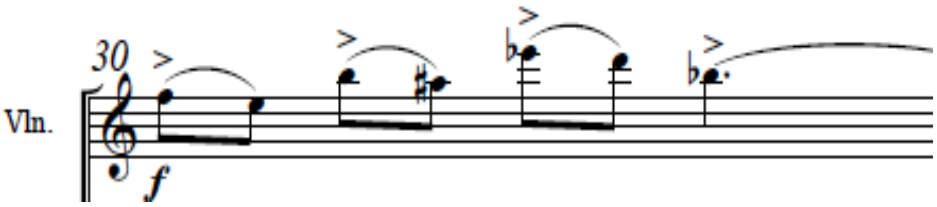
A similar effect is produced with the appearance of the following theme, where each part of the meter is a single note. Furthermore, the ornament on the first beat is a reference to gesture D (see ex. 11).

Example 11 *Osmosis/Zymosis*, m. 25.



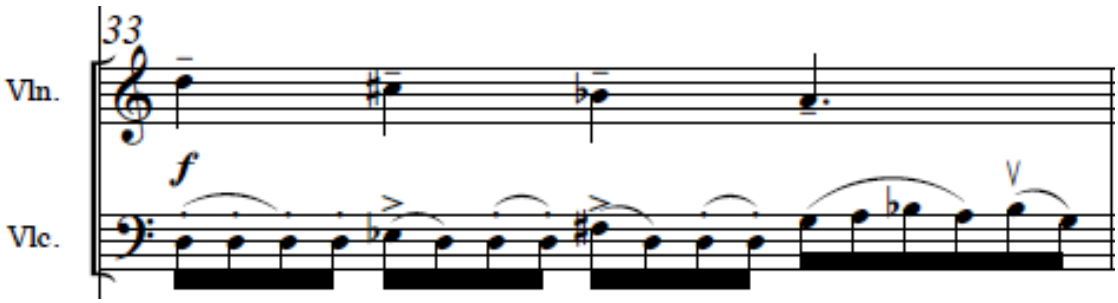
This rhythmical pattern is developed into the following theme with the use of eighth notes (see ex. 12).

Example 12 *Osmosis/Zymosis*, m. 30.



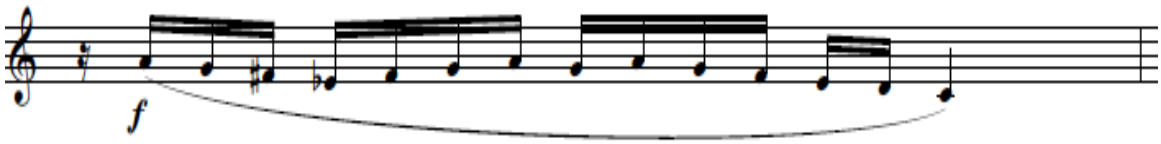
This process of variation continues in order to combine the theme in sixteenth-notes in m. 33 with the Hicaz tetrachord (A-B^{b}-C$^{\#}$-D), which are both important for gesture F (see ex. 13). The texture in this section is also polyphonic.

Example 13 *Osmosis/Zymosis*, m. 33.



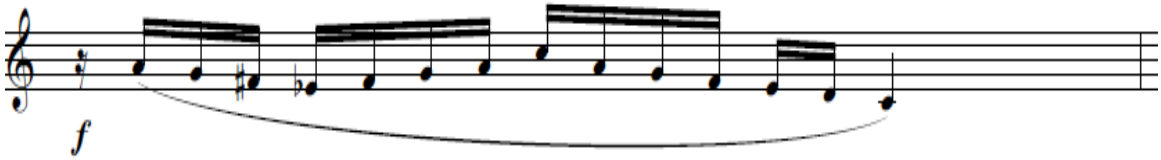
Gesture F is constructed on a Hicaz pentachord (D-E^{b}-F$^{\#}$-G-A) in a stepwise and undulating motion. The ending on the subtonic (lowered leading tone) provides the energy for the motion and the repetition of the gesture, as well as a tendency for the tonicization of C (see ex. 14). This is supported by the accompanying C pedal note.

Example 14 *Osmosis/Zymosis*, Gesture F, m. 49.



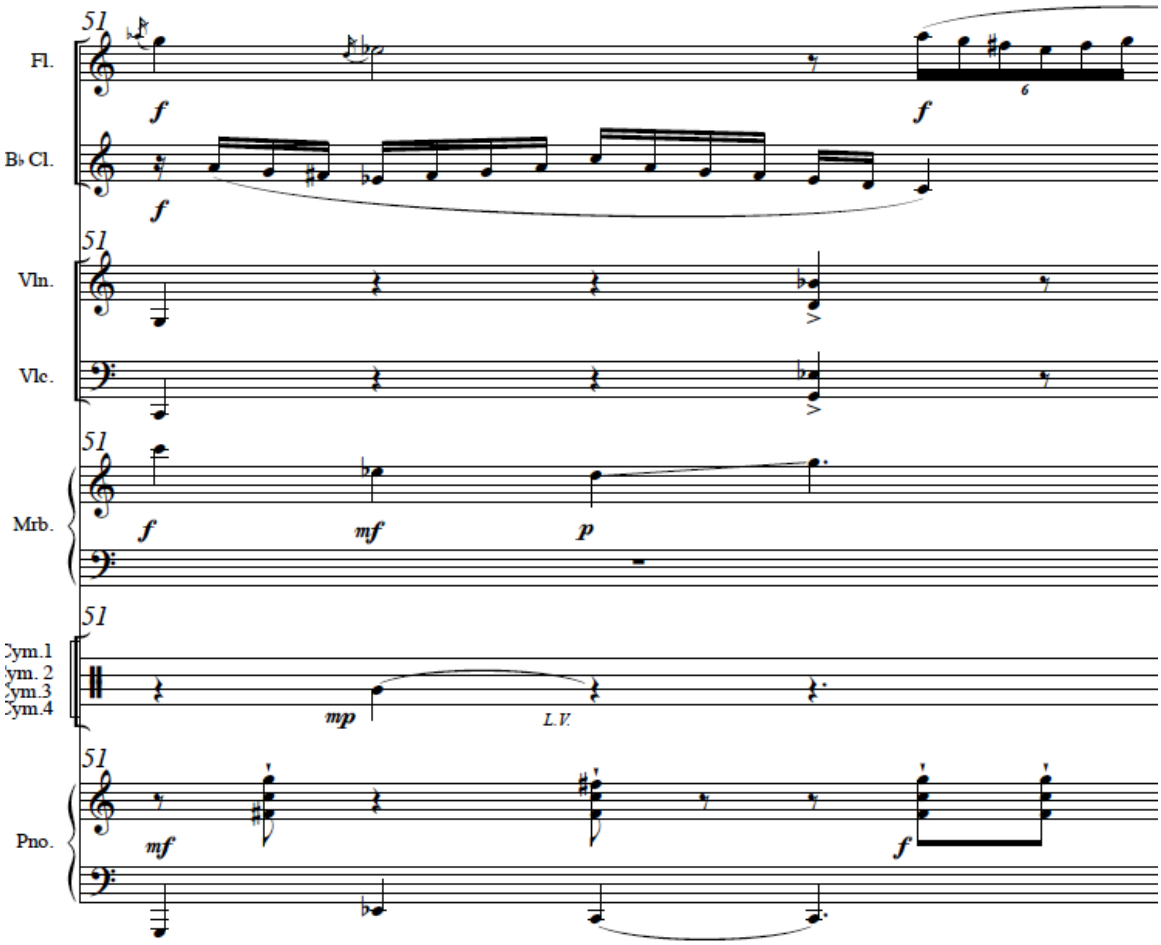
In the following variation of gesture F, there is a leap to the highest note of the gesture, which approximates its golden section (see ex. 15).

Example 15 *Osmosis/Zymosis*, Gesture F' [1st variation of F], m. 51.



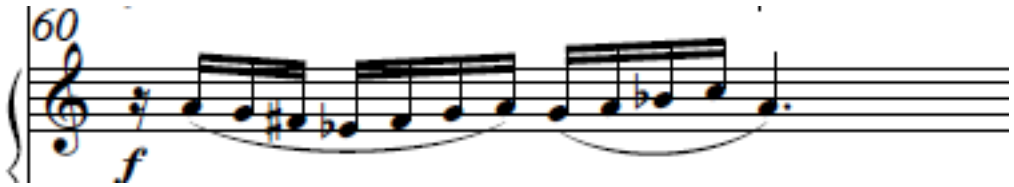
The fact that C is both the highest and the lowest note of the gesture, while the accompaniment of its ending is a pedal C note is evident of the change of the tonicization from D (the first note of the Hicaz tetrachord) to C (see ex. 16).

Example 16 *Osmosis/Zymosis*, m. 51.



The second variation of this gesture works as an ostinato (mm. 59-64), over which ideas grow and gradually build the necessary energy for the break point or the conclusion of this section on m. 66 (see ex. 17).

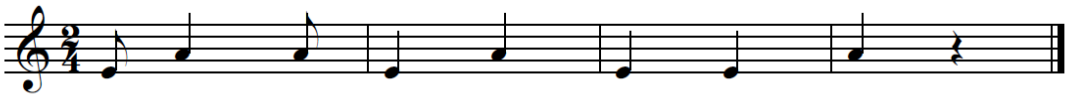
Example 17 *Osmosis/Zymosis*, Gesture F" [2nd variation of F], m. 60.



Measures 66-77

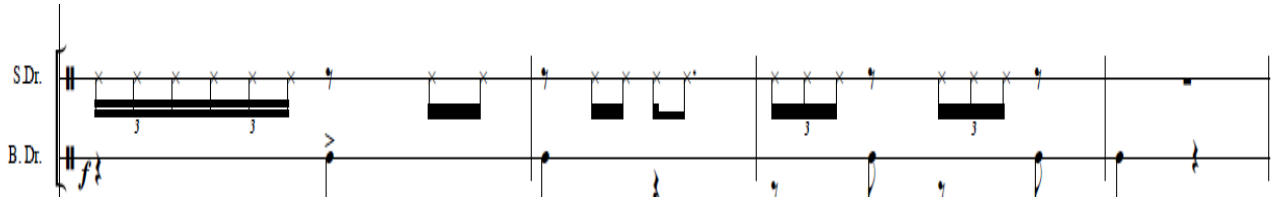
Gesture G and its variations are based on a rhythm named "çifteteli," which is common in the countries of the Eastern Mediterranean region (see ex. 18). This rhythm usually employs a pattern with two pitches, as indicated by its name ("çifte" means two and "teli" means string in Turkish).

Example 18 The rhythmic pattern of the "çifteteli" rhythm.



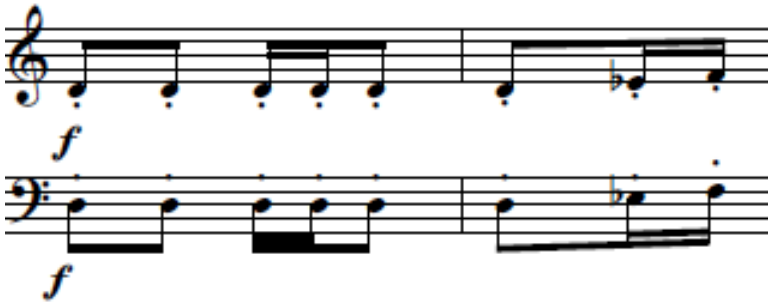
Gesture G is a typical rhythmical pattern based on a transformation of the "çifteteli" rhythm. The persistence on two different timbres is the most evident common characteristic that relates the gesture with the rhythm described above (see ex. 19).

Example 19 *Osmosis/Zymosis*, Gesture G, mm. 71-74 & mm. 75-78.



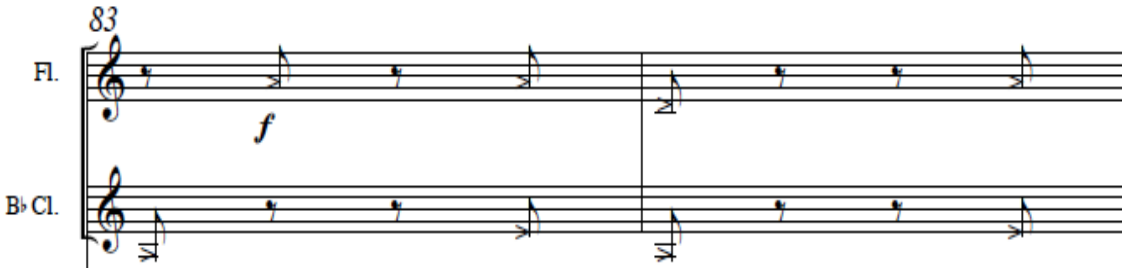
The addition of a third note is a significant characteristic of the first transformation since it generates a melodic idea (see ex. 20).

Example 20 *Osmosis/Zymosis*, Gesture G' [Transformation I], mm. 78-79.



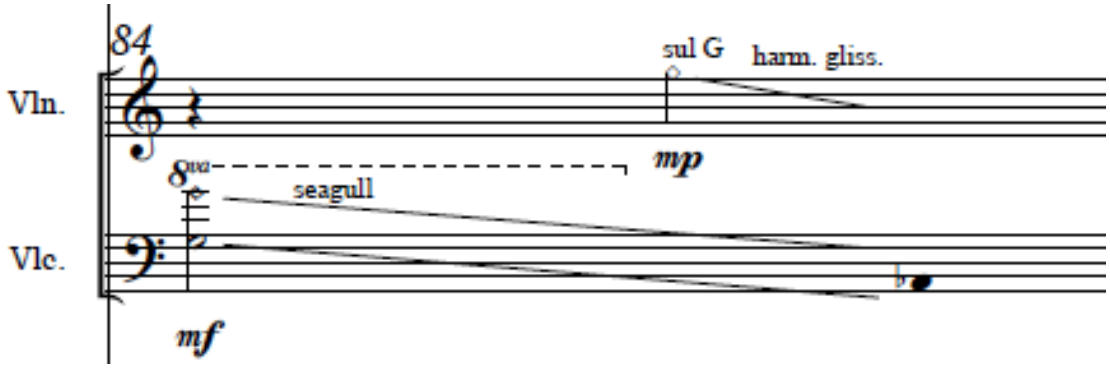
The second transformation explores this rhythmic pattern with the use of tongue slaps in the winds (see ex. 21).

Example 21 *Osmosis/Zymosis*, Gesture G'' [Transformation II], mm. 83-84.



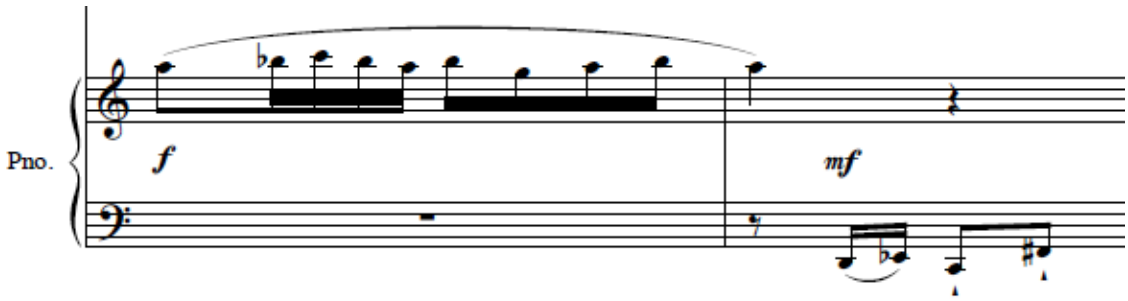
The use of tongue slaps in the second transformation generates another gesture, based on a combination of extended techniques in the strings. Sounding together on m. 84, the tongue slap gives a strong beginning for the seagull effect, followed by the harmonic glissando as a kind of resonance (see ex. 22).

Example 22 *Osmosis/Zymosis*, Gesture H, m. 84.



The use of a range of three octaves for the shaping of the following gesture results in an unexpected ending. This surprising effect is the result of the juxtaposition of the higher register of the beginning of the gesture with the lower register of the ending of the gesture (see ex. 23).

Example 23 *Osmosis/Zymosis*, Gesture I , mm. 90-91.



Measures 94-131

This section serves to absorb the energy built up to this point, and later channels this energy to shape the first tutti gesture. The absorption of the energy is achieved by the use of a harmonic material based on perfect fifths and diatonic melodic material, which both provide a relaxing atmosphere, downgrading the emotional intensity.

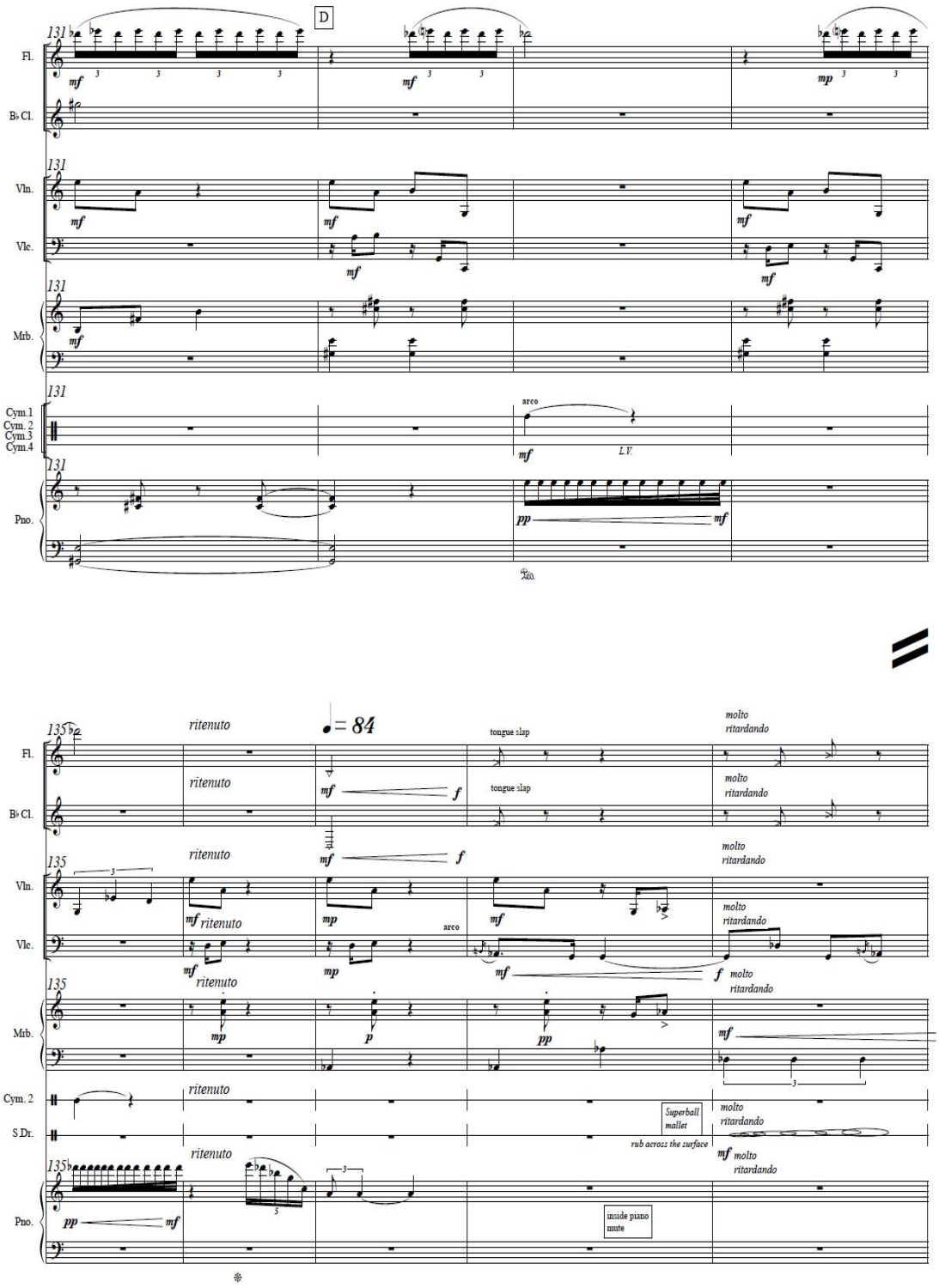
The main melodic material used in this section is a transformation of gesture F, previously heard, which employs diatonic intervals in stepwise motion, instead of the characteristic augmented second interval of gesture F (see ex. 24). Again, this results in a calming flow of the music material, towards the interruption in measure 132.

Example 24 *Osmosis/Zymosis*, mm. 95-97.

Measures 132-141

This passage is an awkward, mannered moment, aiming for a false formation of a tutti gesture, foreshadowing the "Zymosis" part of the piece. The combination of various elements, including extended techniques and unexpected tempo fluctuations, gives the impression of a compressed new world that suddenly appears. This approach, which breaks the linearity followed up to this moment, is comparable to the technique of retrospective narration as used in literature and film (see ex. 25).

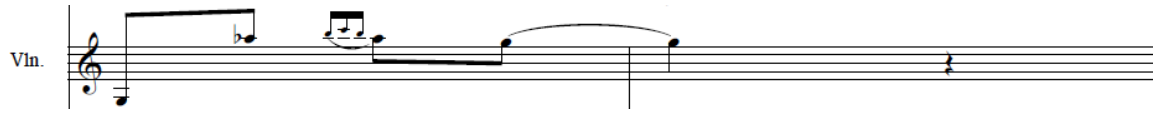
Example 25 *Osmosis/Zymosis*, mm. 131-134.



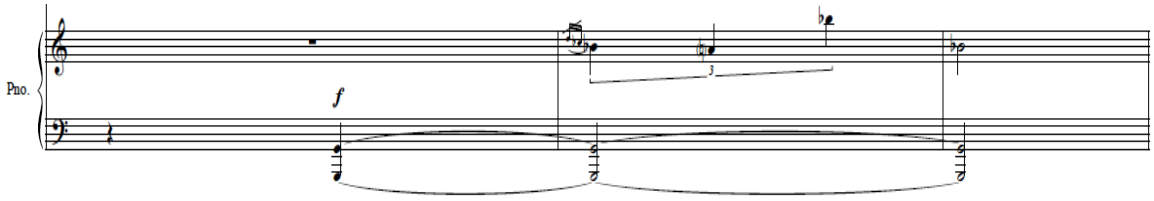
Measures 142-159

In this section there is a contrast between gestures that are based on two different tetrachords: the Hicaz (G-A^{b}-B-C) and the Sabah (G-A-B^{b}-C^{b}) tetrachords. The contrasting nature of these two tetrachords is due to the different intervals they employ (see ex. 26 and 27). Furthermore, the Sabah tetrachord in example 27 contains a diminished fourth which is relatively rare in tetrachords. As a result of that, the traditional ending note of melodies using this tetrachord is usually the third note, which forms a consonant interval with the first note of the tetrachord.

Example 26 *Osmosis/Zymosis*, Gesture J, mm. 142-143.



Example 27 *Osmosis/Zymosis*, Gesture K, mm. 151-153.



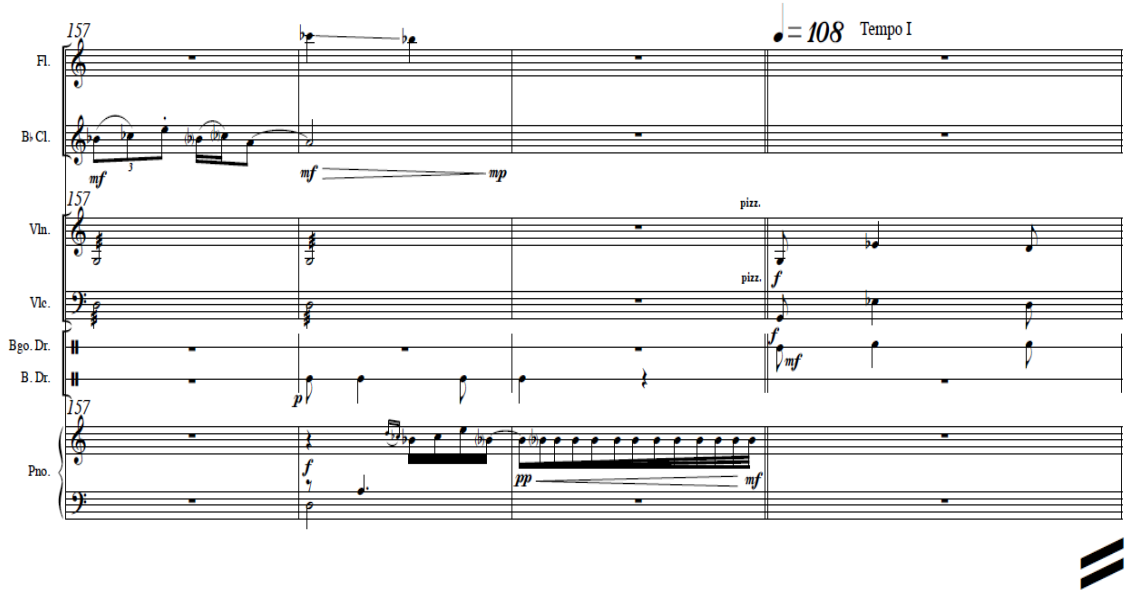
In addition, the ethos or the character of each tetrachord is different. The Hicaz tetrachord is imposing, dynamic and symmetrical, and therefore stable and balanced, while the Sabah tetrachord is mournful, mysterious and asymmetrical. This constant juxtaposition

of the tetrachords in this section sets an ambiguous moment for the development of the piece. These two opposite poles create the energy needed for the gradual regaining of the tempo used at the beginning, starting with the accelerando in m. 152.

Measures 160-181

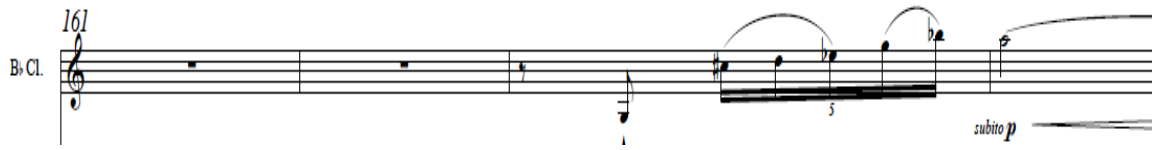
The re-establishment of the starting tempo is underlined by the reappearance of the "çifteteli" rhythm in m. 160., which is further developed and explored with the use of material derived from the false formation of the tutti gesture in mm. 132-141 (see ex. 28).

Example 28 *Osmosis/Zymosis*, mm. 157-160.



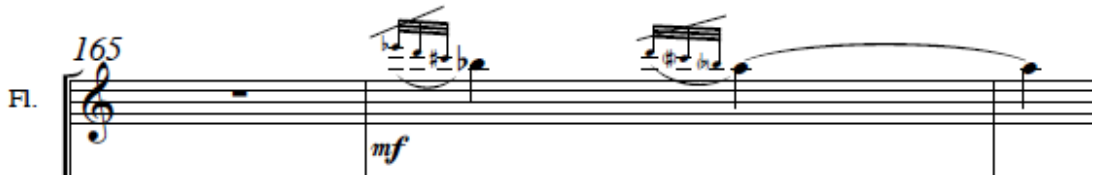
This section is also significant because of the introduction of the embellished Nihâvend pentachord (G-A-B^{b}-$C^{\#}$-D-E^{b}) introduced through the next gesture. This embellished pentachord will play an important role as an ostinato (see Gesture L). The quintuplet subdivision implies the metre from m. 182 onwards (see ex. 29).

Example 29 *Osmosis/Zymosis*, mm. 161-164.



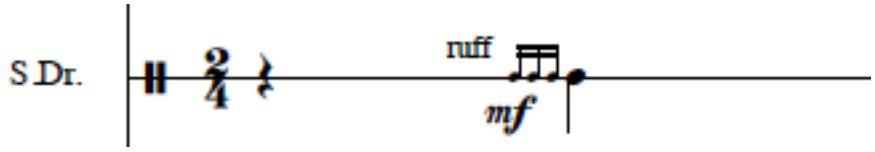
The ornamentation of the ending of this gesture in the flute is typical of the music from the Eastern Mediterranean region. The two last notes played by the clarinet (B^b and A) are prolonged or repeated, while at the same time the ornaments use most of the notes of the embellished Nihâvend pentachord (see ex. 30).

Example 30 *Osmosis/Zymosis*, mm. 165-167.



The rhythmical pattern suggested by these ornaments relates to the "ruff" technique, used by the snare drum in various parts of the piece (see ex. 31). This ornamental idea plays the role of a connective link, providing cohesiveness and distinctiveness for the piece (e.g. mm. 67-70 and mm. 454-477).

Example 31 The "ruff" technique.

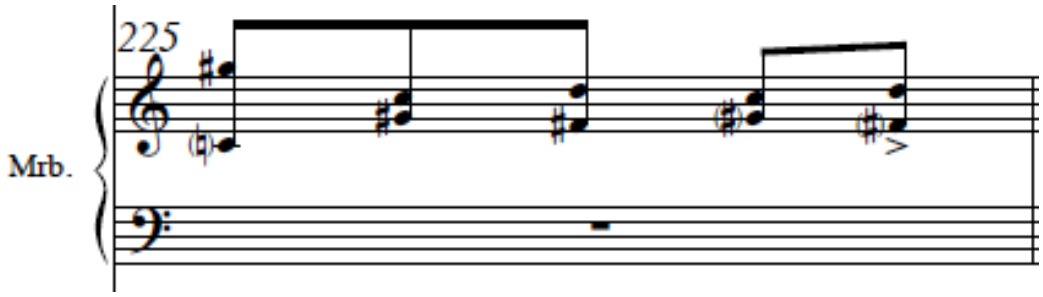


Measures 182-240

This passage has a quintuple metre with an emphatic, bold and doubled melodic line in the left hand of the piano (mm. 182-186), which is juxtaposed and contrasted with a playful and humorous theme from the marimba (mm. 187-190). This juxtaposition creates two contrasting poles that set the frame for further development. The conversation is further expanded, with the clarinet adapting a humorous melodic line (mm. 193-196), while the violin has a bold and heavy line (mm. 199-200).

A short piano interlude (mm. 203-220) leads to a commentary moment with both vertical symmetry and rhythmic asymmetry (mm. 223-229). The symmetry on the $A^{\#}$ axis over an asymmetrical (5/8) rhythmic pattern, with an accent on the weak part of the rhythm, is an example of the use of symmetry and asymmetry for the shaping of the musical material in the compositional process of *Osmosis/Zymosis* (see ex. 32).

Example 32 *Osmosis/Zymosis*, m. 225.

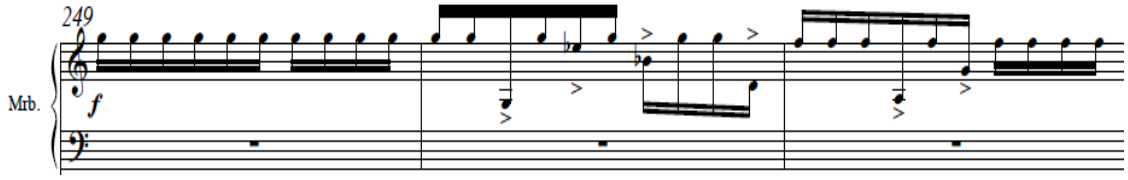


The ritualistic ostinato starting in m. 230 foreshadows a new section, in which percussion will have a significant role. On the other hand, the imposing melodic theme in the violin (mm. 229-235) and the playful melodic line in the clarinet (mm. 236-239) are reminiscent of the previous section and its contrasting material.

Measures 241-281

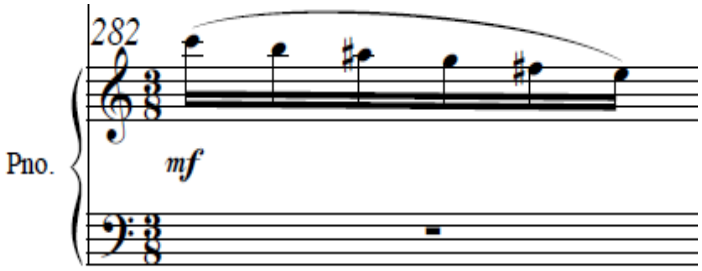
The new section begins with a cadenza by the marimba, accompanied by the piano, with short interventions and comments from the rest of the instruments. It is written in a virtuosic, quasi-improvisatory style. Here, melody notes are inserted into the repeating notes creating a compound melodic texture (see ex. 33).

Example 33 *Osmosis/Zymosis*, m. 249-251.

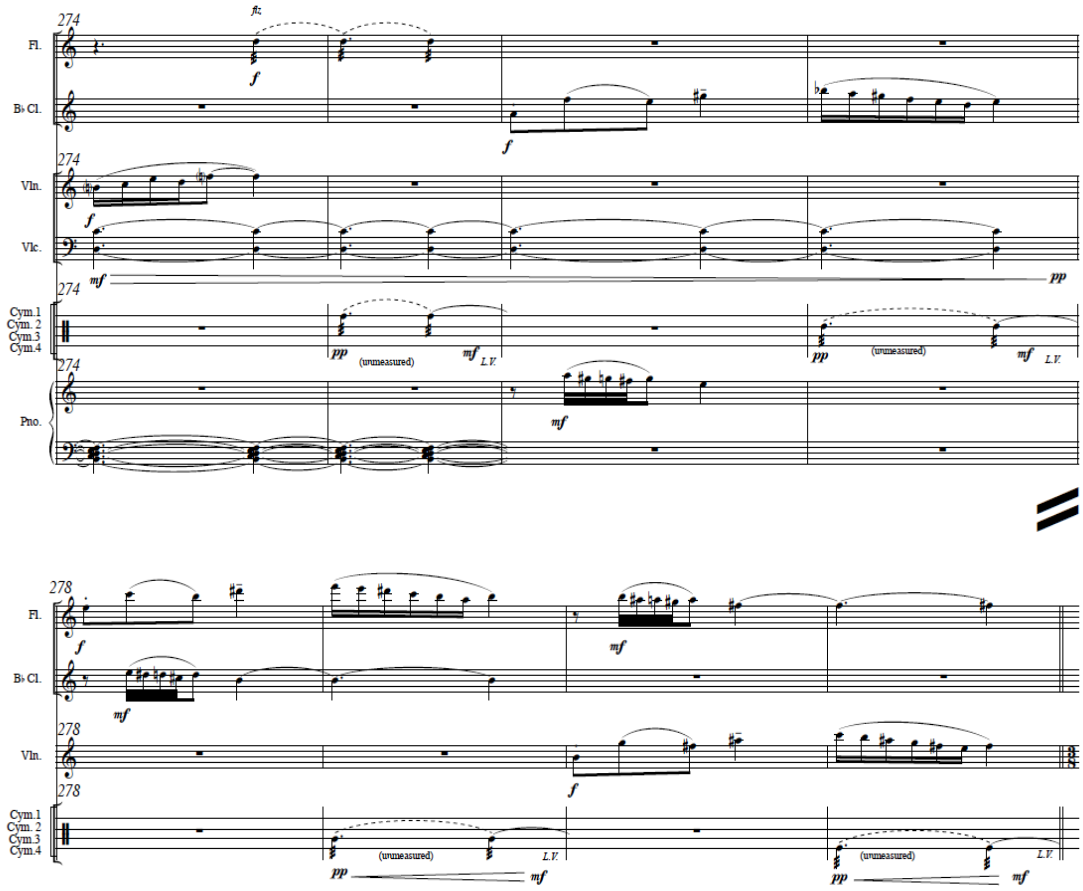


The coda of this section is an imitated passage with a voice exchange starting in m. 276. The second bar of the melodic theme (m. 277) is the embellished Nihâvend pentachord that will be used as the basic material (gesture L) for the following section (see ex. 34 and 35).

Example 34 *Osmosis/Zymosis*, Gesture L, m. 282.



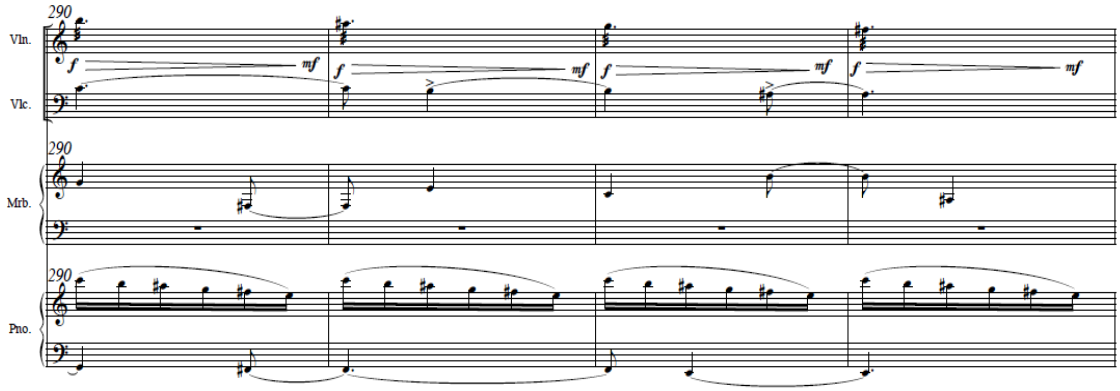
Example 35 *Osmosis/Zymosis*, mm. 274-277.



Measures 282-325

In this passage, gesture L, used as an ostinato, occurs in a 3/8 time. Superimposed on the running sixteenth-notes are four independent layers within the proportion of 2:3:4:5. This technique is reminiscent of the *Studies for Player Piano* by Conlon Nancarrow and *Étude number 6* by György Ligeti, titled *Automne à Varsovie*. The technique creates illusions of various rhythmical surfaces or different tempos operating concurrently. The violin follows a pattern of six sixteenths, the violoncello eight, the marimba four, the right hand of the piano one, and the left hand of the piano ten sixteenths (see ex. 36).

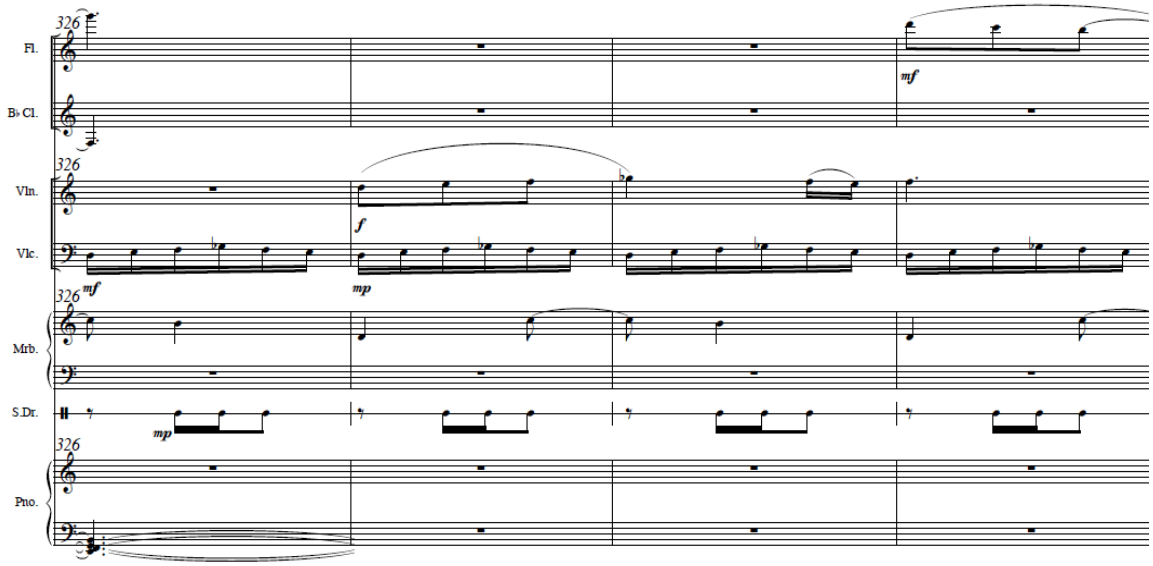
Example 36 *Osmosis/Zymosis*, mm. 290-293.



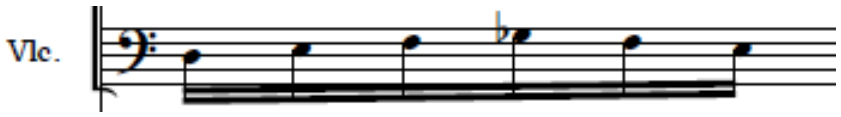
Measures 326-346

In this section, the Sabah tetrachord (mm. 327-328 in the violin) is being contrasted vertically with an ostinato (gesture M) based on a C minor diatonic scale. The highest notes of the ostinato are enhanced by another ostinato from the snare drum, while the marimba continues the previous pulsation on four sixteenths (see ex. 37 and 38).

Example 37 *Osmosis/Zymosis*, mm. 326-329.



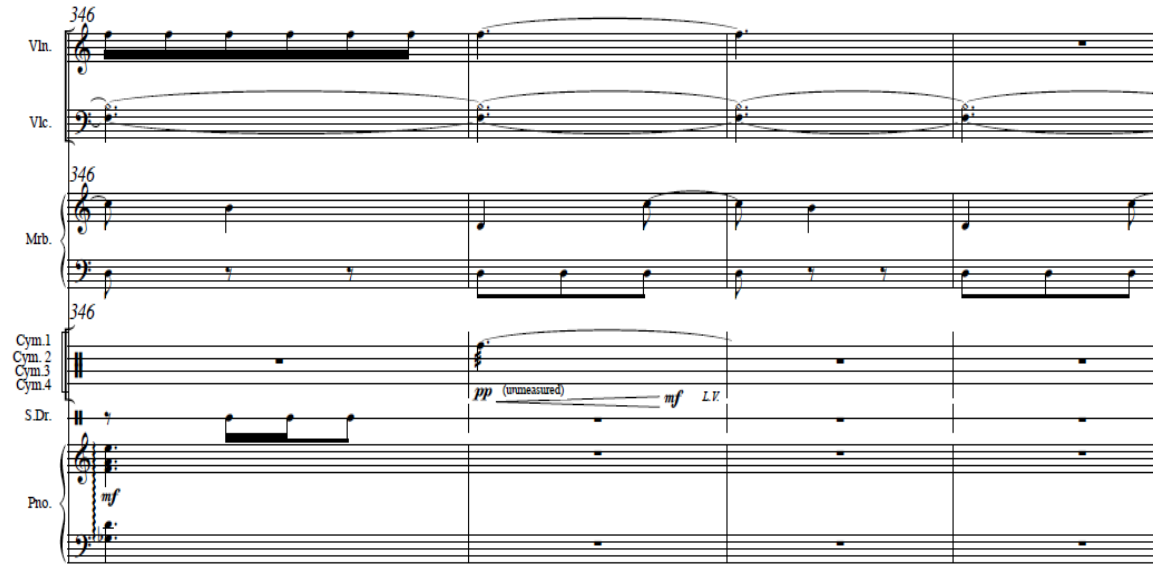
Example 38 *Osmosis/Zymosis*, Gesture M, m. 326.



Measures 347-379

The reappearance of the ritualistic ostinato in the marimba, without abandoning the pulsation on four sixteenths, serves to prepare the appearance of the next theme. The artificial harmonic in the cello is a high pedal note that intensifies and connects as background material all the presented ideas (see ex. 39). This section leads to the peak of the "Osmosis" part, starting in m. 380.

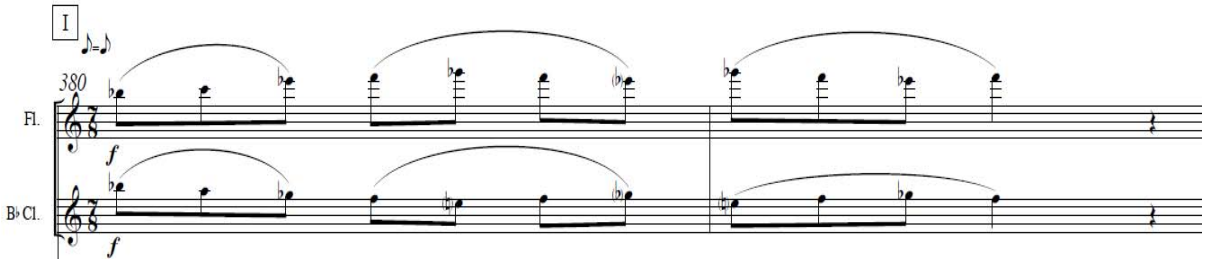
Example 39 *Osmosis/Zymosis*, mm. 346-349.



Measures 380-415

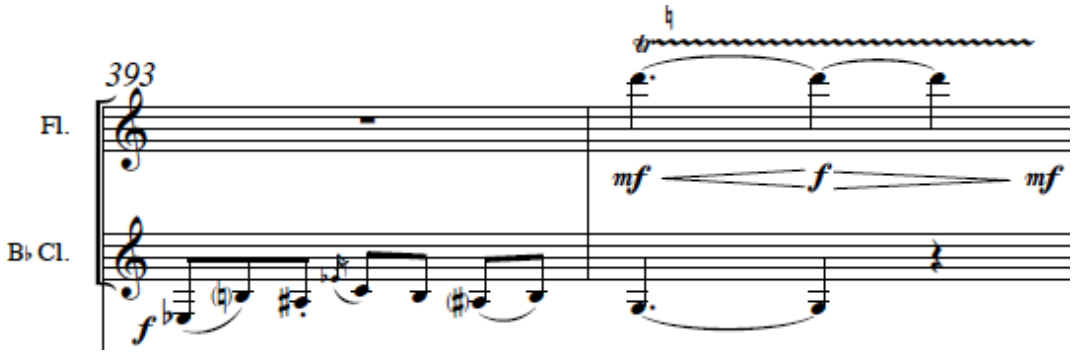
This playful section based on gesture N in 7/8, which is formed in contrary motion, is the strongest point of the "Osmosis" part because of its exuberant dance-like character (see ex. 40).

Example 40 *Osmosis/Zymosis*, Gesture N, mm. 380-81.



This humorous and playful nature is caused by the asymmetrical structure of the metre and the ornamentation of the melodic line. For instance, in the following example, the E^b in the clarinet at the beginning of the gesture, within an implied harmonic environment of G major triad, is resolved in the high D trill by the flute. The fact that the trill utilizes E natural adds a spicy character to the gesture (see ex. 41).

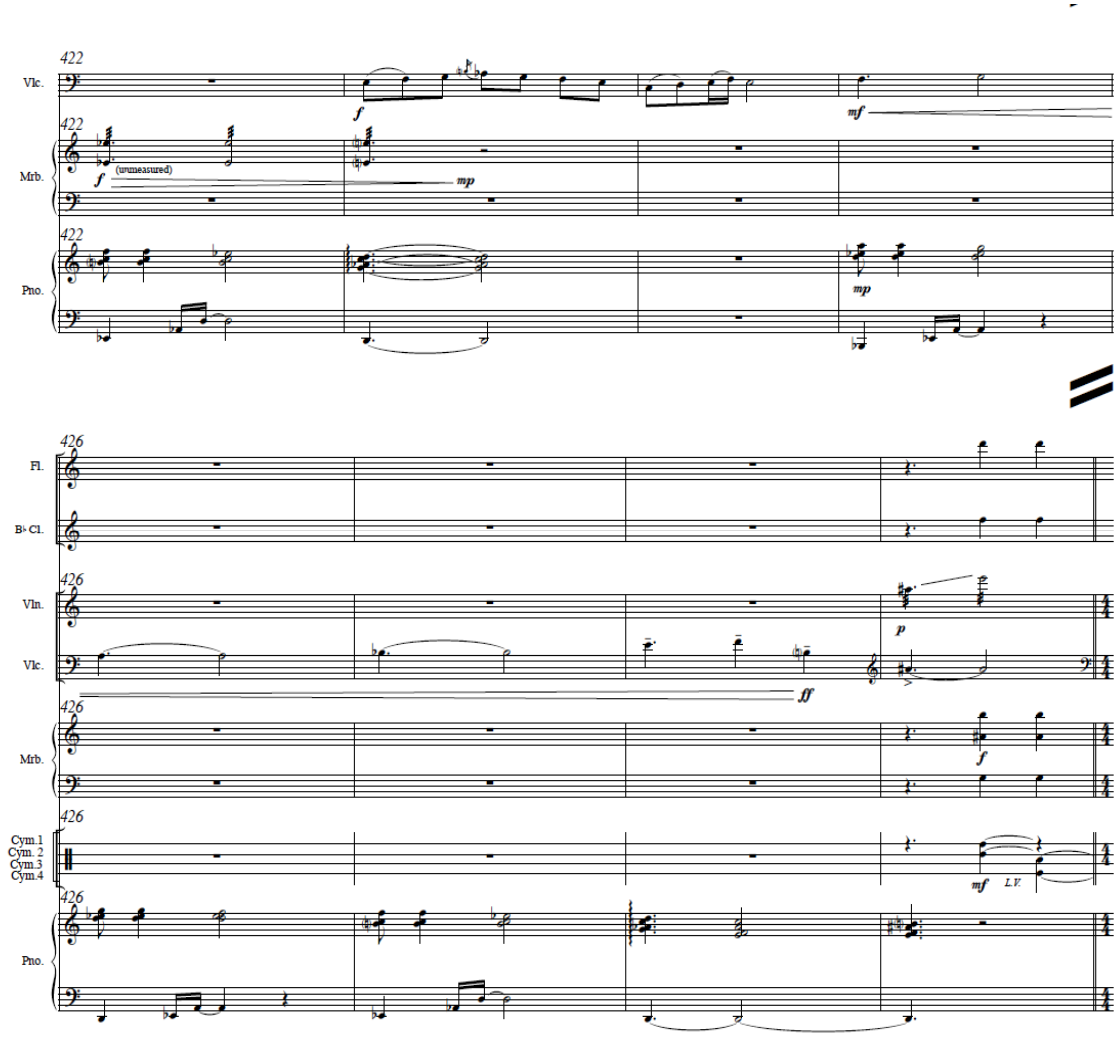
Example 41 *Osmosis/Zymosis*, Gesture O, mm. 393-94.



Measures 416-429

This passage is the coda of the "Osmosis" part. Its purpose is essentially the absorption of the energy of the previous section and the bridging of the "Osmosis" part with the climax (mm. 430-485). The foreground of the ending part of this section is a long, climaxing, melodic line in the violoncello (mm. 423-429), starting with a paraphrase of gesture N. This process is foreshadowing the following section (see ex. 42).

Example 42 *Osmosis/Zymosis*, mm. 422-429.

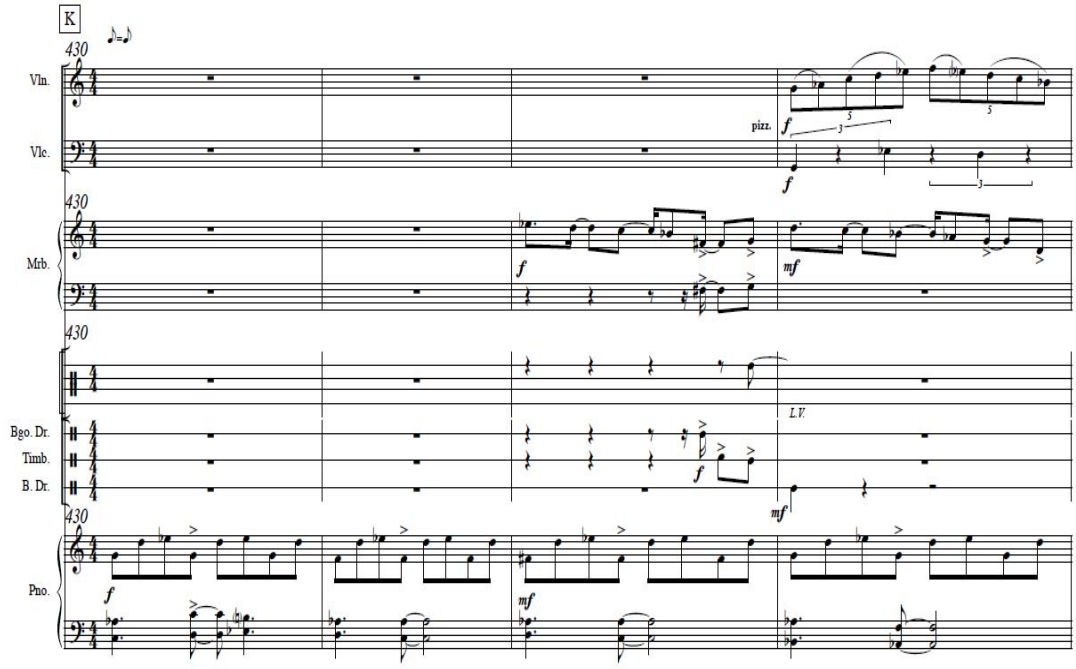


TRANSITION (mm. 430-485)

The main characteristics of this part are the superimposition of various rhythmic patterns, the contrary motion of the outer lines, the extreme dynamics, and the constant building of tension.

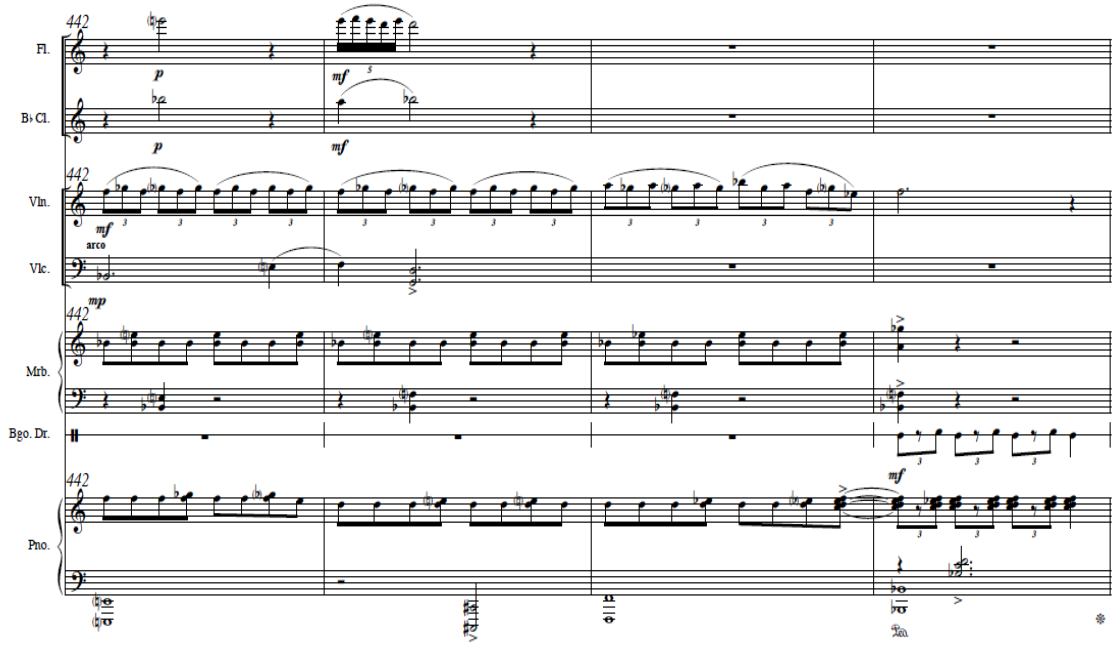
In the beginning of this section there are several asymmetrical patterns on a 4/4 meter, starting with the 8/8 (3+3+2) in the piano, followed by the 16/16 (3+3+3+2+3+2) in the marimba in m. 432 and the quintuplets in the violin in m. 433 (see ex. 43).

Example 43 *Osmosis/Zymosis*, mm. 430-433.



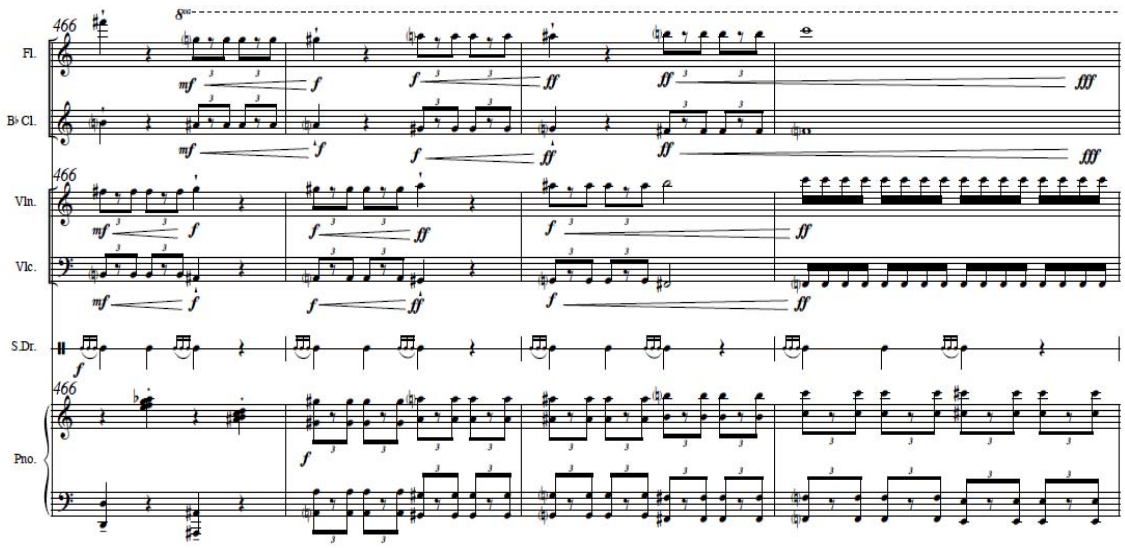
The gradual thickening of the texture and the superimposition of more rhythmic patterns set up a disorganised, unstable environment and the need for a new beginning, based on a clear and distinctive rhythmic pattern, starting in m. 445 (see ex. 44).

Example 44 *Osmosis/Zymosis*, mm. 442-445.



The contrary motion starting in m. 467 ends on the strongest point of the piece, the end of the transition, which approximates the golden section (see ex. 45).

Example 45 *Osmosis/Zymosis*, mm. 466-469.



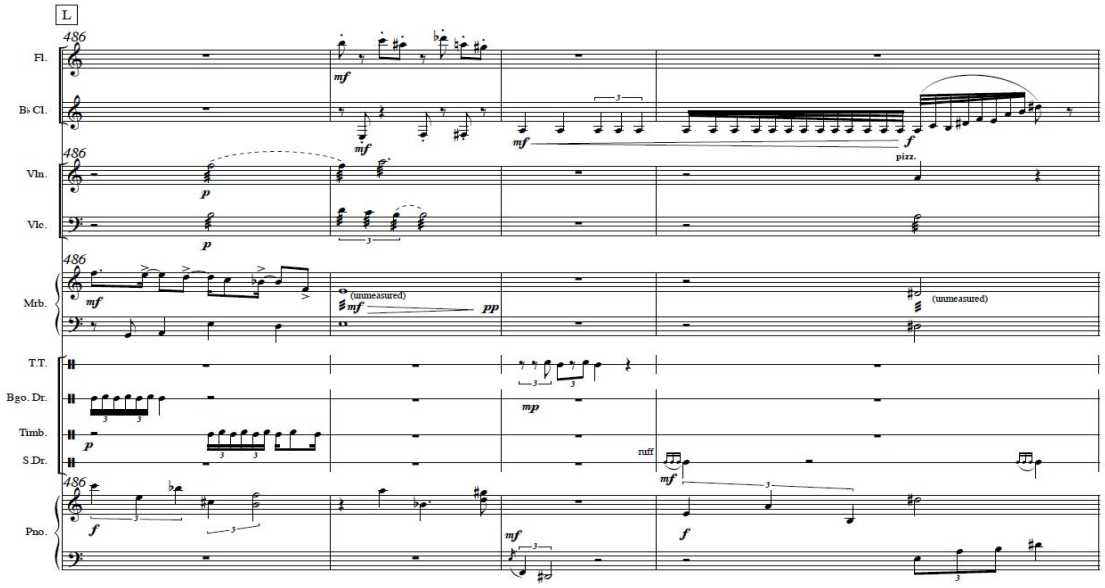
ZYMOSIS (mm. 486-693)

In the "Zymosis" part there is a holistic approach to gesture development, to form larger entities, involving the entire ensemble. The material used here is filtered and presented in an abstract way, not only reminiscent of the music heard up to this moment, but also going a step further in exploring the important role of gestures for the integration of material from Eastern Mediterranean music.

Measures 486-511

This section consists of a fusion of the material presented in both the transition and the "Osmosis" parts. Gesture P consists of several ideas that were heard before, such as the sixteenth-note triplets in the percussion, the ruff technique in the snare drum and the melodic figure in the marimba. However, they have gained an interactive character, which makes them dependent on each other for the development and the shaping of the gesture. Together they create a polyrhythmic texture (see ex. 46).

Example 46 *Osmosis/Zymosis*, Gesture P, mm. 486-489.

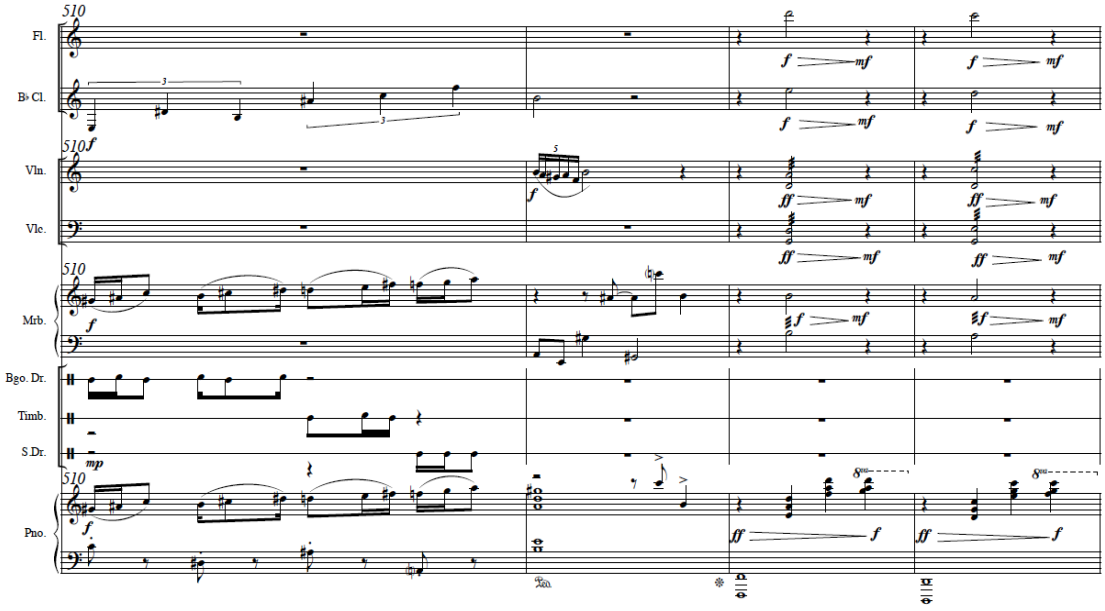


As a result of this, some gestures conclude with very distinct, homophonic textures, while the beginnings have polyphonic textures. This inherent contrast provides a dynamic environment for each of the gestures, and eventually the entire part.

Measures 512-517

This homophonic section releases the tension of the polyrhythm, sounding as an interim destination for the piece. The festive tone of this section is underlined by the dynamics and the tremolos, which shape the gesture (see ex. 47).

Example 47 *Osmosis/Zymosis*, Gesture Q, mm. 510-513.

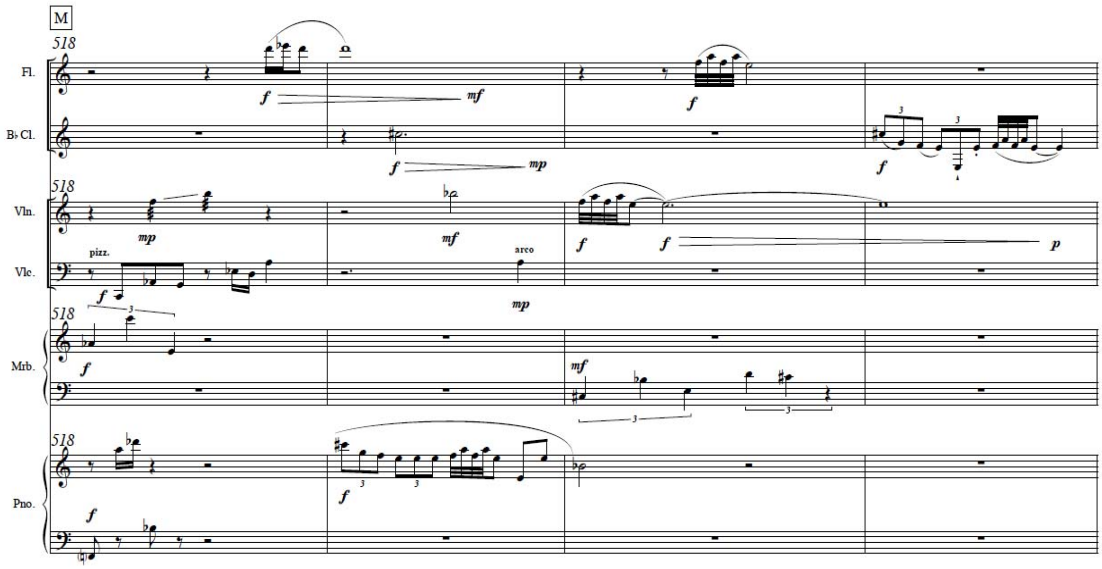


Measures 518-534

In this section the emphasis is on the integration of gestures that imitate techniques of Eastern Mediterranean instruments. The ornament used in the piano on the third beat of m. 519 is typical of the Eastern Mediterranean music. The repetitions followed by several

instruments enhance its role in the development and the shaping of the gesture (see ex. 48).

Example 48 *Osmosis/Zymosis*, Gesture R, mm. 518-521.



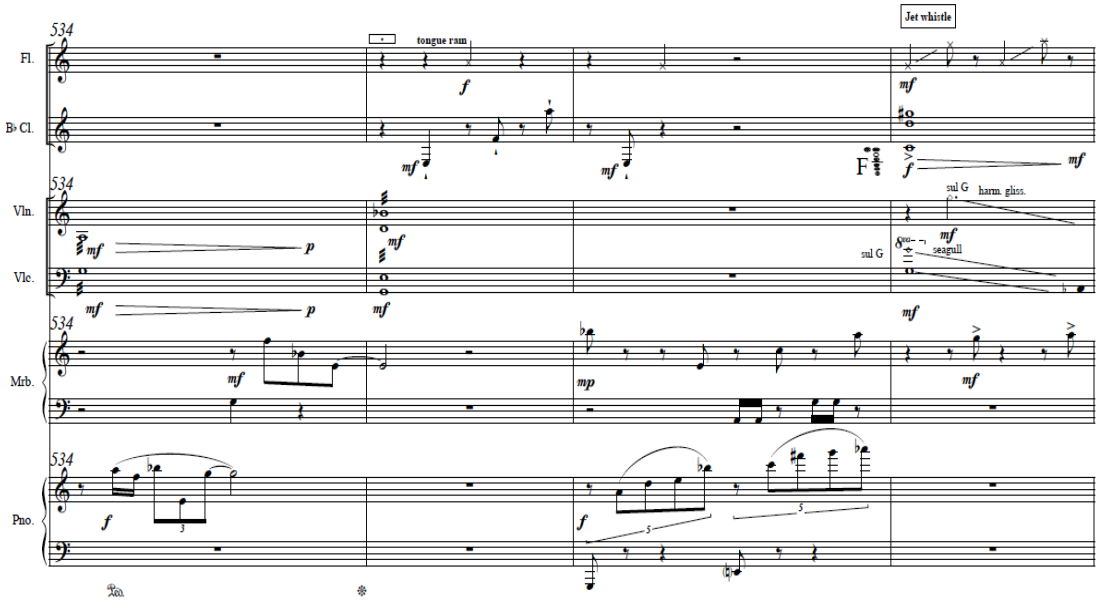
Measures 535-548

The extended techniques used in this section add a specific abstract character to the nature of the piece. In the last bar of gesture S (m. 537), a combination of four different extended techniques suggests the annihilation of the gesture, in order to continue to the gesture of the modern zeibekiko rhythm as used in Greek folk music after 1960 (see ex. 49). The rhythm resembles an unstable heart beat because of the syncopations employed and the asymmetry. Therefore, the zeibekiko dance has no regular dance steps and is mostly improvised. "Since the zeibekiko does not have a typical choreography, the moves acquire a special significance."[15] The zeibekiko rhythm in *Osmosis/Zymosis* is used to

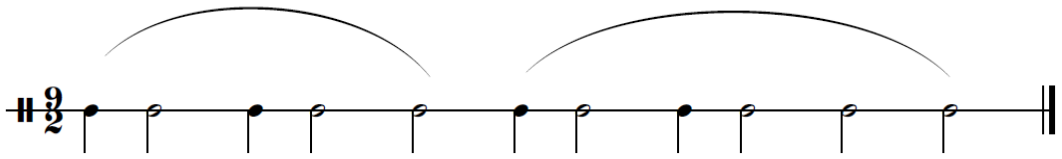
[15] Stavros Stavrou Karayanni, *Dancing Fear and Desire: Race, Sexuality and Imperial Politics in Middle Eastern Dance* (Waterloo: Wilfrid Laurier University press, 2004), 147.

provide variety by interrupting the regularity of the 4/4 beat. The zeibekiko rhythmic cycle in 9/2 (see ex. 50a) begins on the last beat of m. 539 and ends in m. 548 (see ex. 50b).

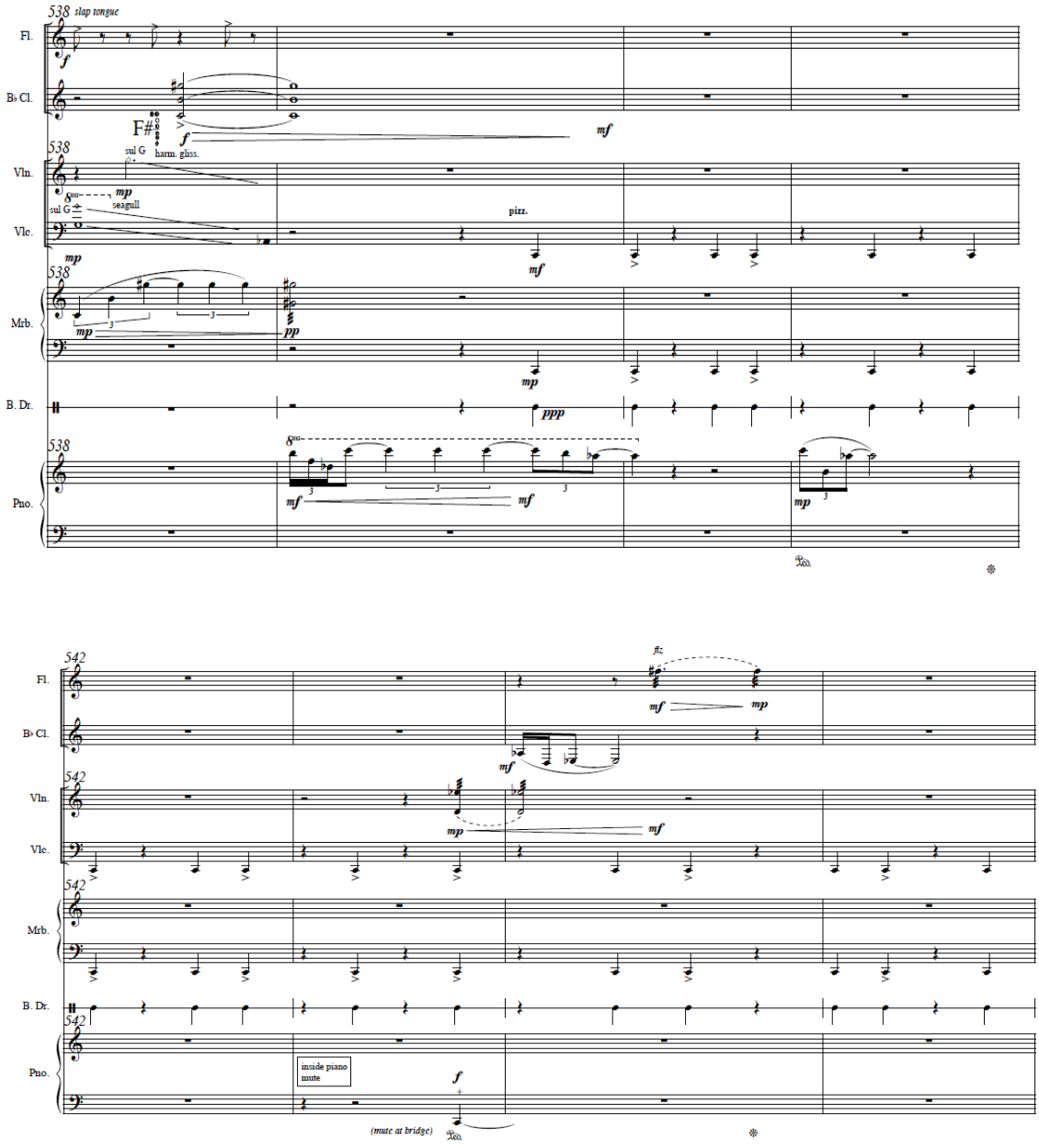
Example 49 *Osmosis/Zymosis*, Gesture S, mm. 534-537.

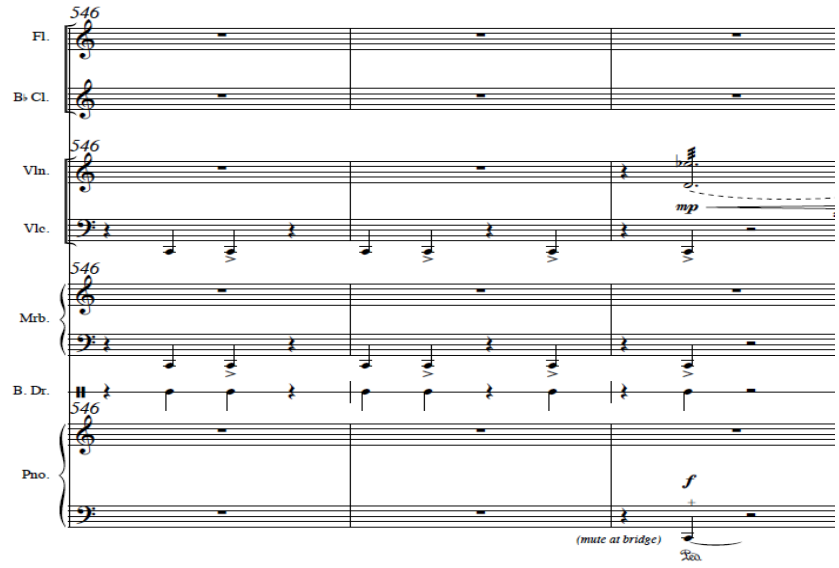


Example 50a *Osmosis/Zymosis*, The zeibekiko rhythmic cycle in 9/2.



Example 50b *Osmosis/Zymosis*, mm. 539-548.

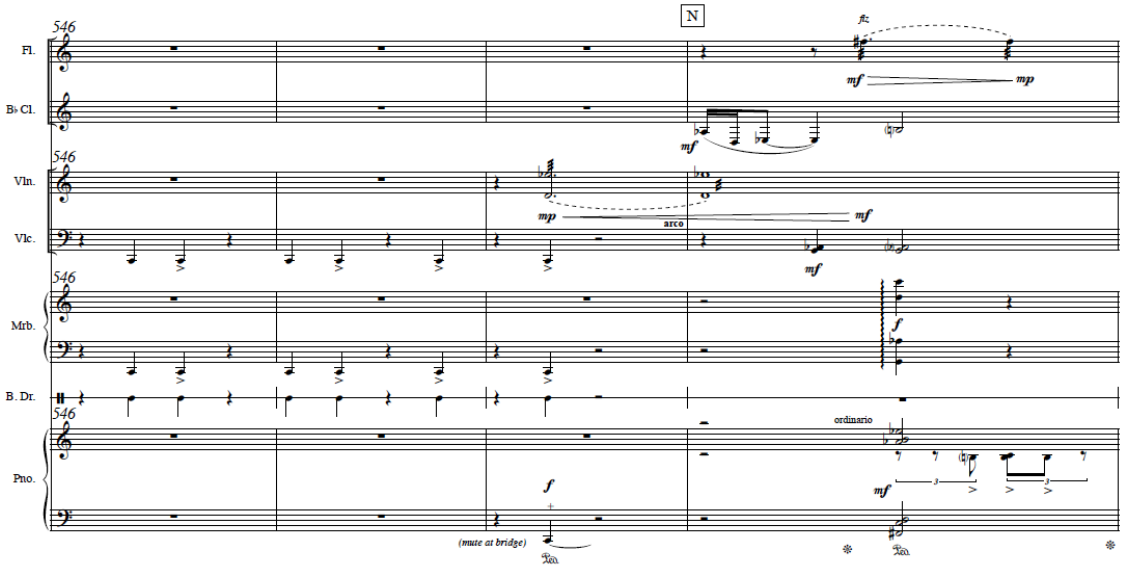




Measures 549-565

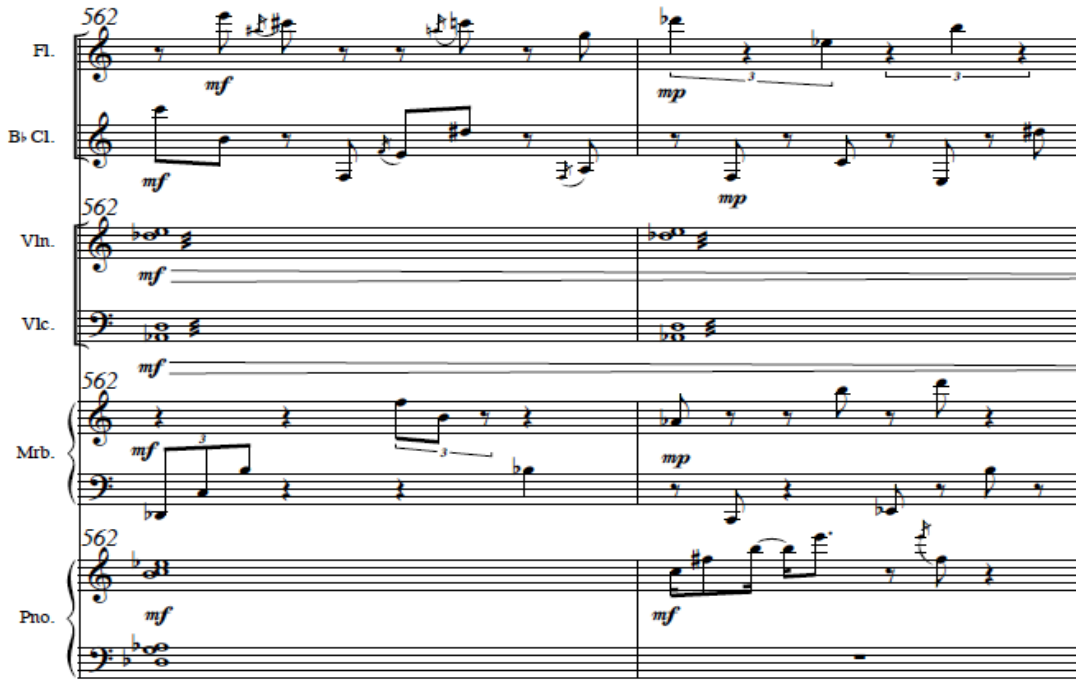
The character of the music becomes more abstract and mystical in this section. The material used up to this point is diffused into a new sound world as explained in section 2.1. An example of this process can be seen at the ending note of the 9/2 zeibekiko rhythmic cycle in m. 548, which is the starting note of the first gesture of this section (see ex. 51).

Example 51 *Osmosis/Zymosis*, mm. 546-549.



This approach results in a pointillistic dissolution of the material, which gradually cancels the need for strong and weak beats in the meter (see ex. 52).

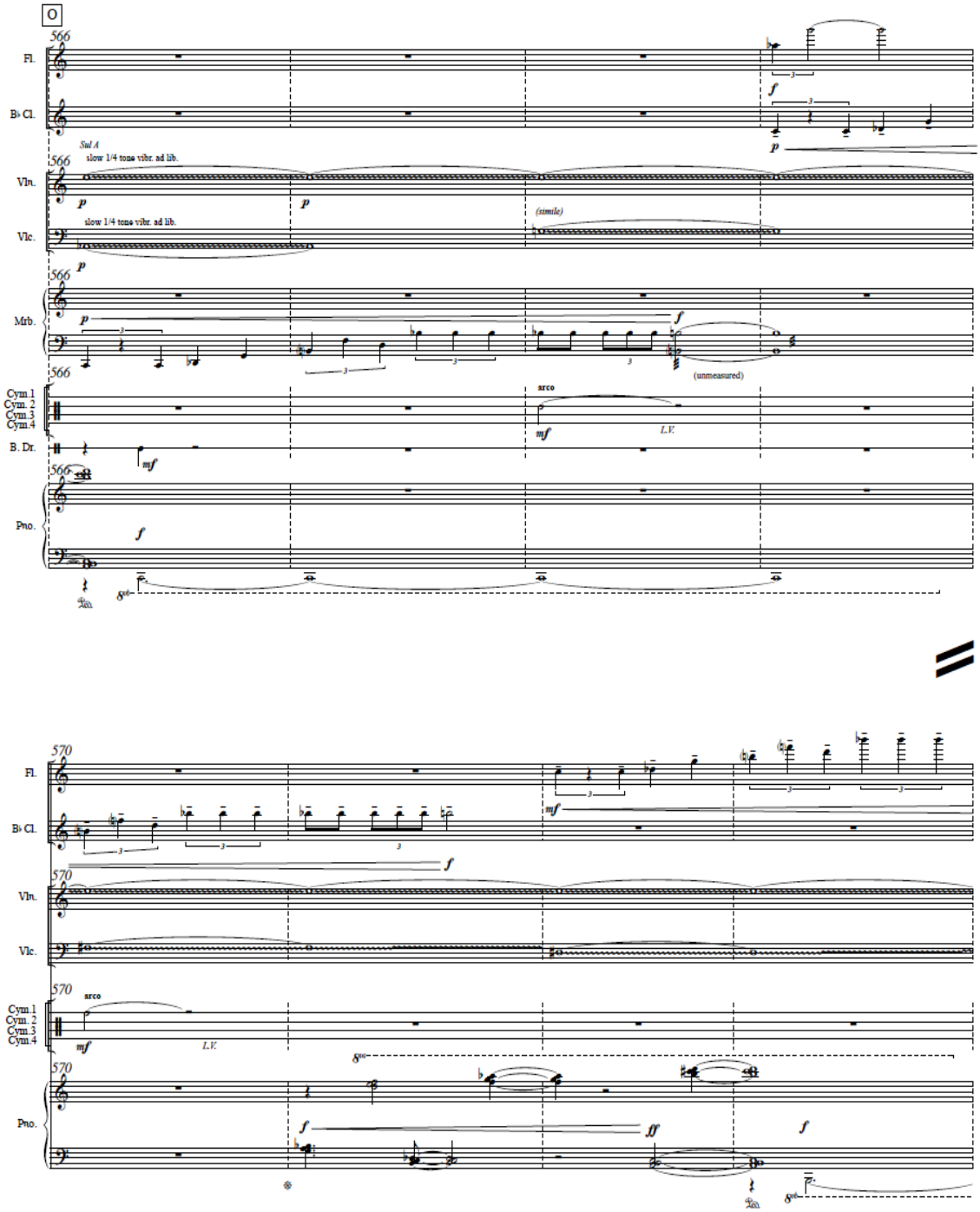
Example 52 *Osmosis/Zymosis*, mm. 562-563.



Measures 566-591

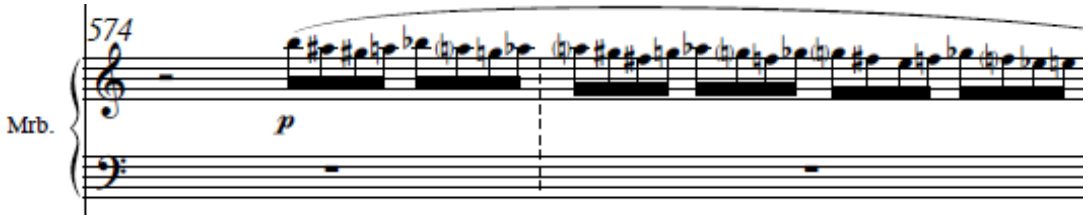
The use of the dotted bar lines from m. 566 until m. 597 serves for coordination of the ensemble only. The slow and wide ¼ tone vibrato emphasizes this diffusion, acting like a glue for the disparate material around it. The canons employed here imply the idea of a rethinking of the techniques of Western music tradition through the theory and the practice of gestures. A characteristic example is the accelerating gesture in the marimba (mm. 566-568) used as the leading voice for the first canon (see ex. 53).

Example 53 *Osmosis/Zymosis*, Gesture T, mm. 566-573.



The next canon starting in m. 574 employs a descending gesture, which interacts with the slow ¼ tone vibrato creating a slippery and blurry atmosphere. This gesture is created by a juxtaposition of a four-note pattern, a semitone lower every time, in the form of a sequence (see ex. 54).

Example 54 *Osmosis/Zymosis*, mm. 574-575.

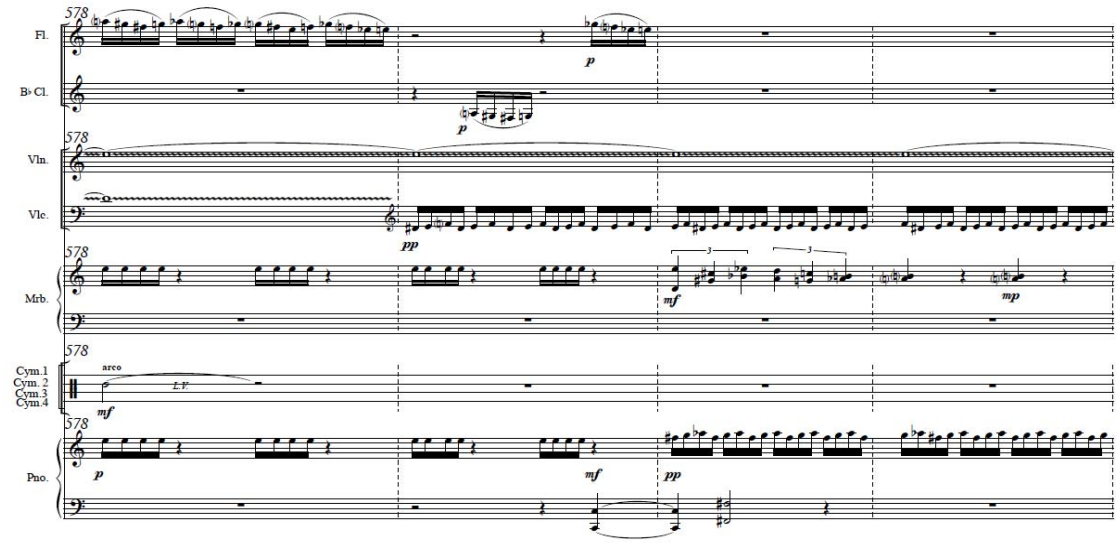


This is background material for the gesture with triplets on the marimba in mm. 580-581, which comes out because of its rhythmic particularity. This gesture is a precursor for the following gestures, which employ triplets in mm. 584-585 and in mm. 586-589. The former is based on the Sabah tetrachord, while the latter employs chromatic material (see ex. 55).

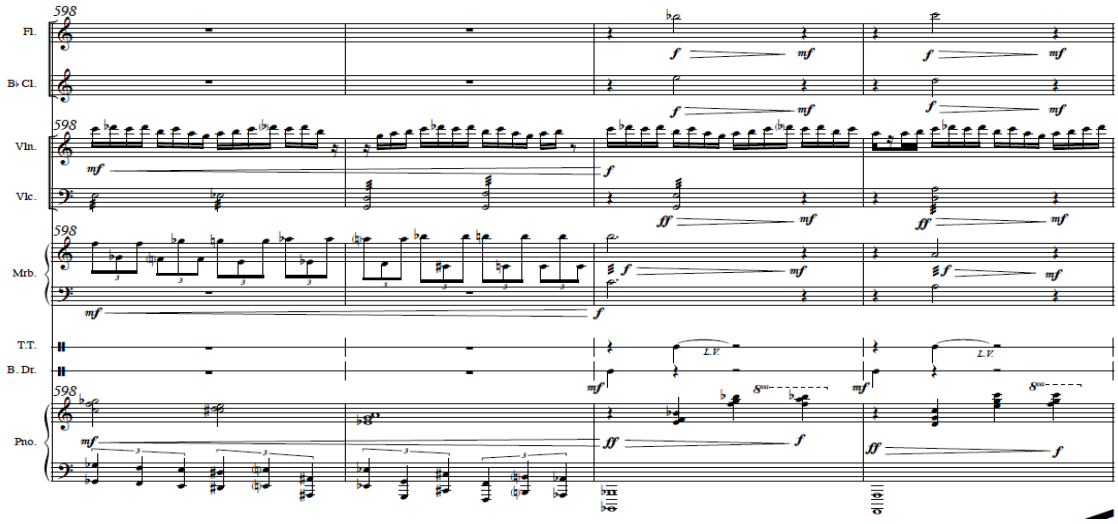
Measures 592-610

The triplets take the role of the accompanying rhythmic pattern, while a persistent theme, an oscillating gesture in the violin, brings various transformations of the material together. The rhythmic ostinato is replaced by the material with the homophonic texture, which is now the accompaniment of the oscillating gesture, from m. 600 onwards (see ex. 56).

Example 55 *Osmosis/Zymosis*, mm. 578-581.



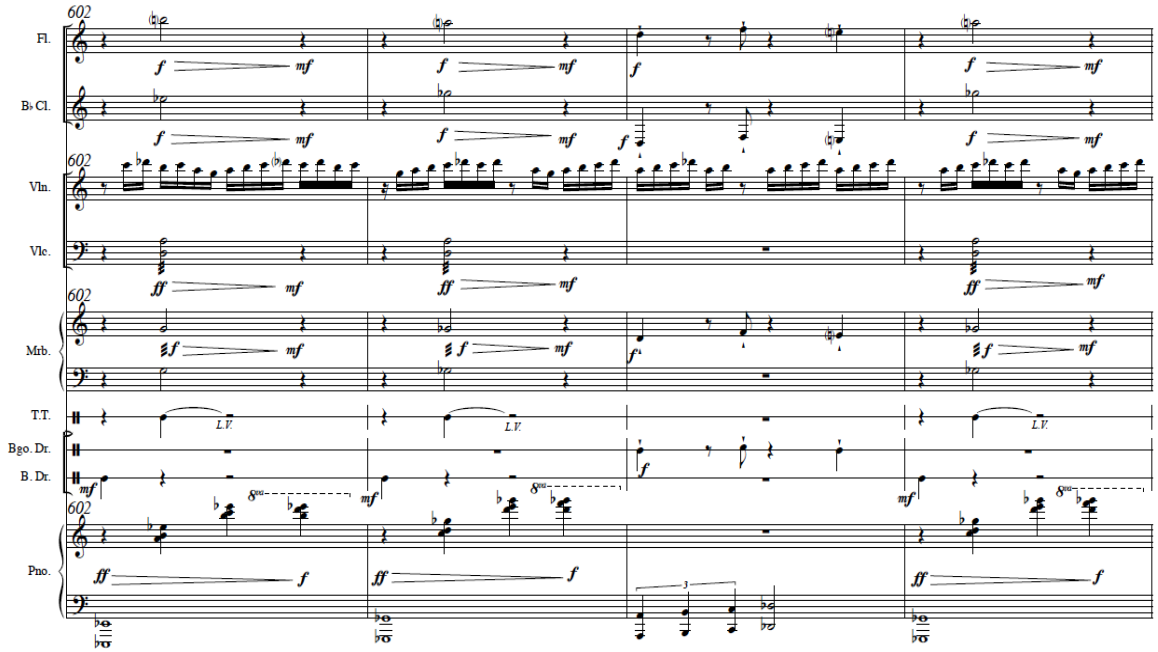
Example 56 *Osmosis/Zymosis*, mm. 598-601 (see ex. 56).



In gesture U, and especially in m. 604, there is an instant change of texture and the accentuation follows an 8/8 pattern (3+3+2). Furthermore, the four doubled notes in the piano prolong the notes of the violin of the obsessive gesture, in the same bar, since they

are exactly the same pitches. This instant change is a shock gesture, which carries the seed of development and variation through contrast (see ex. 57).

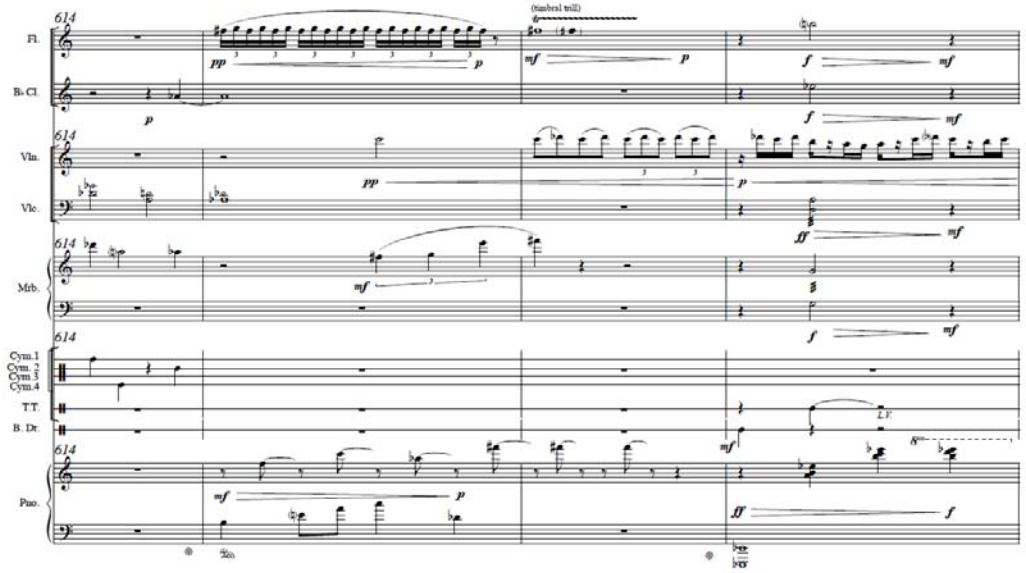
Example 57 *Osmosis/Zymosis*, Gesture U, mm. 602-605.



Measures 611-628

A moment of stillness (mm. 611-614) allows the music to breathe, and gives the listener an opportunity to perceive and accept all the previous motion and intensity. This moment is interrupted by an even more persistent appearance of the oscillating gesture V, bridging the moment of stillness and changing the polyphonic texture to a homophonic one (see ex. 58).

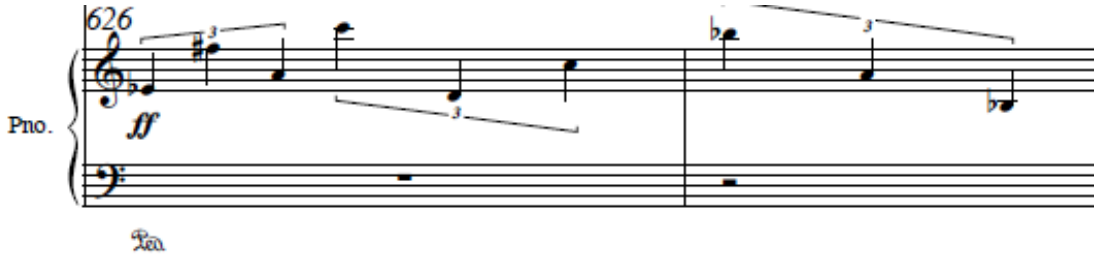
Example 58 *Osmosis/Zymosis*, Gesture V, mm. 614-617.



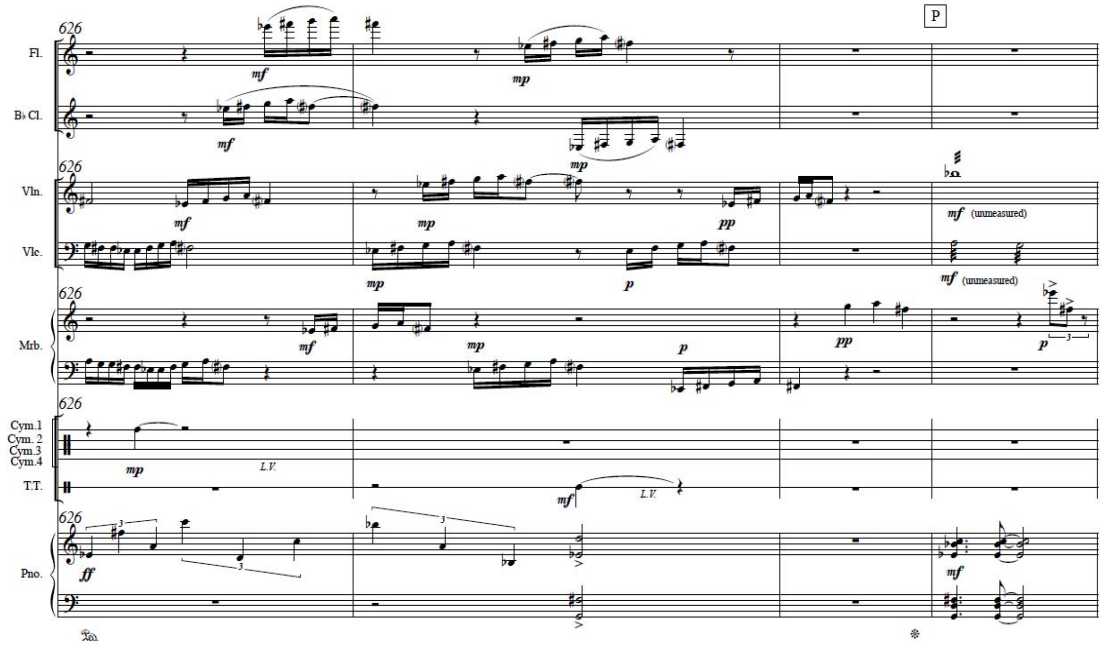
From m. 622 onwards, the material of the gestures is based on the Hicaz maqam starting on D (D-E^{b}-F$^{\#}$-G-A-B^{b}-C-D), while the main technique used is the canon.

Gesture W is the pinnacle of the use of the canon imitating the fading echo behind the following melodic idea by the piano. This process is a diffusion of the previous material for the benefit of the new one (see ex. 59 and 60).

Example 59 *Osmosis/Zymosis*, mm. 626-627.



Example 60 *Osmosis/Zymosis*, Gesture W, mm. 626-629.



Measures 629-637

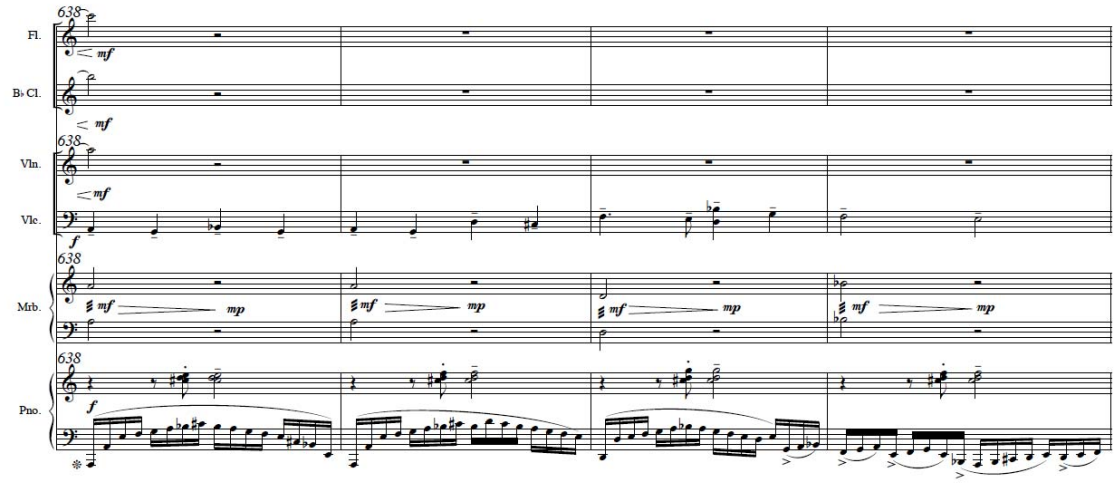
A music bridge with characteristic rhythmic patterns based on syncopation signifies that there is a need for something stable and imposing.

Measures 638-655

This piano and cello double cadenza employs the Hicaz maqam starting on A[16] (see ex. 61). This maqam is used as a cohesive link for various sections of the piece in the form of a tetrachord (m. 33), a pentachord (mm. 59-64), or as a full mode (mm. 638-655).

[16] A-B^{b}-C$^{\#}$-D-E-F-G-A

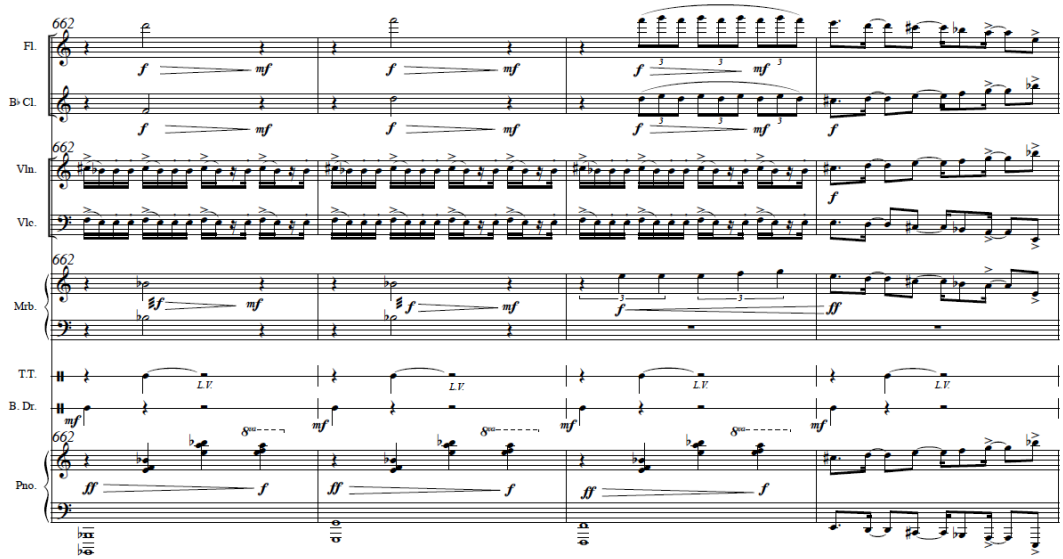
Example 61 *Osmosis/Zymosis*, Gesture X, mm. 638-641.



Measures 656-677

From m. 656 onwards, the texture becomes denser with the reappearance of gestures from various parts of the piece. Gesture Y provides a good example for the coexistence of all these themes. In m. 662 the obsessive gestures from m. 16 can be heard and the homophonic accompaniment from m. 600. In m. 664, the triplets imitate the slow vibrato from m. 12 or the triplets from m. 48. In m. 665 the 16/16 pattern (3+3+3+2+3+2) from m. 432 can be heard (see ex. 62).

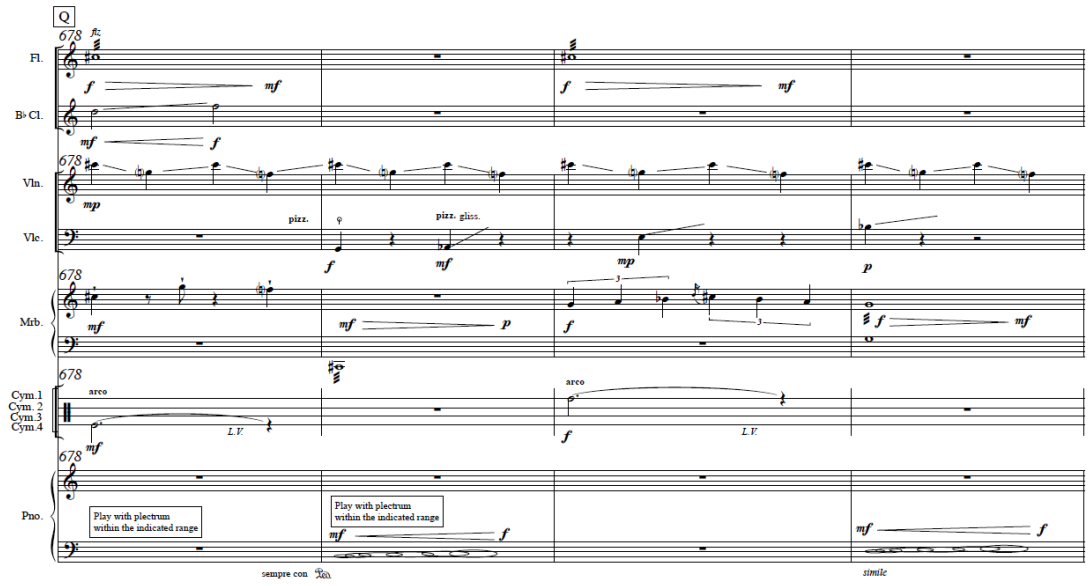
Example 62 *Osmosis/Zymosis*, Gesture Y, mm. 662-665.



Measures 678-693

This process continues until m. 678, where the coda begins. Various short melodic ideas, namely the 8/8 pattern in m. 678 and the triplets with the use of the Nihâvend pentachord (G-A-B^{b}-$C^{\#}$-D) in m. 680, are reminiscent of important moments of the piece. The gesture with the plectrum inside the piano is a dramatic moment, which implies the source of all gestures: the bodily experience as the source of the sound (see ex. 63).

Example 63 *Osmosis/Zymosis*, Gesture Z, mm. 678-681.



2.4 Texture

As mentioned above, the main texture used in the piece is polyphony, with rare and short interruptions of homophonic passages. Polyphony provides the environment of the coexistence of independent and complementary voices, and by that it is a tool for integration of the material from the Eastern Mediterranean region into Western contemporary music.

The decision to use polyphony was driven by the fact that Greek traditional and folk music employ every texture except polyphony. Polyphony allows gestures to interact in a new textural environment, providing ideal conditions for the exploration of their character and, therefore, their integration into a contemporary music work. In this approach the gestures provide the material for their polyphonic environment and the transformations, based on a theory that relates to maqams, the tetrachords, the pentachords, the instrumental techniques, and the aesthetics of Eastern Mediterranean music, as discussed below.

2.5 The Free use of the Basic Maqam Theory and the Byzantine Music Theory as Compositional Techniques

Maqam theory and Byzantine music theory can be very useful tools for composing and continue to be used in various ways by contemporary Balkan and Eastern Mediterranean composers. Both the maqam in Turkish music and the echos (mode) in Byzantine music are constructed with various combinations of tetrachords and pentachords. In *Osmosis/Zymosis*, the maqams follow a well-tempered form that allows the existence of a strong reference to Eastern Mediterranean culture, along with a Western contrapuntal or harmonic development.

In both Turkish and Byzantine music these tetrachords and pentachords carry the seed of creation, development, variation or transformation into all aspects of music. In terms of melodic development they function as formulae in which the notes of a given maqam or echos appear in a more or less ordered way. The accompaniment and the harmonic material are more or less prescribed. When the texture is monophonic there is

no accompaniment, or there is a long pedal note on the pitch centre. In case of a heterophonic texture, the melodic line is adjusted in the idiomatic nature of each instrument.

In my approach, the melodic lines contrast each other within a polyphonic or polyrhythmic texture, in order to form a certain rhythmic and harmonic material. The intend is to create interesting entities that form even more interesting assemblies. A characteristic example of these contrasting lines can be found in mm. 684-690, where the use of glissando inside the piano provides contrast to the melodic lines with eighth notes in the strings and triplets in the winds. The superimposition of these elements provides a rich, dense texture contributing to the heightened interest at the end of the piece.

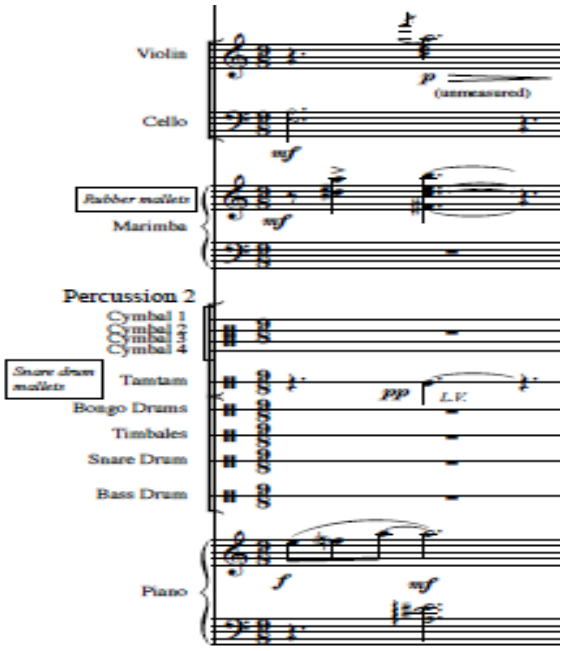
2.6 The Harmonic Material

Harmonies provide light or shadow for the melodic material, affecting their nature. By doubling some of the notes of the tetrachord or the pentachord, the harmonic series of these notes are enhanced and they gain a different sense of validity and importance. The opposite happens when the notes of the accompanying harmony are not included in the tetrachord or the pentachord of the foreground melodic material. If the contrasting harmony is too dissonant, it shadows or blurs the melodic material. It is obvious that every occasion is different and the role of each of the employed harmonies depends on every compositional decision that has been taken at certain points of the piece.

A characteristic example can be found in the first chord of the piece in m. 1. The pitch centre of the chord is A. The use of $D^{\#}$ contrasts with E, creating an uncertain or an unstable harmonic environment. The role of $F^{\#}$ is supportive of this uncertainty because

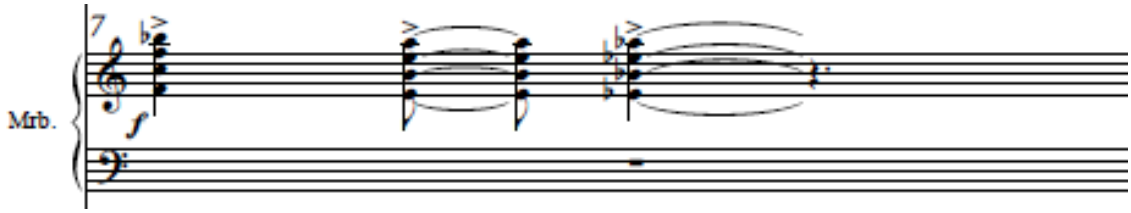
of the chromatic relation with the second note (F) of the melodic gesture. Furthermore, the use of C and B confirm this blurring role of the harmony, as described above (see ex. 64).

Example 64 *Osmosis/Zymosis*, m. 1.



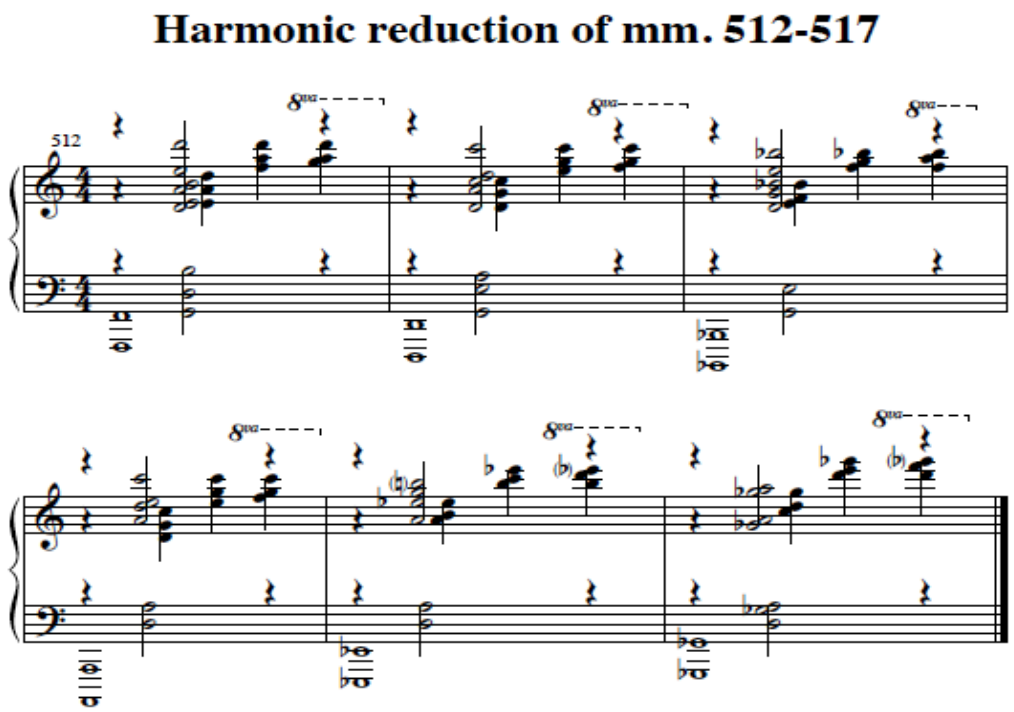
The role of the quintal, quartal or mixed-interval chords with fourths and fifths at the beginning of the piece is to emphasize the use of pentachords, tetrachords, and the harmonic environment associated with them (see ex. 65).

Example 65 *Osmosis/Zymosis*, m. 7.



The use of the homophonic texture in the "Zymosis" part is an attempt to forge a harmonious combination of elements from both cultures. The interruption of this progression in m. 517 and its continuation in m. 522, emphasize that it is always and inevitably a dynamic process undergoing perpetual change. The doubled bass line is the foreground material, which imitates the immersion by the descending line (mm. 512-515) and the uplifting of a wave by the ascending line (mm. 515-517). The quarter notes from the piano highlight the shorter waves that gradually build the tension of a larger wave, while slight or no changes (stepwise motion in the flute and some common notes in other instruments) occur in the accompaniment (see ex. 66).

Example 66 Harmonic reduction, mm. 512-517.



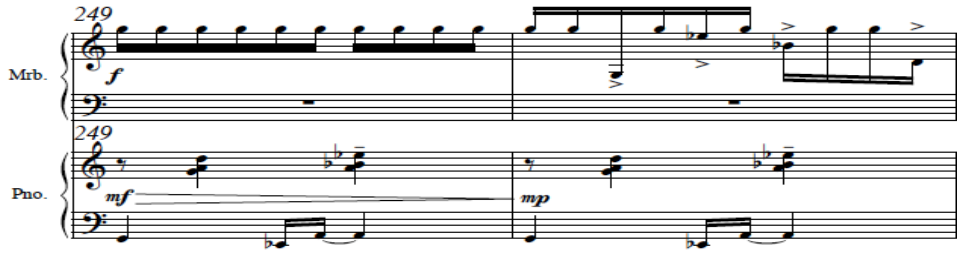
2.7 Additive Time Signatures

Maintaining an unchanging metre can create a limitation of accents and of ways to organize rhythm. The solution for this problem in *Osmosis/Zymosis* is to have frequent changes of additive time signatures, a juxtaposition of simple and additive measures, and a superimposition of layers of different rhythmic patterns. The asymmetrical rhythmic meters serve the shaping of interesting melodic gestures, especially when they are contrasted with simple meters.

The character of the additive time signatures is unique because of the sense of the prolongation of one of their sections. The feeling of the unbalanced rhythm, like 9/8 grouped 2+2+2+3, for instance, is by default a source of energy for the development of the piece. However, multiple repetitions of the same additive time signature may result in a dance-like or even a monotonous and static pattern.

In *Osmosis/Zymosis,* the additive rhythms are used as molds of rhythmic microforms that need to be varied by accents on non-accented beats or by the addition of rhythmic patterns that modify their main structure, in order to be vivified. A characteristic example of this approach can be found in mm. 249-250, where the piano employs a contrasting rhythm that alters the metric pattern of 3+2 with the use of a syncopation, and the marimba uses accents on non-accented beats (see ex. 67).

Example 67 *Osmosis/Zymosis*, mm. 249-250.



In general, the additive time signatures are part of the character of the gestures. The 5/8 (3+2), 7/8 (3+2+2) and 9/8 (2+2+2+3) metres share the same logic of construction, which is the juxtaposition of a combination of patterns of two and three eighth notes. The combined use of these metres provides the music with variation and cohesiveness. Furthermore, the asymmetrical nature of these metres results in a dynamic flow of the rhythm, since the patterns of two eighth notes come as a reaction to the pattern of three eighth notes and vice versa.

3. Conclusion

Composing with gestures is a broad and flexible approach to creative work that encompasses many aspects relating to the development of musical material and compositional techniques, and the compositional process itself. This key statement summarizes my approach to the integration of elements from Eastern Mediterranean folk music into Western contemporary music.

In *Osmosis/Zymosis,* a gesture leads to another gesture, satisfying the action-reaction axiom. The equivalent practice in folk music to this technique is the collaborative improvisation that usually takes place in the prolongation of a song or tune, when needed.

Looking at the work as a whole, the two major parts are also "gestures" of integration. The bridging climax symbolizes the composer's growth towards a higher level of understanding of cross-cultural communication. However, the previous state of the unfiltered material in the "Osmosis" section is needed to show this progress. "Osmosis" and "Zymosis" are two sides of the same coin.

As shown in the synoptic table, the nature of the gestures in the "Osmosis" part is different from those in the "Zymosis" part. The basic difference is the use of gestures as micro-forms in the "Zymosis" part. The gestures in the "Zymosis" part shape the surrounding material producing micro-forms, which have distinct character (ethos) and motion (kinesis).

This compositional process constitutes an enrichment of current compositional practices by providing an open technique, which may encompass many compositional practices and methods. Because of this, composing with gestures may prove to be useful

for composers in approaching cross-cultural communication as a holistic phenomenon. The result of this compositional process may also prove attractive to audiences experiencing this organic integration of elements from other cultures into Western contemporary music. *Osmosis/Zymosis* presents my personal approach to the use of gestures as a compositional process that aims to stimulate a collective discussion about cross-cultural communication.

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Appendix A: Score

Michalis Andronikou

Osmosis/Zymosis

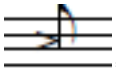
2012

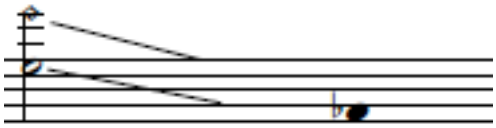
Instrumentation

Flute
Clarinet in Bb
Violin
Violoncello
Percussion 1: Marimba
Percussion 2: 4 Cymbals, Tam-tam,
Bongos, Timbales, Snare drum, Bass drum
Piano

Duration: ca. 20 minutes

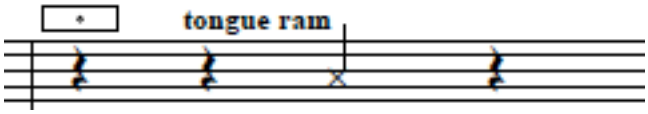
Notes

1. The score is in C.
2. Accidentals carry through measure.
3. The tremolos are always unmeasured.
4. Dotted bar lines are for coordination only.
5. Glissandos without ending are to fade out naturally at any point of the measure at any ending note.
6. Percussion: L.V. = Let vibrate.
7. Snare Drum: Snares on.
8. Flute and violin: = Slow and wide vibrato
9. Snare Drum: = Rim shot
10. Flute and clarinet:  = Tongue slap

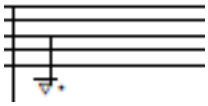


11. Violoncello: = Seagull. This technique, first used by George Crumb in *Vox Balaenae* (1971), is executed by setting an artificial harmonic position in a high register of the fingerboard and sliding into the lower register without altering the hand shape, in order to produce an effect, resembling the cry of the seagull.

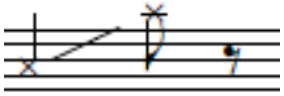
12. Violin: The "harmonic glissando" is achieved by executing a glissando with a finger set lightly on the string, as if fingering a harmonic. The result is an arpeggiation of the string's fundamental harmonic series.

13. Flute: 

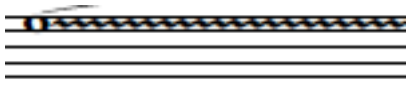
= Tongue ram



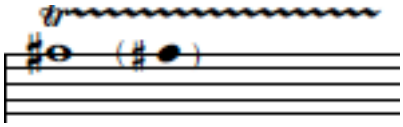
14. Flute: = Blow through instrument, breath sound



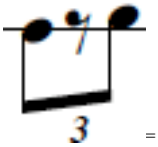
15. Flute: = Jet Whistle



16. Violin: = Slow ¼ tone vibrato ad libitum

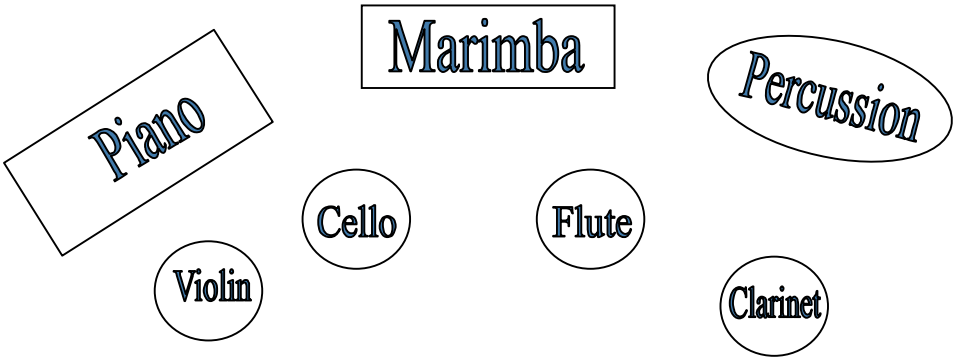


17. Flute: = Timbral trill.
18. Piano: Aeolian harp: The name of this particular extended technique for the piano was given after the homonymous piano piece (1923) by Henry Cowell, in which the pianist's sweeping hands directly across the strings of the piano imitate the sound of the harp's glissando.

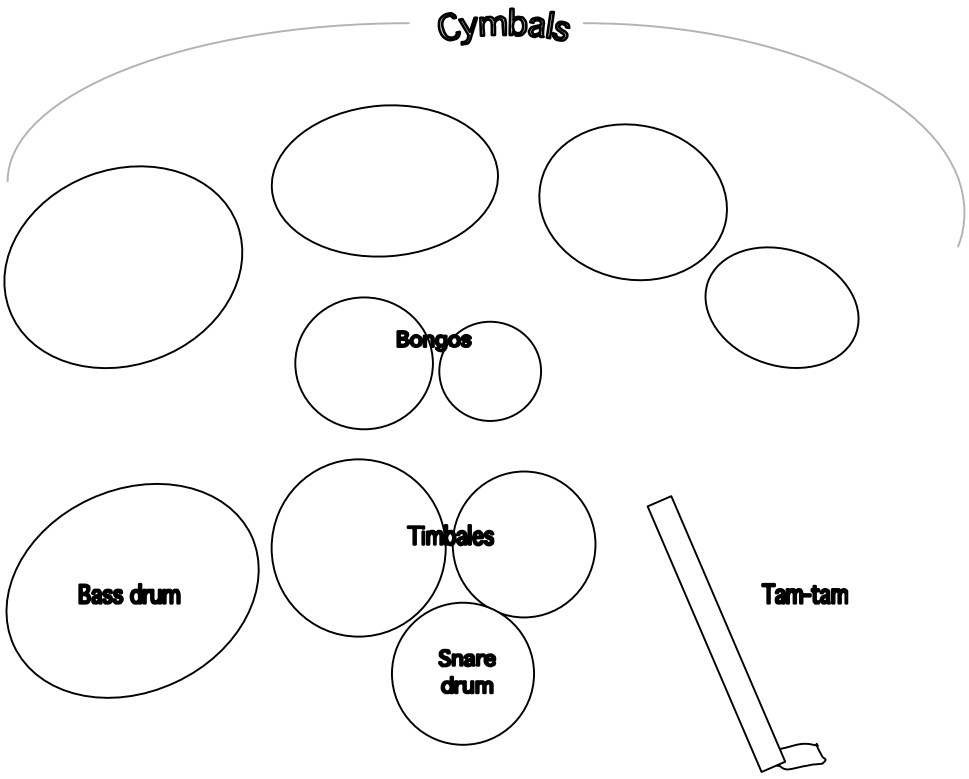


19. Tam-tam: = centre (note on the line) – edge (note above the line)

Instruments' layout



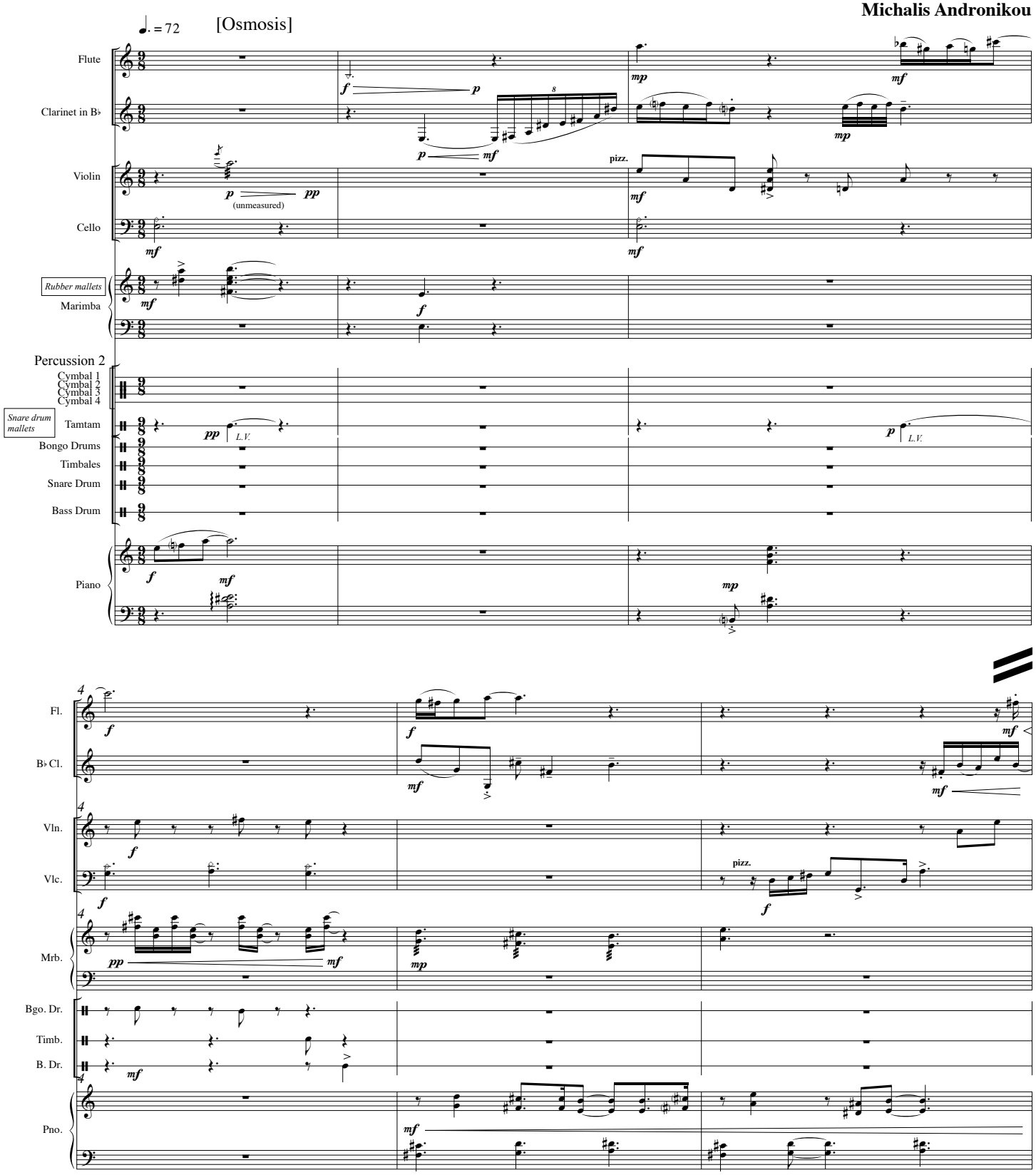
Set of unpitched percussion



Osmosis/Zymosis

Score in C

Michalis Andronikou



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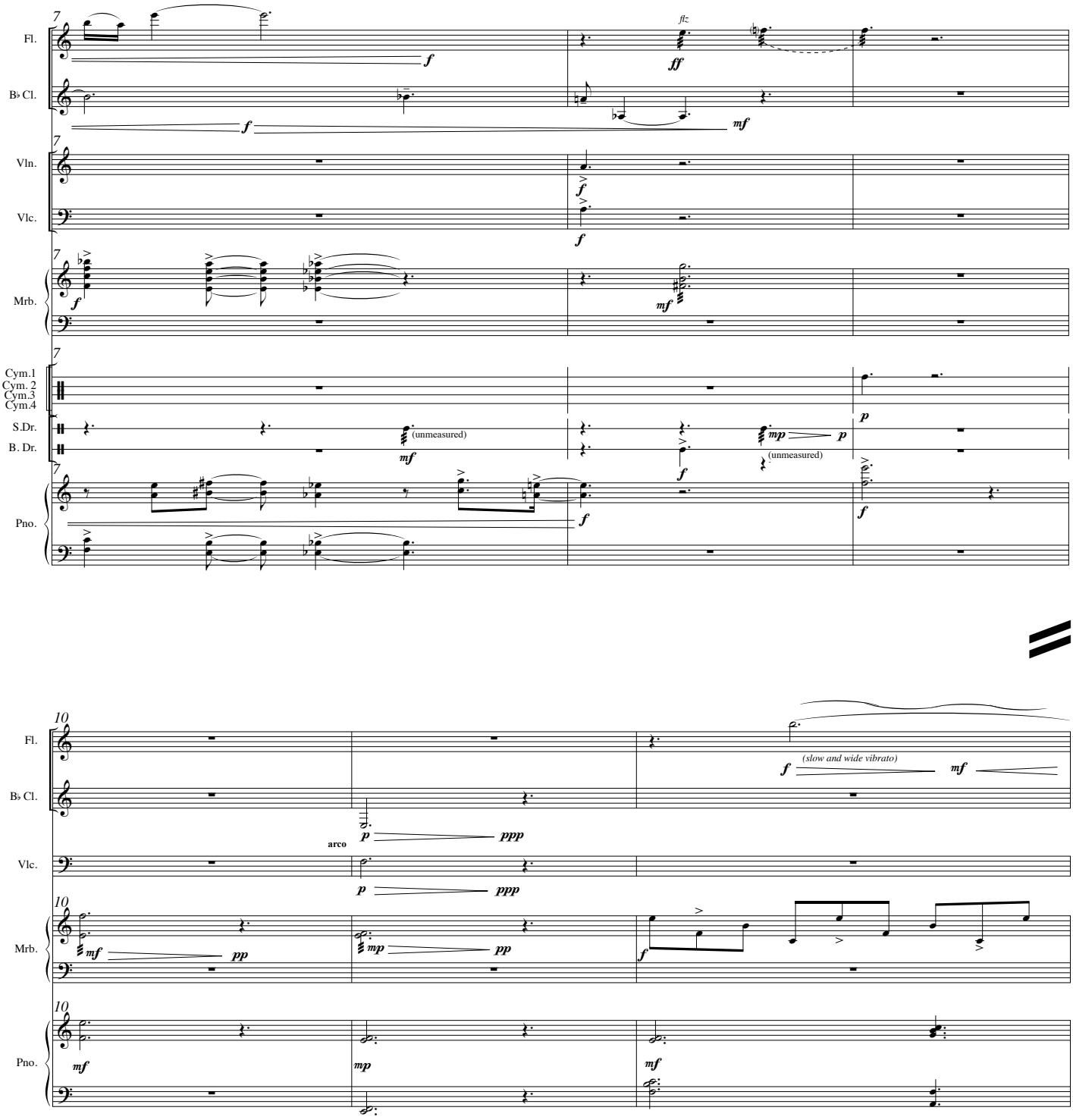
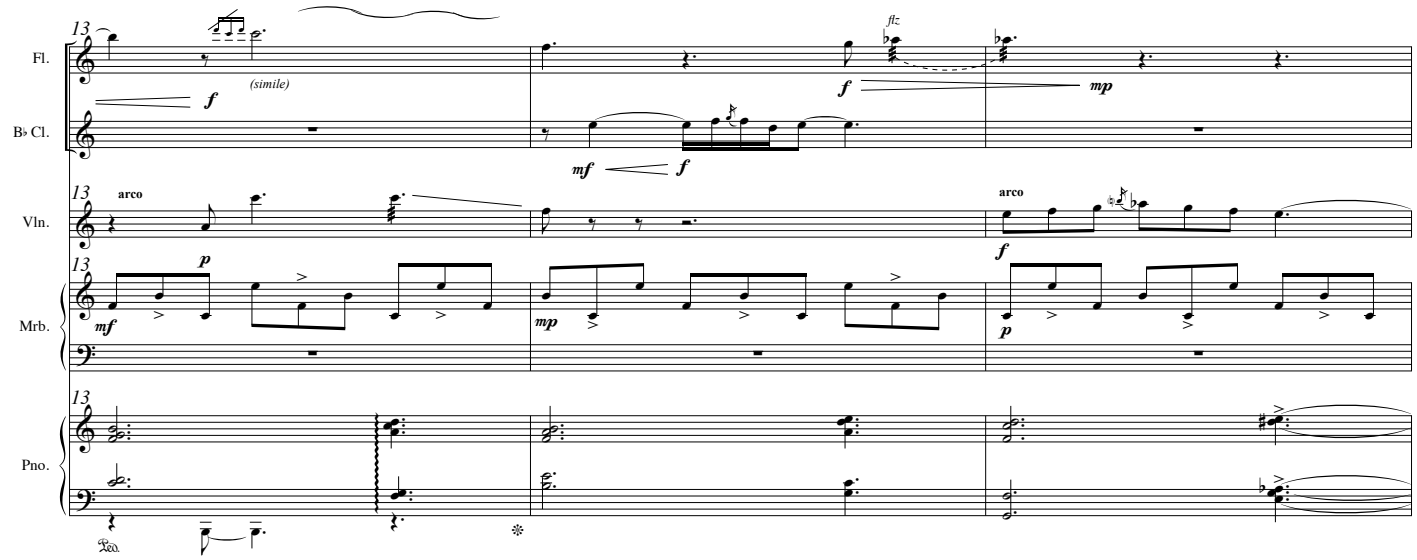
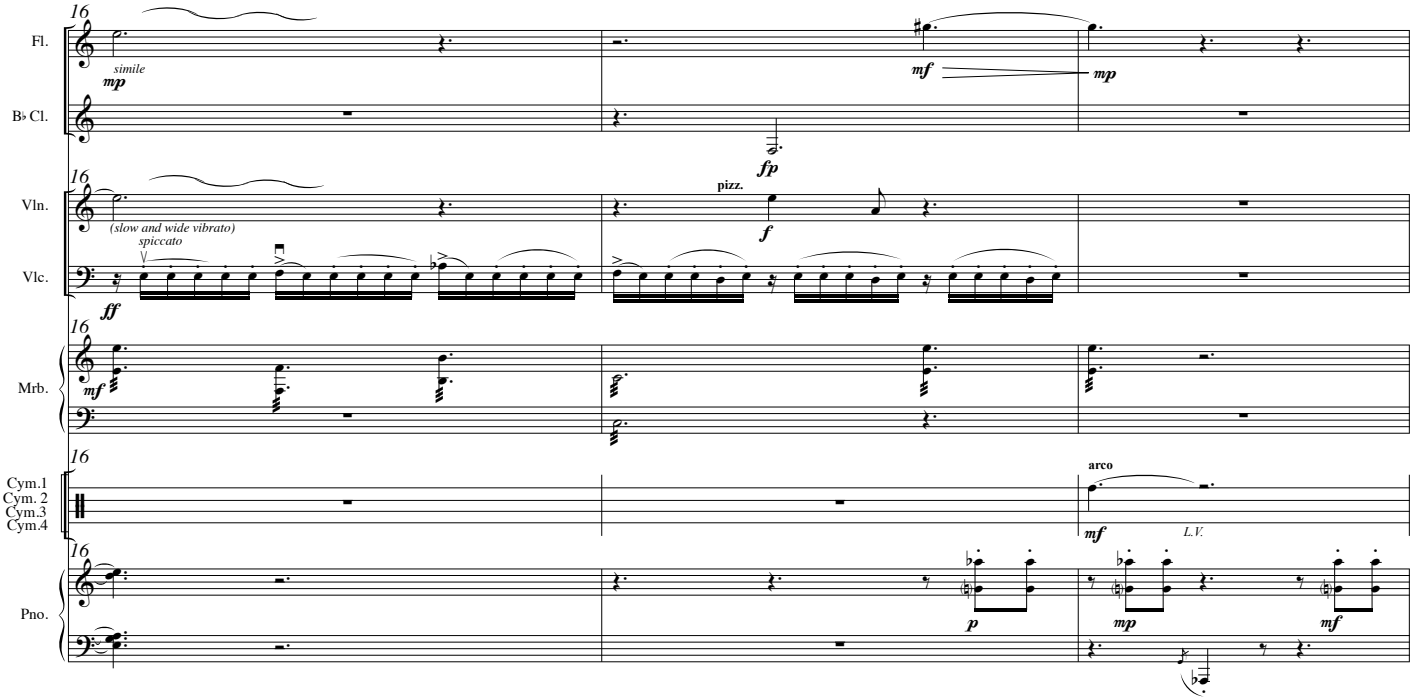
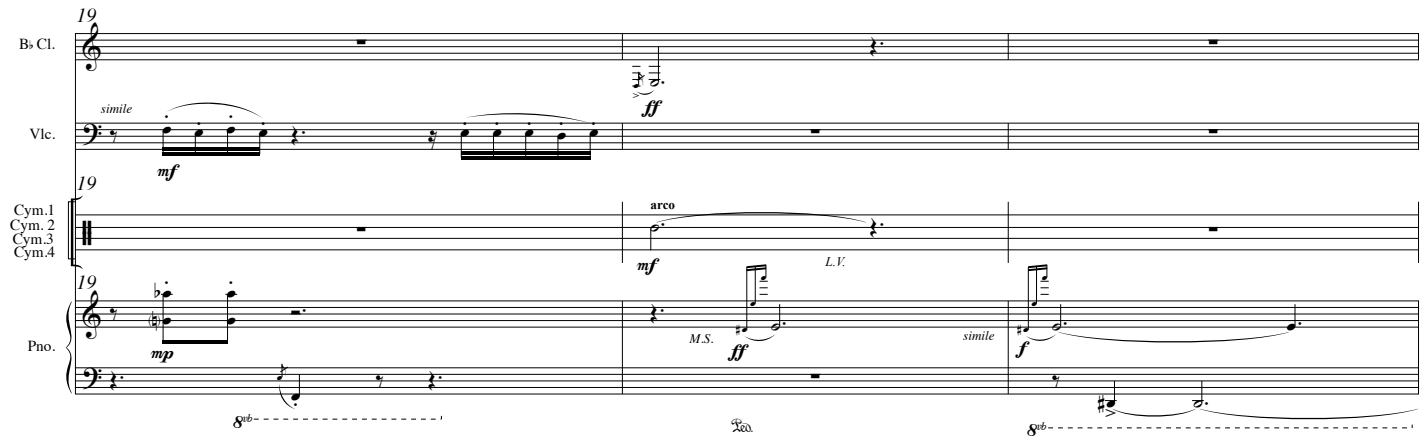
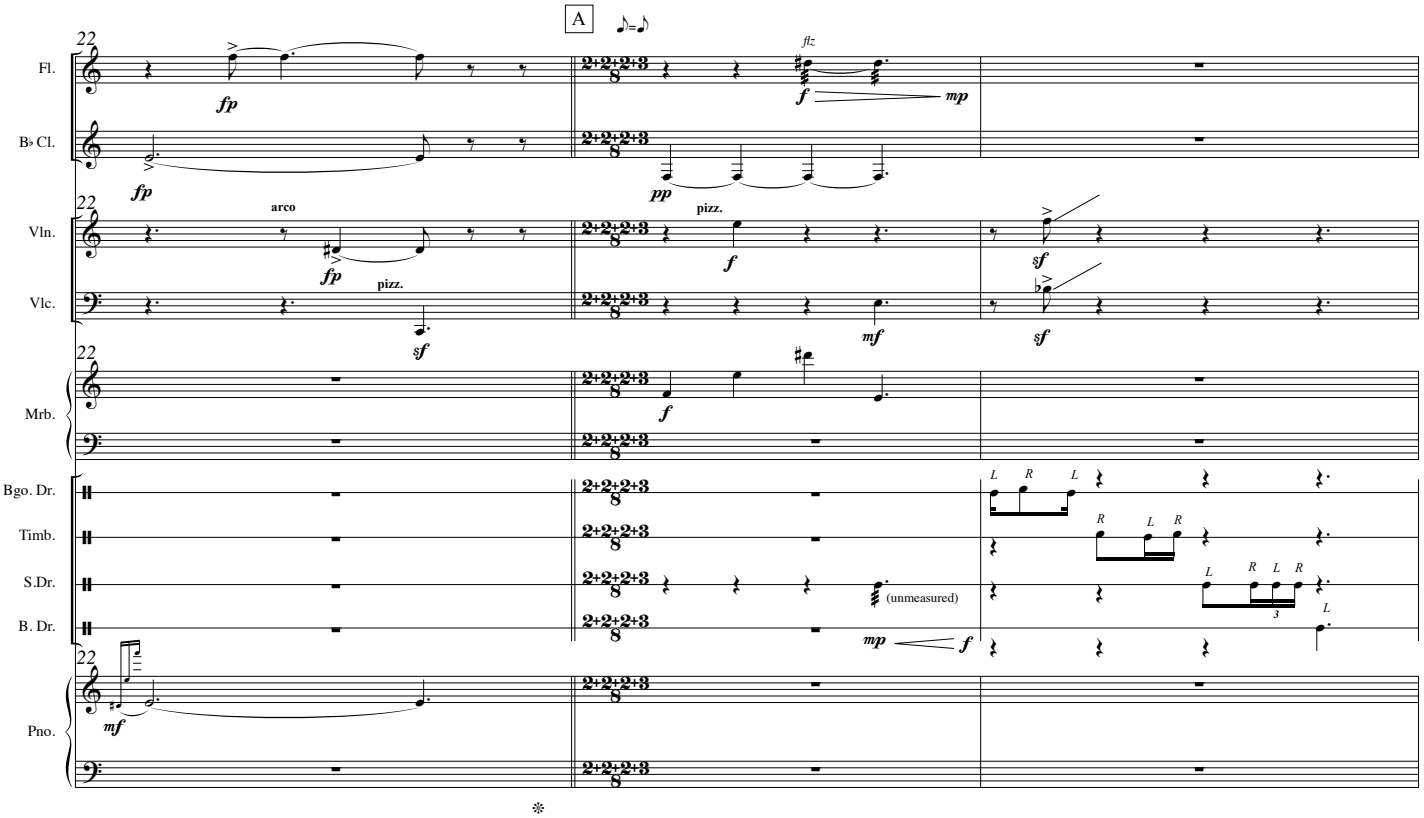
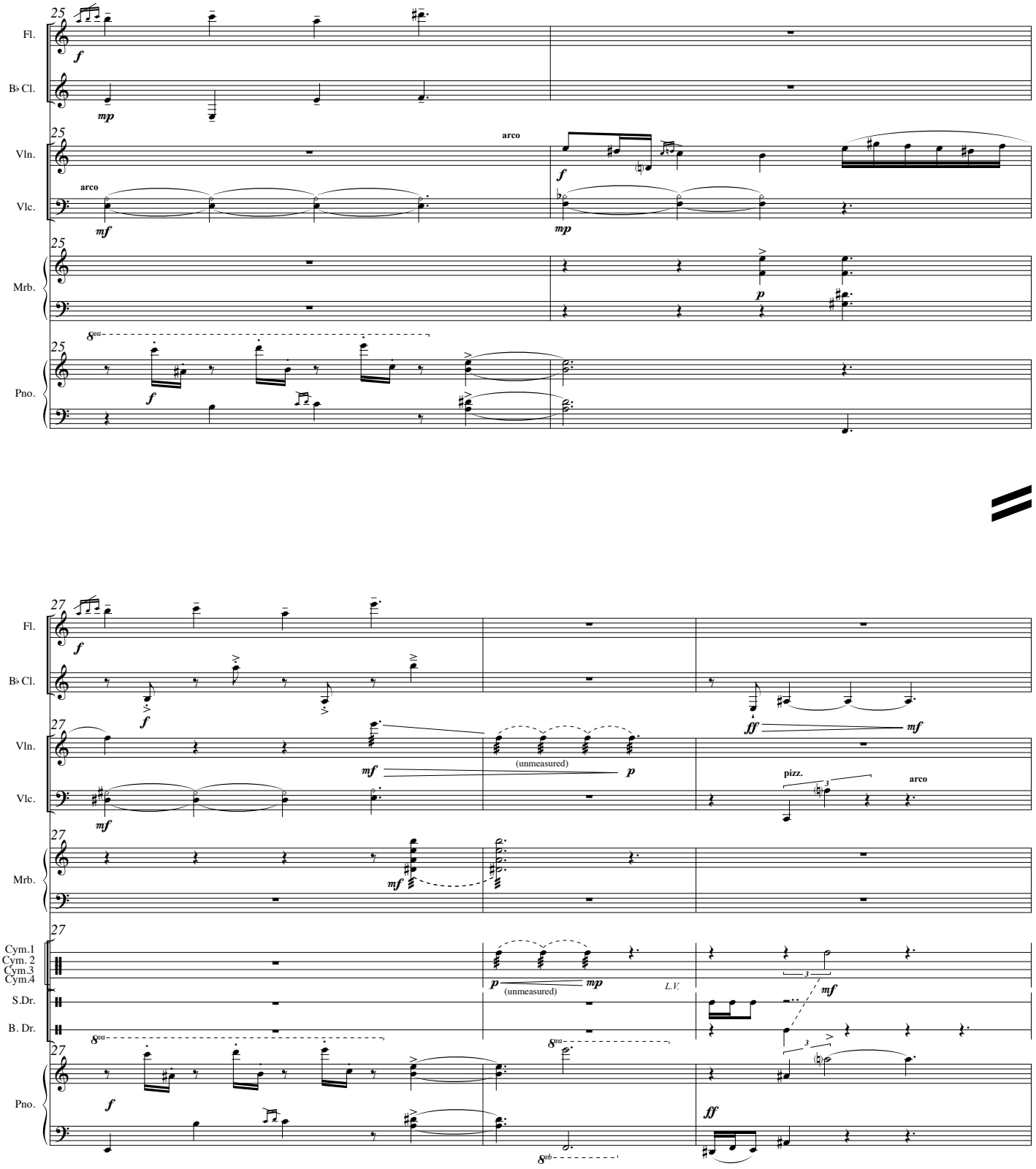

7
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
S.Dr.
B. Dr.
Pno.
flz
ff
f
mf
p
mp
(unmeasured)
10
(slow and wide vibrato)
arco
ppp
pp

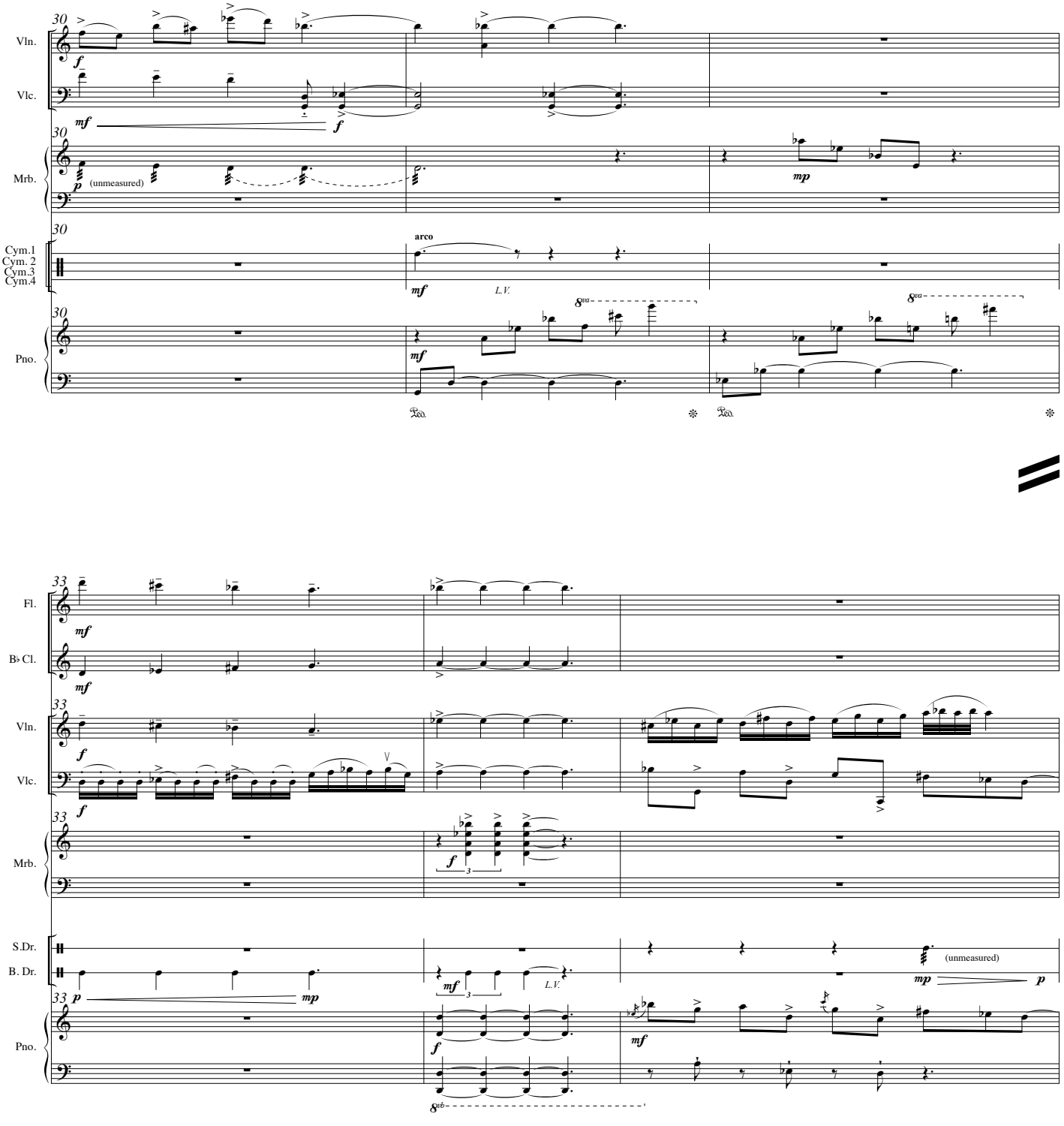

13
Fl.
B♭ Cl.
Vln.
Mrb.
Pno.
(simile)
flz
arco
arco

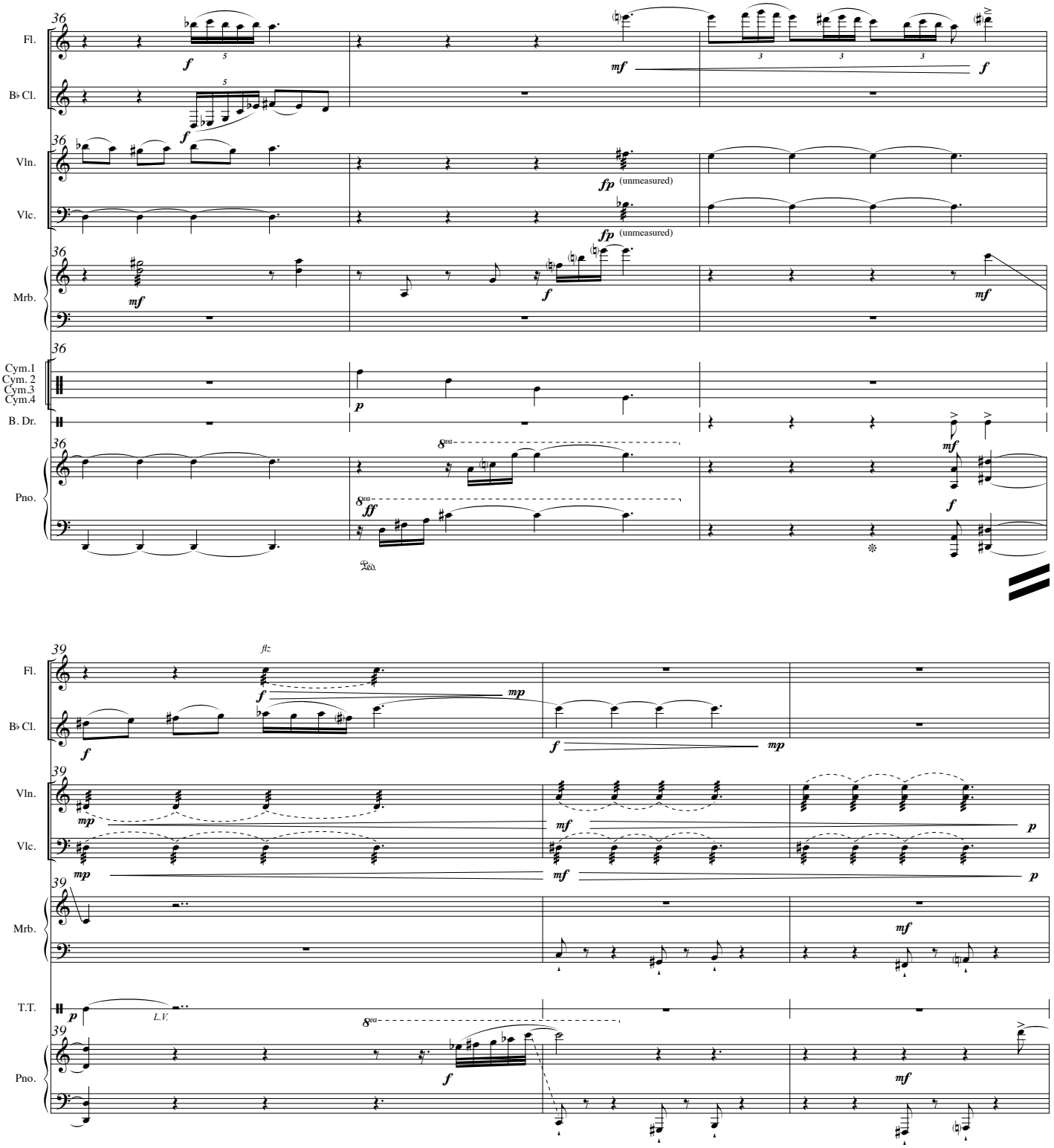

16
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
Pno.
simile
(slow and wide vibrato)
spiccato
pizz.
arco
L.V.

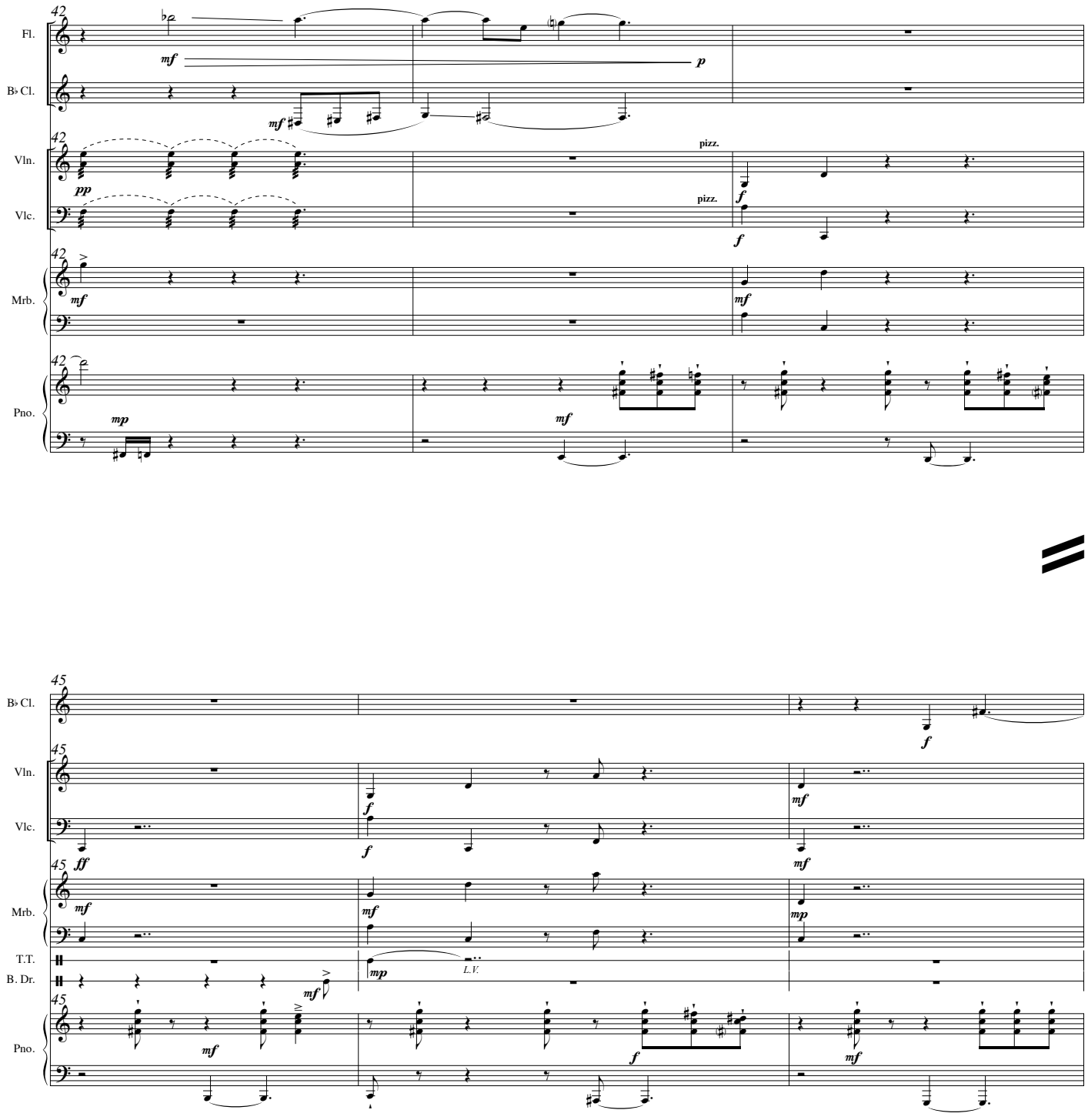

19
B♭ Cl.
Vlc.
Cym.1
Cym. 2
Cym.3
Cym.4
Pno.
simile
mf
ff
arco
L.V.
M.S.
mp
simile
f

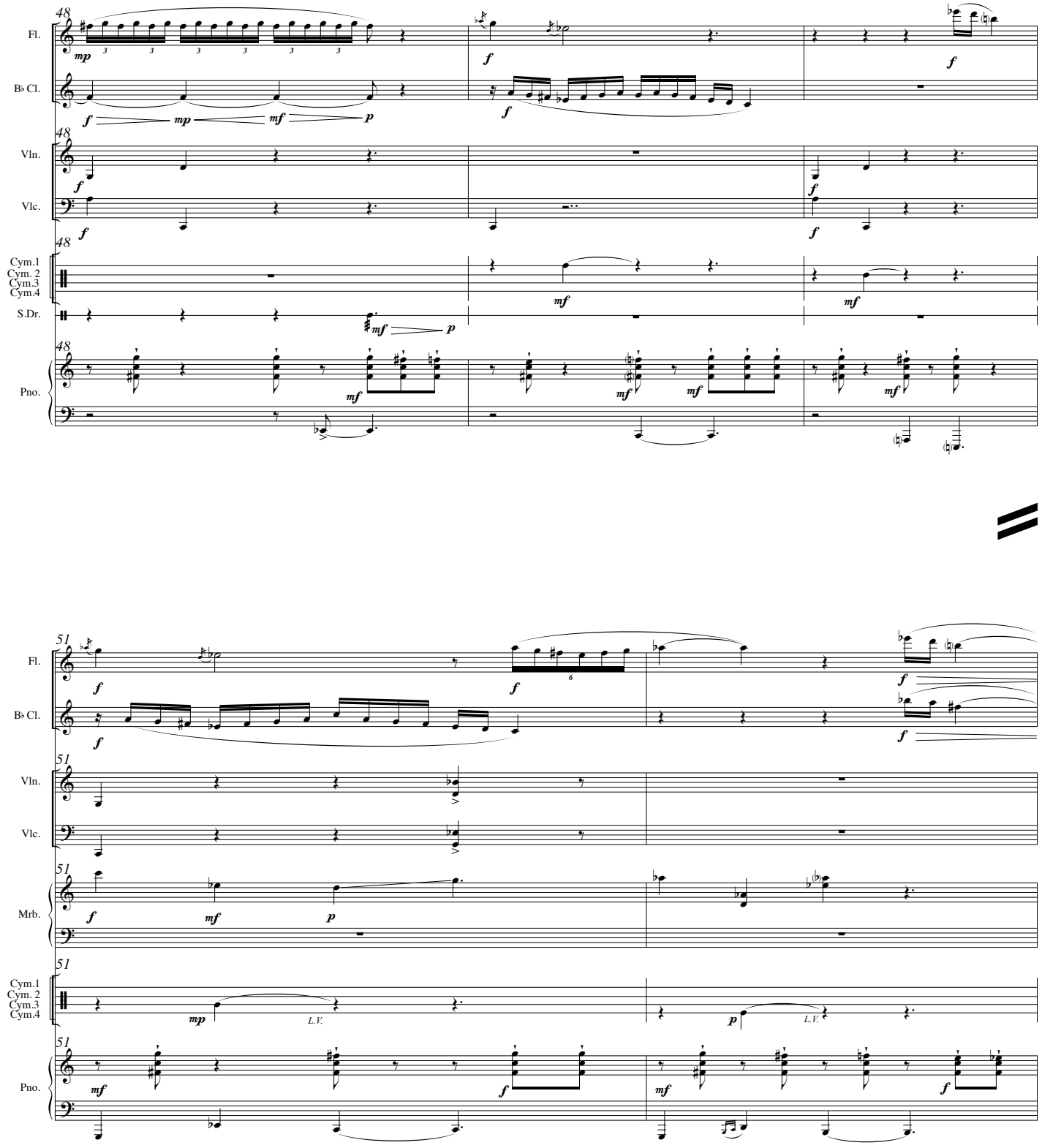

A
22
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Bgo. Dr.
Timb.
S.Dr.
B. Dr.
Pno.
fp
flz
mp
pp
arco
pizz.
sf
(unmeasured)

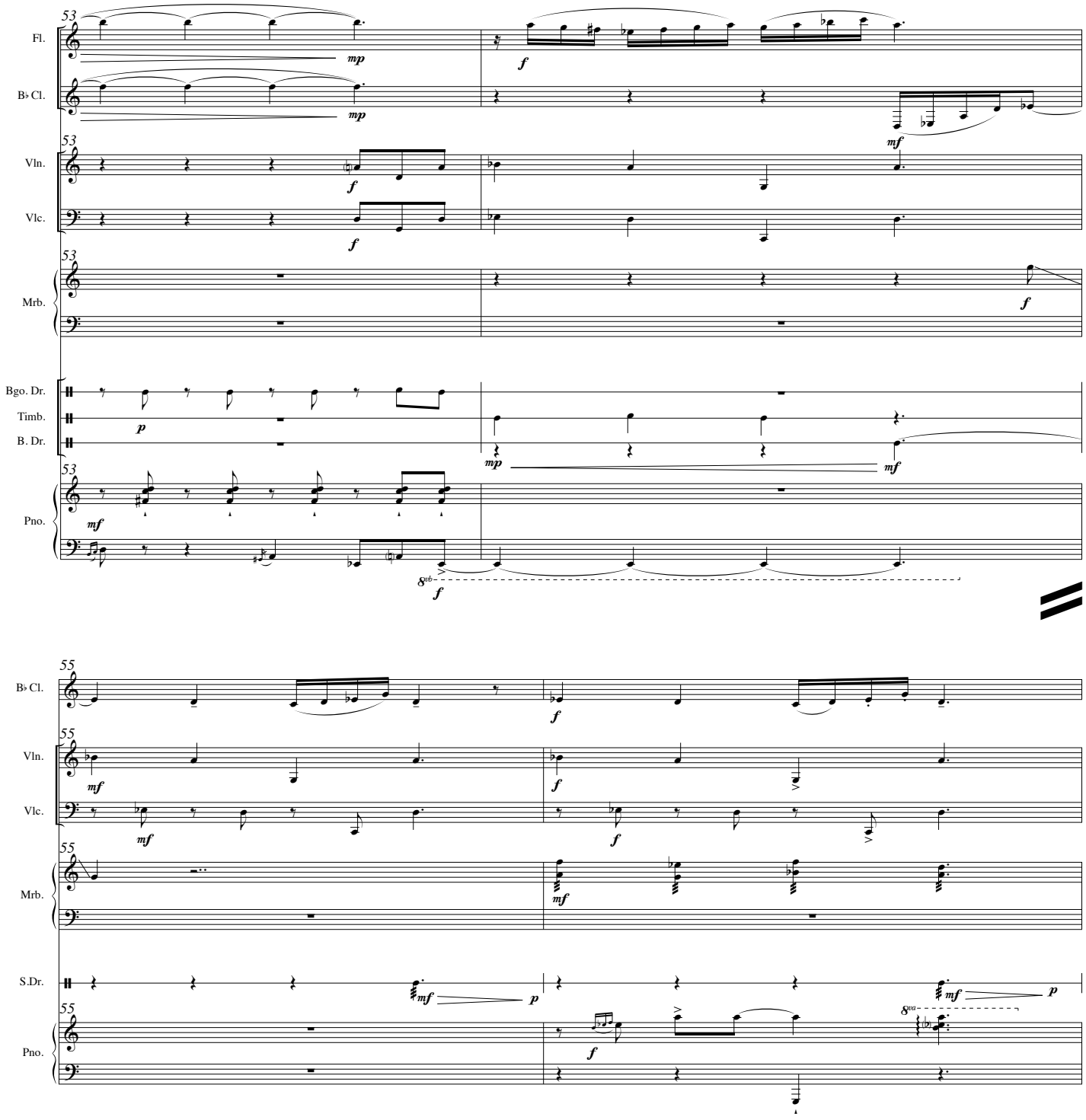

25
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Pno.
arco
f
mp
mf
p
8va
27
Cym.1
Cym. 2
Cym.3
Cym.4
S.Dr.
B. Dr.
(unmeasured)
L.V.
pizz.
ff
8vb

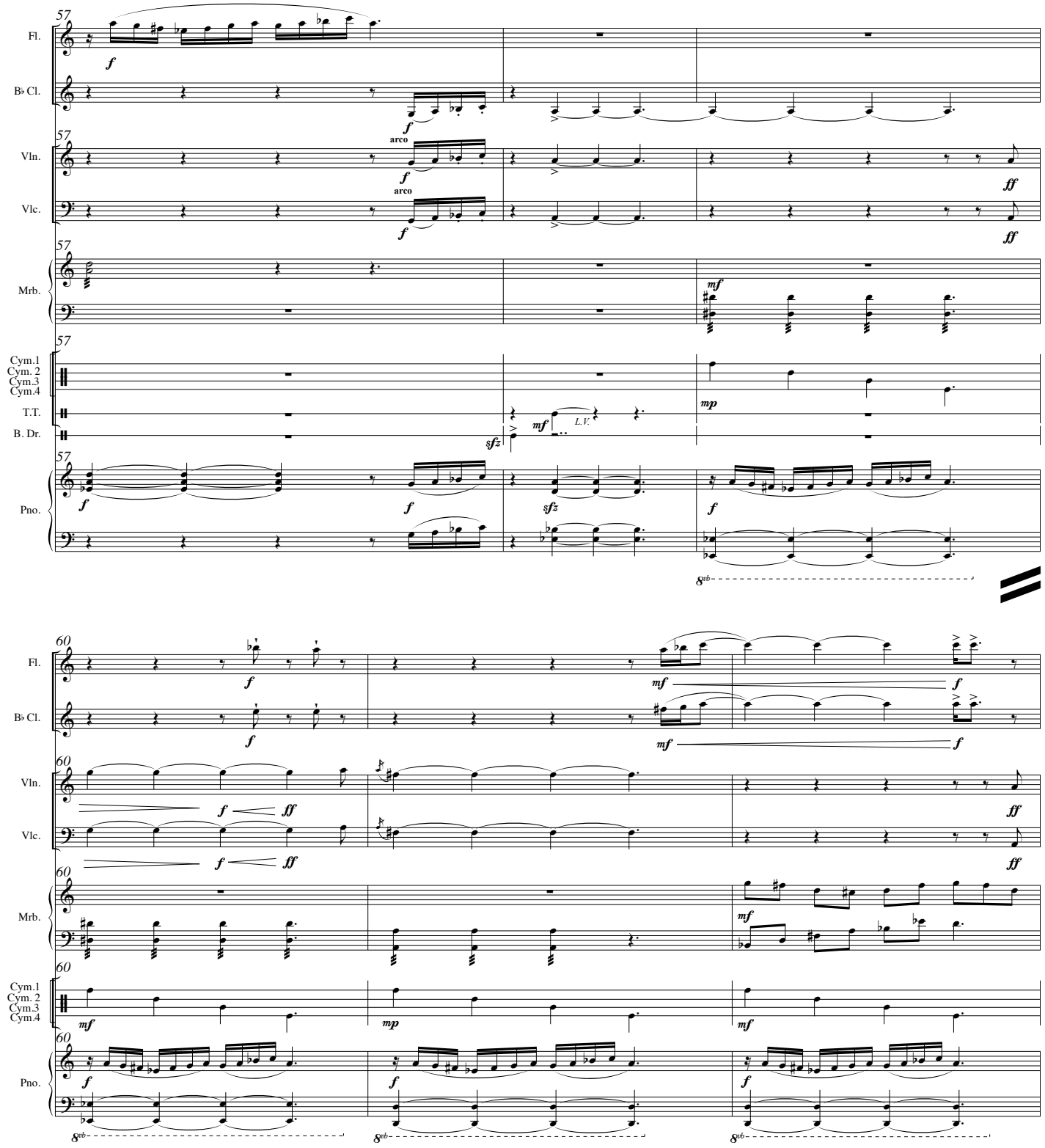

30
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
Pno.
mf
f
p
(unmeasured)
mp
arco
L.V.
8va
Ped.
33
Fl.
B♭ Cl.
S.Dr.
B. Dr.
3
V
(unmeasured)
8vb

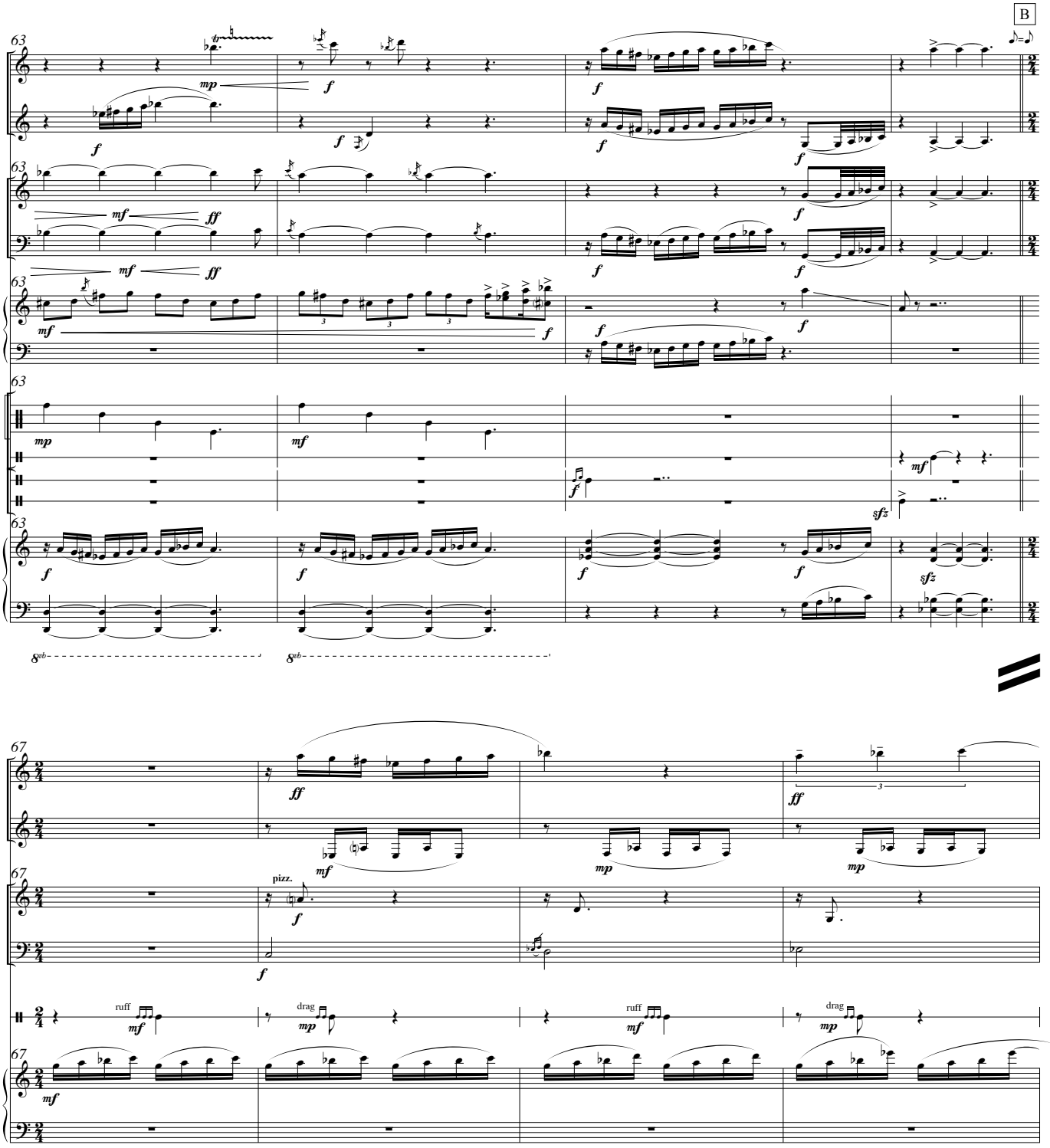

36
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
B. Dr.
Pno.
f
mf
fp
(unmeasured)
p
ff
8va
Ped.
39
flz
mp
L.V.
T.T.

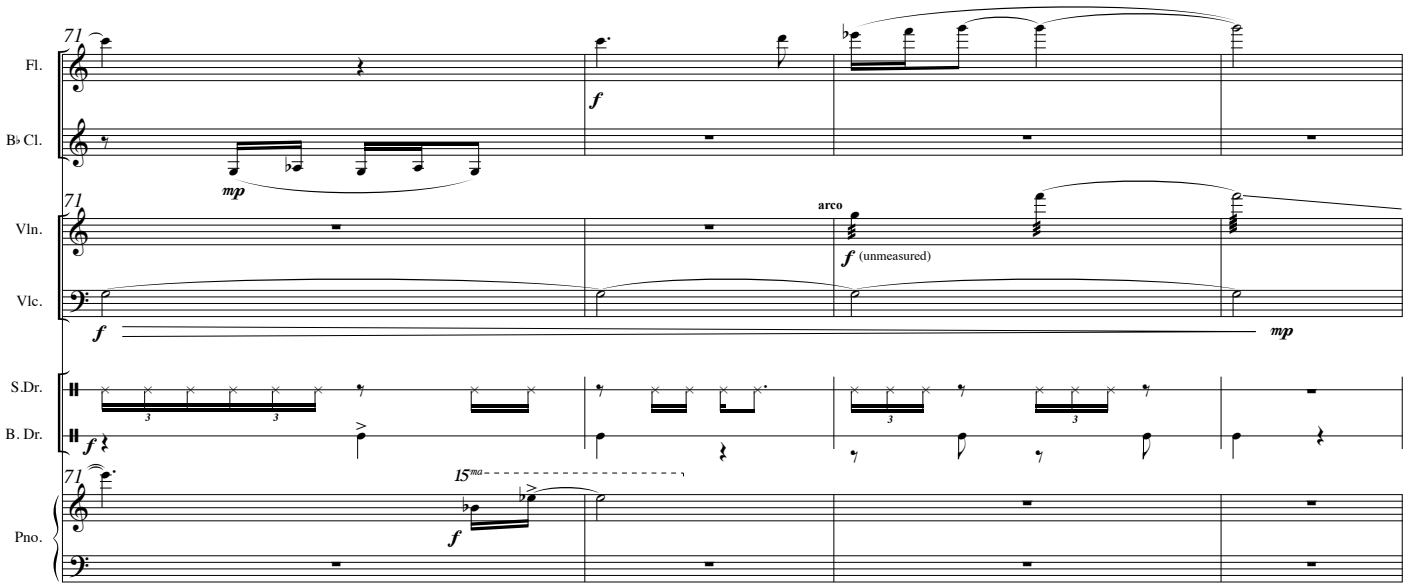

42
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Pno.
mf
p
pp
pizz.
f
mp
45
T.T.
B. Dr.
ff
L.V.

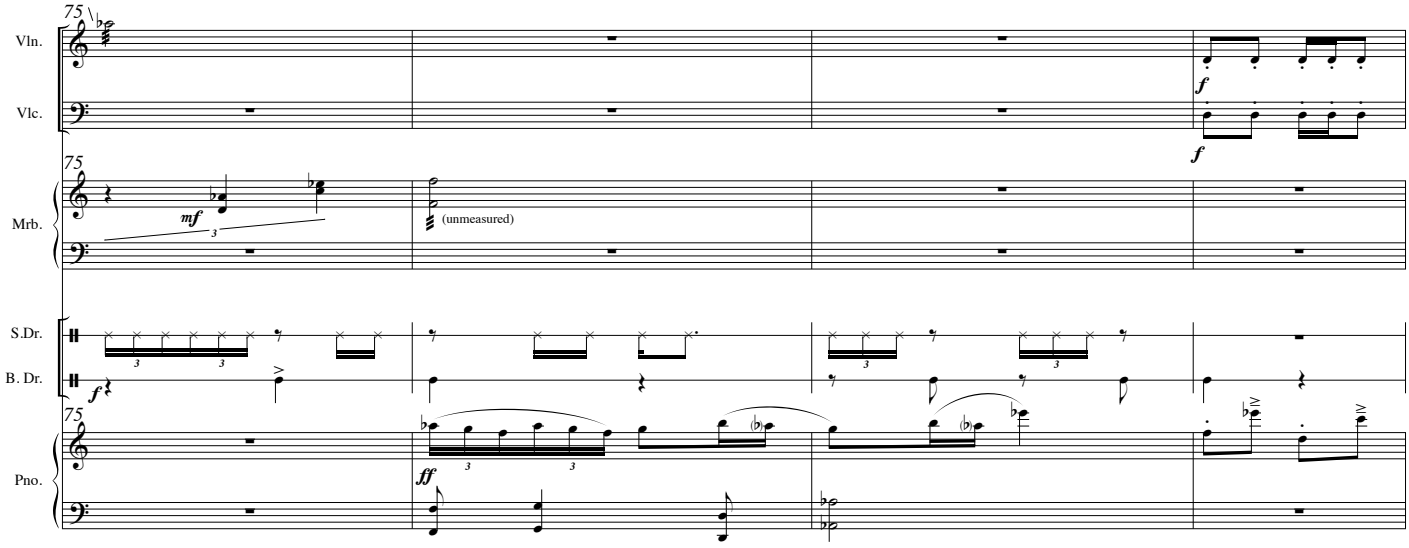

48
Fl.
B♭ Cl.
Vln.
Vlc.
Cym.1
Cym. 2
Cym.3
Cym.4
S.Dr.
Pno.
51
Mrb.
L.V.

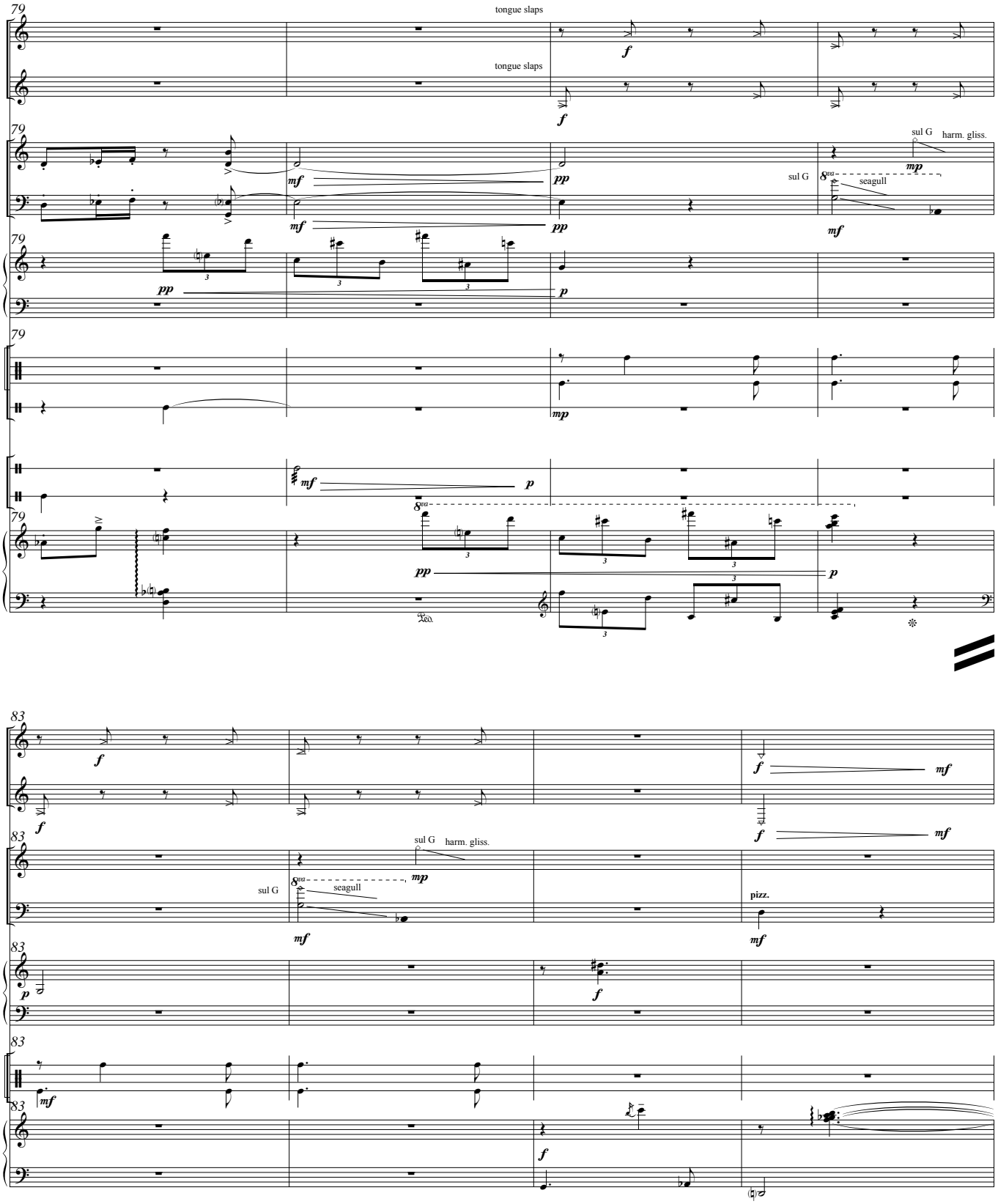

53
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Bgo. Dr.
Timb.
B. Dr.
Pno.
mp
f
mf
p
8vb
55
S.Dr.
8va

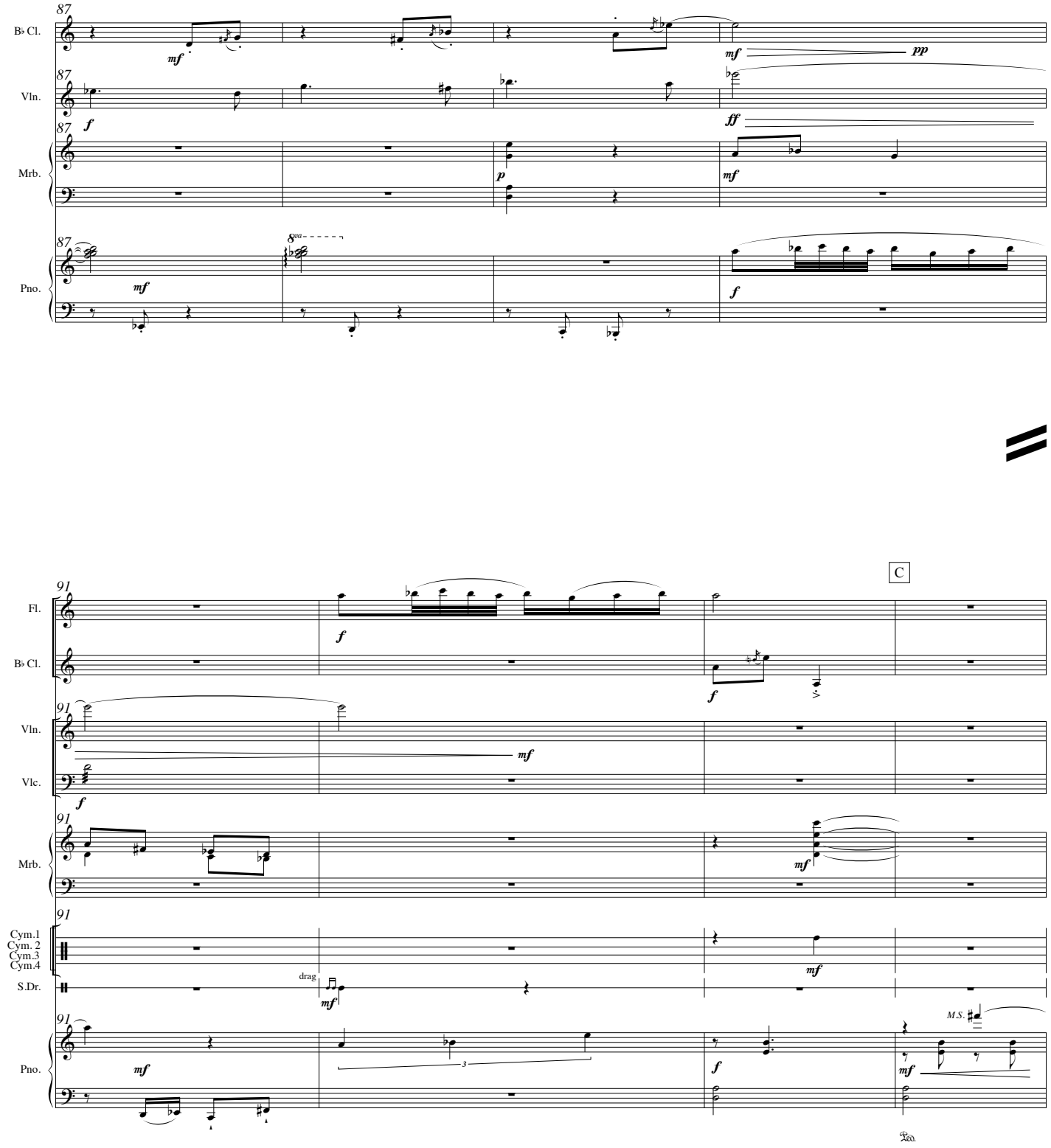

57
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
T.T.
B. Dr.
Pno.
arco
L.V.
8vb
60

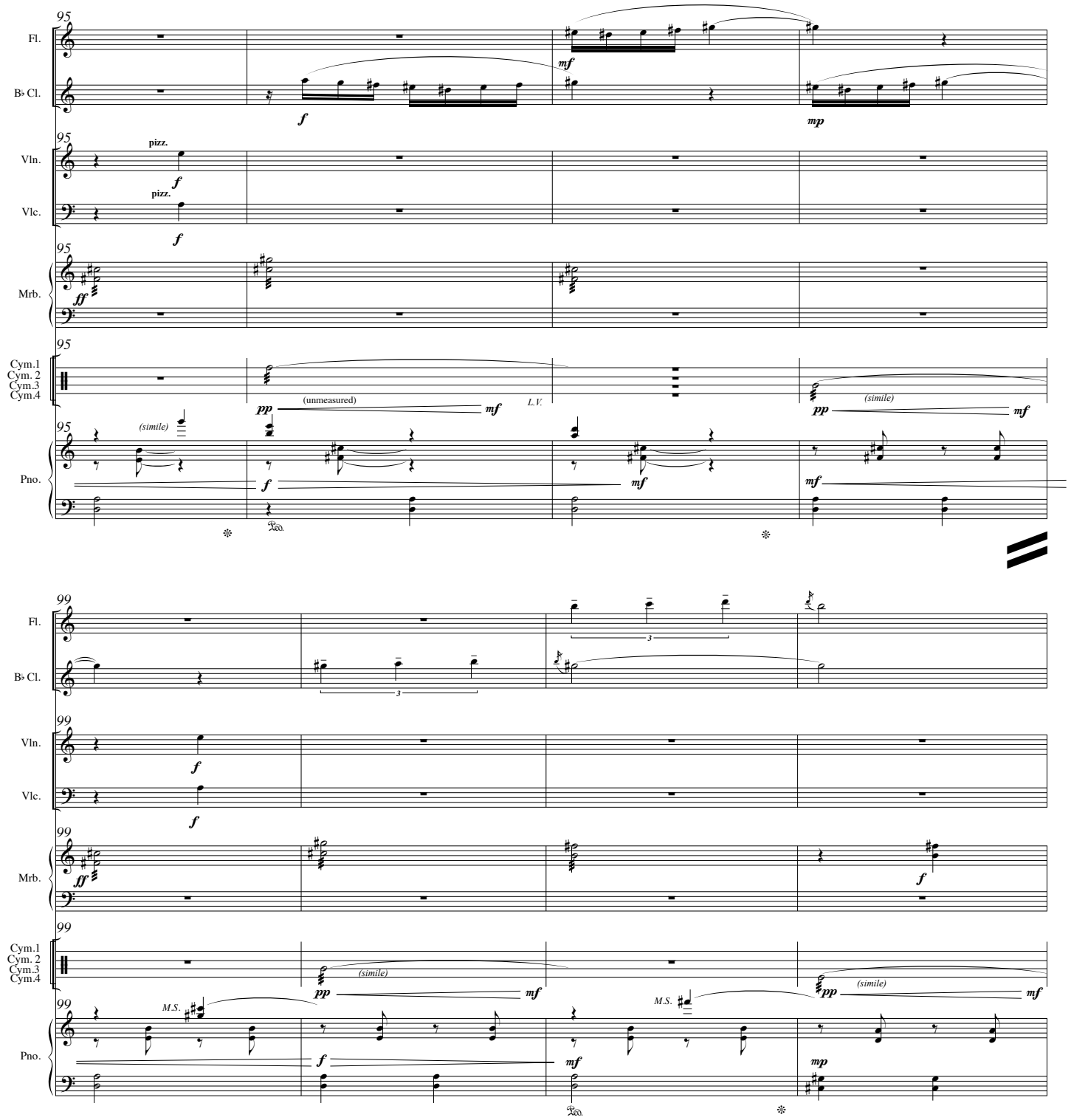

B
63
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
T.T.
Timb.
B. Dr.
Pno.
mp
mf
ff
f
sfz
8vb
67
pizz.
ruff
drag
S.Dr.

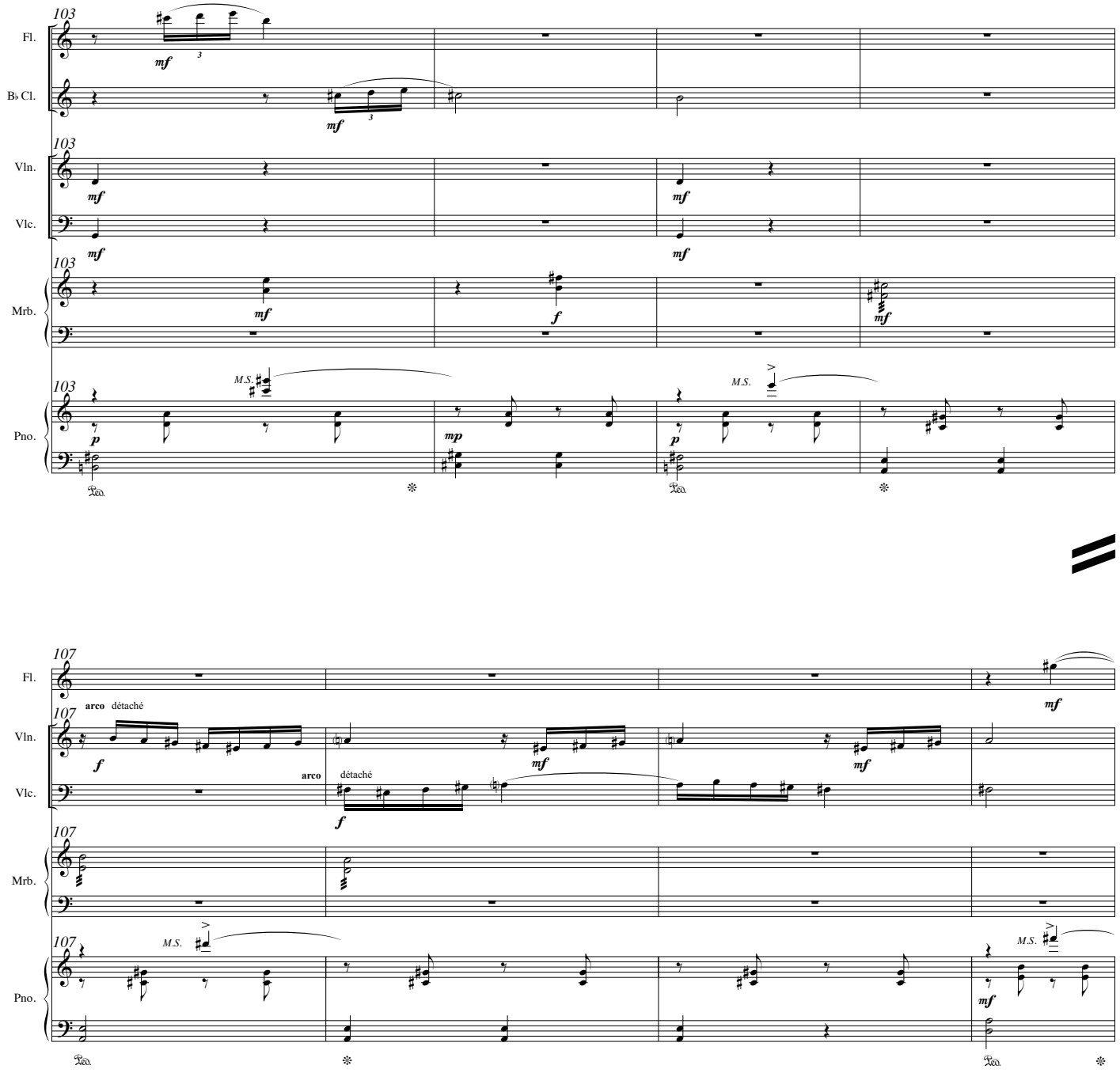

71
Fl.
B♭ Cl.
Vln.
Vlc.
S.Dr.
B. Dr.
Pno.
f
mp
arco
f (unmeasured)
mp
15ma

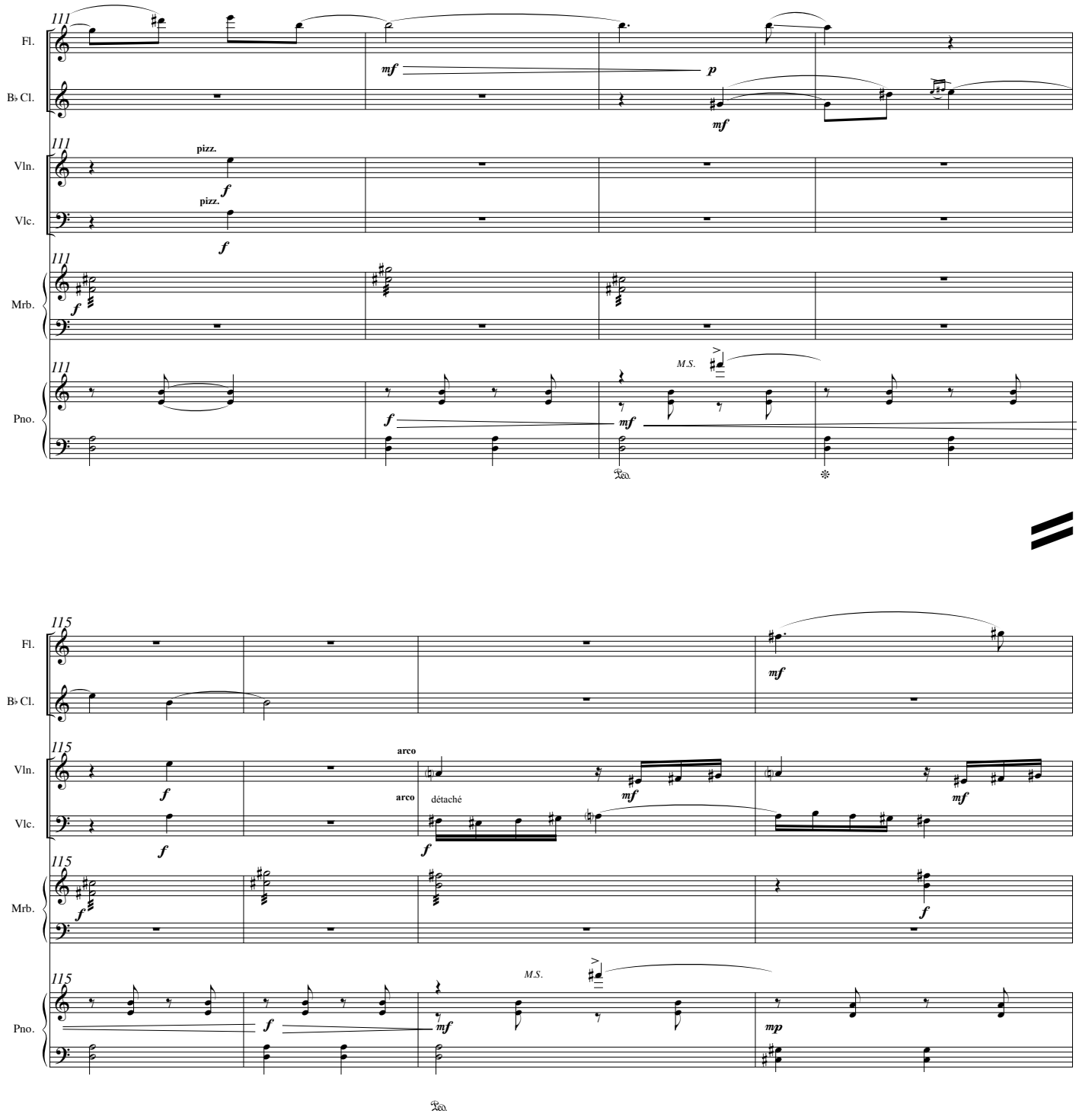

75
Vln.
Vlc.
Mrb.
S.Dr.
B. Dr.
Pno.
mf
(unmeasured)
ff

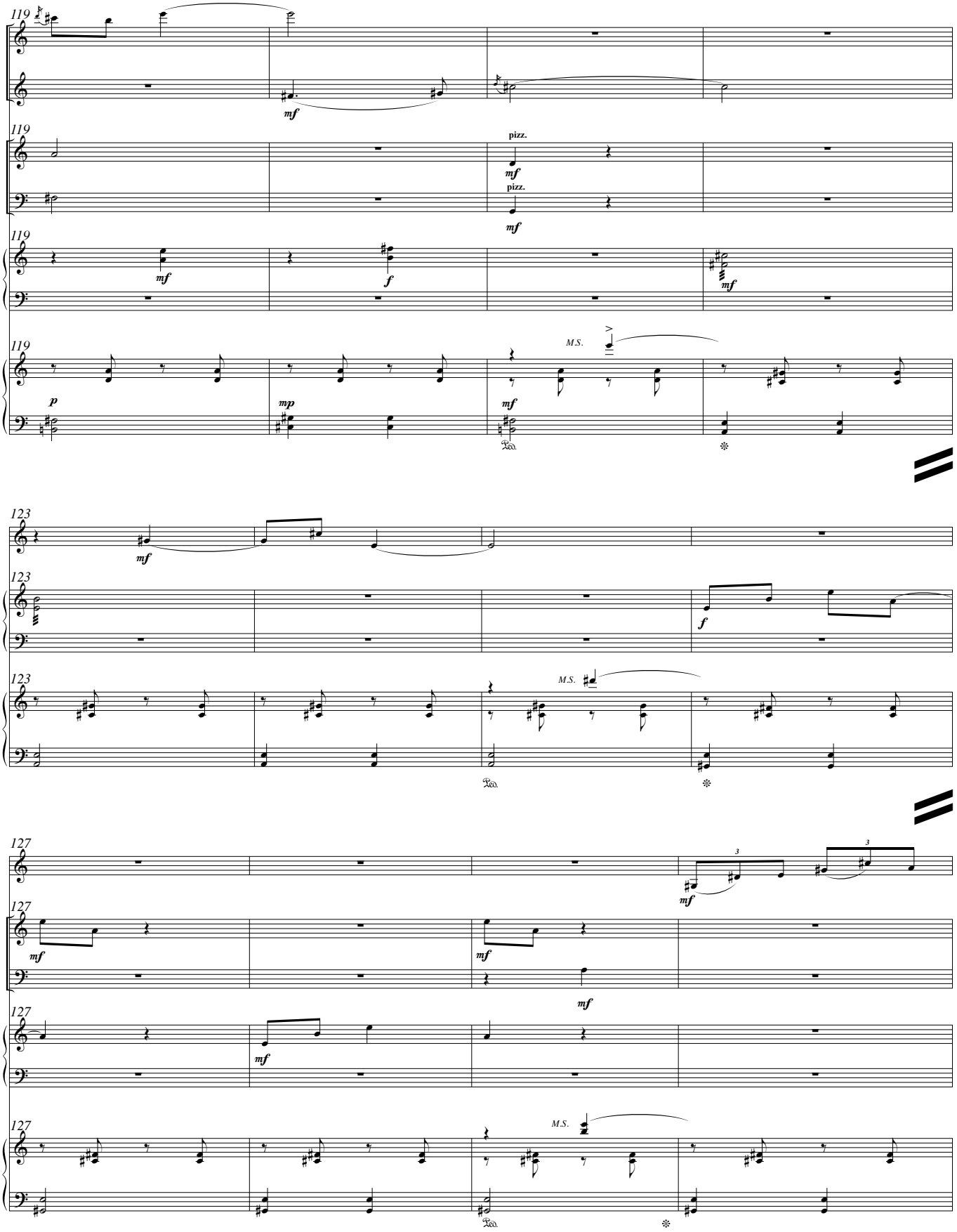

79
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
T.T.
S.Dr.
B. Dr.
Pno.
tongue slaps
tongue slaps
sul G
harm. gliss.
sul G
seagull
83
sul G
harm. gliss.
sul G
seagull
pizz.

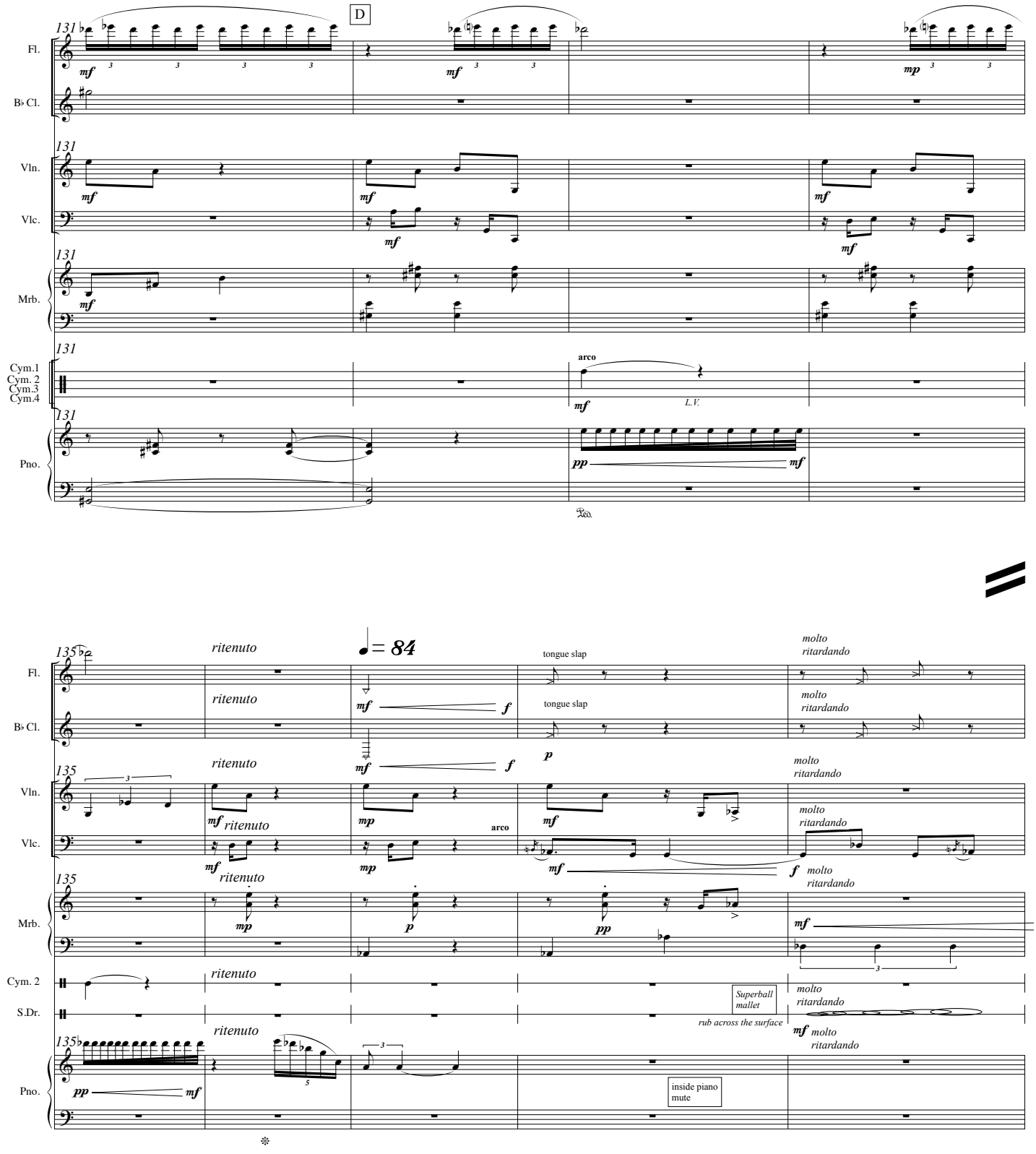

87
B♭ Cl.
Vln.
Mrb.
Pno.
mf
pp
ff
p
8va
f
C
91
Fl.
Vlc.
Cym.1
Cym. 2
Cym.3
Cym.4
S.Dr.
drag
M.S.

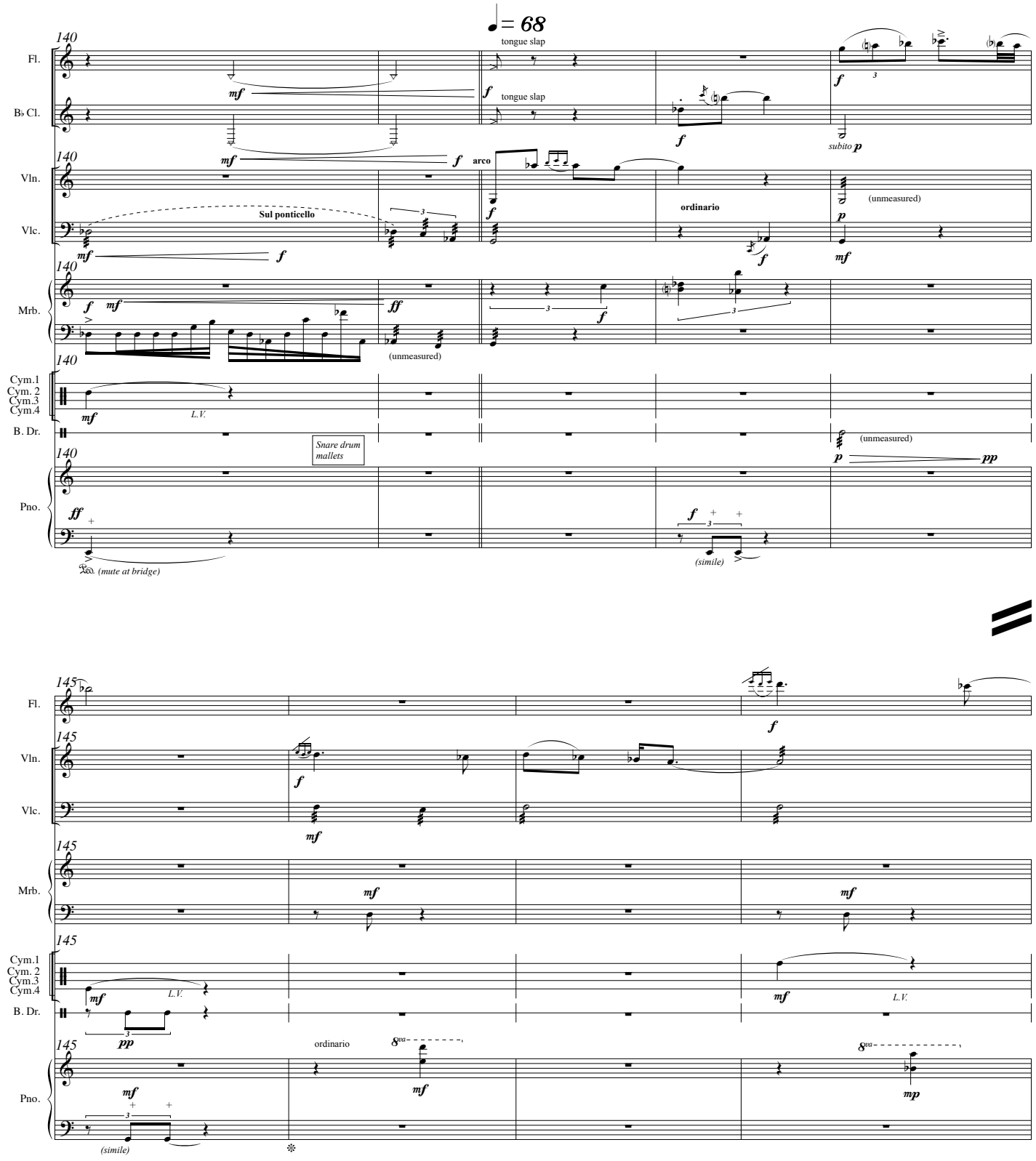

95
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
Pno.
pizz.
(unmeasured)
L.V.
(simile)
M.S.
99

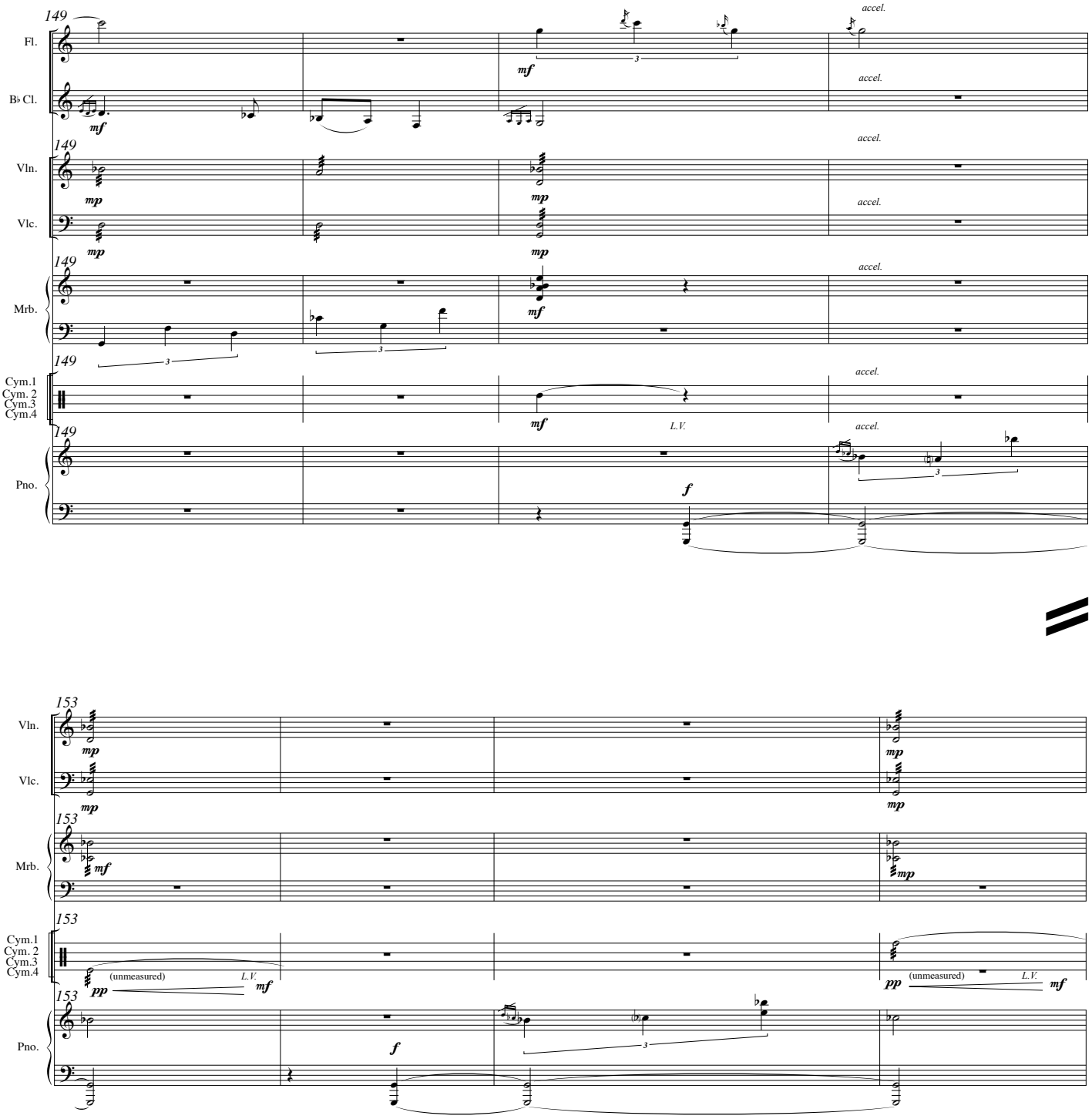

103
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Pno.
mf
f
mp
p
M.S.
Ped.
107
arco
détaché
mf

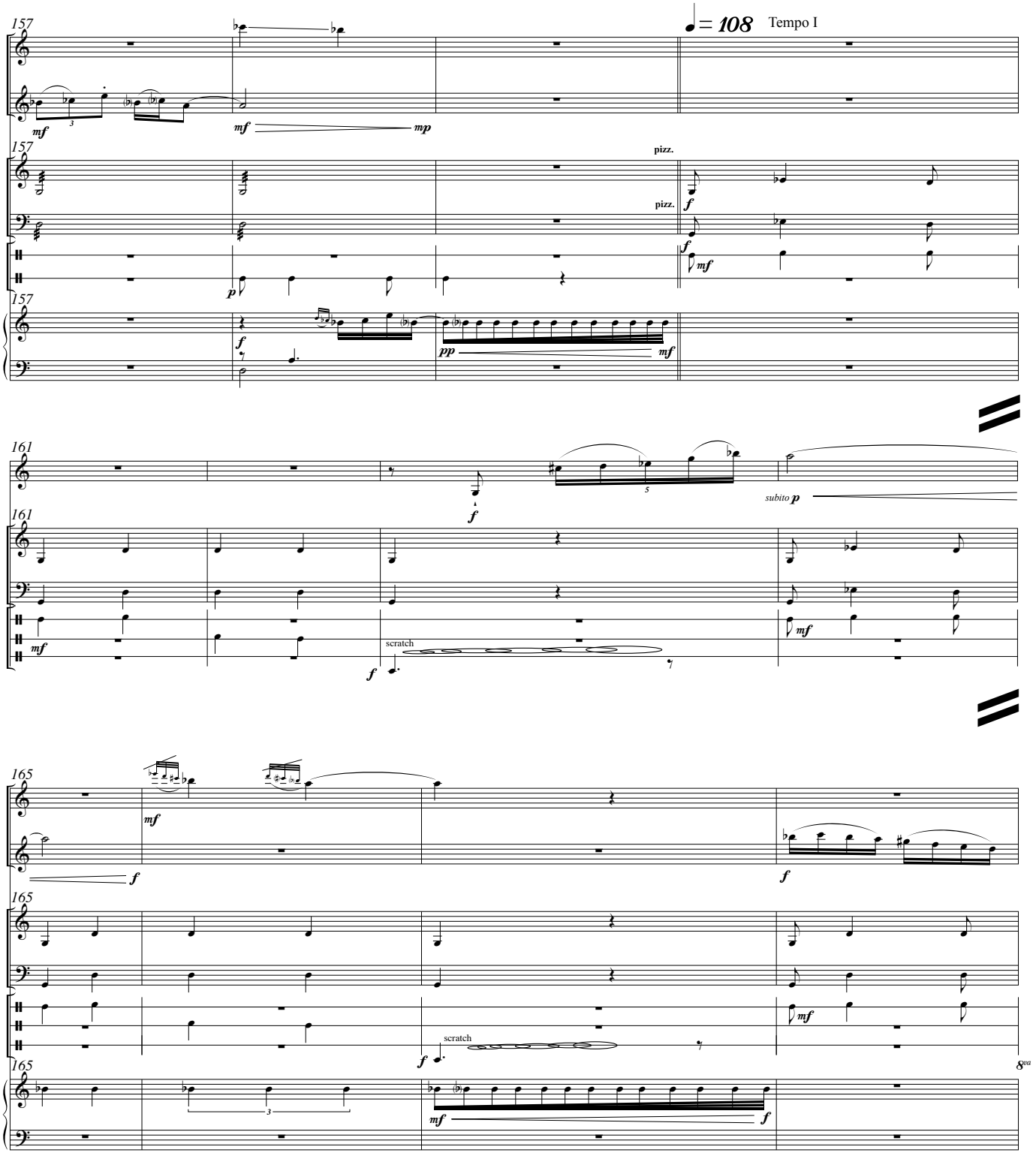

111
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Pno.
pizz.
arco
détaché
M.S.
115

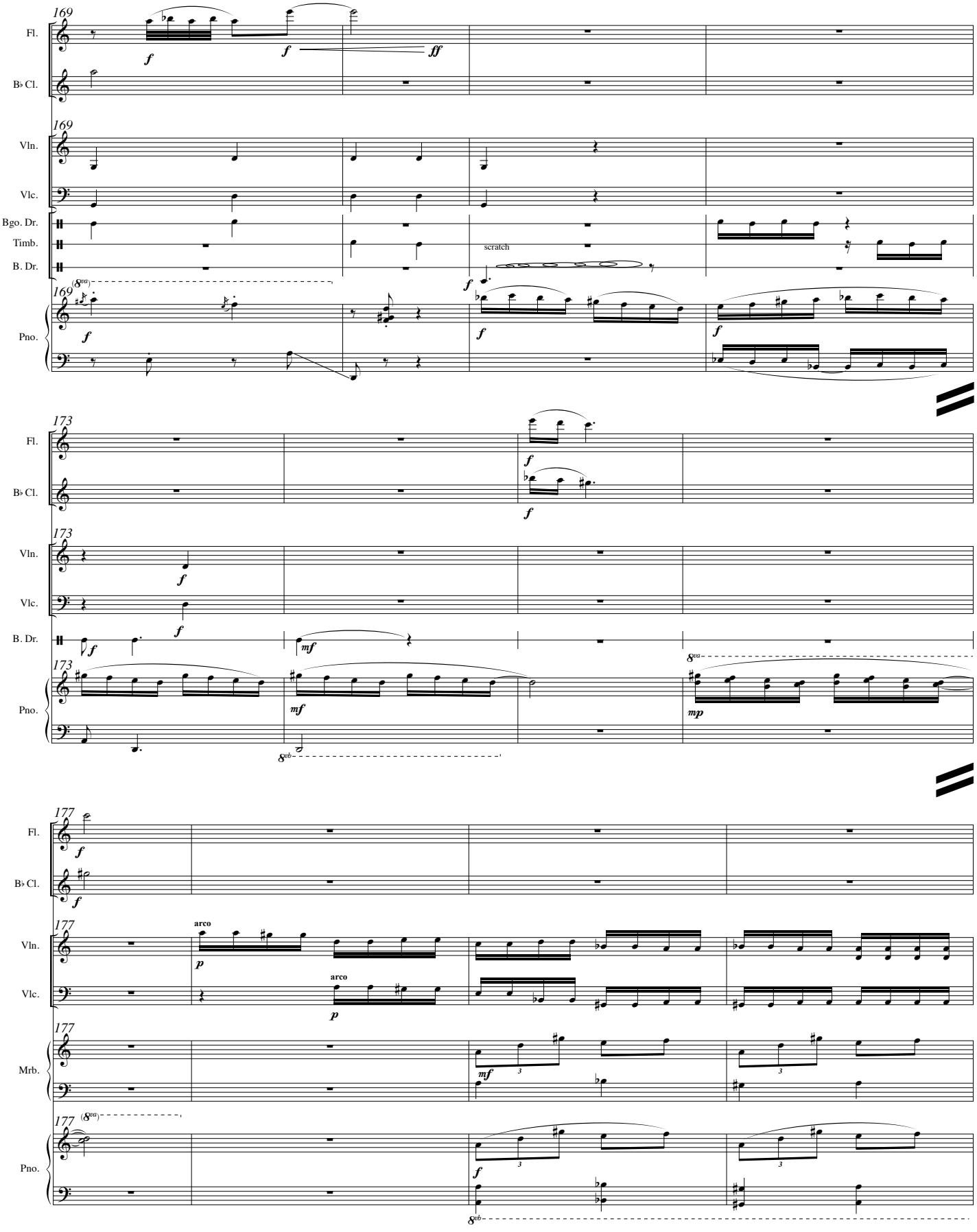

119
Fl.
B♭ Cl.
mf
119
Vln.
pizz.
mf
Vlc.
pizz.
mf
119
Mrb.
mf
f
mf
119
Pno.
p
mp
mf
M.S.
123
B♭ Cl.
mf
123
Mrb.
f
123
Pno.
M.S.
127
B♭ Cl.
3
3
mf
127
Vln.
mf
mf
Vlc.
mf
127
Mrb.
mf
127
Pno.
M.S.

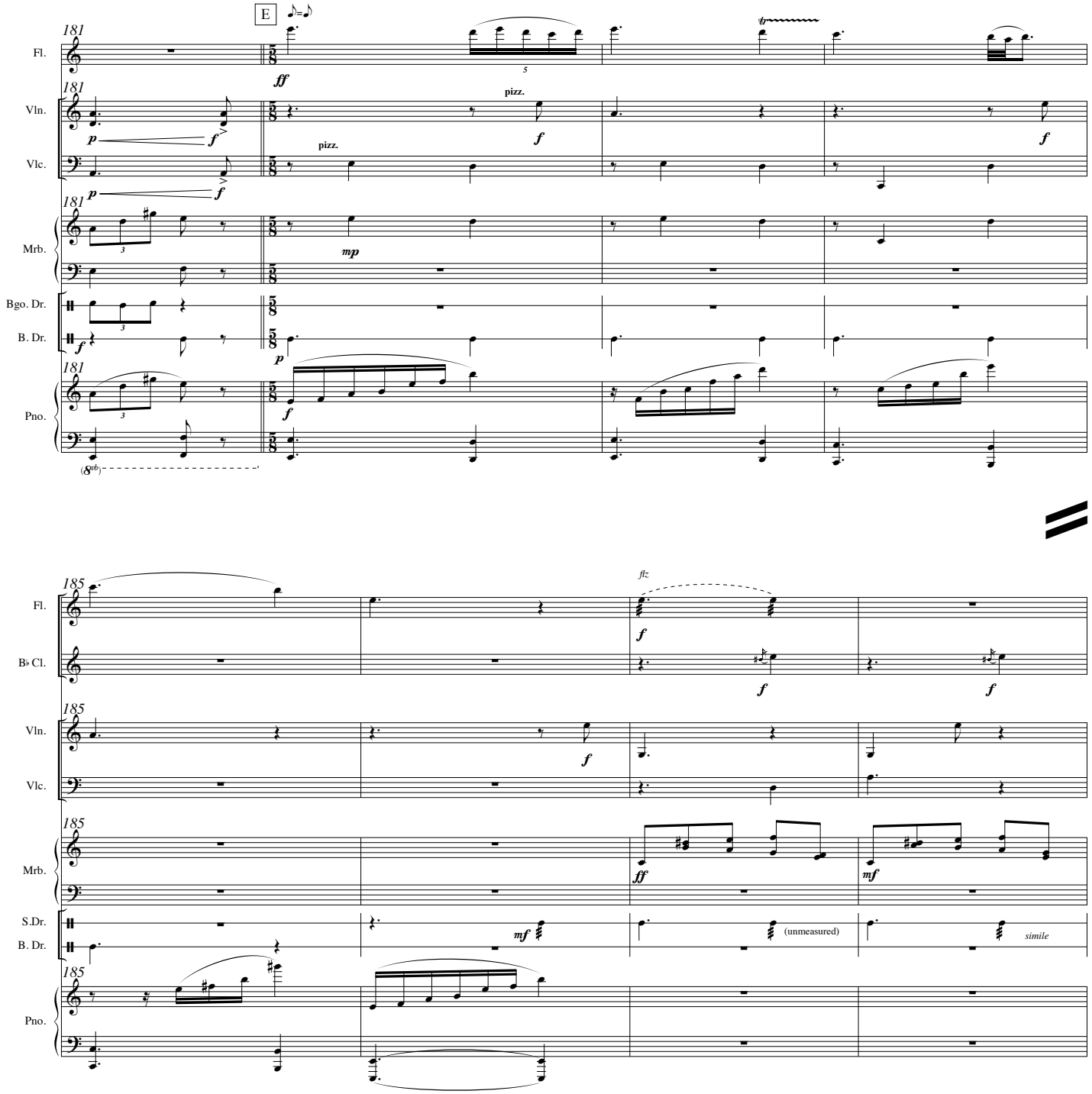

D
131
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
Pno.
mf
mp
arco
L.V.
pp
135
ritenuto
♩= 84
tongue slap
molto
ritardando
f
p
Cym. 2
S.Dr.
Superball
mallet
rub across the surface
inside piano
mute

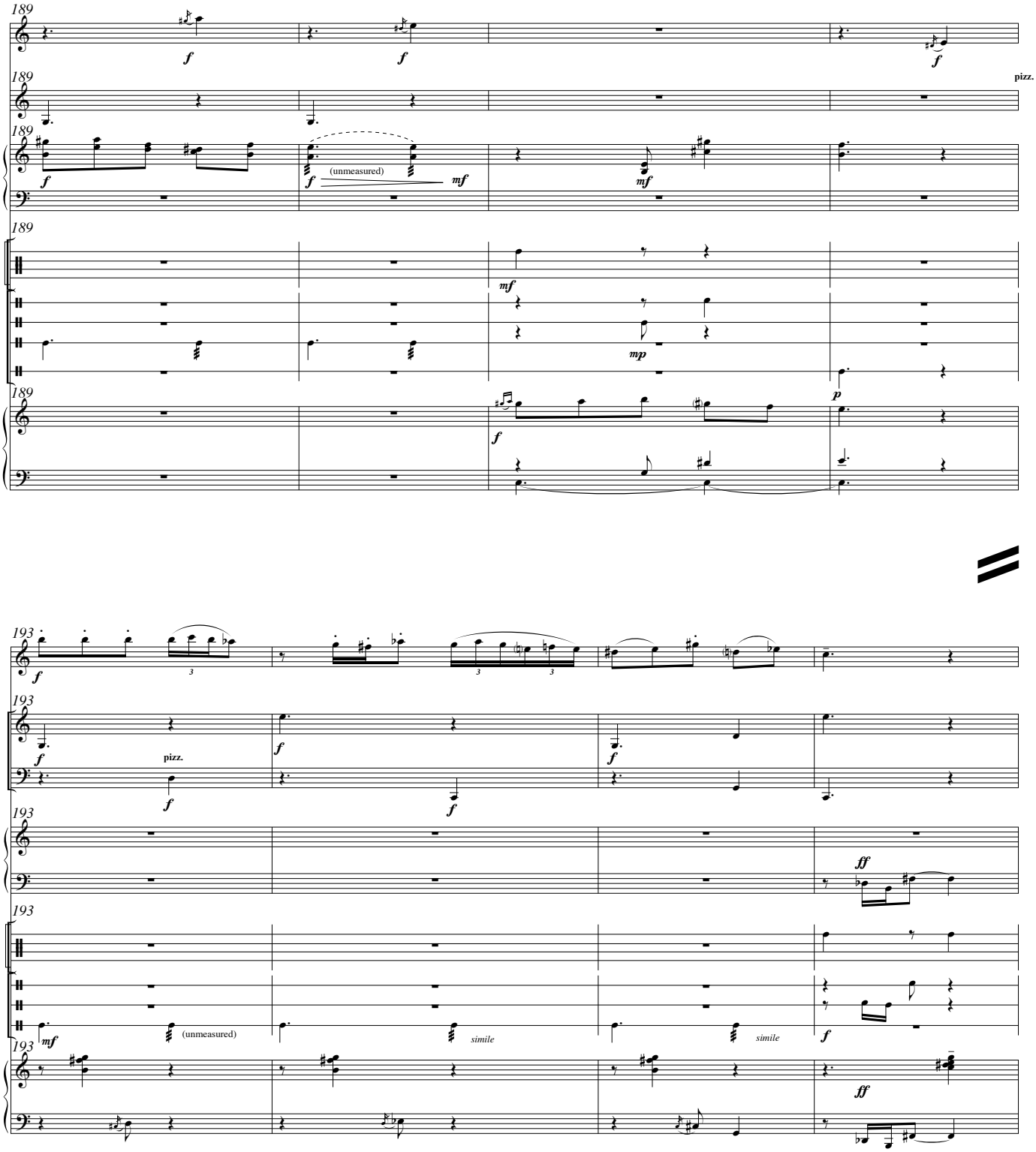

♩= 68
tongue slap
tongue slap
arco
Sul ponticello
ordinario
(unmeasured)
(unmeasured)
(unmeasured)
Snare drum
mallets
L.V.
(mute at bridge)
(simile)
ordinario
(simile)
L.V.
L.V.
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
B. Dr.
Pno.


149
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
Pno.
mf
mp
f
accel.
L.V.
153
(unmeasured)
pp

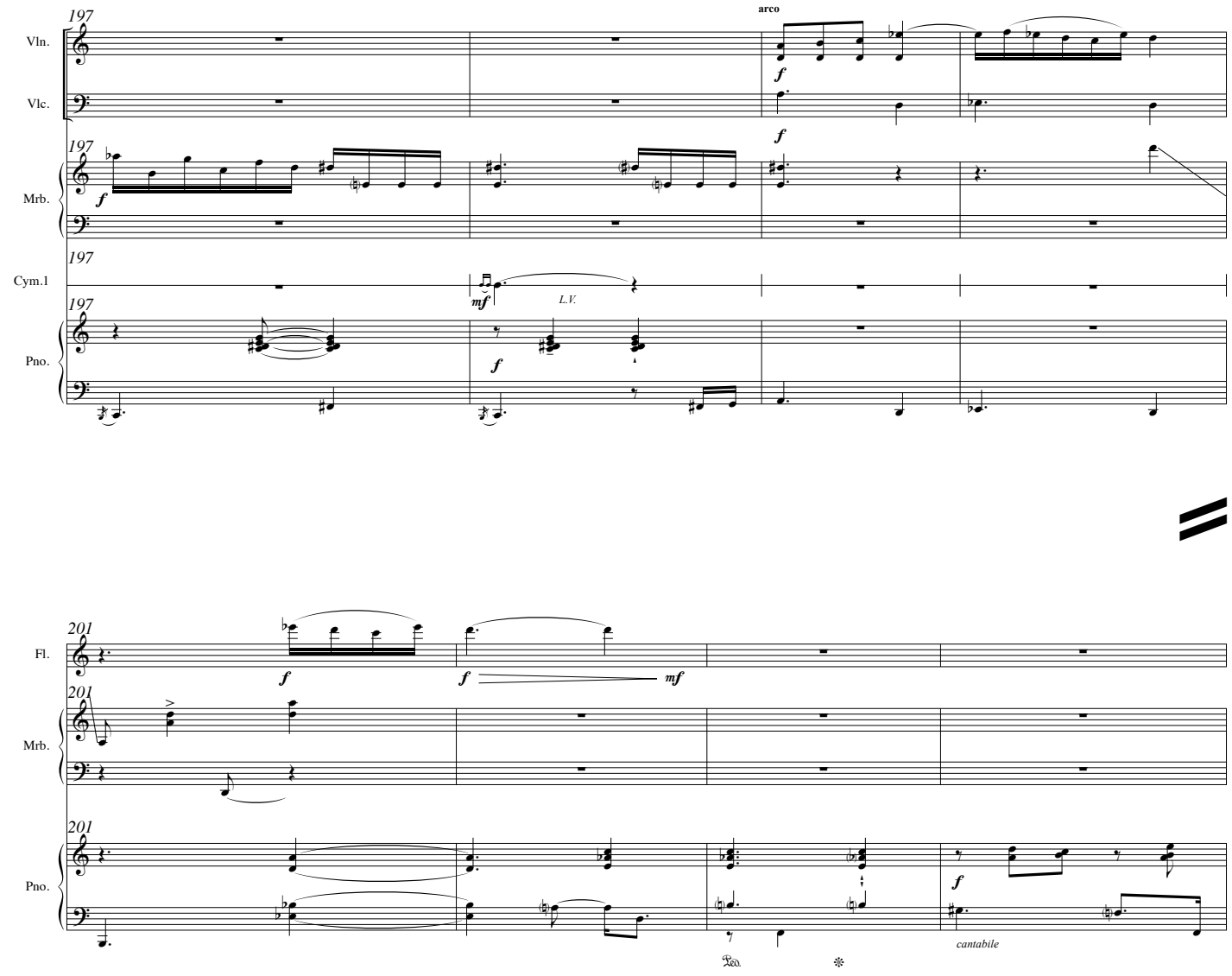

157
♩ = 108 Tempo I
Fl.
B♭ Cl.
mf
mp
157
Vln.
Vlc.
pizz.
pizz.
f
Bgo. Dr.
B. Dr.
mf
p
157
Pno.
f
pp
mf
161
B♭ Cl.
f
subito p
161
Vln.
Vlc.
Bgo. Dr.
Timb.
B. Dr.
mf
scratch
f
mf
165
Fl.
B♭ Cl.
mf
f
f
165
Vln.
Vlc.
Bgo. Dr.
Timb.
B. Dr.
scratch
f
mf
165
Pno.
mf
f
8va


169
Fl.
B♭ Cl.
Vln.
Vlc.
Bgo. Dr.
Timb.
B. Dr.
Pno.
scratch
173
177
Mrb.
arco

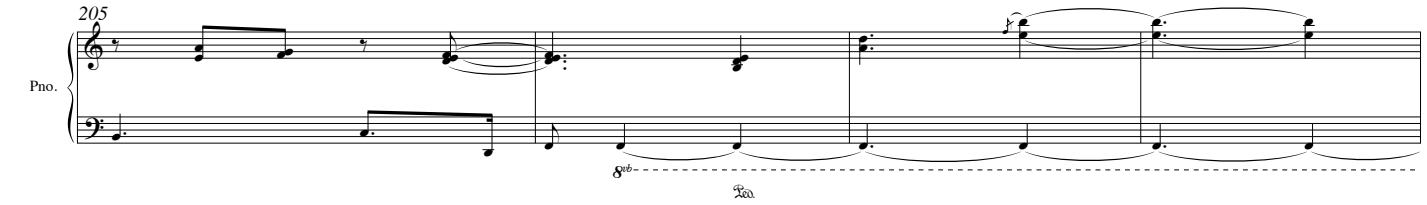

E
181
Fl.
Vln.
Vlc.
Mrb.
Bgo. Dr.
B. Dr.
Pno.
ff
pizz.
mp
185
B♭ Cl.
S.Dr.
flz
(unmeasured)
simile

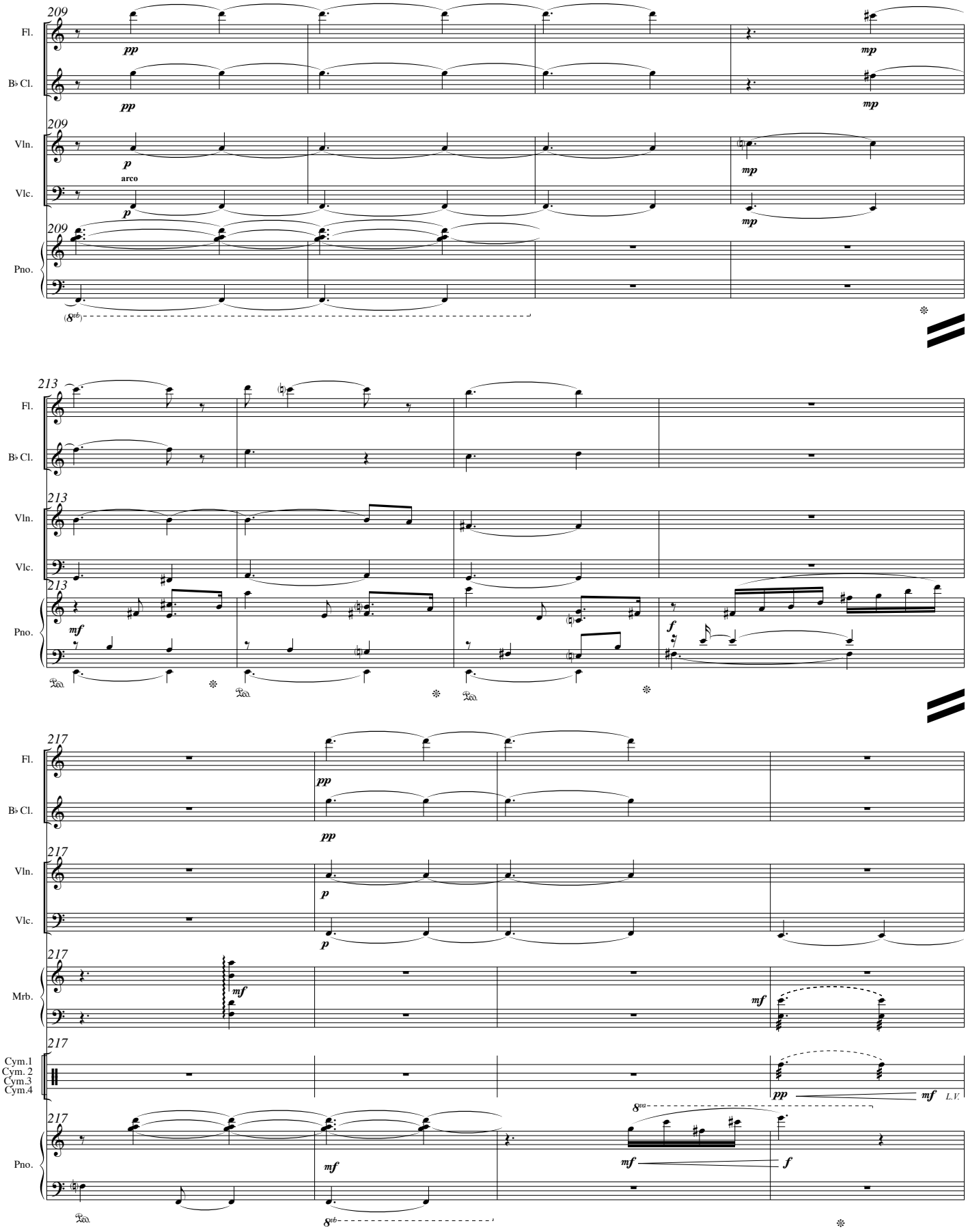

189
B♭ Cl.
Vln.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
Bgo. Dr.
Timb.
S.Dr.
B. Dr.
Pno.
f
mf
mp
p
(unmeasured)
pizz.

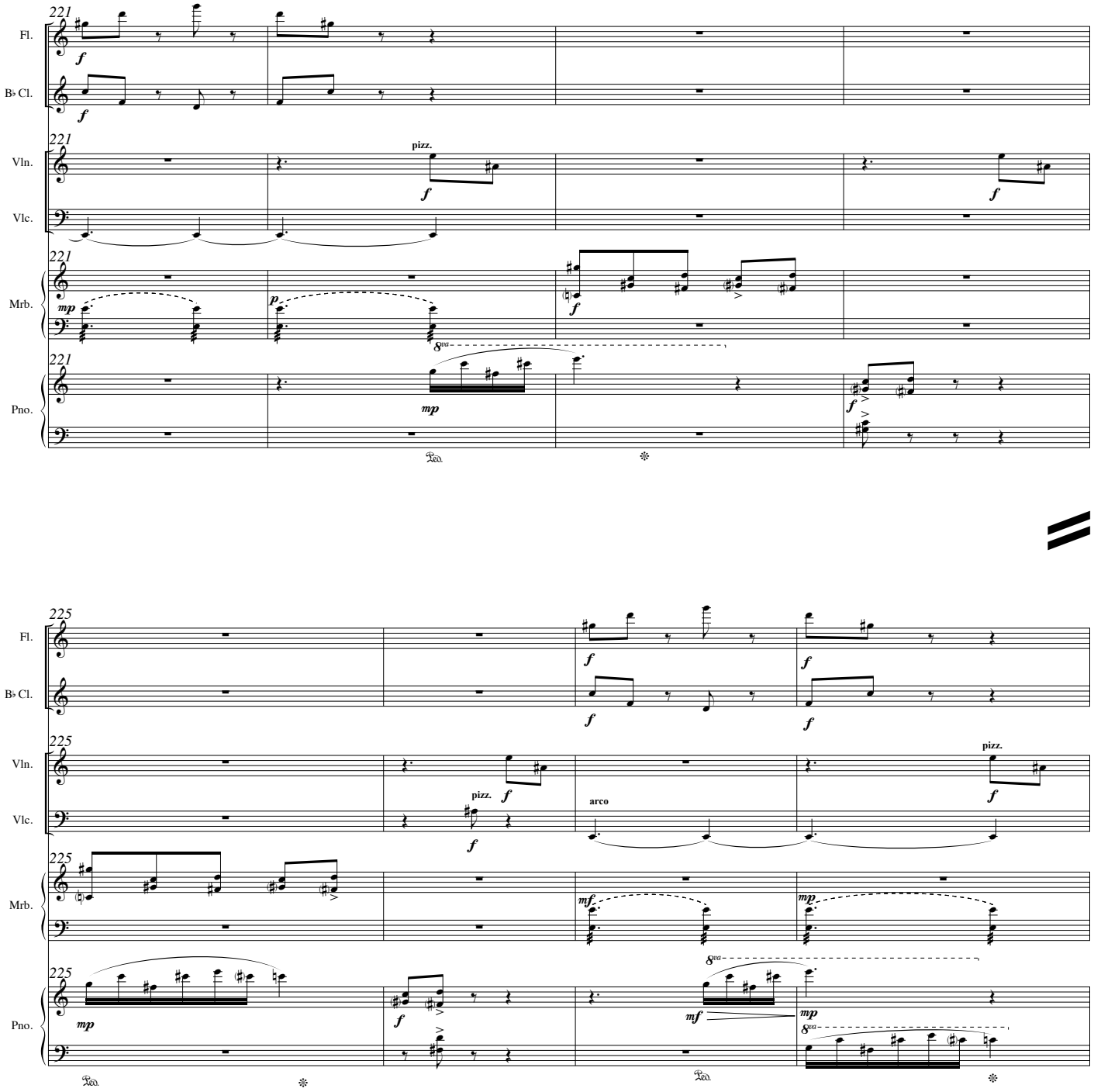
193
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
Bgo. Dr.
Timb.
S.Dr.
Pno.
f
mf
ff
pizz.
(unmeasured)
simile

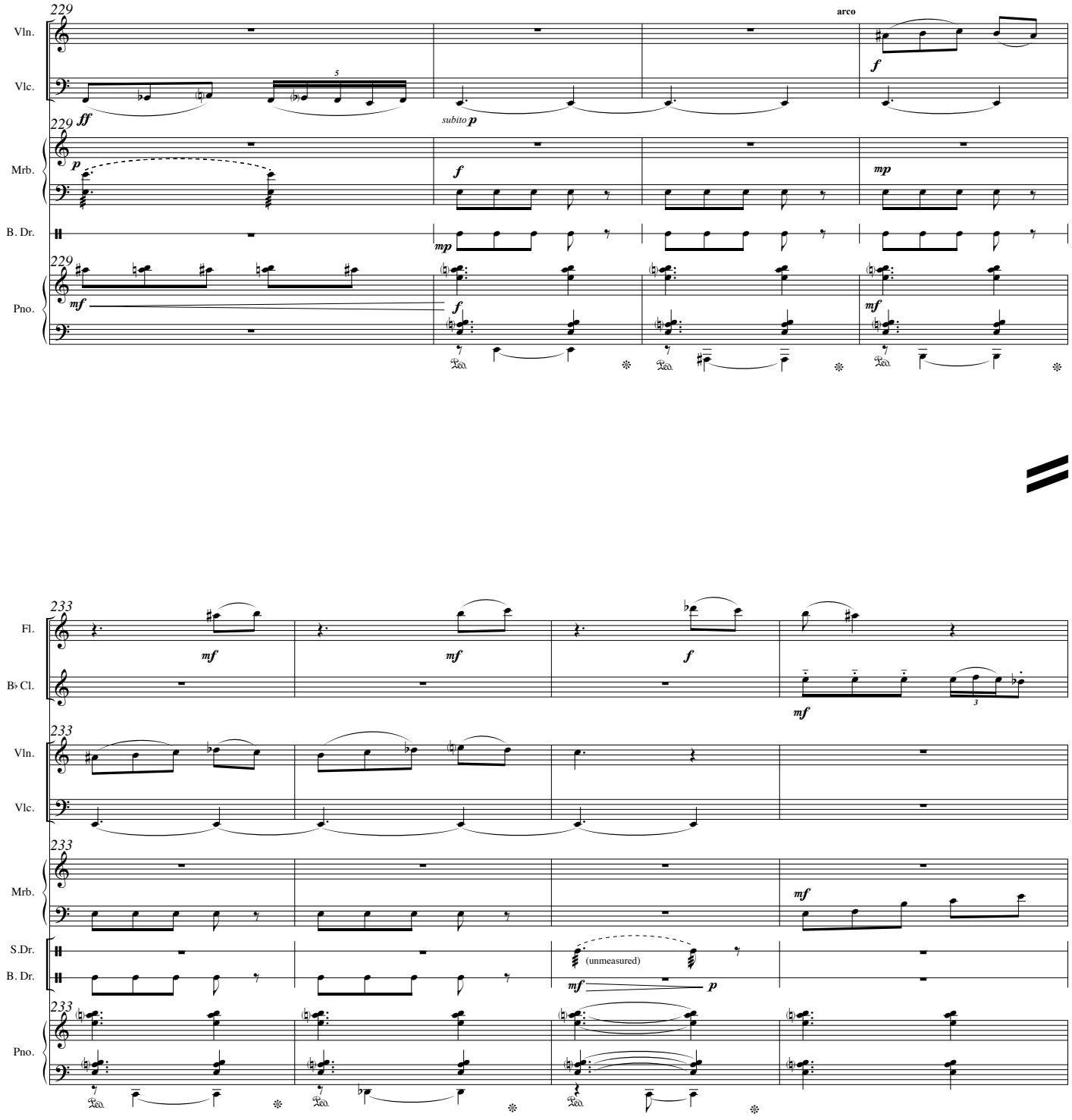

197
Vln.
arco
f
Vlc.
f
197
Mrb.
f
197
Cym.1
mf
L.V.
197
Pno.
f

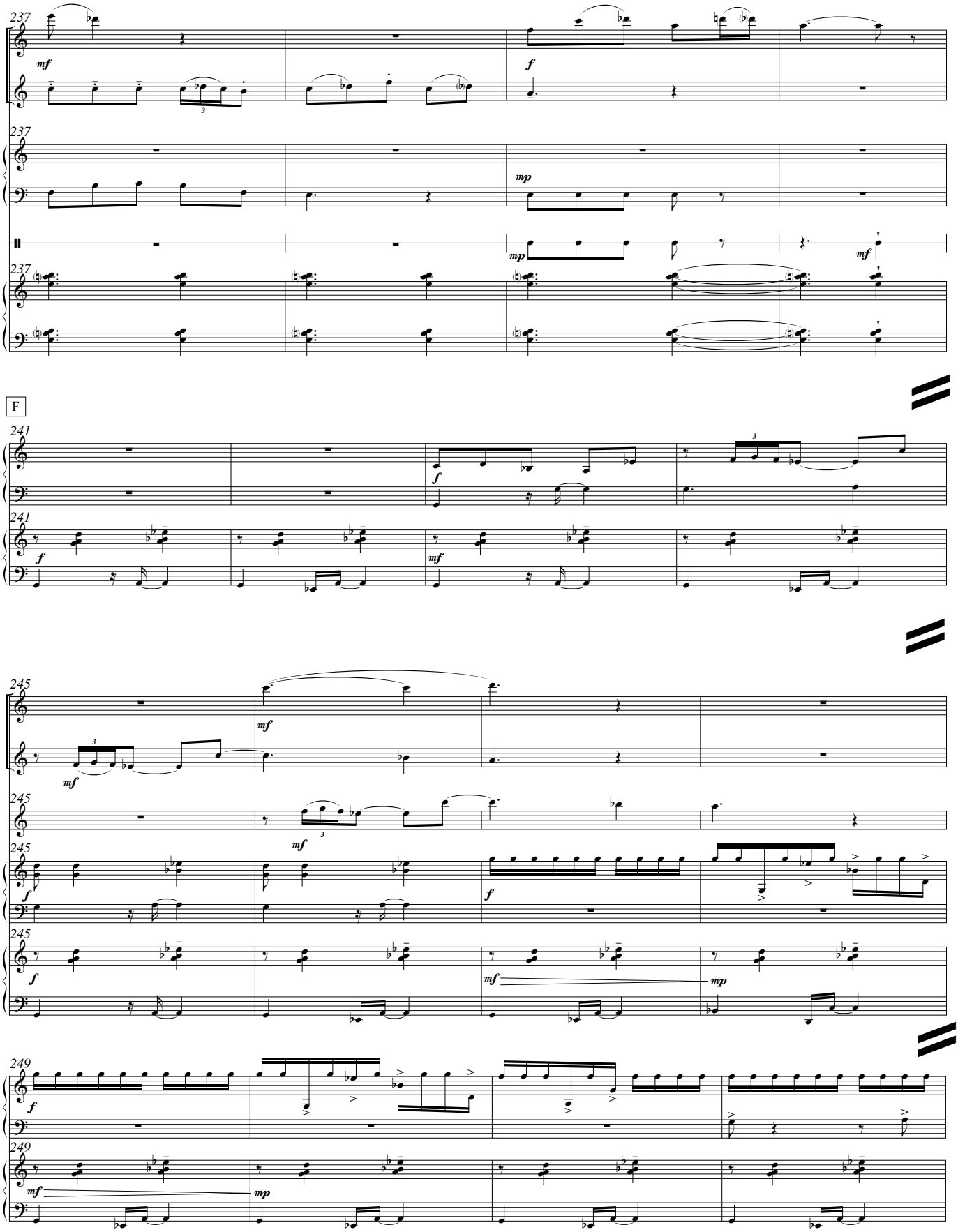
201
Fl.
f
f
mf
201
Mrb.
201
Pno.
f
cantabile
Ped.

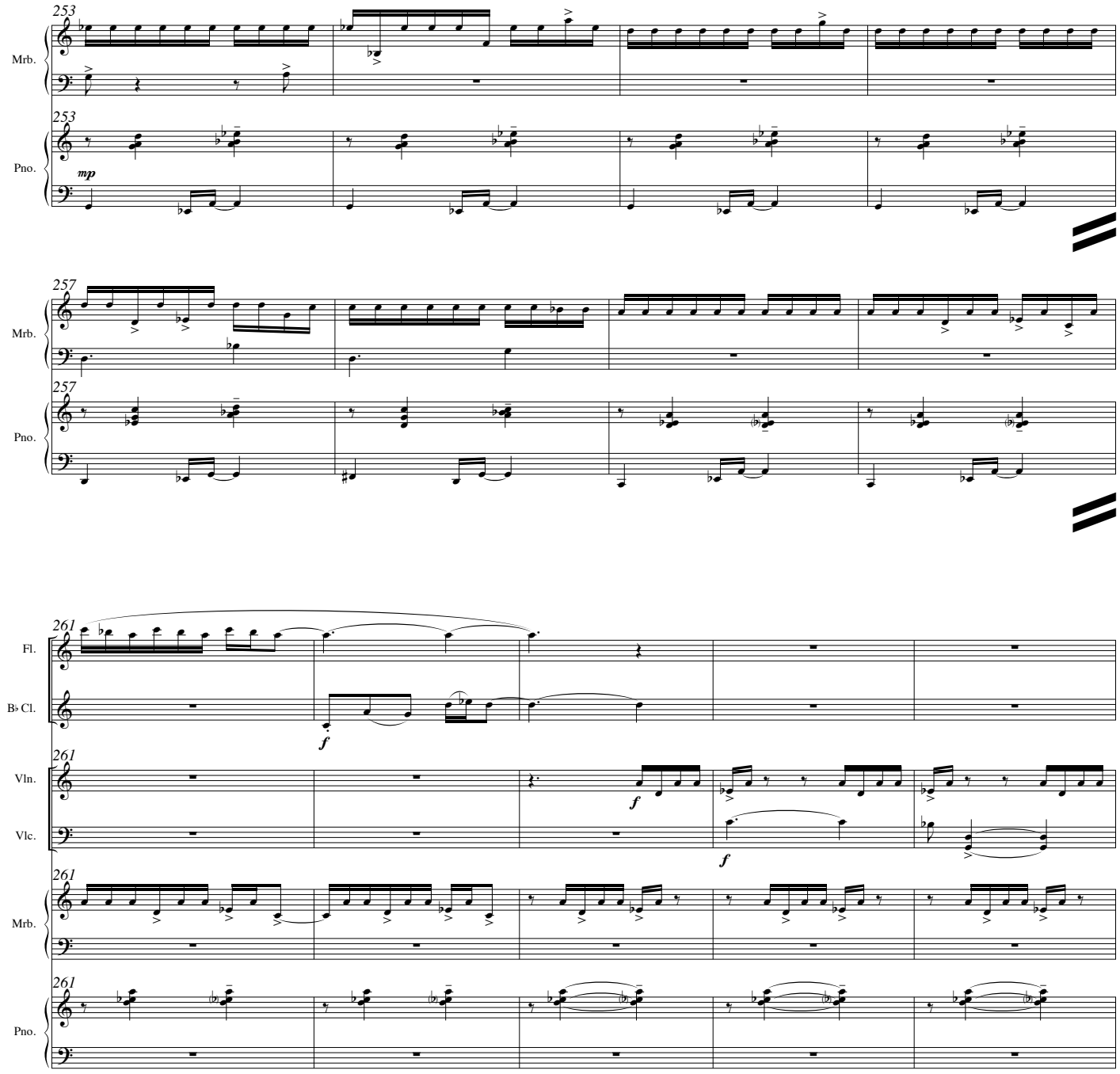

205
Pno.
8vb
Ped.

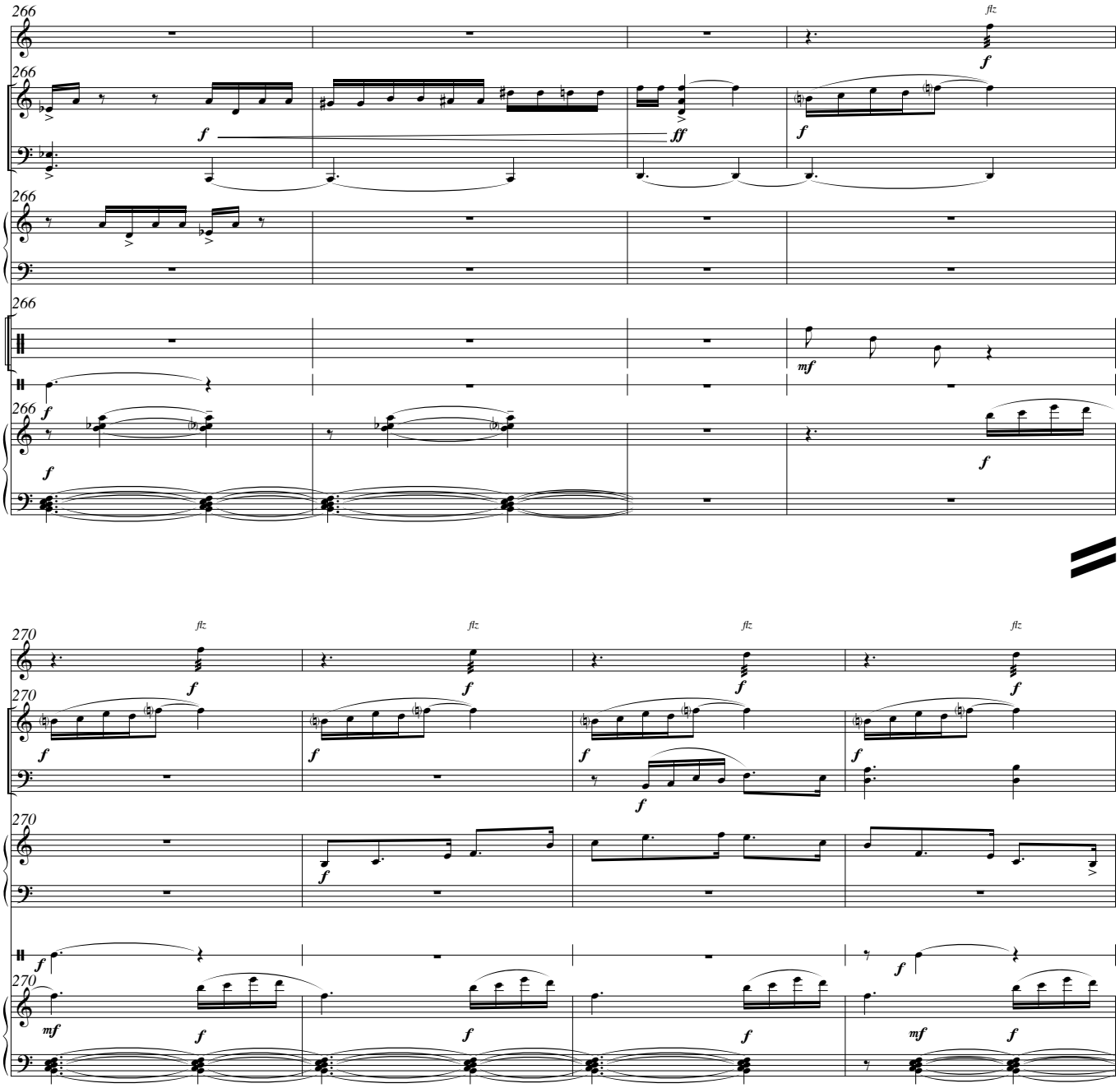

209
Fl.
pp
mp
B♭ Cl.
pp
mp
209
Vln.
p
arco
mp
Vlc.
p
mp
209
Pno.
213
Fl.
B♭ Cl.
213
Vln.
Vlc.
213
Pno.
mf
f
217
Fl.
pp
B♭ Cl.
pp
217
Vln.
p
Vlc.
p
217
Mrb.
mf
mf
217
Cym.1
Cym. 2
Cym.3
Cym.4
pp
mf
L.V.
217
Pno.
mf
mf
f


221
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Pno.
pizz.
8va
225
arco
mf

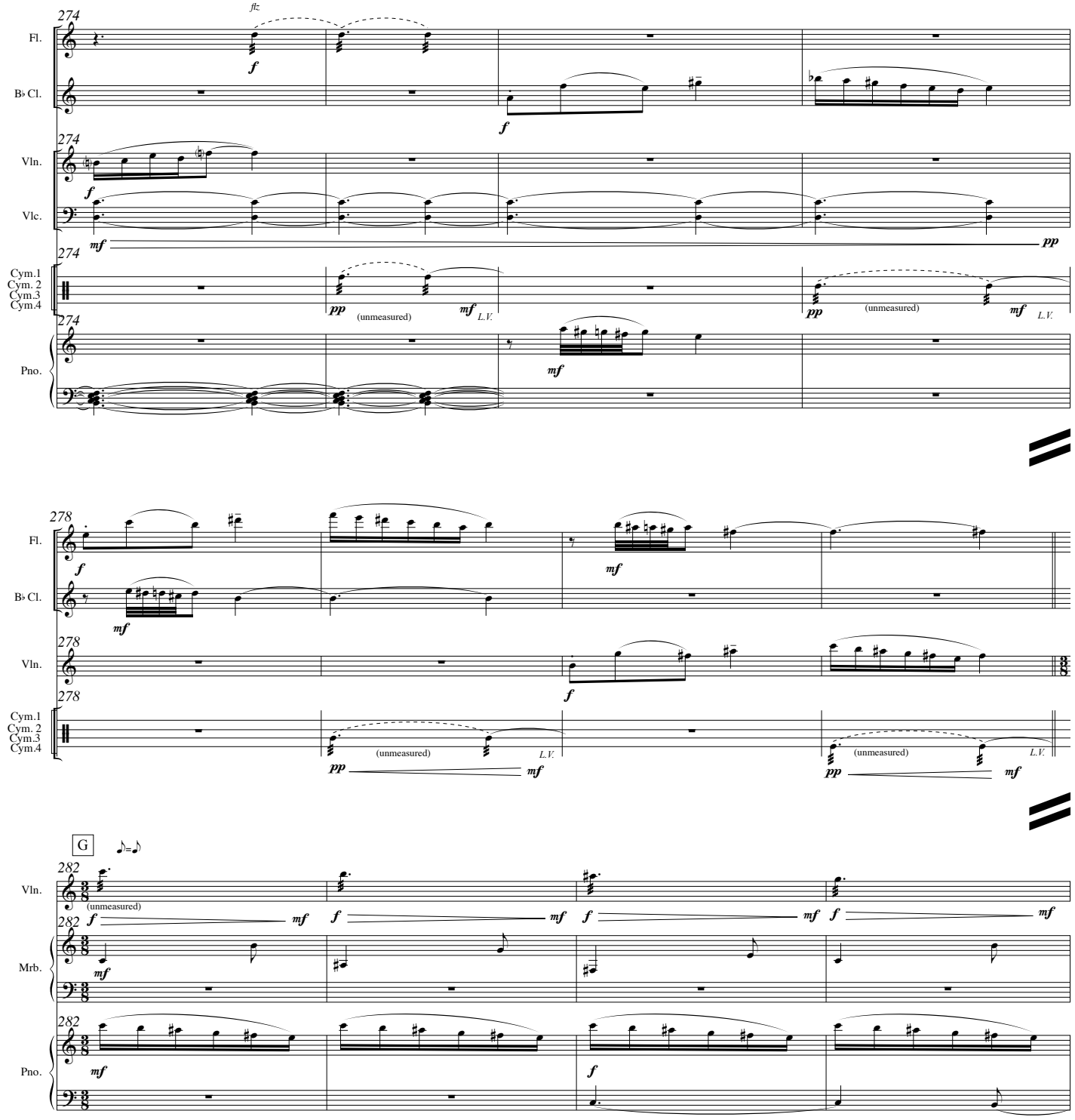

229
Vln.
Vlc.
arco
f
subito p
229 ff
Mrb.
p
f
mp
B. Dr.
mp
229
Pno.
mf
f
mf
233
Fl.
mf
mf
f
B♭ Cl.
mf
233
Vln.
Vlc.
233
Mrb.
mf
S.Dr.
B. Dr.
(unmeasured)
mf
p
233
Pno.


237
Fl.
B♭ Cl.
Mrb.
B. Dr.
Pno.
mf
f
mp
F
241
245
Vln.
249


253
Mrb.
253
Pno.
mp
257
Mrb.
257
Pno.
261
Fl.
B♭ Cl.
f
261
Vln.
Vlc.
f
f
261
Mrb.
261
Pno.

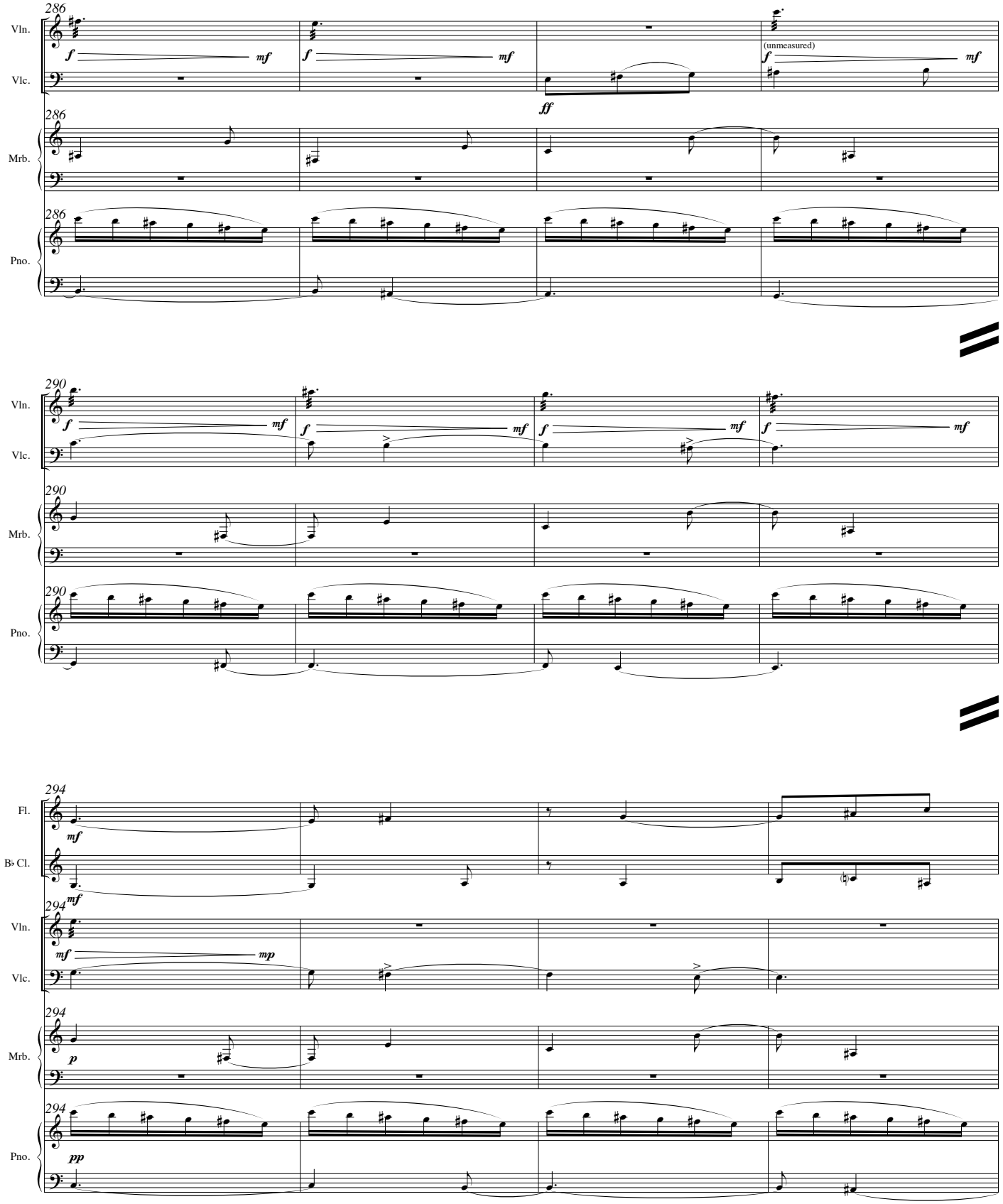

266
Fl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
B. Dr.
Pno.
flz
f
ff
mf

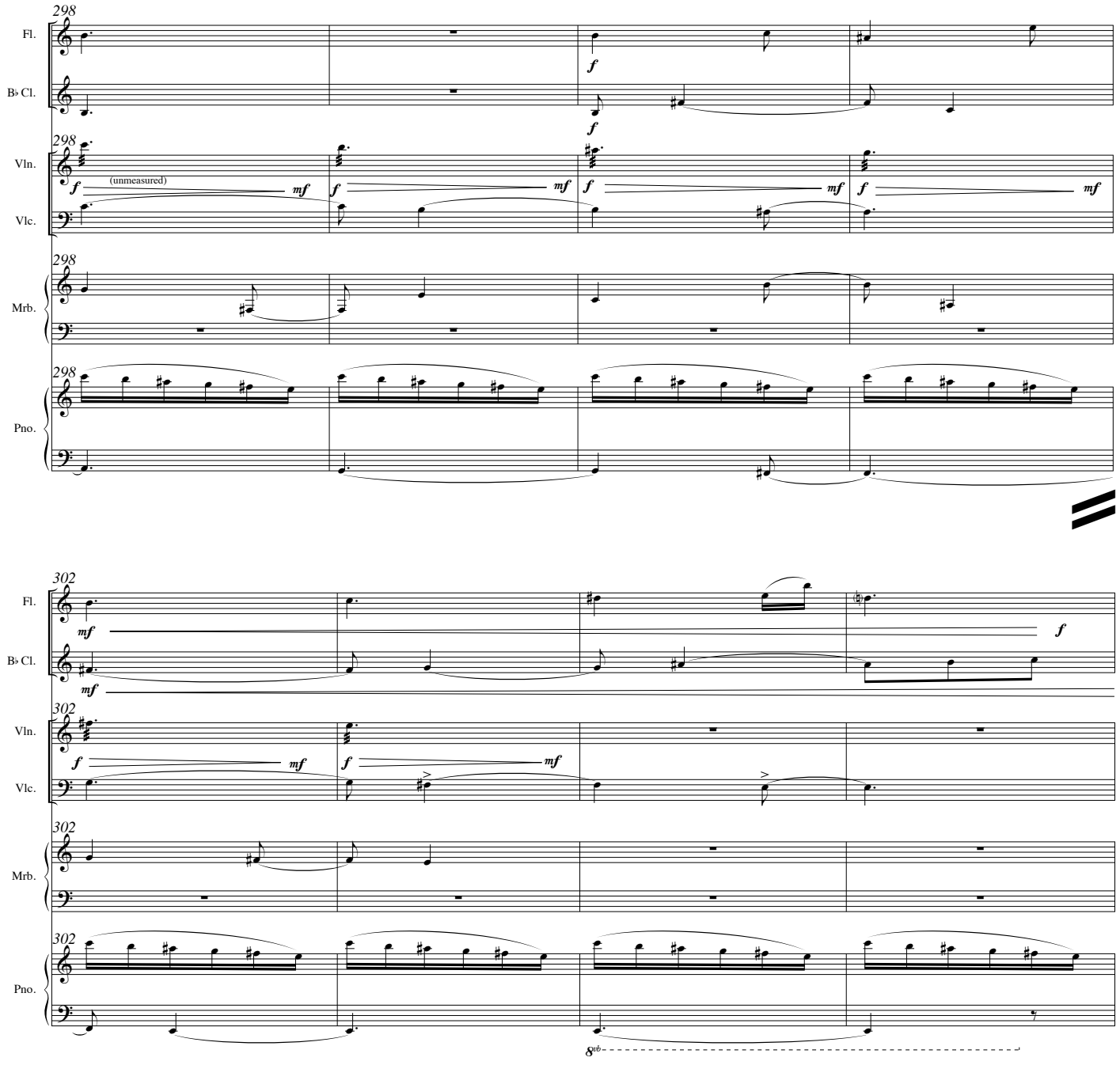
270
Fl.
Vln.
Vlc.
Mrb.
B. Dr.
Pno.
flz
f
mf

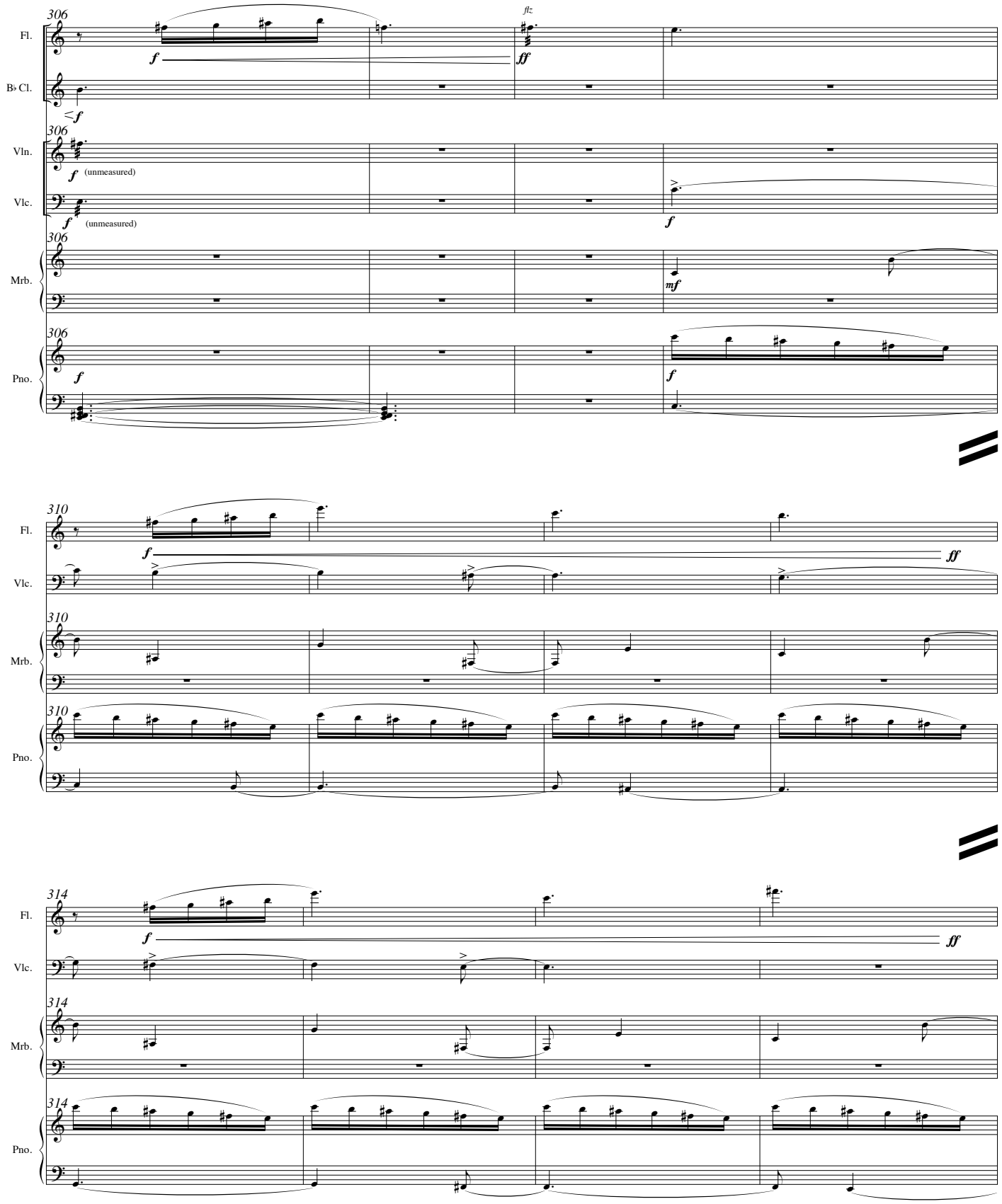

274
Fl.
B♭ Cl.
Vln.
Vlc.
Cym.1
Cym. 2
Cym.3
Cym.4
Pno.
flz
f
mf
pp
(unmeasured)
L.V.

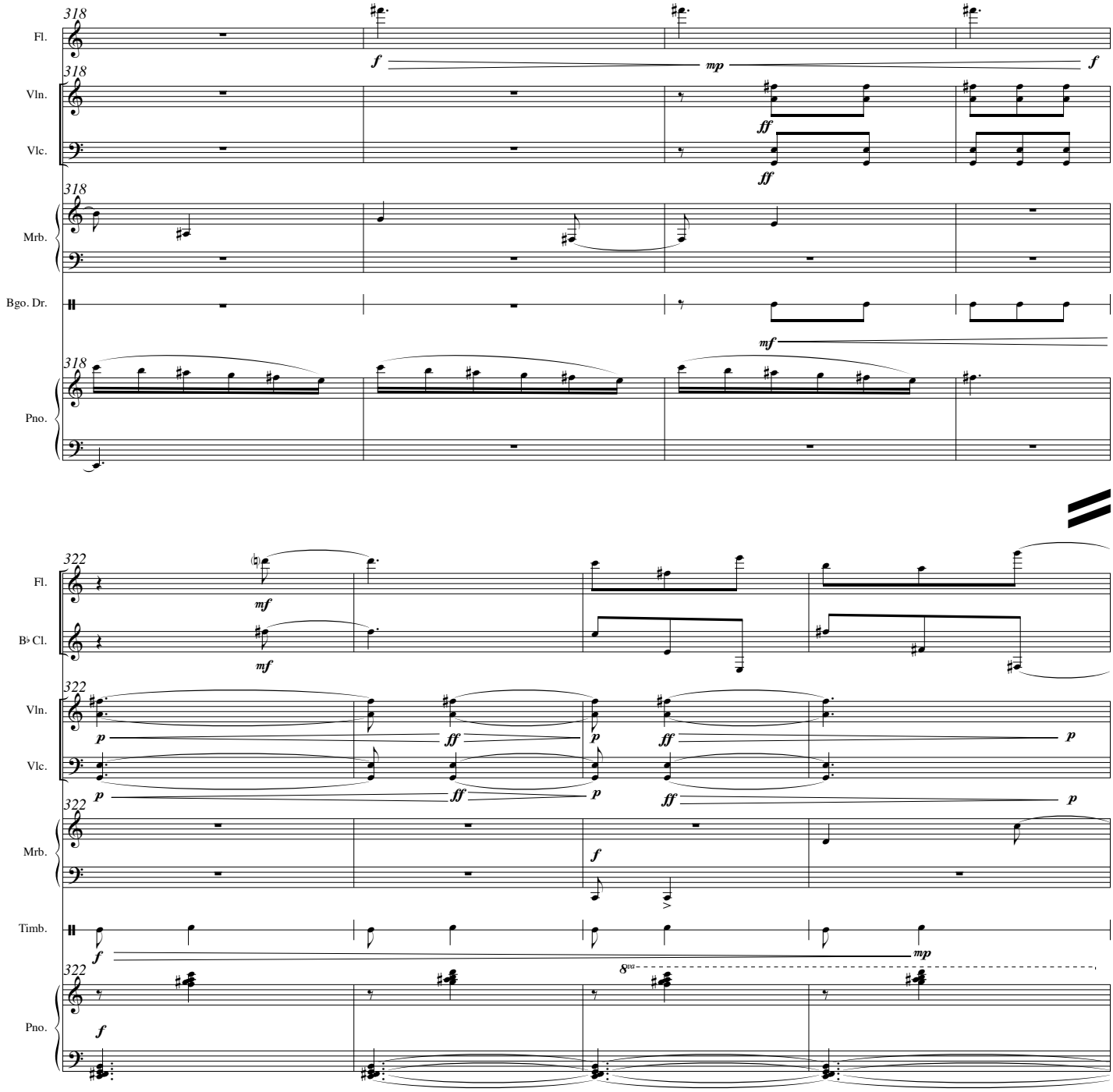
278
Fl.
B♭ Cl.
Vln.
Cym.1
Cym. 2
Cym.3
Cym.4
f
mf
pp
(unmeasured)
L.V.

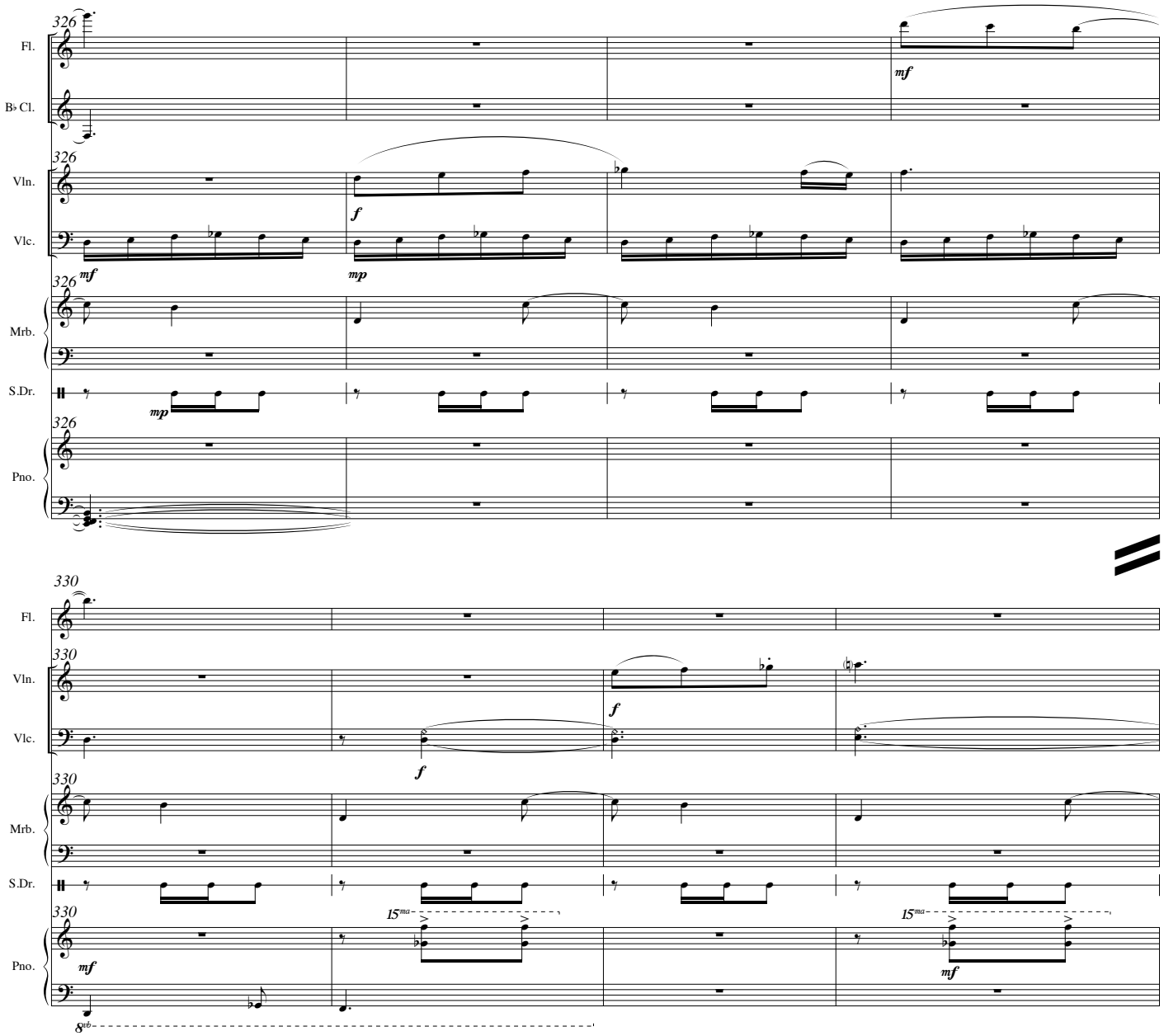
G
♪=♪
282
Vln.
Mrb.
Pno.
(unmeasured)
f
mf

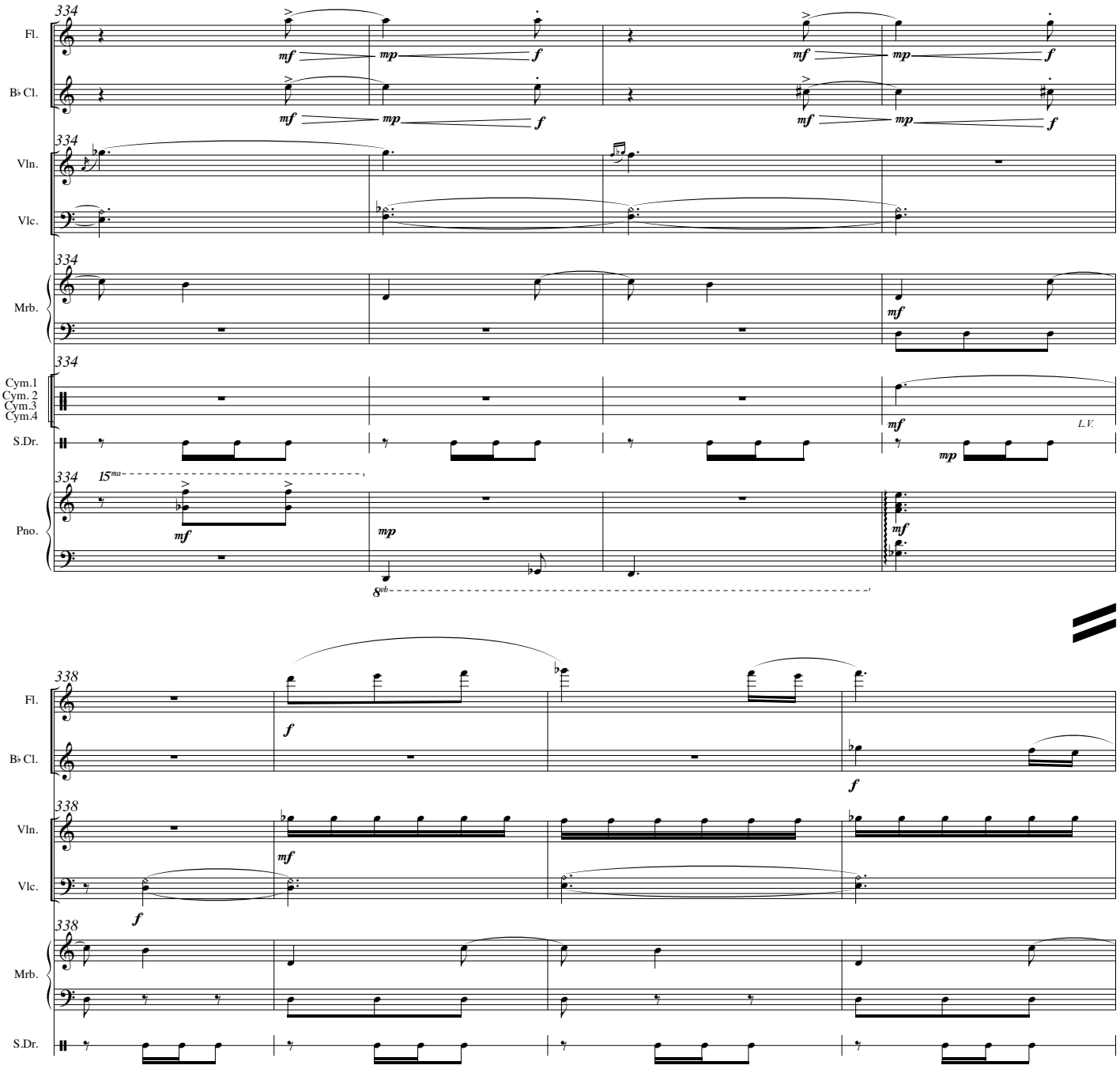

286
Vln.
Vlc.
Mrb.
Pno.
f
mf
ff
(unmeasured)
290
294
Fl.
B♭ Cl.
mp
p
pp

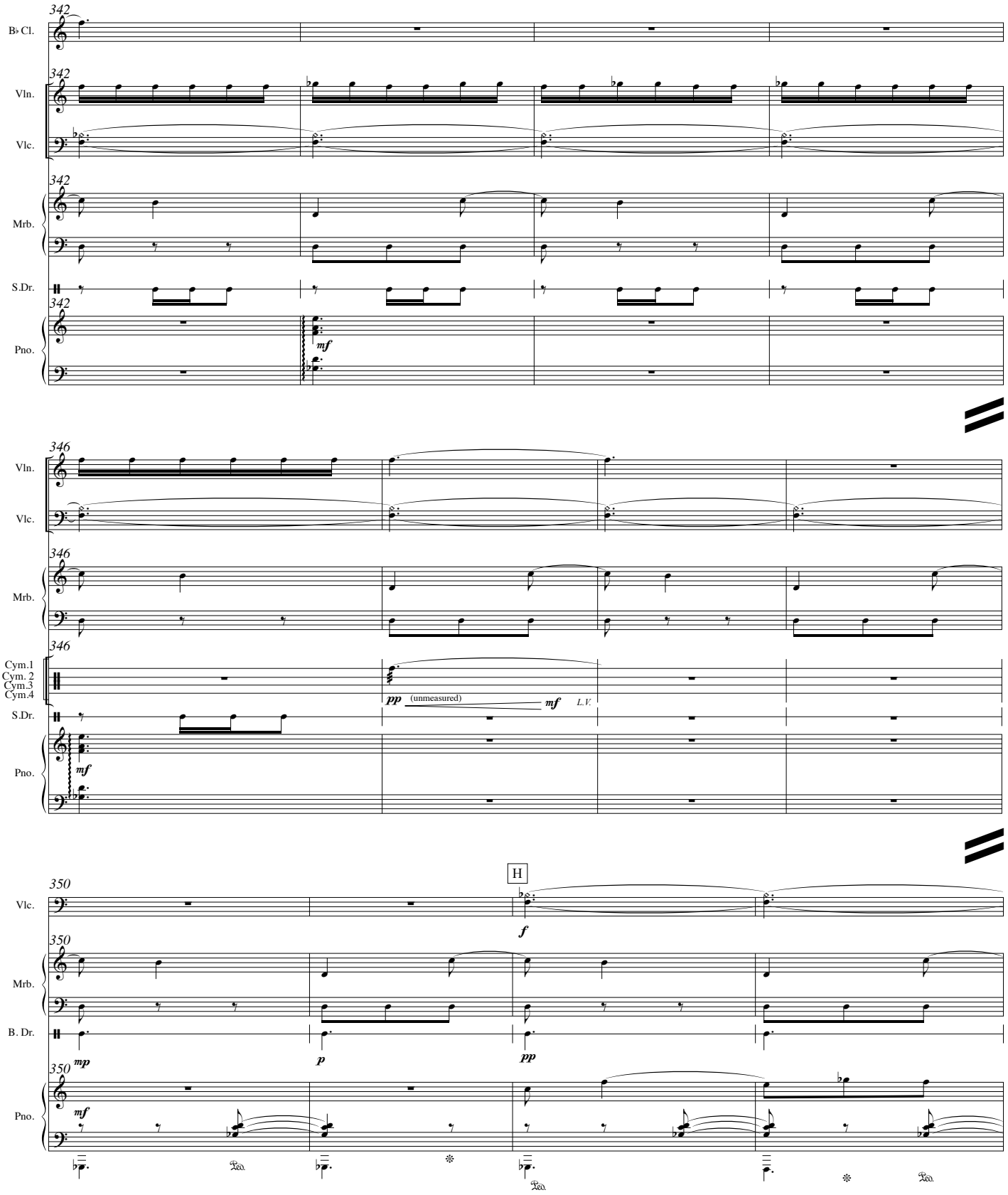

298
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Pno.
(unmeasured)
f
mf
302
8va

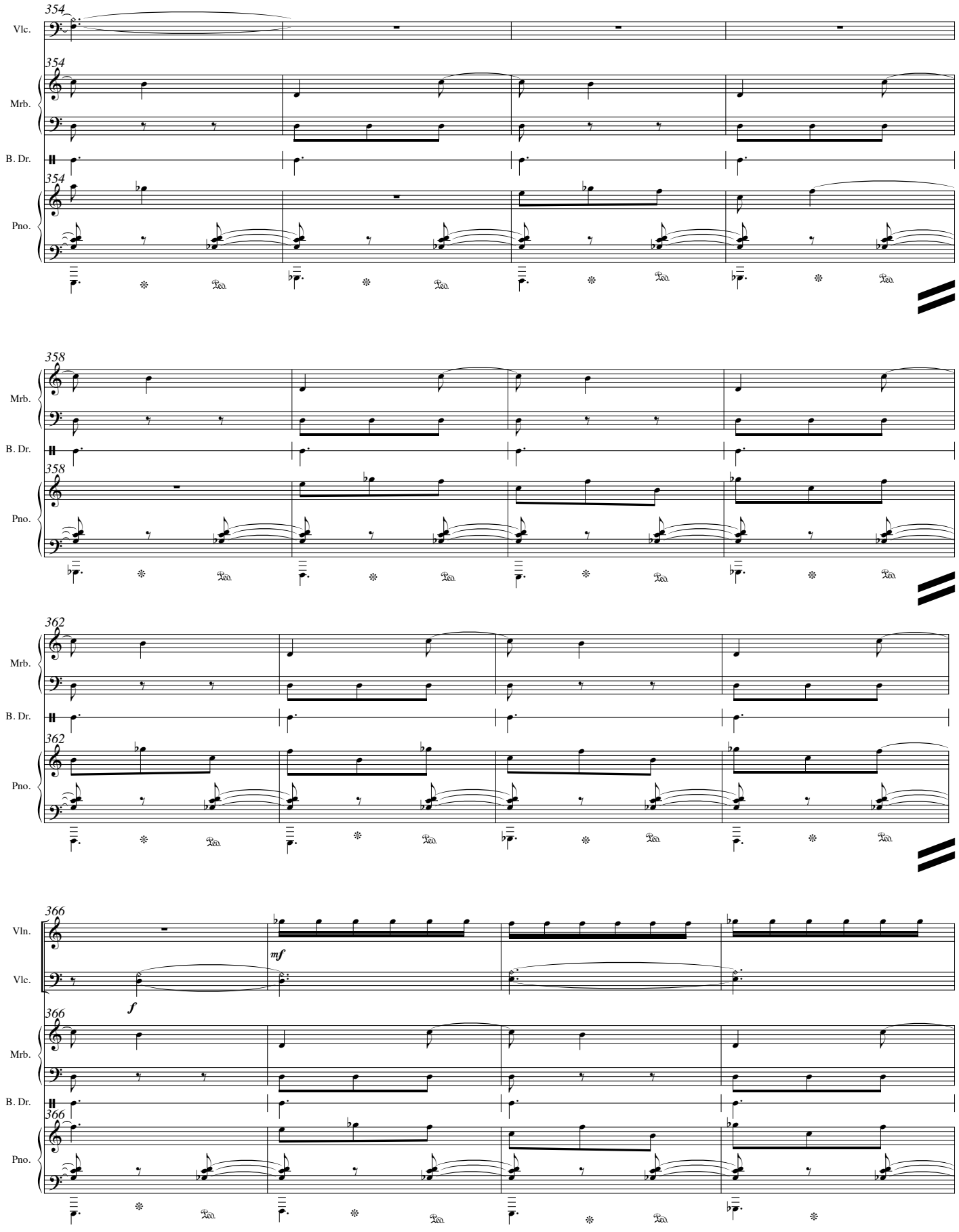

306
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Pno.
flz
f
ff
mf
(unmeasured)
310
314

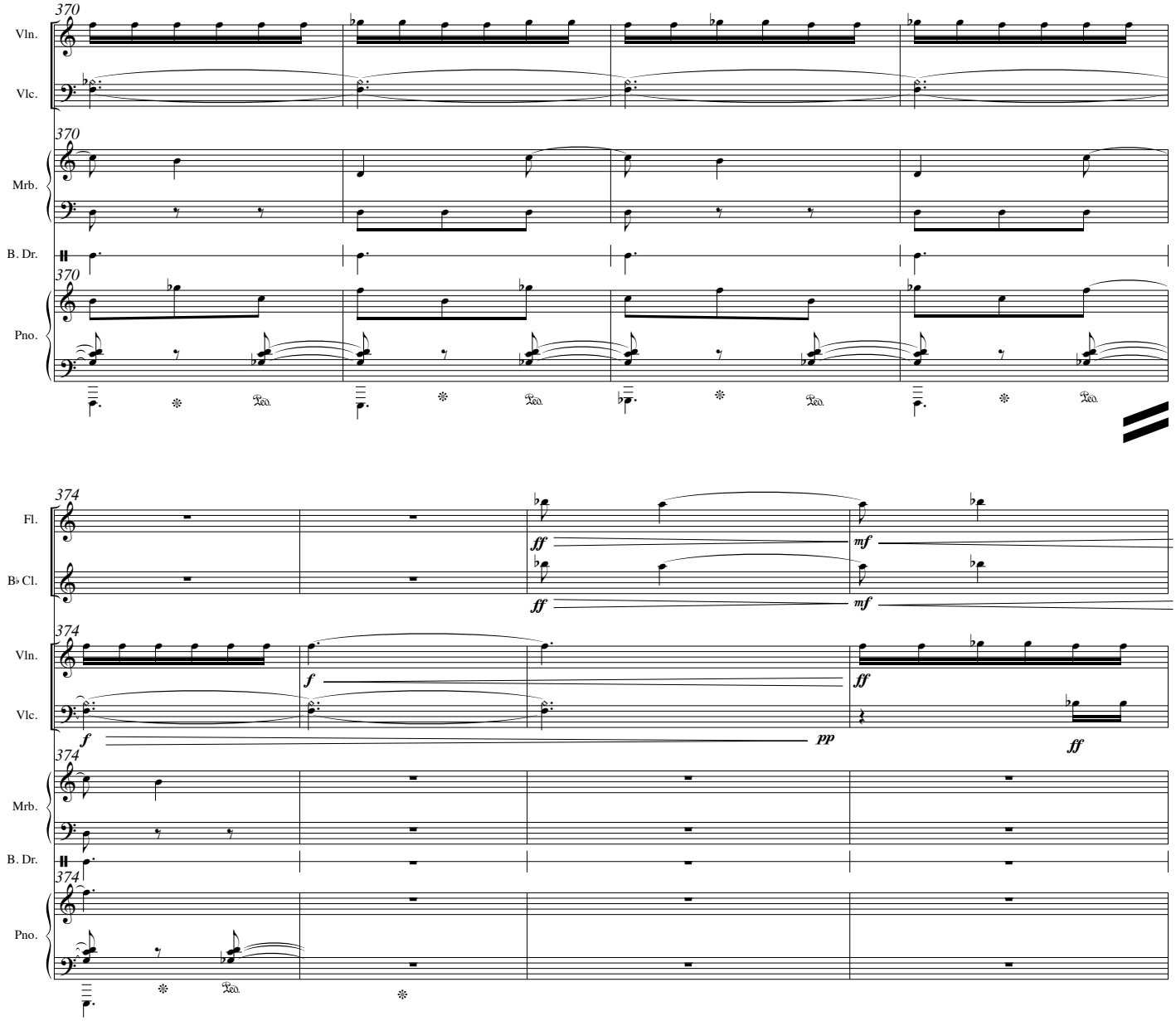

318
Fl.
f
mp
f
318
Vln.
ff
Vlc.
ff
318
Mrb.
Bgo. Dr.
mf
318
Pno.
322
Fl.
mf
B♭ Cl.
mf
322
Vln.
p
ff
p
ff
p
Vlc.
p
ff
p
ff
p
322
Mrb.
f
Timb.
f
mp
322
8va
Pno.
f

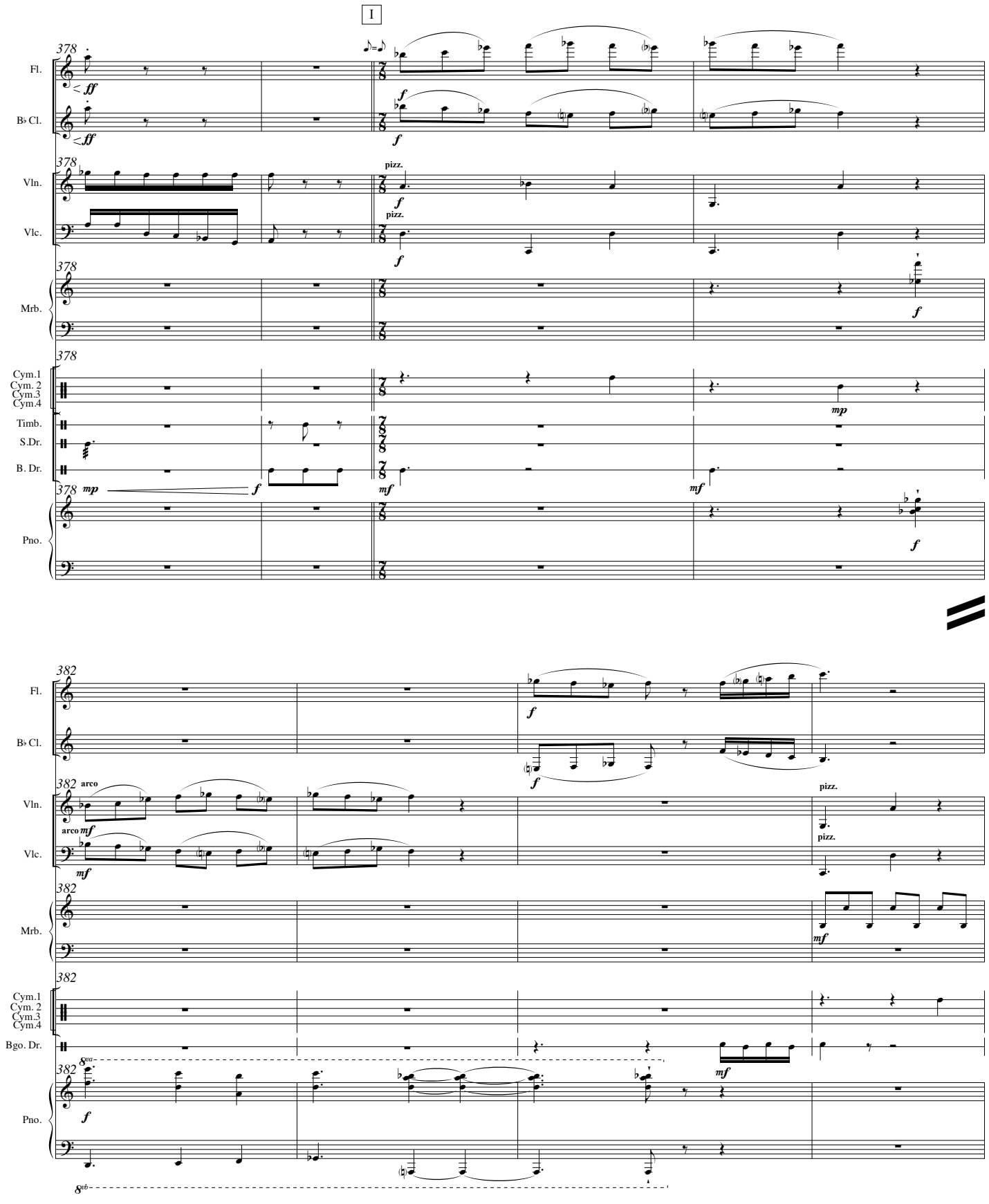

326
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
S.Dr.
Pno.
mf
f
mp
330
15ma
8vb

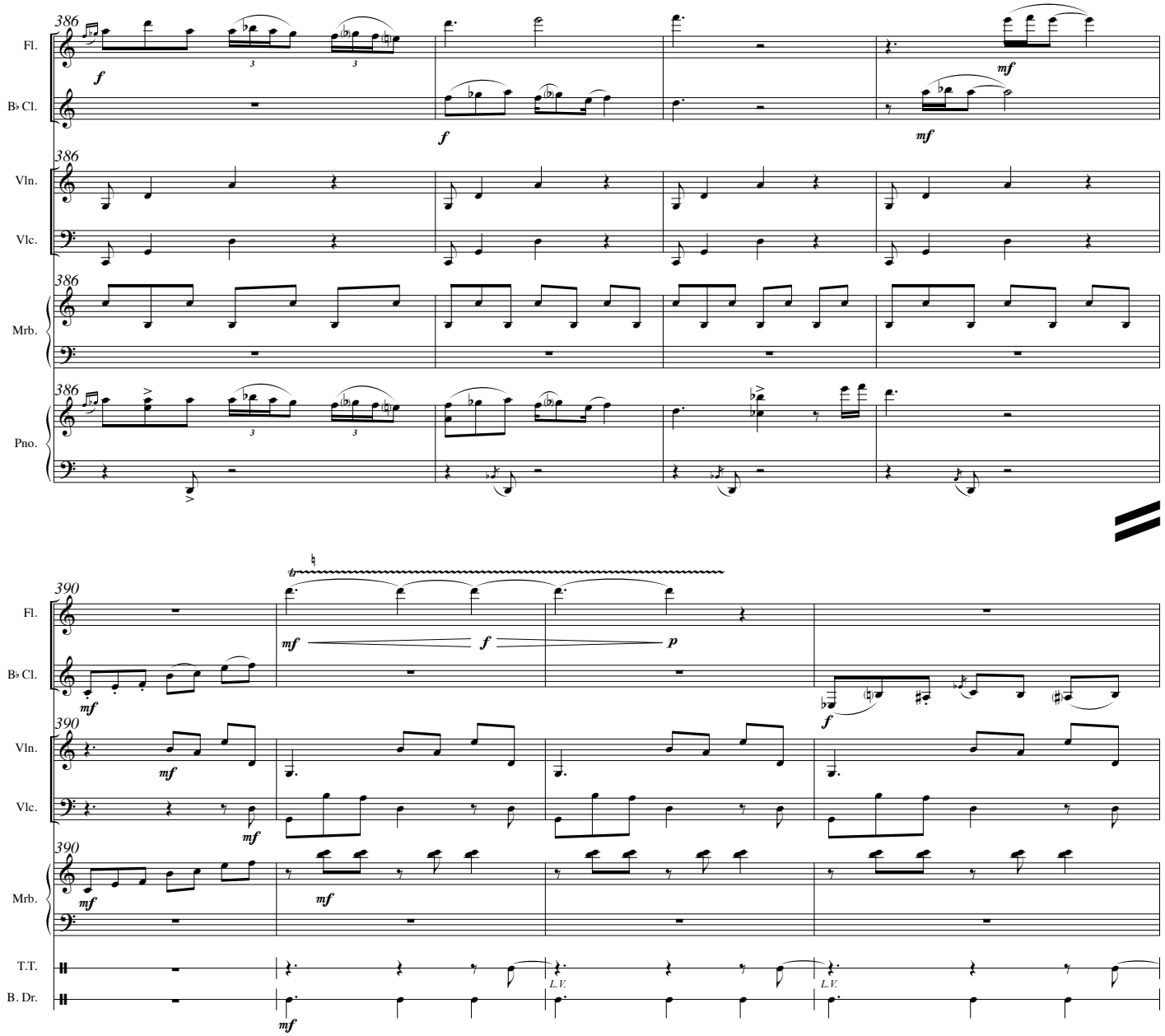

334
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
S.Dr.
Pno.
15ma
8vb
L.V.
338

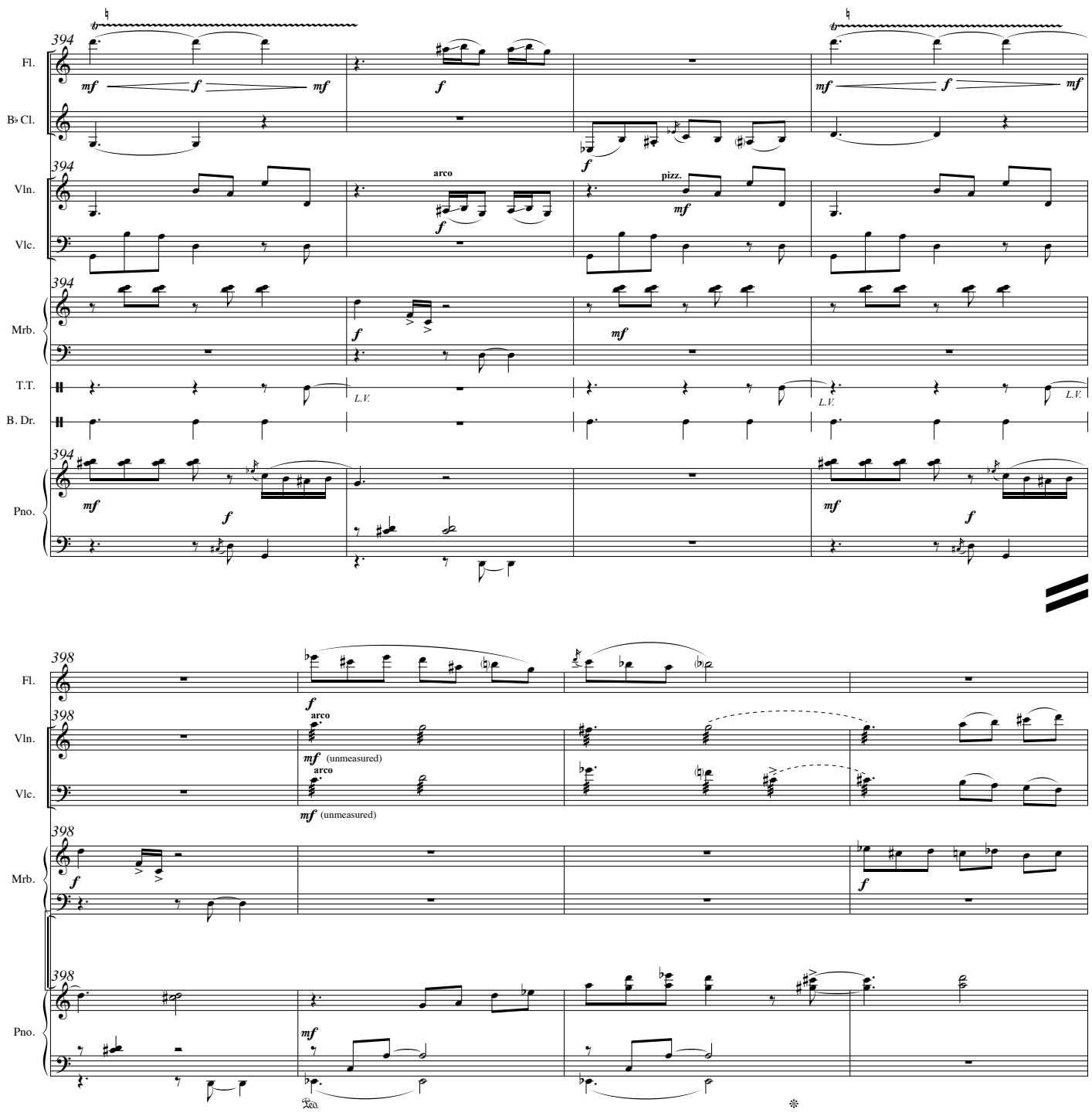

342
B♭ Cl.
Vln.
Vlc.
Mrb.
S.Dr.
Pno.
mf
346
Cym.1
Cym. 2
Cym.3
Cym.4
pp
(unmeasured)
mf
L.V.
H
350
f
mp
p
pp

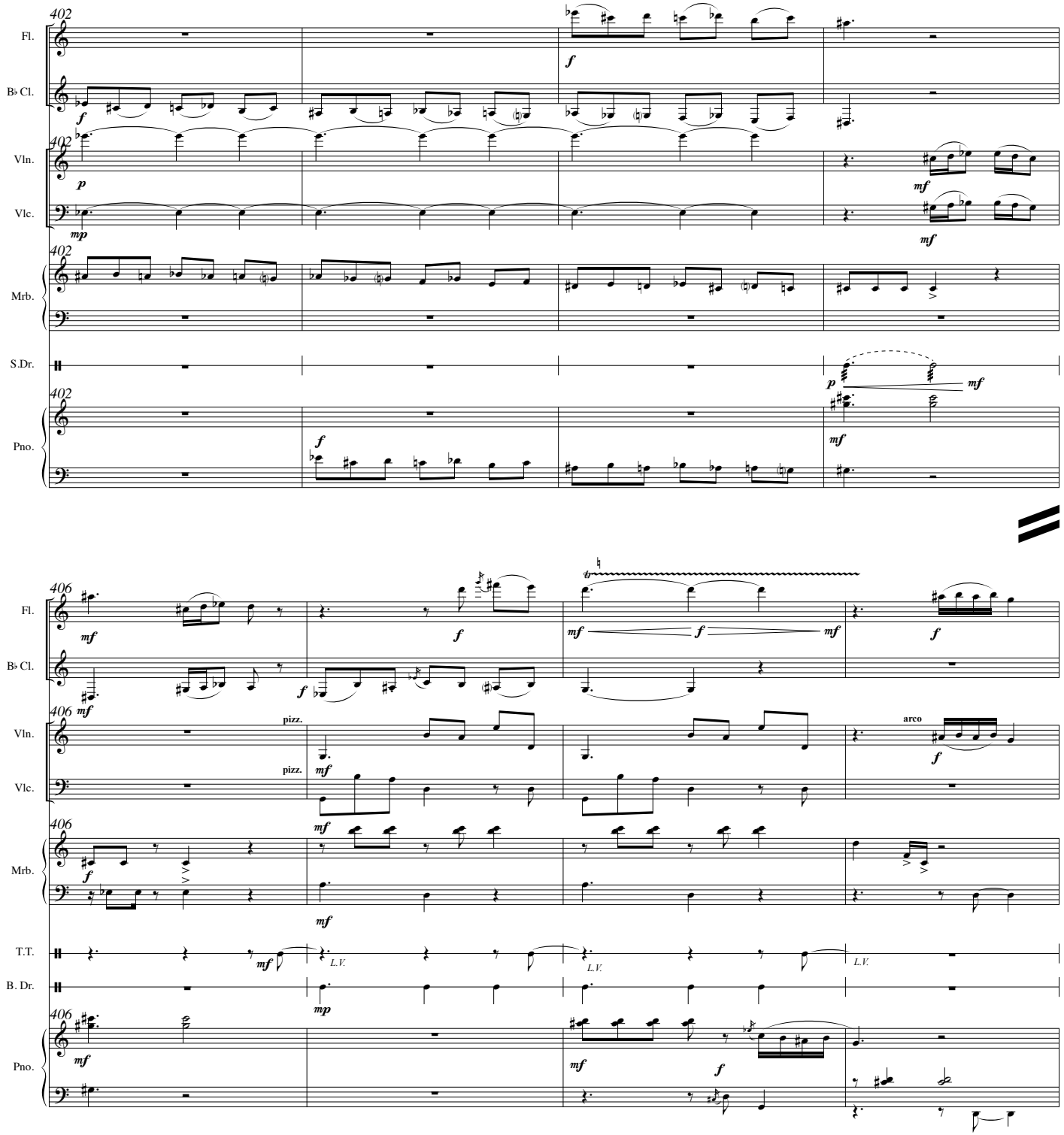

354
Vlc.
354
Mrb.
B. Dr.
354
Pno.
358
Mrb.
B. Dr.
358
Pno.
362
Mrb.
B. Dr.
362
Pno.
366
Vln.
mf
Vlc.
f
366
Mrb.
B. Dr.
366
Pno.

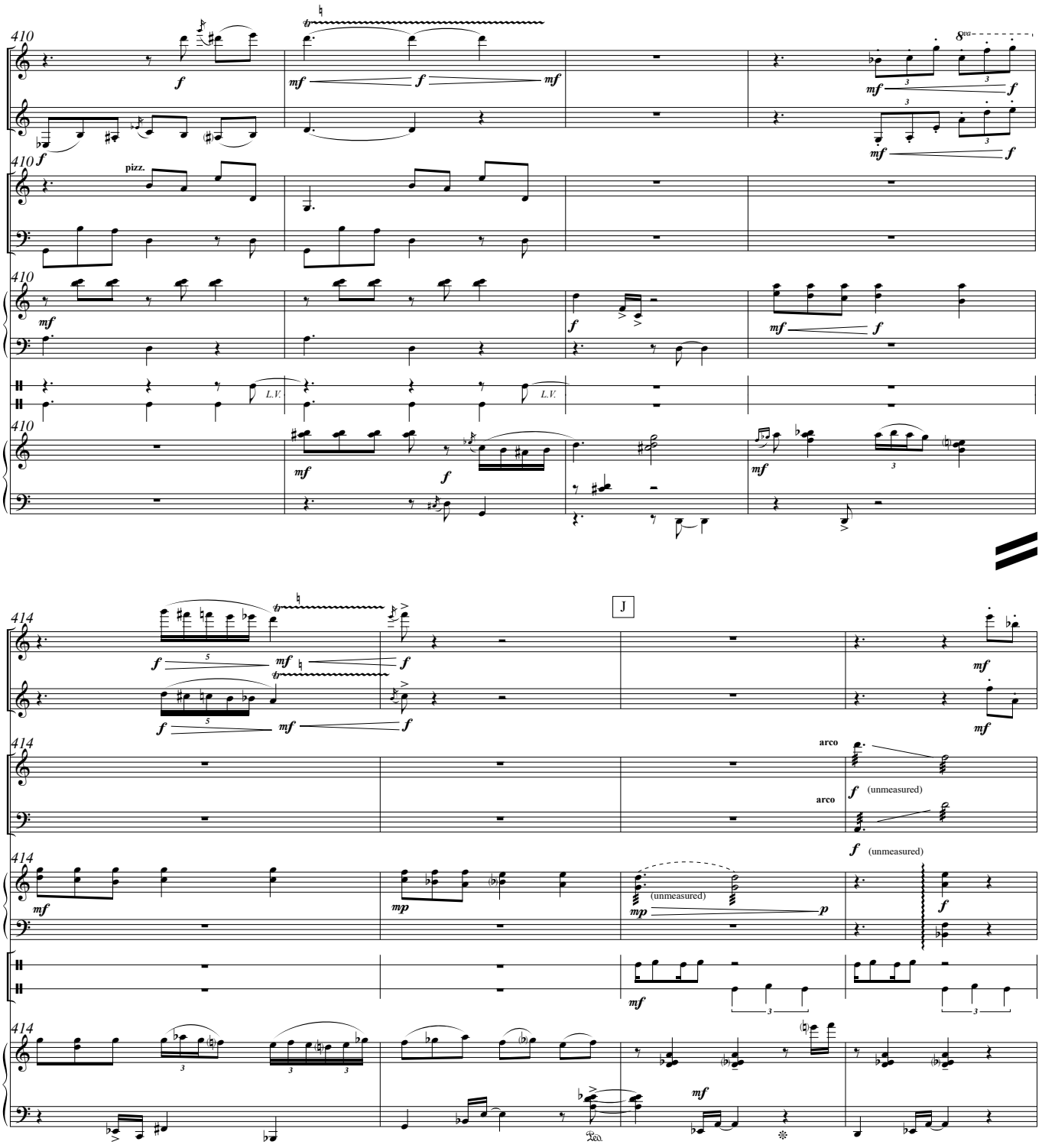

370
Vln.
Vlc.
370
Mrb.
B. Dr.
370
Pno.
Ped.
374
Fl.
B♭ Cl.
ff
mf
374
Vln.
Vlc.
f
pp
374
Mrb.
B. Dr.
374
Pno.

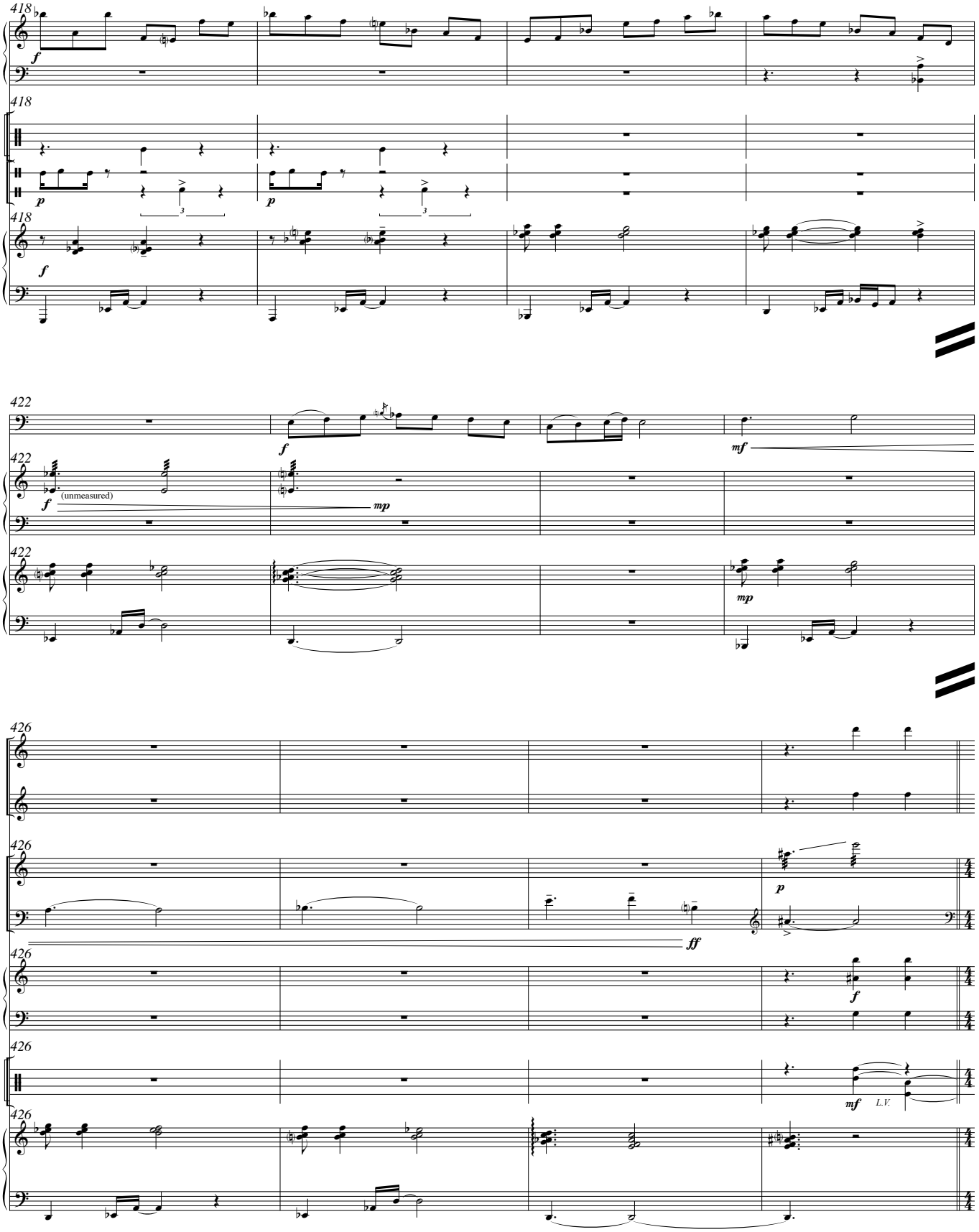

I
378
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
Timb.
S.Dr.
B. Dr.
Pno.
pizz.
arco
382
Bgo. Dr.

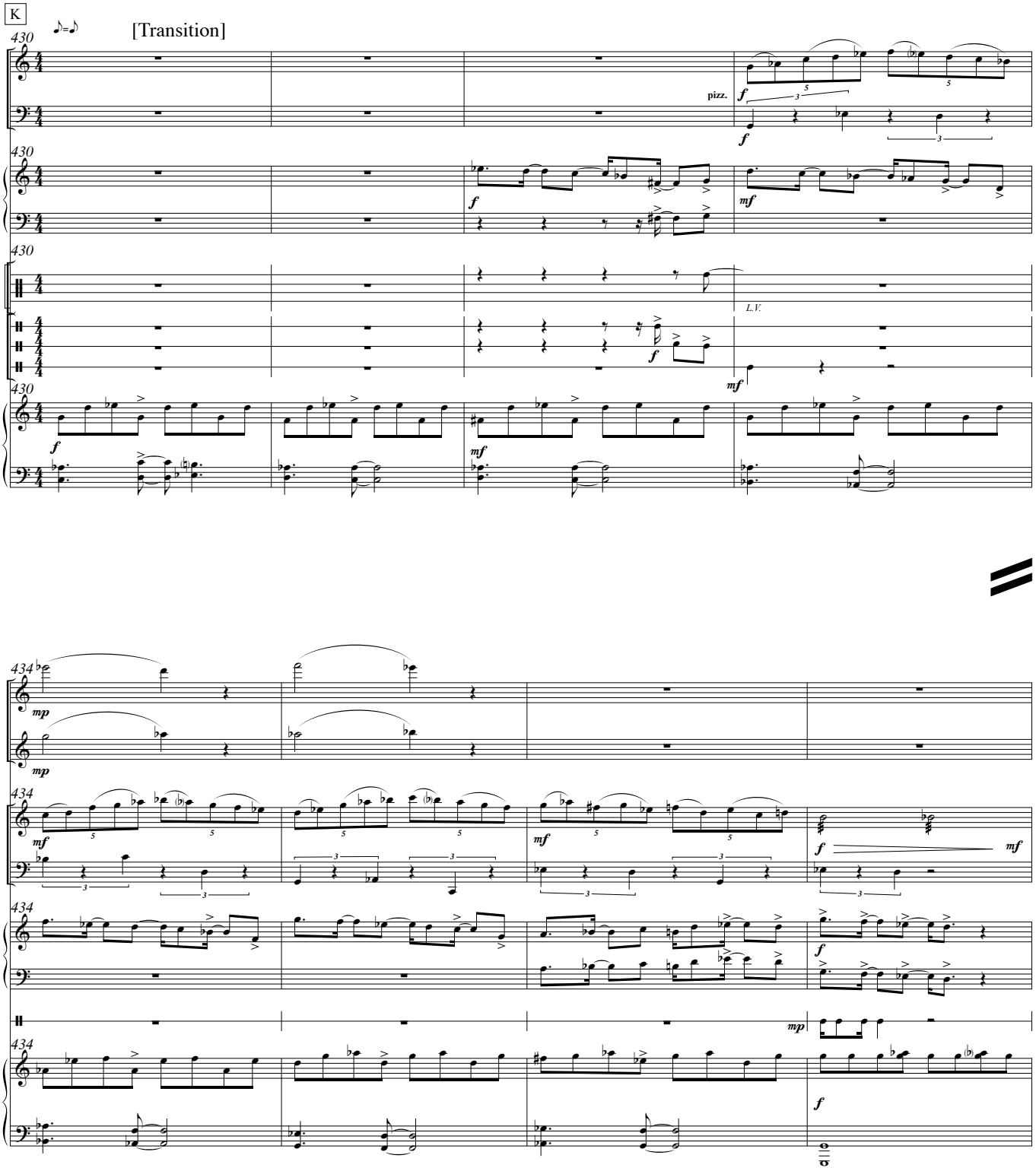

386
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Pno.
f
mf
390
mf
f
p
T.T.
B. Dr.
L.V.

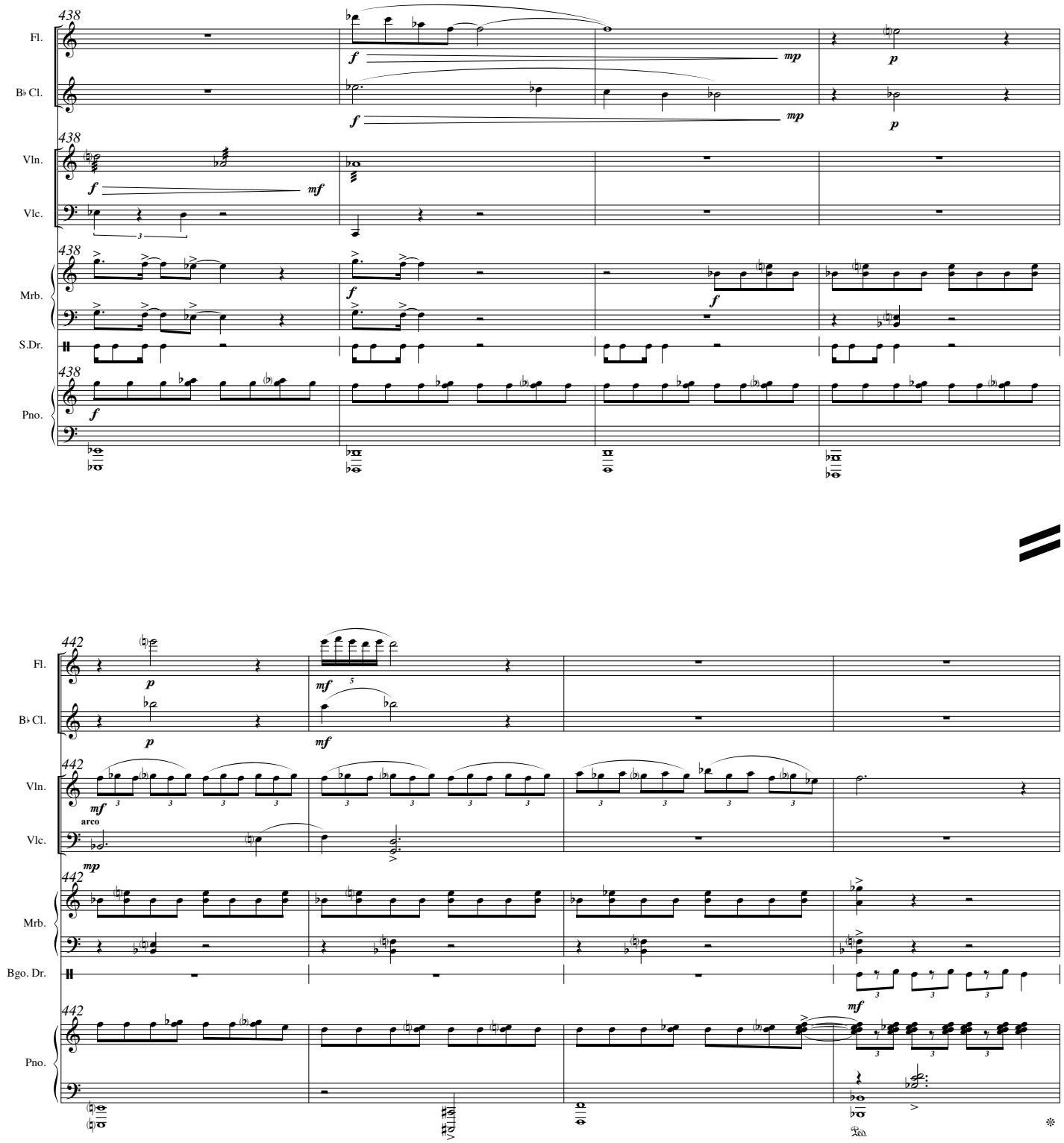

394
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
T.T.
B. Dr.
Pno.
arco
pizz.
L.V.
398
(unmeasured)

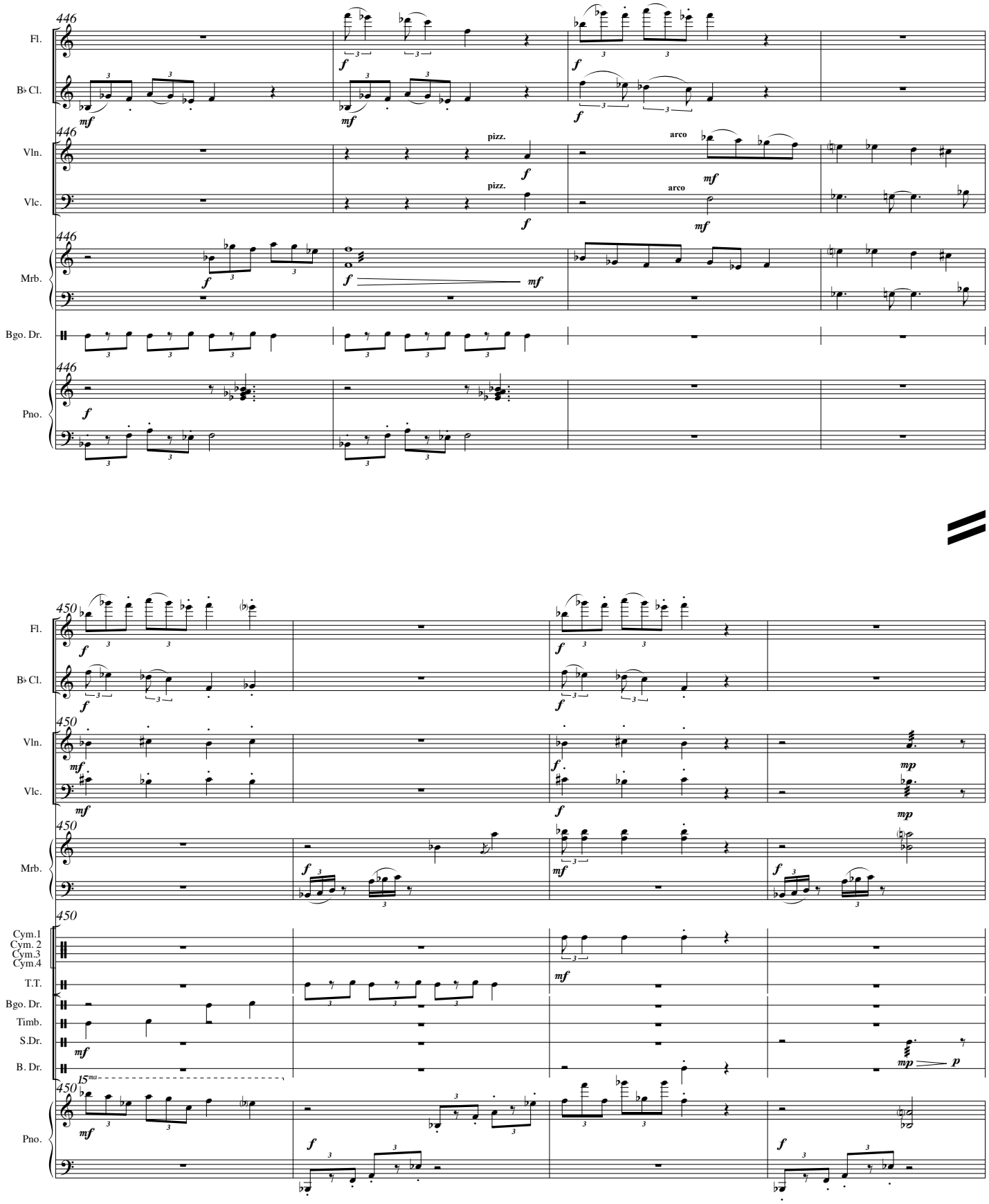

402
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
S.Dr.
Pno.
406
pizz.
arco
T.T.
B. Dr.
L.V.

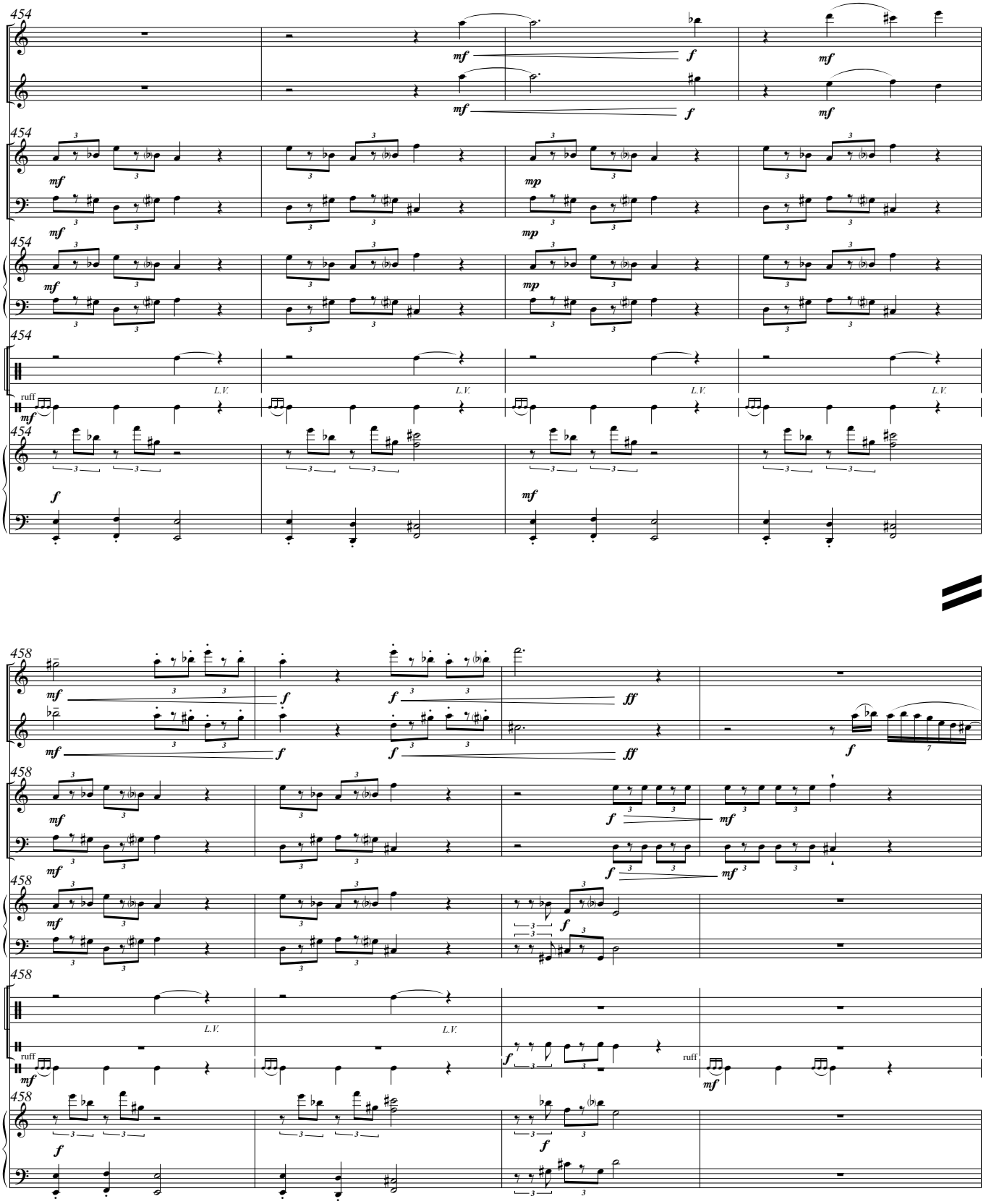

410
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
T.T.
B. Dr.
Pno.
pizz.
L.V.
8va
414
J
arco
(unmeasured)
Bgo. Dr.
Timb.

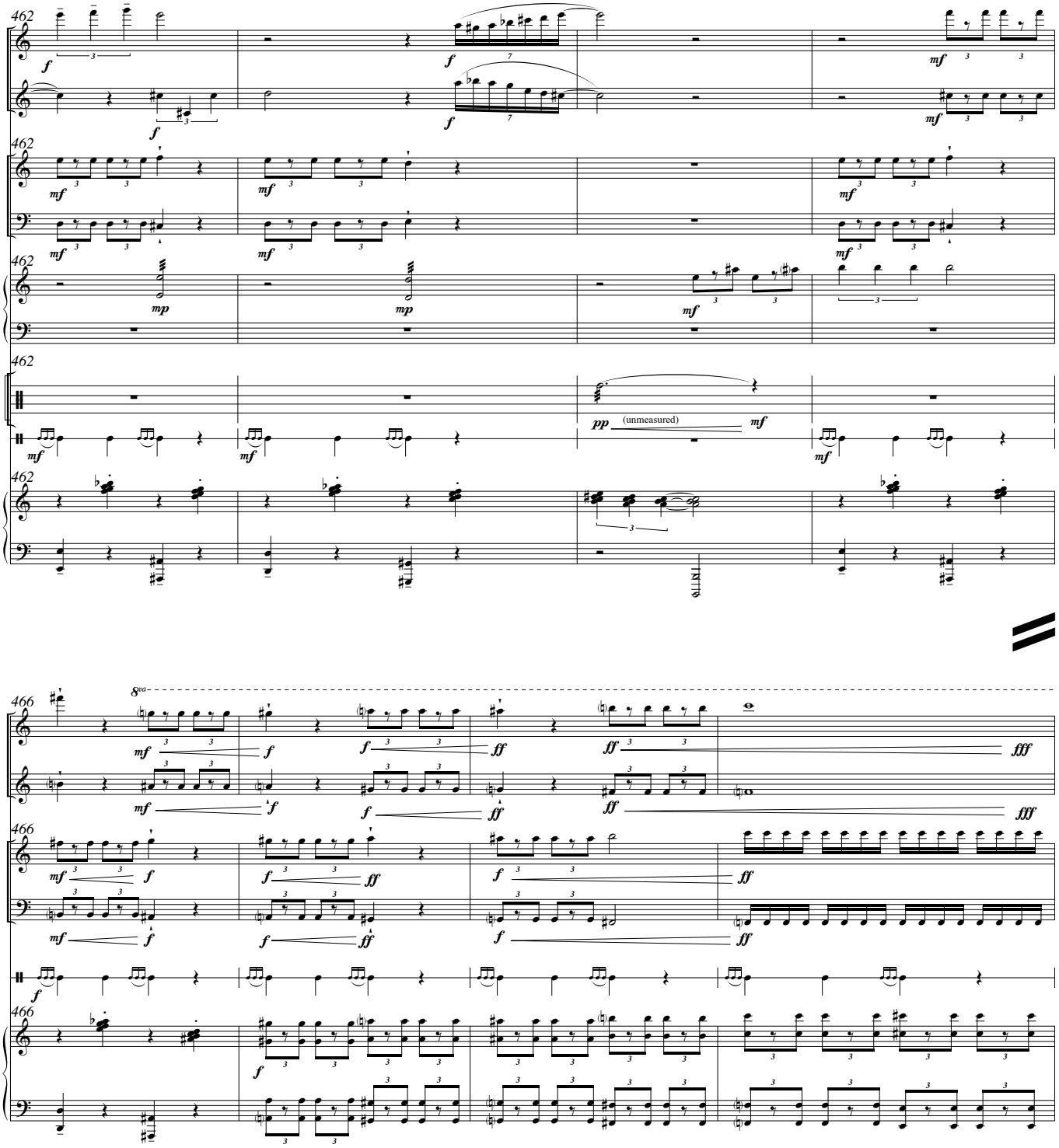

418
Mrb.
f
418
Cym.1
Cym. 2
Cym.3
Cym.4
Bgo. Dr.
Timb.
p
418
Pno.
f
422
Vlc.
f
mf
422
Mrb.
f
(unmeasured)
mp
422
Pno.
mp
426
Fl.
B♭ Cl.
426
Vln.
Vlc.
p
ff
426
Mrb.
f
426
Cym.1
Cym. 2
Cym.3
Cym.4
mf
L.V.
426
Pno.

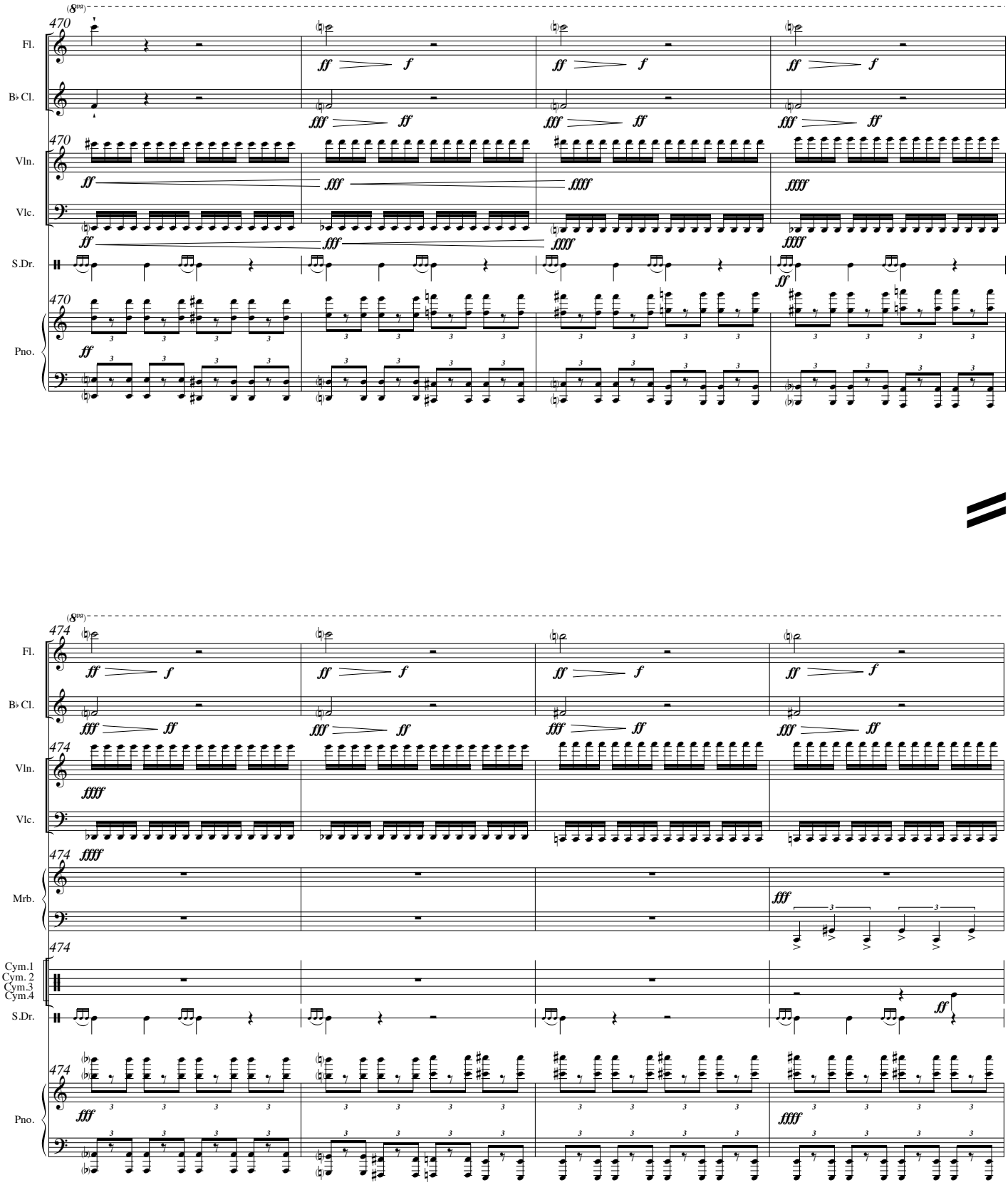

K
[Transition]
430
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
Bgo. Dr.
Timb.
B. Dr.
Pno.
pizz.
L.V.
434
Fl.
B♭ Cl.
S.Dr.

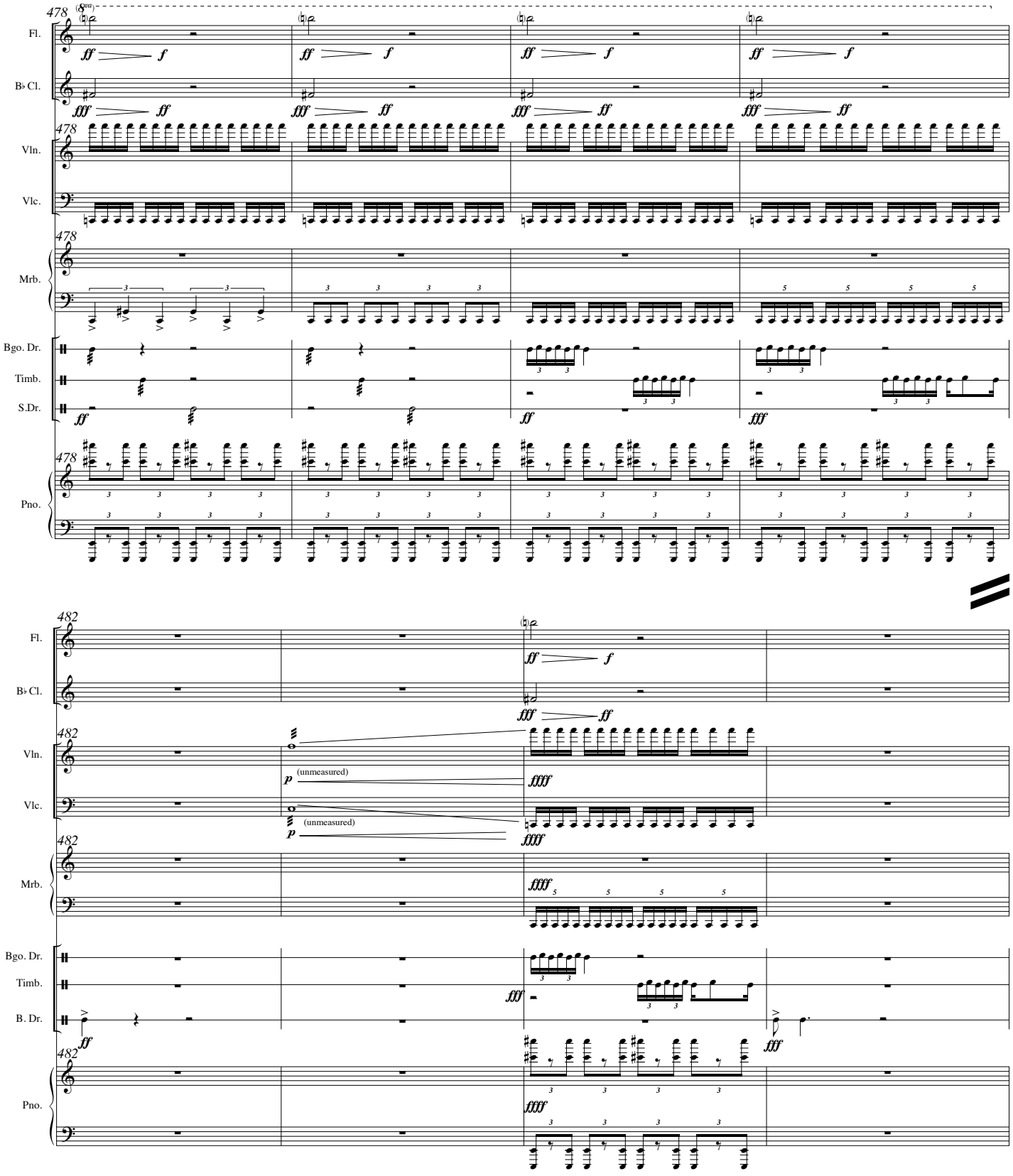

438
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
S.Dr.
Pno.
f
mp
p
mf
442
arco
Bgo. Dr.

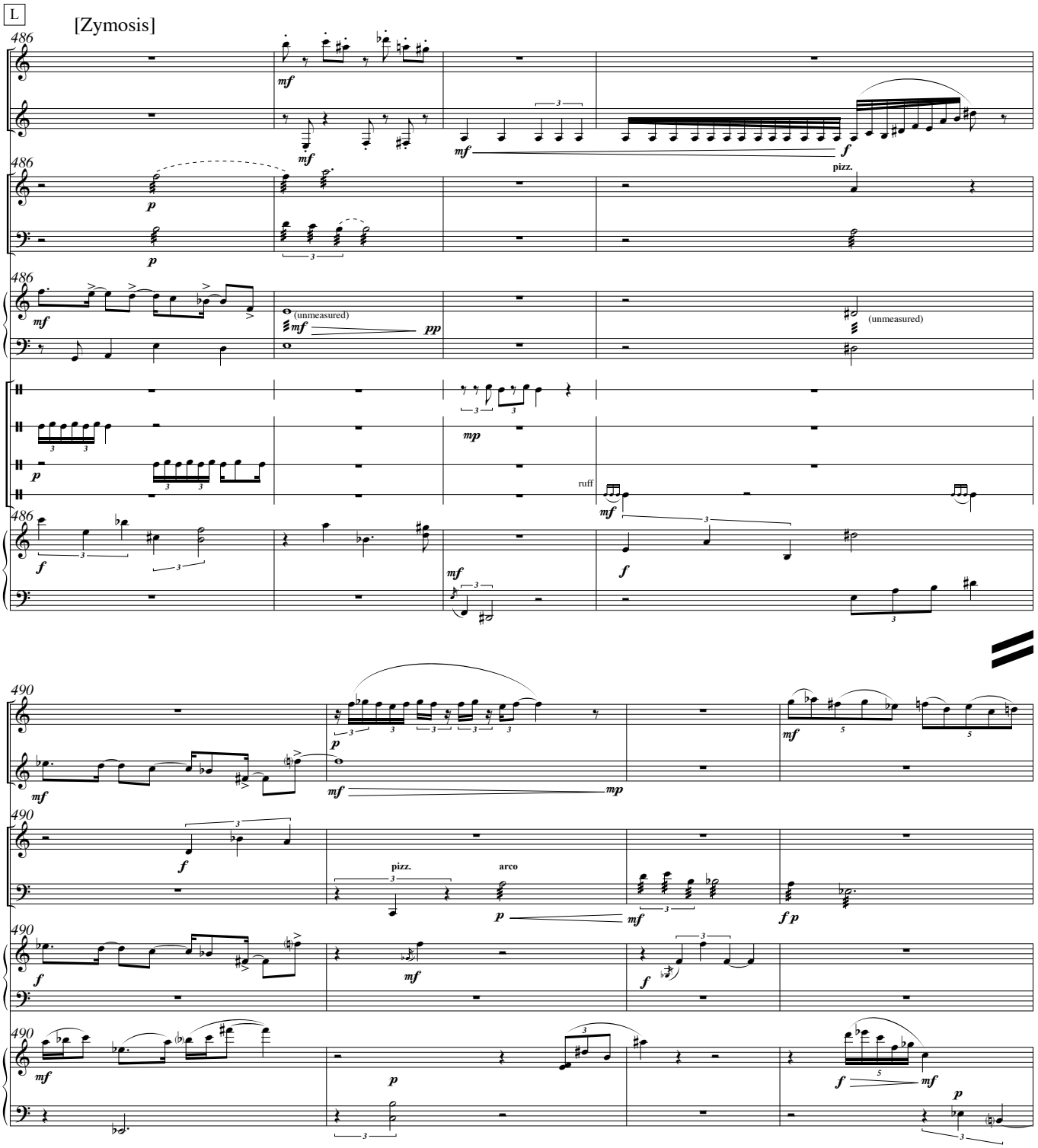

446
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Bgo. Dr.
Pno.
pizz.
arco
450
Cym.1
Cym. 2
Cym.3
Cym.4
T.T.
Timb.
S.Dr.
B. Dr.
15ma

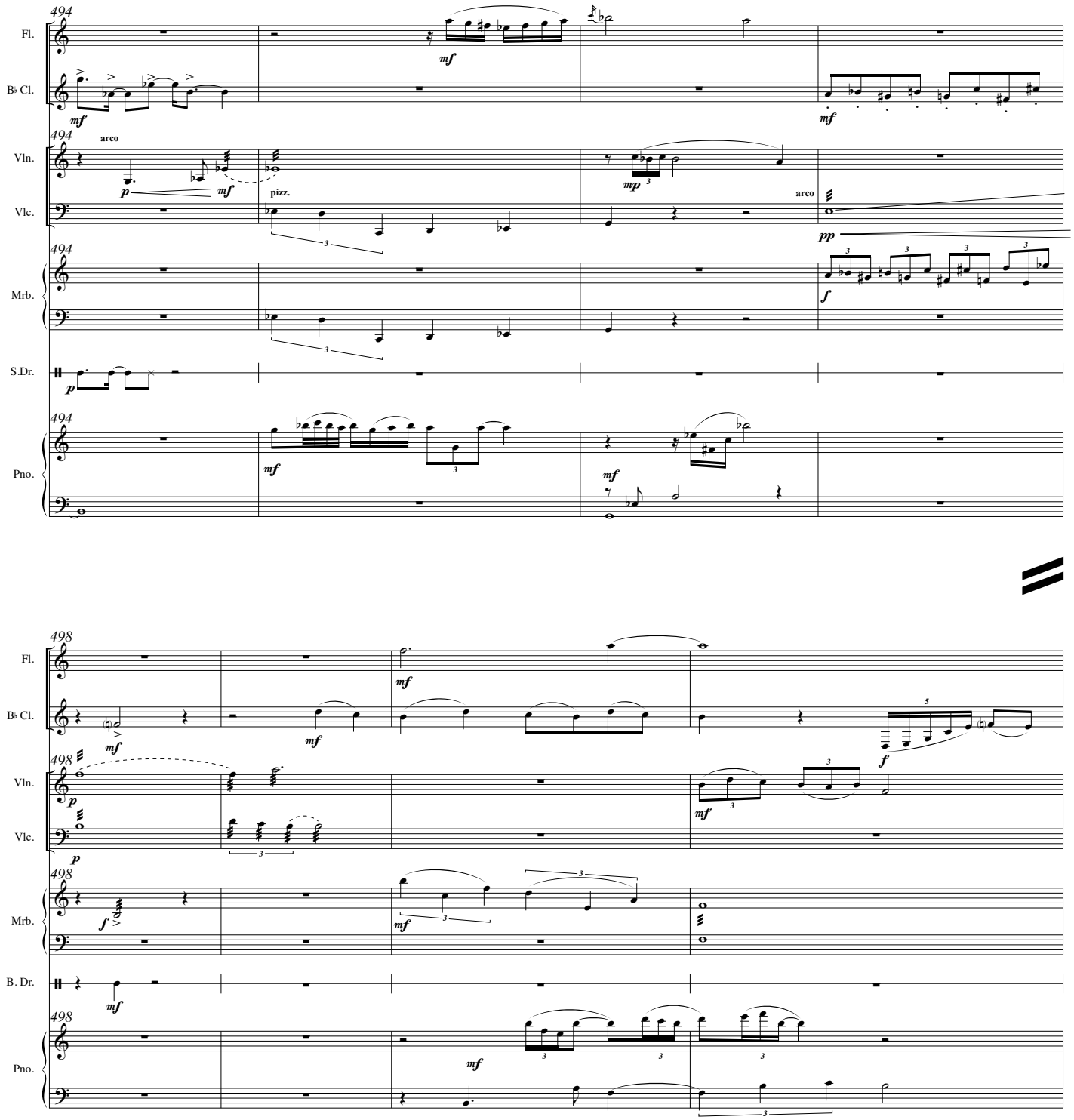

454
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
S.Dr.
Pno.
L.V.
ruff
458
T.T.

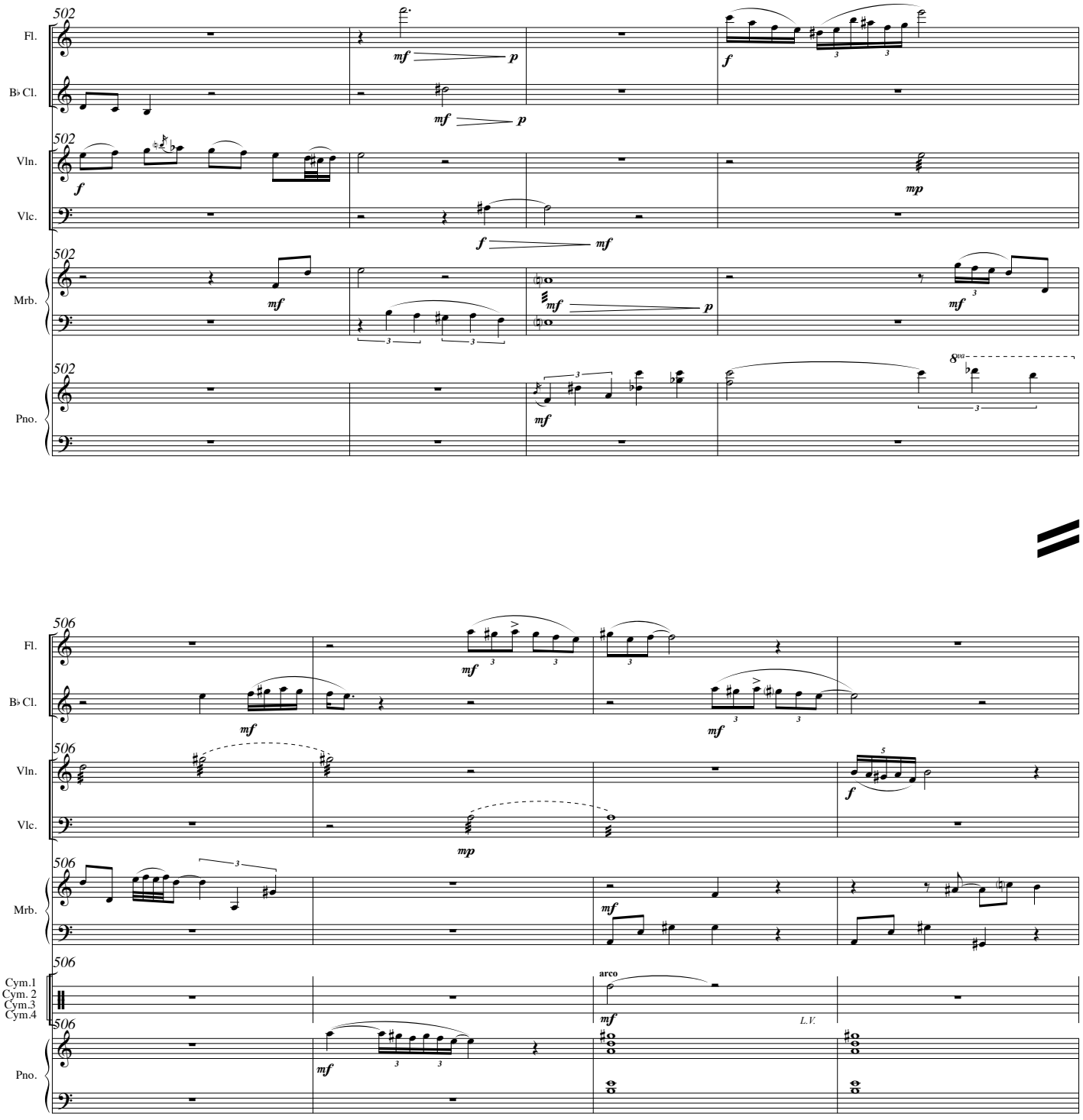

462
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
S.Dr.
Pno.
(unmeasured)
466
8va

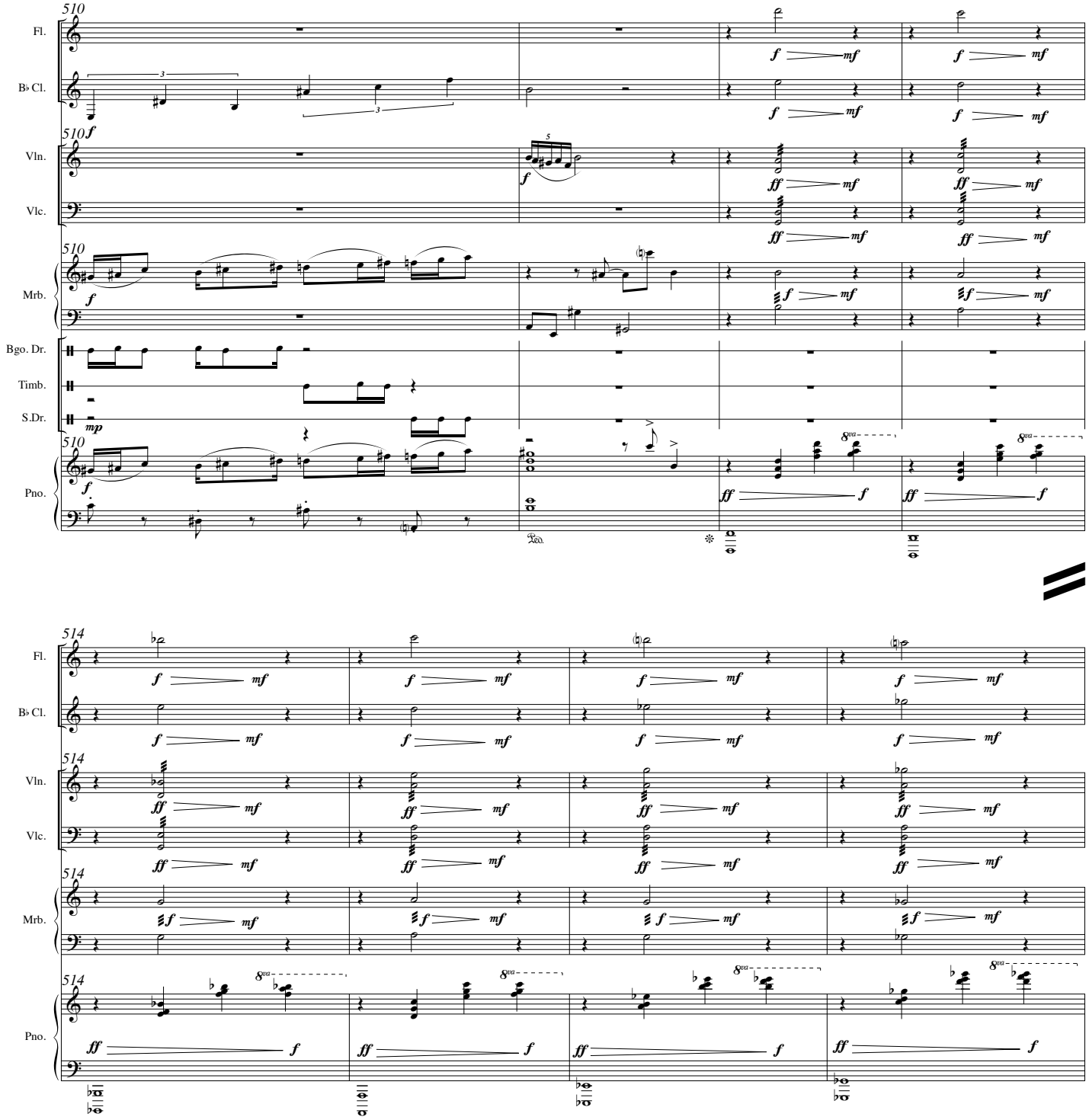

(8va)
470
Fl.
B♭ Cl.
Vln.
Vlc.
S.Dr.
Pno.
ff
f
fff
ff
ffff
fffff
(8va)
474
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
S.Dr.
Pno.
ff
f
fff
ff
ffff
fffff

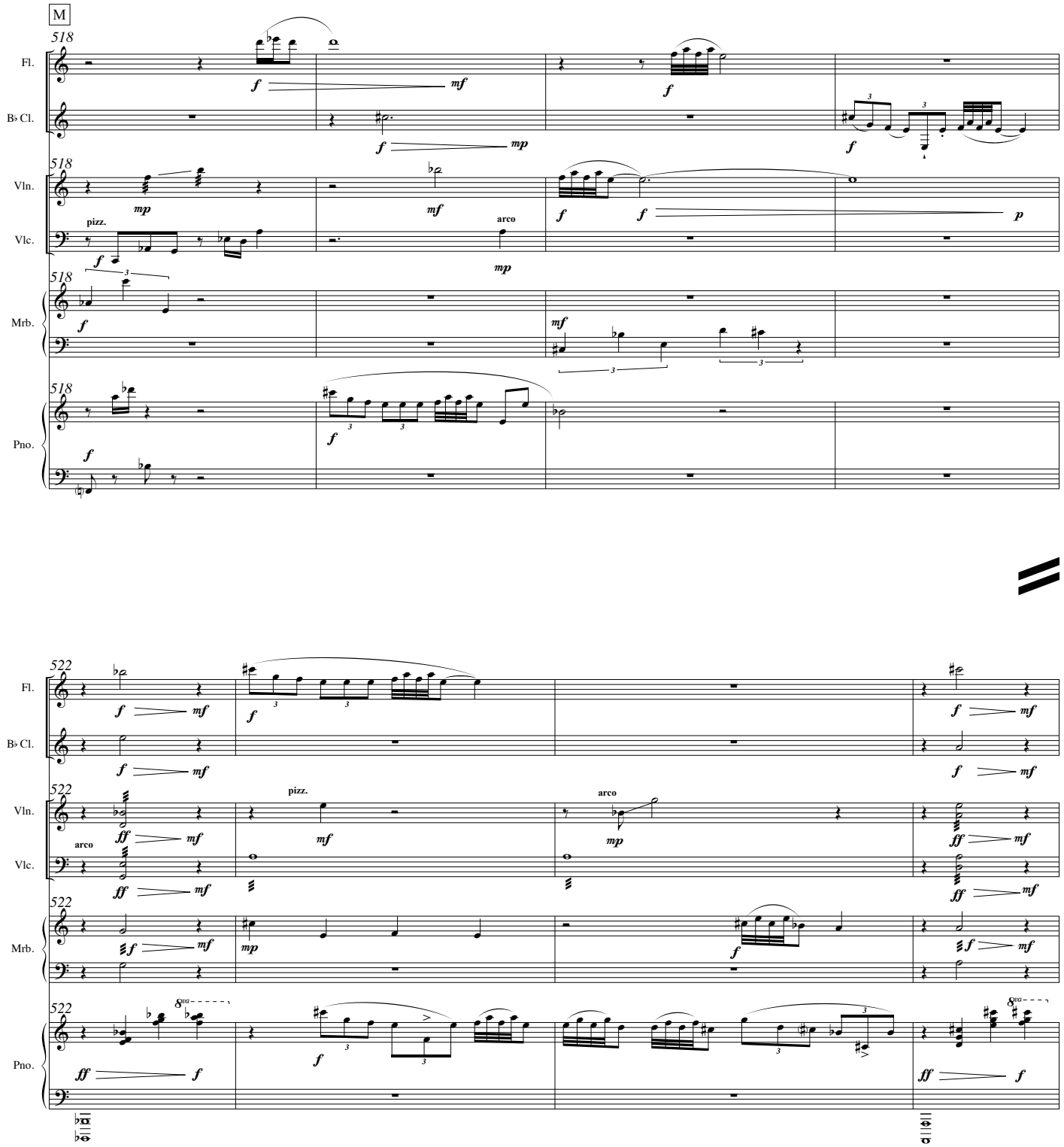

478
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Bgo. Dr.
Timb.
S.Dr.
Pno.
482
B. Dr.
(unmeasured)

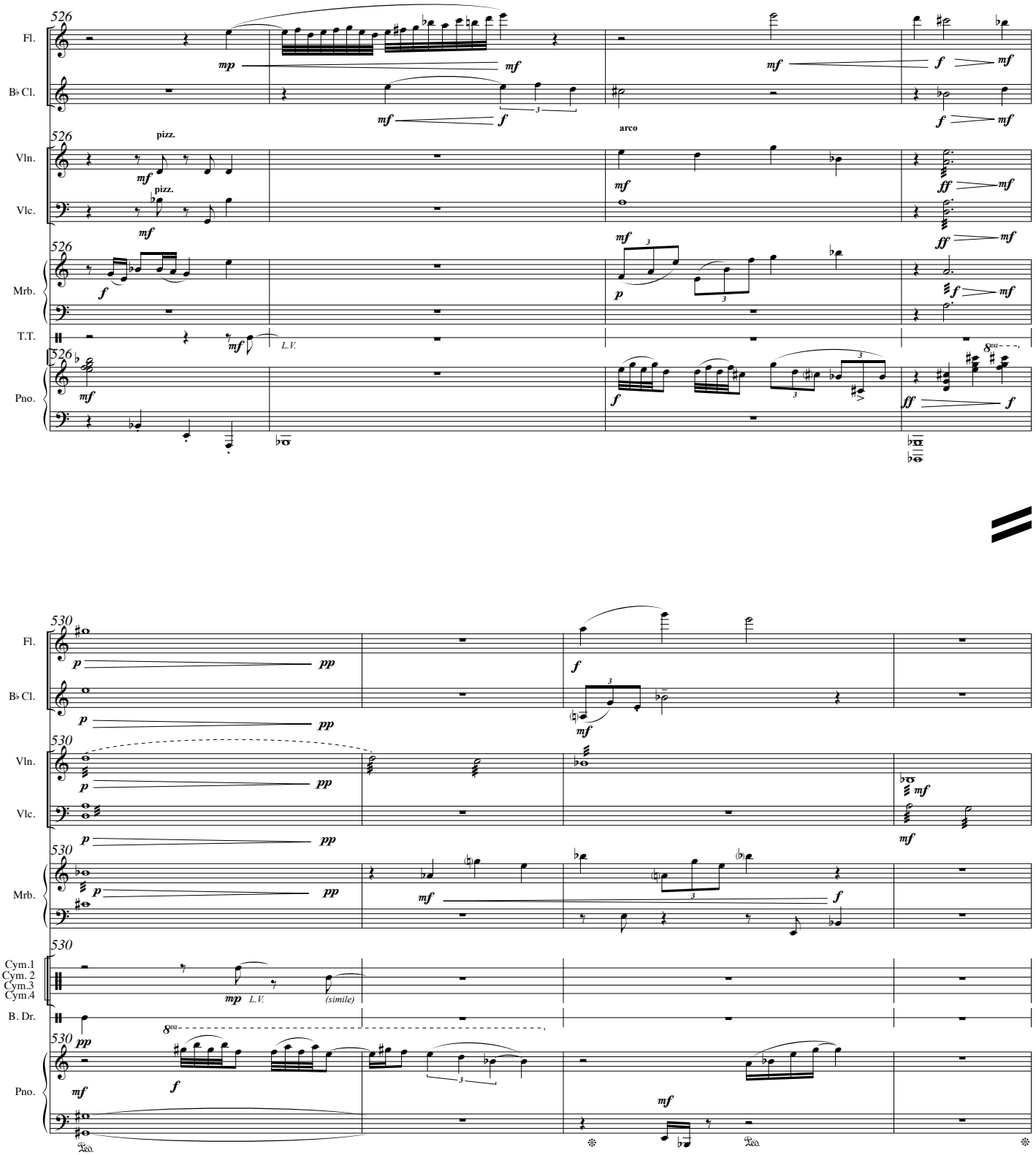

L
[Zymosis]
486
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
T.T.
Bgo. Dr.
Timb.
S.Dr.
Pno.
pizz.
(unmeasured)
ruff
490
arco

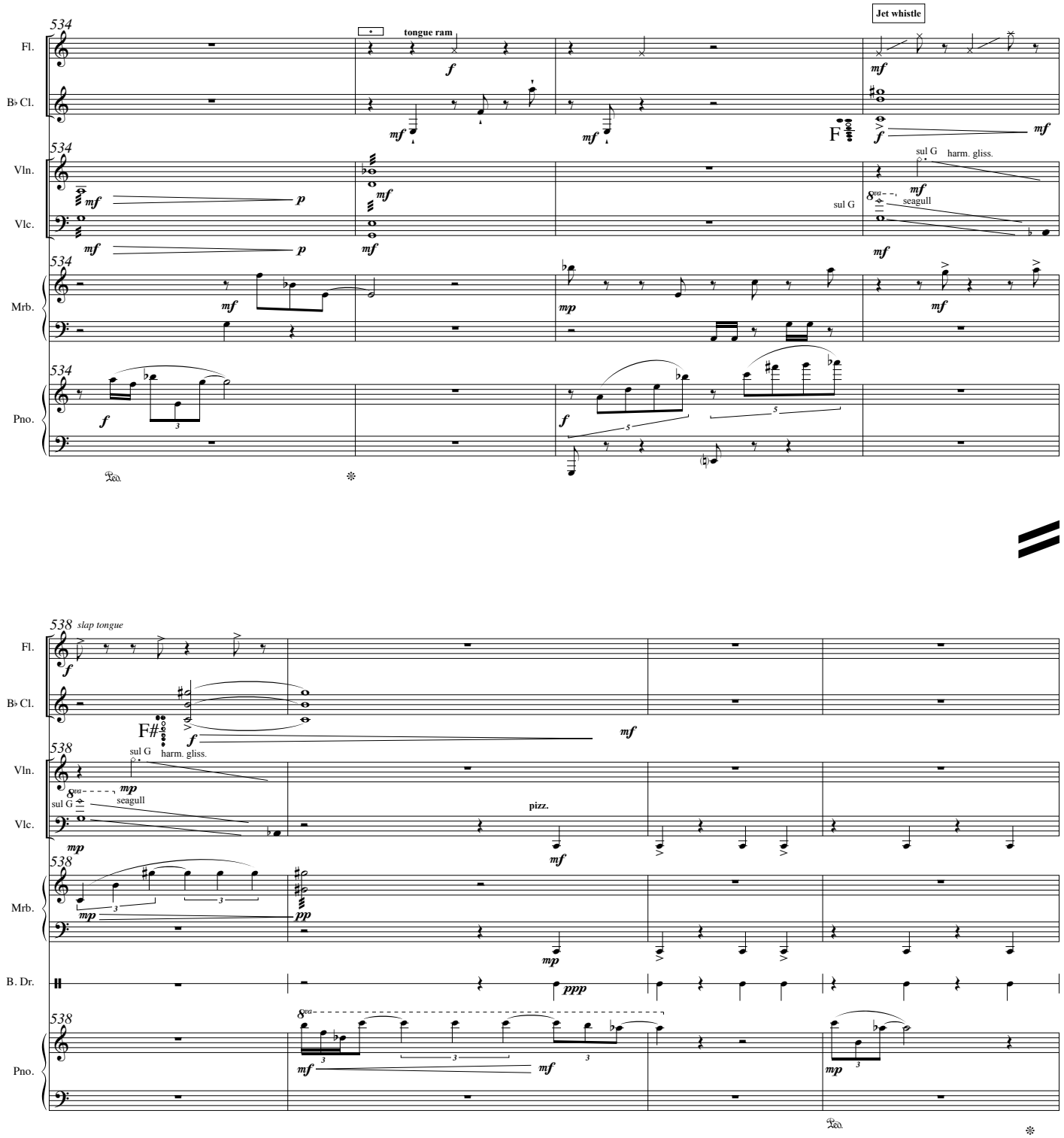

494
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
S.Dr.
Pno.
arco
pizz.
arco
498
B. Dr.

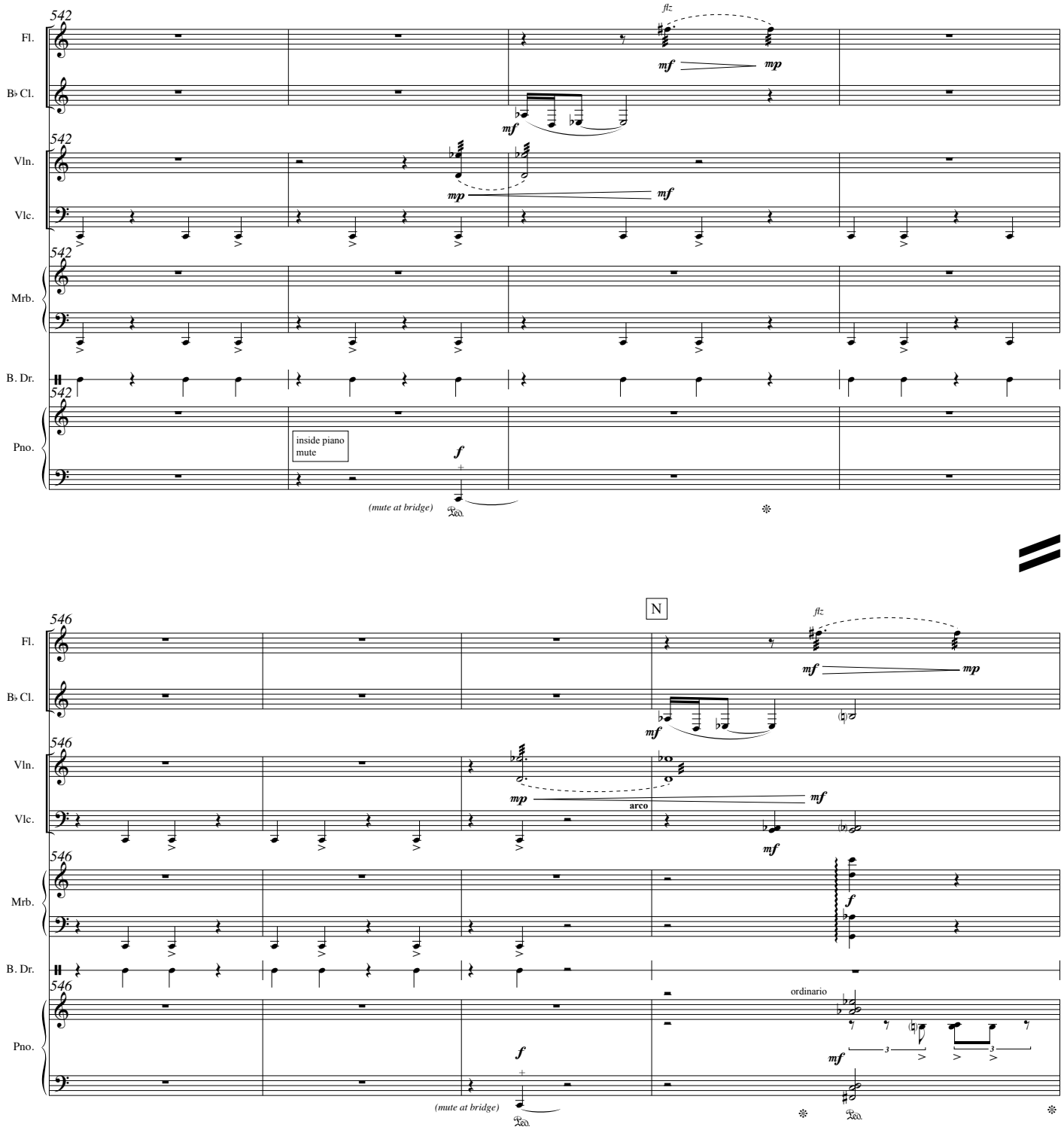

502
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Pno.
mf
p
f
mp
8va
506
Cym.1
Cym. 2
Cym.3
Cym.4
arco
L.V.

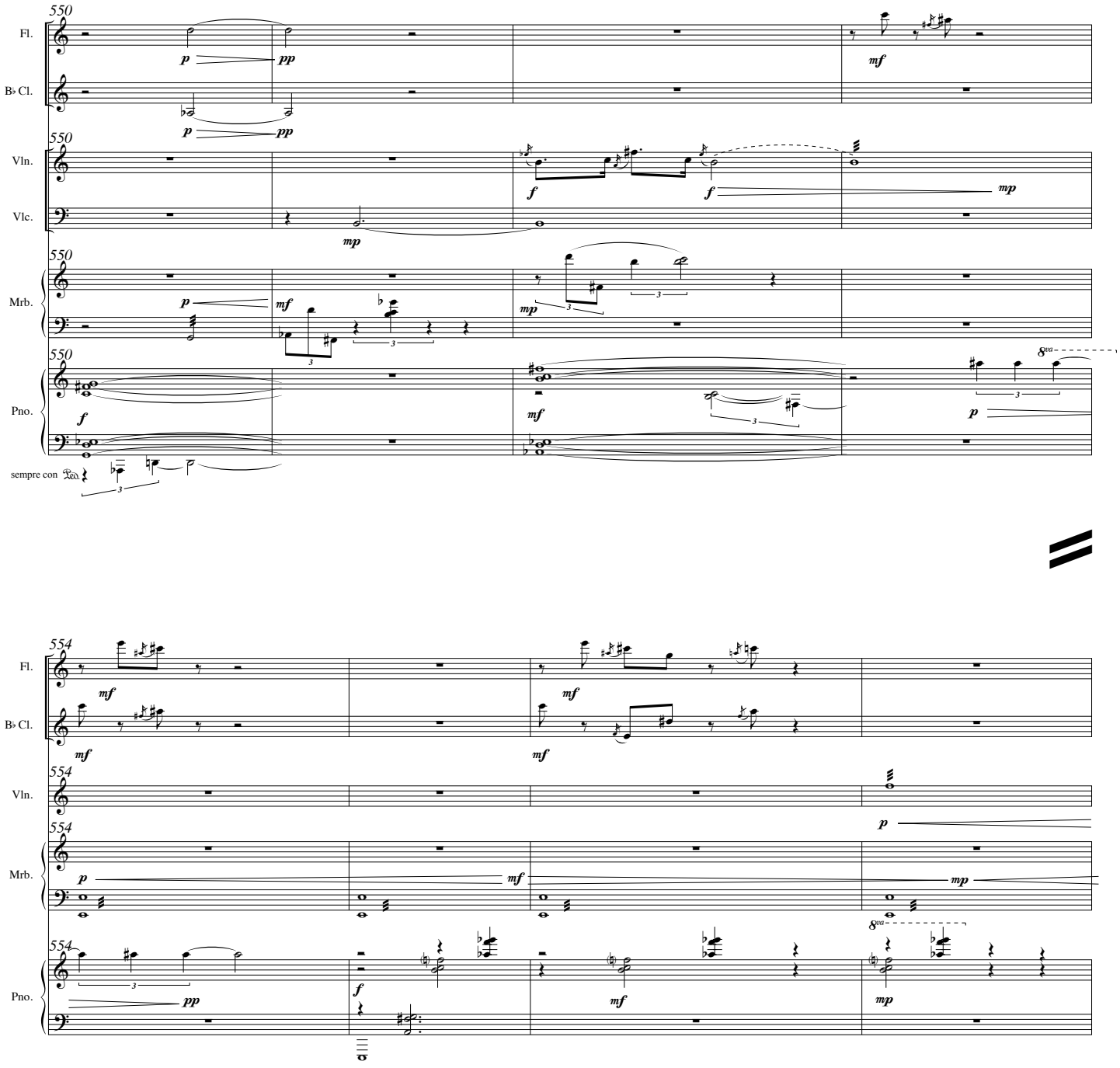

510
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Bgo. Dr.
Timb.
S.Dr.
Pno.
514

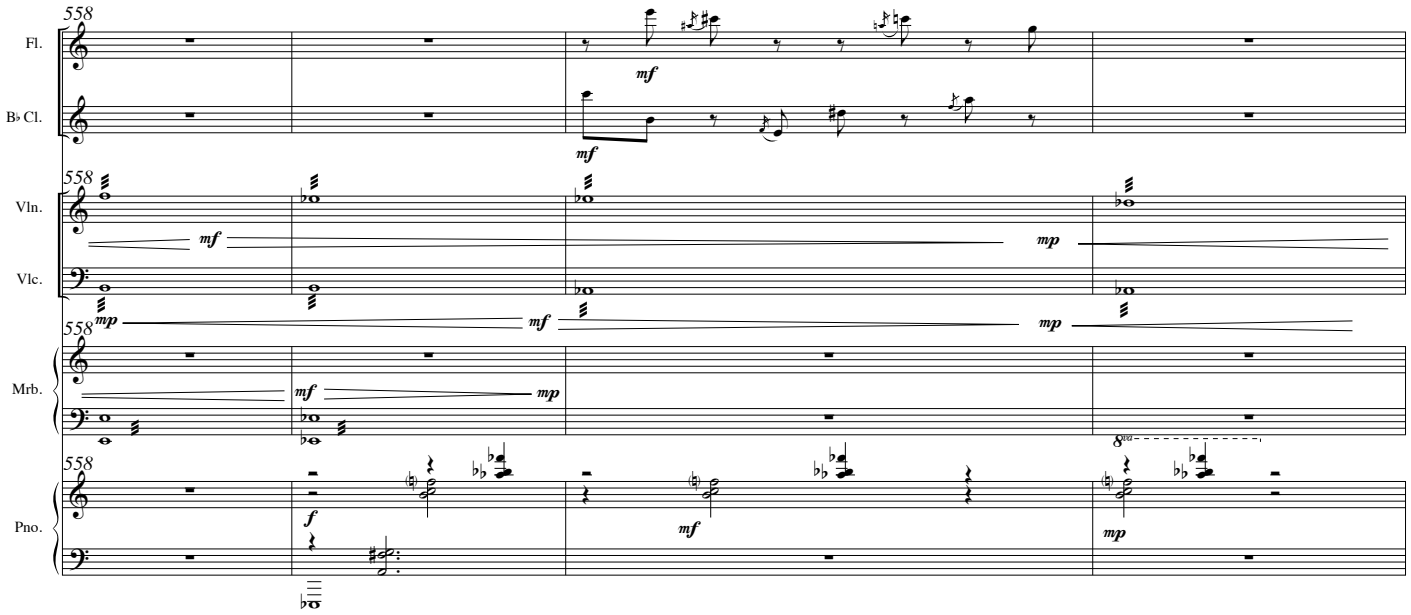

M
518
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Pno.
pizz.
arco
522

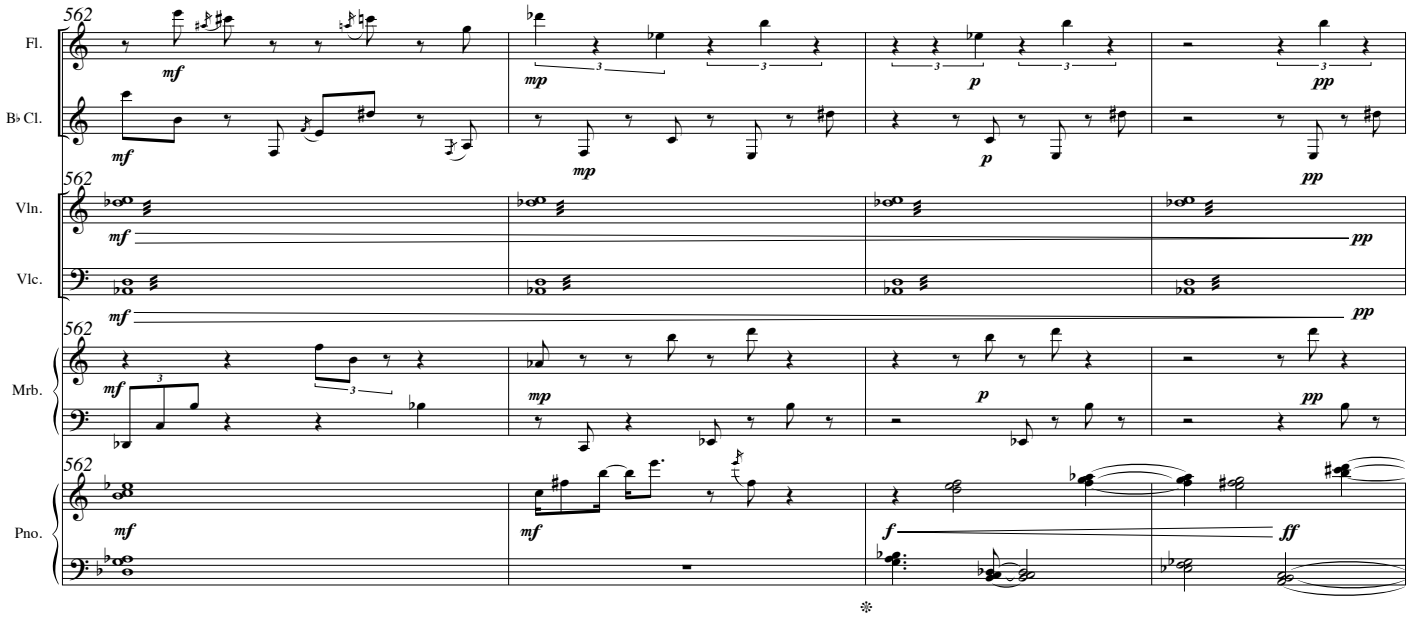

526
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
T.T.
Pno.
pizz.
arco
L.V.
530
Cym.1
Cym. 2
Cym.3
Cym.4
B. Dr.
(simile)

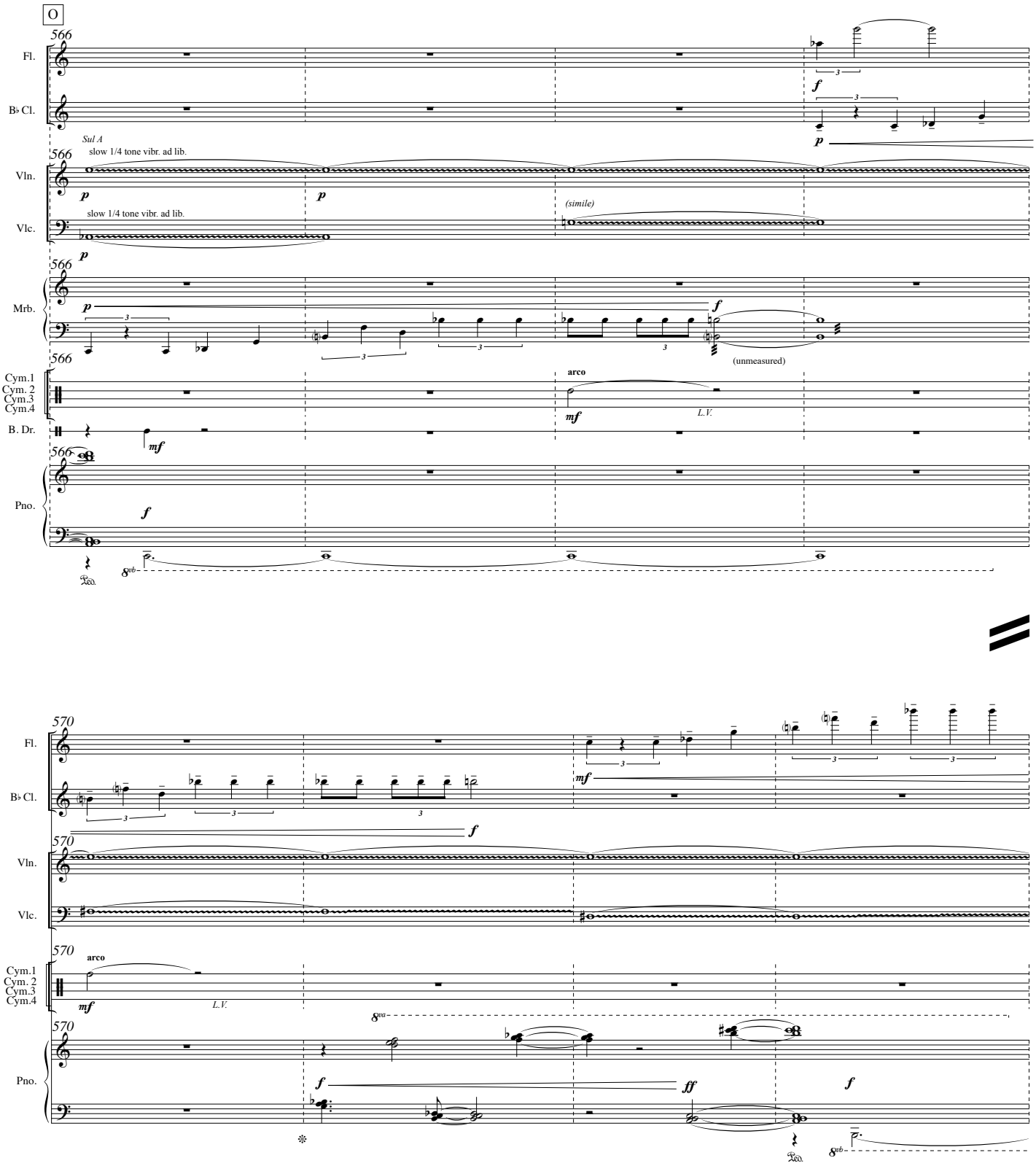

534
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Pno.
tongue ram
Jet whistle
sul G
harm. gliss.
seagull
538
slap tongue
pizz.
B. Dr.

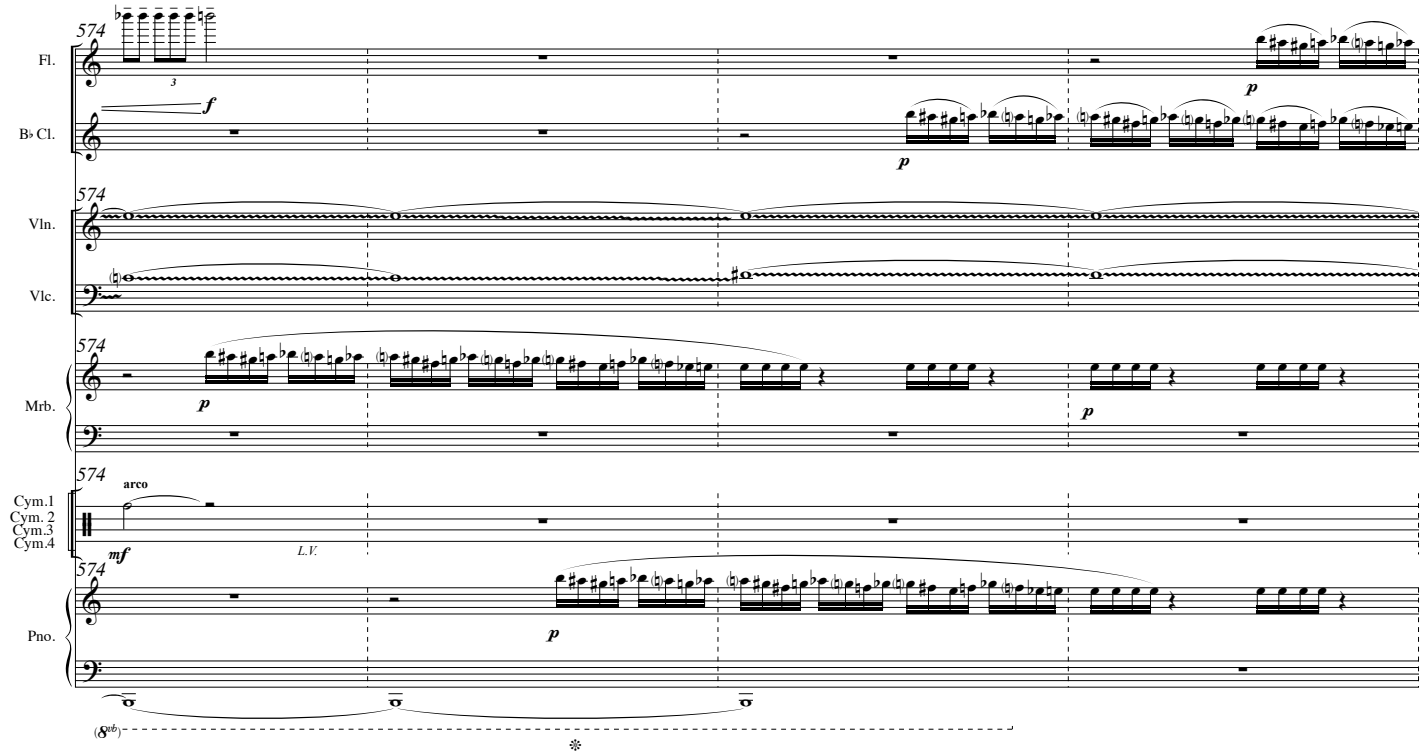

542
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
B. Dr.
Pno.
flz
mf
mp
inside piano
mute
f
(mute at bridge)
546
N
arco
ordinario

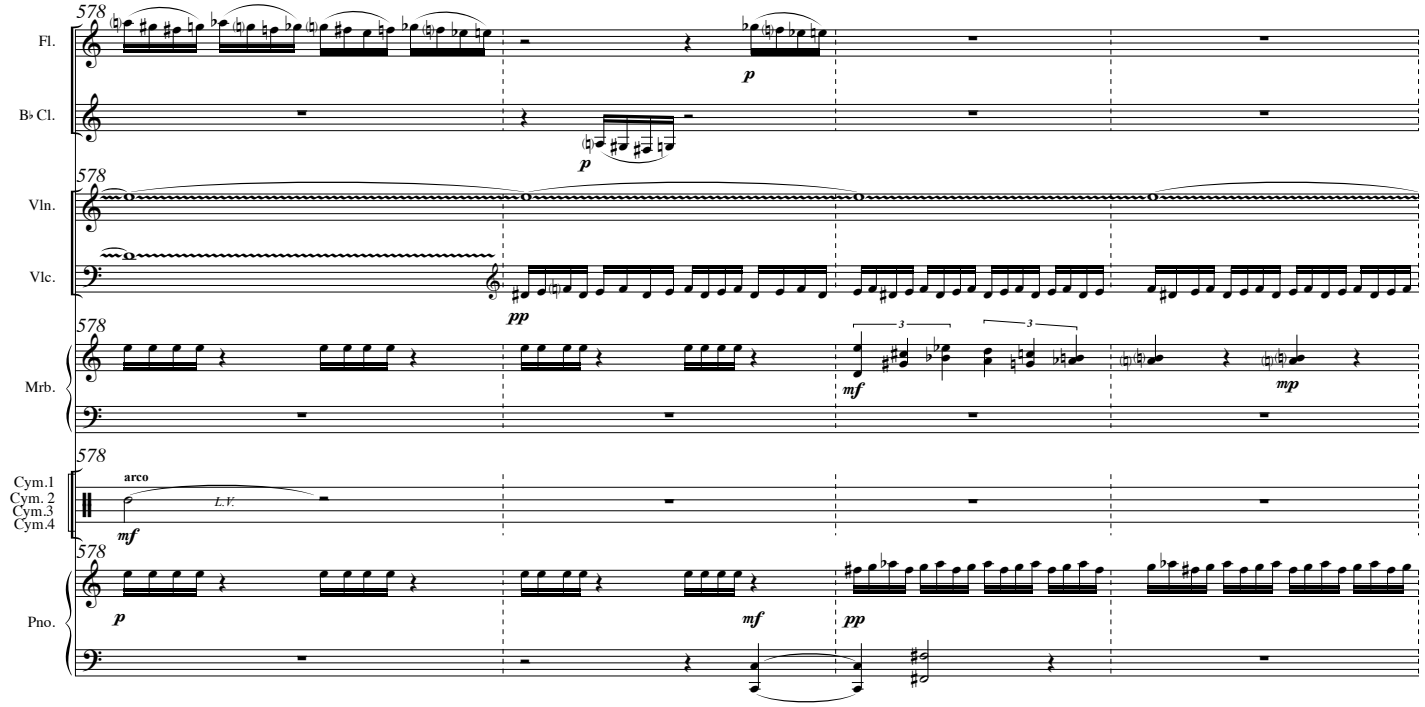

550
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Pno.
sempre con Ped.
554
Fl.
B♭ Cl.
Vln.
Mrb.
Pno.

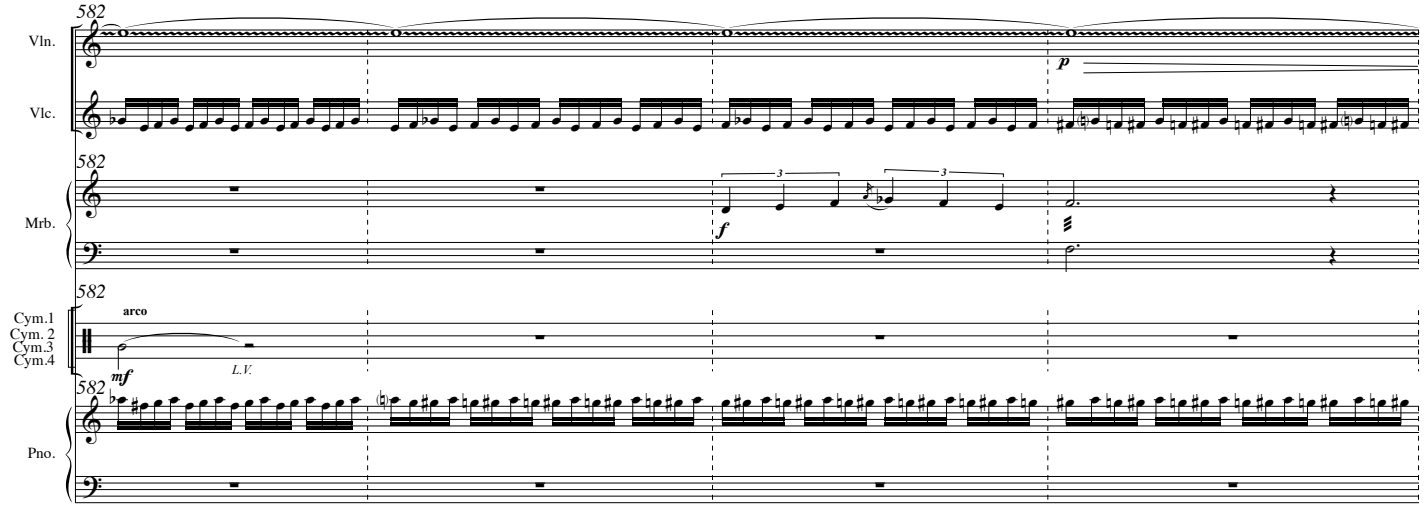

558
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Pno.
mf
mp
f

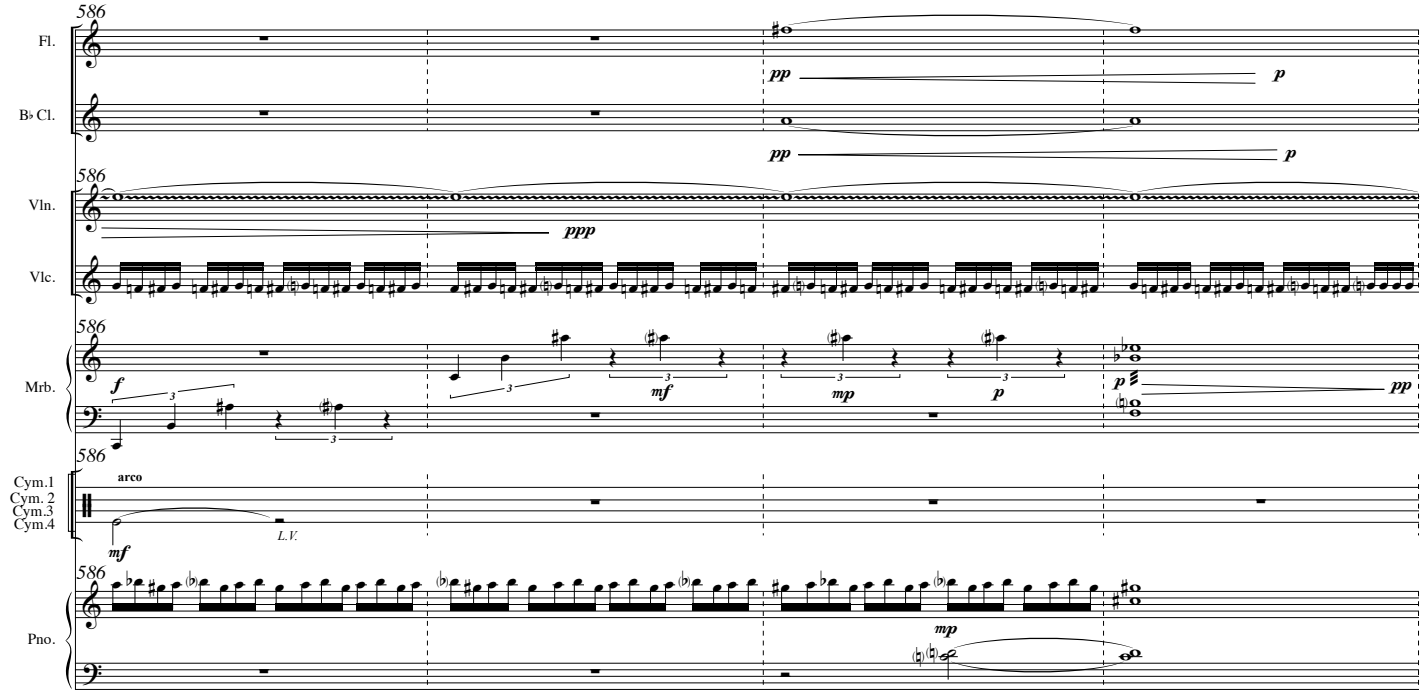

562
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Pno.
mf
mp
p
pp
f
ff

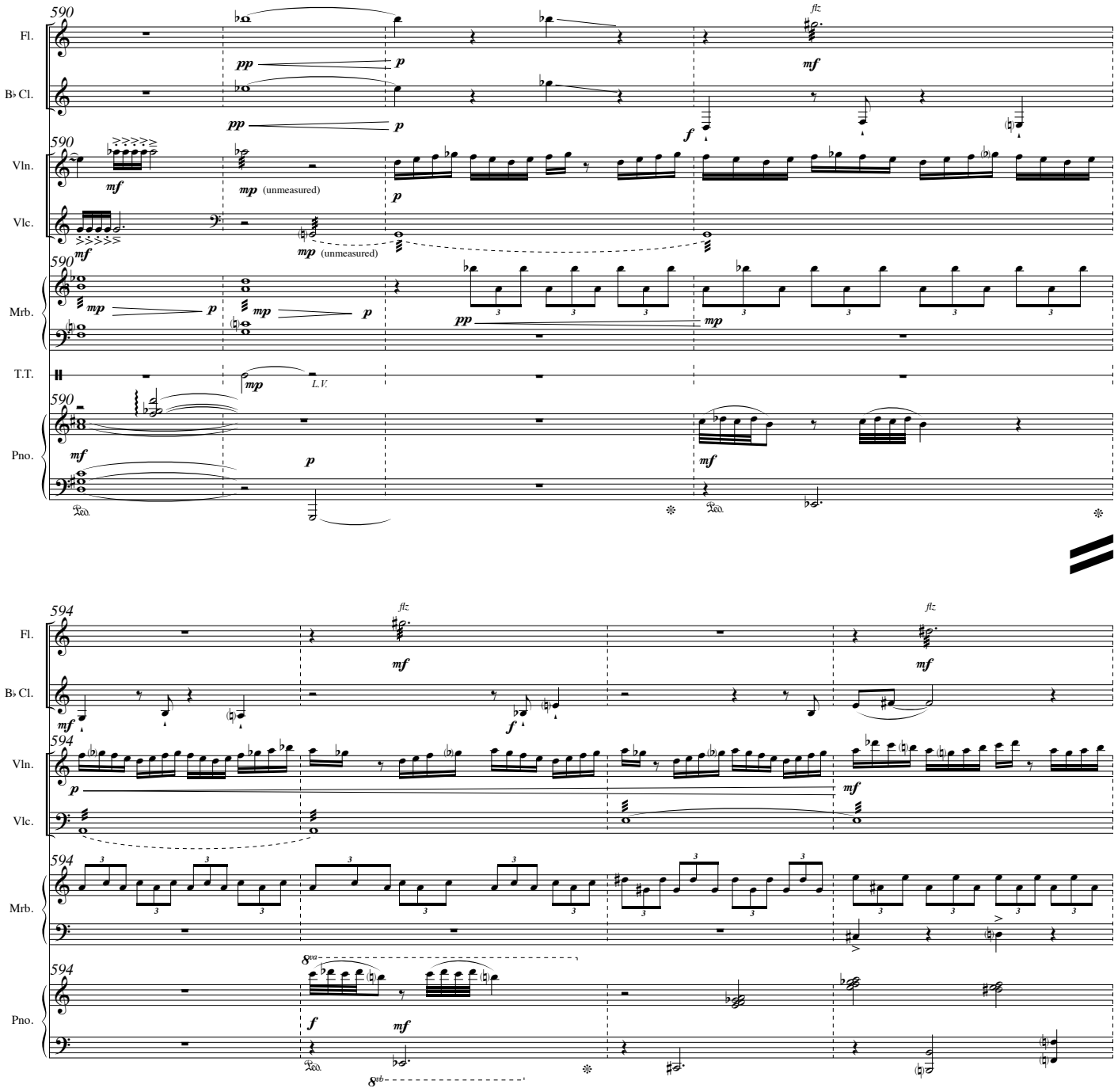

O
566
Fl.
B♭ Cl.
Sul A
slow 1/4 tone vibr. ad lib.
Vln.
slow 1/4 tone vibr. ad lib.
Vlc.
(simile)
Mrb.
(unmeasured)
Cym.1
Cym. 2
Cym.3
Cym.4
arco
L.V.
B. Dr.
Pno.
570
arco
L.V.

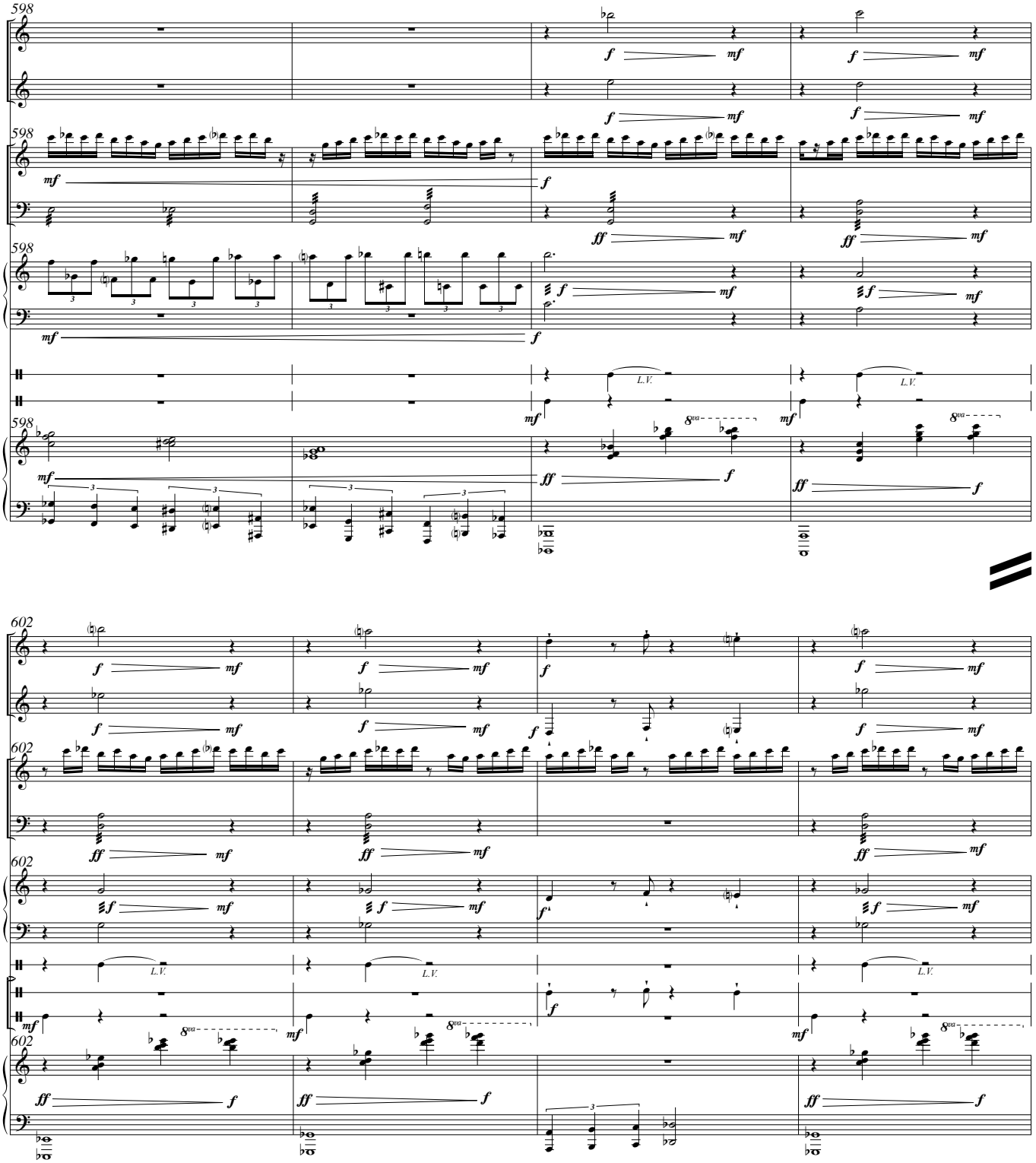

574
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
Pno.
arco
L.V.
(8vb)

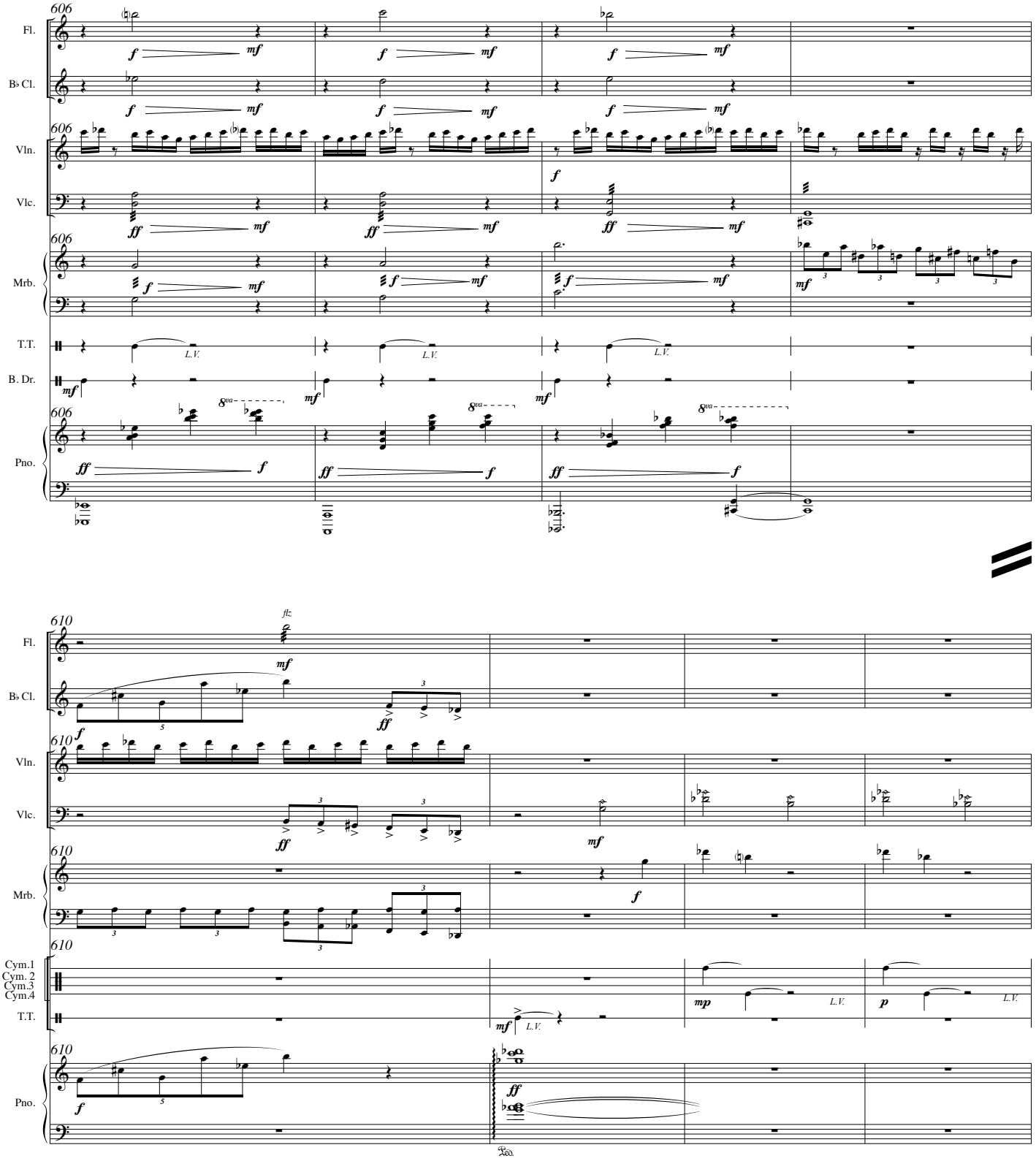

578
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
Pno.
arco
L.V.

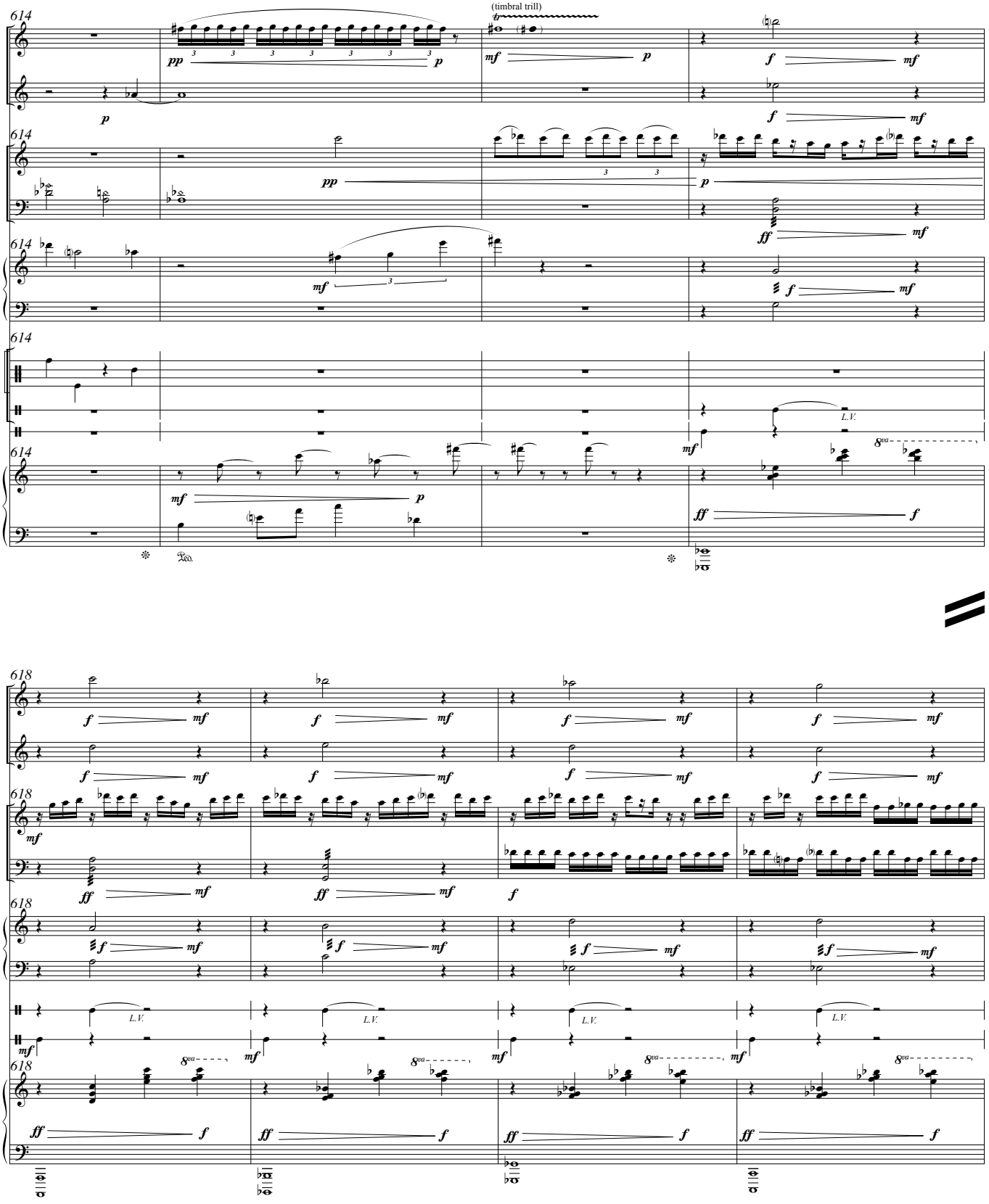

582
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
Pno.
arco
L.V.
p
f
mf

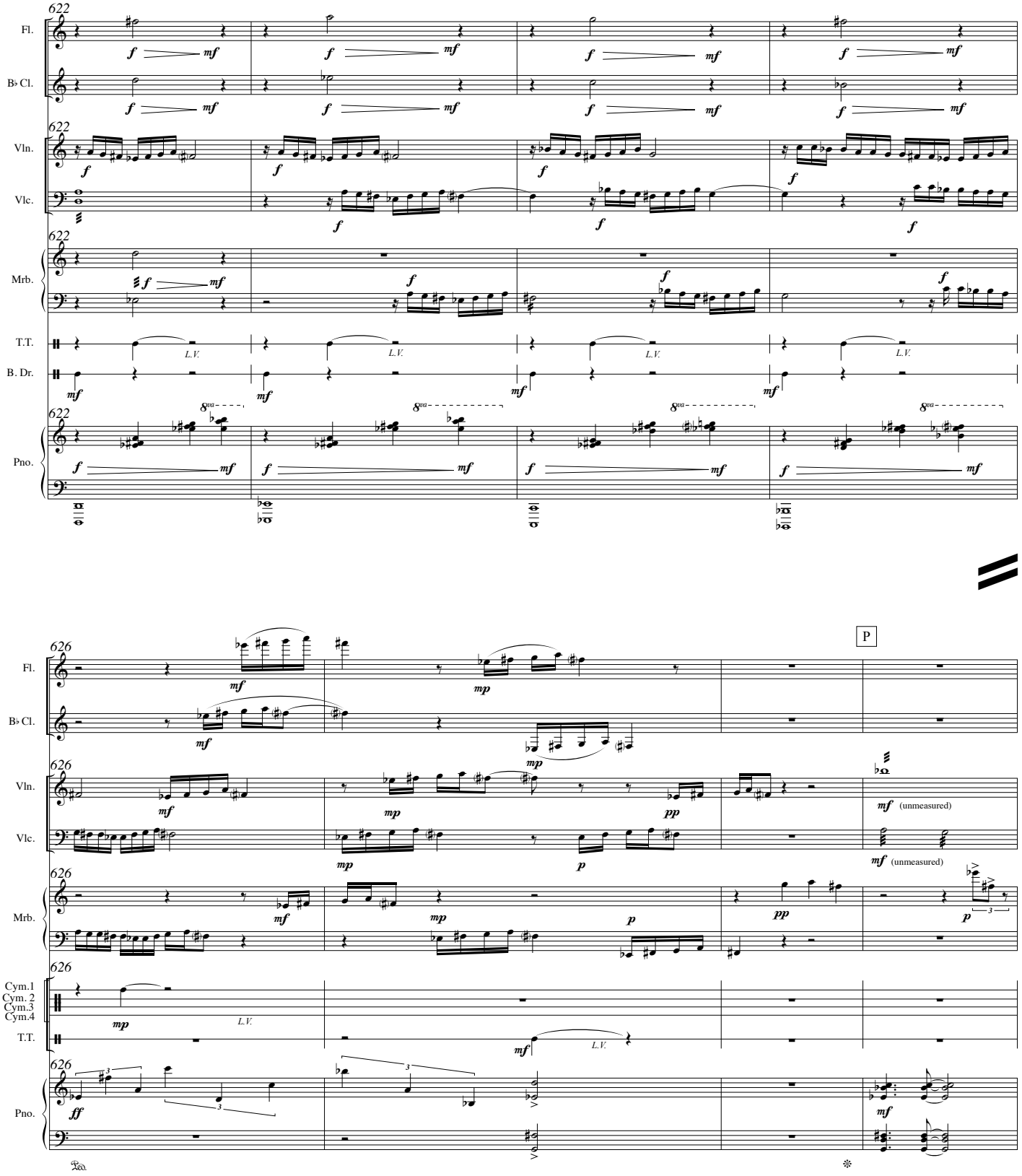

586
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
Pno.
arco
L.V.
pp
p
ppp
f
mf
mp
pp
mf

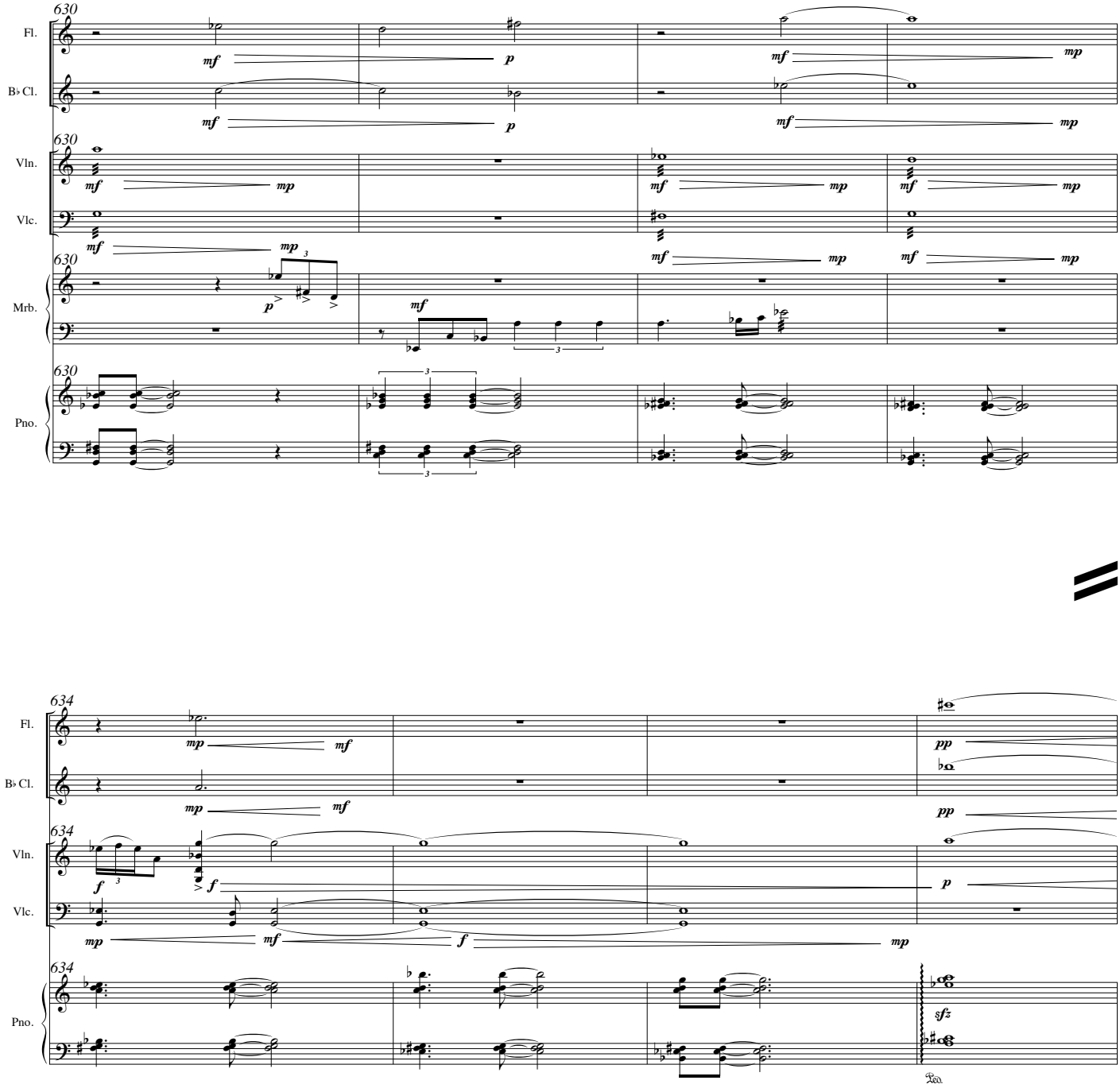

590
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
T.T.
Pno.
flz
pp
p
mf
f
mp (unmeasured)
L.V.
Ped.
594
8va
8vb


598
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
T.T.
B. Dr.
Pno.
L.V.
602
Bgo. Dr.

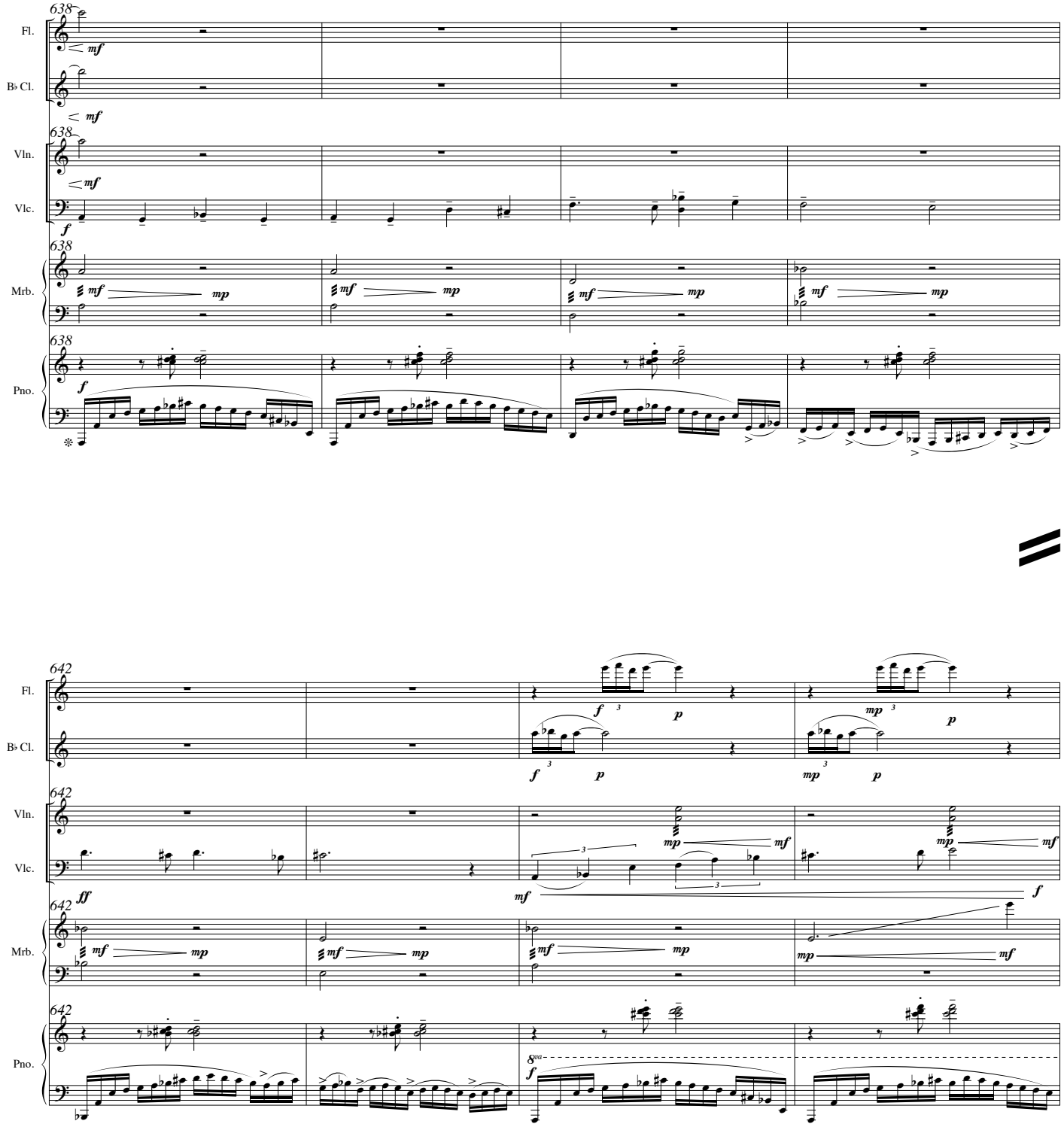

606
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
T.T.
B. Dr.
Pno.
L.V.
8va
610
ftz
Cym.1
Cym. 2
Cym.3
Cym.4
Ped.

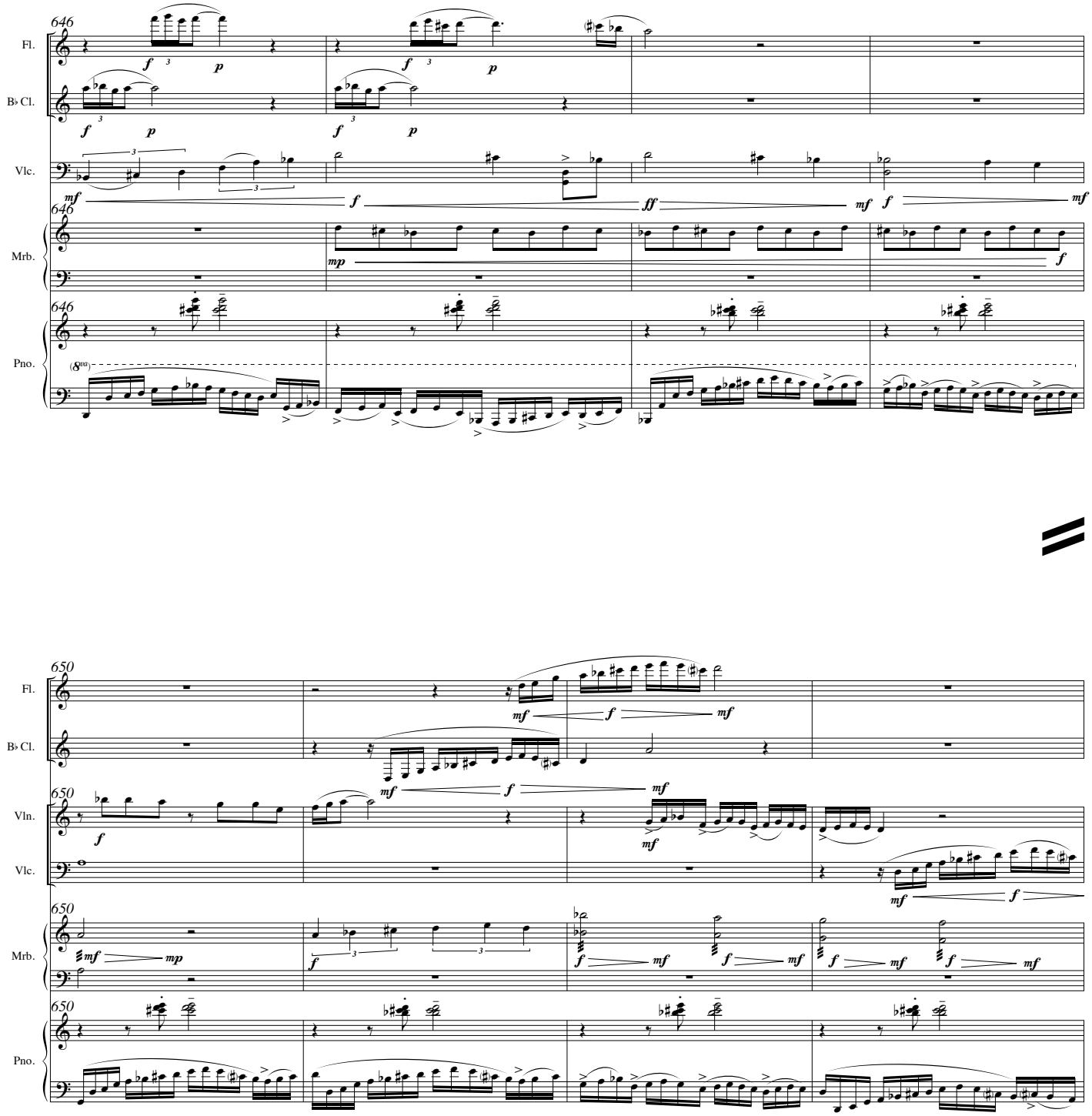

614
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
T.T.
B. Dr.
Pno.
(timbral trill)
L.V.
8va
618

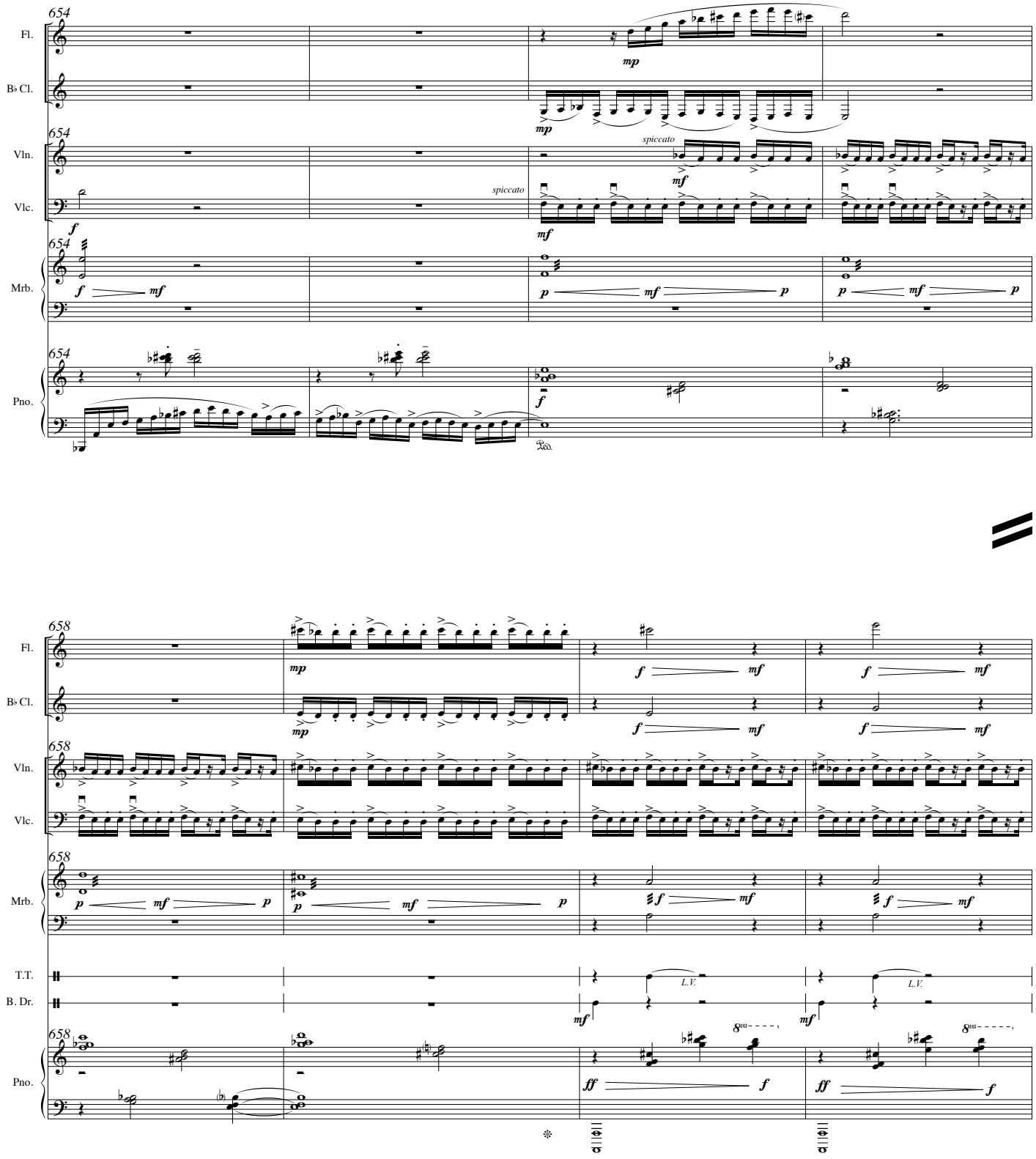

622
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
T.T.
B. Dr.
Pno.
L.V.
626
P
(unmeasured)
Cym.1
Cym. 2
Cym.3
Cym.4

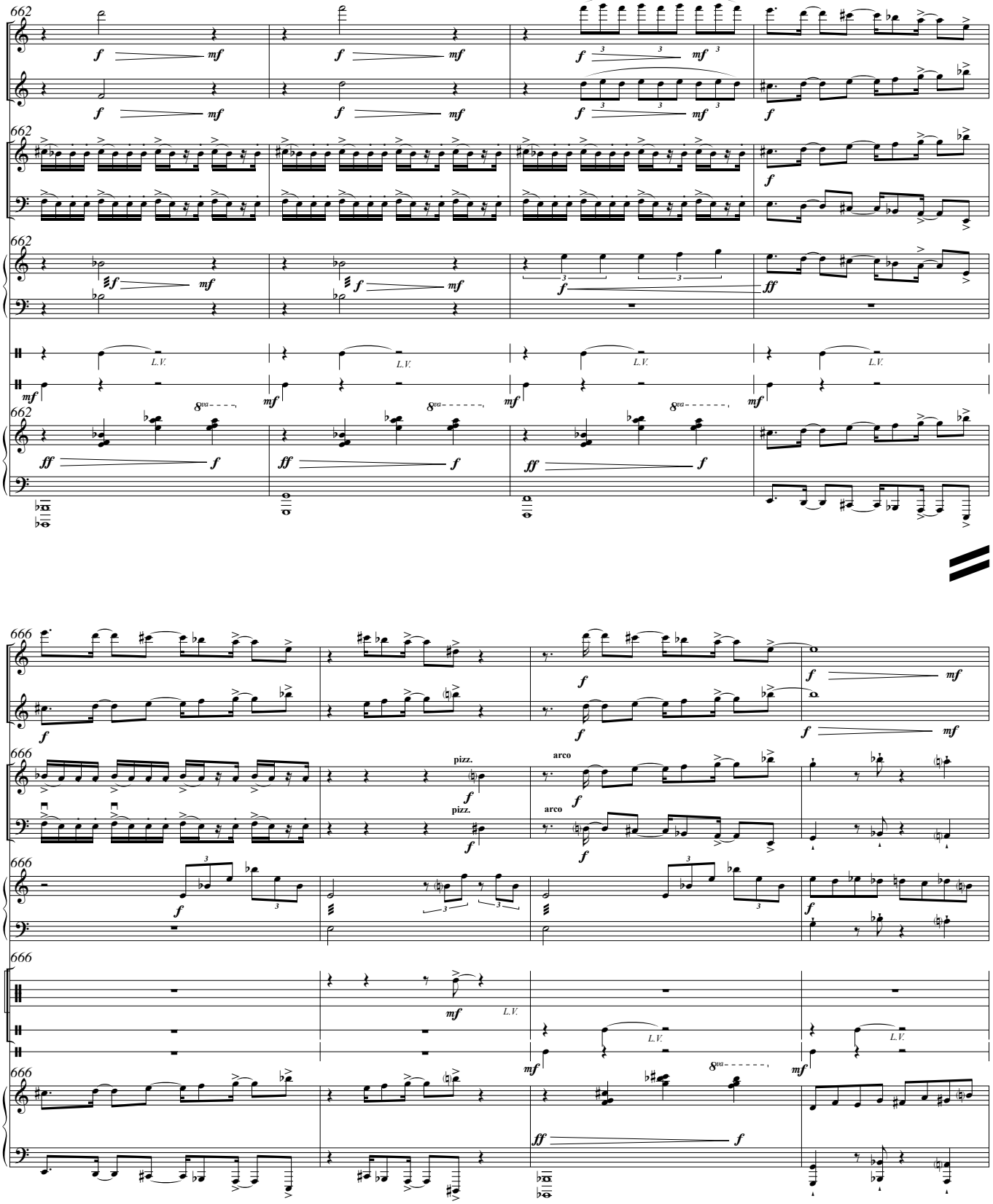

630
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Pno.
mf
p
mp

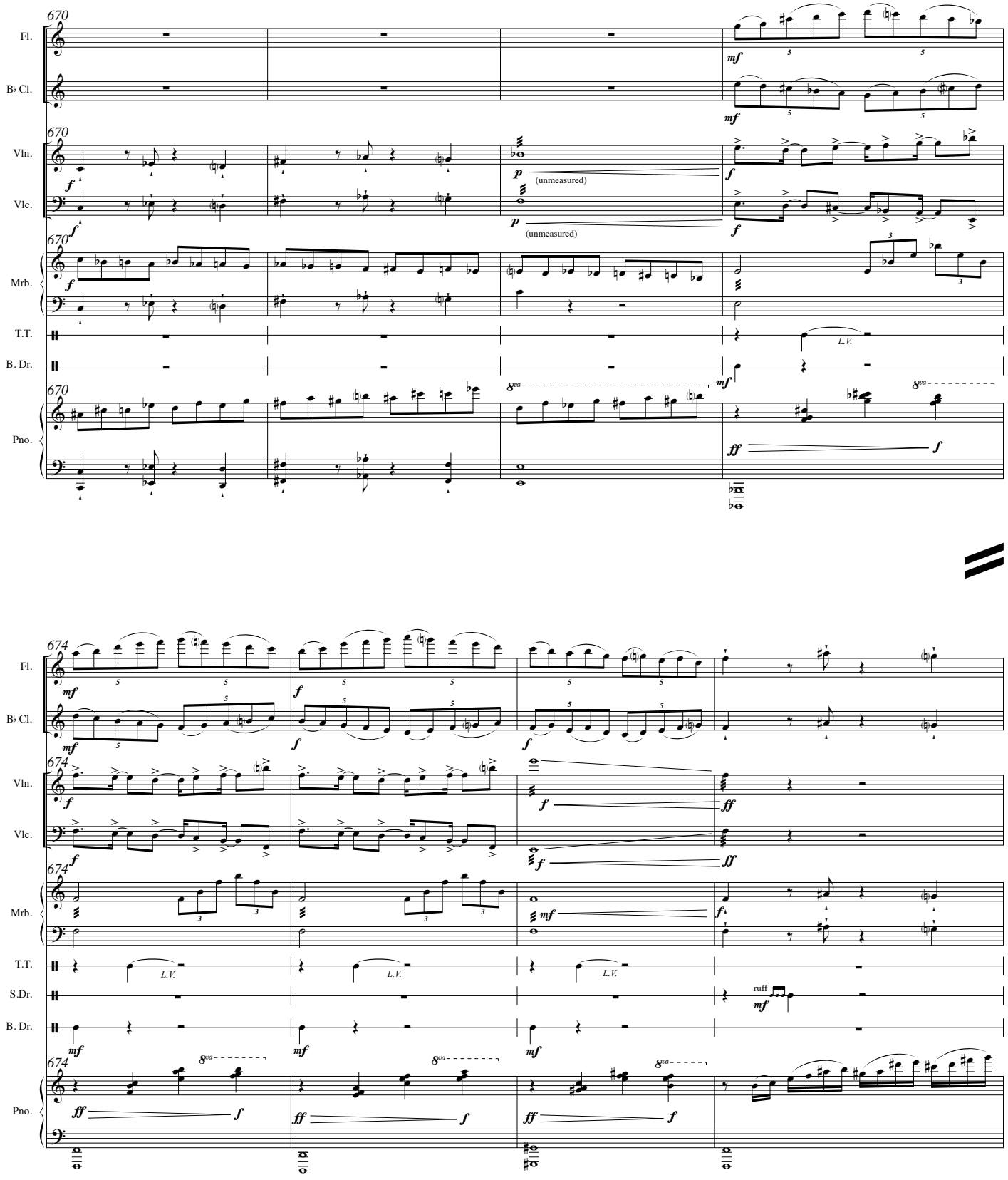
634
Fl.
B♭ Cl.
Vln.
Vlc.
Pno.
mp
mf
f
p
pp
sfz

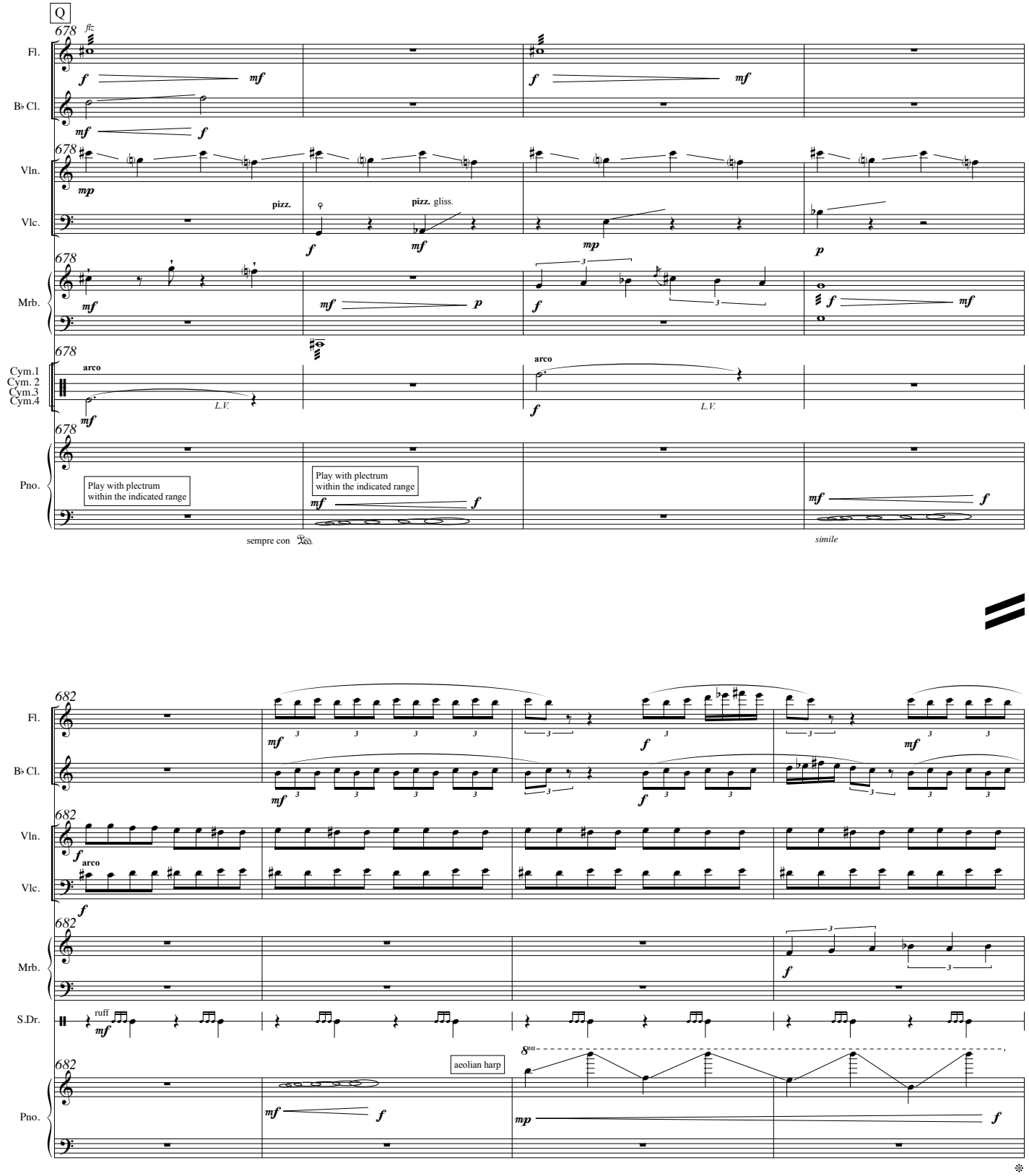

638
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Pno.
mf
mp
f
642
ff
p
8va

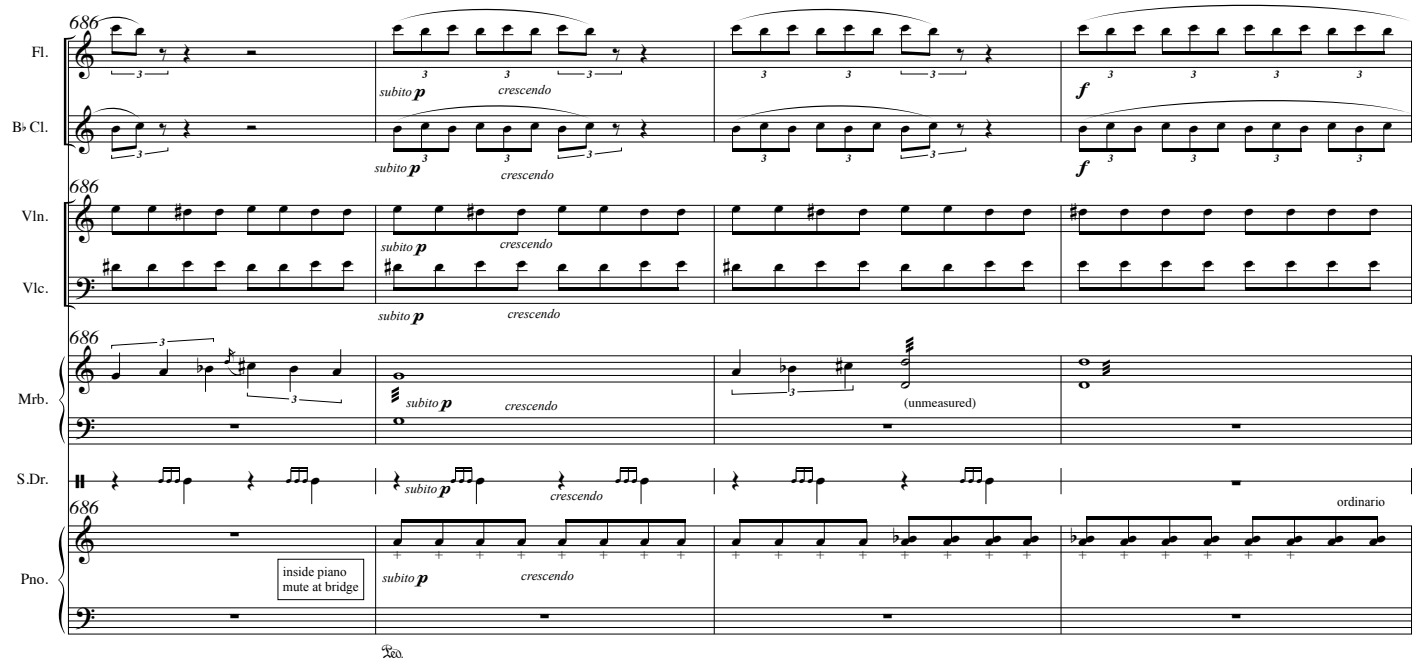

646
Fl.
B♭ Cl.
Vlc.
Mrb.
Pno.
650
Vln.

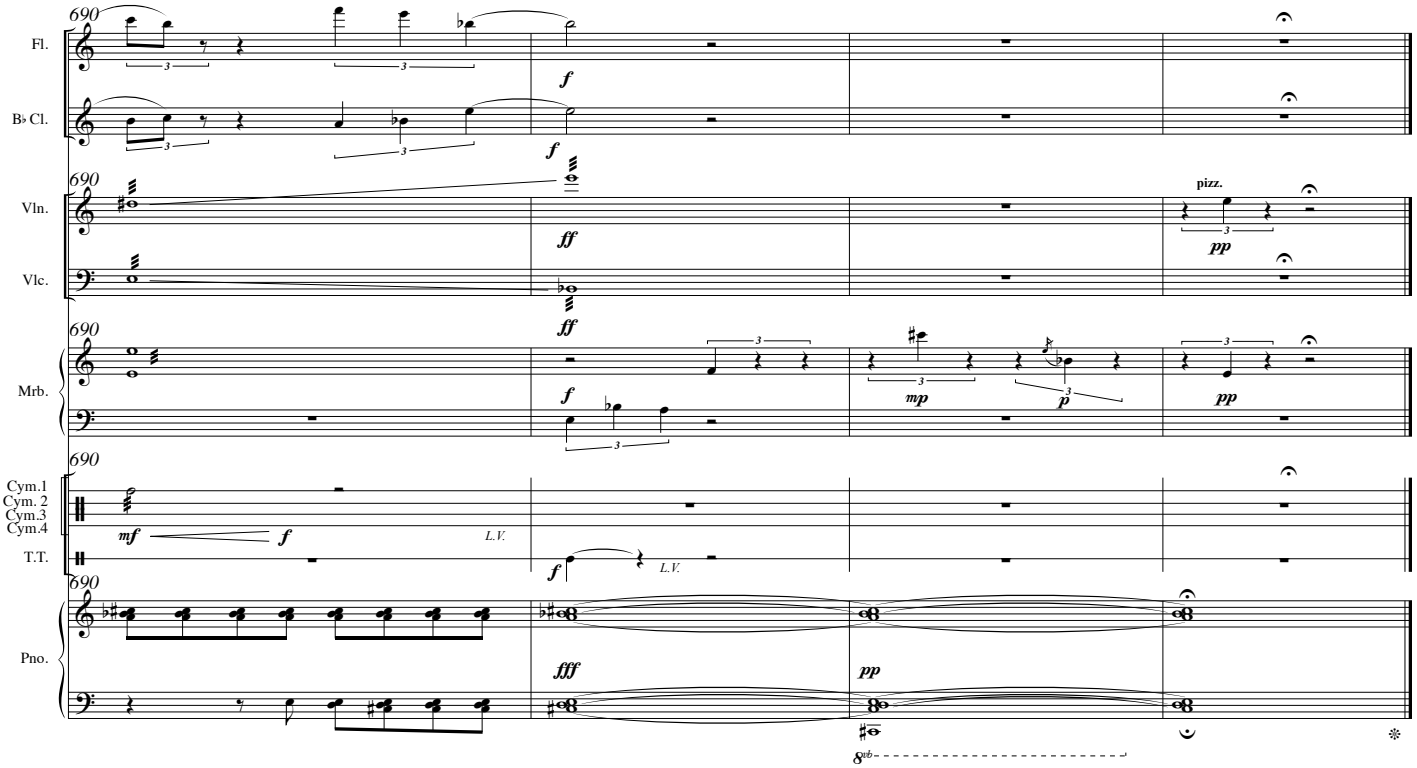

654
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Pno.
mp
spiccato
mf
f
p
658
T.T.
B. Dr.
L.V.
ff
8va


662
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
T.T.
B. Dr.
Pno.
L.V.
8va
666
Cym.1
Cym. 2
Cym.3
Cym.4
pizz.
arco


670
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
T.T.
B. Dr.
Pno.
mf
f
p
(unmeasured)
L.V.
8va
ff
674
S.Dr.
ruff


Q
678
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
Pno.
pizz.
pizz. gliss.
arco
L.V.
Play with plectrum
within the indicated range
sempre con
simile
682
ruff
aeolian harp
8va


686
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
S.Dr.
Pno.
subito p
crescendo
f
(unmeasured)
ordinario
inside piano
mute at bridge


690
Fl.
B♭ Cl.
Vln.
Vlc.
Mrb.
Cym.1
Cym. 2
Cym.3
Cym.4
T.T.
Pno.
f
ff
fff
mf
mp
p
pp
pizz.
L.V.
8vb

Appendix B: The Recording of the Première

Please see attached CD.

B.1 About the Concert

Osmosis/Zymosis was performed by Land's End Ensemble, at the "2013 Happening Festival of New Music and Media," on January 25, 2013, at the Rosza Centre, University of Calgary. The ensemble under the artistic director and conductor Laura Jayne Bowler, comprised:

John Lowry, violin

Beth Root Sandvoss, cello

Lucie Jones, flute

Andrew Morrow, clarinet

Kyle Eustace, marimba

Eric Bumstead, percussion

Matthew Blackburn, piano

B.2 The Concert Program Note

Osmosis/Zymosis is a work of ca. twenty minutes, for a mixed chamber ensemble (augmented "Pierrot ensemble"), comprising flute, clarinet, violin, violoncello, piano and percussion, based on the idea of the integration of "gestures," as used in the Eastern Mediterranean music tradition, into Western music tradition. The title consists of two terms which are often used in science for certain chemical processes. "Osmosis" is the gradual absorption and "Zymosis" is the development, the process or the spread of an infection. Both these Greek words are also useful for the description of the blending of

cultures, especially for individuals who face displacement or immigration. A related concept in anthropology would be the rite of passage, a ritual event that marks a person's transition from one status to another. A music composition that incorporates elements from one culture to another, is even more than that. Both the process and the resulting work are steps towards musical maturity and openness. In many ways the integration of music elements from one culture to another is a "glimpse to the future," which could be helpful in bridging cultural and aesthetic differences.