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Portfolio of Compositions

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Submitted in partial fulfilment of requirements of the University of Glasgow for the award of Doctor of Philosophy

University of Glasgow, School of Culture and Creative Arts, Music
January 2018

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II. Portfolio

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Acknowledgements

I am grateful to my PhD advisor, Dr. Jane Stanley, for her guidance throughout the creation of this portfolio. Dr. Stanley has constantly inspired me to improve as a composer and a scholar.

I am also thankful for the advice and perspective of Professor Bill Sweeney.

I would like to thank my mother, Molly G. Bayley, for her patience and encouragement.

Finally, I would like to thank my uncle and aunt, Jon and Linda Katzenbach.

Abstract

The objective of my portfolio is to develop a new compositional process that involves analysing recorded sounds, interpreting and translating analyses into musical metaphors, and generating formal structures based on changes in timbre. The portfolio explores several models of compositional processes that were created in the course of my research. It analyses the strengths and weaknesses of these models, and it offers insight into the ways that the compositional process may be further developed.

The Development of a New Compositional Process

The objective of this portfolio is to develop a new compositional process that involves analysing recorded sounds, interpreting and translating analyses into musical metaphors, and generating formal structures based on changes in timbre. In the course of writing these works, I constructed several model compositional processes that attempt to actualize this objective. In this commentary, I have reflected upon the methods that I used and choices that I made while creating each model, evaluated the strengths and weaknesses of each model, and offered insights into ways that the more successful models may be further developed.

The inspiration for the portfolio was a realisation that my process for composing original notated music was incapable of producing the music that I had imagined. I had been working in an audio recording studio for several years, and as a result I had grown accustomed to analysing and manipulating digital audio samples. Working with digital audio changed my perspective on music and sound at a fundamental level. I became frustrated by what I perceived as a disassociation between the music that I designed, either digitally or in my imagination, and the music that I was able to notate.

Prior to my research, my compositional process heavily incorporated elements of set theory. I determined the pitch content of my compositions by creating strict intervallic relationships. The advantage of this method was that it allowed me to generate a great deal of musical material. However, I increasingly felt that the material that I generated was detached from the music that I had imagined. I approached writing music as a technical exercise rather than a creative process. My dissatisfaction with my methodology grew, and I began to search for means by which I could better translate the sounds in my mind’s ear to notated music.

I experienced a philosophical revolution when I began to view pitch and frequency as two distinct concepts. When analysing digital audio samples, I considered frequency, the spectral envelope, and the time envelope. These were tangible elements that I could harness in my digital music. Why couldn’t I apply that same perspective to notated music? I was resolved to change my perspective, but this immediately presented challenges.

The first challenge that I identified was determining how I would generate sound spectra to serve as the basis for my compositions. The second difficulty was in how to interpret spectra; how would I create music from abstract sound? I approached these problems from different angles in each of my works, and I have described the processes that I undertook in the writing of each individual composition. Inevitably, attempting to solve these problems uncovered additional questions.

My desire to invent a better compositional process led me to research spectral music, and in the early days of my research I primarily focused on the methods of early composers of spectral music. The earliest spectral composers, most notably Michael Levinas, Tristan Murail, and Gérard Grisey, had devised methods to translate analyses of audio samples into music. I became captivated by this early spectral music, but I couldn’t help but notice that these early composers of spectral music wrote very little about their methods of developing form. In fact, discussion of form was glaringly absent from most analyses of early spectral music. Because of this, I identified a third challenge to developing my compositional process: how could I organize music through the use of changes of timbre?

Early in my research, I had become fascinated with the concept of timbre and its relation to musical form. This fascination continued to develop through the course of writing this portfolio. The discussion of timbre as it relates to music and form is problematic because the term is often employed to describe two different perceptions of sound. The first definition of timbre is an encompassing term that is used to describe the perceived emotional status of a sound. In this definition, timbre contains all of the intangible elements of a sound. For example, a listener might describe their perception of a violinist playing a sustained note at a low amplitude and at a high frequency as airy, light, or ethereal.

The second definition of timbre is the exact physical characteristics of a sound: its frequency spectrum, time envelope, micro-intonations, range, and decay. These elements are measurable and able to be analysed. For the purposes of this commentary, I will always use this second definition of timbre. Timbre is defined as the objective, measurable elements of sound that determine its character. I acknowledge that there are elements of sound and music that cannot be analysed. However, these indefinable elements are outside of the focus on this portfolio.

I began to study musical scores from the first of the spectral music composers in order to determine how they organised their music. I had recognized the need to adopt a new approach to identifying, constructing, and analysing musical form and structure. Tristan Murail's 1982 work *Désintégrations* for orchestra and tape presented one possible method. Murail describes his process for generating musical form in this work as follows:

> *"All of the material for the piece (which is scored for orchestra and tape), its microforms and systems of evolution, were determined from such spectral analyses, from the decomposition or artificial reconstruction of harmonic and inharmonic spectra."*[1]

Désintégrations was my introduction to the concepts of micro-form and macro-form. In *Désintégrations*, Murail invented a series of micro-forms based on spectral analyses. He artificially altered the spectra that served as the basis for the work, and then used these artificially adjusted micro-forms to introduce contrast and variation.

A micro-form is defined as a self-contained group of musical events. It is a small-scale musical unit that expresses a complete musical thought. A micro-form may be comprised of a single sound, or of several sounds that combine or overlap. All of the elements contained with a micro-form are recognized as belonging to that unit. Micro-forms often serve as components of a larger-scale form.

A macro-form is defined as a large-scale musical unit that is built from multiple micro-forms. A macro-form combines multiple musical thoughts to convey a larger impression. Macro-forms often utilise recurring arrangements or patterns of micro-forms. Whereas micro-forms are used to identify sound events that occur at the local level, macro-forms are a method of identifying a combination of events that effect the global musical structure.

Murail's method of generating form through the use of recurring, gradually-altered micro-forms quickly became a standard in spectral music. It is important to point out that Murail did not regard micro-forms as musical cells. Instead, he viewed them as sonic events that could be altered through the introduction of inharmonic spectra. The gradual introduction of inharmonic spectra serves as a method of development. I introduced these concepts into my compositions from the very start while writing ***Evanescent***, but it was not until I wrote ***Aurora*** that I was confident in my ability to apply them to large-scale form. Murail identified the difficulty in applying this practice to large-scale form by stating:

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[1] Tristan Murail, "Spectra and Sprites," *Contemporary Music Review* 24, no. 2-3 (January 25, 2007): 141.

> *"if any attempt is made to generalize some of the previous ideas concerning large-scale form, the system will rapidly become too complex to be understood and controlled in an intuitive manner by the composer/user."*[2]

Interestingly, a number of composers of spectral music reject the notion that large-scale form should exist in music. Philippe Hurel, a composer of spectral music and music theorist, has written at length about form and gesture. Hurel maintains that gestures should be rejected along with transformations, rhythmic and intervallic work as artificial constructs that detract from the communication of sound phenomena.[3] His perspective is held among several composers of spectral music. Theorist Brian Kane summarises this point of view:

> *"Harmony must come from the timbral spectrum; form must come from the attack and decay of its partials. Objective and formalized, sound itself becomes the fetishized idol around which the Spectralists construct their myth."*[4]

At first, Kane's mention of harmony may seem out of place when discussing a compositional process that rejects the need for interval and pitch relationships. However, composers of spectral music established two concepts that I have found helpful in my own process: harmonicity and inharmonicity. Harmonicity is defined as the degree in which the frequencies, envelope, and micro-intonations present resemble those components as they exist in the source spectral analysis. Music with a high degree of harmonicity

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2 Murail, "Spectra and Sprites," 145.

3 Brian Kane, "The Elusive "Elementary Atom of Music"," *Qui Parle*, Spring/Summer, 14, no. 2 (2004): 128.

4 Kane, "The Elusive "Elementary Atom of Music"," 133.

closely resembles the characteristics of the source spectrum. Inharmonicity is defined as the degree in which sound elements (frequencies, time envelope, micro-intonations) do not resemble the source spectrum. Inharmonicity is often introduced through the addition of frequencies that are not present in the source spectra.

In 2005, Tristan Murail published a detailed reflection on the evolution of his compositional process. In this reflection, he states that he discarded the strict rules that he formulated in the early stages of spectralism, and instead has adopted a "spectral attitude".[5] Murail describes this attitude as an awareness of musical phenomena. He states that a composer of spectral music should adopt the following principles:

- *"thinking in terms of continuous, rather than discrete, categories (corollary: the understanding that everything is connected);*
- *a global approach, rather than a sequential or 'cellular' one;*
- *organizational processes of a logarithmic or exponential, rather than linear, type;*
- *construction with a functional, not combinatorial, method; and*
- *keeping in mind the relationship between concept and perception."*[6]

I do not classify my music as spectral, but I find these principles helpful when developing my creative perspective. I discovered that it was exceptionally beneficial to train myself to view music as a continuous flow of sound rather than discrete events. I also consider it incredibly important to organise music using functional, non-linear methods. However, I struggled with abandoning linear forms. That conflict was detrimental to the processes that I used in *Evanescent*.

Murail's final principle, the consideration of the relationship between concept and perception, is beyond the scope of my research. However, I did incorporate one aspect of this principle into my process. Composers of spectral music often include shifts between states of predictability and unpredictability in their music. Julian Anderson describes this shift between states as follows:

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[5] Tristan Murail, "Target Practice," *Contemporary Music Review* 24, no. 2-3 (January 25, 2007): 152.

[6] Murail, "Target Practice," 152.

> *"A much more fundamental concern shared by most of these composers is with the conscious composition of the degree of predictability or unpredictability in their music, and a consequent fascination with the psychology of perception."*[7]

I incorporated this into my process by using instrumental techniques that produce unpredictable frequencies and timbres. I introduced a different type of unpredictability by constructing patterns of micro-forms, and then reordering or skipping components within those micro-forms.

The concept of instrumental synthesis was also deeply influential to my writing. Instrumental synthesis is the technique of performing a spectral analysis on a sound and then reproducing the analysed frequencies using instruments. The resulting sound will be more complex than the source because it will have the added complexity of each instrument's complex spectrum. Theorist and composer Joshua Fineberg explains this by stating:

> *"The sound complexes built this way are fundamentally different from the models on which they are based, since each component is played by an instrument with its own complex spectrum. Thus the result is not the original model, but a new, much more complex structure inspired by that model."*[8]

Tristan Murail used instrumental synthesis in the compositional process of *Désintégrations*. He expanded upon the concept by applying what he called spectral treatment, a process that included splitting, filtering, "spectral exploration", adding inharmonic spectra, and applying a new frequency curve.[9] In an analysis of Murail's later work, *L'esprit des dunes*,

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7 Julian Anderson, "A Provisional History of Spectral Music," *Contemporary Music Review* 19, no. 2 (Aug 20, 2009): 8.

8 Joshua Fineberg, "Guide to the Basic Concepts and Techniques of Spectral Music," *Contemporary Music Review* 19, no. 2 (Aug 20, 2009): 85.

9 Murail, "Spectra and Sprites," 141.

Joshua Fineberg identifies Murail's use of spectra compression and the introduction of artificial distortion.[10]

Gérard Grisey also heavily utilised instrumental synthesis in his work *Partiels* for chamber orchestra (1975). In *Partiels*, Grisey recreates a spectral analysis of a fortissimo trombone E2. However, he does not attempt to recreate the spectra in its precise form. Instead, he expands the time scale of the spectra and introduces elements of inharmonicity.[11] Grisey develops this process further in his composition for flute, clarinet, string trio and prepared piano, *Vortex Temporum*. Theorist Robert Hasegawa has analysed and identified the inharmonic spectra present in *Vortex Temporum*. In his analysis, he states that "Grisey uses only three types of spectra – harmonic, stretched and compressed".[12]

It was natural for me to incorporate these techniques into my own music. I had already resolved to develop my process to match the techniques that I used when working with digital audio. Grisey and Murail had created a process that allowed me to interact and modify notated music as if it were sound. However, I did not fully embrace the processes of spectral music. I did not (and still do not) feel that spectral music addressed all of my objectives for creating a new process. It analysed sounds and provided a means for interpretation and translation, but it lacked a concrete method of generating form. I therefore turned to composers of other styles for inspiration.

Per Nørgård was one of the first composers that I researched, and his music influenced my perspective when composing both *Evanescent* and *Aurora*. Nørgård was one of the earliest composers to utilise spectral analyses in his compositional process. In the first movement of his work *Voyage into the Golden Screen* (1968), Nørgård employs two harmonic spectra. The first is based on G, and the second transposed a quarter tone higher. The two spectra are introduced at differing tempos. The partials of the second spectrum are offset from the partials of the first spectrum. These partials are introduced through the use of fractal melodies. Julian Anderson describes this movement as "the first properly instrumental piece of spectral

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10 Joshua Fineberg, "Musical Examples," *Contemporary Music Review* 19, no. 2 (Aug 20, 2009): 122.

11 Grisey, *Partiels: pour 18 musiciens*. BMG. 132423 Ricordi.

12 Robert Hasegawa, "Gérard Grisey and the 'Nature' of Harmony," *Music Analysis* 28, no. 2-3 (2009): 352.

composition”[13], although it follows few of the rules on ordering attack and decay that were subsequently established by composers of spectral music. Anderson considers the work to be a precursor to spectral music.[14]

Nørgård employed an integer sequence that he called an infinity series to generate a never-ending series of intervals. The series is defined by Nørgård as: s = (s(n))_n>=0 by the rules s(0) = 0, s(2n) = -s(n) for n >= 1, and s(2n + 1) = s(n) + 1 for n >= 0.[15] In his early compositions, he used this integer sequence as a source of pitch content, and as a source for structure and form. I was aware of the infinity series, but I did not incorporate it into my own compositional process. I felt that using an integer sequence to generate music was too similar to my past style of music. It would have been inconsistent with the goals that I had set out when designing a new process. In an interview in 2015, Nørgård acknowledged the limits of the forms in his early works:

> *“When you listen to my earliest works you will find that there is a degree of ... unfinishedness. The music never really ends. Every motif that has seemingly ended is the beginning of something new that continunes.[sic] And continues and closes just to continue in another direction.”*[16]

The music of Helmut Lachenmann heavily influenced the early development of my compositional process. Lachenmann’s aesthetic is at odds with my own, but I found many of his works to be sources of inspiration due to the thoughtfulness he displayed when constructing rich timbres, and additionally because of the methods that he devised to organise musical phrases. I will describe the influence of his music in greater detail in my examination of *Memories of my Father*.

I have chosen to discuss my works chronologically, that is to say, in the order in which they were composed. My compositional process, perspective, and practice evolved significantly over the course of my research. I have documented the motivations for these evolutions, reflected upon missteps

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13 Anderson, "A Provisional History of Spectral Music," 14.

14 Anderson, "A Provisional History of Spectral Music," 9.

15 Gary Yu Hin Au, Christopher Drexler-Lemire and Jeffrey Shallit, “Notes and note pairs in Nørgård's infinity series”. *Journal of Mathematics and Music,* 2.

16 Nørgård, “infinity, landscapes and layers”, *ernst von siemens musikstiftung*, 2.

and failures, and offered insights reached with the benefit of retrospection. I do not claim to have perfected my process, nor do I believe that my works serve as flawless models. Instead, it is my hope that the these works serve as a source of reference to future composers for the use of evolving their own processes. The nature of creative practice necessitates continual self-reflection and growth.

Evanescent, for orchestra, 2013, [9']

Evanescent represents my first attempt to invent a new process that integrated spectral analysis, translating analyses into music, and organising music through time using changes in timbre. I was initially overwhelmed by the lack of a compositional model to follow. Therefore, I began the development of my process by identifying clear technical and musical objectives for my first work. I anticipated that I would build a successful model in the process of ascertaining solutions to these objectives.

I planned to write a single-movement composition for full orchestra. The length of this work would be approximately twenty minutes. I chose to write for a full orchestra because it was a well-established ensemble that afforded a considerable variety of timbres. My initial idea was to record a sound, analyse it, and then write a single micro-form based on the analysis of the sound. I would introduce the micro-form at the start, and then repeat it with variations and evolutions. I imagined that a form would naturally emerge from the constant repetition and development of this single micro-form.

One of my broad goals, as previously stated, was to approach my music as if I were working directly with sound. With that goal in mind, I created my list of technical objectives. First, I would record several sound samples that were both interesting and familiar. Because this process was new to me, I was hesitant to begin with an overly-complicated sound. Secondly, I would select a single sample among the recordings and perform a spectral analysis. Finally, I would translate that analysis into micro-forms.

I decided to record my own voice performing vocal exercises. These recordings would serve as the sound samples for my analyses. I studied classical voice throughout my undergraduate career, and I had performed as both an ensemble and solo vocal artist. I had several years of experience as a performing vocalist in a new music ensemble. This experience had taught me that the voice was capable of producing an extensive variety of timbres.

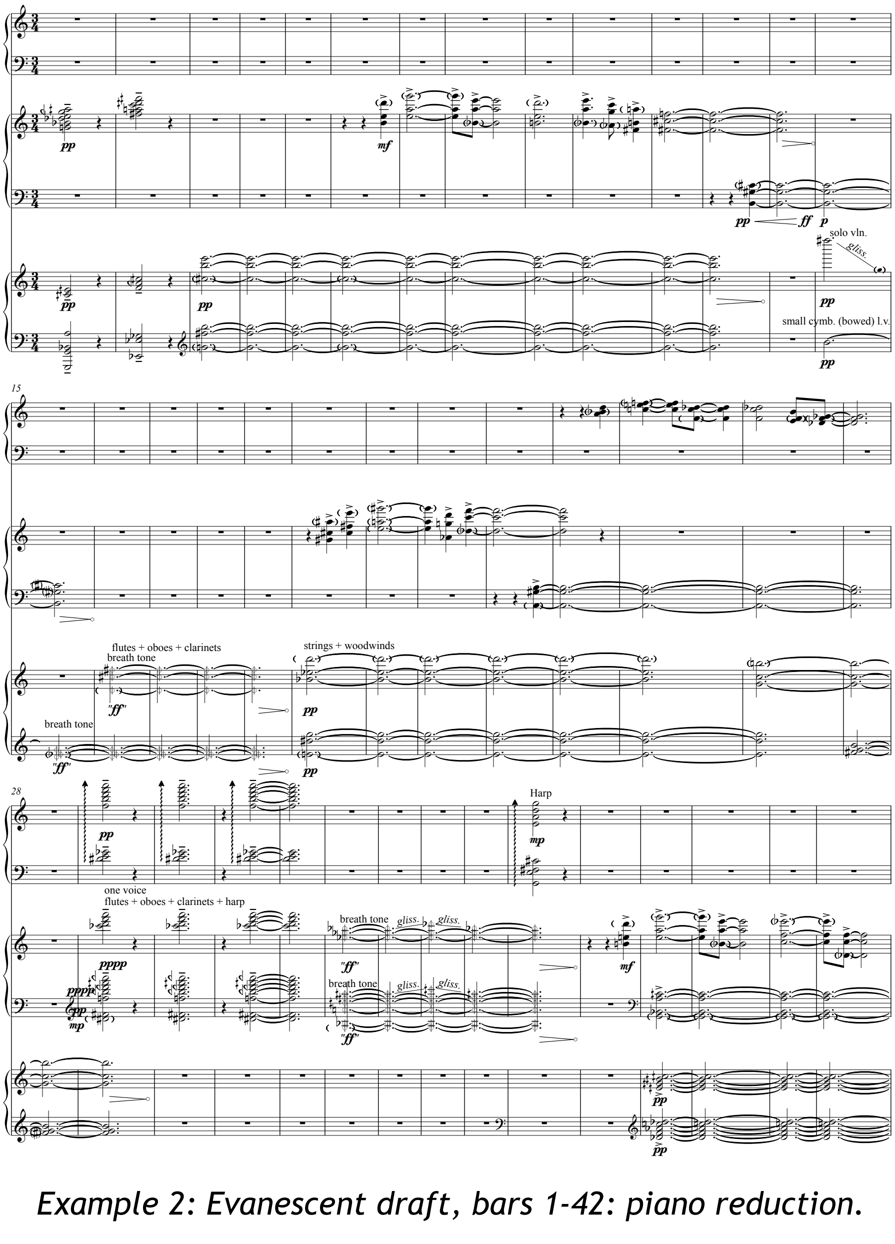
Next, I selected a sample from the recordings that would serve as the sound source for my spectral analysis. After conducting the analysis, I decided to revisit the recording and alter it to produce a more unfamiliar sound. I employed frequency modulation and compression, altered the registers of several partials, and combined partials that were within an eighth of a step. Once I had arrived at a sound that I found interesting, I performed a second spectral analysis. The following is a sample from the modified spectrum to illustrate the process:

Frequency (Hz)	Level (dB)	Frequency (Hz)	Level (dB)
86.132	-13.143	1636.523	-29.749
172.265	-10.780	1722.656	-29.805
258.398	-14.995	1808.789	-30.495
344.531	-19.245	1894.921	-30.990
430.664	-18.119	1981.054	-31.728
516.796	-18.878	2067.187	-31.732
602.929	-20.566	2153.320	-32.511
689.062	-21.153	2239.453	-32.914
775.195	-23.003	2325.585	-33.753
861.328	-25.001	2411.718	-34.141
947.460	-25.682	2497.851	-35.068
1033.593	-25.112	2583.984	-35.359
1119.726	-26.096	2670.117	-35.510
1205.859	-26.563	2756.250	-35.469
1291.992	-27.456	2842.382	-36.011
1378.125	-27.583	2928.515	-36.793
1464.257	-27.220	3014.648	-35.406
1550.390	-28.614	3100.781	-35.181

Example 1: Evanescent, Sample of the spectral analysis.

The next step in my process was to compose the micro-form that would serve as the single, repeating idea throughout the work. I charted the relative duration and amplitude of each frequency, then determined the order in which groups of frequencies should appear in the micro-form. I designed a micro-form that was exactly one minute in length. I then planned to repeat nineteen evolutions of the micro-form.

On re-examination, I believe that my process at this point was flawed. I had reduced my process to a mechanical exercise rather than focusing on creative expression. As a result, I wrote the first draft of *Evanescent* as if I were working from a blueprint. The technical process was sensible, but I had given little or no thought to my creative process. Furthermore, I had composed a draft that was lacking in development. My method of repeating a single micro-form with minor transformations did not produce the sense of development that I had anticipated. The work lacked a sense of beginning, growth, or an ending. I was made aware of the shortcomings of the draft when I heard it performed for the first time.


solo vln.
gliss.
small cymb. (bowed) l.v.
15
flutes + oboes + clarinets
breath tone
strings + woodwinds
breath tone
28
Harp
one voice
flutes + oboes + clarinets + harp
breath tone
gliss.
gliss.
breath tone
gliss.
gliss.

Example 2: Evanescent draft, bars 1-42: piano reduction.

The first draft of *Evanescent* was performed at a workshop with the Royal Scottish National Orchestra (RSNO) in 2013. Example 2 is a piano reduction of the opening passage of this draft. The reading by the RSNO gave me a fresh perspective, and I decided to rewrite the score from the beginning with a greater focus on originality and creative expression. To start, I composed a new micro-form that was approximately eight seconds in length. I planned to repeat the micro-form while overlapping multiple instances of it at various expansions and contractions. I would use the intersecting instances of the micro-form to form textures of varying complexity. I recognized that my draft had a problem with a lack of textural, and this was my method of addressing it.

My concept for the large-scale form of the work was similar to that of the draft. I again intended to communicate a single musical idea over the course of twenty minutes. In my draft, I designed my form by repeating a single micro-form twenty times. In the rewrite, I would instead construct a large-scale form by repeating macro-forms. Each of these macro-forms would be comprised of several minutes of overlapping micro-forms. An unintentional result of this method of organisation was that I began composing in sections rather than writing continuous, uninterrupted music as was my original intention.

The first macro-form begins in bar 1 and ends in in bar 16. It contains several instances of the micro-form that is introduced in bar 1. This micro-form repeats again in bars 4, 8, and 11. The second macro-form beings in bar 17 and ends in bar 28. I adjusted the length of the macro-forms with each reiteration. By bar 108, I had expanded the length of each macro-form considerably. I intended for the gradual increase in length of each reiteration to act as a method of imparting a sense of growth to the listener. The work ends with a single expanded micro-form (bar 121—end).

In the process of writing the final draft, I perceived that the work was better suited to a chamber ensemble. Consequentially, I changed the scoring from large full orchestra to a more compact chamber orchestra. In the wind section, most instruments were reduced to a single performer per part. I chose to position the piccolo on the top staff based on Elaine Gould's recommendations for stave allocation for woodwind and brass.[17]

Gérard Grisey's *Modulations* for orchestra (the fourth work in his *Les espaces Acoutiques* cycle) was a source of inspiration during this period of my research. I sought to emulate Grisey's method of incorporating brief micro-forms in the opening section of the work. I discerned that these fleeting sounds introduced an element of motion that my previous drafts lacked.

I also studied Grisey's *Vortex Temporum* for mixed chamber ensemble. In this work, Grisey assigned musical material to four distinct temporal groups. The first group is a compressed version of the entire work shortened to sixteen seconds. The second is a slower transformation that evolves as it repeats. Grisey intermittently repeats this group in fragments. The third is a greatly expanded sonic image that shares a relation to the content in the second group. The fourth group is an extended, prolonged statement.[18]

I ran into great difficulty when determining how to write an ending for *Evanescent*. My intention was to end the work once I felt that I had completely communicated the idea expressed by the initial micro-form. However, I discovered that my method of generating form did not naturally produce an ending. By following the process that I had laid out, I wrote musical material that developed endlessly without an intended final statement. I chose to end the work by restating a single micro-form. I now feel that this is an abrupt ending that lacks a proper resolution.

Tristan Murail and Gérard Grisey utilised similar forms in their early works. They recognized the limitations associated with forms that were designed around the repetition of a single musical idea, and both constructed more complex forms in their later works. Murail described his move towards complex forms as "an aesthetic necessity"[19], and elaborates by stating:

> *"The linearity of the music of that period was partially an aesthetic decision. It was a way to create a rupture, a strong*

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[17] Elaine Gould, *Behind Bars: The Definitive Guide to Music Notation*, 531.

[18] Joshua P.A. Castanet & Joshua Fineberg, "Gérard Grisey and the foliation of time", *Contemporary Music Review* 19, no. 3 (August 20, 2009), 38.

[19] Ronald Bruce Smith and Tristan Murail, "An Interview with Tristan Murail", *Contemporary Music Journal* 24, No. 1 (2000), 16.

> *break, with structuralist music. It was a conscious decision to write with linear processes. Still, we soon found the limits of this way of composing. I say "we," because at that time, I shared many discussions about these matters with Gérard Grisey. Either we were going to repeat what we had already done, or we were going to need to find other solutions, especially toward form. I think that I was aware of that fact fairly early."*[20]

On reflection, I believe that my linear method of developing a large-scale form in *Evanescent* was partially unsuccessful. However, I do not believe that the linear method is inherently unsound. After all, this method of generating form is still widely in use among composers of spectral music. Instead, I now attribute the lack of success in constructing a large-scale form to an incompatibility between the creative and technical processes that I employed. However, *Evanescent* was a success from the standpoint of refining my perspective on form and creative processes.

***Reflections on distance*, for bass clarinet and piano, 2013 [2']**

Reflections on distance was written for a composition workshop offered by bass clarinettist Sarah Watts and pianist Antony Clare. The workshop called for composers to write short works for bass clarinet and piano. The deadline for the workshop was two weeks. This presented an excellent opportunity to develop a process that could be applied to works for ensembles with 2-4 players. Additionally, it was a chance to examine methods for creating concise forms that achieved my objective of organising music using changes in timbre.

One of my objectives when planning this work was to consider the use of melody in my creative process. I aimed to determine whether the inclusion of melody and motif would benefit this process. I refrained from intentionally including melodies in *Evanescent*, but I had noticed that several motifs had inadvertently emerged in the process of repeating micro-forms. I resolved to emphasise the use of motifs when writing my next work.

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20 Ronald Bruce Smith and Tristan Murail, "An Interview with Tristan Murail", 16.

Prior to writing, I researched the approaches that other contemporary composers had taken towards including melody in their writing process. In a presentation at the Darmstadt courses in 1978, Grisey rejected the use of motifs and melodies as a primary consideration in his process.[21] He felt that musical material should “derive from the natural growth of sonority, from the macrostructure and not the other way round. In other words, there is no basic material (no melodic cell, no complex of notes or note values).”[22] Julian Anderson writes that composers of spectral music have struggled to write melodically, and that some composers of spectral music have concluded that “standard concepts as "melody' and 'counterpoint' have ceased to have any meaning in the new syntax of spectral composition.”[23]

In the 1980s, Gérard Grisey and Tristan Murail began to incorporate elements of melody into their works. Murail stated that he “made melodies from the spectral content”[24], a process where he constructed melodies and motifs by filtering partials from a spectrum. He developed this process extensively in his 1988 composition *Vues aériennes* for horn, violin, cello and piano. In this work, he constructed melodic lines for the horn was using frequencies taken from an underlying harmonic spectrum and three distortions of that spectrum.[25] Developing this process was not easy for Murail. He writes:

> *“It took me a very long time to re-introduce truly melodic elements into my music, because I was afraid of returning to past melodic clichés, falling back into formulas of theme and variation of all sorts. I wanted to find very personal melodic contours, and this is one of the hardest things to do, since, today, everything melodic is connotated to a frightening degree.”*[26]

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[21] François Rose, “Introduction to the Pitch Organization of French Spectral Music”, *Perspectives of New Music* 34, No. 2 (Summer 1996), 8.

[22] Gérard Grisey, Record Notes, Erato STU 71157, 1981.

[23] Anderson, “A Provisional History of Spectral Music”, 16.

[24] Ronald Bruce Smith and Tristan Murail, “An Interview with Tristan Murail”, 19.

[25] Murail, “Target Practice”, 168.

[26] Tristan Murail, “After-thoughts”, Contemporary Music Review 19, no. 3 (2009), 8.

Gerard Grisey evolved the concept of incorporating melody into a spectral compositional process. In his 1992-1994 work *L'Icône paradoxale* for soprano, mezzo-soprano, and orchestra, Grisey prominently featured melodies. He also strayed from established spectral music norms by using musical cells to develop form.[27]

Finnish composer Kaija Saariaho frequently incorporates melody in her music. Saariaho is often labelled as a composer spectral music. However, theorist Damien Pousset asserts that Saariaho's music has evolved to the extent that it can no longer be classified as "second generation" spectral music, and her music should instead be categorised as "post-spectral".[28] One example of her use of melody may be found in the work *Notes on light* for orchestra (2006). Saariaho begins this composition with a solo cello melody that is based upon a downward moving semitone. The orchestra answers the soloist's melody with an upward moving semitone.[29]

My technical process for composing *Reflections on distance* was initially similar to the process used in *Evanescent*. I recorded a sound that would serve as an inspiration for the work, analysed samples of that sound, and then chose one of the spectral analyses. However, my creative process differed significantly from my previous efforts. I envisioned the work as a short, delicate conversation between a pair of related partners. In the midst of the conversation, I would have the second partner echo the first.

The piano line utilises square noteheads to indicate to the pianist that they should depress notes without the notes sounding, and then hold them with the sostenuto pedal. In theory, the held notes would sound through sympathetic vibrations, when plucked, or when played. In practice, I discovered that sympathetic vibrations sounded at such a low amplitude that they were generally only audible to the performer.

I used plucked notes in the piano as a means of introducing a contrasting timbre. The contrast in timbres would help differentiate between the two partners during their exchange. The first partner begins the

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27 Gérard Grisey, *L'Icône paradoxale*, Ricordi R. 2676, 1992-1994.

28 Damien Pousset, "The Works of Kaija Saariaho, Philippe Hurel and Marc-André Dalbaviem — Stile Concertato, Stile Concitato, Stile Rappresentativo", *Contemporary Music Review* 19, vol 3, (2000): 69.

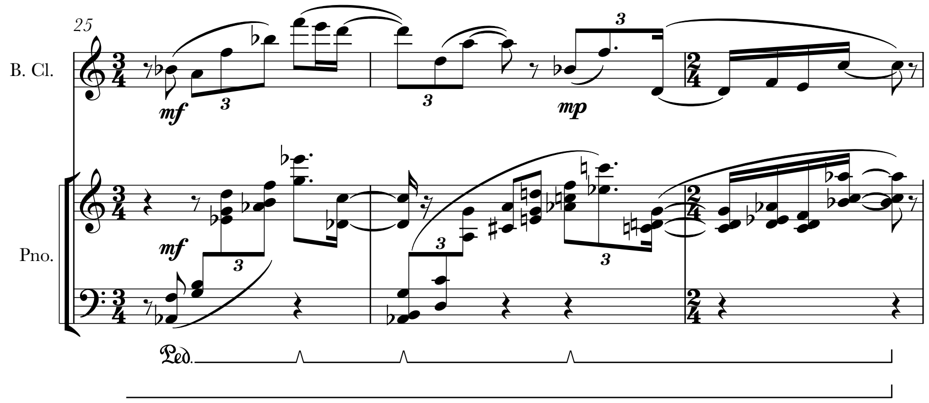
29 Kaija Saariaho, *Notes on Light*, Chester Music, (2009).

conversation in bars 1-9. In bar 10, the second partner offers a response. In bars 15-16, the first partner returns. In bars 19, both the pianist and bass clarinettist take the role of the second partner. The pianist shifts back to the role of the first partner in bar 29.

My intent was not to force the timbre of the piano to match that of the bass clarinet, or for the timbre of the bass clarinet to match that of the piano. Rather, both instruments played fragments of a shared spectrum. I also planned to experiment with the attack and decay of in both parts. In the piano, this was achieved by selectively holding notes with the sostenuto pedal. At times, I called upon the performer to hold both the sostenuto pedal and sustain pedal. This allows for an interesting technique: the notes held by the sostenuto pedal continue to sound, and all other notes are dampened.

I ran into some trouble when notating the pedal lines for this work. Previously, I had performed as a vocalist and a pianist in an orchestra that specialised in performing new music. On occasion, the works that we performed called for the pianist to stand, depress both the sostenuto and sustain pedals with the right foot, and pluck notes in the piano with the left hand. I was able to accomplish this with a bit of practice. In the workshop, pianist Antony Clare was also able to execute this technique. However, it received criticism from other pianists who found it uncomfortable or impossible. I decided to remove the technique from the final draft because it did not significantly change the sound.

I achieved a similar effect in the bass clarinet by moving from a natural tone to a subtone in bar 17. Several of the upper partials of the bass clarinet’s spectrum are filtered when playing a subtone. The notes are performed at an exceptionally low dynamic, and this produces an echo within the instrument. The echo of the sub-tone complemented the theme of reflections, and it added a touch of variety and richness of timbre. I decided to limit the technique to a single occurrence so that it would stand out as a unique moment. The bass clarinet line also features a single timbral trill in bar 22. This trill sounded more clearly than I had anticipated.



Example 3: Reflections on distance, bars 25-27: example of overlapping bass clarinet and piano.

On re-examination, the form of the final draft resembles a simple binary form with the addition of a coda. It was not my intention to use a traditional form in my process. In fact, planned to write a through-composed work without distinct sections. The binary form naturally emerged as I focused on the creative process. I concentrated on designing a musical conversation between two partners, and I did not consider the implied form until after completing my draft. This method of generating form proved to be effective in short works that communicate a simple musical idea.

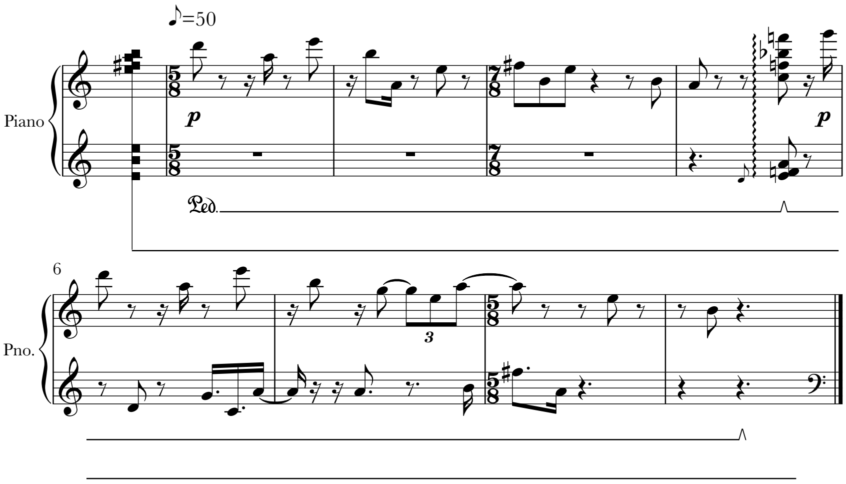
Of Windborne Echoes, for solo piano, 2014 [13']

My primary objective when planning the third work in my portfolio was to invent a fundamentally different process for generating large-scale form. In *Evanescent*, I had successfully organised musical material as micro-forms at a local level. However, I had not discovered a successful method for organising music at a macro level. I chose to write for solo piano due to my familiarity with the instrument.

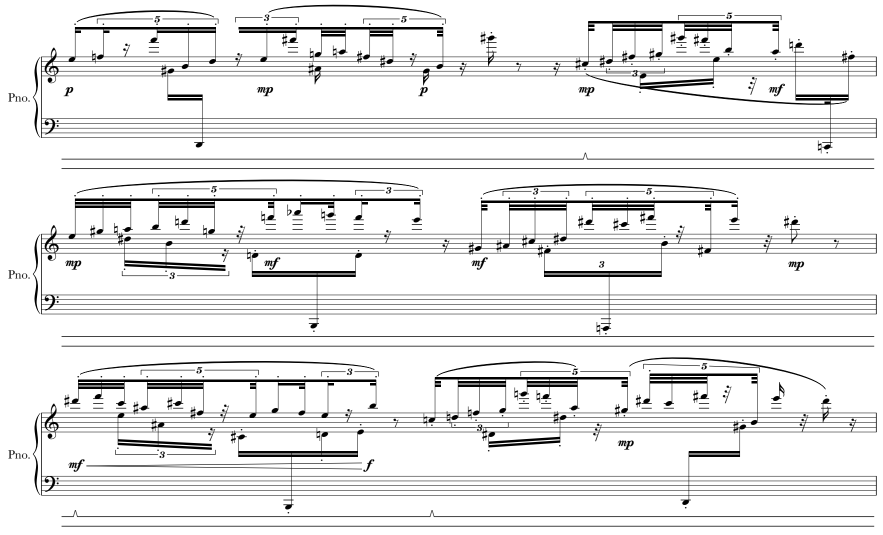
My first course of action was to record several samples of myself playing excerpts from Johann Sebastian Bach's *The Well-Tempered Clavier, Book I* on a grand piano. I recorded these samples by positioning a microphone inside the piano. I was not primarily concerned with capturing the resonance of the piano. Next, I selected two spectra to analyse. After performing the analyses, I began composing a series of brief 10-15 second micro-forms.

One of my creative goals for this work was to incorporate a degree of improvisation into my process. I found that I was able to enter a creative mental state if I dedicated thirty minutes to improvisation at the piano prior to writing. I started to improvise based on the spectra that I had analysed, and I notated any improvisations that I found interesting. I then developed them into short micro-forms. Each micro-form was an unrelated, self-contained musical thought. I scheduled my improvisation sessions on non-consecutive days to ensure that I would invent micro-forms that were unrelated to the material that I had previously written.

I repeated this process over the course of several weeks until I sensed that I had a sufficient variety of musical material. Examples 4a–e are micro-forms that I composed during this process. Once I was satisfied with the quantity of drafts, I started to consider the form that the work would take. The micro-forms provided an abundance of musical material, but their only relation was the shared spectra. My first approach was to arrange the sketches at random. I shuffled the sketches, formed a pile, and then notated the resulting progression of micro-forms. The results were interesting but haphazard chains of micro-forms with no development or evolution. I felt that this did not achieve my goal of creating a large-scale form.



Example 4.a: Of Windborne Echoes, micro-form.


Pno.
p
mp
p
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mf
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mf
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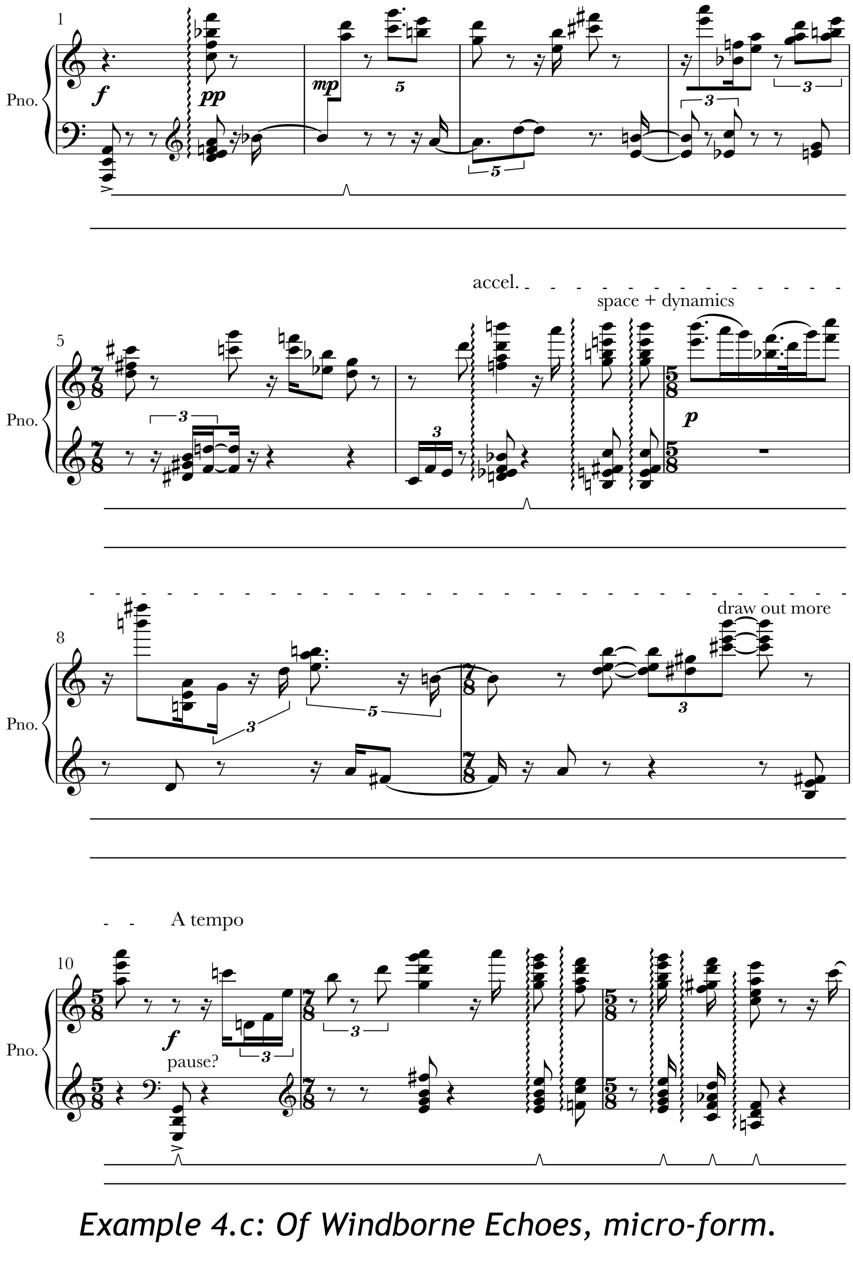
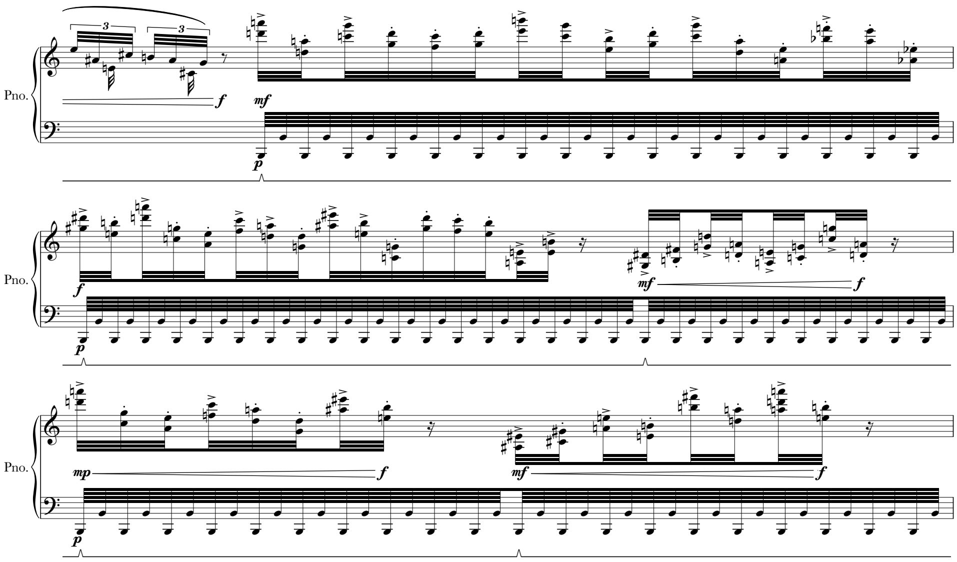
mp

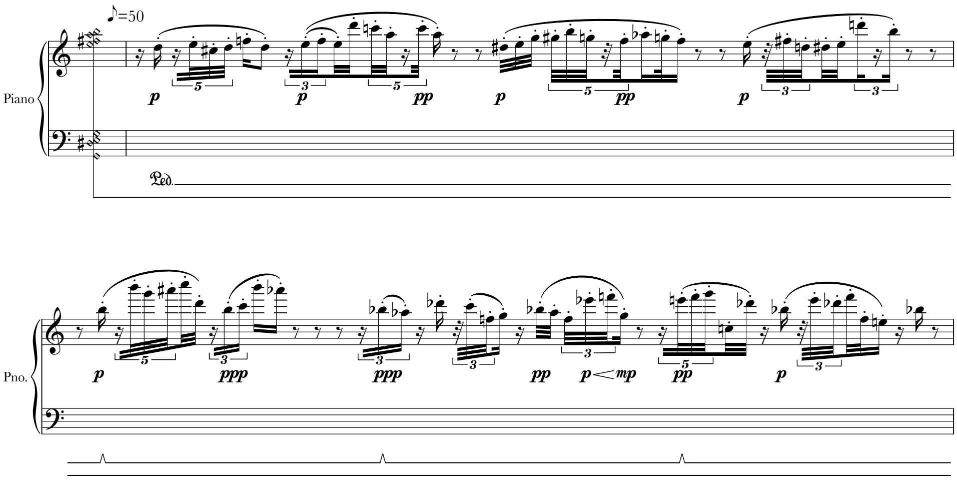
Example 4.b: Of Windborne Echoes, micro-form.


1
Pno.
f
pp
mp
5
accel.
space + dynamics
p
8
draw out more
A tempo
10
f
pause?

Example 4.c: Of Windborne Echoes, micro-form.



Example 4.d: Of Windborne Echoes, micro-form.



Example 4.e: Of Windborne Echoes, micro-form.

My second approach was to pair sketches that shared similar characteristics. I focused specifically on rhythmic patterns, envelope, and register in this process. This second method proved to be more successful. However, I was concerned that this process would create a form that was centred around the use of musical cells. At the time, I was heavily influenced by the early writings of spectral composers, and I somewhat arbitrarily rejected the use of musical cells. I now feel that the use of cells does not hinder the creative process.

My third and final approach was to arrange groups of micro-forms in patterns. I repeated these micro-form groups with variations and evolutions. Each repetition functioned as a macro-form. I felt that the constant alternation dissimilar musical material provided contrast and a sense of momentum. In the latter half of the composition, I overlapped multiple patterns as a means of varying the texture. I began to classify this method of organising music as a modular form.

I decided to abandon bar lines and meter in order to introduce an element of temporal freedom to the work. The performer would be given almost complete control over meter and duration. I also adopted a system of notation that indicated pauses of partially indeterminate length. The pause marks indicate either a short or a long pause. A tempo is given within a range of values, and the performer is free to increase or decrease the tempo at their own discretion. It was my intent for these techniques to inject a high level of unpredictability in each performance.

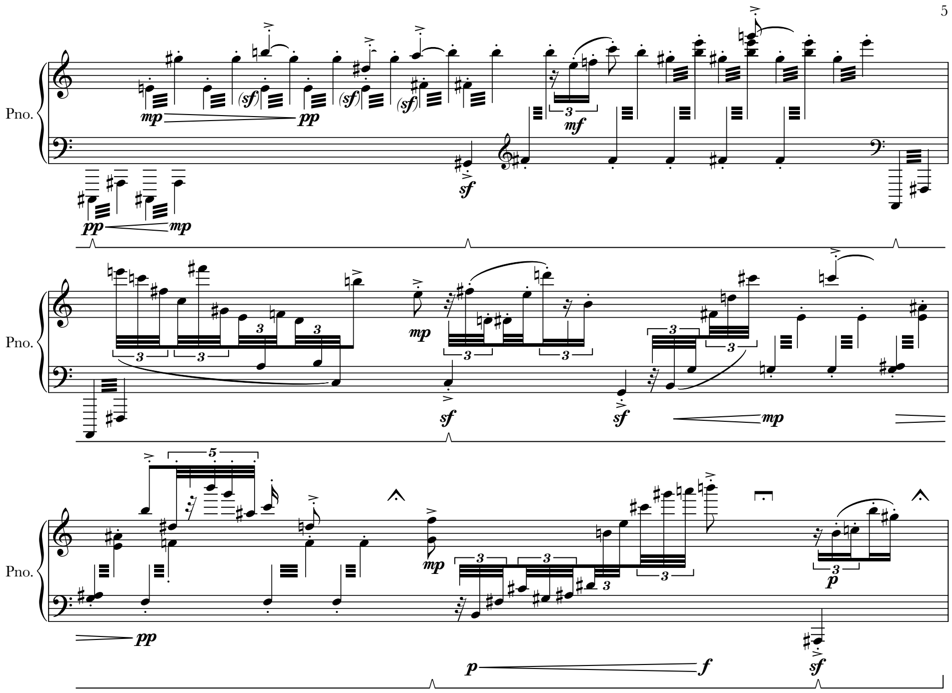
I now feel that my methods for notating the rhythmic structure of this work are deeply flawed. I had intended to indicate relative durations through the use of proportionate spacing. However, I made compromises with the spacing in the process of notating. These compromises undermine my original intention. I considered completely rewriting the work with a more precise spatial structure, but I feel that this would be detrimental to the character of the work. I have decided to present the work with its flawed rhythmic notation to demonstrate the development of my compositional process.

One of the questions that arose as I developed this new compositional process was the question of when to conclude the piece. Initially, *Of windborne echoes* was roughly twenty-five minutes in length. However, I perceived that roughly half of the material was redundant. I removed roughly ten minutes rather than attempting to further develop the work.

Entire sections of my second draft seemed as if they were borrowed from a second or third work. I considered spitting the composition into two movements, but I instead decided to cut segments from the composition. I restructured the order of the repeating patterns until I was satisfied with the flow between each macro-form. I connected macro-forms by overlapping fragments of their patterns at points where two macro-forms joined. One example of this is on page 5. The top system contains a partial rendition of one micro-form, and then the middle system shifts to a second micro-form before returns to the first. The third system uses a second micro-form before an immediate shift to contrasting material.

On reflection, I wish that I had maintained the original length of the composition. I cut material that had the potential for greater development due to an immaturity in my compositional process. Had I been more experienced at utilising modular forms, I likely would have been able to expand the work further. While developing the process for this work, I discovered that modular forms pose a problem of continuity.

Of windborne echoes was the prototype for the modular form that I further developed in my later works. I did not immediately embrace the modular compositional process; I found it frustrating and anxiety-provoking to work in such an unstructured manner. However, by freeing myself of the artificial constrains imposed by a preconceived form, I allowed myself to experiment with musical material that I might have previously discarded. The piece stands as a partially failed experiment; it succeeded in adding a great deal of flexibility to my creative process, but it failed to develop into the extended work that I had initially planned.



Example 5: Of Windborne Echoes, pg. 5: multiple micro-forms spliced and sounding at the same time.

***Memories of my father*, for string quartet, 2014, [30']**

One year prior to the start of my research, my father suddenly and unexpectedly passed away. He did not depart peacefully; my father spent his last two weeks immobile in a hospital bed, drifting in and out of consciousness, unable to breathe without machine assistance. Shortly after his death, my aunt also passed away. My grandparents, my great aunts, and several close family friends followed in quick succession. I found myself consumed by an overwhelming sense of loss, and I was unable to express my feelings through words. ***Memories of my father*** was my attempt to translate this sense of loss, tension, and grief into music.

In hindsight, I believe that all of the works in my portfolio were affected by this loss. I struggled to impart emotion into ***Evanescent*** and ***Of windborne echoes***. Numerous composers have been inspired by the strong feelings that result from grief and sorrow, but I found that these feelings acted as a psychological block that dampened my creative expression. Through the process of writing ***Memories of my father***, I was able to partly convey these emotions. This release was also of great benefit when I composed my subsequent works, ***Aurora*** and ***Childhood***.

It is with these thoughts in mind that I determined the creative objectives for my next work. My primary concept was to impart a sense of tension into the music. It was my hope that audible tension would serve to communicate the emotions that inspired the work. I also planned to introduce a level of unpredictability in the work. I achieved both objectives this through the use of bow pressure, rapid shifts between bow placements, and multiphonics. The sound of the bow shifting between positions is intentional and meant to elicit a sense of tension.

I established several technical objectives for my next work. I decided to focus on the development of large-scale form. I would write a multi-movement work for string quartet. The length of the work would be approximately twenty minutes. I did not initially determine the number of movements or their individual durations. Additionally, I would integrate instrumental synthesis into my process.

As previously mentioned, I had worked in a recording studio for several years prior to beginning my research. One of my broad research goals was to incorporate techniques from my experience with sound editing into my notated music. The use of instrumental synthesis was one means of pursuing this goal. Theorist François Rose describes “instrumental additive synthesis” as a process that allows a composer to "adapt an electronic procedure for acoustical instruments."[30]

At the same time, I began to consider the implications of the harmonicity and inharmonicity of each element in my drafts. Theorist Clarence Barlow has devised a method for measuring a frequency's "harmonicity".[31] I was aware of this method, but I chose not to apply it because of its heavy reliance upon interval relationships. Instead, I determined harmonicity by considering the degree in which the frequencies, envelopes, and micro-intonations that I notated resembled their existence in the spectra. I measured inharmonicity by considering the degree in which these same sound elements (frequencies, envelope, micro-intonations) did not resemble the source spectra.

In preparation for writing the first movement of my string quartet, I researched the use of string multiphonics by contemporary composers. Regrettably, I discovered that there were few written studies of the notation and sounds of string multiphonics. One of the few studies of string multiphonics had been written by Israeli composer Michael Liebman. I contacted Liebman, and he was generous enough to send me a copy of his volume *New Sounds for Cello and Double Bass*, as well as a copy of his composition for solo cello, *Movement of Repose.*[32] Liebman and I communicated via email over the course of a few months, and through this exchange he shared his research on bow placement and its effects on multiphonics. This correspondence greatly enhanced my understanding of multiphonics and my ability to incorporate them in the string quartet.

The opening micro-form in the first movement of my quartet uses string multiphonics to immediately introduce the concept of unpredictability. The following is the opening passage of the first movement of *Memories of my father* with the harmonics and multiphonics visualised in the score:

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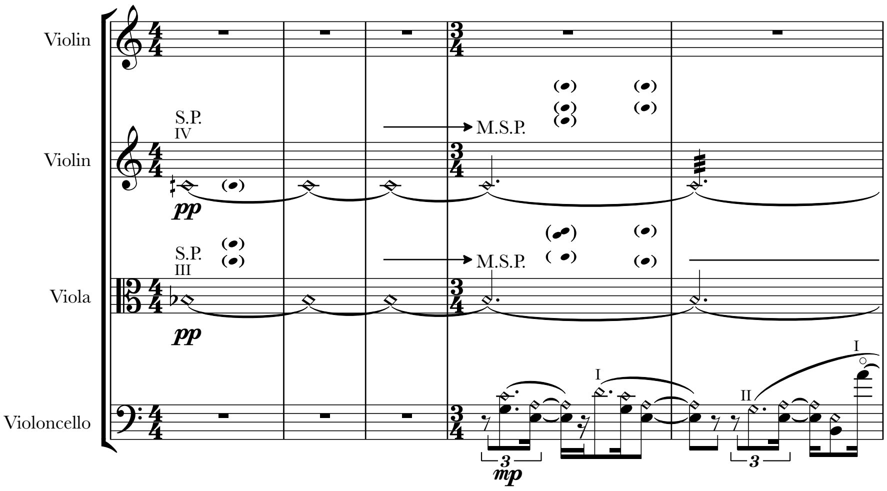
30 Rose, "Introduction to the Pitch Organization of French Spectral Music", 11.

31 Hasegawa, "Gérard Grisey and the 'Nature' of Harmony," 358.

32 Michael Liebman, *New Sounds for Cello and Double Bass (Multiphonics),* Kompozitor Russia, 2010.



Example 6: Memories of my father, bars 1-5.

I notated multiphonics in the style established by Liebman. Multiphonics are notated using small noteheads contained within parenthesis. The parentheses indicate that there is a possibility of the notes sounding, not a certainty. The notes that sound will vary depending on the characteristics of each individual instrument. The multiphonics that I chose can consistently be heard on most instruments. All of the multiphonics that I used were referenced in Liebman's charts. At times, I opted not to notate multiphonics in the score because the sounding pitches were too unpredictable.

I made heavy use of multi-stop harmonics in both movements of *Memories of my father*. Initially, I was hesitant to this technique due to my unfamiliarity with its usage. However, I found the sounds of multi-stop string harmonics to be uniquely captivating. Additionally, the process of shifting between two multi-stop harmonics created bow noise. I had planned to include bow noise as an element of the work as a means of conveying tension. In order to familiarise myself with the usage and notation of multi-stop harmonics, I worked closely with the American cellist and composer Tom McVeety. McVeety examined my early drafts, corrected notational errors, and offered advice as to possible alternatives. He also guided my understanding of the usage and limitations of the technique.

I used harmonic trills throughout the first movement of the quartet. The notation of these trills has been standardised by composers Kaija Saariaho, Marcos Balter, and Hans Thomalla in their various works for strings. One example of this notation can be found in the opening passage of

Saariaho's *Sept Papillons For Solo Cello*[33]. An example of double harmonic trill notation can be found in Marcos Balter's solo work for piano, *Memoria*[34].

As previously stated, I employed constant shifts between bow placements as a method of generating bow noise. Movement between sul ponticello, normale, and sul tasto creates a deliberate, audible noise from the bow. These bow placements also serve to add variety of timbre. I later utilised this same effect to varying degrees in *Aurora* and *Childhood*. In both movements of the quartet, I used movements between bow placements in conjunction with artificial harmonics. This technique is frequently used by Kaija Saariaho. An example of this can be found in *Orion* (2002) for large orchestra. In bars 37–54 the lower strings continuously shift between normale, sul tasto, and sul ponticello while playing artificial harmonics.[35]

I was also inspired by Saariaho's second string quartet, *Terra Memoria* (2004). In *Terra Memoria*, Saariaho frequently uses shifts between bow positions to create contrasting timbres. An example of this is in bars 40-41 where all of the voices shift from sul ponticello to sul tasto, and then re-enter on sul ponticello.[36] Melody is a central element in this work. The melody is quickly established by the first violin in bar 15, and it repeats throughout the work. The melody is head in each instrument before finding its way to the viola in bars 314 to 321.

The form of *Terra memoria* can be understood as the development of a single melody over time. Theorist Jon Hargreaves analysed the quartet by reducing its melodies and charting their iterations.[37] The form of *Terra memoria* taught me that melody could be used as a device to develop a large-scale form. It inspired me to include melodies in both movements of my quartet.

Joshua Fineberg's *a ripple-ringed pool* for violin obbligato and mixed ensemble greatly influenced my initial direction. In this work, Fineberg also uses shifts between bow placements. I borrowed a technique from this work:

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33 Kaija Saariaho, *Sept Papillons for Solo Cello*, 1.

34 Marcos Balter, *Memoria for solo piano*, 1-2.

35 Kaija Saariaho, *Orion*, Chester Music, 25–26.

36 Kaija Saariaho, *Terra Memoria*, bars 40-41.

37 Jon Hargrove, *Kaija Saariaho: Visions, Narratives, Dialogues*, Routledge, (2016): 34.

a rapid slide upward to an unspecified pitch that is as high as possible.[38] This technique may be found in my quartet at bar 150 of the first movement in the second violin. The form of *a ripple-ringed pool* was similar to the modular structure that I had devised for the opening of my first movement, but I was unsure of how to apply it across a larger scale.

Helmut Lachenmann's first string quartet, *Gran Torso,* and third string quartet, *Grido,* were also sources of inspiration. *Gran Torso* is one of Lachenmann's earliest works to use the style that he has termed musique concrète instrumentale. I was initially unsure of how to approach the composition of a work for four instruments from the same instrument family. I was concerned that the lack of instrumental diversity would limit the potential to introduce contrasting timbres.

Lachenmann wrote that he faced a similar challenge when writing his first string quartet.[39] To overcome this problem, he developed a process that he calls "dialectical structuralism" to organise sounds.[40] This process views individual sounds as individual components that combine to form a larger structure. Lachenman describes his perception of musical structure as:

> *"Structure as a dialectical object of perception, in as much as the musical meaning and aural experience of individual sounds or their elements were not determined just by themselves - i.e. by their own direct physical characteristics - but by their relation to their immediate and wider environment, their affinities, the various role they played in a context or hierarchy."*[41]

I considered applying this perspective to my own process, but I quickly found it to be cumbersome and restrictive. Additionally, I found that the process of establishing formulaic relationships between sounds was contradictory to the objectives of my research. I had begun my research in an attempt to escape the similarly restrictive processes imposed by serialism and set theory.

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[38] Joshua Fineberg, *a ripple-ringed pool*, bars 48-49.

[39] Helmut Lachenmann, "On my second string quartet ('Reigen seliger Geister')", *Contemporary Music Review* 23, no. 3-4 (2004): 59.

[40] Helmut Lachenmann, "On Structuralism", *Contemporary Music Review* 12, part 1 (1995): 93-94.

[41] Helmut Lachenmann, "On Structuralism", 97.

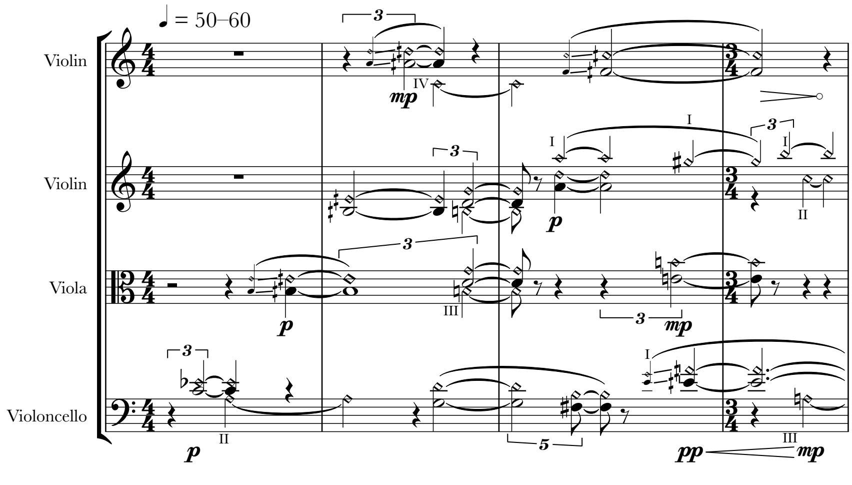
However, I was inspired by Lachenmann's methods of introducing variety of timbre and texture in his string quartets. Lachenmann achieves this diversity of sound through rapid shifts between dense and sparse textures, layering of sounds, and use of a large number of extended techniques.

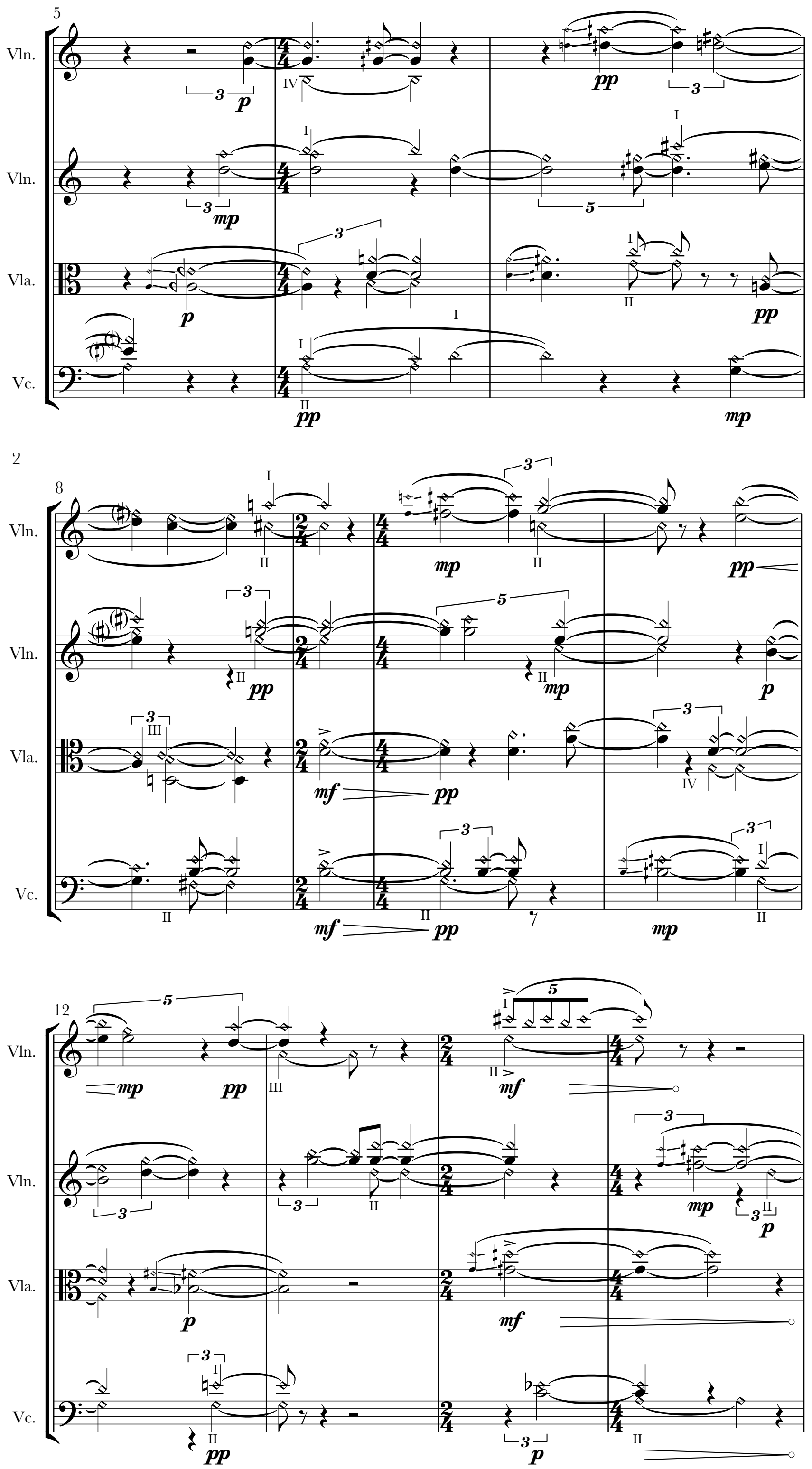
I decided to develop the large-scale form for the first movement of *Memories of my father* based on the modular form that I had created in *Of windborne echoes*. My concept was to compose a set of micro-forms based on my analyses, then to arrange them so that the work constantly moved between micro-forms that contained highly dissimilar sounds.

To start, I digitally designed a sound that would serve as the source for my analyses. I chose to construct an artificial sound because I felt that a recorded sound would not be related to the emotional message conveyed by the work. Next, I composed several 2-minute micro-forms based on the analyses of my sound. Each of these micro-forms contained unrelated melodies that were derived from the spectra.

As the work progressed, I extended the length and complexity of each micro-form. I also began to incorporate the previously-explained concept of harmonicity and inharmonicity by introducing frequencies that were not present in the spectra, modifying the envelope, and using techniques that would affect the intonation.

One concern that I identified after completing the first draft of the first movement was a lack of textural contrast. The following is the opening passage of initial draft to demonstrate the introduction of melodic material, and the lack of textural contrast:





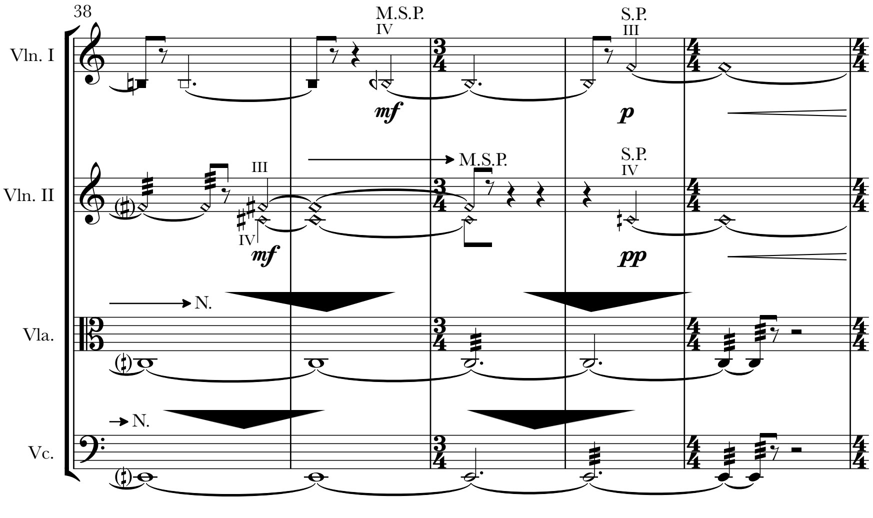
Example 7: Memories of my father, first draft, opening passages.

I decided to re-write the entire movement to address the lack of textural contrast. During this rewriting process, both Tom McVeety and Michael Liebman provided feedback on my drafts. I wrote new micro-forms based on the ideas that had been most successful in my previous draft. I kept several of the melodies that I had written and integrated them with new micro-forms.

Next, I considered methods of improving the large-scale modular form that I had designed in earlier drafts. I organised micro-forms into groups based on their textural similarity. I then arranged micro-forms into patterns that alternated between highly-contrasting musical material without transitions. Full statements of these pattern became macro-forms. For example, the first macro-form begins in bar 1 and extends until bar 28.

I introduced the primary melodies in the opening passages. The melodies serve as structural guideposts to indicate movement between micro-forms, and to reference earlier moments in the work. I evolved the melodies in the same way as the micro-forms. I expanded, contracted, modulated, and introducing inharmonicity so that the melodies shared the characteristics of their local micro-forms.

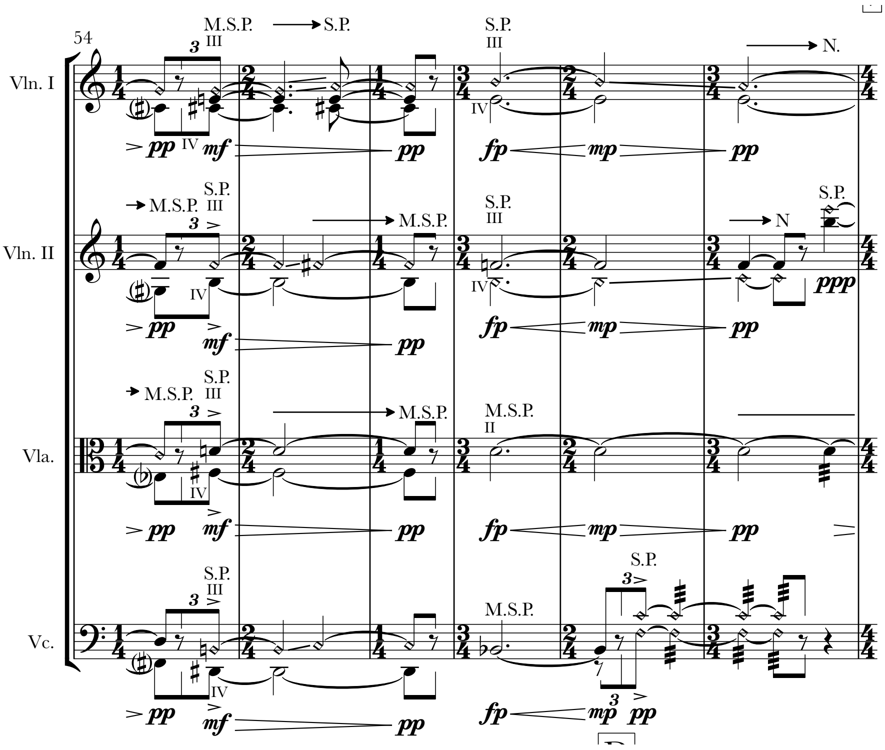
At times, I overlapped two contrasting micro-forms as a means of generating new textures. These moments also introduced new combinations of timbres into the work. Example 7 shows the first time this method is used in bar 38. The lower strings apply bow pressure, referencing the micro-form introduced in bars 11-15, while the upper strings reference the micro-form that played in bars 29-36. The layering of micro-forms extends until bar 54.



Example 7: Memories of my father, first movement, bars 38-42.

In bar 53, all four voices shift back to the expression of a single micro-form. This shift in texture and timbre designates the beginning of a new macro-form. Example 8 demonstrates the moment where all four instruments move back to the expression of a single micro-form and a new section begins.

On reflection, I feel that I accomplished most of the creative and technical objectives that I establish for the first movement of my quartet. It was a successful effort at developing a modular form. Instrumental synthesis had become a primary aspect of my compositional process. I was also able apply the concepts of harmonicity and inharmonicity to my process. I am satisfied with the movement’s ability to convey emotional tension. However, I could have incorporated a greater level of unpredictability.



Example 8: Memories of my father, bars 54-59.

After the completion of the first movement of my quartet, I spent some time considering alternative methods of developing large-scale form. This led me to question what constituted the success of a large-scale form, and how I could measure that success. I started to reflect on the contributing elements of successful established forms. This led me to consider the possibility of adapting an established form to my compositional process. It was possible that I had been too premature to discard existing methods of structuring music.

I resolved to structure the second movement of my quartet as a simple binary form. As in the first movement, I would use changes in timbre to establish the internal structure. I would also use the same spectra as the first movement. However, in this movement I would introduce a greater variety of inharmonicity.

The next step in my process was to chart out a projected binary form. I arbitrarily determined that the second movement would be nine minutes and thirty seconds, and then applied the golden ratio to determine the relative lengths of each section within the form. The process of charting out a form in advance was helpful in that it provided a clear formal model for the composition. However, as I began composing the second movement, I quickly determined that strictly following the chart was too limiting. Instead, I used the chart to determine the order and relative duration of micro-forms.

<table>
<tr><th colspan="16">Memories of my father, Mvt. II</th></tr>
<tr><td colspan="8">A. 352.279</td><td colspan="8">B. 217.72</td></tr>
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<tr><td colspan="2">i. 134.56</td><td colspan="2">ii. 83.16</td><td colspan="2">i. 83.16</td><td colspan="2">ii. 51.4</td><td colspan="2">83.16</td><td colspan="2">51.4</td><td colspan="2">51.4</td><td colspan="2">31.76</td></tr>
<tr><td>83.16</td><td>51.4</td><td>51.4</td><td>31.76</td><td>51.4</td><td>31.76</td><td>31.76</td><td>19.63</td><td>51.4</td><td>31.76</td><td>31.76</td><td>19.63</td><td>31.76</td><td>19.63</td><td>19.63</td><td>12.13</td></tr>
</table>

Example 9: Memories of my father, Movement II, binary form.

The process of outlining a form prior to composition was helpful in many respects. The speed of my writing increased because I did not have to design a form at the same time as I was writing. This process also eliminated the threat of writer's block. I designed the micro-forms that would be needed in each subsection. I then composed melodies that could match the character of multiple micro-forms.

The process that I followed for writing the second movement was similar to following a blueprint. It was effective, but I became frustrated due to the lack of creative freedom. I was aware that my creative process had in some way been compromised. It should come as no surprise that I did not use the same process when composing the subsequent works in my portfolio.

In reflecting upon this process, I believe that it has the potential for greater development. The form of the second movement was highly effective in achieving the technical goals that I set. My primary oversight was in designing a model that was too specific. I think that this technical process would be effective if a more general framework were to be designed prior to writing. This framework would list the general musical concept, the emotional inspiration, and the message that each section in the work should convey.

Aurora, for orchestra, 2015, [16']

My compositional process significantly evolved through the course of writing *Of Windborne Echoes* and *Memories of my father*. I made great progress towards developing a method of interpreting and translating spectral analyses into musical metaphors. However, I felt that there were still several questions outstanding regarding my processes of generating form. My intent was to develop a musical structure that was organised through the use of changes in timbre, and I had not yet fully realised that goal. I also identified the need to determine how to measure the success of a large-scale form.

To answer these questions, I established objectives for my next work. I would write a second work for orchestra. This work would be approximately fifteen minutes in length, and the music would be organised in a single movement. I would further develop the process of constructing a modular form. I chose to use a modular form because it seemed to have significant potential for development.

The spectra in *Aurora* originate from a recording of the radio waves emitted by Saturn's auroras as recorded by the Cassini Radio and Plasma Wave Science (RPWS) instrument on NASA's Cassini spacecraft. Research Scientist William S. Kurth at the University of Iowa’s Department of Physics and Astronomy transposed the recording down by a factor of 44 by so that the frequencies were audible to the human ear.[42] [43] I selected two five second samples from the recording and performed spectral analyses.

I chose recordings from NASA for creative rather than technical reasons. As a child, my parents took me to visit the Kennedy Space Center in Florida, and the National Air and Space Museum of the Smithsonian Institution in Washington D.C. I associate NASA and spaceflight with positive memories of my family, and I believed that I would be able to use this association to impart an emotional message of nostalgia and hope into my work. I was additionally inspired at the thought of basing my music on a sound that was relatively new and unheard by humankind.

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[42] William S. Kurth, *Cassini RPWS*, NASA, University of Iowa.

[43] William S. Kurth, *The Sounds of Lightning at Saturn*, NASA, University of Iowa.

I chose two sound samples to analyse based on their striking nature, and their high contrast in timbre and character. Example 9 is a full spectral analysis of the second of these samples. The analysis of the first spectrum revealed several frequencies that resembled a major seventh chord with a root of E flat: E flat, G natural, B flat, and D natural. I was concerned that a listener would identify familiar intervallic relationships and perceive an unintended harmonic structure. My goal had been to abstain from the use of intervallic relationships. This problem was exacerbated when I discovered that the second spectrum emphasised B flat and D natural. However, I decided to move forward with these spectra.

The next step in my process was to assign each frequency to its nearest quarter tone. I then split the frequencies of the first spectrum into two groups. The first group contained frequencies that were prominent in the recording. The second group contained frequencies that were rarely heard. I repeated this process for the second spectrum. The first groups would serve as inspiration for melodic content. The second groups would act as ancillary frequencies and colour tones.

My process for the first draft of *Aurora* was similar to the process that I had designed for the first movement of my string quartet. I sketched several micro-forms based on my spectral analyses of the two sound samples. These micro-forms were longer and more complete ideas compared to the micro-forms that I had designed in the past. I wrote these micro-forms sporadically over several weeks. I listened to the recordings, reflected on the emotional message connected to my childhood, and then sketched.

After I had amassed a collection of self-contained musical ideas in the form of micro-forms, I sorted them based on their relative similarities. I removed the micro-forms that I perceived lacked technical and emotional qualities. This applied to the majority of my sketches. I kept roughly one out of every fifteen sketches. Finally, I arranged the micro-forms into a sequence and then composed a first draft.

Frequency(Hz)	Level (dB)	Frequency(Hz)	Level (dB)	Frequency(Hz)	Level (dB)
9.766	-41.674	205.078	-38.980	400.391	-32.521
19.531	-39.588	214.844	-38.642	410.156	-33.390
29.297	-38.013	224.609	-36.340	419.922	-32.966
39.063	-37.016	234.375	-36.361	429.688	-34.547
48.828	-34.196	244.141	-35.912	439.453	-36.903
58.594	-33.056	253.906	-37.088	449.219	-37.396
68.359	-33.805	263.672	-37.765	458.984	-36.377
78.125	-34.339	273.438	-39.466	468.750	-37.888
87.891	-33.449	283.203	-35.574	478.516	-38.406
97.656	-33.507	292.969	-35.260	488.281	-40.267
107.422	-34.235	302.734	-36.288	498.047	-41.055
117.188	-34.152	312.500	-35.774	507.813	-45.685
126.953	-35.359	322.266	-33.851	517.578	-49.331
136.719	-36.253	332.031	-34.180	527.344	-50.187
146.484	-37.883	341.797	-34.633	537.109	-50.459
156.250	-39.998	351.563	-33.793	546.875	-51.463
166.016	-39.476	361.328	-34.697	556.641	-52.805
175.781	-37.052	371.094	-33.996	566.406	-55.315
185.547	-37.392	380.859	-32.215	576.172	-55.853
195.313	-38.414	390.625	-32.427	585.938	-54.939
595.703	-54.432	791.016	-62.786	986.328	-67.802
605.469	-53.237	800.781	-55.309	996.094	-67.754
615.234	-54.714	810.547	-50.903	1005.859	-67.525
625.000	-57.116	820.313	-51.864	1015.625	-66.619
634.766	-59.640	830.078	-53.076	1025.391	-64.078
644.531	-59.206	839.844	-58.103	1035.156	-60.979
654.297	-59.120	849.609	-64.675	1044.922	-57.737
664.063	-55.751	859.375	-65.066	1054.688	-51.750
673.828	-53.412	869.141	-65.992	1064.453	-49.745
683.594	-54.545	878.906	-66.327	1074.219	-53.873
693.359	-57.412	888.672	-66.636	1083.984	-57.706
703.125	-62.549	898.438	-67.084	1093.750	-62.797
712.891	-63.101	908.203	-67.681	1103.516	-66.732
722.656	-60.838	917.969	-67.863	1113.281	-68.036
732.422	-59.780	927.734	-67.834	1123.047	-67.802
742.188	-60.669	937.500	-68.015	1132.813	-69.238
751.953	-62.294	947.266	-68.059	1142.578	-69.722
761.719	-62.856	957.031	-68.093	1152.344	-69.986
771.484	-63.789	966.797	-67.922	1162.109	-70.122
781.250	-66.408	976.563	-68.103	1171.875	-69.251

Frequency(Hz)	Level (dB)	Frequency(Hz)	Level (dB)	Frequency(Hz)	Level (dB)
1162.109	-70.122	1357.422	-71.670	1552.734	-72.518
1171.875	-69.251	1367.188	-71.353	1562.500	-72.892
1181.641	-69.370	1376.953	-71.203	1572.266	-73.315
1191.406	-68.968	1386.719	-71.676	1582.031	-73.378
1201.172	-68.343	1396.484	-71.818	1591.797	-72.633
1210.938	-67.011	1406.250	-72.077	1601.563	-73.052
1220.703	-57.583	1416.016	-72.456	1611.328	-73.876
1230.469	-53.898	1425.781	-72.431	1621.094	-74.265
1240.234	-49.814	1435.547	-72.488	1630.859	-73.017
1250.000	-48.764	1445.313	-72.836	1640.625	-72.741
1259.766	-54.905	1455.078	-73.362	1650.391	-74.143
1269.531	-62.247	1464.844	-73.705	1660.156	-73.918
1279.297	-66.634	1474.609	-72.484	1669.922	-72.678
1289.063	-69.155	1484.375	-72.395	1679.688	-73.880
1298.828	-69.993	1494.141	-72.606	1689.453	-74.087
1308.594	-70.333	1503.906	-72.662	1699.219	-73.726
1318.359	-71.527	1513.672	-72.688	1708.984	-72.787
1328.125	-70.986	1523.438	-72.932	1718.750	-72.771
1337.891	-70.940	1533.203	-72.439	1728.516	-73.613
1347.656	-71.564	1542.969	-73.029	1738.281	-74.157
1748.047	-74.235	1943.359	-74.401	2138.672	-73.900
1757.813	-74.150	1953.125	-74.261	2148.438	-73.544
1767.578	-73.256	1962.891	-73.899	2158.203	-73.358
1777.344	-73.442	1972.656	-74.689	2167.969	-74.695
1787.109	-73.476	1982.422	-74.051	2177.734	-74.177
1796.875	-72.980	1992.188	-74.185	2187.500	-73.653
1806.641	-73.209	2001.953	-74.284	2197.266	-73.380
1816.406	-74.126	2011.719	-73.947	2207.031	-74.900
1826.172	-74.445	2021.484	-74.279	2216.797	-74.533
1835.938	-74.406	2031.250	-73.529	2226.563	-75.426
1845.703	-73.152	2041.016	-74.384	2236.328	-74.879
1855.469	-73.543	2050.781	-74.614	2246.094	-73.663
1865.234	-73.857	2060.547	-75.052	2255.859	-74.731
1875.000	-73.814	2070.313	-73.665	2265.625	-74.174
1884.766	-75.089	2080.078	-73.516	2275.391	-74.232

Example 9: Aurora, spectrum analysis.

The first draft of *Aurora* was approximately twenty-five minutes. After I completed the first draft, I sensed that it had the potential to be expanded upon. However, I had not improved upon my method of constructing large-scale form, nor had I discovered a means to evaluate the success of a large-scale form.

In the latter half of the draft, I expanded each micro-form and then selectively filtered out frequencies. An example of this may be found in Example 10. I then layered these expanded micro-forms to increase and decrease the textural density. After completing this process, I perceived that the timbres, textures, and envelopes did not contain significant contrast. I interpreted the resulting form as highly static. In retrospect, I may have been able to embrace this static material as an element of my process.

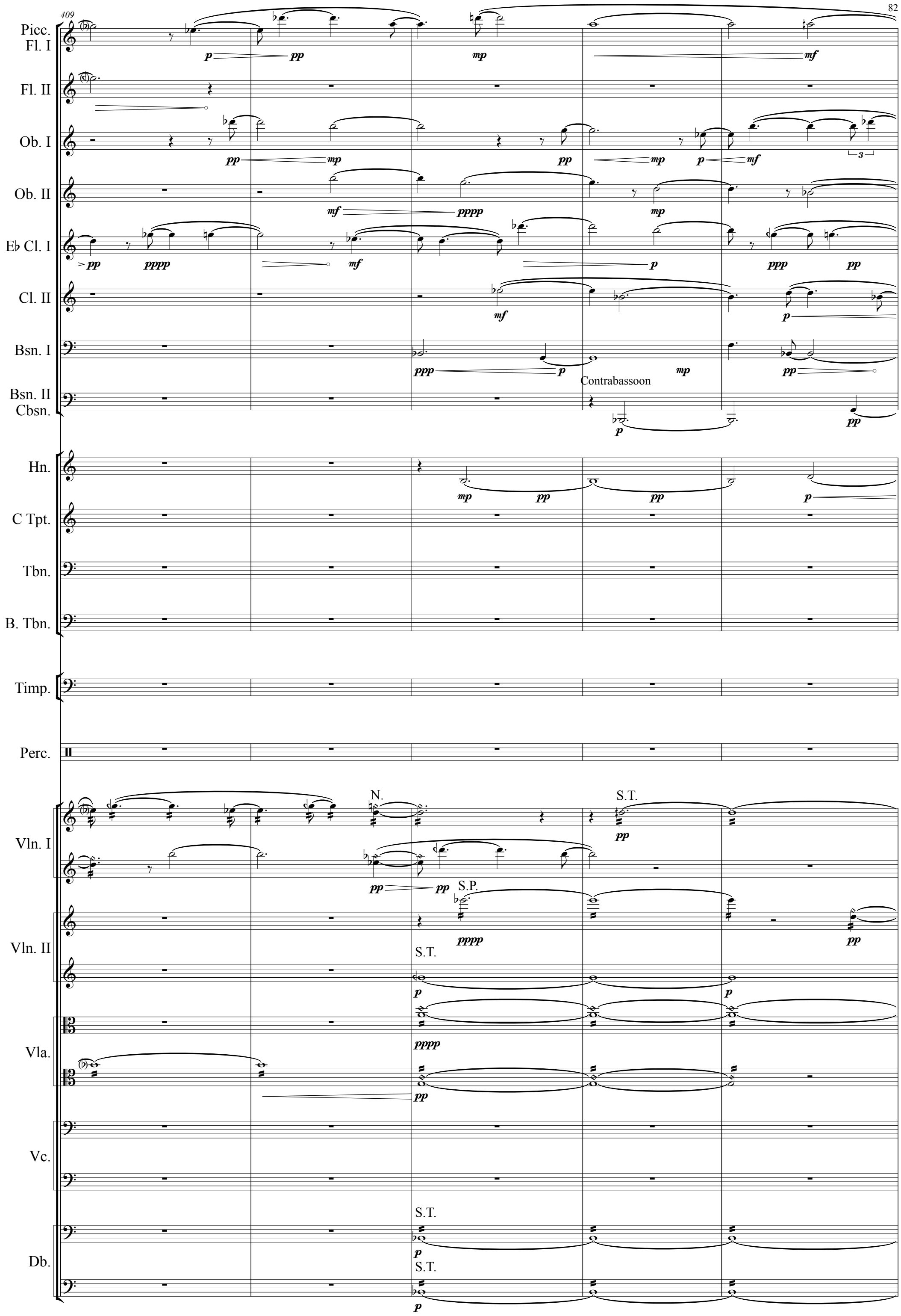
I rejected the static character of the first draft and elected to rewrite the entire work. However, I did not discard the micro-forms that I had designed in my initial process. Additionally, I believed that the methods that I had used to develop those micro-forms produced favourable results. One area that I had not emphasised in the draft was the melodic material. I identified this as an area that could be expanded upon and given a greater focus in the rewrite.

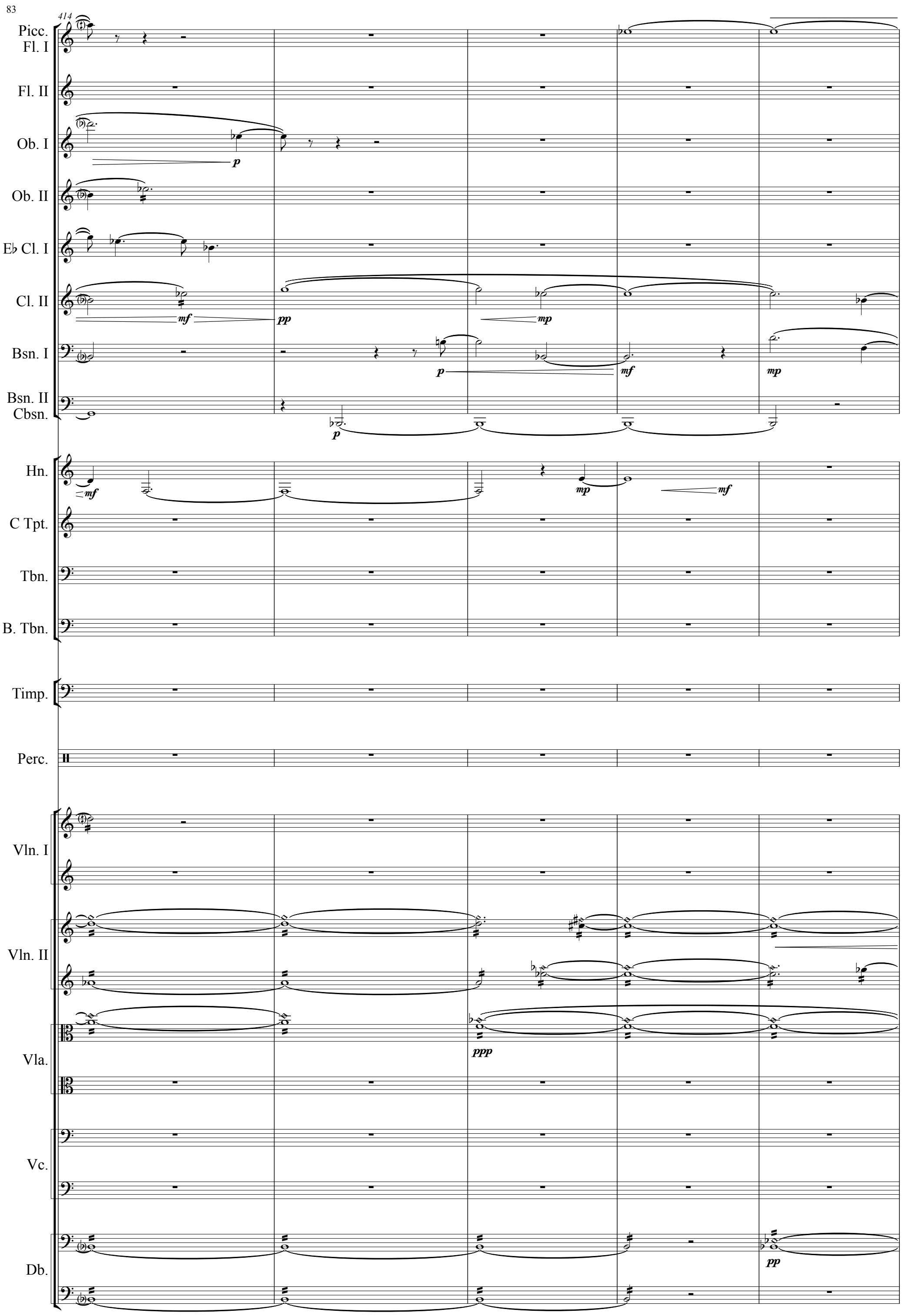
Additionally, I planned to employ several techniques that I had incorporated in the early half of the draft. These techniques had added moments of contrast, and I found their timbres compelling. I decided to expand these moments into fully developed musical thoughts. One examples of this is the string section’s use of bowed and plucked notes behind the bridge.

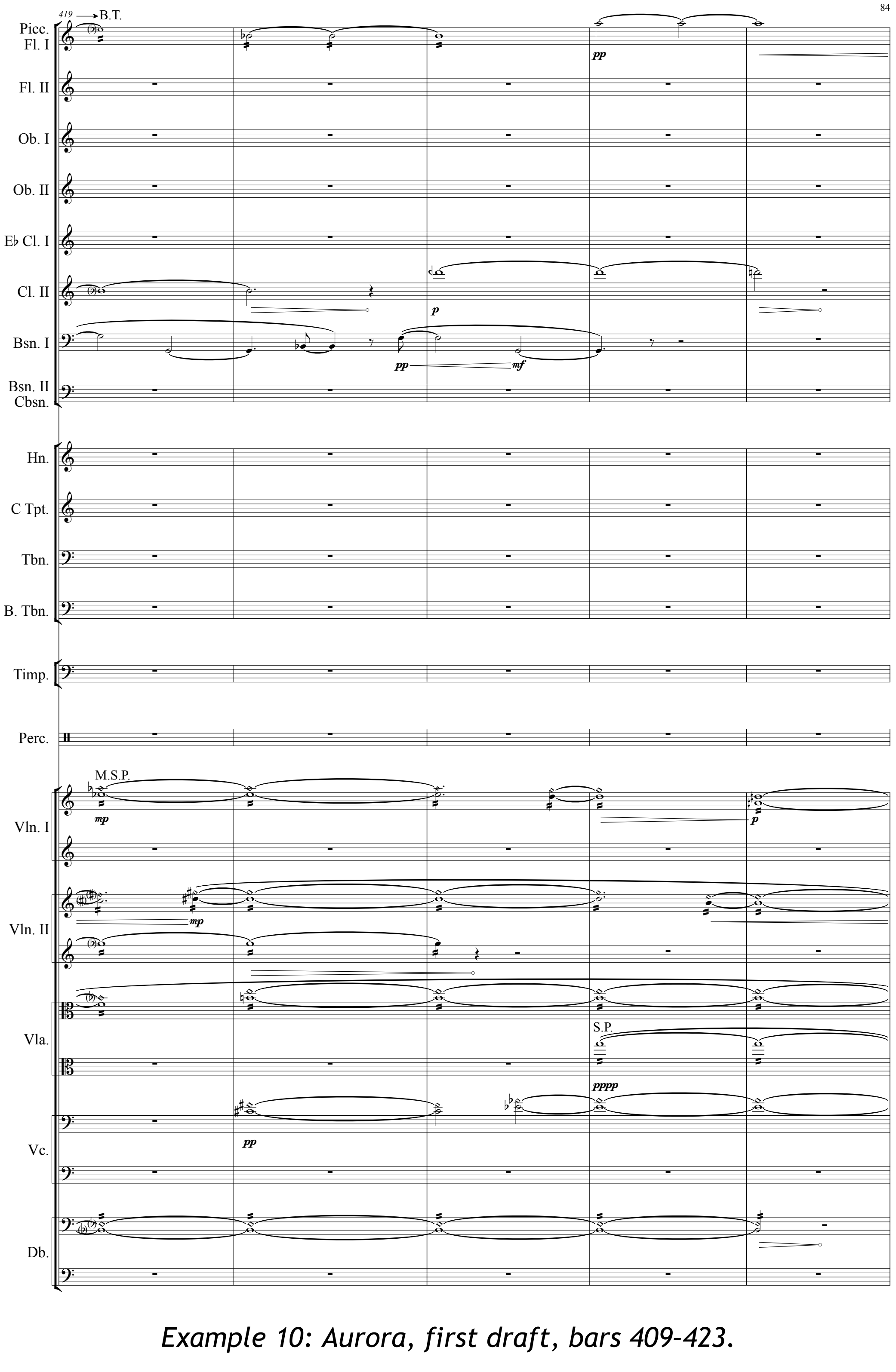
The process that I followed while writing my final draft had notably evolved. I constructed the first section by introducing several groups of micro-forms. The micro-forms in these groups were presented in brief, incomplete realizations. In the next section, I repeated the micro-form group and presented the micro-forms in their entirety. I varied subsequent sections by incorporating inharmonicity through changes in frequencies, envelope, and intonation. I also expanded and contracted the micro-forms so that they varied in length in each section. The melodies also expanded throughout the work.

An example of this may be found in bars 218-243 where one of the earliest micro-forms is reintroduced in an expanded transformation. In bars 225-230, a second micro-form is present in a contracted form. The first micro-form repeats for a second time in these bars in the woodwinds. A third micro-form enters in bar 230 in an expanded form, and it concludes in bar 243. In bar 244, an expanded form of the opening micro-form and melody appears.

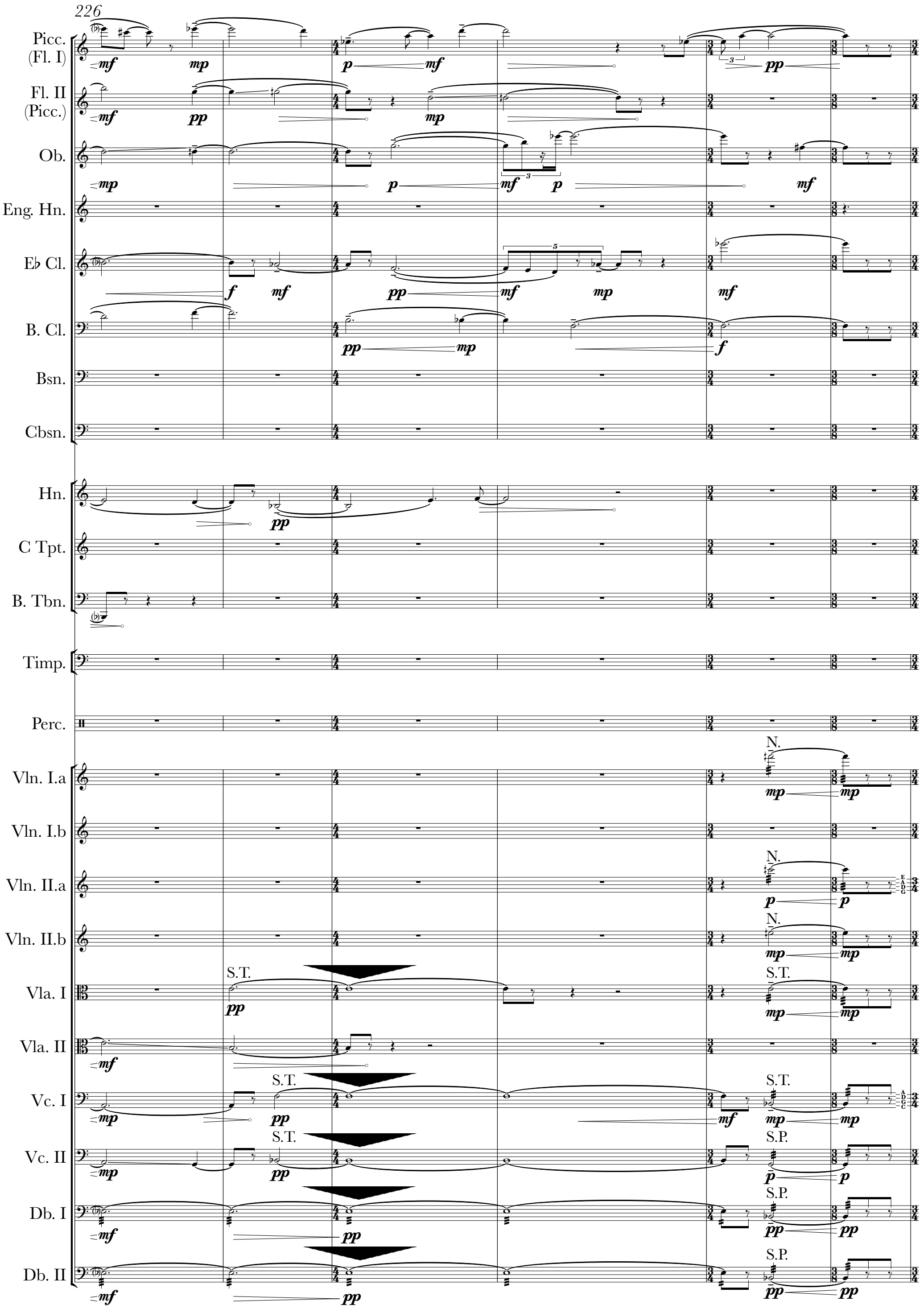
The process that I created for generating large-scale form was highly effective. My perspective on large-scale form evolved as I developed this process. I began to measure the success of a large-scale form by its effectiveness at communicating an emotional narrative. The original emotional inspiration for the work may only be known to myself. However, a successful large-scale form would to some extent communicate the underlying message of the work.


409
82
Picc.
Fl. I
Fl. II
Ob. I
Ob. II
E♭ Cl. I
Cl. II
Bsn. I
Bsn. II
Cbsn.
Contrabassoon
Hn.
C Tpt.
Tbn.
B. Tbn.
Timp.
Perc.
Vln. I
Vln. II
Vla.
Vc.
Db.
N.
S.T.
S.P.
p
pp
ppp
pppp
mp
mf
3


83
414
Picc.
Fl. I
Fl. II
Ob. I
Ob. II
E♭ Cl. I
Cl. II
Bsn. I
Bsn. II
Cbsn.
Hn.
C Tpt.
Tbn.
B. Tbn.
Timp.
Perc.
Vln. I
Vln. II
Vla.
Vc.
Db.
p
mf
pp
mp
ppp


419
B.T.
84
Picc.
Fl. I
Fl. II
Ob. I
Ob. II
E♭ Cl. I
Cl. II
Bsn. I
Bsn. II
Cbsn.
Hn.
C Tpt.
Tbn.
B. Tbn.
Timp.
Perc.
M.S.P.
Vln. I
Vln. II
Vla.
S.P.
Vc.
Db.
pp
p
mf
mp
pppp

Example 10: Aurora, first draft, bars 409–423.


226
Picc. (Fl. I)
Fl. II (Picc.)
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
N.
S.T.
S.P.

Example 11: Aurora, bars 226-231. Two micro-forms sounding at the same time. The bottom micro-form has been contracted, and the upper micro-form has been expanded.

Childhood, for orchestra, 2015-2016, [25']

The compositional process that I developed in the course of writing *Aurora* had addressed all of my research objectives to some measure. However, I sensed that the process had the potential to be expanded upon. I resolved to write an additional work for full orchestra with the objective of refining my existing process. Prior to writing, I dedicated some time to defining my objectives for this work.

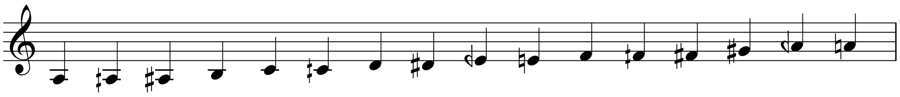
The first goal that I established was to increase the efficiency of my translation process. One of my research objectives was to develop a process through which I could translate sounds into notated metaphors. The method of translation that I employed in *Aurora* was to reflect on my emotional message as I listened to the source recordings, then immediately sketch a micro-form. I repeated this process until I had a wealth of musical ideas. This method was effective at generating musical material, but it was highly inefficient. I discarded the majority of the micro-forms that I had written.

The second objective that I established was to improve upon the modular form that I had designed in *Aurora*. This modular form was successful at communicating my emotional narrative, but I perceived that I could better use changes in timbre as a method of communicating structure. To some degree, my goal was related to Lachenmann's perception of musical structure and concept of dialectical structuralism. My perspective evolved over the course of composing the works in my portfolio. I began to view musical form as a method of organising communication.

My third goal was to write a work that communicated the emotions that I felt when reflecting on my childhood. These emotions were positive, for the most part, and I felt that connecting with my past would bring elements of innocence and optimism to my music. To that end, I sought out recordings of sounds that had a positive emotional relationship with my childhood.

My first concept was to source recordings of engine noises from several airplanes. My family frequently travelled internationally due to my mother's work, and this had instilled in me from a young age a love of air travel. However, upon performing spectral analyses of these samples, I discovered that engines produce simple sounds with sustained frequencies and little contrast. The engine sounds of my imagination were far more interesting and varied. I therefore considered constructing my own sound digitally to match the engine noises that I recalled from my childhood.

I spent some time designing the sound that would serve as the inspiration for the composition. Once I was satisfied with the sound, I performed a spectral analysis. Previously I moved directly from an analysis to composing micro-forms. This time I decided to begin writing by sketching melodic material based on several scales that I built with frequencies contained in the spectra. Example 11 is the scale that was the model for the opening melody that is heard in the violoncello in bar 3.



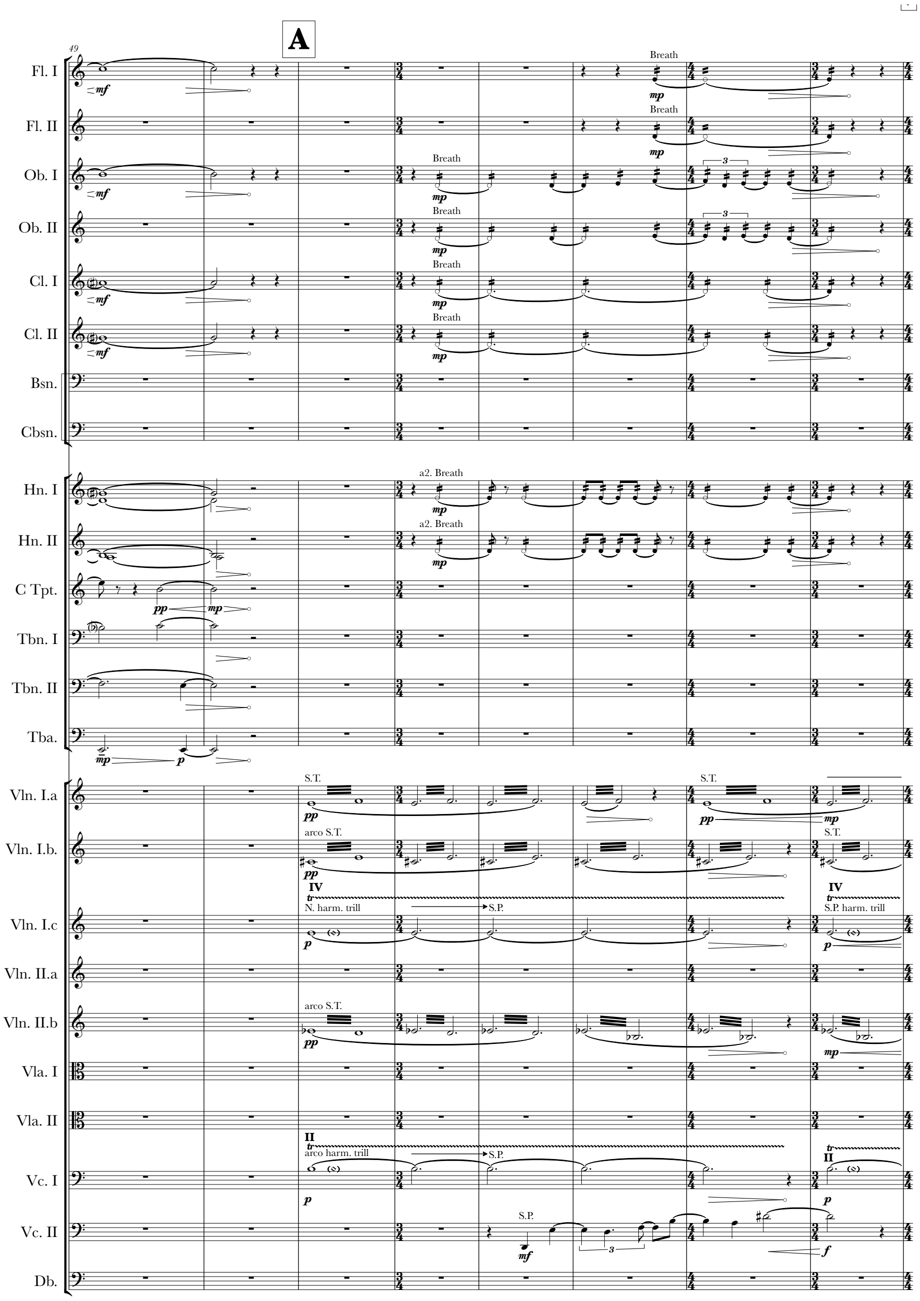
Example 11: Childhood, scale that inspired the opening melody.

I sketched approximately fifteen complete melodies, as well as a large number of melodic fragments. Subsequently, I wrote micro-forms based on the spectral analysis. In contrast with my previous process, I intentionally composed micro-forms with dissimilar characteristics. My plan was to arrange these dissimilar micro-forms into patterns and then weave the melodies in and out. The melodies would act as an indication that the contrasting micro-forms were part of a single macro-form.

I discovered that my compositional process had become significantly more efficient. I possessed a clear perception of the emotional message that I intended to communicate, an emotional connection to the sound source, and a plan for structuring my music to communicate my narrative. Consequentially, I was able to write at a quicker rate, with less creative obstructions, and with a greater sense of purpose.

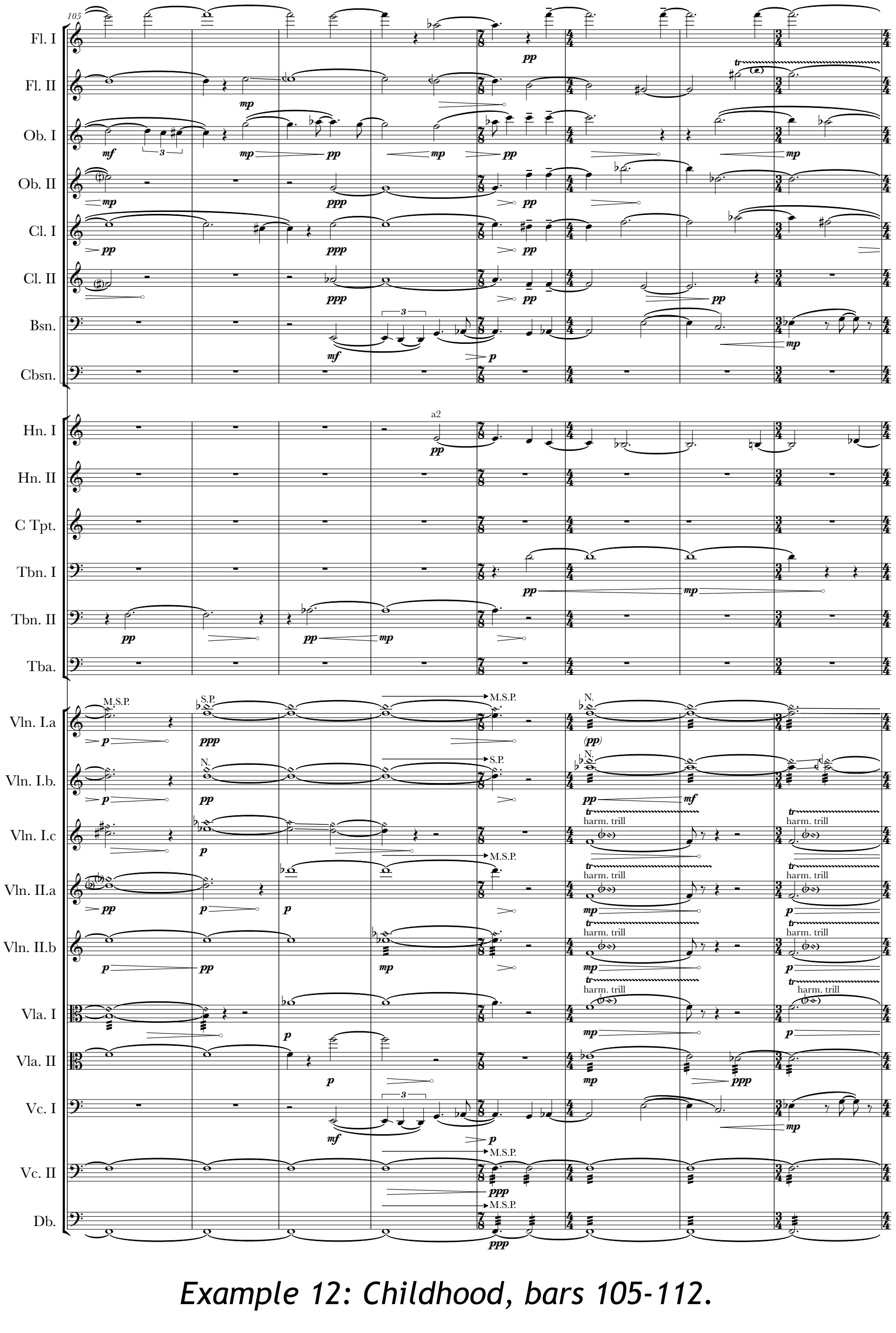
Previously, I discarded the majority of the material that I composed. In the process of composing *Childhood*, I discarded perhaps a third of the music that I wrote. This was a significant improvement in efficiency. On reflection, I attribute this improvement to the refinement of my process to translate recorded sound into notated musical metaphor.

One result of the prominent melodic in *Childhood* is a distinct lack of structural discontinuity. I used melodic material as a sort of structural bond to preserve the continuity between macro-forms. However, there are a few times when distinct structural breaks are heard. These moments are deliberate pauses in the narrative. The first of these moments occurs in bar 51 as the opening micro-form resolves and the entire ensemble pauses. This moment is followed by the entrance of newly-introduced micro-forms. This is seen in example 12.


A
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
Breath
a2. Breath
S.T.
arco S.T.
N. harm. trill
S.P.
S.P. harm. trill
arco harm. trill

Example 12: Childhood, bars 49-57.

At times, I disguised transitions between micro-forms by sustaining frequencies. In bar 109, the violoncello and double bass sustain their frequencies through the resolution of a micro-form and the beginning of a new one. These moments happen at the same time that the winds play a greatly expanded reiteration of the opening micro-form. The winds do not conclude this micro-form until bar 124. This is also an example of an area where a melody extends across multiple micro-forms. The bassoon enters with the primary melody in bar 107 and exits in bar 118.


105
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
a2
M.S.P.
S.P.
N.
harm. trill

Example 12: Childhood, bars 105-112.

I utilised several techniques to vary the density of textures. A method that I used to construct dense textures was to layer multiple micro-forms. Layering also served as a method of designing intricate timbres. I used this method to indicate structurally significant moments. I balanced this texturally dense material by introducing moments of sparse simplicity. In bar 199, two micro-forms sound at different speeds. The micro-form in the wind section is relatively quick and texturally dense. The strings play a long, expanded, texturally thin micro-form that extends past the completion of the micro-form in the winds.

I filtered frequencies and introduced inharmonic frequencies to establish periods of harmonicity and inharmonicity. I also attempted to shift between groups of highly contrasting timbres. One example of this is in bar 79 where the music shifts from a texturally dense moment to a sparse texture. This moment is further highlighted by the appearance of the second melody in the trumpet starting in bar 80.

In the early sections of the work, I introduced micro-forms in condensed states. Each micro-form was condensed to approximately thirty seconds in length. As the work progressed, I revealed the micro-forms at their full length. After all of the micro-forms had been introduced, I reintroduced them in expanded and contracted iterations.

The final draft of *Childhood* addresses all of my research goals to a much greater extent than *Aurora* and *Memories of my father*. I believe that I owe the success of my process to a few factors. First, in the process of writing this work I placed considerable importance on discovering a sound source that held emotional significance. Second, I developed the modular form of *Childhood* with the objective of communicating a narrative. The modular form served as a means of organising this narrative. Finally, I improved upon the translation process that generated musical material from the spectral analyses of a sound. On reflection, I am convinced that this work can serve as a successful model for future compositions.

Parting Thoughts

As I reflect upon my research objectives, I feel that the compositional process that I developed was only partially successful. My objective was to develop a new compositional process that incorporated spectral analysis, the translation of analyses into notated musical metaphors, and the creation of a musical form that used changes in timbre to delineate structural components. I recognize that I was most successful at addressing the first two objectives.

The third objective is only partially realized in *Memories of my father* and *Aurora*. I was able to design a clearer form in *Childhood*, but there remains substantial potential for further research.

One question that I did not address in my research is the classification of my music. I did not initially address this question because I believed (and I continue to hold the opinion) that self-classifications by composers are for the most part meaningless. However, upon examining my portfolio in whole, I have concluded that these works fall into the realm identified by Damien Pousset as “post-spectral”.[44] That is, they are inspired by spectral music, but they differ notably in processes.

Upon re-examining the second movement of *Memories of my father*, I believe that there is the potential to further adapt existing forms to my process. The difficulties that I experienced in the process of composing this movement could be addressed by designing a less rigid blueprint, by incorporating a narrative into the blueprint, and by giving greater emphasis to the emotional inspiration for the work.

The most successful addition to my process was the inclusion of improvisation. I first incorporated improvisation into my compositional process when writing *Of Windborne Echoes*. I subsequently developed this into a process that involves devoting a significant amount of time to sketching micro-forms prior to beginning a draft. I found that the process of sketching dozens of self-contained ideas over a period of several weeks inspired my creativity, prevented writer’s block, and provided an abundance of material at the start of my drafting phase.

Childhood is the most successful model of my compositional process, but it is not a perfect model. The large-scale form achieves my goal of communicating my emotional narrative. However, I have identified the potential for significant development of forms that utilise timbre as a structural component. All of the works in this portfolio are useful as models, but I believe that *Childhood* is the best model for future compositions that utilise my process.

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44 Pousset, “The Works of Kaija Saariaho, Philippe Hurel and Marc-André Dalbaviem — Stile Concertato, Stile Concitato, Stile Rappresentativo”, 69.

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Christopher Bayley

Evanescent

For orchestra

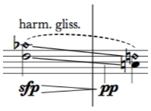
Performance Notes

General

Trills should be played to the note indicated in brackets.

Glissandi should start at the beginning of the note.

Strings

N.	Normal (used to distinguish the normal bowing position from S.P. or S.T.)
S.P.	Sul ponticello: to bow near the bridge of the instrument.
M.S.P.	Molto sul ponticello: to bow as close as possible to the bridge of the instrument.
S.T.	Sul tasto: to bow near the fingerboard.
>○	Diminuendo al niente.
○<	Crescendo dal niente.
⟶	Change gradually from one bow placement to another.
	A harmonic glissando. "Seagull" effect.

Scoring

1 Piccolo
1 Flute (doubling bass flute)
2 Oboes
2 Clarinets in B flat
- Clarinet II doubling Bass Clarinet in B flat.

1 Bassoon (doubling Contrabassoon)
2 Horns in F
1 Trombone

Percussion

Harp

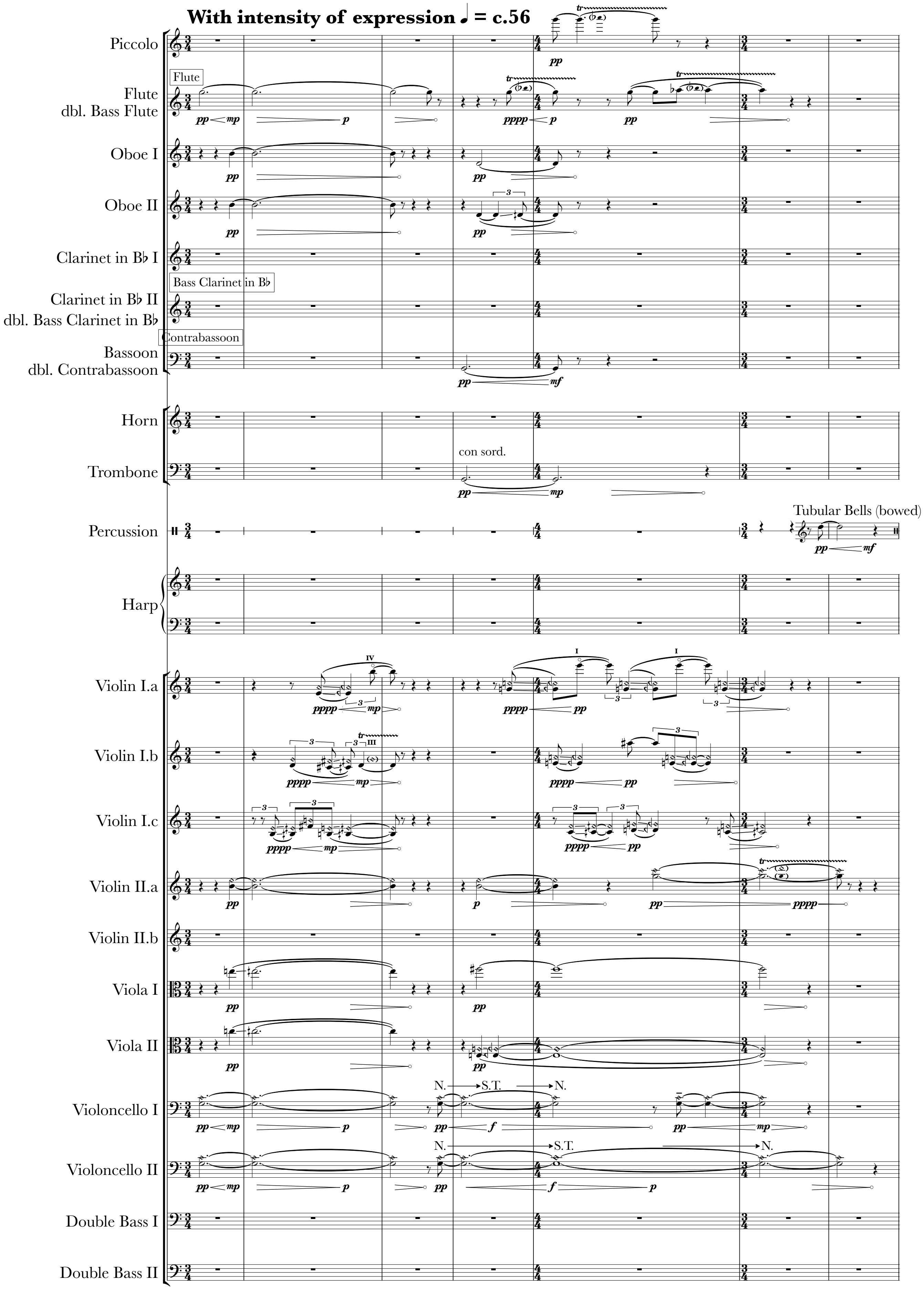
6 Violins I
- Violin 1.a 2 Performers
- Violin 1.b 2 Performers
- Violin 1.c 2 Performers

4 Violins II
4 Violas
4 Violoncello
2 Double Basses

Score in C

Evanescent

Christopher Bayley



With intensity of expression ♩ = c.56
Piccolo
Flute
Flute
dbl. Bass Flute
Oboe I
Oboe II
Clarinet in B♭ I
Bass Clarinet in B♭
Clarinet in B♭ II
dbl. Bass Clarinet in B♭
Contrabassoon
Bassoon
dbl. Contrabassoon
Horn
con sord.
Trombone
Tubular Bells (bowed)
Percussion
Harp
Violin I.a
Violin I.b
Violin I.c
Violin II.a
Violin II.b
Viola I
Viola II
N.
S.T.
N.
Violoncello I
N.
S.T.
N.
Violoncello II
Double Bass I
Double Bass II

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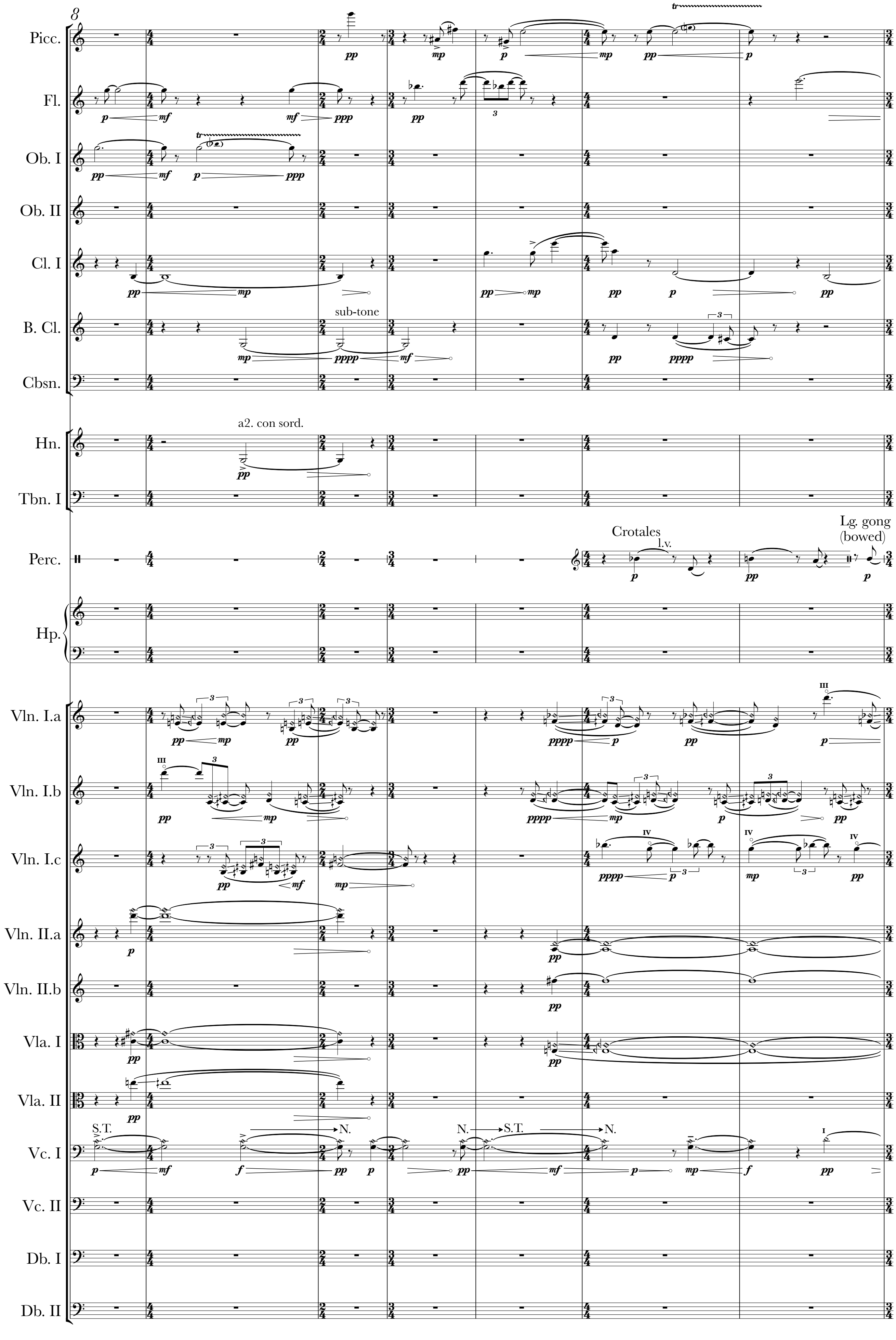
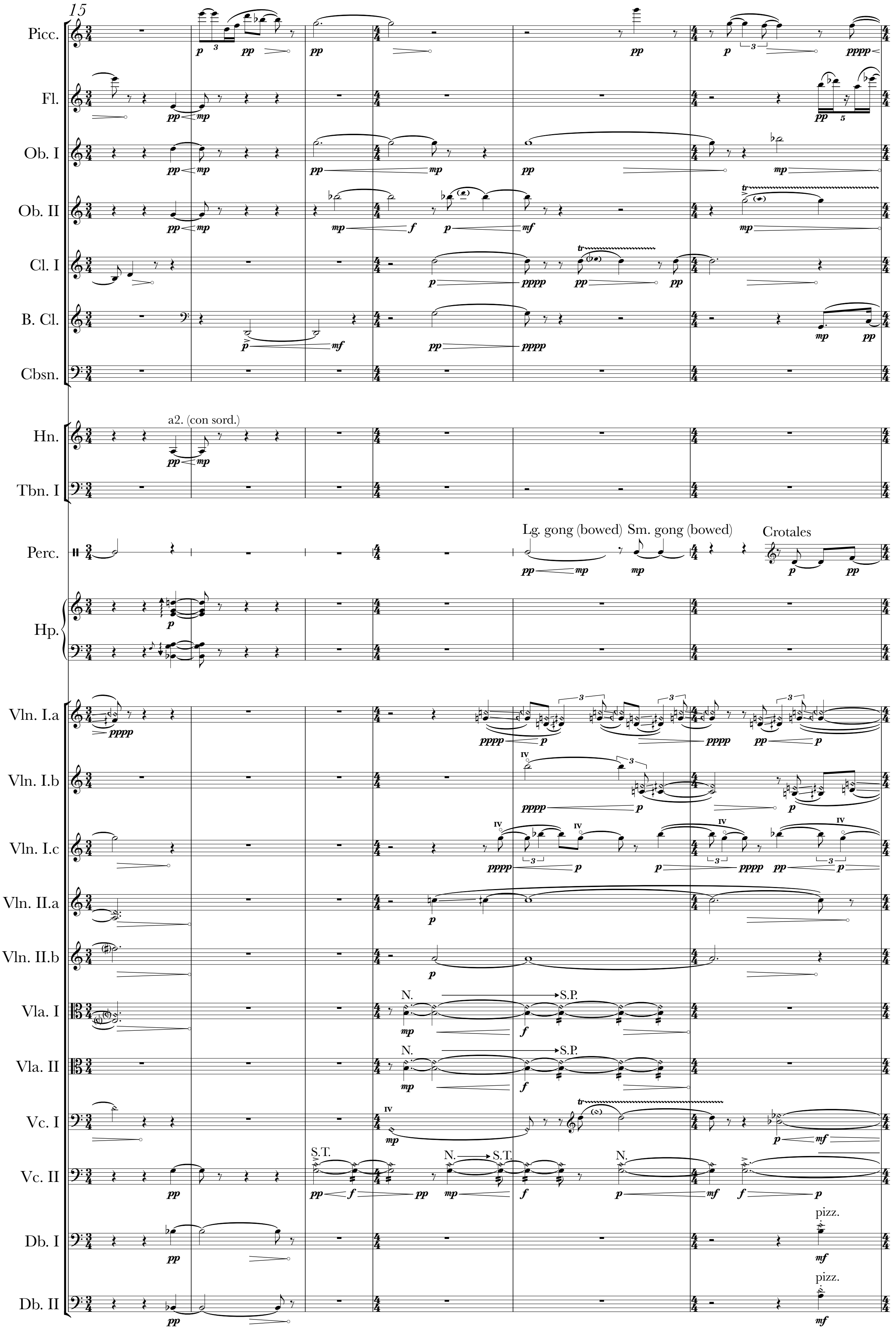
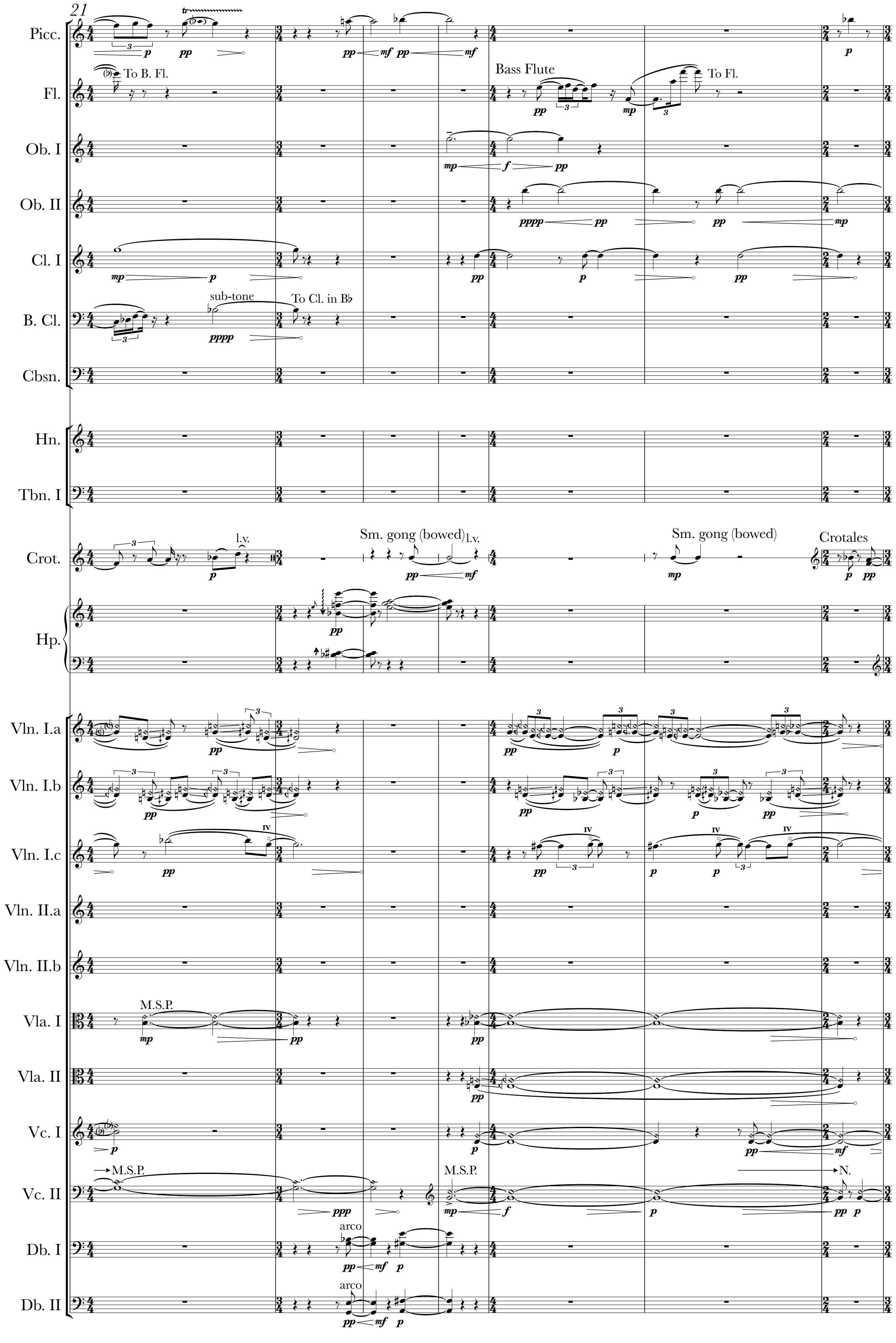
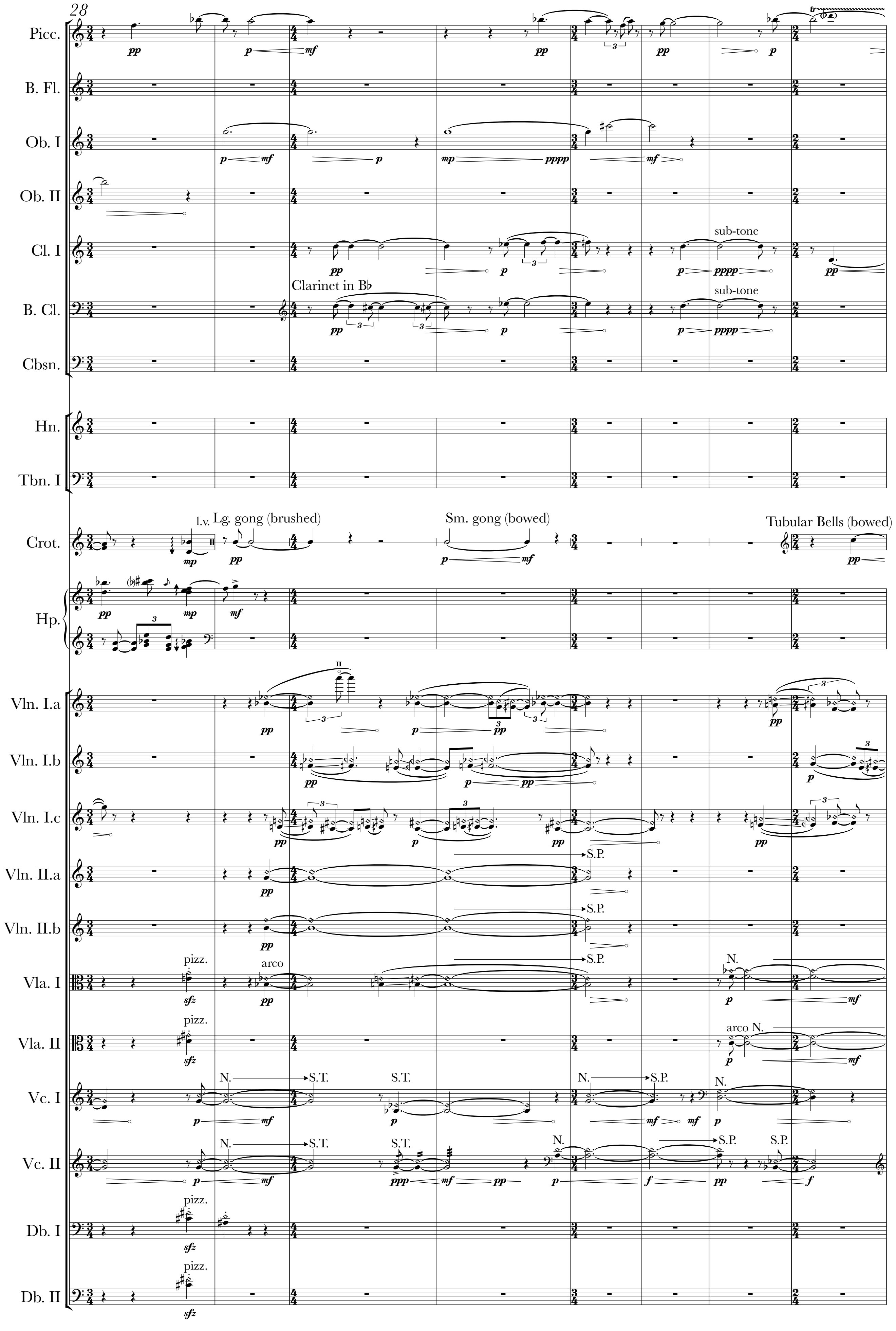
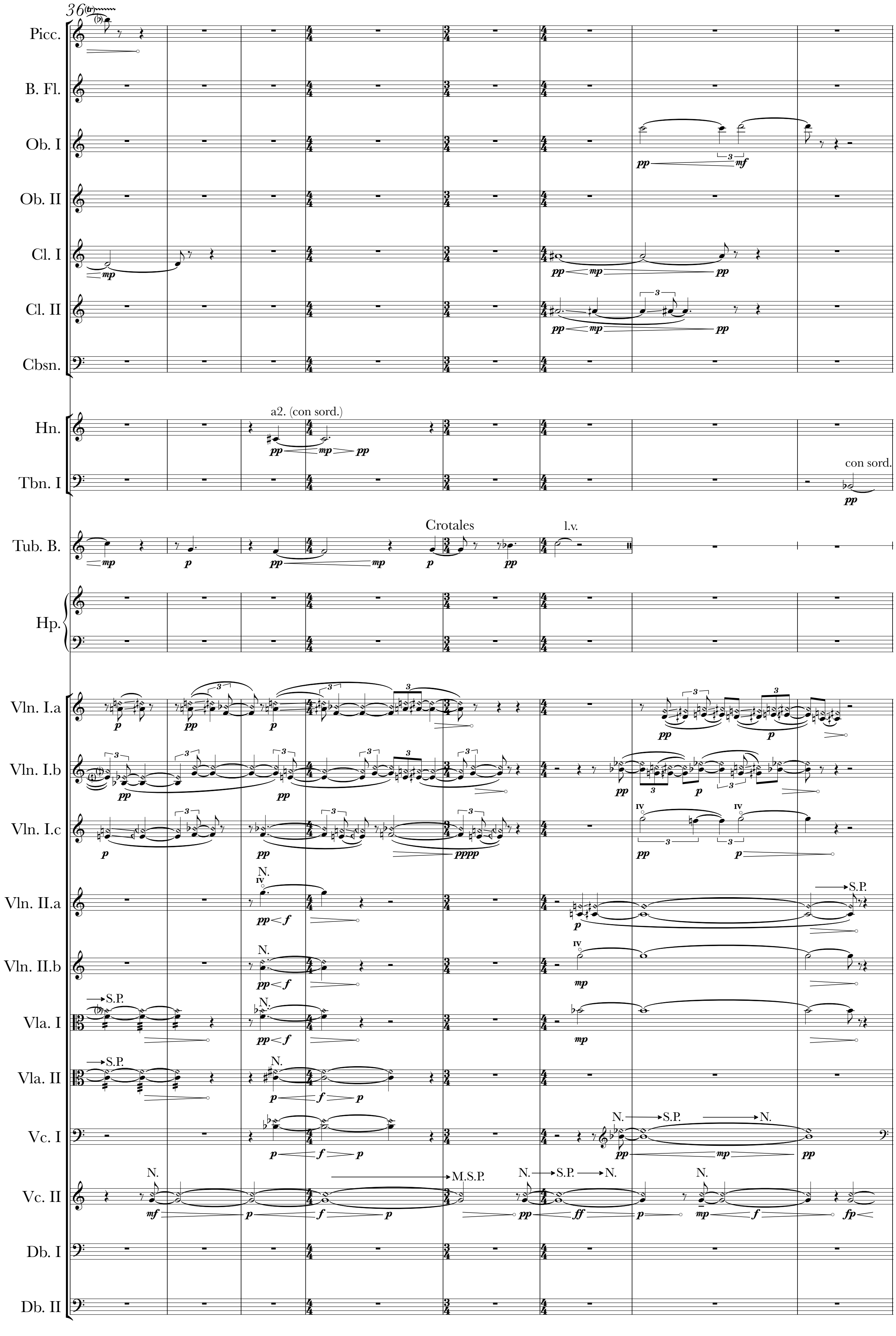
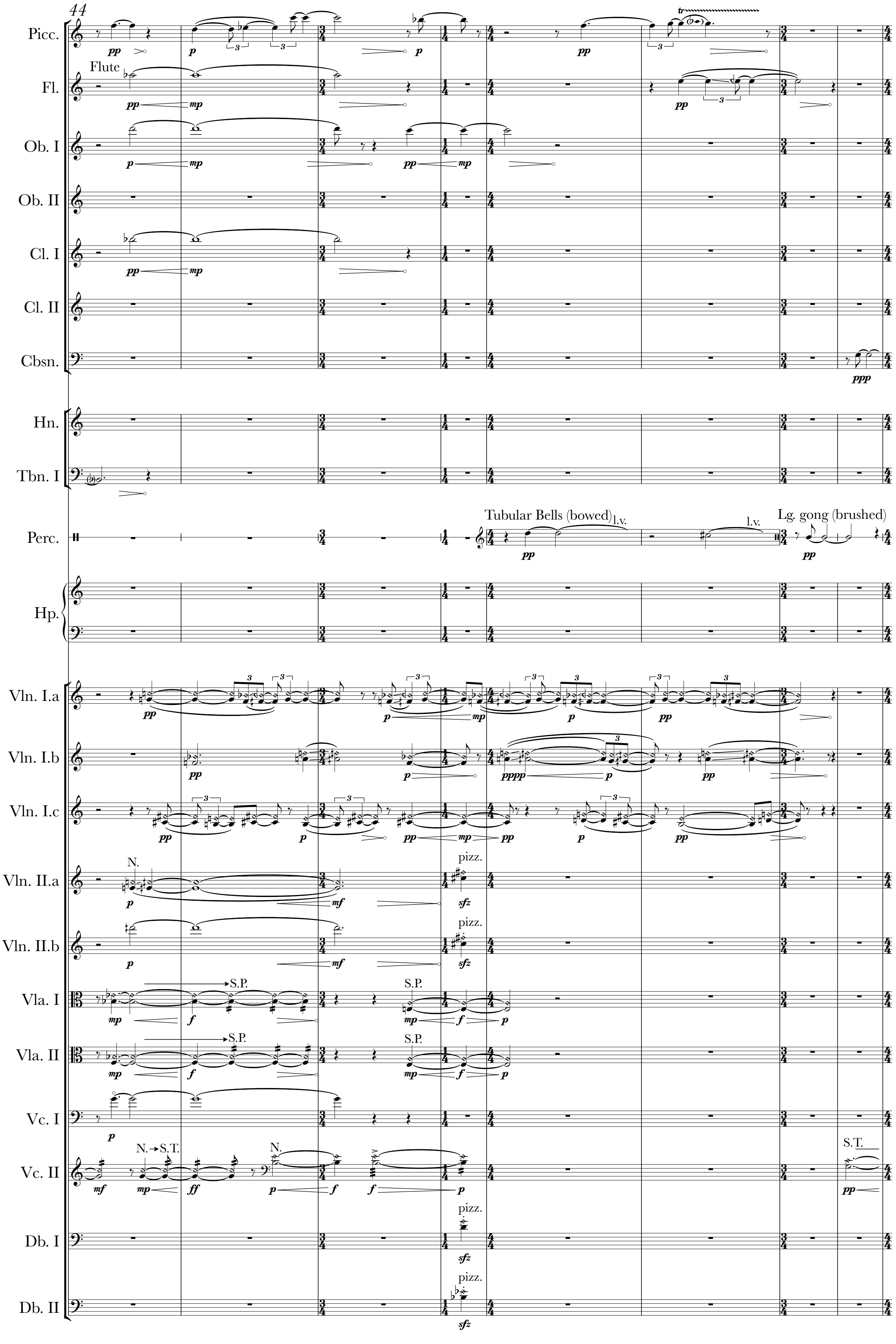

8
Picc.
Fl.
Ob. I
Ob. II
Cl. I
B. Cl.
Cbsn.
Hn.
Tbn. I
Perc.
Hp.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
sub-tone
a2. con sord.
Crotales
l.v.
Lg. gong
(bowed)
S.T.
N.
N.
S.T.
N.
pp
mp
p
mf
ppp
pppp
f


15
Picc.
Fl.
Ob. I
Ob. II
Cl. I
B. Cl.
Cbsn.
Hn.
a2. (con sord.)
Tbn. I
Perc.
Lg. gong (bowed)
Sm. gong (bowed)
Crotales
Hp.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
N.
S.P.
Vla. II
N.
S.P.
Vc. I
Vc. II
S.T.
N.
S.T.
N.
Db. I
pizz.
Db. II
pizz.


21
Picc.
Fl.
Ob. I
Ob. II
Cl. I
B. Cl.
Cbsn.
Hn.
Tbn. I
Crot.
Hp.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
To B. Fl.
Bass Flute
To Fl.
sub-tone
To Cl. in B♭
l.v.
Sm. gong (bowed)
l.v.
Sm. gong (bowed)
Crotales
M.S.P.
M.S.P.
M.S.P.
N.
arco
arco
IV
IV
IV
IV
pp
mf
mp
p
pppp
ppp
f


28
Picc.
B. Fl.
Ob. I
Ob. II
Cl. I
sub-tone
B. Cl.
Clarinet in B♭
sub-tone
Cbsn.
Hn.
Tbn. I
Crot.
l.v.
Lg. gong (brushed)
Sm. gong (bowed)
Tubular Bells (bowed)
Hp.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
S.P.
Vln. II.b
S.P.
Vla. I
pizz.
arco
S.P.
N.
Vla. II
pizz.
arco N.
Vc. I
N.
S.T.
S.T.
N.
S.P.
N.
Vc. II
N.
S.T.
S.T.
N.
S.P.
S.P.
Db. I
pizz.
Db. II
pizz.


36
Picc.
B. Fl.
Ob. I
Ob. II
Cl. I
Cl. II
Cbsn.
Hn.
Tbn. I
Tub. B.
Hp.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
a2. (con sord.)
con sord.
Crotales
l.v.
N.
IV
S.P.
M.S.P.
pp
mp
mf
p
f
ff
pppp
fp


44
Picc.
Fl.
Ob. I
Ob. II
Cl. I
Cl. II
Cbsn.
Hn.
Tbn. I
Perc.
Hp.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
Flute
tr
Tubular Bells (bowed)
l.v.
l.v.
Lg. gong (brushed)
N.
pizz.
pizz.
S.P.
S.P.
S.P.
S.P.
N.→S.T.
N.
S.T.
pizz.
pizz.
pp
p
p
pp
pp
mp
p
mp
pp
mp
pp
mp
ppp
pp
pp
pp
p
mp
p
pp
pp
pppp
p
pp
pp
p
p
pp
mp
pp
p
pp
p
mf
sfz
p
mf
sfz
mp
f
mp
f
p
mp
f
mp
f
p
p
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3
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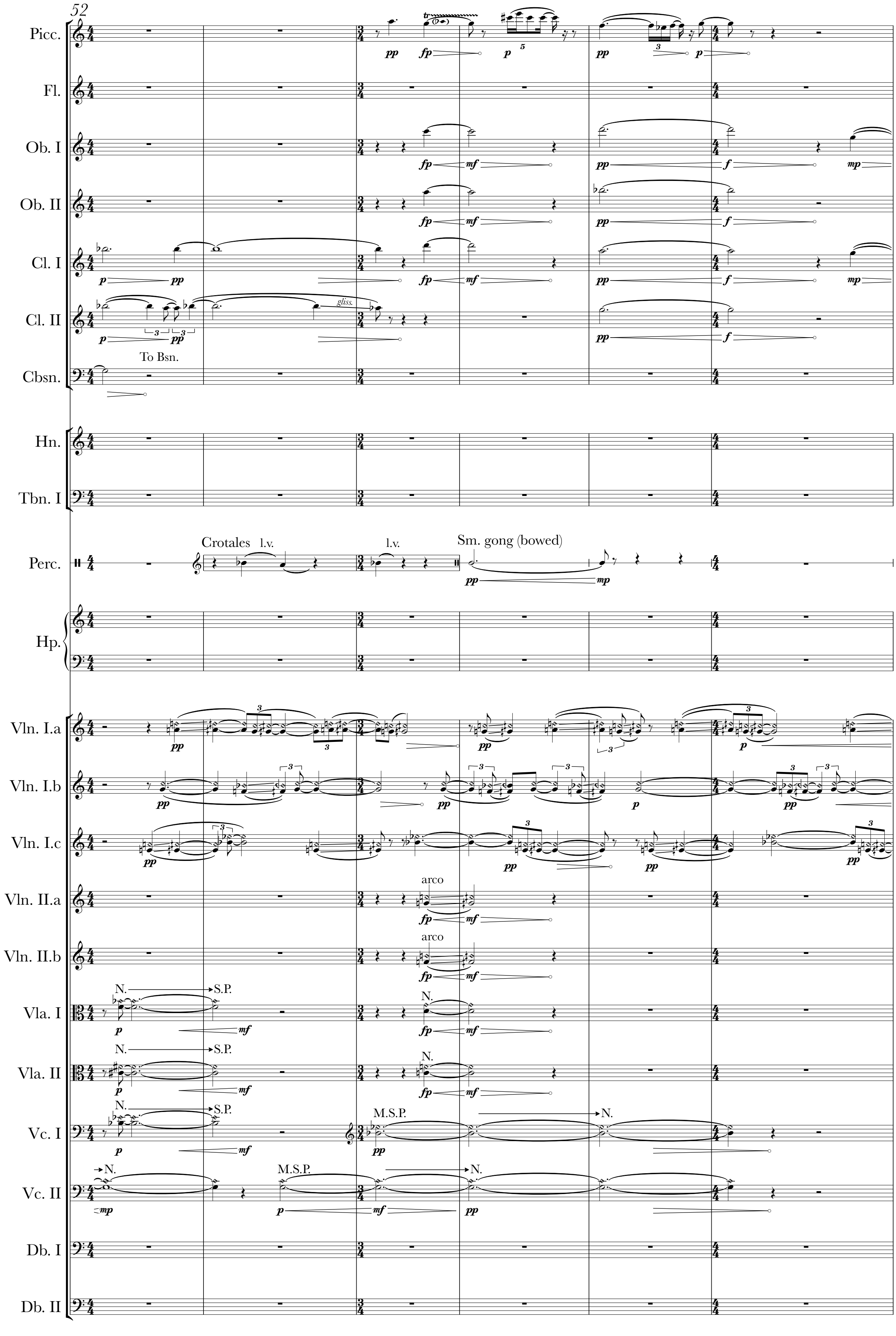
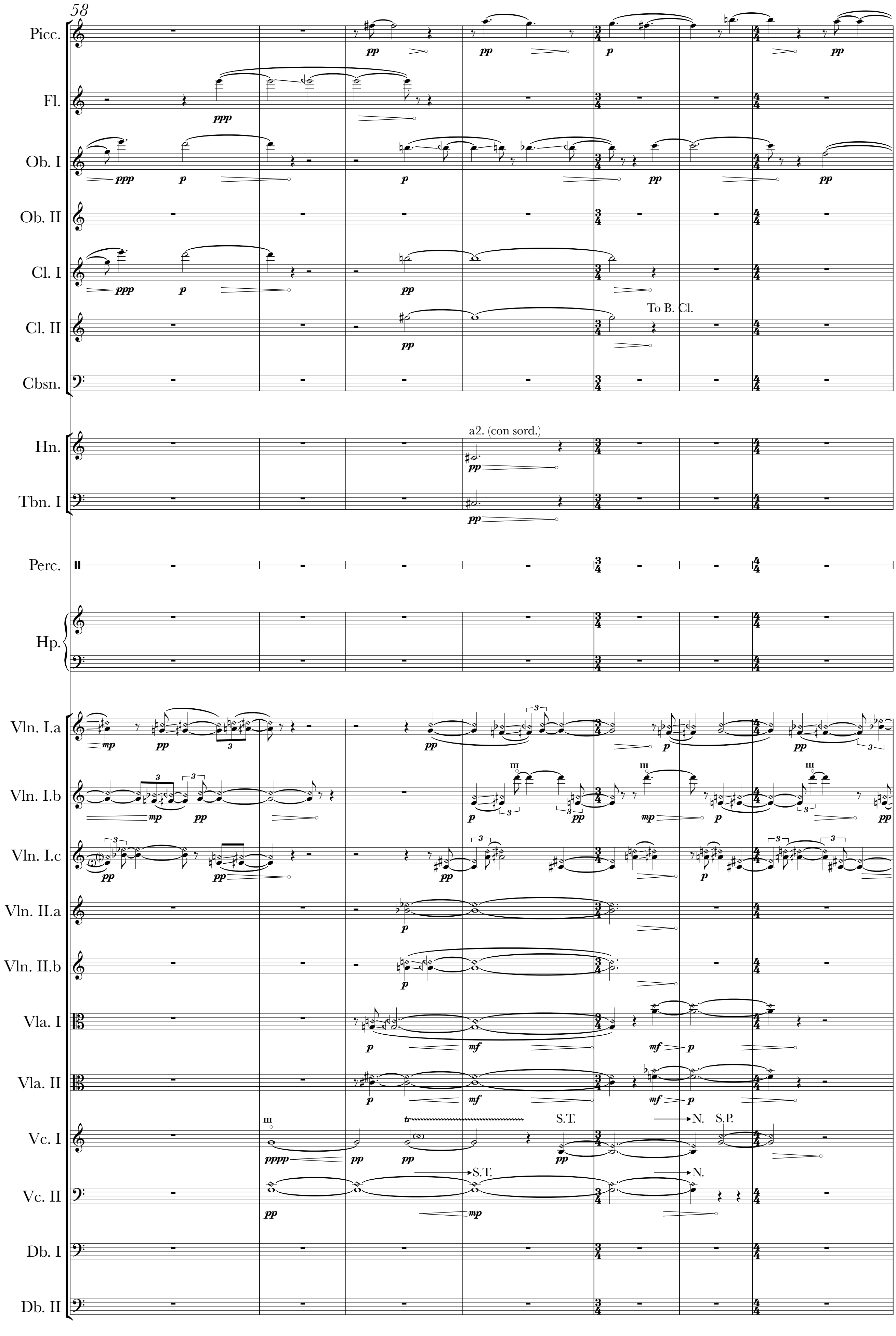
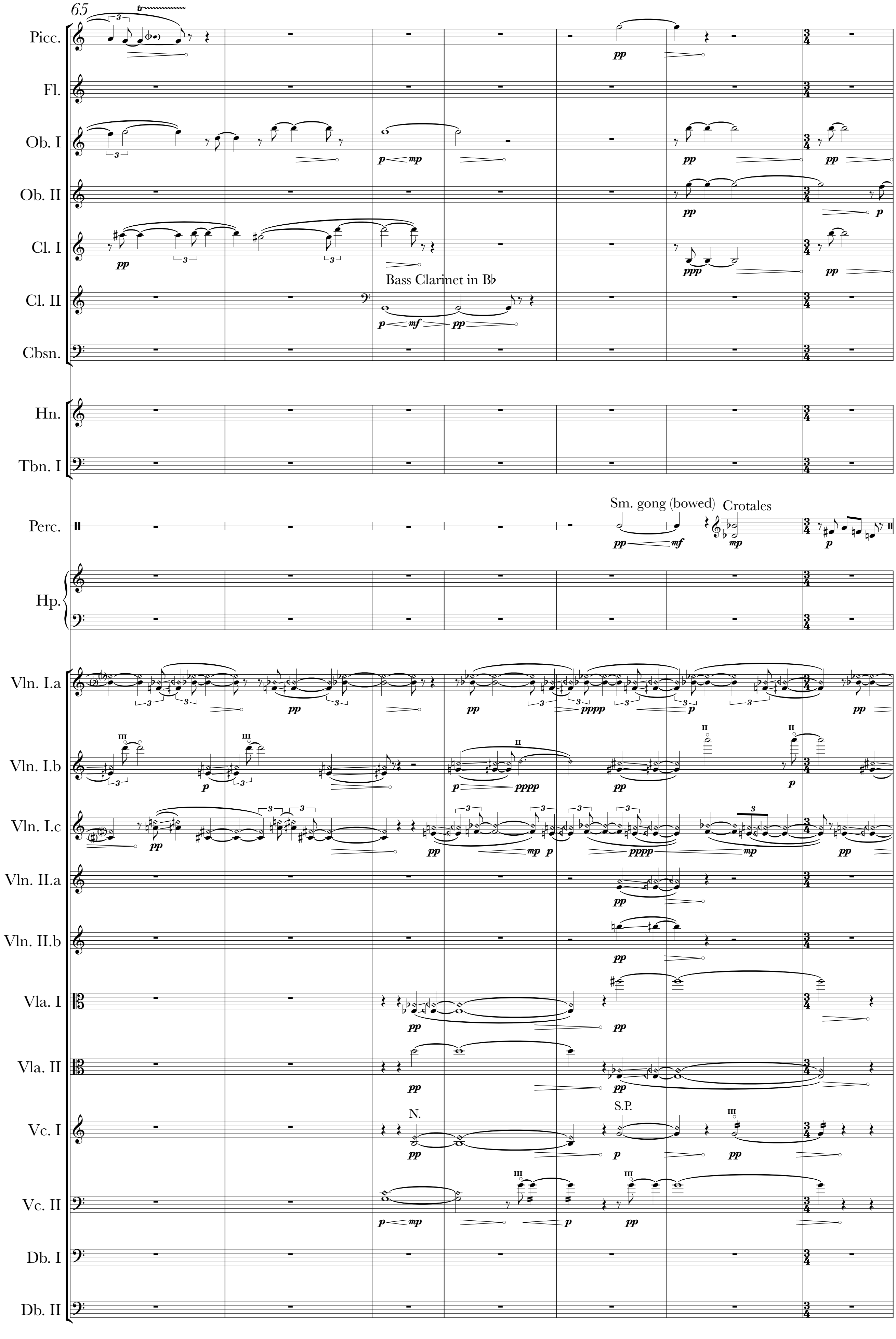
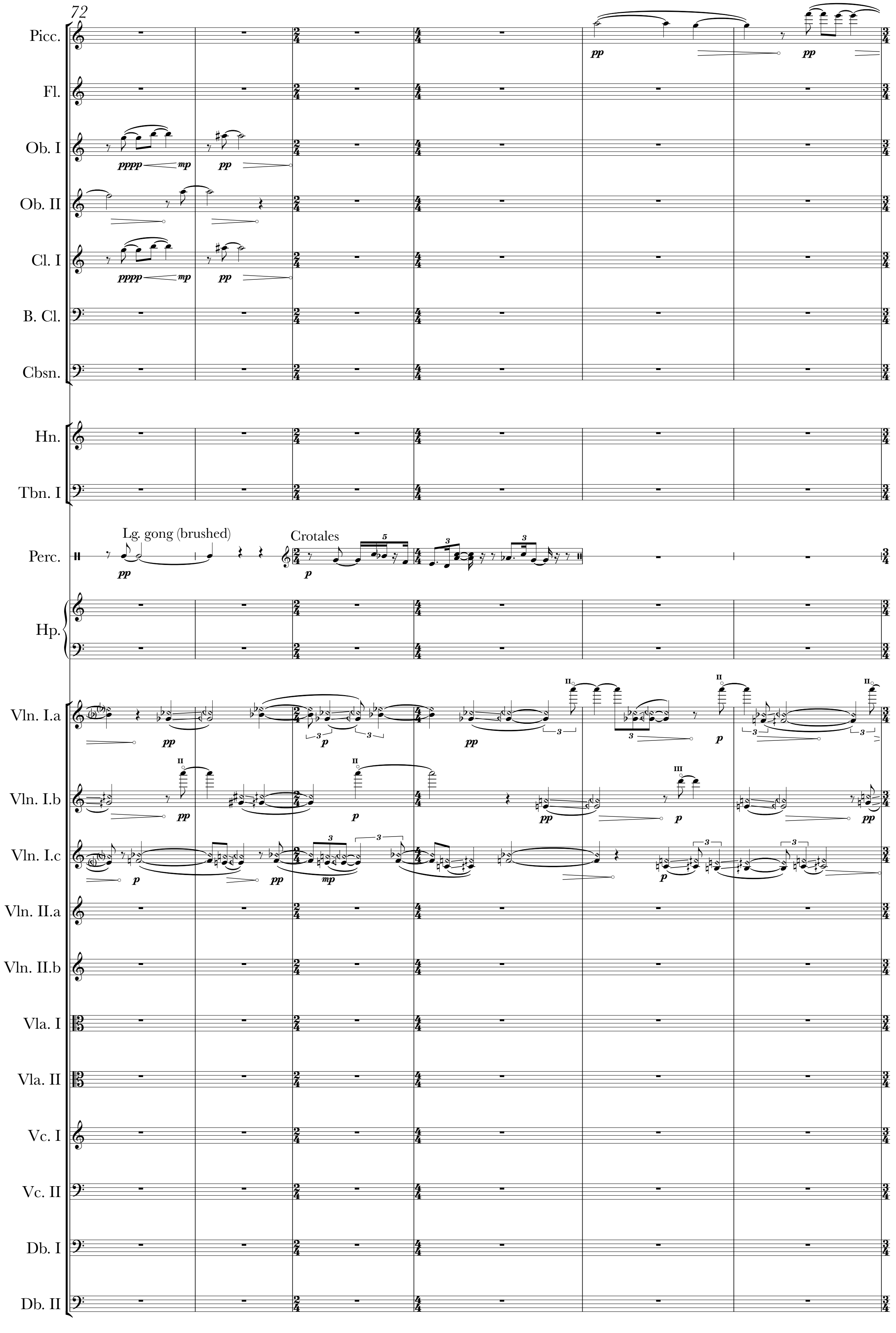
3
3
3


52
Picc.
Fl.
Ob. I
Ob. II
Cl. I
Cl. II
Cbsn.
Hn.
Tbn. I
Perc.
Hp.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
tr
gliss.
To Bsn.
Crotales
l.v.
l.v.
Sm. gong (bowed)
arco
arco
N.
S.P.
N.
S.P.
N.
S.P.
M.S.P.
N.
N.
M.S.P.
N.
N.
N.
pp
fp
p
mf
f
mp


58
Picc.
Fl.
Ob. I
Ob. II
Cl. I
Cl. II
Cbsn.
Hn.
Tbn. I
Perc.
Hp.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
To B. Cl.
a2. (con sord.)
S.T.
N.
S.P.
III
tr
3
pppp
ppp
pp
p
mp
mf


65
Picc.
Fl.
Ob. I
Ob. II
Cl. I
Cl. II
Cbsn.
Hn.
Tbn. I
Perc.
Hp.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
Bass Clarinet in B♭
Sm. gong (bowed)
Crotales
N.
S.P.
tr
pp
ppp
pppp
p
mp
mf
II
III


72
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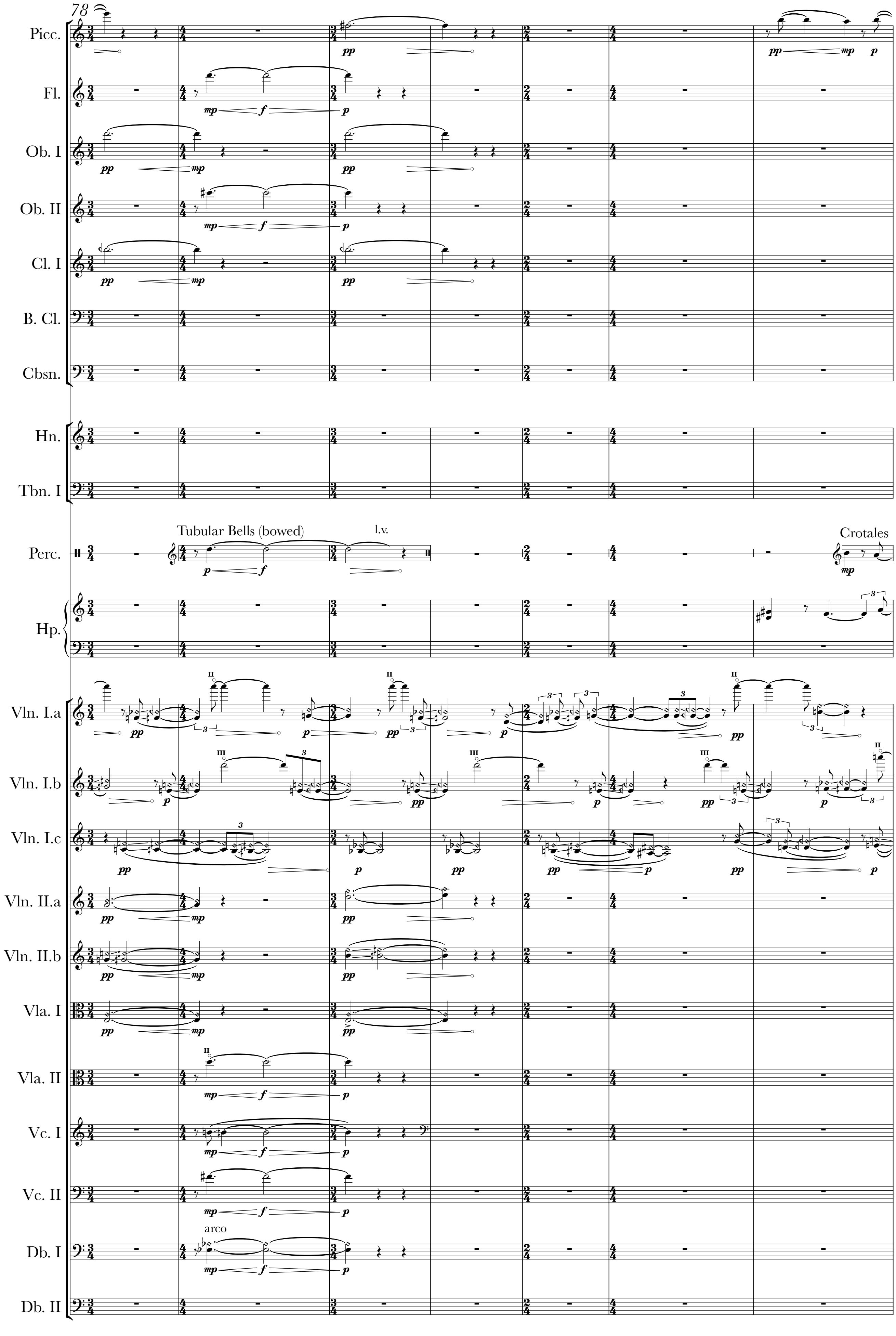
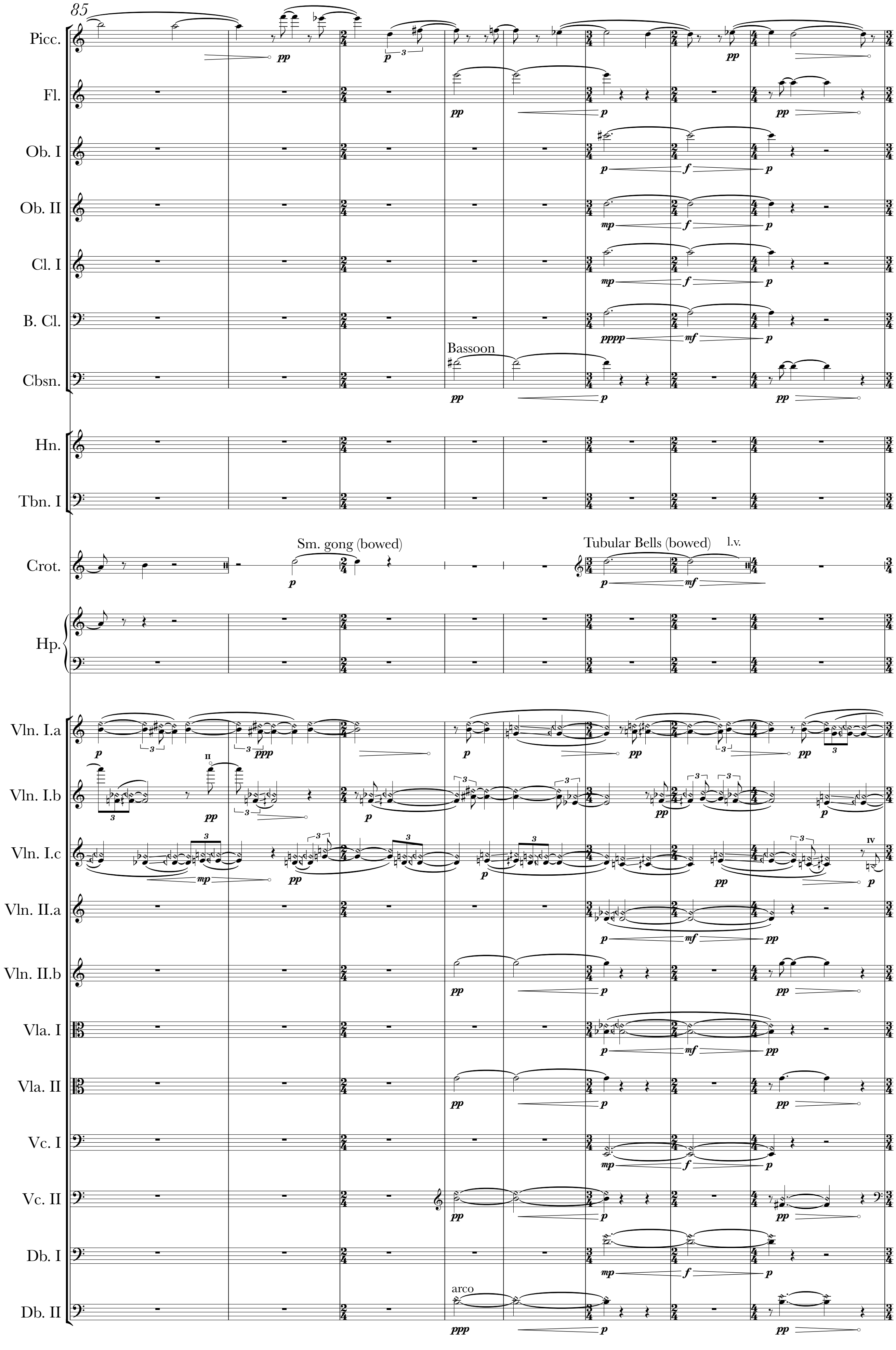
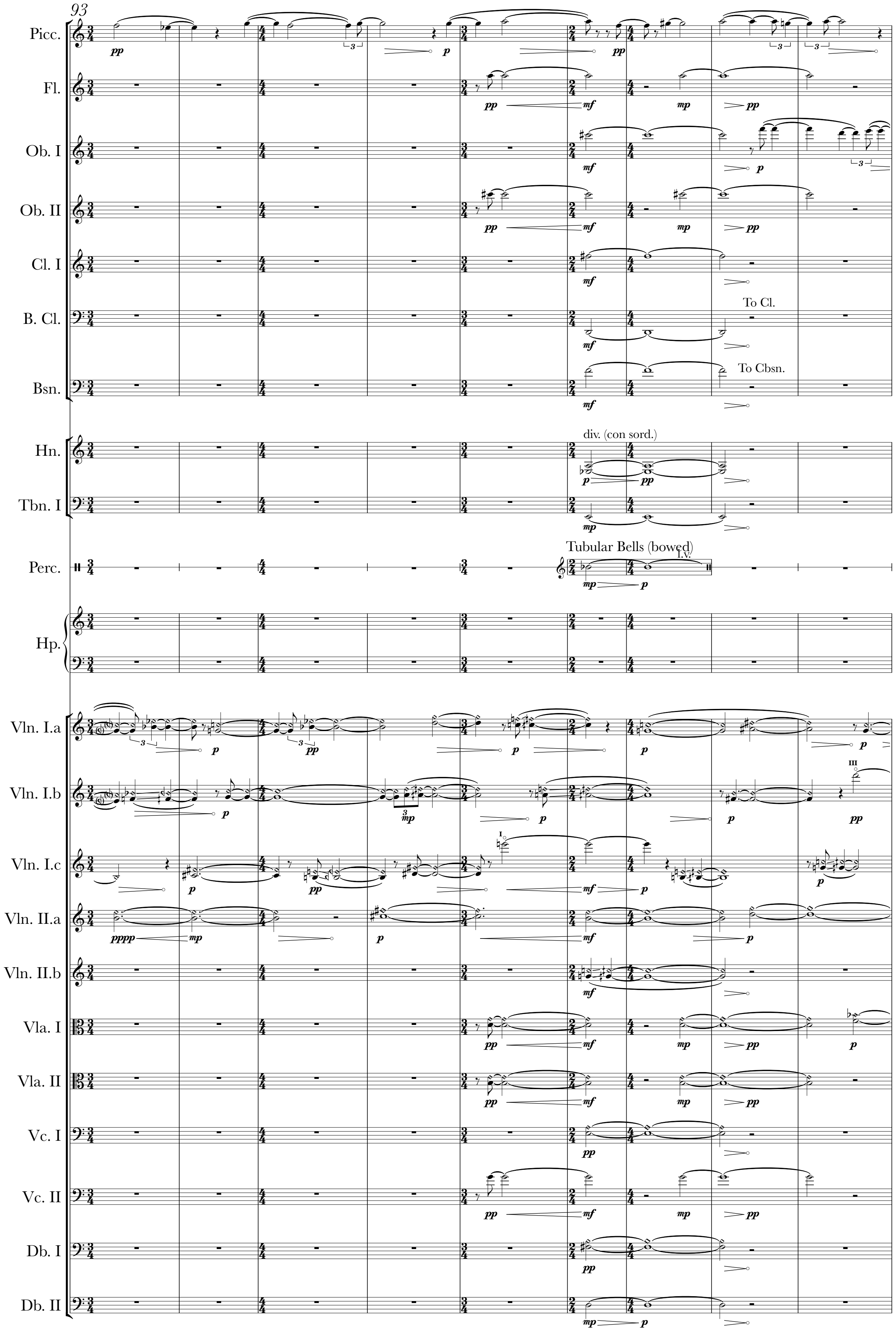
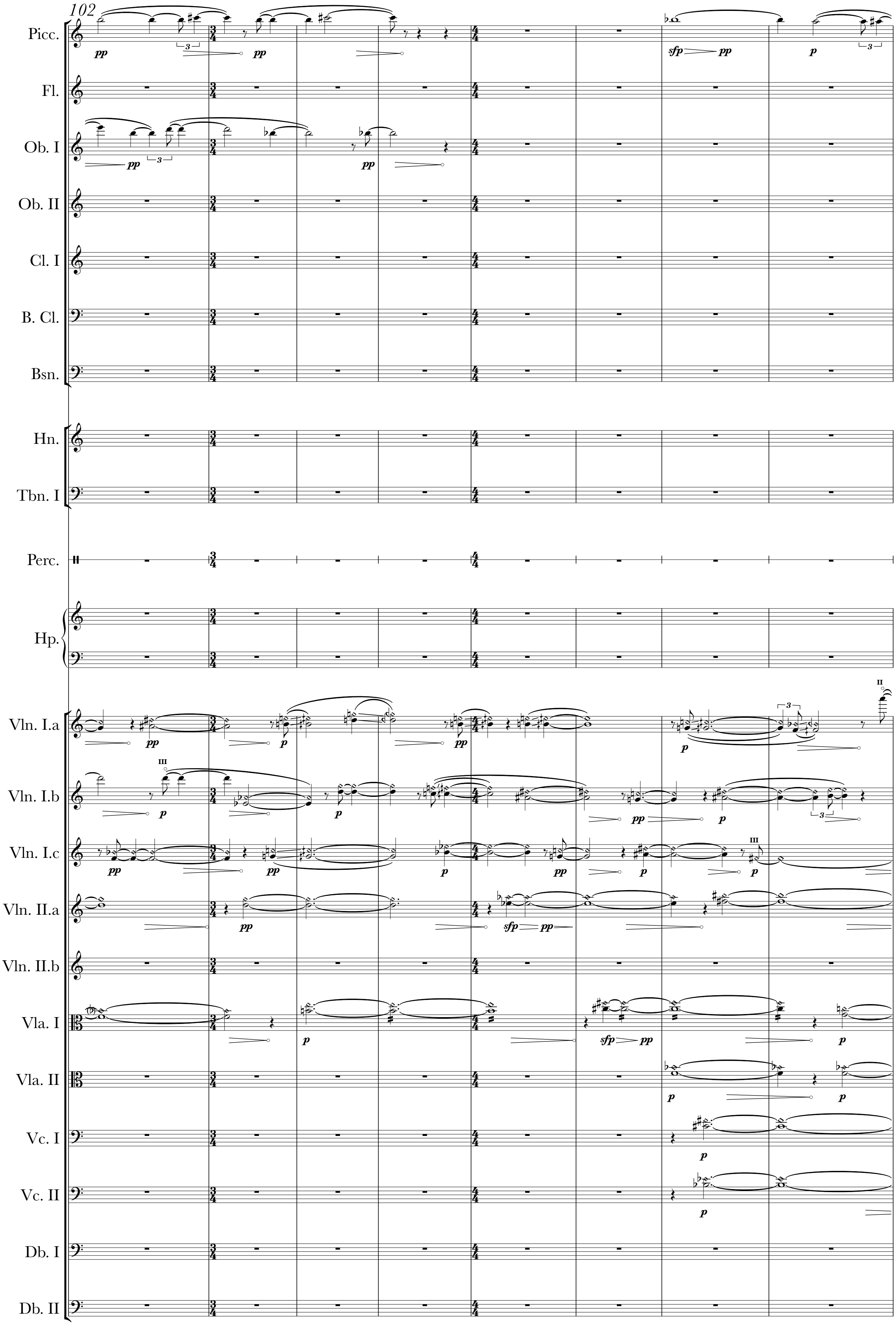
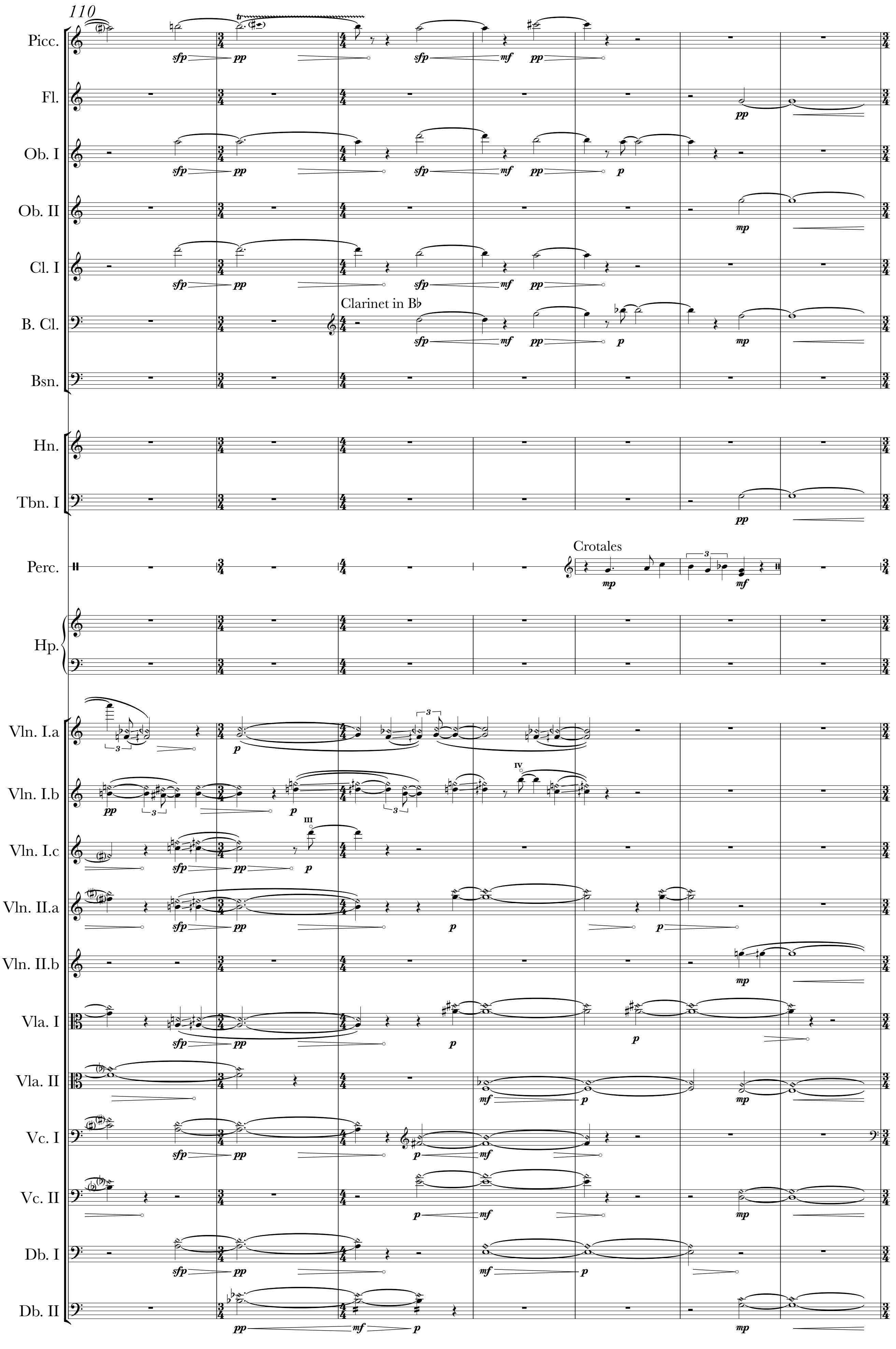
Fl.
Ob. I
Ob. II
Cl. I
B. Cl.
Cbsn.
Hn.
Tbn. I
Perc.
Lg. gong (brushed)
Crotales
Hp.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
pp
pppp
mp
p
II
III
3
5


78
Picc.
Fl.
Ob. I
Ob. II
Cl. I
B. Cl.
Cbsn.
Hn.
Tbn. I
Perc.
Tubular Bells (bowed)
l.v.
Crotales
Hp.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
arco
Db. II
pp
mp
f
p


85
Picc.
Fl.
Ob. I
Ob. II
Cl. I
B. Cl.
Cbsn.
Bassoon
Hn.
Tbn. I
Crot.
Sm. gong (bowed)
Tubular Bells (bowed)
l.v.
Hp.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
arco
pp
p
ppp
mp
mf
f
pppp
II
IV


93
Picc.
Fl.
Ob. I
Ob. II
Cl. I
B. Cl.
To Cl.
Bsn.
To Cbsn.
Hn.
div. (con sord.)
Tbn. I
Perc.
Tubular Bells (bowed)
l.v.
Hp.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II


102
Picc.
Fl.
Ob. I
Ob. II
Cl. I
B. Cl.
Bsn.
Hn.
Tbn. I
Perc.
Hp.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
pp
p
sfp
III
II
3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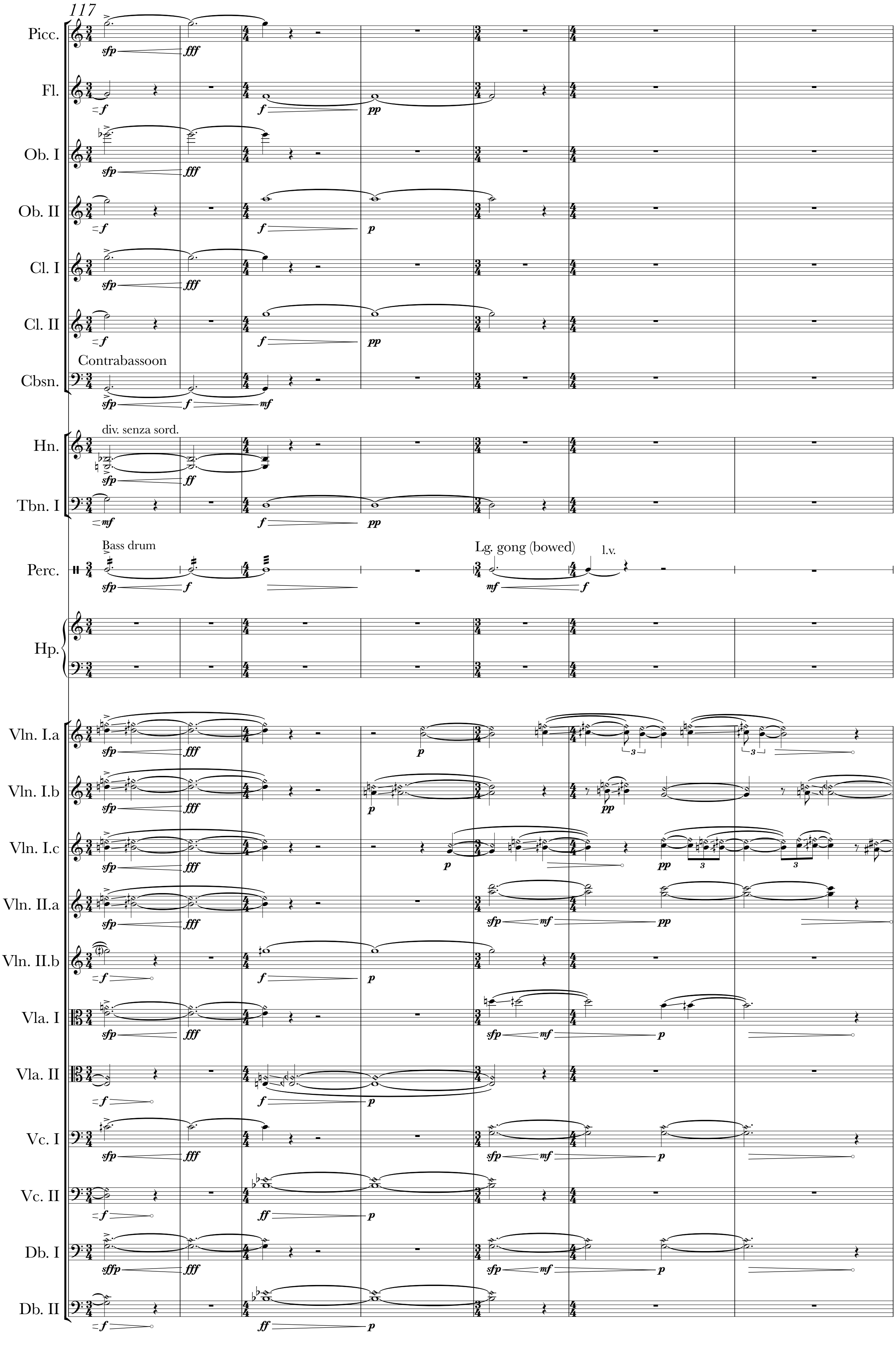
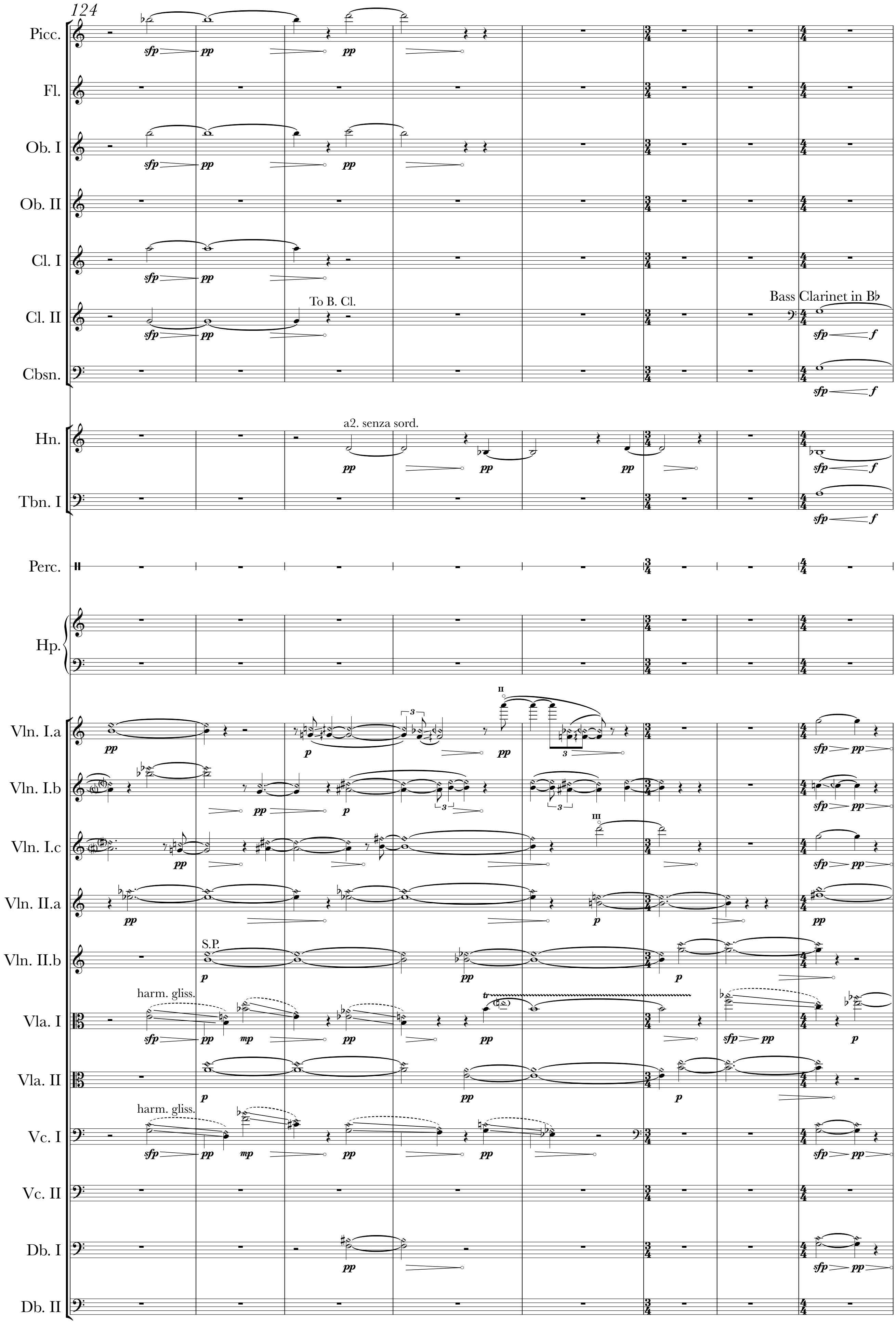
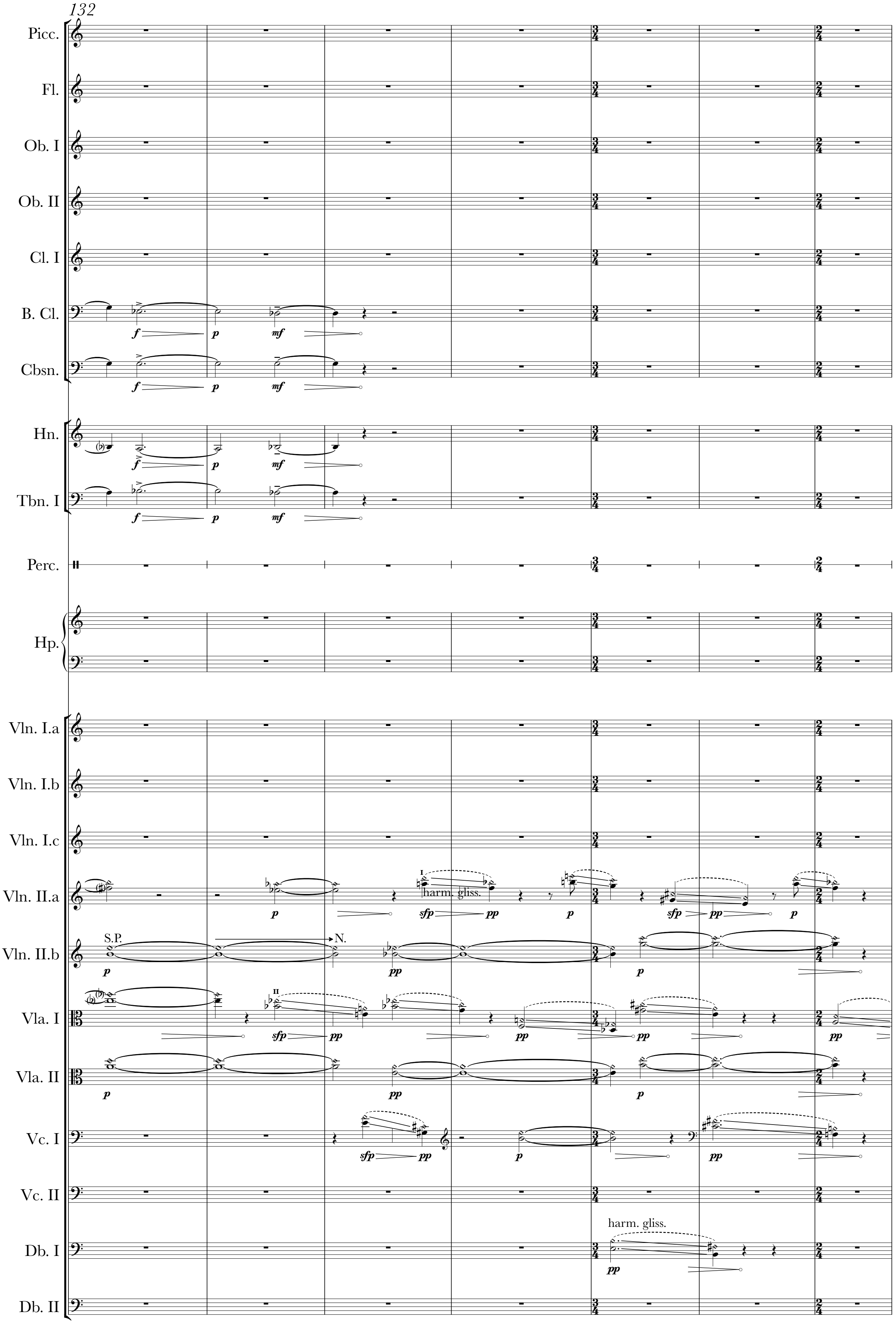
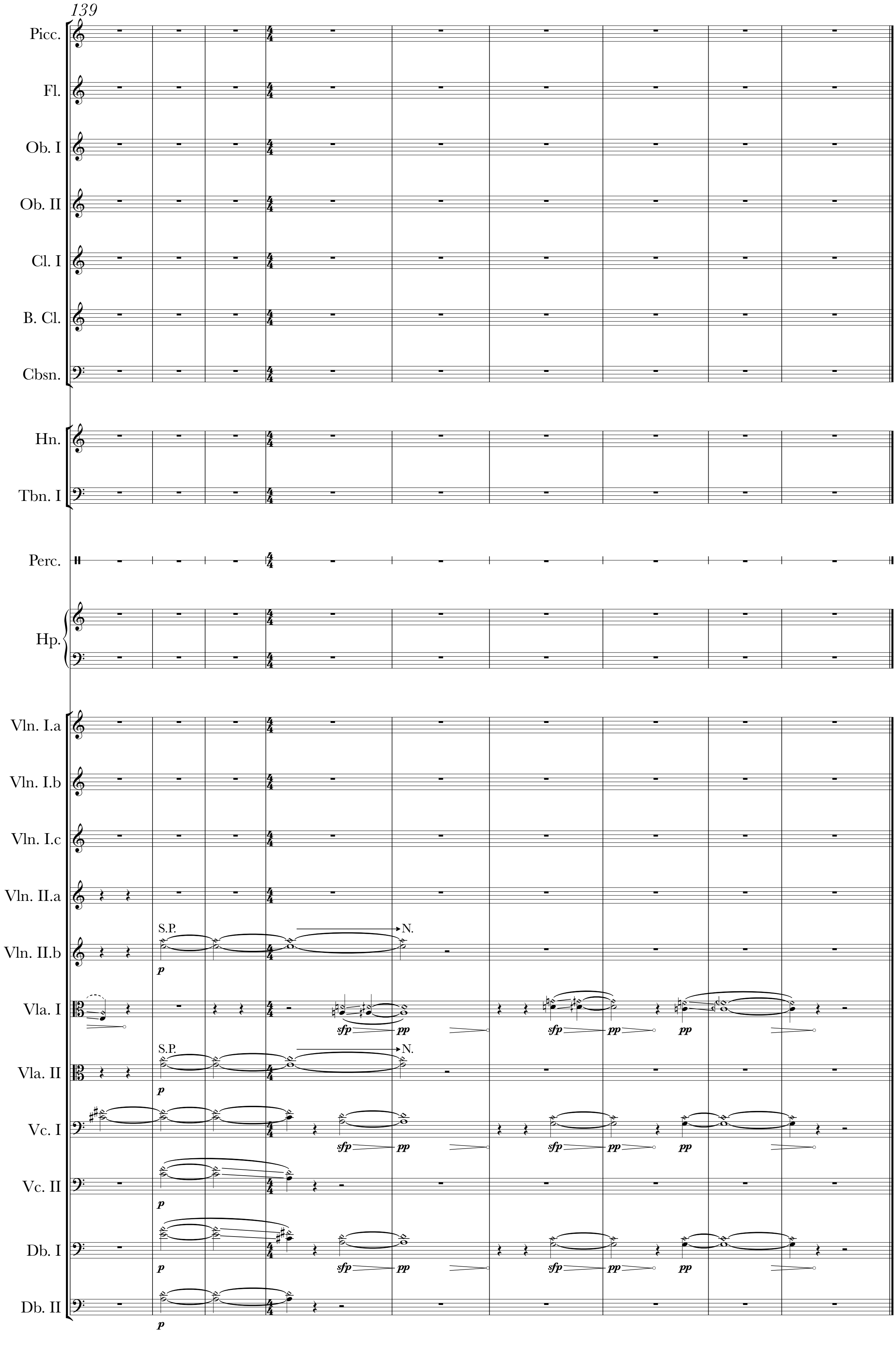
Fl.
Ob. I
Ob. II
Cl. I
B. Cl.
Clarinet in B♭
Bsn.
Hn.
Tbn. I
Perc.
Crotales
Hp.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II


117
Picc.
Fl.
Ob. I
Ob. II
Cl. I
Cl. II
Contrabassoon
Cbsn.
div. senza sord.
Hn.
Tbn. I
Bass drum
Lg. gong (bowed)
l.v.
Perc.
Hp.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
sfp
fff
f
pp
p
mf
ff
sffp
3


124
Picc.
Fl.
Ob. I
Ob. II
Cl. I
Cl. II
Cbsn.
Hn.
Tbn. I
Perc.
Hp.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
To B. Cl.
Bass Clarinet in B♭
a2. senza sord.
S.P.
harm. gliss.
harm. gliss.
sfp
pp
mp
p
f
3
II
III
tr


132
Picc.
Fl.
Ob. I
Ob. II
Cl. I
B. Cl.
Cbsn.
Hn.
Tbn. I
Perc.
Hp.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
f
p
mf
harm. gliss.
sfp
pp
S.P.
N.
I
II


139
Picc.
Fl.
Ob. I
Ob. II
Cl. I
B. Cl.
Cbsn.
Hn.
Tbn. I
Perc.
Hp.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
S.P.
N.
p
Vla. I
sfp
pp
Vla. II
S.P.
N.
p
Vc. I
sfp
pp
Vc. II
p
Db. I
p
sfp
pp
Db. II
p

Christopher Bayley

Reflections on distance

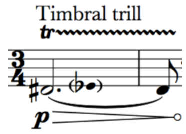
for Bass Clarinet and Piano

Performance Notes

Bass clarinet

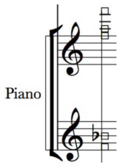
Subtone

Extremely soft ***pppp*** tone.



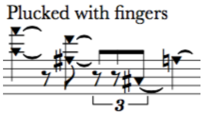
Timbral trill. Trill between two notes of the same pitch using alternative fingerings.

Piano



Silently press the indicated notes and the sostenuto pedal.

The sostenuto pedal and sustain pedal may be simultaneously used. Notes may be selectively sustained by holding the sostenuto pedal and lifting the sustain pedal.



Notes with triangular note heads should be plucked with fingers inside of the piano.

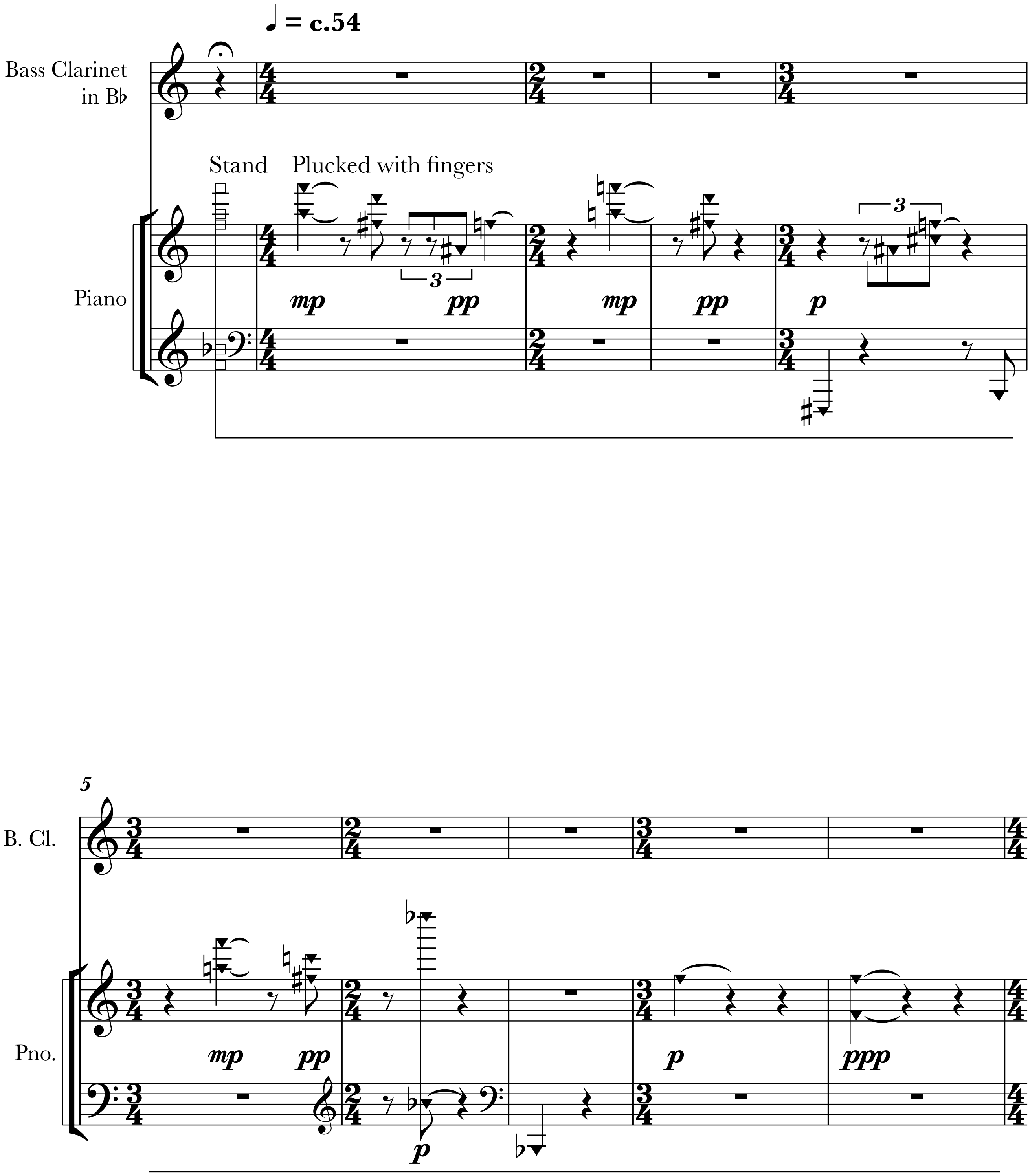
Stand/Sit

The performer is instructed to stand or sit so that they might play plucked notes within the piano or played notes as written.

Score is Transposed

Reflections on distance

Christopher Bayley


♩ = c.54
Bass Clarinet in B♭
Stand
Plucked with fingers
Piano
mp
pp
mp
pp
p
3
3
5
B. Cl.
Pno.
mp
pp
p
p
ppp

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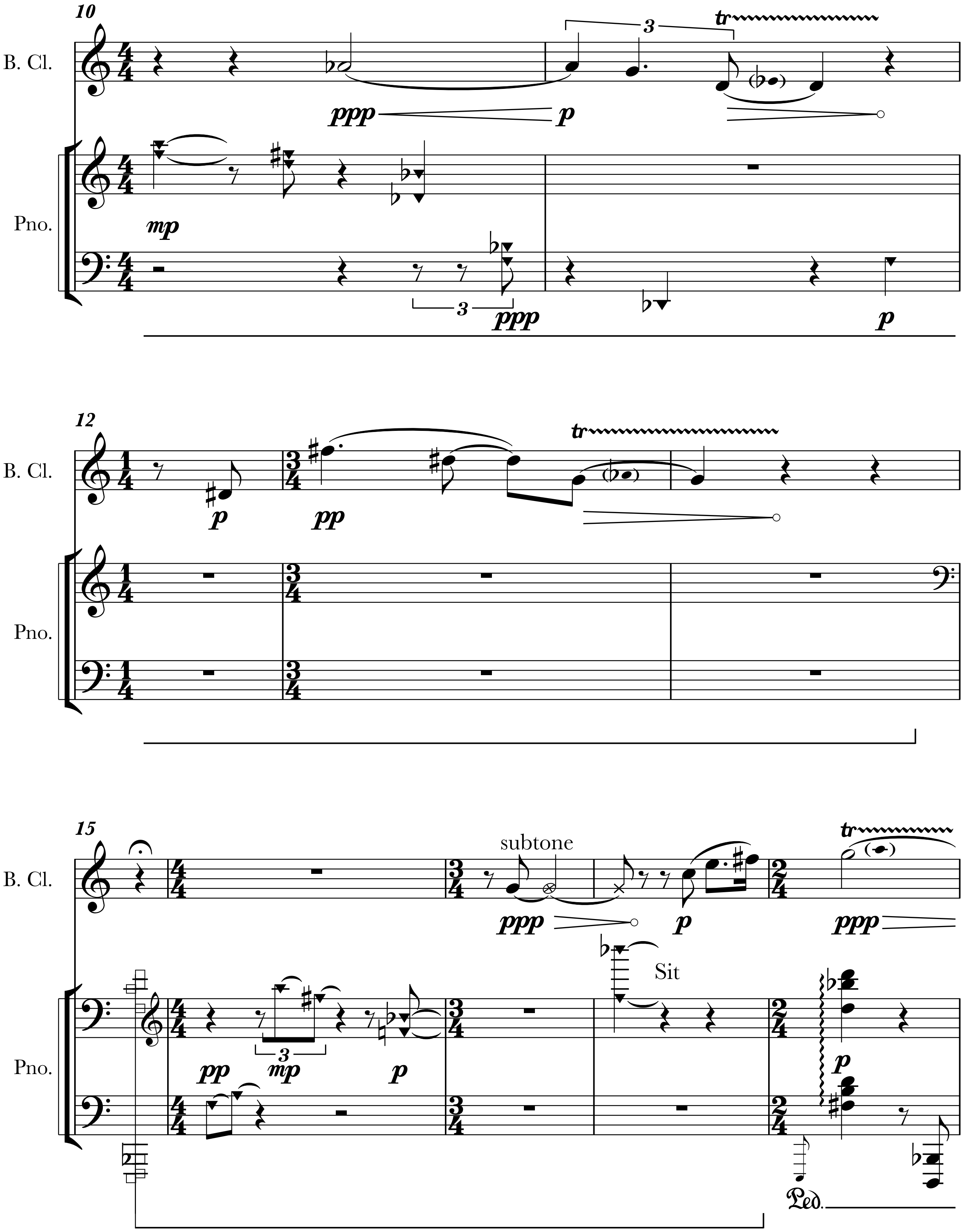
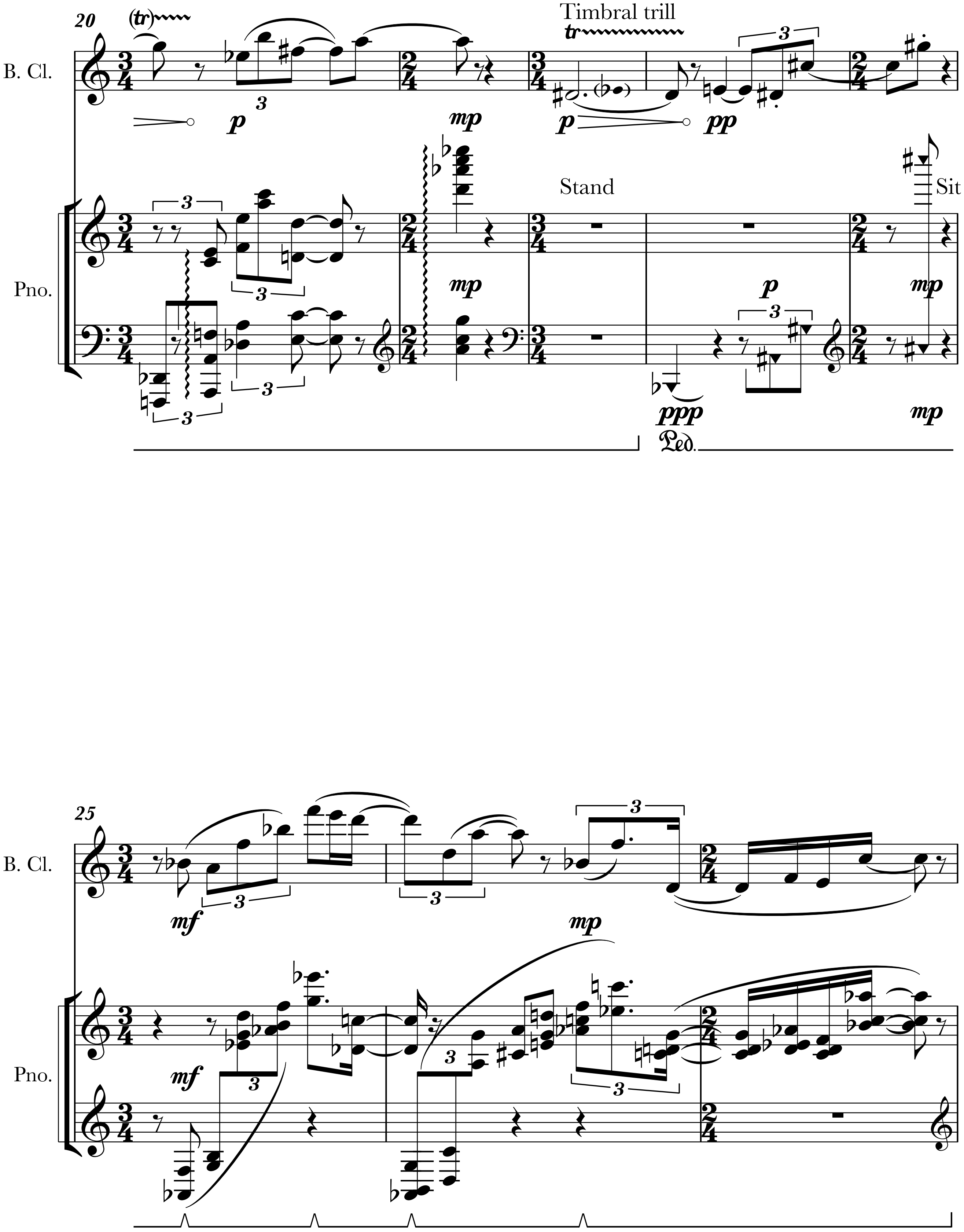
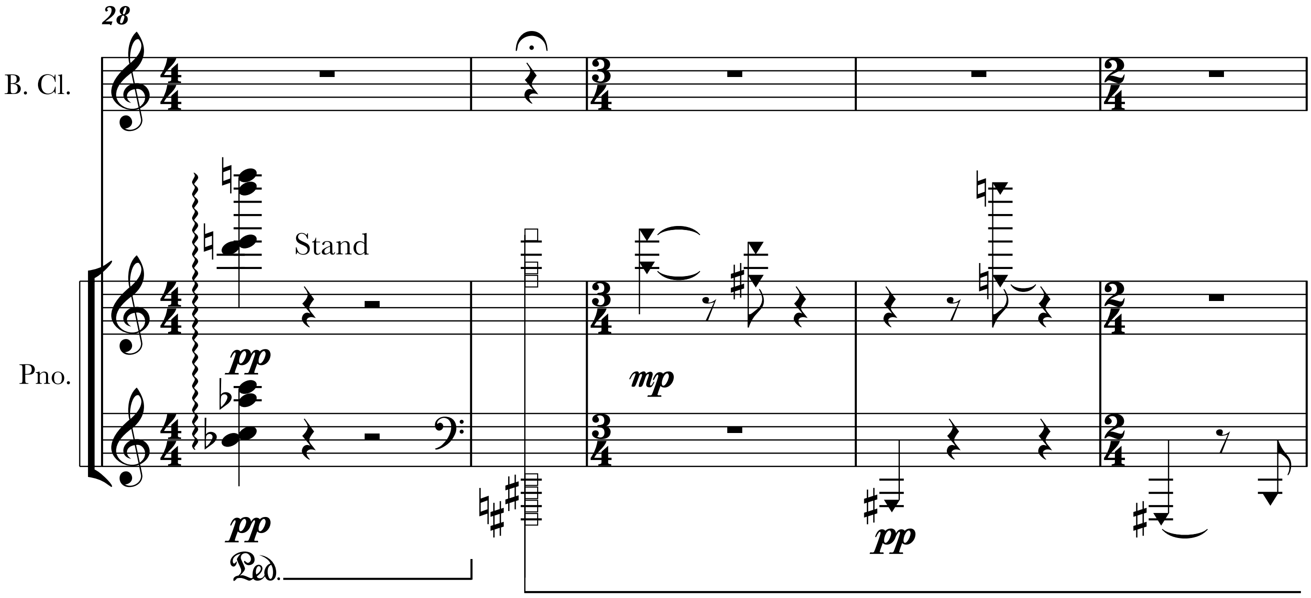
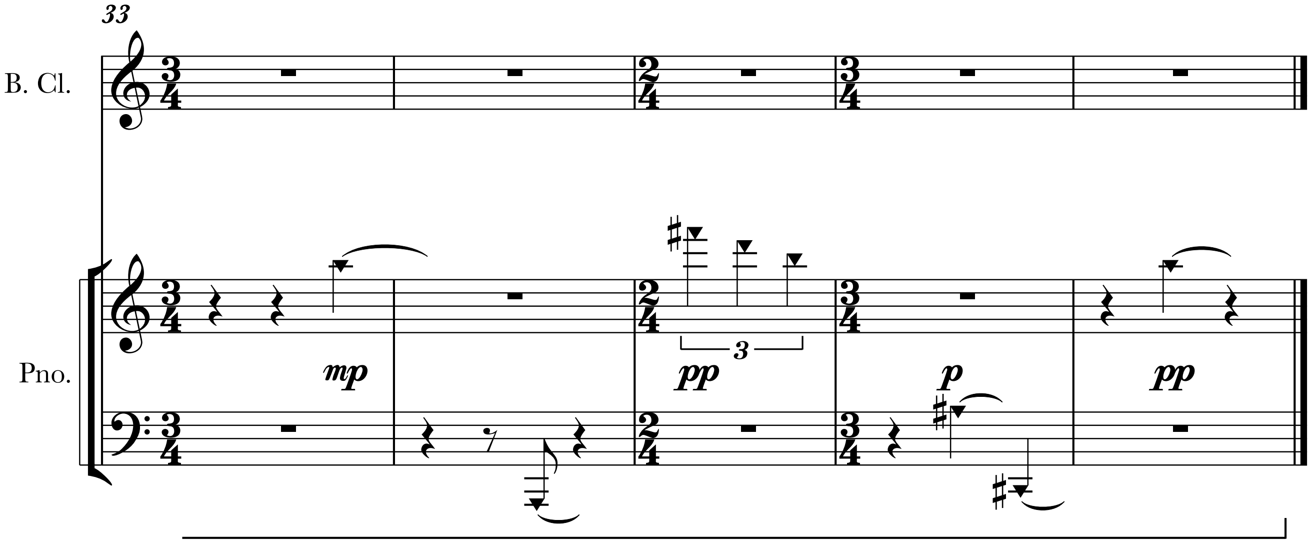

10
B. Cl.
Pno.
3
tr
ppp
p
mp
ppp
p
12
tr
p
pp
15
subtone
ppp
p
tr
ppp
Sit
pp
3
mp
p
p
Ped.


20
(tr)
Timbral trill
tr
B. Cl.
p
mp
p
pp
Stand
Sit
Pno.
mp
p
ppp
Ped.
25
mf
mp


28
B. Cl.
Pno.
Stand
pp
pp
mp
pp
Ped.


33
B. Cl.
Pno.
mp
3
pp
p
pp

Christopher Bayley

Of windborne echoes

For solo piano

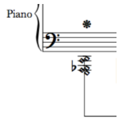
Performance Notes

General

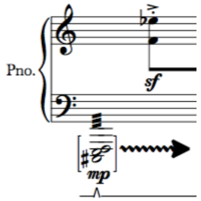
Tempo is to be determined by the performer throughout the piece. The metronome markings given mere suggestions. The performer may play each section at the tempo of their choosing.

Duration is represented spatially in the score.

The length of the work may vary between 12—15 minutes.



Silently press the indicated notes and the sostenuto pedal.
The sostenuto pedal and sustain pedal may be simultaneously used. Notes may be selectively sustained by holding the sostenuto pedal and lifting the sustain pedal.



Bracketed notes with tremolo lines indicate that a performer should tremolo in a rapid, irregular pattern.

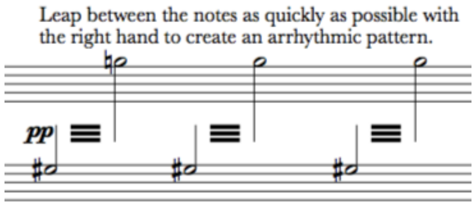
The length of the tremolo will be indicated by a wavy line capped with an arrow.

This symbol indicates a long pause. The length of the pause is determined by the player.

5–8 seconds is often appropriate.

This symbol indicates a short pause. The length of the pause is determined by the player.

1-2 seconds is often appropriate.


Leap between the notes as quickly as possible with the right hand to create an arrhythmic pattern.
pp

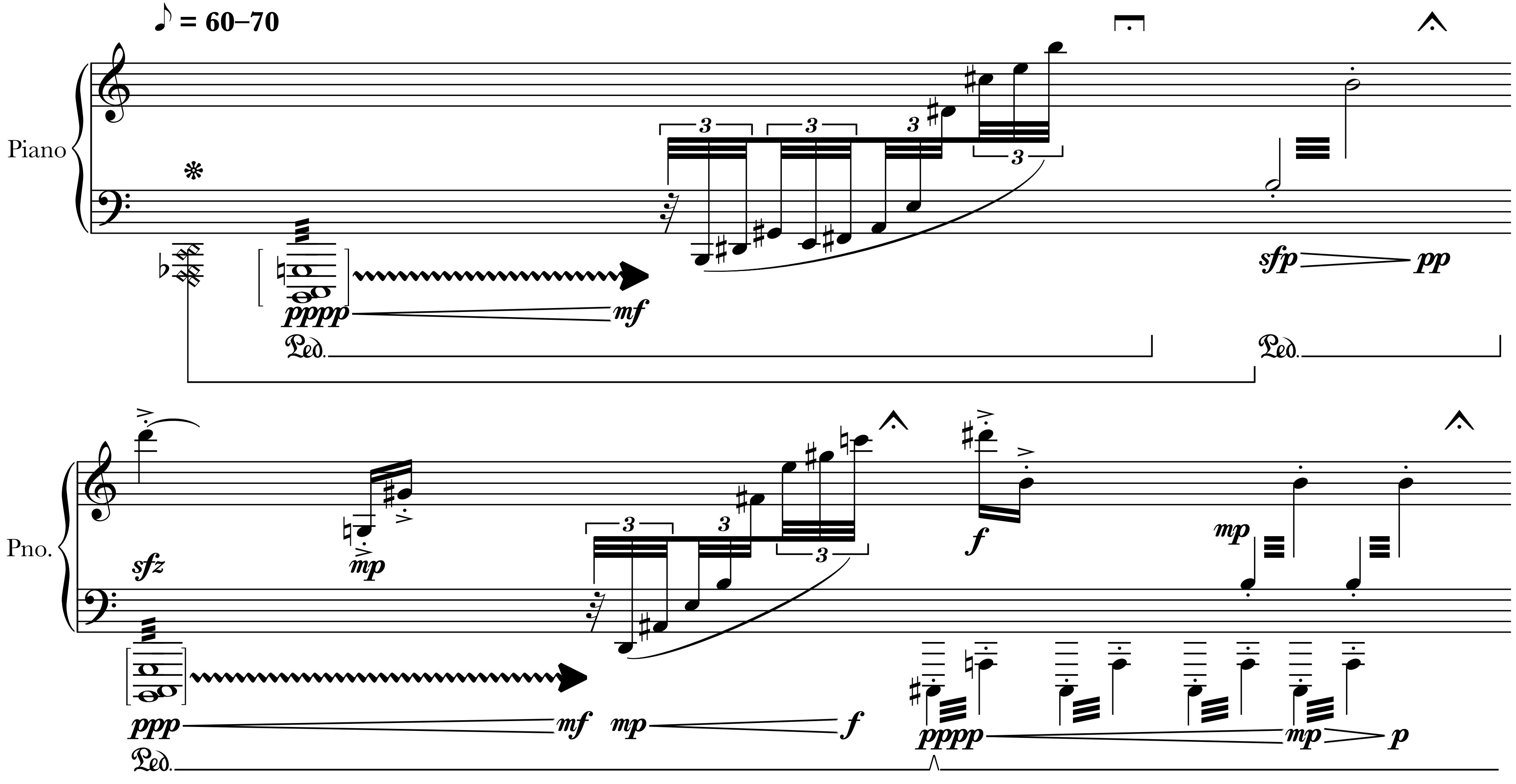
The performer will at times be required to leap between the first and fifth finger on the right hand.

It is also possible to leap between the second and fifth finger if that is more comfortable.

The sound should resemble an irregular, quick tremolo.

Of windborne echoes

Christopher Bayley


♪ = 60–70
Piano
pppp
mf
sfp
pp
Ped.
Ped.
Pno.
sfz
mp
ppp
mf
mp
f
f
mp
pppp
mp
p
Ped.

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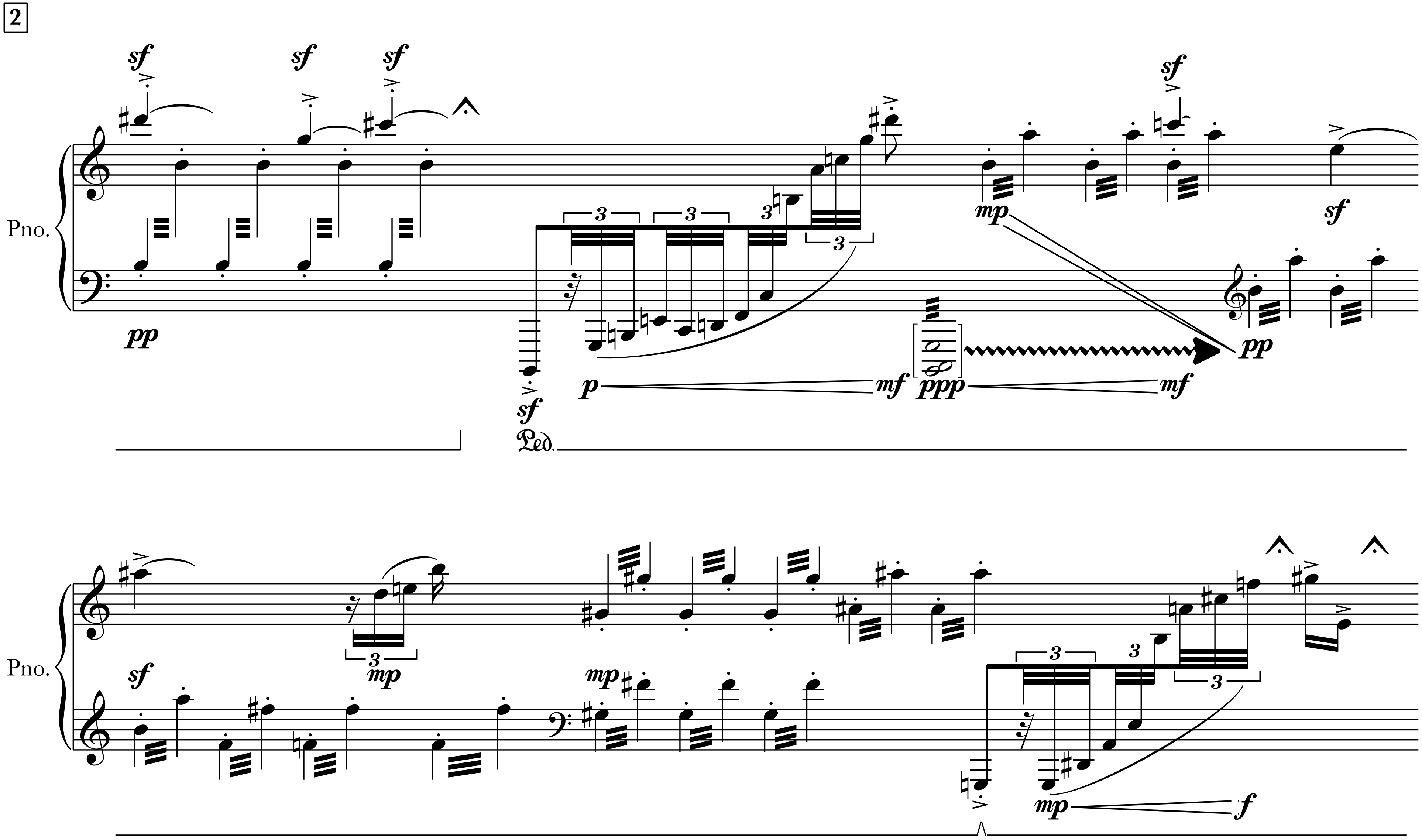
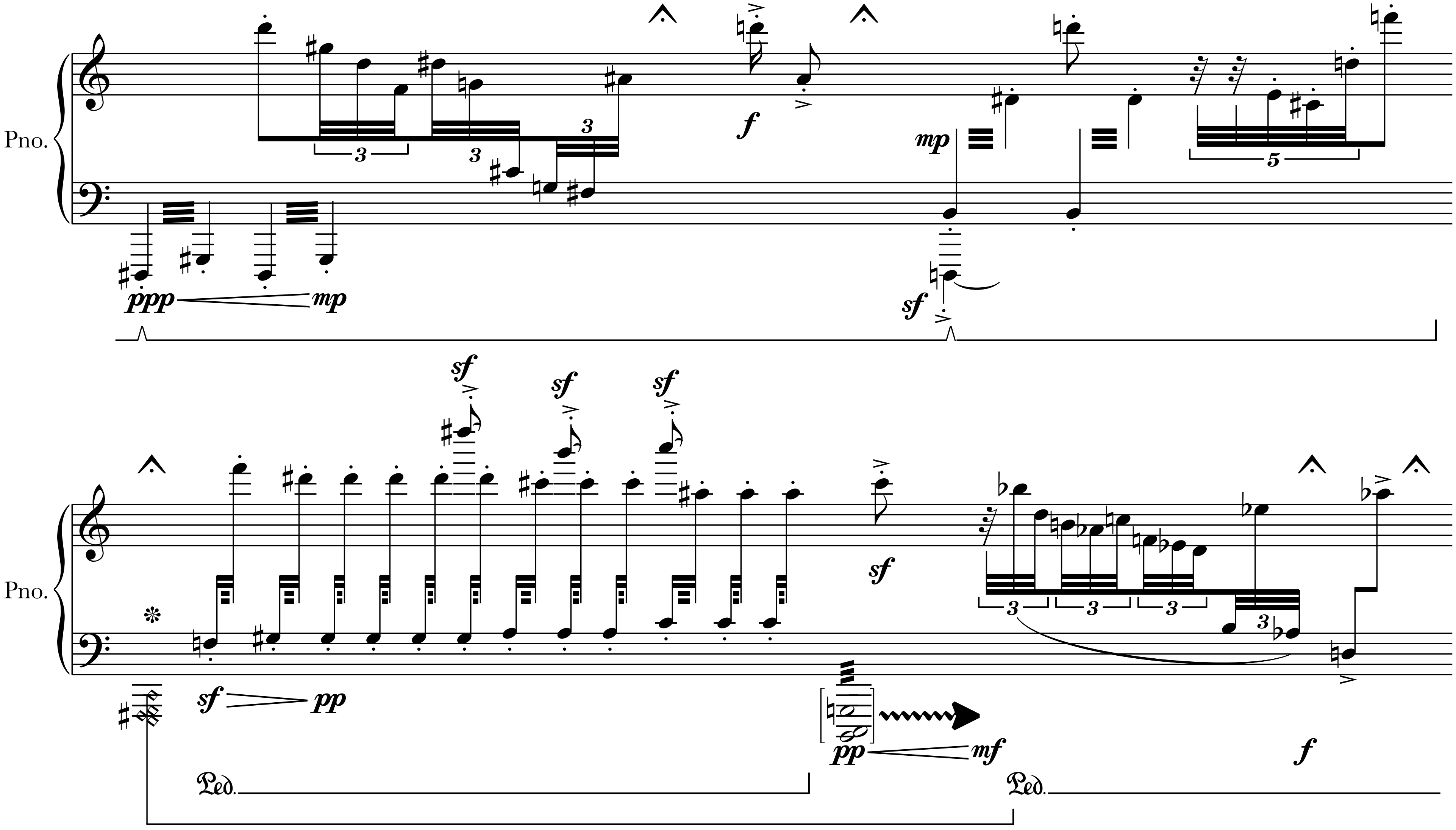
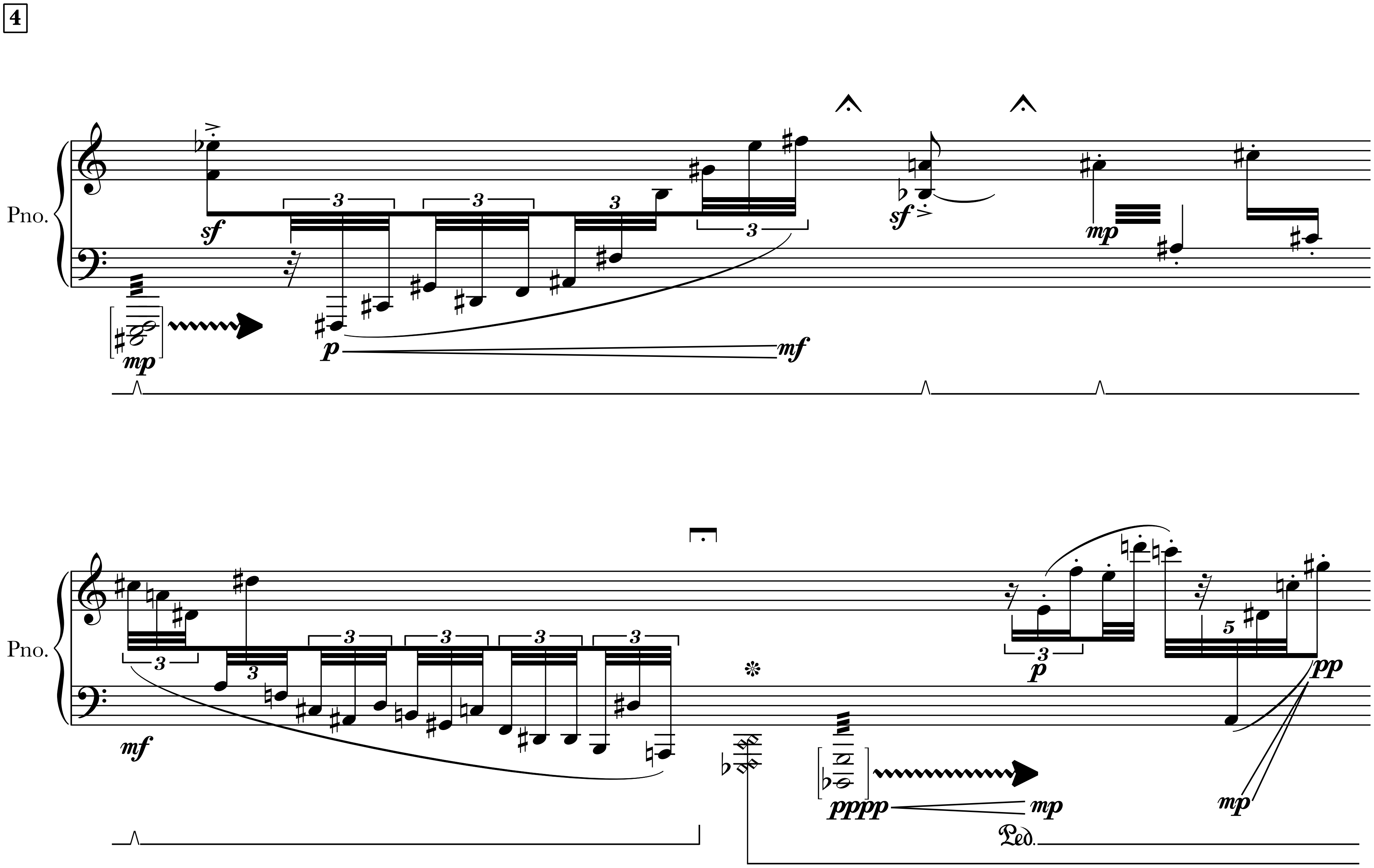
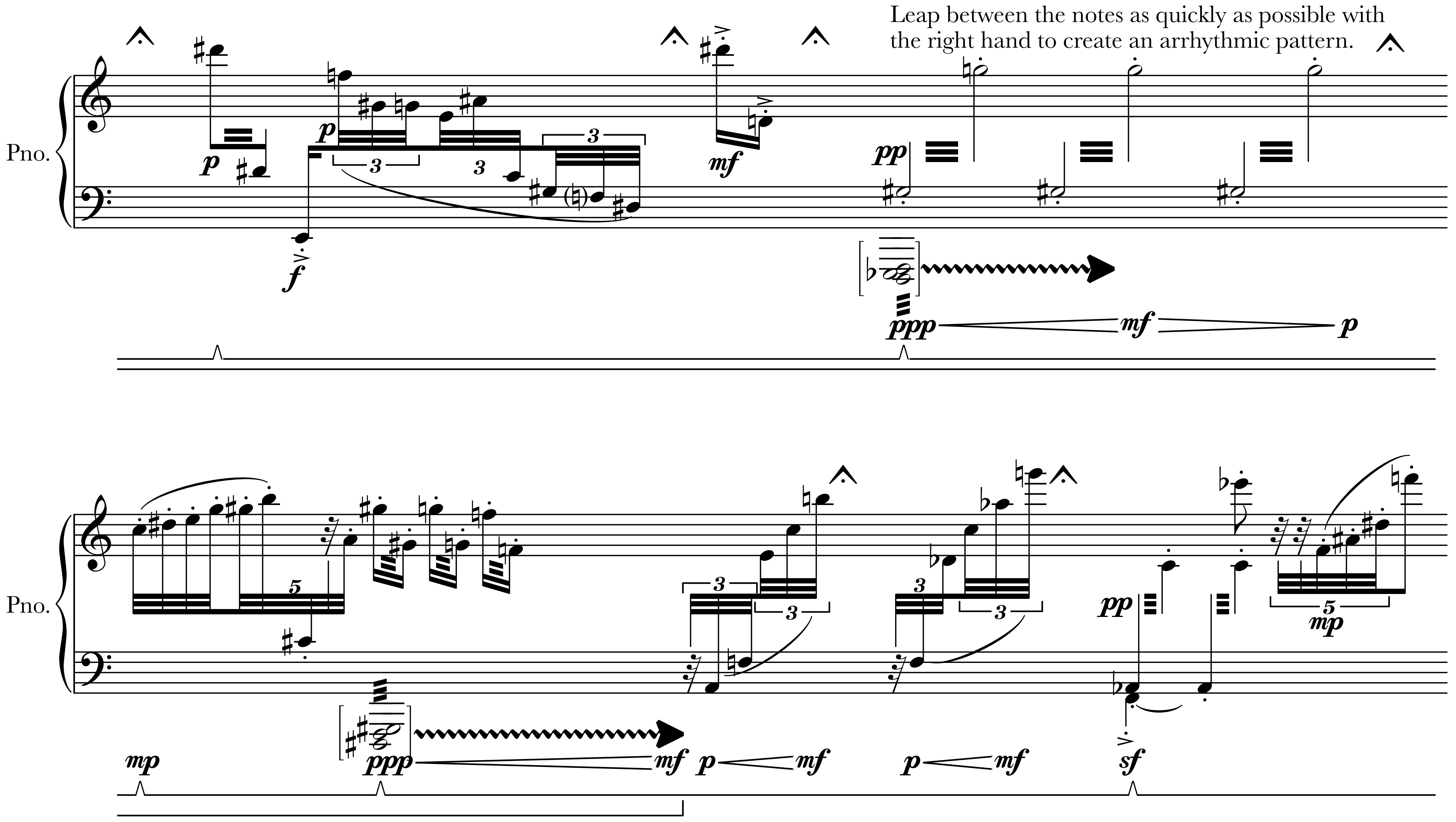
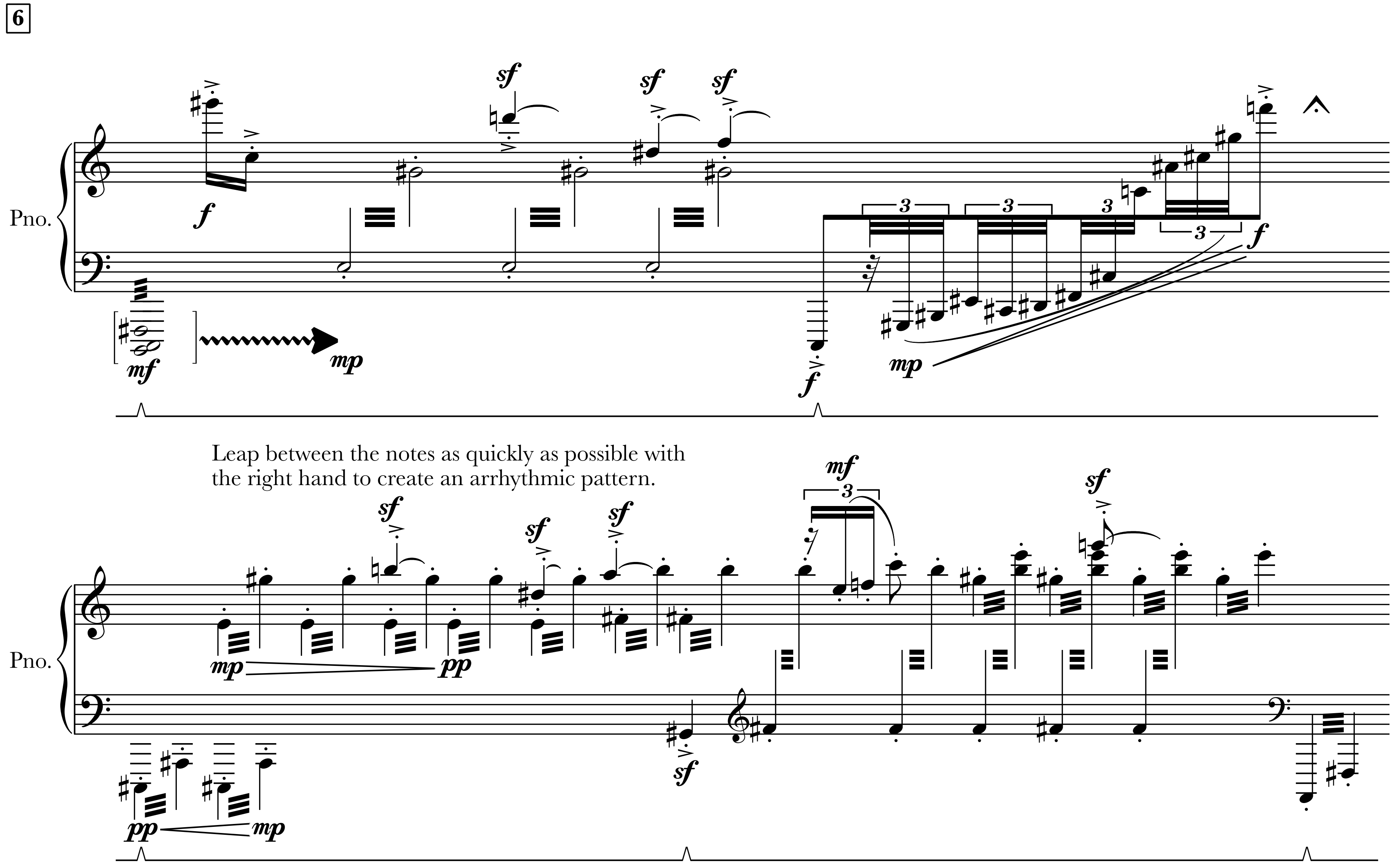

2
Pno.
sf
sf
sf
pp
3
3
3
3
sf
p
mf
ppp
mf
mp
pp
sf
sf
Ped.
Pno.
sf
3
mp
mp
3
3
3
mp
f

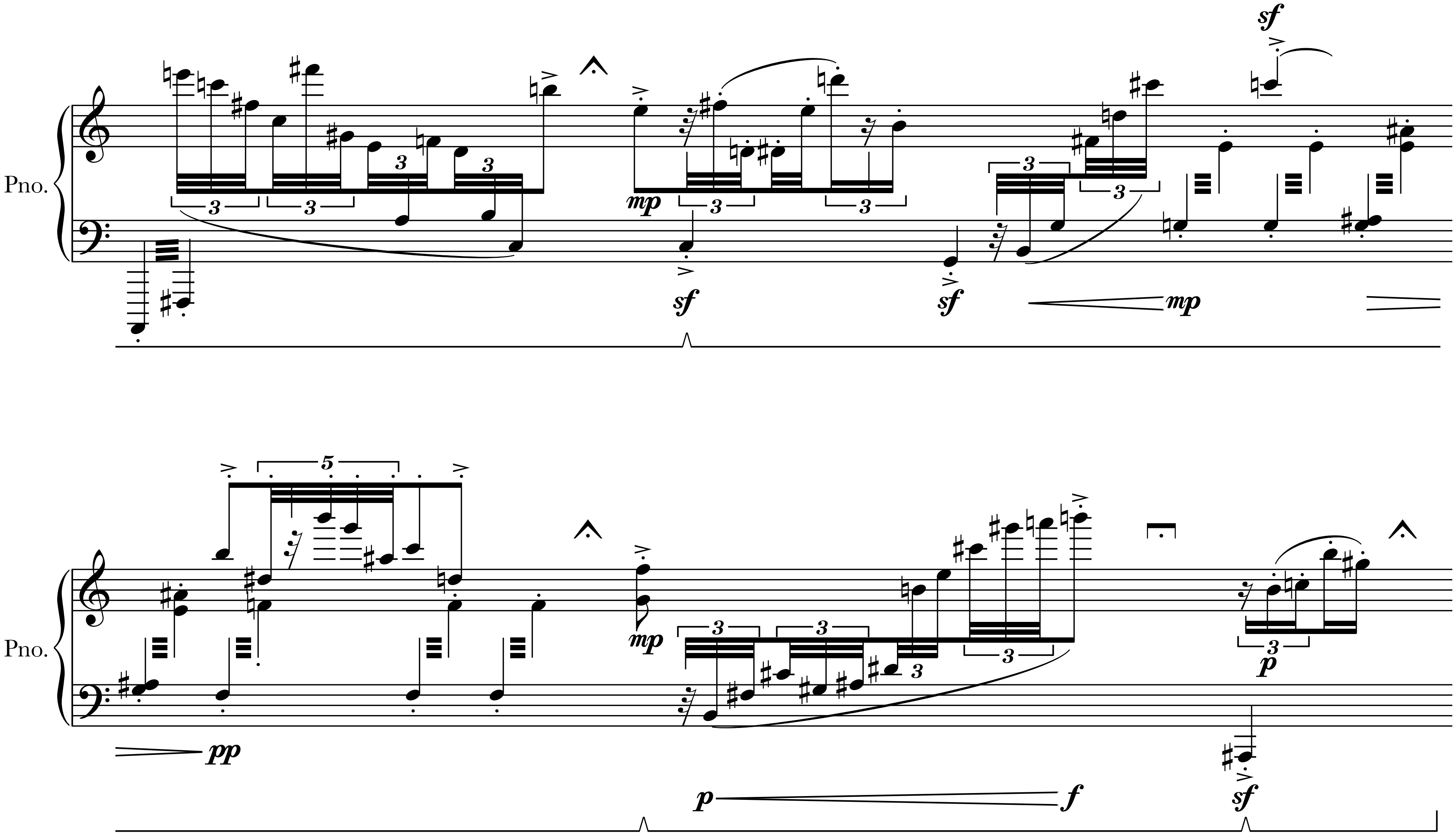

Pno.
3
3
3
ppp
mp
f
mp
5
sf
Pno.
sf
sf
sf
sf
pp
sf
3
3
3
3
pp
mf
f
Ped.
Ped.

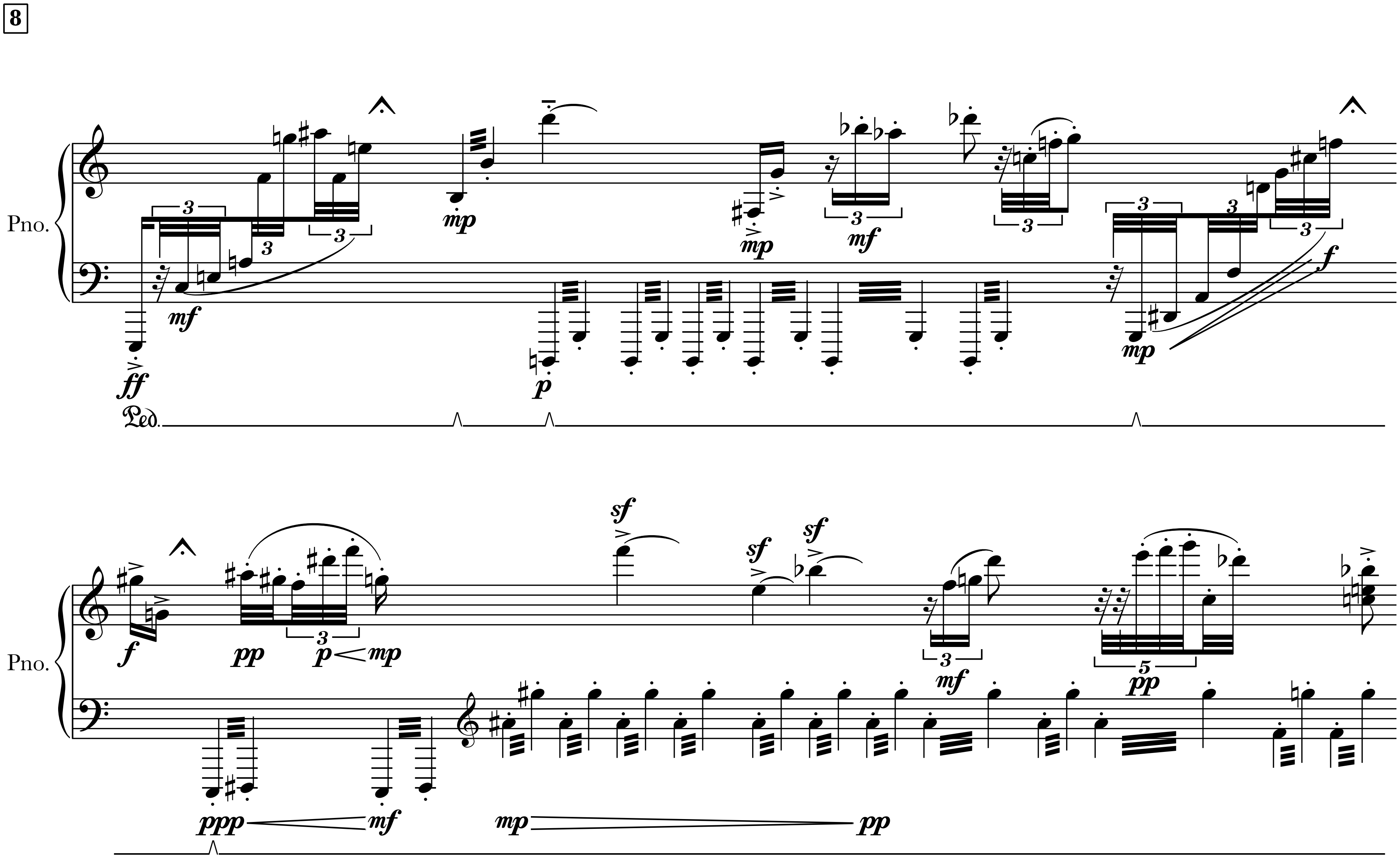

4
Pno.
sf
3
3
3
3
mp
p
mf
sf
mp
Pno.
3
3
3
3
3
3
mf
pppp
mp
Ped.
3
p
5
pp
mp

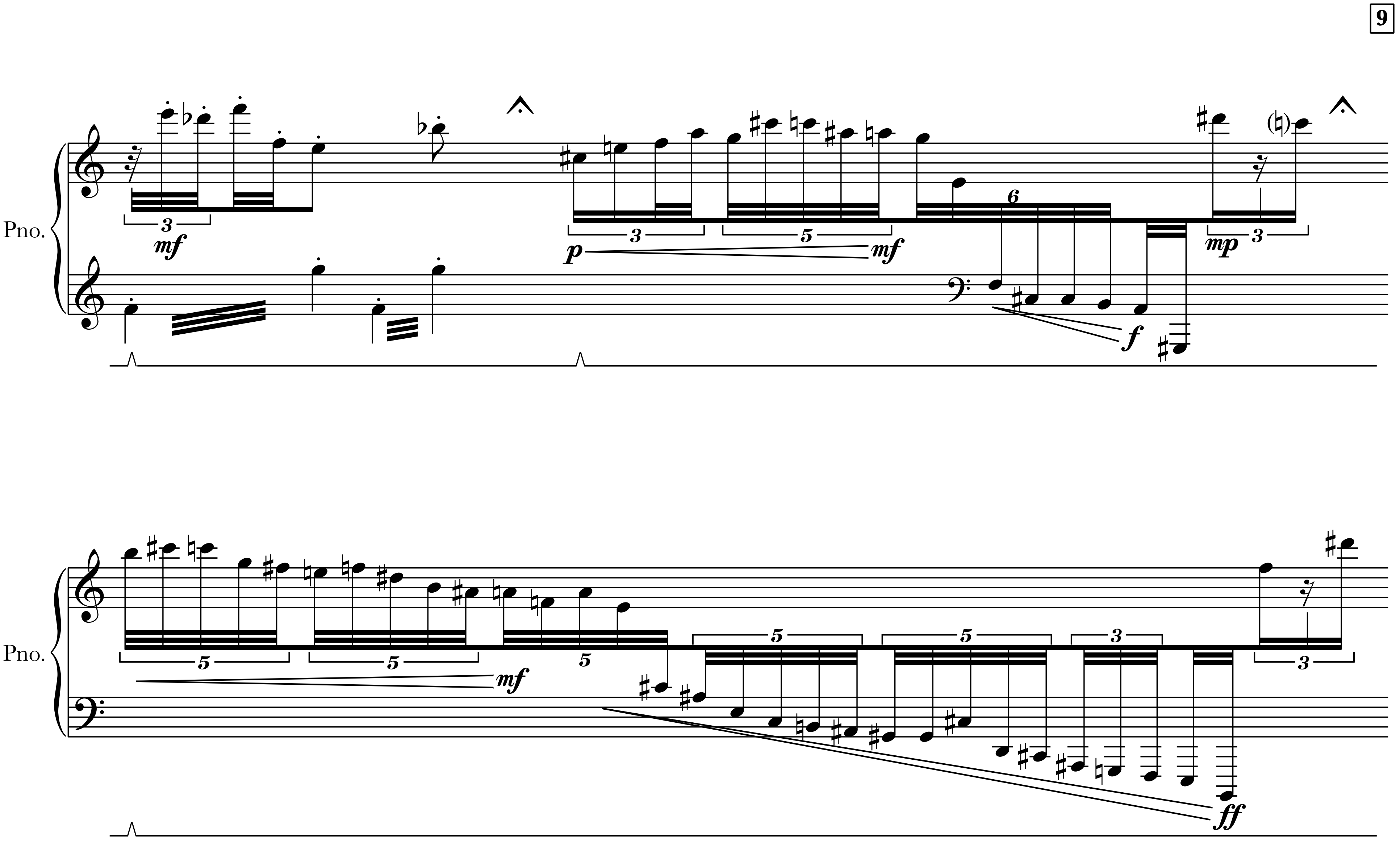

Leap between the notes as quickly as possible with the right hand to create an arrhythmic pattern.
Pno.
p
f
p
3
3
3
mf
pp
ppp
mf
p
Pno.
5
mp
ppp
mf
3
3
p
mf
3
3
p
mf
pp
sf
5
mp

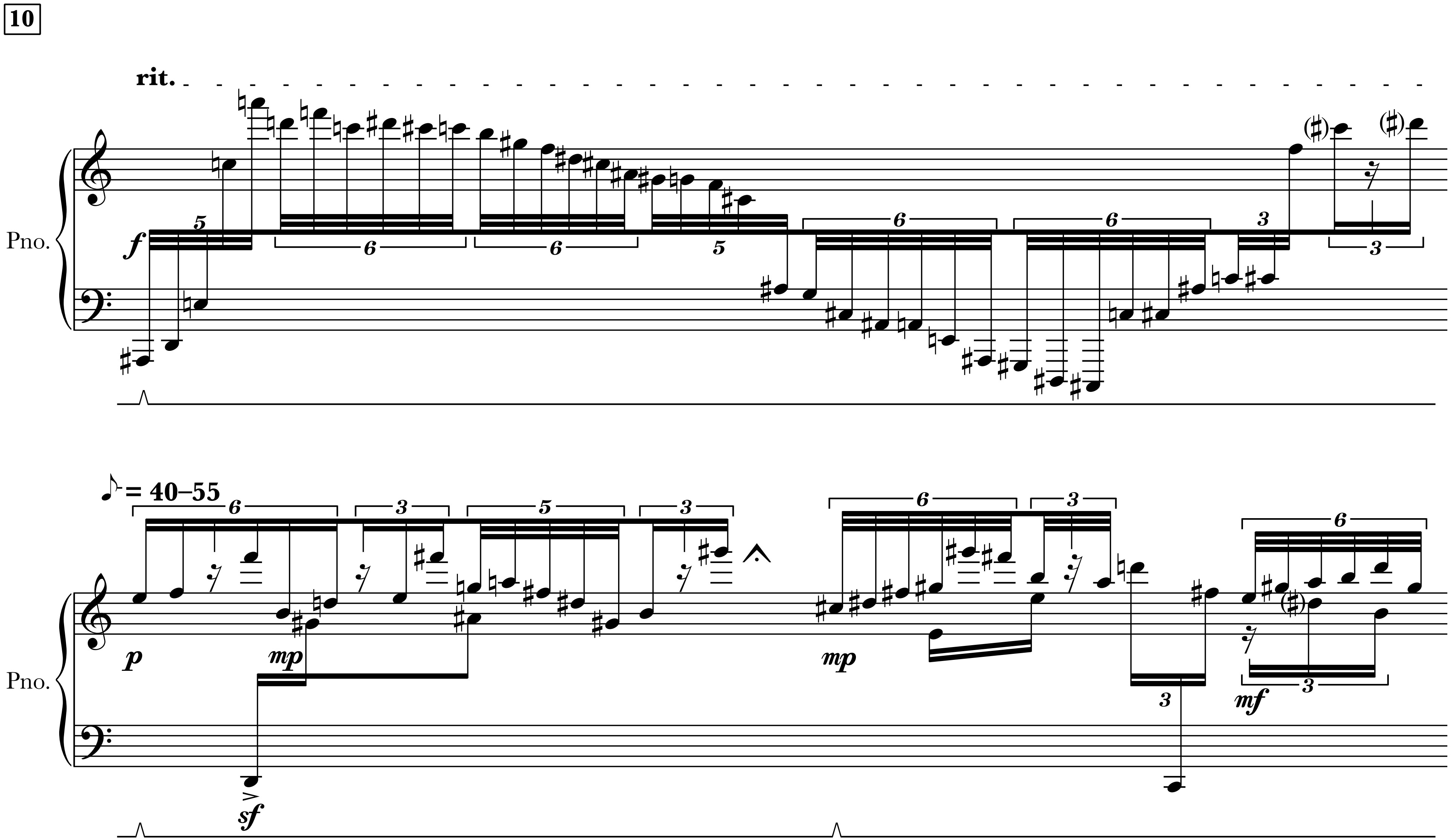

6
Pno.
f
sf
sf
sf
mf
mp
f
mp
f
Pno.
mp
pp
sf
sf
sf
mf
3
sf
pp
mp
sf

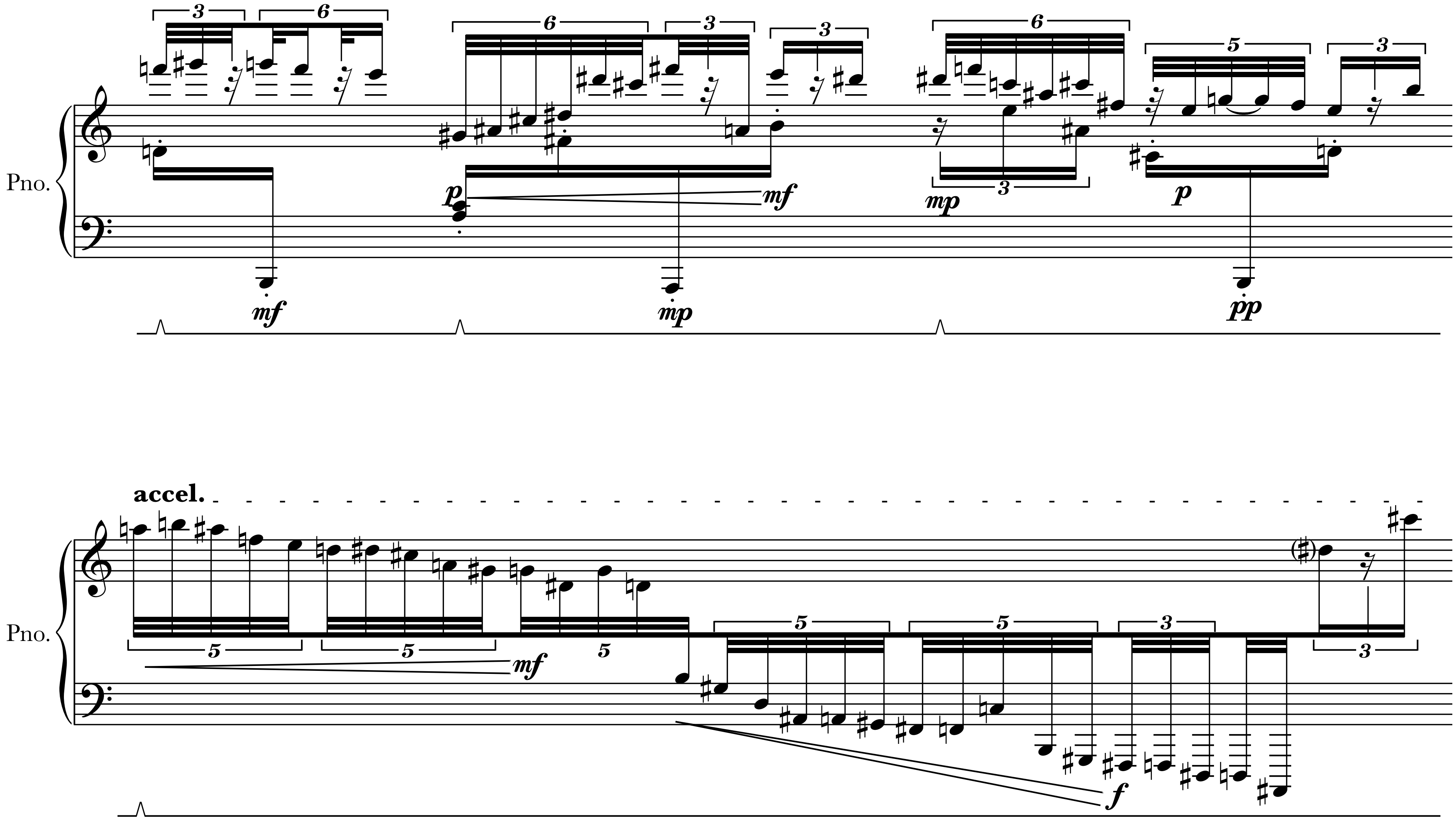
Leap between the notes as quickly as possible with the right hand to create an arrhythmic pattern.

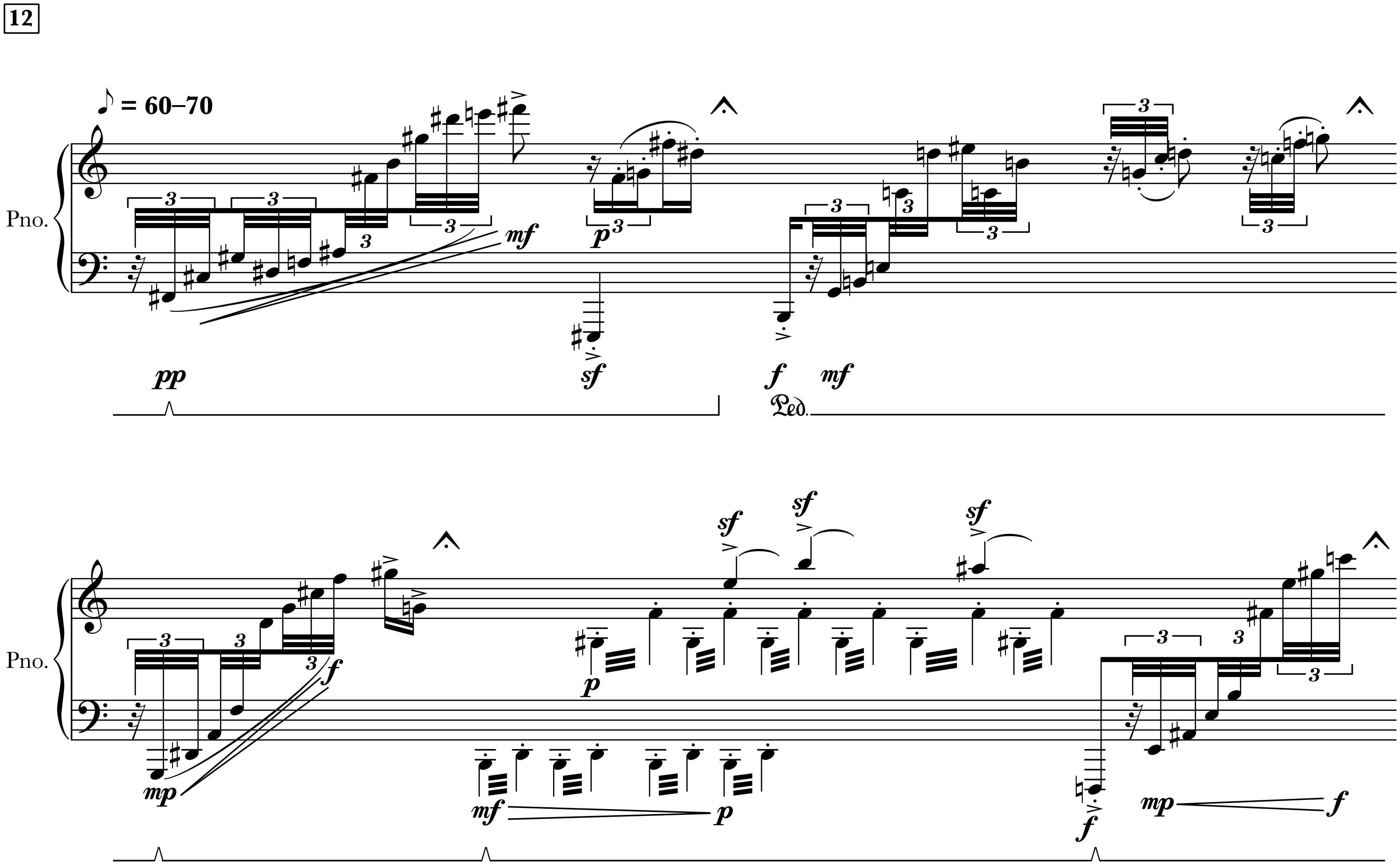

Pno.
3
mp
sf
mp
5
pp
p
f
sf
p

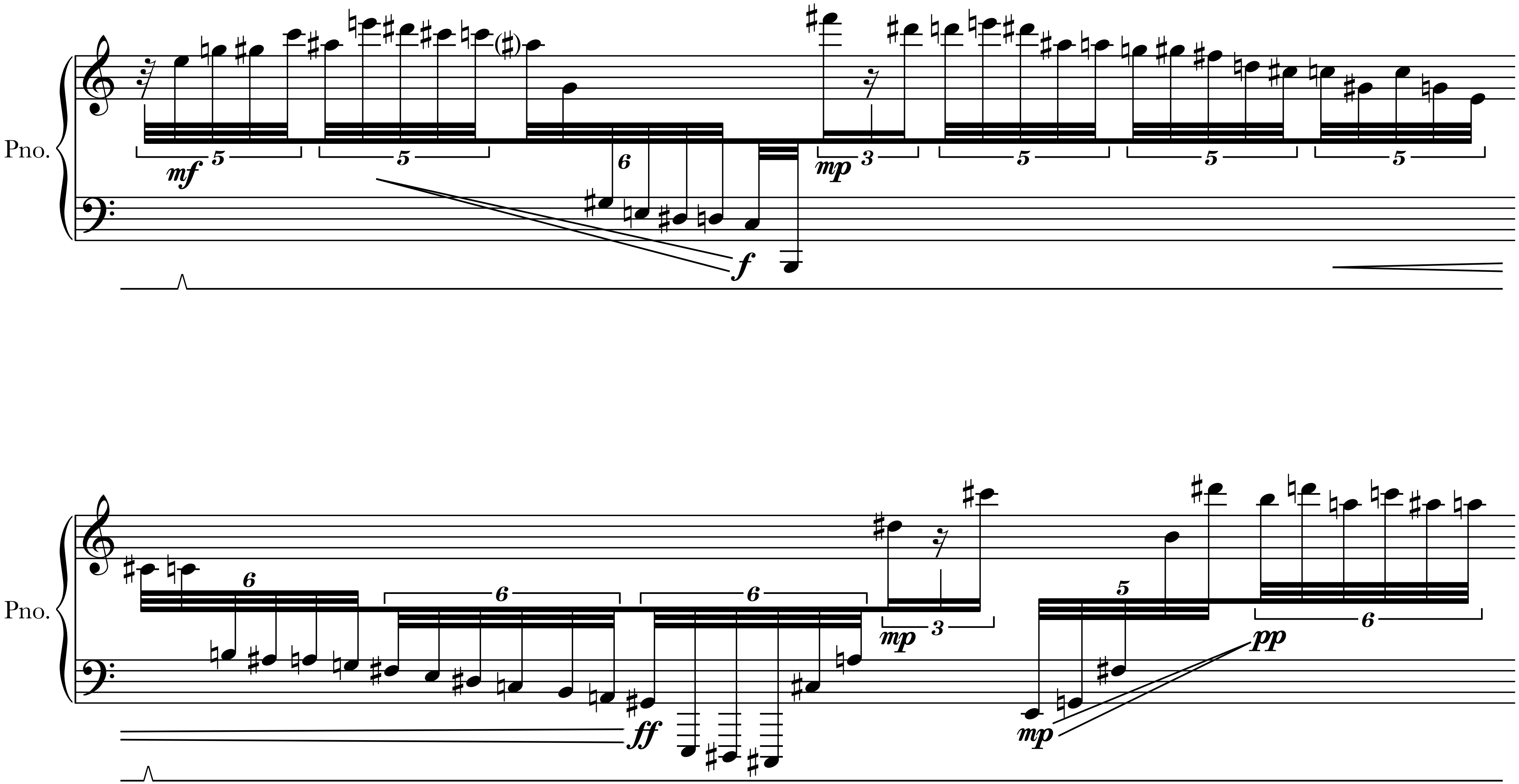

8
Pno.
ff
mf
3
mp
p
mp
mf
3
mp
f
Ped.
Pno.
f
pp
3
p
mp
sf
sf
sf
3
mf
5
pp
ppp
mf
mp
pp

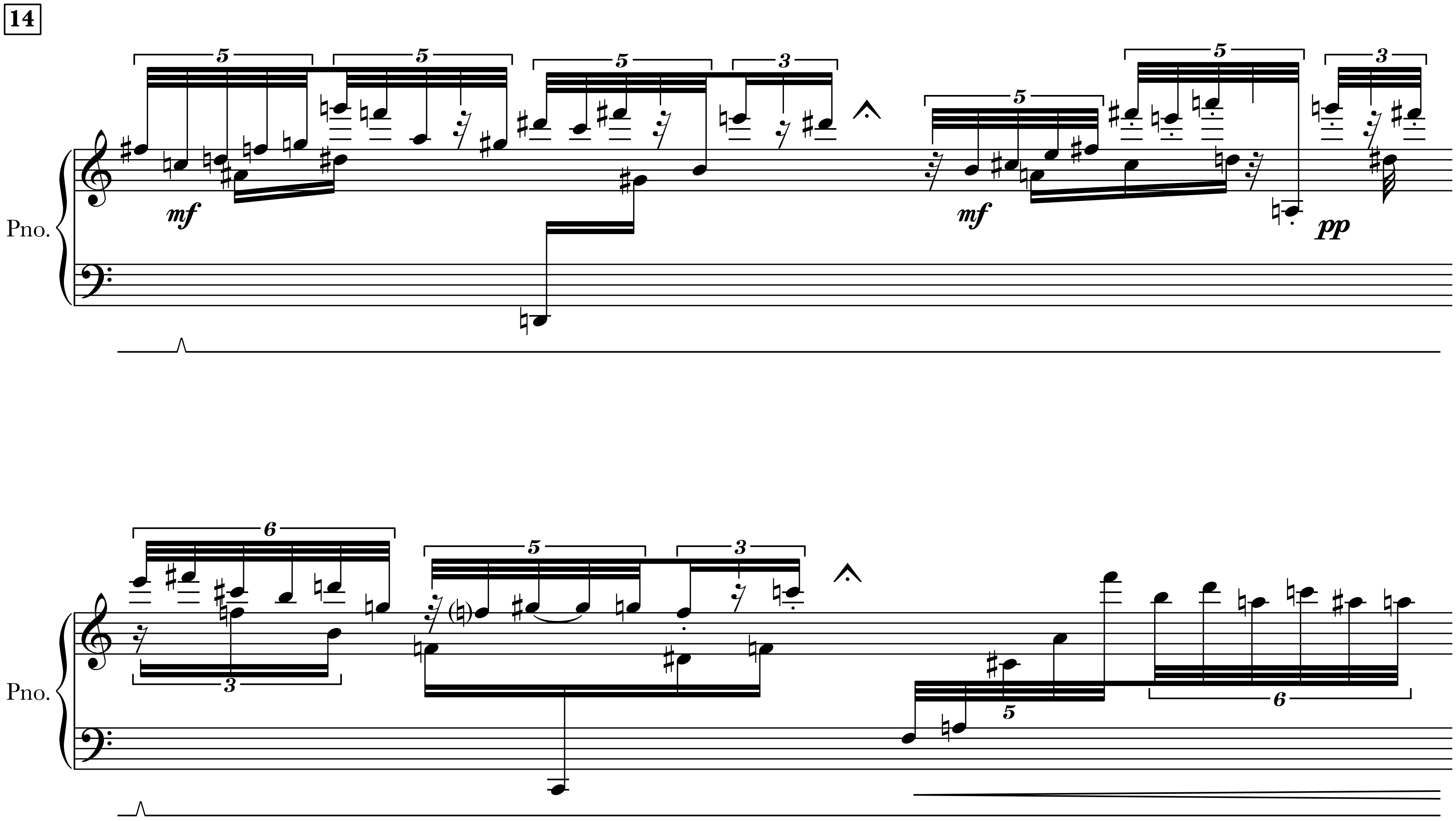

9
Pno.
3
mf
p
3
5
mf
6
f
mp
3
Pno.
5
5
5
mf
5
5
3
3
ff

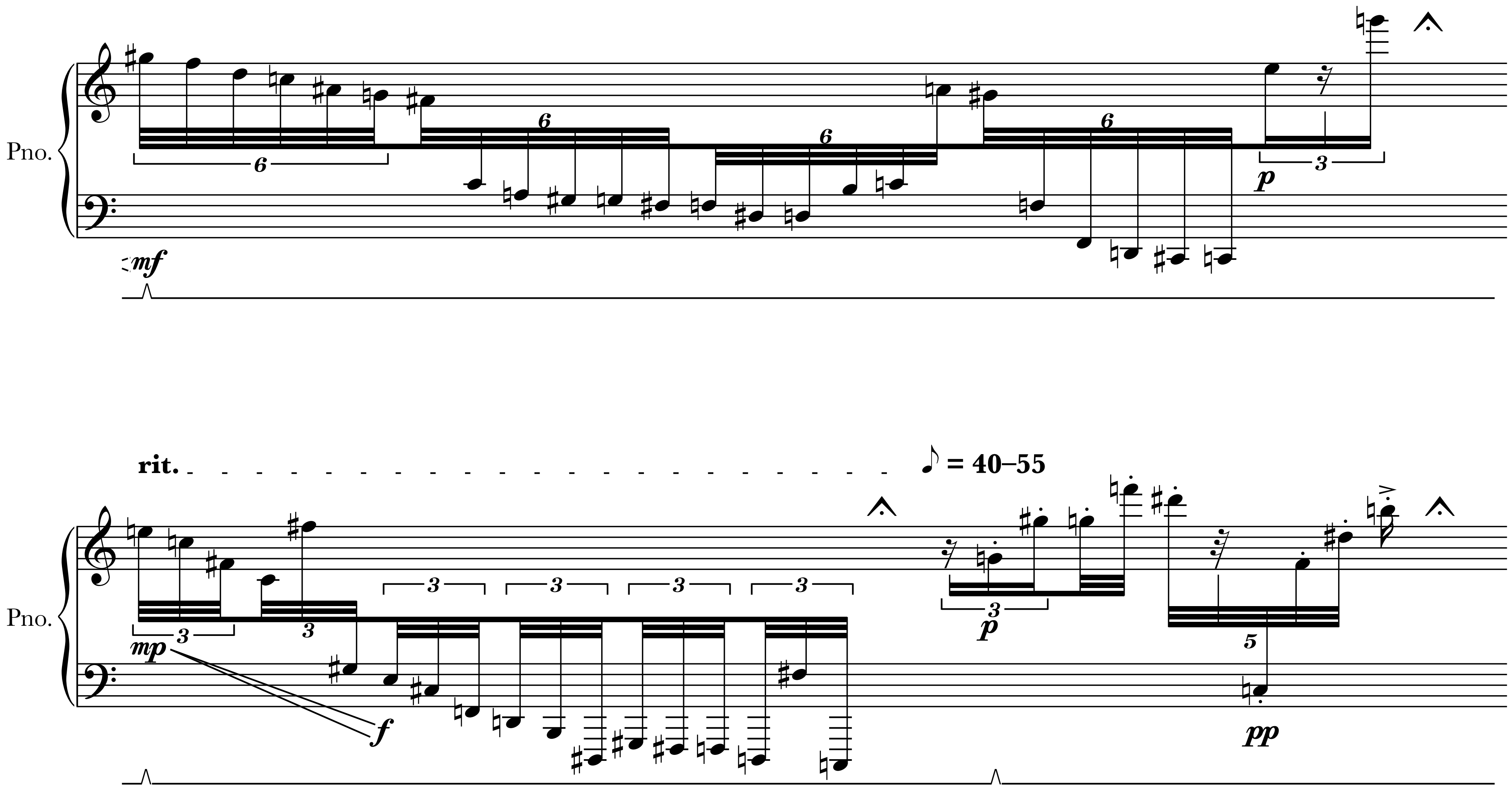

10
rit.
Pno.
f
5
6
6
5
6
6
3
(♯)
(♯)
3
♪ = 40–55
6
3
5
3
p
mp
sf
Pno.
6
3
mp
3
6
(♮)
3
mf

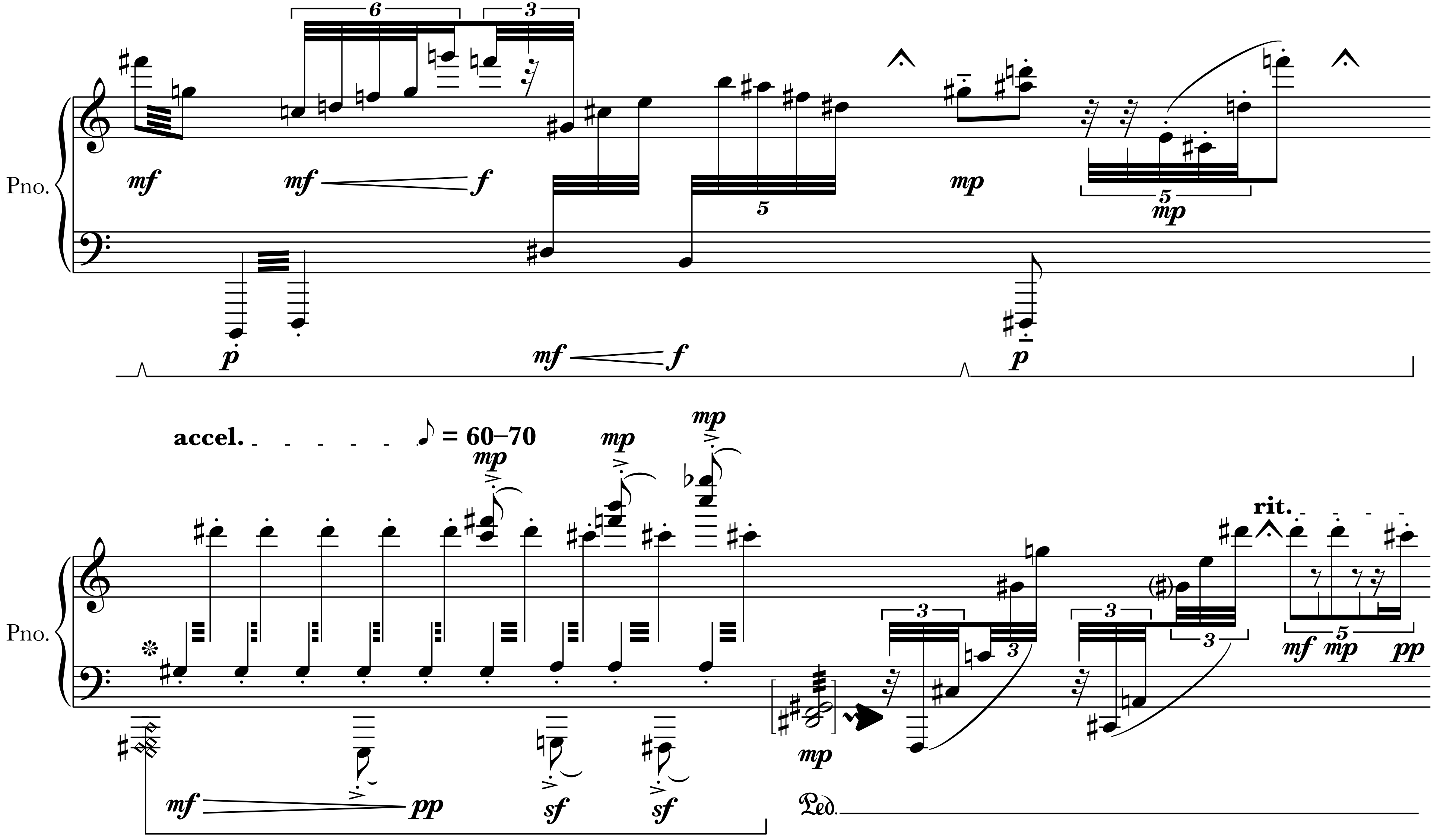

Pno.
3
6
6
3
3
6
5
3
p
mf
mp
p
mf
mp
pp
Pno.
accel.
5
5
5
5
5
3
3
mf
f

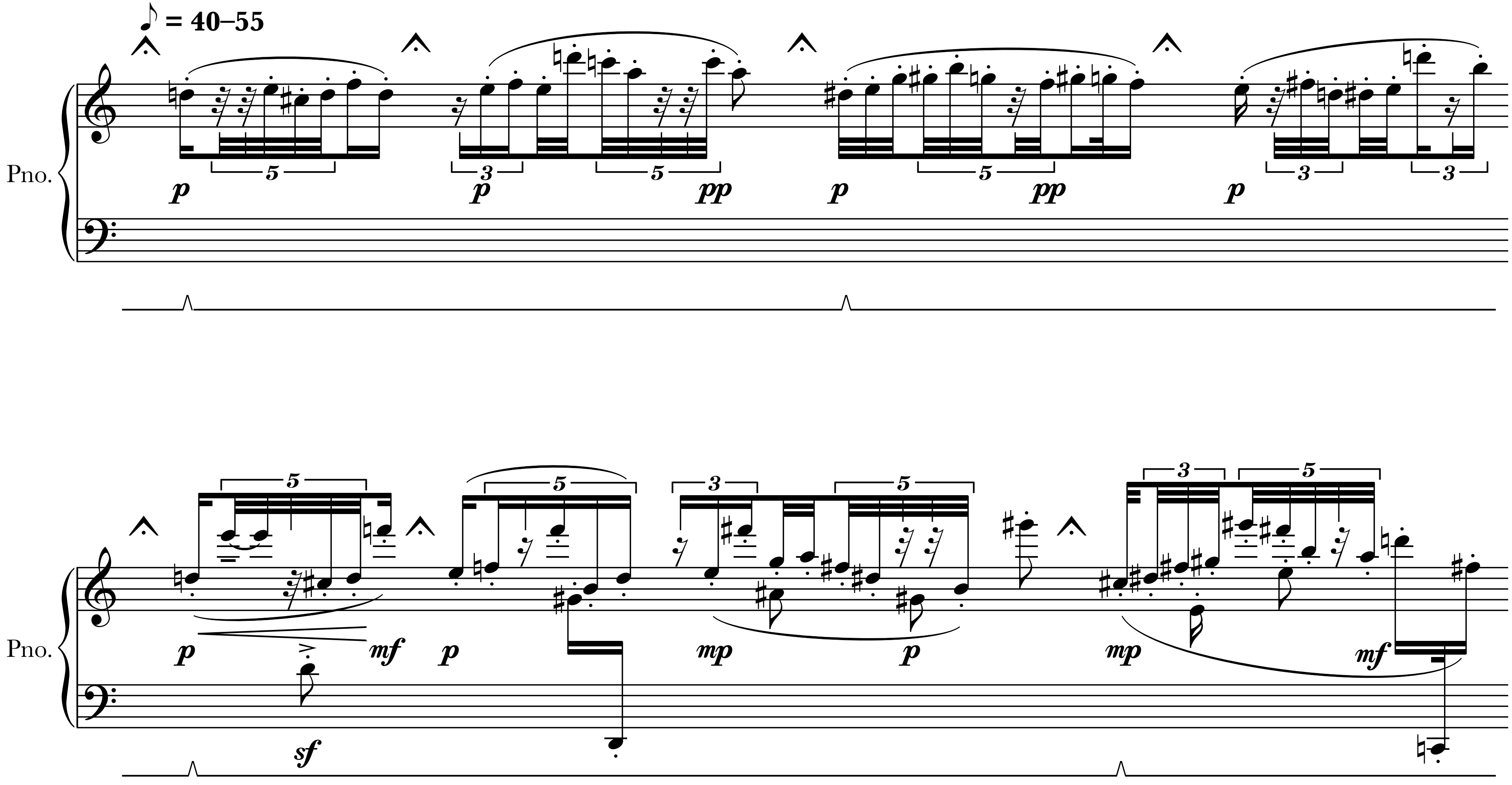

12
♪ = 60–70
Pno.
3
pp
mf
p
sf
f
mf
Ped.
Pno.
mp
f
sf
sf
sf
p
mf
p
f
mp
f

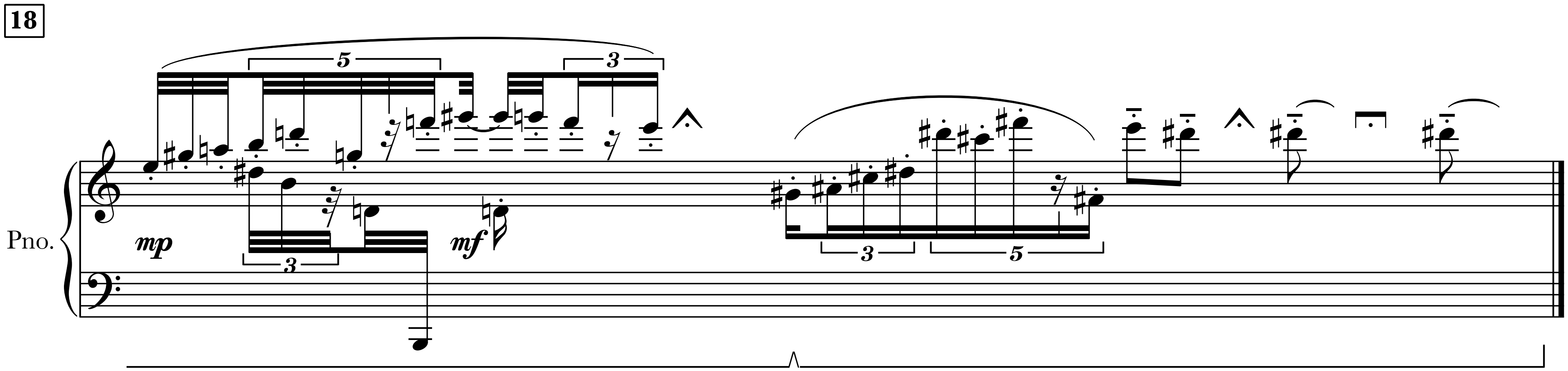

Pno.
mf
5
5
(♯)
6
f
mp
3
5
5
5
Pno.
6
6
6
ff
mp
3
5
mp
pp
6


Pno.
mf
mf
pp
Pno.
(♮)


Pno.
mf
6
6
6
6
p
3
rit.
𝅘𝅥𝅮 = 40–55
mp
3
3
f
3
3
3
3
p
3
5
pp


Pno.
6
3
mf
mf
f
5
mp
5
mp
p
mf
f
p
accel.
♪ = 60–70
mp
mp
mp
Pno.
rit.
3
3
3
3
5
mf
mp
pp
mf
pp
sf
sf
mp
Ped.


♪ = 40–55
Pno.
p
pp
mp
mf
sf
3
5


Pno.
mp
mf

Christopher Bayley

Memories of my father

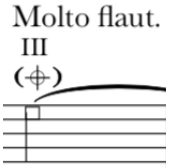
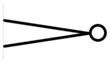
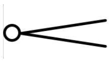
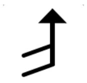
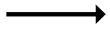
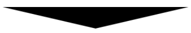
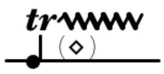
For string quartet

Performance Notes

General

Trills should be played to the note indicated in brackets.

Glissandi should start at the beginning of the note.

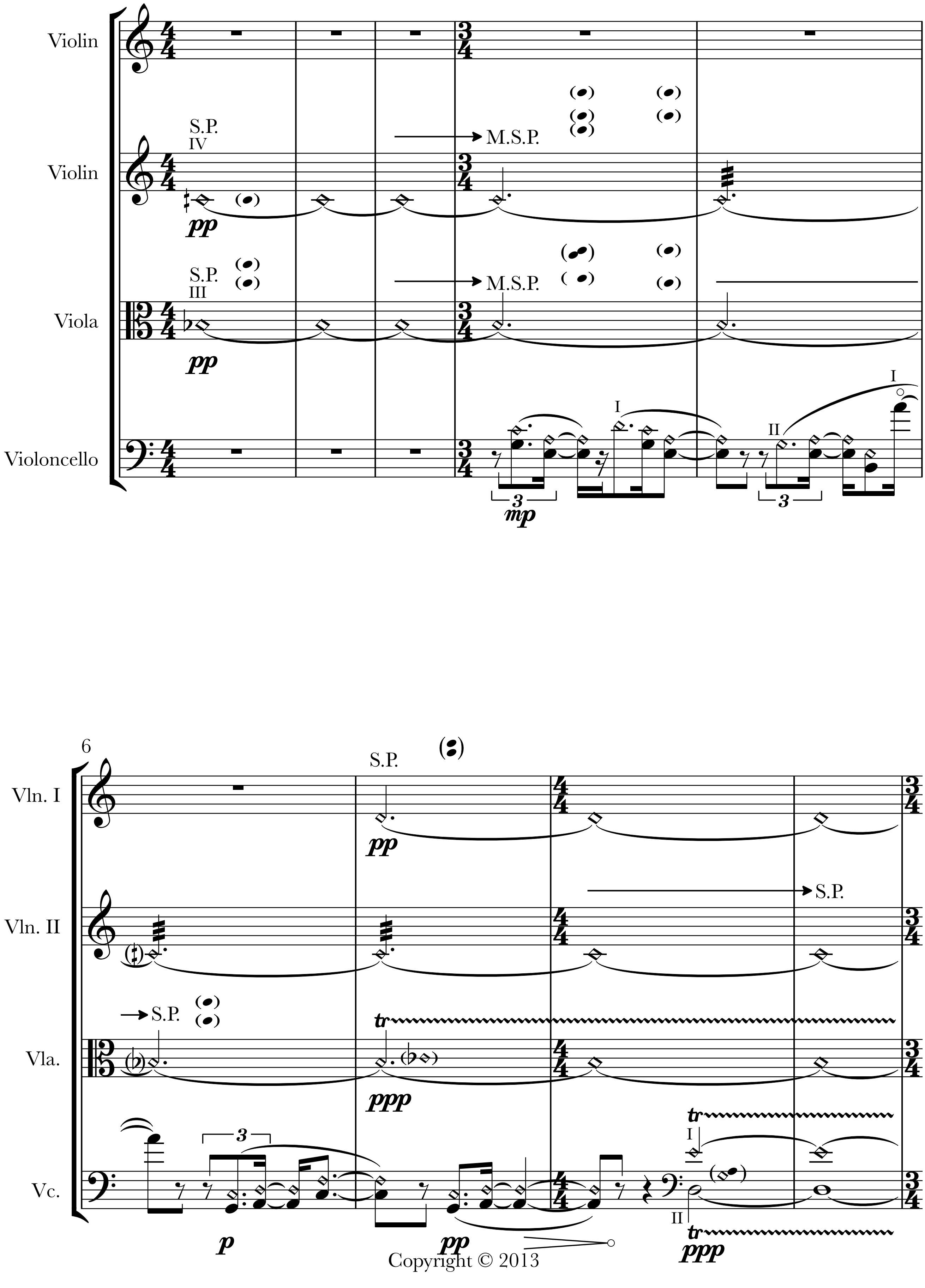
N.	Normal (used to distinguish the normal bowing position from S.P. or S.T.)
S.P.	Sul ponticello: to bow near the bridge of the instrument.
M.S.P.	Molto sul ponticello: to bow as close as possible to the bridge of the instrument.
S.T.	Sul tasto: to bow near the fingerboard.
	Flautando: Gently mute the string with the left hand while very lightly bowing. The technique produces a soft, airy noise with a faint tone that lacks a distinct pitch. Flautando tremolo should be played at the tip of the bow.
	Diminuendo al niente.
	Crescendo dal niente.
	Produce a quick glissando to the highest possible point in the time available.
	Change gradually from one bow placement to another.
	Apply bow pressure. The pressure of the bow should increase and decrease in proportion to the depth of the pressure mark. Tone distortion (overpressure) should occur at the peak.
	A harmonic trill produced by alternating between a normal note and an indicated harmonic. The resulting sound should be a rapid alternation between normal and harmonic tones.

Memories of my father

Allow the pitch to shift so that overtones
and multiphonics spontaneously emerge and dissipate.

Christopher Bayley

♩ = c. 60


Violin
Violin
Viola
Violoncello
S.P.
IV
M.S.P.
S.P.
III
M.S.P.
pp
pp
mp
3
I
II
I
6
Vln. I
Vln. II
Vla.
Vc.
S.P.
pp
S.P.
S.P.
tr
ppp
p
pp
tr
I
II
tr
ppp

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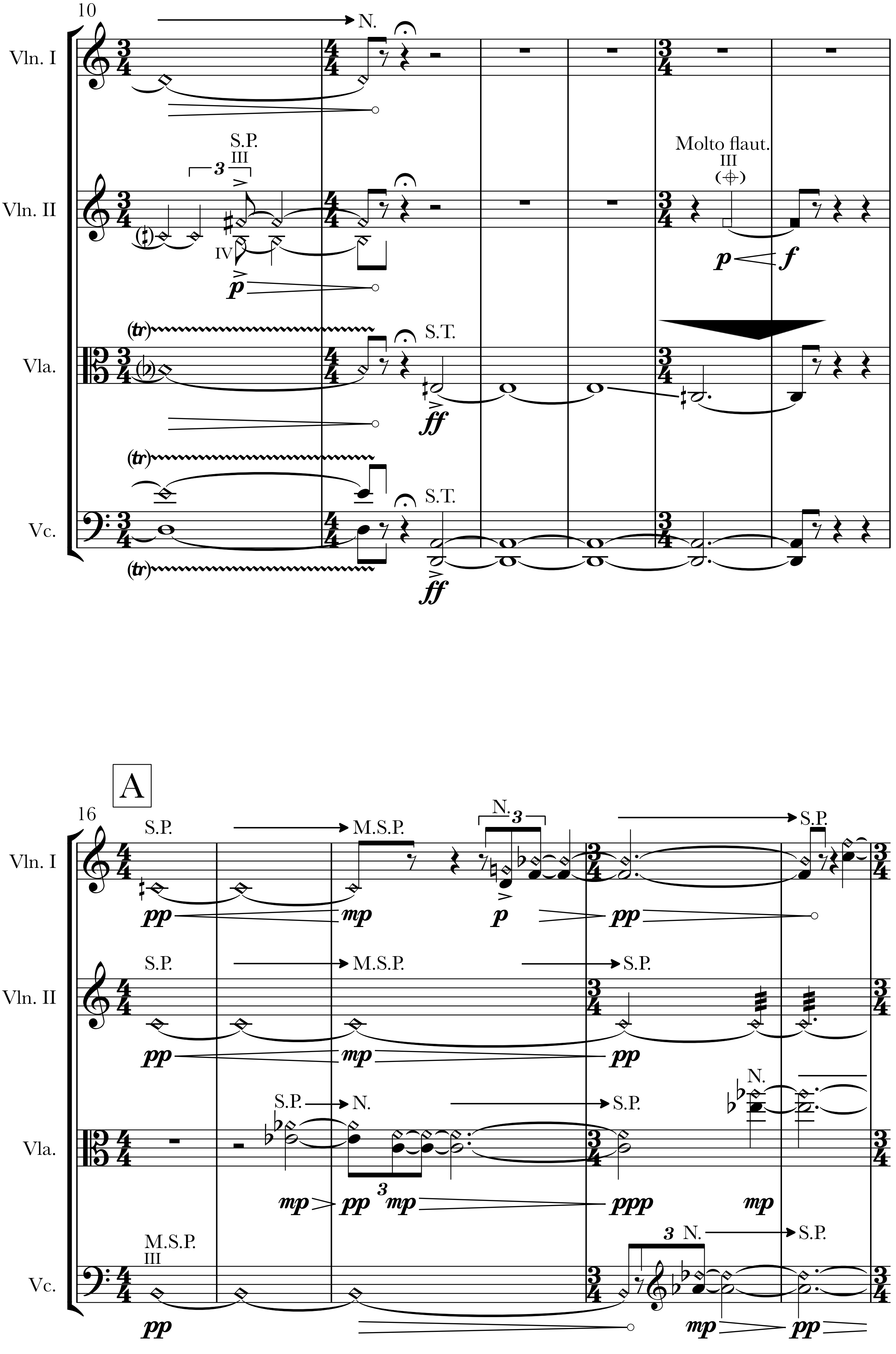
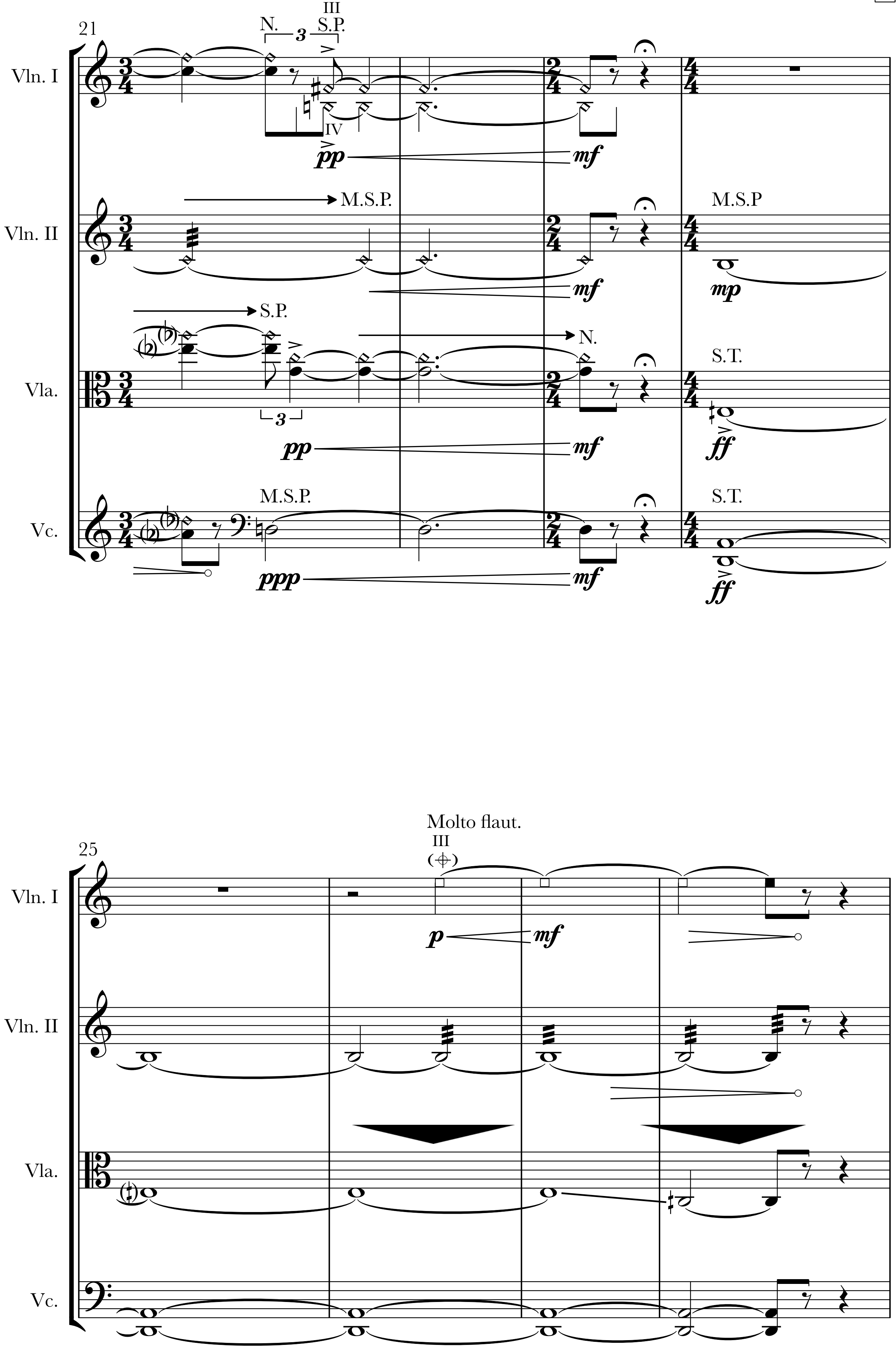
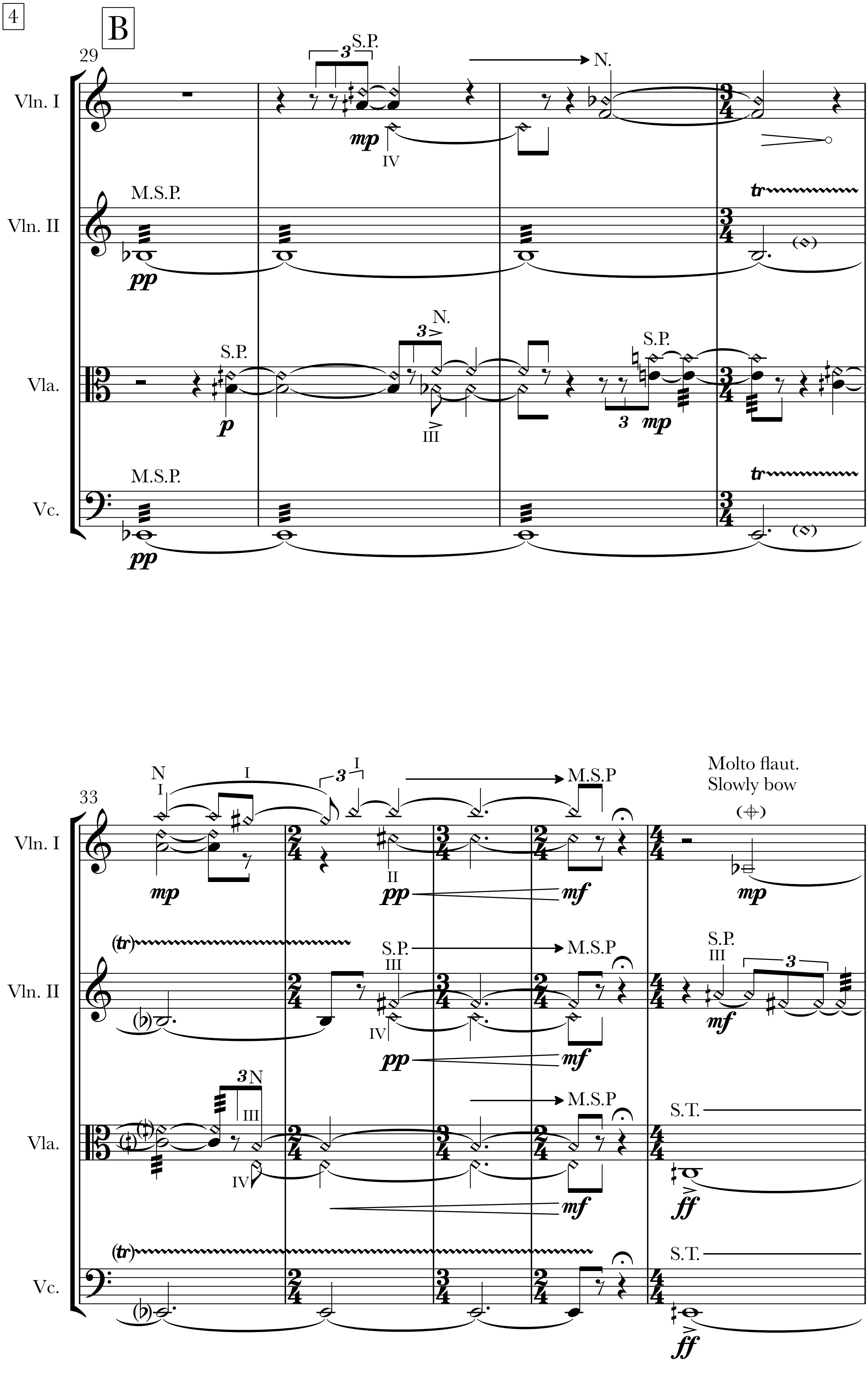
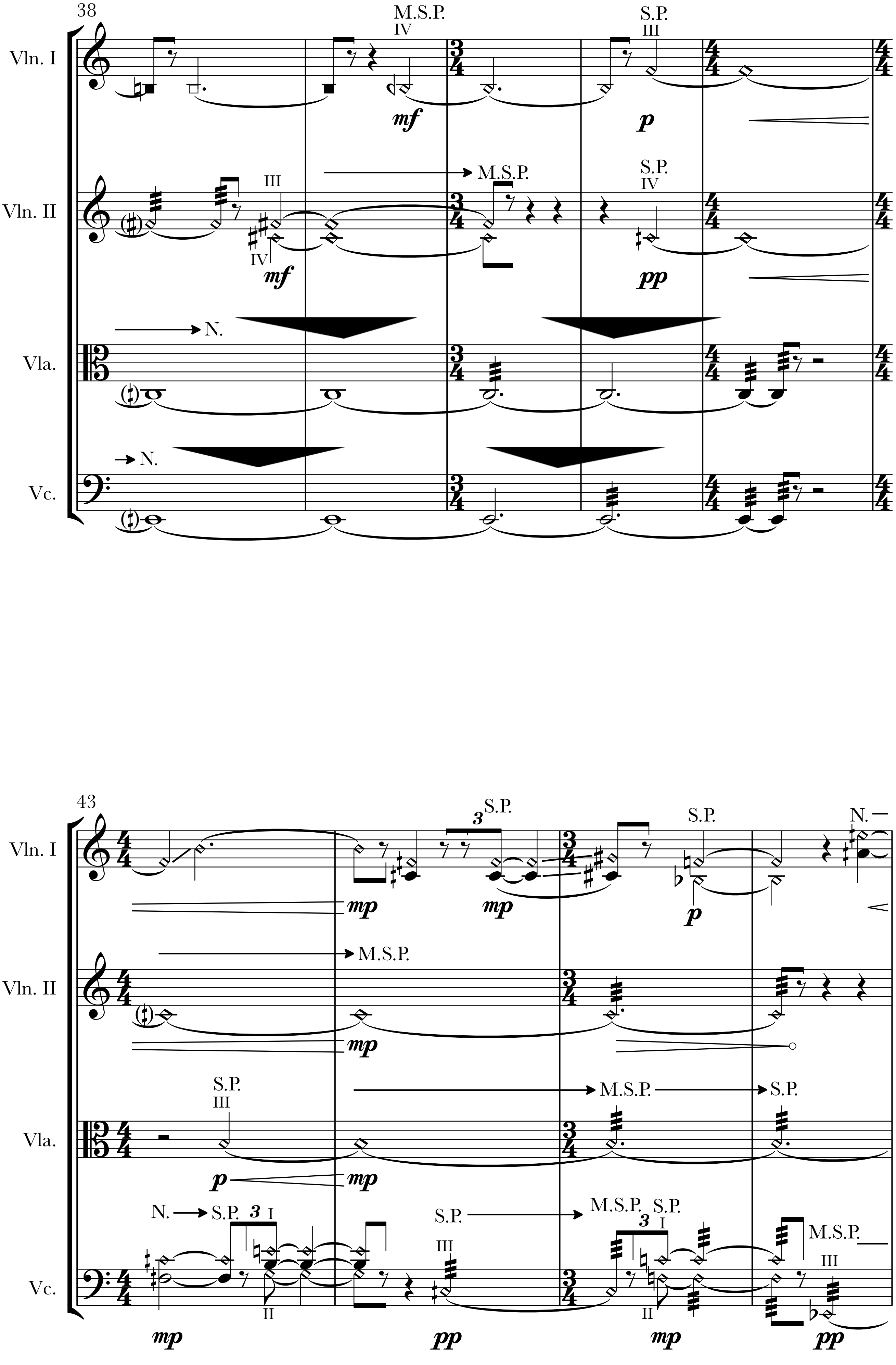
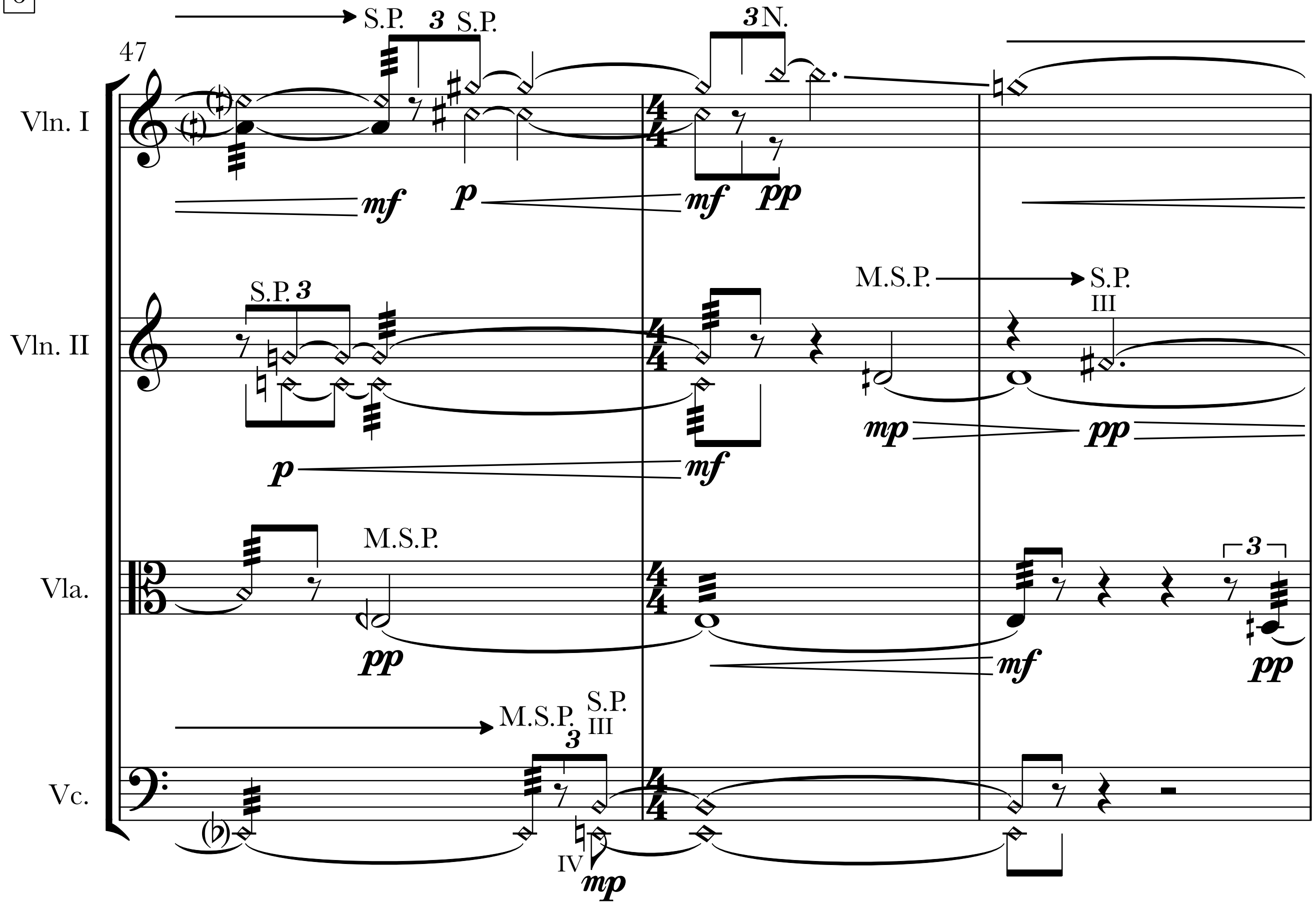
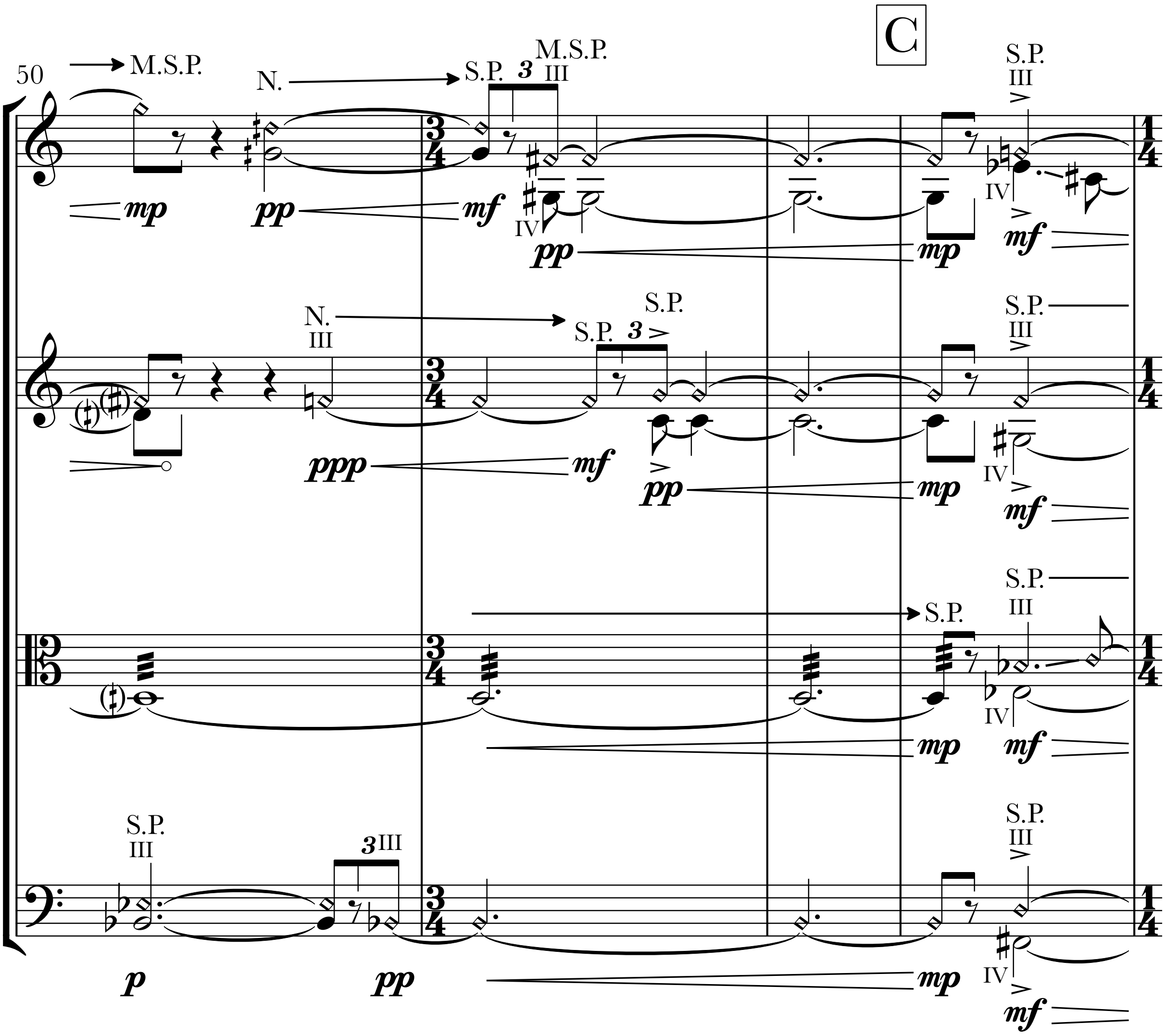

10
Vln. I
Vln. II
Vla.
Vc.
N.
S.P.
III
3
IV
p
(tr)
S.T.
ff
Molto flaut.
III
p
f
A
16
S.P.
M.S.P.
N.
3
pp
mp
p
pp
S.P.
M.S.P.
S.P.
pp
mp
pp
S.P.
N.
S.P.
N.
mp
pp
3
mp
ppp
mp
M.S.P.
III
pp
3
N.
S.P.
mp
pp

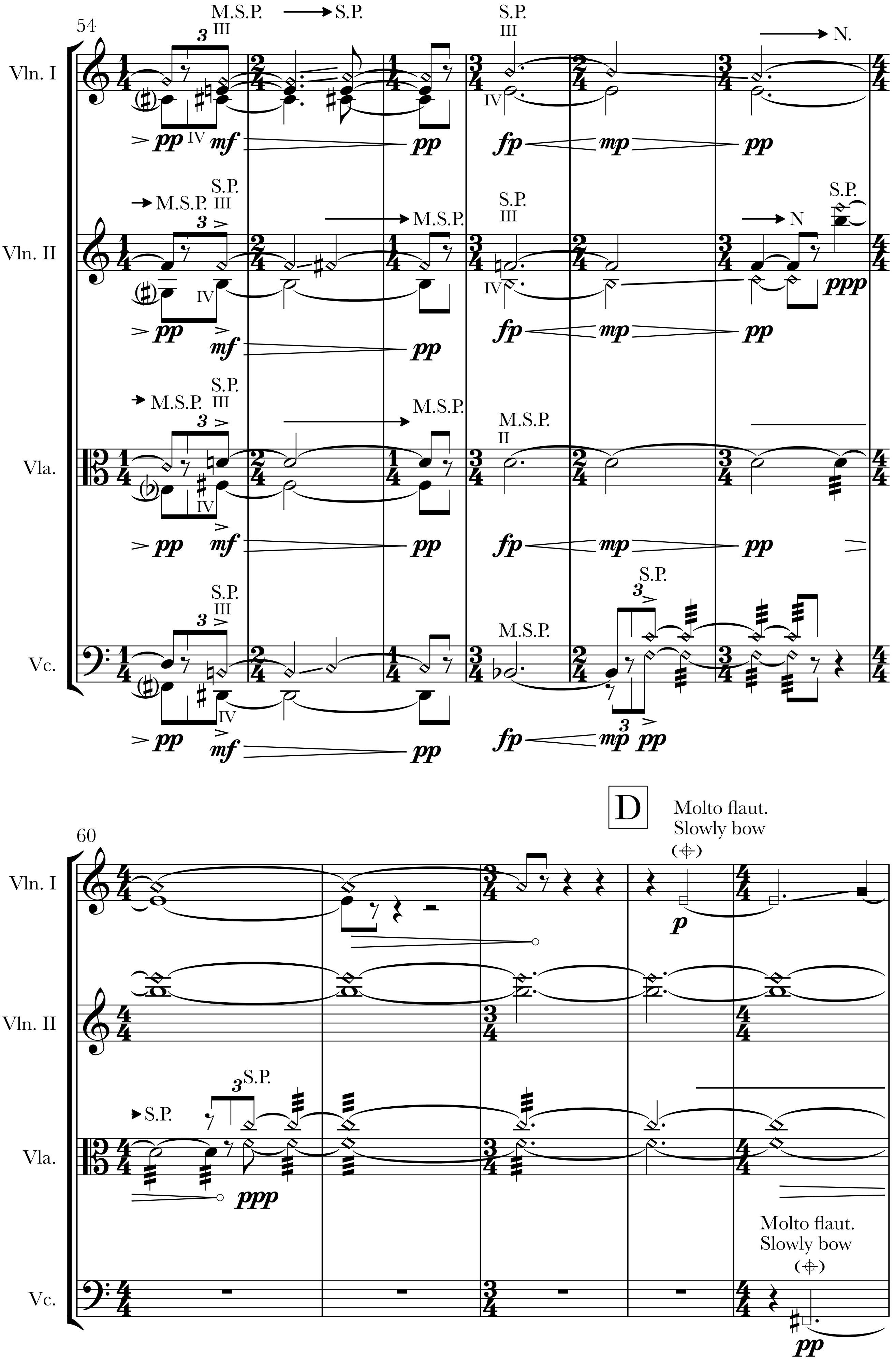

21
Vln. I
Vln. II
Vla.
Vc.
N.
3
III
S.P.
IV
pp
mf
M.S.P.
mf
M.S.P
mp
S.P.
N.
3
pp
mf
S.T.
ff
M.S.P.
ppp
mf
S.T.
ff
25
Vln. I
Vln. II
Vla.
Vc.
Molto flaut.
III
p
mf

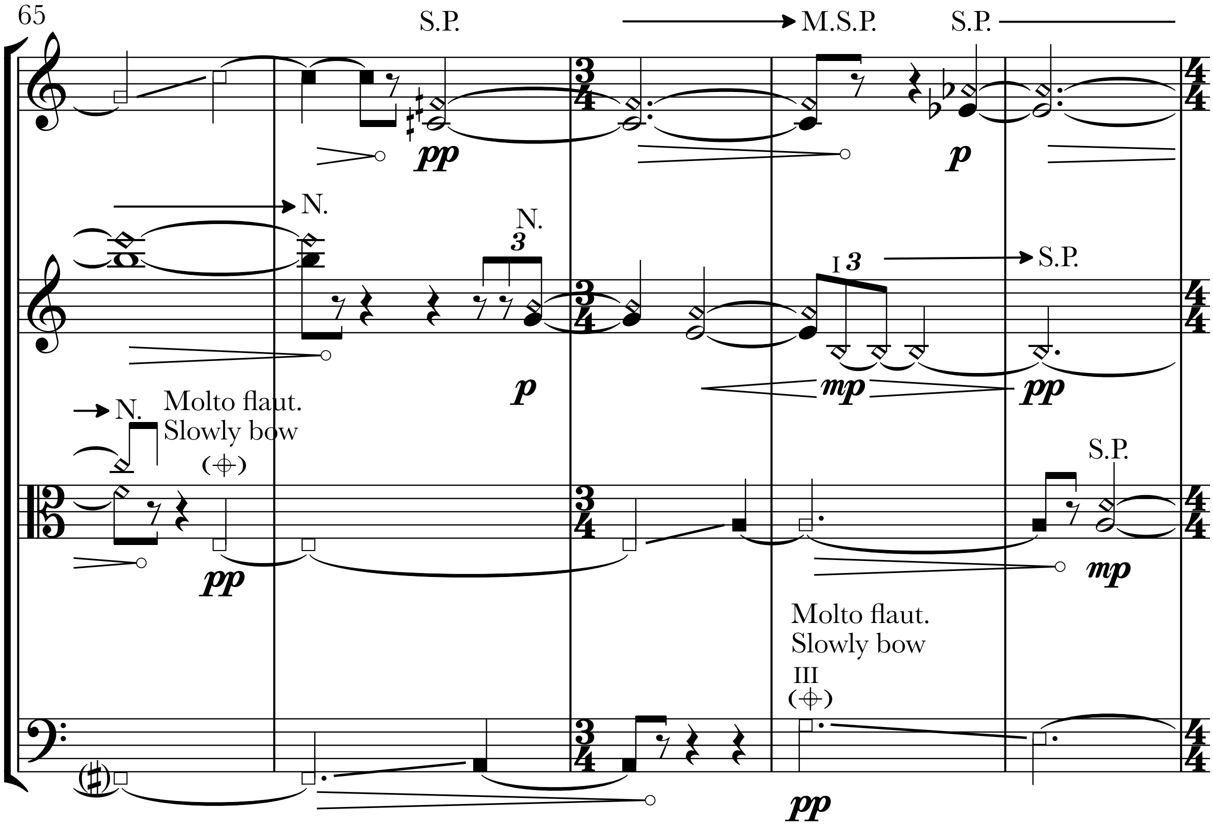

B
29
Vln. I
Vln. II
Vla.
Vc.
S.P.
N.
M.S.P.
IV
III
mp
pp
p
tr
33
N
I
II
M.S.P
Molto flaut.
Slowly bow
mf
S.T.
ff

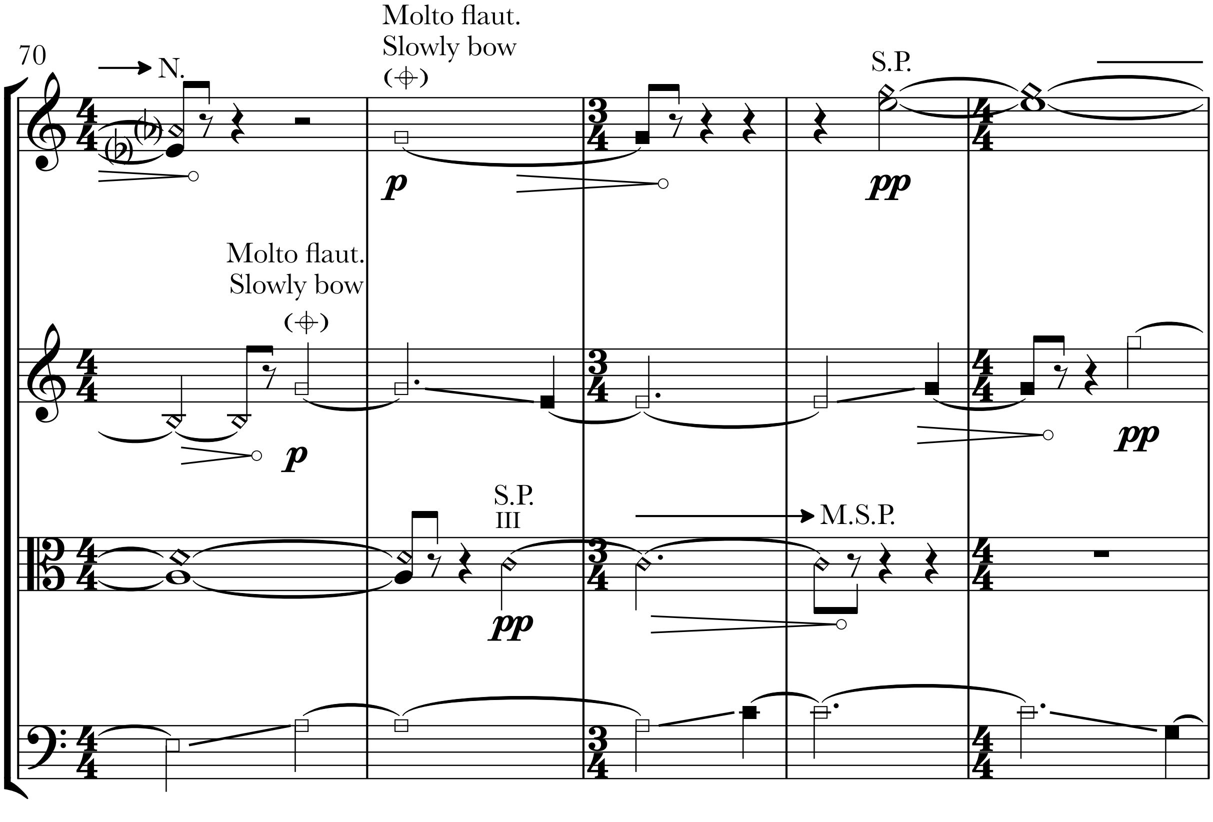

38
Vln. I
Vln. II
Vla.
Vc.
M.S.P.
IV
mf
S.P.
III
p
III
IV
mf
M.S.P.
S.P.
IV
pp
N.
N.
43
Vln. I
Vln. II
Vla.
Vc.
3
S.P.
mp
mp
S.P.
p
N.
M.S.P.
mp
S.P.
III
p
mp
M.S.P.
S.P.
N.
S.P.
3
I
II
mp
S.P.
M.S.P.
III
pp
3
S.P.
I
II
mp
M.S.P.
III
pp

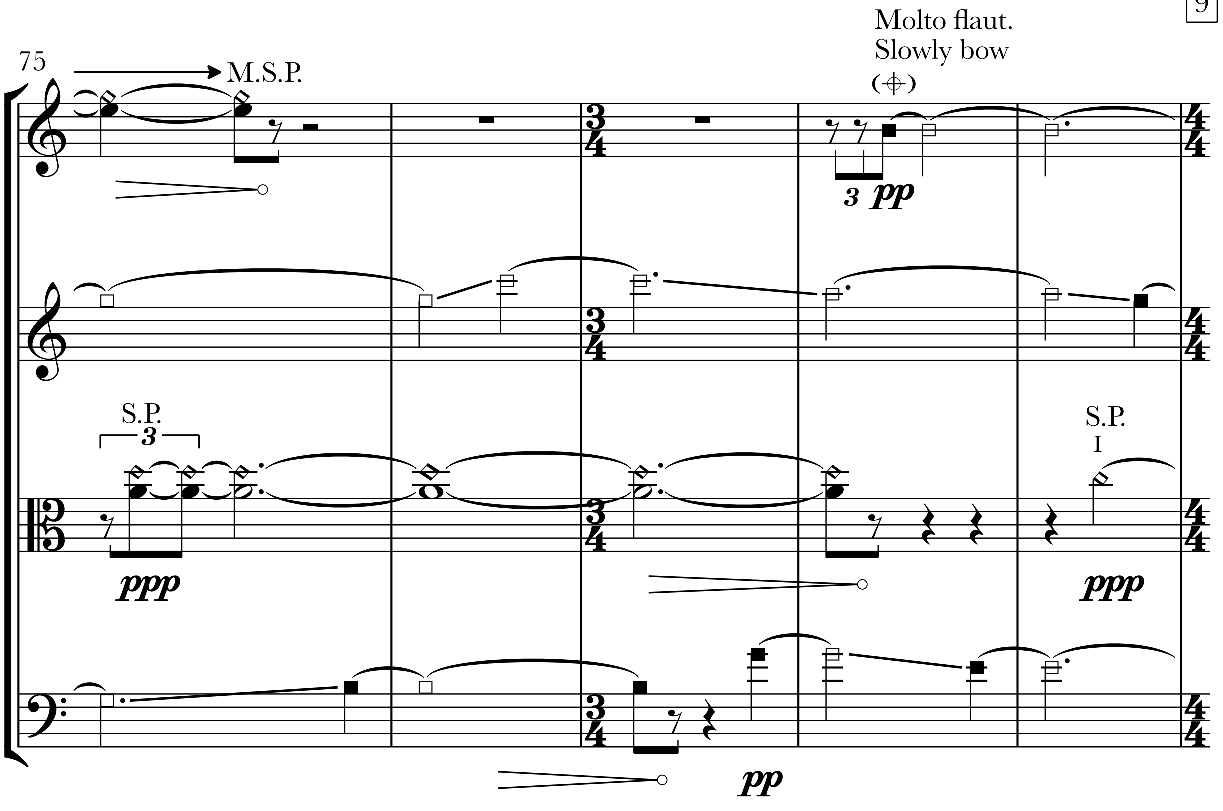

47
Vln. I
Vln. II
Vla.
Vc.
S.P.
3
S.P.
3 N.
mf
p
mf
pp
S.P. 3
M.S.P.
S.P.
III
p
mf
mp
pp
M.S.P.
pp
3
mf
pp
M.S.P.
S.P.
III
3
IV
mp

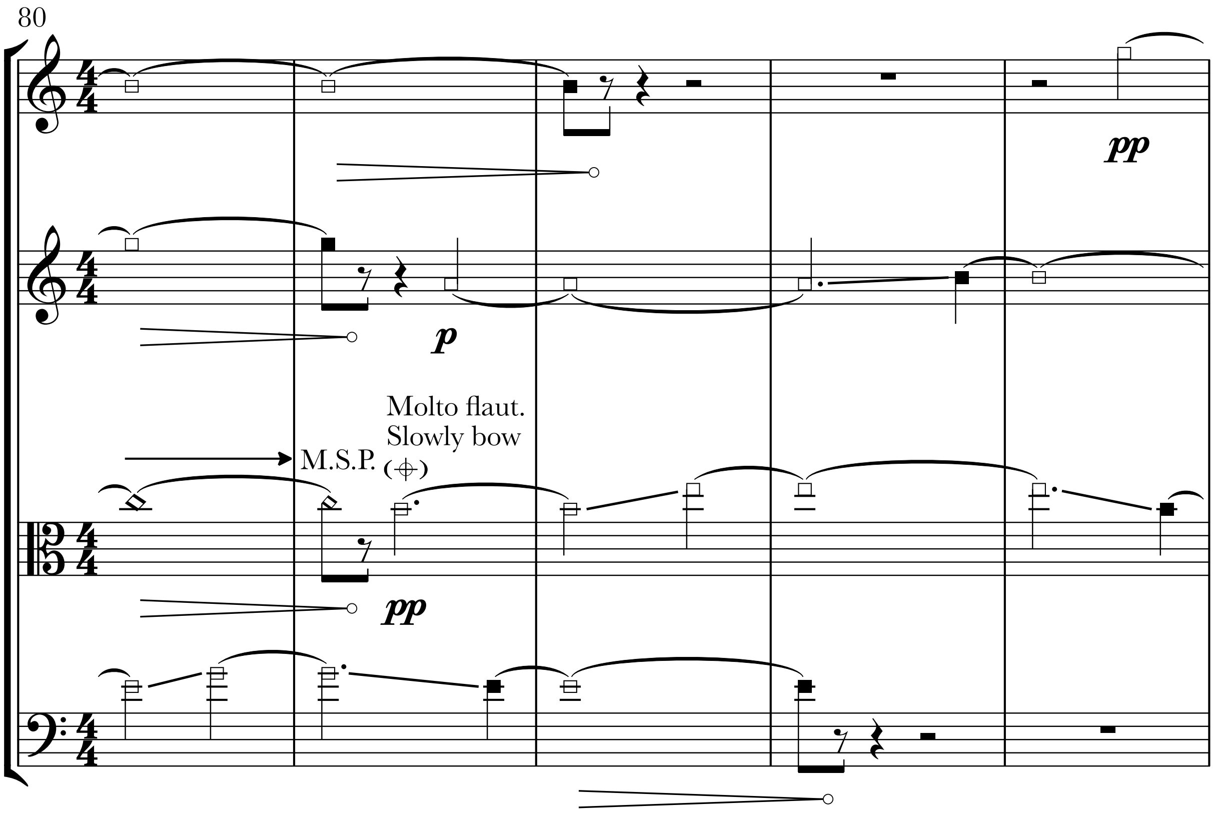

50
C
Vln. I
Vln. II
Vla.
Vc.
M.S.P.
N.
S.P.
3
M.S.P.
III
S.P.
III
mp
pp
mf
IV
pp
mp
IV
mf
N.
III
S.P.
3
S.P.
S.P.
III
ppp
mf
pp
mp
IV
mf
S.P.
S.P.
III
IV
mp
mf
S.P.
III
3 III
S.P.
III
p
pp
mp
IV
mf

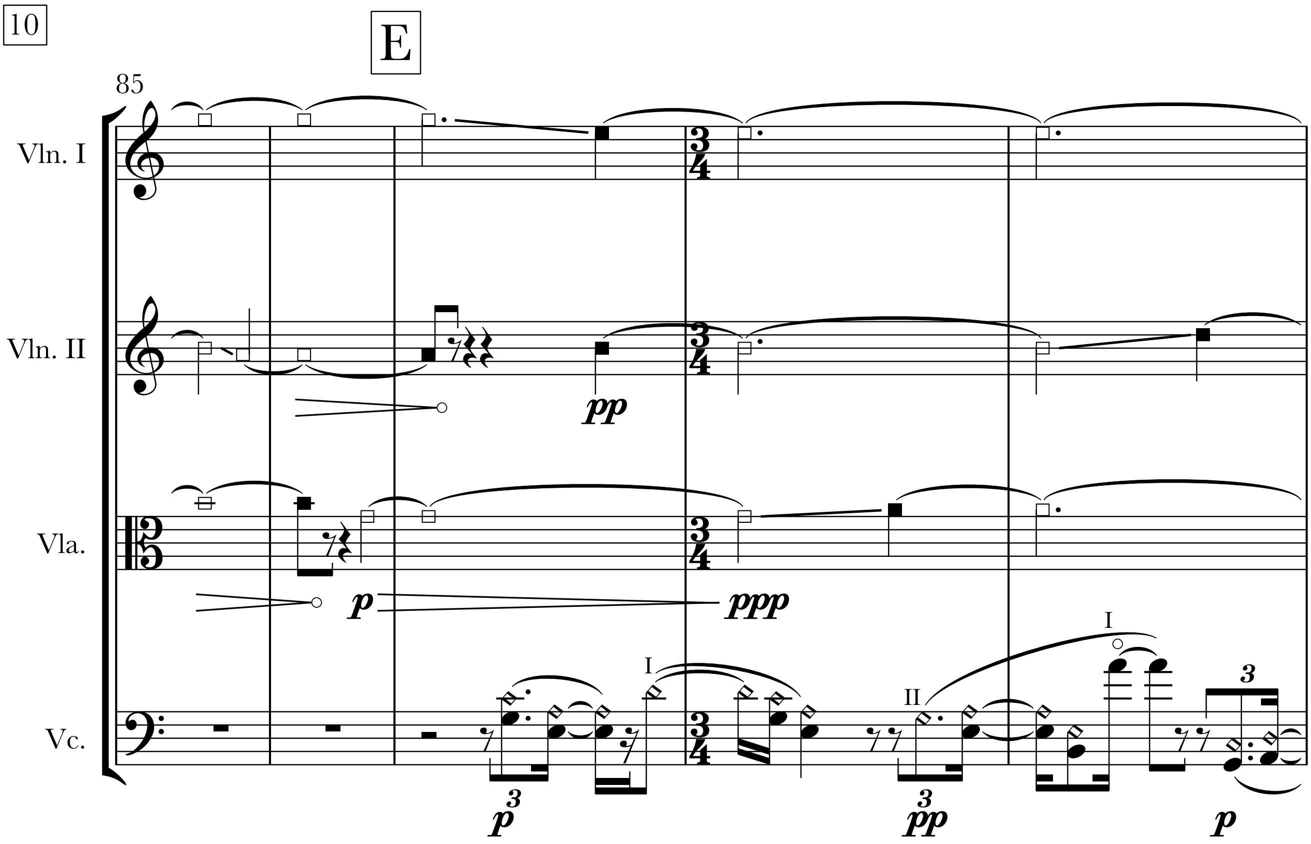

54
Vln. I
Vln. II
Vla.
Vc.
M.S.P.
S.P.
III
IV
N.
M.S.P.
II
pp
mf
fp
mp
ppp
60
D
Molto flaut.
Slowly bow
p
pp

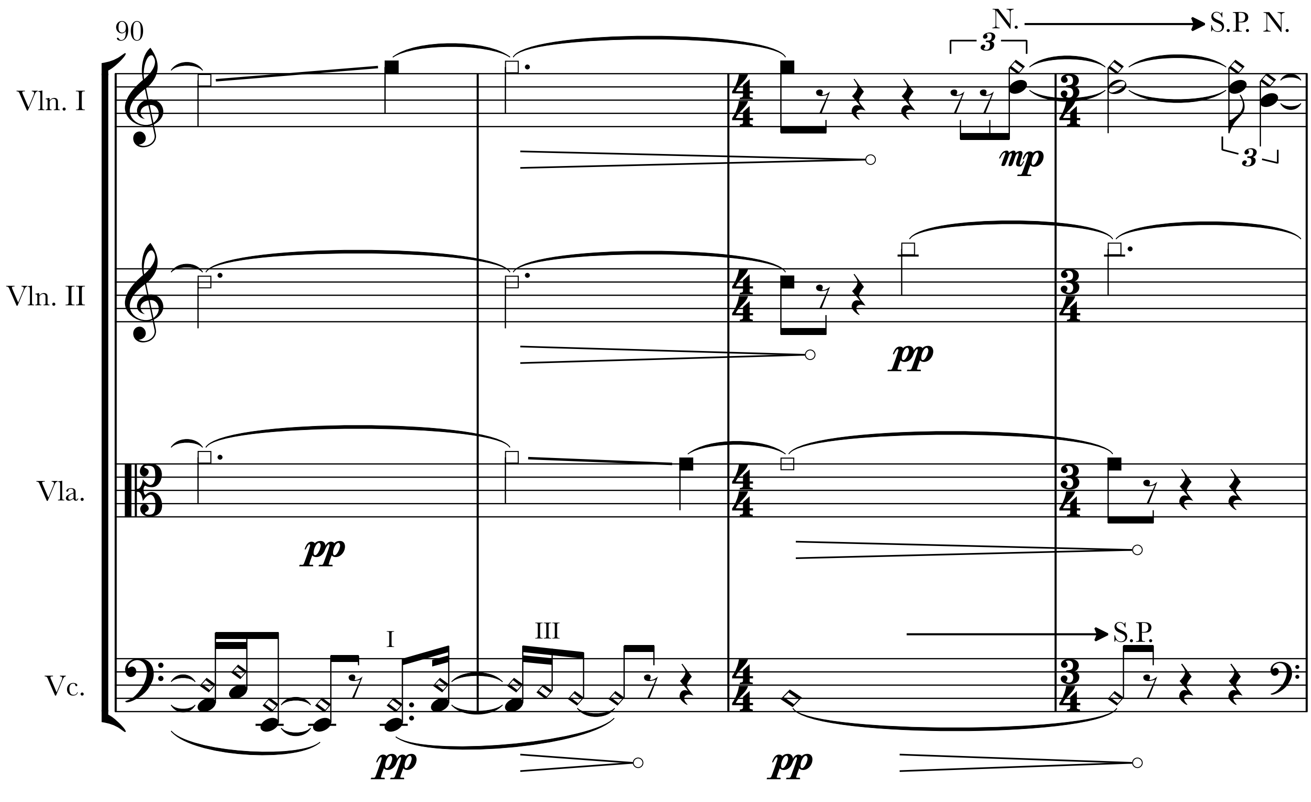

65
Vln. I
Vln. II
Vla.
Vc.
S.P.
M.S.P.
S.P.
N.
N.
S.P.
N.
Molto flaut.
Slowly bow
3
I
pp
p
mp
Molto flaut.
Slowly bow
III

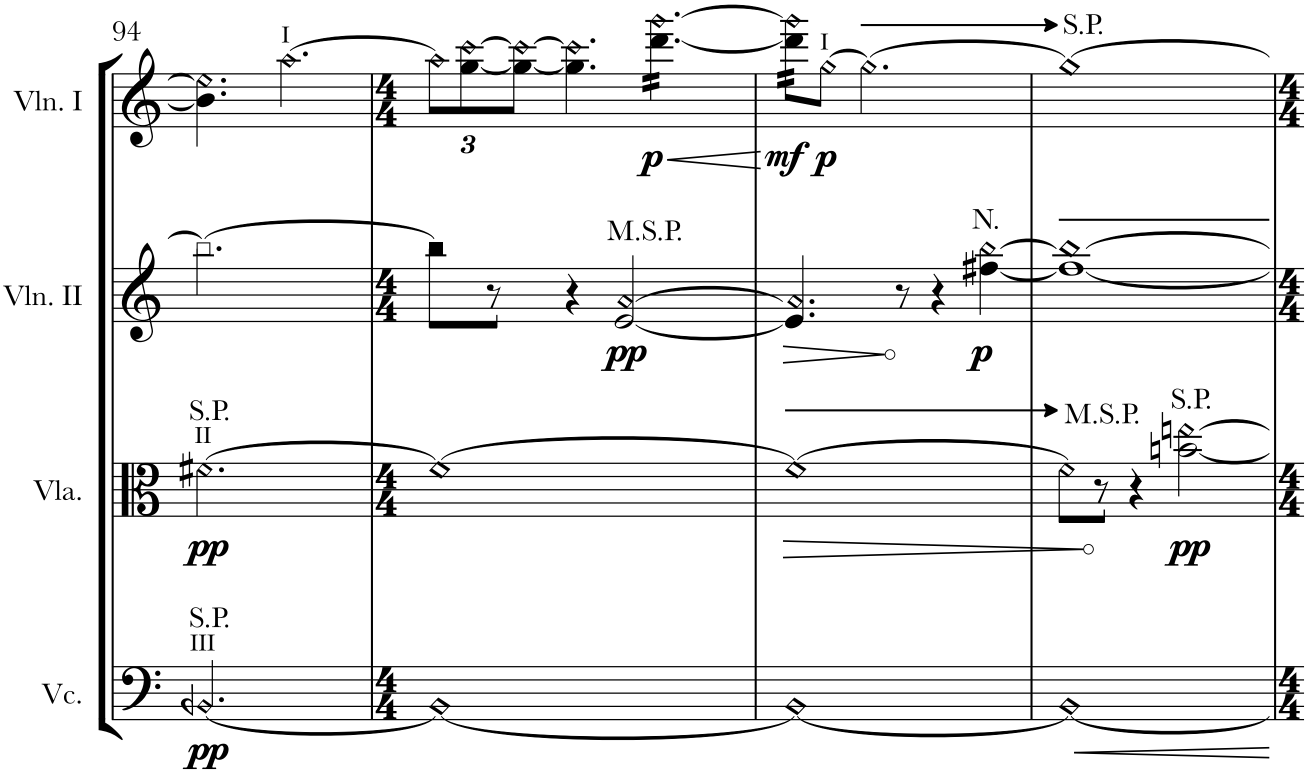

70
Vln. I
Vln. II
Vla.
Vc.
N.
Molto flaut.
Slowly bow
S.P.
Molto flaut.
Slowly bow
S.P.
III
M.S.P.
p
pp

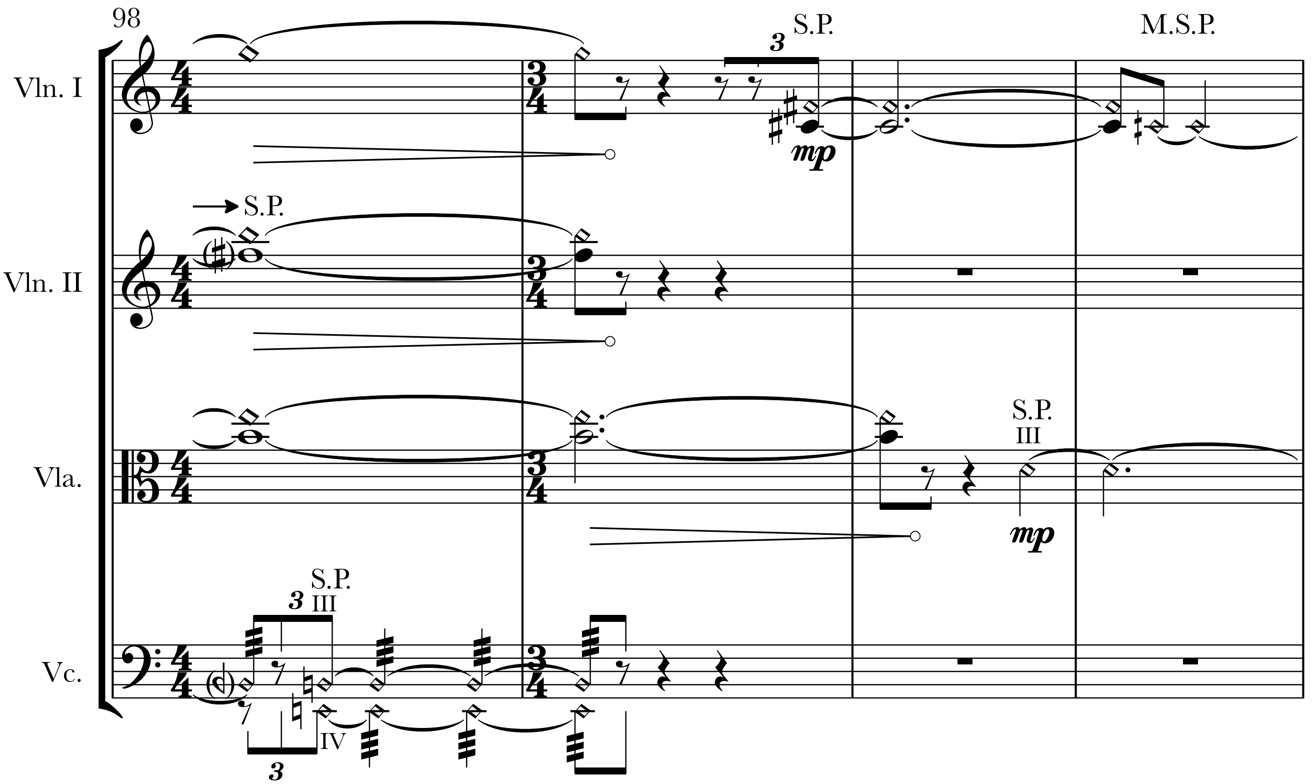

75
M.S.P.
Molto flaut.
Slowly bow
(⌖)
Vln. I
3
pp
Vln. II
S.P.
3
Vla.
ppp
S.P.
I
ppp
Vc.
pp
3
4
4
4

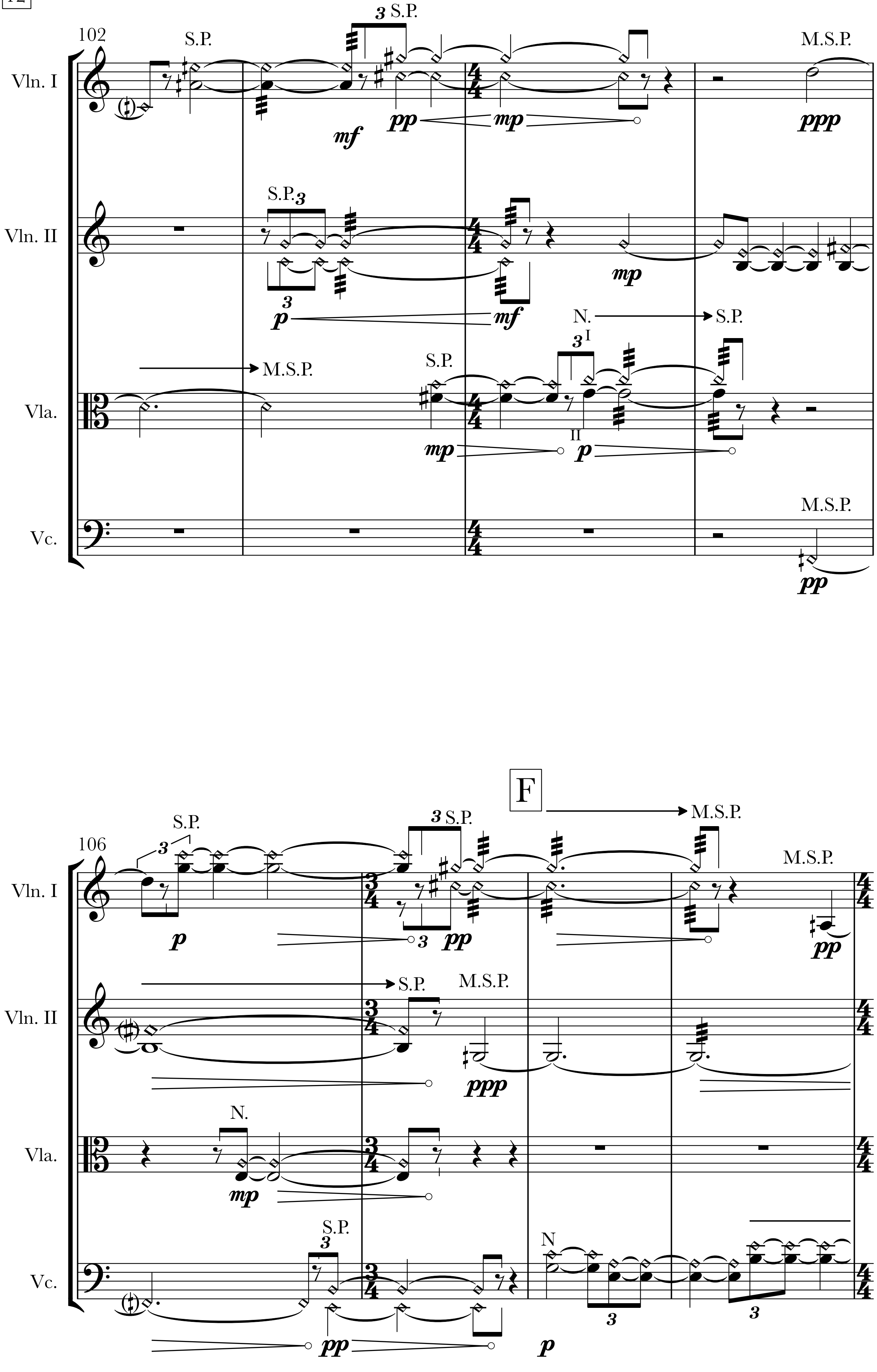

80
Vln. I
pp
Vln. II
p
Molto flaut.
Slowly bow
M.S.P.
(⌖)
Vla.
pp
Vc.
4
4

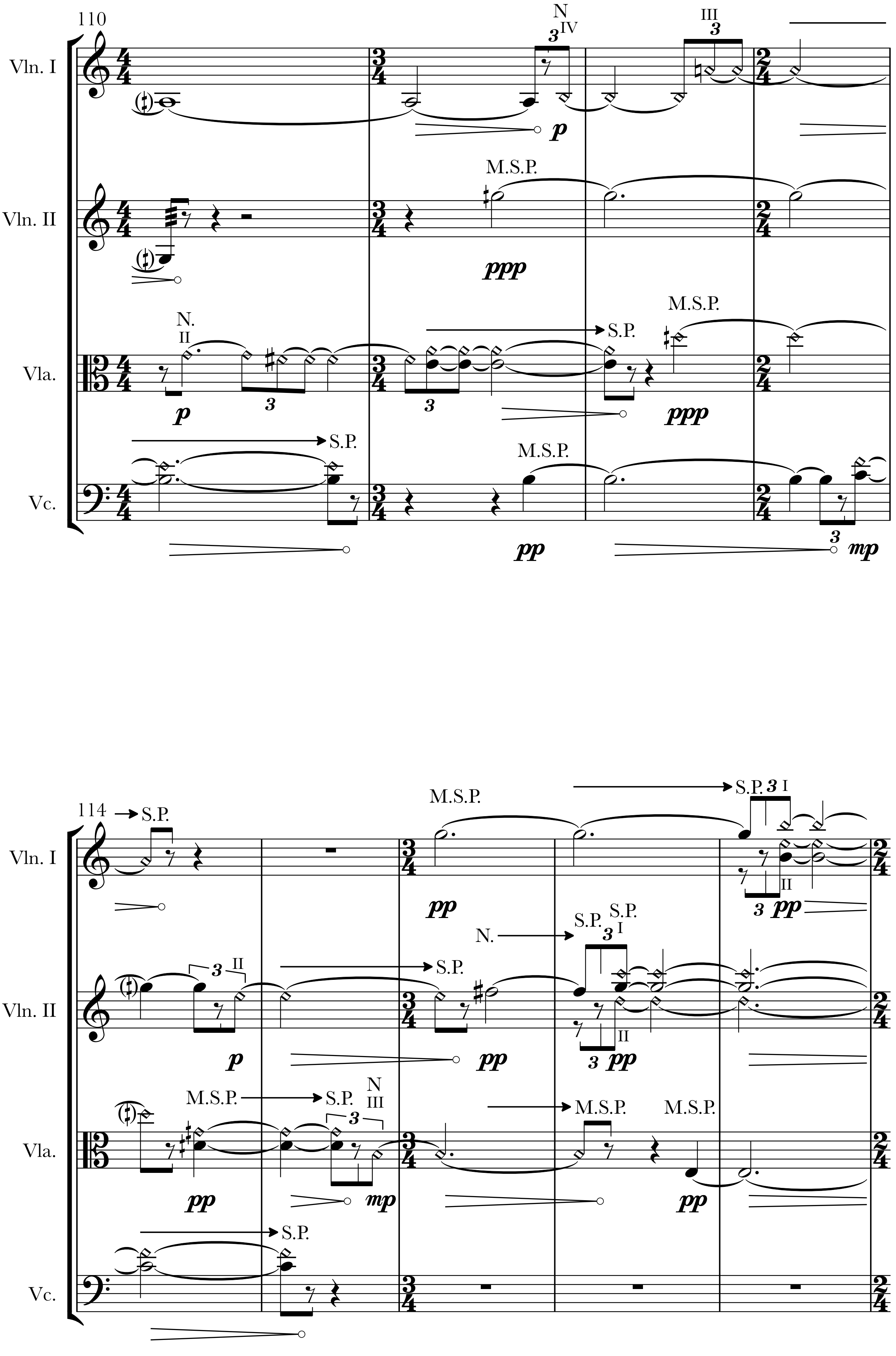

E
85
Vln. I
Vln. II
Vla.
Vc.
pp
p
ppp
I
II
I
3
p
pp
p

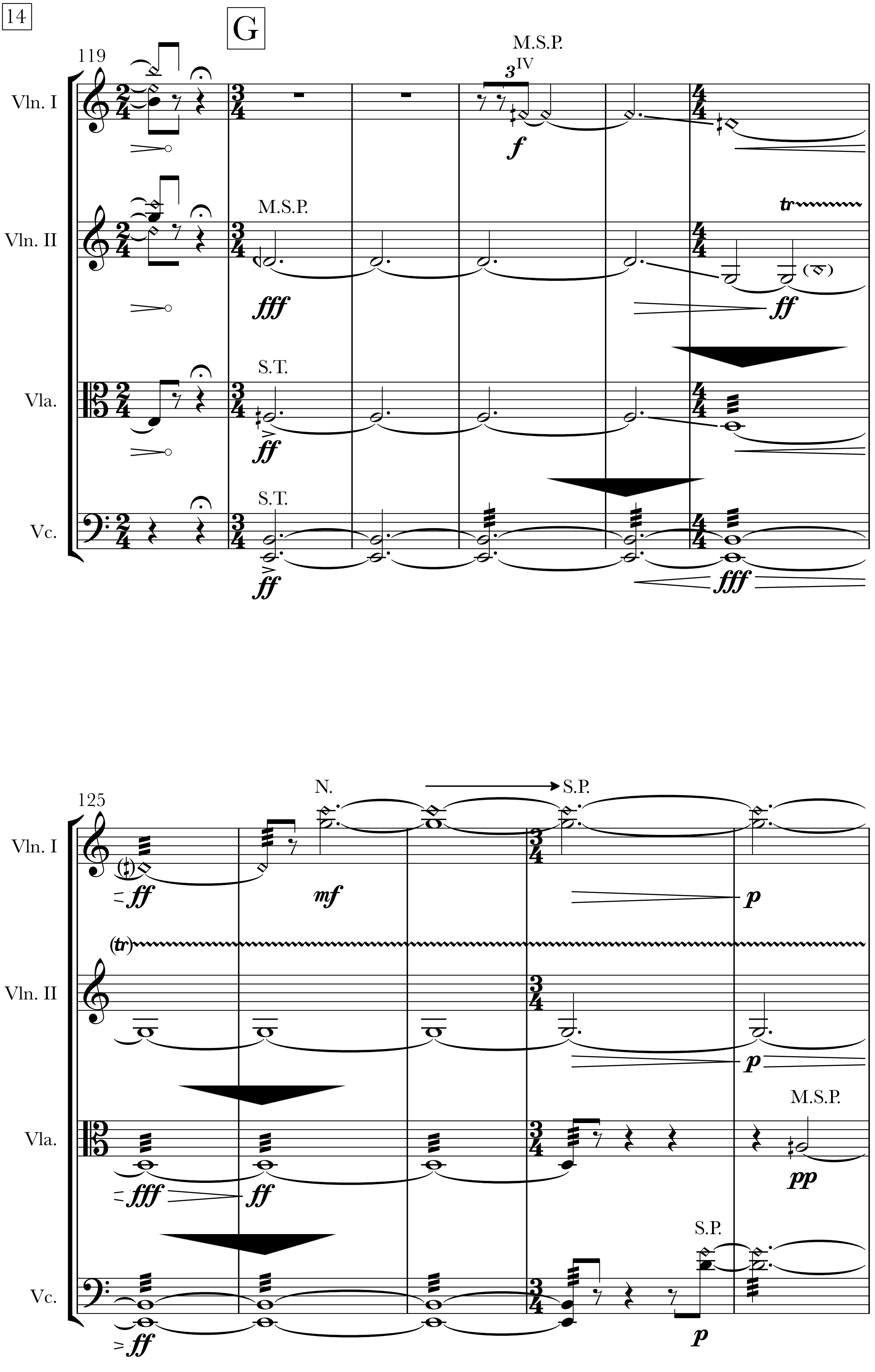

90
Vln. I
Vln. II
Vla.
Vc.
N.
S.P.
N.
3
mp
pp
pp
I
III
S.P.
pp
pp

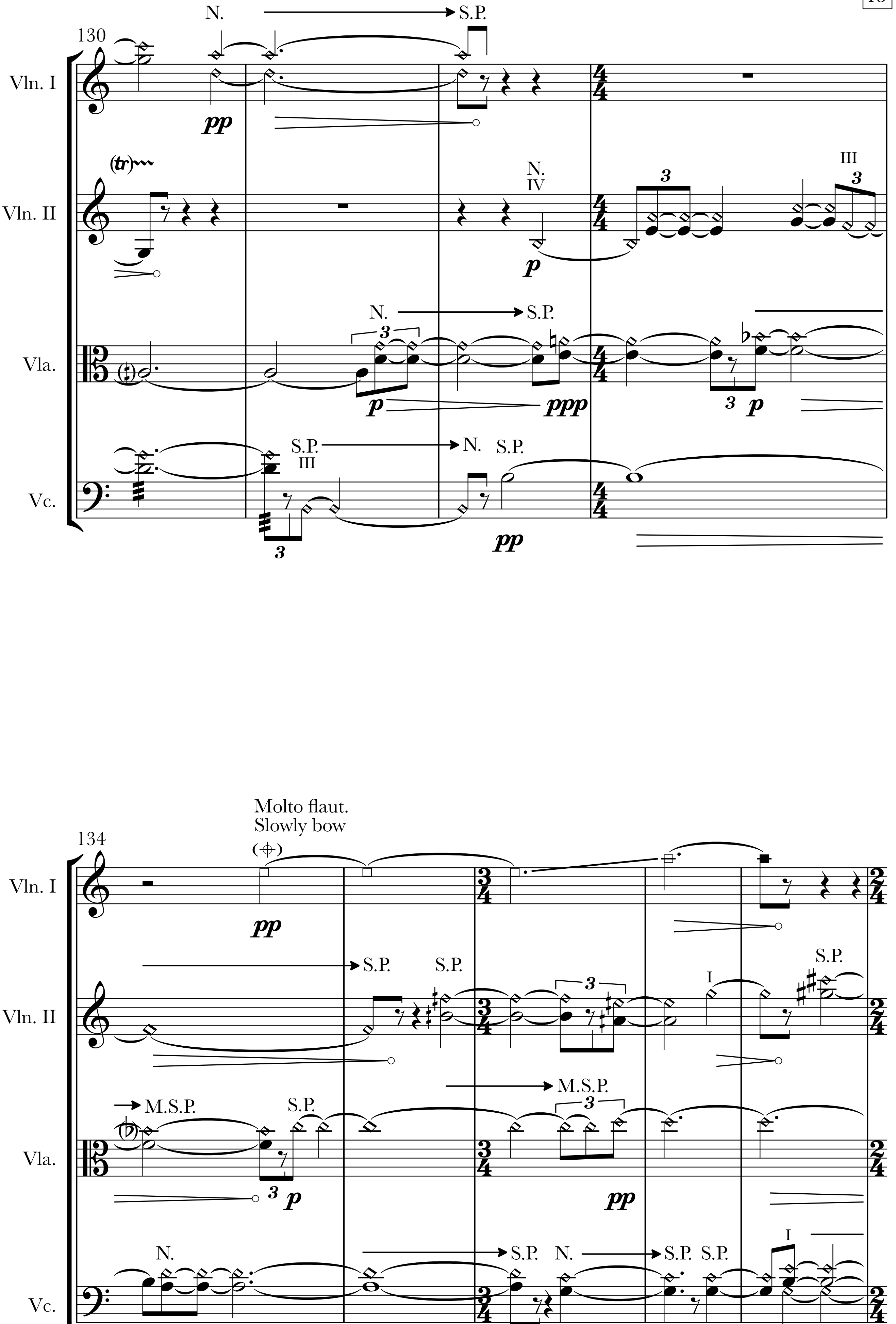

94
Vln. I
Vln. II
Vla.
Vc.
I
3
p
mf p
S.P.
M.S.P.
pp
N.
p
S.P.
II
pp
M.S.P.
S.P.
pp
S.P.
III
pp


98
Vln. I
Vln. II
Vla.
Vc.
3
S.P.
mp
M.S.P.
S.P.
(♯)
S.P.
III
mp
S.P.
III
3
IV
3
mp
p

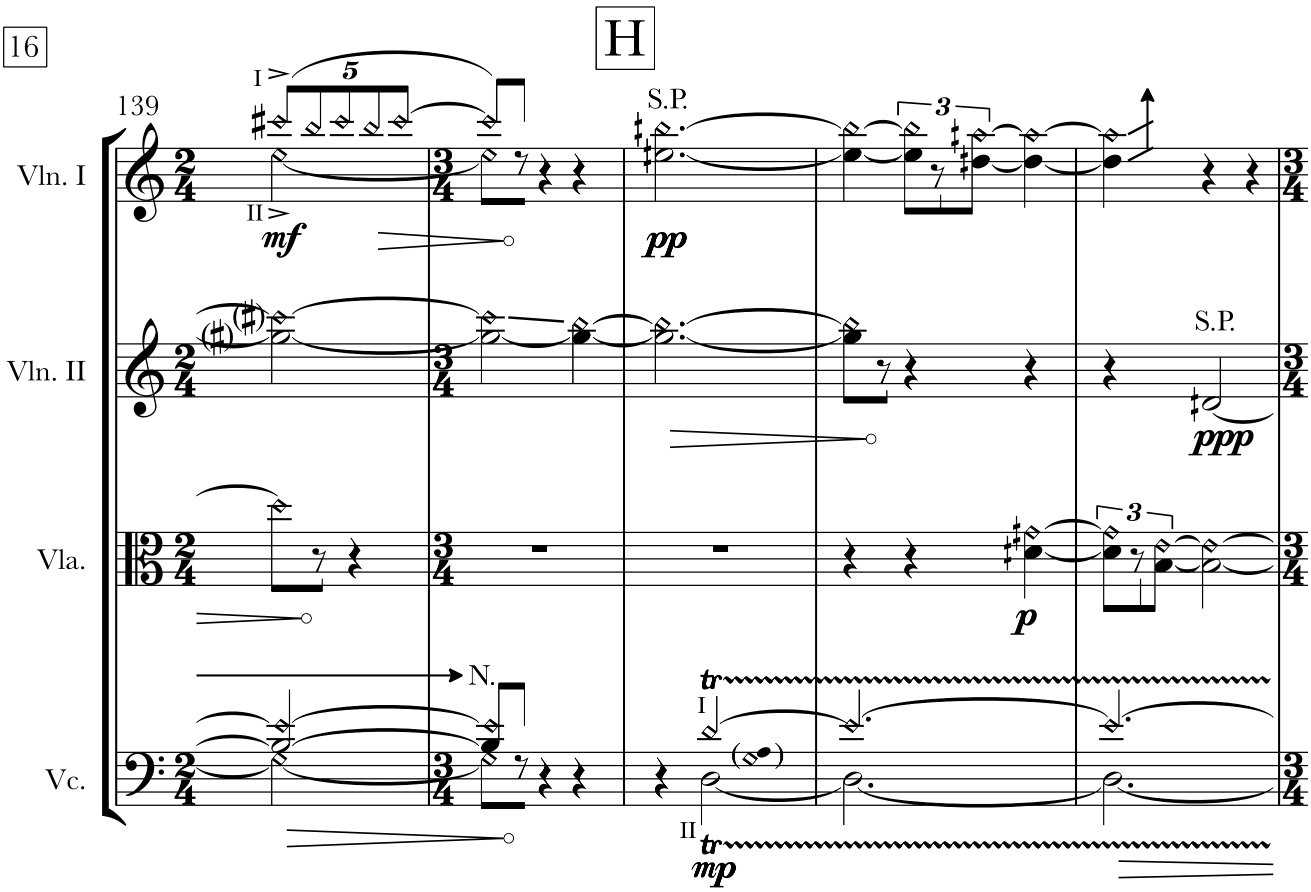

102
Vln. I
Vln. II
Vla.
Vc.
S.P.
3 S.P.
mf
pp
mp
M.S.P.
ppp
S.P. 3
3
p
mf
mp
N.
S.P.
M.S.P.
3 I
II
p
M.S.P.
pp
106
F
S.P.
3
p
3 S.P.
3 pp
M.S.P.
M.S.P.
pp
S.P.
M.S.P.
ppp
N.
mp
S.P.
3
pp
N
3
3
p

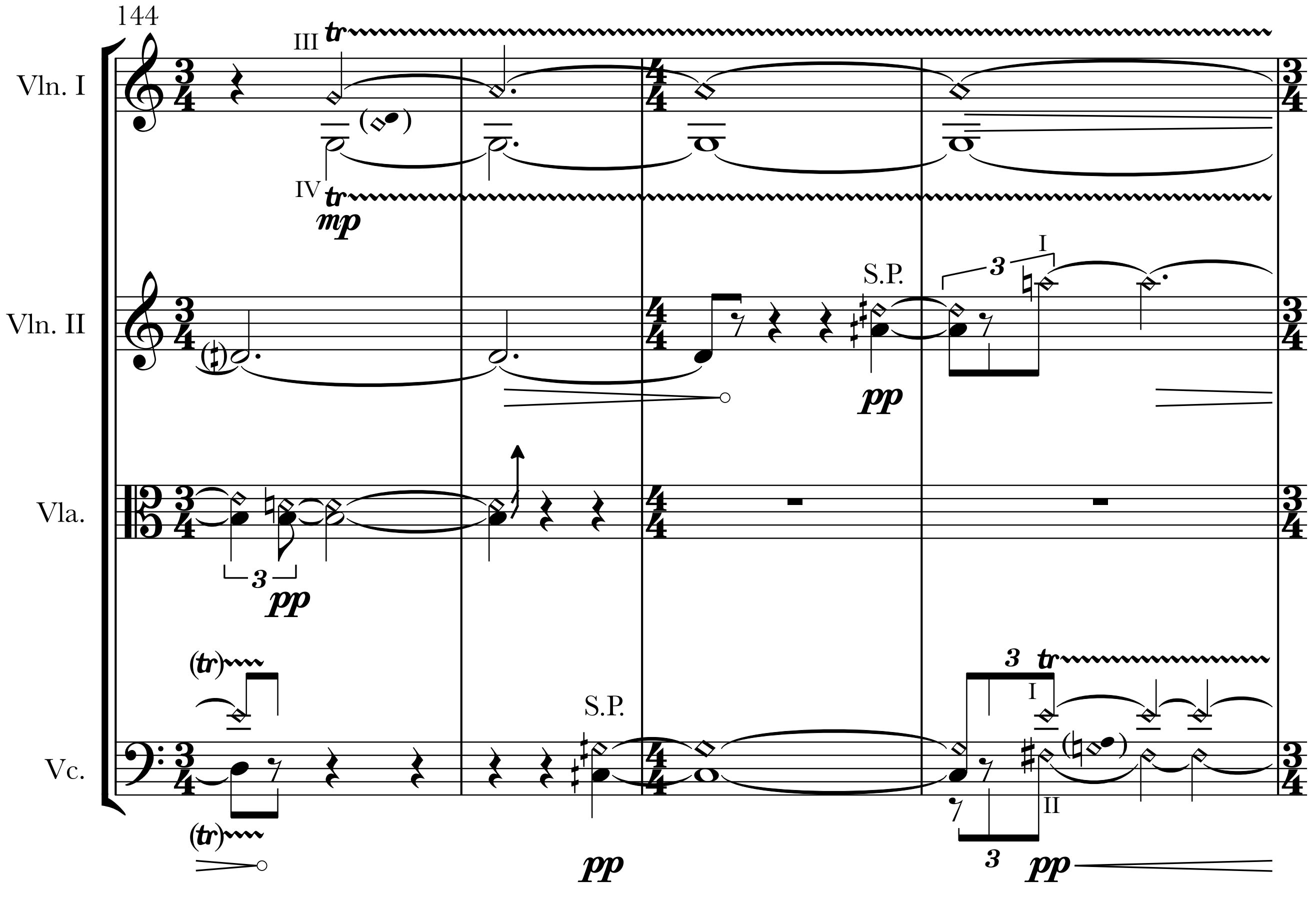

110
Vln. I
Vln. II
Vla.
Vc.
N
IV
III
M.S.P.
N.
II
S.P.
p
ppp
pp
mp
114
S.P.
M.S.P.
S.P.
I
II
N.
S.P.
N
III
M.S.P.
S.P.
pp
p
mp

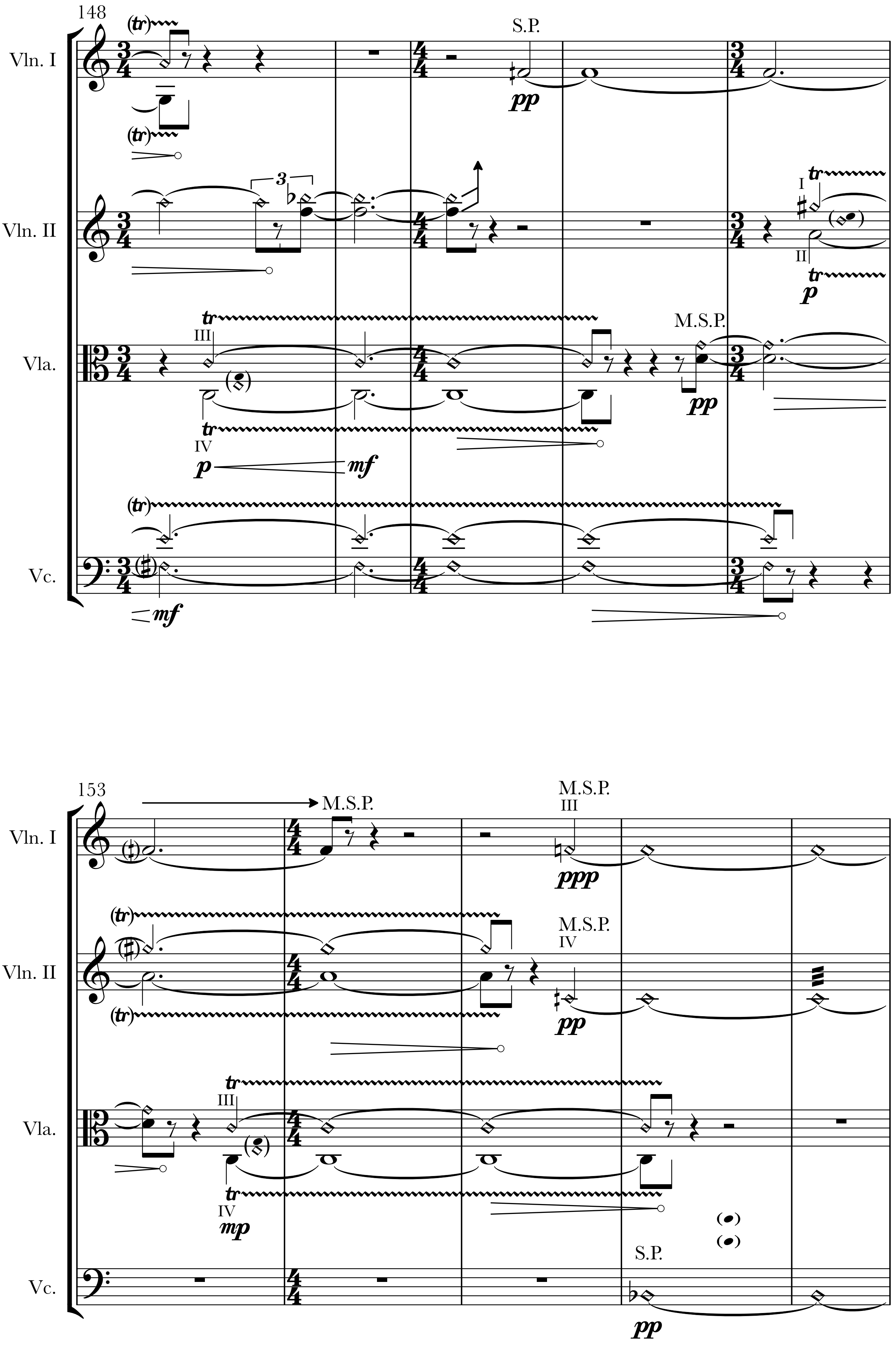

119
G
Vln. I
Vln. II
Vla.
Vc.
M.S.P.
3
IV
f
M.S.P.
fff
tr
ff
S.T.
ff
S.T.
ff
fff
125
N.
S.P.
mf
p
(tr)
p
fff
ff
M.S.P.
pp
S.P.
ff
p

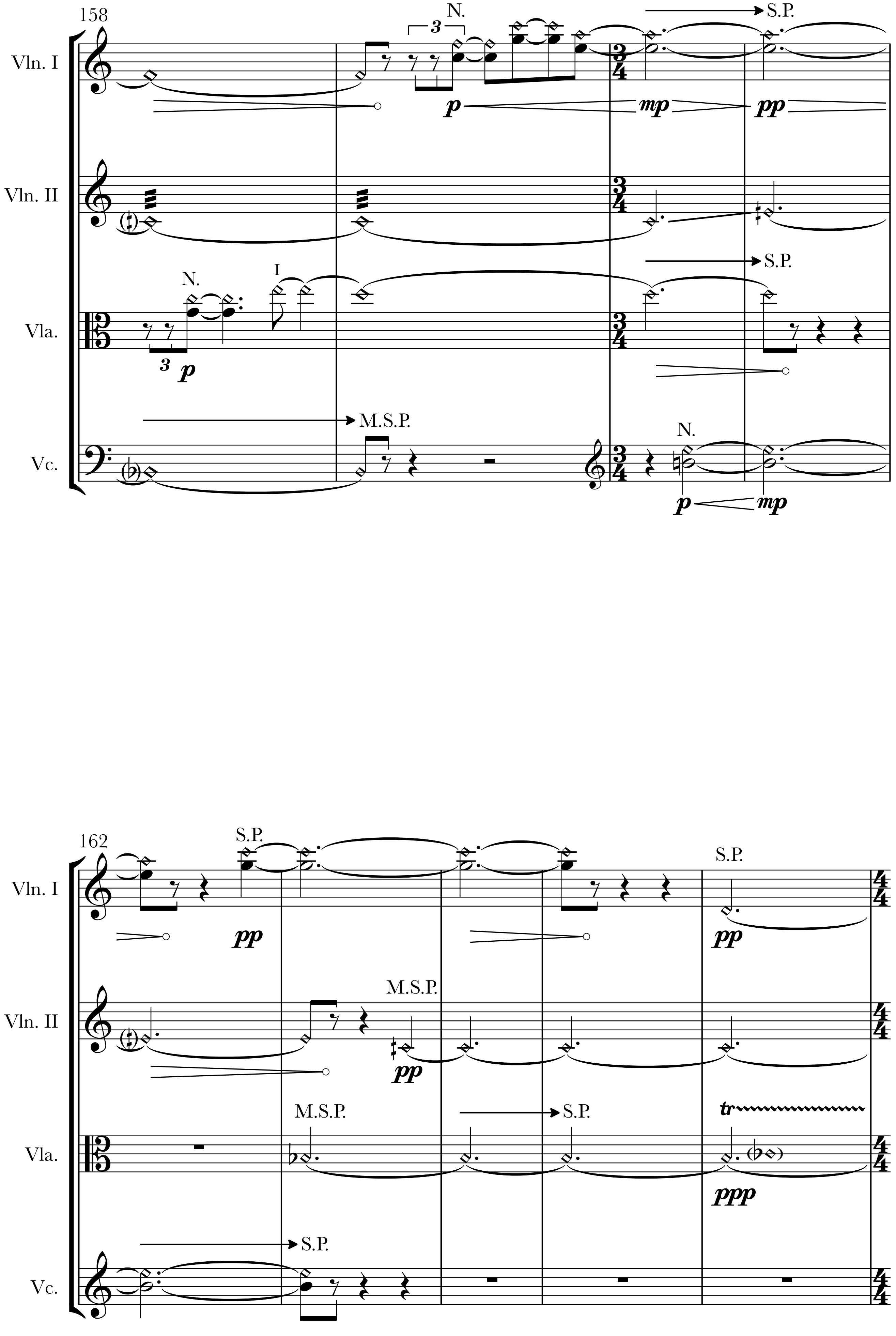

130
Vln. I
Vln. II
Vla.
Vc.
N.
S.P.
pp
(tr)
N.
IV
p
III
3
N.
S.P.
p
ppp
p
S.P.
III
N.
S.P.
pp
134
Molto flaut.
Slowly bow
(⌖)
pp
S.P.
S.P.
I
S.P.
M.S.P.
M.S.P.
S.P.
p
pp
N.
S.P.
N.
S.P.
S.P.
I
II
p
mp
p
pp

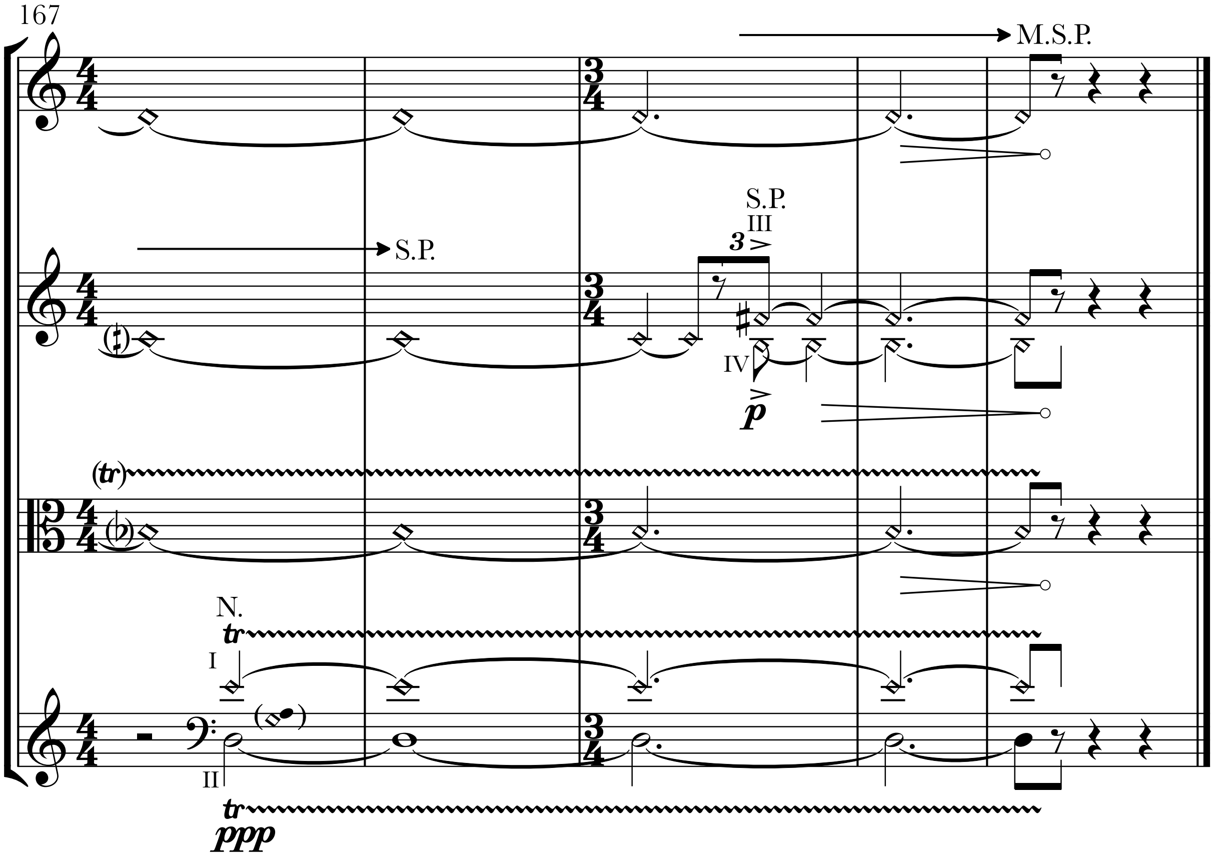
H


139
Vln. I
Vln. II
Vla.
Vc.
I
II
5
mf
S.P.
pp
3
ppp
p
N.
tr
mp


144
Vln. I
Vln. II
Vla.
Vc.
III
IV
tr
mp
S.P.
3
I
pp
(tr)
II

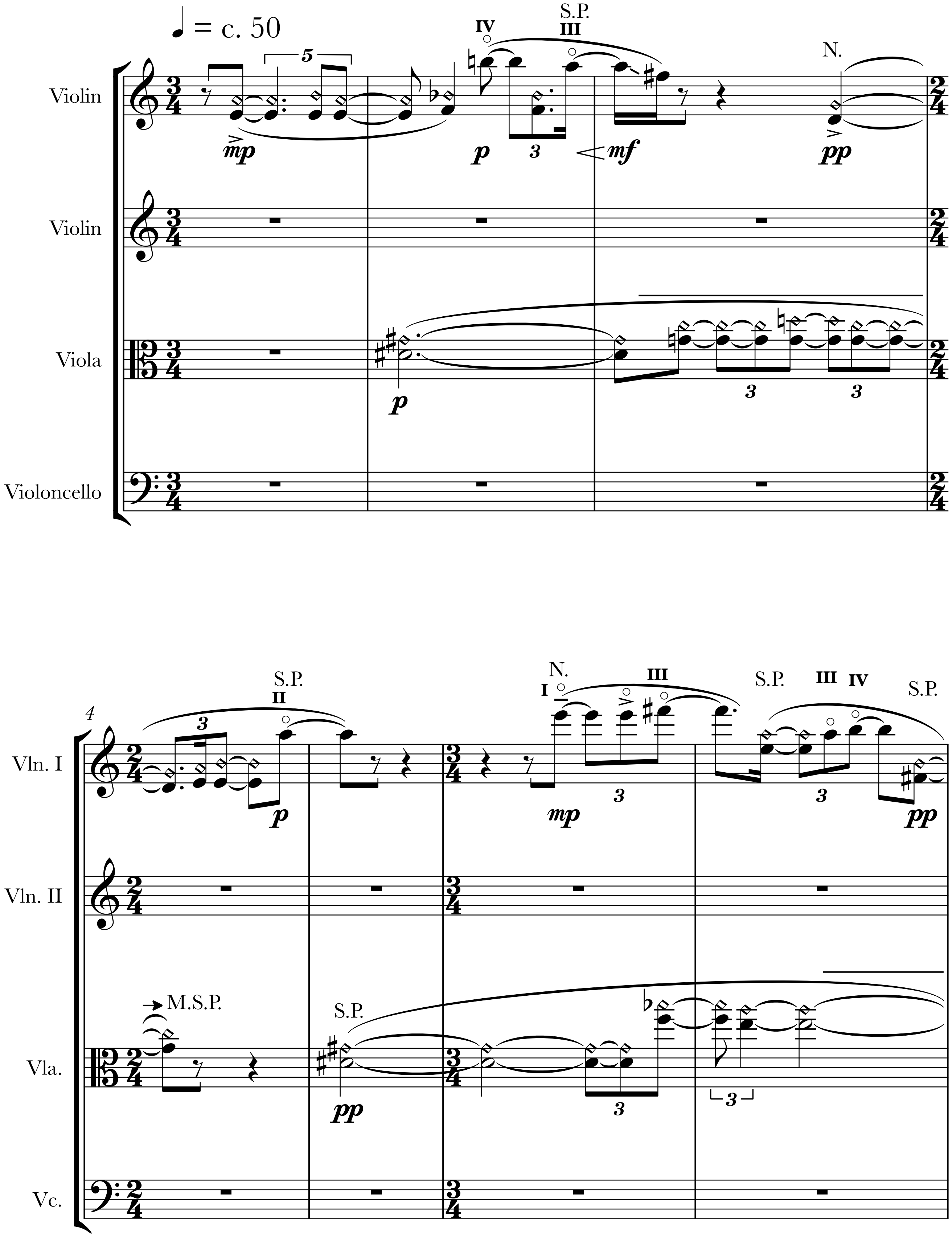

148
Vln. I
Vln. II
Vla.
Vc.
(tr)
(tr)
S.P.
pp
3
tr
I
II
tr
p
tr
III
M.S.P.
pp
tr
IV
p
mf
(tr)
mf
153
M.S.P.
M.S.P.
III
ppp
(tr)
(tr)
M.S.P.
IV
pp
tr
III
tr
IV
mp
S.P.
pp


158
Vln. I
Vln. II
Vla.
Vc.
N.
3
S.P.
p
mp
pp
N.
I
3
p
S.P.
M.S.P.
N.
p
mp
162
Vln. I
Vln. II
Vla.
Vc.
S.P.
pp
S.P.
pp
M.S.P.
pp
M.S.P.
S.P.
tr
ppp
S.P.


167
Vln. I
Vln. II
Vla.
Vc.
M.S.P.
S.P.
S.P.
III
IV
3
p
(tr)
N.
tr
I
II
tr
ppp

Memories of my father
II

Christopher Bayley


♩ = c. 50
Violin
Violin
Viola
Violoncello
Vln. I
Vln. II
Vla.
Vc.
5
3
IV
S.P.
III
N.
II
I
M.S.P.
mp
p
mf
pp
4

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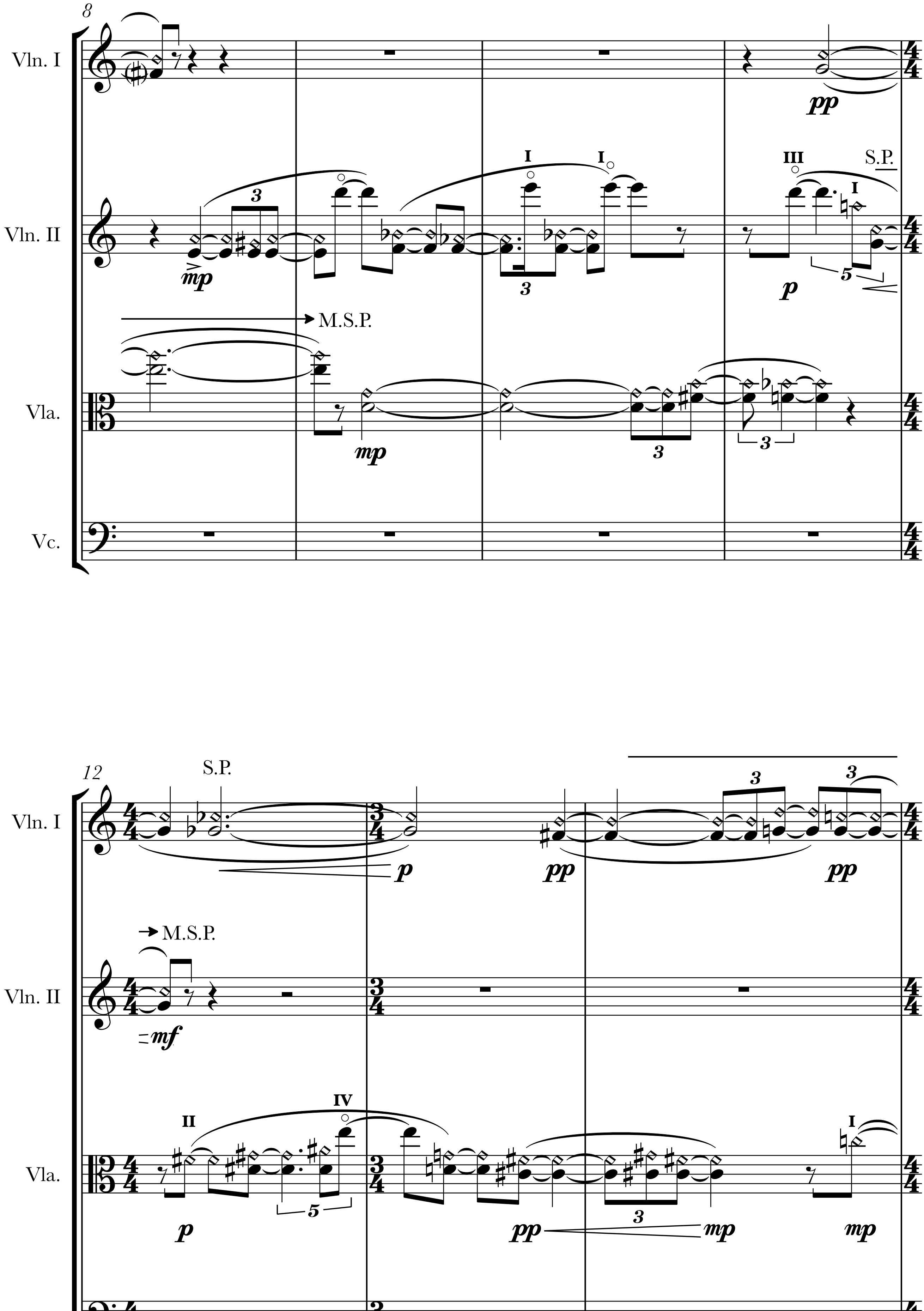
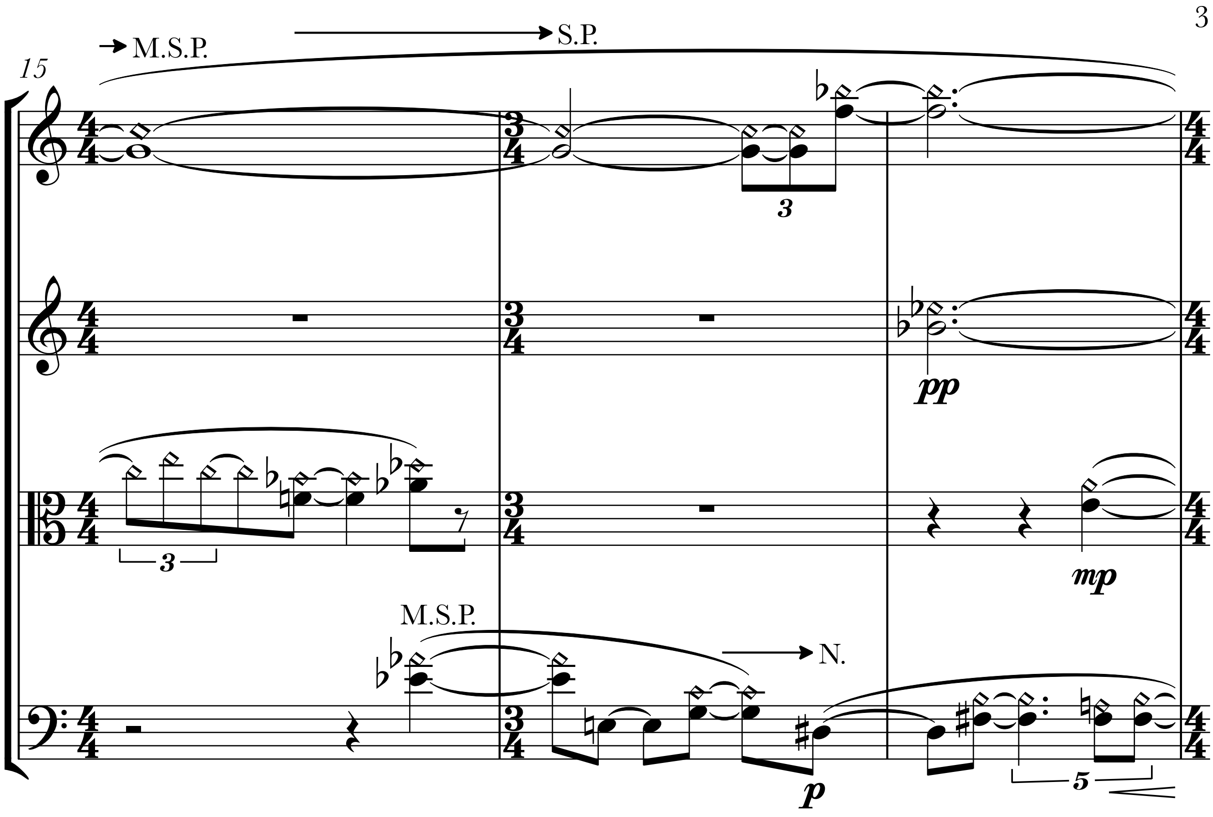
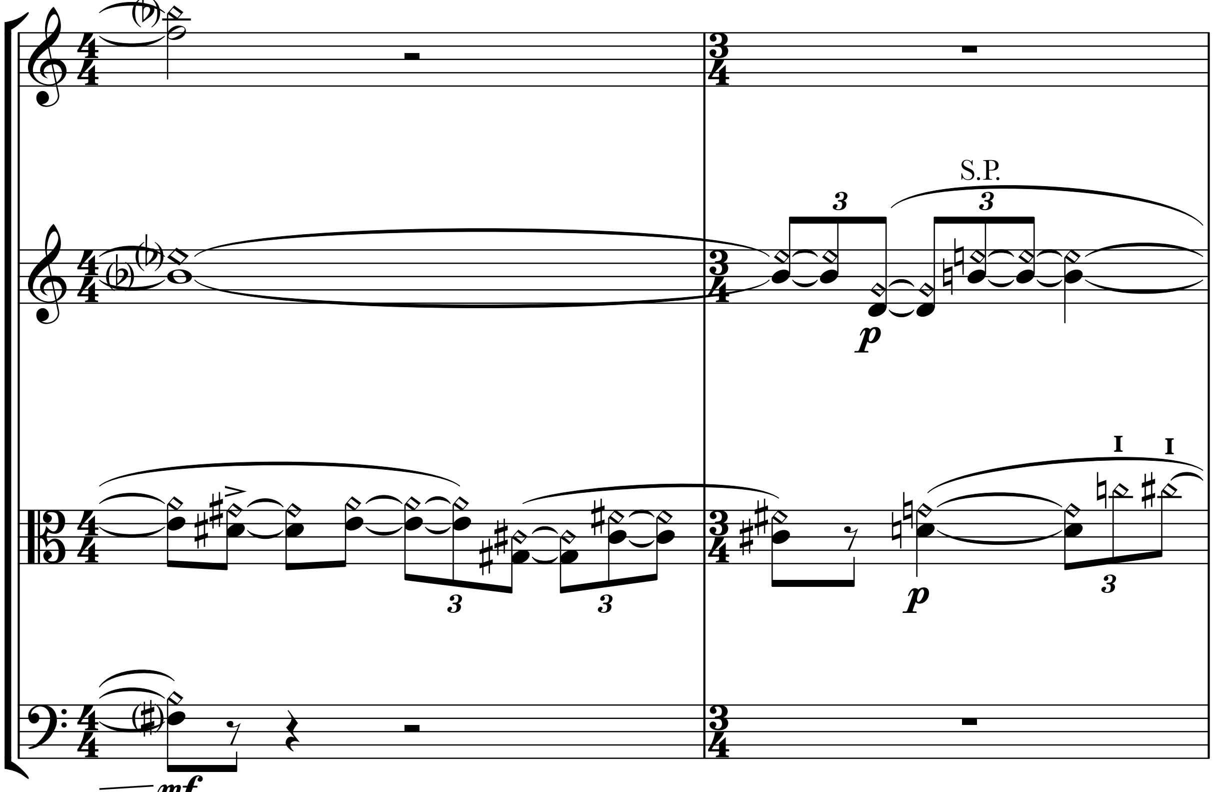
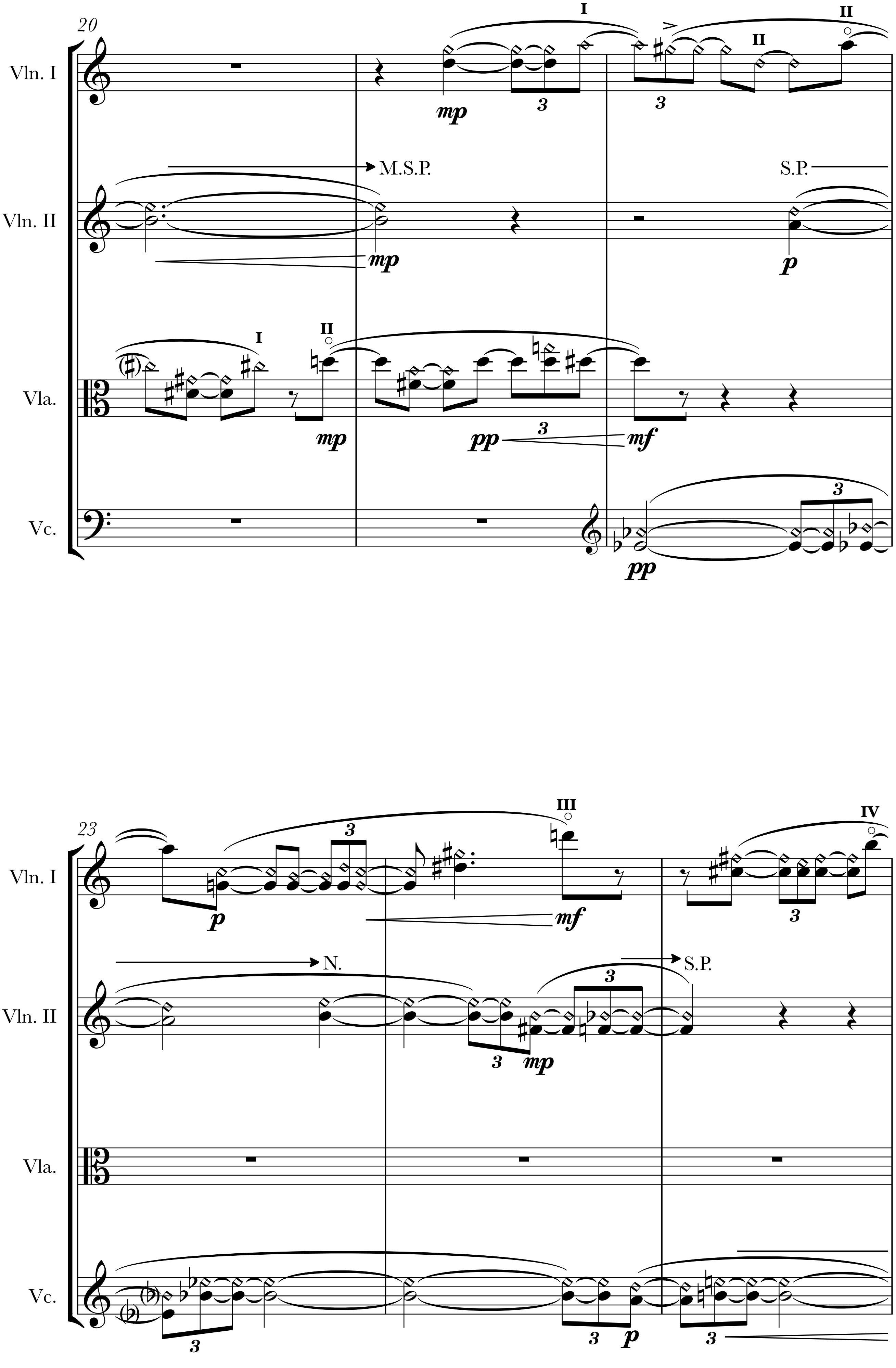
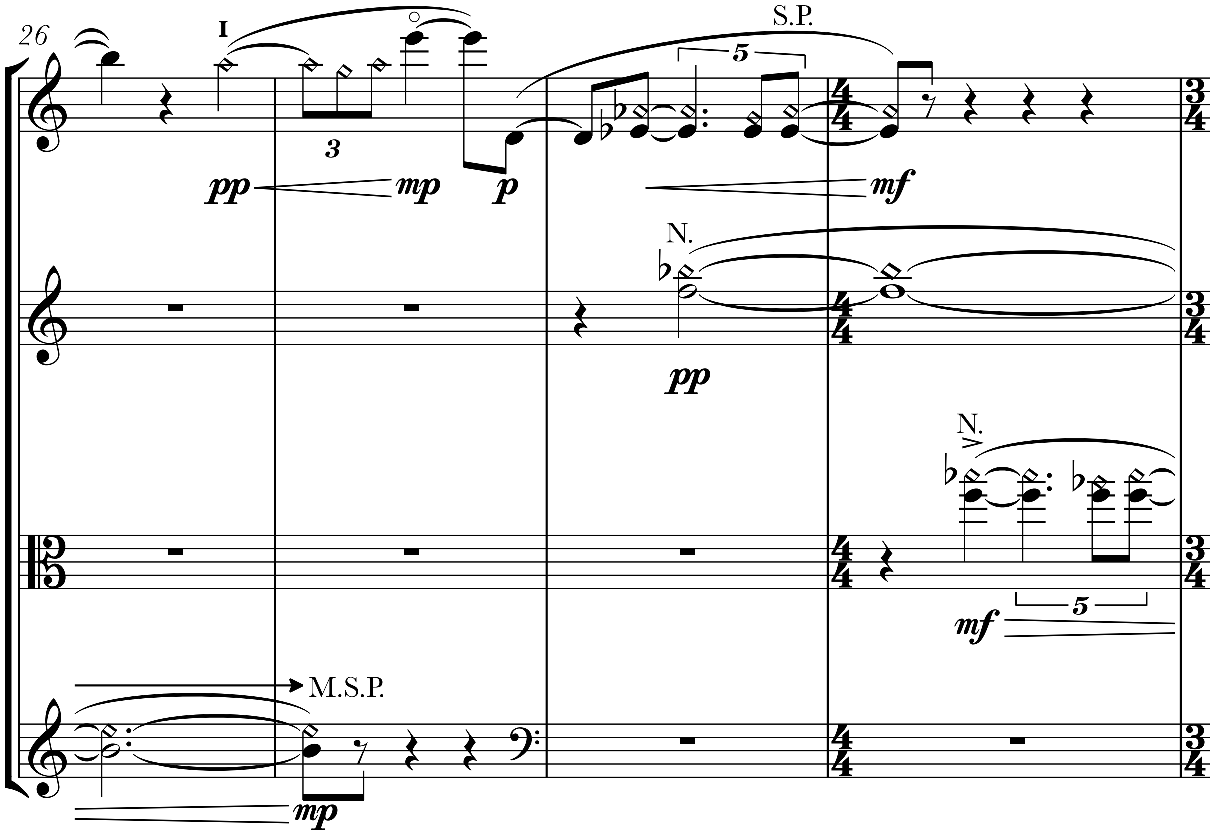
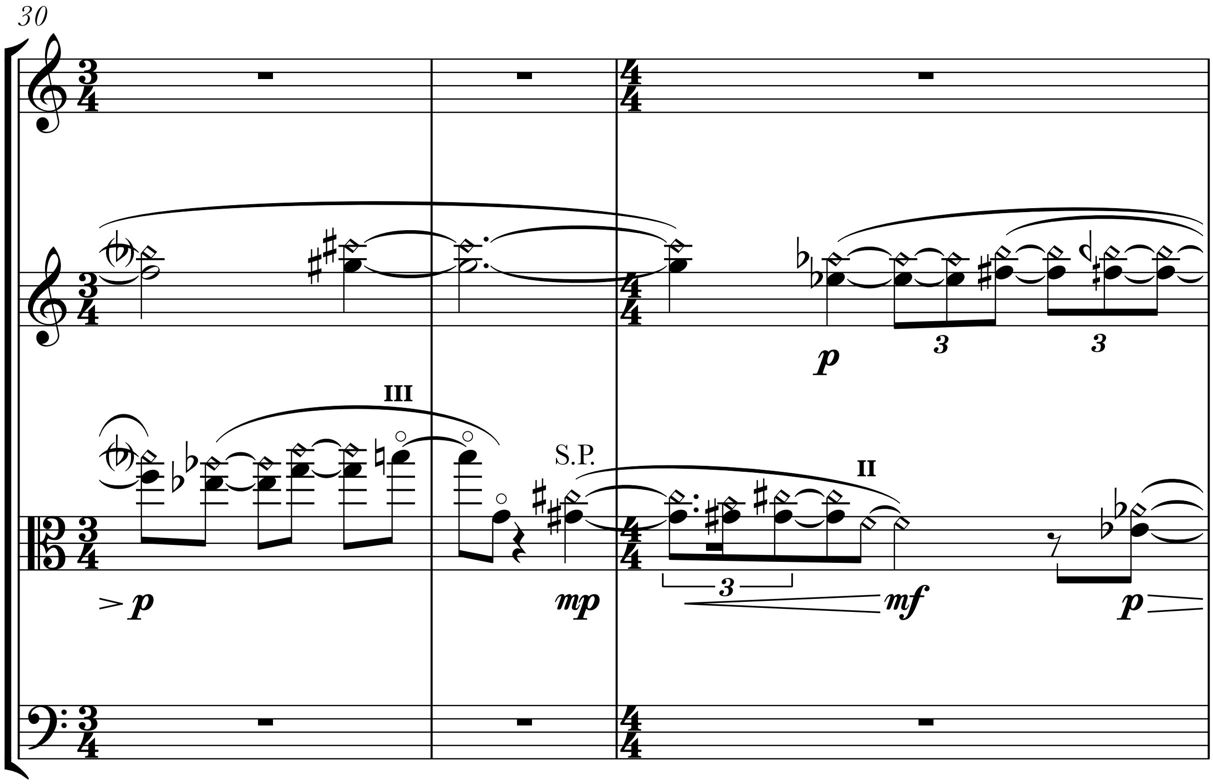

8
Vln. I
Vln. II
Vla.
Vc.
mp
3
I
III
S.P.
p
5
M.S.P.
pp
12
S.P.
→ M.S.P.
mf
II
IV
p
pp
mp

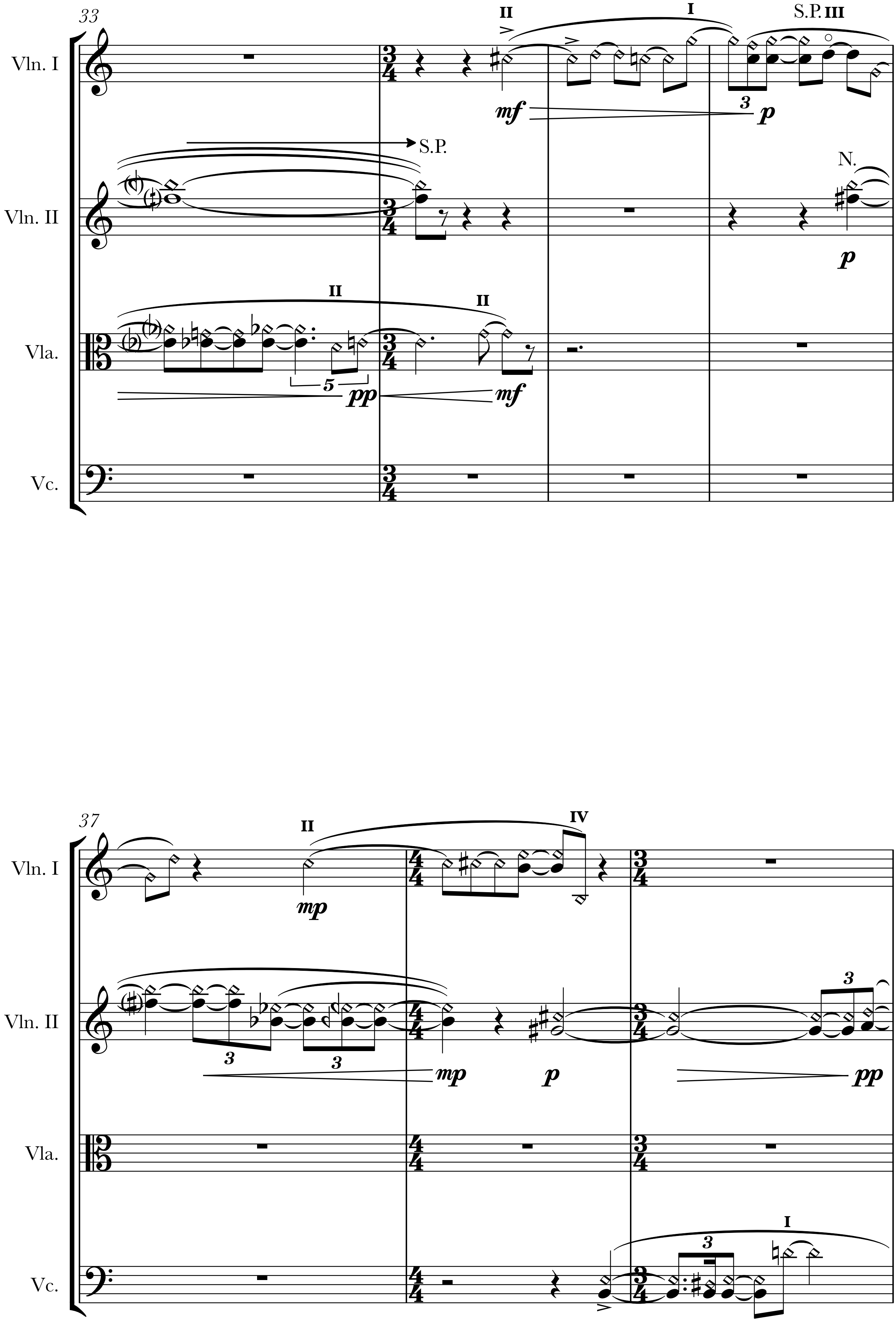

15
M.S.P.
S.P.
Vln. I
Vln. II
Vla.
Vc.
3
3
5
pp
mp
p
M.S.P.
N.

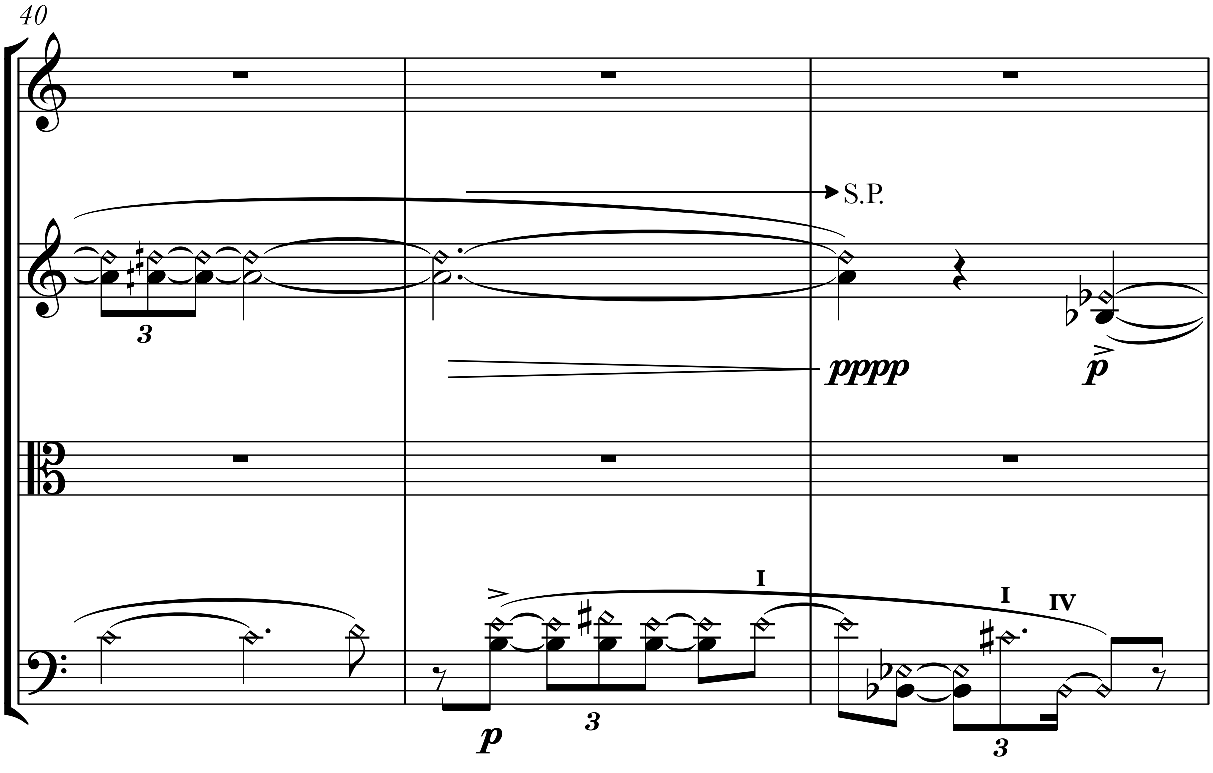

18
Vln. I
Vln. II
Vla.
Vc.
S.P.
3
3
3
3
3
p
p
mf
I
I

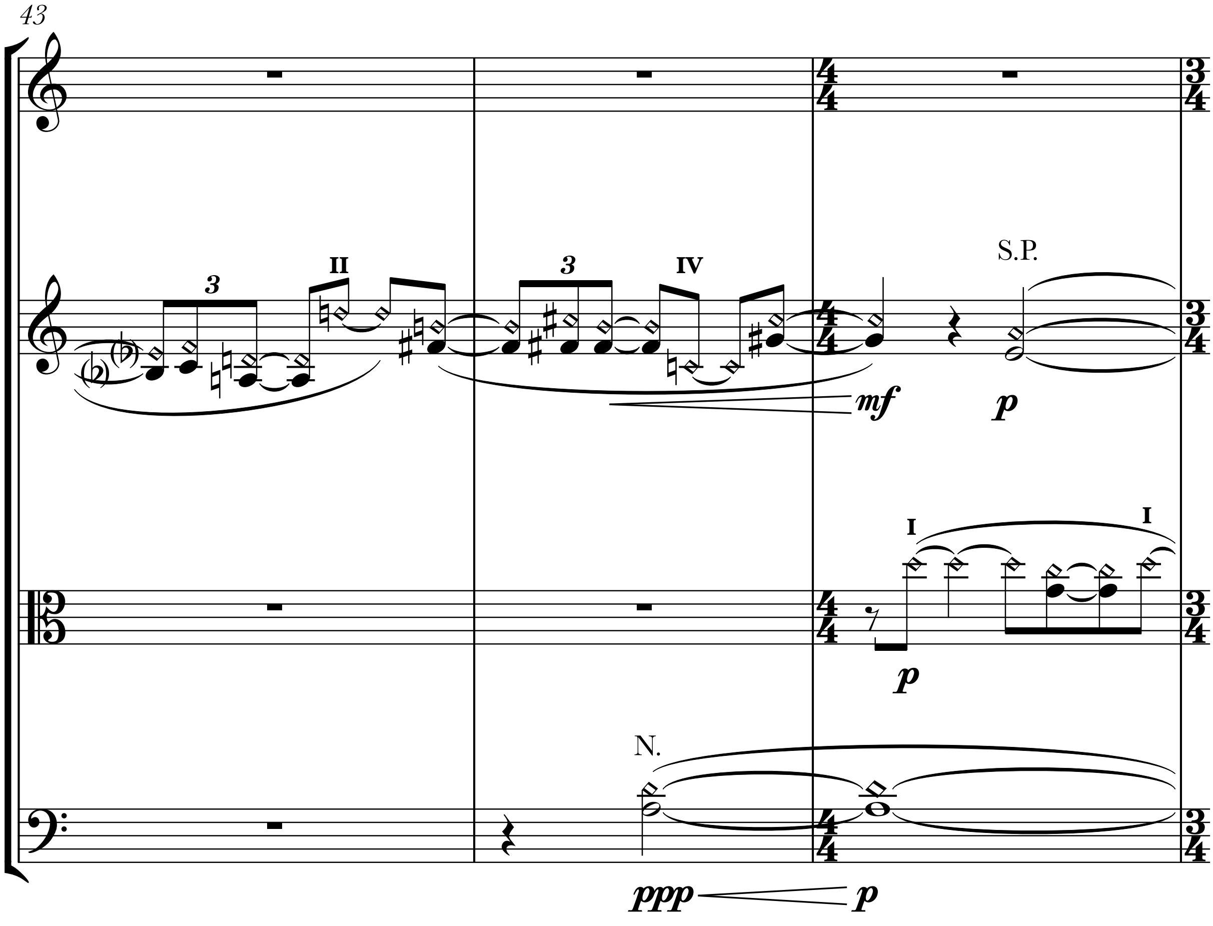

20
Vln. I
Vln. II
Vla.
Vc.
mp
I
II
M.S.P.
S.P.
mp
p
mp
pp
mf
pp
3
23
p
mf
III
IV
N.
S.P.
mp
p
3

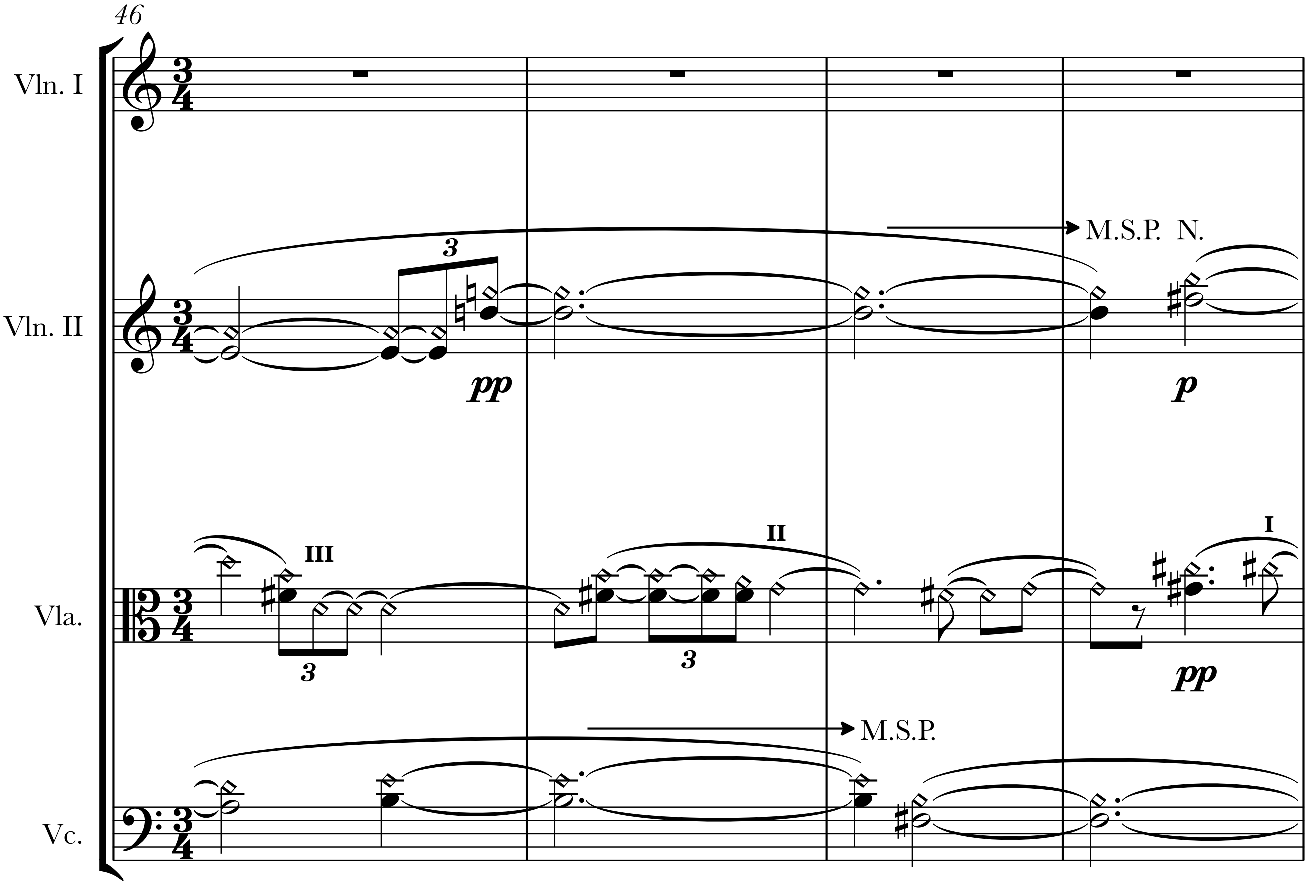

26
Vln. I
Vln. II
Vla.
Vc.
I
3
pp
mp
p
S.P.
5
mf
N.
pp
N.
mf
5
M.S.P.
mp

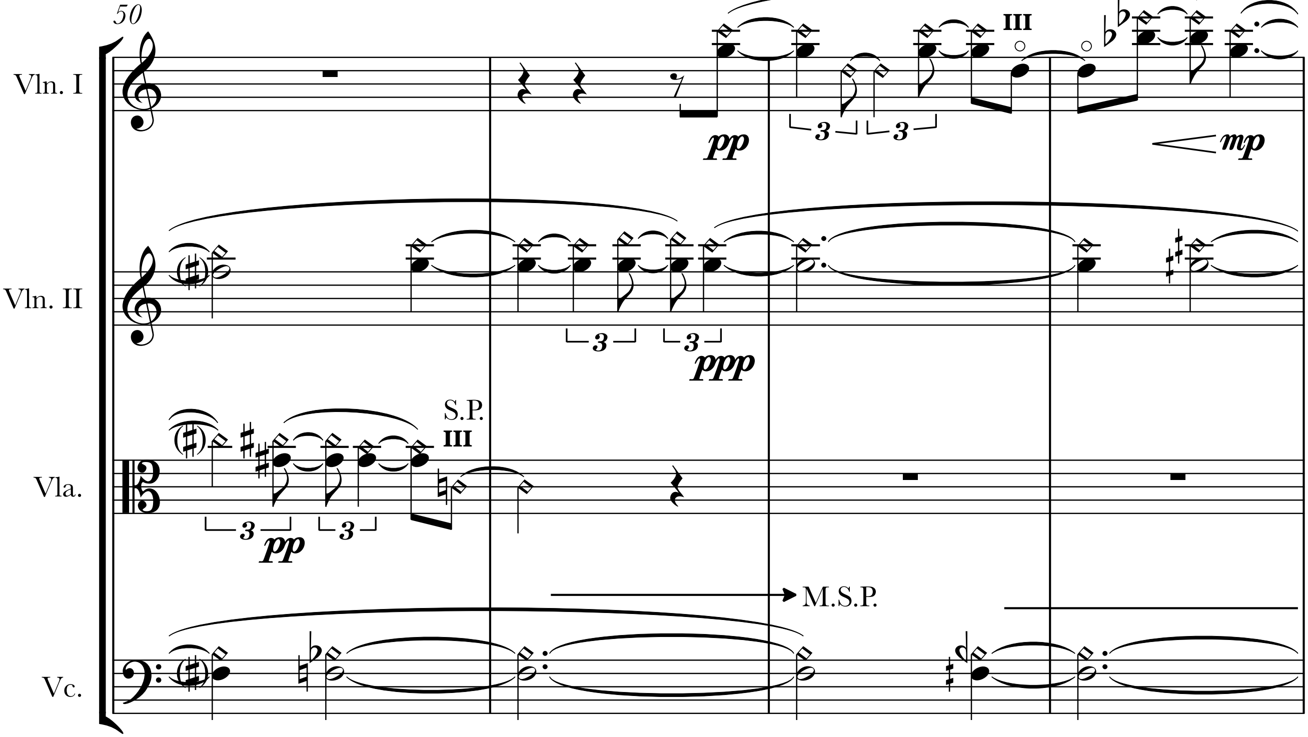

30
Vln. I
Vln. II
Vla.
Vc.
p
3
3
III
p
S.P.
mp
3
II
mf
p

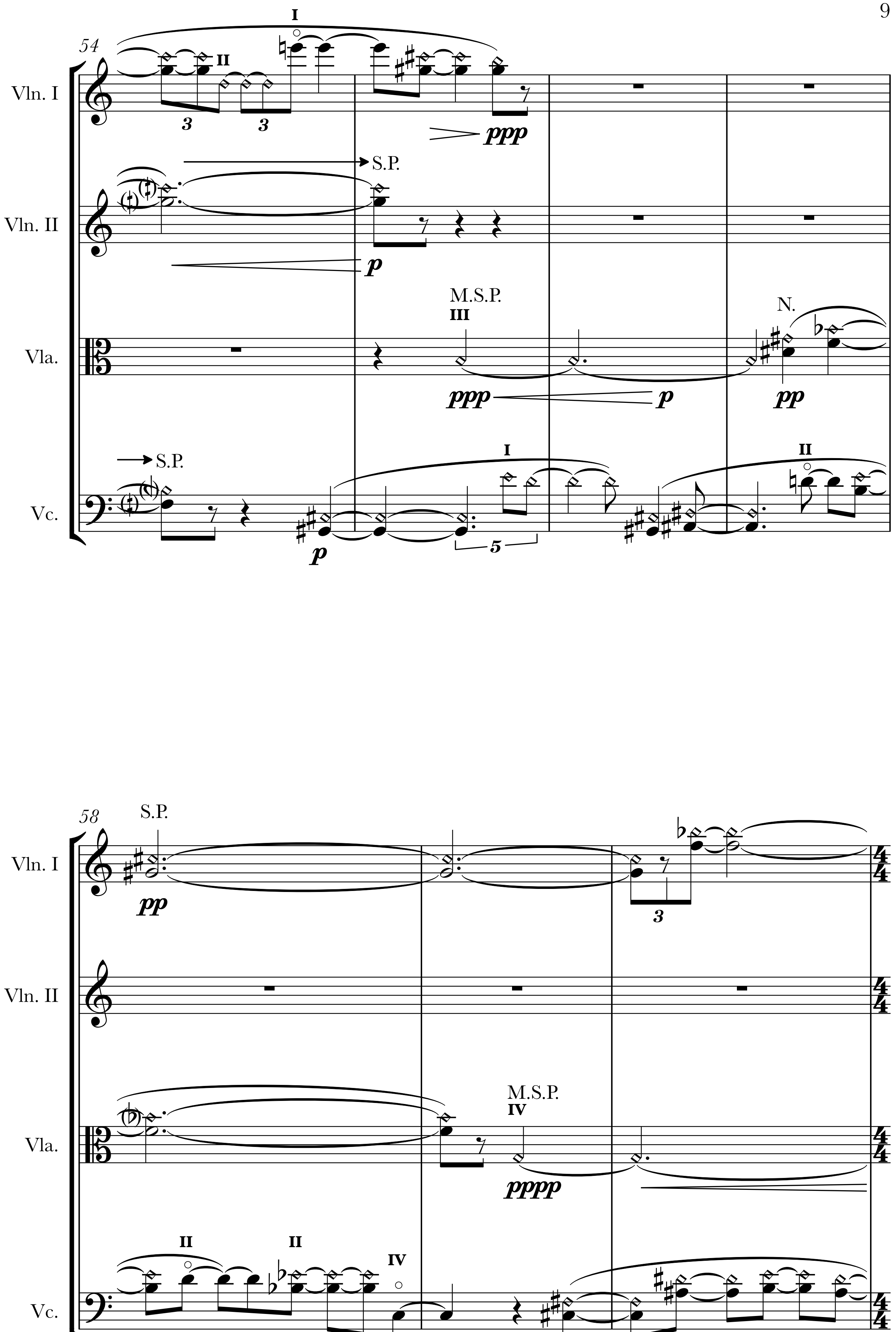

33
Vln. I
Vln. II
Vla.
Vc.
II
I
S.P. III
mf
3
p
S.P.
N.
p
II
II
5
pp
mf
37
II
IV
mp
3
3
mp
p
3
pp
I
3
pp

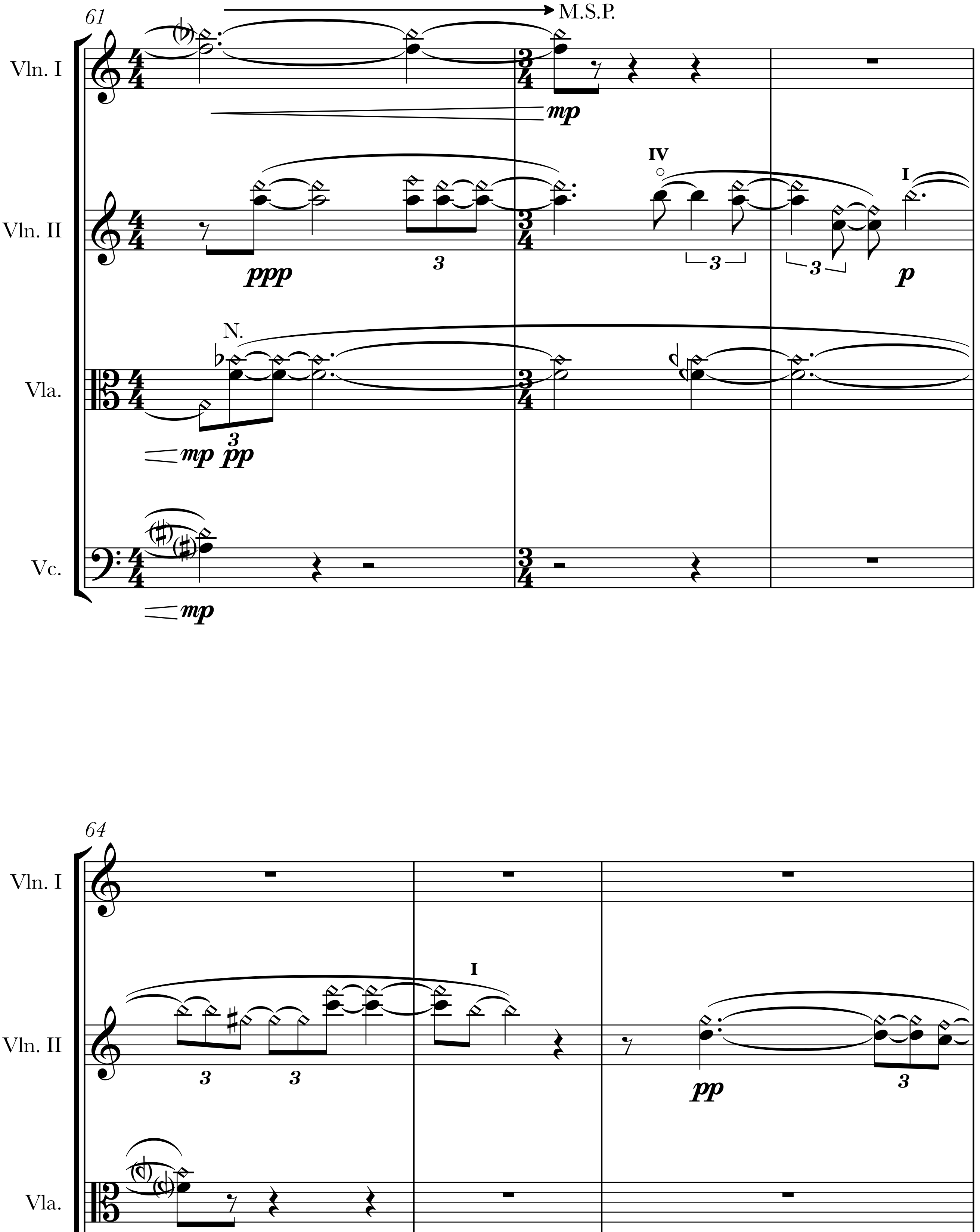

40
Vln. I
Vln. II
Vla.
Vc.
S.P.
3
pppp
p
I
IV
p
3
3

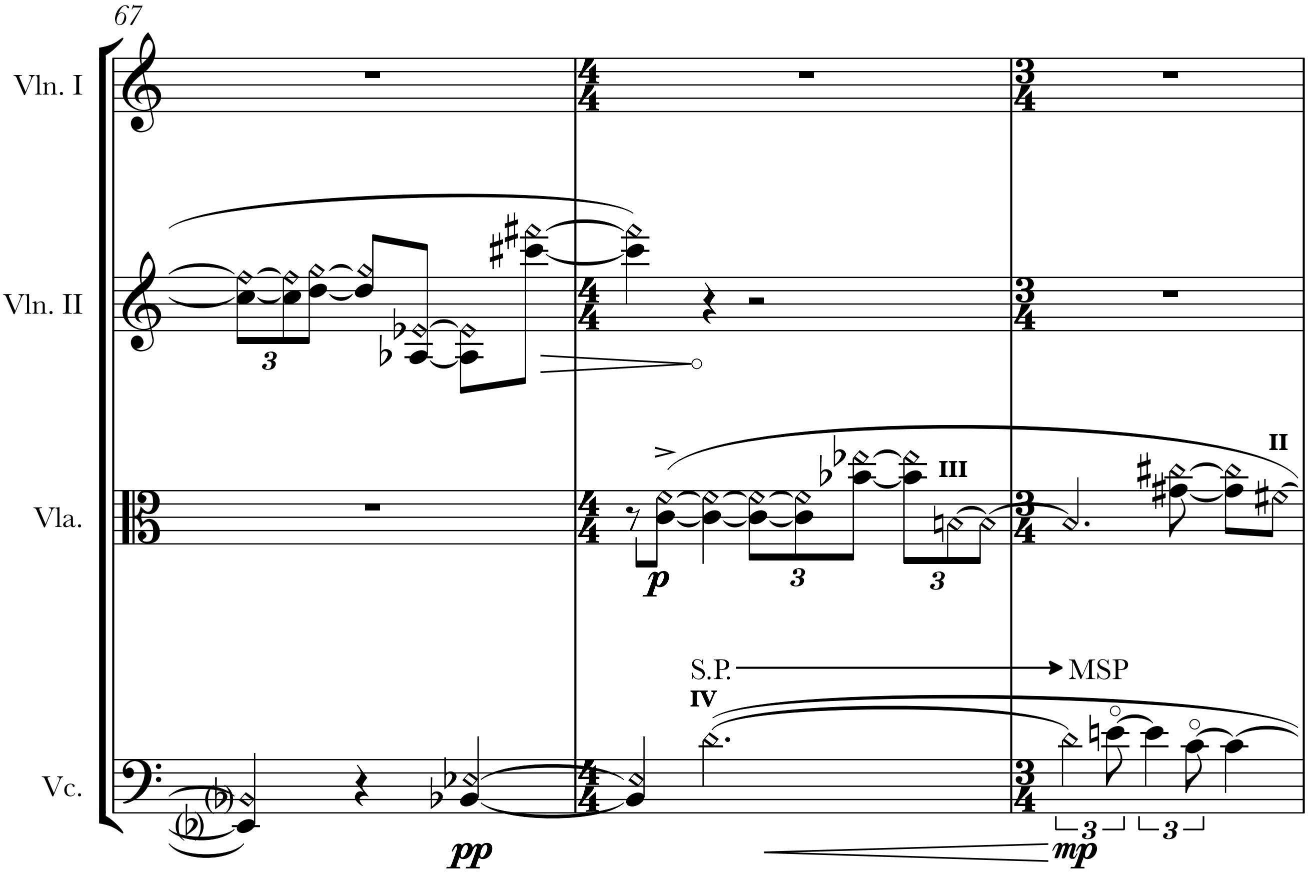

43
Vln. I
Vln. II
Vla.
Vc.
3
II
3
IV
(♭)
(♭)
mf
S.P.
p
I
I
p
N.
ppp
p

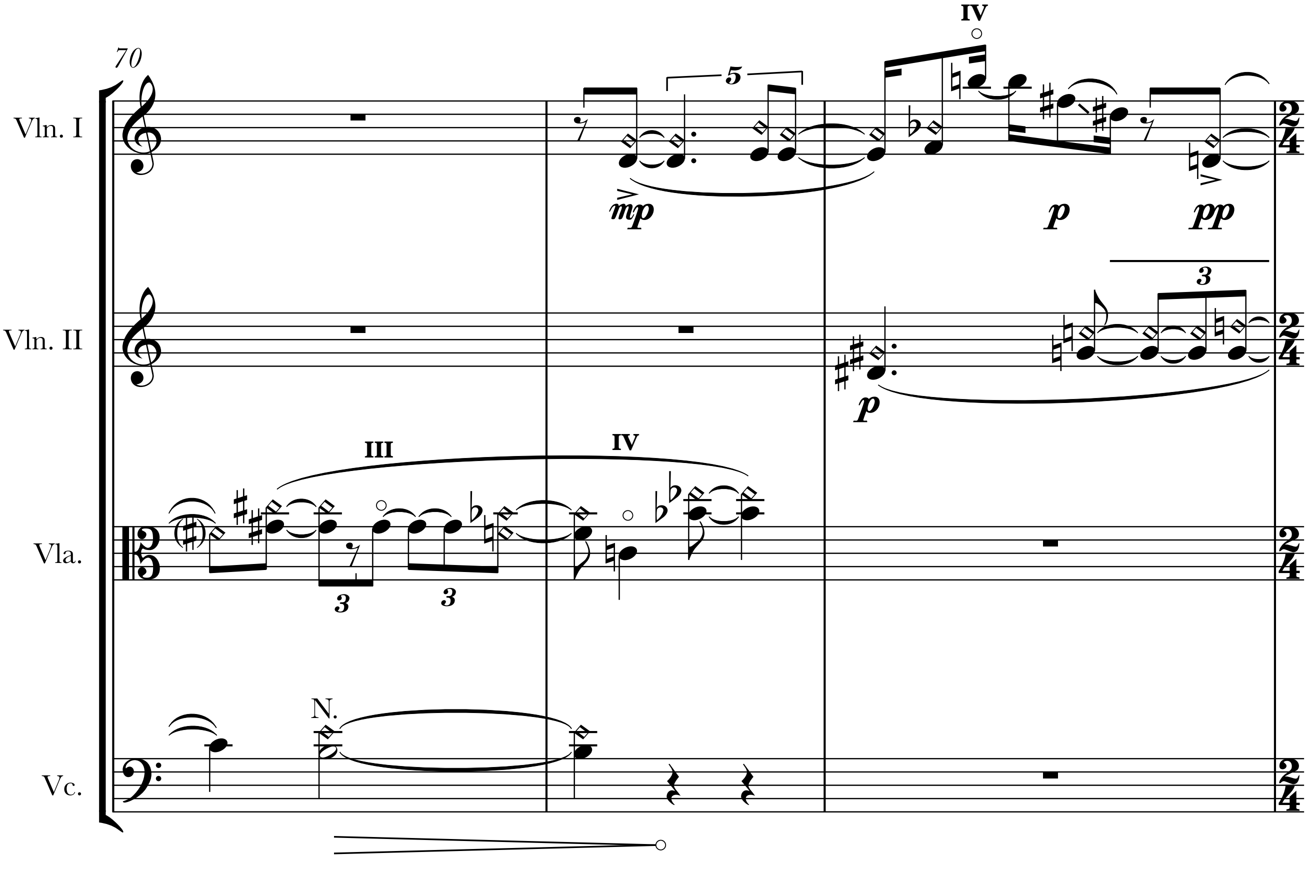

46
Vln. I
Vln. II
Vla.
Vc.
pp
M.S.P.
N.
p
III
II
I
3
M.S.P.
pp

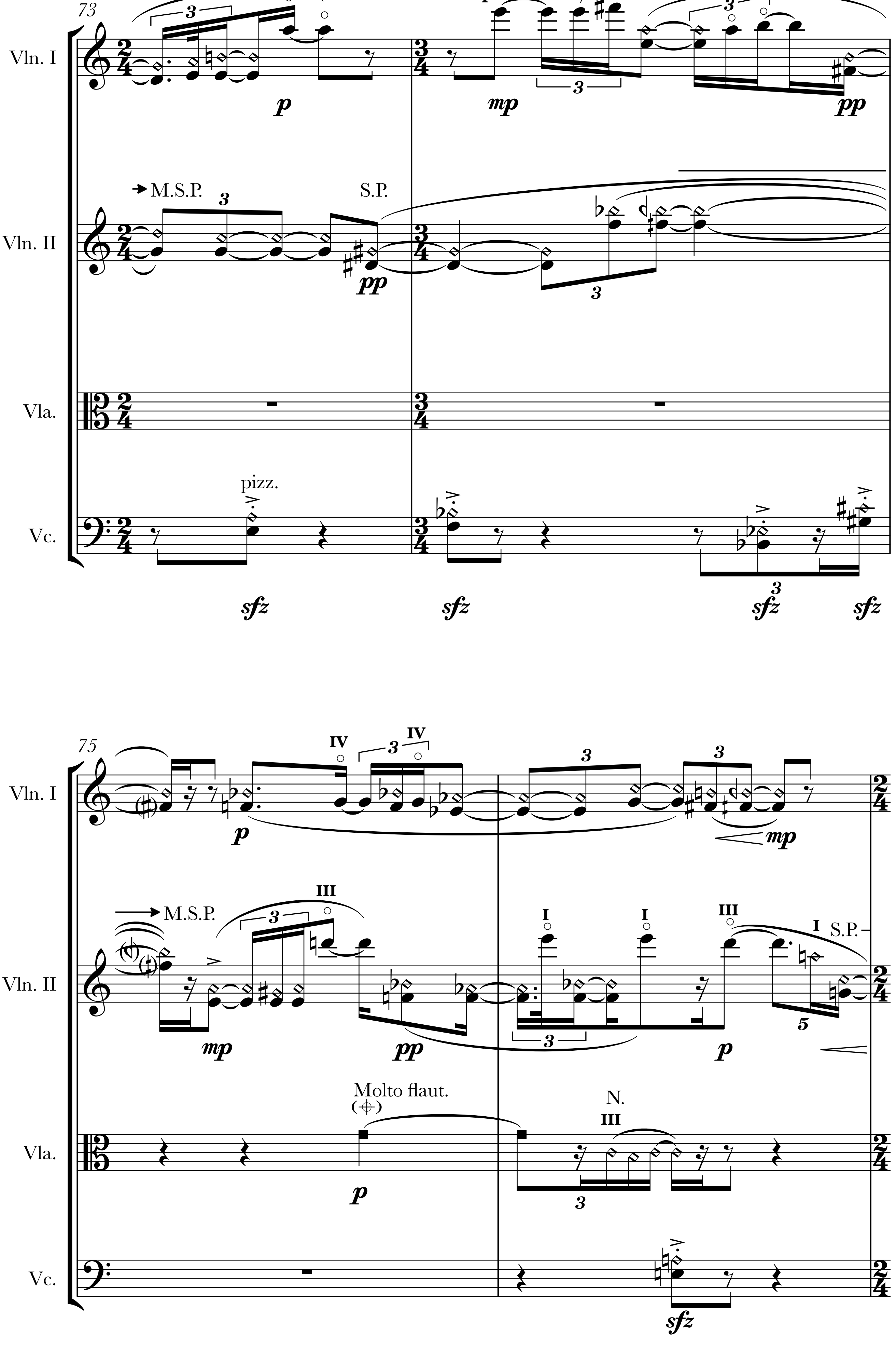

50
Vln. I
Vln. II
Vla.
Vc.
II
III
pp
3
mp
ppp
S.P.
III
pp
M.S.P.
ppp
p

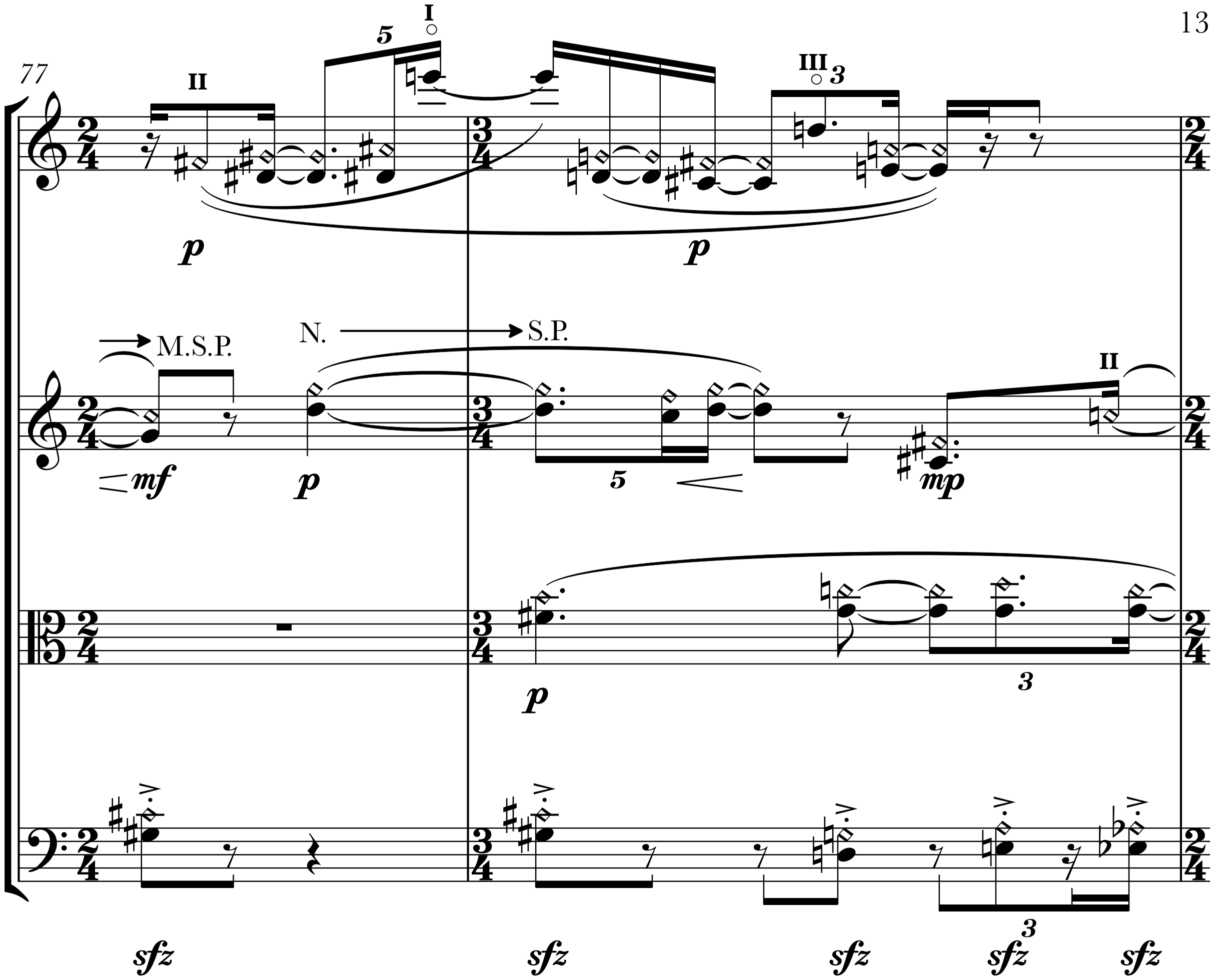

54
Vln. I
Vln. II
Vla.
Vc.
I
II
3
3
ppp
S.P.
p
M.S.P.
III
ppp
p
N.
pp
S.P.
I
5
p
II
58
S.P.
pp
3
M.S.P.
IV
pppp
II
II
IV
3
3
pp

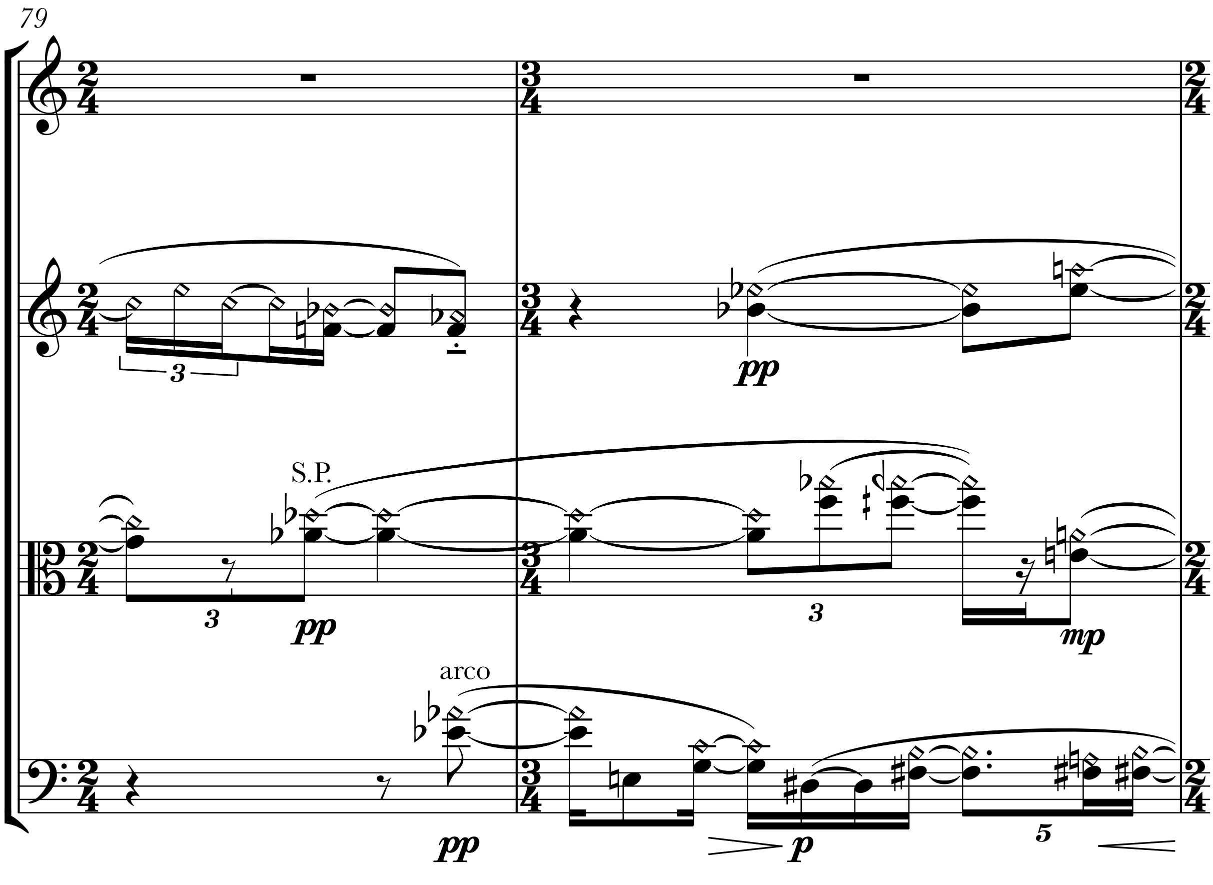

61
M.S.P.
Vln. I
mp
Vln. II
ppp
3
IV
3
3
I
p
N.
Vla.
3
mp
pp
Vc.
mp
64
Vln. I
Vln. II
3
3
I
pp
3
Vla.
Vc.
p
3
3

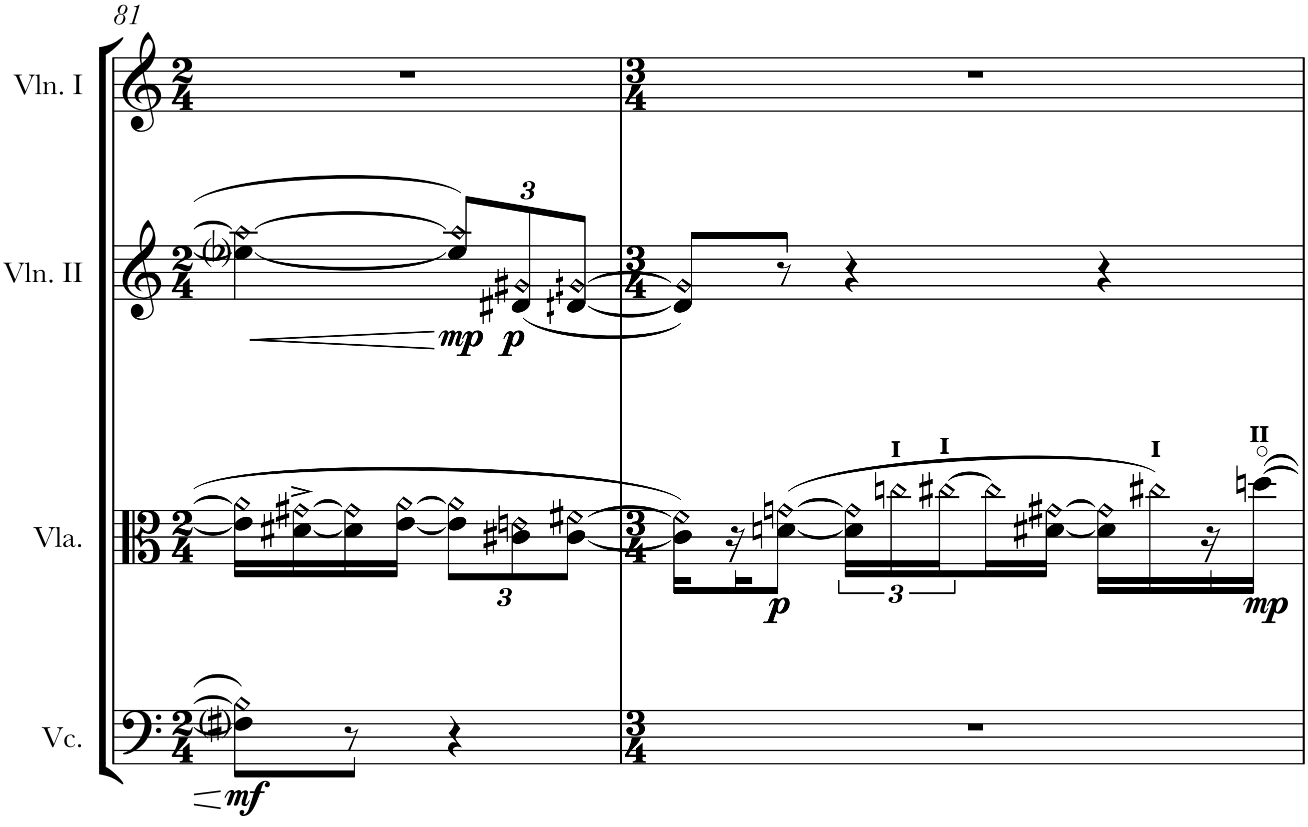

67
Vln. I
Vln. II
Vla.
Vc.
3
3
3
III
II
p
S.P.
MSP
IV
pp
mp
3
3

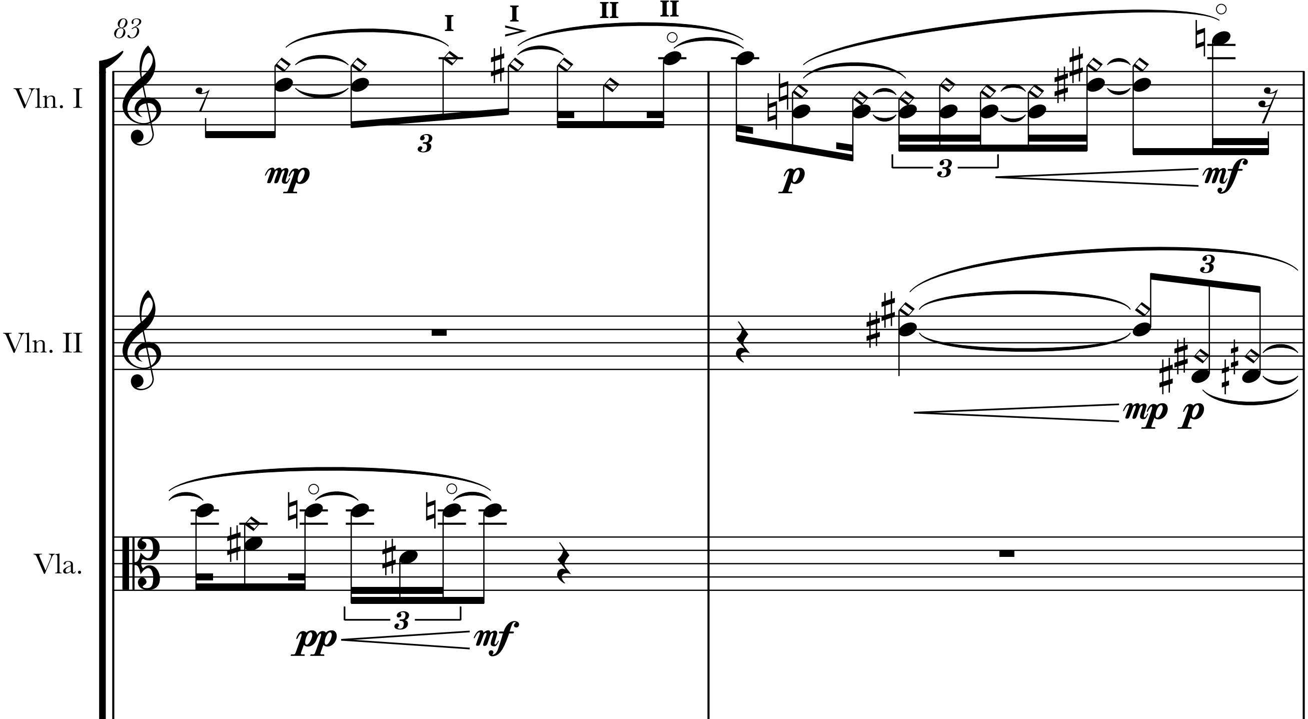

70
Vln. I
Vln. II
Vla.
Vc.
5
IV
mp
p
pp
3
p
III
IV
3
3
N.

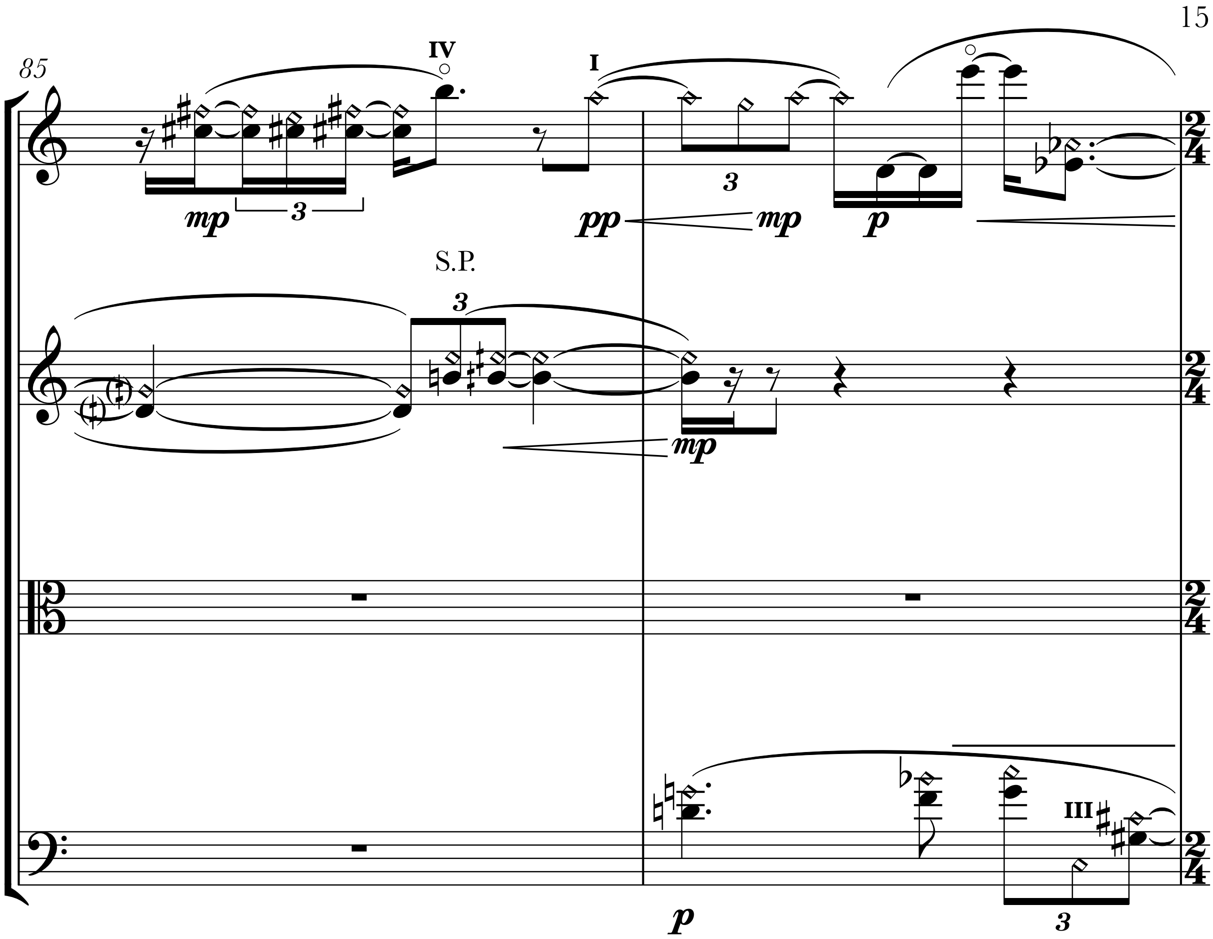

73
Vln. I
Vln. II
Vla.
Vc.
II
N.
I
III
S.P.
III
IV
S.P.
3
p
mp
pp
→ M.S.P.
S.P.
pp
pizz.
sfz
sfz
sfz
sfz
75
IV
IV
p
mp
→ M.S.P.
III
I
I
III
I
S.P.
mp
pp
p
5
Molto flaut.
N.
III
p
sfz

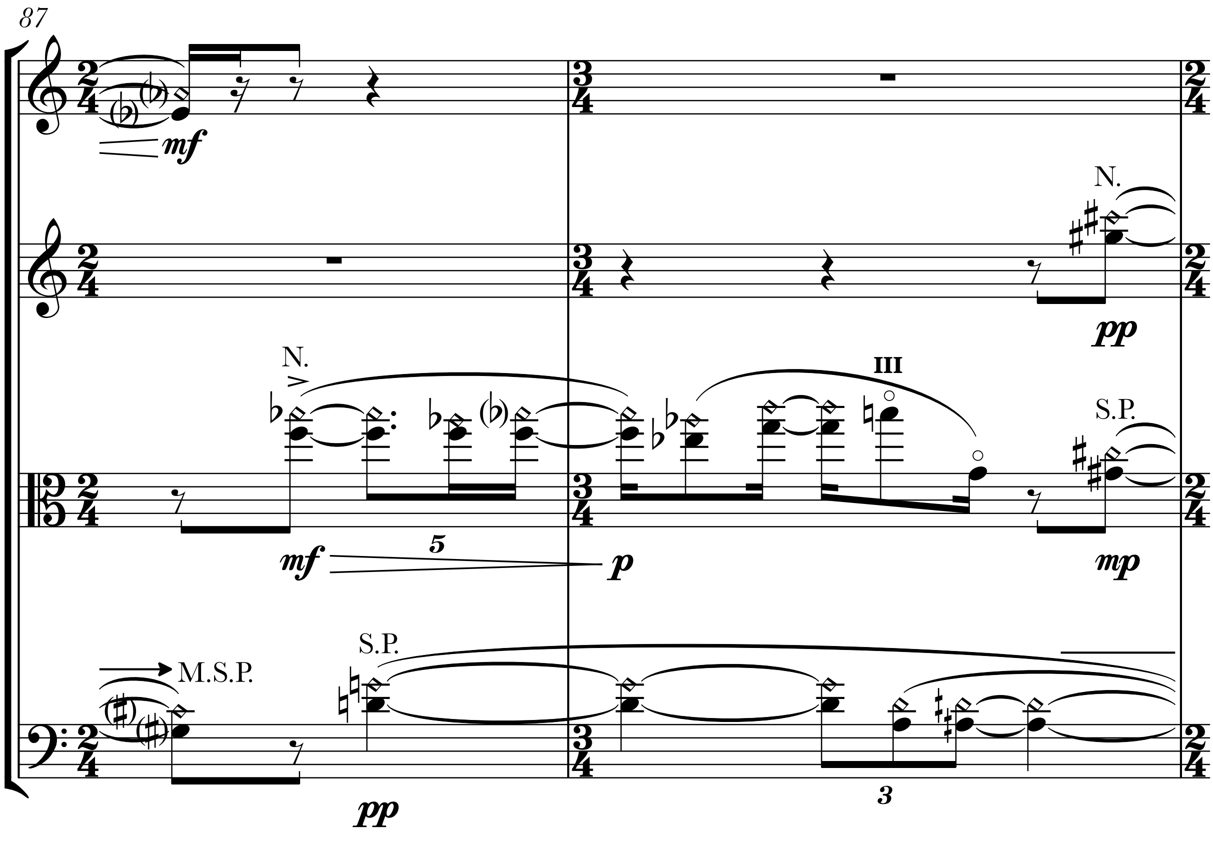

77
Vln. I
Vln. II
Vla.
Vc.
II
5
I
III
3
p
p
M.S.P.
N.
S.P.
mf
p
5
mp
p
3
sfz
sfz
sfz
sfz
sfz

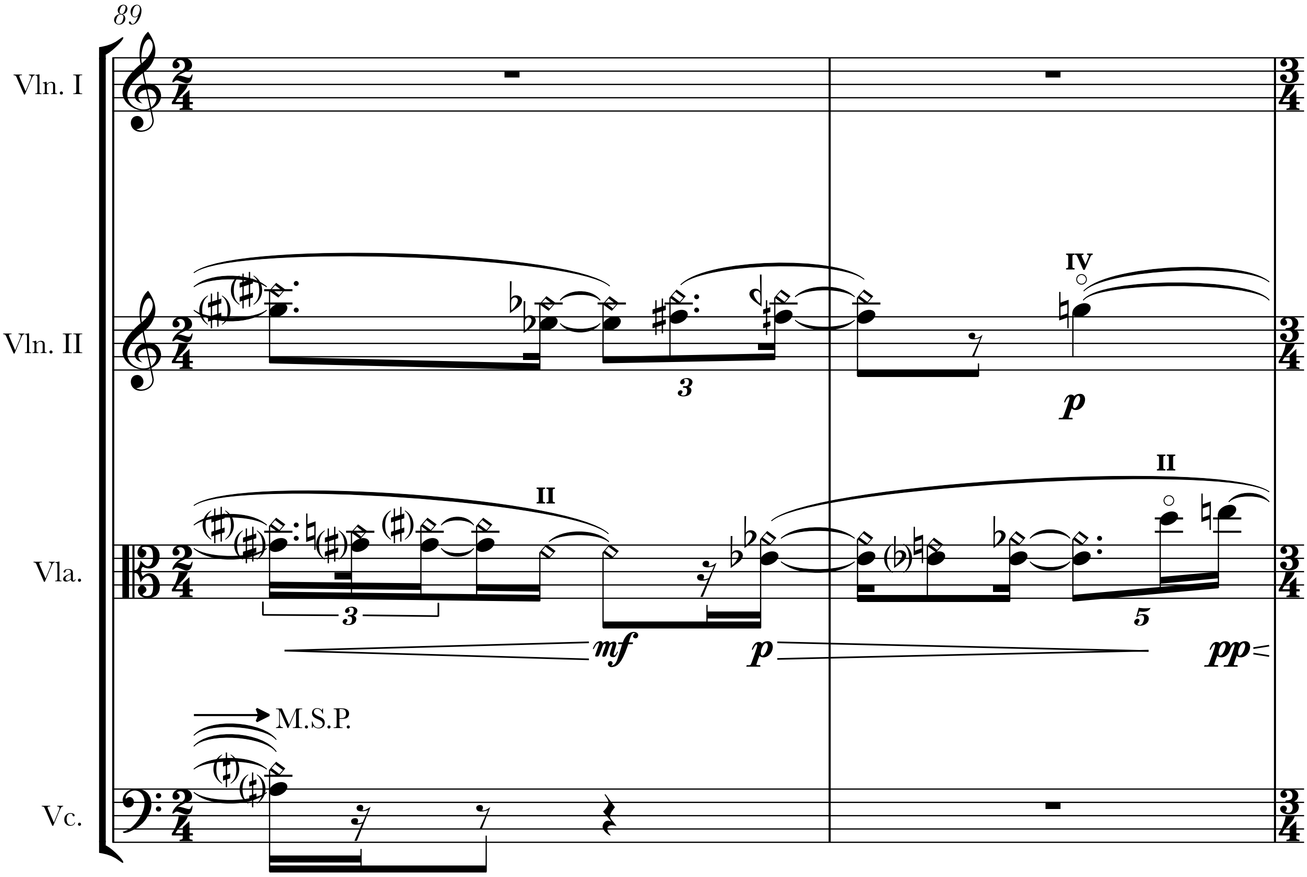

79
Vln. I
Vln. II
Vla.
Vc.
3
pp
S.P.
3
pp
3
mp
arco
pp
p
5

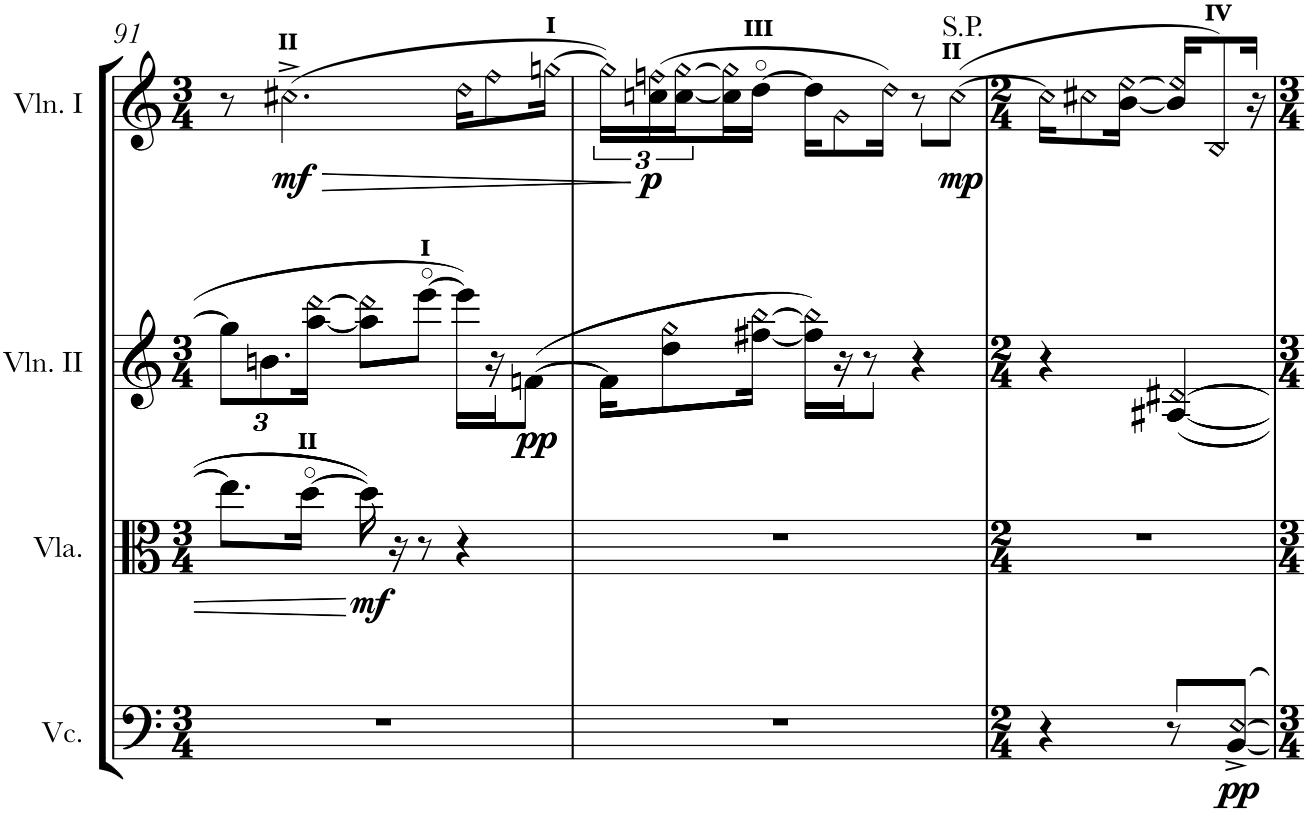

81
Vln. I
Vln. II
Vla.
Vc.
3
mp
p
I
II
mp
mf

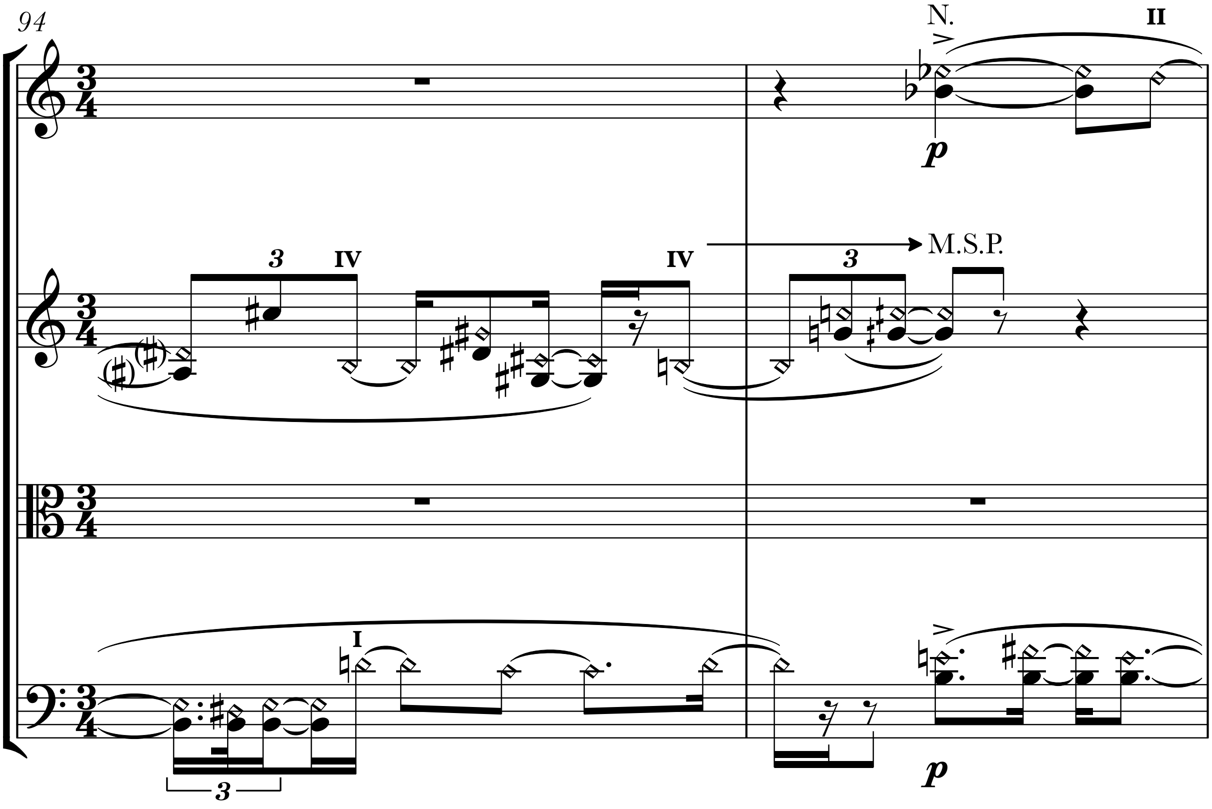

83
Vln. I
Vln. II
Vla.
Vc.
I
II
III
3
mp
p
mf
pp

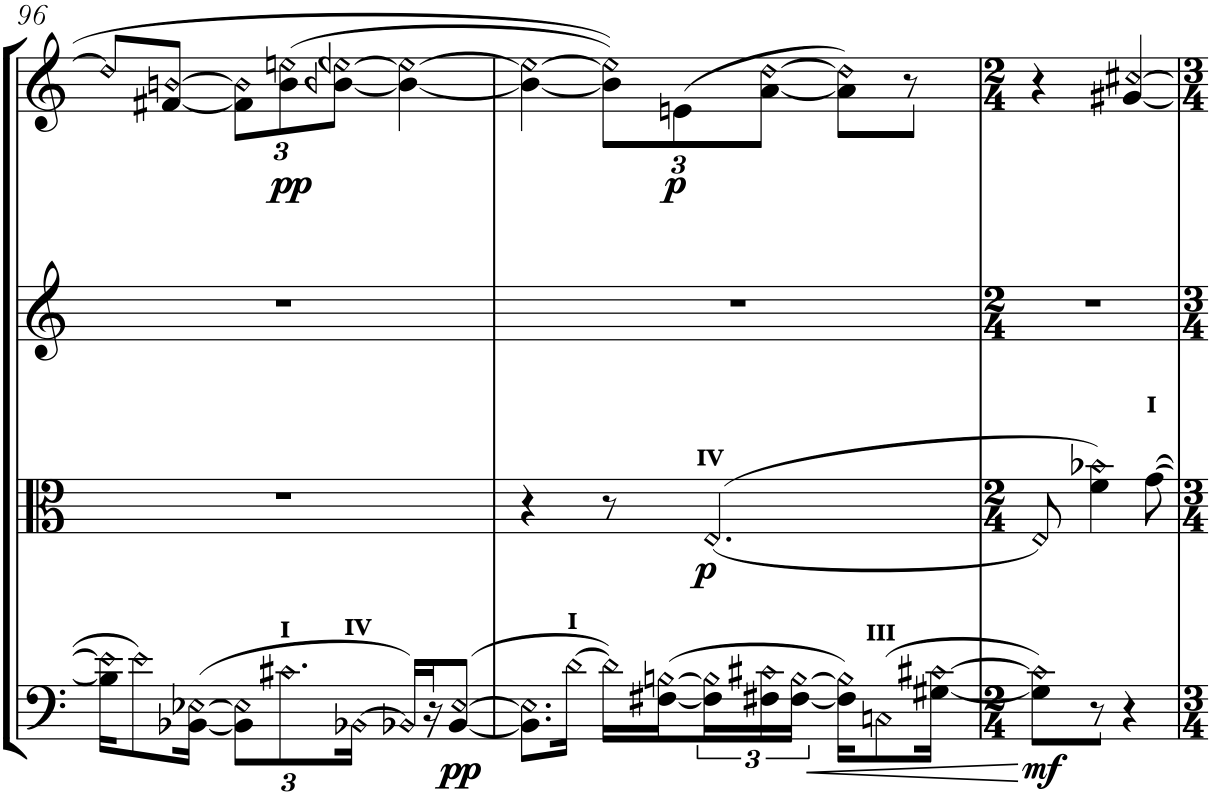

85
Vln. I
Vln. II
Vla.
Vc.
IV
I
S.P.
III
3
mp
pp
p

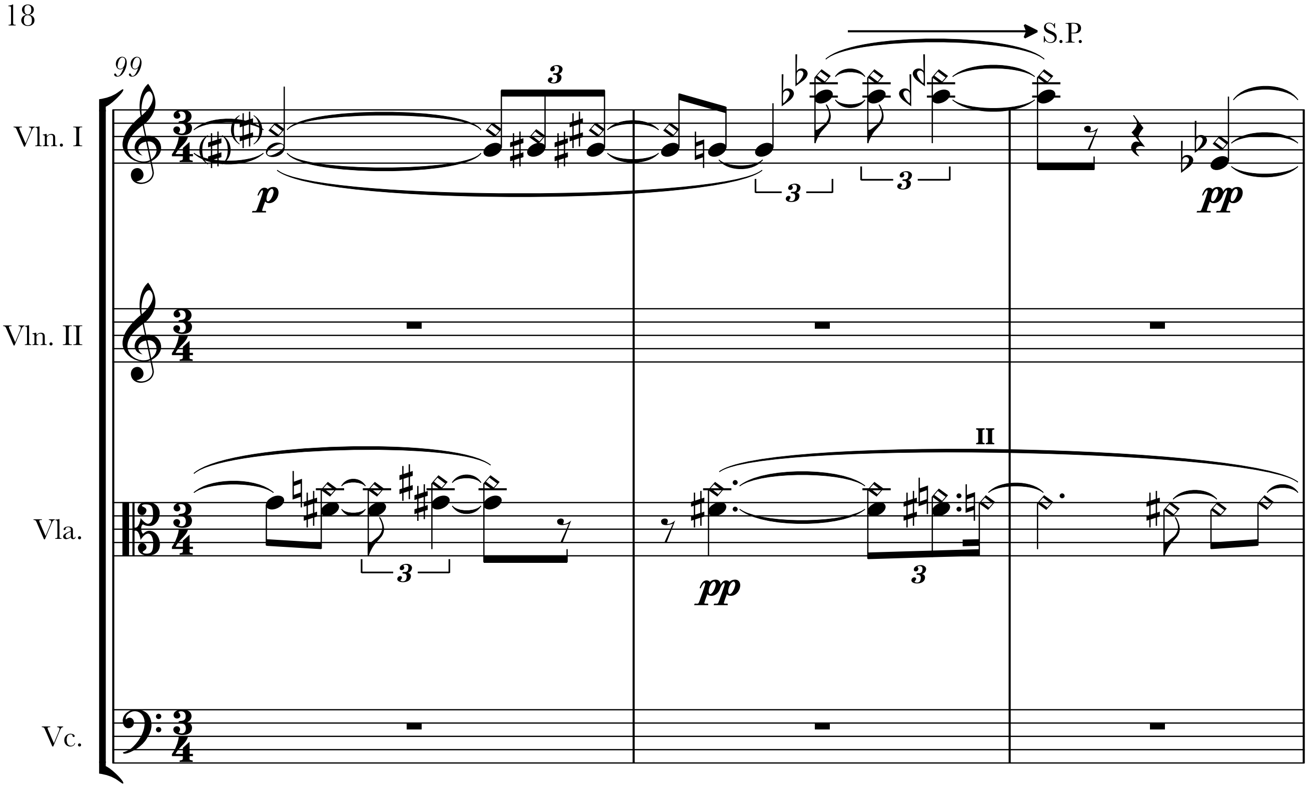

87
Vln. I
Vln. II
Vla.
Vc.
N.
III
S.P.
M.S.P.
5
3
mf
p
mp
pp

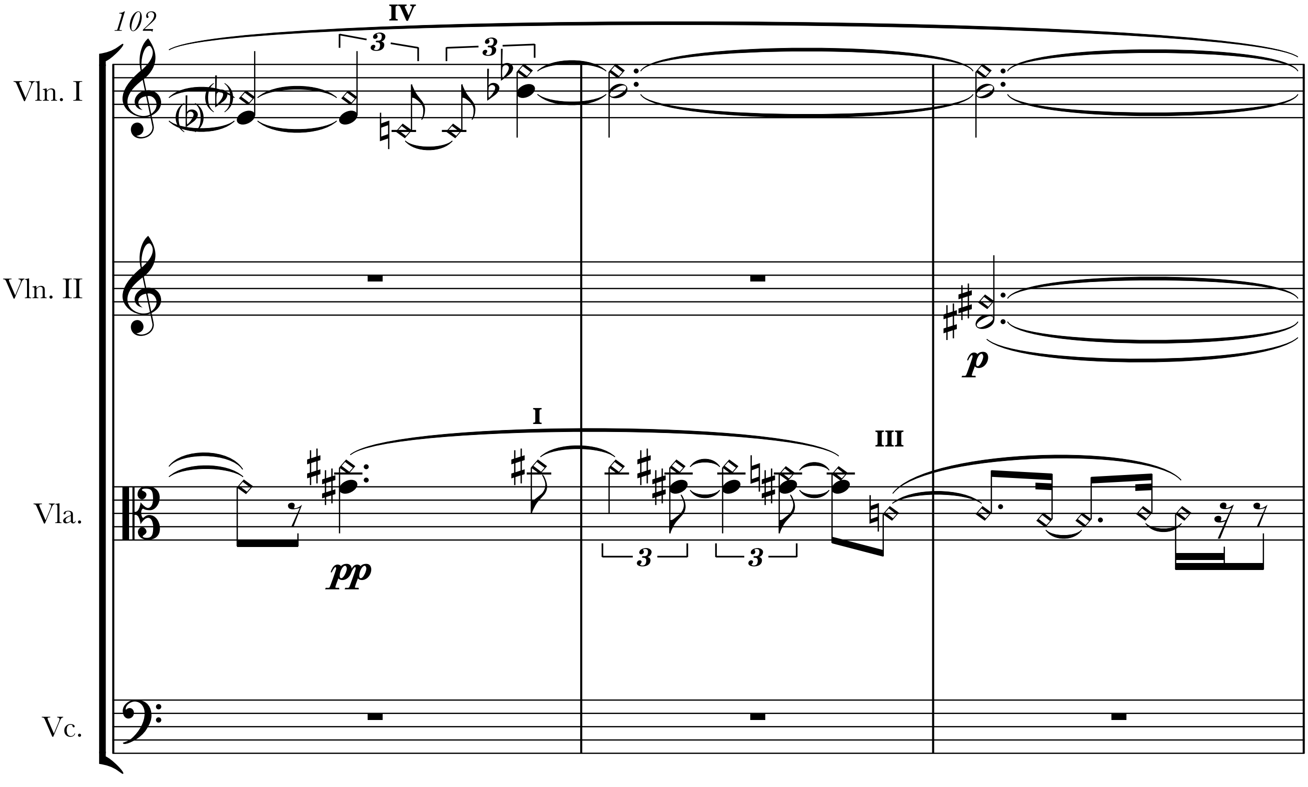

89
Vln. I
Vln. II
Vla.
Vc.
IV
II
M.S.P.
3
5
mf
p
pp

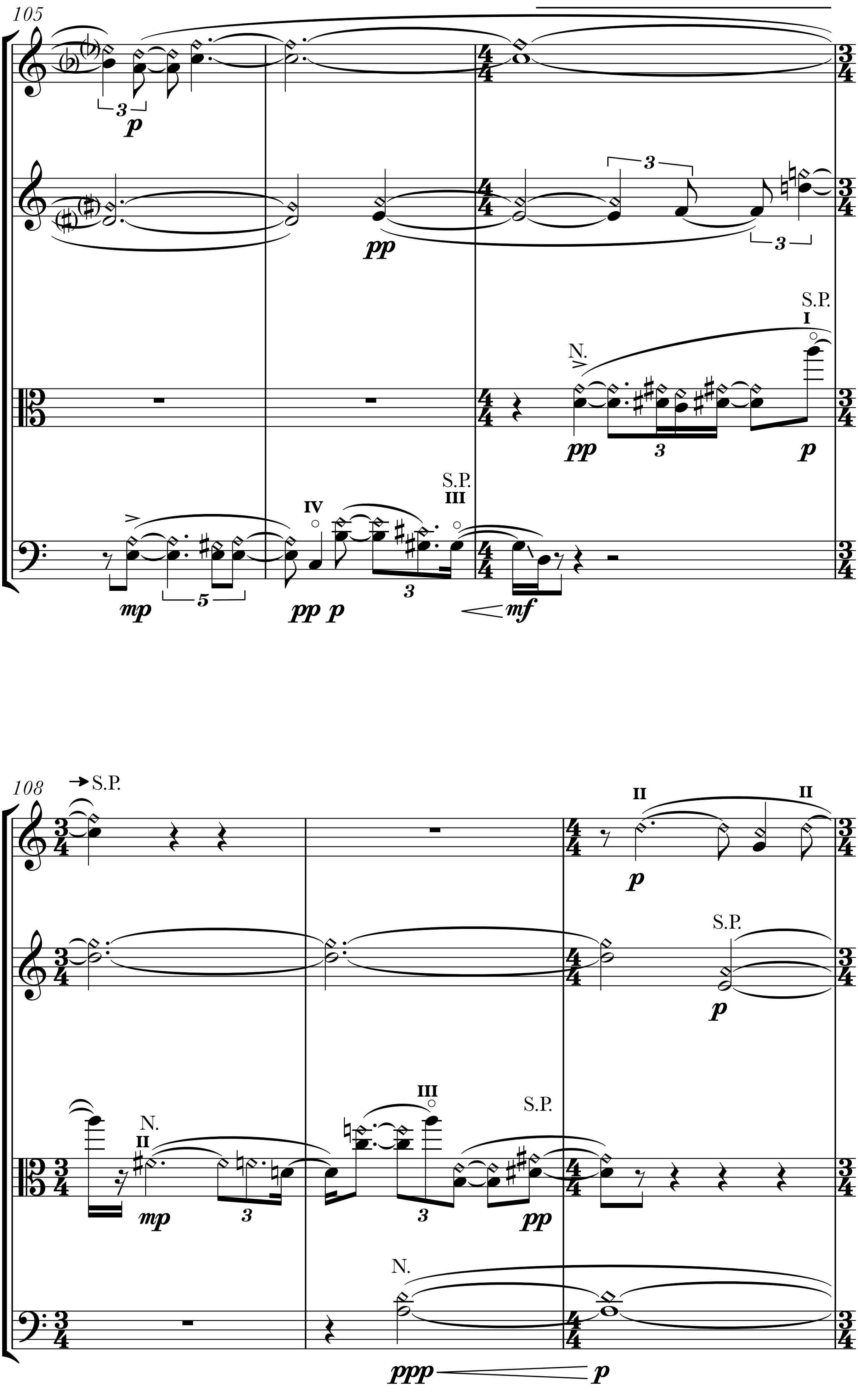

91
Vln. I
Vln. II
Vla.
Vc.
II
I
III
S.P.
IV
3
mf
p
mp
pp

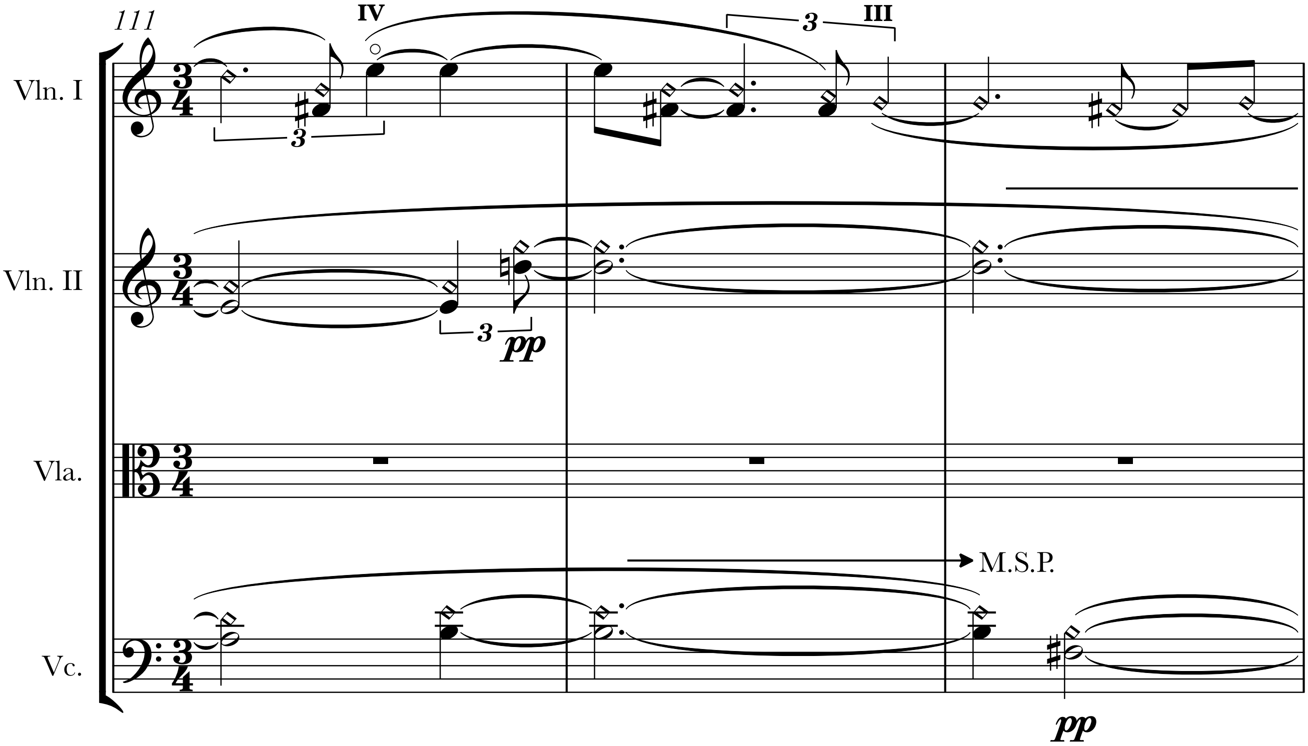

94
Vln. I
Vln. II
Vla.
Vc.
N.
II
p
3
IV
IV
M.S.P.
I
p

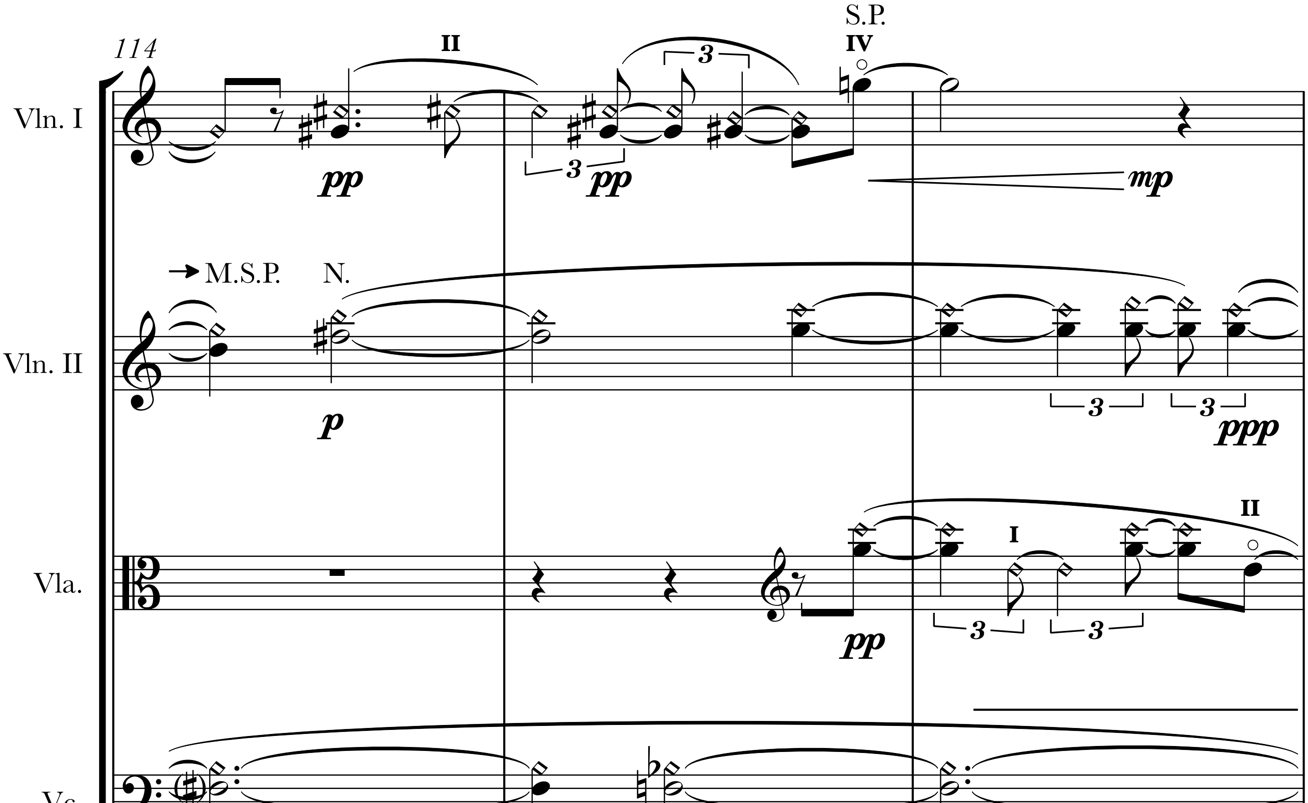

96
Vln. I
Vln. II
Vla.
Vc.
3
pp
3
p
IV
I
p
I
IV
I
III
3
pp
3
mf

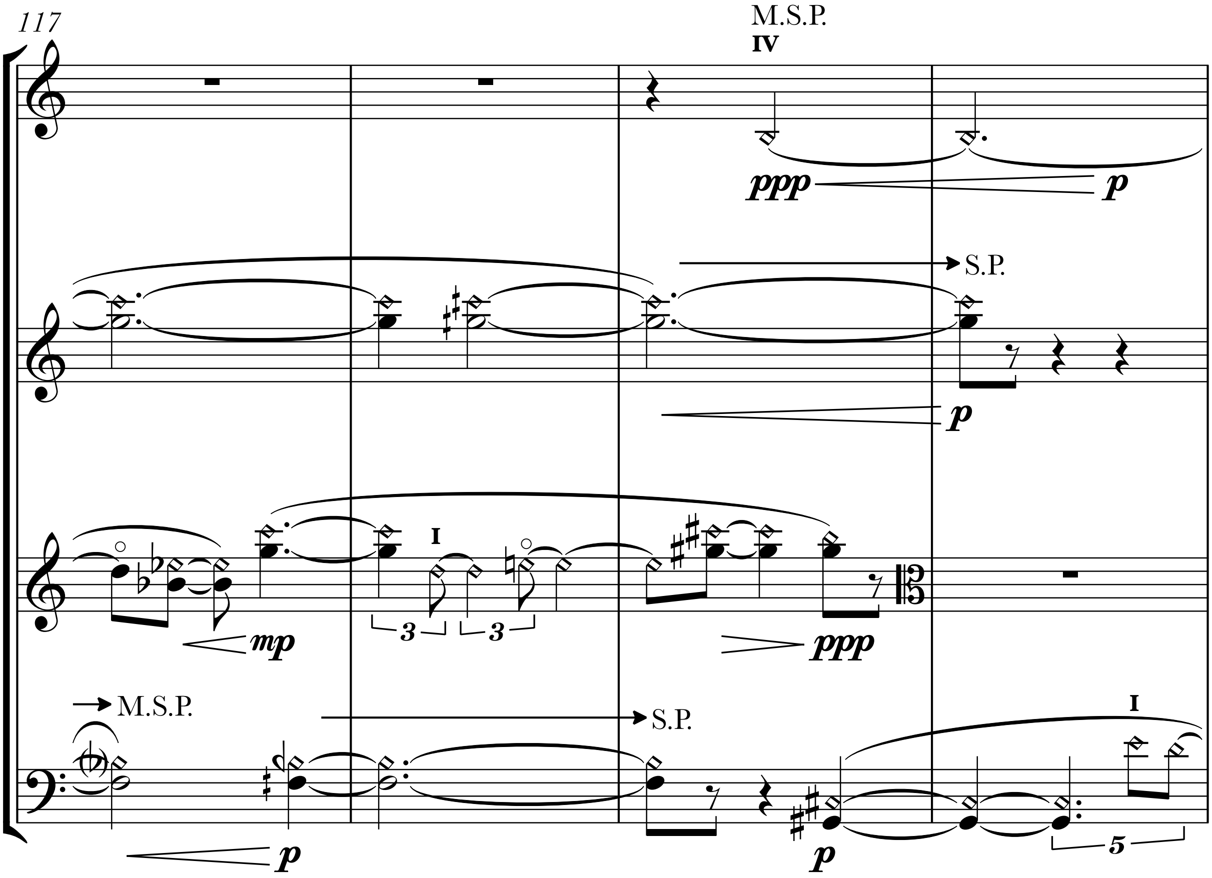

99
S.P.
Vln. I
Vln. II
Vla.
Vc.
3
p
pp
II

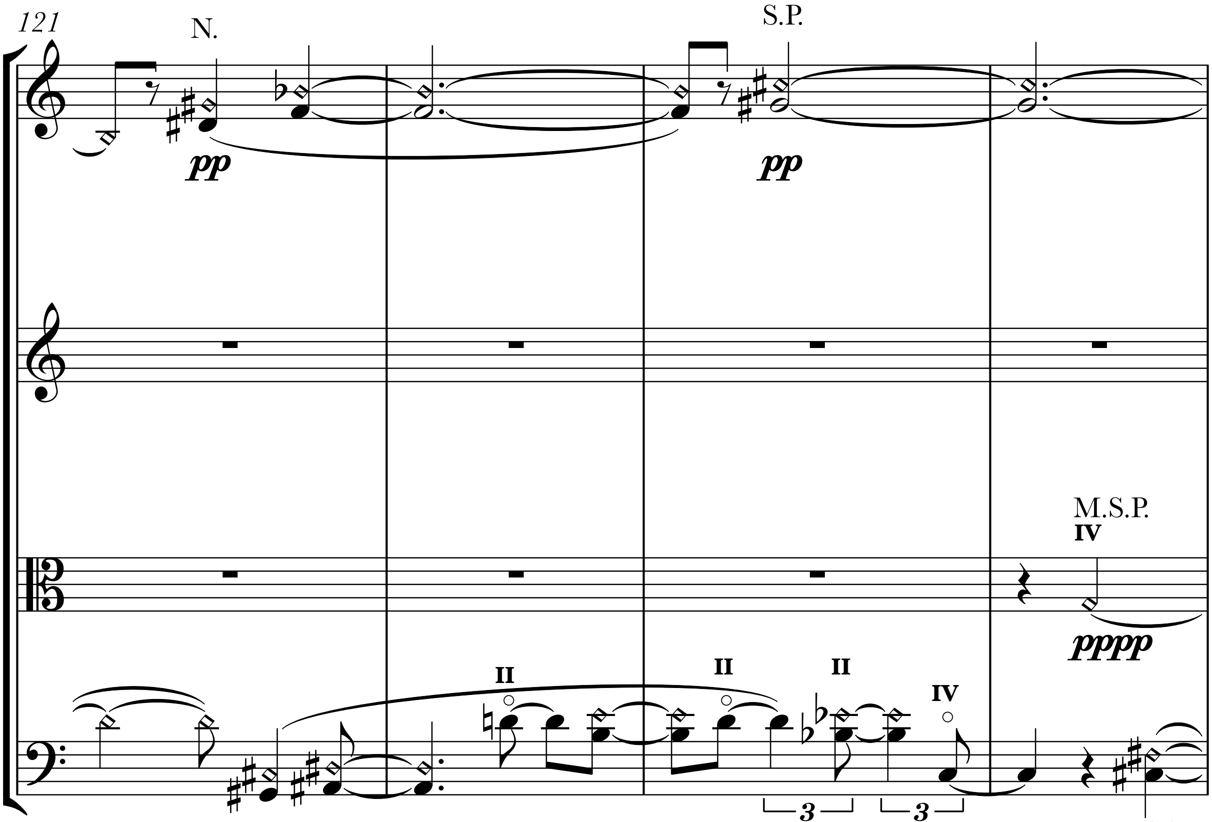

102
IV
3
Vln. I
Vln. II
Vla.
Vc.
p
pp
I
III

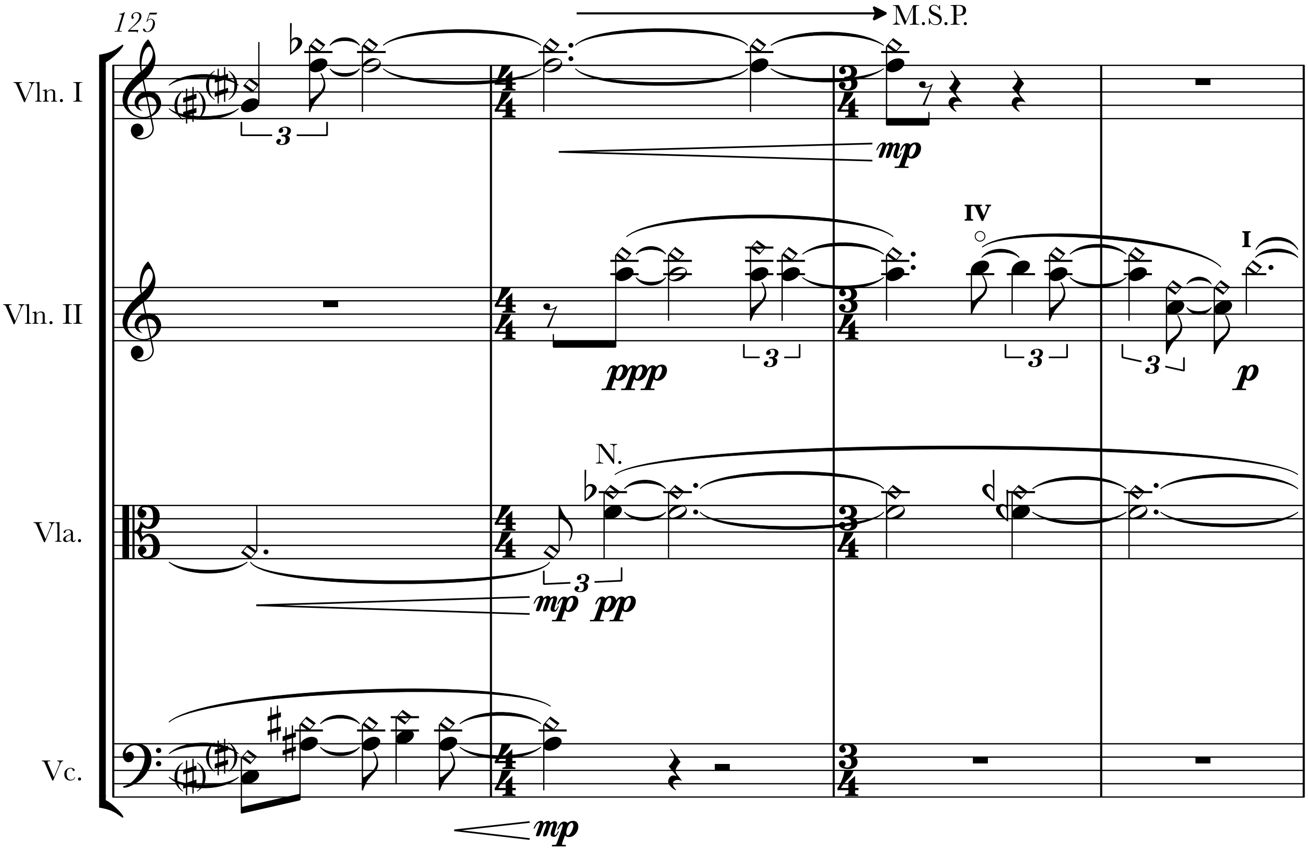

105
Vln. I
Vln. II
Vla.
Vc.
3
p
pp
3
3
N.
pp
3
S.P.
I
p
mp
5
IV
pp p
3
S.P.
III
mf
108
➔S.P.
II
II
p
S.P.
p
N.
II
mp
3
III
3
S.P.
pp
N.
ppp
p

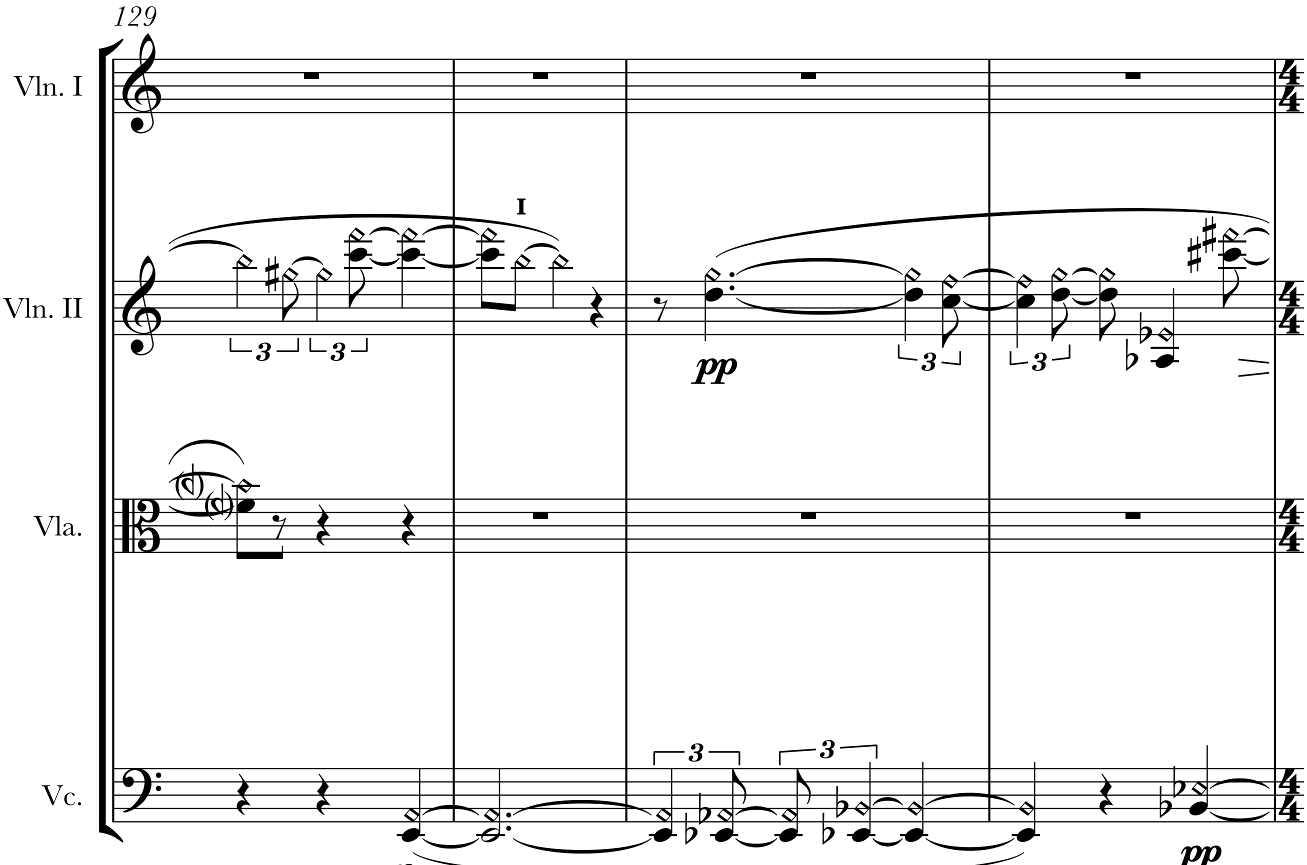

111
Vln. I
Vln. II
Vla.
Vc.
IV
3
III
pp
M.S.P.
pp

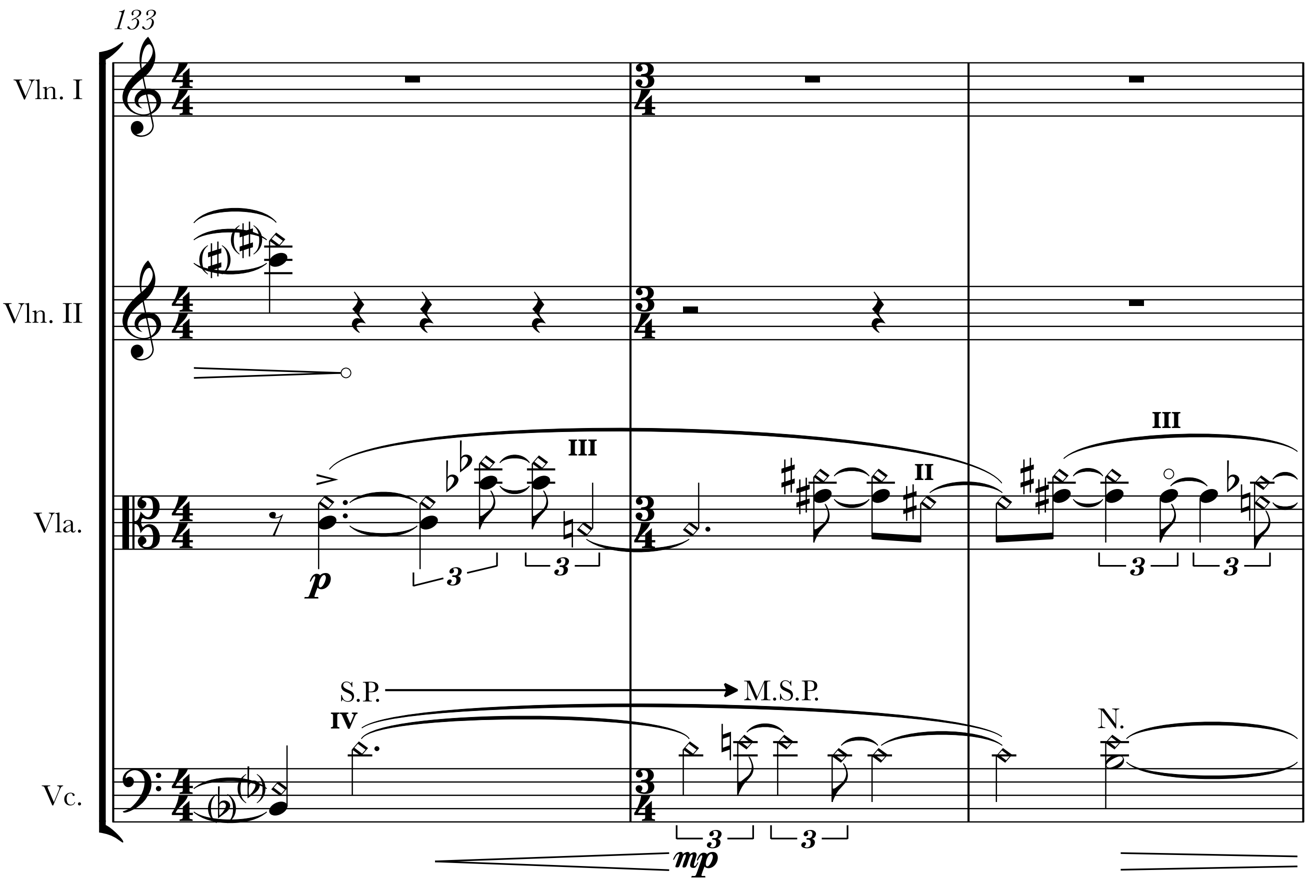

114
Vln. I
Vln. II
Vla.
Vc.
II
3
S.P.
IV
pp
pp
mp
M.S.P.
N.
p
ppp
I
II
pp
ppp

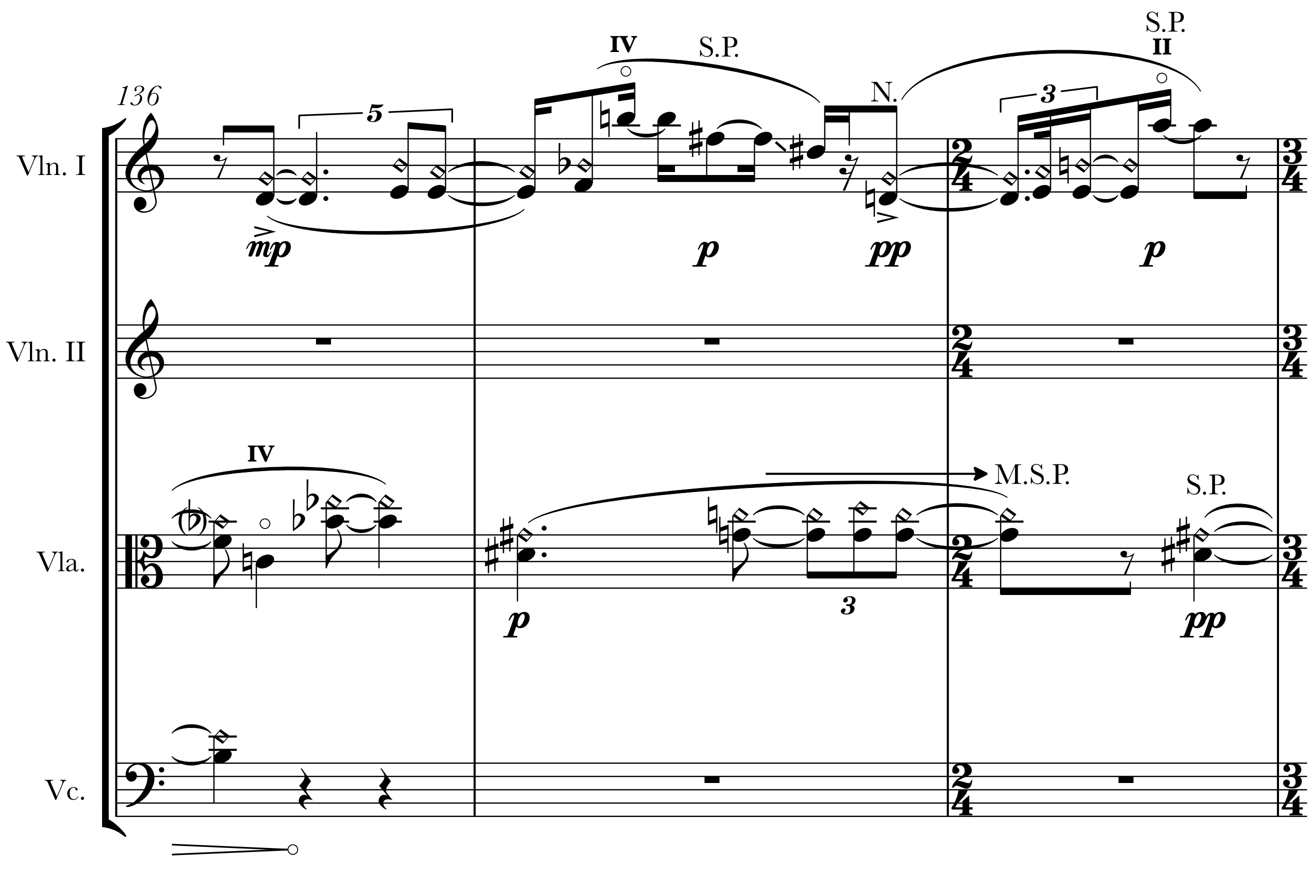

117
Vln. I
Vln. II
Vla.
Vc.
M.S.P.
IV
ppp
p
S.P.
p
mp
I
3
3
ppp
M.S.P.
S.P.
p
p
I
5

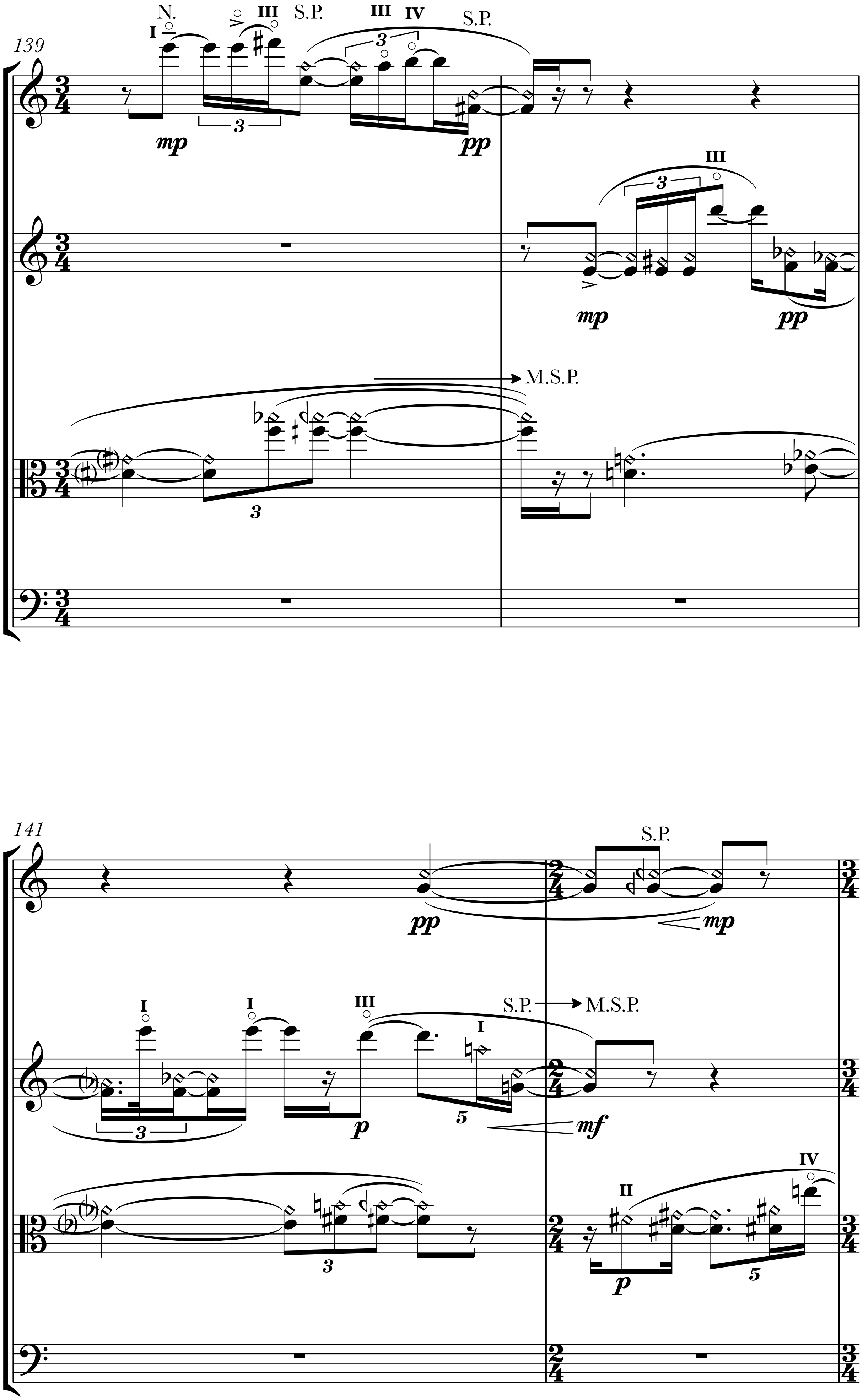

121
Vln. I
Vln. II
Vla.
Vc.
N.
pp
S.P.
pp
M.S.P.
IV
pppp
II
II
II
IV
3
3
pp

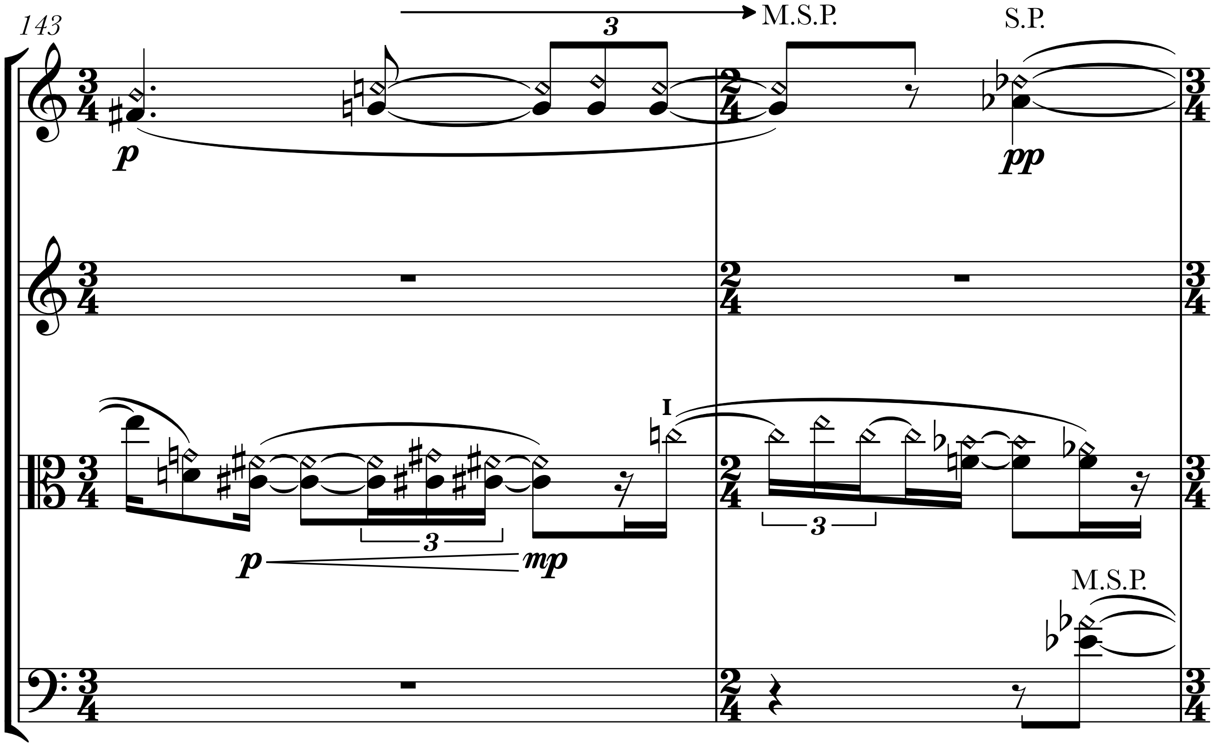

125
M.S.P.
Vln. I
Vln. II
Vla.
Vc.
3
mp
ppp
IV
I
p
N.
pp

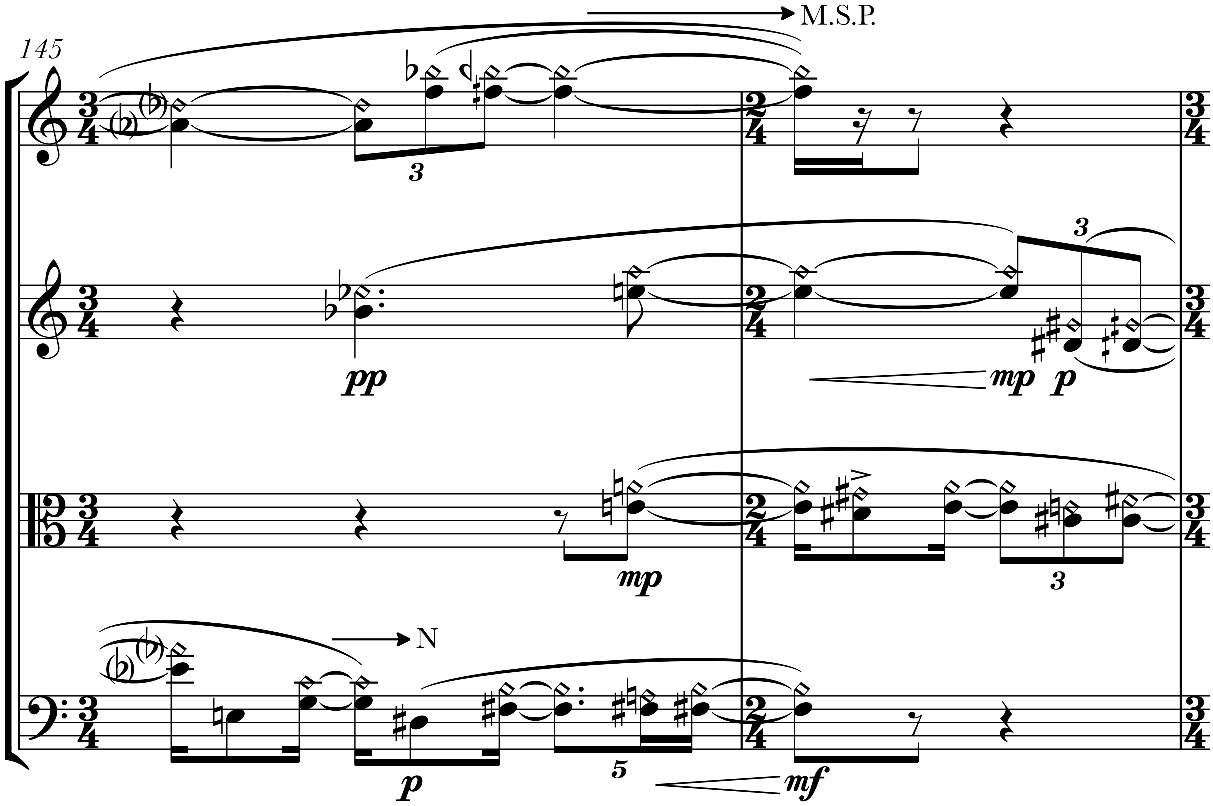

129
Vln. I
Vln. II
Vla.
Vc.
3
I
pp
p

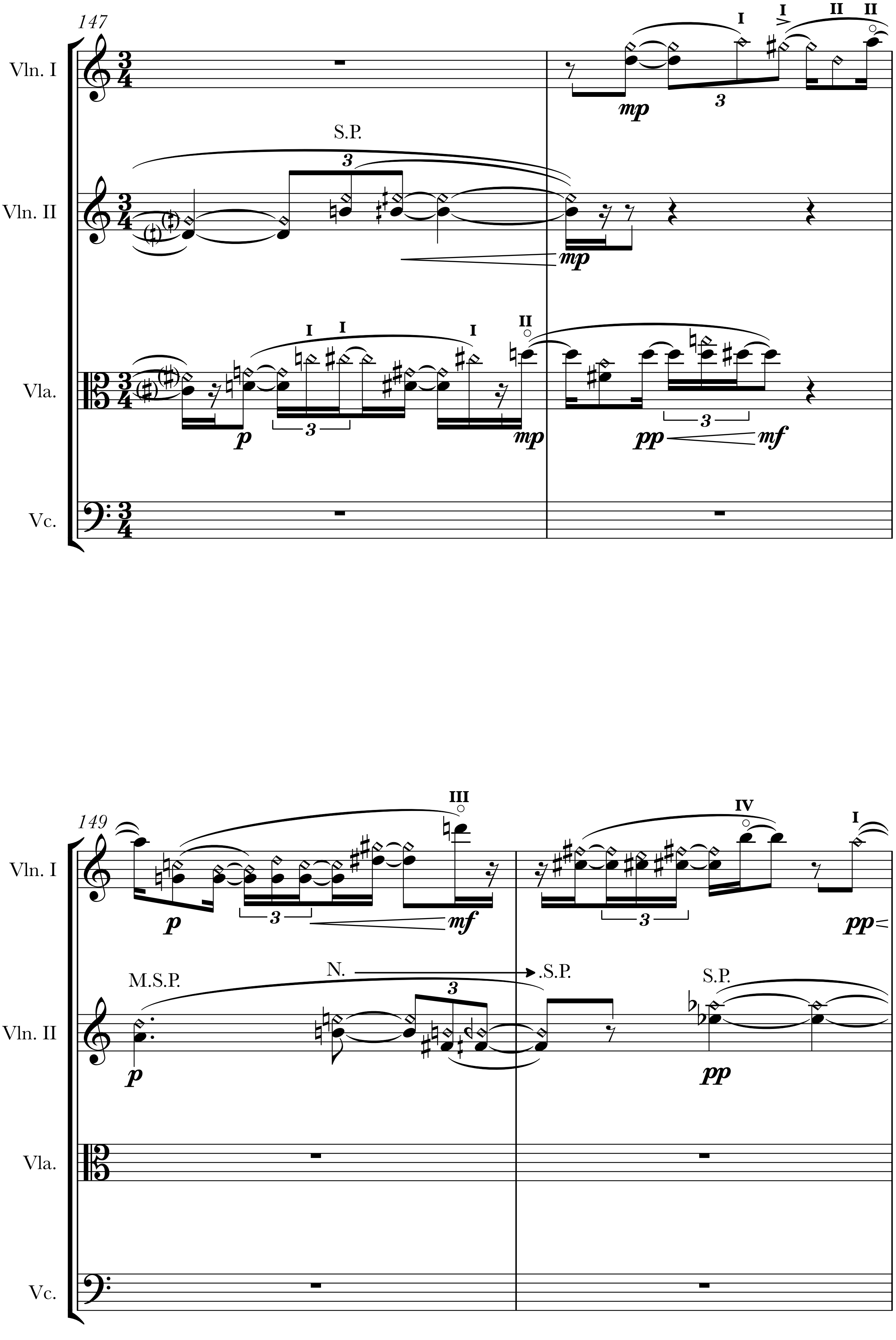

133
Vln. I
Vln. II
Vla.
Vc.
III
II
III
S.P.
M.S.P.
IV
N.
p
mp
3

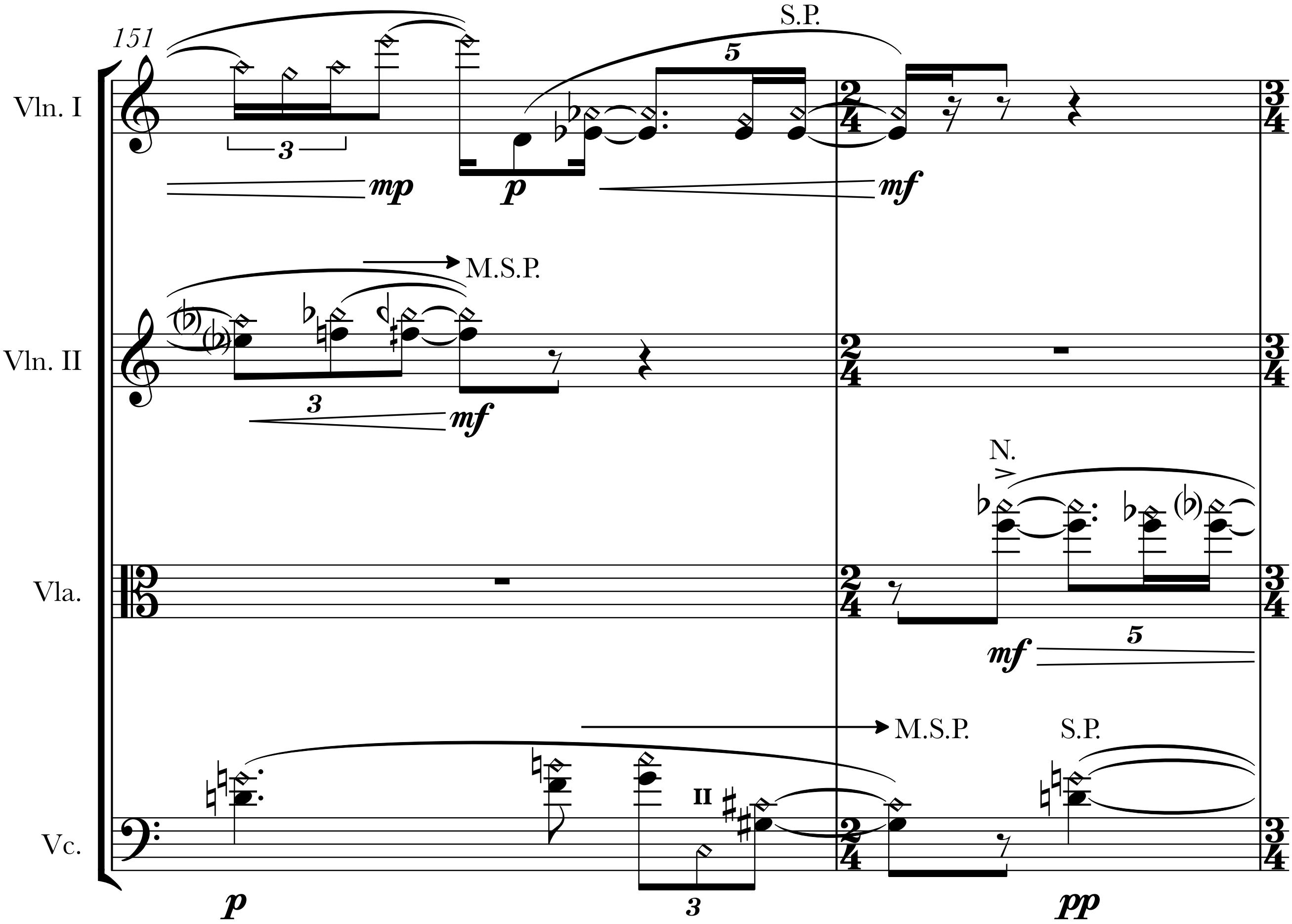

136
Vln. I
Vln. II
Vla.
Vc.
5
IV
S.P.
N.
S.P.
II
3
mp
p
pp
p
IV
M.S.P.
S.P.
p
pp

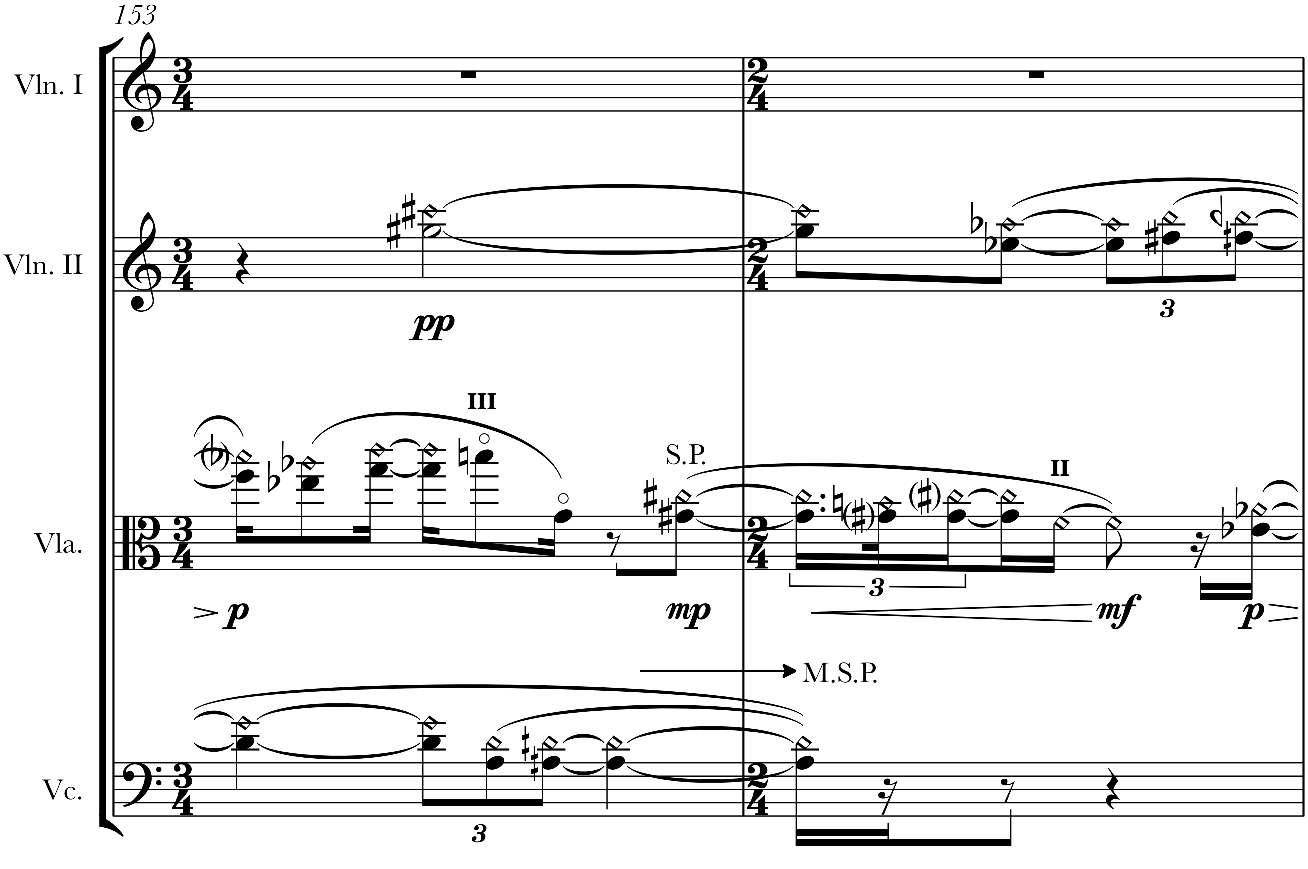

139
Vln. I
Vln. II
Vla.
Vc.
N.
I
III
S.P.
III
IV
S.P.
3
3
mp
pp
III
3
mp
pp
M.S.P.
3
141
Vln. I
Vln. II
Vla.
Vc.
S.P.
pp
mp
I
I
III
S.P.
M.S.P.
I
3
p
5
mf
II
IV
3
p
5

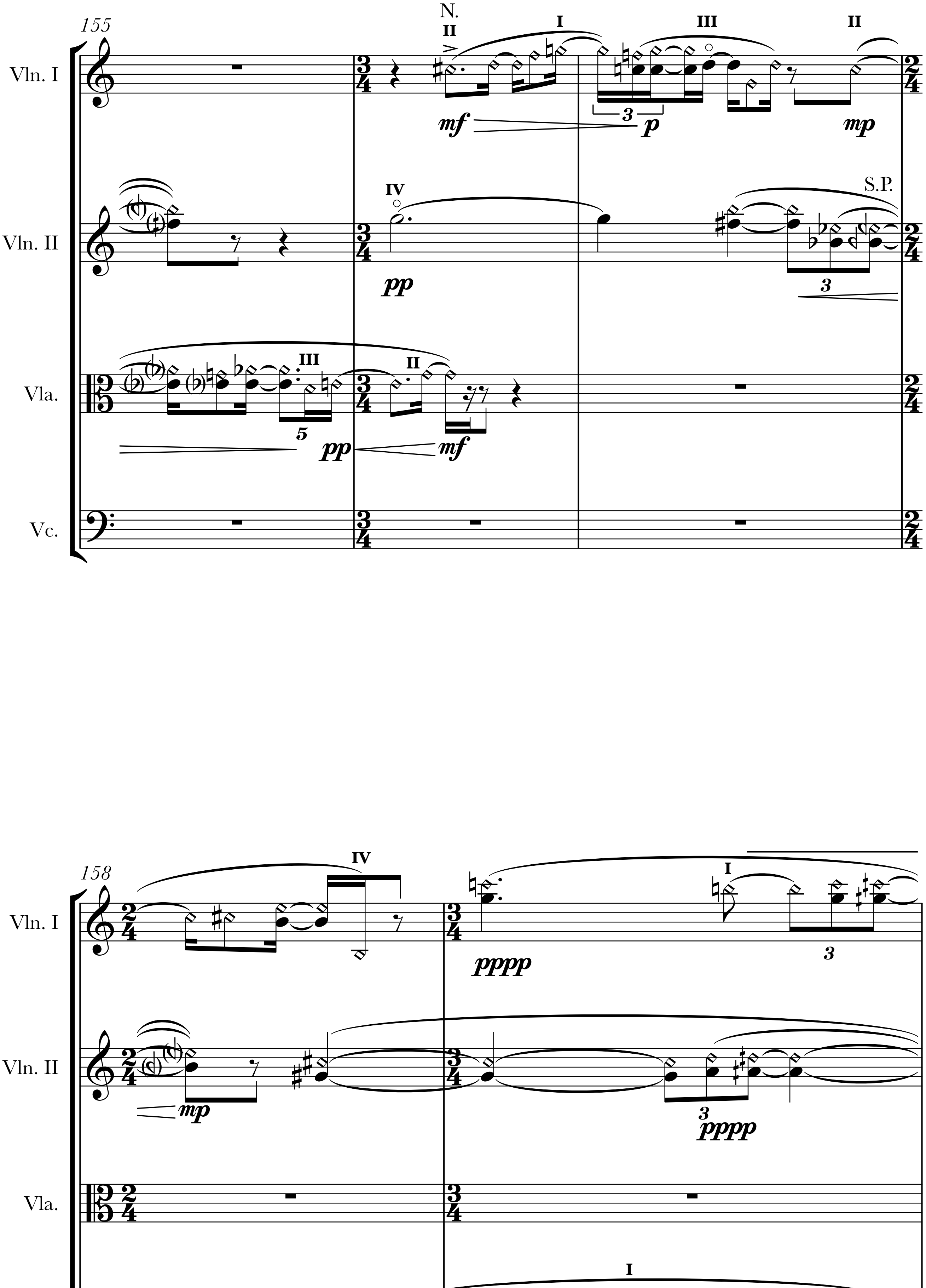

143
Vln. I
Vln. II
Vla.
Vc.
M.S.P.
S.P.
M.S.P.
3
p
pp
p
mp
I

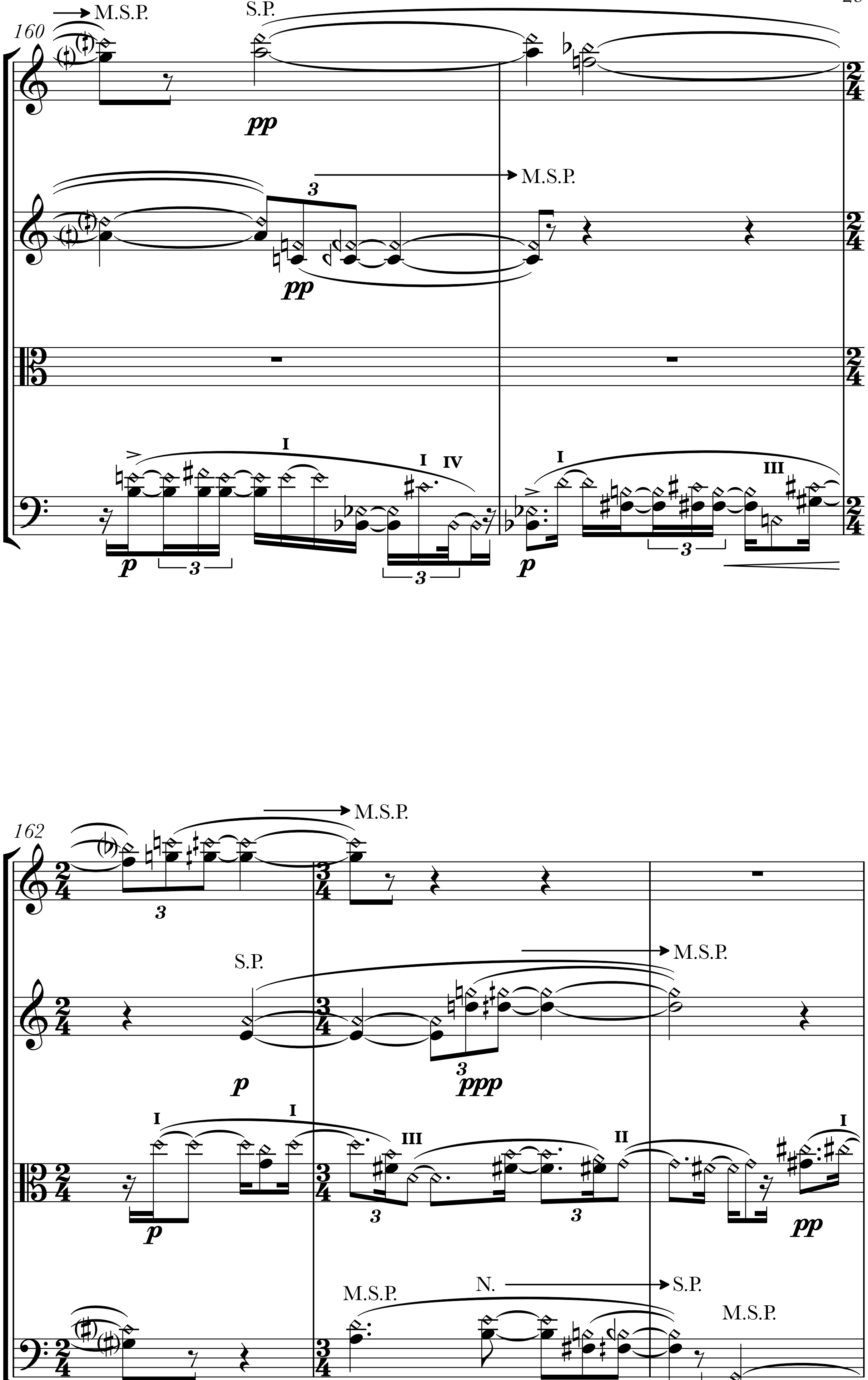

145
Vln. I
Vln. II
Vla.
Vc.
M.S.P.
N
3
5
pp
mp
p
mp
p
mf

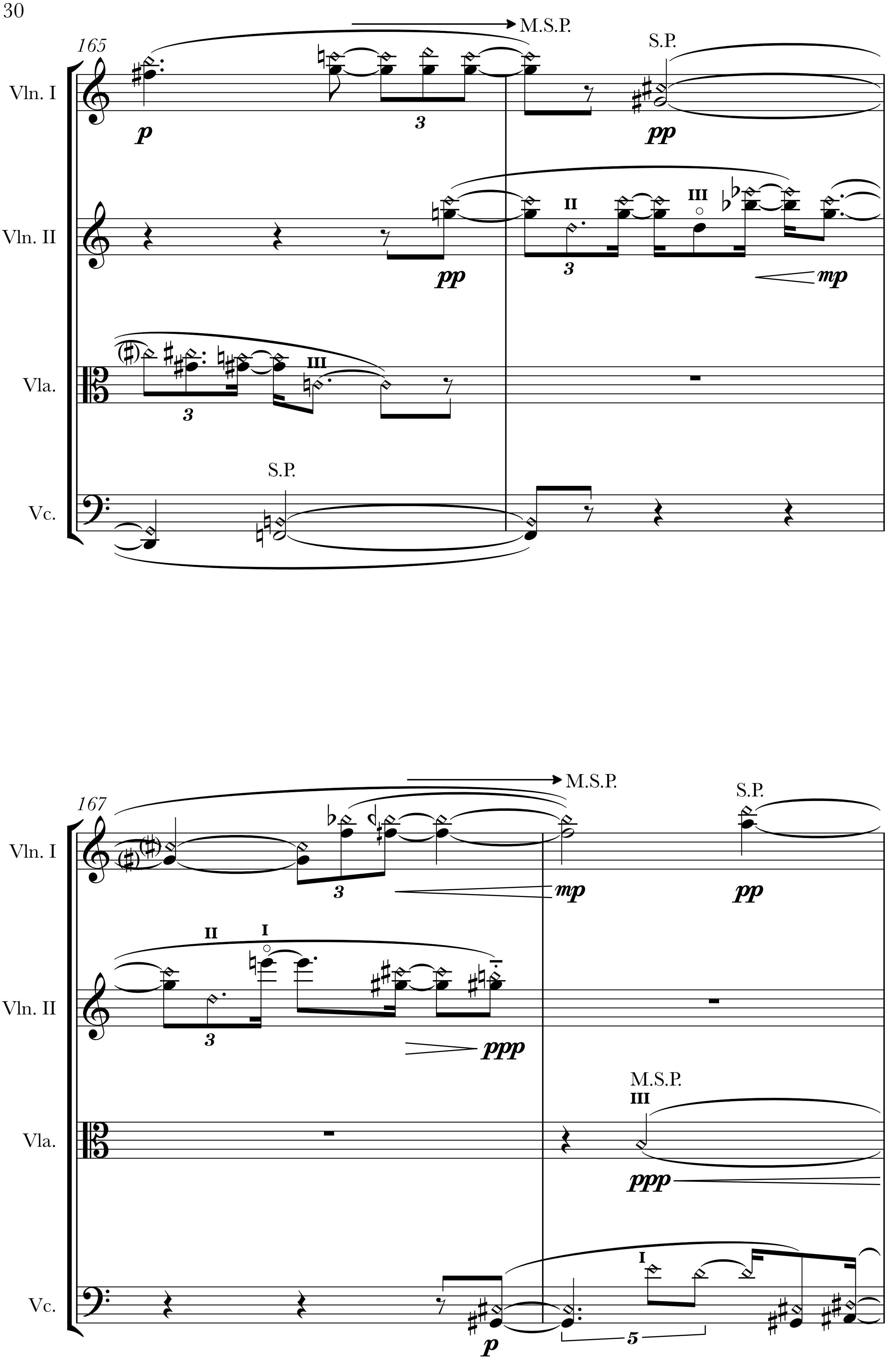

147
Vln. I
Vln. II
Vla.
Vc.
S.P.
3
I
II
mp
p
pp
mf
149
M.S.P.
N.
.S.P.
III
IV

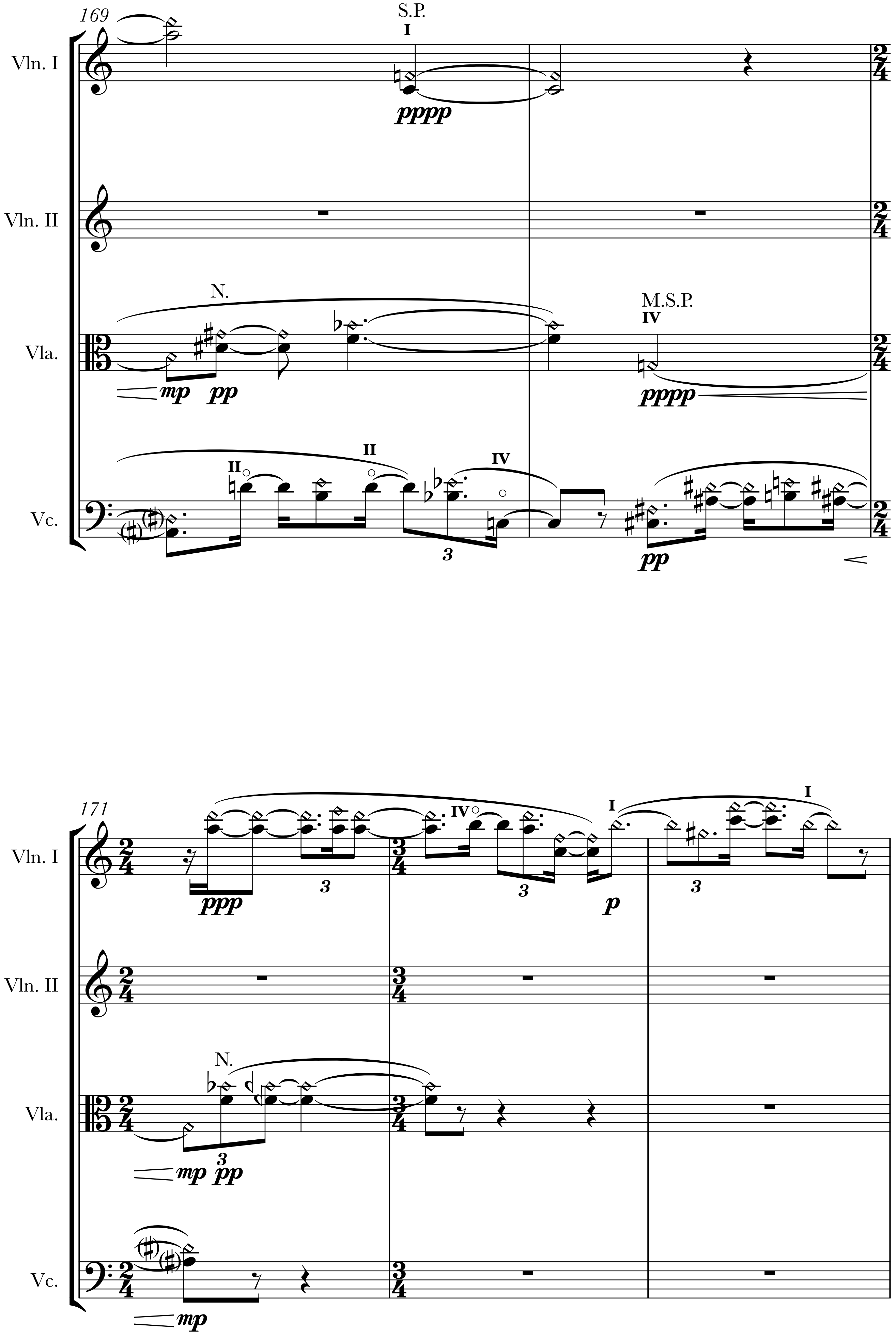

151
Vln. I
Vln. II
Vla.
Vc.
S.P.
M.S.P.
N.
II
mp
p
mf
pp
3
5

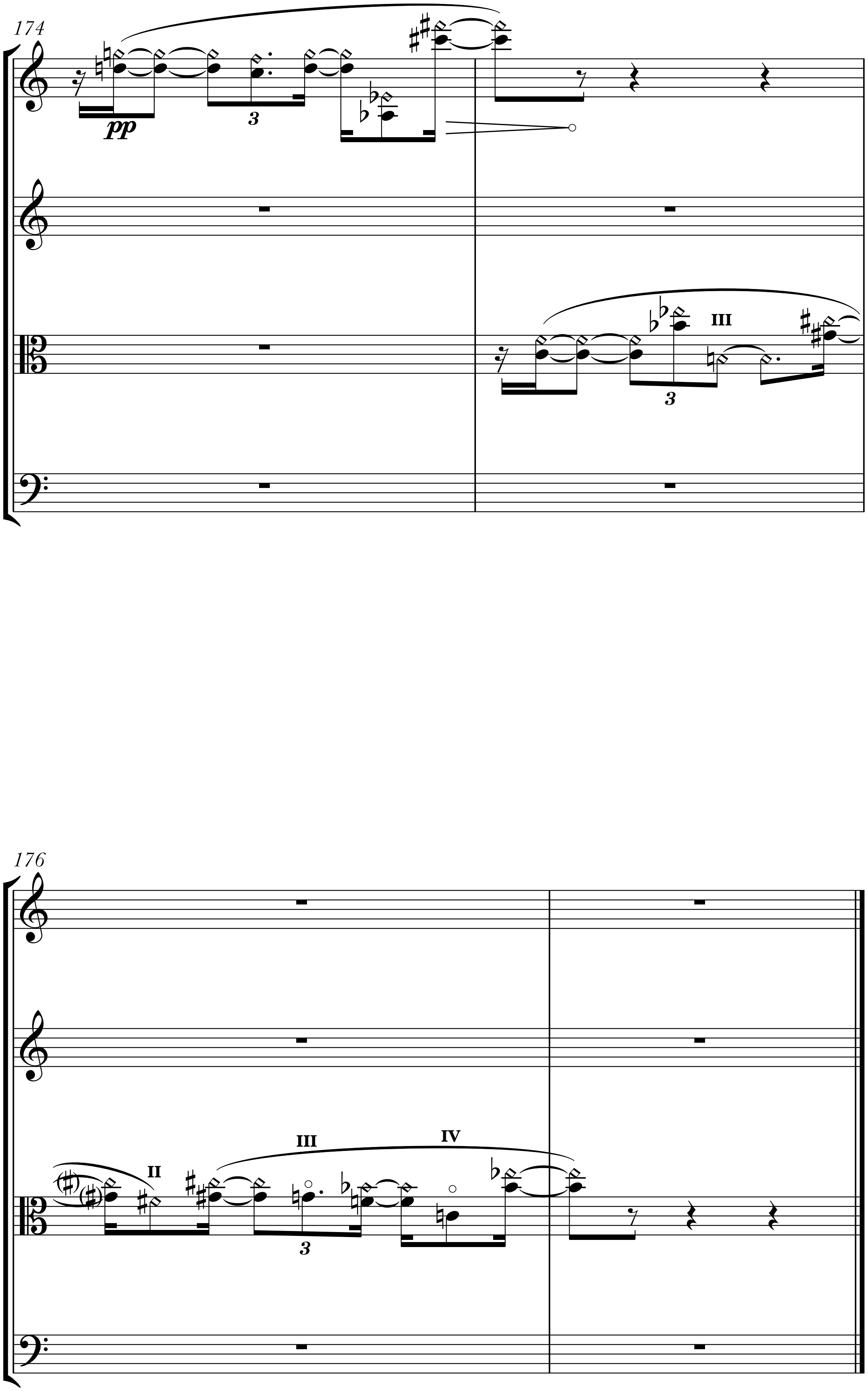

153
Vln. I
Vln. II
Vla.
Vc.
III
S.P.
II
M.S.P.
pp
p
mp
mf
3


155
Vln. I
Vln. II
Vla.
Vc.
N.
II
I
III
II
mf
3
p
mp
IV
pp
S.P.
3
III
II
5
pp
mf
158
IV
I
pppp
3
mp
3
pppp
I
pp
3


160
Vln. I
Vln. II
Vla.
Vc.
M.S.P.
S.P.
pp
M.S.P.
3
pp
I
I
IV
I
III
p
3
3
p
3
162
M.S.P.
3
S.P.
M.S.P.
p
3
ppp
I
I
III
II
I
3
3
p
pp
M.S.P.
N.
S.P.
M.S.P.
3
mf
p
pppp


165
M.S.P.
S.P.
Vln. I
Vln. II
Vla.
Vc.
p
pp
3
II
III
mp
S.P.
167
M.S.P.
S.P.
3
mp
pp
II
I
3
ppp
M.S.P.
III
ppp
I
p
5


169
Vln. I
Vln. II
Vla.
Vc.
S.P.
I
pppp
N.
mp
pp
M.S.P.
IV
pppp
II
II
IV
3
pp
171
ppp
3
IV
3
I
p
3
I
N.
3
mp
pp
mp


174
Vln. I
pp
3
Vln. II
Vla.
3
III
Vc.
176
Vln. I
Vln. II
Vla.
II
III
IV
3
Vc.

Christopher Bayley

AURORA

For orchestra

Performance Notes

General

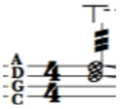
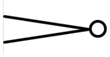
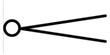
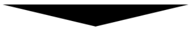
Trills should be played to the note indicated in brackets.

Glissandi should start at the beginning of the note.

Woodwind

B.T.	Breath tone. Blow air through the instrument to create a partially unpitched tone.
Flutter	Flutter tongue.

Strings

	Actions behind the bridge will be notated with a key signature that indicates string names. A dotted line will be placed above the notes.
N.	Normal (used to distinguish the normal bowing position from S.P. or S.T.)
S.P.	Sul ponticello: to bow near the bridge of the instrument.
M.S.P.	Molto sul ponticello: to bow as close as possible to the bridge of the instrument.
S.T.	Sul tasto: to bow near the fingerboard.
Flaut.	Flautando: Gently mute the string with the left hand while very lightly bowing. The technique produces a soft, airy noise with a faint tone that lacks a distinct pitch.
	Flautando tremolo should be played at the tip of the bow.
	Diminuendo al niente.
	Crescendo dal niente.
	Change gradually from one bow placement to another.
	Apply bow pressure. The pressure of the bow should increase and decrease in proportion to the depth of the pressure mark. Tone distortion (overpressure) should occur at the peak.

Scoring

2 Flutes (both doubling piccolo)
2 Oboes
1 English Horn
1 Clarinet in E flat
1 Bass Clarinet
1 Bassoon
1 Contrabassoon
1 Horn in F
1 Trumpets in C
1 Bass Trombone

Timpani

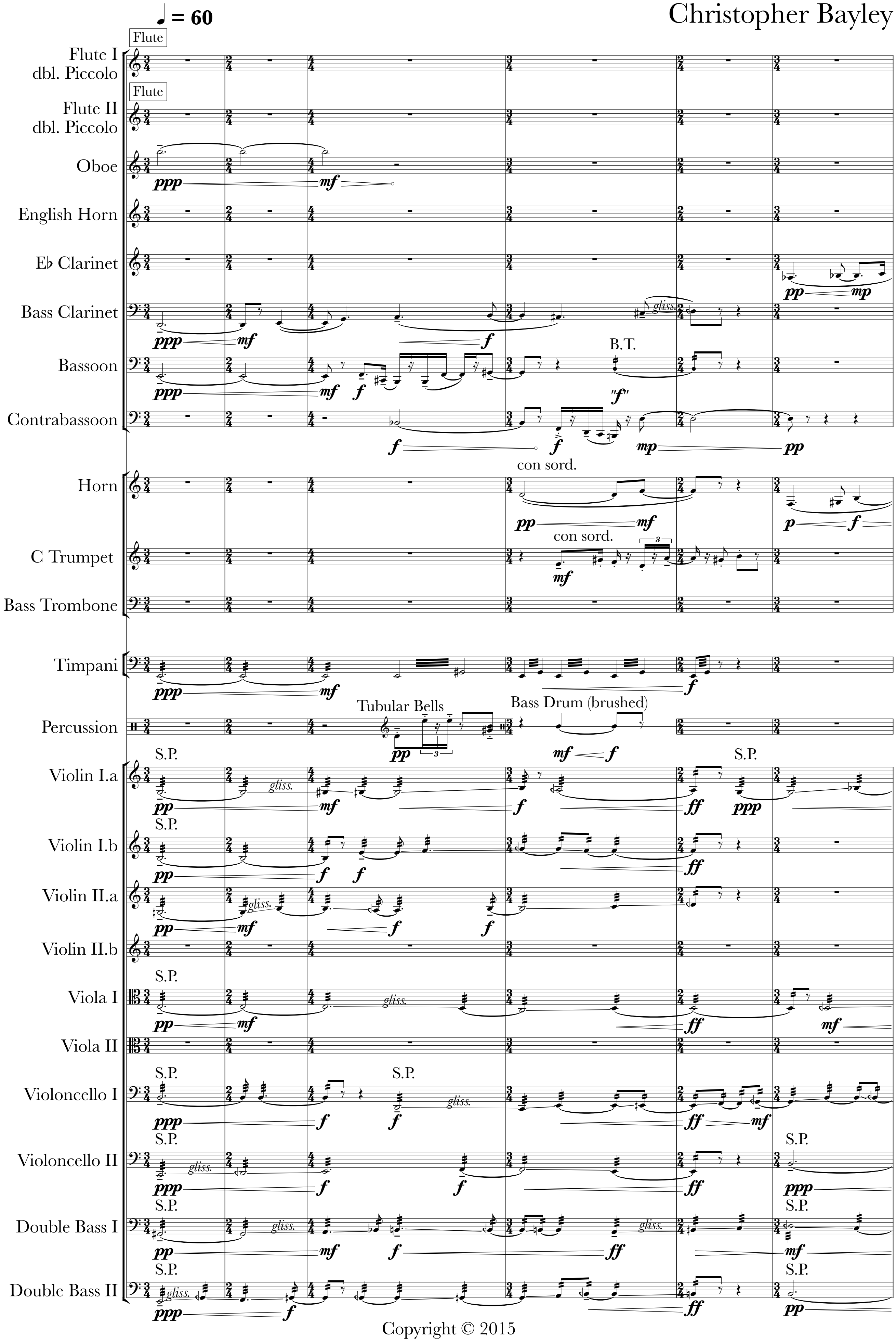
Percussion
- Tenor Drum
- Bass Drum
- Tubular Bells

6 Violins I
6 violins II
6 violas
4 violoncello
2 double basses

Score in C

AURORA

Christopher Bayley


♩ = 60
Flute
Flute I dbl. Piccolo
Flute
Flute II dbl. Piccolo
Oboe
ppp
mf
English Horn
E♭ Clarinet
pp
mp
Bass Clarinet
ppp
mf
f
gliss.
Bassoon
ppp
mf
f
B.T.
"f"
Contrabassoon
f
f
mp
pp
Horn
con sord.
pp
mf
p
f
C Trumpet
con sord.
mf
3
Bass Trombone
Timpani
ppp
mf
f
Percussion
Tubular Bells
pp
3
Bass Drum (brushed)
mf
f
Violin I.a
S.P.
gliss.
pp
mf
f
ff
S.P.
ppp
Violin I.b
S.P.
pp
f
f
ff
Violin II.a
gliss.
pp
mf
f
f
Violin II.b
Viola I
S.P.
gliss.
pp
mf
ff
mf
Viola II
Violoncello I
S.P.
S.P.
gliss.
ppp
f
f
ff
mf
Violoncello II
S.P.
gliss.
ppp
f
f
ff
S.P.
ppp
Double Bass I
S.P.
gliss.
gliss.
pp
mf
f
ff
S.P.
mf
Double Bass II
S.P.
gliss.
ppp
f
ff
S.P.
pp

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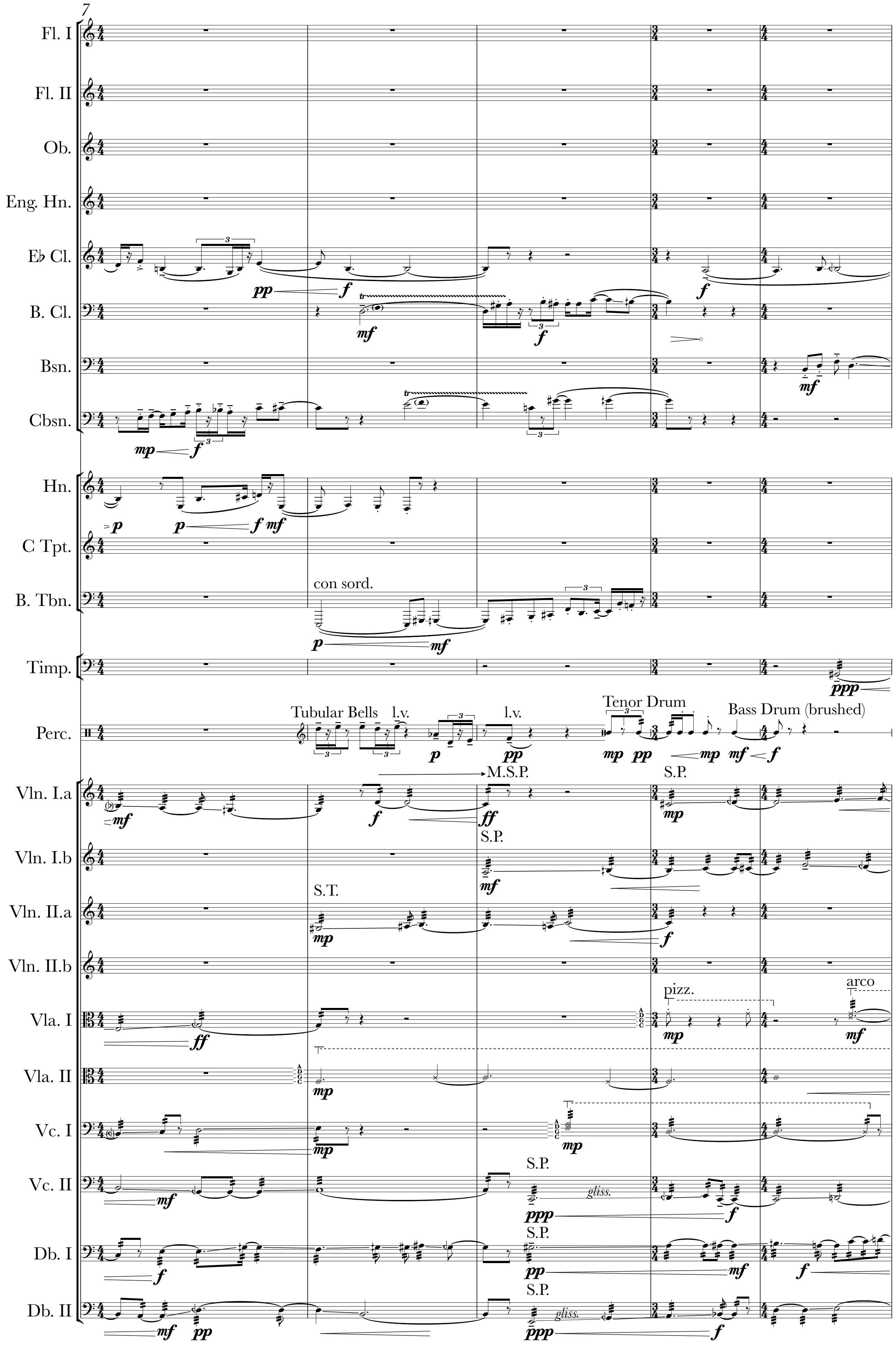
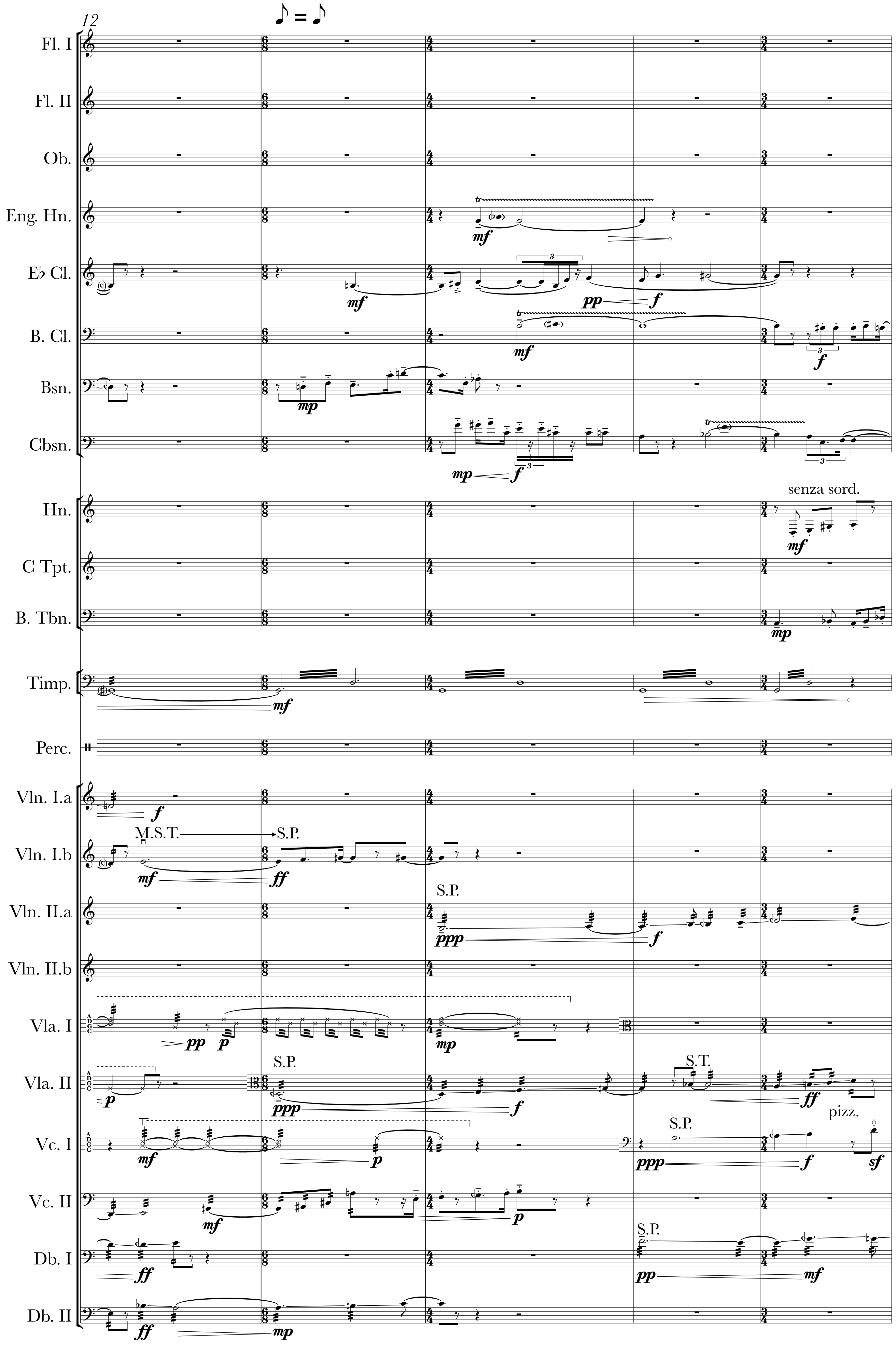
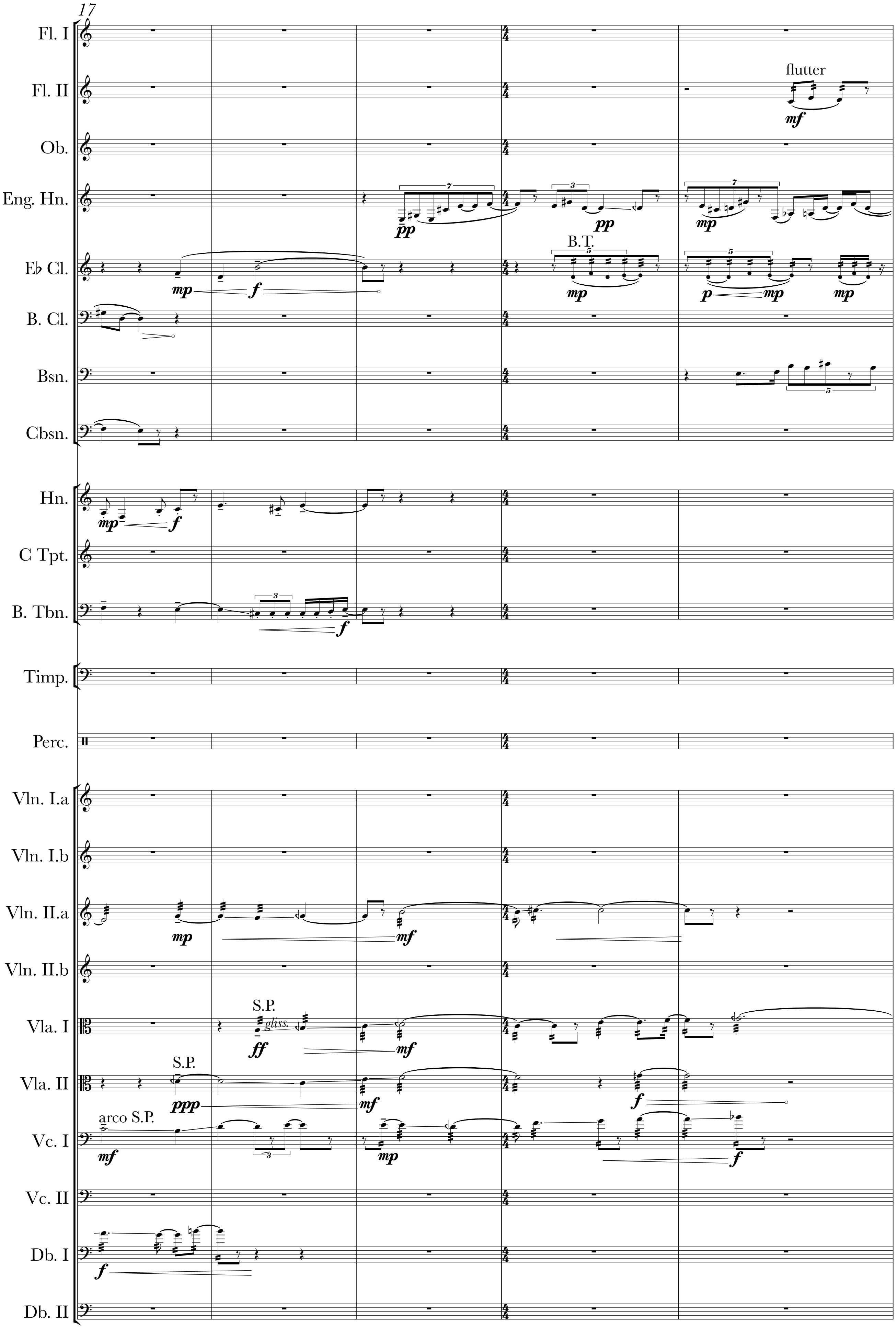
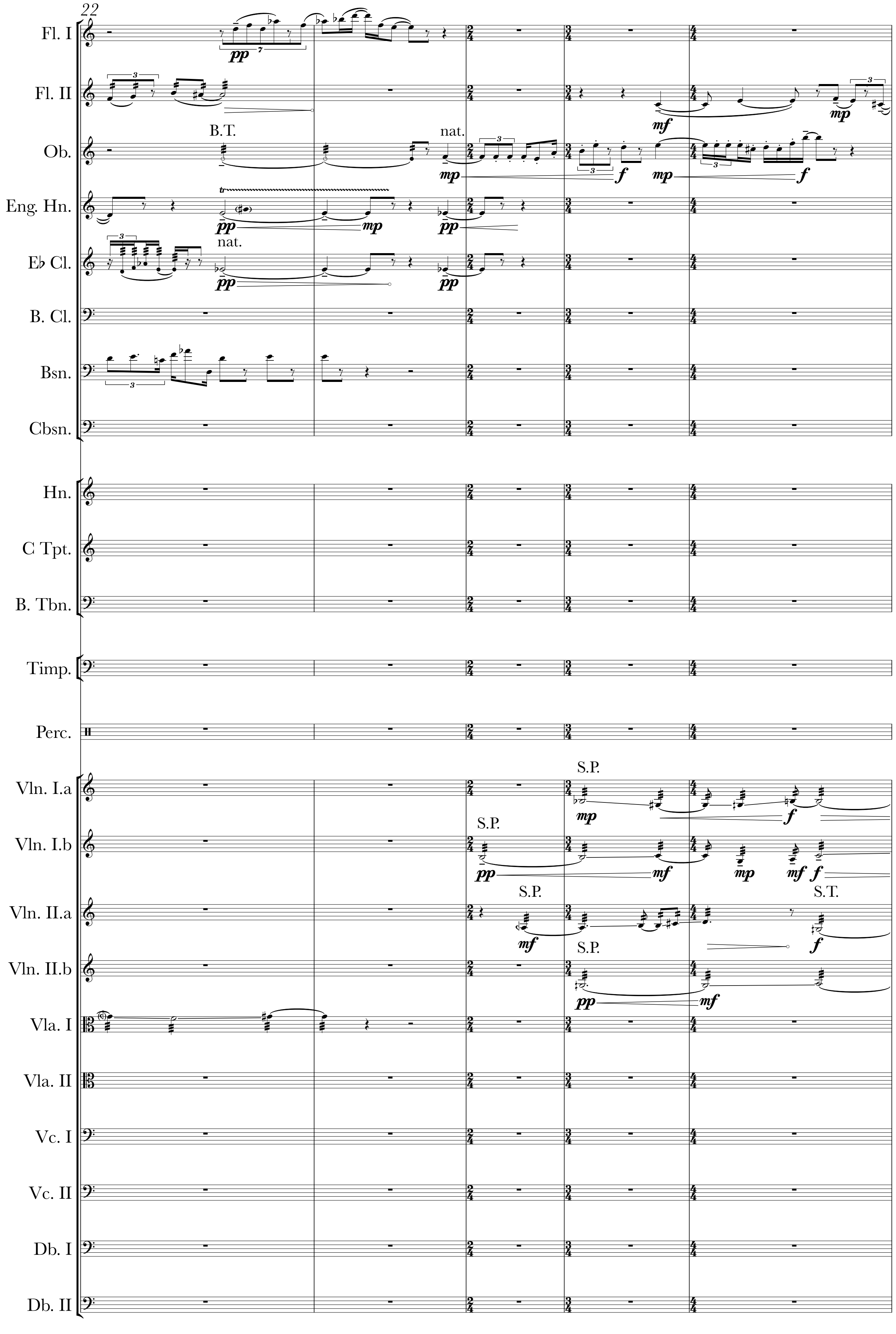
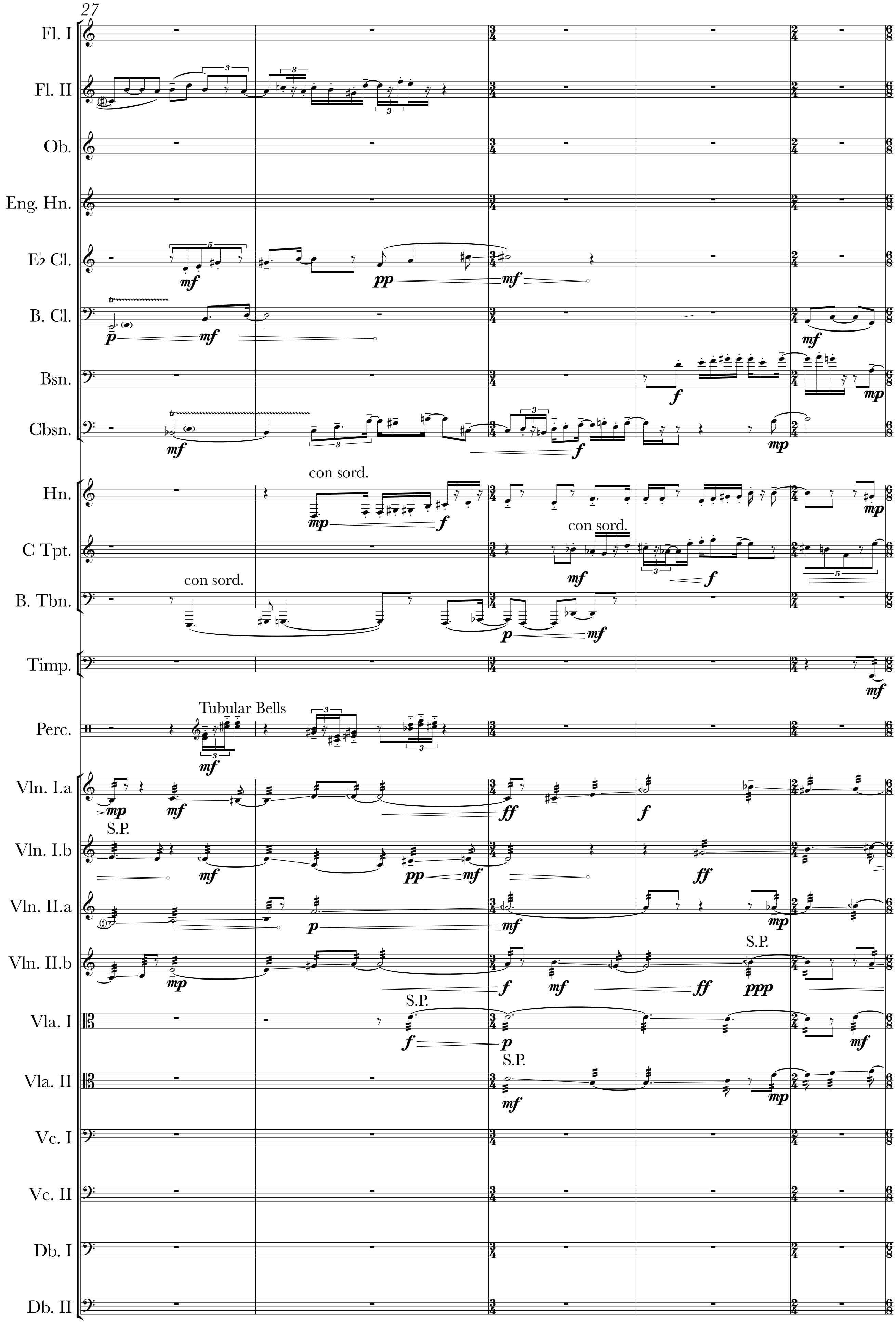
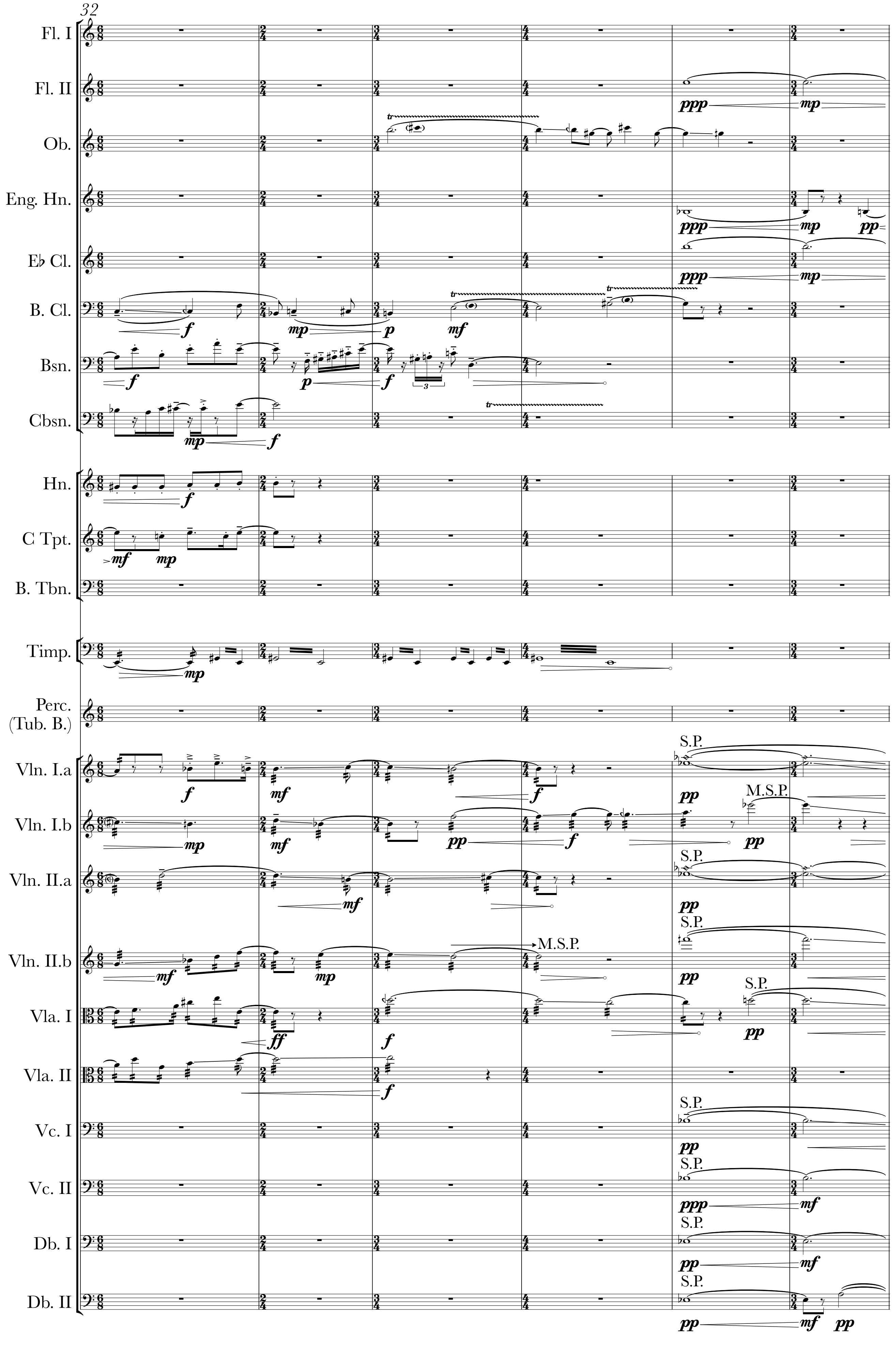

7
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
pp
f
f
B. Cl.
mf
f
Bsn.
mf
Cbsn.
mp
f
Hn.
p
p
f
mf
C Tpt.
B. Tbn.
con sord.
p
mf
Timp.
ppp
Perc.
Tubular Bells
l.v.
p
l.v.
pp
Tenor Drum
mp
pp
mp
Bass Drum (brushed)
mf
f
Vln. I.a
mf
f
M.S.P.
ff
S.P.
mp
Vln. I.b
S.P.
mf
Vln. II.a
S.T.
mp
f
Vln. II.b
Vla. I
ff
pizz.
mp
arco
mf
Vla. II
mp
Vc. I
mp
mp
Vc. II
mf
S.P.
ppp
gliss.
f
Db. I
f
S.P.
pp
mf
f
Db. II
mf
pp
S.P.
ppp
gliss.
f

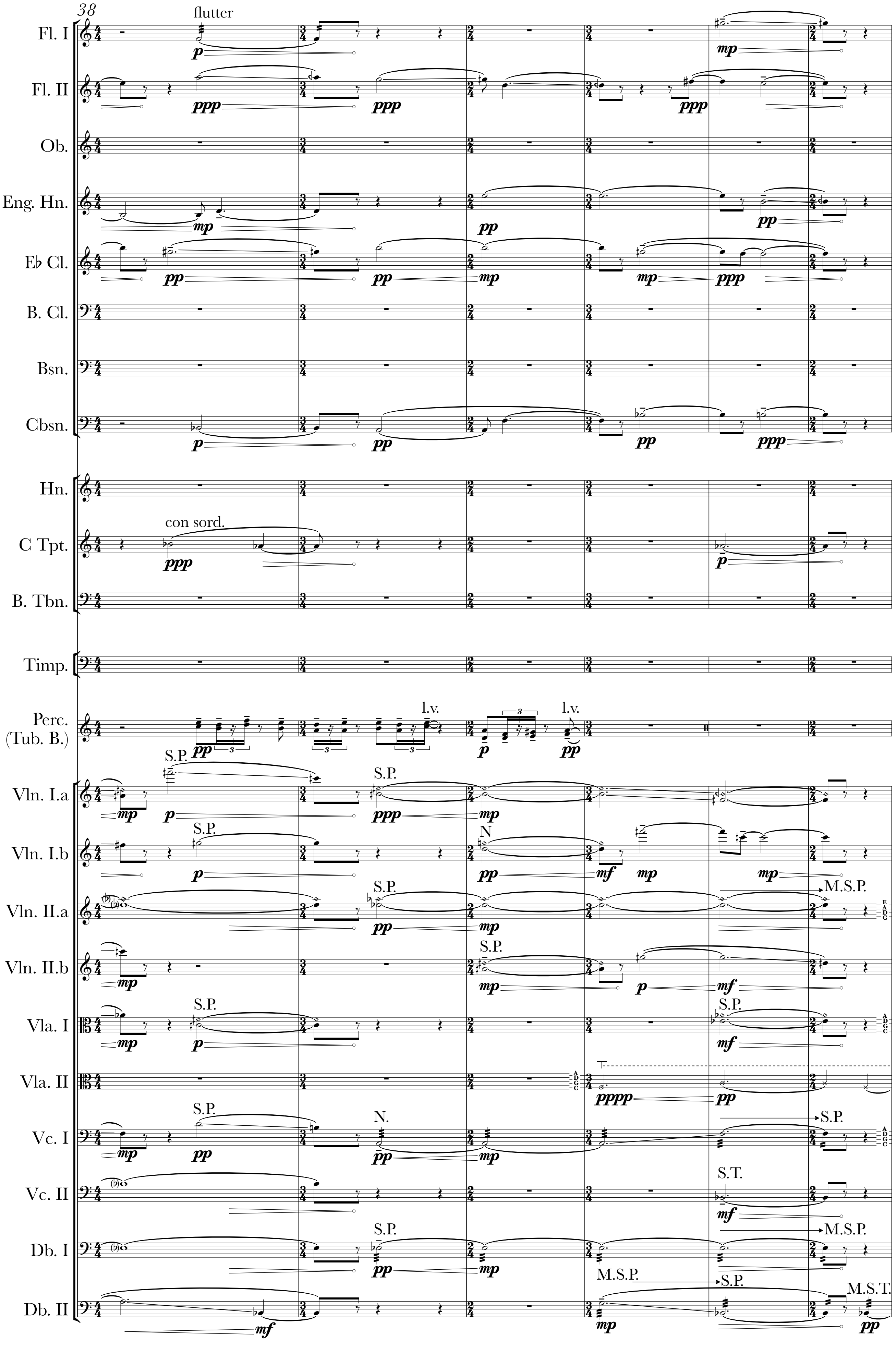

12
♪ = ♪
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
tr
mf
pp
f
mp
senza sord.
M.S.T.
S.P.
ff
ppp
p
S.T.
pizz.
sf

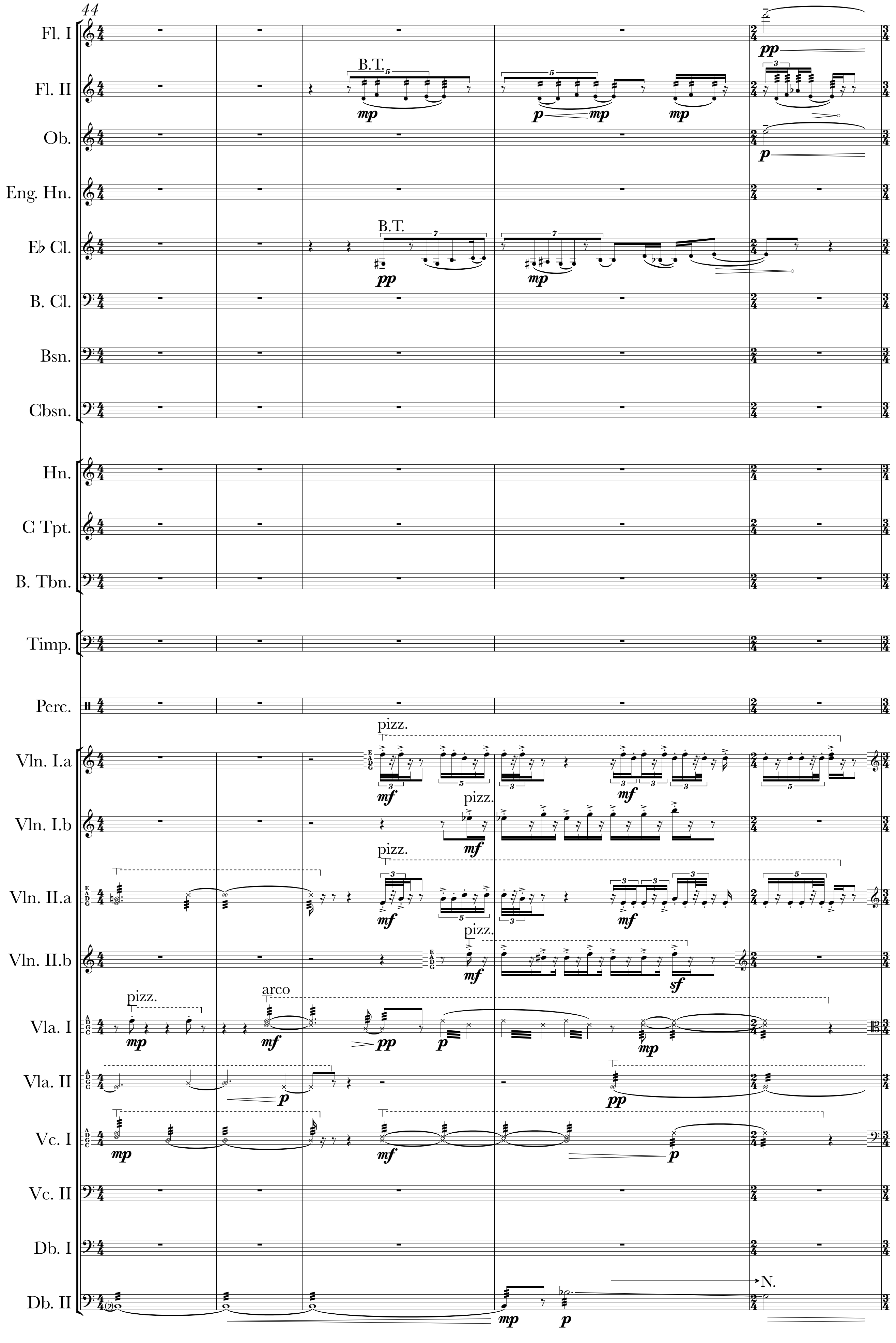

17
Fl. I
Fl. II
flutter
mf
Ob.
Eng. Hn.
7
pp
3
pp
7
mp
E♭ Cl.
mp
f
B.T.
5
mp
5
p
mp
mp
B. Cl.
Bsn.
5
Cbsn.
Hn.
mp
f
C Tpt.
B. Tbn.
3
f
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
mp
mf
Vln. II.b
Vla. I
S.P.
gliss.
ff
mf
Vla. II
S.P.
ppp
mf
f
Vc. I
arco S.P.
mf
3
mp
f
Vc. II
Db. I
f
Db. II

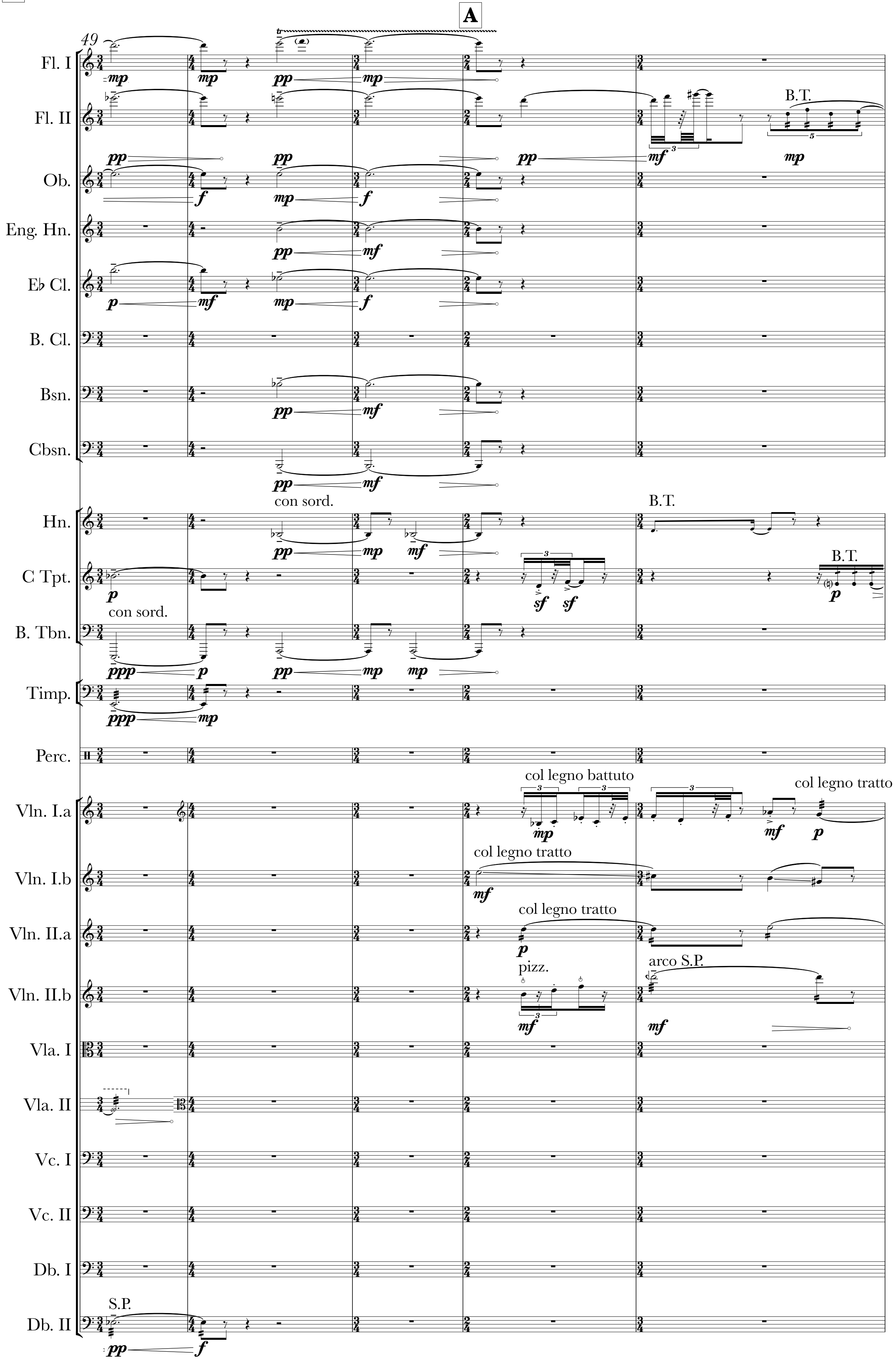

22
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
B.T.
nat.
nat.
tr
S.P.
S.P.
S.P.
S.P.
S.T.
pp
mf
mp
mp
f
mp
f
pp
mp
pp
pp
pp
mp
f
pp
mf
mp
mf
f
mf
f
pp
mf

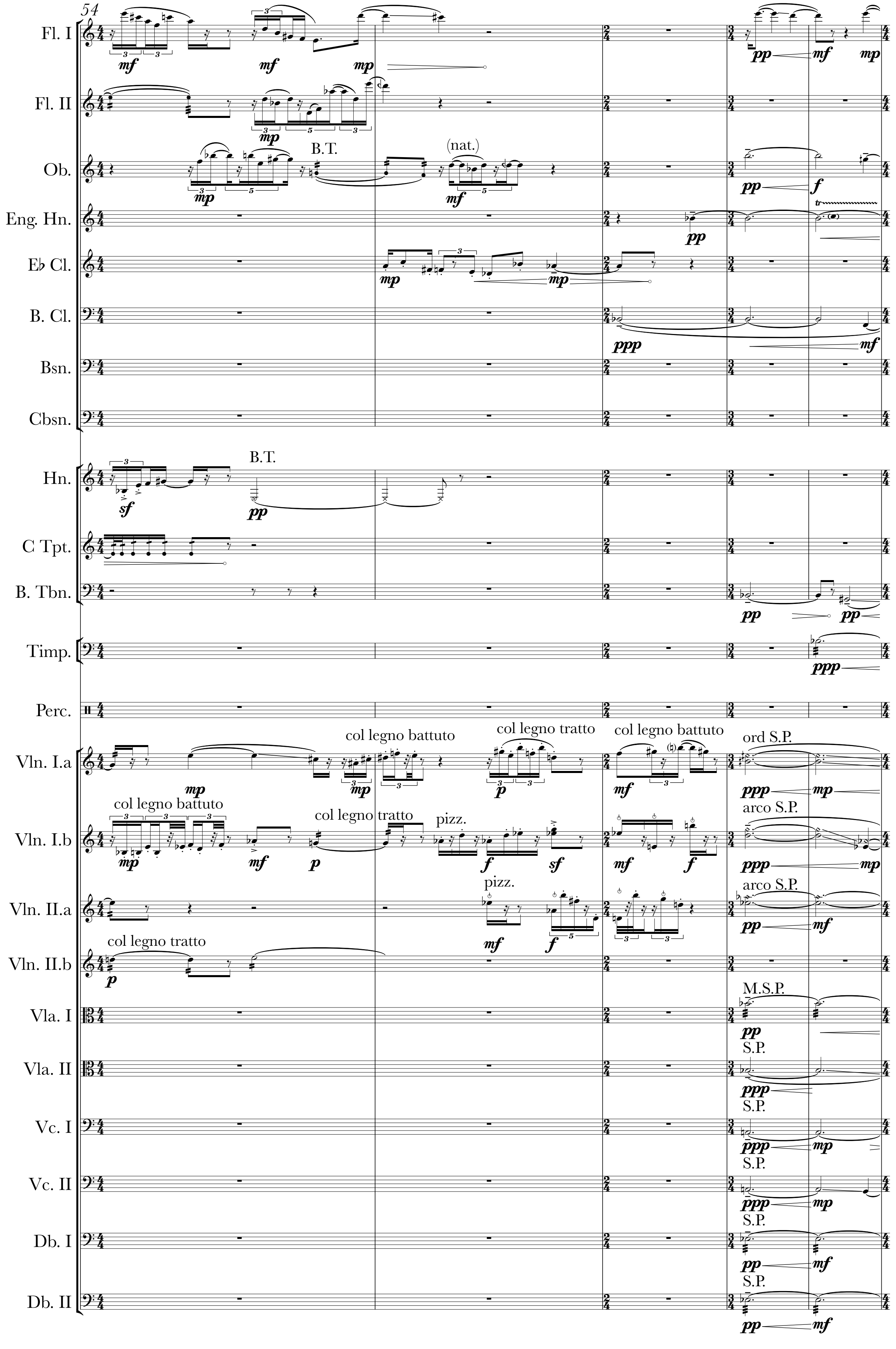

27
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
con sord.
con sord.
con sord.
Tubular Bells
S.P.
S.P.
S.P.
S.P.
mf
pp
mf
p
mf
mf
f
mp
mf
f
mp
mp
f
mf
f
p
mf
mf
mf
mp
mf
mf
pp
mf
ff
f
mf
pp
mf
ff
p
mf
mp
mp
mp
f
mf
ff
ppp
f
p
mf
mf
mp

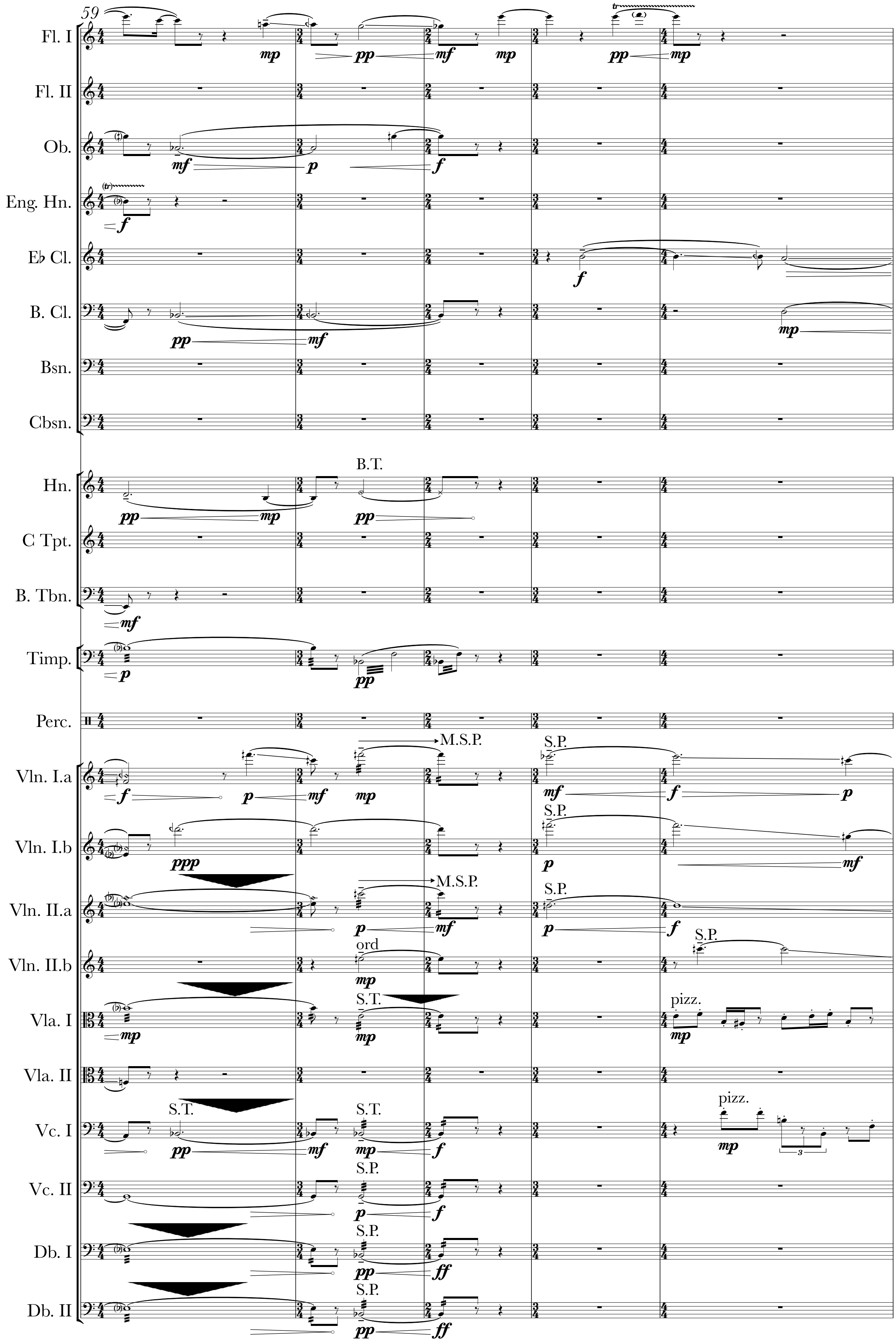

32
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
(Tub. B.)
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
tr
3
ppp
pp
p
mp
mf
f
ff
S.P.
M.S.P.

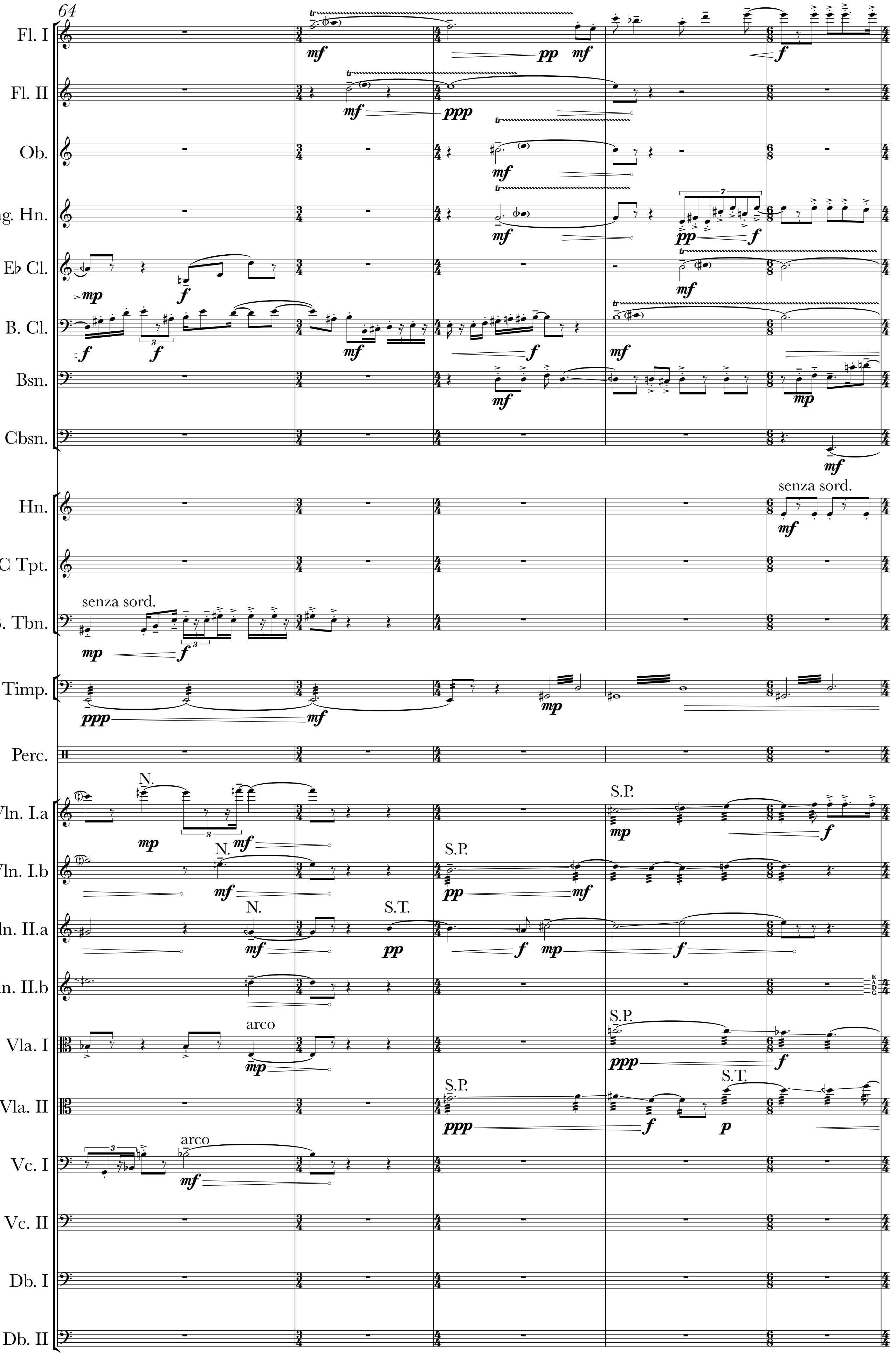

38
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
(Tub. B.)
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
flutter
con sord.
l.v.
l.v.
S.P.
N
N.
M.S.P.
S.T.
M.S.T.
p
pp
ppp
pppp
mp
mf

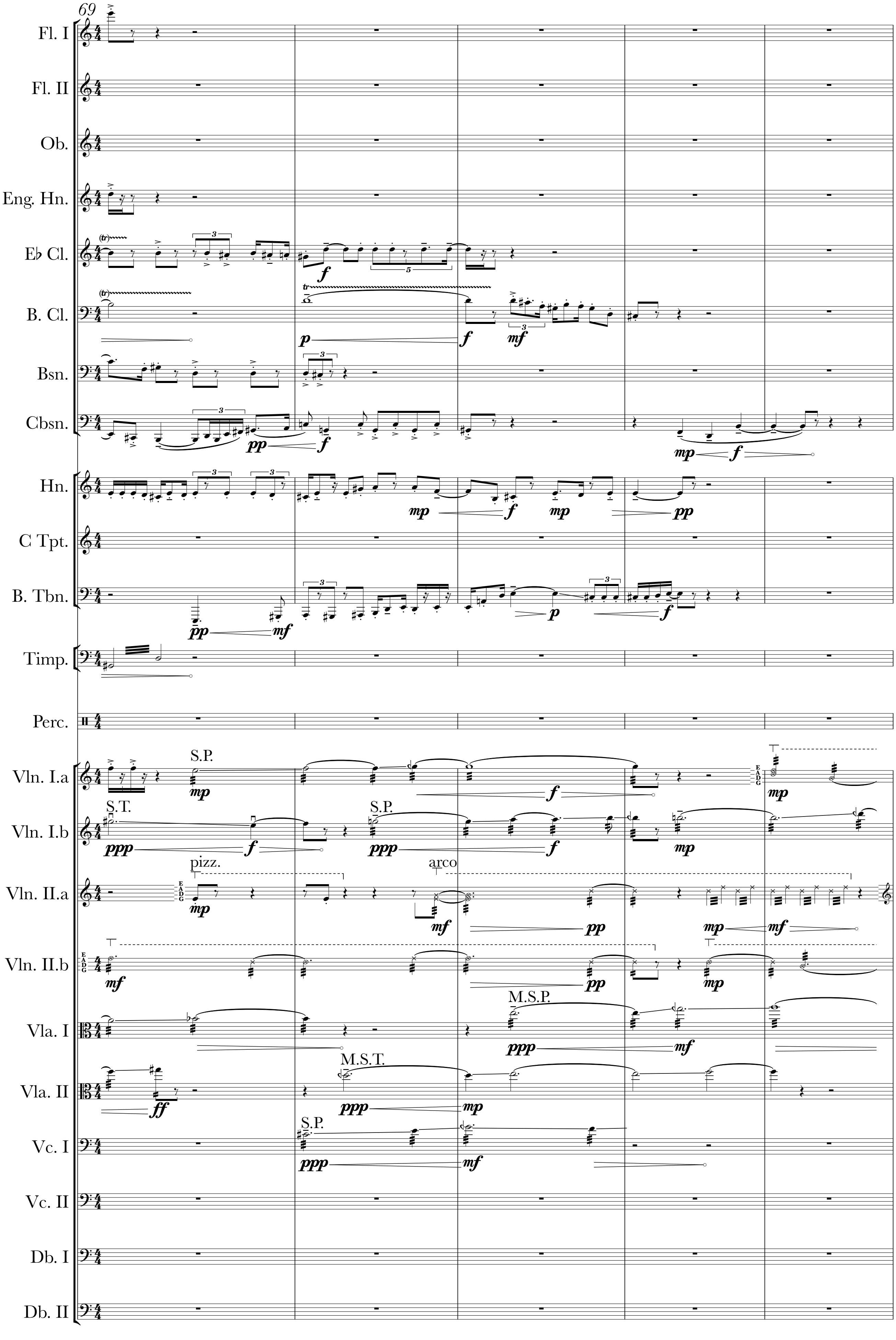

44
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
B.T.
pizz.
arco
N.
pp
mp
p
mf
sf

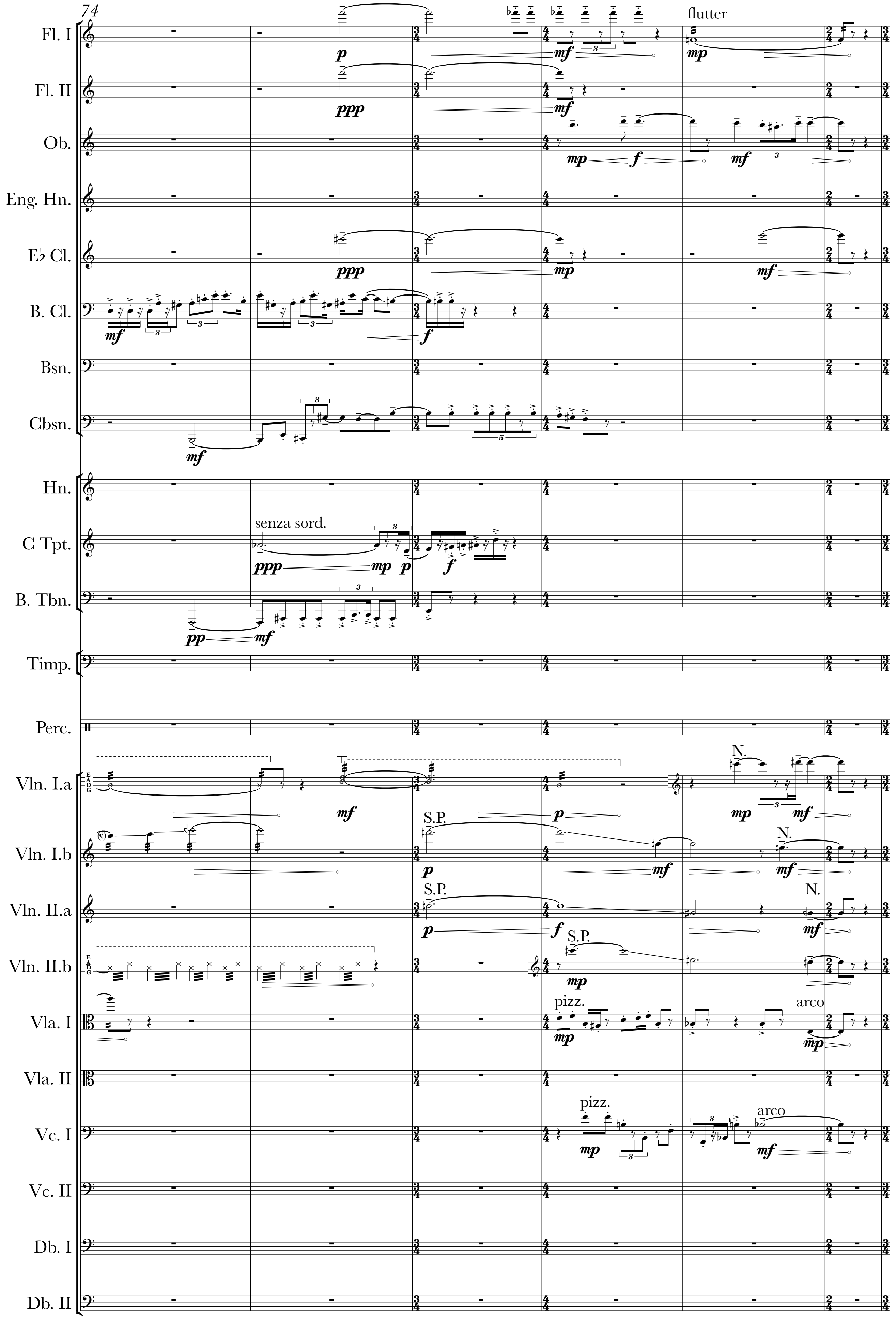

A
49
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
tr
B.T.
con sord.
con sord.
B.T.
B.T.
col legno battuto
col legno tratto
col legno tratto
col legno tratto
pizz.
arco S.P.
S.P.
mp
mp
pp
mp
pp
pp
pp
mf
mp
f
mp
f
pp
mf
p
mf
mp
f
pp
mf
pp
mf
pp
mp
mf
p
sf
sf
p
ppp
p
pp
mp
mp
ppp
mp
mp
mf
p
mf
p
mf
mf
pp
f
3
5
3
3
3
3
3

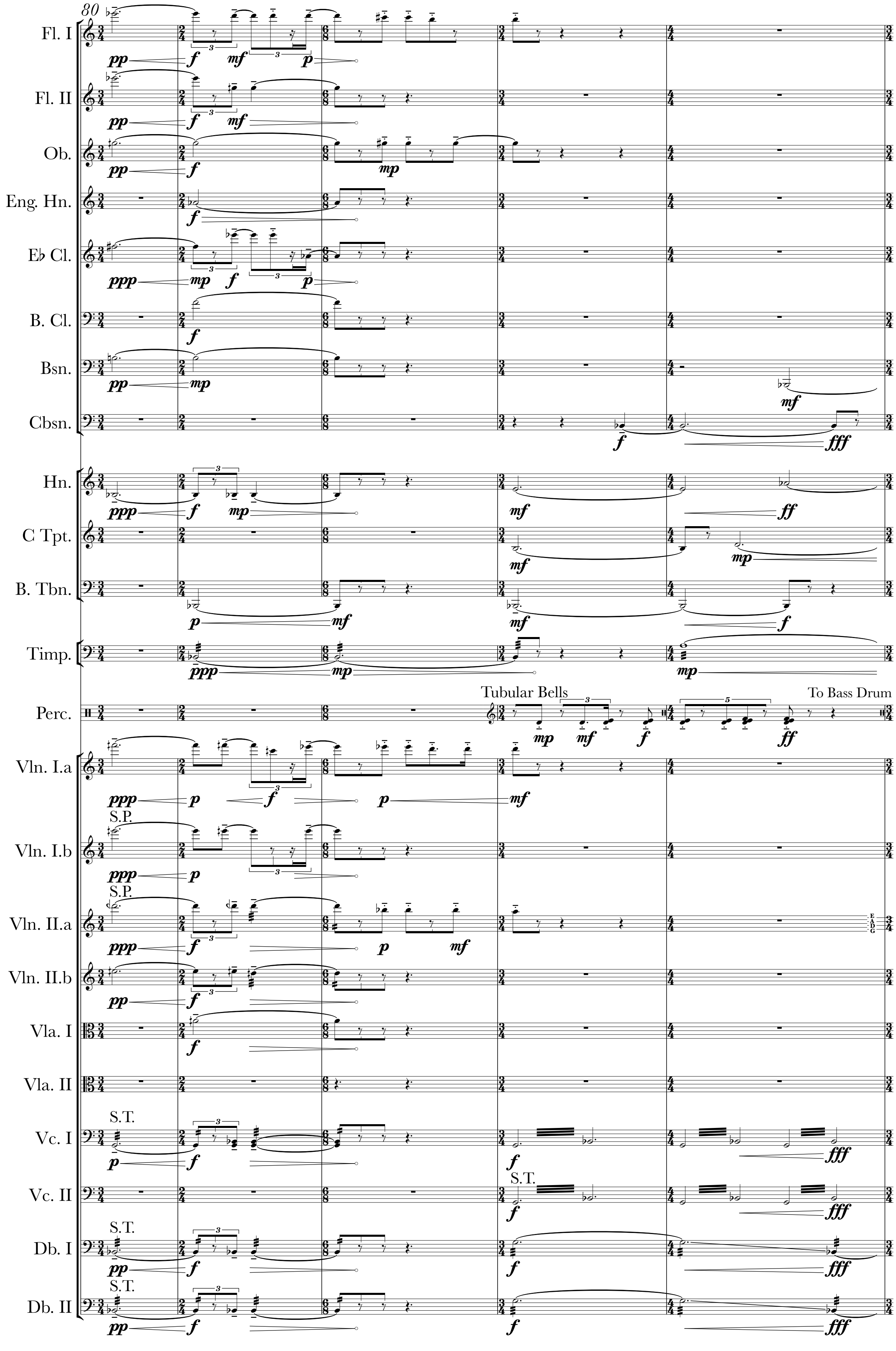

54
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
mf
mp
pp
f
B.T.
(nat.)
ppp
sf
col legno battuto
col legno tratto
pizz.
ord S.P.
arco S.P.
M.S.P.
S.P.
p

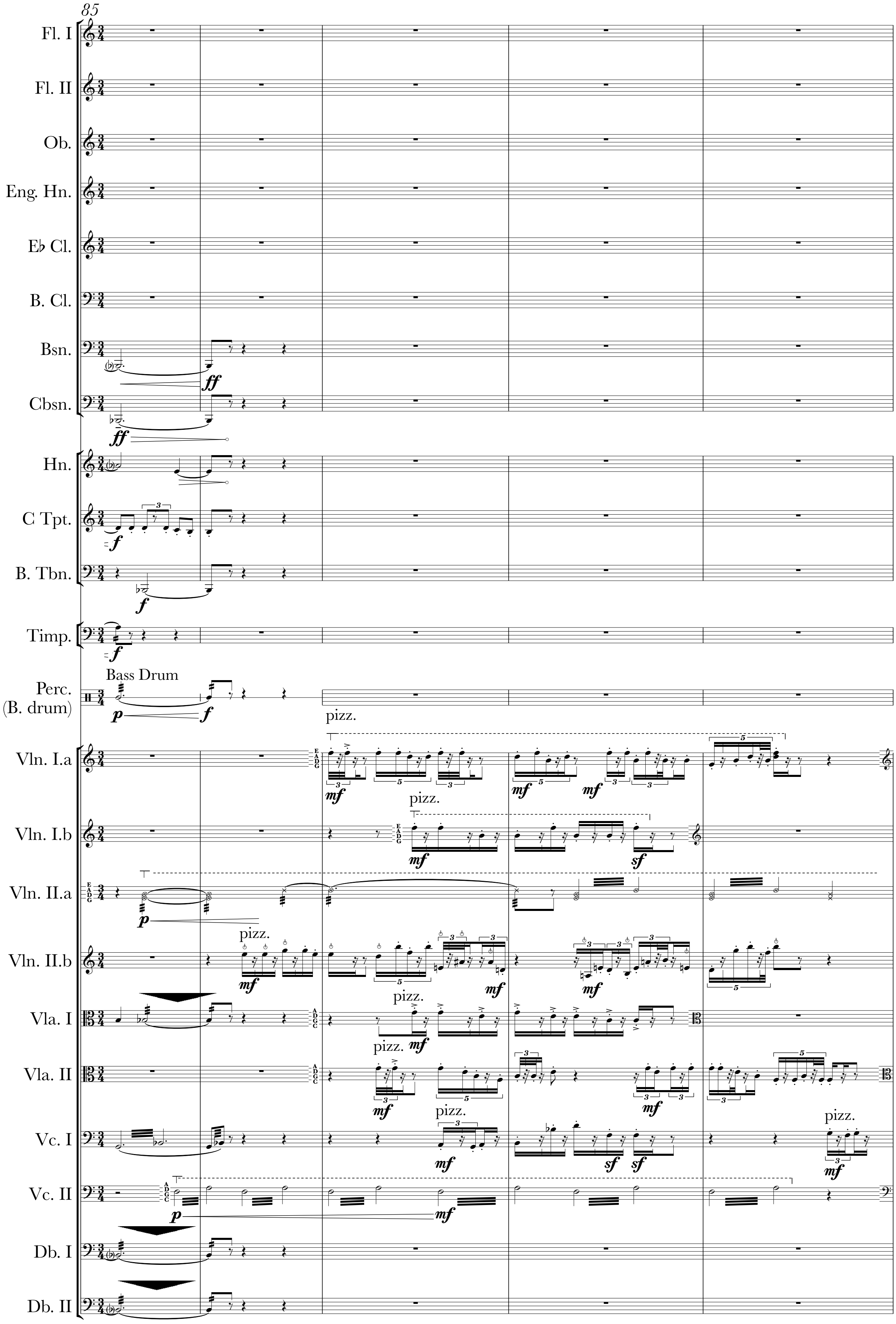

59
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
B.T.
M.S.P.
S.P.
ord
S.T.
pizz.
mp
pp
mf
f
p
ppp
ff
3

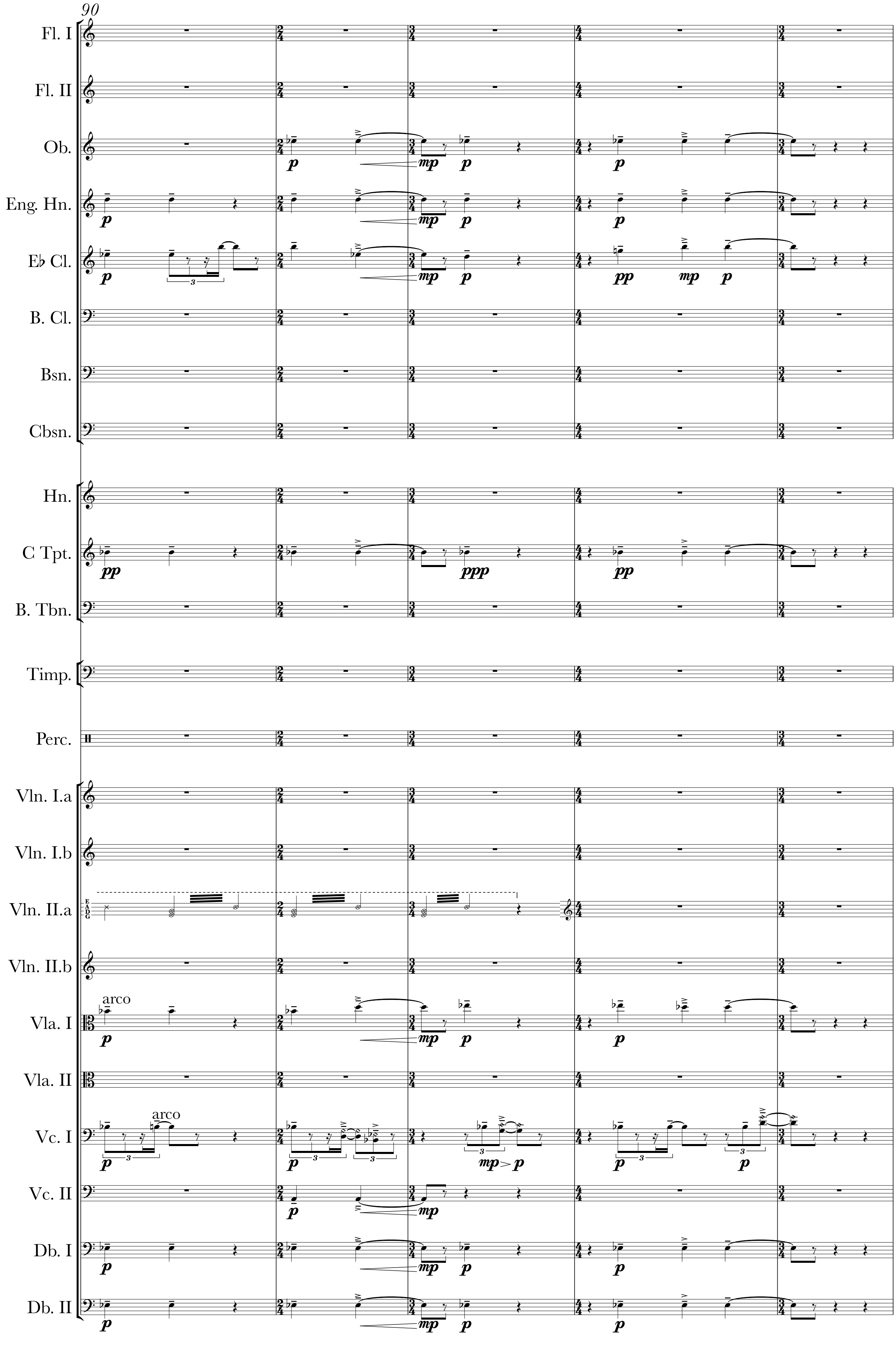

64
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
tr
mf
pp
ppp
mp
f
p
7
3
senza sord.
N.
S.P.
S.T.
arco
E
A
D
G

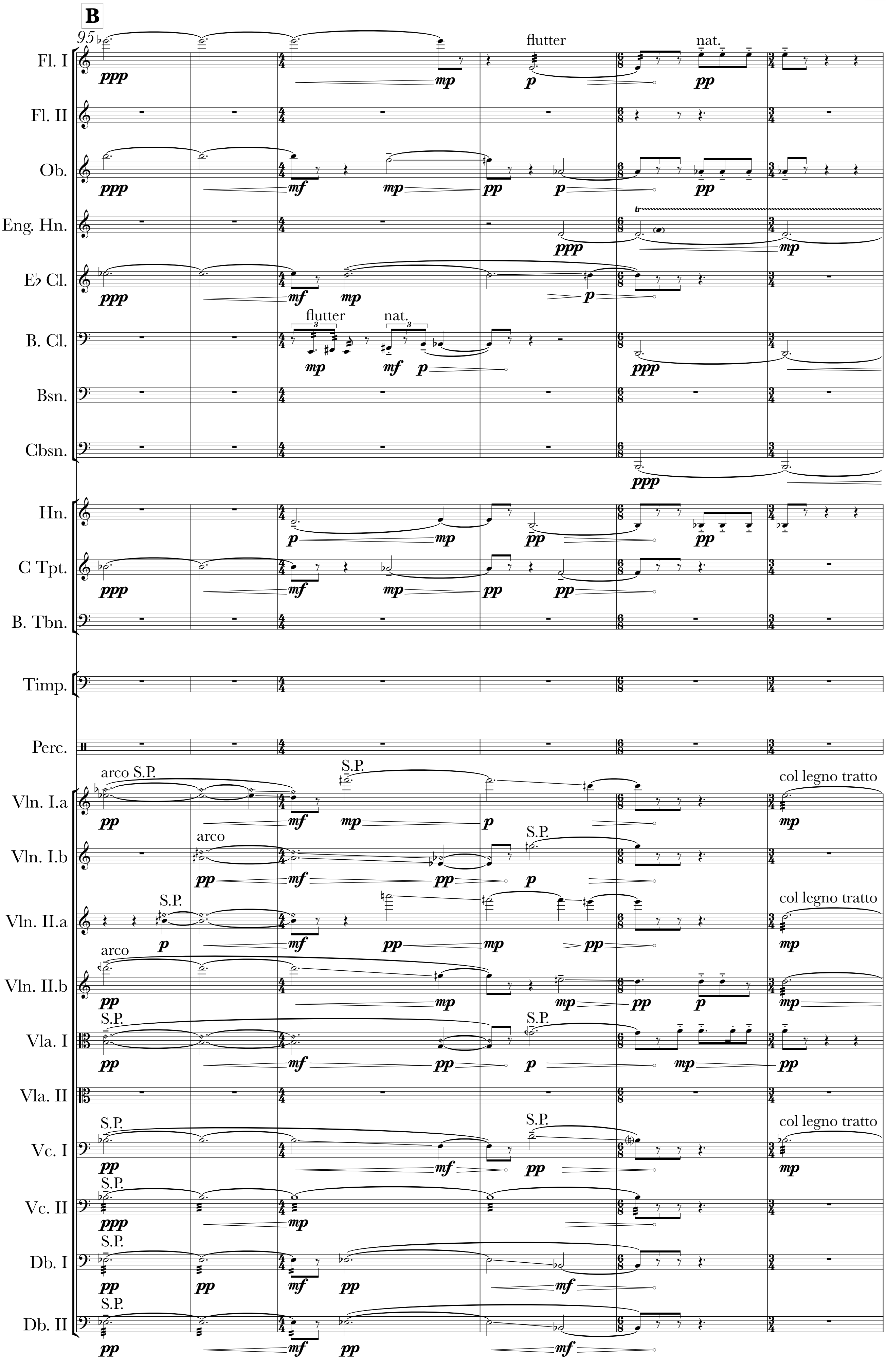

69
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
(tr)
tr
3
5
S.P.
S.T.
pizz.
arco
M.S.P.
M.S.T.
E A D G
f
p
mf
pp
mp
ppp
ff

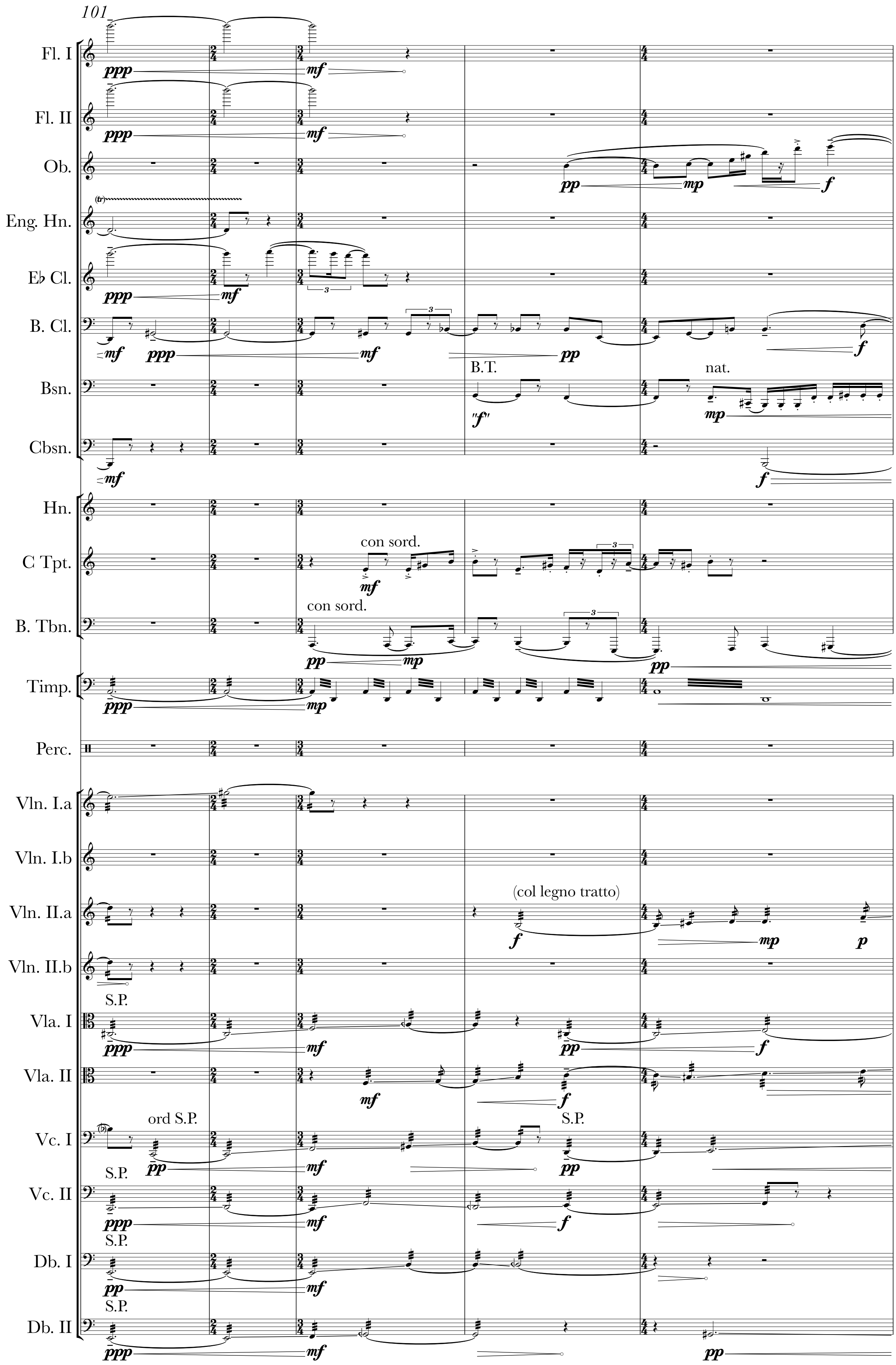

74
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
flutter
senza sord.
S.P.
N.
pizz.
arco
p
ppp
mf
mp
f
pp

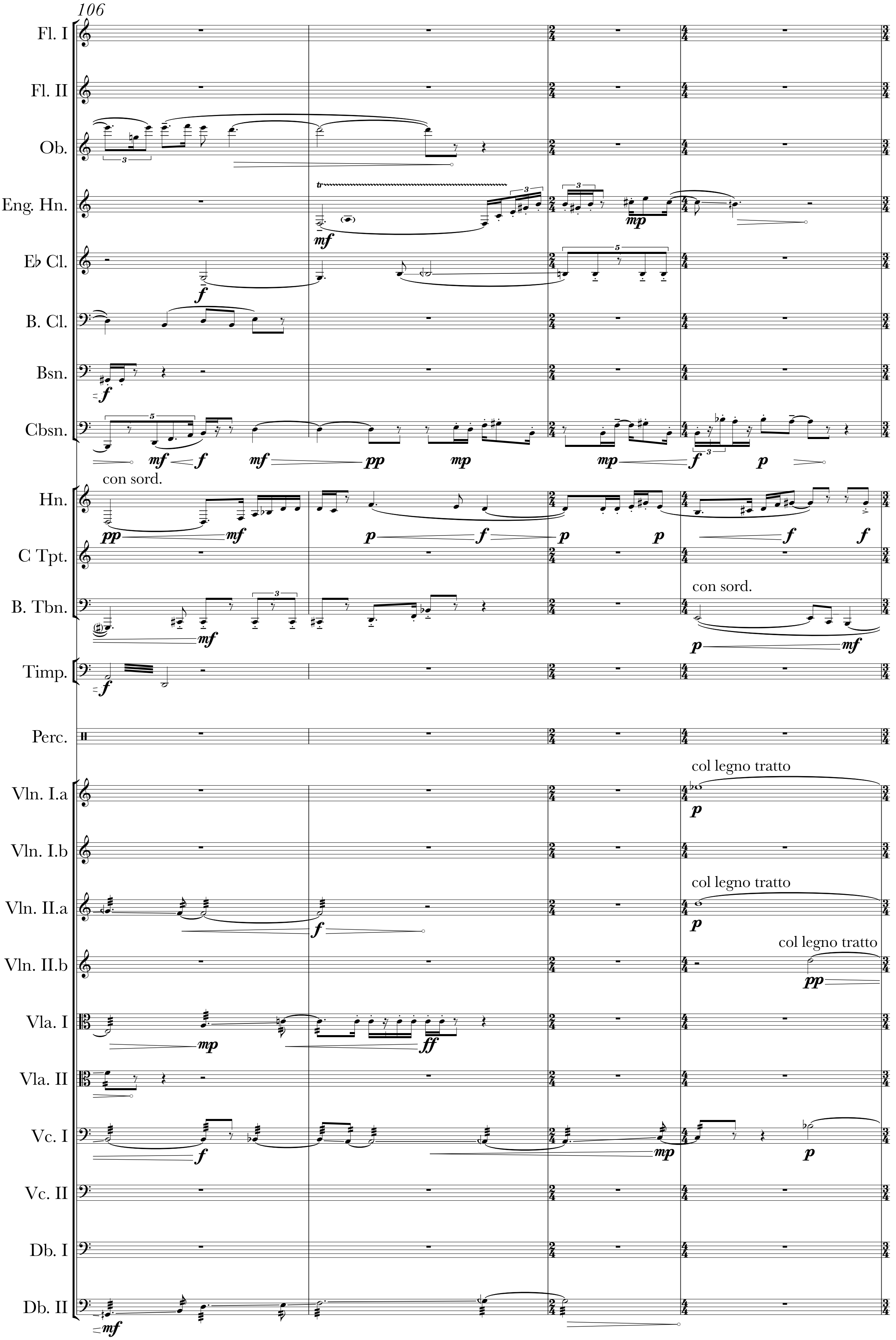

80
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Tubular Bells
To Bass Drum
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
S.P.
S.P.
S.T.
S.T.
S.T.
S.T.
pp
f
mf
p
ppp
mp
ff
fff
3
5

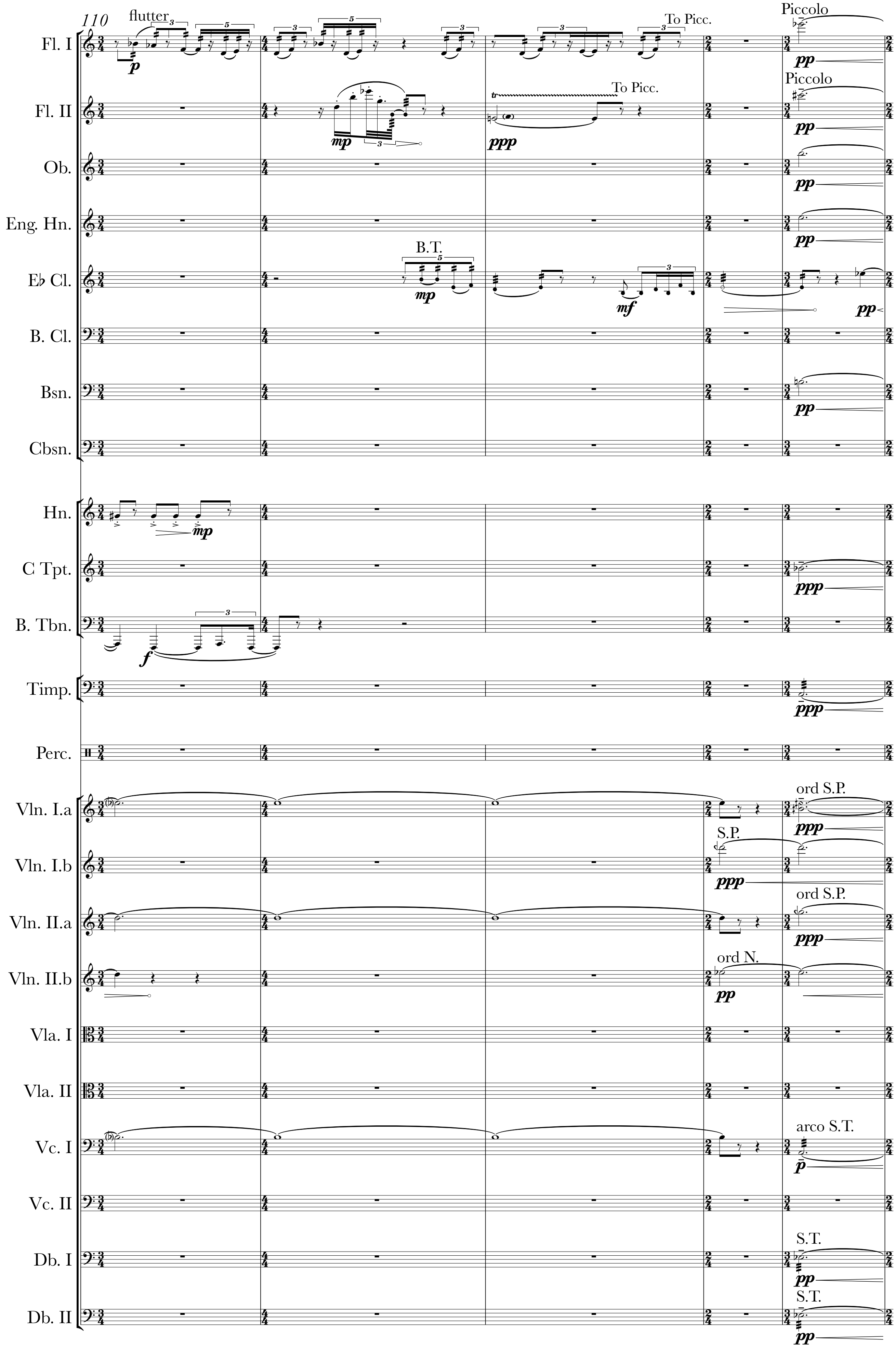

85
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
(B. drum)
Bass Drum
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
pizz.
ff
f
p
mf
sf
3
5
E A D G
A D G C

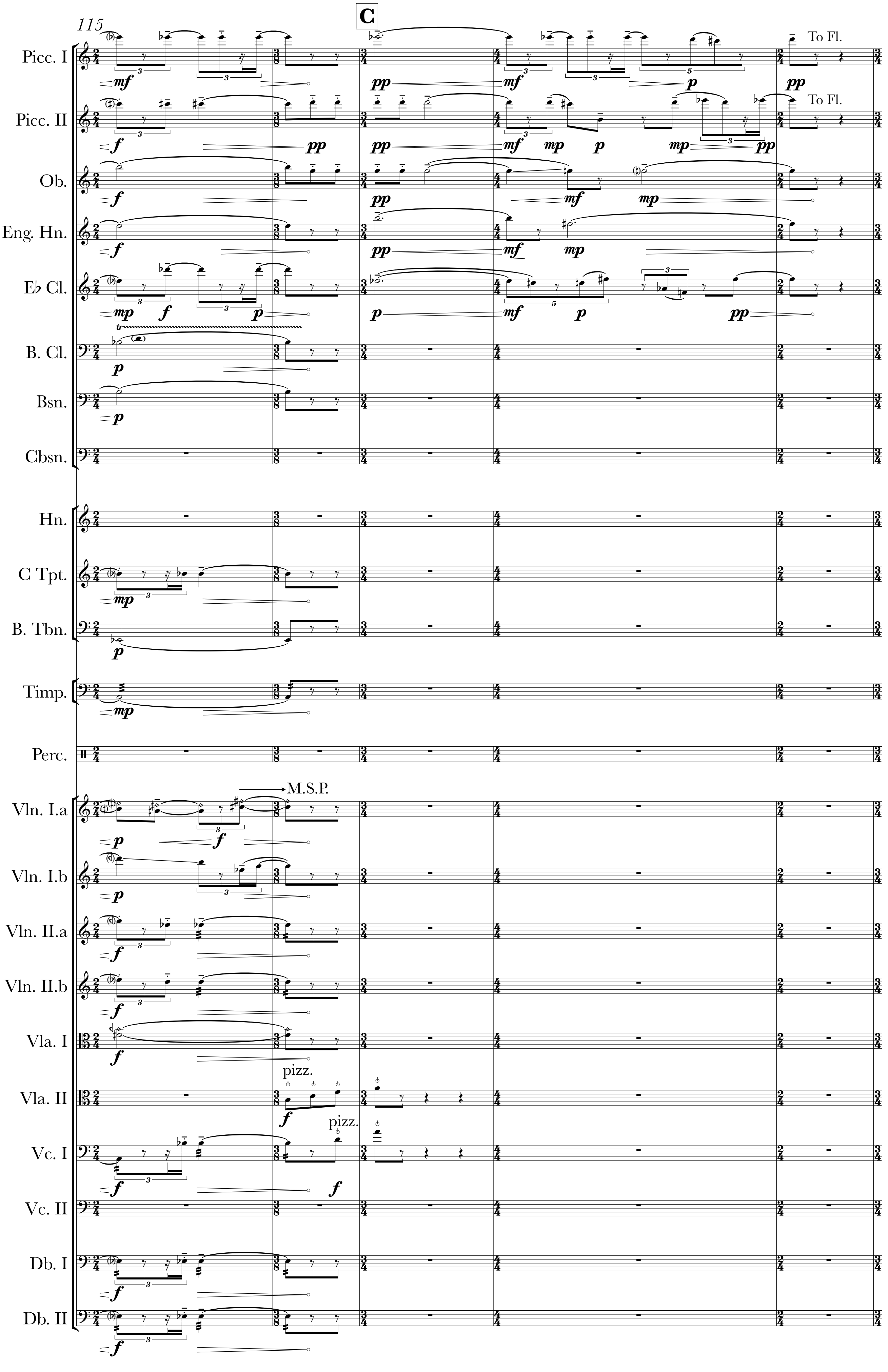

90
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
arco
arco
p
mp
pp
ppp
mp > p
3

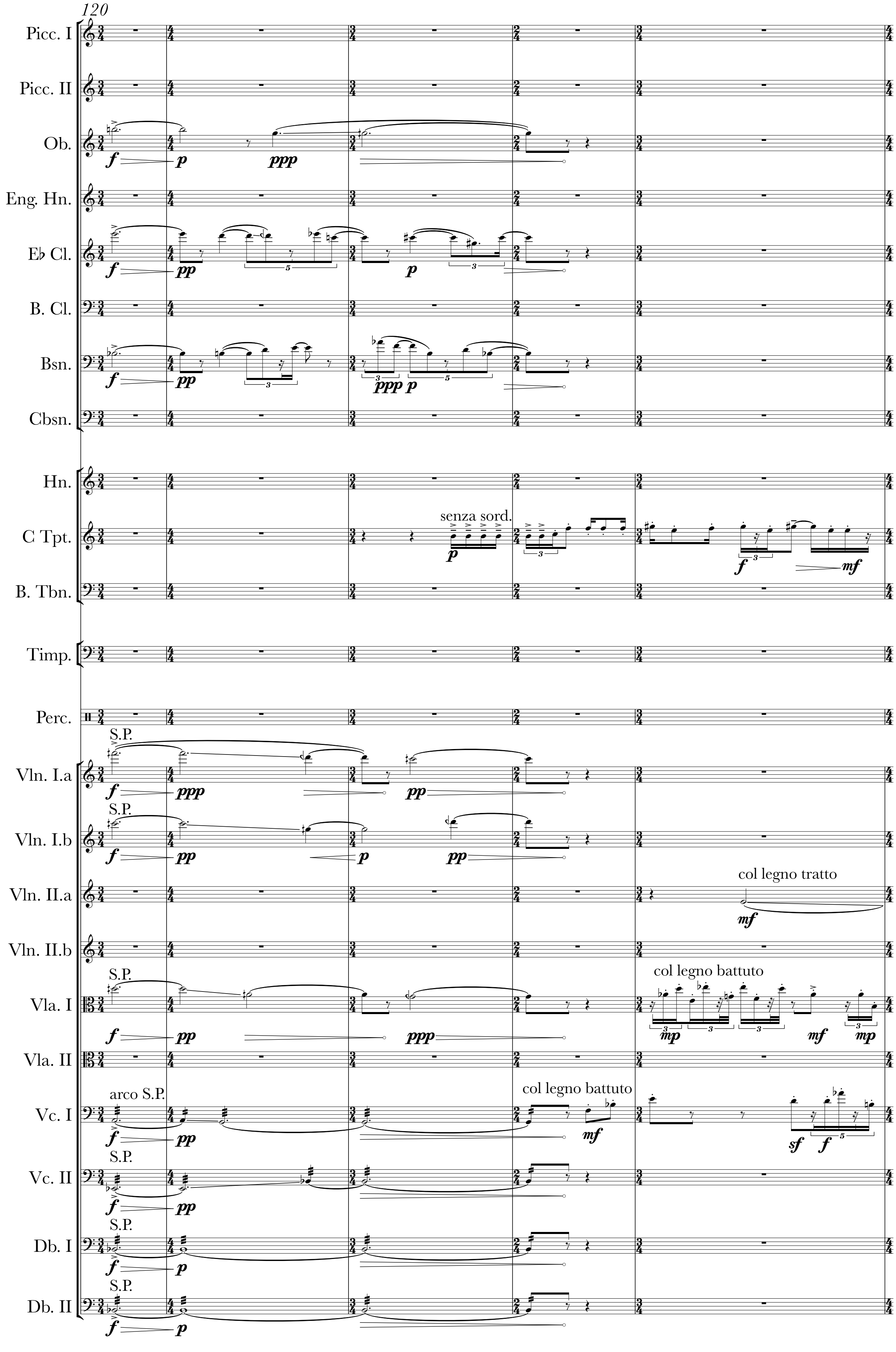

B
95
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
flutter
nat.
arco S.P.
arco
S.P.
col legno tratto
ppp
pp
p
mp
mf

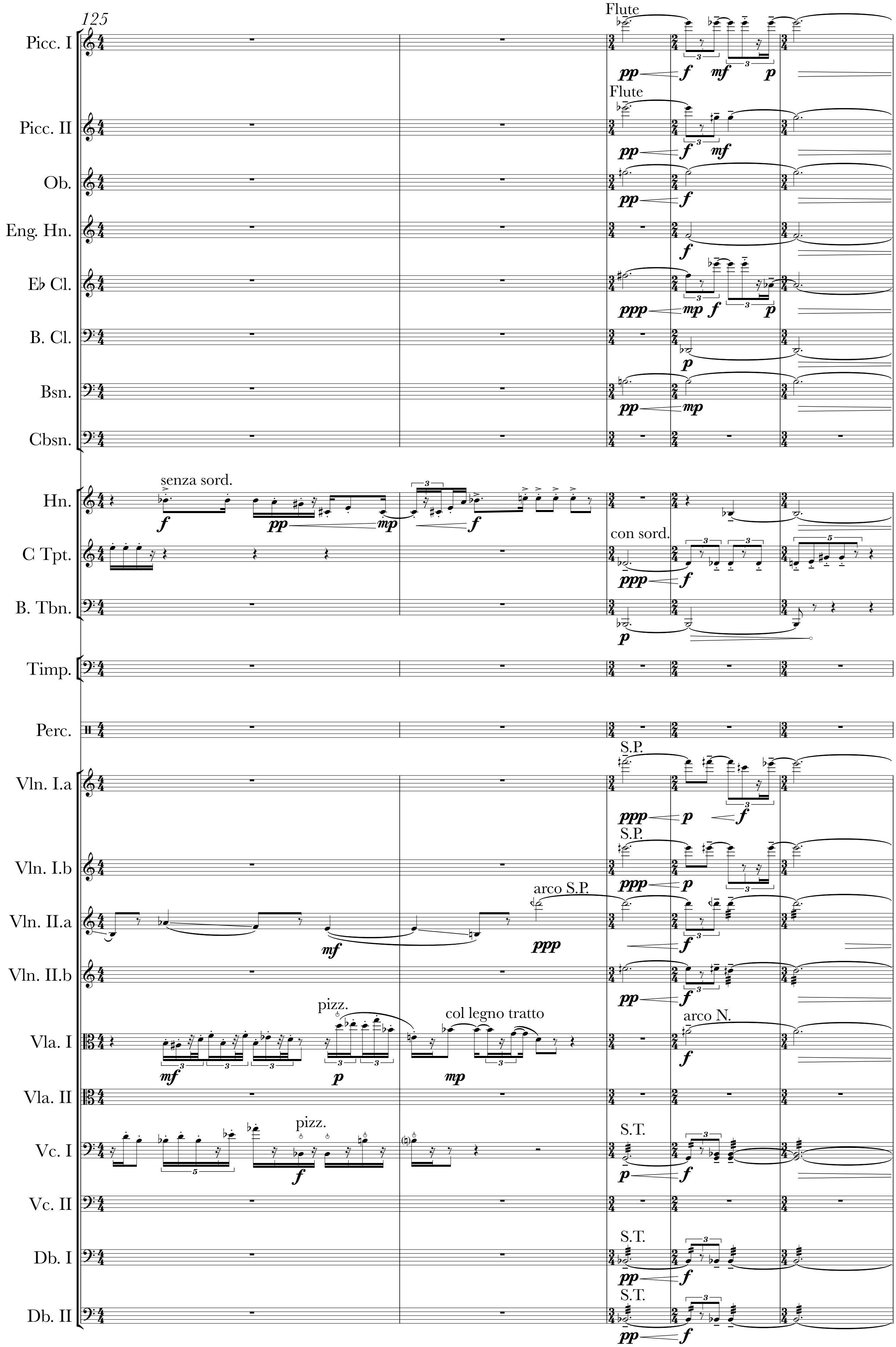

101
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
ppp
mf
pp
mp
f
B.T.
"f"
nat.
con sord.
(col legno tratto)
p
S.P.
ord S.P.
(tr)
3

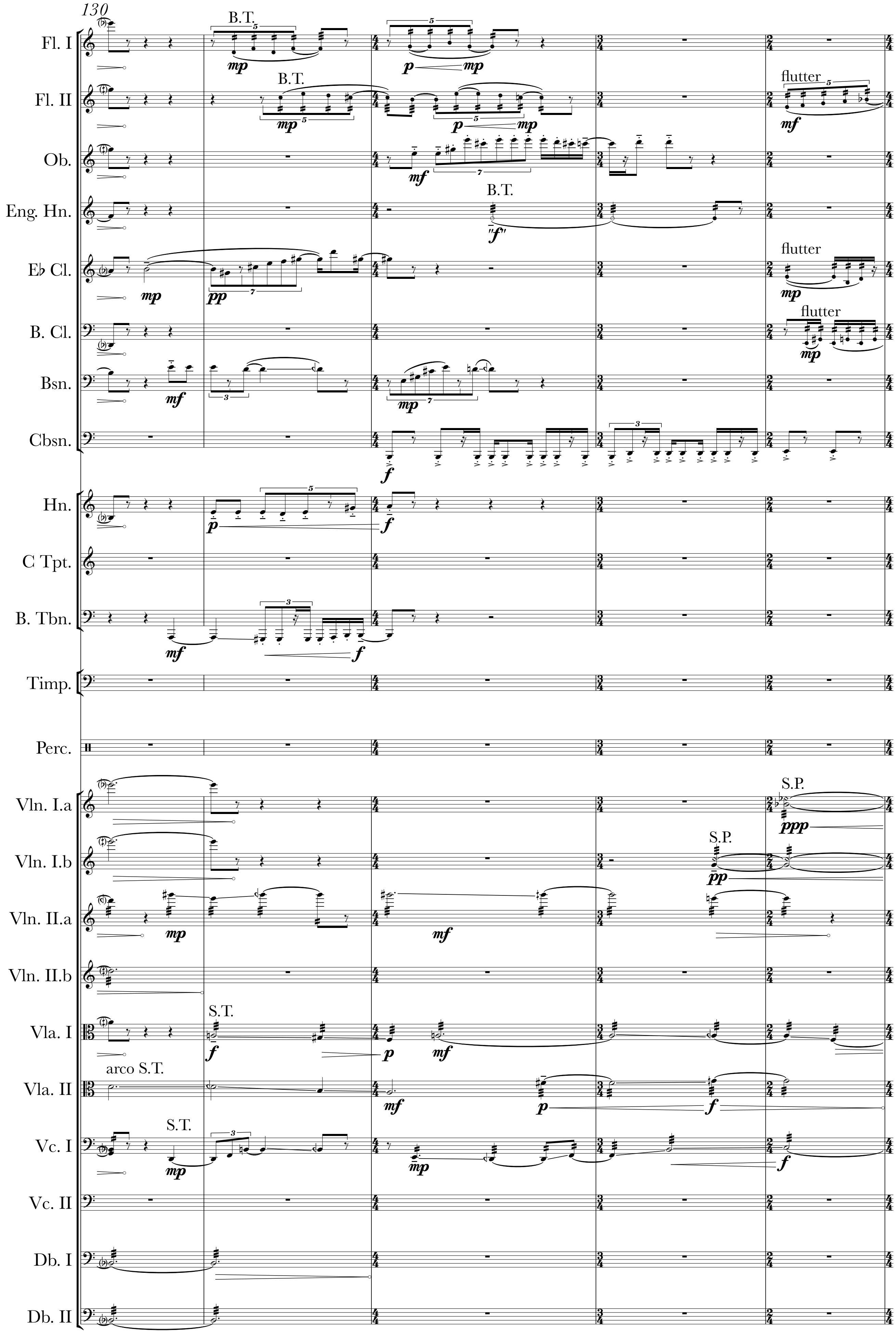

106
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
con sord.
con sord.
col legno tratto
col legno tratto
col legno tratto
tr
3
5
mf
f
pp
mp
p
ff

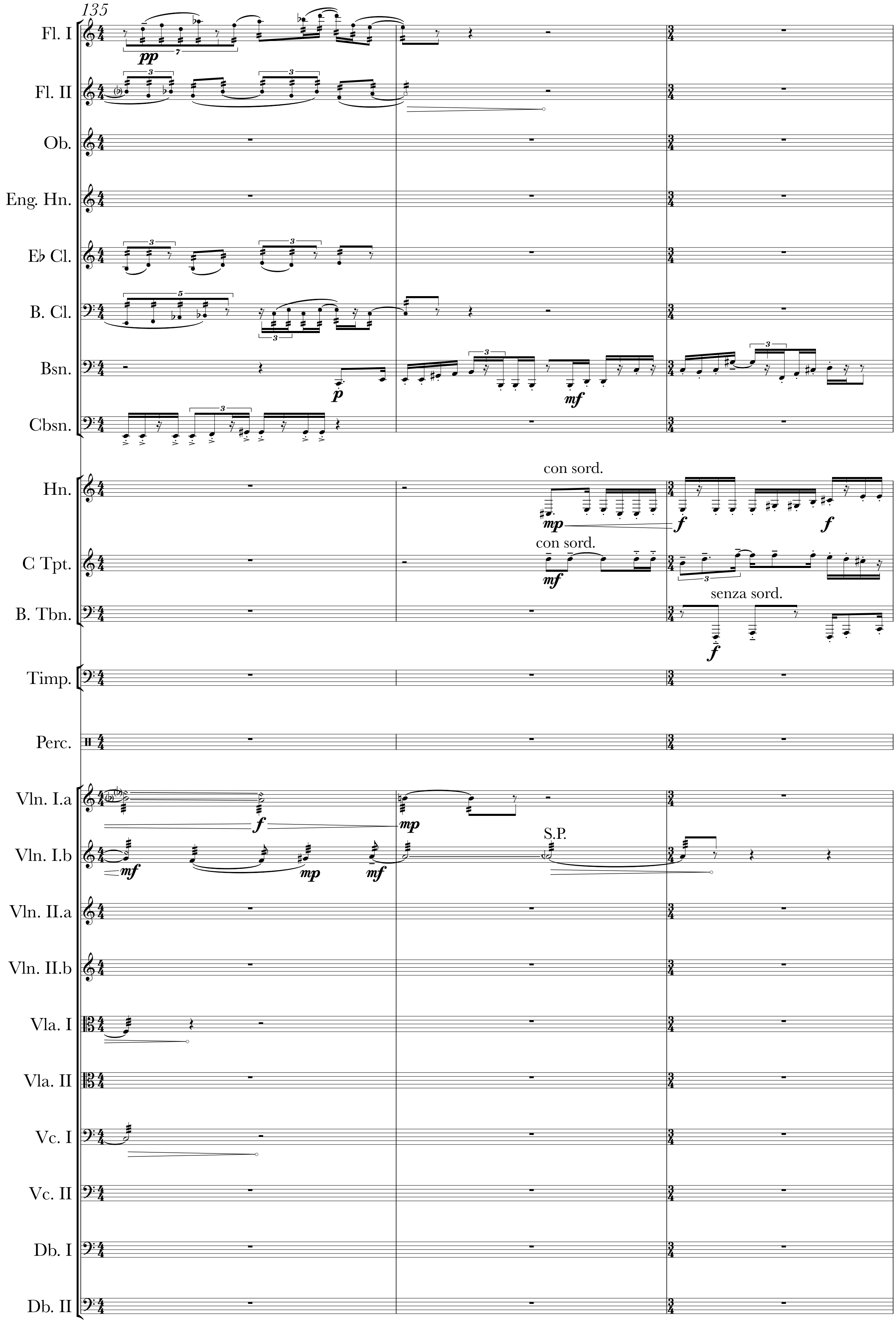

110
flutter
To Picc.
Piccolo
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
B.T.
p
mp
ppp
mf
pp
f
ord S.P.
S.P.
ord N.
arco S.T.
S.T.

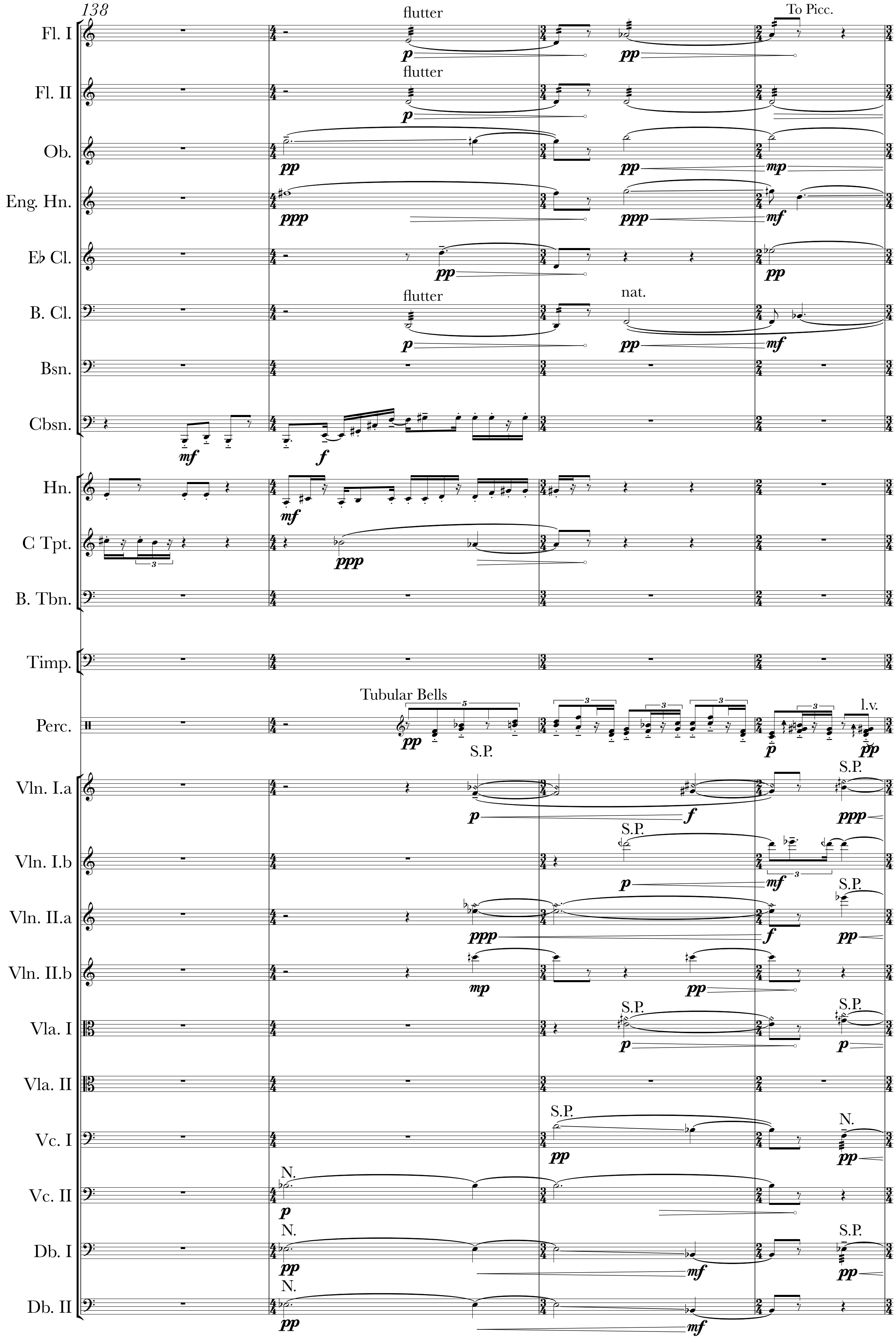

115
C
Picc. I
Picc. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
To Fl.
To Fl.
M.S.P.
pizz.
pizz.
mf
f
mp
p
pp

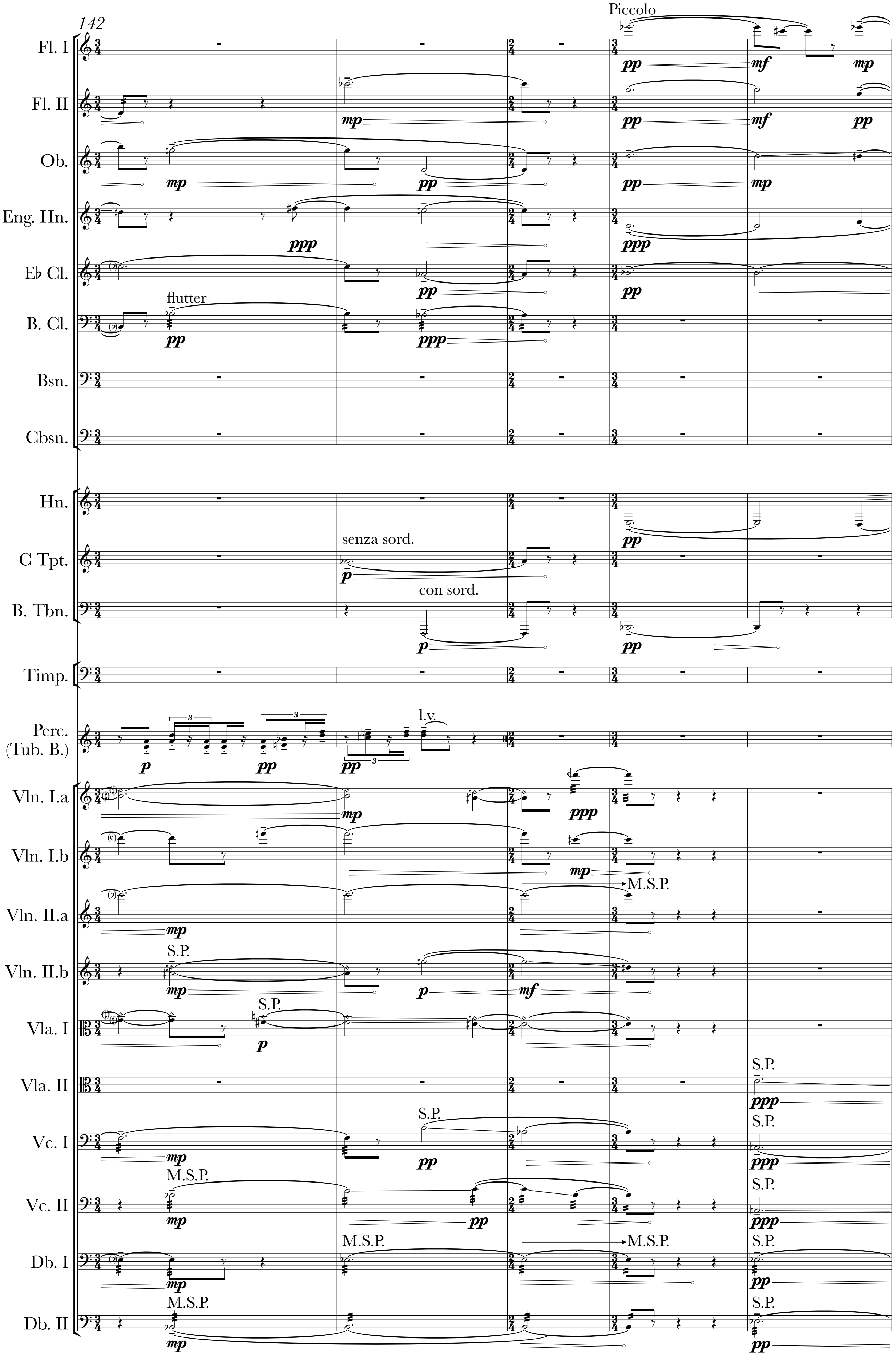

120
Picc. I
Picc. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
senza sord.
B. Tbn.
Timp.
Perc.
Vln. I.a
S.P.
Vln. I.b
S.P.
Vln. II.a
col legno tratto
Vln. II.b
Vla. I
S.P.
col legno battuto
Vla. II
Vc. I
arco S.P.
col legno battuto
Vc. II
S.P.
Db. I
S.P.
Db. II
S.P.

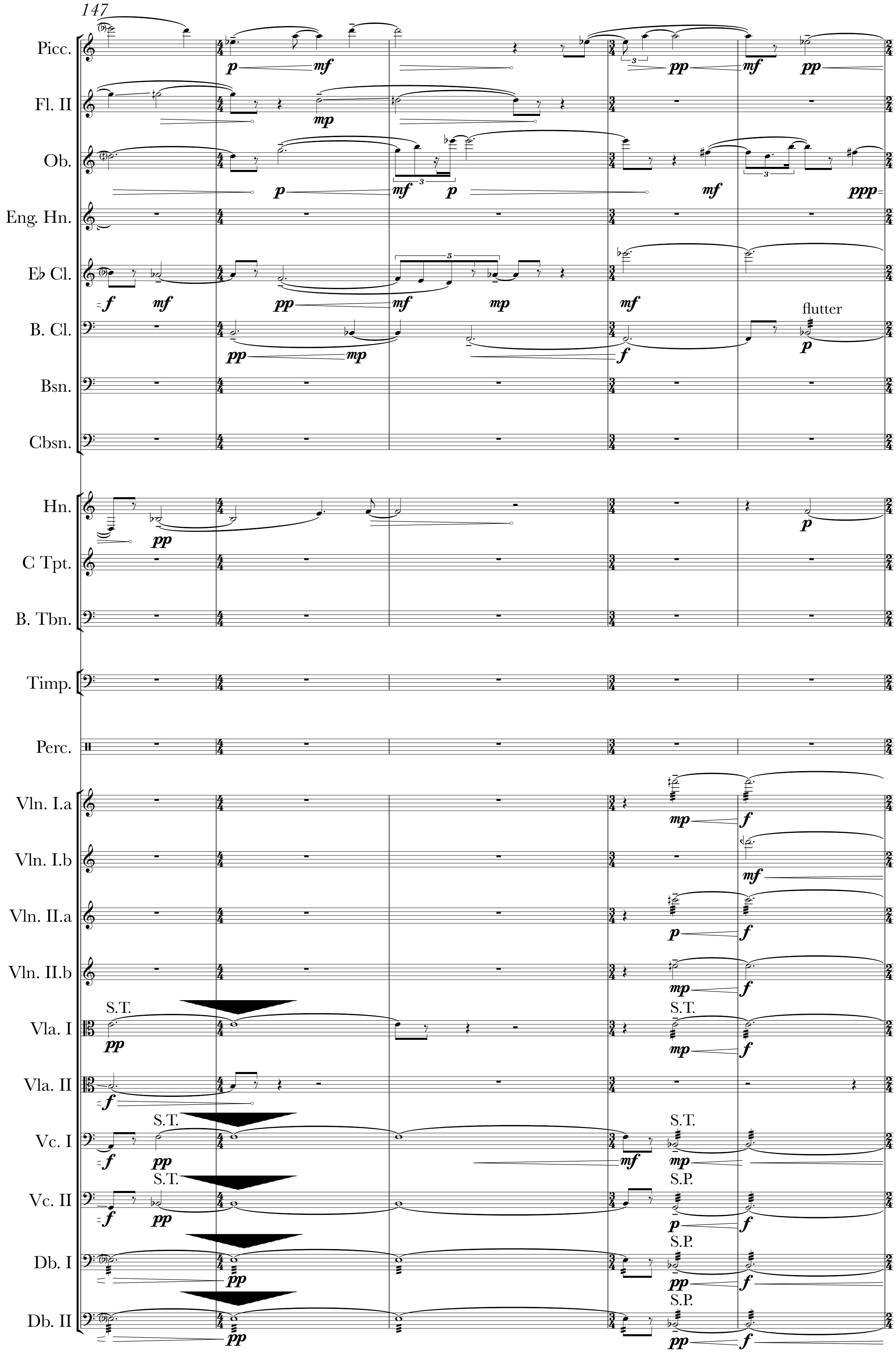

125
Picc. I
Picc. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
Flute
Flute
senza sord.
con sord.
S.P.
S.P.
arco S.P.
pizz.
col legno tratto
arco N.
pizz.
S.T.
S.T.
S.T.
pp
f
mf
p
ppp
mp
3
5

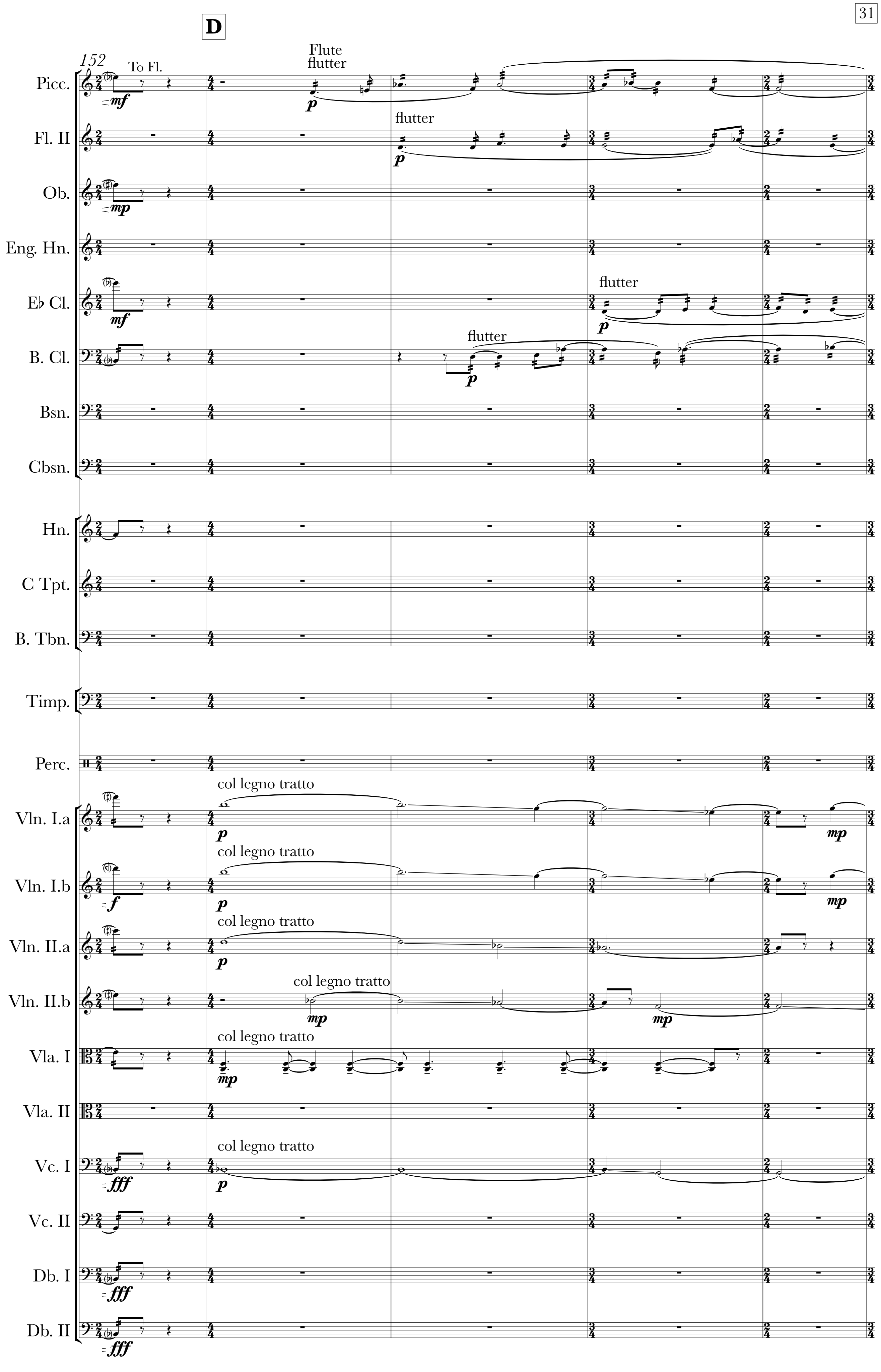

130
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
B.T.
flutter
S.P.
S.T.
arco S.T.
mp
p
mf
"f"
pp
f
ppp

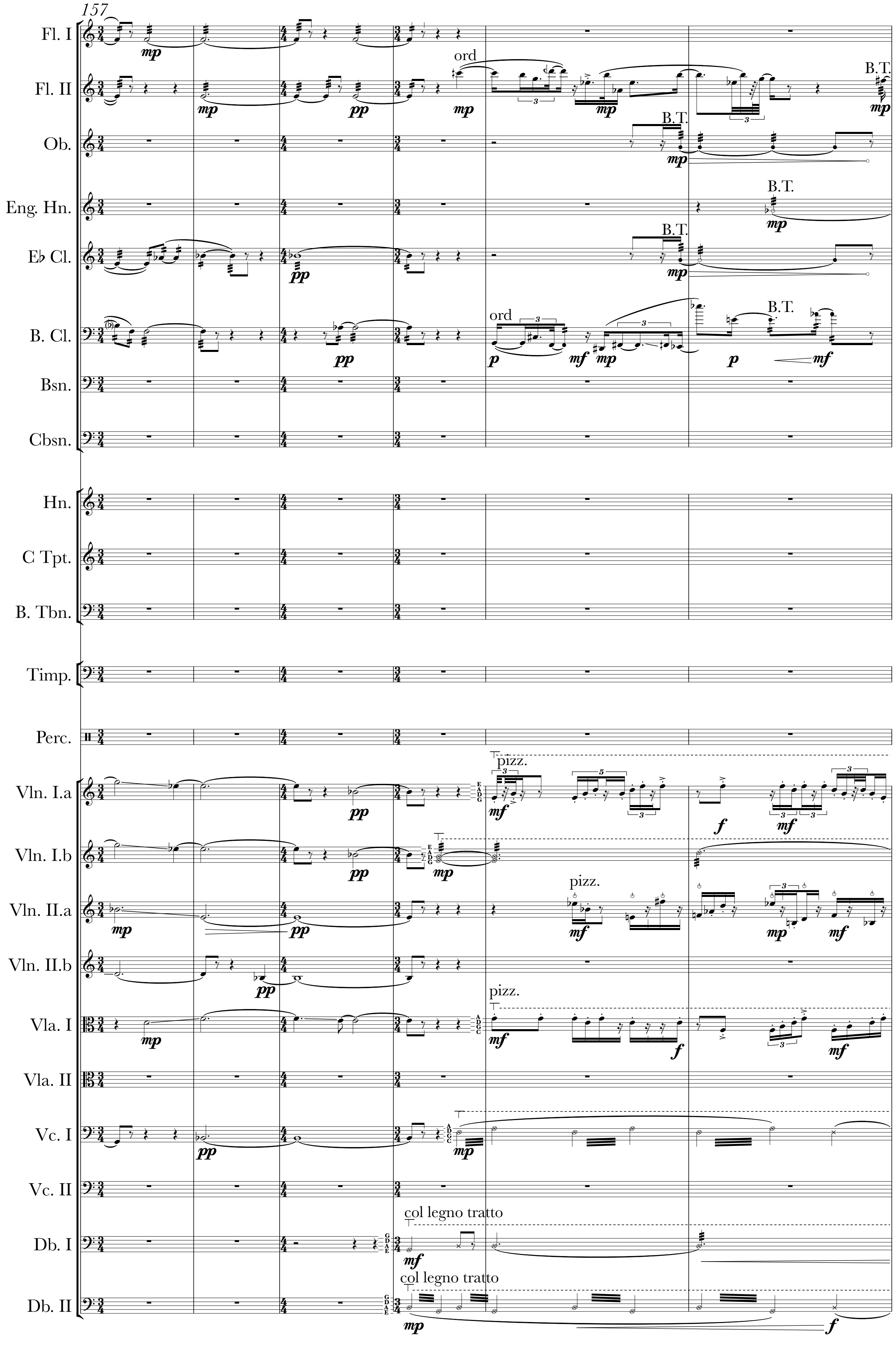

135
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
pp
p
mf
con sord.
mp
f
con sord.
mf
senza sord.
f
f
mp
mf
mp
mf
S.P.

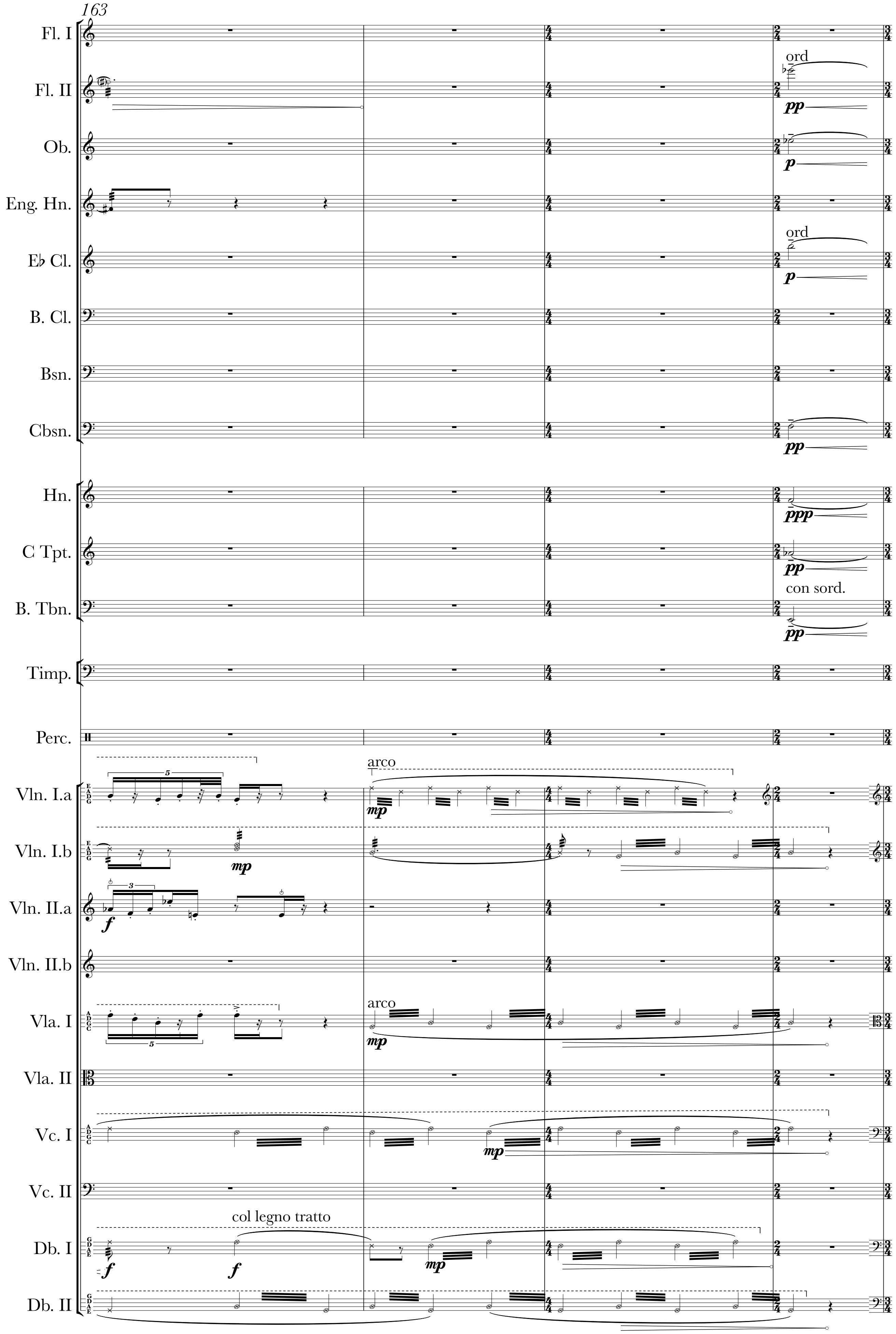

138
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
flutter
To Picc.
nat.
Tubular Bells
l.v.
S.P.
N.
p
pp
ppp
mp
mf
f
3
5

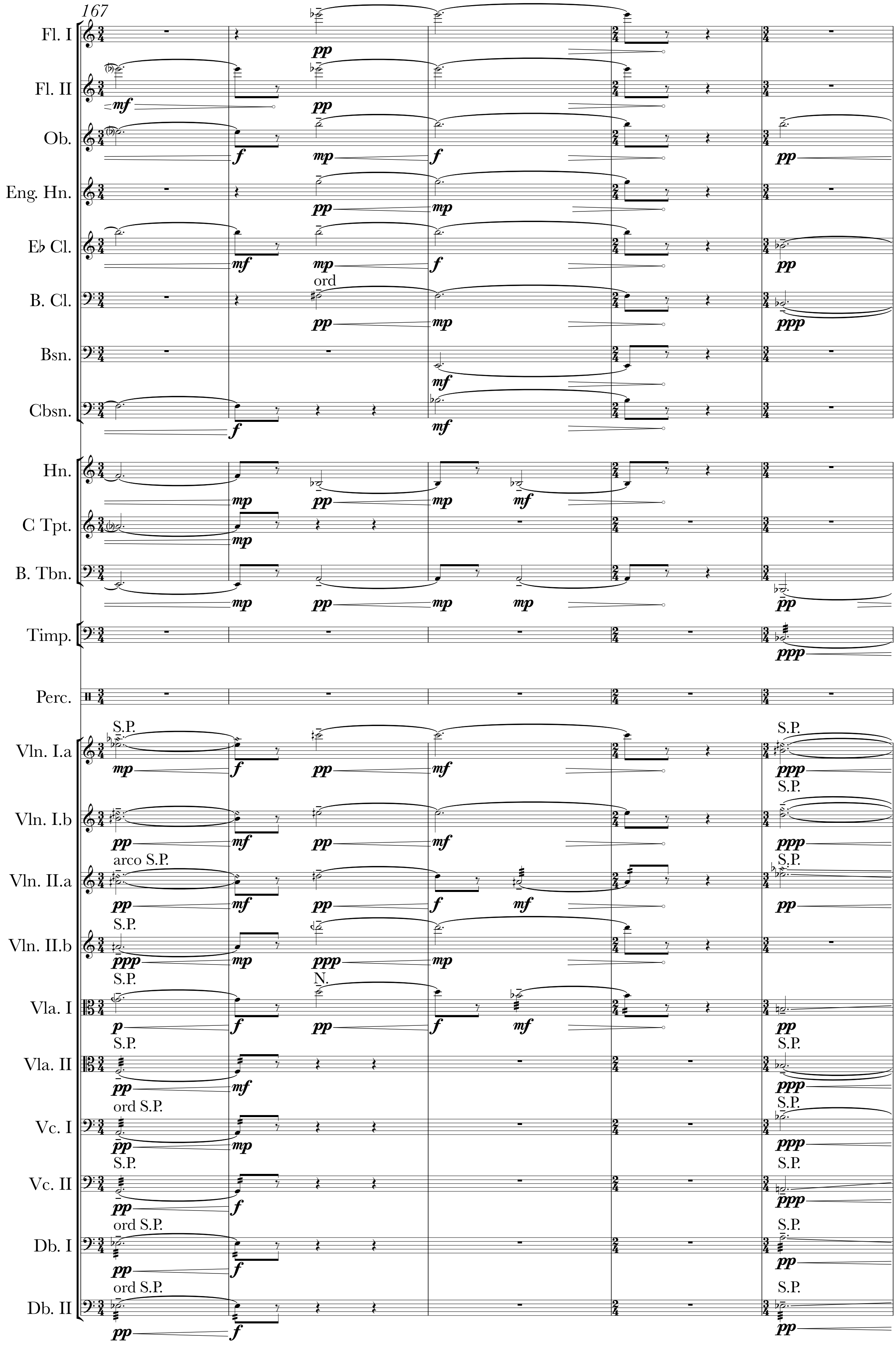

142
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
(Tub. B.)
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
Piccolo
flutter
senza sord.
con sord.
l.v.
S.P.
M.S.P.
pp
mf
mp
ppp
p

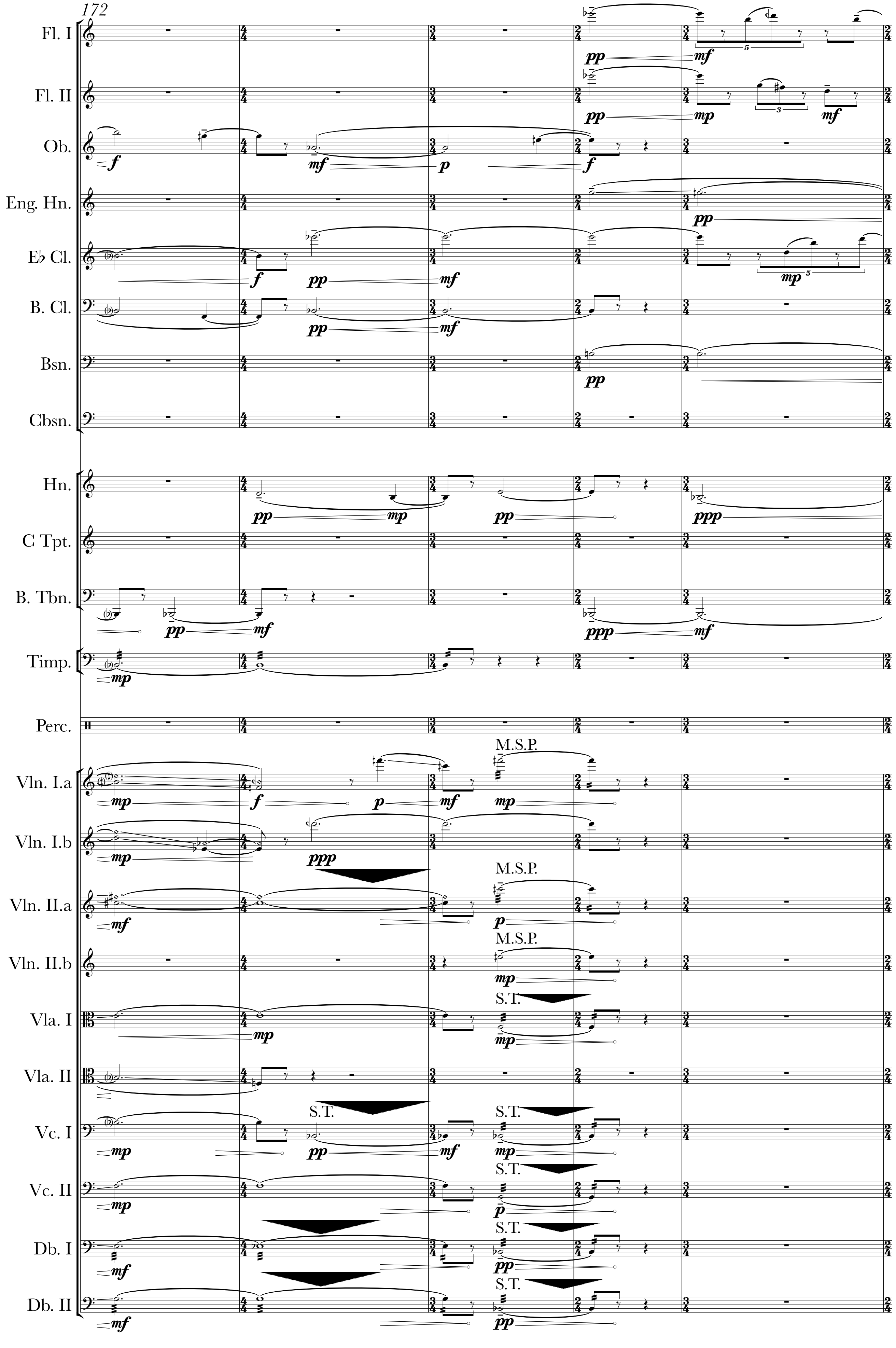

147
Picc.
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
p mf pp mf pp
mp
p mf 3 p ppp mf 3 ppp
f mf pp 5 mf mp mf
pp mp f flutter p
pp p
mp f
mf
p f
mp f
S.T. pp S.T. mp f
f
S.T. f pp mf S.T. mp
S.T. f pp S.P. p f
pp S.P. pp f
pp S.P. pp f

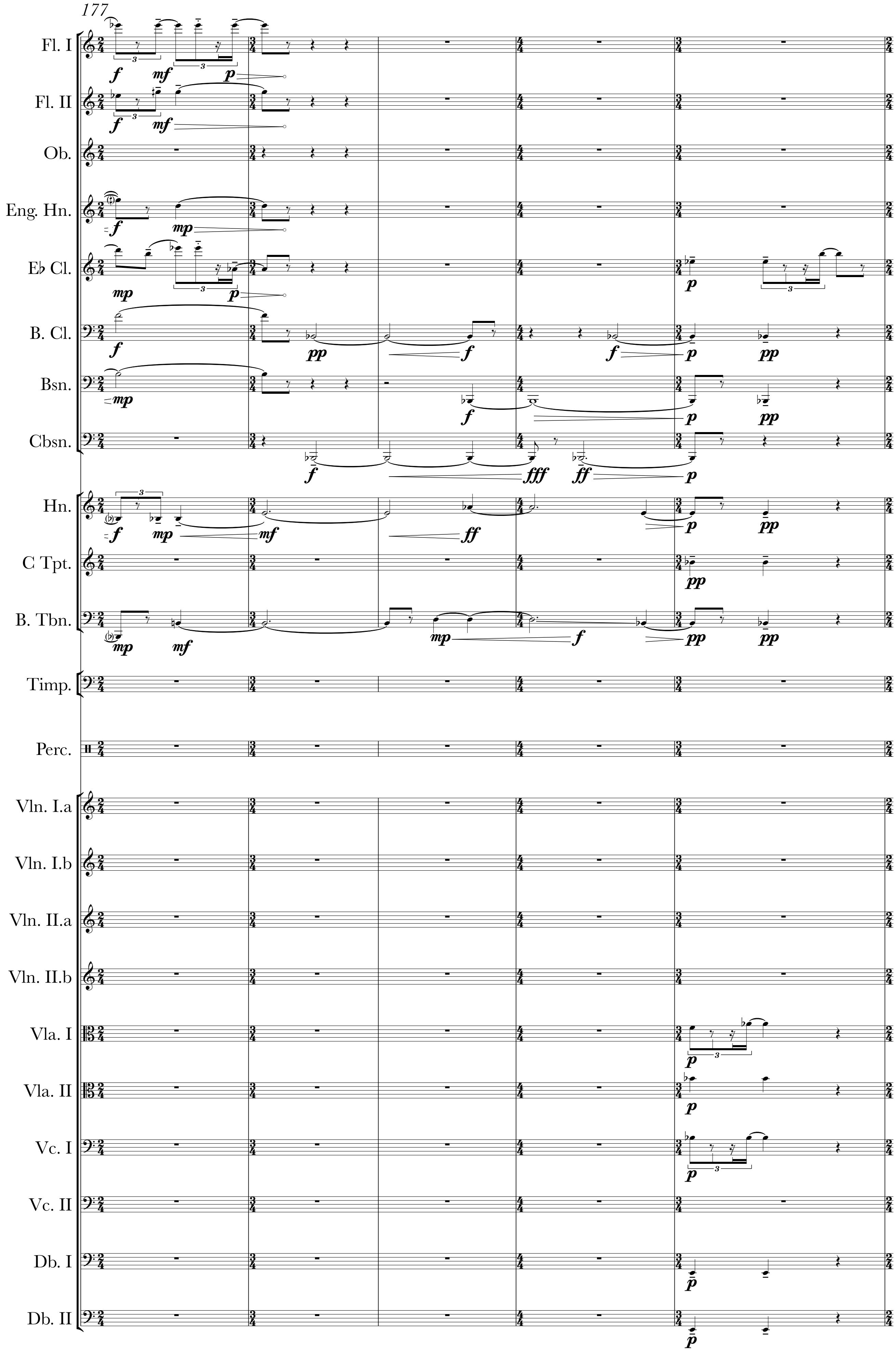

D
152
To Fl.
Flute
flutter
flutter
flutter
flutter
col legno tratto
col legno tratto
col legno tratto
col legno tratto
col legno tratto
col legno tratto
Picc.
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II

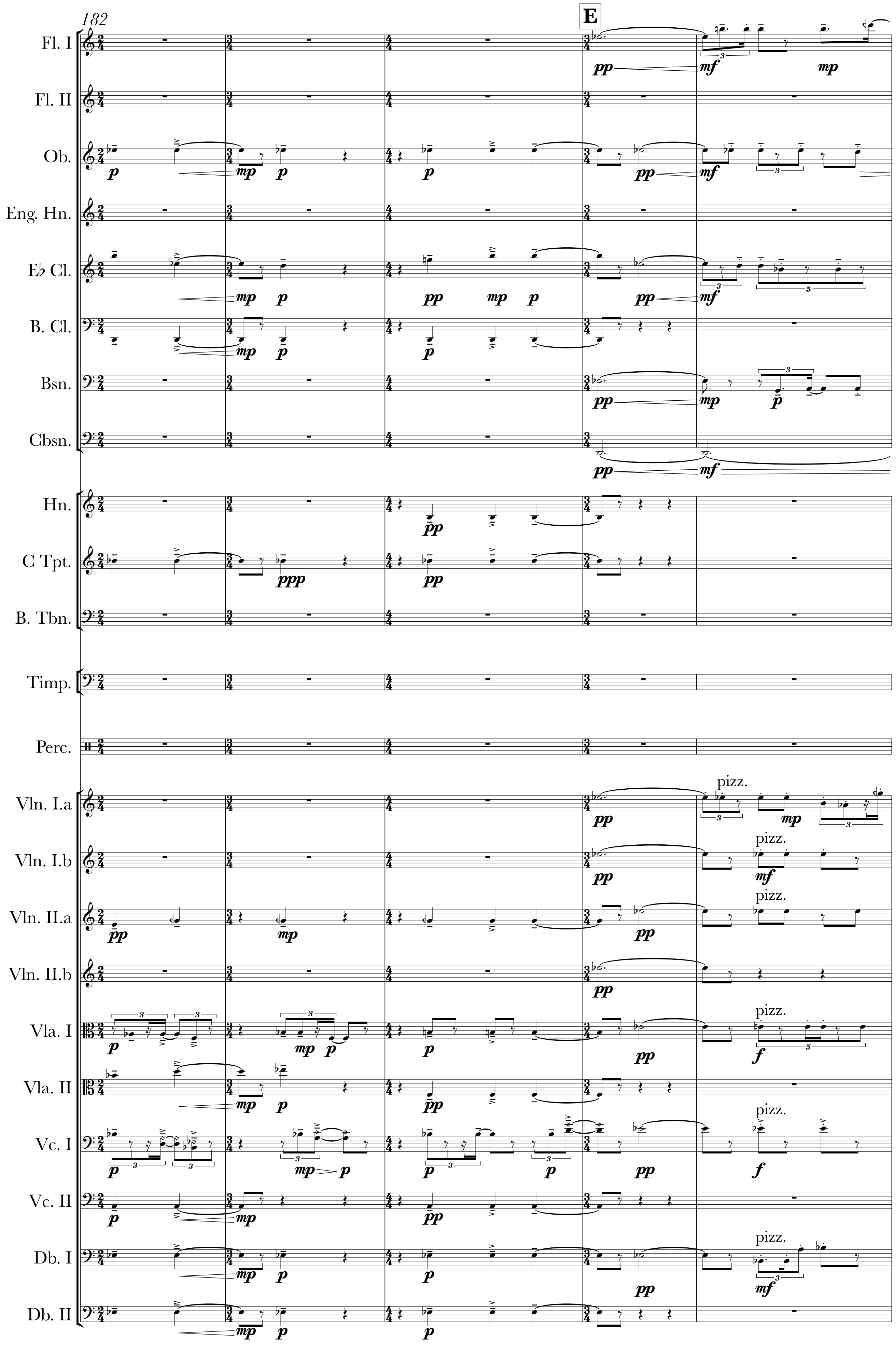

157
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
ord
B.T.
pizz.
col legno tratto
mp
pp
p
mf
f
E A D G
A D G C
G D A E

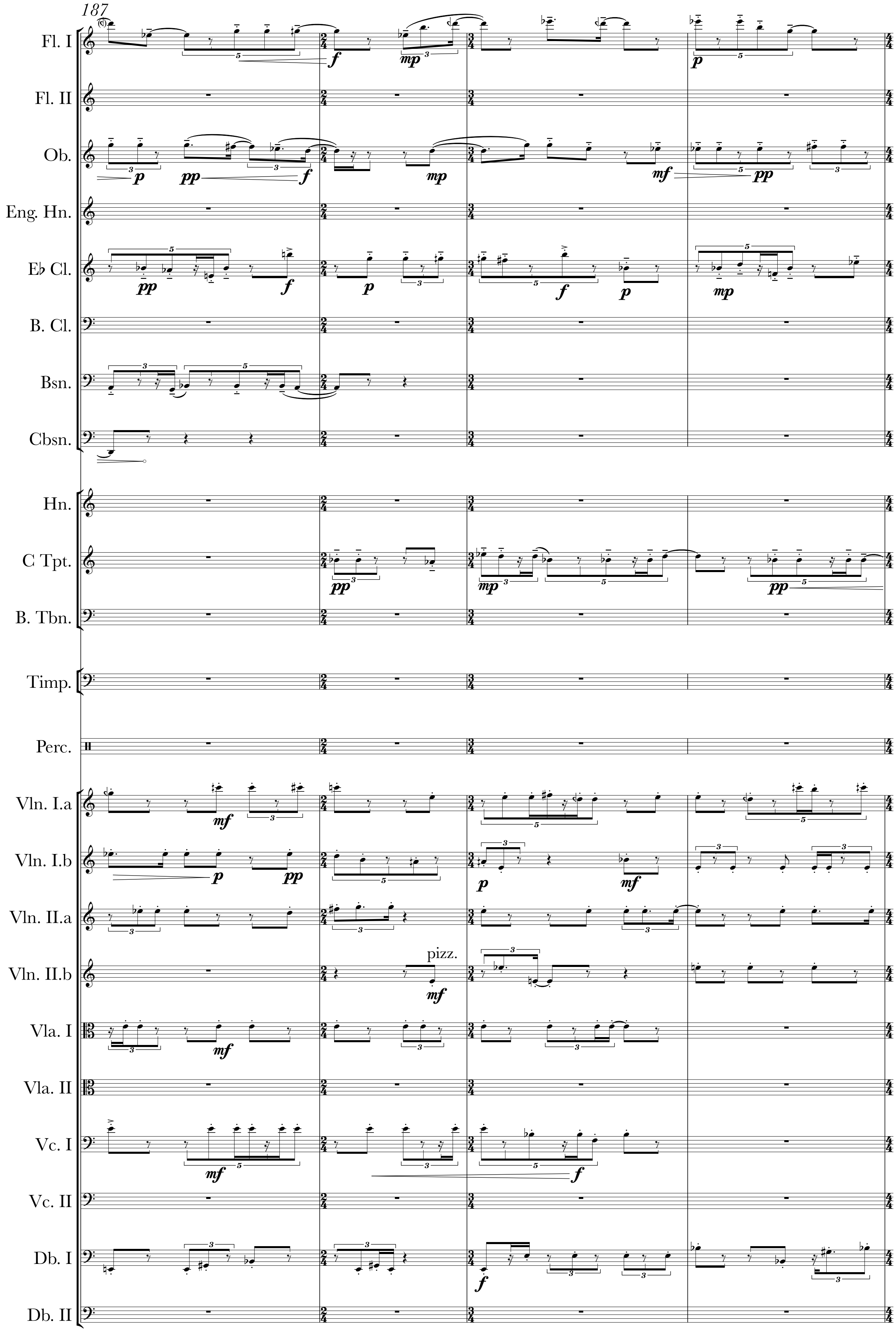

163
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
ord
pp
p
ord
p
pp
ppp
pp
con sord.
pp
arco
mp
mp
f
arco
mp
mp
col legno tratto
f
f
mp

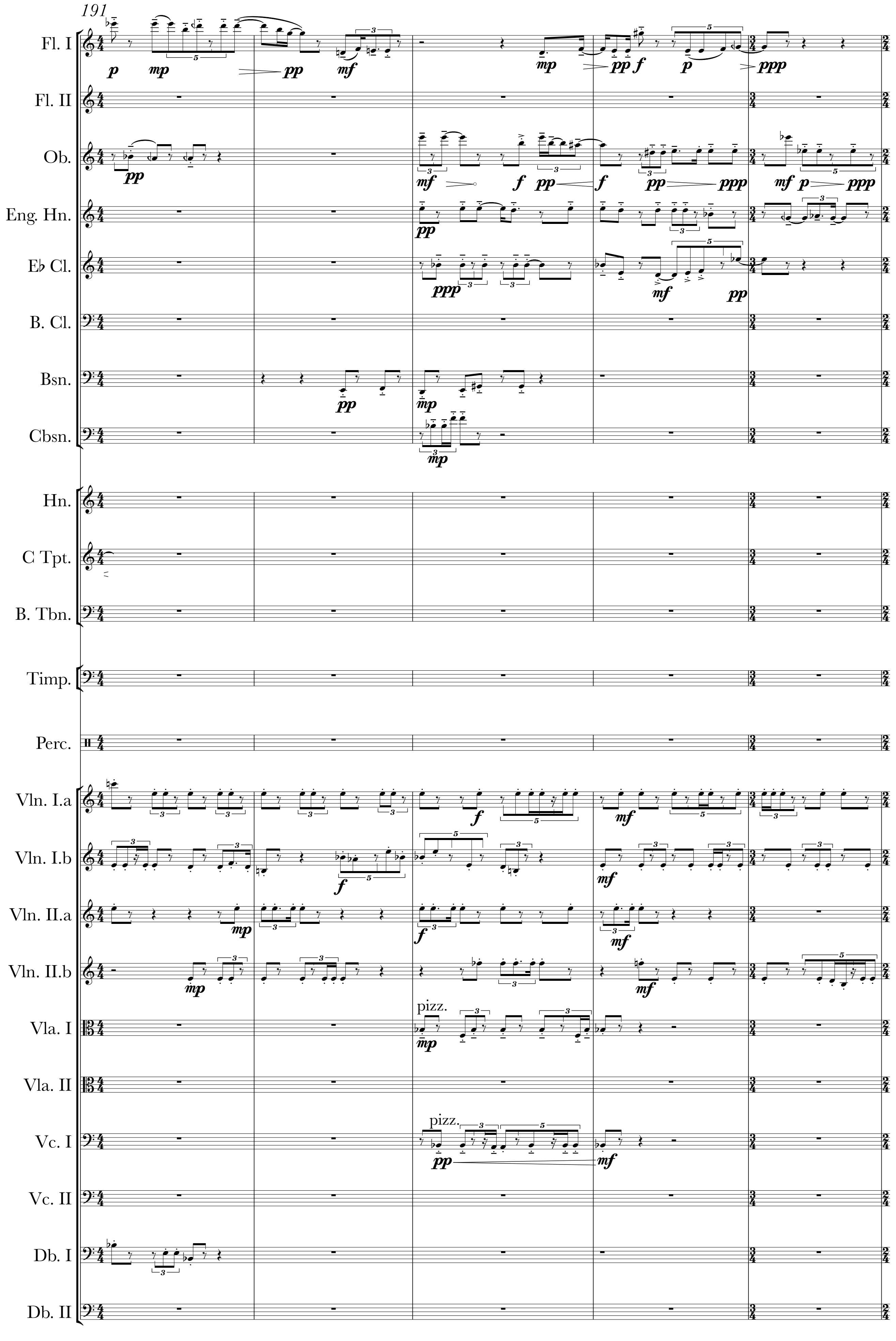

167
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
pp
mf
f
mp
ppp
p
ord
S.P.
arco S.P.
N.
ord S.P.

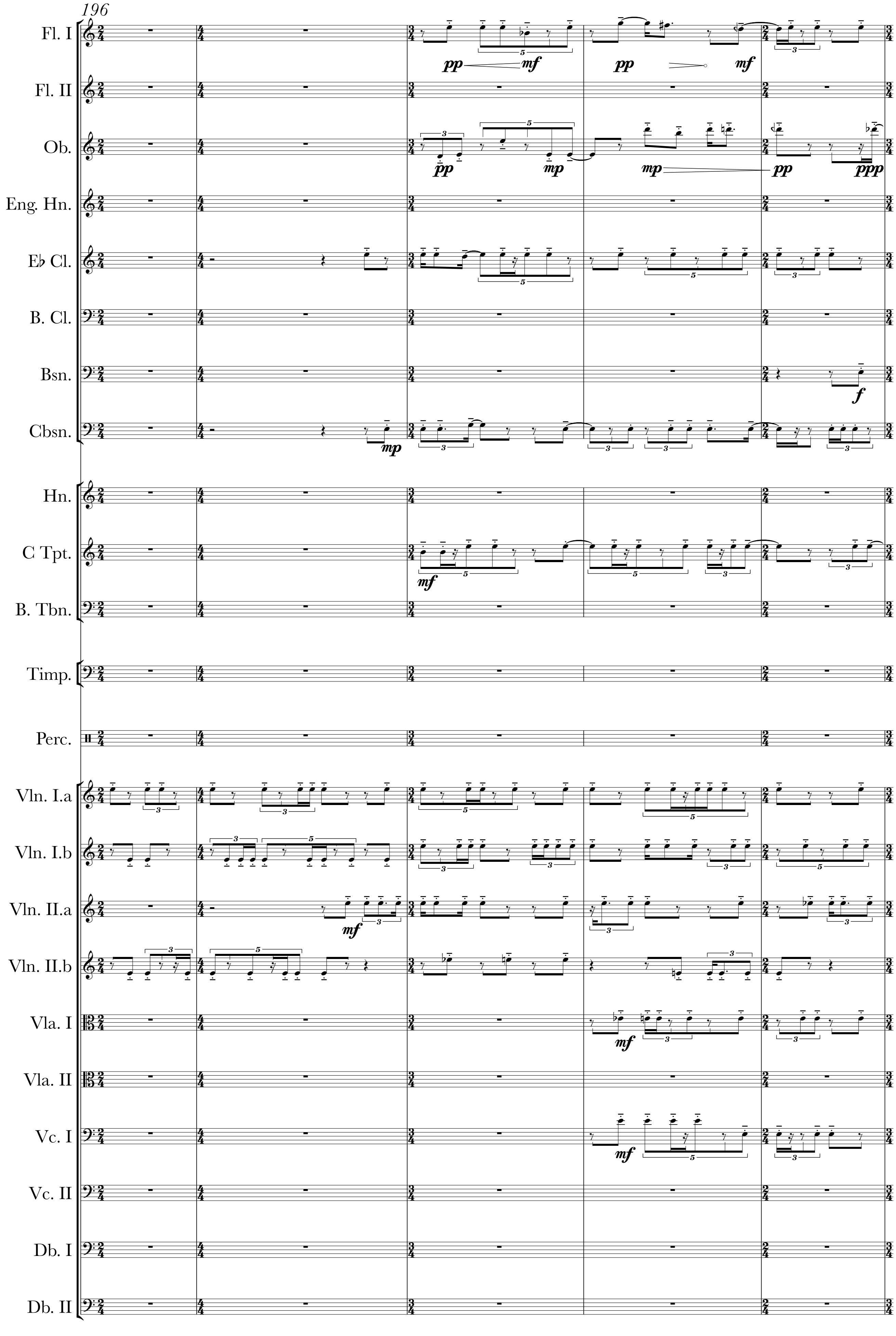

172
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
M.S.P.
S.T.
5
3

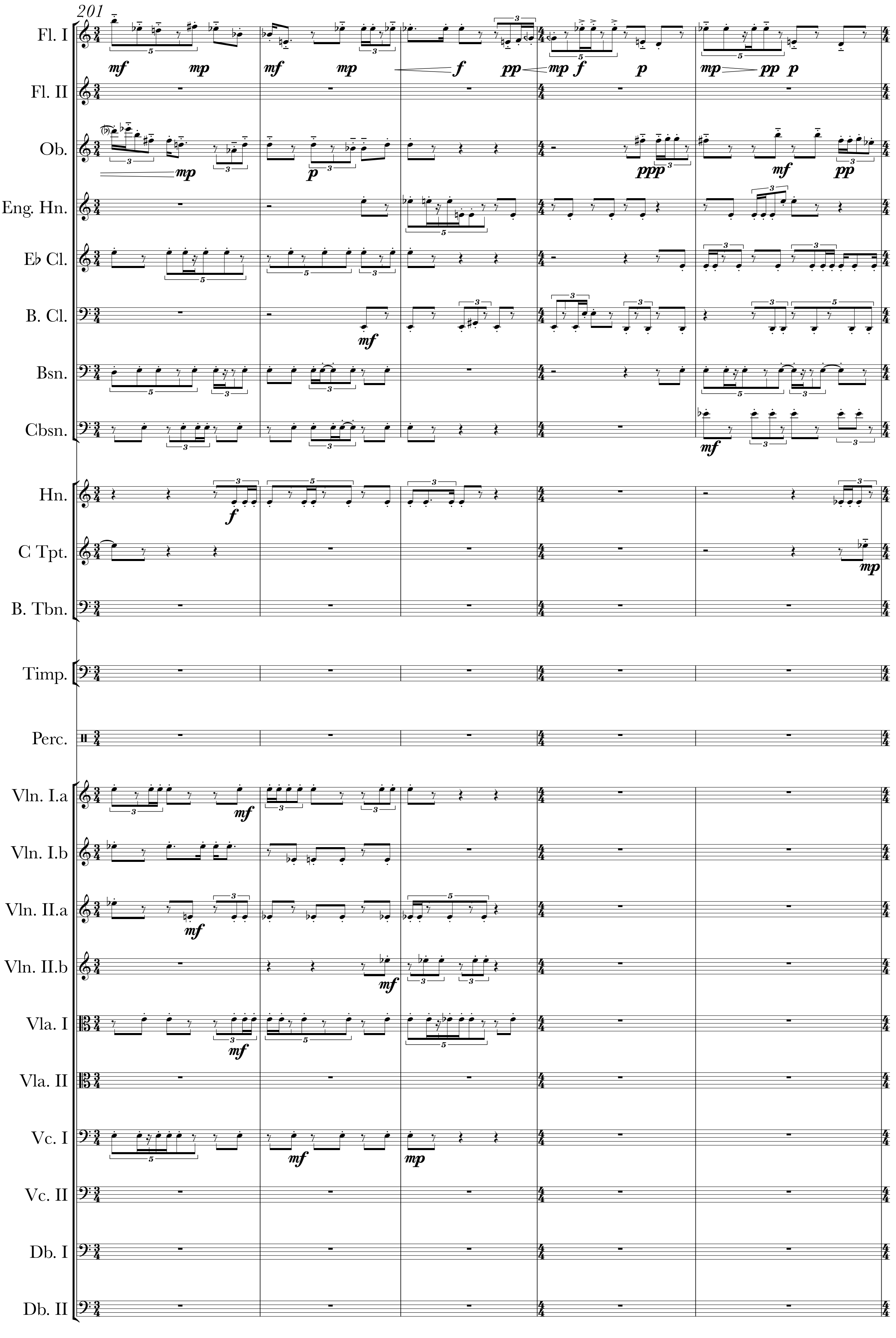

177
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
f
mf
p
mp
pp
ff
fff
3

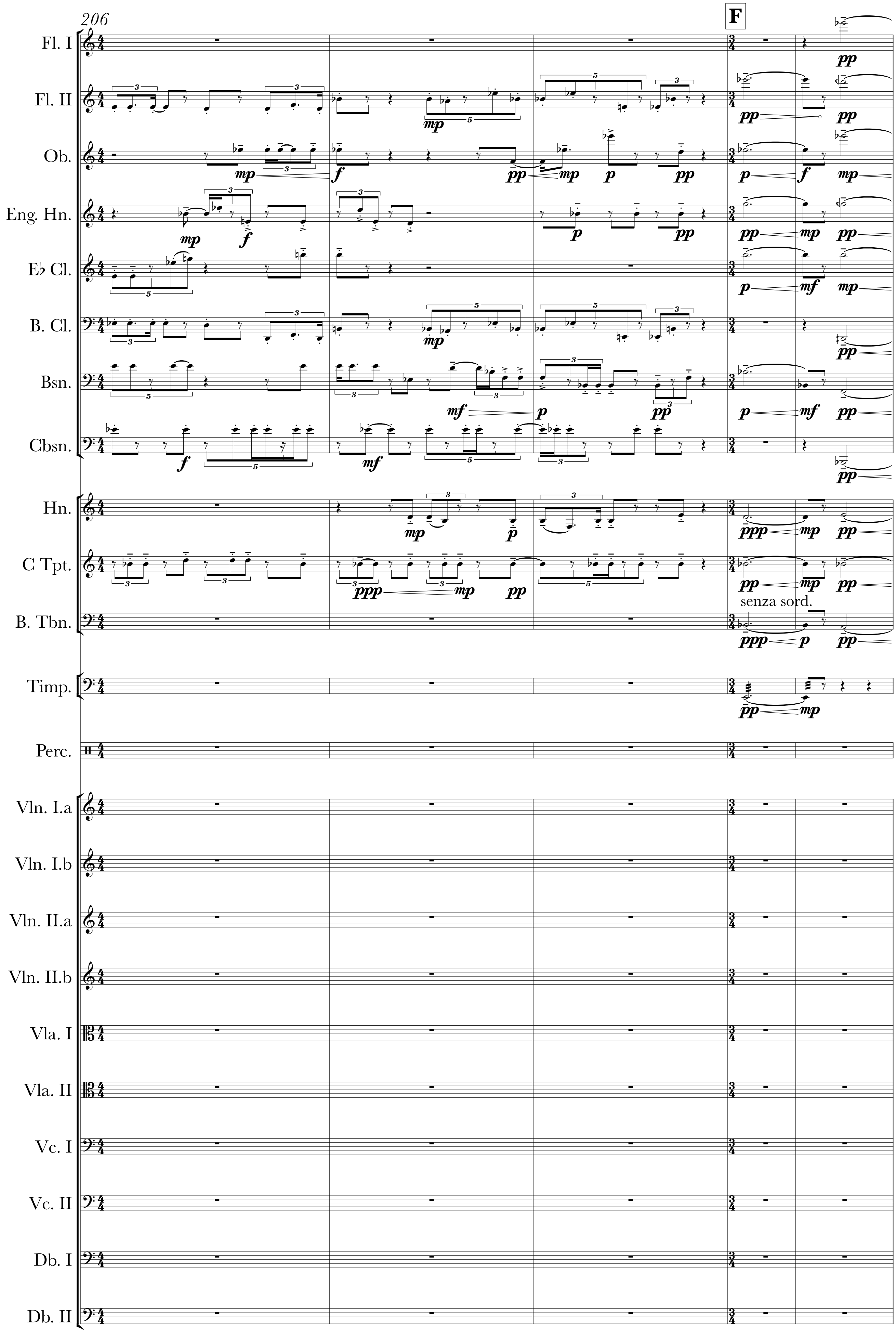

182
E
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
pizz.
pp
p
ppp
mp
mf
f

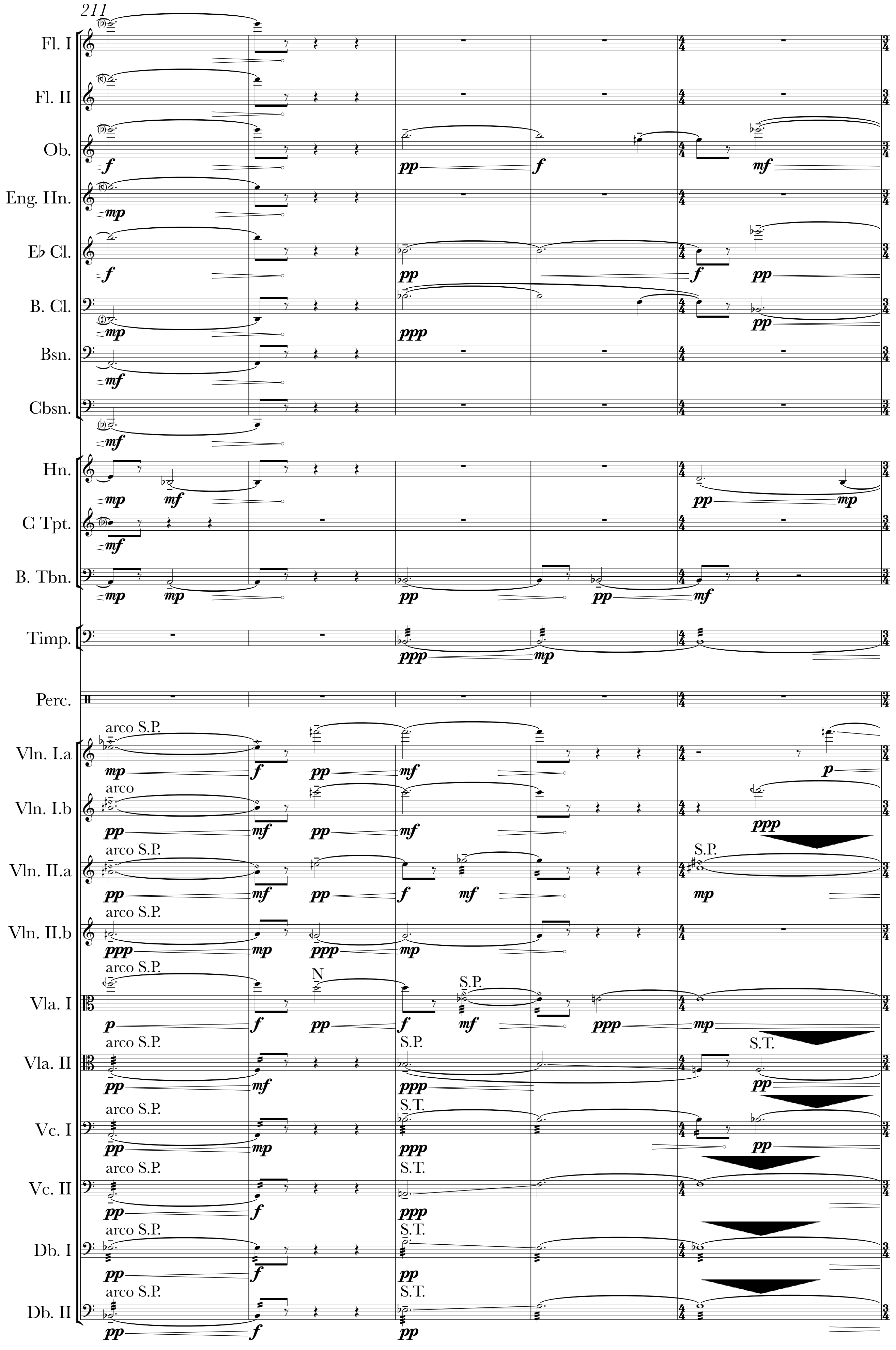

187
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
pizz.
f
mp
p
pp
mf

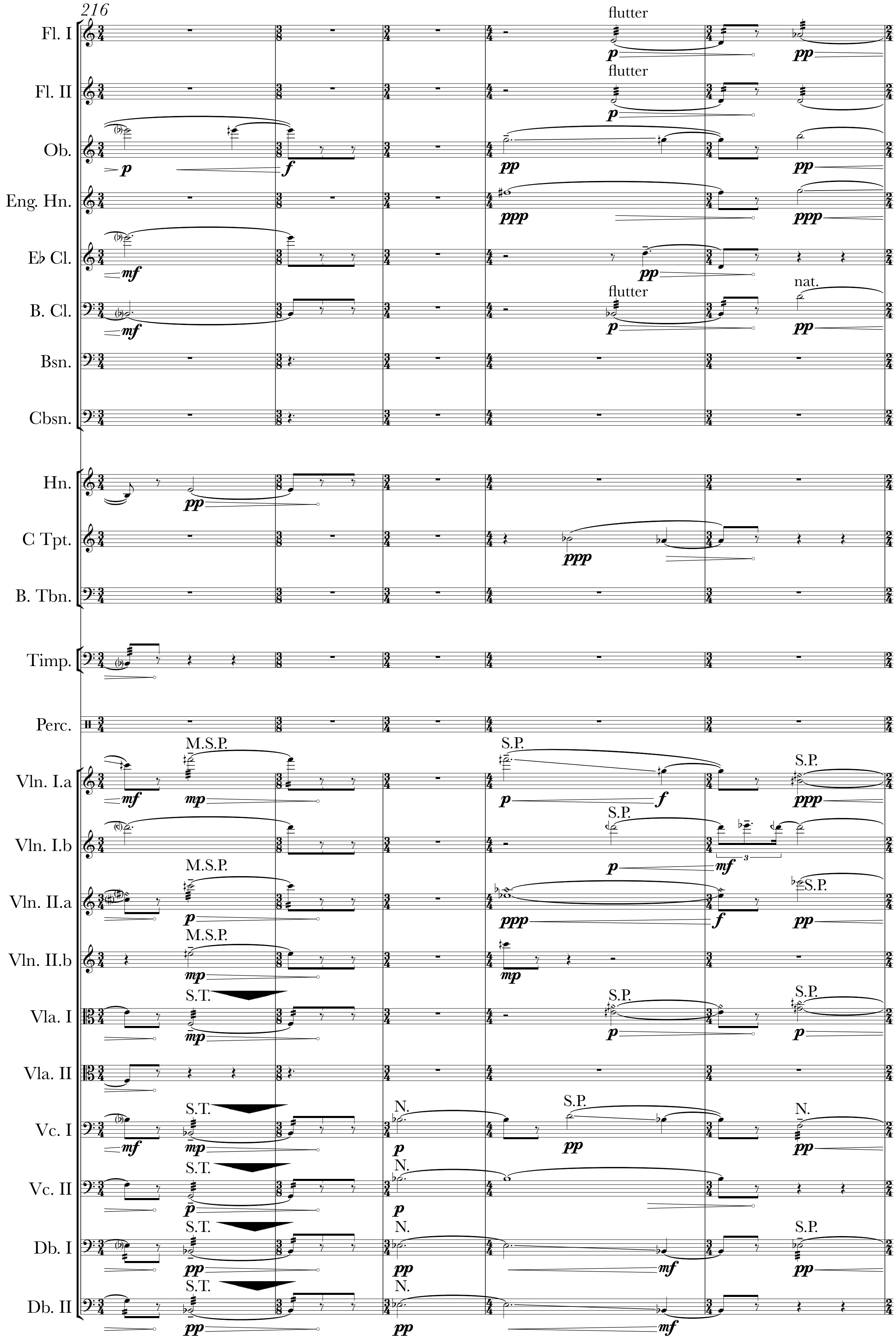

191
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
p
mp
pp
mf
f
ppp
pizz.
pizz.

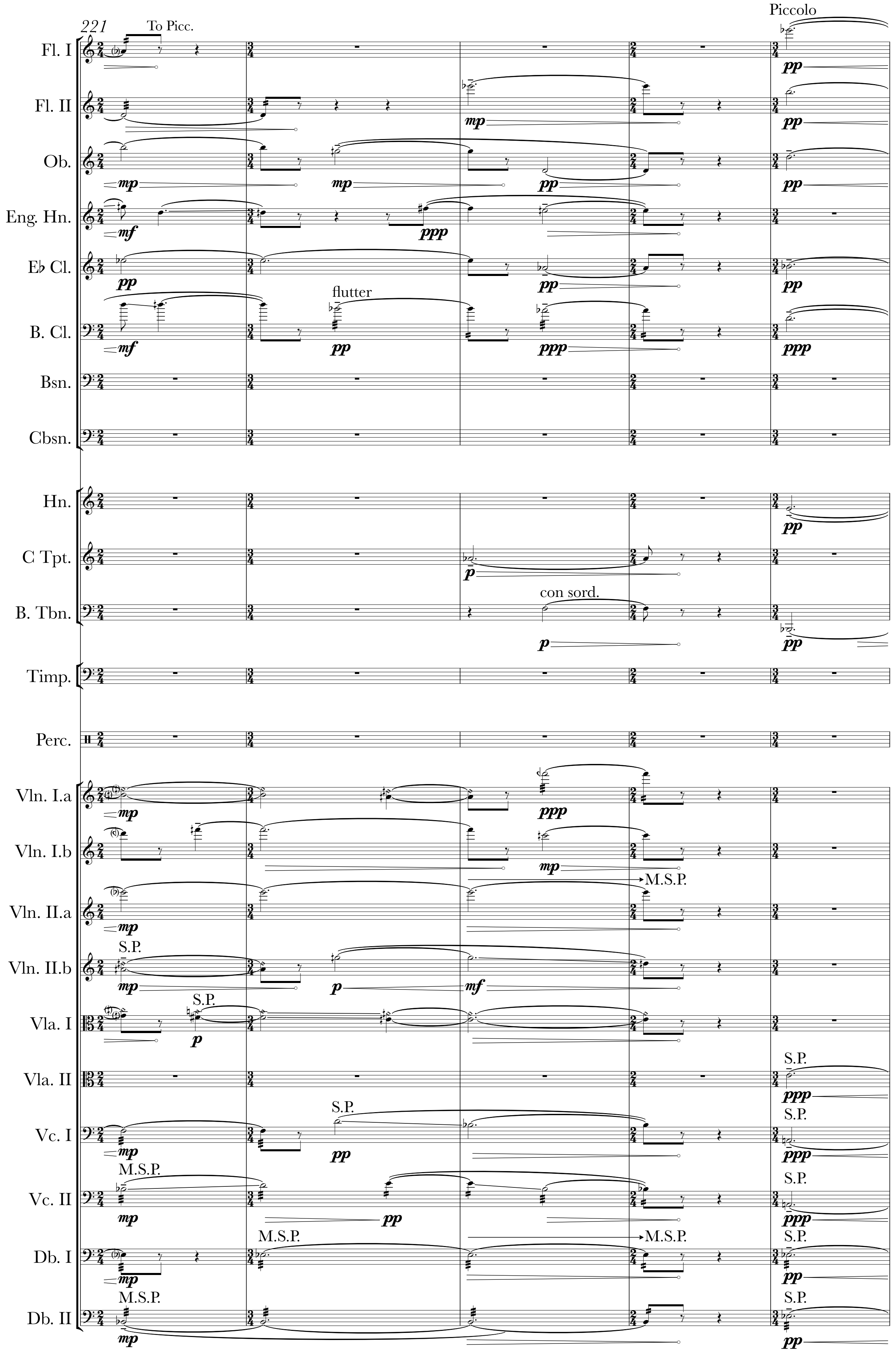

196
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
pp
mf
pp
mf
pp
mp
mp
pp
ppp
f
mp
mf
mf
mf
mf
3
5

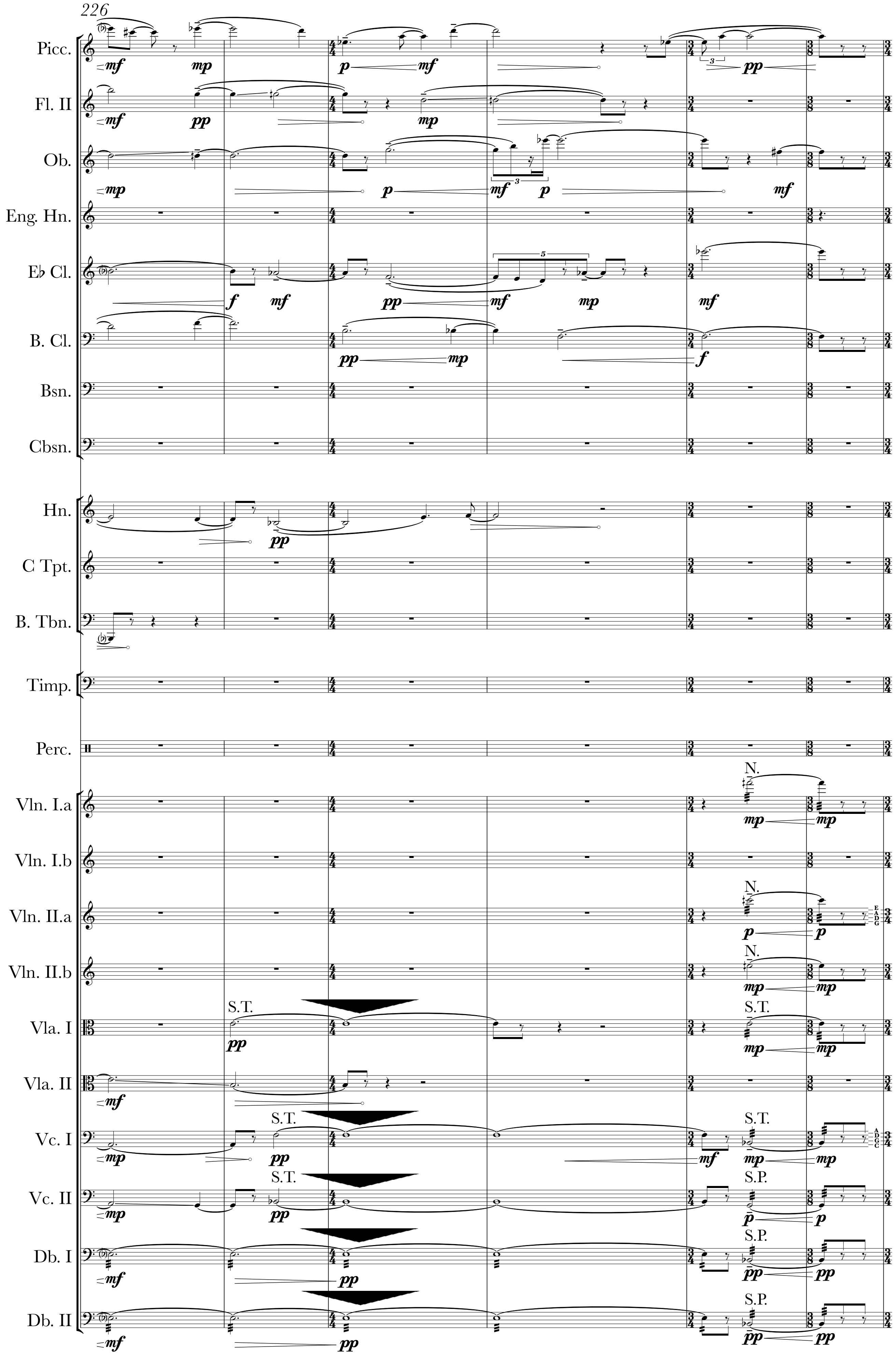

201
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
mf
mp
f
pp
p
ppp

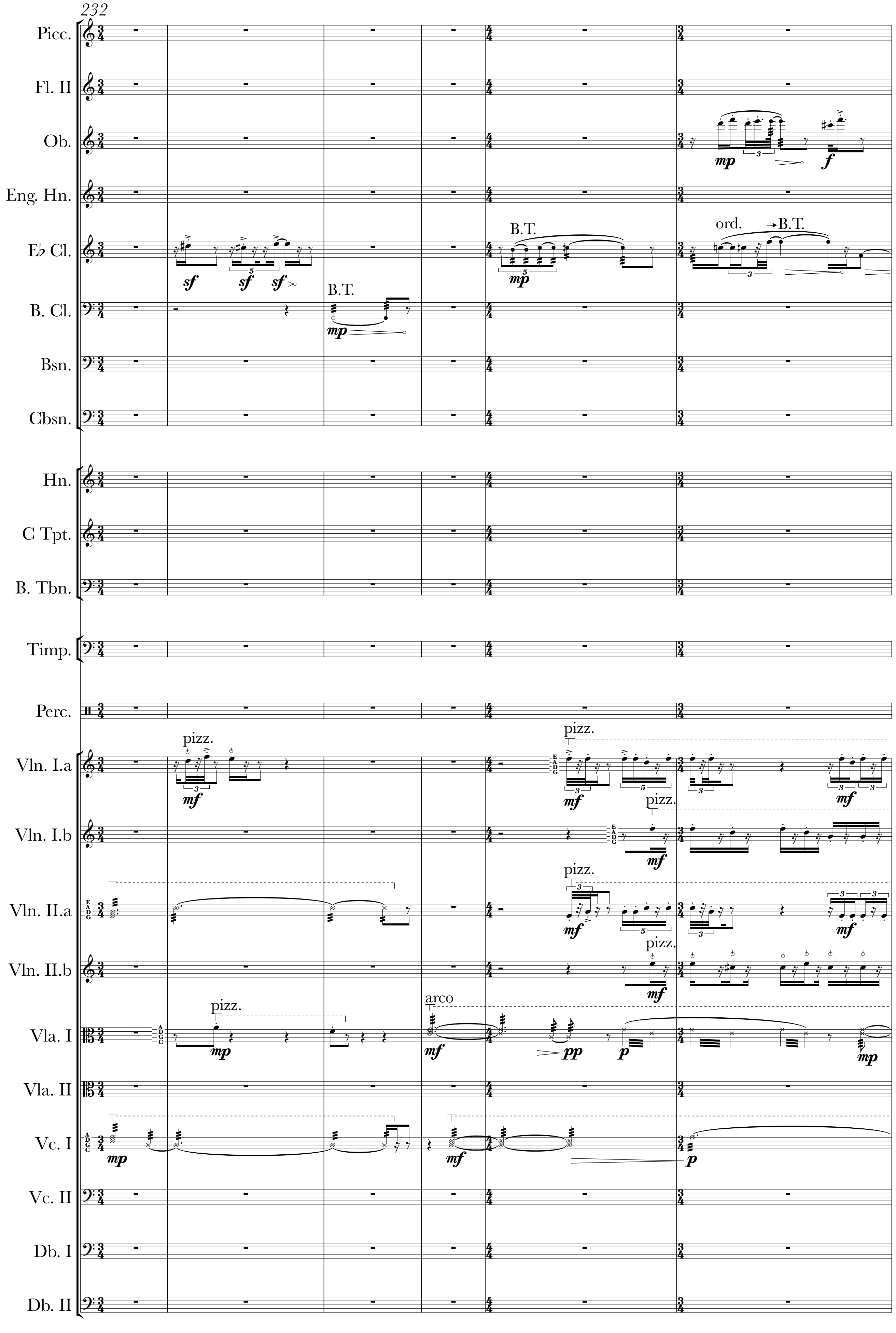

206
F
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
senza sord.
mp
f
mf
p
pp
ppp

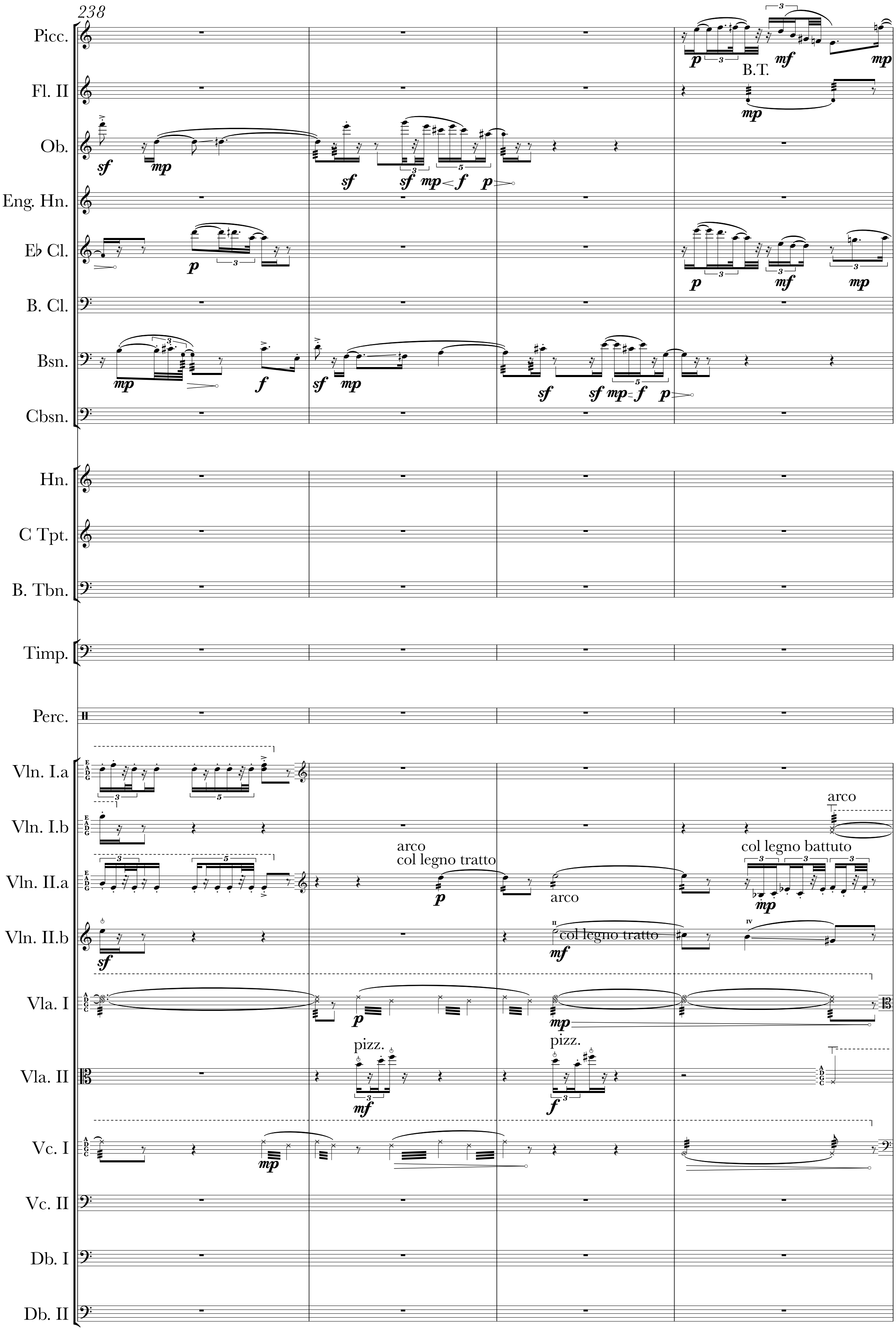

211
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
arco S.P.
arco
N
S.P.
S.T.
f
mp
mf
pp
ppp
p

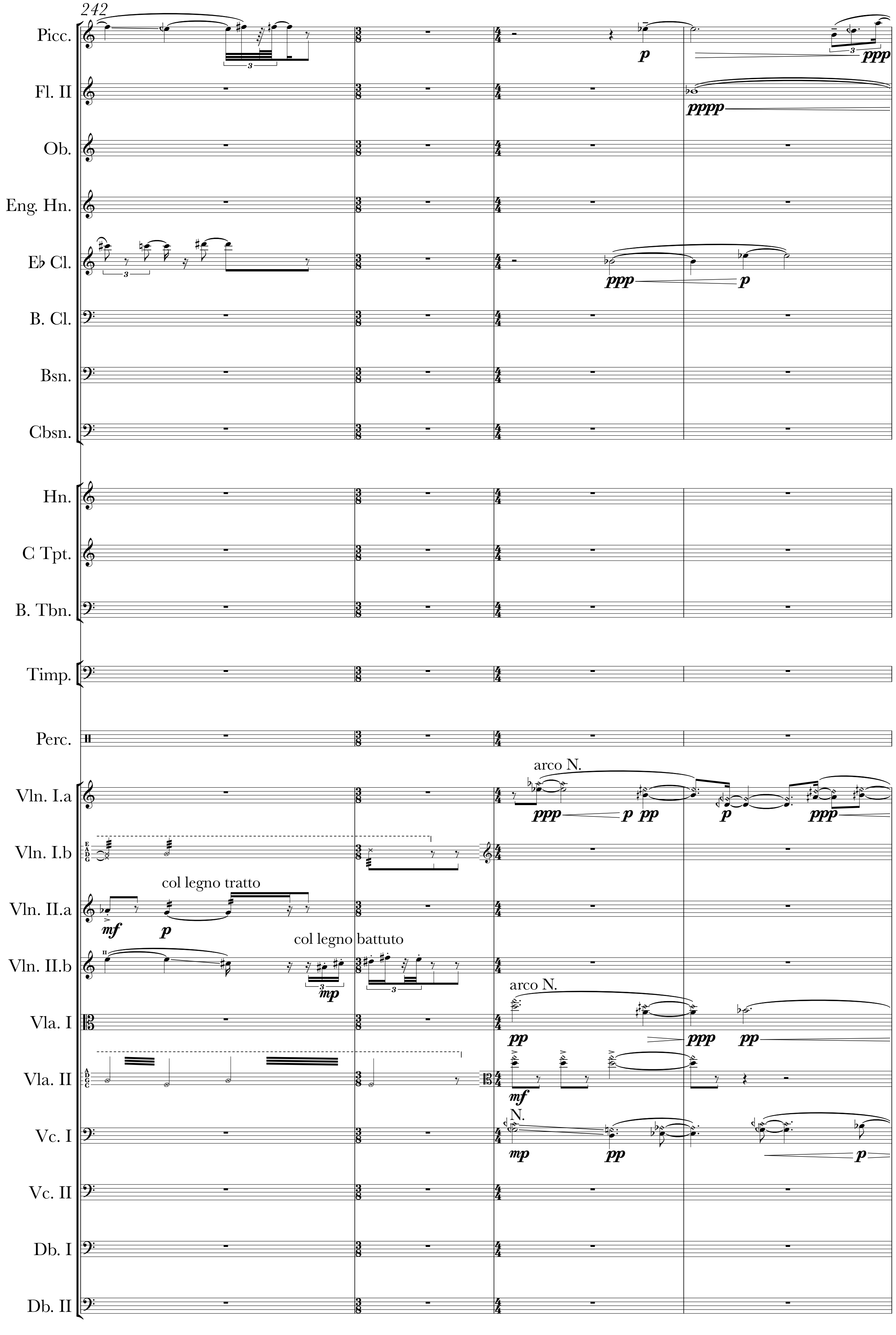

216
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
flutter
flutter
flutter
nat.
M.S.P.
M.S.P.
M.S.P.
S.P.
S.T.
N.
p
f
pp
ppp
mf
mp
3

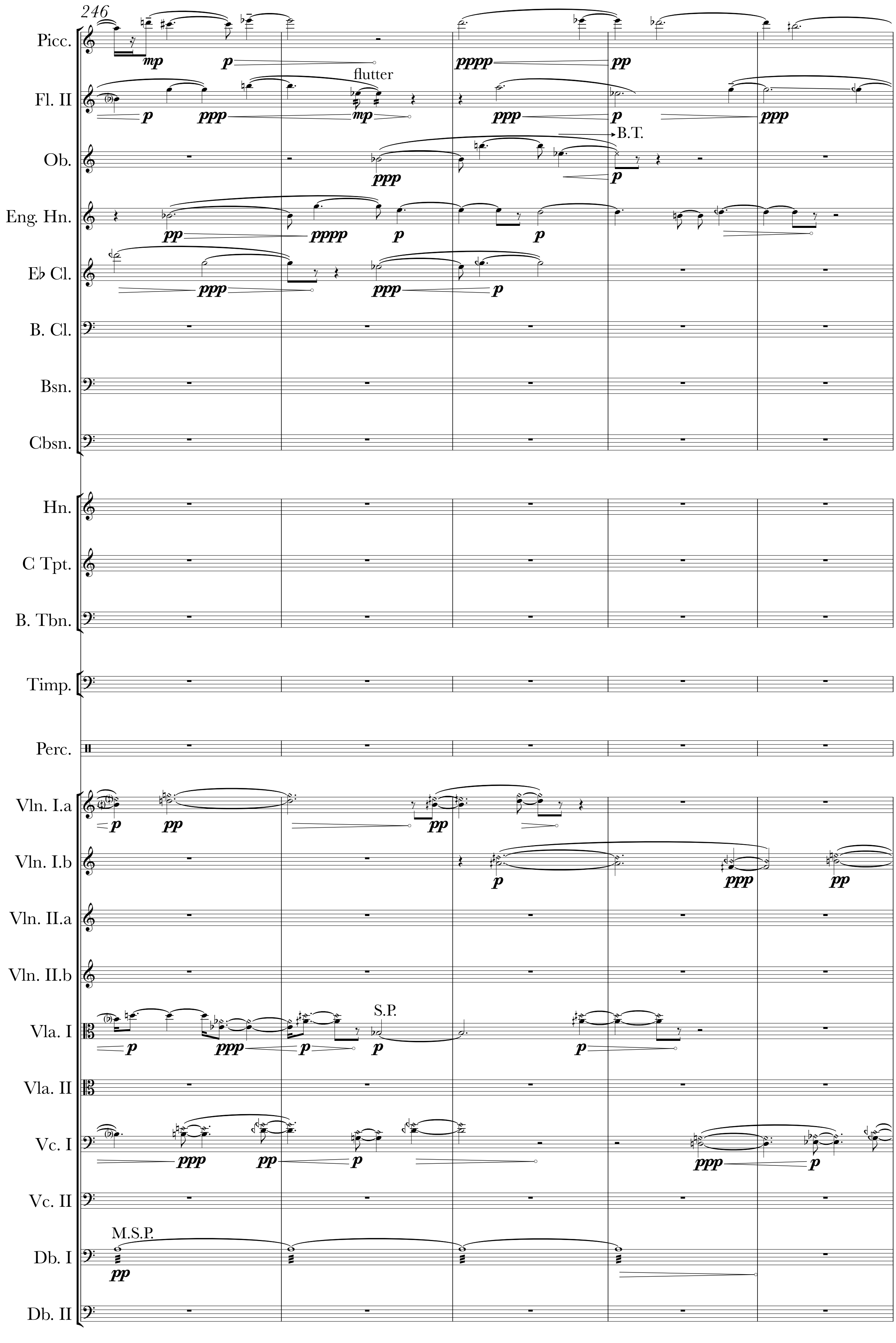

221
To Picc.
Piccolo
Fl. I
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
flutter
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
con sord.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
M.S.P.
Vln. II.a
S.P.
Vln. II.b
S.P.
Vla. I
S.P.
Vla. II
S.P.
Vc. I
S.P.
M.S.P.
Vc. II
S.P.
M.S.P.
M.S.P.
Db. I
S.P.
M.S.P.
Db. II
S.P.
mp
mf
pp
ppp
p


226
Picc.
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
mf
mp
p
pp
f
N.
S.T.
S.P.
E A D G
A D G C


232
Picc.
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
B.T.
ord.
→B.T.
pizz.
arco
mp
f
sf
mf
pp
p


238
Picc.
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
B.T.
arco
col legno tratto
arco
col legno tratto
col legno battuto
pizz.
pizz.
sf
mp
p
mf
f


242
Picc.
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
p
ppp
pppp
ppp
p
arco N.
ppp
p
pp
p
ppp
E
A
D
G
col legno tratto
mf
p
col legno battuto
mp
arco N.
pp
ppp
pp
A
D
G
C
mf
N.
mp
pp
p


246
Picc.
Fl. II
Ob.
Eng. Hn.
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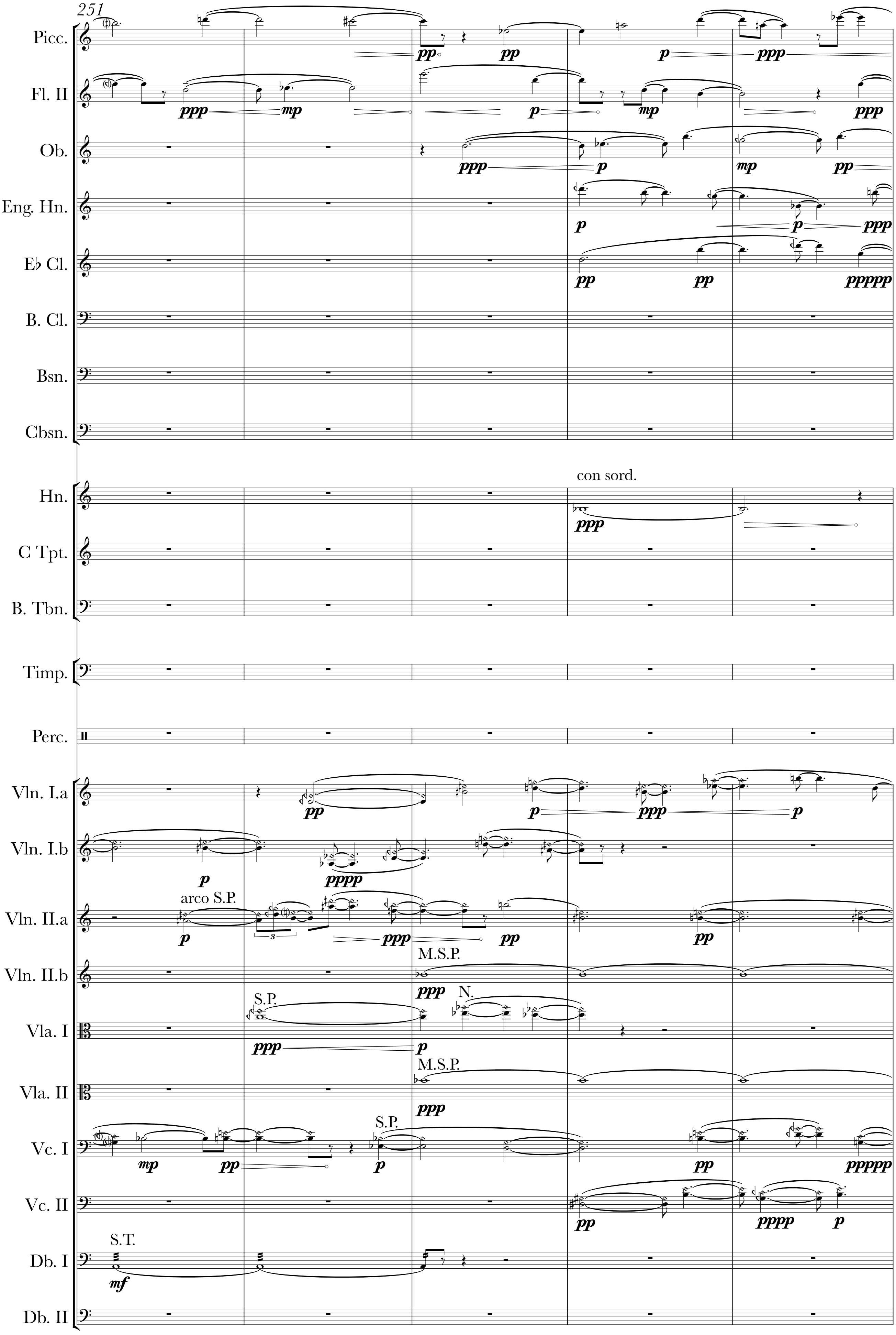
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
mp
p
pppp
pp
ppp
flutter
B.T.
S.P.
M.S.P.


251
Picc.
Fl. II
Ob.
Eng. Hn.
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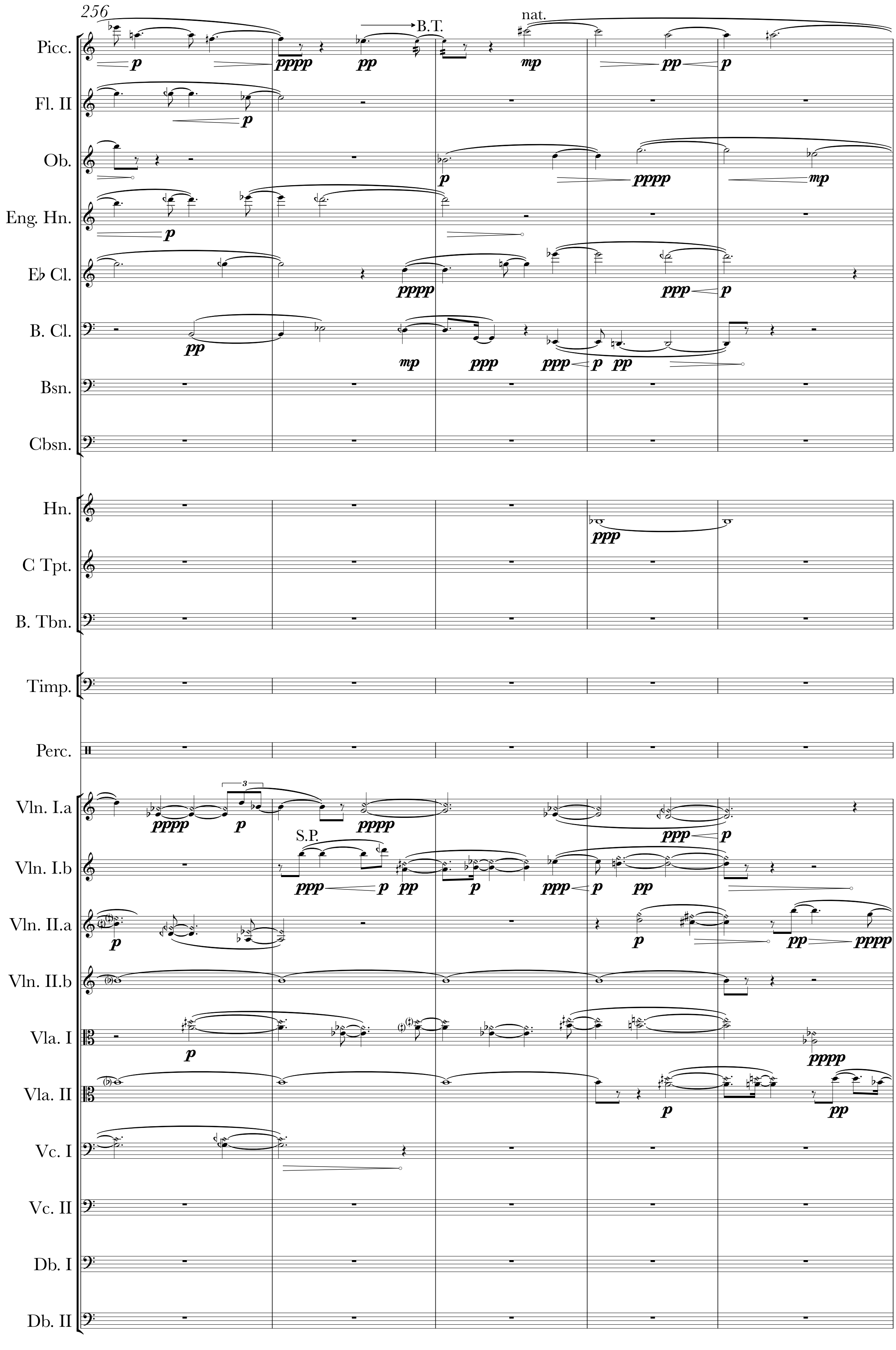
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
con sord.
arco S.P.
M.S.P.
S.P.
N.
S.T.
pp
ppp
p
mp
pppp
ppppp
mf
3


256
B.T.
nat.
S.P.
3
Picc.
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
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Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
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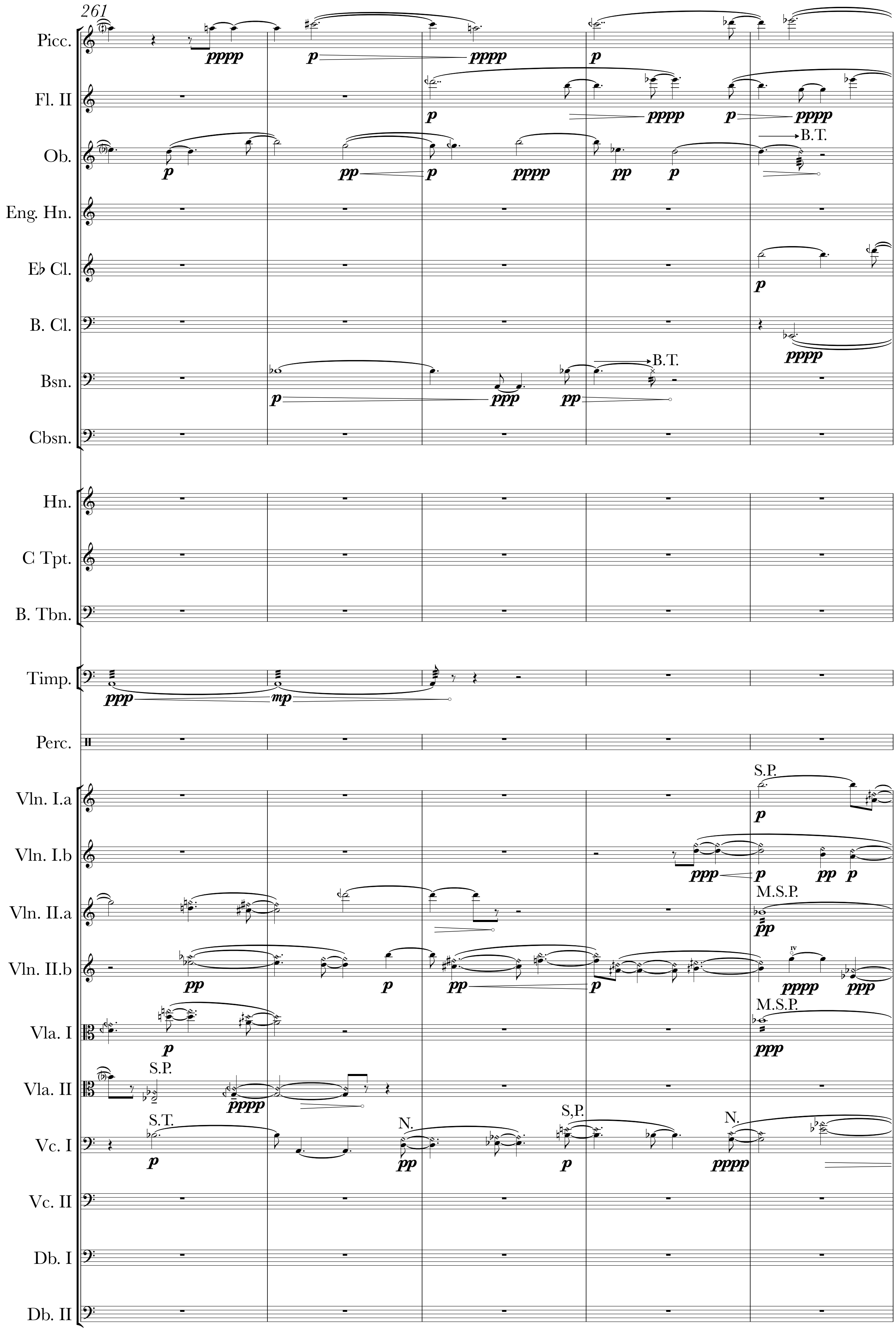
pppp
pp
mp
ppp


261
Picc.
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
pppp
p
pppp
p
p
pppp
p
pppp
p
pp
p
pppp
pp
p
B.T.
p
pppp
p
ppp
pp
B.T.
ppp
mp
S.P.
p
ppp
p
pp
p
M.S.P.
pp
pp
p
pp
p
pppp
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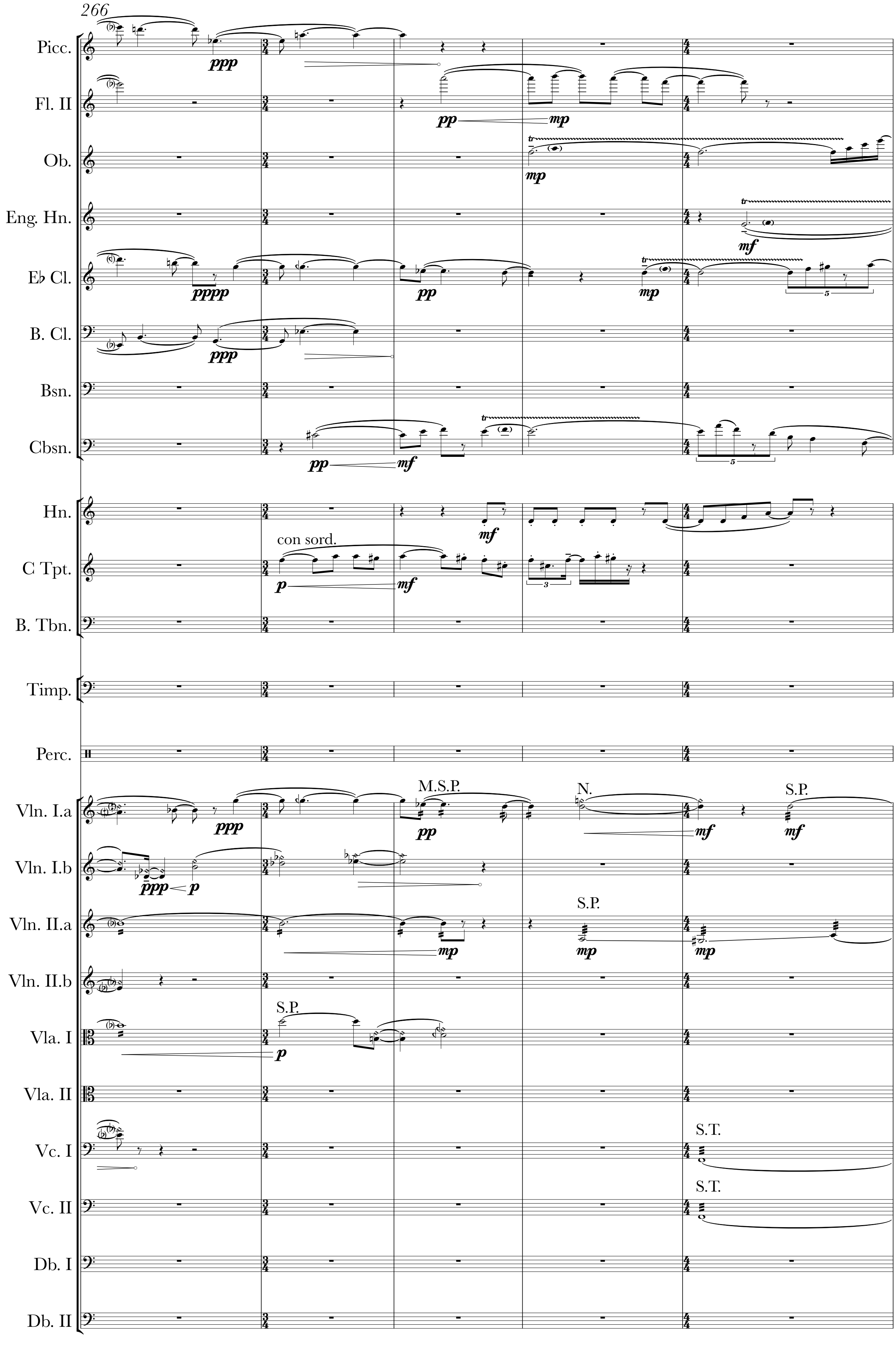
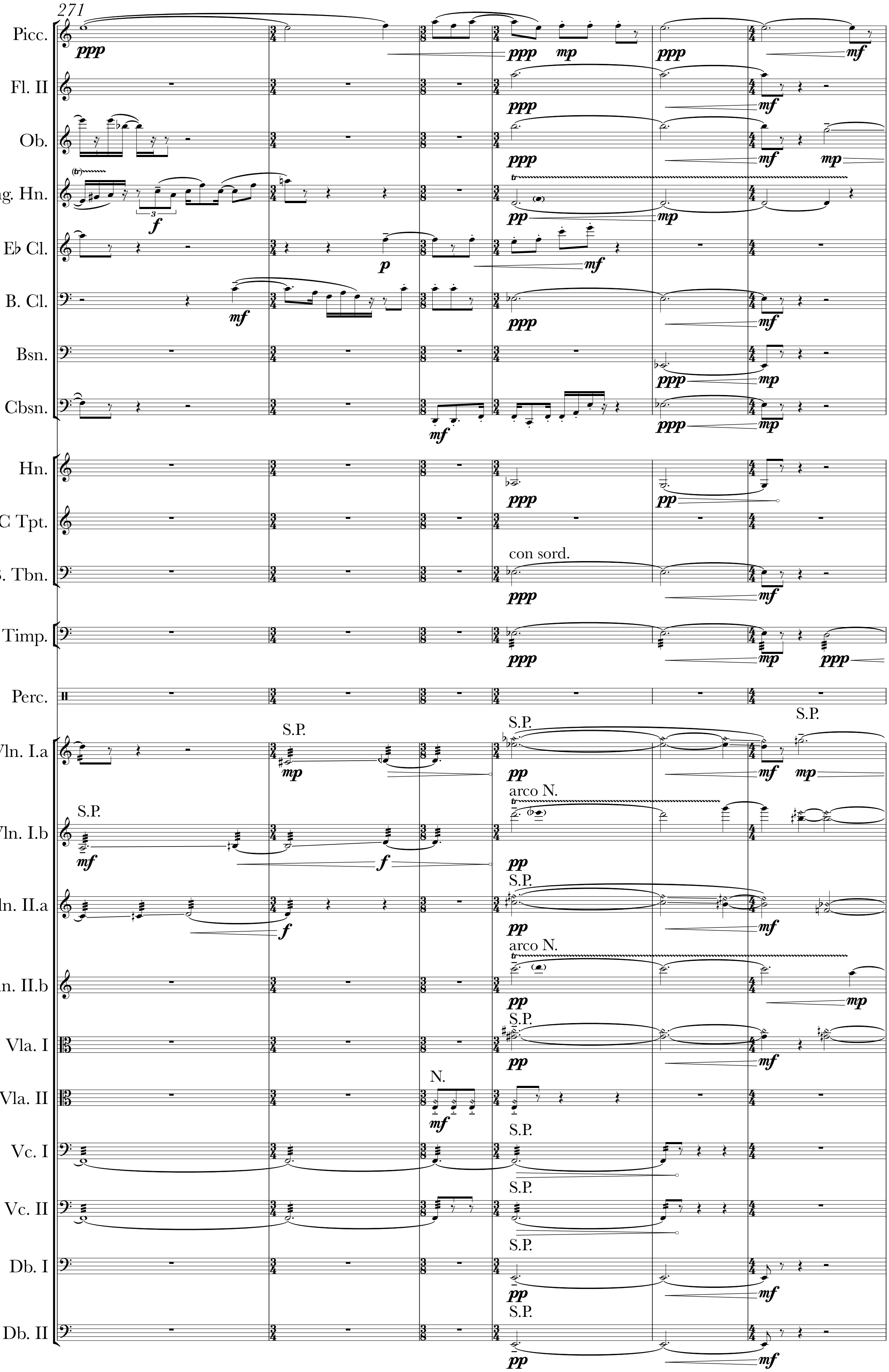
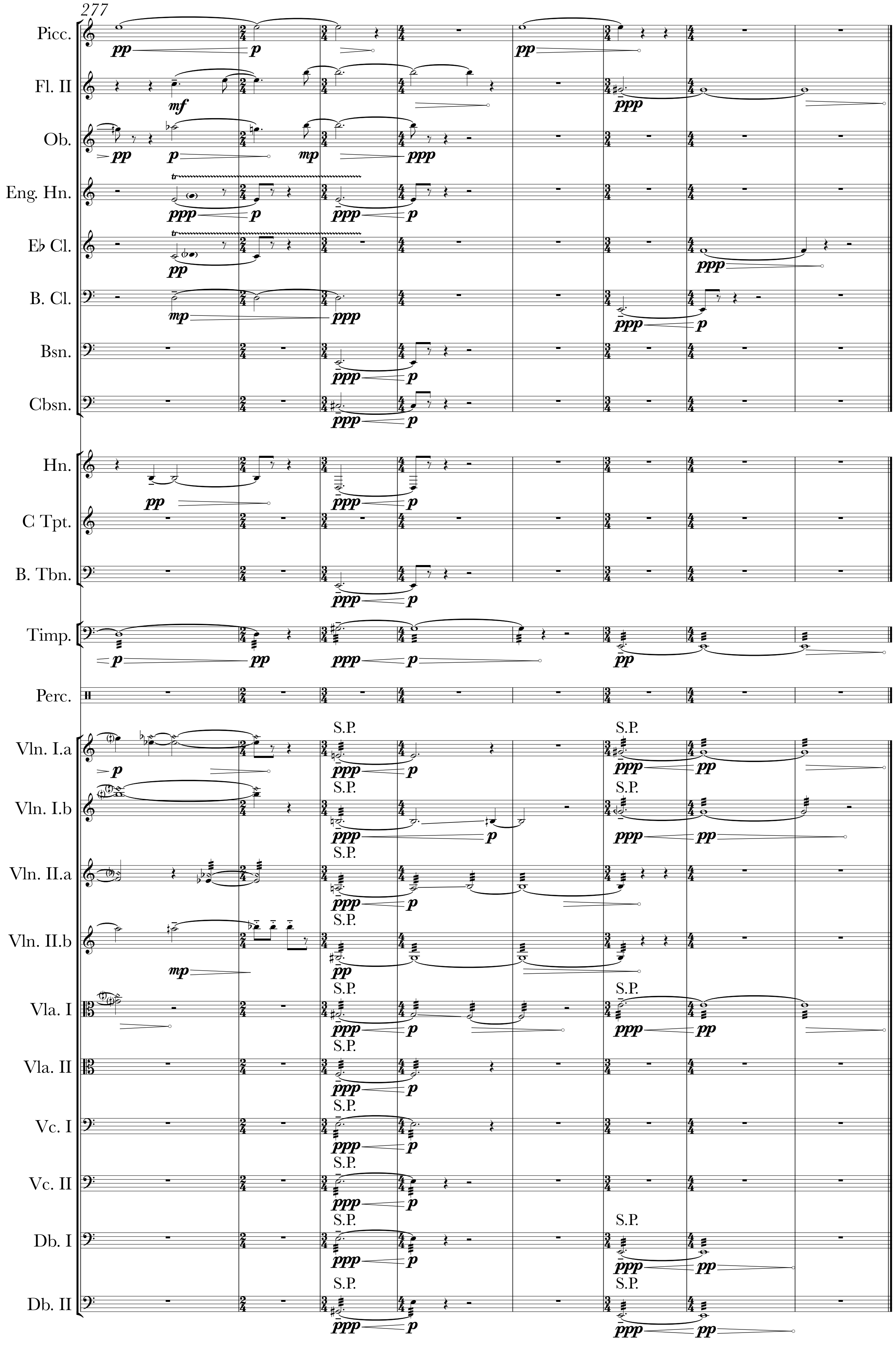
pppp


266
Picc.
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
ppp
pp
mp
mf
pppp
p
tr
con sord.
M.S.P.
N.
S.P.
S.T.
3
5


271
Picc.
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
ppp
mp
mf
f
p
pp
(tr)
tr
3
con sord.
S.P.
arco N.
N.


277
Picc.
Fl. II
Ob.
Eng. Hn.
E♭ Cl.
B. Cl.
Bsn.
Cbsn.
Hn.
C Tpt.
B. Tbn.
Timp.
Perc.
Vln. I.a
Vln. I.b
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db. I
Db. II
pp
p
mf
mp
ppp
tr
S.P.

Christopher Bayley

CHILDHOOD

For orchestra

Performance Notes

General

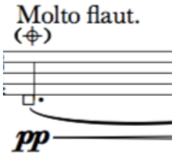
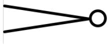
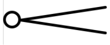
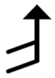
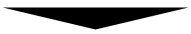
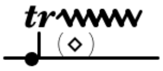
Trills should be played to the note indicated in brackets.

Glissandi should start at the beginning of the note.

Woodwind

B.T.	Breath tone. Blow air through the instrument to create a partially unpitched tone.
S.B.T.	Speak or buzz lips while blowing.

Strings

N.	Normal (used to distinguish the normal bowing position from S.P. or S.T.)
S.P.	Sul ponticello: to bow near the bridge of the instrument.
M.S.P.	Molto sul ponticello: to bow as close as possible to the bridge of the instrument.
S.T.	Sul tasto: to bow near the fingerboard.
	Flautando: Gently mute the string with the left hand while very lightly bowing. The technique produces a soft, airy noise with a faint tone that lacks a distinct pitch. Flautando tremolo should be played at the tip of the bow.
	Diminuendo al niente.
	Crescendo dal niente.
	Produce a quick glissando to the highest possible point in the time available.
→	Change gradually from one bow placement to another.
	Apply bow pressure. The pressure of the bow should increase and decrease in proportion to the depth of the pressure mark. Tone distortion (overpressure) should occur at the peak.
	A harmonic trill produced by alternating between a normal note and an indicated harmonic. The resulting sound should be a rapid alternation between normal and harmonic tones.

Scoring

2 Flutes (all doubling piccolo)
2 Oboes
2 Clarinets in B flat
1 Bassoon
1 Contrabassoon
2 Horns in F
1 Trumpet in C
2 Trombones
1 Tuba

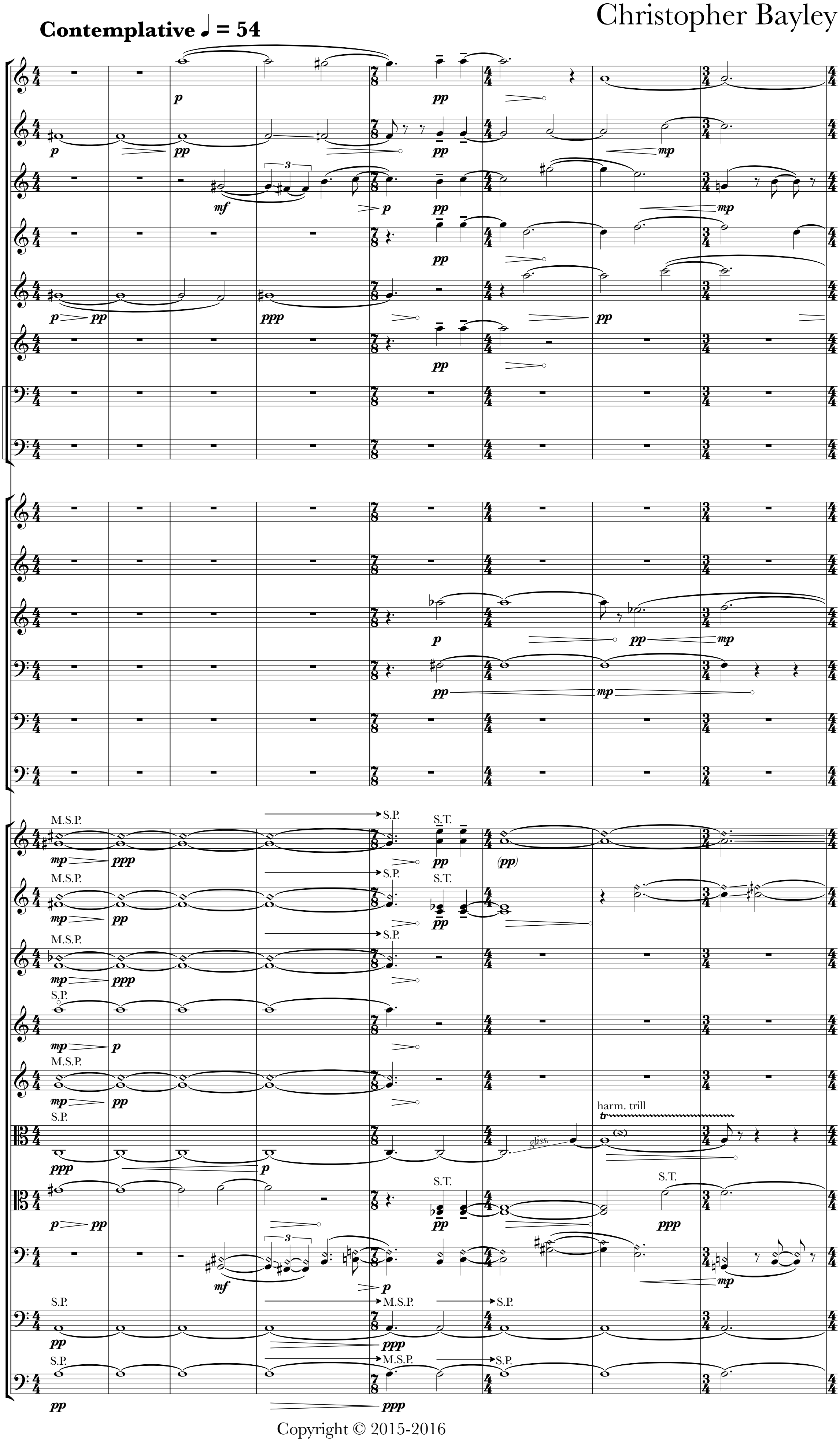
6 Violins I
- Violin 1.a 2 Performers
- Violin 1.b 2 Performers
- Violin 1.c 2 Performers

4 violins II
4 violas
4 violoncello
2 double basses

Score in C

CHILDHOOD

Christopher Bayley


Contemplative ♩ = 54
Flute I
Flute II
Oboe I
Oboe II
Clarinet in B♭ I
Clarinet in B♭ II
Bassoon
Contrabassoons
Horn in F I
Horn in F II
Trumpets in C
Trombone I
Trombone II
Tuba
Violin I.a
Violin I.b
Violin I.c
Violin II.a
Violin II.b
Viola I
Viola II
Violoncello I
Violoncello II
Double Bass
M.S.P.
S.P.
S.T.
gliss.
harm. trill
3
p
pp
ppp
mf
mp
(pp)

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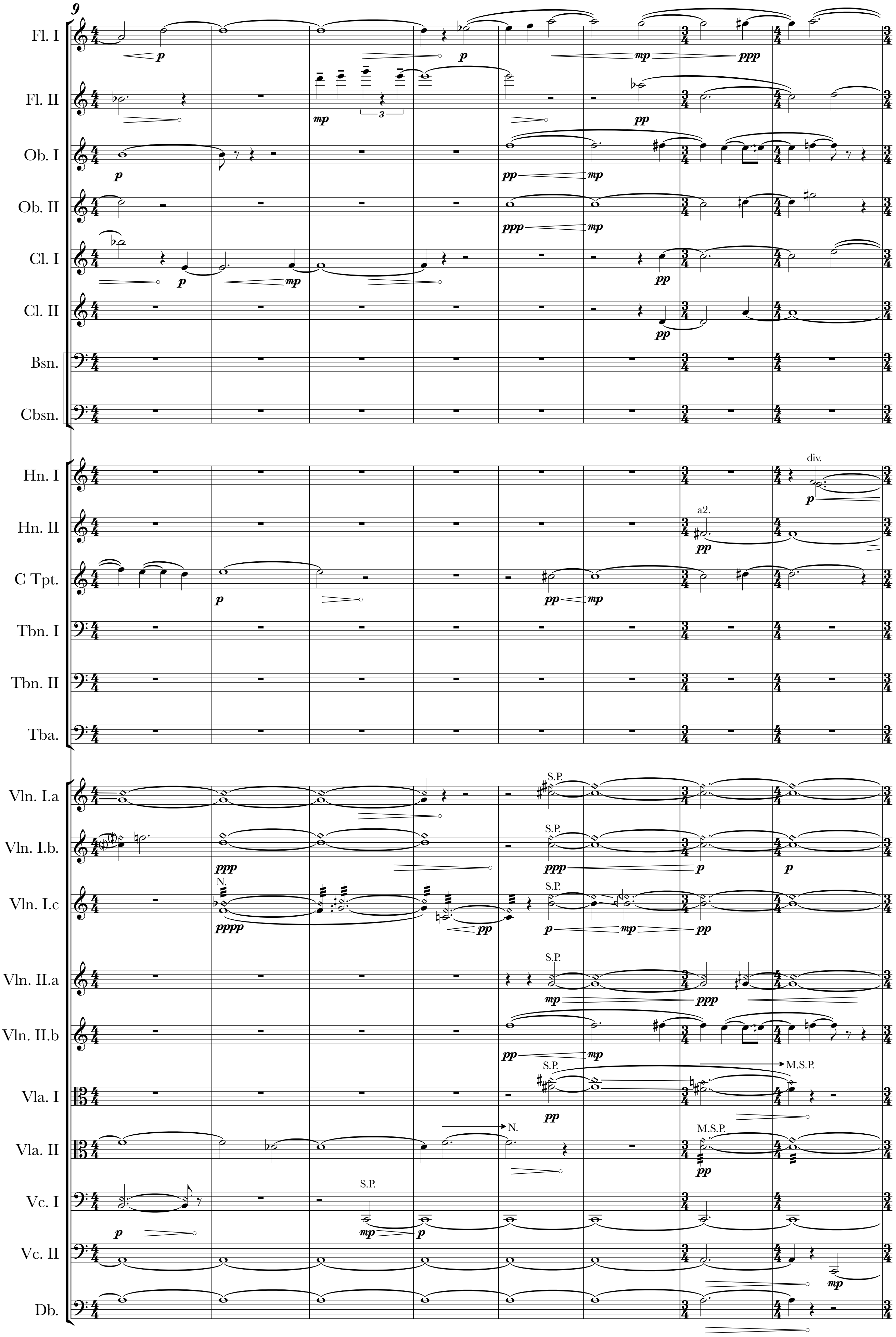
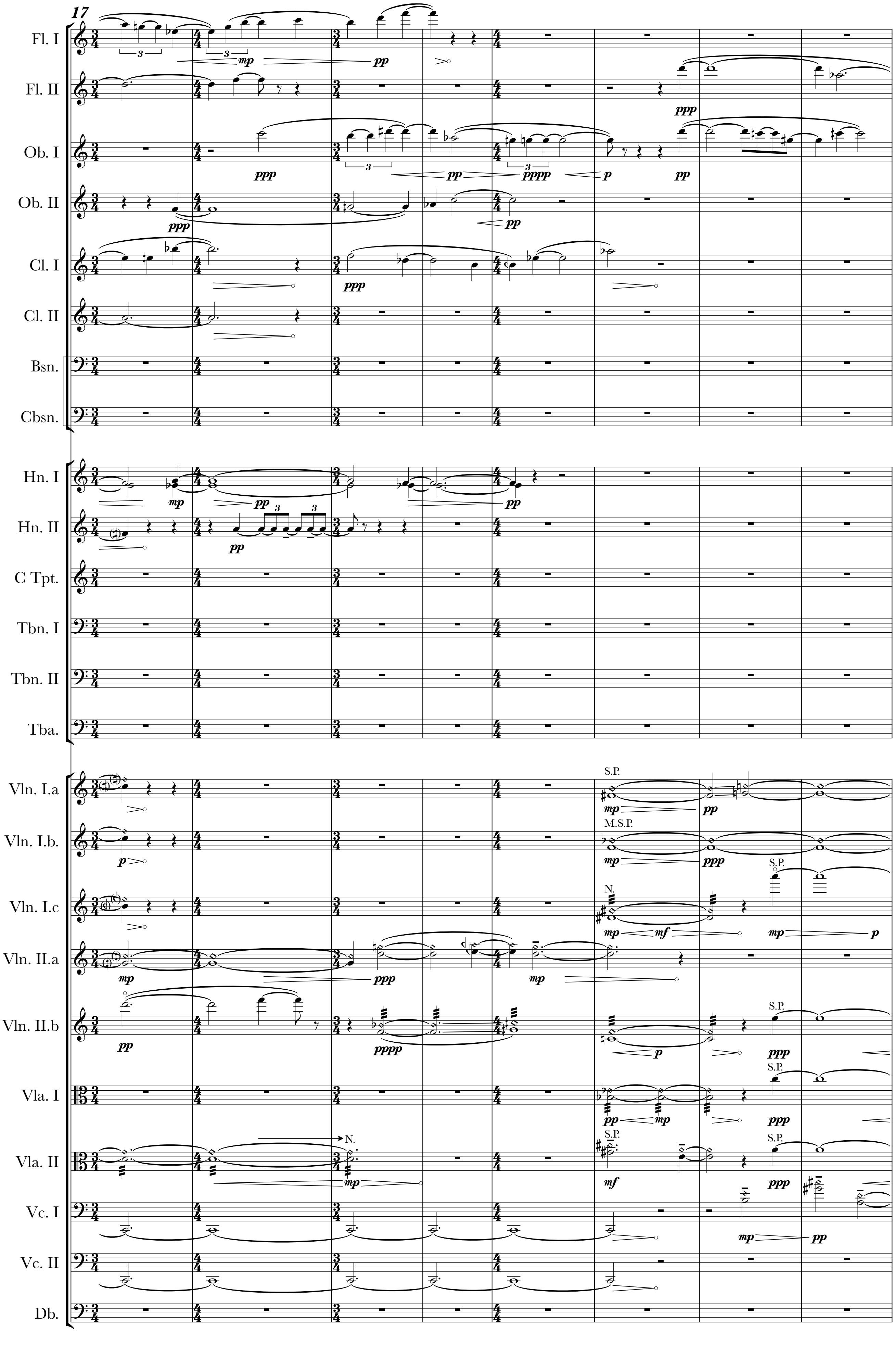
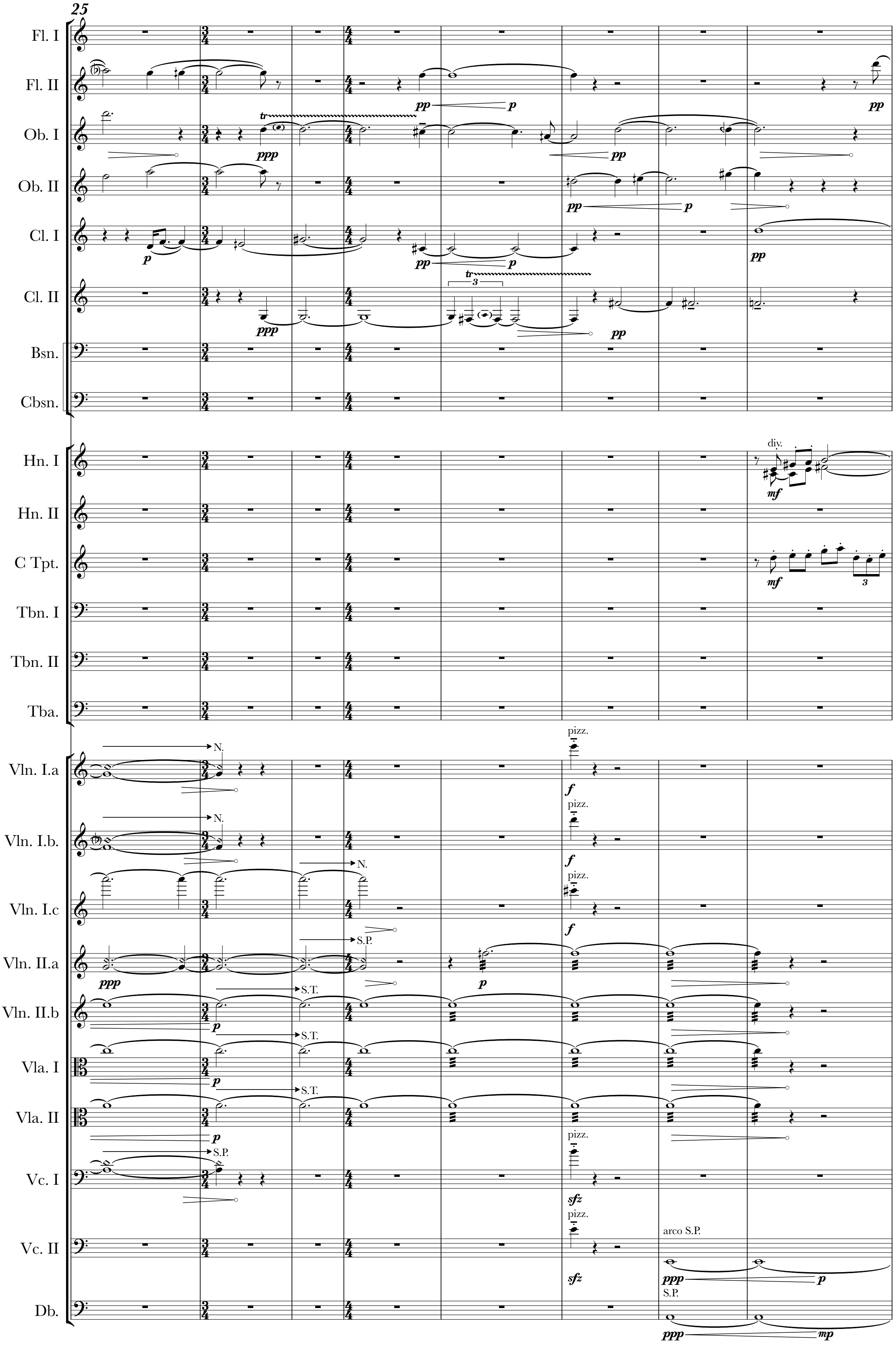
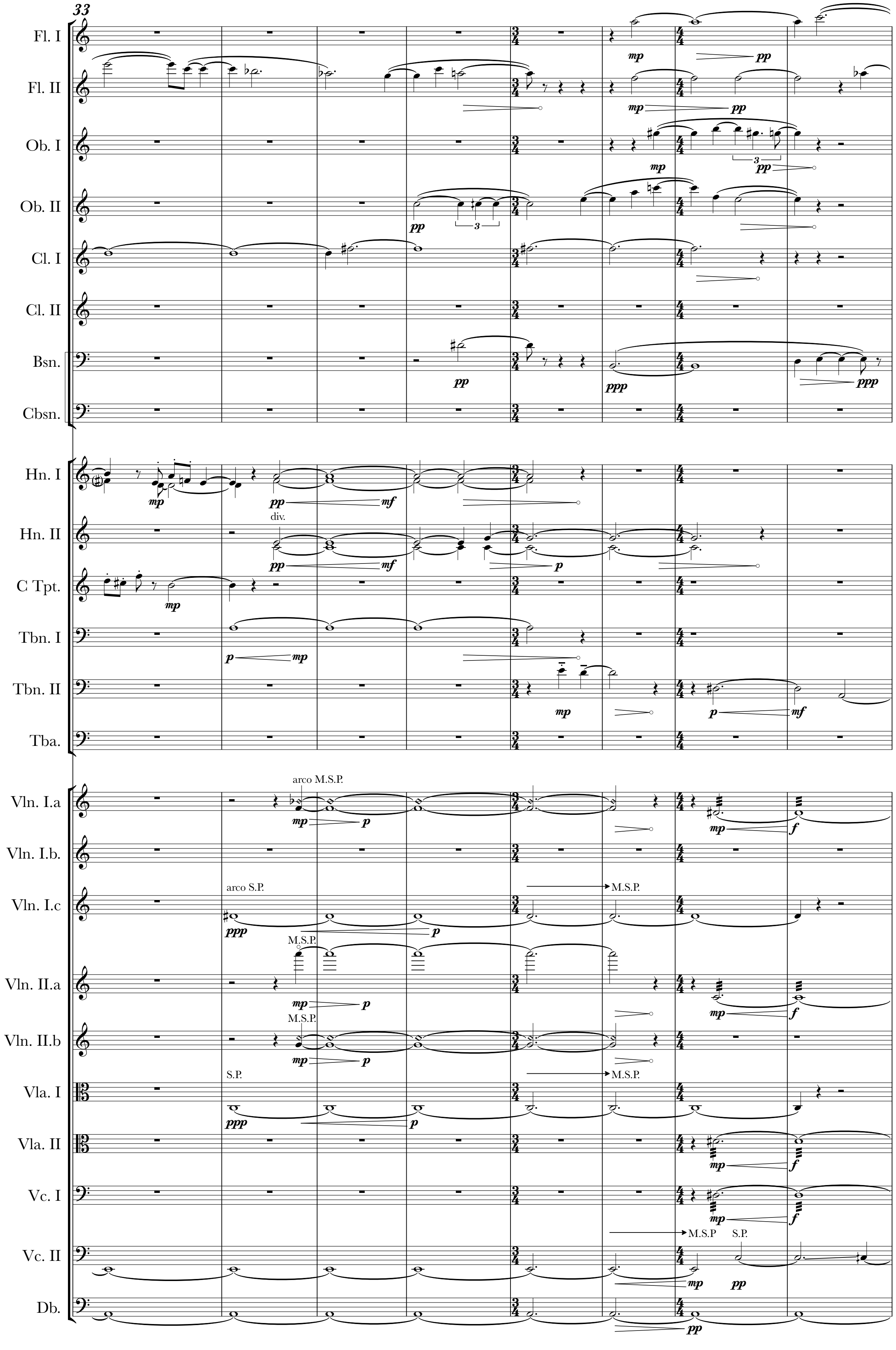
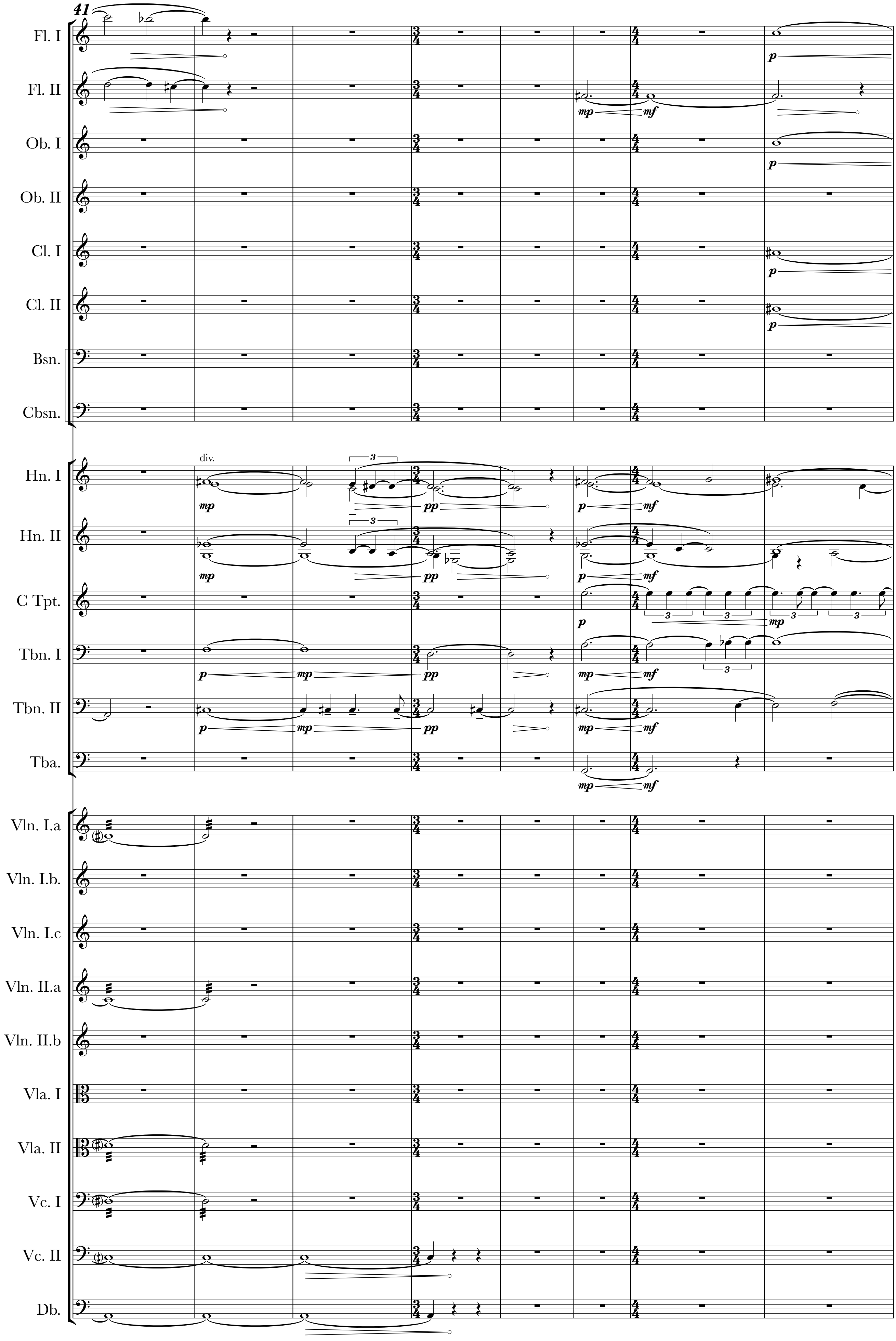
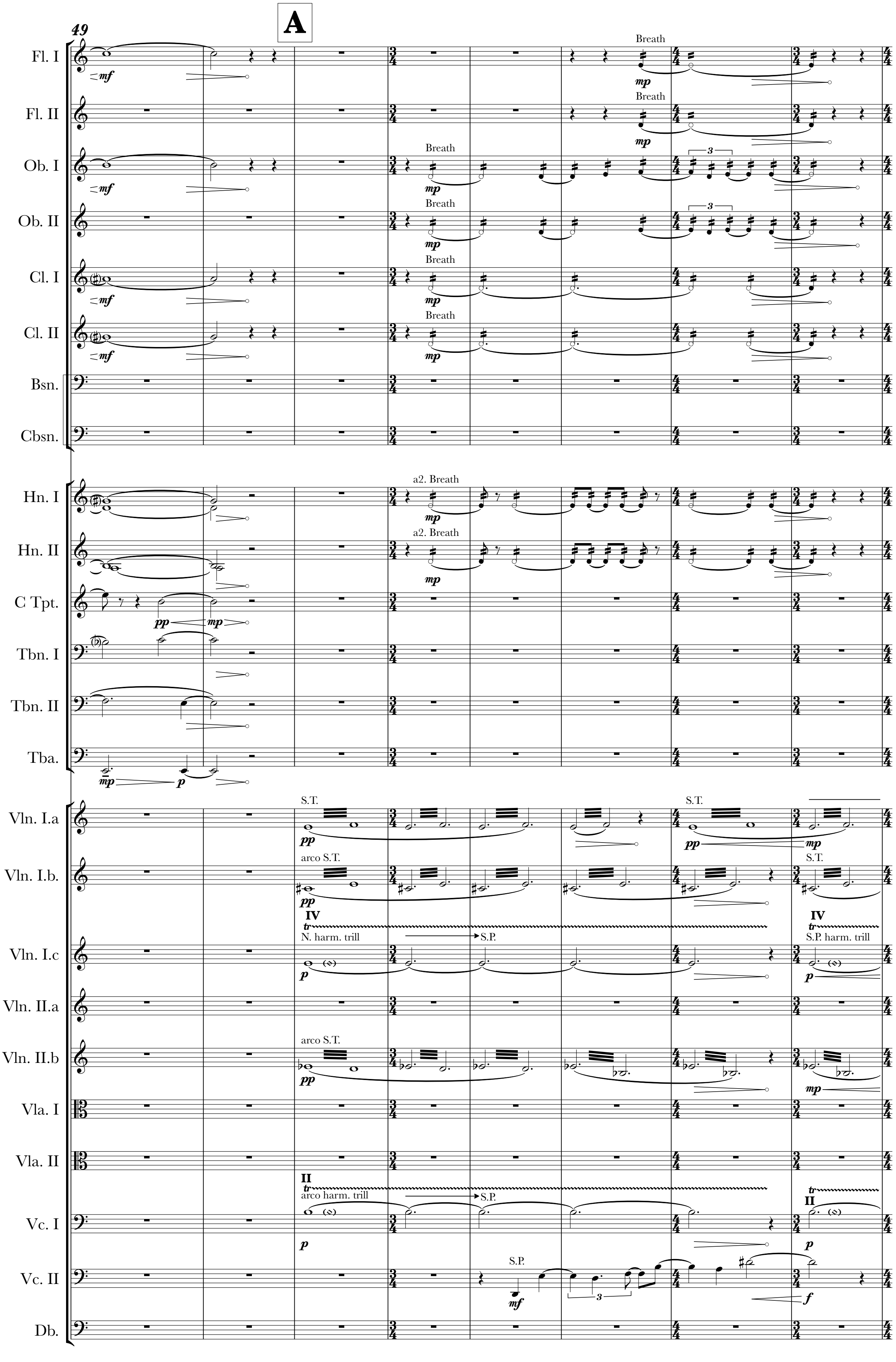

9
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
p
mp
ppp
pp
pppp
3
div.
a2.
S.P.
N.
M.S.P.

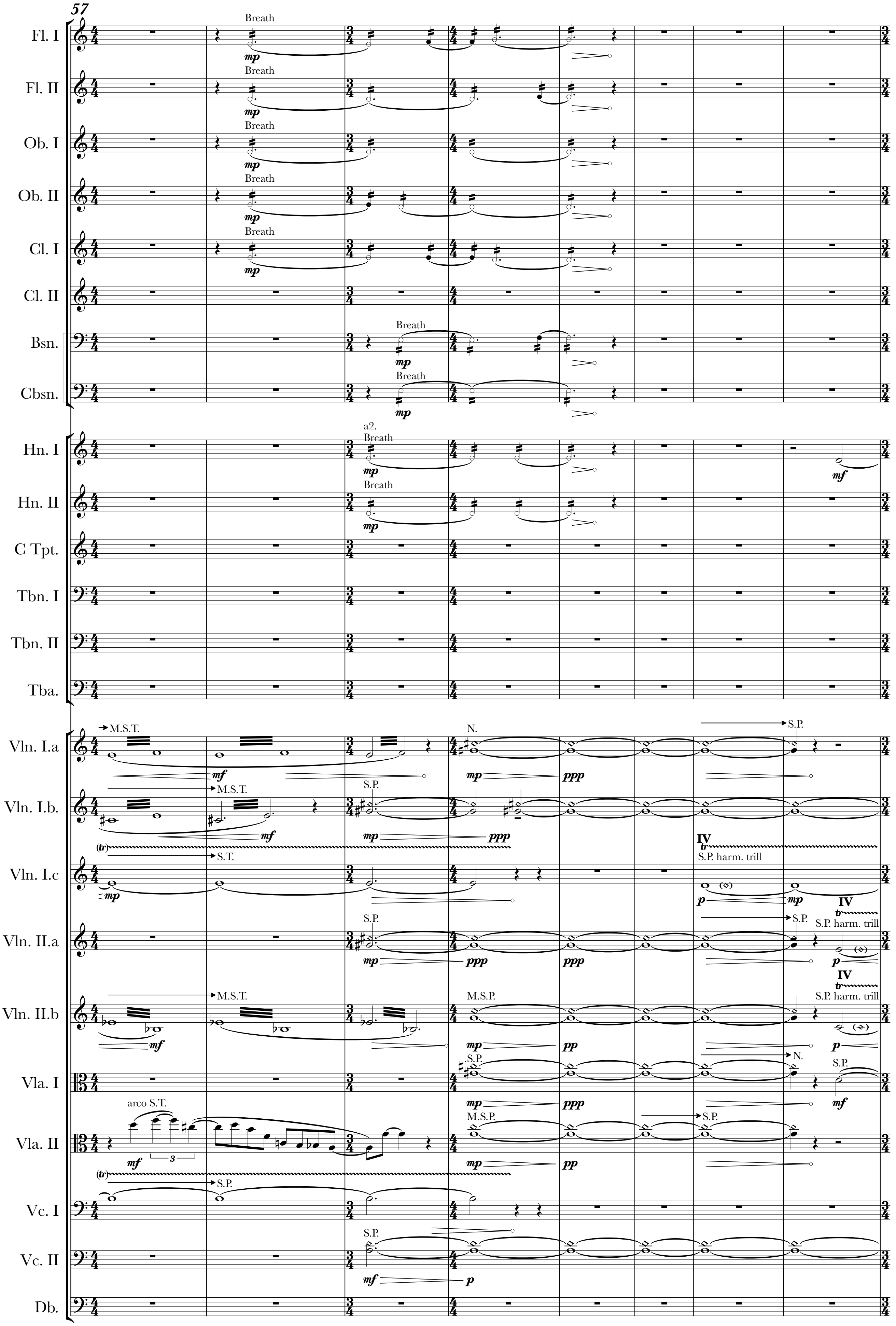

17
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
3
mp
pp
ppp
ppp
pp
pppp
p
ppp
ppp
pp
ppp
mp
pp
pp
S.P.
mp
pp
M.S.P.
mp
ppp
S.P.
N.
mp
mf
mp
p
mp
ppp
mp
pp
pppp
p
S.P.
ppp
S.P.
pp
mp
ppp
N.
mp
S.P.
mf
S.P.
ppp
mp
pp

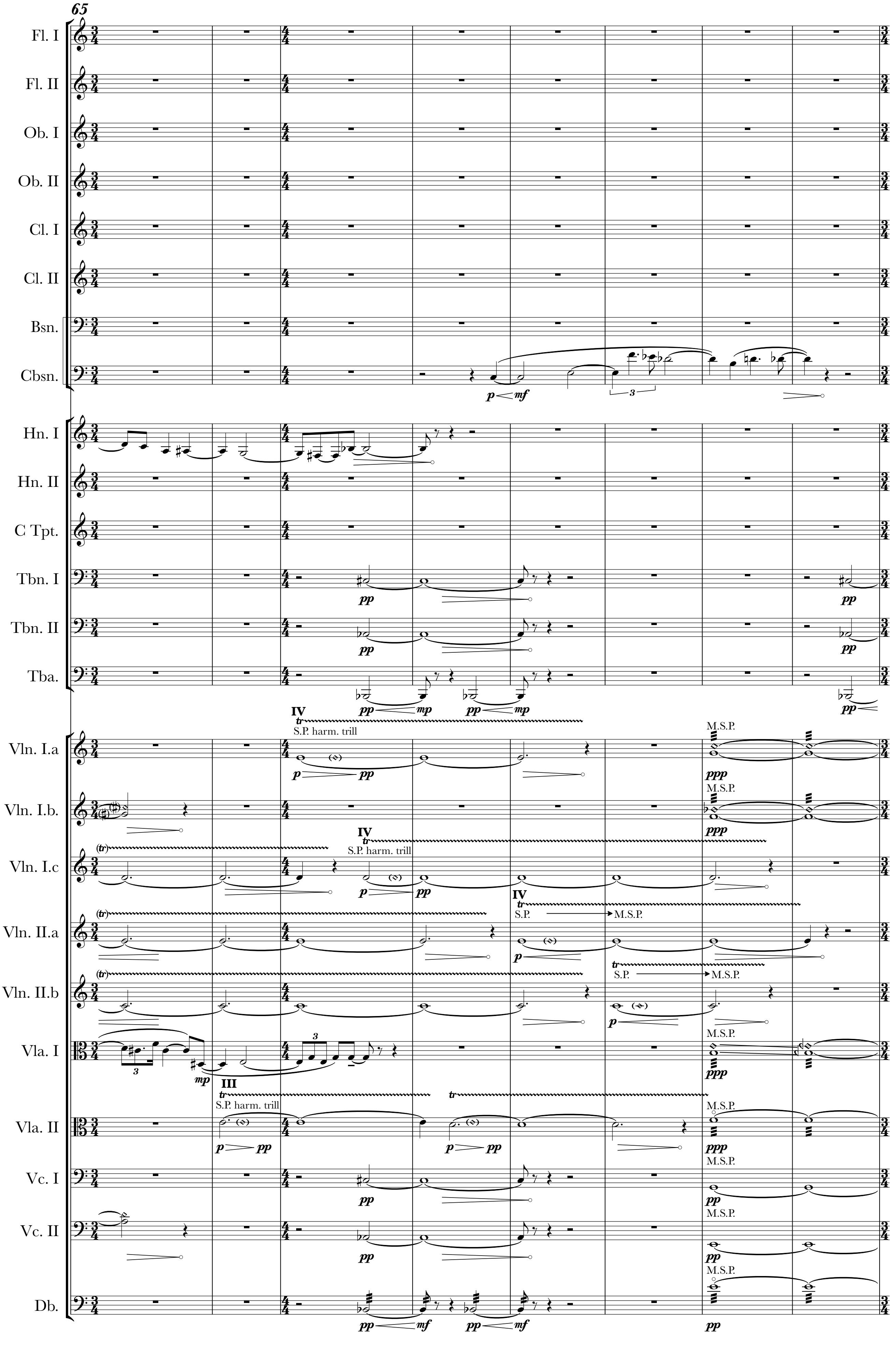

25
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
pp
p
pp
tr
ppp
pp
pp
p
p
pp
p
pp
tr
3
ppp
pp
div.
mf
mf
3
N.
N.
N.
S.P.
S.T.
S.T.
S.T.
S.P.
pizz.
f
pizz.
f
pizz.
f
ppp
p
p
p
p
pizz.
sfz
pizz.
sfz
arco S.P.
ppp
p
S.P.
ppp
mp

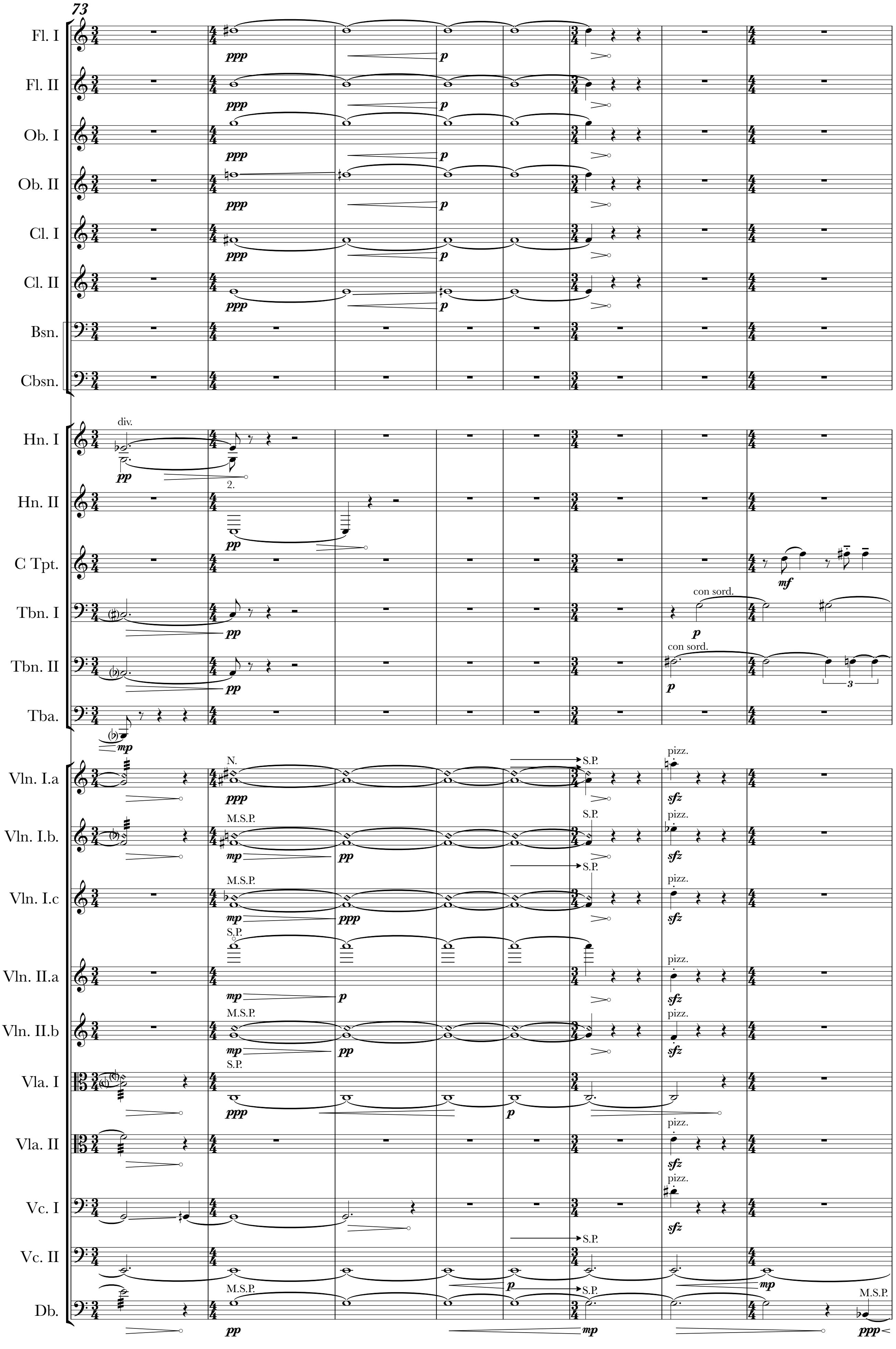

33
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
mp
pp
3
ppp
mf
div.
p
f
arco M.S.P.
arco S.P.
M.S.P.
S.P.
M.S.P

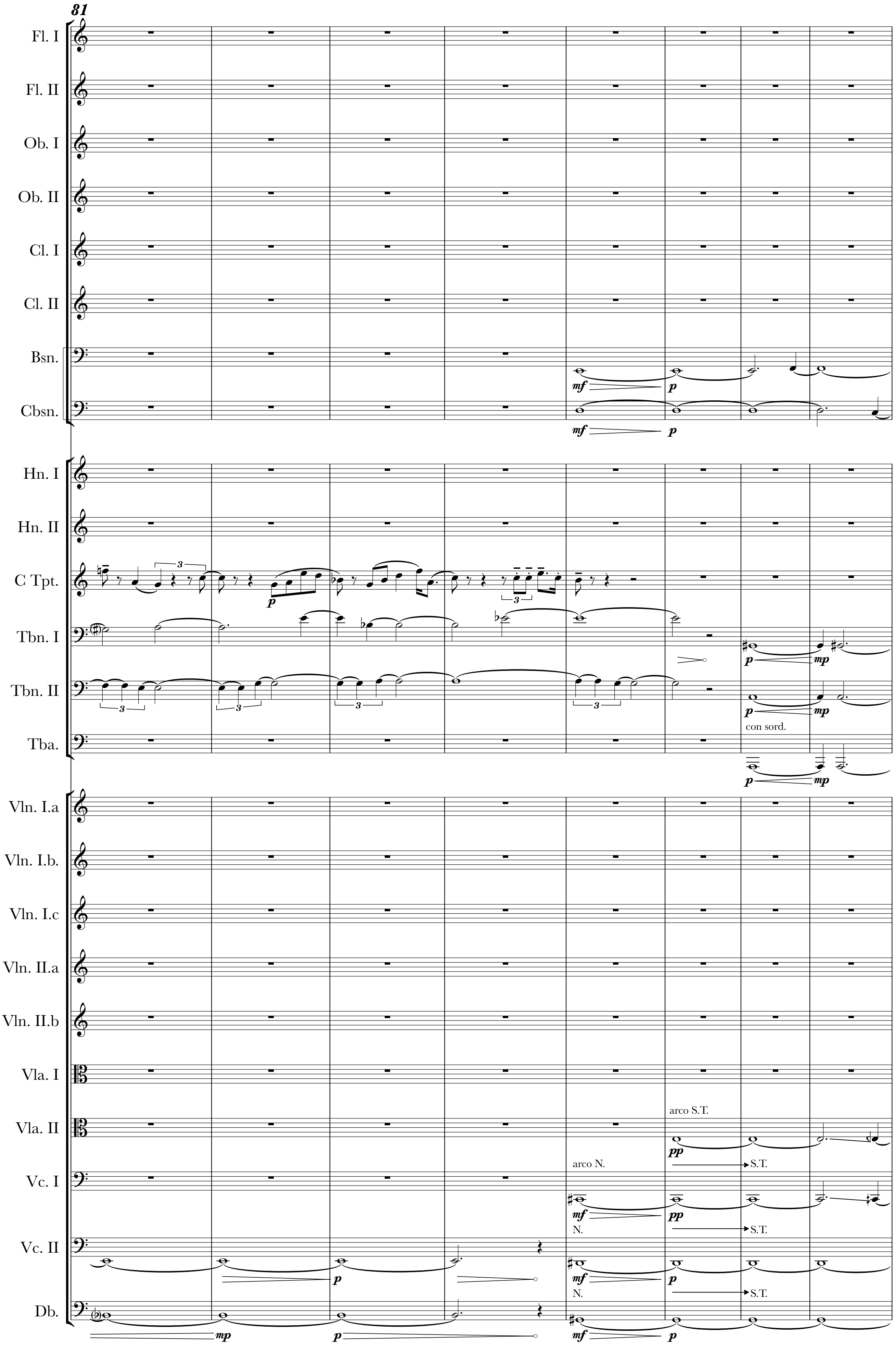

41
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
div.
mp
pp
p
mf
3

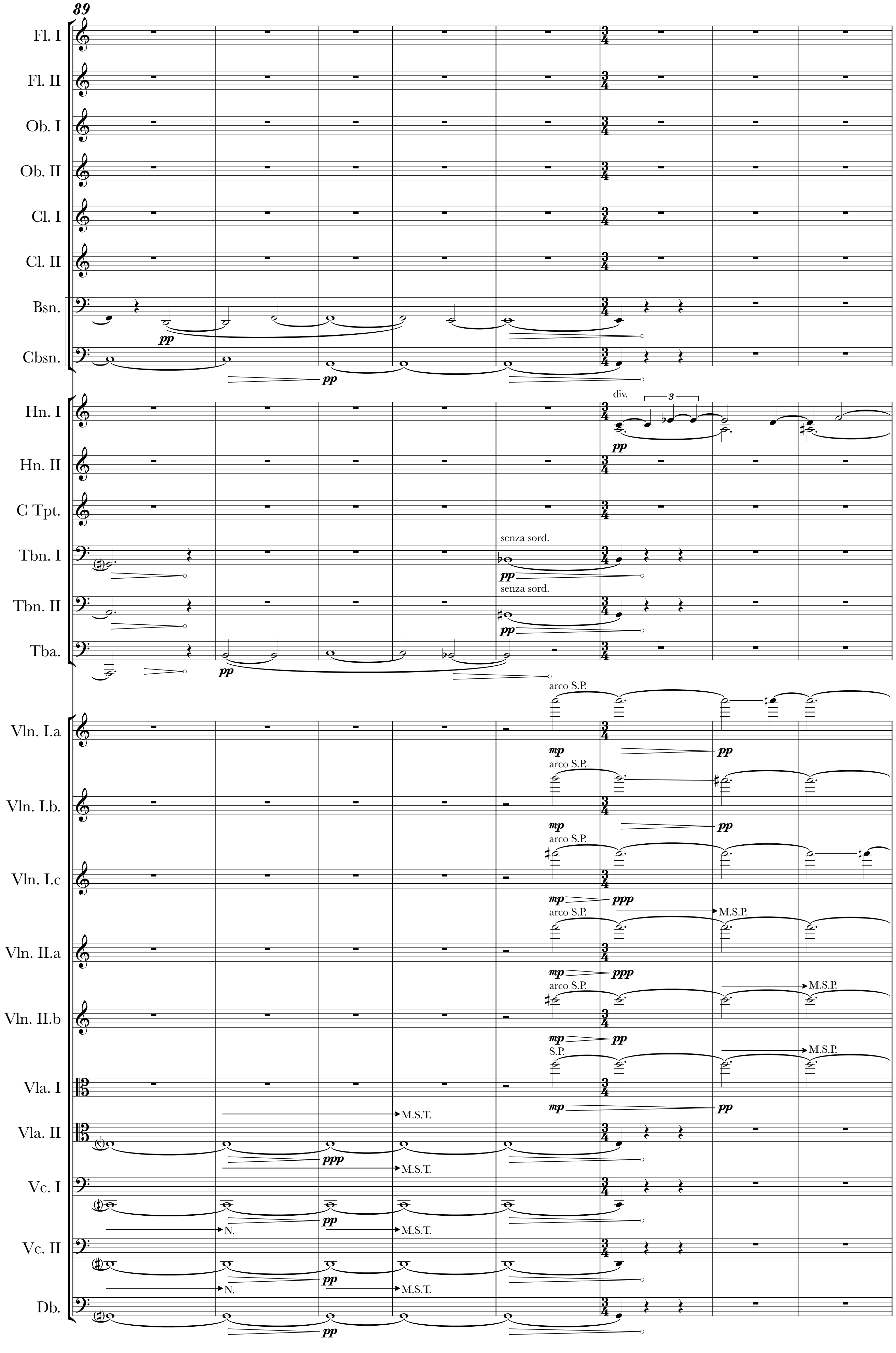

49
A
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
Breath
mf
mp
3
a2. Breath
pp
p
S.T.
arco S.T.
IV
tr
N. harm. trill
S.P.
S.P. harm. trill
II
arco harm. trill
f

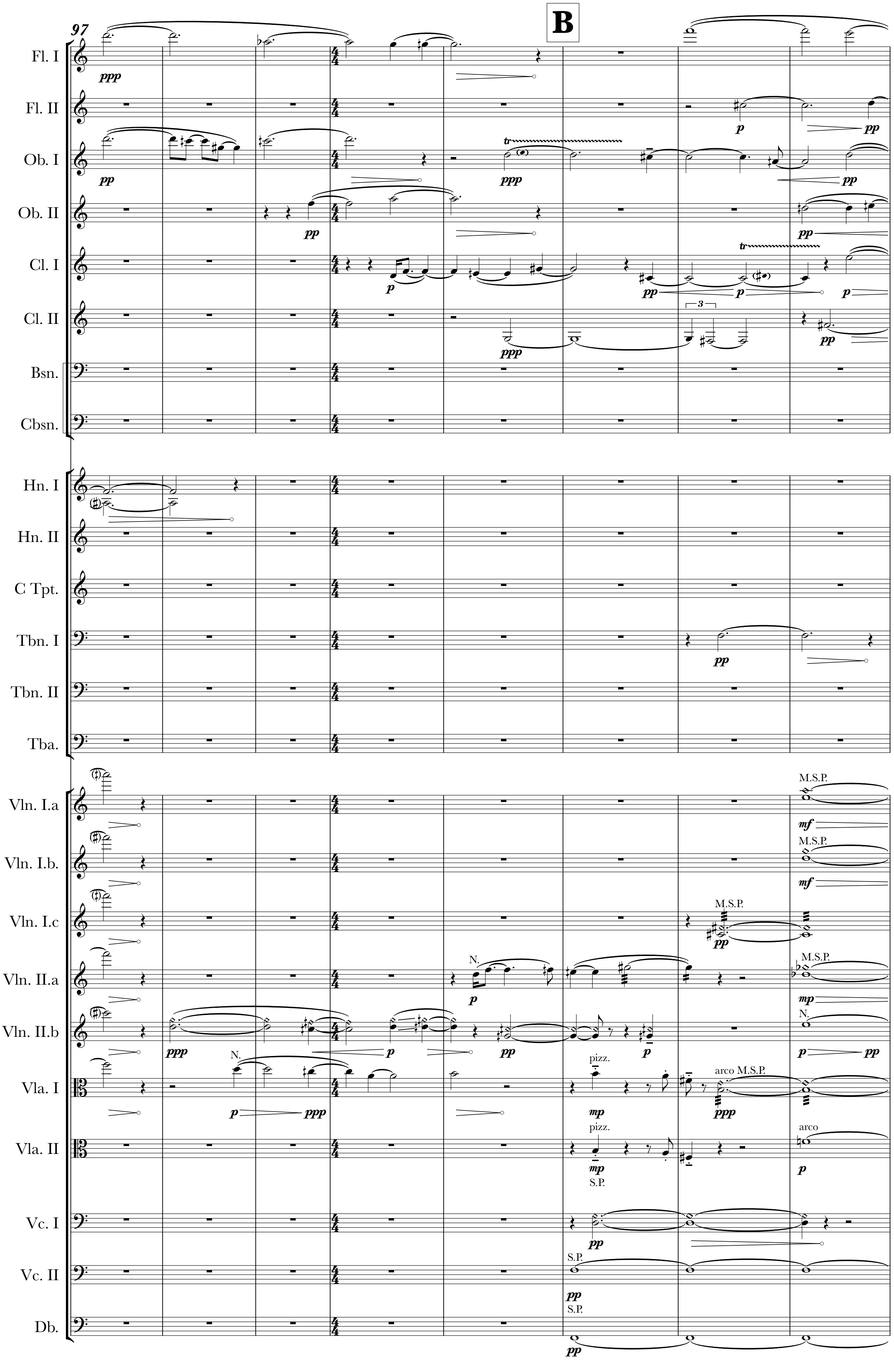

57
Fl. I
Breath
mp
Fl. II
Breath
mp
Ob. I
Breath
mp
Ob. II
Breath
mp
Cl. I
Breath
mp
Cl. II
Bsn.
Breath
mp
Cbsn.
Breath
mp
Hn. I
a2.
Breath
mp
mf
Hn. II
Breath
mp
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
M.S.T.
mf
N.
mp
ppp
S.P.
Vln. I.b.
M.S.T.
mf
S.P.
mp
ppp
Vln. I.c
(tr)
S.T.
mp
IV
tr
S.P. harm. trill
p
mp
Vln. II.a
S.P.
mp
ppp
ppp
S.P.
IV
tr
S.P. harm. trill
p
Vln. II.b
M.S.T.
mf
M.S.P.
mp
pp
IV
tr
S.P. harm. trill
p
Vla. I
S.P.
mp
ppp
N.
S.P.
mf
Vla. II
arco S.T.
mf
3
M.S.P.
mp
pp
S.P.
Vc. I
(tr)
S.P.
Vc. II
S.P.
mf
p
Db.

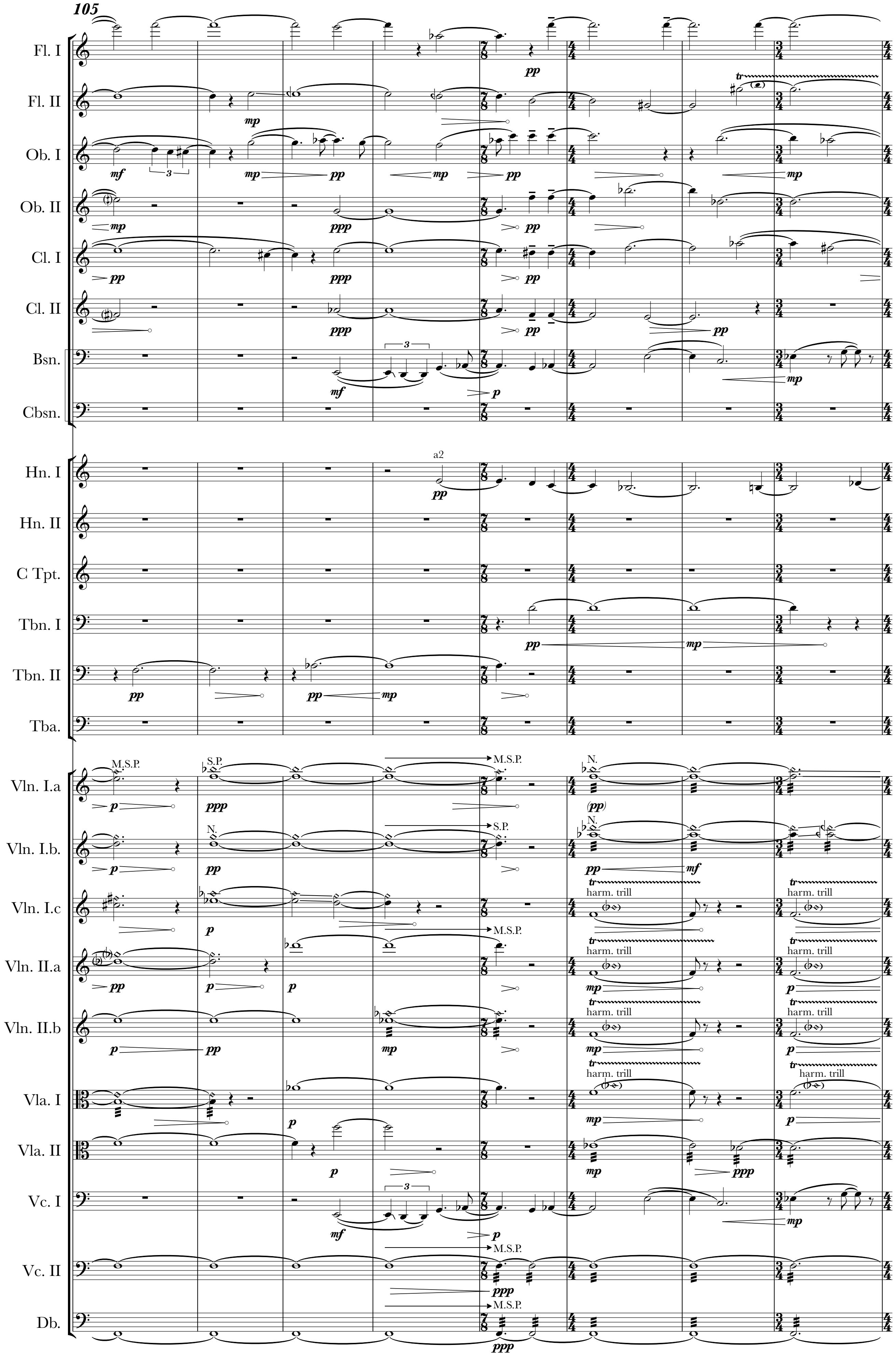

65
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
p
mf
3
Hn. I
Hn. II
C Tpt.
Tbn. I
pp
Tbn. II
pp
Tba.
pp
mp
IV
tr
S.P. harm. trill
M.S.P.
Vln. I.a
p
pp
ppp
Vln. I.b.
Vln. I.c
(tr)
IV
tr
S.P. harm. trill
Vln. II.a
IV
tr
S.P.
M.S.P.
Vln. II.b
tr
S.P.
M.S.P.
Vla. I
3
mp
III
tr
S.P. harm. trill
Vla. II
Vc. I
Vc. II
Db.
pp
mf

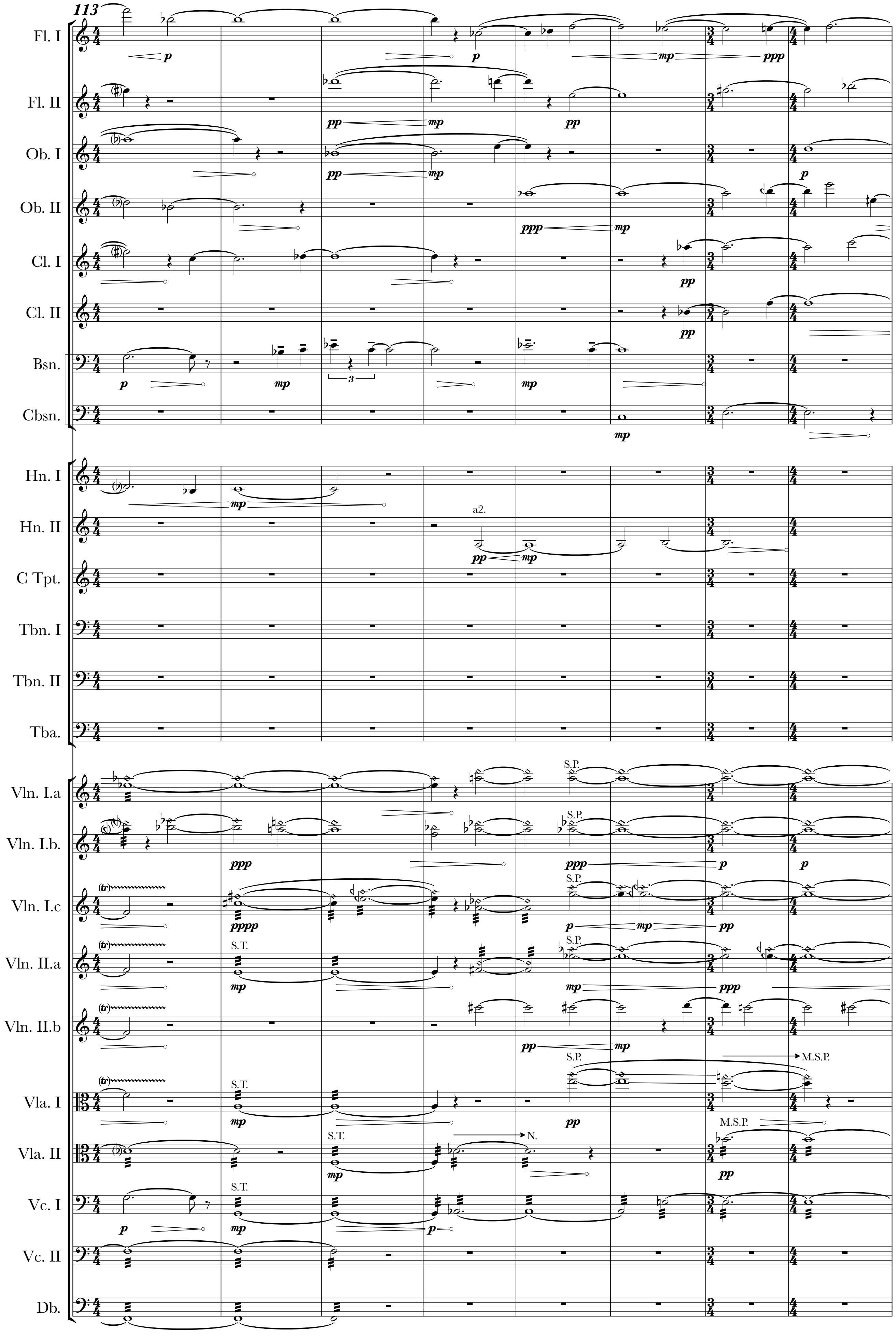

73
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
ppp
p
pp
mp
mf
sfz
div.
2.
con sord.
N.
S.P.
M.S.P.
pizz.
3

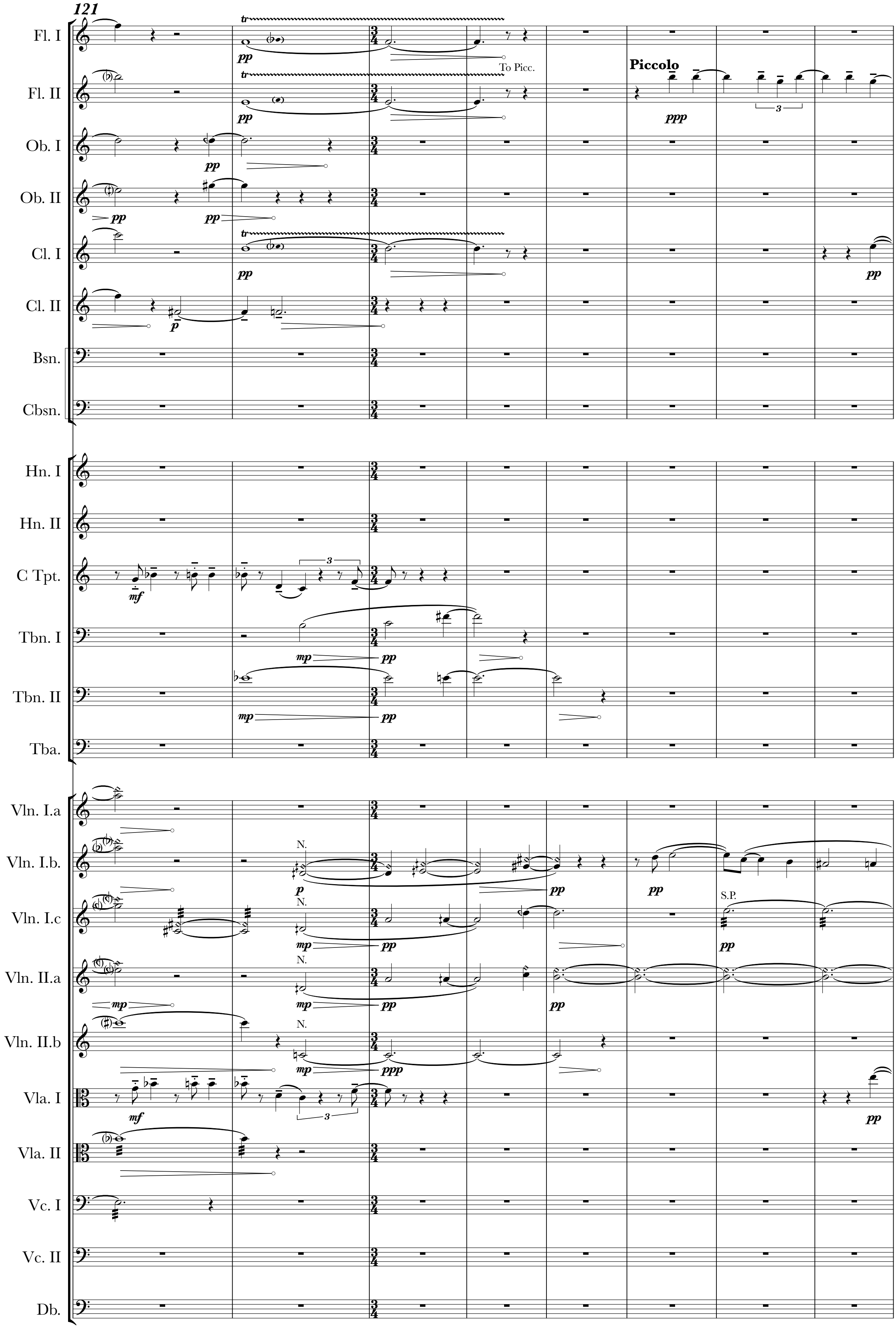

81
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
mf
p
3
con sord.
mp
arco S.T.
pp
arco N.
S.T.
N.

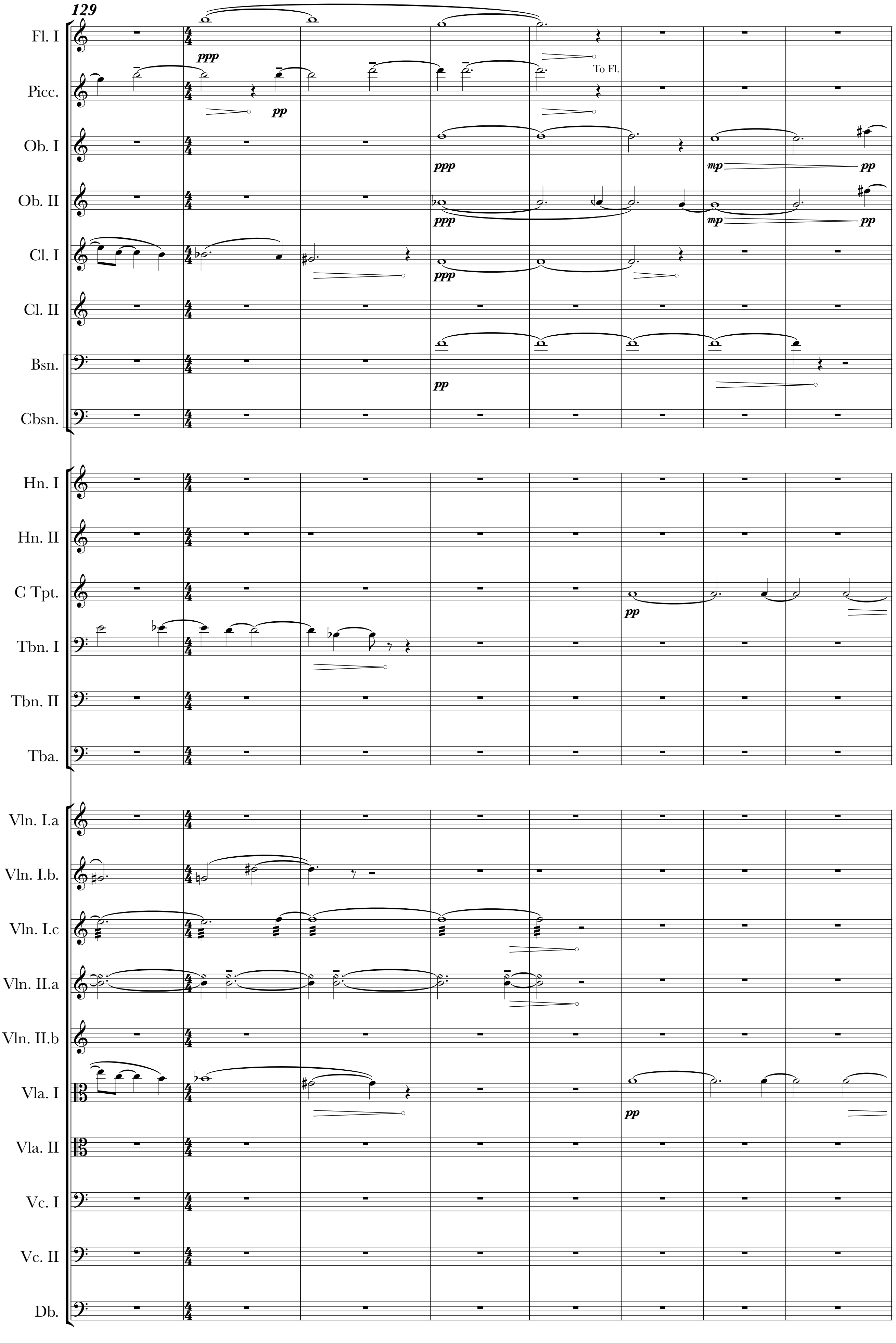

89
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
pp
div.
3
senza sord.
arco S.P.
S.P.
mp
ppp
M.S.P.
M.S.T.
N.

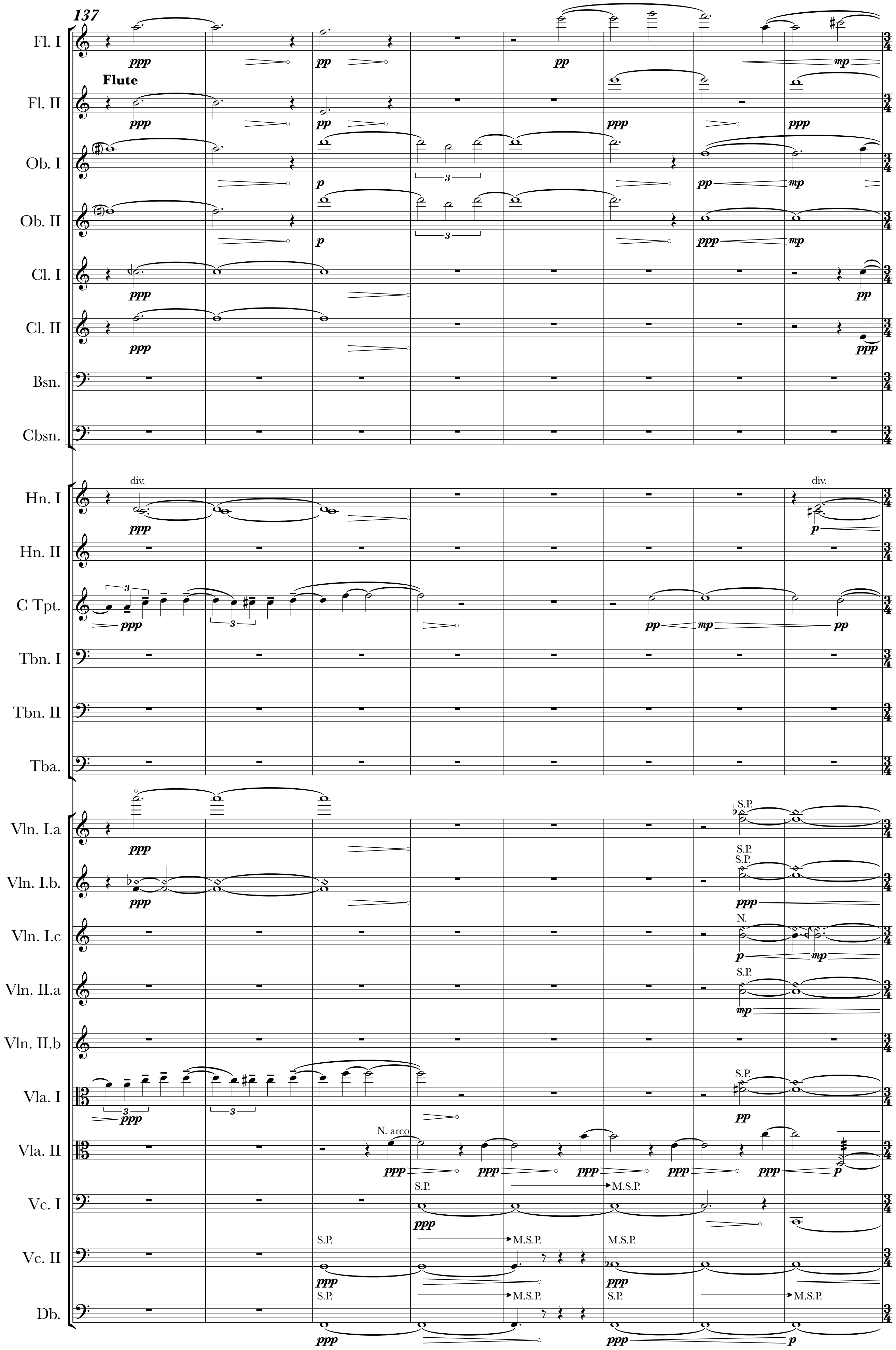

97
B
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
ppp
pp
p
mp
mf
tr
3
M.S.P.
N.
pizz.
arco
arco M.S.P.
S.P.

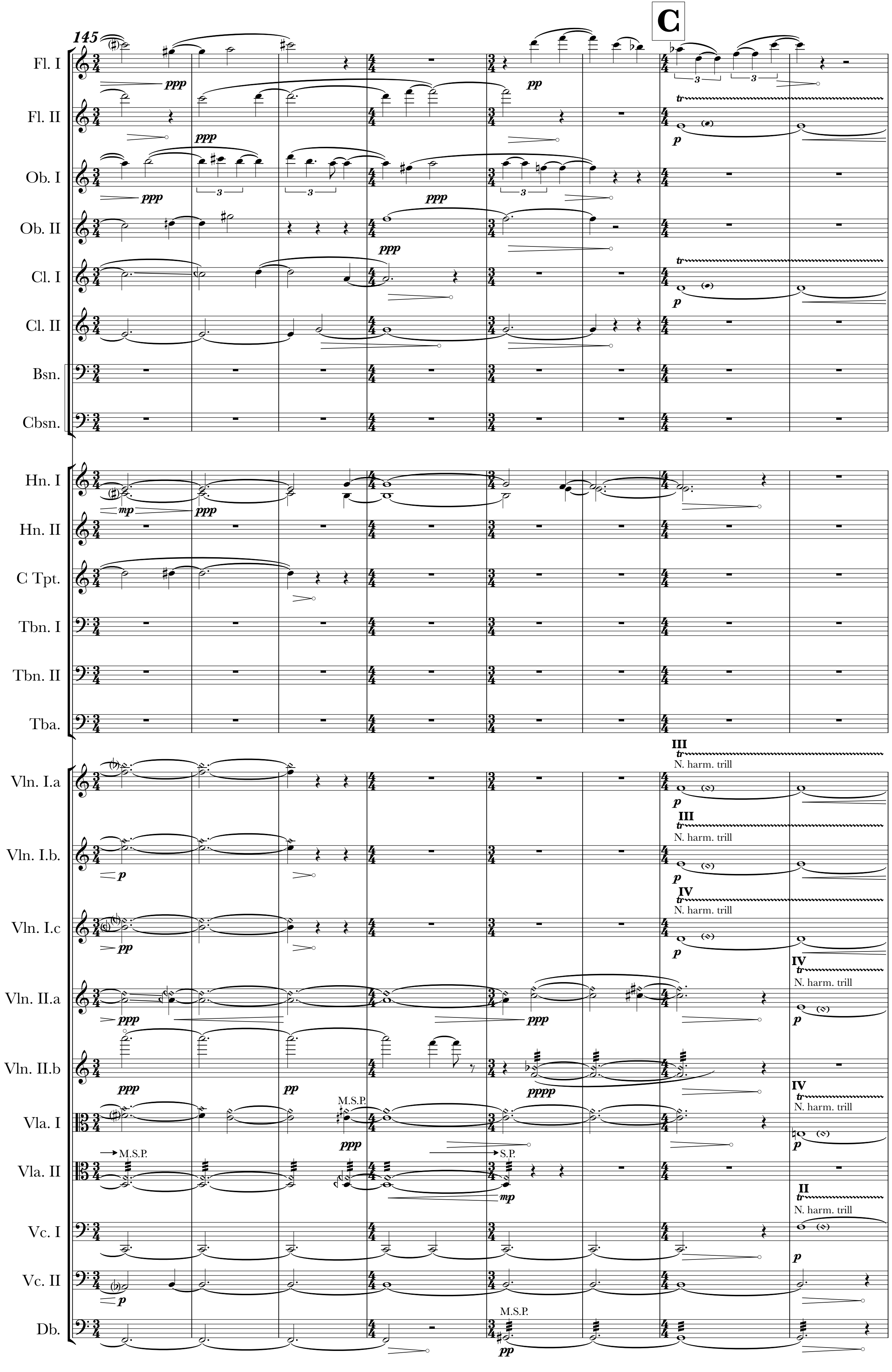

105
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
a2
M.S.P.
S.P.
N.
harm. trill
tr
3
pp
ppp
p
mp
mf
(pp)

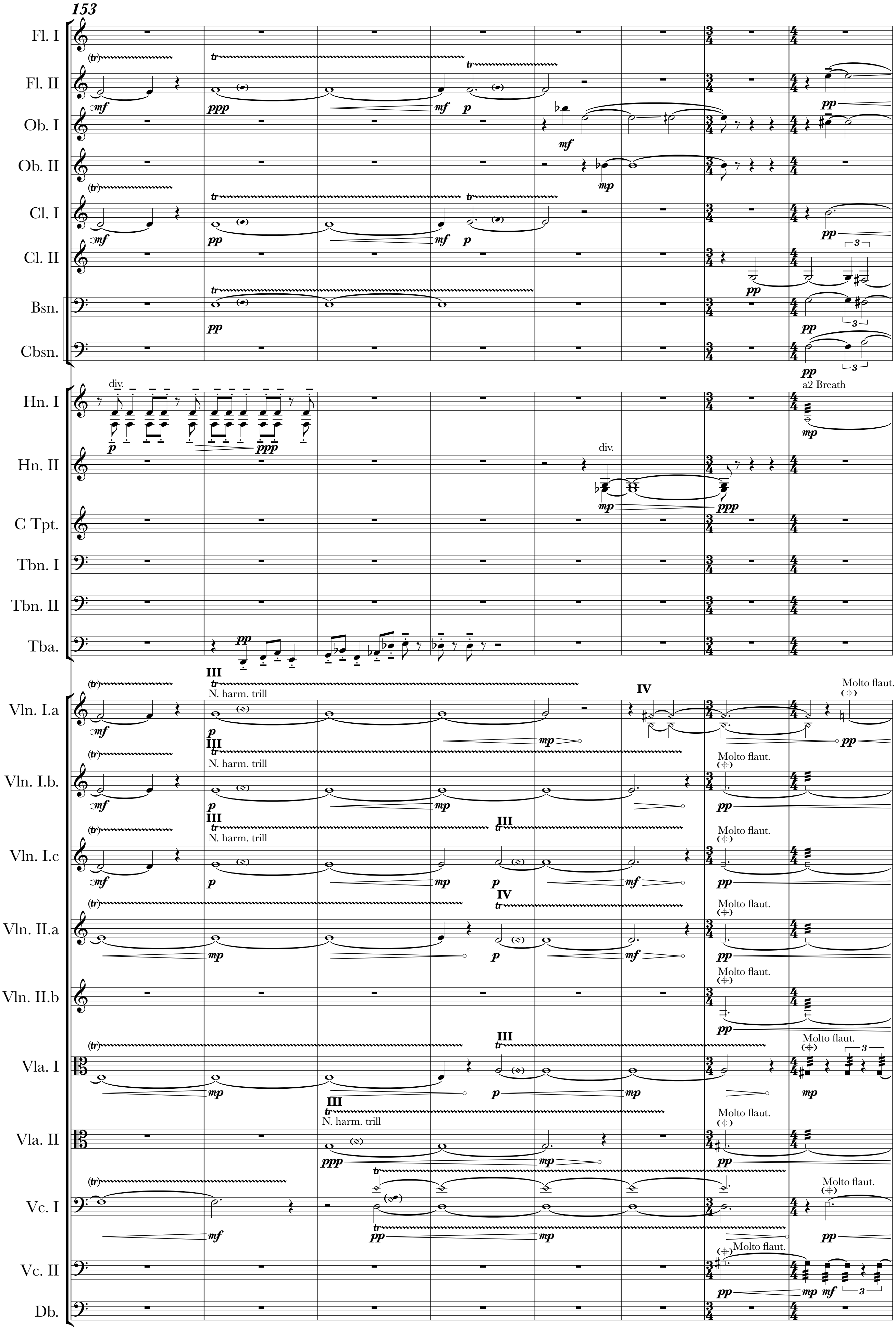

113
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
a2.
S.P.
S.T.
N.
M.S.P.
p
pp
ppp
pppp
mp
3

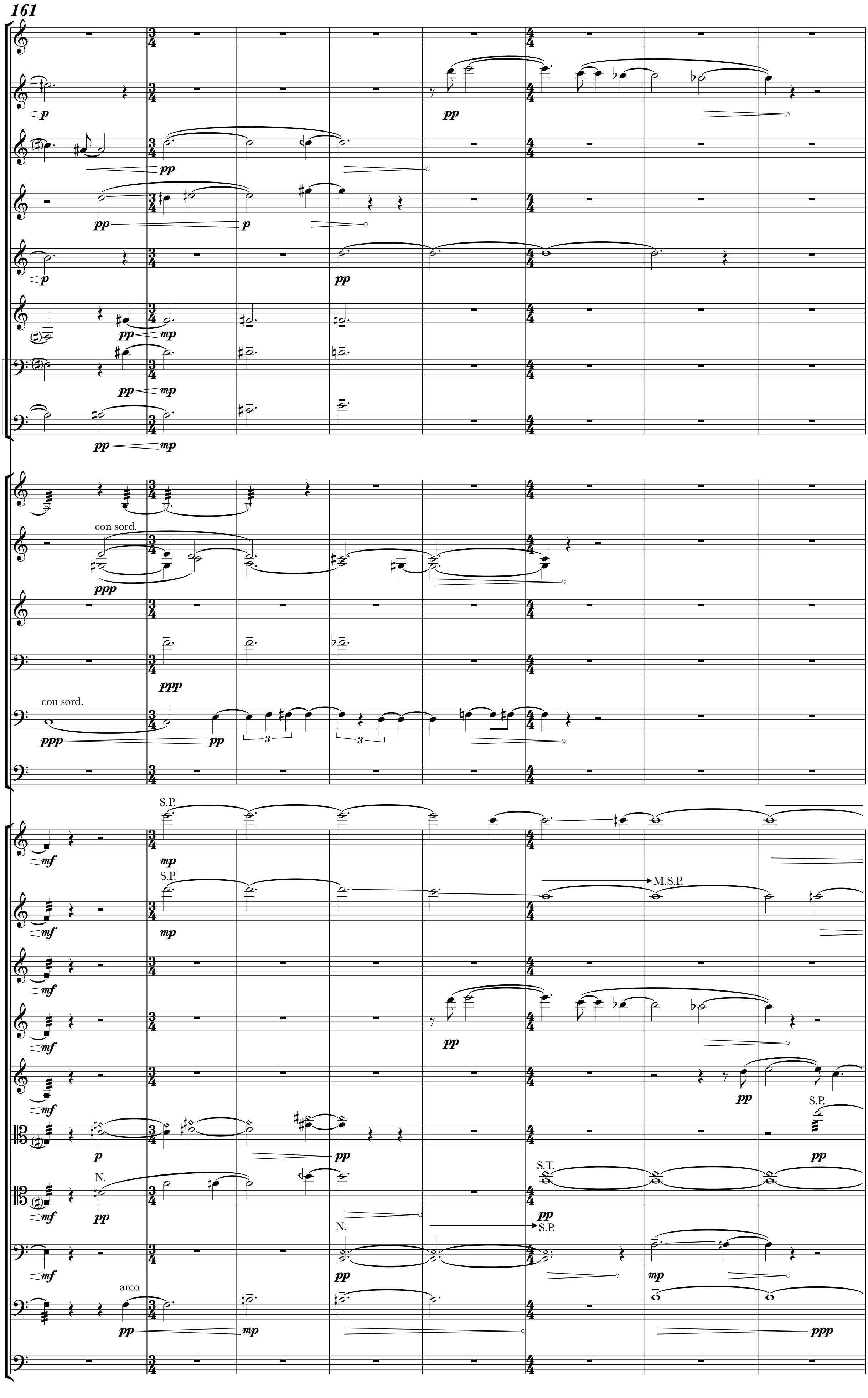

121
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
tr
pp
To Picc.
Piccolo
ppp
3
p
mf
mp
ppp
N.
S.P.

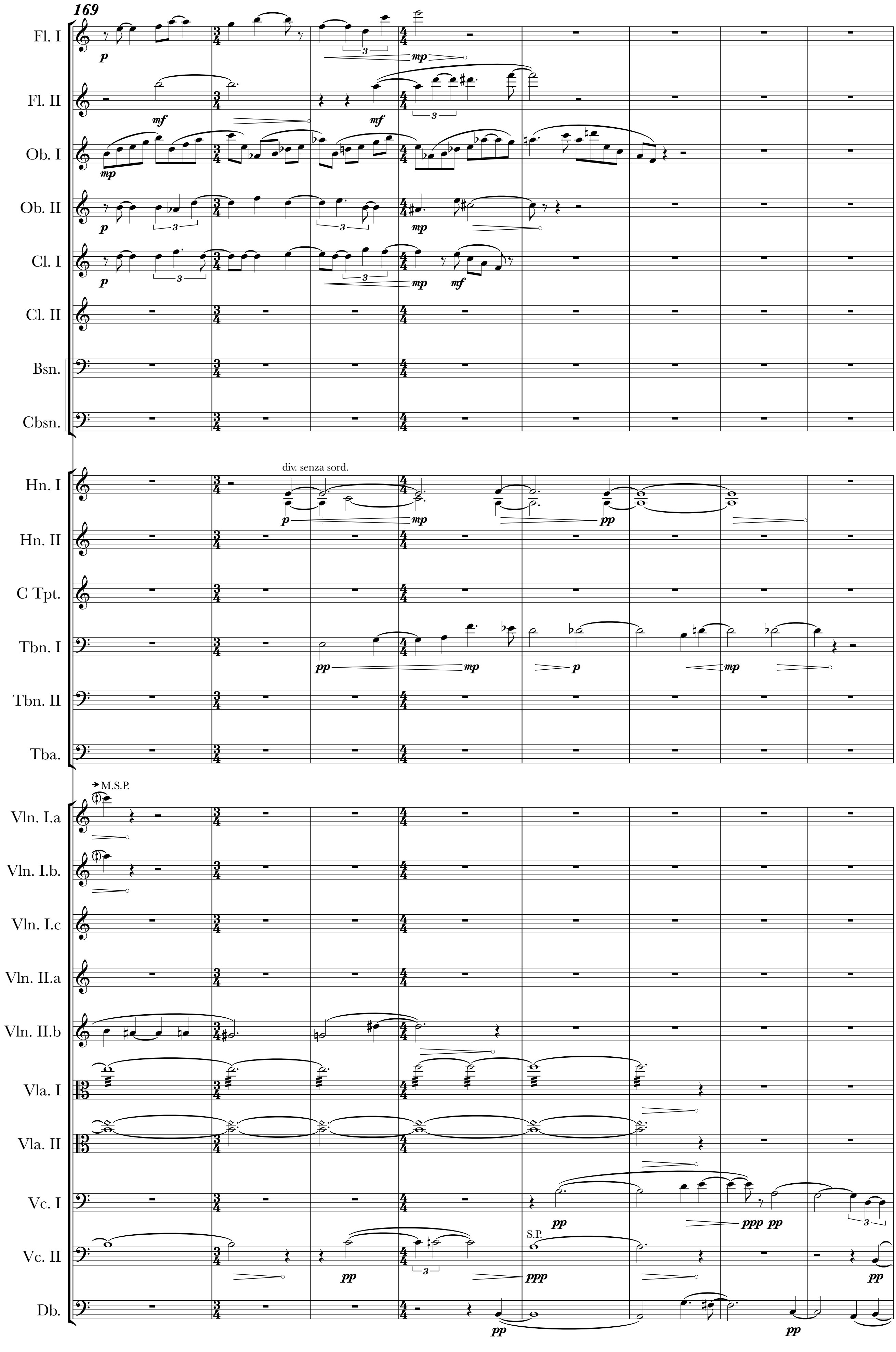

129
Fl. I
ppp
Picc.
pp
To Fl.
Ob. I
ppp
mp
pp
Ob. II
ppp
mp
pp
Cl. I
ppp
Cl. II
Bsn.
pp
Cbsn.
Hn. I
Hn. II
C Tpt.
pp
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
pp
Vla. II
Vc. I
Vc. II
Db.

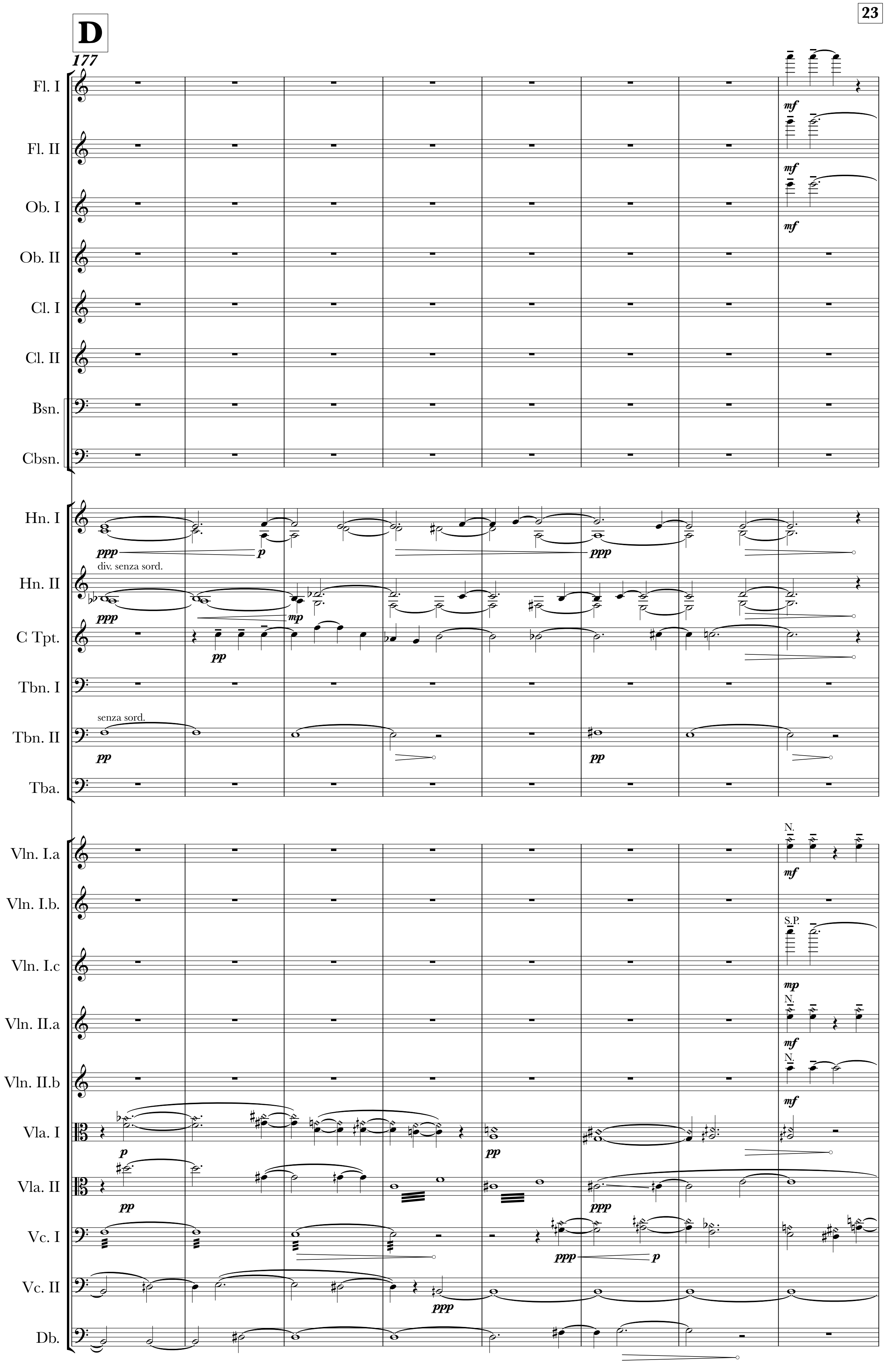

137
Fl. I
Fl. II
Flute
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
div.
N. arco
S.P.
M.S.P.
N.
3
ppp
pp
p
mp

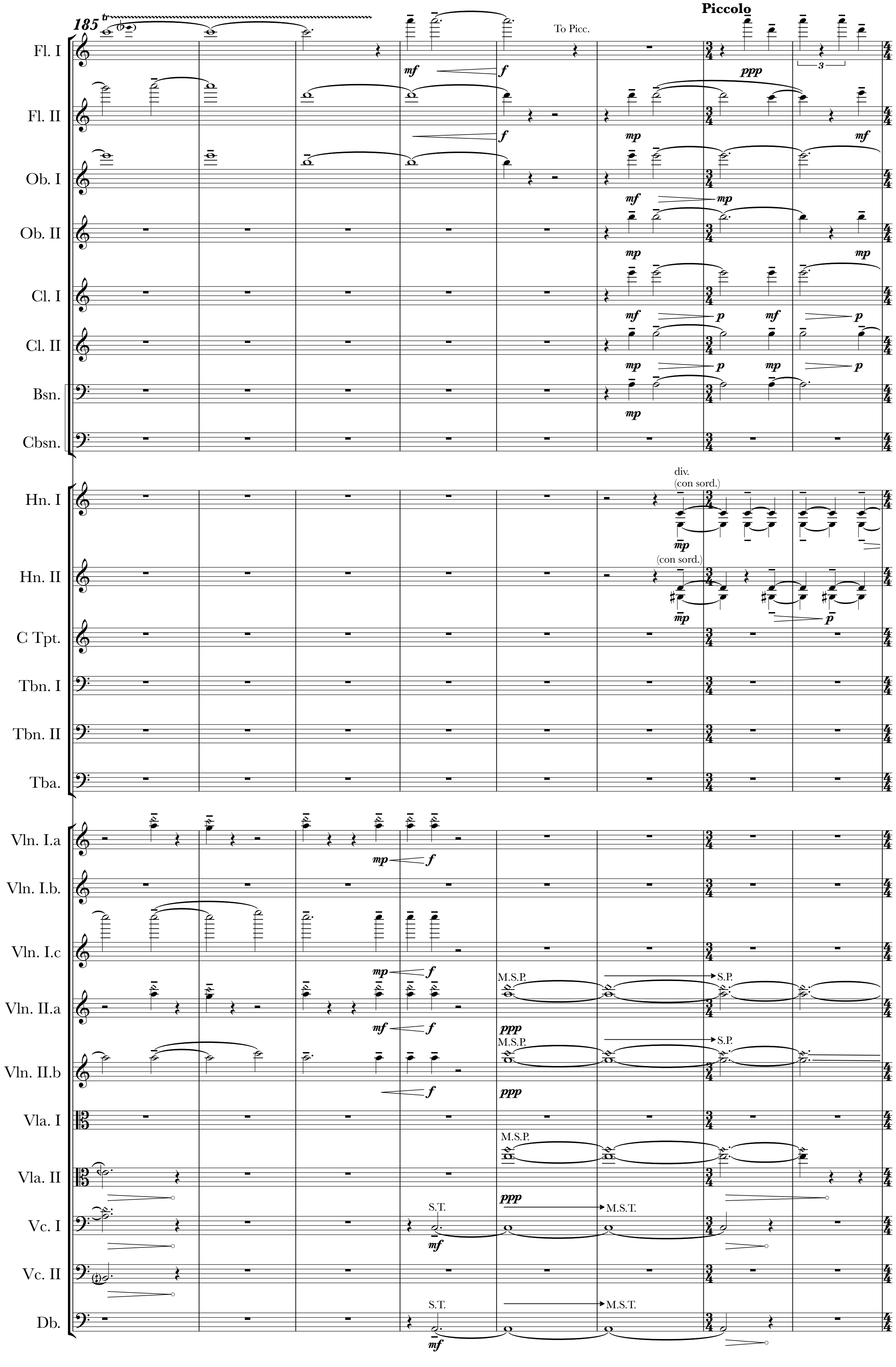

145
C
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
ppp
pp
p
pppp
mp
tr
III
IV
II
N. harm. trill
M.S.P.
S.P.
3

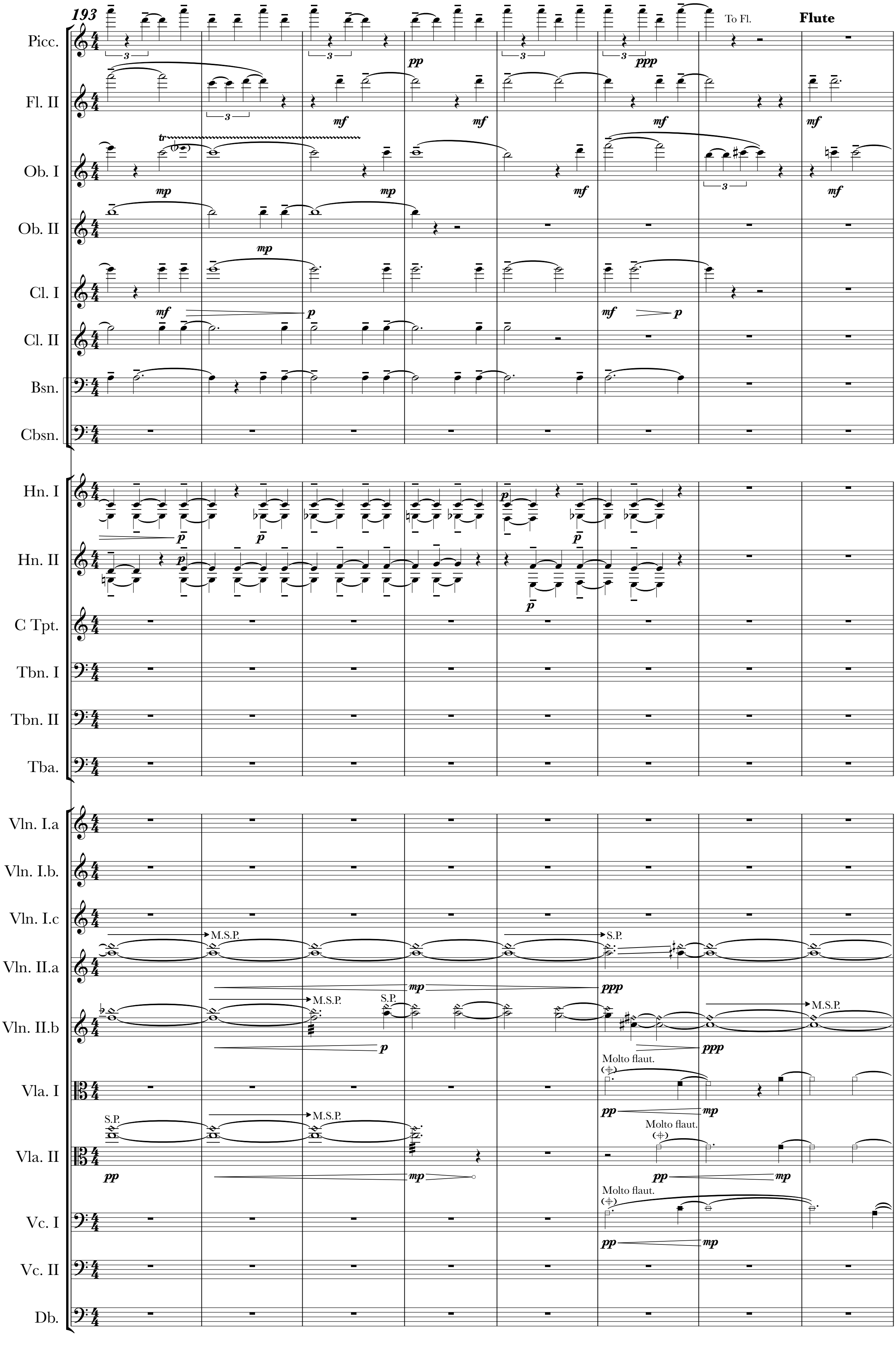

153
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
(tr)
tr
mf
ppp
p
mp
pp
3
a2 Breath
div.
III
IV
N. harm. trill
Molto flaut.

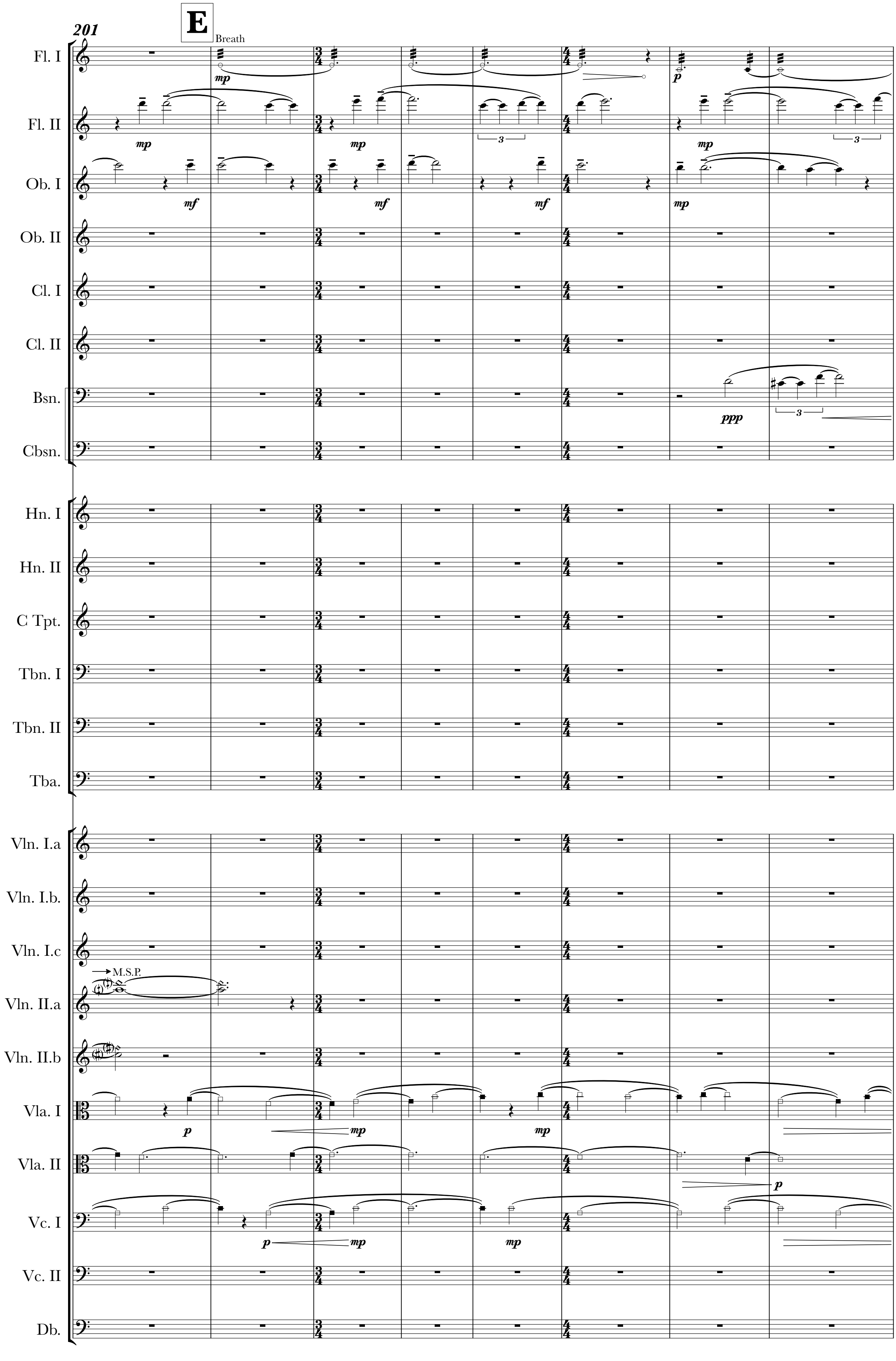

161
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
con sord.
con sord.
S.P.
S.P.
M.S.P.
S.P.
N.
S.T.
S.P.
N.
arco
3
3
p
pp
pp
p
p
pp
pp
mp
pp
mp
pp
mp
ppp
ppp
ppp
pp
mf
mp
mf
mp
mf
mf
pp
mf
pp
p
pp
mf
pp
pp
pp
mf
pp
mp
pp
mp
ppp

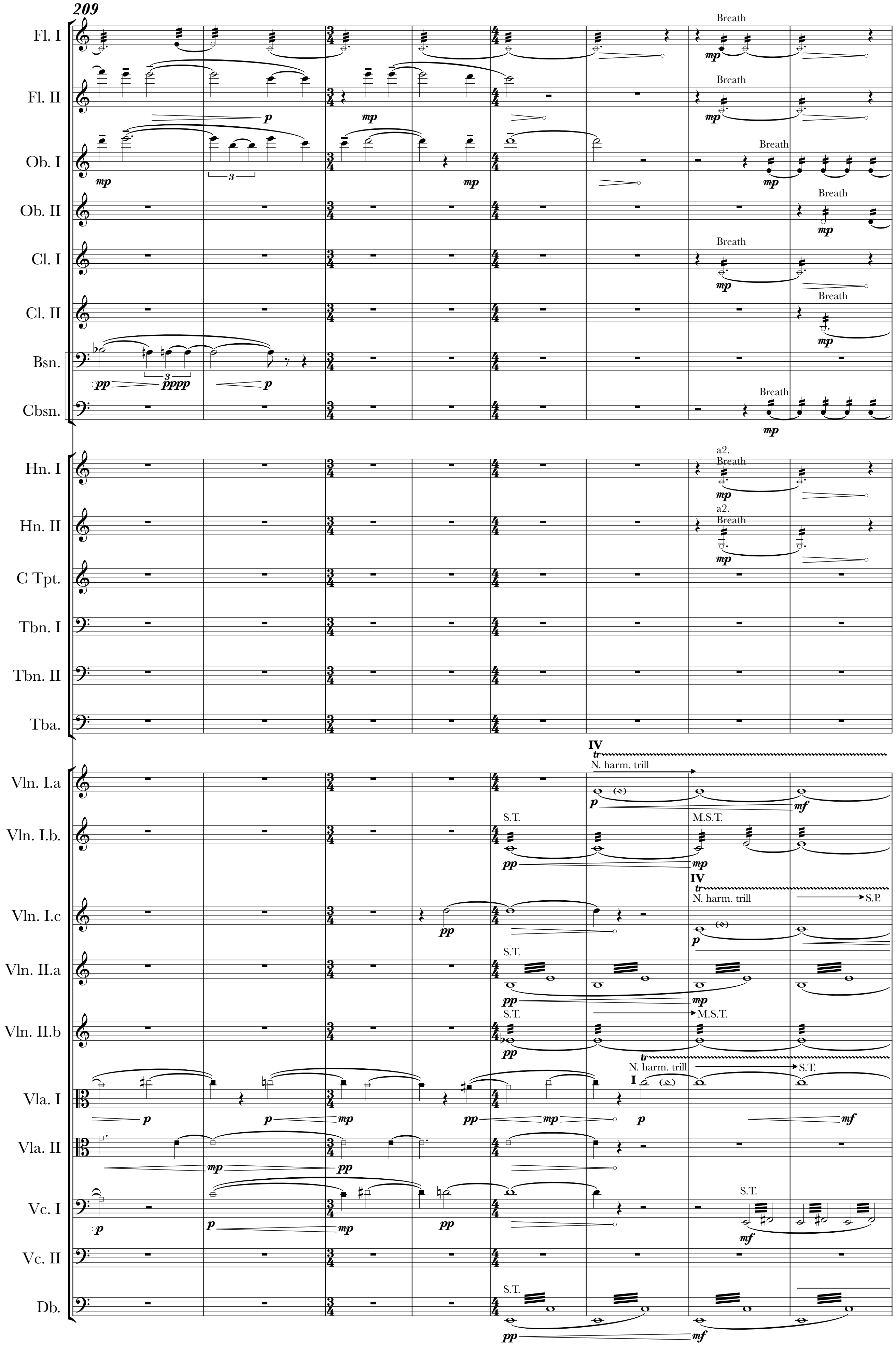

169
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
div. senza sord.
M.S.P.
S.P.
p
mf
mp
pp
ppp
3

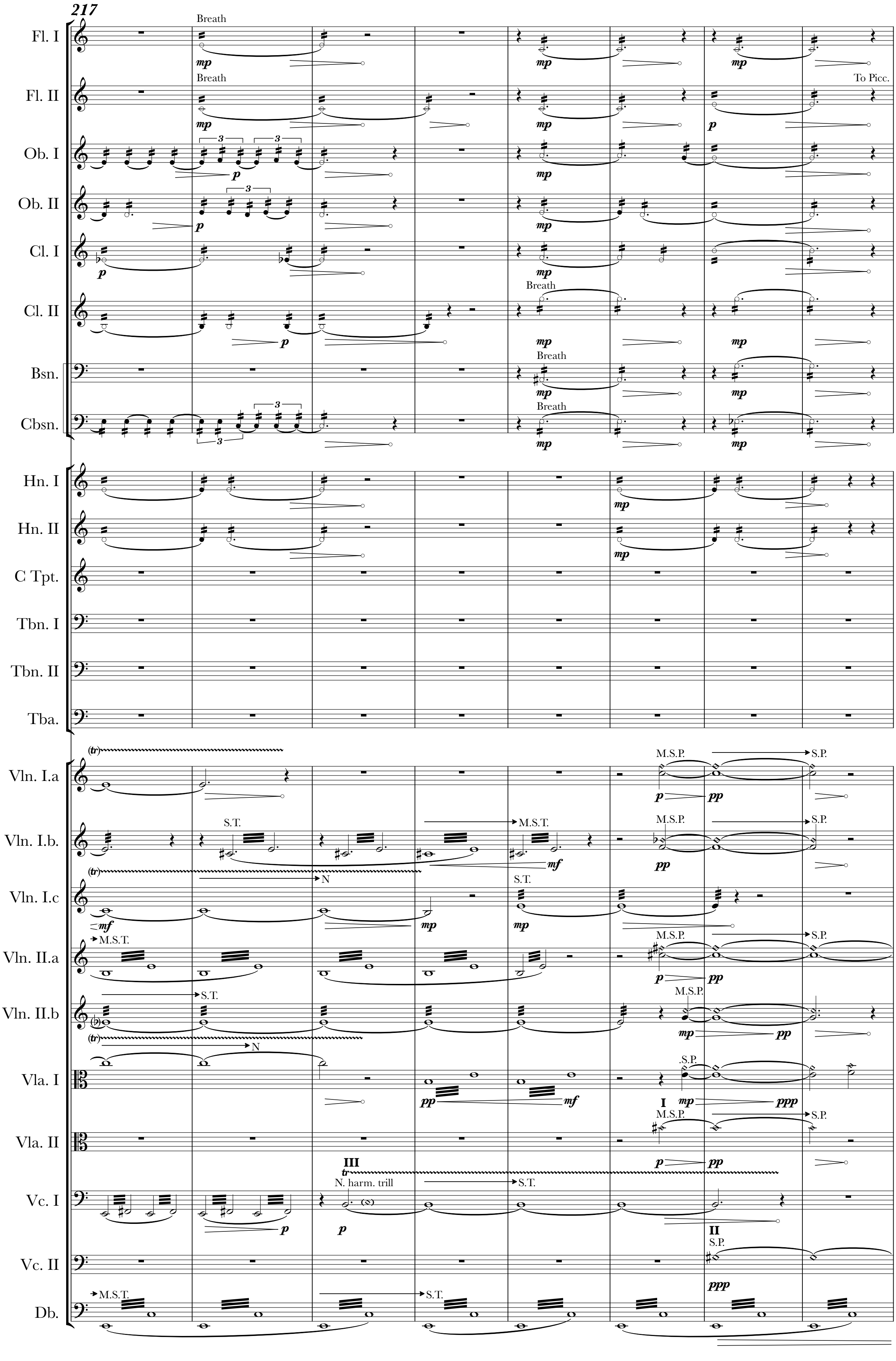

D
177
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
mf
mf
mf
ppp
p
ppp
div. senza sord.
ppp
mp
pp
senza sord.
pp
pp
N.
mf
S.P.
mp
N.
mf
N.
mf
p
pp
pp
ppp
ppp
p
ppp

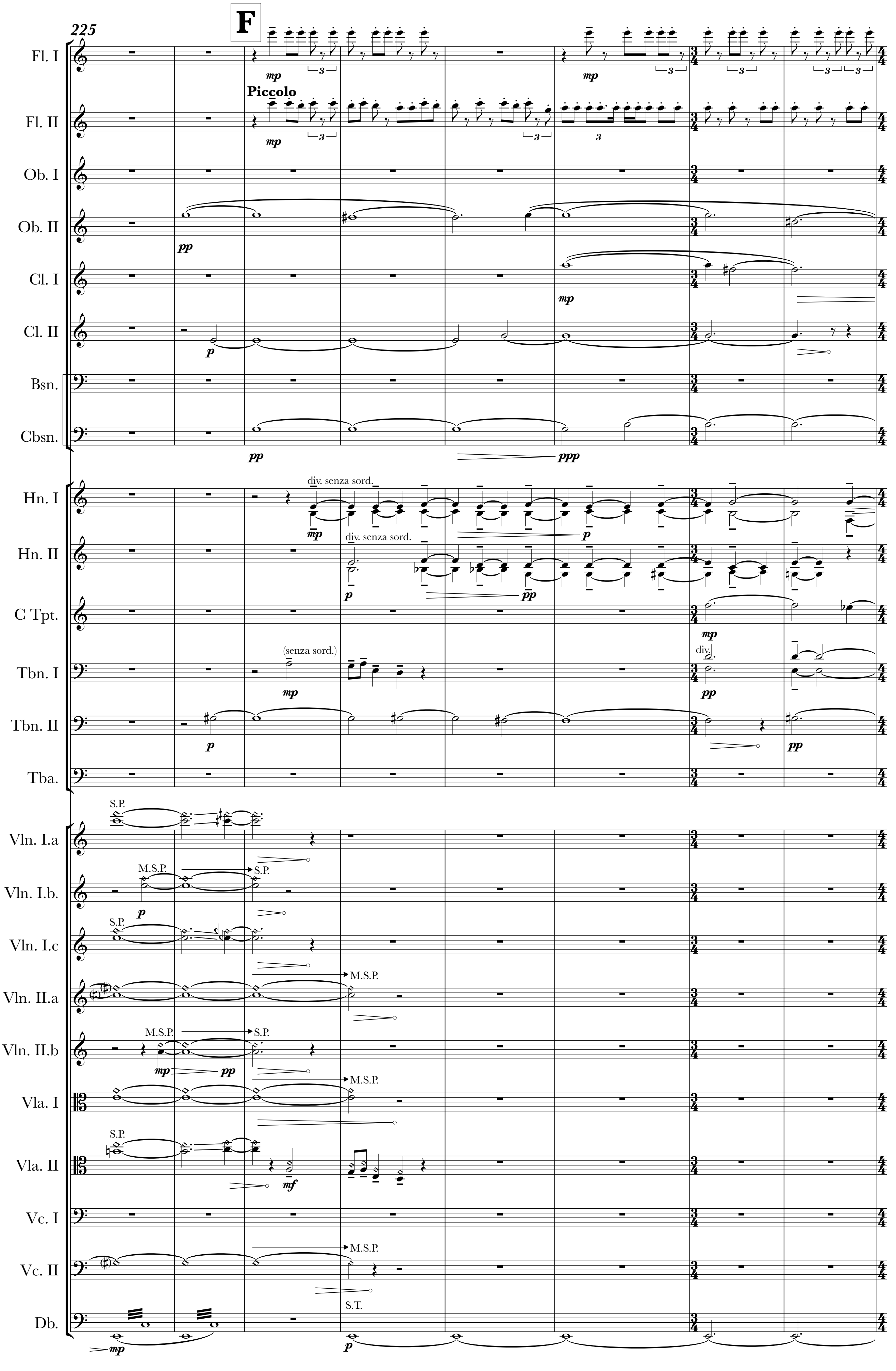

185
tr
To Picc.
Piccolo
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
mf
f
ppp
3
mp
mf
mp
p
div.
(con sord.)
M.S.P.
S.P.
S.T.
M.S.T.

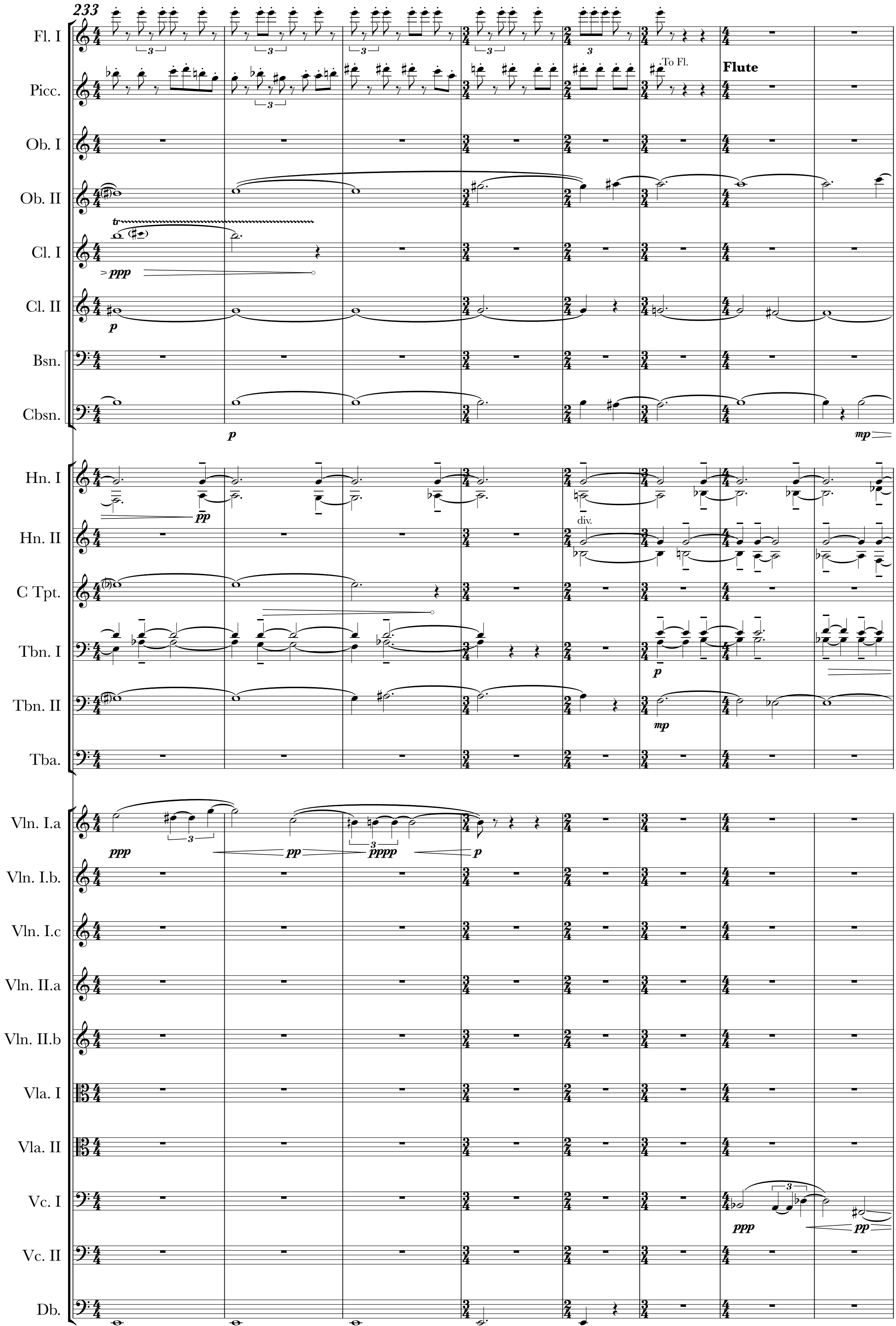

193
Picc.
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
To Fl.
Flute
3
pp
ppp
mf
mp
tr
p
M.S.P.
S.P.
ppp
Molto flaut.
(+)

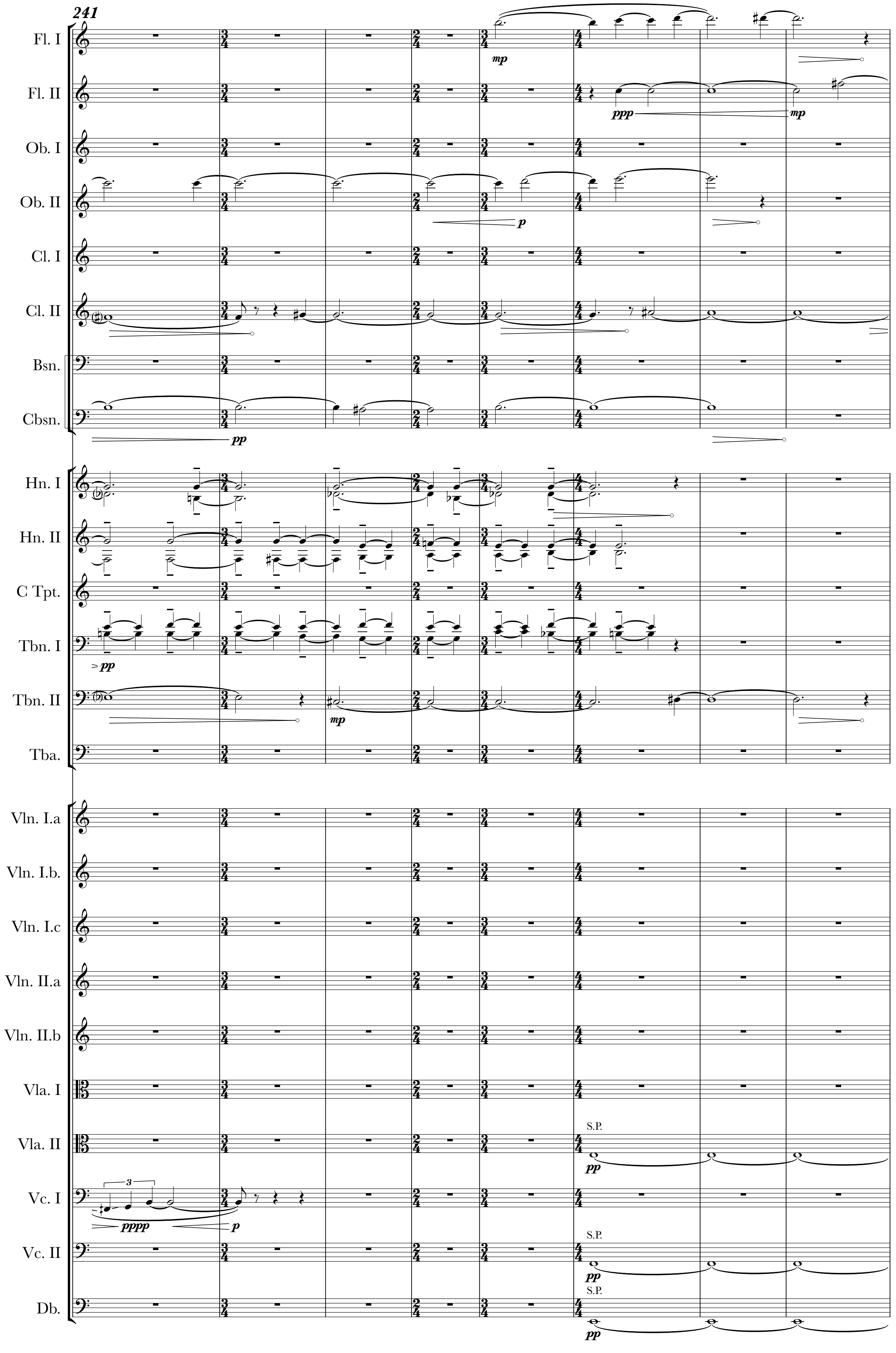

201
E
Breath
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
M.S.P.
mp
mf
p
ppp
3

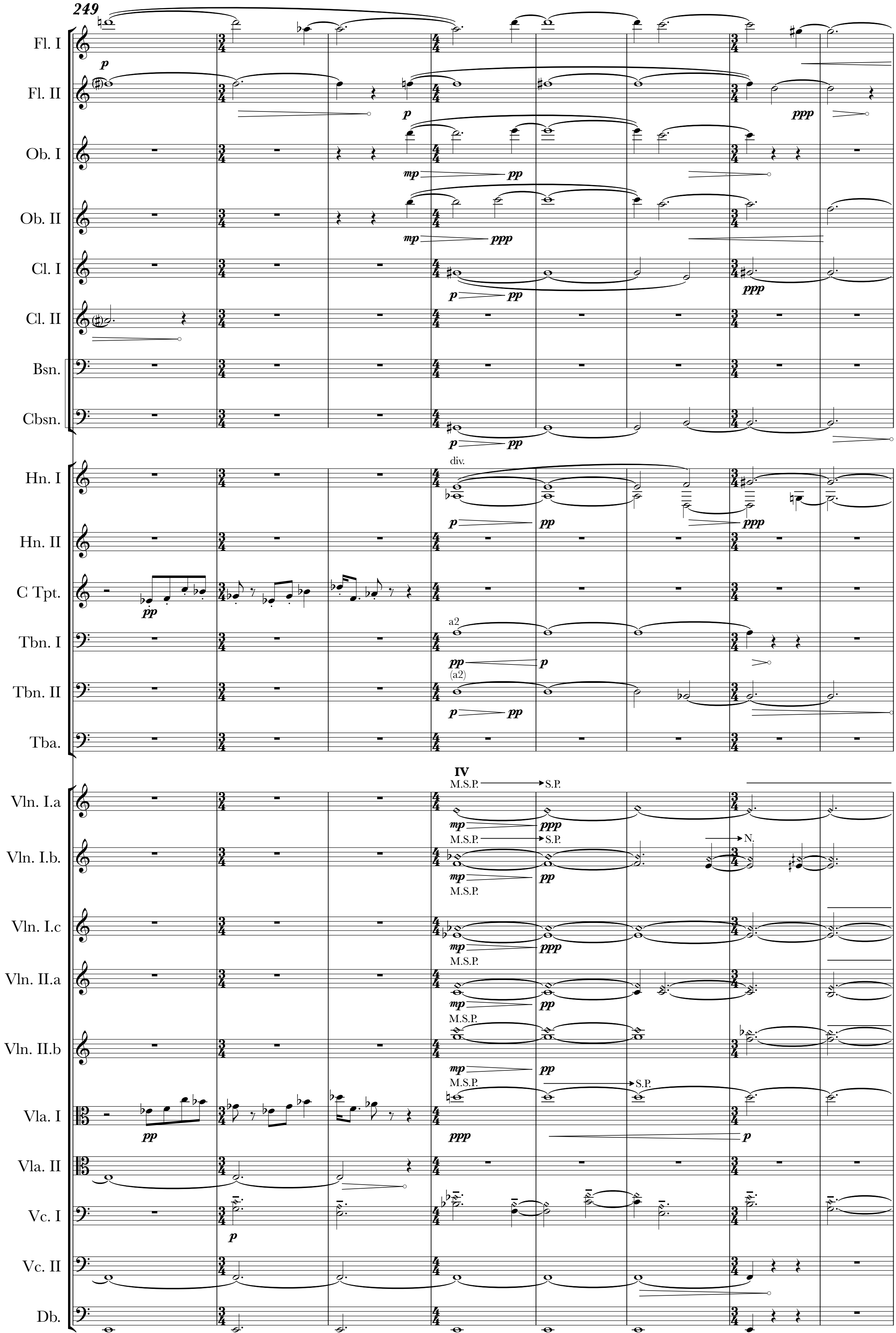

209
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
Breath
a2.
IV
N. harm. trill
S.T.
M.S.T.
S.P.
I
mp
p
pp
pppp
mf

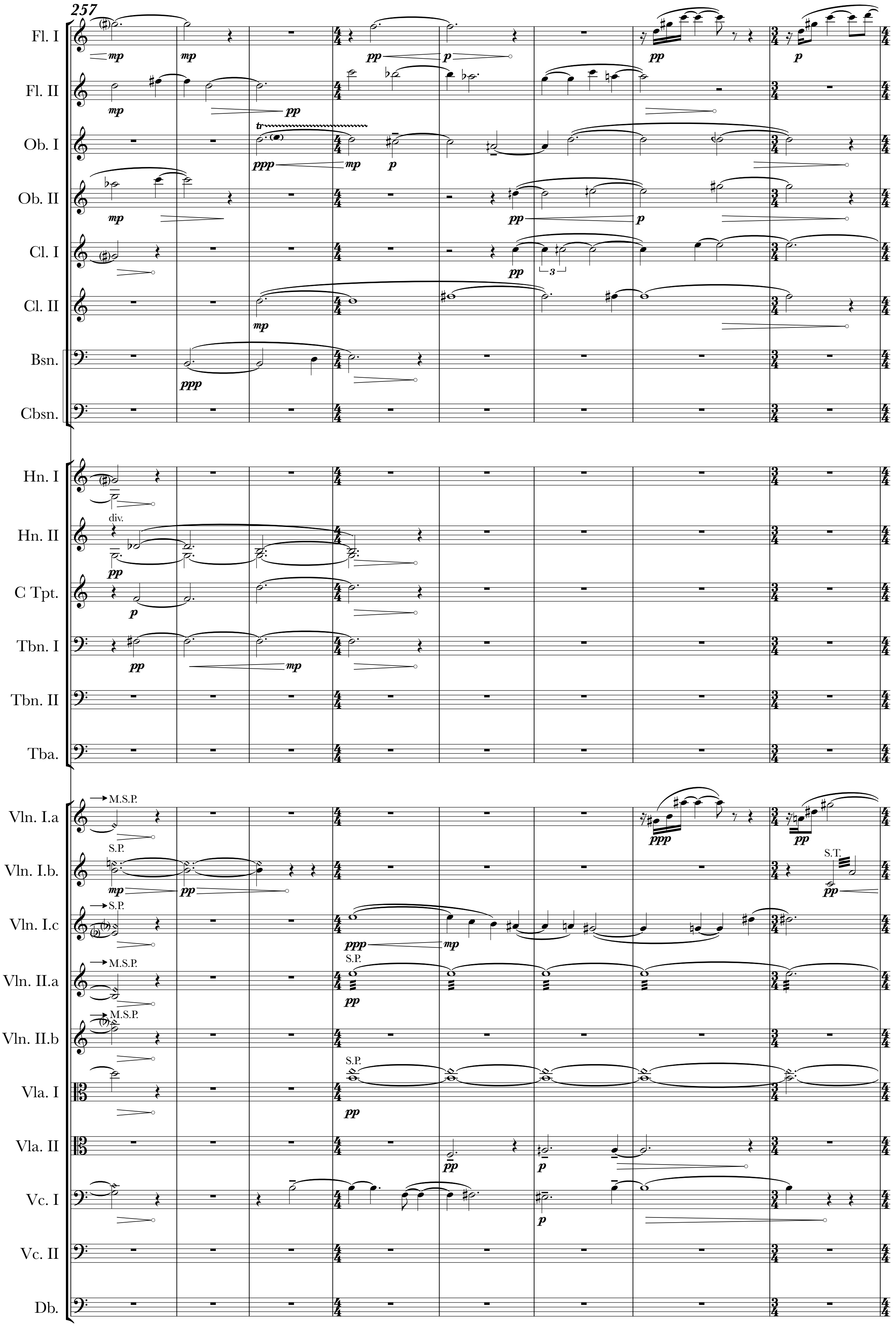

217
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
Breath
To Picc.
M.S.T.
S.T.
M.S.P.
S.P.
N
III
N. harm. trill
I
II
mp
p
mf
pp
ppp

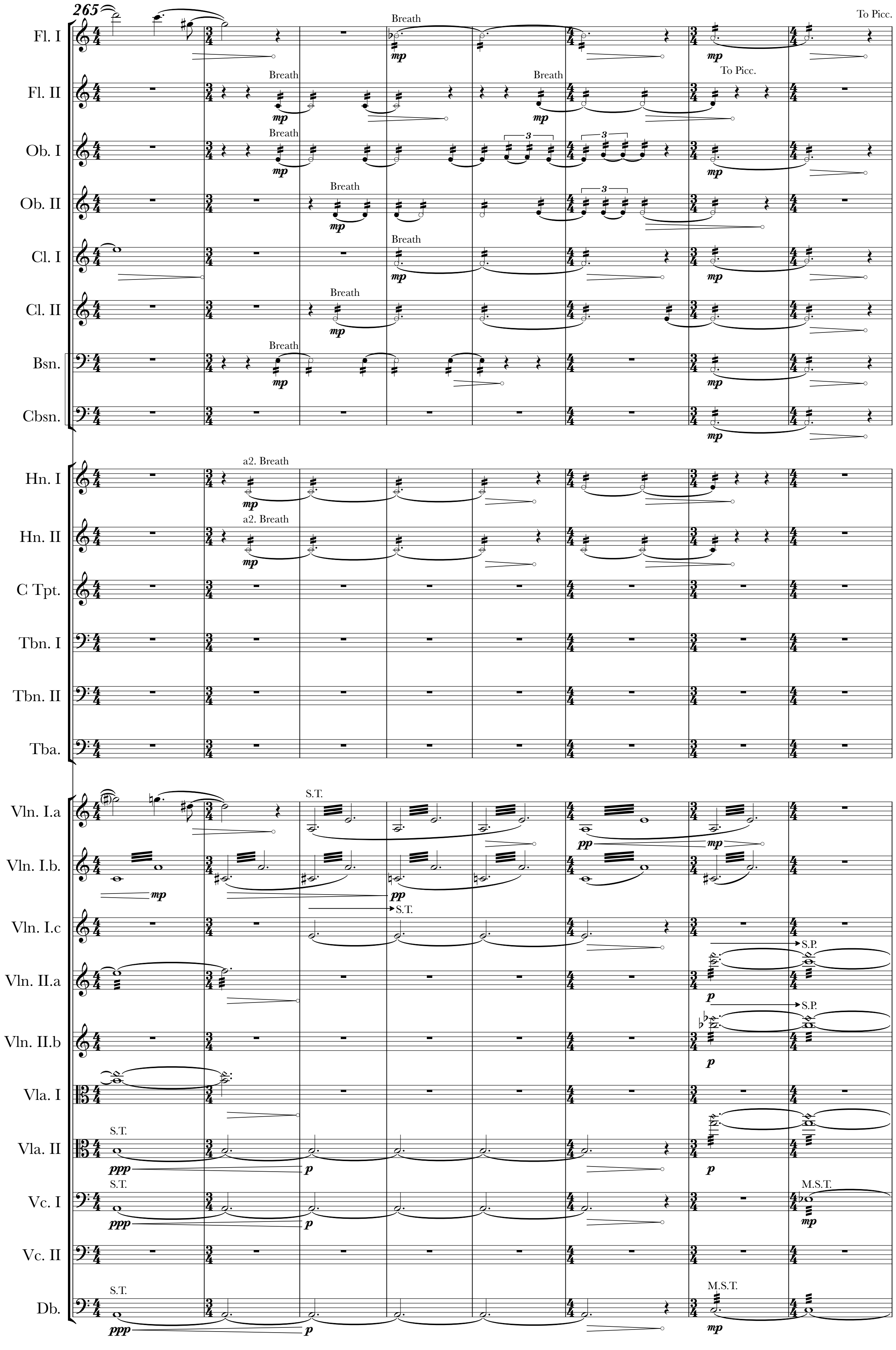

225
F
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
Piccolo
mp
pp
p
ppp
mf
div. senza sord.
(senza sord.)
div.
S.P.
M.S.P.
S.T.
3

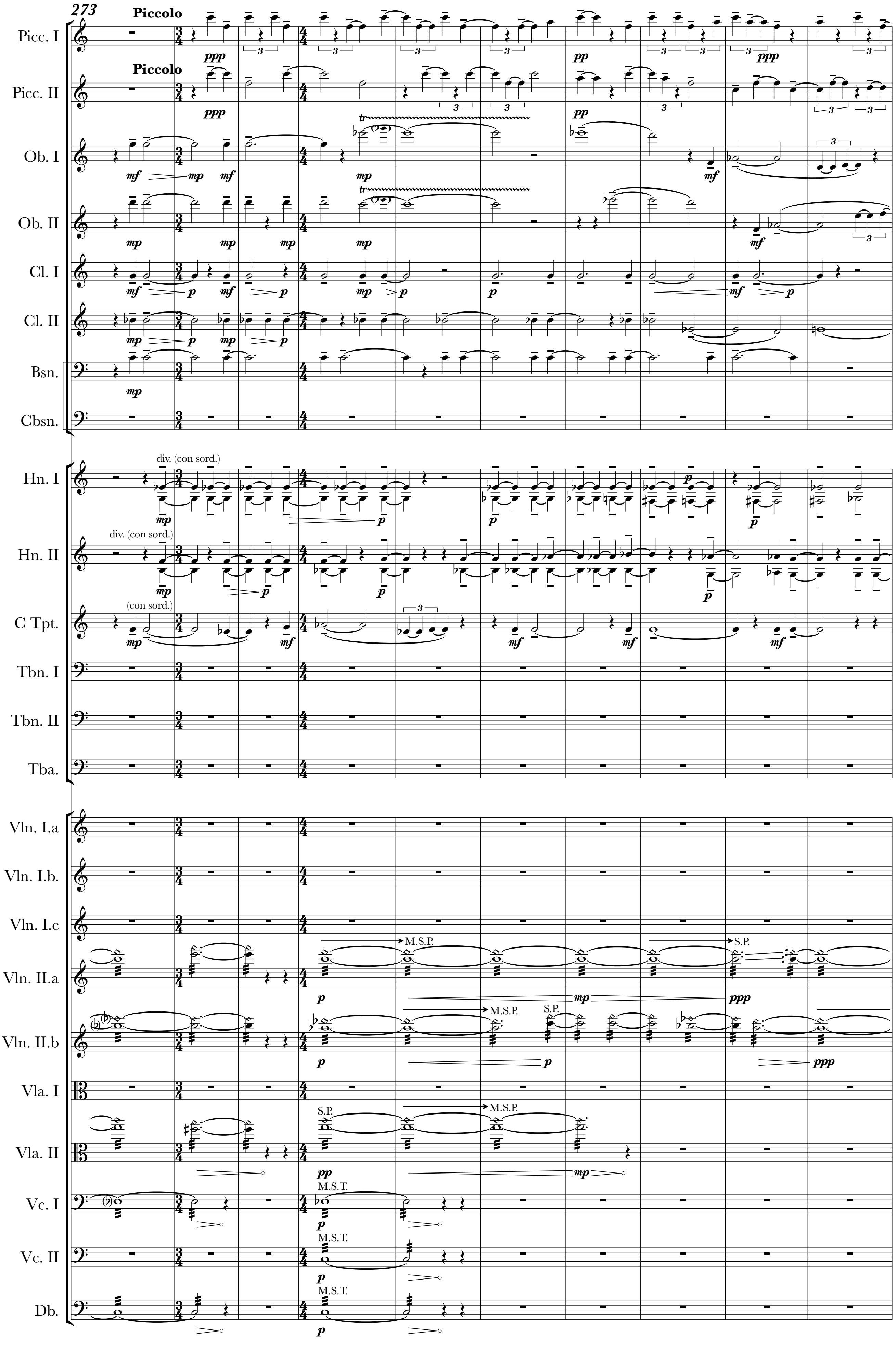

233
Fl. I
Picc.
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
To Fl.
Flute
tr
ppp
p
mp
pp
div.
pppp
3

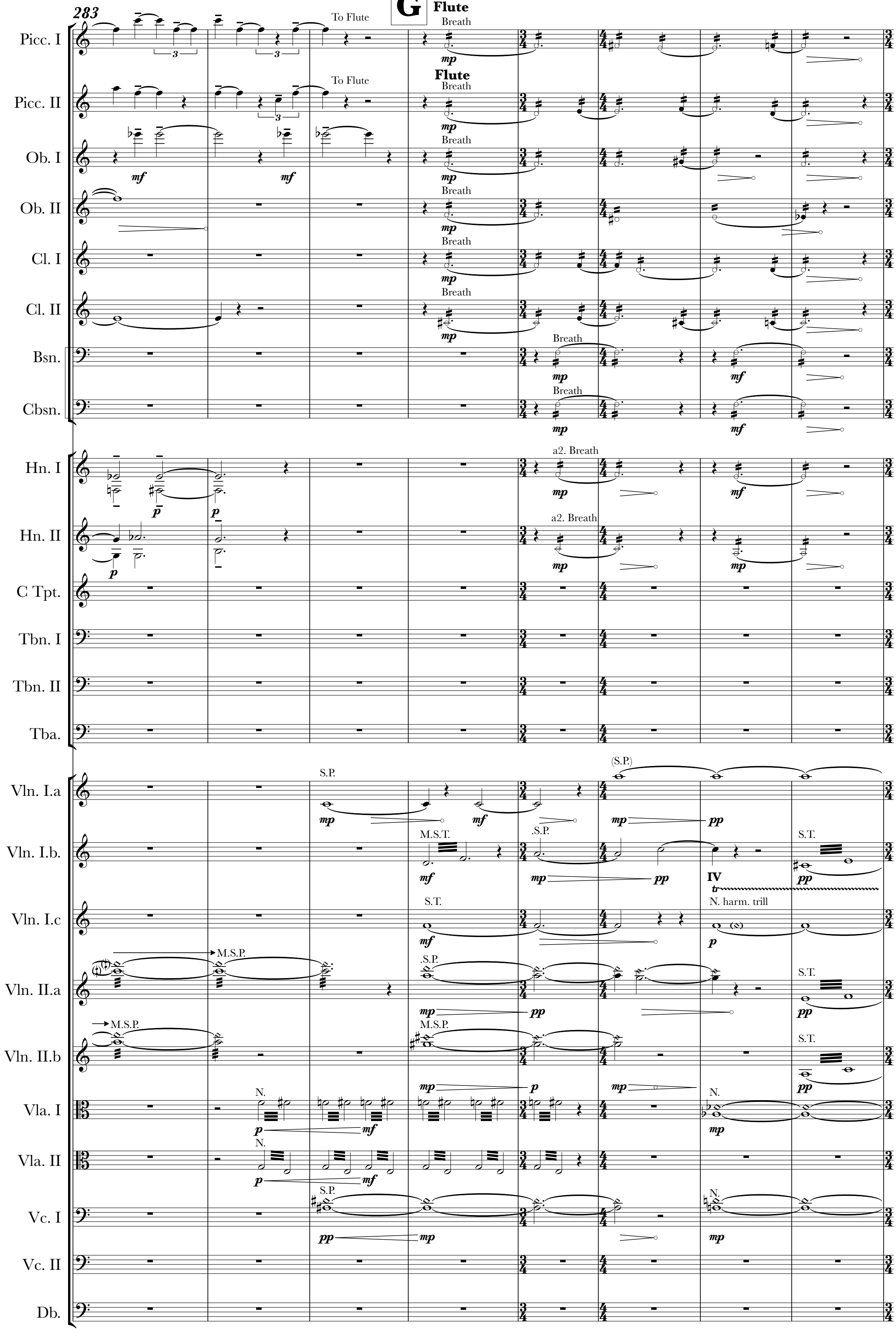

241
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
mp
ppp
p
pp
mp
pppp
S.P.
3

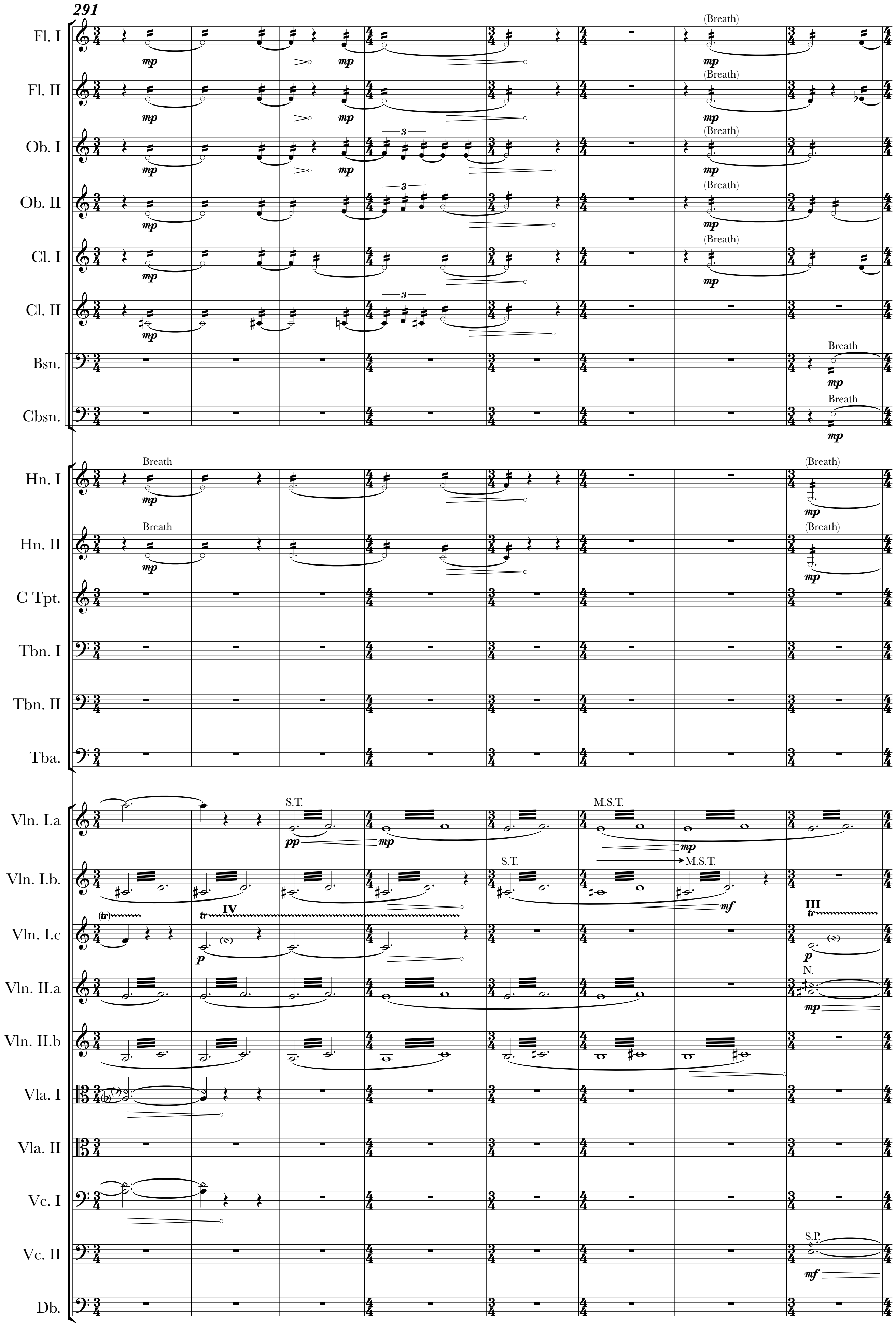

249
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
p
ppp
mp
pp
div.
a2
(a2)
IV
M.S.P.
S.P.
N.

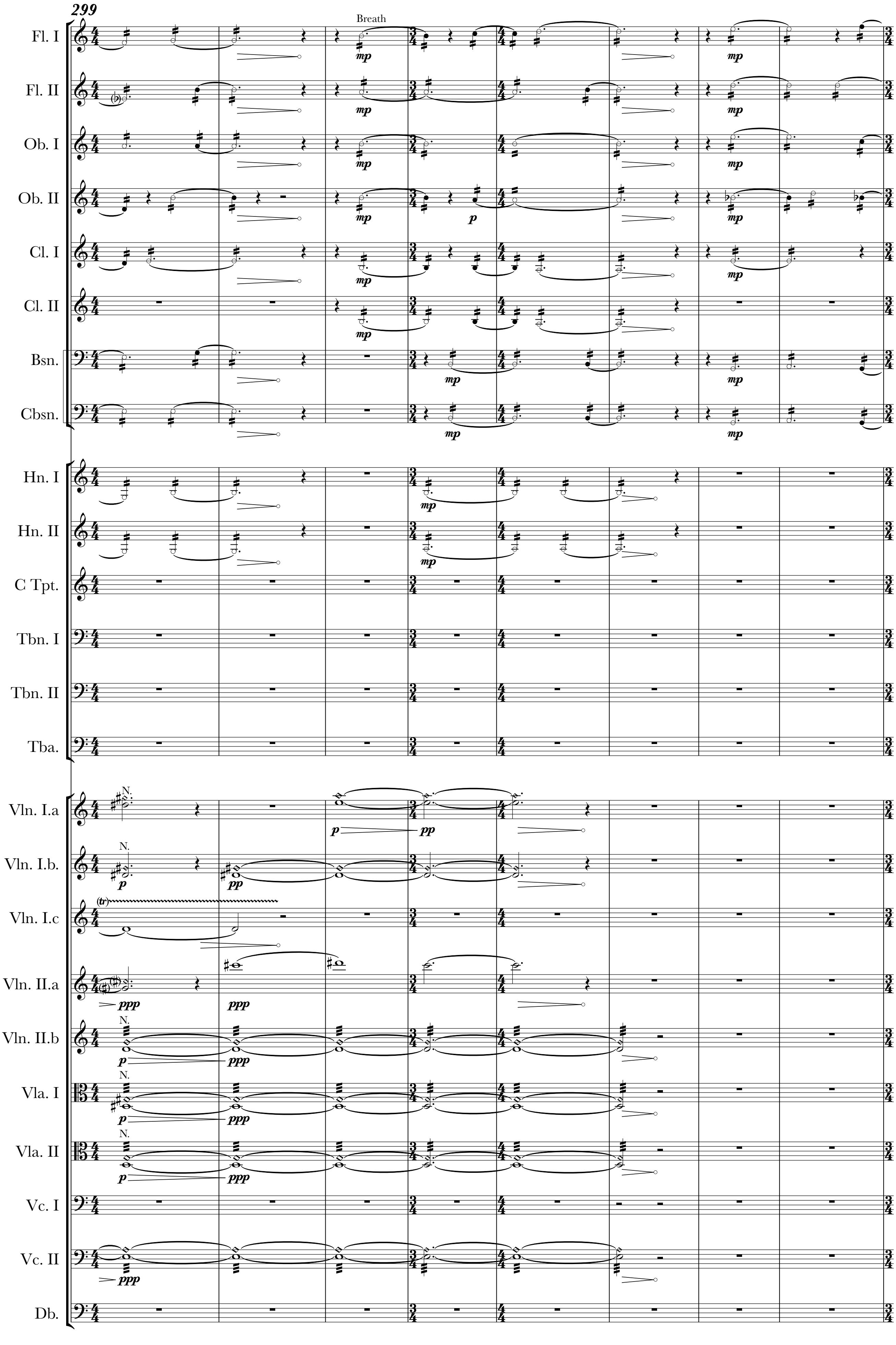

257
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
mp
pp
p
ppp
tr
3
div.
M.S.P.
S.P.
S.T.

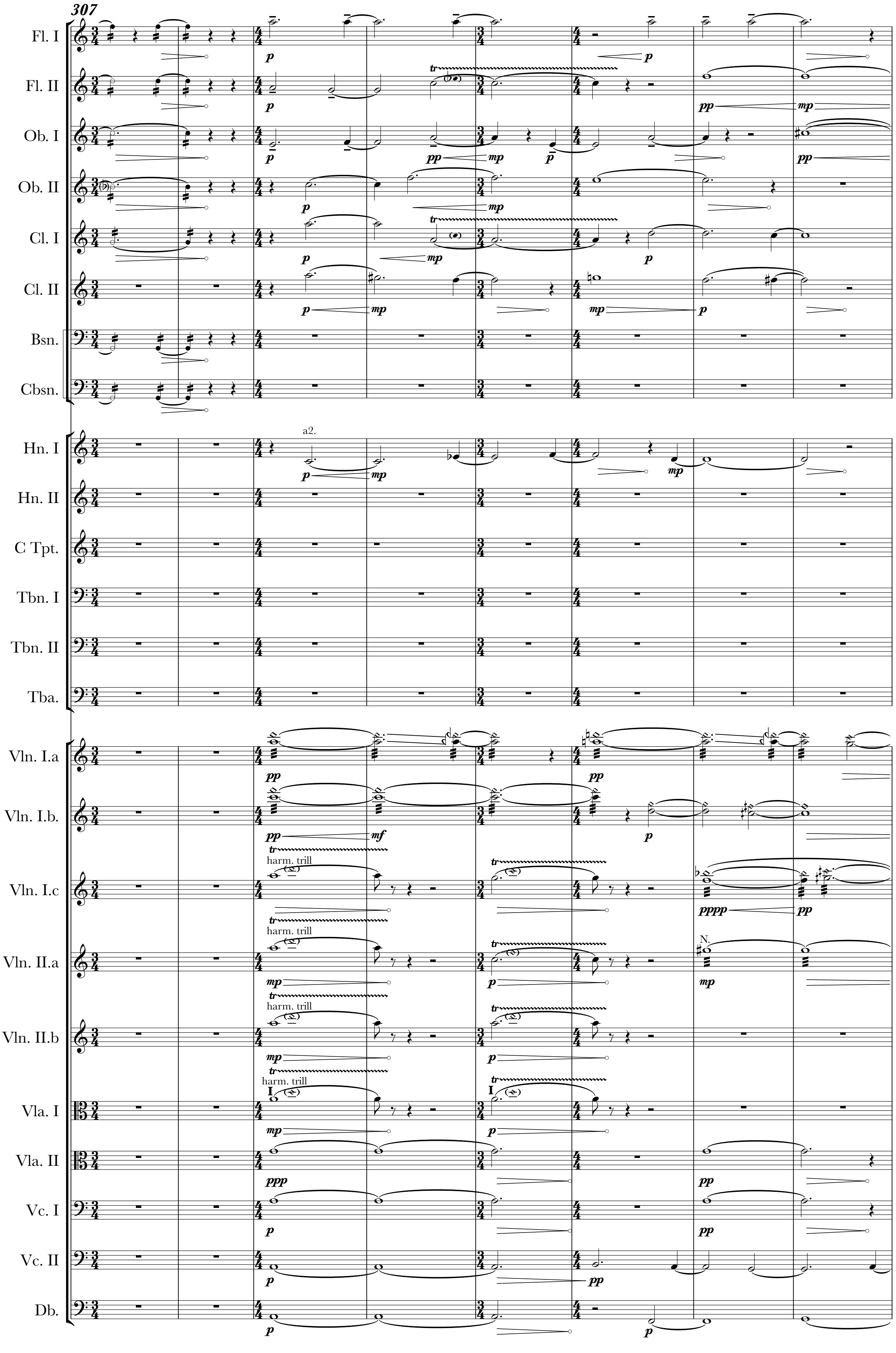

265
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
Breath
To Picc.
a2. Breath
S.T.
S.P.
M.S.T.
mp
pp
ppp
p
3

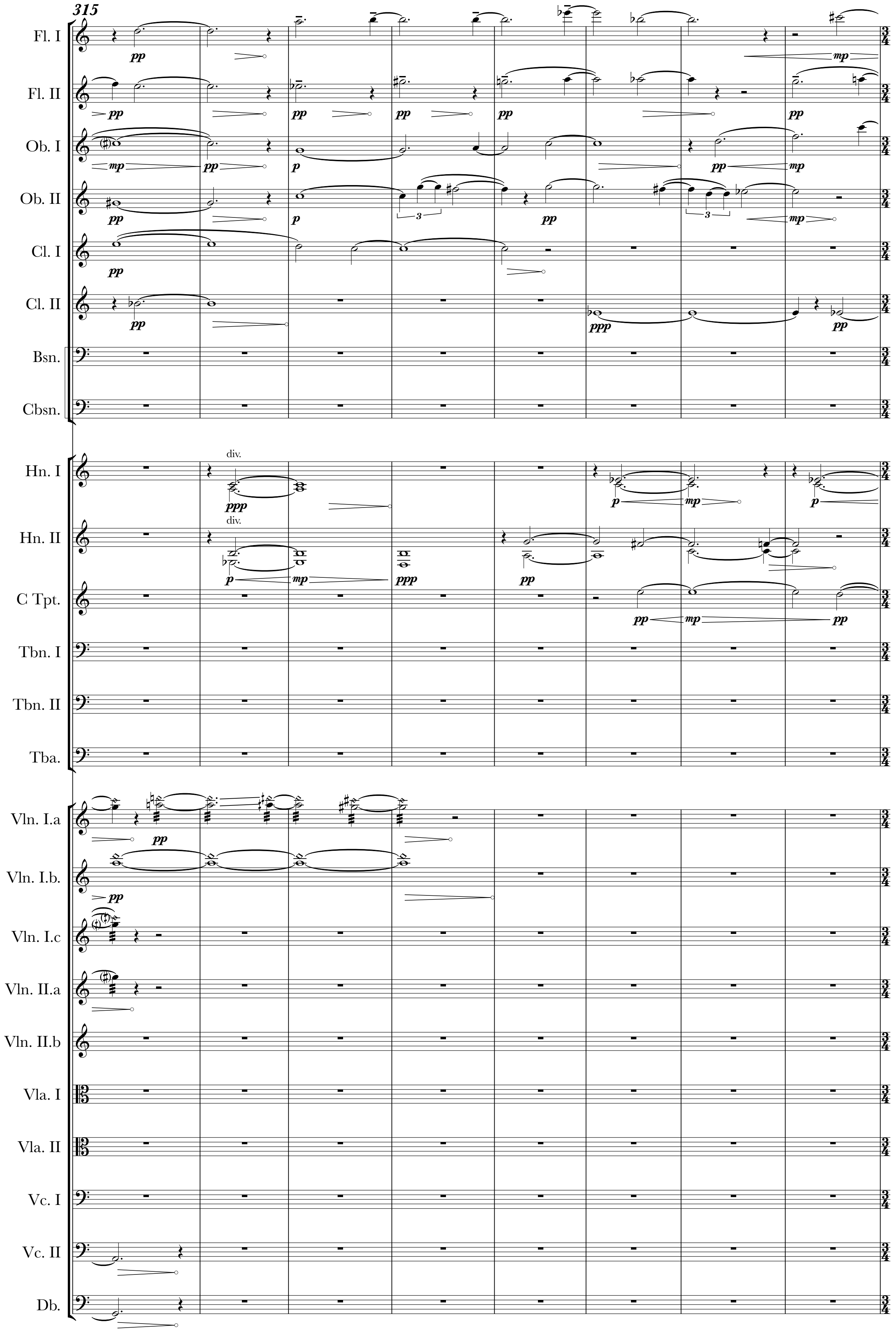

273
Piccolo
Picc. I
ppp
pp
ppp
Piccolo
Picc. II
ppp
pp
Ob. I
mf
mp
mf
tr
mp
mf
Ob. II
mp
mp
mp
tr
mp
mf
Cl. I
mf
p
mf
p
mp
p
p
mf
p
Cl. II
mp
p
mp
p
Bsn.
mp
Cbsn.
div. (con sord.)
Hn. I
mp
p
p
p
div. (con sord.)
Hn. II
mp
p
p
p
(con sord.)
C Tpt.
mp
mf
mf
mf
mf
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
M.S.P.
S.P.
p
mp
ppp
Vln. II.b
M.S.P.
S.P.
p
p
ppp
Vla. I
Vla. II
S.P.
M.S.P.
pp
mp
Vc. I
M.S.T.
p
Vc. II
M.S.T.
p
Db.
M.S.T.
p
3

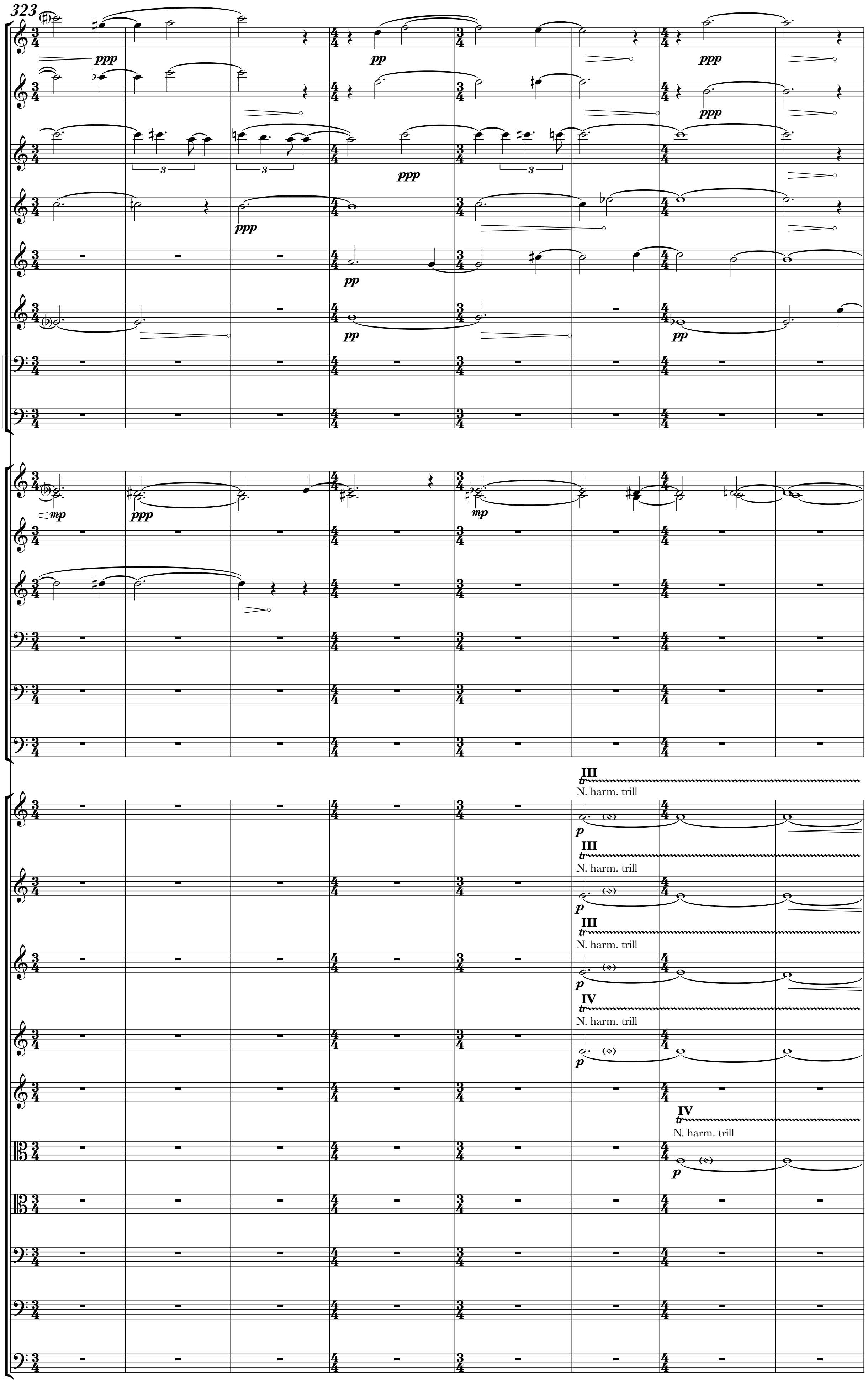

283
G
Flute
Breath
To Flute
Picc. I
Picc. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
a2. Breath
(S.P.)
S.P.
M.S.T.
.S.P.
S.T.
IV
N. harm. trill
M.S.P.
N.
mp
mf
p
pp

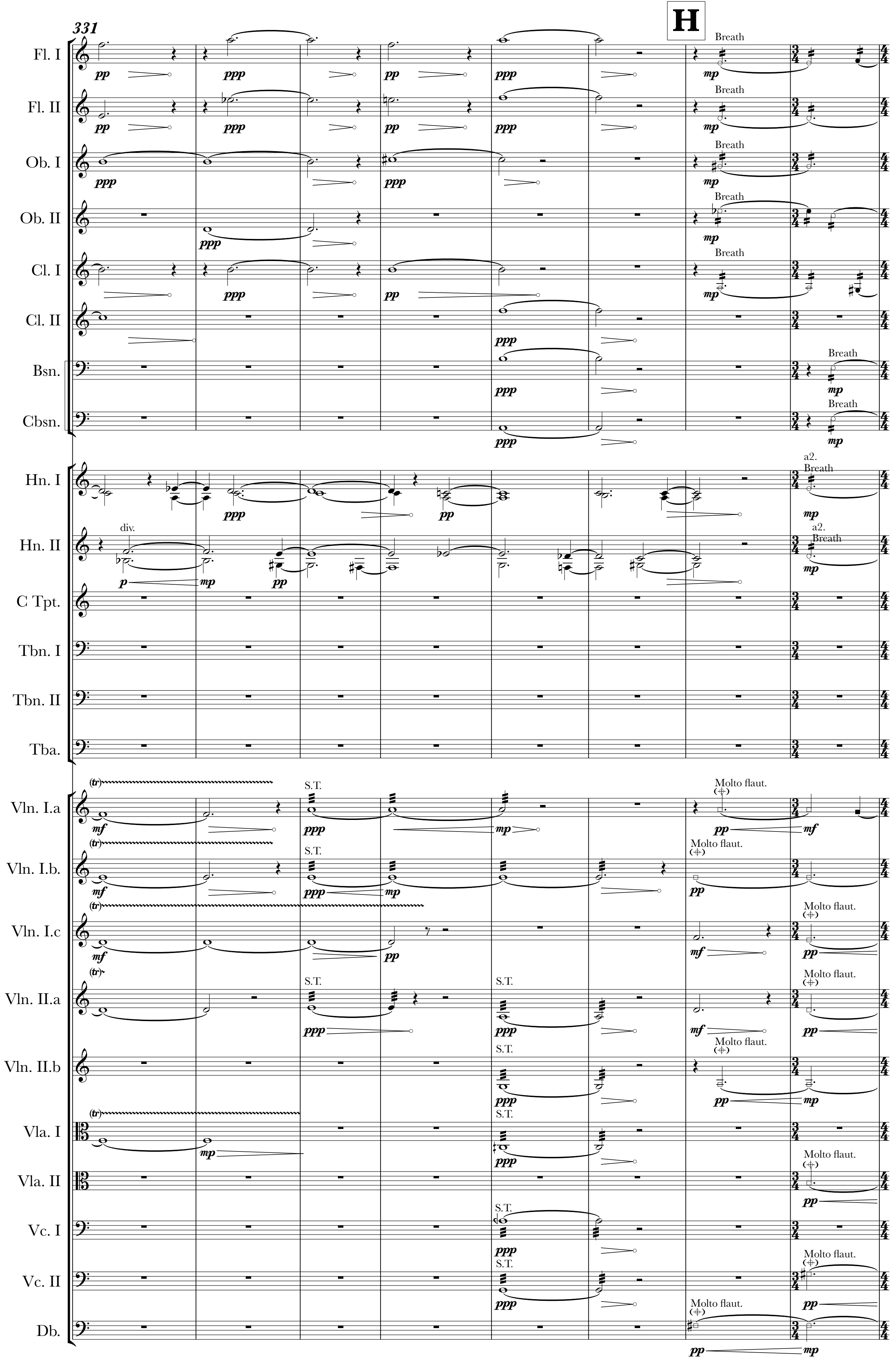

291
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
mp
(Breath)
Breath
3
S.T.
M.S.T.
pp
mf
p
(tr)
tr
IV
III
N.
S.P.

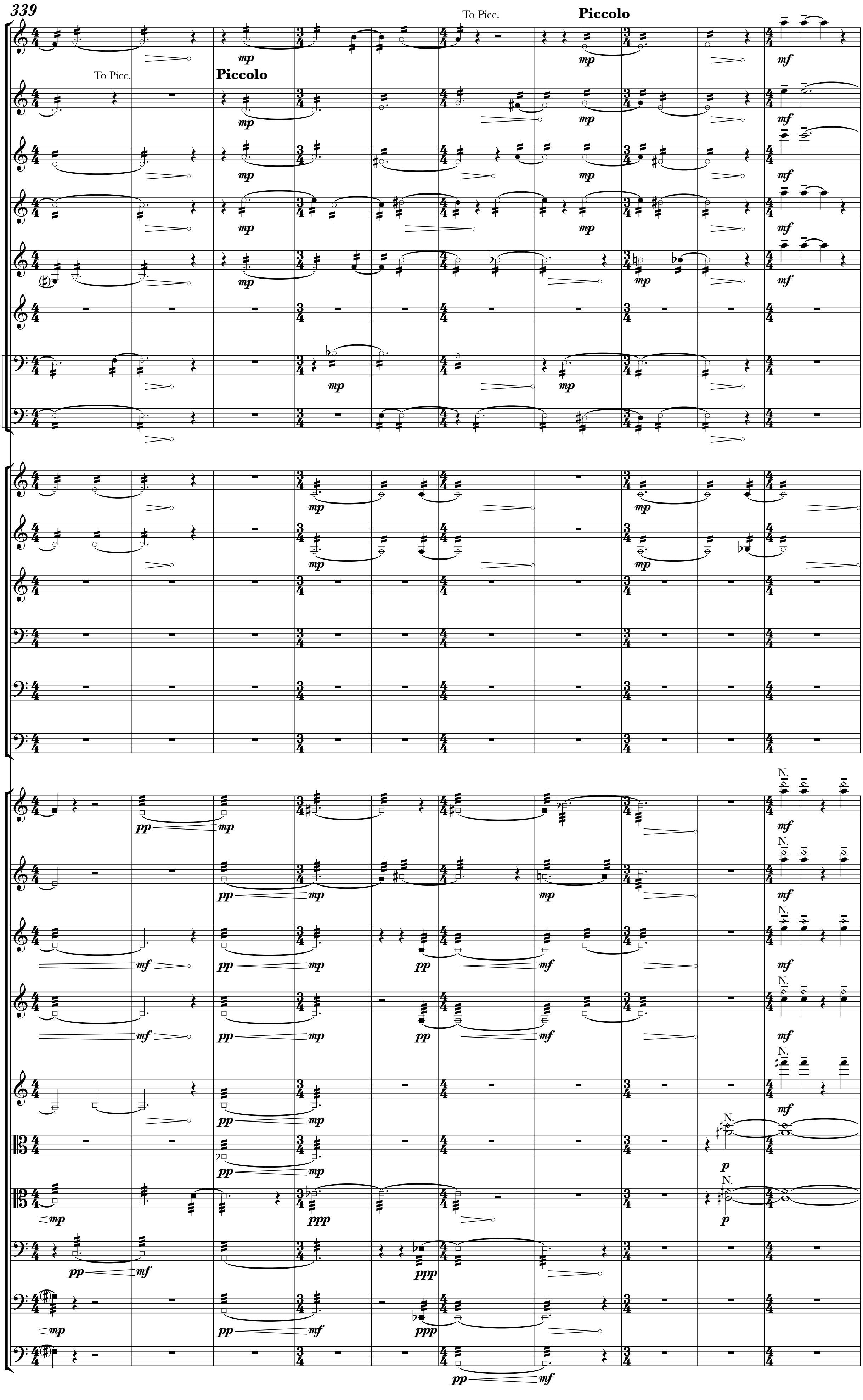

299
Breath
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
mp
p
pp
ppp
N.
(tr)

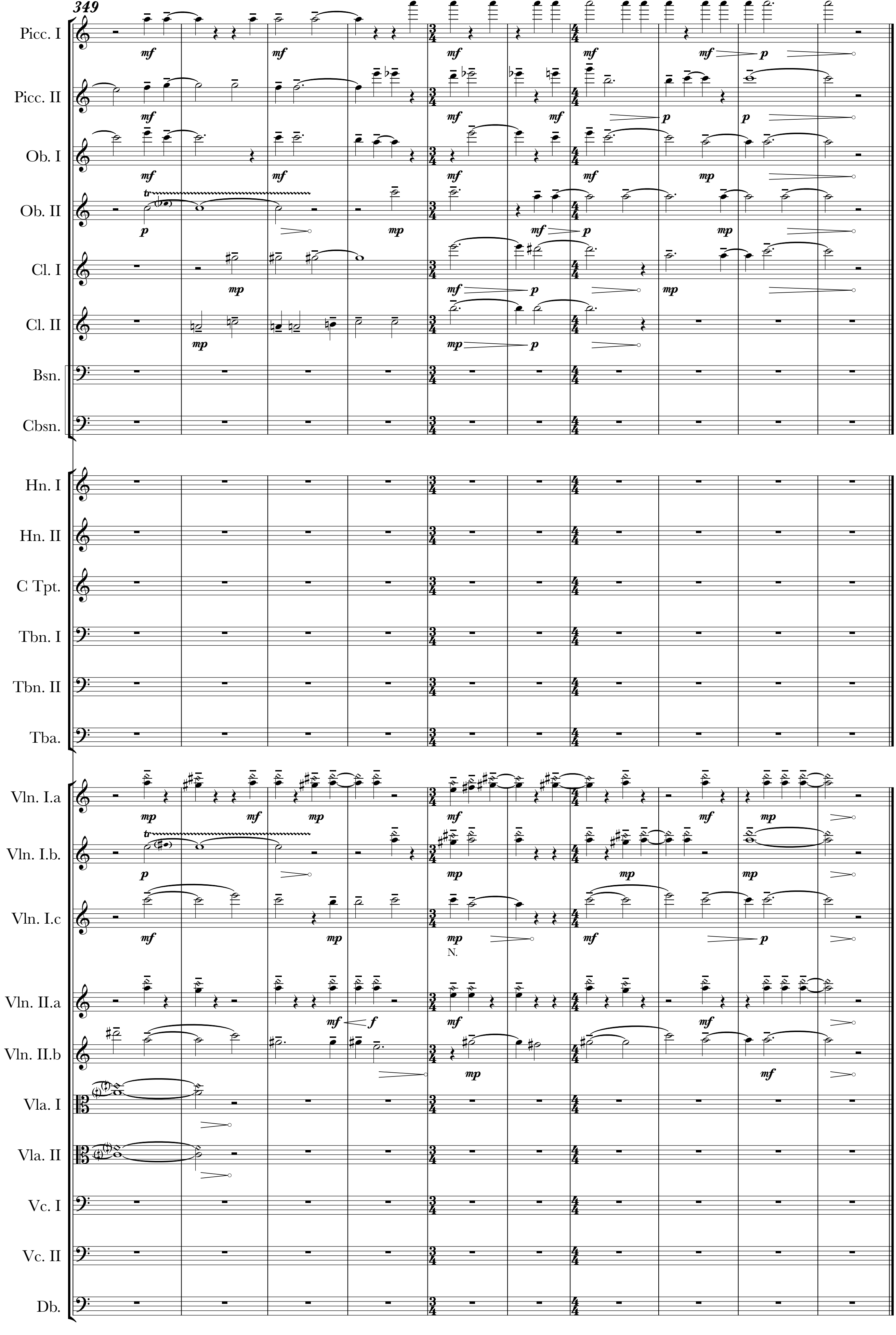

307
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
a2.
harm. trill
tr
N.
I
p
pp
ppp
pppp
mp
mf


315
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
div.
div.
pp
mp
p
ppp
3


323
Fl. I
ppp
pp
ppp
Fl. II
ppp
Ob. I
3
3
ppp
3
Ob. II
ppp
Cl. I
pp
Cl. II
pp
pp
Bsn.
Cbsn.
Hn. I
mp
ppp
mp
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
III
tr
N. harm. trill
Vln. I.a
p
III
tr
N. harm. trill
Vln. I.b.
p
III
tr
N. harm. trill
Vln. I.c
p
IV
tr
N. harm. trill
Vln. II.a
p
Vln. II.b
IV
tr
N. harm. trill
Vla. I
p
Vla. II
Vc. I
Vc. II
Db.


331
H
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
Breath
a2.
div.
(tr)
S.T.
Molto flaut.
pp
ppp
p
mp
mf


339
To Picc.
Piccolo
To Picc.
Piccolo
Fl. I
Fl. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
mp
mf
pp
ppp
p
N.


349
Picc. I
Picc. II
Ob. I
Ob. II
Cl. I
Cl. II
Bsn.
Cbsn.
Hn. I
Hn. II
C Tpt.
Tbn. I
Tbn. II
Tba.
Vln. I.a
Vln. I.b.
Vln. I.c
Vln. II.a
Vln. II.b
Vla. I
Vla. II
Vc. I
Vc. II
Db.
mf
mp
p
f
tr
N.