Source Bonding, ‘Music’ & ‘Sound’ in Electroacoustic Composition and the Audiovisual Sound canvas

Ph.D. Thesis and Portfolio

(Volume I – Written Thesis)

Thesis submitted in accordance with the requirements of the University of Liverpool for the degree of Doctor in Philosophy

By

Daniel J Fallon

Monday 3rd September 2018

Acknowledgments

I wish, firstly, to thank my supervisor, Matthew Fairclough, for his calm guidance and well-natured encouragement through the challenge of producing a Ph.D.

I also thank The Arts and Humanities Research Council. Their continued support of the arts and humanities creates invaluable opportunities for researchers and practitioners, and is of immeasurable value to society at large.

I am grateful to the musicians of the Royal Liverpool Philharmonic Orchestra, Ensemble 10/10, and the Pixels Ensemble, and to Hilary Browning for lending their talent to the project and breathing life into much of the work.

For her stalwart companionship, I thank my partner, Ella, who has weathered the highs and the lows along with me.

Finally, I wish to thank my parents, Liz and Jim Fallon, who have nurtured my life-long musical interest and provided unwavering support, encouragement and sanctuary through the challenges of Ph.D. candidacy and all others prior.

This PhD was funded by the Arts and Humanities Research Council

Arts & Humanities
Research Council

Abstract

Denis Smalley's theories of Spectromorphology, Source Bonding, and Bonding Play can help us to understand the malleable relationships between sounds and their perceived sources in the context of electroacoustic music, and how these relationships can enrich and be enriched through their application within audiovisual media. (Smalley, D, 1997) These theories interact with the ideas and practices of composers working within fields such as Sonorism and Soundscape Composition in a way that helps to build the concept of an audiovisual sound canvas, adapted from the definition posited by Julio d'Escrivan's. (d'Escrivan's, J, 2009) A sound canvas in which sounds generated by musical instruments and all manner of 'non-musical' objects and environments may integrate into one aesthetic entity and challenge the conventional distinctions between 'sound' or 'noise' and 'music'. A sound canvas, too, in which the expectations and tensions surrounding the abstract, intrinsic properties of sounds, and their extrinsic links to perceived sources may be reinforced, stretched or broken by way of creating, gratifying and undermining a listener's expectations, thus building and resolving tensions like tonal dissonance and consonance in harmonic music. By weaving such a sound canvas into an audiovisual production one may liberate 'sound' beyond naturalistic representation and bring greater depth to the relationships between sounds and sources via the structured, visual representation of sound-making objects. In turn, such a sound canvas may enrich a visual montage and abolish any hierarchy between audiovisual elements, instead fostering aesthetic unity between 'sound', 'music' and moving image. These ideas are born-out in the portfolio of compositions, which represents the cultivation and realization of this vision in practice.

Contents

Written Thesis

Introduction....................5

Practical Compositional Approach....................10

An Adaptation of Julio d'Escrivan's Sound Canvas....................12

Portfolio Example: Rhythm, Motif, and Melody in a Sound Canvas for *Berlin: Symphony of a Metropolis, Acts I and V*....................15

Denis Smalley's Source Bonding, Bonding Play, and Gesture....................16

Gesture and Gestural Surrogacy....................18

Portfolio Example: Gestural Surrogacy and Bonding Play in *The Near Woods*....................19

Portfolio Example: Aesthetic Connections, Gesture, and 'Humanity' in *Urban Cycle*....................21

Sonoristics & Sonorism....................24

Portfolio Examples: Sonorism and its Legacy in *Cityscape, Eylenda*: Extended Techniques, Sound Mass, and Musique Concrète Instrumentale....................29

The Soundscape & Acoustic Ecology....................31

Portfolio Examples: The Influence of Soundscape Composition in the Portfolio of Compositions......36

The Unified Audiovisual Sound Canvas: Concluding Examples....................39

Portfolio Example: Audiovisual Sound Canvas in *The Near Woods*....................42

Bibliography....................48

Portfolio of Compositions - Audio and Audiovisual Media…………………….DATA DVD

1) Cityscape (audio)

2) Selfie I (audio)

3) Selfie II (video)

4) Urban Cycle (audio)

5) Berlin: Symphony of a Metropolis – Act I (video)

6) Berlin: Symphony of a Metropolis – Act V (video)

7) Eyelenda (video)

8) The Near Woods (video)

Source Bonding, 'Music' & 'Sound' in Electroacoustic composition and the Audiovisual Sound Canvas

Theoretical and Practical Context

Introduction

This commentary details the way Denis Smalley's theories of Spectromorphology, Source Bonding, and Bonding Play can help us to understand the malleable relationships between sounds and their perceived sources in the context of electroacoustic music, and how these relationships can enrich and be enriched through their application within audiovisual media, rendering greater aesthetic unity between 'sound[1]', 'music', and visual montage. Indeed, conventional distinctions between 'sound' and 'music' may breakdown or disappear entirely. I will discuss the way Dennis Smalley's theories interact with the ideas and practices of composers working within fields such as Sonorism and Soundscape Composition and the way they have inspired the aims and practices of this project. These themes are borne out in the portfolio of compositions, examples from which are interspersed throughout this thesis and, as will be explained, each composition can be understood as a step towards the realization of their union in an adapted notion of Julio d'Escrivan's sound canvas.

This project has emerged from the kindred appreciation of sound as a creative medium seen in the distinct fields of film sound and electroacoustic composition. It seeks to erode the distinction between 'sound' and 'music' as creative media, often upheld in film sound, via a form of electroacoustic composition that allows instrumental and *environmental sounds*[2] to form an aesthetic *whole.* A compositional practice through which 'sound' and 'music' may even switch roles and assume different identities in the perceptions of an audience. A violin may carry a musical idea, or contribute to the sound of a passing train, or both simultaneously, while the sound of a passing train may constitute music. As two elements in a composition interact in this way, they can achieve an aesthetic and referential unity.

---

[1] 'Music', of course, is usually understood as 'sound'. However, in general, for the purposes of this thesis, the term *sound,* like the term *noise,* is used to distinguish between the general category of sounds inferred to be non-musical and those that are inferred to be 'music'.

[2] For the purposes of this thesis, the term *environmental sound* refers to any sound with a real, implied or illusory physical connection to a character, object or environment depicted or implied in a Soundscape Composition, or by the imagery within an audiovisual construct.

This kind of electroacoustic composition may incorporate the expectations and tensions surrounding the abstract, intrinsic properties of sounds, and their extrinsic links to perceived sources. A listener may associate a sound with an object, but this sound can be presented in myriad ways: detached from its source; processed to obscure its link with its origin; manipulated to contribute to the sonic impression of an entirely different object; or as an element in an abstract, musical structure. A composer has the power, therefore, to reinforce, stretch or break the perceived bonds between sounds and their sources, thus gratifying or undermining a listener's expectations regarding the behaviour of various sounds, as a way of building and resolving tensions like tonal dissonance and cadence in harmonic music.

Audiovisual media offers a very rich context in which to apprehend 'sound' and 'music' in this kind of aesthetic unity. The visual presence of a sound-making object accompanying its sound creates a strong, arguably primordial, association between the two, which can make these tensions all the more significant and assist in more closely knitting the audio and the visual. There is an important kinship between aspects of film sound and certain schools of 20th Century music composition from which this thesis has grown. Soundscape Composition, for example, which has been particularly influential in this project, is concerned with the bonds between sounds and their sources, and "the interrelationships between sound, nature and society" (Westerkamp, H, 2002, p. 52). This view reflects the perspectives of earlier composers who, at the turn of the 20th Century saw heightening tensions surrounding conventional, Western distinctions between 'sound' and 'music', and a renewed appetite for new musics with new sounds. Luigi Russolo's Futurist Manifesto laid out, in 1913, the need for an 'art of noise' (Russolo, L, 1967)**,** Edgard Varèse sought to redefine music as 'organized sound' (Varese, E, and Wen-Chung, C, 1966); Pierre Schaeffer would later bring everyday sounds into the abstract realm with musique concrète (Battier, M, 2007); while Joseph Chominski worked to overthrow the Polish musicological norm by raising timbre to higher structural importance within instrumental music. (Granat, Z, 2009, p. 822) Meanwhile, the invention of sound cinema raised new questions about our relationship with this rich medium that complemented new musical ideas and fueled the advancement of audio technology. Béla Balázs' views fall into pertinent concert with those of such composers when he writes:

> "The sounds of our day-to-day life we hitherto perceived merely as a confused noise, as a formless mass of din, rather as an unmusical person may listen to a symphony... The sound film will teach us to analyze even chaotic noise with our ear and read the score of life's symphony... It is an old maxim that art saves us from chaos." (Balázs, B, 1985, p. 116)

The introduction of recorded sound to cinema in the early 20th century brought with it myriad potential applications, but sound cinema was born into an arts culture that tended towards *naturalism* - an era in which painters, novelists and playwrights sought realism in their work. Moreover, upon its arrival, the technology was limited and did not lend itself to any application much beyond basic, slavishly naturalistic representation. So, the use of sound, by and large, followed the path of least resistance to serve the existing trend. (Chion, M, 2009, pp. 45-46) However, while much effort was put into the use of sound to promote realism, as a sensory effect subservient to higher aesthetic components, such as narrative and visual editing, there were those who saw greater potential. Among them was a small collective of eminent Russian filmmakers who, in 1928, famously advocated for the notion of audiovisual *counterpoint* with *A Statement on Sound:*

> "Only a contrapuntal use of sound in relation to the visual montage piece will afford a new potentiality of montage development and perfection. The first experimental work with sound must be directed along the line of its distinct non-synchronization with the visual images. And only such an attack will give the necessary palpability which will later lead to the creation of an orchestral counterpoint of visual and aural images." - Sergei Eisenstein, Vsevolod Pudovkin and Grigori Alexandrov **(Mackenzie, S, 2014, p. 801)**

There has long been an important relationship between cinema and music composition, particularly among composers with an interest in environmental sound. Sound cinema had, for example, a significant influence on Pierre Schaeffer's work. Schaeffer explicitly cited filmmaker, Jean Epstein, at the time of founding the Groupe de Recherches Musicales: **"Through the transposition of natural sounds, it becomes possible to create chords and dissonances, melodies and symphonies of noise, which are a new and specifically cinematographic music."** As Marc Battier explains, "The technique of recording and of montage, which is associated with cinematographic practice, came to serve as a substrate of musique concrète... [The] phenomenon of an epiphanic being that appears through the transduction of sound became the pedestal of Schaeffer's thinking named *reduced listening."* (Battier, M, 2007) This is perhaps a testament to the potentially fertile, creative relationship between musique concrète, sound-film and other new musics from which this project was born.

Reduced listening remains a key practice within musique concrète and other types of electroacoustic composition, and is a gateway through which sounds of the real world may be brought into the abstract realm. It is also considered important in much analysis and production of sound cinema. Michel Chion attributes significant importance to *reduced listening* as one of three *listening modes* in his reassessment and analysis of audiovisual media since the arrival of sound to cinema in 1927, *Audio-Vision: Sound on Screen:* "The emotional, physical, and aesthetic value of a sound is linked not only to the causal explanation we attribute to it but also to its own qualities of timbre and texture, to its own personal vibration. So just as directors and cinematographers – even those who will never make abstract films – have everything to gain by refining their knowledge of visual materials and textures, we can similarly benefit from disciplined attention to the inherent qualities of sounds." (Chion, M, 1994, p. 31) Sound designer Andy Farnell also outlines his own array of listening strategies for consideration when designing sound for audiovisual media that speak to a close kinship between sound design and the composition of musique concrète, electroacoustic music more broadly and arguably music in general. Again, among them features Schaeffer's *reduced listening,* which he explains is "an important skill in sound design." (Farnell, A, 2010, p. 106)

Audio technology has advanced significantly since then and, consequently, composers can work with a staggering array of both instrumental and environmental sounds. Film *sound designers*[3] share many of the composer's tools, as well as an appreciation of sound, and certain techniques and considerations that illuminate the aesthetic potential of 'sound composition', often only attributed to 'music'. Yet, parochial distinctions between 'sound' and 'music' remain the status quo in much audiovisual and music production. Some sounds are thought to be 'musical' (clear pitches produced on a musical instrument, for example) while others are not. It is, perhaps, more accurate to say that no sound is innately musical, but that any sound may become musical once it has been organized along with, or developed into other sounds in order to create a musical structure.

---

[3] For the purposes of this thesis, the term *sound design* refers to the recording, manipulation, synthesis and layering of sounds in order to create an aural impression or representation of characters, objects and environments depicted or implied by the imagery in an audiovisual construct.

This portfolio of compositions has been subject to many influences, but as part of its theoretical and contextual framework I will focus on two schools of 20th -century composition that have been particularly important to the project: Sonorism and Soundscape Composition. Sonorism, like much 20th -century electronic and electroacoustic music, derived purpose from a campaign to shift musical focus away from internal structures of pitches and durations and towards 'sound' in the literal sense as a primary structural element. Not only does this philosophy complement the other driving ideas behind this project, but the movement also gave rise to a wealth of unconventional or *extended* instrumental playing techniques, which directly informed, or inspired the instrumental writing found in the portfolio. Similarly, Soundscape Composition offers both theoretical and practical impetus for the project by promoting a renewed and deepened relationship with objects, places, and their sounds. Soundscape composers help us to explore our phenomenological experience of the world we live in through the composition of environmental sounds into Soundscape music.

The compositional vision embodied in this project and the blending of environmental sound composition and instrumental writing, as well as their relevance to audiovisual media, can be understood through a vernacular and framework derived from a combination of powerful concepts: Julio d'Escrivan's sound canvas, and Denis Smalley's notions of Bonding Play and Spectromorphology. While some individual pieces in the portfolio focus on one or two aspects of the compositional vision outlined in this thesis by way of focused learning and development, the portfolio, as a whole, demonstrates the incremental blending of these ideas, then their application within an audiovisual setting *(see Appendix 1)* to the overall end of cultivating a compositional technique that aims to foster deeper aesthetic unity between 'sound', 'music' and moving image.

Practical Compositional Approach

Stage One – Establishing a Sound World

Each piece in the portfolio grew from the sounds of a particular environment – a sound world. The first task in the compositional process was to analyze the elements within that sound world and to consider, by listening from a spectromorphological perspective (see *'Denis Smalley's Source Bonding, Bonding Play and Gesture'*), for characteristic sound shapes and textures, which may be complemented or mimicked using the available instruments. The aim of these initial considerations was to collate and envisage a potential palette of sounds – of gestures, timbres, spectromorphological shapes – with which to work and to foster a familiarity with the sound world to be carried forward into the other stages of the compositional process.

Stage Two – Collecting an Initial Sound Palette

A practical exploration of the spectromorphologies in both instrumental and environmental sounds was necessary to facilitate these gestural interrelations. In order for a string ensemble to contribute to the sound of wind or crashing waves for example, one must first find a way to bring out the common spectral and morphological characteristics of each object. Research and experimentation with instrumental *extended* or *peripheral* techniques, such as those exemplified in Sonorism (See *'Sonoristics and Sonorism'*), has been crucial to finding these common characteristics.

In addition to this, an exploration of the sound shapes available through manipulating and layering environmental recordings was also necessary, using techniques including granular synthesis, sustained reverb and reverb sampling, 'time-stretching', 'shelf', 'peak', 'notch', and 'gain' EQ functions, and pitch correction. During this process it became possible to imagine how both instrumental and environmental sounds may be organized into compound and related sound shapes.

Stage Three – Developing Ideas and Form

The process of understanding the sound world and collecting a palette of sounds would naturally precipitate the development of musical ideas and form. I would outline the contours and general structure of the piece, identifying moments of contrasting intensity or character, sketching musical ideas inspired by the sound world and its sound shapes, either taking cues from a visual component or being guided by the development of autonomous, musical ideas.

This general structure would be gradually fortified with more detailed ideas. Instrumental parts, if present, would take shape, leaving space for environmental sounds to be woven in, or vice versa. The compositional process, at this point, would become less predictable. The distinction between environmental sound and instrumental sound would begin to break down, not only in their creative roles within the piece, but also in their consideration and treatment from this point in the compositional process. Harmonic progression, melodies, sound masses and gestures would be conceptualized, using environmental sounds *and* musical instruments on equal, structural footing.

Stage Four – Collecting Further Sounds

As each work took shape the need to record instrumental parts, or a greater number of environmental sounds would arise. The recording of both environmental and instrumental parts was treated as part of the production process, regardless of whether this was achieved through, public performance, public workshop, or studio sessions. In practice, the opportunity to record the instrumental component of a piece in a studio only arose once throughout the project (during the production of *Urban Cycle).* As a relatively workable alternative (and as an avenue for dissemination), the more frequent opportunities for recitals in live performances or workshops were used as a way of gathering recorded, instrumental material. Recording live performances posed a limitation in that it is difficult or impossible to isolate each instrumental recording from the others in this setting. Many of the recordings have the sounds of other instruments or the 'tape part' in them, so the possibility of reworking the recordings into the final piece was limited in most cases. Moreover, the live workshops and performances offered very limited rehearsal time and little or no opportunity to experiment and hone techniques, which were new to some of the musicians. Nonetheless, these public performances and workshops yielded enough workable material to complete each piece.

Stage Five – Post-production

In general, following a performance or workshop, each piece was close to completion. The final stage in the composition of each work was to refine, edit, mix and, in some sections, rework the recordings to produce the final sound canvas. (See *'An Adaptaion of Julio d'Escrivan's sound canvas')* To approach this task the perspective of a soundscape composer was often adopted, working with environmental sounds and instrumental recordings in much the same way, while respecting the musical ideas within certain instrumental passages. Many parts of the recorded, instrumental performances have been edited in post-production and the scores presented are not intended as an accurate representation of the final pieces, rather as some reference and insight into the production process.

An Adaptation of Julio d'Escrivan's Sound Canvas

Composers and filmmakers can build effective relationships between musical ideas and on-screen elements, but diegetic, environmental sound arguably capitalizes on a more immediate and explicit association between sound and vision thanks to the audiovisual bond between sound and source. They would be inextricably linked were it not for the technological fcapability to separate them in a film studio, at which point a myriad of creative links and references become available. The potency of this bond can be seen through the sonic motifs of Steve McQueen's *Hunger* (2008) highlighted by Adam Melvin. During the opening of the film we encounter one of the most important sound motifs: a steady, rhythmic pulse picked out via the din of protesters banging dustbin lids. As well as having immediate visceral efficacy, the percussive pulse motif appears on four notable occasions throughout the film that help to outline its tripartite structure: at the end of the first section with a pulse beaten out on riot shields with police batons in a similar aural texture; the introduction of the final third of the film with the steady, rhythmic sound of a prison officer sweeping up urine; and the finale of the film at which the credits are initiated along with a pulsed piano note in a similar tempo to the rhythm beaten out previously on the riot shields. This motivic treatment is further enhanced in its transition between diegetic and non-diegetic uses. The sound of police beating their riot shields, for example, continues long after they are seen to have stopped on screen, serving to focus audience attention on the motif as an expressive entity with structural importance. The pulse motif is used to frame the film's different sections while referring to previous scenes, thereby encouraging viewers to draw parallels and contrasts between interconnected situations and characters, enhancing the meaning within the film. We are introduced to a number of the film's audiovisual motifs in a kind of symphonic exposition during the first three minutes; while thereafter, both audio and visual elements are given similar treatment throughout the development of the story. In this way, McQueen's sound motifs are often "tightly immersed within the fabric of his visual language, pre-empting or breaking free of their visual 'hosts' where necessary." (Melvin, A, 2011) The content of those motifs "and the various contexts in which they appear play a further role in simultaneously establishing and negating the somewhat inescapable connotations of sectarian identity synonymous with the film's subject matter." (Melvin, A, 2011) The careful composition of the soundtrack in *Hunger* grants certain sounds their own expressive identity partly through immediate, visceral effect and partly through motivic treatment emphasized via both *asynchronism* and *synchronism*. As Adam Melvin surmises:

> "The use of recurrent sonic motifs serves to reflect the ritualized world in which *Hunger* is set while framing and punctuating the film's narrative in a manner that is crucial to its structural cohesion. Meanwhile, the absorption of the film's musical content into the fabric of its soundscape, coupled with the almost musical sensibility with which sound itself is at times handled, further enhances and unifies its dynamic." (Melvin, 2011)

It is this relationship that has lead Julio d'Escrivan's to posit his notion of a sound canvas and that "to reduce sound art to the creative practice we know as electronic or electroacoustic music is a mistake. The usage of sound for dramatic purposes, for representation and narrative goes beyond what we might conventionally term musical". d'Escrivan's outlines what he calls 'sound art' "as something distinct from music yet existing at the end of a unified continuum between abstraction and representation." (d'Escrivan's, J, 2009, p. 65)

I contend, however, that d'Escrivan's imposes an unnecessary limitation on electroacoustic music and the creative potential of sound in the context of film. Through engagement with musical movements such as, Soundscape Composition and Sonorism, it is possible to blur the distinction between 'sound art', 'sound design' and 'music' imposed by d'Escrivan's and for each of them to move freely along this continuum between abstraction and representation. Indeed, during the piece *Selfie II,* which features in the portfolio of compositions, I worked alongside sound designer Carl Harries to produce the soundtrack to the film, *Selfie* (Harmer, G, 2015) and, at times, it would be impossible for an audience to distinguish between his work and mine. As composers and sound designers, we can bring music to the art of sound design and environmental sound to the art of music. d'Escrivan's acknowledges the common ground between film sound and music - "aesthetically, perhaps we are at a point where musicians and sound designers inhabit the same creative space" - but goes on to reveal a discomfort with the notion of their relationship in its grandest, most all-encompassing form when he envisions music as an element within a sound canvas, along with sound effects and ambience recordings:

> "Rather than proclaiming, as Fischinger, Cage and Varèse did, that all sounds are, or can be music, the new school of thought should be that music is another component of sound composition."(d'Escrivan's, J, 2009, p. 71)

Nonetheless, in his notion of a sound canvas, d'Escrivan's has provided a way of conceptualizing one of the central ideas of this thesis. My own concept of such a *sound canvas,* embodied in the portfolio, includes a greater degree of integration between its elements to the extent that the distinction between 'sound' and 'music' that d'Escrivan's insists upon may disappear altogether. Moreover, the defining importance he puts on the representative and narrative function in taking 'sound art' in film 'beyond music' is recruited as part of the compositional process in the portfolio, thereby becoming part of the music. As one can more clearly appreciate in the context of Denis Smalley's ideas to be discussed later, the bonds between sounds and their sources can be strengthened, weakened and broken as a way of prompting different types of attention from the audience and creating, gratifying and foiling expectations as part of a compositional strategy. In a practice involving *asynchronism,* the use of sound for the emotive effect of its internal properties and for its motivic potency, where 'sound' and 'music' interweave to assume one another's identities, and where their structure is so closely bonded to narrative and diegetic representation, it is limiting to draw such a clear distinction between the two realms. Instead of thinking categorically, it is more productive to think of one integrated *sound canvas* without presupposing lines of separation. In my own practice as a composer, this fluidity has been best facilitated through a musical mindset.

Portfolio Example: Rhythm, Motif, and Melody in a Sound Canvas for *Berlin: Symphony of a Metropolis, Acts I and V*

The sounds, rhythms and musical ideas associated with train travel, for example, feature throughout the rescoring of Walter Ruttmann's *Berlin: Symphony of a Metropolis* that occupies a place in the portfolio of compositions. Train imagery features prominently in the opening of the film and there are several important elements within the sound canvas surrounding it, which recur motivically throughout Acts I and V: first, there is the sound of the train itself moving over the tracks, which is edited to phase in and out of a rhythmic loop that often features in conjunction with a short, repetitive double-bass melody; then, there is a low to mid frequency throbbing effect that defines the tempo of the passage; and finally, a prominent violin melody designed to blend with the sounds of passing objects and trains. All three of these elements serve as motifs and as a way of gradually restoring the music to its quicker tempo by reminding the audience of the sense of momentum associated with the train montage at the beginning. Mixtures of all three elements return, for example, at around 00:10:45 to accompany the imagery of people traveling to work through busy walkways and train stations. However, the rhythmic sound of the train is then subsumed into the rhythmic marching of commuters' footsteps, before the intensity of the sound canvas crescendos to a moment of silence and the city's industrial machinery comes to life.

The motif voiced by the cello and the violin, which forms part of a melody beginning at 00:01:45 (bar 74), demonstrates how an instrumental part can interact with environmental sounds to seemingly blend with objects on-screen. The melody is characterized by two main components: the staccato notes that reflect the stereotypical rhythmic sounds associated with trains ('clacking' and 'chugging' etc.); and the wide, 'sul ponticello' portamentos intended to mimic the metallic resonances and 'Doppler effect' present in the sounds of passing trains. This mimicry becomes especially apparent at 00:02:42 when a train passes on the adjacent track to the perspective of the camera at which point the string parts blend almost indistinguishably from the environmental sounds of the oncoming train. In this moment, sound design, Soundscape Composition and melodic, tonal instrumental composition all weave together.

The sound of the passing train is composed of recordings of trains themselves *and* various metallic, instrumental sounds including bowed cymbals and violin effects, such as bowing on the bridge and harmonic glissandos. Some of the sounds are 'EQed' and tuned to form a subtle sense of harmony[4] to complement the violin part, while also being treated with a subtle 'Doppler effect' to create the impression of an object moving quickly towards and away from the viewer's perspective. The 'sul ponticello' articulation of the portamentos in the violin and cello melody bring out a particularly metallic quality in the sound of the instruments, which blends with the collection of train sounds, while also carrying the melody. This mix of music and sound effects can only be partially understood through Julio d'Escrivan's sound canvas because the distinction between 'sound' and 'music' is not always clear and because they bear a structural function bound-up in the narrative of the film. This example elucidates the need to adapt d'Escrivan's notion into one that does not rely so heavily on distinctions between 'sound' and 'music'. The sounds in this example are aesthetically joined through rhythm, harmony and, as will be shown, *gesture,* as defined by Denis Smalley, designed to invoke a sense of the physical motion going on in the imagery, interspersed with that of the violin player.

Denis Smalley's Source Bonding, Bonding Play, and Gesture

To support this adapted notion of a sound canvas one can look to Denis Smalley's theories of *intrinsic-extrinsic threads, Source Bonding* and *Bonding Play*, which feature as part of a framework of ideas associated with *Spectromorphology.* Smalley's concept of Spectromorphology offers a more open view of music composition, which, unlike conventional notation and musicological vernacular surrounding pitch, harmony and rhythm, is capable of accommodating the varied sounds of electroacoustic music. Any sound may find a home in Spectromorphology, free from discriminatory associations with particular environments and traditions. "The two parts of the term refer to the interaction between sound spectra (spectro -) and the ways they change and are shaped through time (- morphology)… A spectromorphological approach sets out spectral and morphological models and processes, and provides a framework for understanding structural relations and behaviours as experienced in the temporal flux of the music." (Smalley, D, 1997, p. 107) In his article *Spectromorphology: Explaining Sound Shapes* (1997) Smalley outlines a series of descriptive frameworks for considering, often metaphorically, the sounds and structures of electroacoustic music. As an example, his framework of 'motion and growth processes' offers a perspective on various morphologies through a series of interlinking descriptive terms. (See *Figure 1*)

---

[4] In general, wherever environmental sounds have been manipulated to take on a harmonic role within the portfolio it has been achieved via one or a combination of five processes: granular synthesis, sustained reverb, 'time-stretching', 'peak', 'notch', and 'gain' EQ functions, and pitch correction. In this instance, particular frequencies were amplified in isolation by using the 'peak', 'notch' and 'gain functions'. This allows one to bring out pitched material while retaining the rest of the spectra and mixing the two in the desired proportions. The result is the ability to tune and create chords from the recognizable sound of an extractor fan. This technique was used commonly throughout the production of the portfolio.

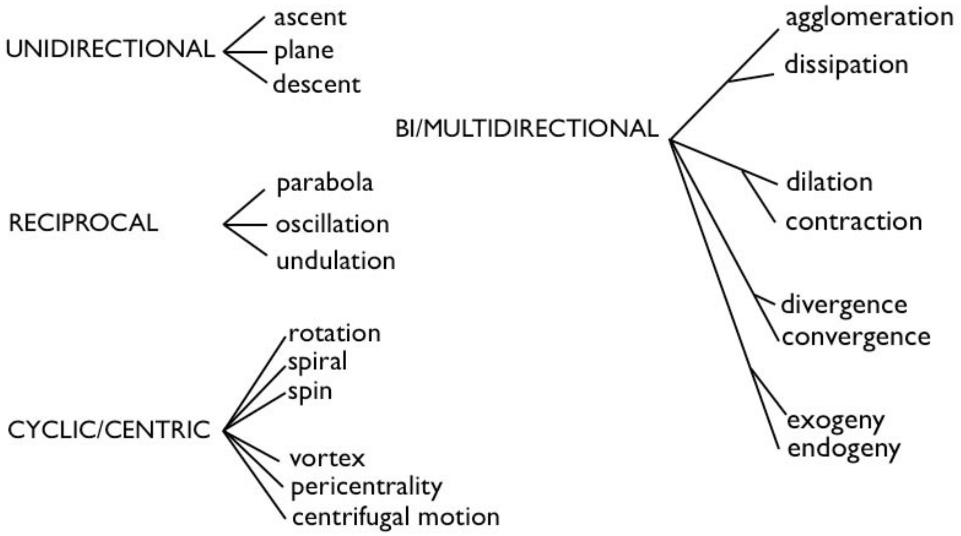

UNIDIRECTIONAL
ascent
plane
descent
RECIPROCAL
parabola
oscillation
undulation
CYCLIC/CENTRIC
rotation
spiral
spin
vortex
pericentrality
centrifugal motion
BI/MULTIDIRECTIONAL
agglomeration
dissipation
dilation
contraction
divergence
convergence
exogeny
endogeny

Figure 1. Motion and growth processes
(Smalley, D, 1997, p.116)

In conjunction with this spectromorphological framework one can use others to describe more, internal detail. For example, Smalley's descriptive framework of 'texture motion' may help to describe and consider *flocking* within a *convergent, multidirectional* morphology. (See *figure. 2)*

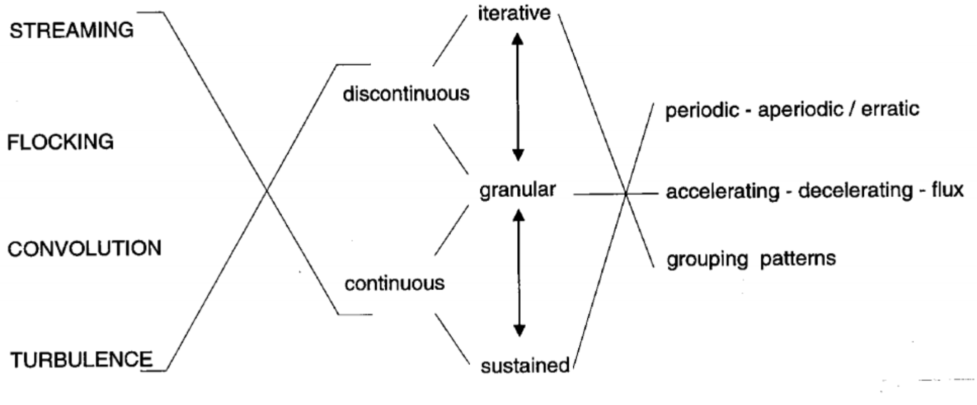

STREAMING
FLOCKING
CONVOLUTION
TURBULENCE
discontinuous
continuous
iterative
granular
sustained
periodic - aperiodic / erratic
accelerating - decelerating - flux
grouping patterns

Figure 2. Texture motion.

(Smalley, D, 1997, p.116)

Through Spectromorphology, Smalley provides an overarching precedent and framework for considering the musical integration of instrumental and environmental sounds, both pitched and unpitched, into a unified sound canvas. The theory, however, cannot describe an experience of music beyond the "closed, autonomous artefact." (Smalley, D, 1997, p. 110) Although Smalley discusses Spectromorphology in relation to listener expectations as an important aspect of electroacoustic music, and to a significant extent the terms he uses are intended to evoke connections with familiar spectromorphologies outside of music, the theory alone does not account for the way music relates and refers to external contexts, and the role the listener may play in this process. In Smalley's own words, music "does not refer only to itself but relies on relating to a range of experiences outside the context of the work. Music is a cultural construct, and an extrinsic foundation in culture is necessary so that the intrinsic can have meaning. The intrinsic and extrinsic are interactive." (Smalley, 1997) This aspect of music, and sound more generally, is of particular importance to this project, and a compositional practice that capitalizes on those intrinsic-to-extrinsic links in order to draw a sense of place or object into a creative work, depicted visually, audibly, or both. In order to accommodate this consideration, Smalley developed the term Source Bonding in relation to the notion of intrinsic-to-extrinsic threads in conjunction with Spectromorphology.

> "I have invented the term Source Bonding to represent the intrinsic-to-extrinsic link, from inside the work to the sounding world outside. I define Source Bonding as: the natural tendency to relate sounds to supposed sources and causes, and to relate sounds to each other because they appear to have shared or associated origins." (Smalley, 1997, p. 110)

Gesture and Gestural Surrogacy

Smalley further enriches the idea of Source Bonding by connecting it with *gesture.* Gesture, as defined by Smalley, is an important element in the compositional process embodied in the portfolio. He outlines gesture as a "motion trajectory which excites the sounding body, creating spectromorphological life", therefore revealing or implying something about its origins, and about the humanity behind it. We may make this connection "by deducing gestural activity, referring back through gesture to proprioceptive and psychological experience in general… Not only do we listen to the music, but we also decode the human activity behind the spectromorphologies through which we automatically gain a wealth of psycho-physical information." (Smalley, 1997, p. 111)

There are, of course, various degrees of separation between a sound and its perceived gestural origins, which Smalley divides in four stages of *gestural surrogacy*: 'First-order surrogacy'[5]; 'second-order surrogacy'[6]; 'third-order surrogacy'[7]; and 'remote surrogacy'[8]. (Smalley, 1997, p. 112) The compositional process embodied in the portfolio has been, partly, reliant on the ability to place sounds within each of these categories and to move them from one order of surrogacy to another.

Portfolio Example: Gestural Surrogacy and Bonding Play in *The Near Woods*

In *The Near Woods*, the *streaming* sounds of a spinning bike cassette at 04:40 have been processed with EQ filter sweeps (by using the 'peak', 'shelf', 'gain' and 'notch' controls of a digital equalizer) and a panning effect to dislodge the sound from first-order surrogacy into second order surrogacy, as they become instrumentalized. Earlier, at 03:56, the sound of bike-brakes gripping the rim of

---

[5] *First Order Surrogacy* – "Original, *primal gesture*, on which sounding gesture is based, occurs outside music in all proprioceptive perception and its allied psychology. First order surrogacy projects the primal level into sound, and is concerned with sonic object use in work and play prior to any 'instrumentalisation' or incorporation into a musical activity or structure. It is here that musical potential begins to be recognised and explored." (Smalley, 1997, p. 112)

[6] *Second-order surrogacy* – "traditional instrumental gesture, a stage removed from the first order, where recognizable performance skill has been used to develop an extensive registral articulatory play". (Smalley, 1997, p. 112)

[7] *Third-order surrogacy* – "A gesture is inferred or imagined in the music. The nature of the Spectromorphology makes us unsure about the reality of either the source or the cause, or both. We may not be sure about how the sound was made to behave as it does, what the sounding material might be, or perhaps about the energy–motion trajectory involved." (Smalley, 1997, p. 112)

[8] *Remote surrogacy* – "Remote surrogacy is concerned with gestural vestiges. Source and cause become unknown and unknowable as any human action behind the sound disappears. The listener may instead be concerned with non-sounding extrinsic links, always, of course, based on perceived spectromorphological attributes. But some vestiges of gesture might still remain. To find them we must refer to tensile, proprioceptive properties, to those characteristics of effort and resistance perceived in the trajectory of gesture. Thus, remote surrogacy, while distanced from the basic, musical first order, can yet remain linked to the psychology of primal gesture." (Smalley, 1997, p. 112)

a wheel is played, in naturalistic synchronization with the image, in first-order surrogacy, evoking a direct sense of 'primal gesture'. The sound very quickly precipitates a sustained tone, generated by isolating pitched spectra within the overall sound, then elongating the pitched tone through polyphonic time-stretching and granular synthesis achieved by cutting, copying, and cross-fading small segments of the sound. The tone is then copied, layered and re-pitched to arpeggiate a chord, which mirrors the violin passage heard earlier in the piece at 01:04. *(See figure. 3.)*

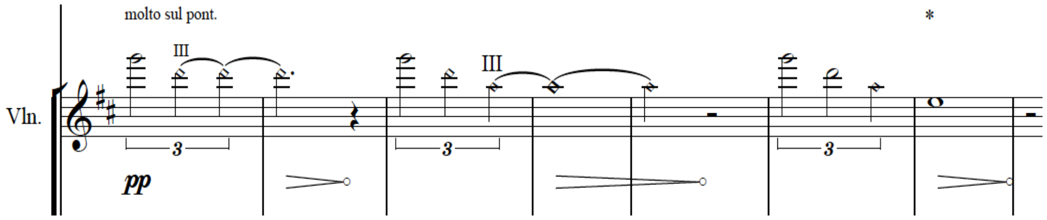


Figure 3 – Excerpt from The Near Woods

In this way, the sound of the bike-brakes jumps from first-order to remote gestural surrogacy, undermining listener expectations as to how the sound should behave because, in spectromorphological terms, new *continuants* are introduced to the sound (*prolongation* and *statement*) and the *termination* is altered (from *disappearance* to *release*)[9]. This movement of sounds between orders of gestural surrogacy has assisted in weaving together instrumental and environmental sounds while generating, maintaining, stretching and breaking connections with a visually or aurally perceived environment. As noted previously, the bonds between sounds and their sources can be strengthened, weakened and broken in this way to prompt different types of listening and create, gratify and undermine expectations as part of a compositional strategy. Smalley calls this *Bonding Play.*

---

[9] In particular relation to the significance of expectation in music, Smalley offers a list of terms that can be used to consider the functional significance of a given sound. They fall into three categories: 'Onsets', 'Continuants', and 'Terminations.

Onsets	**Continuants**	**Terminations**
Departure	Passage	Arrival
Emergence	Transition	Disappearance
Anacrusis	Prolongation	Closure
Attack	Maintenance	Release
Upbeat	Statement	Resolution
Downbeat		Plane

(Smalley, 1997, p.115)

An appreciation of gesture can be considered a part, or a type of Source Bonding. From the texture of a sound (an aspect of its spectra), a listener may infer the object that made it, while from its morphology, a listener may infer something about the motion of that object, or the way in which energy is being imparted to and from it – the primal gesture affecting it. Moreover, gesture can highlight both the need for and presence of a sense of humanity in electronic and electroacoustic music. In the portfolio, for instance, there are morphologies manufactured from environmental sounds, which imitate those commonly produced by musicians playing their instruments, or more generally relate to a sense of motion or transfer of energy. This serves two purposes: 1) It generates an aesthetic connection between instruments and environmental sounds both in abstract terms – they interact musically by speaking similar and complementary sound shapes – and in referential terms, capitalizing on "the natural tendency to relate sounds to supposed sources and causes, and to relate sounds to each other because they appear to have shared or associated origins" (Smalley, 1997, p. 110); and 2) More loosely, it can create the sense that one is listening to something 'musical' and 'human' by evoking, in the imagination of a listener, those musical gestures that are, as Smalley asserts, "very strongly culturally imbedded" as a consequence of a "cultural conditioning process based on years of (unconscious) audiovisual training." (Smalley, 1997, pp. 110-112)

Portfolio Example: Aesthetic Connections, Gesture, and 'Humanity' in *Urban Cycle*

The piece, *Urban Cycle*, is written for cello and environmental sounds recorded from urban environments and modes of transport. These sounds lend themselves to generating the sense of motion that permeates the piece in a way that mirrors the rubato, crescendos and diminuendos of the cello performance, as well as contributing to the structure of the piece. This can be heard from the outset of the piece. The sounds of passing vehicles and the urban environment, along with a specific mix of cello articulations (see *figure. 4*) combine to create spectro-morphologies with gestural links to both passing vehicles and the cellist herself. The opening two minutes are characterized by swells of sound designed to imitate the sounds of passing vehicles. Within these *sound masses (see 'Sonoristics and Sonorism')* are environmental sounds, including the footsteps and conversations of passers-by, a passing tram, a motorbike engine, jangling keys, and various metallic drones mixed to generate a sense of harmony and motion or gesture; as well as the cello performance.

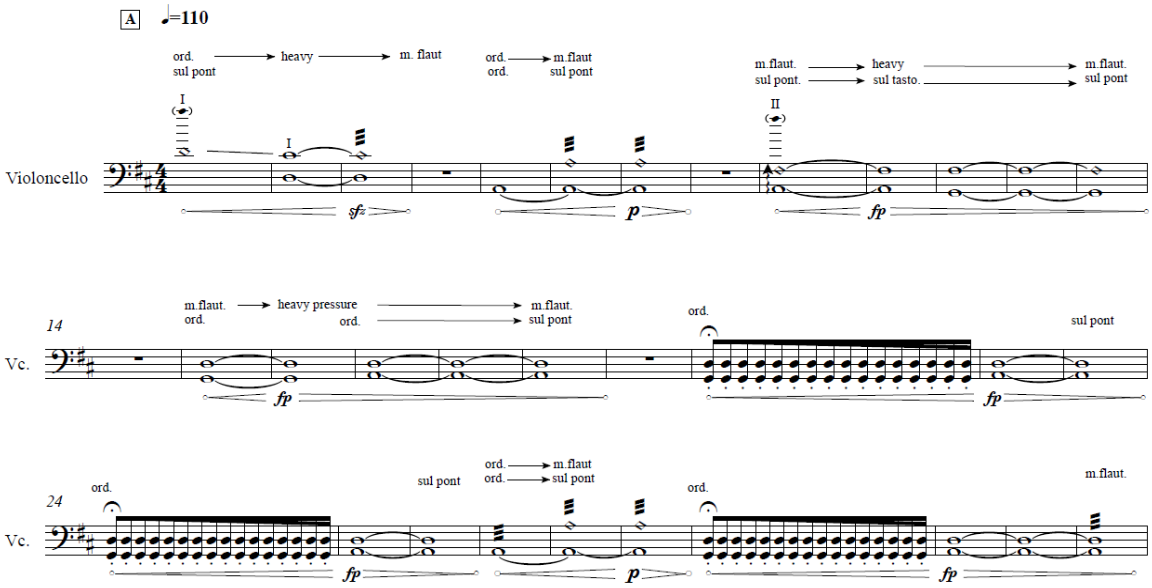

A
♩=110
ord.
sul pont
heavy
m. flaut
ord.
ord.
m.flaut
sul pont
m.flaut.
sul pont.
heavy
sul tasto.
m.flaut.
sul pont
I
II
Violoncello
sf
p
fp
14
Vc.
m.flaut.
ord.
heavy pressure
ord.
m.flaut.
sul pont
ord.
sul pont
fp
24
Vc.
ord.
sul pont
ord.
ord.
m.flaut
sul pont
ord.
m.flaut.
fp
p
fp

Figure 4 Excerpt from Urban Cycle

The cello part is designed to blend with the environmental sounds through its *emergent onsets*, as notes crescendo from silence into sustained continuants (*maintenance* and *statement*), which change, smoothly, in timbre throughout their duration via gradual alterations in bow pressure and position. Further complementary timbral variation is produced using harmonics and tremolo. Often cello passages transition into tremolo articulation, producing a continuous, turbulent sound. These techniques, in conjunction with particular bow placements, often produce 'airy' or 'metallic' sounds, useful for blending with the sounds of passing vehicles and bustle of the urban environment. In addition, some passages of the cello performance are mixed, panned and manipulated in the same way as the environmental sounds. For example, the quickening, staccato double stops leading to a sustained fourth, heard at 01:04, are panned from right to left in order help mimic the sound of a passing motor bike, an aspect of its *spatiomorphology*[10]. The sustained fourth is also post-processed with an electronic 'tremolo' effect making it throb rhythmically, like an engine. The second time this passage occurs at 01:15 it is combined with a recording of a passing motor bike, creating gestural unity between the two sounds. Many of the sound shapes produced by the cello share *onsets*, *continuants*, *terminations*, and moments of *turbulence*, *continuity* and *discontinuity*, as well as *distancing, orientation* and *spatiomorphological paths* with the environmental sounds. In this way, both instrumental performance and environmental sounds can evoke intrinsic-extrinsic links together, both real and imagined, in aesthetic unity.

---

[10] Smalley's term spatiomorphology refers to the perceptions of space bound up with spectromorphological content. In a similar system of frameworks to those used in Spectromorphology he interlinks terms such as *intimacy-distance, breadth-depth,* and *orientation* to describe 'composed spaces', and outlines 'characteristic

The theme of passing vehicles – these swells of sound, changes in timbre and spatial placement – is established at the beginning of the piece and carried forward into other sections. From 01:57, when the cello part becomes continuous, this theme is maintained, as the melody is mixed and panned to blend with sounds of passing vehicles, and the crescendos and diminuendos in environmental sounds. It is sustained in this way, as a central element, until around six minutes into the piece and then revisited in full force from around nine minutes. Environmental and instrumental performance combine to form structurally important musical elements.

The identity of the cello at the beginning of the piece is not clear, but as the piece progresses a more prominent melody emerges and is voiced in conventional timbres (from around bar 77, for example). The sound of the cello moves from a tenuous *bond* with its physical source, where it often mimics environmental sounds, to a substantial one. This acts as a revelation of the cello in its familiar acoustic character – a revelation of the true gestures behind its sound - as though it has emerged from within the urban sounds of the piece. The hope is that this blending of instrumental and environmental sounds and Bonding Play will greater encourage the listener to hear the urban sounds as music and promote a sense of unity among all the elements of the piece.

Urban Cycle also demonstrates Smalley's point about the relationship between gesture and humanity in electroacoustic music. Through association with the gestures of a human being playing a musical instrument – via mimesis and aesthetic integration – the environmental sounds of the piece can be imbued with a sense of humanity and expression, as well as creating certain tensions through the dynamic relationship between the sound of the cello and the idea of the cello in the listener's

---

paths' of sound using terms: '*approach,*' '*departure,*' '*crossing,*' '*rotation,*' and '*wandering*' in order to describe the placement and motion of sound through perceived space. (Smalley, 1997, pp.122-124) mind. This is another example of *Bonding Play* as a compositional device, and these tensions are an example of the kind that can be incorporated into an adapted notion of Julio d'Escrivan's sound canvas.

A sense of gesture can be created via any sound: the sound of a passing bus; the sound of an instrumental ensemble imitating the sound of a passing bus; or the sound of a passing bus processed to voice a chord, for example. Whether made by people, musical instruments, machinery or nature, sounds often stimulate the imagination and memory to provide a sense of motion, shape, space, material, or gesture. It is this trait in our perception of sound that allows the sound designer to manufacture the sounds of on-screen objects using the 'spectromorphological life' of other, unrelated sounding bodies - to present an illusion as diegetic reality. In the same way, it is this trait that has allowed me to blend instrumental and environmental sounds and to incorporate the tensions created by building and resolving expectations via, in Smalley's terms, 'intrinsic-to-extrinsic links' and 'Bonding Play'. A large part of the work in the portfolio is based on the interrelations of spectromorphologies and the gestures they imply. These are the threads of a sound canvas that includes both referential sound and abstract music in sometimes indistinguishable combination, and the way they create, gratify and undermine expectations together.

One can see, then, how Denis Smalley's theories provide a framework for appreciating the creative and musical use of sound based on its intrinsic, abstracted properties, as well as its extrinsic references and representations. Both abstract and referential sound can relate in different ways to the imagery within an audiovisual construct, generating the possibility of a *counterpoint* between sound and image. From this perspective, one can adopt d'Escrivan's sound canvas while rejecting his lines of separation between 'music', 'sound', reference, representation and narrative function.

Sonoristics & Sonorism

An important element of the work in the portfolio has been the development of an instrumental writing technique capable of supporting musical ideas, including tonal harmony and melody, while also mixing and making aesthetic connections with environmental sounds. This involved blending instrumental and environmental sounds and sound textures, and the mimesis of environmental sounds using musical instruments. In order to achieve this one must investigate the possible spectromorphological similarities within the instrumental ensemble and the collection of environmental sounds being used for a given piece. This may be accomplished by analyzing and manipulating recorded, environmental sounds, as well as exploring the broad timbral ranges of certain instruments and applying them appropriately.

Western composers and music producers currently operate in a relatively open musical culture that encourages the use and invention of new sounds by almost any means. It is deemed perfectly ordinary for a composer to look for inspiration by experimenting with, for example, a violin beyond the intention of its design - percussing its body, bowing behind the bridge or manipulating its sound electronically. Some of this is owed to the field of *Sonoristics* and *Sonorism* conceived in the 1950s and developed throughout the 60s and early 70s, which offers structured impetus and a comprehensive portfolio of experimentation for any composer interested in exploring such techniques. The term *Sonoristics* was coined by Jozef Chominski in 1956 in an attempt to shift the focus of Polish musicology of the time away from internal structure and towards the *sonus* or 'sound' in the literal sense, in reaction to what he perceived as the essential aspect of 20th century music: "The search for new sound qualities, which, after the radical changes in the tonal system and its eventual breakdown, had become the growing concern of 20th century composers." (Granat, Z, 2009, p. 822) Chominski's *Sonoristics* not only demands in-depth consideration regarding timbre in and of itself, but also affords it a greater structural importance. Chominski aimed to alter the hierarchy in which timbre and sound itself were considered lower than the internal, musical structure as defined by the interrelations of time and pitch. (Granat, Z, 2009, pp. 822-823)

Chominski's work complemented developments in new music throughout the 20th century by composers such as Russolo, Varèse, Cage and Schaeffer who confirmed his assertion that there was an appetite for the structural use of unpitched sounds and for *extended* instrumental techniques as a way of expanding the composer's palette. In this context, during the 60s composers such as Pendereki, Górecki and Szalonek adapted Chominski's original cause under the banner of *Sonorism* by exploring the extended range of timbres available on conventional instruments through unconventional playing techniques. Penderecki wrote some of the most striking extended string music through which he introduced new techniques including: quarter-tone clusters, 'the highest pitch possible', percussing the strings with the hand, and bowing behind the bridge. A famed example of Pendercki's string writing is *Threnody for the Victims of Hiroshima* (1960) in which he deployed various unconventional percussive and bowing techniques to create shifting sonic textures and sound masses.

The sound mass significantly characterized Sonorism. The construction and development of a given sound mass within a piece can be governed by the morphology of timbres and combinations of timbres, and by pitches and clusters of pitches. Pitch clusters may begin or end as a single pitch-class and expand and contract via stepwise, microtonal divergence, or develop in waves of tone-cluster glissandi. For example, the finale of *Anaklasis* constituted in five harmonic string clusters each of which glissando upward, one after the other, to where the strings can no longer speak their pitches. (Thomas, A, 2005, p. 168)

> "Penderecki's instrumental music . . . may be labeled today as classic Sonorism... In place of melody, harmony, metre and rhythm, sound became the form-creating, tectonic agent. Pitch as such ceased to have a vital role – colour was now dominant. The sound shape became the essential architectonic unit instead of the motif." (Thomas, 2005)

Szalonek ventured similar experiments to complement his particular fascination with woodwind. "In the context of a philosophical consideration of the history and nature of sound and of the nature of musical perception… Szalonek developed an explicit performing methodology involving new fingering, the identification of overtone combinations, unorthodox embouchures as well as techniques involving playing on mouthpieces alone." (Thomas, 2005, pp. 198-199) He contributed to an array of extended techniques for wind and brass[11]. His "purpose was not purely abstract. He was intent on reestablishing 'contact with the natural expressive potency and richness of sound as structured by the physical interaction of man with his surroundings, whether as active performer or active perceiver'" (Thomas, 2005, p. 199), a fundamental aspect of *Sonorism* that chimes with aspects of Soundscape Composition, with Smalley's notions relating to Source Bonding and with the concerns of film-sound.

---

[11] There is a plethora of extended wind and brass techniques contributed to and definitvely influenced by Szalonek including: Disassembling the instrument and playing various parts independently; playing the mouthpiece alone; percussing the mouthpiece; embouchure effects, such as flutter, double, triple, and slap tonguing, pitch bending, and various types of vibrato; biting and blowing the mouthpiece; blowing air through the instrument and changing fingerings to achieve coloured noise; multiphonics through singing and playing, half-valving, overblowing and special fingerings; microtonal effects and harmonics. (Burtner, 2005)

The techniques and ideas of *Sonoristics* and *Sonorism* alone have furnished composers with an extraordinary array of sounds and scoring methods, and, indeed, enriched this PhD portfolio both directly and via its legacy evident in the timbral concerns of subsequent composers. After the frenzied experimentalism of the 60s and 70s many of Sonorism's practitioners returned to more traditional music, but the influence of Sonorism lived on to some extent in their music, while other composers picked up the torch and continued to refine and broaden the instrumental vocabulary. A pertinent example is Helmut Lachenmann as he has used instrumental techniques inherited and developed from Sonorism to draw a direct connection between his instrumental music and musique concrète, through his concept of musique concrète intrumentale:

> "The idea of 'instrumental musique concrète' — i.e. sound as a message conveyed from its own mechanical origin, and so sound as experience of energy, marked the compositional material of my pieces between 1968 (*TemA*) and 1976 (*Accanto*). It remains part of my thinking as composer to this day. It signifies an extensive defamiliarization of instrumental technique: the musical sound may be bowed, pressed, beaten, torn, maybe choked, rubbed, perforated and so on…Such a perspective demands changes in compositional technique, so that the classical base-parameters, such as pitch, duration, timbre, volume, and their derivatives retain their significance only as subordinate aspects of the compositional category which deals with the manifestation of energy." – Helmut Lachenmann. (Ryan & Lachenmann, 1999)

In my own practice this serves the function of subverting expectations regarding instrumental sound. It allows the composer to detach a sound from an instrument in the mind of a listener, to *reduce* it from its source, so that it no longer acts as a signifier of the instrument that produced it and opens up, more freely, the possibility of Smalley's Bonding Play, and gestural surrogacy. An extended, instrumental technique may sound so unfamiliar that it may even be perceived as bonded to a different source, perhaps an environmental object within an electroacoustic composition, through the blending and mimesis of sound shapes.

For guidance in how compose in this way I also looked to the more contemporary work of Kaija Saariaho. In her collection of works entitle *Sept Papillons* (2000), for example, she finds a way to explore the acoustics of the cello through a broad range of techniques brought together by timbre, gesture and subtly implied harmonic relationships. *Sept Papillons* presents a musical world in which timbre and pitch are equals. This approach characterizes large portions of the cello writing in the portfolio piece, *Urban Cycle,* and contributes to both the micro and macro structures of the music. The small details of the piece include cello passages designed to mimic or blend with environmental sounds, while overall there is a general shift from the use of unconventional cello articulations at the beginning of the piece to clear melodic lines in the middle, then back again to create a sense of the cello emerging from, then receding back into the urban environment of the piece.

Although Saariaho's works for cello are richly detailed, she also inspires a compositional technique realized through broad and liberating brush-strokes, so to speak. *Sept Papillons* is not so much based on counterpoint or complex harmony, as palatable gestures born of the cello's acoustic nuance. Her music seems as though it is written as much for the performer as it is for the listener as an exploration of the intuitive relationship between instrumentalist and instrument. As well as the close details as to how to explore timbre on certain instruments, this general way of imagining music through an intuitive sense of contour and gesture, similar to the ideas of Sonorism, fits well with the vision of this thesis and has influenced the treatment of both environmental sound and instrumental writing at various points throughout this PhD.

The practices and ideas surrounding Sonorism and its legacy – the intent to reestablish "contact with the natural expressive potency and richness of sound as structured by the physical interaction of man with his surroundings" (Thomas, A, 2005, p. 199) - help to situate musical instruments, as sound-making objects, on a level composer's palette next to environmental objects.

Portfolio Examples: Sonorism and its Legacy in *Cityscape*, *Eylenda*: Extended Techniques, Sound Mass, and Musique Concrète Instrumentale

Cityscape, being the first piece in the portfolio to be produced, functioned as a means of focused experimentation with instrumental techniques associated with Sonorism and, for this reason, it accompanies no visual component. The instrumental recordings are coupled with a recording of an urban environment with which they are blended or distinguished from as the piece progresses. This integration is often accomplished using techniques inherited from Sonorism. For example, from bar 33 a violin gesture imitates the squeak of bus brakes in the form of an arpeggio played *multo sul pont,* articulated by a variety of harmonics and fundamental notes. This is combined with harmonic tremolo on the cello, as well as a quickening series of staccato 'G' notes in the clarinet to help create the general impression of urban environmental sounds, such as passing vehicles and their momentum. Although, some of the articulations in this passage do not project pitch clearly, each part contributes to the prevailing harmony. As the passage progresses, the cello crescendos to clearly voice pitches 'D' and 'E' and out of the urban fray comes a clearer harmonic progression leading to the F^{add9} chord. (see *figure. 5*)

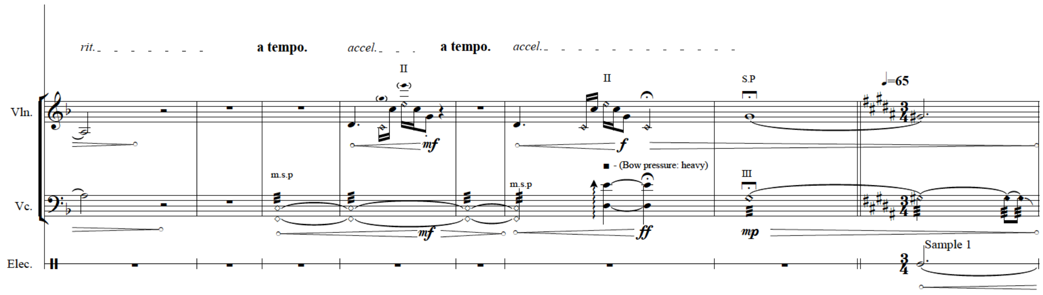


Figure 5

These techniques and ideas, having been explored in *Cityscape,* were carried forward into other parts of the portfolio to contribute to the refinement of a compositional technique.

At the very beginning of *Eylenda*, as the footage of waves fades in, woven into the sound canvas can be heard a flautist playing low whistle tones to illicit a sound made up of a subtle pitch and a prominent air noise. This blends with the sounds of the wind and the sea and, to some extent adopting their identity. Whistle tones are used quite extensively throughout the piece for this purpose. From 00:04:47 they can be heard a little more clearly through the quieter sections of the piece in which wind, rather than imposing waves and waterfalls, is more of a feature. Whistle tones have a key benefit. Their acoustic character is, in part, similar to that of the wind. This is obvious, but they also have the capacity to voice pitch with varying and controllable degrees of stability. This is a subtler, but equally important characteristic. Such techniques on a wide variety of instruments in the wind, brass and string families can produce a combination of pitch and unpitched sound. This is possible, to an extent, because of the tonal hierarchy embodied in western orchestral instruments, noted by Boulez. (Boulez, P, 1987) Their tunings and the way they are designed to resonate in harmony with the structures of traditional harmonic music mean that it is possible to introduce varying degrees of pitch into articulations of sounds such as 'air noises' and bow 'overpressure'. As most of the music in the portfolio is tonal and adheres to these structures, this trait has allowed me to subtly voice musical ideas and the sounds of certain urban and natural environments simultaneously through individual and grouped instruments.

The same quality is present in very light, bowed tremolo, which is used to similar effect in *Eyelenda* to contribute to crescendos of chords that imitate gusts of wind, particularly towards the end of the film. There are other 'air noise' effects used throughout the piece, which resemble sections of Penderecki's string writing. For example, this is what blends the instrumental ensemble with the sound of the waterfall from around 00:03:40. Contained within the 'air noises' is very subtle pitched material. Other string effects facilitate such interactions. Again borrowed from Penderecki, a collection of percussive effects tapped out on violins, violas and cellos, contribute to the impressions of sea birds from around 00:02:30. Individually they do not sound like birds, but in this context they are intended contribute to the general impression of their presence and blend with the sounds of the general environment. When considered as gestures, in the sense put forward by Denis Smalley they can be heard, in the context, as implying small things, bird-like chatter or the tintinnabulation of their feet and beaks – gestural vestiges. Along with the subtle overtones and pitched material in their sound, their reverb helps to establish them as members of a distinct musical ensemble at times, and as integrated components of the on-screen environment at others.

The Soundscape & Acoustic Ecology

Soundscape Composition offers a way of thinking about and working with sound that allows the composer and sound designer to better construct an aesthetically unified sound canvas and engage in Denis Smalley's Bonding Play. Due to its origins in *acoustic ecology*[12], it places importance on the bond between sound and source. Soundscape composers often seek to explore "the interrelationships between sound, nature and society." (Westerkamp, H, 2002, p. 52) In this way, soundscape music is directly concerned with Source Bonding and Bonding Play. The movement shares some of the ambition contained in Béla Balázs' outlook on film-sound expressed in his notion that "the sound film will teach us to analyze even chaotic noise with our ear and read the score of life's symphony". (Balázs, B, 1985, p. 116)

In the late sixties R. Murray Schafer sought to promote attention towards our changing sonic environment through a series of lectures on noise pollution. Recognizing the need for a progressive response to the situation and his distaste for certain industrial elements of Vancouver's soundscape, Schafer penned an essay in 1973 entitled 'The Music Of The Environment' (Schafer, R, 1973)**,** which describes examples of good and bad acoustic design and offers insight into the control we have over our sonic environment. He called for the establishment of the World Soundscape Project. "The main purpose of the WSP's work was to document acoustic environments, both functional and dysfunctional, and to increase public awareness of the importance of the soundscape, particularly through individual listening sensitivity." (Truax, 2008) Due to its elementary focus on aural details and the human relationship with sound, the project was very quickly associated with musical interest. As an original member of the WSP, Barry Truax explains that what characterizes Soundscape Composition "most definitively is the presence of recognizable environmental sounds and contexts, the pupose being to invoke the listener's associations, memories, and imagination related to the soundscape." (Truax, B, 1996, pp. 54-55) Soundscape Composition owes this central aspect of its identity to acoustic ecology.

---

[12] The term 'acoustic ecology' is given to the discipline attempting to describe and anaylse human beings' relationship to their environment as mediated through sound. The term's relevance is neatly demonstrated via an example outlined by Barry Truax. In *Dawn Chorus* - an expanded version of a section of the Soundscape Composition *Summer Solstice* - "the choice of time and location is designed to present to the listener what might be called the natural acoustic ecology, disturbed only minimally by the monastery bell on the one hand, and aircraft and distant train horns on the other. The most striking example of the intricacy of that ecology was observed at dawn when the aural "collision" of high-pitched frogs with the dawn chorus of birds in the same frequency range was avoided by the cessation of the former. This is a small example of what Bernard Krause (1993) terms the "niche hypothesis" of natural species and their acoustic communication patterns where each species occupies a specific frequency band or, as in the solstice example, a different time frame. The "composition" of the Summer Solstice documentary, then, was largely realized by natural forces with the studio manipulation intended to evoke an appreciation of that ecology." (Truax, B, 1996)

Soundscape Compositions vary significantly, but, according to Truax, in general, can be placed somewhere along a continuum between 'found sound' and 'abstracted sound'. At the one end, the 'found sound' approach uses only minimal editing and mixing techniques. The aim of this category of compositions, typified by the early work of the World Soundscape Project, is towards the naturalistic representation of particular environments. This may involve the use of one completely unaltered recording or the construction of a soundscape through the layering of different elements recorded from the same environment and often the same perspective. Examples of this kind of work include substantial passages in Westerkamp's *Into the Labyrinth* (2002) and Jon Appleton's *Times Square Times Ten* (1969), which although part of a larger, abstract structure, sound often like natural presentations of certain environments. At the other end, the use 'abstracted sound' is organized in accordance with internal sound properties and sound patterns and may involve transformative processing, as well as editing and mixing. Even soundscape pieces that include heavily processed sounds bear the defining links between sounds and some sense of their physical origins and associations. (Truax, 2002) Paul Lansky's *Night Traffic* (1992), for instance, opens with a series of drones – gestural vestiges at best – that later reveal their connection to passing vehicles as the sounds of the piece are processed differently to achieve closer degrees of gestural surrogacy at certain points.

The term *acousmatic* is used to describe the experience of hearing without seeing, often with reference to Pierre Schaeffer's musique concrète, and, essentially, Soundscape Composition is acousmatic. However, for Schaeffer the *acousmatique* was more essential than that. His concept of it rests upon Husserl's phenomenological concept of *epoché*[13]. On a deeper level the *acousmatique* is about suspending expectation and dispelling prejudicial associations. Schaeffer's acousmatique is supposed to 'suspend', to some extent, the phenomenological experience in favour of a more ordered and categorical approach to listening. (Kane, B, 2014) Crucially for Schaeffer, the acousmatique presentation of sound allows us to distinguish between modes of listening; it allows us to hear differently. Schaeffer described four listening modes with a particular emphasis on *reduced listening* in relation the composition of musique concrète. Reduced listening is a way of apprehending any sound by focusing entirely on the inherent traits of the sound itself, in the same way as the break between sound and source outlined in the context of Denis Smalley's *Source Bonding* prompts engagement with Spectromorphology. By removing the sound from the context of, or, in Husserl's term, by "bracketing" out, the sound's source, be it voice, instrument, object or environment, it becomes a *sound object (l'objet sonore)* in its own right that one can attend to for its inherent properties (timbre, pitch, morphology etc.), rather than as a signifier for something else. (Chion, M, 1994, p. 29)

---

[13] Schaeffer uses Edmund Husserl's Phenomenological philosophy to define his concepts of both the *sound object* and the *acousmatique.* Schaeffer's concept of the *acousmatique* rests on Husserl's *epoché.* "The reduction of the natural standpoint, also known as the phenomenological *epoché*, is one of the most famous procedures in Husserlian phenomenology.[36]Husserl identifies the natural standpoint (or attitude) with a commonsense view of the world: a world immediately available or "on hand, " where I am surrounded by objects and things of which I have immediate knowledge; where I operate habitually and often without reflection; where things possess significance and utility in relation to my interests and goals; a world that has spatial and temporal extension, and to which I am bound through everyday involvement.[37] For Husserl, the natural attitude is the given. But to become aware of the natural attitude, there must be some way of holding it at bay, so that it can be

Conversely, soundscape composers seek to present acousmatic arrangements (in the superficial sense) designed to maintain links between sounds and their sources and help listeners to explore their phenomenological experience of the world we live in via those intrinsic-extrinsic threads. At the same time, however, many soundscape composers layer and manipulate environmental sounds so as to draw attention to their intrinsic properties – inducing a kind of reduced listening - and the way they constitute an abstract, musical structure. Those two characteristics may seem at odds with one another, but in the context of Smalley's notion of Bonding Play and the deeper, Schaefferian concept of the acousmatique, one can see how certain kinds of Soundscape Composition may come alive in the tension between hearing a sound as abstract *and* as extrinsically connected to the outside world within the same piece, perhaps even at the same time. The life of the piece may be further developed in the way that this tension is built and resolved. This is an aspect of the way soundscape

---

examined. Husserl, borrowing the term *epoché* from ancient skepticism, suggests that we should employ an act of "bracketing" or "suspending, " an act of refraining from judgment about the exterior world in order to experience it anew."

"For Schaeffer, the natural standpoint must be overcome if musical research is ever to disclose the grounding of musical practice. By bracketing out the physically subsisting fact-world, by barring judgments in relation to it, and by leaving us only with auditory phenomena, hearing can no longer be characterized as a subjective deformation of external things… The introduction of the acousmatic reduction is modeled on Husserl's *epoché*. By barring visual access to the source of the sound, it is intended to draw our attention to the sound's immanent properties and objectivity." (Kane, B, 2014) composers guide their audience in experiencing the familiar in a new way and examining the phenomenological experience of the world we live in.

The work of soundscape composer, Sam Salem, for example, is characterized by the morphology of environmental sounds into ambient drones and the arrangement and counterpoint of different sounds based on their internal properties and their extrinsic links by way of providing an acousmatic experience of a particular environment. His piece, *The Sun Warms the Memory* (2011), is constituted entirely of environmental sounds recorded in Brussels. Between 01:50 and 02:30, for instance, we hear sounds of air, water, people, mechanical objects, and vehicles integrate into a shifting texture in which different elements are blended based on timbral similarities and contrasts, and composed into an abstract structure, reliant on the intrinsic properties of sounds, that generates a sense of place.

It is worth noting that film sound designers use many of the same mixing, layering, editing and processing techniques as soundscape composers. An excerpt from Andy Farnell's *Designing Sound* demonstrates some of this common ground: "Keep an ear open for similar sounds or ones with similar mechanisms. Make connections between patterns like a water splash and breaking glass, or a squeaking wheel and an animal sound." (Farnell, A, 2010, p. 243) Similarly, the use of sound in film can be rationalized along a continuum between found sound and abstracted sound. At the 'found sound' end of the continuum sound designers seek to create plausible, naturalistic sonic impressions of environments, characters and objects. At the 'abstracted' end sound may be used to conjure mood, be implemented motivically, or manipulated to bring out rhythmic, gestural and pitched material and given a kind of abstract, musical status. Of course, pertinently to this project, those same tensions between the acousmatic, the intrinsic, and the extrinsic may be wrought within narrative audiovisual media.

Through attention to these attributes it is possible to manipulate an audience's relationship with on-screen sounds and images and to move sounds from one point on Truax's 'found sound'/'abstracted sound' continuum to another. During the opening of David Lynch's *Blue Velvet* (1986), for example, we see a man watering his lawn collapse and die. Our attention is brought the sound of the hosepipe, which steadily increases in volume. Then, the 'hissing' sound is mixed into a pitched, ambient drone as the camera moves into the grass towards a colony of ants. The ‘hissing’ of the hosepipe is then mirrored in the sibilance of the rustling and chewing of the ant colony, which is amplified even more, to become *hyper real* and the most prominent feature of the scene. This involves varying degrees of gestural surrogacy. The sounds of the ant colony move from first-order surrogacy, in which they convey the movements and activities of the ants, to second and arguably third order surrogacy after becoming instrumentalized.

Sound design and Soundscape Composition share certain aesthetic concerns that prompt an investigation into people’s relationship with their sonic environment. The aesthetic purpose of Soundscape Composition, for the most part, remains fundamentally true to its origins in acoustic ecology. Soundscape composers seek to explore "the interrelationship between sound, nature and society" by either presenting unfettered, recorded material in coherent arrangements or by manipulating recorded material into abstract forms. (Westerkamp, H, 2002, p. 52) Cinema offers a striking arena for directing audience attention to the sounds or soundscapes of certain environments and for pursuing some of the same aesthetic goals as Soundscape Composition and, to return to Béla Balázs, whose outlook chimes with that of acoustic ecologists, an opportunity to organize and “analyze even chaotic noise with our ear and read the score of life's symphony.” (Balázs, B, 1985, p. 116) Just as Truax and his contemporaries base their practice on the understanding that "environmental sound acquires its meaning both in terms of its own properties and in terms of its relation to context", the sound designer must attend to both the intrinsic properties of sound, and its extrinsic links. (Truax, B, 1996, p. 52)

In Gus Van Sant’s *Elephant,* Hildegard Westerkamp’s soundscape composition, *Beneath the Forest Floor* (1992) is woven by sound designer Leslie Shatz into the film’s soundtrack to exploit both the emotive effects of its intrinsic properties and for its extrinsic links to environments that juxtapose those depicted in the film. Randolph Jordan suggests that Van Sant was employing the “disenfranchising of sound from conventional relationships to the cinematic image as a foundation for exploring the cultural environment of disenfranchised youth.” (Jordan, R, 2012) During the film’s ‘Benny’ scene we find here a set of relationship between image, sounds, and their source, which can be unified through the notion of a sound canvas. Westerkamp’s piece constituted in many environmental sounds recorded from the rain forests of western Canada. It functions, partly, as a traditional film score in *Elephant* whereby its drones, that rise and fall in volume resembling gusting wind whistling through corridors, bring an ominous tension to the scene. At the same time, the piece is woven into the film's sound design, within which there is a juxtaposition between the intrinsic-extrinsic links in Westerkamp's music to the British Columbian rain forest, and those of Shatz's sound design to the diegetic environment. This juxtaposition is reinforced by the counterpoint between *Beneath the Forest Floor* and the footage of school corridors and classrooms, ultimately generating a layer of meaning that Jordan interprets as an exploration of disenfranchisement. Westerkamp's music carries both these functions, the latter of which is afforded greater potency as a result of being sensitively woven together with Shatz's sound design. In the context of Van Sant's film, Shatz's sound design and Westerkamp's music generate layers of tension and meaning which are drawn into an audiovisual sound canvas in which narrative, 'music' and 'sound' are merged together.

Portfolio Examples: The Influence of Soundscape Composition in the Portfolio of Compositions

Soundscape Composition has had a clear influence over every piece in the portfolio. *Selfie I* and *Selfie II* are ostensibly Soundscape Compositions produced almost entirely using sounds recorded from the household environment in which the film, *Selfie (*Harmer, G, 2015*)* is set. The latter piece functions as part of an audiovisual soundtrack in a similar way to Westerkamp's music in *Elephant* as it creates tension through ambient drones and textures, as well as referring to objects and environments through intrinsic-extrinsic links and using those sounds and their links as motifs. The opening of the film is underscored with a series of drones, one of which, for instance, was produced from the sound of a household extractor fan, and another from a washing machine[14]. As the opening credits shiver and disappear, the sounds of an old television, manipulated and recomposed, provide the moment with subtle impact and have the crescendo fade out to the sound of residual TV static. The sounds of an iPhone keypad have been manipulated – time-stretched, duplicate, reorganized – to form a sound motif, which appears at various points, including 00:03:43 and 00:04:17**.** This particular sound is closely related to the overall message of the film which concerns the way that technology has encouraged vanity in people and occurs during swells of tension brought on by 'the monster within', so to speak, when we do things like take 'selfies'.

---

[14] These drones were created by using a digital equalizer to change the nature of their sound. Most commonly, particular frequencies were amplified in isolation by using the 'peak', 'notch' and 'gain functions'. This allows one to bring out pitched material while retaining the rest of the spectra and mixing the two in the desired proportions. The result is the ability to tune and create chords from the recognizable sound of an extractor fan. This technique was used commonly throughout the production of the portfolio.

The other pieces in the portfolio, although they contain prominent instrumental parts, bear the hallmarks of Soundscape Composition in their treatment of environmental sounds and, in some cases, instrumental sounds. *Cityscape* is grounded in ideas relating to Soundscape Composition and techniques inherited from Sonorism. The driving concept was to bring the subtle sense of an urban environment to the musical ideas. The piece is constituted by the instrumental music you see in the score and a mostly unaltered, walkthrough recording of an urban environment, similar to the recordings that make up the World Soundscape Project archive. *Eylenda* also employs largely unaltered, environmental sounds presented in quite a naturalistic way. Only, for this piece they were layered and organized, along with instrumental parts, to produce sound masses and in this way become an important, structurally integral element to the music. This facet of naturalism in their treatment of environmental sound, strongly connects both pieces with the institution of Soundscape Composition and its foundations in acoustic ecology.

Urban Cycle is very strongly rooted in the soundscape composer's objective of guiding a listener to explore their phenomenological experience of a familiar environment in a new way. Many of the techniques and ways of thinking used, not only in composing with environmental sounds, but also in composing the cello part and in integrating the two elements into one another, were directly linked to the school of Soundscape Composition. As previously discussed, the piece includes Bonding Play and varying degrees of gestural surrogacy, yet at all times the impression of an urban environment is maintained, encouraging the listener to identify or imagine the shared or associated origins of the majority of sounds going on at any one time. At many points throughout the piece the sounds, both environmental and instrumental are merely played back more or less as they were recorded, their musical significance is as a consequence of the way they are combined and organized with each other – corresponding patterns, contours, contrasts and motifs – evident in the passage between 06:50 and 08:50; while at other times, sounds are manipulated through varying degrees of recognition in order to fulfil certain roles – to support harmony, for example[15]. Many of the recordings of passing vehicles, for example, heard during the opening of the piece, and restated towards the end, maintain their natural Spectromorphology, while at other times, such as 03:57, they are manipulated, in this case elongated or 'time-stretched' into something less recognizable. Yet, the listener remains 'in' the urban environment due to the intrinsic-extrinsic links of sounds that refer to that environment, and on account of the maintained aesthetic links between those 'found sounds' and more 'abstracted sounds'. Together, they make up the piece as a whole, the efficacy of which comes partly from the aforementioned experience of hearing a sound as both abstract *and* extrinsically linked. The sense of the environment would not exist without the music and the music would not exist without the sense of the environment because of those links, and because an important aspect of the music's effect is upheld in the development and upheaval of tensions and expectations surrounding those links through Bonding Play.

Building on the work of *Urban Cycle*, the rescoring of *Berlin: Symphony of a Metropolis: Act I and Act V*, and *The Near Woods* included many of the same techniques and a similar approach in audiovisual contexts. For example, the sound of a moving train, originally presented quite naturalistically in conjunction with its image, recurs as a motif, unchanged in its Spectromorphology, but in the diegetic absence of a train during Act I of *Berlin: Symphony of a Metropolis.* In the opening of Act V the sounds of a tram, its bell and its brakes are presented in unaltered naturalism, then, during the last second of their play back, their signals are bussed to trigger a long reverb, which generates sustained tones that blend with the instrumental ensemble and support the prevailing harmony of the music.

The Near Woods, in particular, is defined largely by the organization of recognizable sounds. During the passage between 03:33 and 06:00, for instance, all the environmental sounds retain their 'true' timbre and are recognizable, particularly because they are source-bonded to diegetic objects and places, yet are presented asynchronously. The piece does, however, include sounds abstracted beyond recognition, but remains closely connected to the diegetic environment most of the time. These techniques embody a very multifaceted approach to Soundscape Composition, which makes use of both 'found sounds' and 'abstracted sounds', in Truax's terms, while maintaining close, aesthetic integration between a diegetic environment, its sounds, and instrumental music.

---

[15] In general, wherever environmental sounds are manipulated to take on a harmonic role within the portfolio it was achieved via one or a combination of five processes: granular synthesis, sustained reverb, 'time-stretching', 'peak', 'notch', and 'gain' EQ functions, and pitch correction. The former three process all serve to elongate a part or all of the sound, or generate a different 'continuant' in Smalley's terms. The 'peak', 'notch' and 'gain' EQ functions were used to isolate pitched material while excluding other spectral elements to the desired degree, while pitch correction was used to 'tune' this pitched material to support or create harmony.

Soundscape Composition has provided a huge amount of inspiration and precedent for this project. It offers a collection of ideas and practices that allows a composer to bring environmental sound into an abstract realm, while engaging in Smalley's Bonding Play in order to draw "the interrelationships between sound, nature and society" into an aesthetically unified sound canvas. (Westerkamp, 2002, p. 52) Moreover, the similarities between sound design and Soundscape Composition, on a backdrop of ideas regarding sound cinema that seek to elevate sound within the audiovisual hierarchy, such as the notion of audiovisual counterpoint, illuminate how the ethos and practice of soundscape composers can assist in a form of electroacoustic composition that incorporates the tensions between the abstract, intrinsic, and the extrinsic in finding a meaningful place in audiovisual media.

The Unified Audiovisual Sound Canvas: Concluding Examples

Soundscape Composition, Sonorism, and its legacy, have been important influences over the development of the compositional practice cultivated through this project both practically, in that they have bestowed a plethora of techniques, and philosophically in that they are both concerned with re-evaluating our relationship with 'sound' and 'music', and in exploring the significance of the source bonding in music. As a framework for considering the relationship between sound and source in music this thesis looks to Denis Smalley's theories surrounding Spectromorphology and Bonding Play, and the role of expectation in electroacoustic music. The audiovisual environment enriches the exploration of Bonding Play in electroacoustic composition profoundly, particularly in light of visions such as Alexandrov, Eisenstein, and Pudovkin's audiovisual counterpoint in which the audio and the visual take on a certain cooperative autonomy to create an aesthetic experience greater than the sum of its parts. The musical analogy of 'counterpoint' is highly appropriate here. The separate elements of the *audio* and the *visual* may stand alone as individual, aesthetic structures to some extent, like individual lines of music, but when they combine the different voices relate to one another to create new meaning. A sound canvas that integrates ‘music’, ‘sound’, and their malleable links to physical objects through moments of audiovisual counterpoint (rather than upholding conventional audiovisual naturalism and the distinctions between diegetic and non-diegetic, and between ‘sound’ and ‘music’), opens up the possibility of richer aesthetic meaning and unity between the audio and the visual,

There are existing examples of this kind of integration. Walter Murch’s sound editing brings together the song *The End* (The Doors, 1967) and different sounds of helicopter blades in the opening sequence of *Apocalypse Now* (Coppola, F, 1992). The sounds of helicopters are used motivically throughout the movie, but in this opening sequence those sounds are somewhat disembodied. They are presented in isolation from other sounds generated by or associated with helicopters and are first heard acousmatically. They have been disembodied from their source somewhat, placing the sound in third-order gestural surrogacy. Shortly after this, a helicopter comes into view and the audience connects sound and image, bringing it into second-order surrogacy through audiovisual association (an effect not possible through electroacoustic composition alone). Then, *The End* begins to play while the eerie, manipulated helicopter recordings continue and blend with the music. After around two minutes, a drum fill in the song blends with and introduces more naturalistic sounds of passing helicopters. This naturalism is disrupted by their asynchronism with a visual montage that overlays shots of the Vietnam war with Benjamin Willard (Martin Sheen) lying on the floor, staring up at a ceiling fan. The sounds of helicopters, The Doors’ song and the Bonding Play between sounds and sources come together to form an evocative sound canvas containing visual and audible motifs that carry significance throughout the film.

A similar intricate relationship between sound, music and image plays out in *Berberian Sound Studio* (Stirckland, P, 2012) in which sound engineer, Gilderoy (Toby Jones) is recruited to work on a gory, Italian thriller, *The Equestrian Vortex*. As tensions between the characters in the film intensify, so too does the tension between Gilderoy’s perception of reality and the movie’s fiction. This surreal aspect of the film is reflected in the use of sound as it often breaches the diegetic/non-diegetic divide, not only between *Berberian Sound Studio* and the world the audience inhabits, but also between *The Equestrian Vortex* and the world Gilderoy inhabits. During scenes in which Gilderoy is producing foley to picture, or listening intently to parts of his sound design, those diegetic sounds become a prominent, loud feature, and often combine with non-diegetic synthesized drones. At the same time the camera will often zoom in to exclude the sound-making object from the shot, so that the audience becomes immersed in these, often violent, disturbing, and carefully composed sounds. We are drawn into the unsettling intensity of Gilderoy's experience, both through the emotive impact of these sounds and in the way they relate to the plot of the film – the abuse of the actresses, the terse, aggressive insistence of director Francesco (Cosimo Fusco).

The recent work of Clemens Wirth, director and animator, and commercial audio production company, Radium Audio, presents a congruous blend of sound design, music and moving image in which it is hard to pinpoint where each element ends and the others begin. The soundtrack to Wirth's short film *Kinsetsu* (2017) bears some vivid hallmarks of electroacoustic music composition. The abstract fascination with texture, both visually and sonically, may lead viewers to see a kind of audiovisual musique concrète in this piece. Radium Audio is credited with "music & sound design" in the film's credits, though the two elements are barely distinguishable from one another. Despite being only two minutes in duration, it is a dense work. Recordings of environmental sounds are instrumentalized, layered, manipulated, and composed in aesthetic union with synthesizer parts, which imitate a string section and give the piece a sense of harmonic shape and progress.

The synthesized chords are distinct within the piece because of their tonality and mimesis of the familiar sound of a string ensemble. However, they are unified with the rest of the sound canvas as they sit within the layers of sound, foregrounded by close recordings of environmental sounds, are sometimes blended almost completely with similar spectromorphologies, and because they are obviously subject to the same digital manipulation as the other sounds – equalization, filter sweeps, contributing to collective contrasts in texture and volume. The audience is presented with an electroacoustic composition founded on the interrelations of textures, spatial perspectives, and morphologies that works with the visual montage in its treatment of different visual textures and the rhythm of its editing to produce a cohesive whole.

The use of sound in *Kinsetsu* is, by and large, non-naturalistic. At 00:33, for instance, an image of stationary stones accompanies sounds that imply movement and collision among large rocks. Similar juxtaposition is employed at 01:18 with images of ice. In particular, however, this asynchronism is played out through one of the strongest thematic contrasts in the film: that between micro and macro perspectives struck within both the soundtrack itself and in the counterpoint between sound and image. At 01:00 stop-motion footage of small stones moving over one another accompanies sounds, which imply micro and macro perspectives of the stones simultaneously. There is no real sense of scale in the image, however the rapid, stop-motion movement of some of the stones, combined with the great number of them densely packed into the frame, suggest small objects and a certain distance between viewpoint and subject. Occupying the higher frequencies of the soundtrack are the sounds of small stones moving over one another that correspond with the macro perspective of the camera, while in the lower frequencies there are sounds that imply a perspective from *among* the stones – from within the crevasses between them – a micro perspective where the collisions between stones sound larger and more thunderous. I suggest that this is a kind of audiovisual, spatiomorphological Bonding Play. Both micro and macro sounds can be source bonded to the stones themselves, but only the higher frequency sounds match the perspective of the camera, whereas, by contrast, the micro perspective sounds create juxtaposition between sound and vision. This thematic contrast is repeated at intervals throughout the film, including at 00:05, 00:27, 01:00, and 01:09.

Despite being a visual artist, sound takes a central creative role in many of Wirth's films, such as *Gravity* (2015) and *Timanfaya* (2018). This kind of work presents an insight into how a sound canvas, consisting of environmental sound, instrumental sound, and Bonding Play, and composed using techniques of Soundscape Composition, musique concrète and Sonorism may be realized.

Portfolio Example: Audiovisual Sound Canvas in *The Near Woods*

The final piece in the portfolio, *The Near Woods* draws on all the experiments and practices cultivated throughout the project to create an audio complement to Ollie Bradley-Baker's visual montage. It is an electroacoustic piece written for flute, bass clarinet in Bb, vibraphone, piano, violin, and violoncello (these parts were recorded almost entirely through a live ensemble performance), and environmental sounds that bear changing, intrinsic-extrinsic links to physical objects and spaces depicted in the film. It incorporates all the influences and ideas discussed and can be understood as a sound canvas in which the distinction between 'music' and 'sound' is blurred and, at times, removed altogether.

The Beginning of the Journey: Early Morning in a City Park (00:00 – 03:26)

The opening of the film is characterized by the familiar sounds of an urban park – wind through leaves, distant traffic and birds. From 00:24 there emerges a low volume, high-pitched, oscillating drone (the kind used to depict mechanical activity later on in the film) combined with the amplified bass frequencies from the sounds of distant traffic, subtly bolstered by a recording taken from the inside of an underground train tunnel of echoing air and train movement. These combine with the sounds of trickling water, a single-note crescendo on the bass clarinet and a flute gesture to form the first swelling sound mass of the piece. Within this sound mass, too, is an audible recording of various extended string techniques – left handed pizzicato, col legno bowing, and percussive effects – like those found in Penderecki's music, which form a dense, *flocking* sound texture. This sound mass crescendos quickly to a sudden change in texture and volume at 00:40. Many of the other sounds drop out of the mix, leaving the extended string techniques uncovered. Where once they were combined with other sounds to create the sonic impression of water, they become the only remaining sounds linked to the image of running water because they remain heard when the water is seen, and because the intrinsic properties of the percussive string effects bear similarities to those of trickling water. They produce gestural vestiges, as heard in remote-order surrogacy. This sequence acts as an opening statement inviting the audience to consider this unconventional relationship between sound and image with its extended instrumental techniques, its agglomeration of environmental and instrumental sounds, and audiovisual Bonding Play.

Throughout this opening scene the distant sounds of air, traffic and street noise form an important part of the sound canvas as they contribute to a sense of atmosphere and place, while rising and falling in volume like waves or gusts of wind to support certain moments and passages in the composition. In addition, pitched tones, inherent to some of the environmental sounds, as well as complementary, 'metallic', or 'airy' timbres, are combined with those created in the violin part. When the violin part begins at 00:56 the sound of squeaking bus brakes, tuned to specific pitches harmonizes with the violin. It is as if the arpeggios emerge from the distant sounds of the city. This is an important structural element in that it recurs as a motif, relates to other, similar material used to create atmospheric drones (eg. 01:58), and in that the intervals in the arpeggios relate to those in quicker, distinctive arpeggiated string passages heard, for example at 02:08 and 03:32, among other occasions.

Other motifs constituted in environmental sounds are introduced in the first three minutes in the visual absence of their source. For instance, the sudden emergence of a collection of bicycle sounds at 01:50 builds into another sound mass. There has been no imagery of a bicycle, so far, instead this passage establishes a sound motif that takes on new significance when it is coupled with imagery of associated objects later in the film, during close shots of moving bike components and amid other similarly derived sounds. This functions as an audio introduction to an audiovisual theme, prominent throughout the film.

'The Bicycle Portrait' (03:26 – 06:19)

The relationship of these sounds to the image becomes clearer in the following scene, which, during production, was referred to as 'the bicycle portrait'. This section of the film between 03:26 and 06:19 features many close shots of the bicycle's mechanical components interspersed with more open images of a cyclist riding through city streets and represents the vision of this project well. It contains a mixture of diegetic, naturalistic sound, and non-diegetic (though often derived from the diegesis) sound composed into one abstract structure. The sound canvas retains its link to the context depicted, but largely plays out asynchronously with the image.

The construction of this part of the sound canvas began with these environmental sounds, which were organized under the influence of Soundscape Composition into their final form, designed to invite an audience to explore a familiar experience and object in a new way. Then, the instrumental ensemble was introduced by incorporating fragments of melodies fully expounded in other parts of the film, and instrumental effects to produce pitch and 'noise' in various proportions, inspired by Sonorism. In Smalley's terms, one could describe this section, generally, as a mixture of *flocking* and *streaming* spectromorphologies. The way the different sounds were flocked and streamed was influenced by the visual montage, the need to create passages of contrasting intensity and moments of emphasis, melodies that feature during other parts of the film, and the possibilities for complementary sound shapes and textures within the different elements. For example, from 04:05 we hear a repeated note (D) played on the piano that accelerates into the gradual introduction of a hand-muting technique to create an unorthodox piano articulation. *(See figure.. 6)*

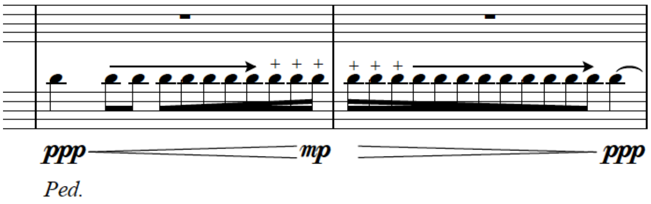


Figure 6
Excerpt from The Near Woods (Piano)

This blends with the sounds of a spinning bicycle wheel, spokes being struck, and a chain skipping over cassette teeth within a sound mass rising towards a moment of sudden contrast at 04:10, after which the repeated note decelerates as the muting effect is gradually minimized, restoring characteristic sustain and pitch to the sound of the piano. One second later, the quickening and slowing shape articulated by the piano is mirrored by a recording of a piece of wood being dragged over the spokes of a bicycle wheel into a similar, more subtle moment of sudden contrast created by the crescendo and sudden removal of the sound of general street ambience. Through *extended* piano articulation, in the context of the rest of the sound canvas, the perceived bond between the sound of the piano and the piano itself can be heard weakening. The sound draws away from its source to take a temporary place among the other *flocking* sounds, before reconnecting with its real source object.

There is an array of techniques used in this section to create somewhat unconventional timbres and to integrate instrumental sounds with environmental sounds. Instrumental passages are tightly knitted into this weave of sounds through a lack of prominence in the mix; unusual timbres and extended techniques; and an absence of lyricism, of melodic line and clear harmonic progression; verging on a kind of musique concrète instrumentale whereby instrumental sounds become, at times, reduced from their source to interact with other, environmental sounds.

Bonding Play is an ever-present facet of this part of the sound canvas too, as sounds come in and out of synchronization with the image while remaining linked, either loosely or strongly, to the bicycle or diegetic environment. Sounds may be perceived as diegetic or non-diegetic accordingly, bringing the visual montage into this process and creating the overall effect of audiovisual Bonding Play.

The City Centre (06:24 - 08:36)

A similar method of composition is employed in the following section, between 06:24 and 08:36, only more space is given to tonal melodic and harmonic ideas articulated mostly through instrumental sound. From 06:54, for example, some of the same instrumental extended techniques are used in order to blend the instrumental parts of the music with the metallic resonances, drones, and sounds of passing vehicles, while some of the sound shapes from 'the bicycle portrait' recur, such as the aforementioned wood percussing on bicycle spokes at 06:56, along with new environmental sounds.

Leaving The City (08:04)

From 08:04, following the hectic climax of the city centre, the nature of the sound canvas begins to change as the subject (Louise Taggart) travels through a quieter, partly forgotten, post-industrial landscape towards the edge of the city, and out into more distant suburbia, before reaching uninhabited, coastal forest. As this happens the sound canvas becomes sparser and a more rural set of environmental sounds is gradually introduced using the same compositional approach. Extended instrumental techniques, environmental sounds and fragments of melody interact to create varying textures and sound masses that are bonded to the image via current, erstwhile or future links with visible sources in the film. From 12:20, for instance, a blend of familiar percussive sounds, both instrumental and environmental, *flock* together, to occasionally coincide rhythmically, while the rustling of leaves and pine needles, and the sounds of wind and waves, occupying similar spectra fills the space around them. From 17:14 the retuned recordings of bus brakes and arpeggiated violin part return along with a new arrangement of other ideas and sounds from the beginning of the piece as the film works towards its calm end.

The compositional method cultivated through the project has been consistently applied throughout *The Near Woods.* The examples described demonstrate the way Soundscape Composition, Sonorism and Smalley's Bonding Play can be integrated into an audiovisual sound canvas in which the lines of distinction between instrumental sound and environmental sound, as well as the distinction between diegetic and non-diegetic sound, can be eroded. By liberating sounds from their conventional categories and integrating them into one aesthetic structure, they may facilitate Bonding Play. Perceived bonds between sounds and their sources can be strengthened, weakened, and broken as a way of creating, gratifying and undermining an audience's expectations. As can be understood via Smalley's theoretical framework, the resulting sensations of tension and resolution become an integral aspect of the musical experience, like dissonance and resolution in tonal, harmonic music. *The Near Woods, Eyelenda, Berlin: Symphony of a Metropolis,* and *Selfie II,* aim to draw these tensions into an audiovisual context to produce audiovisual Bonding Play. In this way it is possible to create a more layered audiovisual experience in which sound canvas and visual montage gain *contrapuntal* importance, fostering stronger aesthetic unity between 'sound', 'music', and moving image.

Bibliography

APPLETON, L., 1969. Times Square Times Ten. In: Appleton Syntonic Menagerie [CD]. USE: Flying Dutchman.

BALÁZS, B., 1985. Theory of Film: Sound. In: J.B. ELIZABETH WEIS, ed, *Film Sound: Theory and Practice.* New York: Columbia University Press, pp. 116.

BATTIER, M., (AUTHOR), 2007. What the GRM brought to music: From musique concrète to acousmatic music. *Organised sound: An international journal of music technology,* **12**(3), pp. 189-202.

BOULEZ, P., 1987. Timbre and composition-timbre and language. *Contemporary Music Review,* **2**(1), pp. 161-171.

BRADLEY-BAKER, O., 2018. *The Near Woods.* United Kingdom.

BRIBITZER-STULL, M., 2015. *Understanding the leitmotif : from Wagner to Hollywood film music.* Cambridge : Cambridge Univ. Press, 2015.

BURCH, N., 1985. On the Structural Use of Sound. In: J.B. ELIZABETH WEIS, ed, *Film Sound: Theory and practice.* New York: Columbia University Press, pp. 201.

BURTNER, M., 03/01/2005, 2005-last update, *Making Noise: Extended Techniques After Experimentalism* [Homepage of New Music Box], [Online]. Available: http://www.newmusicbox.org/articles/making-noise-extended-techniques-after-experimentalism/ [23/02/2017, 2017]. .

CHION, M. and GORBMAN, C., 2009. *Film, a sound art / Michel Chion ; translated by Claudia Gorbman.* New York : Columbia University Press, 2009; English ed.].

CHION, M., GORBMAN, C. and MURCH, W., 1994. *Audio-vision : sound on screen.* New York : Columbia University Press, 1994.

COPPOLA, F., 1979. *Apocalypse_Now.* Cannes, France: Omni Zeotrope

D'ESCRIVÁN, J., (AUTHOR), 2009. Sound art (?) on/in film. *Organised sound: An international journal of music technology,* **14**(1), pp. 65-73.

FARNELL, A., 2010. *Designing sound [electronic book] Andy Farnell.* Cambridge, Mass. : MIT Press, c2010.

GRANAT, Z., 2009. Rediscovering 'Sonoristics': A Groundbreaking Theory from the Margins of Musicology. In: *Music's Intellectual History.* ed, BARBARA DOBS MACKENZIE, ZDRAVKO BLAZEKOVIC*.* New York: Répertoire International de Littérature Muiscale, pp. 821.

HARMER, G., 2015. *Selfie.* United Kingdom, Online: Fraught Productions.

HUCKVALE, D., 2008. *Hammer film scores and the musical avant-garde.* Jefferson, N.C. ; McFarland & Co., 2008.

JORDAN, R., 2012. The Ecology of Listening while Looking in the Cinema: Reflective Audioviewing in Gus Van Sant's *Elephant*. *Organised Sound* **17**(3) pp. 248-256

KANE, B., 2014. *Pierre Schaeffer, the Sound Object, and the Acousmatic Reduction.* Oxford University Press.

KULEZIC-WILSON, D., 2008. Sound Design Is the New Score. *Music, Sound, and the Moving Image,* **2**(2), pp. 127-131.

LANSKY, P., 1992. Night Traffic. In: Homebrew [CD[. Bridge Records.

LUTHER ADAMS, J., 2015. *The Wind in High Places.* Online: Cold Blue Music.

LUTHER ADAMS, J., 2014. *Become Ocean.* Seattle: Cantaloupe Music.

LYNCH, D., 1986. *Blue Velvet.* U.S.A and Canada: De Laurentiis Entertainment Group.

MACKENZIE, S., 2014. A Statement on Sound (USSR, 1928). Berkeley: University of California Press, pp. 566.

MCQUEEN, S., 2008. *Hunger.* Cannes, France: Icon Film Distribution.

MELVIN, A., 2011. Sonic motifs, structure and identity in Steve McQueen's Hunger. *Soundtrack,* **4**(1), pp. 23-32.

NICK, F and SEIS, M., 2015. *Eyelenda.* [Online Video]. 12 July 2015. Available from: <https://www.youtube.com/watch?v=U3r62Np_pxY> [Accessed: 3 February 2017]

PENDERECKI, K., 1960. *Threnody for the Victims of Hiroshima.* EMI Music Inc.

PUDOVKIN, V., 1985. Asynchronism as a Principle of Sound Film. In: J.B. ELIZABETH WEIS, ed, *Film Sound.* Columbia University Press, .

PUDOVKIN, V., 1933. *The Deserter.* Russia: Mezhrabpom.

ROACH, H., 1940. *One Million B.C..* U.S.A: United Artists.

RUSSOLO, L., 1967. *The Art of Noise (futurist manifesto, 1913).* Translated from [Italian] by Robert FILLIOU. Something Else Press.

RUTTMANN, W., 1927. *Berlin: Symphony of a Metropolis.* Germany: Fox Europa

RYAN, D. and LACHENMANN, H., 1999. *Composer in Interview: Helmut Lachenmann.* Boosey & Hawkes.

SAARIAHO, K., 1992. *Près.* Chester Music Ltd.

SAARIAHO, K., 2000. *Sept Papillons.* Helsinki: Chester Music Ltd.

SALEM, S., 2011. *The Sun Warms The Memory.* [Online] Available at: <http://www.osamahsalem.co.uk/?projects=the-sun-warms-the-memory> [Accessed 20 August, 2018]

SCHAFER, R, 1973. *The Music of the Environment.* Wein: Universal Edition.

SMALLEY, D., (AUTHOR), 1997. Spectromorphology: Explaining sound-shapes. *Organised sound: An international journal of music technology,* **2**(2), pp. 107-126.

STRICKLAND, P., 2012. *Berberian Sound Studio.* U.K: UK: Universal.

TERUGGI, D., (AUTHOR), 2015. Musique concrète today: Its reach, evolution of concepts and role in musical thought. *Organised sound: An international journal of music technology,* **20**(1), pp. 51-59.

THE DOORS, 1967. The End. In: *The Doors* [CD]. Elektra Records.

THOMAS, A., 2005. Sonorism and experimentalism. *Polish Music since Szymanowski,* **1**(2), pp. 159.

TRUAX, B., 2008. Soundscape Composition as Global Music: Electroacoustic music as soundscape. *Organised Sound,* **13**(2), p. 103.

TRUAX, B., 1996. Soundscape, Acoustic Communication and Environmental Sound Composition. *Contemporary music review,* **15**(1), pp. 49-65.

TRUAX, B., (AUTHOR), 2002. Genres and techniques of Soundscape Composition as developed at Simon Fraser University. *Organised sound: An international journal of music technology,* **7**(1), pp. 5-13.

VAN SANT, G., 2003. *Elephant.* U.S.A: HBO Films, Fine Line Features

VARÈSE, E. and WEN-CHUNG, C., 1966. The Liberation of Sound*. Perspectives of New Music,* **5**(1) pp. 11-19.

WESTERKAMP, H., (AUTHOR), 2002. Linking Soundscape Composition and acoustic ecology. *Organised sound: An international journal of music technology,* **7**(1), pp. 51-56.

WESTERKAMP, H., 2002. Into the Labyrinth. In: *Into India* [CD]. Centrediscs.

WESTERKAMP, H., 1996. Beneath the Forest Floor. In: *Transformations* [CD]. Centrediscs.

WILLIAMS, J., 1977. *Music of Star Wars.* U.S.A: 20th-Century Fox.

WIRTH, C., 2018. *Timanfaya.* [Online Video]. 1 March 2018. Available from: <http://www.clemenswirth.com/timanfaya/> [Accessed: 20 August 2018].

WIRTH, C., 2017. *Kinsetsu.* [Online Video]. 12 April 2017. Available from: <http://www.clemenswirth.com/kinsetsu> [Accessed: 20 August 2018].

WIRTH, C., 2015. *Gravity.* [Online Video]. 20 April 2015. Available from: <http://www.clemenswirth.com/gravity> [Accessed: 20 August 2018].

Source Bonding, ‘Music’ & ‘Sound’ in Electroacoustic composition and the Audiovisual Sound Canvas

Ph.D. Thesis and Portfolio

(Volume II – Appendix I)

Thesis submitted in accordance with the requirements of the University of Liverpool for the degree of Doctor in Philosophy

By

Daniel J Fallon

Monday 3rd September 2018

Contents

Appendix 1 3
The Portfolio of Compositions List of Works.... 3
Cityscape 3
Selfie I and *Selfie II* 4
Selfie I 4
Selfie II (Film Score) 5
Urban Cycle 6
Berlin: Symphony of a Metropolis, Act I & Act V 7
Eylenda 8
The Near Woods **........ 9**

Appendix 1

The Portfolio of Compositions

List of Works

The Development of a Compositional Technique through Practice-Based Research

The pieces in the portfolio are presented here in chronological order, accompanied by descriptions of their aesthetic aims and their areas of focus. The pieces themselves and the order in which they were produced embody the progression and incremental realization of the compositional ideas and techniques outlined the thesis. Three of the four pieces in the first part of the portfolio – *Cityscape, Selfie,* and *Urban Cycle* – do not accompany a visual component. These were thought of as *studies* allowing focus on certain practices, free from the pressures of collaboration and scoring to picture; experiments in different areas, which would later come together to contribute to a more complete representation of the vision discussed in this thesis: from initial experiments in developing an instrumental, timbral palette; to those that helped to refine the use of environmental sound; to the final realization of a *sound canvas* in which environmental sound, instrumental music, abstraction and reference thoroughly interweave to enrich the audiovisual experience.

Cityscape

Written for bass clarinet in Bb, percussion, piano, violin, violoncello and urban environmental sounds.

Duration: 8 minutes 58 seconds

Publically workshopped and recorded at Open Circuit Festival, Liverpool, November 2014 by *Ensemble 10/10*

Aesthetic Aims

For the listener *Cityscape* aims to encourage hearing the possible similarities and links between instrumental and environmental sounds, and perhaps to hear spectromorphological relationships and to begin, therefore, to blur the distinction between 'sound' and 'music'.

Areas of Focus and Development

Cityscape was the product of the early experimentation that partially forms basis of this project. It served as a way of building on the experiments of a previous work, *Bicycle,* (workshopped by instrumentalists from the Royal Liverpool Philharmonic Orchestra, though not included in the portfolio) and exploring further the use of an instrumental ensemble to produce a range of timbres that would merge well with the sounds of an urban environment, while carrying tonal harmonic and melodic ideas. Moreover, the piece was a study in how to develop this way of writing within the specific confines of this project. Almost all the instrumental recordings were to be made in live workshops or performances with minimal rehearsal time. There was a need, therefore, to familiarize myself with writing in this way and to understand what would be feasible in this context with musicians sometimes unfamiliar with these kinds of techniques. Working with instrumentalists and instruments directly allowed me to appreciate and learn to work with their particular qualities and extended techniques by way of progress towards synergy between musical ideas, players' skill and the full range of instrumental timbre in a way that could be applied to audiovisual production later on. In a sense, this piece embodies an attempt at refining the first three stages of what would become the overall compositional method.

Selfie I and *Selfie II*

'Selfie I' and 'Selfie II' are related projects. 'Selfie II' is the 'score' to Geoff Harmer's 'Selfie' (2015), a kitsch-horror film telling the story of a woman's discovery of a super natural being in her home. Production of *'Selfie I' was begun prior to 'Selfie II', though both pieces were under production simultaneously for a time. They are almost entirely constituted in sounds recorded from the diegetic environment of the film - a standard British household.*

Selfie I

Autonomous soundscape piece constituted in household environmental sounds

Duration: 10 minutes 46 seconds

Completed January 2015

Aesthetic Aims

Selfie I aims to build coherent, abstract structures by manipulating, layering and mixing environmental sounds recorded from the diegetic environment of the film, *Selfie* (2015). In keeping with the philosophy of Soundscape Composition, a significant purpose here was to prompt a listener to experience a familiar environment in a new way; a campaign that supported the goals of the film and film score this piece is associated with.

Areas of Focus and Development

Selfie I is a Soundscape Composition that aims to present the familiar sounds of the average household in abstract form. As well as being a piece in its own right it also allowed me to experiment with its particular set of sounds and work on ideas in a way that informed the music for the film *Selfie* (Harmer, G, 2015) *Selfie I* is the first piece in the portfolio of its kind and many of the approaches to organizing and composing with environmental sound, influenced by Soundscape Composition and Sonorism, explored in the production of this piece where used and developed throughout the rest of the portfolio.

Selfie II (Film Score)

Autonomous soundscape piece written for electronic and household environmental sounds

Duration 6 minutes 49 seconds

Music produced for the film 'Selfie', directed by Geoff Harmer and publically released by Fraught Productions in 2015

Aesthetic Aims

Selfie II aims to build coherent, abstract structures that supported the form and emotional contour of the film, *Selfie* (2015), by manipulating, layering and mixing environmental sounds recorded from the diegetic environment of the film. In keeping with the philosophy of Soundscape Composition, a significant purpose here was to prompt a listener to experience a familiar environment in a new way, and assist the audience in reflecting on their phenomenological experience of the world we live in.

Areas of Focus and Development

Selfie II sought to bring the techniques and approaches explored in *Selfie I* to the more pressured, collaborative audiovisual production of Geoff Harmer's *Selfie* (2015)

I was asked to produce an 'ambient' score based on shifting drones punctuated with dramatic crescendos and abrupt, jarring sound effects to blend with the work of sound designer, Carl Harries. Despite involving a separate composer and sound designer for the film, it is sometimes difficult to hear where the musical score ends and the sound design begins. They often overlap. There are elements of the soundtrack that are abstract and others that bear a strong connection to the on-screen environment. Many of the sounds in the score contribute to a physical sense of the on-screen environment, while others are manipulated to the point of complete abstraction. Likewise, the sound designer has not been limited to representative sound. There are abstract elements to his work too. For instance, from 00:03:55 the sound designer included some creaking sounds, and some jarring abstract sound effects, while I included some sounds of human breathing which could easily have been put there by the sound designer in reference to the ominous presence in the film. As is outlined in the commentary, this fluidity between perceived diegetic and non-diegetic sound is an important aspect in the function of the work in the portfolio and the way it engages with its theoretical heritage.

Urban Cycle

A studio piece composed of violoncello and urban environmental sounds

Duration 11 minutes 19 seconds

Violoncello played by Hilary Browning of the Liverpool Philharmonic Orchestra

Publically installed at Libidinal Circuits festival, Liverpool, July 2015

Aesthetic Aims

Urban Cycle aims to integrate instrumental sounds and performance, along with environmental sounds into one composition in such a way as to blur the distinction between 'sound' and 'music' and reveal the way a listener may attach certain expectations to a given sound based on its perceived origins. The identity of the cello is unclear at the beginning of the piece as it blends with and mimics the characteristics of sounds within the urban environment to which the piece alludes.

As the piece progresses the cello emerges to voice increasingly conventional, tonal melodies in conventional articulations. Then, the cello recedes back somewhat into the canvas of environmental sounds. Similarly the environmental sounds are manipulated into organized structures that may undermine a listener's expectations as to how those sounds should behave, thus prompting a listener to hear all elements, instrumental and environmental, as components in a complete piece of music.

Areas of Focus and Development

Urban Cycle was produced in ideal circumstances that allowed me to thoroughly consolidate positive outcomes from the previous works and build them into a single piece. The piece was written for a soloist and was recorded over several studio sessions, which permitted liberal experimentation with different techniques and ideas under the consultation of an experienced, professional instrumentalist. These studio sessions produced ample recorded material to then be digitally integrated, along with environmental sounds into an electroacoustic piece, outside of the confines and deadlines of working collaboratively with a filmmaker or director, or to meet the needs of a public performance. Timbre is of central importance to this piece. Building on work undertaken for *Bicycle* and *Cityscape,* Browning and I were able to explore the timbral and gestural range of the cello, so as to serve the end of blending instrumental and environmental sounds.

Berlin: Symphony of a Metropolis, Act I & Act V

A rescoring of Walter Ruttmannn's 'Berlin: Symphony of a Metropolis' (1927)

In collaboration with composers Liam Carey, Andrew Graley, and Isabel Benito Gutiérrez

Written for alto flute, clarinet, percussion, violin and violoncello and urban environmental sounds

Act I duration: 15 minutes 4 seconds   Act V duration: 2 minutes 58 seconds

Publically Screened and Performed by the Royal Liverpool Philharmonic Orchestra, Clark Rundell conducting, at FACT cinema in March 2016

Aesthetic Aims

To create a sound canvas incorporating musical ideas written for the available instrumental ensemble and environmental sounds bearing a strong connection to the diegesis, thus creating the possibility of audiovisual Bonding Play within a musical structure reflective of Ruttmann's visual montage.

Areas of Focus and Development

Berlin: Symphony of a Metropolis (1927) is Walter Ruttmannn's silent, city symphony film depicting life in Berlin, during the late 1920s, originally scored by Edmund Meisel. The rescoring of Acts I and V featuring in the portfolio aimed to bring some of the techniques established in the previous portfolio works to a live ensemble setting in contribution and a more pressured, collaborative audiovisual production. The compositional approach to both Act I and V drew significantly on the experiences of creating *Cityscape, Selfie II* and *Urban Cycle* in the treatment of environmental sounds and the collective ensemble to produce contrasting sound masses and textures, as well as the weaving of instrumental melody with environmental sounds.

Eylenda

Studio piece composed of instrumental and environmental sound.

Duration: 6 minutes 28 seconds

Music and sound produced for a rescoring of the film Eyelenda (2015) directed and produced by Flo Nick and Marcus Seis.

Eylenda (2015) is a short montage of the Icelandic landscape created by filmmakers, Flo Nick and Marcus Seis, who were interested in the idea of uniting a sense of the environment with music through the influences of Sonorism and Soundscape Composition, and in my rescoring their film with a view to the possibility of replacing its original music in the published edit. However, the movie currently remains published with its original score composed by Moritz Hoffman and Thomas Steinbach. The submitted piece replaces all the original sound and music.

Aesthetic Aims

The aesthetic aim of *Eyelenda* was to integrate a literal sense of the diegetic environment with a musical score constituted in environmental and instrumental sounds, via the influences of Sonorism and Soundscape Composition to form a unified *sound canvas.*

Areas of Focus and Development

The soundtrack is a studio piece composed of mostly unaltered recordings taken from places akin to those depicted in the film, and instrumental sounds that I recorded myself, or found in various commercially available sound banks, such as IRCAM's *UVI Station: Solo Instruments* and EastWest Quantum Leap's *Symphonic Orchestra.* The compositional focus of this piece was largely on the construction of 'waves' or 'gusts' of sound masses, in the sense inherited from Sonorism, that build into dense, somewhat dissonant, tone clusters combined with environmental recordings and pitchless instrumental 'noise' garnered through extended techniques.

At times instrumental sounds are subsumed into overall sound masses, while at others they may become more prominent and identifiable. As is the case with much of the work in the portfolio, the sound canvas is made up of many layers, some of which are not individually audible, but are essential to creating a kind of 'noise-floor' or subtle atmosphere from which other, more prominent sounds emerge. Many of the sibilant or 'airy' sounds, whether instrumental or environmental, for instance, blend together seamlessly and their individual spectra cannot be perceived. Indeed, one of the main characteristics of the style I have cultivated in this portfolio is a kind of flux between hi-fi and low-fi, a listening experience where detailed pitched, harmonic material and conventional instrumental timbres are revealed and subsumed by waves of dense sound masses made up of often indistinguishable sounds of the diegetic environment and instrumental recordings. This facilitates Bonding Play and the blending of instrumental and environmental sounds, as well as a general intrinsic-extrinsic link to a physical context.

The Near Woods

Written for Flute, Bass Clarinet in Bb, Vibraphone, Piano, Violin, and Violoncello

Duration: 22 minutes 8 seconds

Music and sound composed for the film 'The Near Woods' directed and produced by Ollie Bradley-Baker (2018)

Publicly screened and performed (preview) at Open Circuit Festival, Liverpool in March 2018

Produced for Online Release

Aesthetic Aims

The film, *The Near Woods* seeks to evoke some of the emotional contour and catharsis of travelling by bike through contrasting environments. My score aims to support the film in this endeavor by bringing instrumental sound to the sounds of diegetic objects and environments, and environmental sound to constitute music. Through the bonds created and broken between sounds and their sources in conjunction with their diegetic presentation, *The Near Woods* seeks to draw Bradley-Baker's visual montage into this relationship to create audiovisual *Bonding Play*, thus creating a more layered audiovisual experience in which sound gains more *contrapuntal* importance, and stronger aesthetic unity between 'sound', 'music', and moving image.

Areas of Focus and Development

This collaborative audiovisual piece aims to bring together all the ideas and influences discussed in this PhD thesis, the environmental sound was produced, instrumental music written, and both post-produced by me surrounding a live performance and screening by the Pixels ensemble in March 2018 at Liverpool Open Circuit festival. The performance was used as an opportunity to gather recorded, instrumental material that was post-produced in combination with the environmental sounds to create the final film score. There were limitations on the extent of the post-production possible due to the fact the ensemble was recorded during a live performance with very short rehearsal time available. Although instruments had individual microphones, each instrument was not thoroughly isolated; moreover there was no opportunity for a second take to iron out any imperfections. *(See appendix 3)* Nonetheless, the performance was a success, both as a performance and recording sessions and enough good material was recorded in order to produce the final piece. As is highlighted in the written commentary, *The Near Woods* fulfills the vision of an audiovisual sound canvas outlined in this thesis.

Source Bonding, ‘Music’ & ‘Sound’ in Electroacoustic composition and the Audiovisual Sound Canvas

Ph.D. Thesis and Portfolio

(Volume III – Appendices II & III)

(Written Scores & *The Near Woods*: Recorded Instrumental Performance)

Thesis submitted in accordance with the requirements of the University of Liverpool for the degree of Doctor in Philosophy

By

Daniel J Fallon

Monday 3rd September 2018

Contents

Appendix 2: Scores

Cityscape……………………………………………………….1

Urban Cycle…………………………………………………….20

Berlin: Symphony of a Metropolis – Act I……………29

Berlin: Symphony of a Metropolis – Act V…………99

The Near Woods……………………………………………107

Appendix 3: *The Near Woods,* Instrumental Performance

Note on Appendix 3……200

Recording of instrumental performance mixed into the sound canvas, but otherwise unaltered (video)……………………DATA DVD

Daniel J Fallon

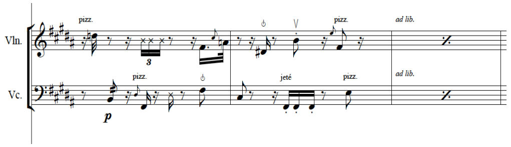
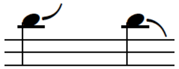
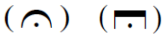
Cityscape

Bass Clarinet in B♭
Percussion
Piano
Violin
Cello
Electronics (pre-recorded audio)

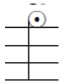
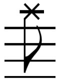
Performance Notes

The intention of this piece is to incoporate musical gestures and techniques which subvert the listener's expectations as to the timbres produced by an acoustic ensemble. To this end the piece attempts to create the subtle impression of a cityscape within the music.

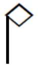
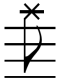
General

→	Transition evenly from one technique or tone to another
	Improvised pitched and non-pitched percussive effects: to be performed in the same manner as is exemplified in the notated bars.
	Glissando up/down at the end of a note's duration
	Fermata in other parts

Bass Clarinet

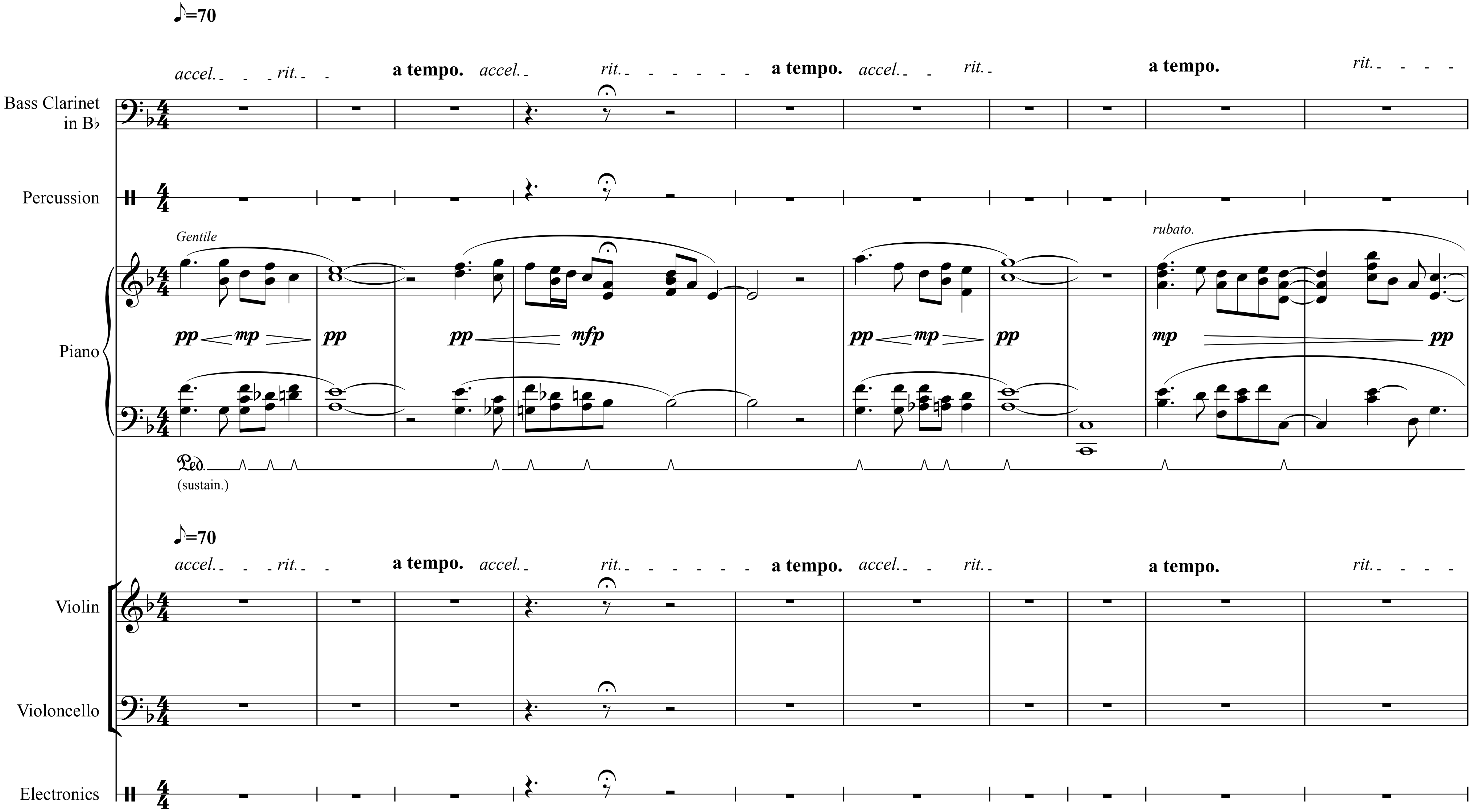
	Breathy tone - A tone made up of half pitch and half air noise
	Key click

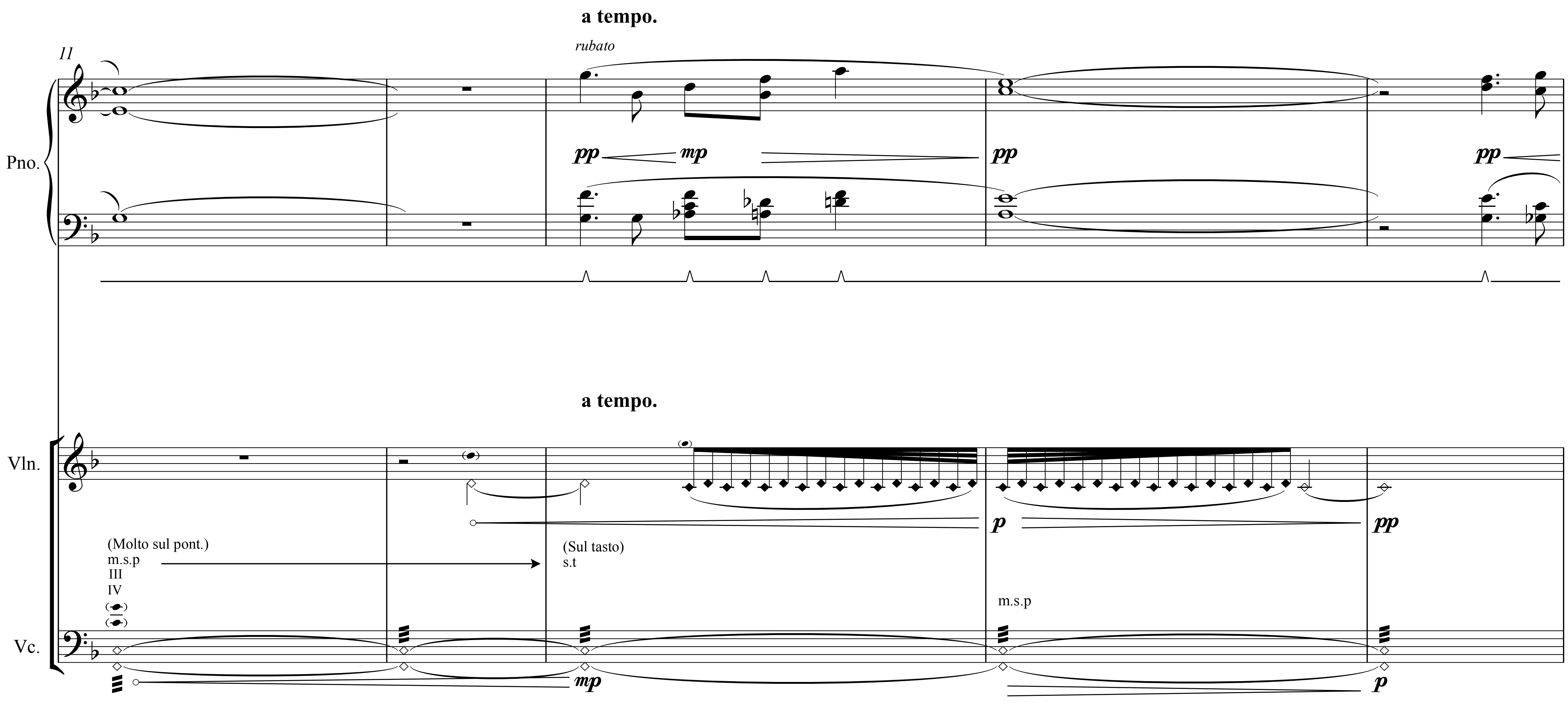
Strings

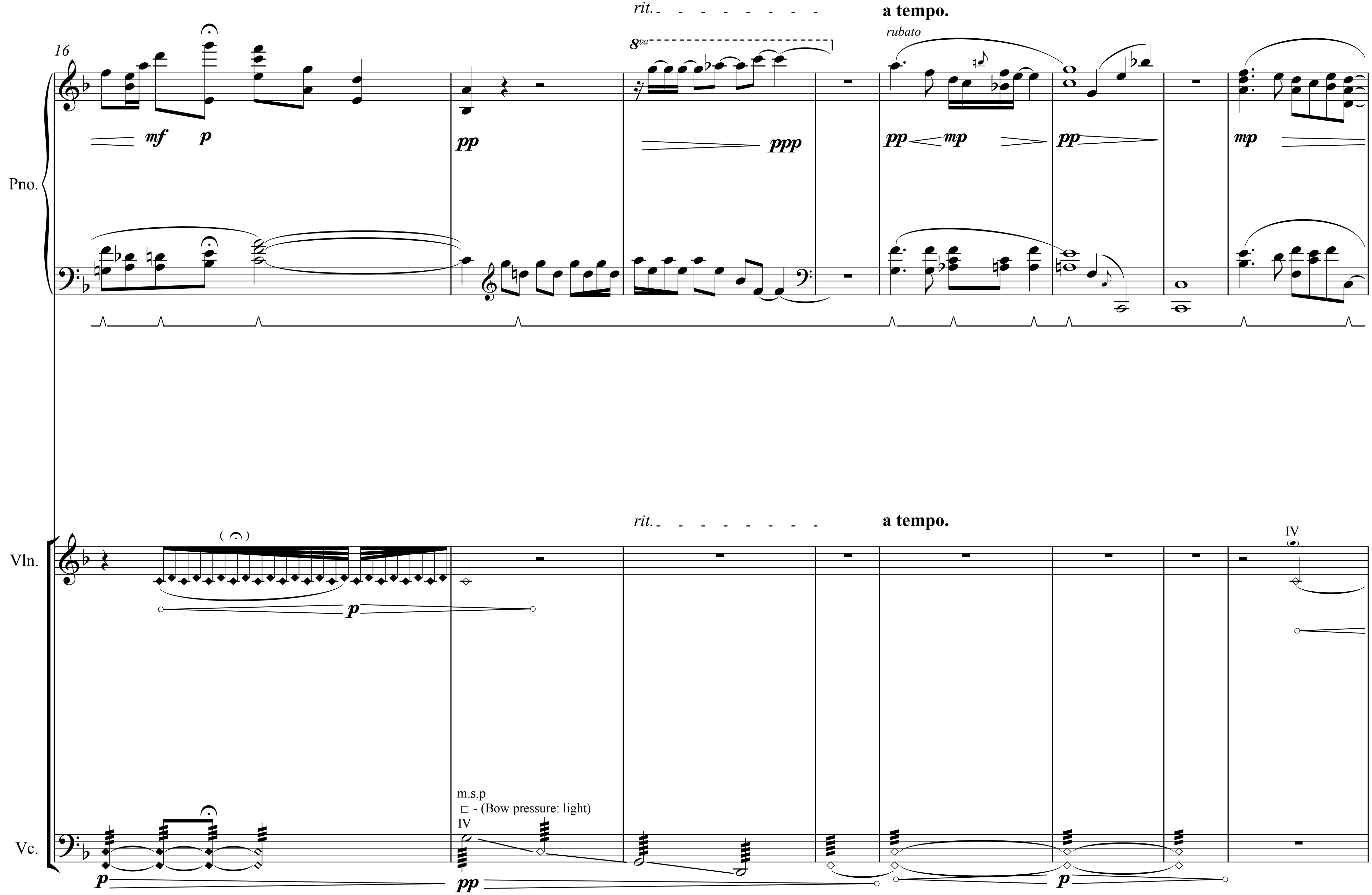
☐	Bow pressure: very light
⬒	Bow pressure: meduim/ord.
■	Bow pressure: heavy (Almost overpressure)
S.P	Sul Ponticello
M.S.P	Molto Sul Potincello
S.T	Sul Tasto
	Harmonic/Harmonic pressure
	Percuss body of instrument with fingers

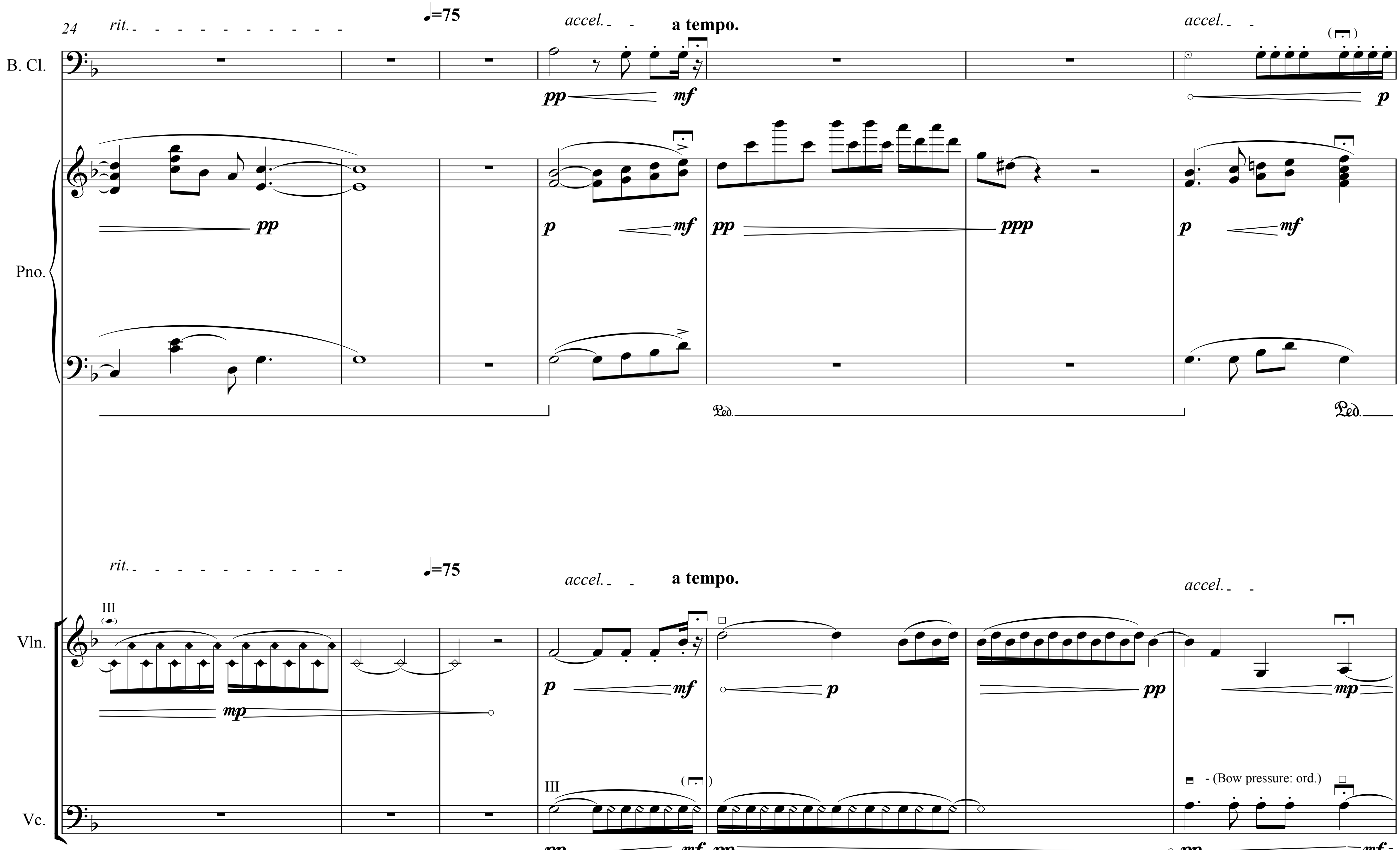
Cityscape

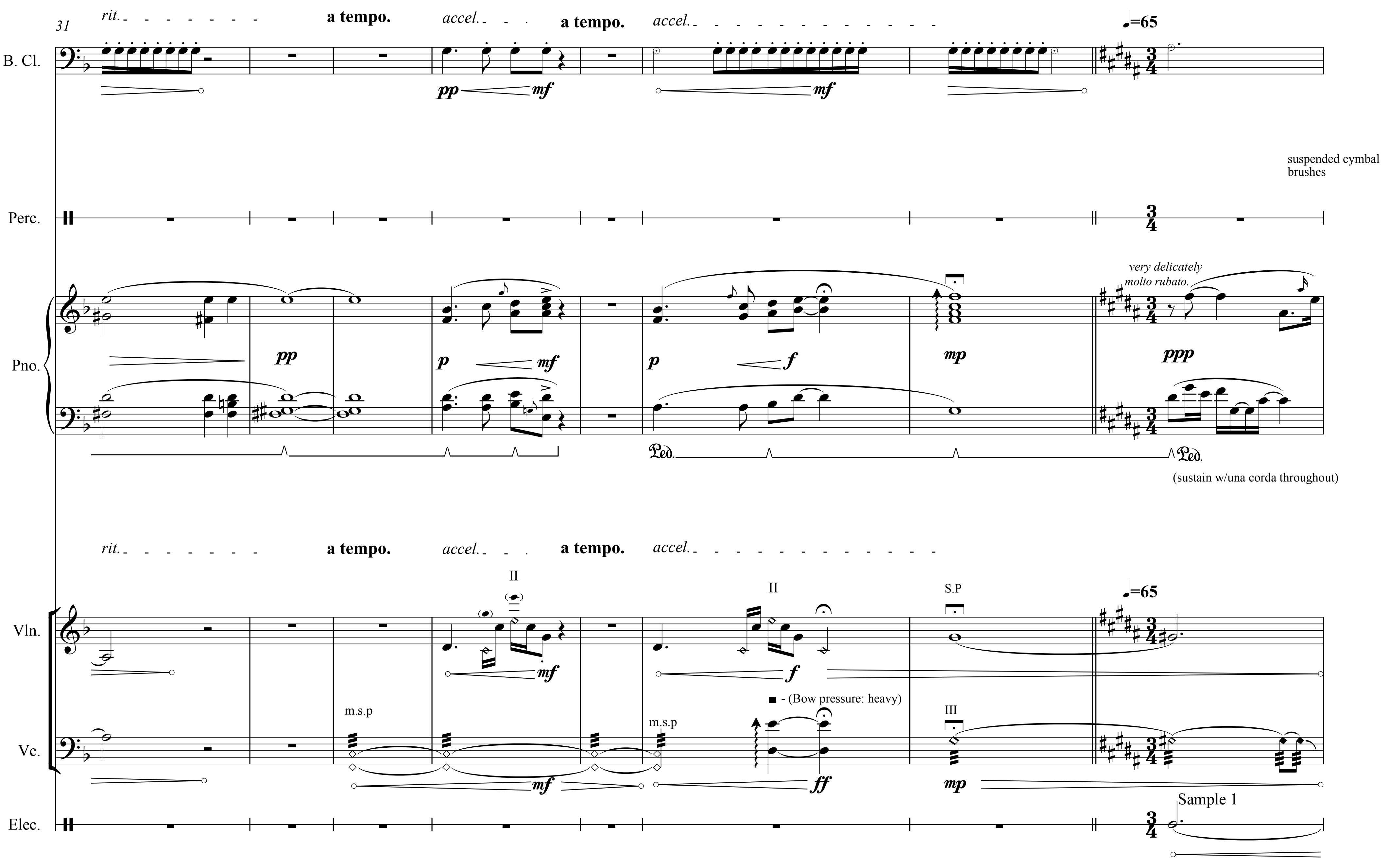
Daniel J Fallon

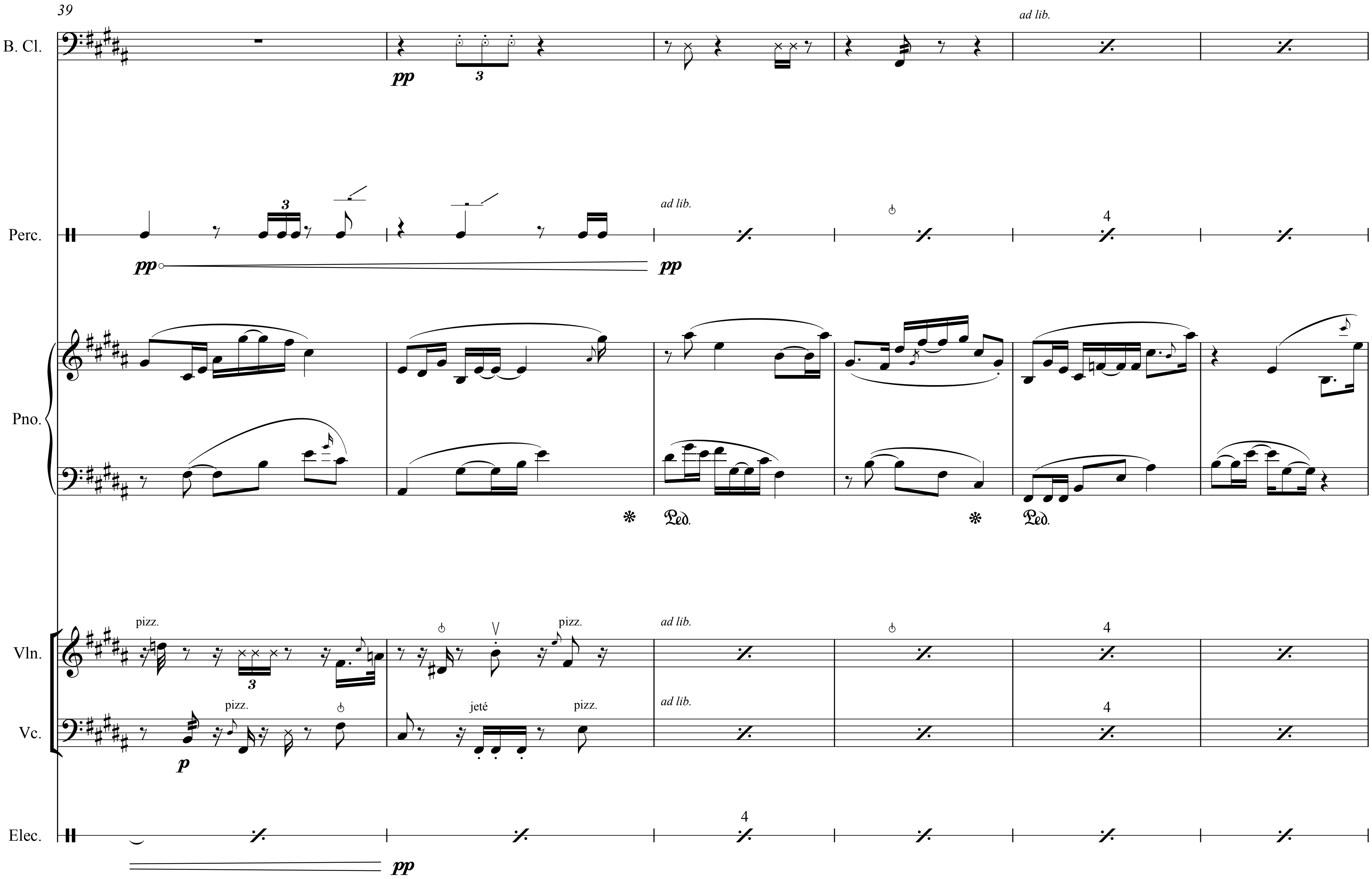

♪=70
accel. rit.
a tempo.
accel.
rit.
a tempo.
accel.
rit.
a tempo.
rit.
Bass Clarinet in B♭
Percussion
Gentile
rubato.
Piano
pp
mp
pp
pp
mfp
pp
mp
pp
mp
pp
Ped.
(sustain.)
♪=70
accel. rit.
a tempo.
accel.
rit.
a tempo.
accel.
rit.
a tempo.
rit.
Violin
Violoncello
Electronics

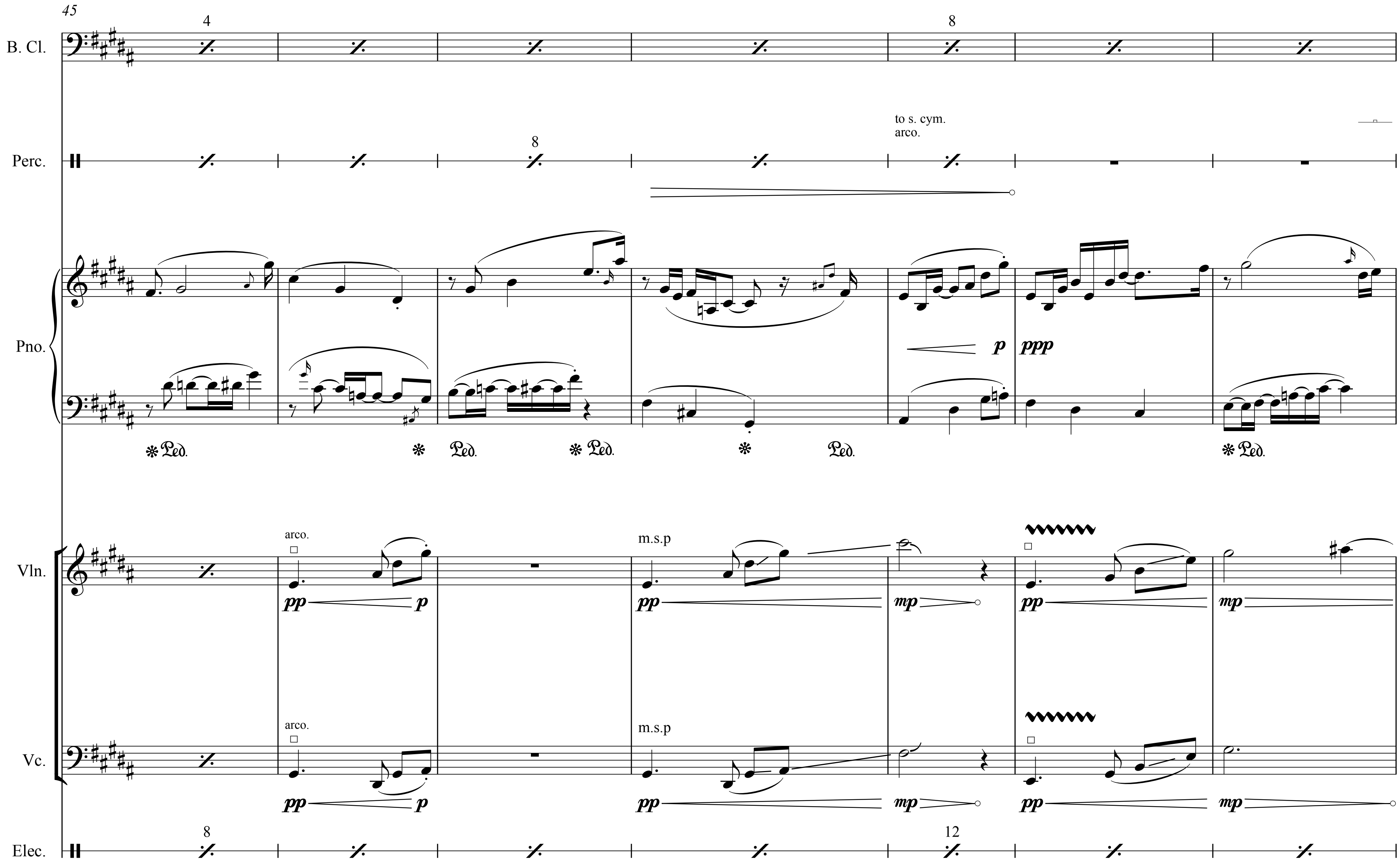

a tempo.
rubato
11
Pno.
pp
mp
pp
pp
a tempo.
Vln.
Vc.
(Molto sul pont.)
m.s.p
III
IV
(Sul tasto)
s.t
p
pp
m.s.p
mp
p

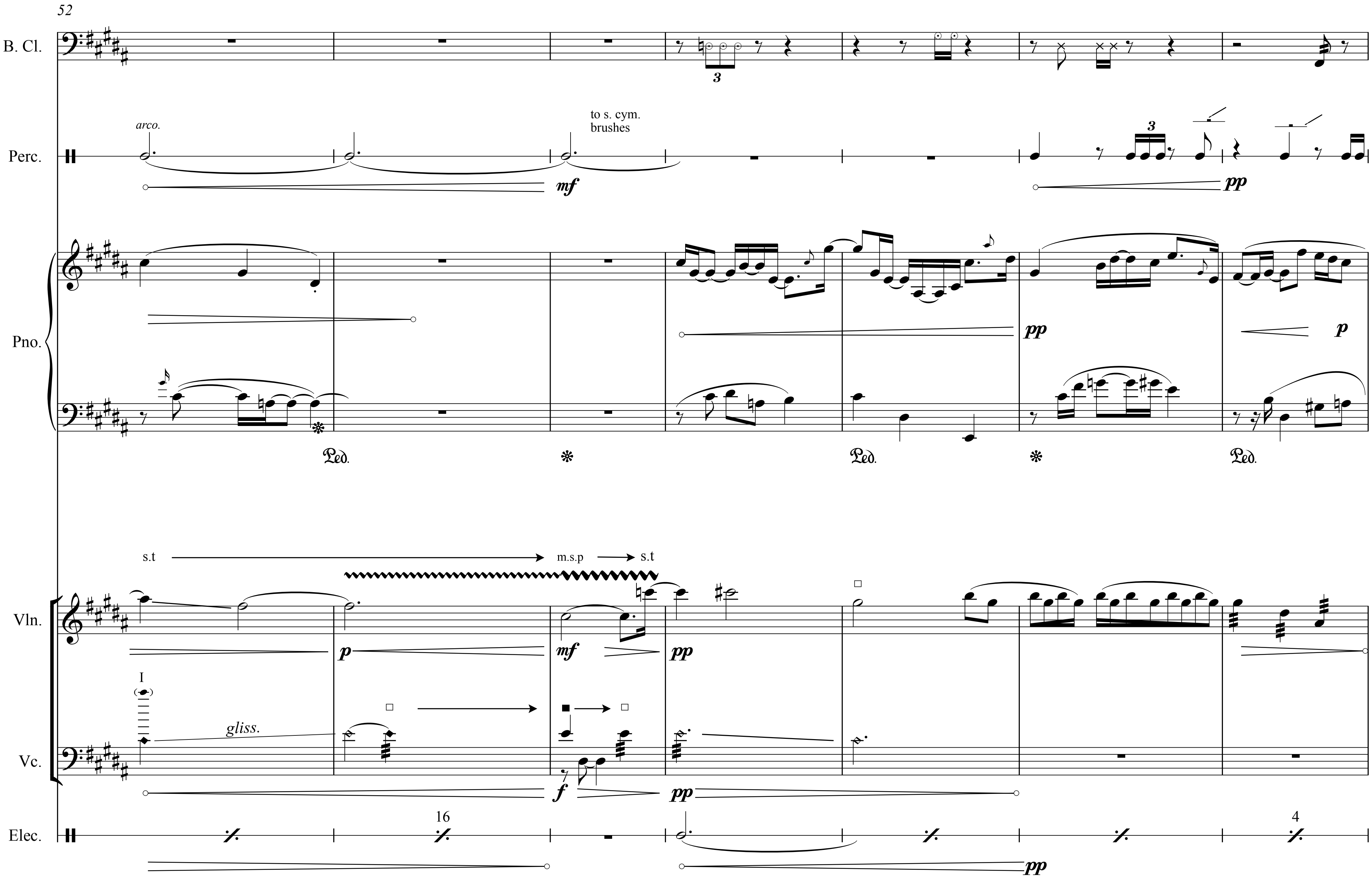
16
rit.
a tempo.
rubato
8va
mf
p
pp
ppp
pp
mp
pp
mp
Pno.
rit.
a tempo.
IV
p
Vln.
m.s.p
□ - (Bow pressure: light)
IV
p
pp
p
Vc.

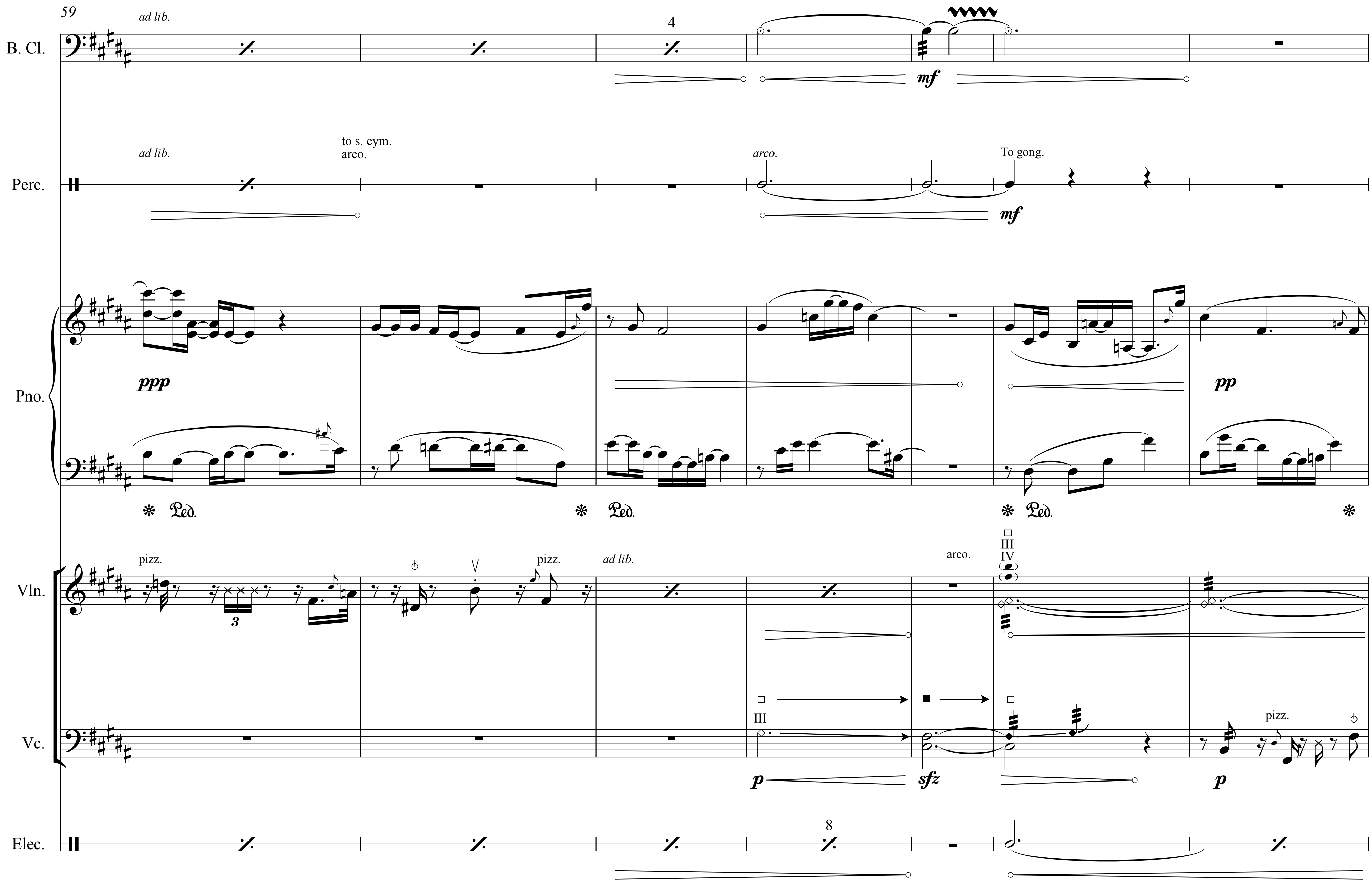

24
rit.
♩=75
accel.
a tempo.
accel.
B. Cl.
Pno.
Vln.
Vc.
pp
mf
p
pp
ppp
Ped.
III
mp
pp
mf
- (Bow pressure: ord.)

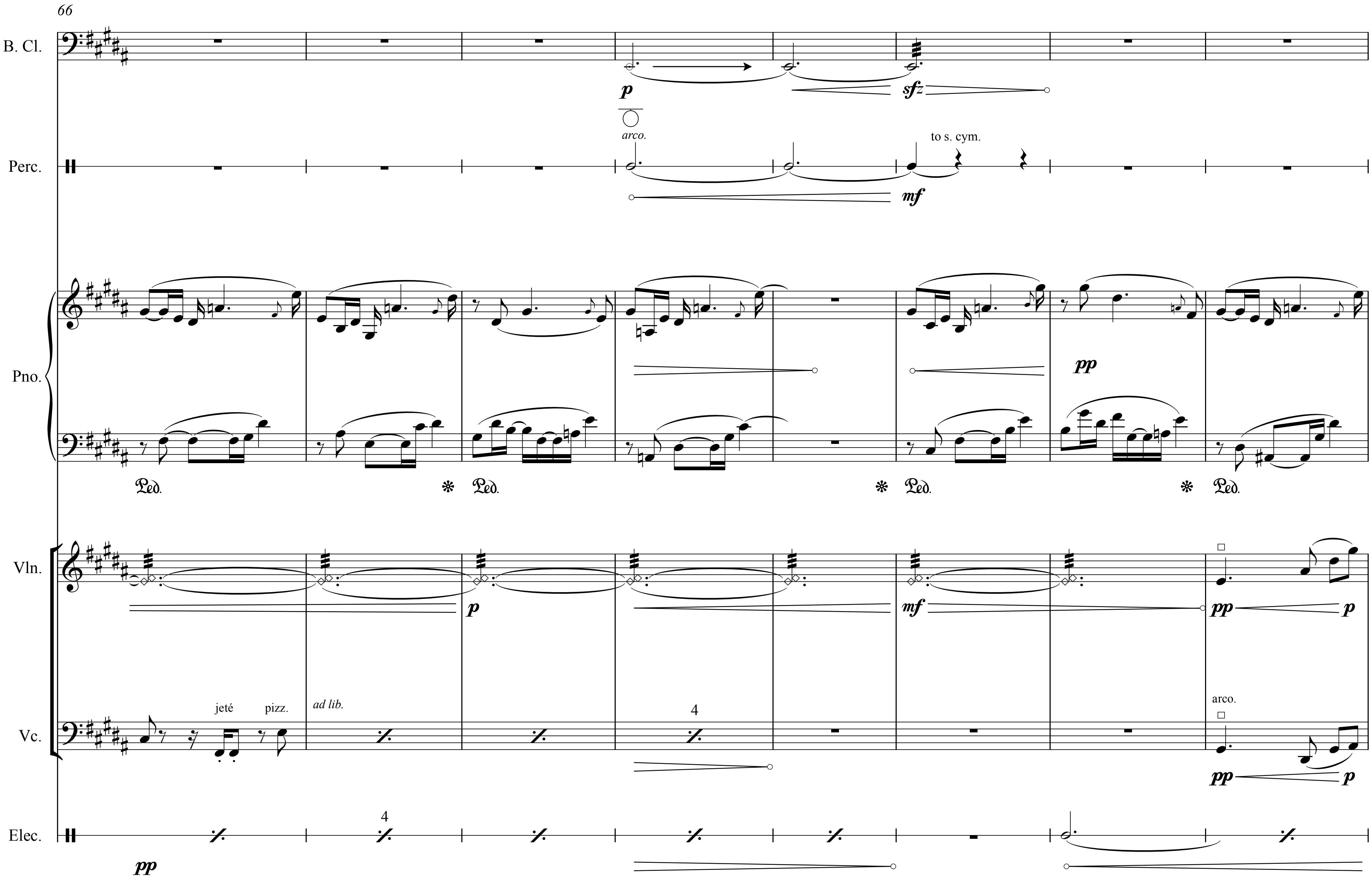

31
rit.
a tempo.
accel.
a tempo.
accel.
♩=65
B. Cl.
pp
mf
mf
suspended cymbal
brushes
Perc.
very delicately
molto rubato.
Pno.
pp
p
mf
p
f
mp
ppp
Ped.
Ped.
(sustain w/una corda throughout)
rit.
a tempo.
accel.
a tempo.
accel.
II
II
S.P
♩=65
Vln.
mf
f
m.s.p
m.s.p
■ - (Bow pressure: heavy)
III
Vc.
mf
ff
mp
Sample 1
Elec.

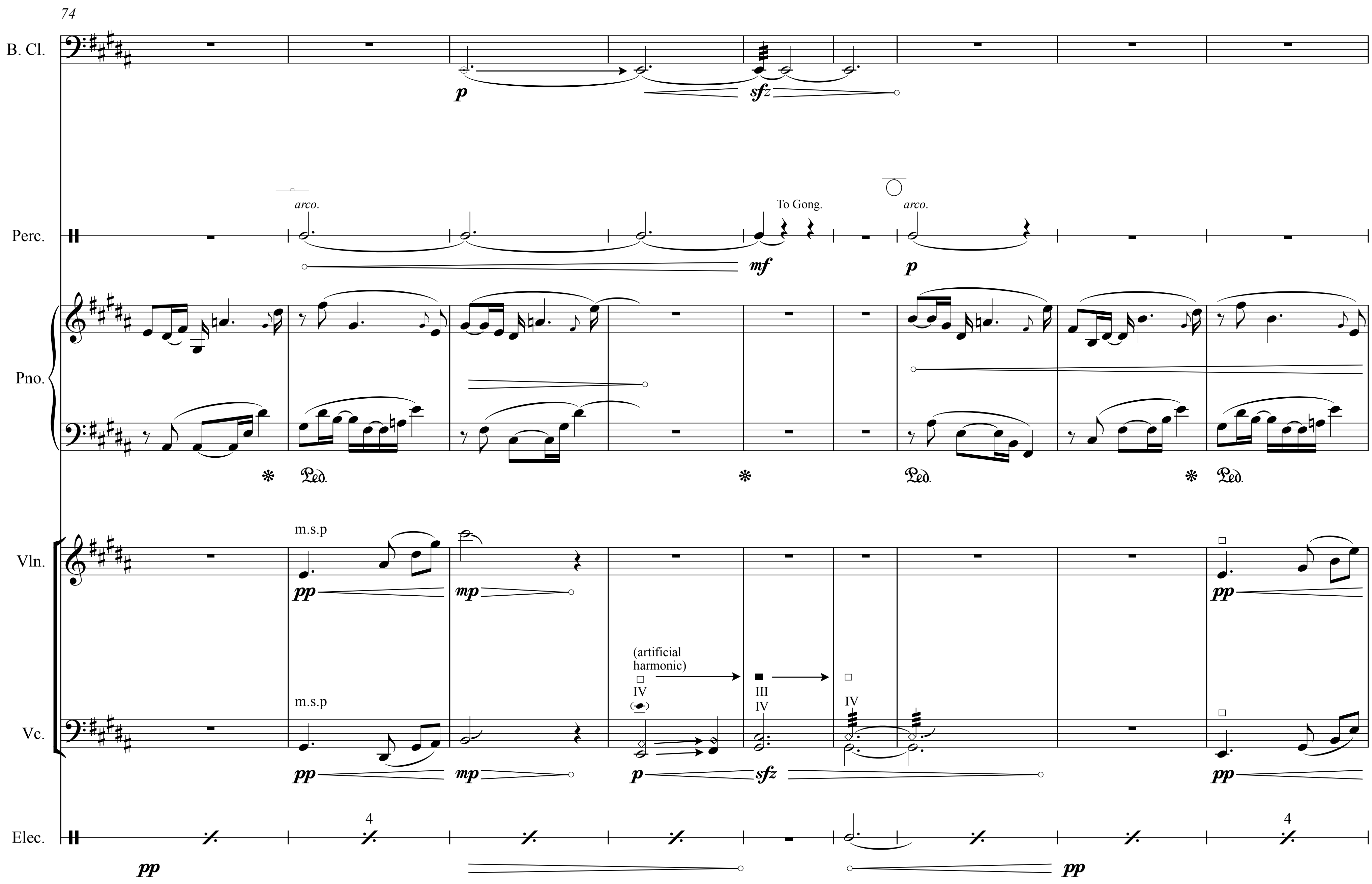

39
B. Cl.
Perc.
Pno.
Vln.
Vc.
Elec.
pp
3
ad lib.
pp
pp
3
4
4
4
4
4
pizz.
3
pizz.
p
jeté
pizz.
pizz.
ad lib.
ad lib.
ad lib.
Ped.
Ped.
pp

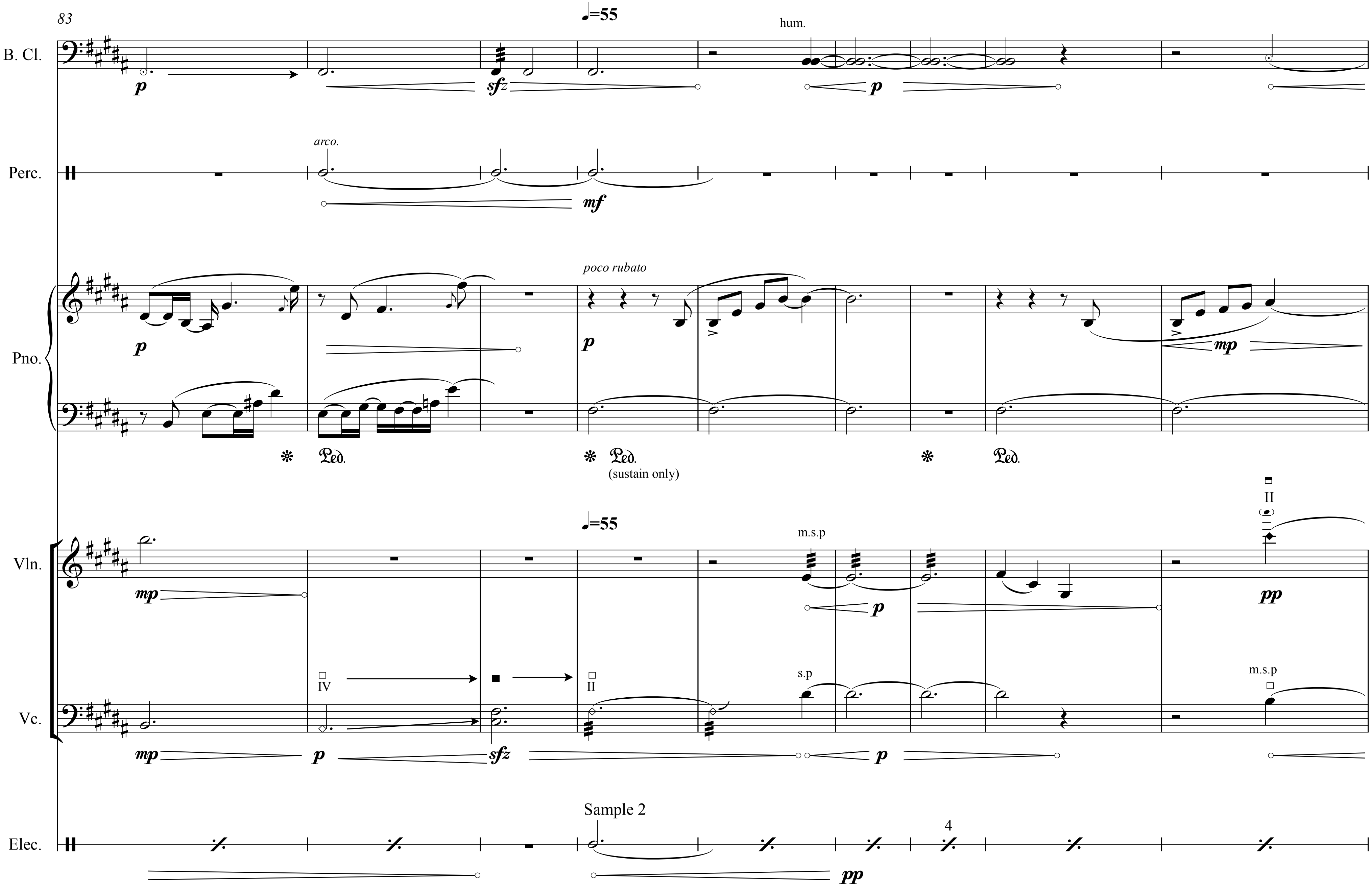

45
B. Cl.
4
8
Perc.
8
to s. cym.
arco.
Pno.
p
ppp
Ped.
Vln.
arco.
m.s.p
pp
p
mp
Vc.
arco.
m.s.p
pp
p
mp
Elec.
8
12

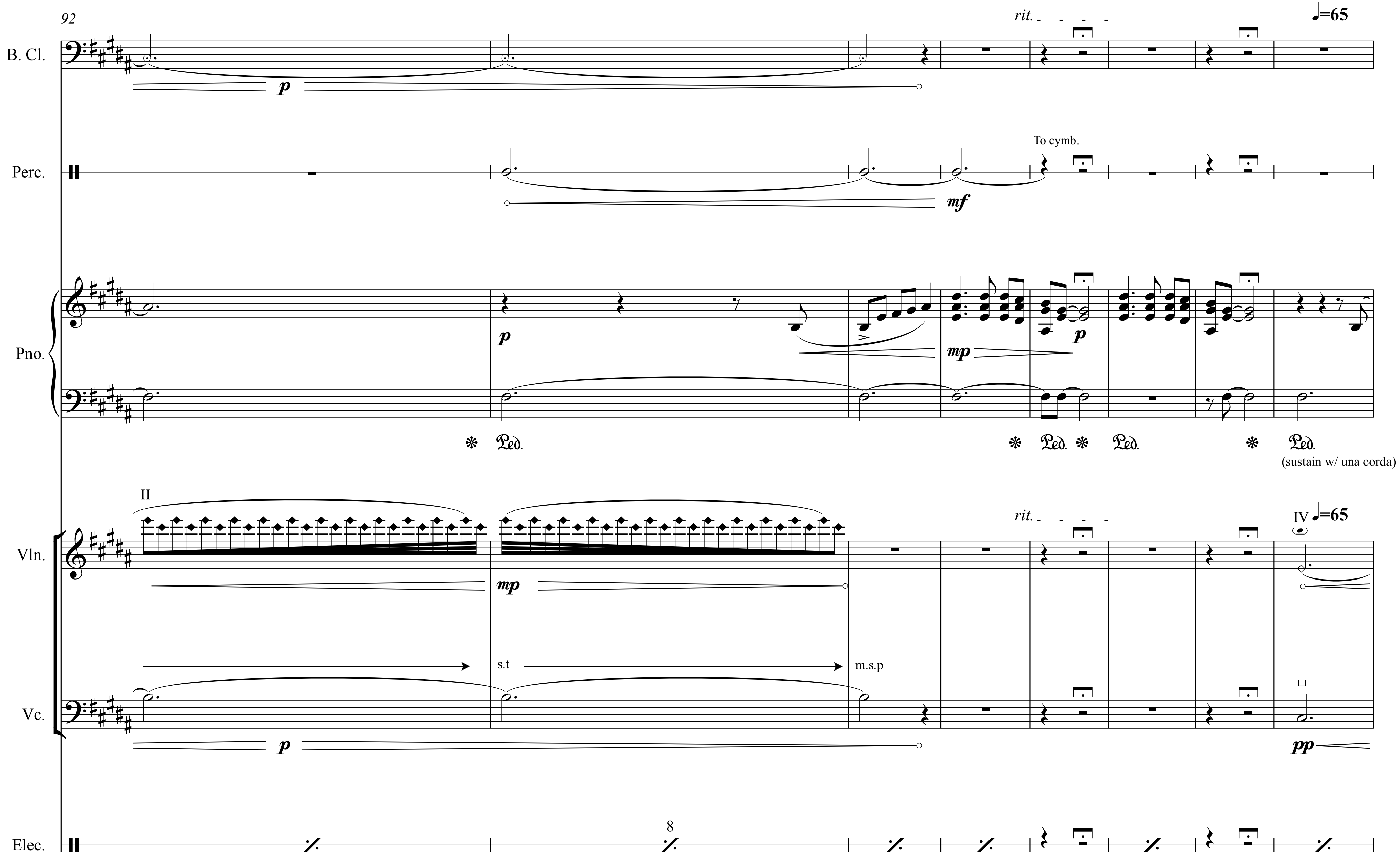

52
B. Cl.
Perc.
Pno.
Vln.
Vc.
Elec.
arco.
to s. cym.
brushes
3
mf
pp
p
Ped.
❋
s.t
m.s.p
s.t
I
gliss.
f
16
4

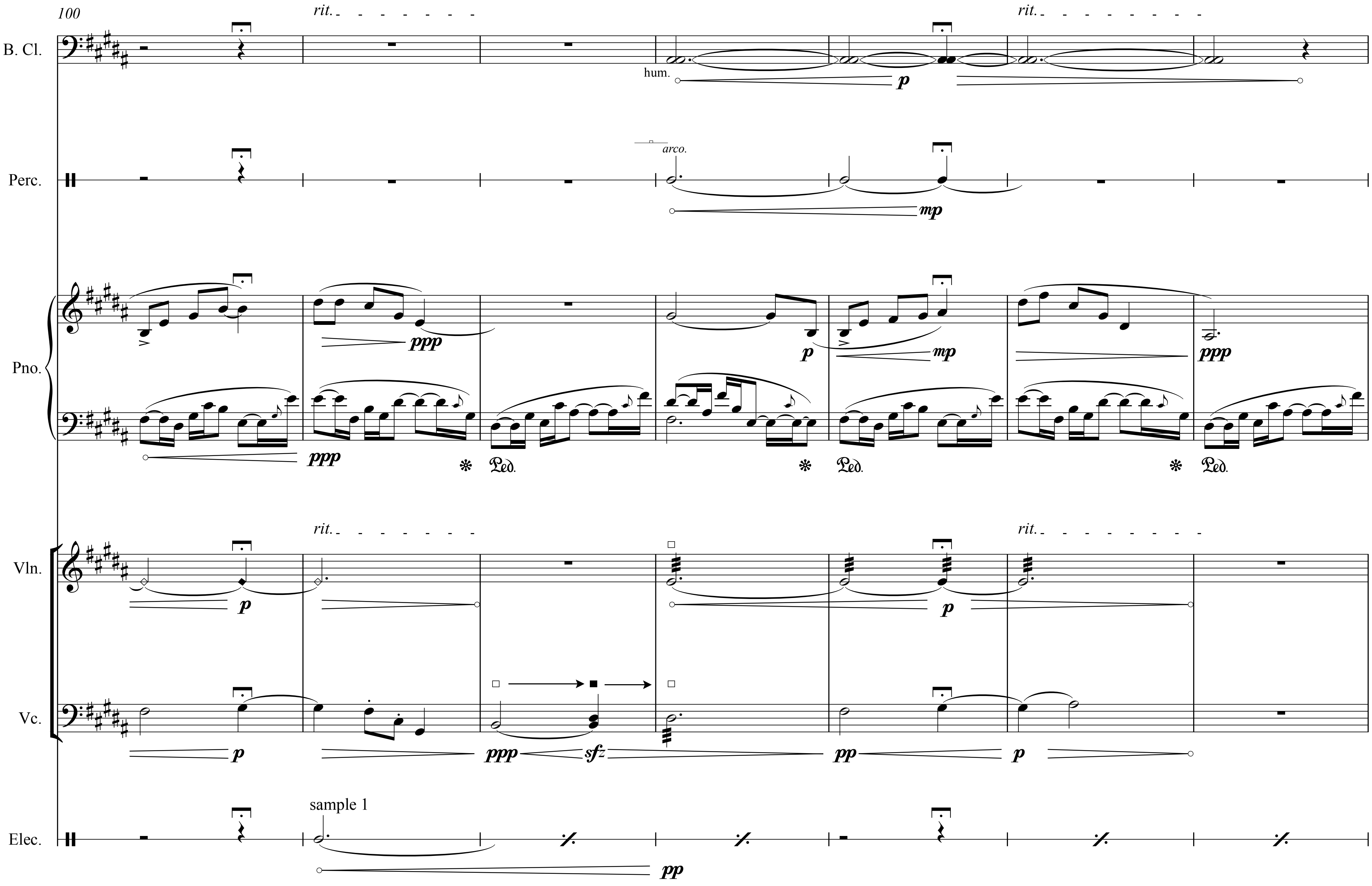

59
B. Cl.
Perc.
Pno.
Vln.
Vc.
Elec.
ad lib.
4
mf
ad lib.
to s. cym.
arco.
arco.
To gong.
mf
ppp
pp
Ped.
Ped.
Ped.
pizz.
3
pizz.
ad lib.
arco.
III
IV
III
sfz
p
pizz.
p
8

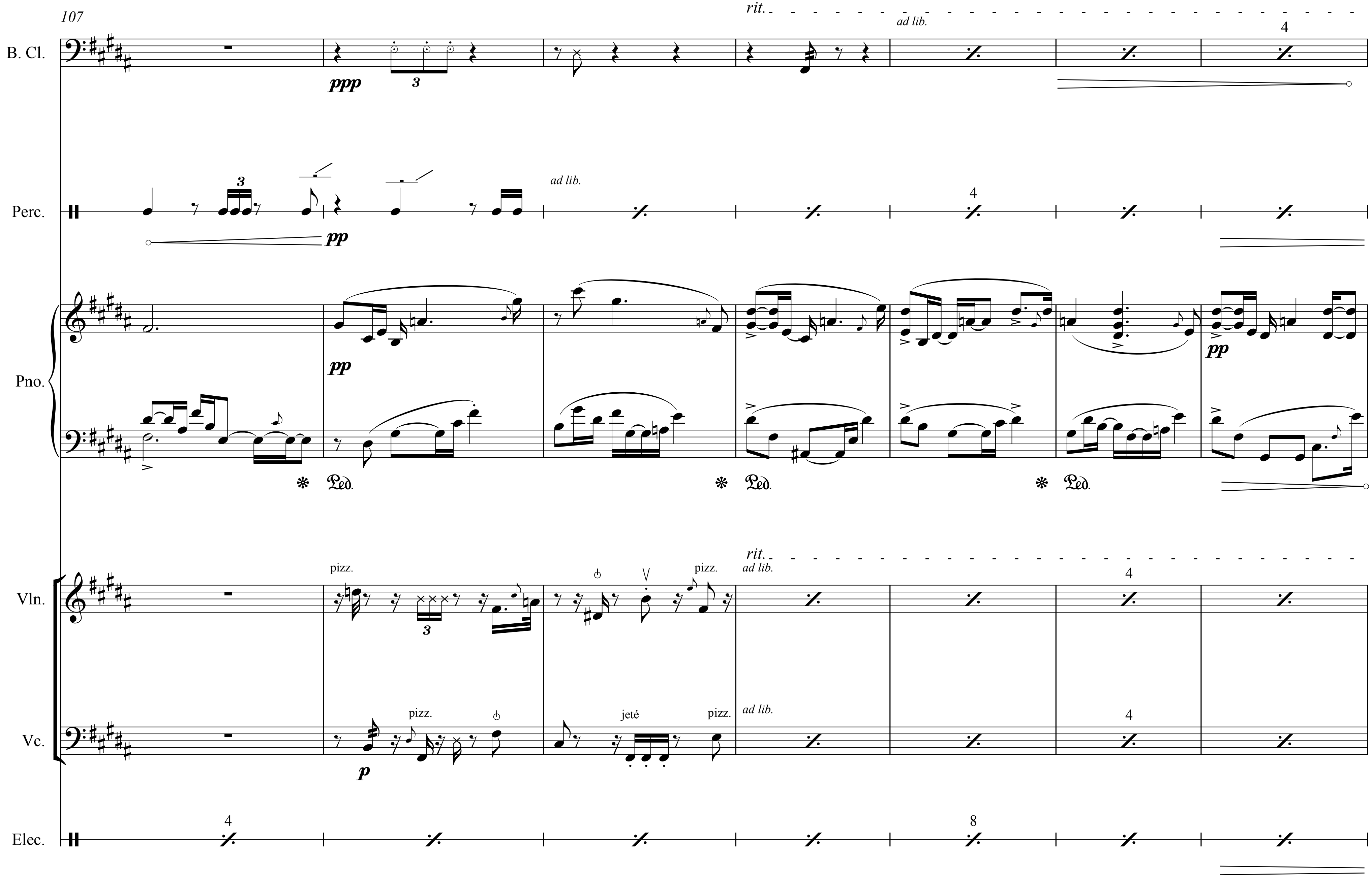

66
B. Cl.
Perc.
Pno.
Vln.
Vc.
Elec.
p
sfz
arco.
to s. cym.
mf
pp
Ped.
❊
p
mf
pp
p
jeté
pizz.
ad lib.
4
arco.
pp
p
4
pp

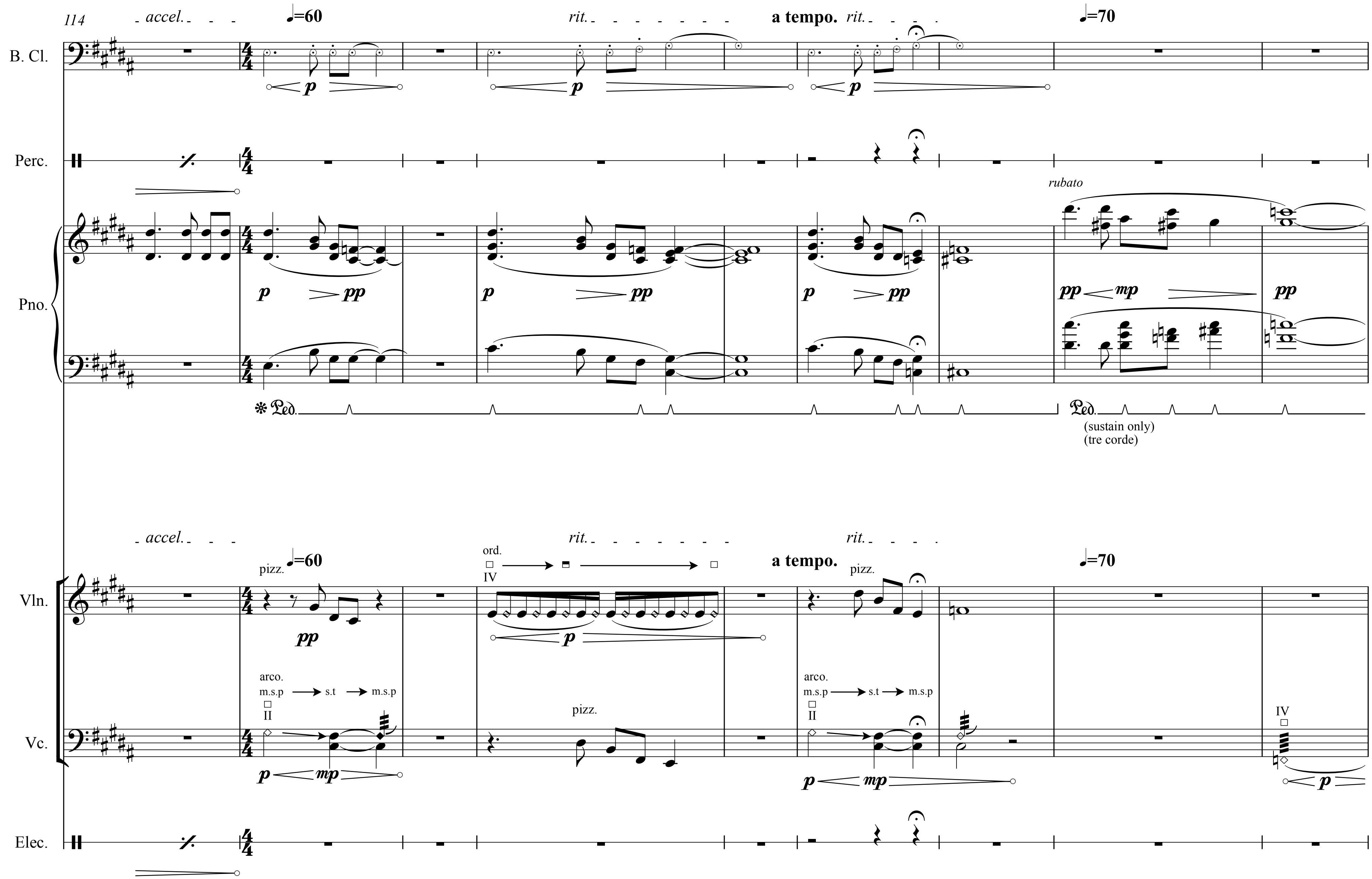
74
B. Cl.
Perc.
Pno.
Vln.
Vc.
Elec.
p
sfz
arco.
To Gong.
arco.
mf
p
Ped.
Ped.
Ped.
m.s.p
m.s.p
pp
mp
pp
mp
(artificial harmonic)
IV
III
IV
IV
p
sfz
4
4
pp
pp

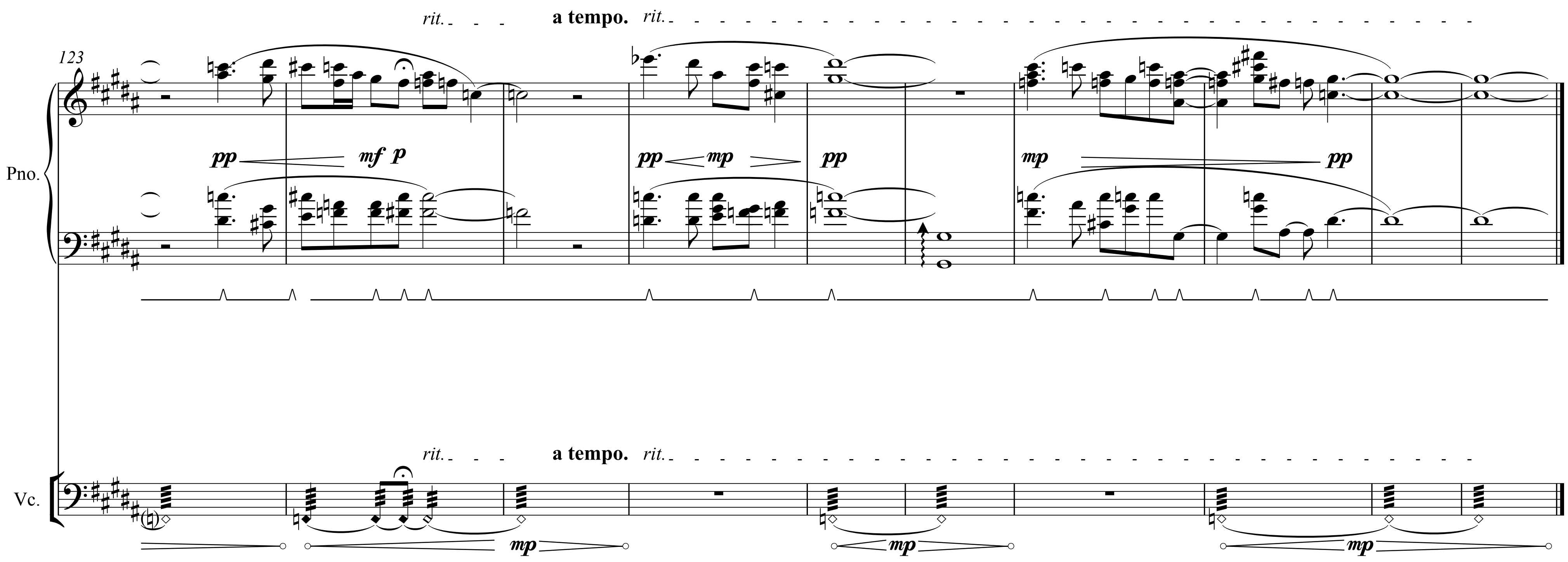

83
B. Cl.
Perc.
Pno.
Vln.
Vc.
Elec.
♩=55
hum.
arco.
poco rubato
(sustain only)
m.s.p
s.p
IV
II
Sample 2
4
p
sfz
mf
mp
pp


92
rit.
♩=65
B. Cl.
p
Perc.
To cymb.
mf
Pno.
p
mp
p
Ped.
(sustain w/ una corda)
II
rit.
IV ♩=65
Vln.
mp
s.t
m.s.p
Vc.
p
pp
8
Elec.


100
rit.
B. Cl.
Perc.
Pno.
Vln.
Vc.
Elec.
hum.
p
arco.
mp
ppp
p
mp
ppp
ppp
Ped.
p
ppp
sfz
pp
p
sample 1
pp


107
B. Cl.
Perc.
Pno.
Vln.
Vc.
Elec.
rit.
ad lib.
4
ppp
3
pp
ad lib.
4
3
pp
pp
Ped.
Ped.
Ped.
rit.
ad lib.
pizz.
pizz.
4
pizz.
jeté
pizz.
ad lib.
4
p
3
4
8

114
accel.
♩=60
rit.
a tempo.
rit.
♩=70
B. Cl.
p
Perc.
Pno.
rubato
p
pp
mp
❋ Ped.
Ped.
(sustain only)
(tre corde)
Vln.
pizz.
ord.
IV
Vc.
arco.
m.s.p
s.t
II
pizz.
IV
Elec.


rit.
a tempo.
rit.
123
Pno.
pp
mf
p
pp
mp
pp
mp
pp
Vc.
rit.
a tempo.
rit.
mp
mp
mp

Daniel J Fallon

Urban Cycle

for

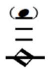
Cello
&
Pre-recorded electronics

The aim of this performance is to blur the distinction between the cello part and the pre-recorded electronics. To this end, the score is intended to elicit a wide variety of timbres from the cello itself and to recruit the player's intuition as to how the instrument behaves and speaks. The ambition is that the contrasting and shifting timbres produced by cello will blend and relate to the sound within the pre-recorded electronics to voice the musical ideas in aesthetic unity.

Notation

- Pause/Fermata

- Long Pause/Fermata

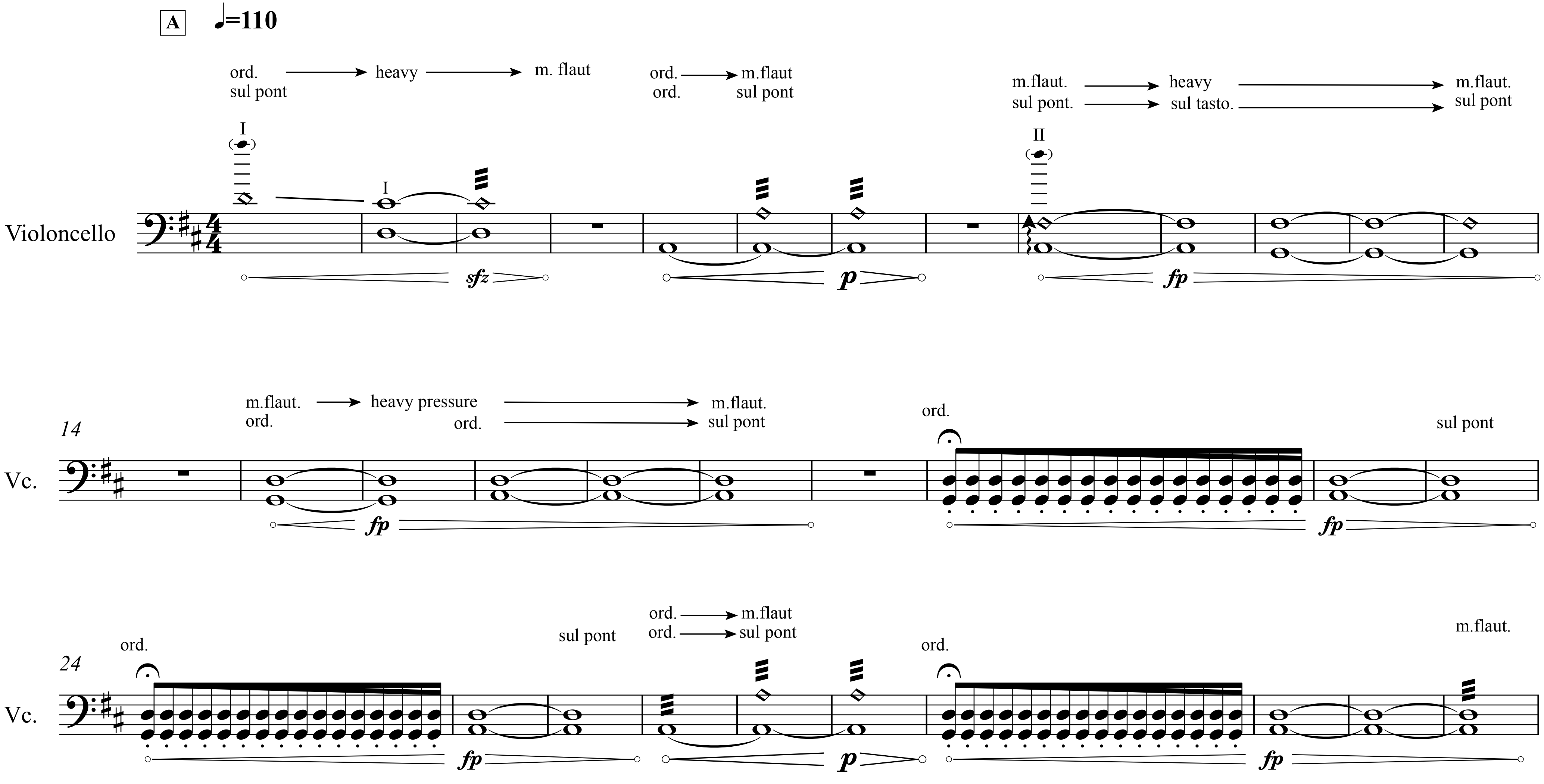
 - Sounding pitch
- Harmonic

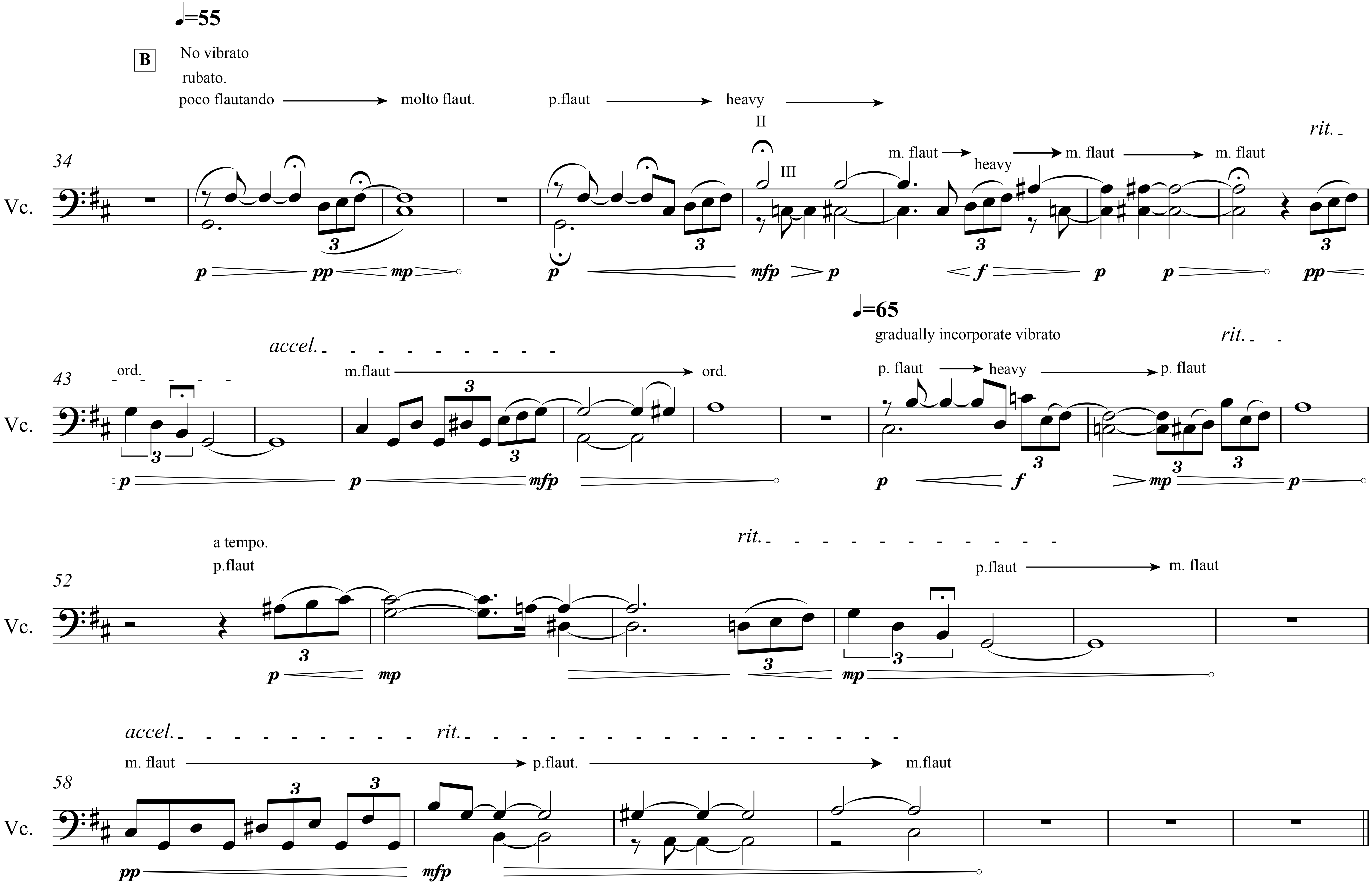
- Left-hand pizz

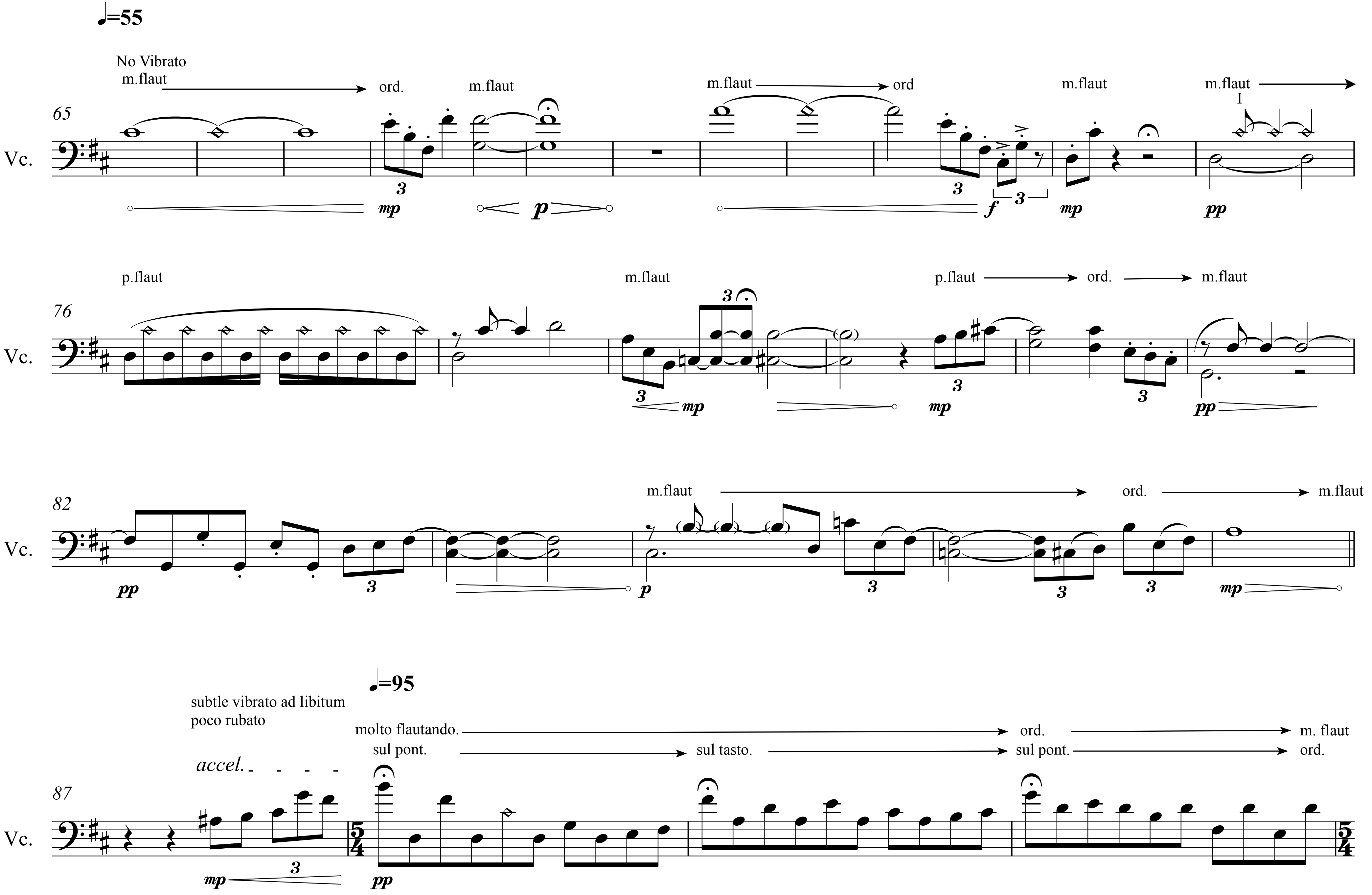
- Smooth, gradual transition
from one technique to another

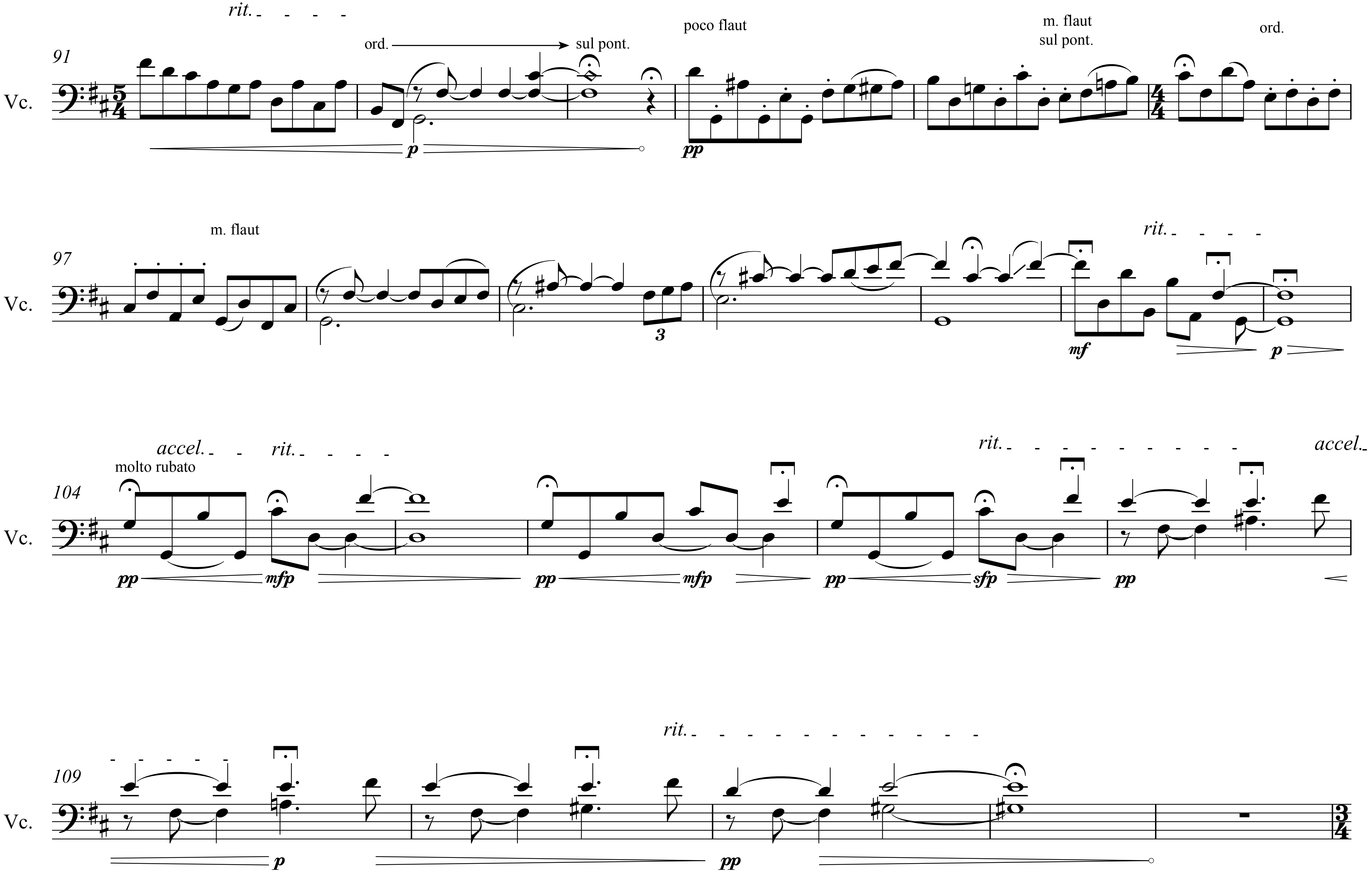
Urban Cycle

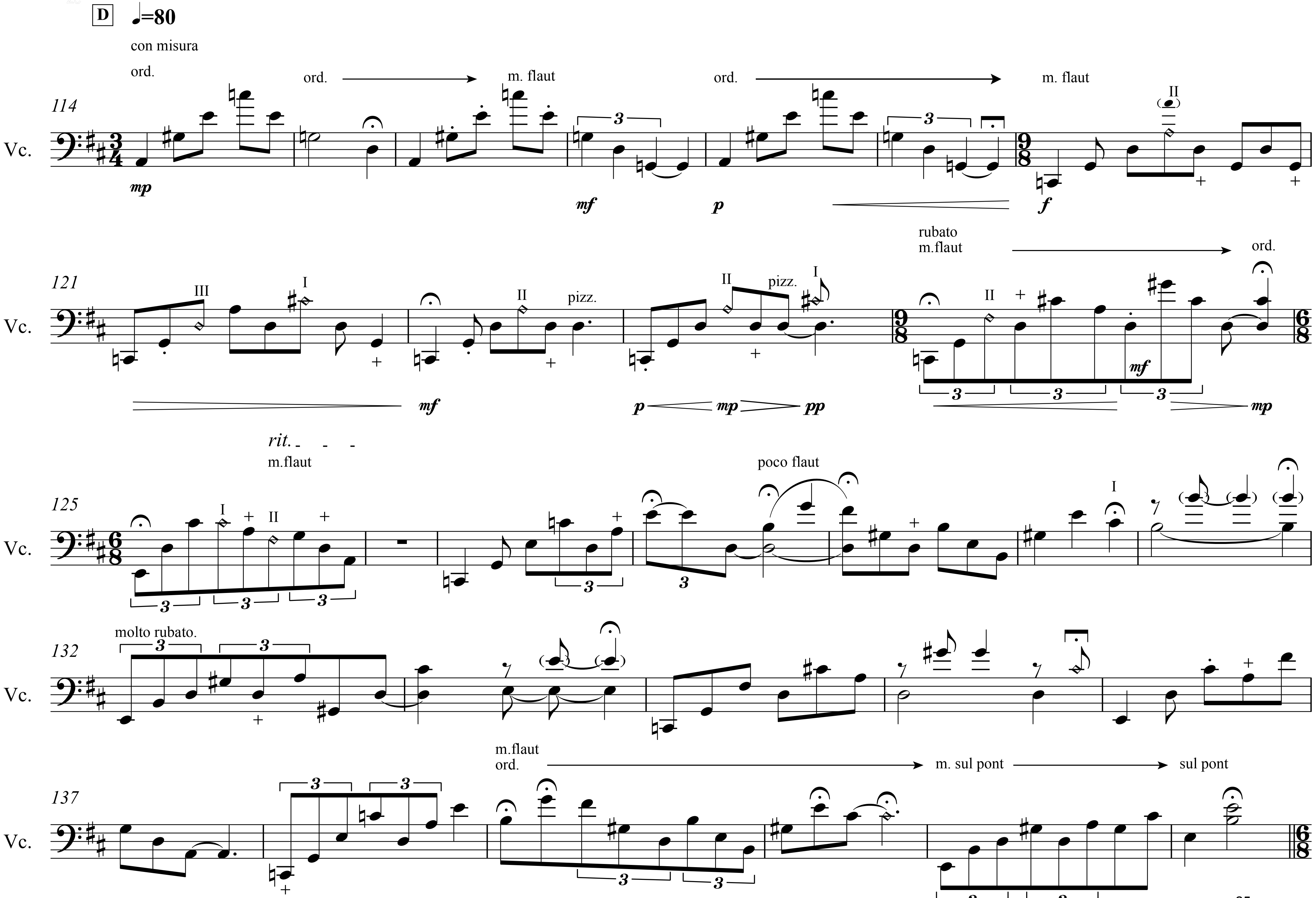
Daniel J Fallon

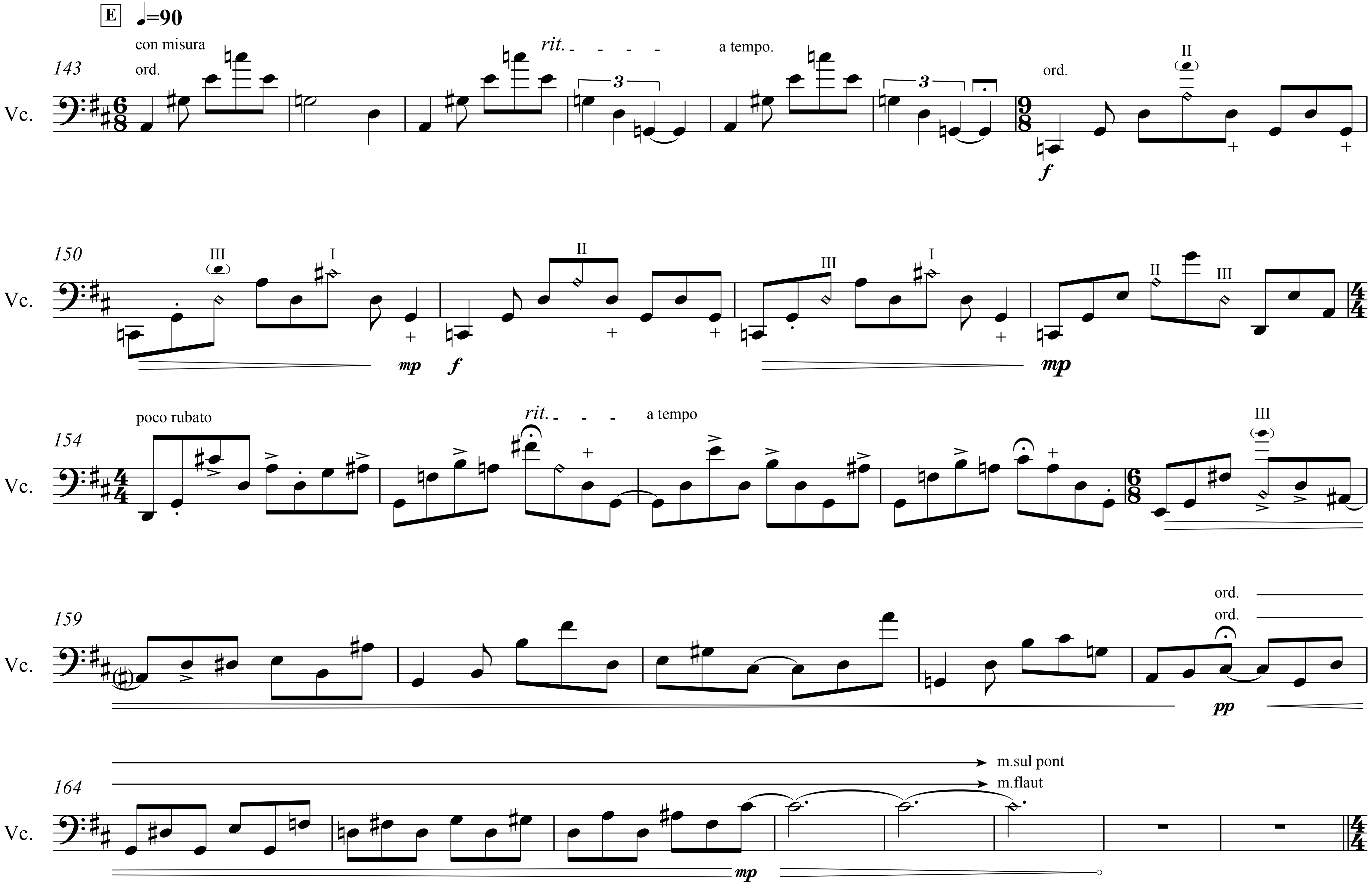

A
♩=110
ord.
sul pont
heavy
m. flaut
ord.
ord.
m.flaut
sul pont
m.flaut.
sul pont.
heavy
sul tasto.
m.flaut.
sul pont
I
I
II
Violoncello
sfz
p
fp
14
m.flaut.
ord.
heavy pressure
ord.
m.flaut.
sul pont
ord.
sul pont
Vc.
fp
fp
24
ord.
sul pont
ord.
m.flaut
ord.
sul pont
ord.
m.flaut.
Vc.
fp
p
fp

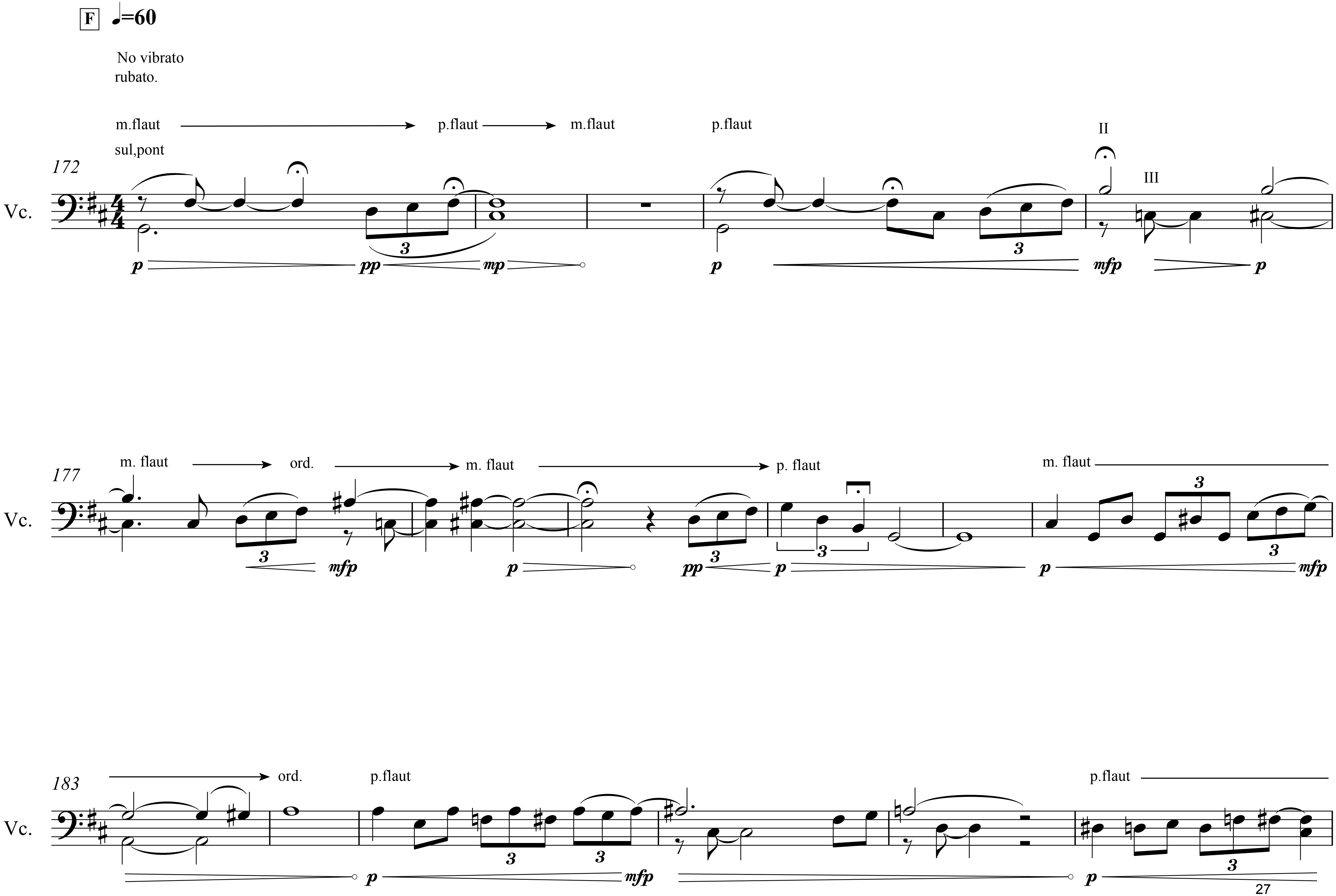

♩=55
B
No vibrato
rubato.
poco flautando → molto flaut.
p.flaut → heavy →
II
III
m. flaut → heavy → m. flaut → m. flaut
rit.
34
Vc.
3
p pp mp
p mfp p
f p p pp
♩=65
gradually incorporate vibrato
accel.
rit.
43
ord.
m.flaut → ord.
p. flaut → heavy → p. flaut
p p mfp
p f mp p
a tempo.
p.flaut
rit.
p.flaut → m. flaut
52
p mp
mp
accel.
rit.
m. flaut → p.flaut. → m.flaut
58
pp mfp

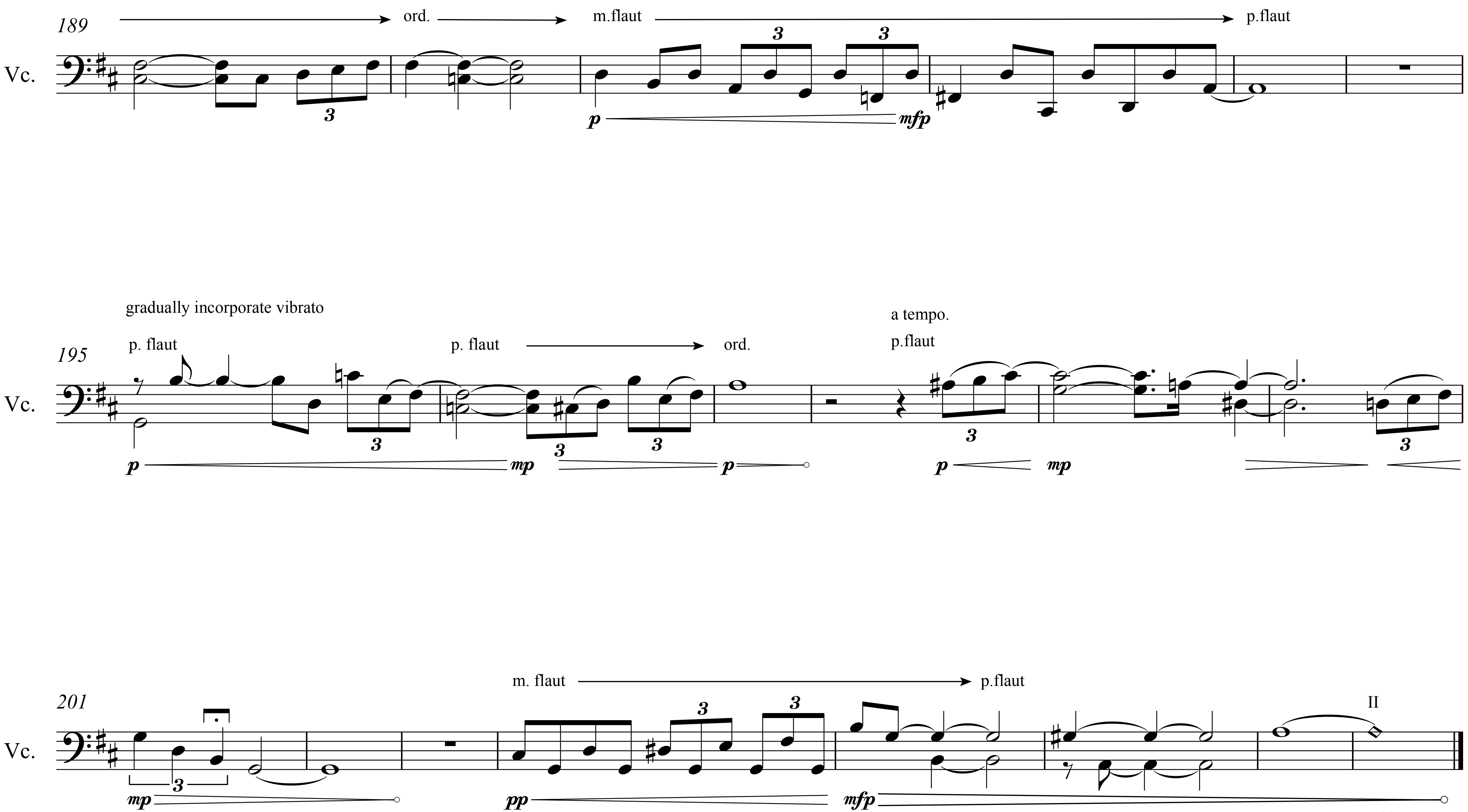

♩=55
No Vibrato
m.flaut
ord.
m.flaut
m.flaut
ord
m.flaut
m.flaut
I
65
Vc.
3
mp
p
3
f
3
mp
pp
p.flaut
m.flaut
p.flaut
ord.
m.flaut
76
Vc.
3
3
mp
3
mp
3
pp
m.flaut
ord.
m.flaut
82
Vc.
pp
3
p
3
3
3
mp
♩=95
subtle vibrato ad libitum
poco rubato
molto flautando.
ord.
m. flaut
sul pont.
sul tasto.
sul pont.
ord.
accel.
87
Vc.
5
4
mp
3
pp
5
4


rit.
ord.
sul pont.
poco flaut
m. flaut
sul pont.
ord.
91
Vc.
p
pp
m. flaut
rit.
97
Vc.
3
mf
p
accel.
molto rubato
rit.
rit.
accel.
104
Vc.
pp
mfp
pp
mfp
pp
sfp
pp
rit.
109
Vc.
p
pp


D
♩=80
con misura
ord.
ord.
m. flaut
ord.
m. flaut
114
Vc.
mp
mf
p
f
II
rubato
m.flaut
ord.
121
III
I
II
pizz.
II
pizz.
I
II
mf
mf
p
mp
pp
mp
rit.
m.flaut
poco flaut
125
I
II
I
molto rubato.
132
m.flaut
ord.
m. sul pont
sul pont
137


E
♩=90
con misura
143
ord.
rit. - - - -
a tempo.
3
3
ord.
II
f
+
+
Vc.
150
III
I
II
III
I
II
III
+
+
+
+
mp
f
mp
154
poco rubato
rit. - - -
a tempo
+
+
III
159
ord.
ord.
pp
164
m.sul pont
m.flaut
mp


F
♩=60
No vibrato
rubato.
m.flaut
sul,pont
p.flaut
m.flaut
p.flaut
II
III
172
Vc.
p
pp
mp
p
mfp
p
177
m. flaut
ord.
m. flaut
p. flaut
m. flaut
mfp
p
pp
p
p
mfp
183
ord.
p.flaut
p.flaut
p
mfp
p


189
ord.
m.flaut
p.flaut
Vc.
p
mfp
gradually incorporate vibrato
195
p. flaut
p. flaut
ord.
a tempo.
p.flaut
p
mp
p
p
mp
201
m. flaut
p.flaut
II
mp
pp
mfp

Daniel J Fallon

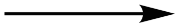
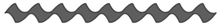
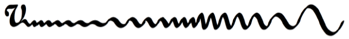
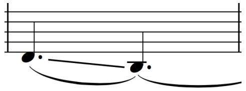
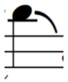
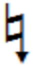
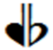
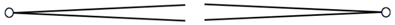
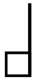
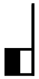
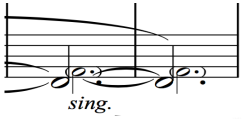
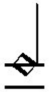
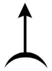
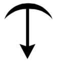
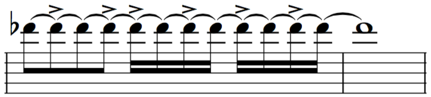
Berlin: Symphony of a Metropolis

For

Alto Flute
Clarinet in Bb
Percussion
(Suspended Cymbal, Tam-tam & Vibraphone)
Violin
Violoncello

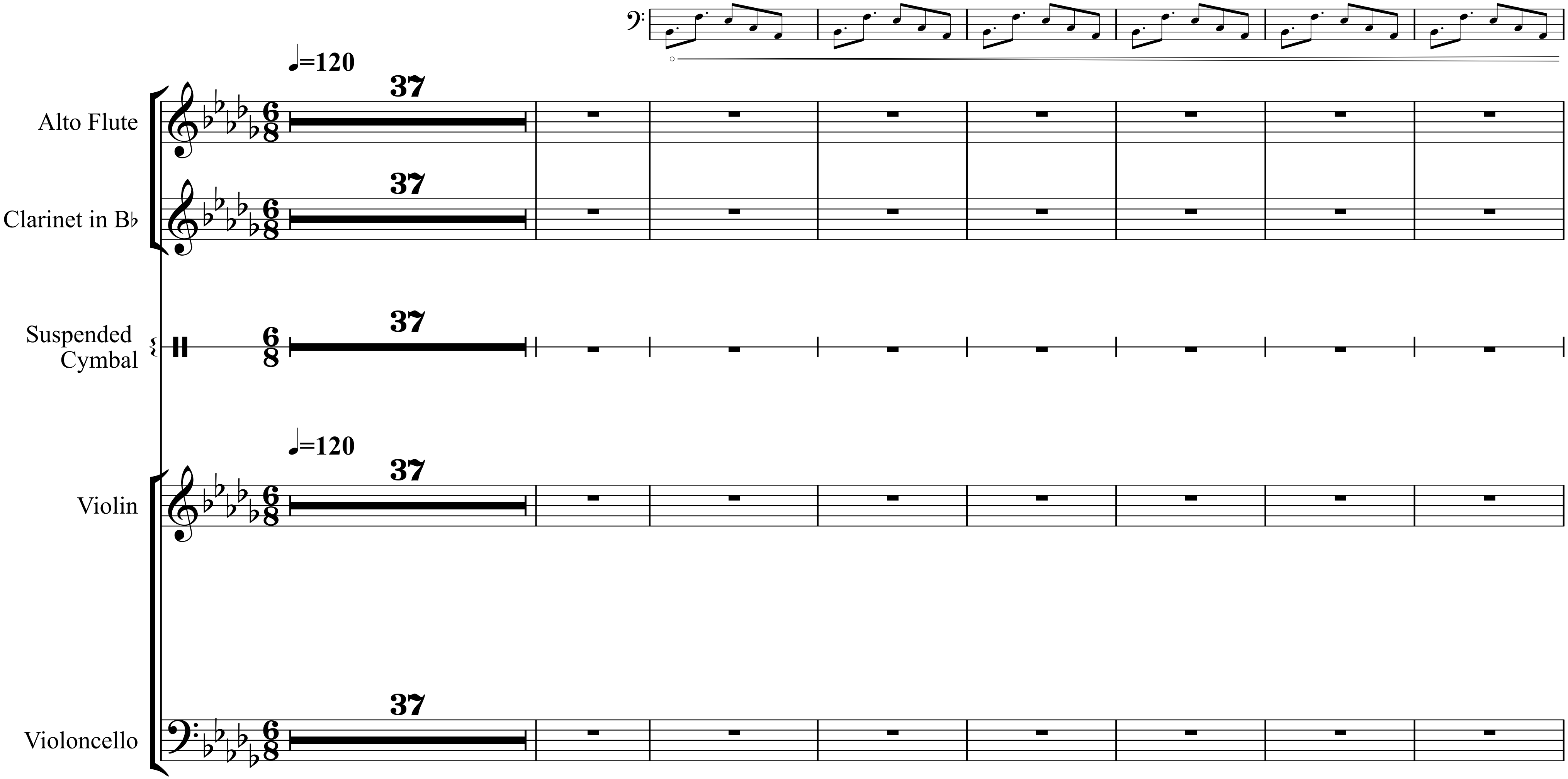
Berlin Symphony Of A Great City:
Act 1

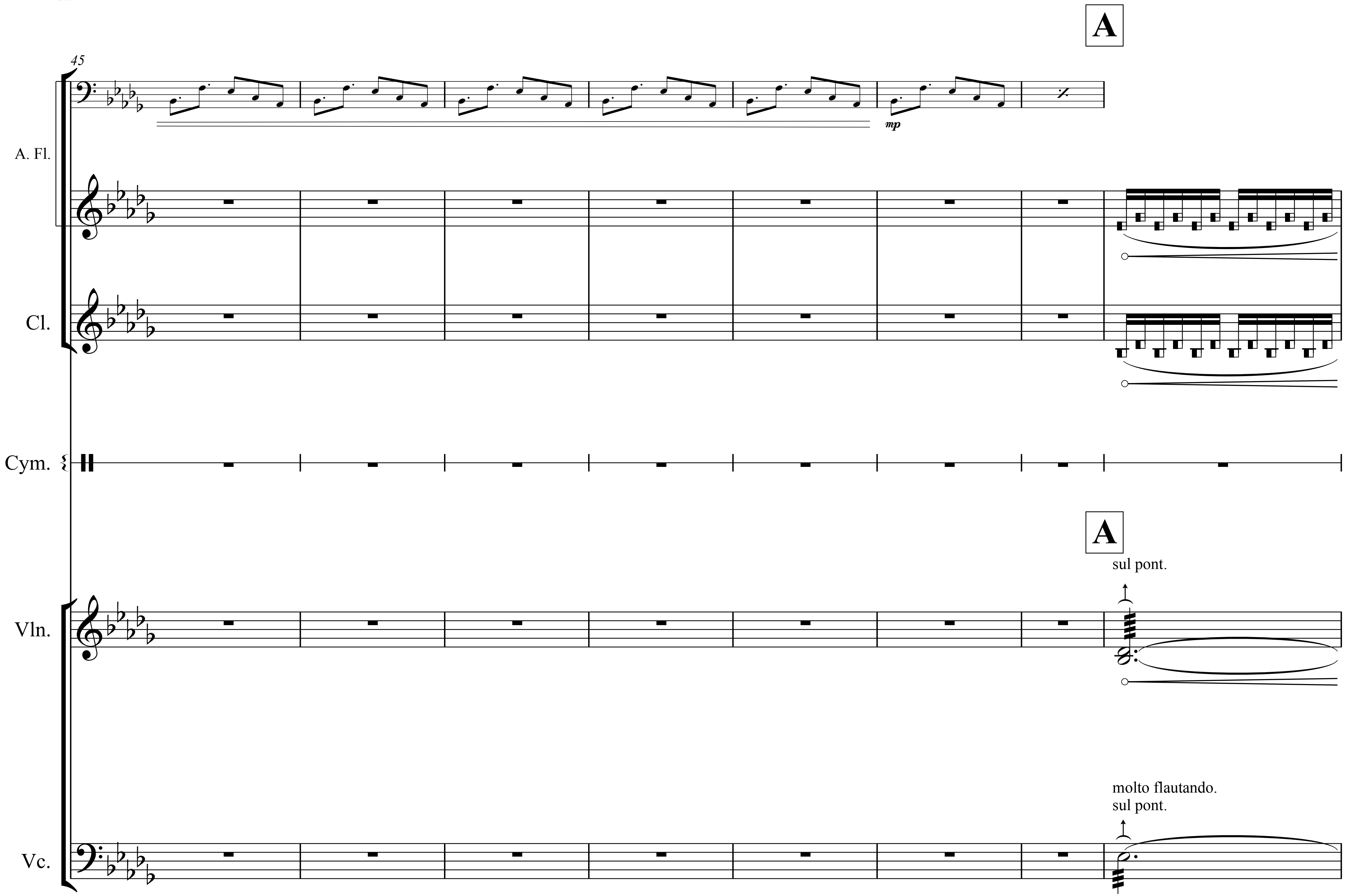
Notation

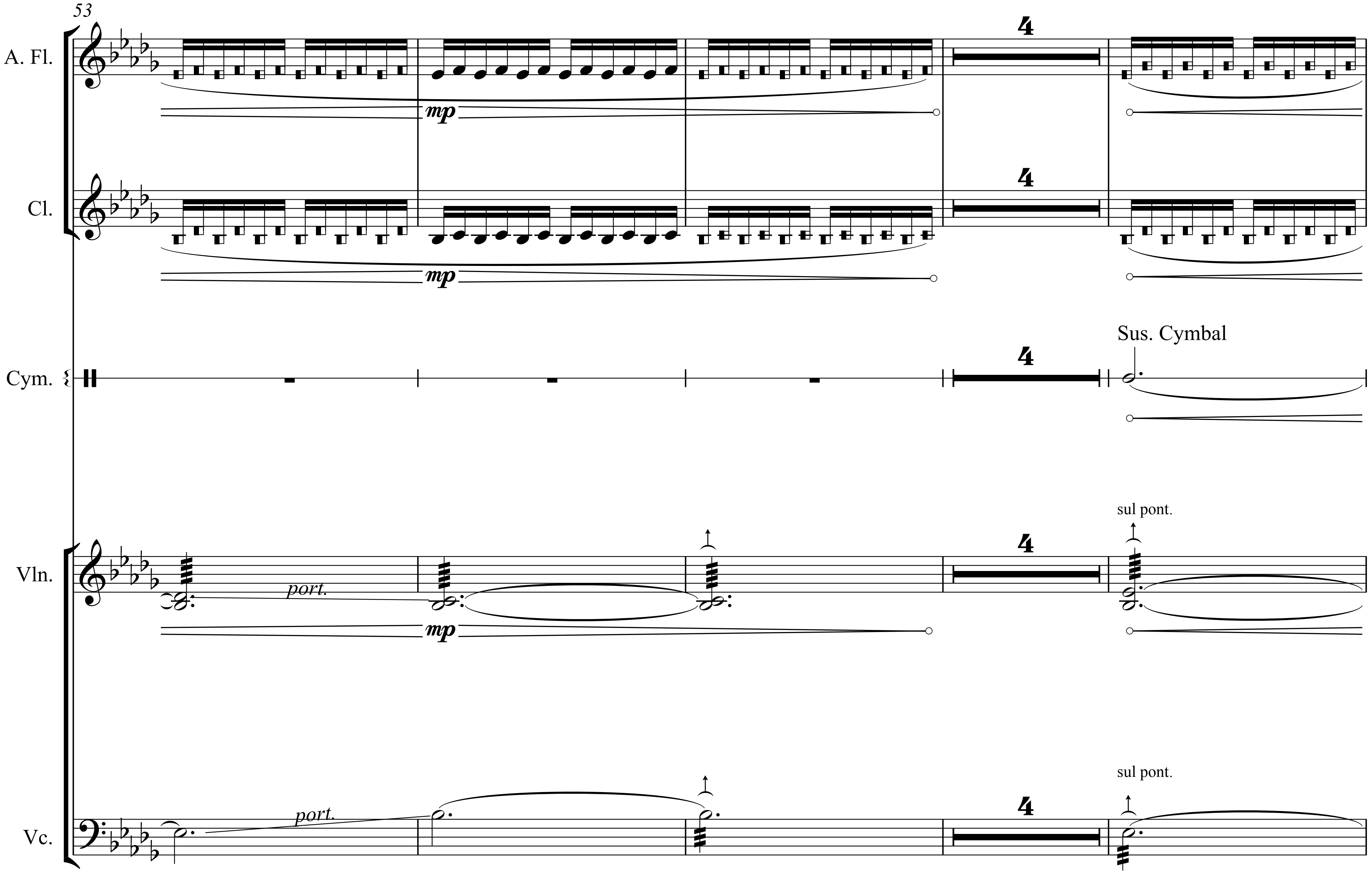
	Transition smoothly from one articulation to another
	Wide vibrato
	Dramatic, ad. Lib. vibrato
	Portamento
	Drop-off in pitch at the end of a note's duration
	¼ tone flat
	¾ tone flat
	Crescendo *from* and diminuendo *to* silence as seamlessly as possible
	Air Noise. No Pitch
	Half air noise, half pitch. (an 'airy' or 'breathy' tone)
	Sing the smaller, bracketed note in conjunction with the note voiced on the instrument
	Harmonic pressure
	Bow as lightly as possible while maintaining pitch and volume
	Heavy bow pressure (almost scratch tone)
	Accent marked beats within a sustained note creating a throbbing effect

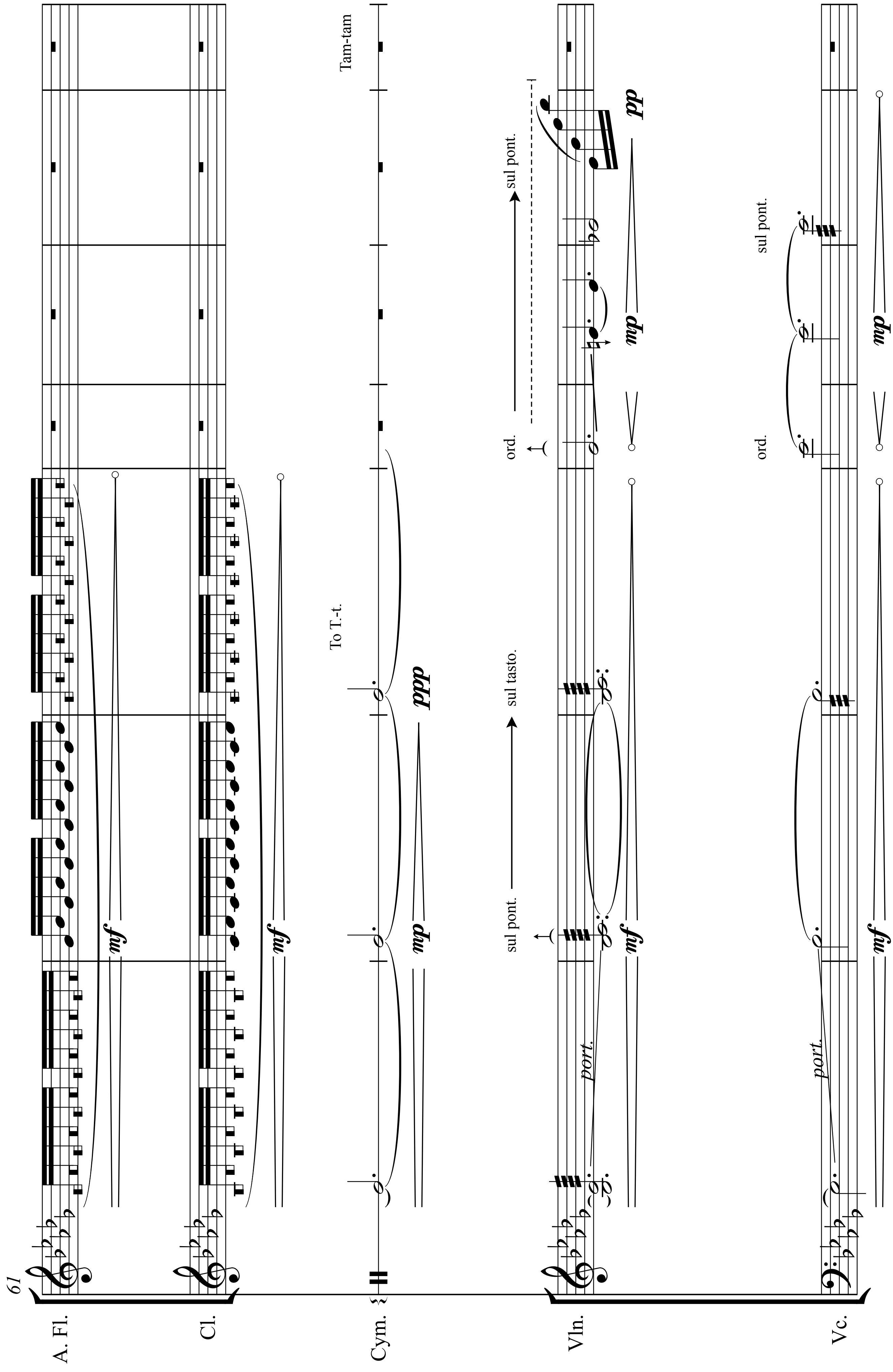
Berlin: Symphony of a Metropolis, Act 1

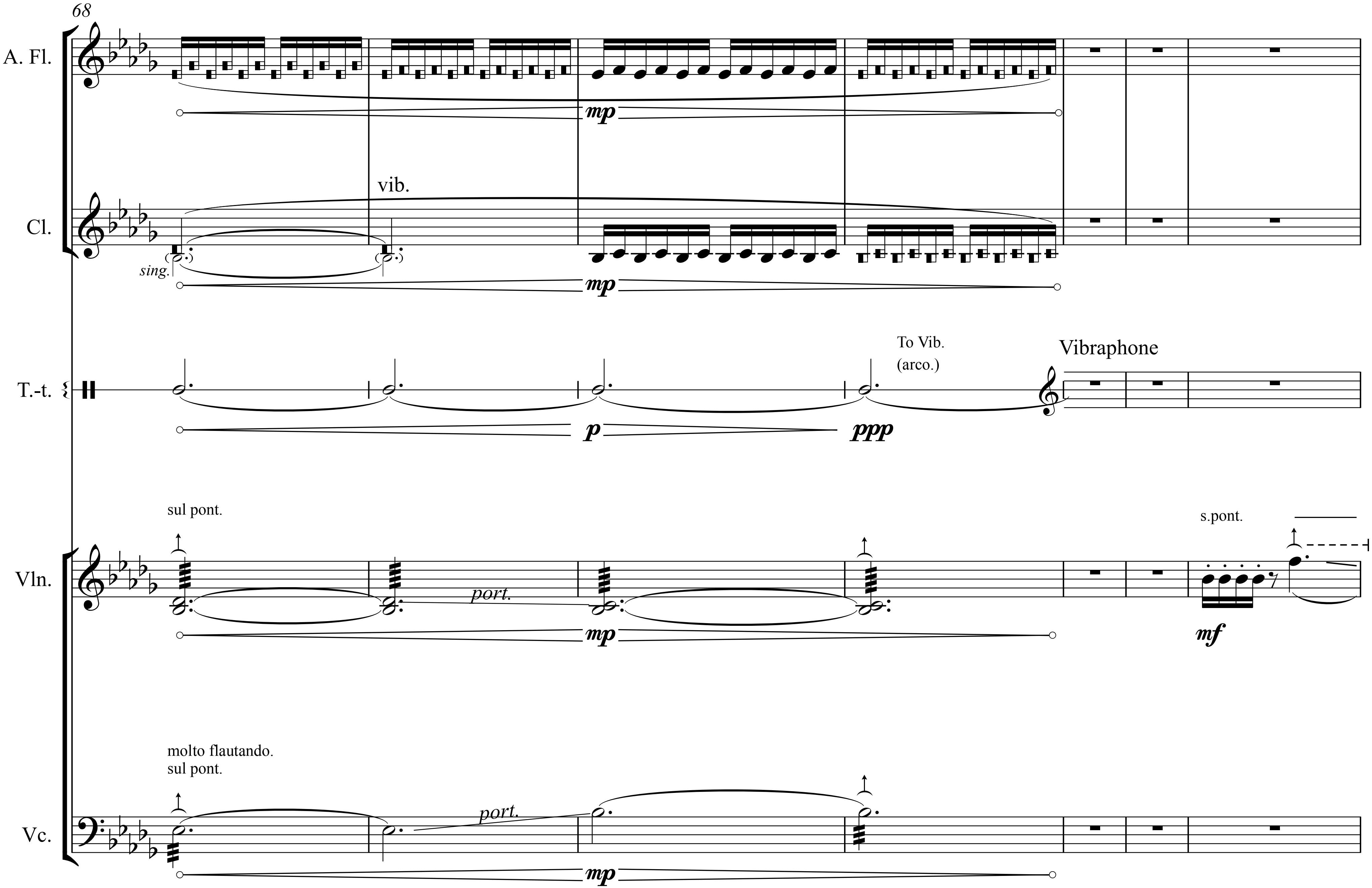
Daniel J Fallon

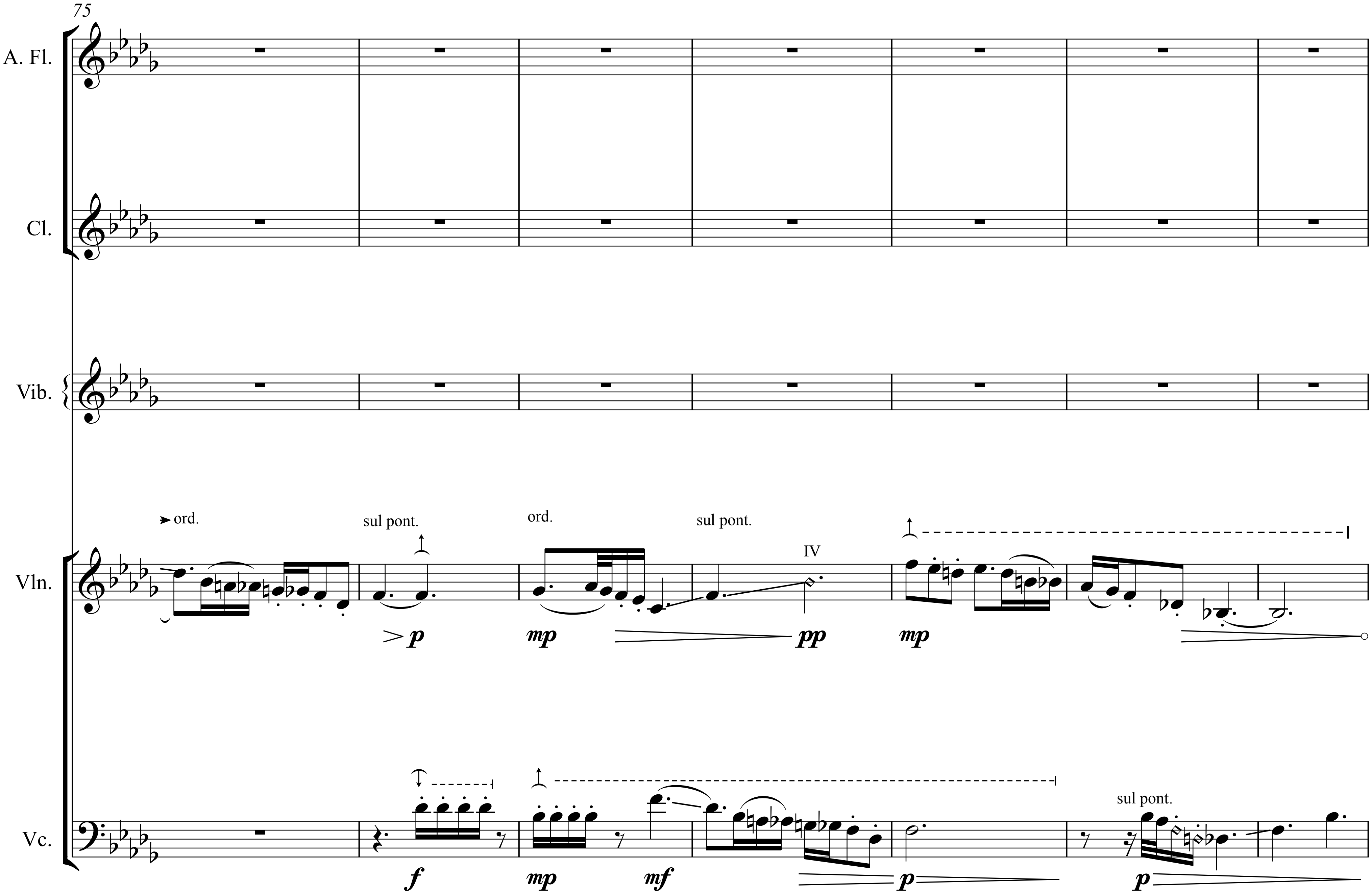

♩=120
37
Alto Flute
Clarinet in B♭
Suspended Cymbal
Violin
Violoncello

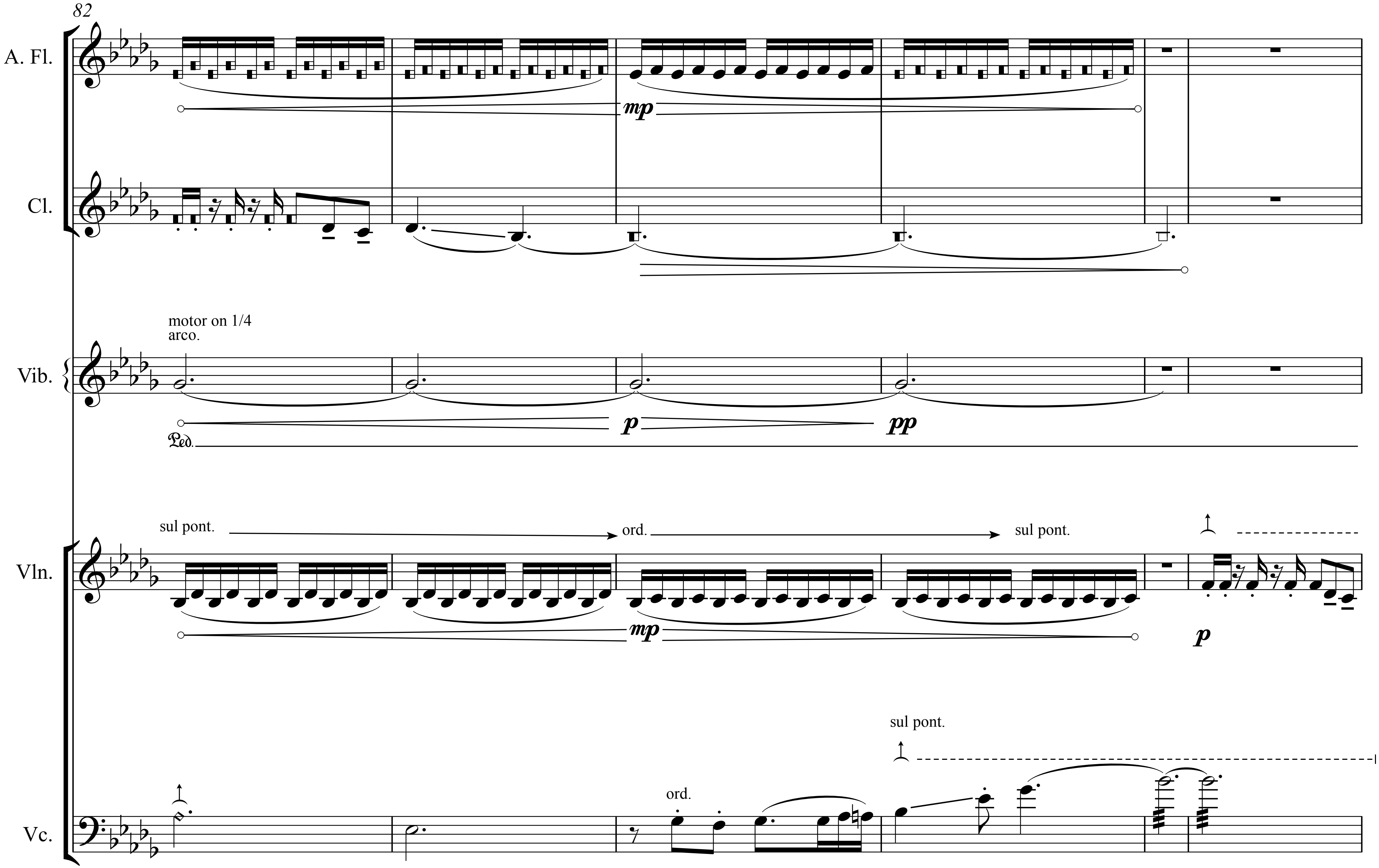
A
45
A. Fl.
mp
Cl.
Cym.
A
sul pont.
Vln.
molto flautando.
sul pont.
Vc.

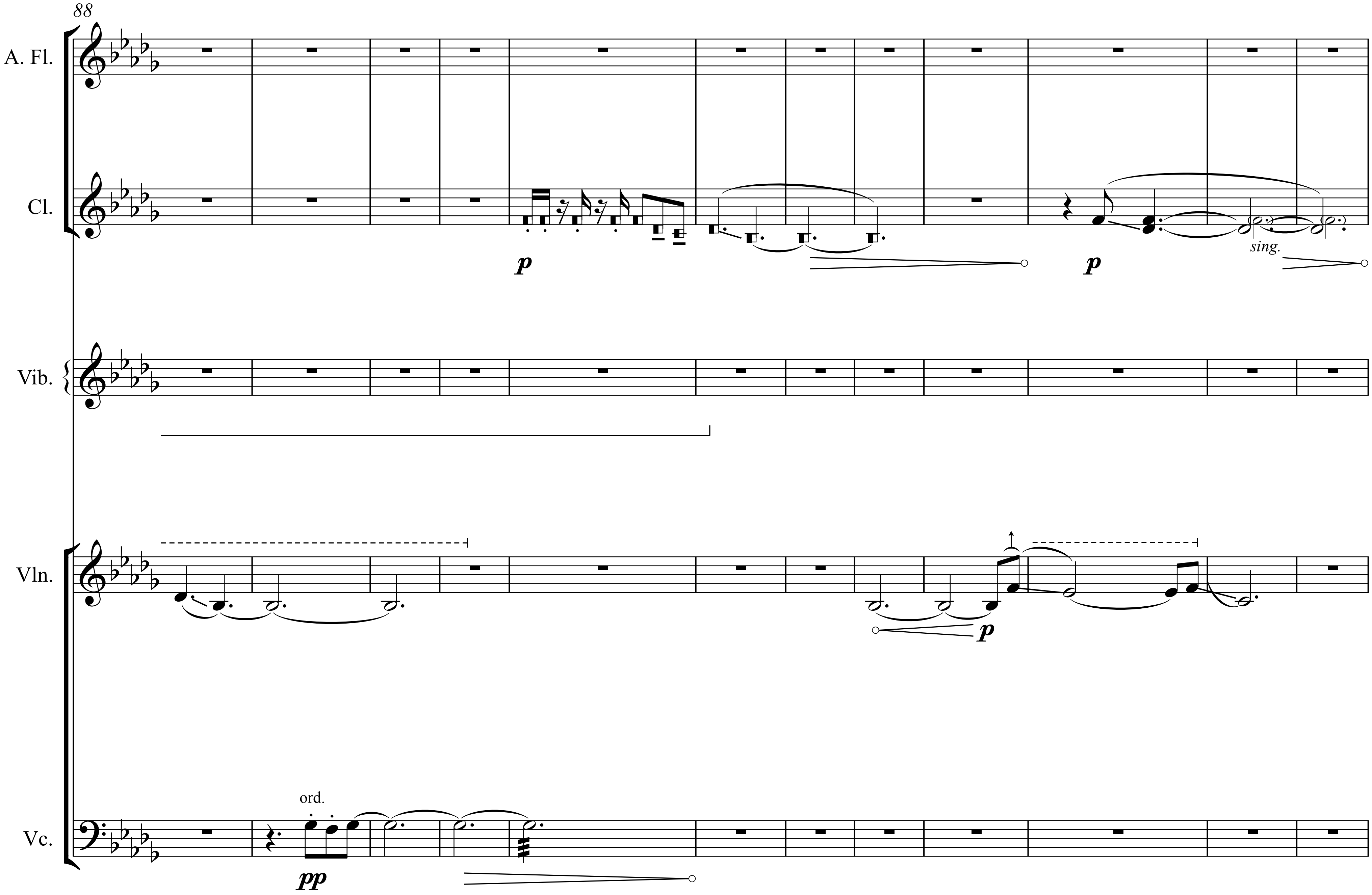

53
A. Fl.
Cl.
Cym.
Vln.
Vc.
mp
mp
mp
mp
4
4
4
4
4
Sus. Cymbal
sul pont.
sul pont.
port.
port.

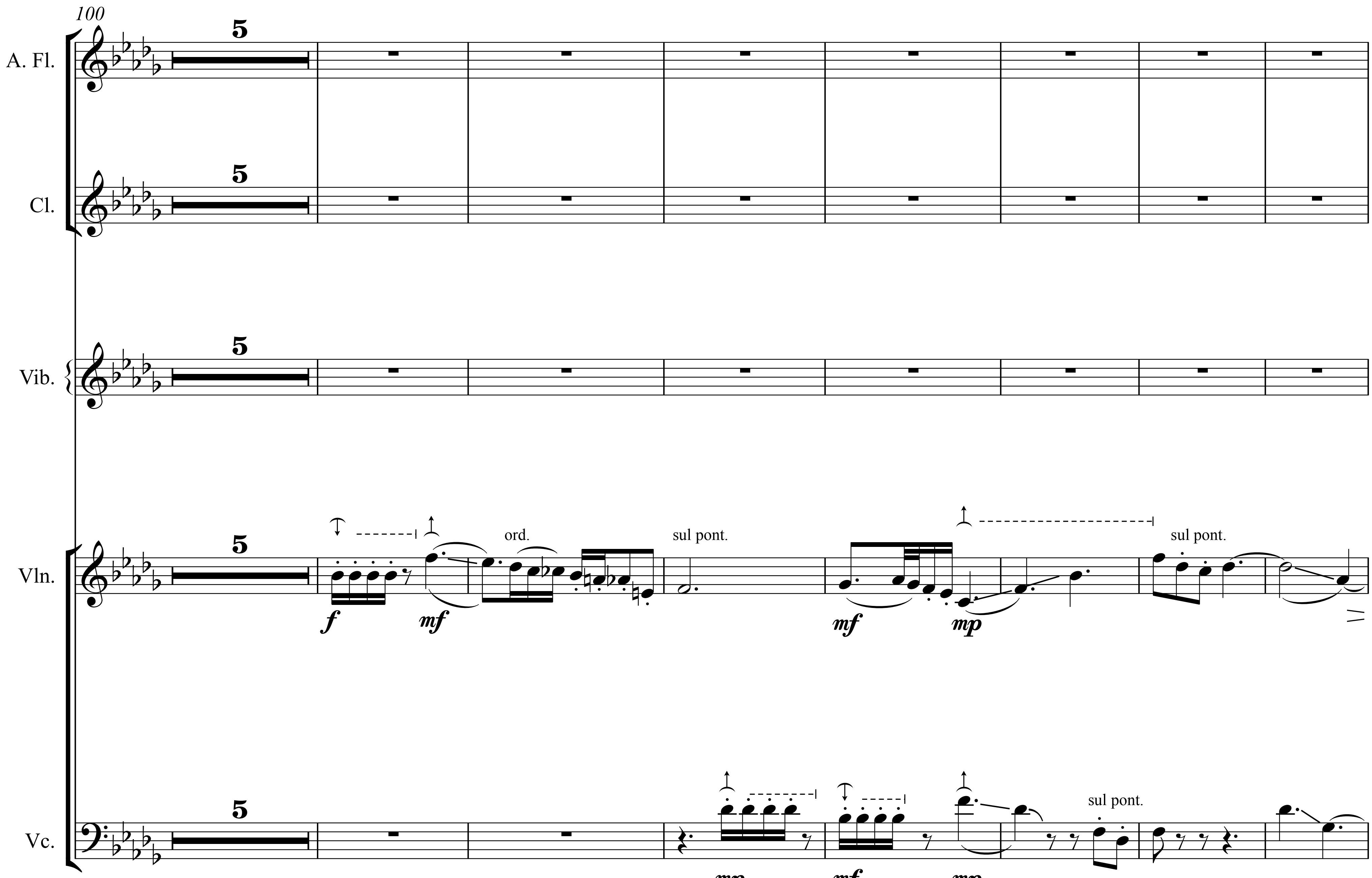

61
A. Fl.
Cl.
Cym.
Vln.
Vc.
mf
mf
mp
ppp
To T.-t.
Tam-tam
sul pont.
sul tasto.
port.
mf
ord.
sul pont.
mp
pp
port.
mf
ord.
sul pont.
mp

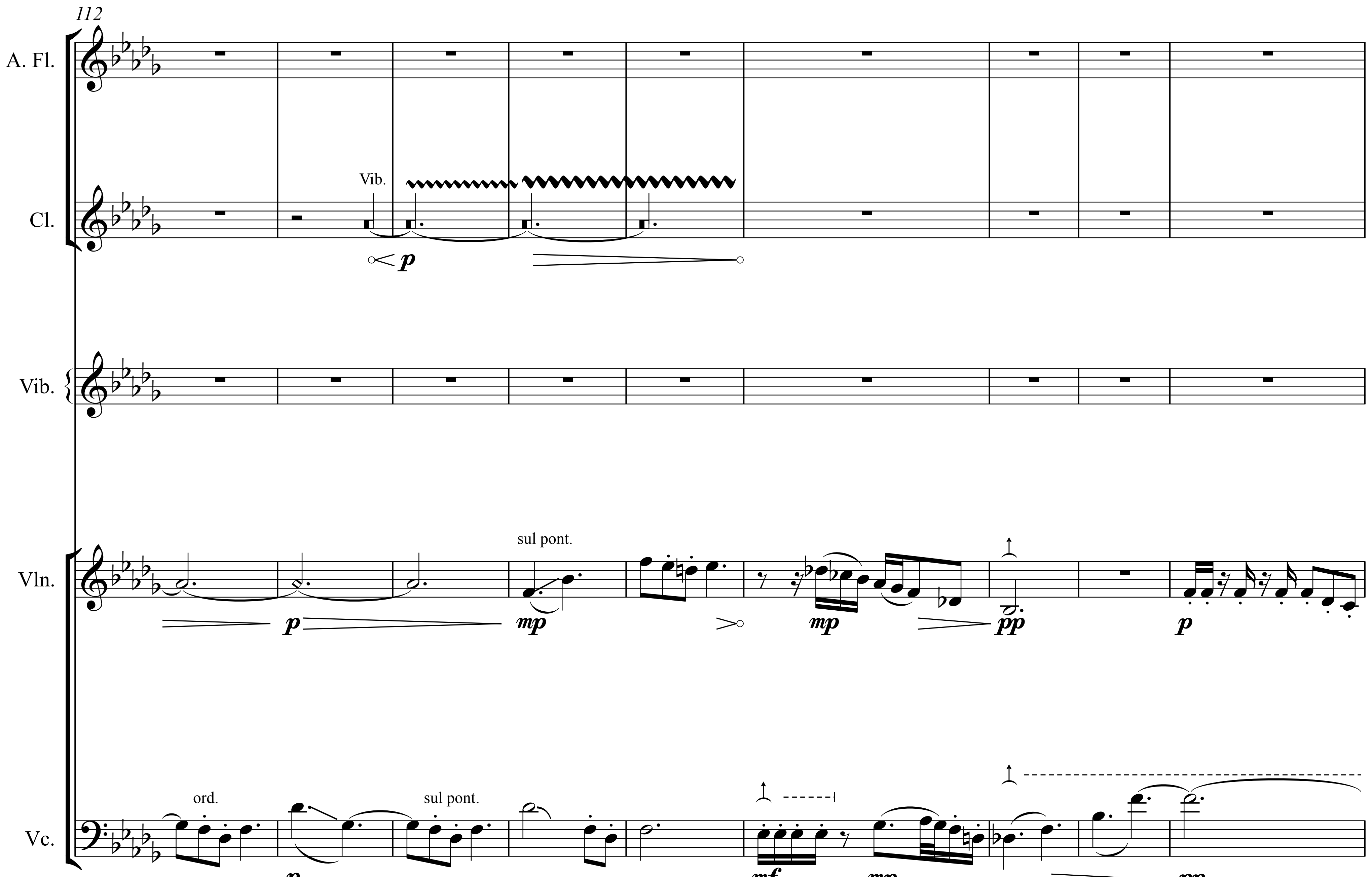

68
A. Fl.
Cl.
T.-t.
Vln.
Vc.
mp
vib.
sing.
mp
To Vib.
(arco.)
Vibraphone
p
ppp
sul pont.
port.
mp
s.pont.
mf
molto flautando.
sul pont.
port.
mp

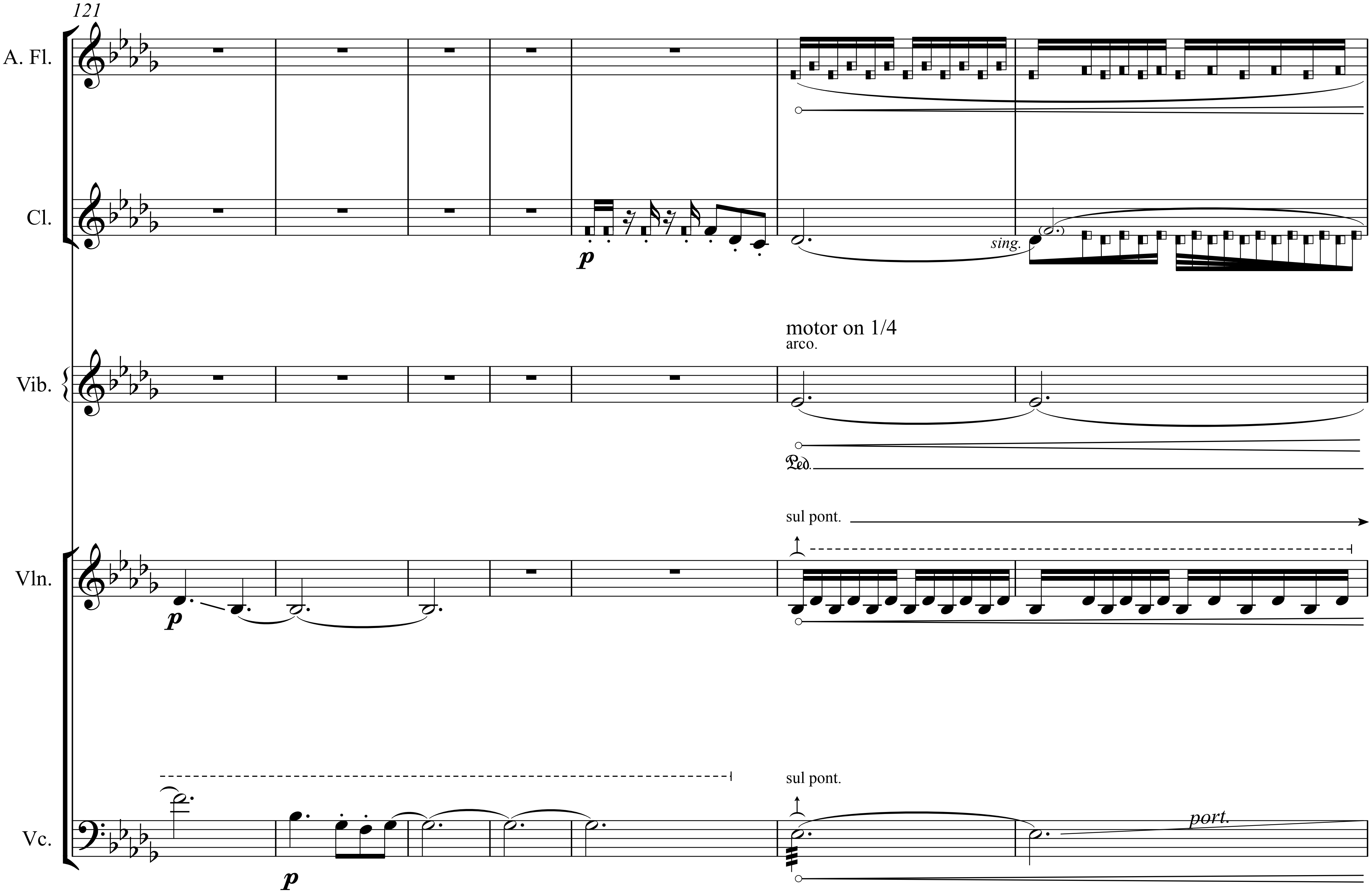

75
A. Fl.
Cl.
Vib.
Vln.
Vc.
ord.
sul pont.
ord.
sul pont.
IV
> p
mp
pp
mp
f
mp
mf
p
sul pont.
p

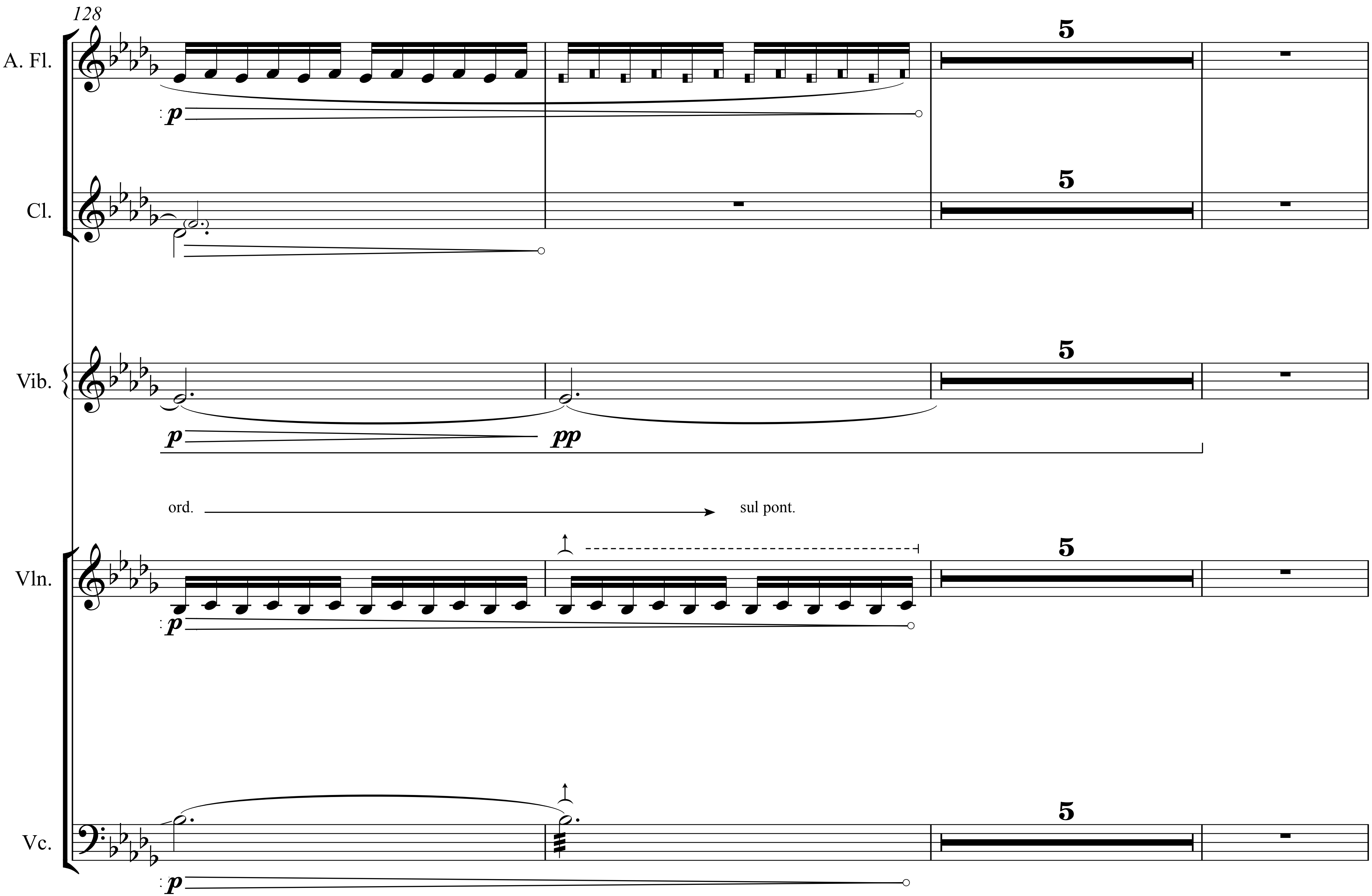

82
A. Fl.
Cl.
Vib.
Vln.
Vc.
mp
motor on 1/4
arco.
p
pp
Ped.
sul pont.
ord.
sul pont.
mp
p
sul pont.
ord.
pp
mp
ppp

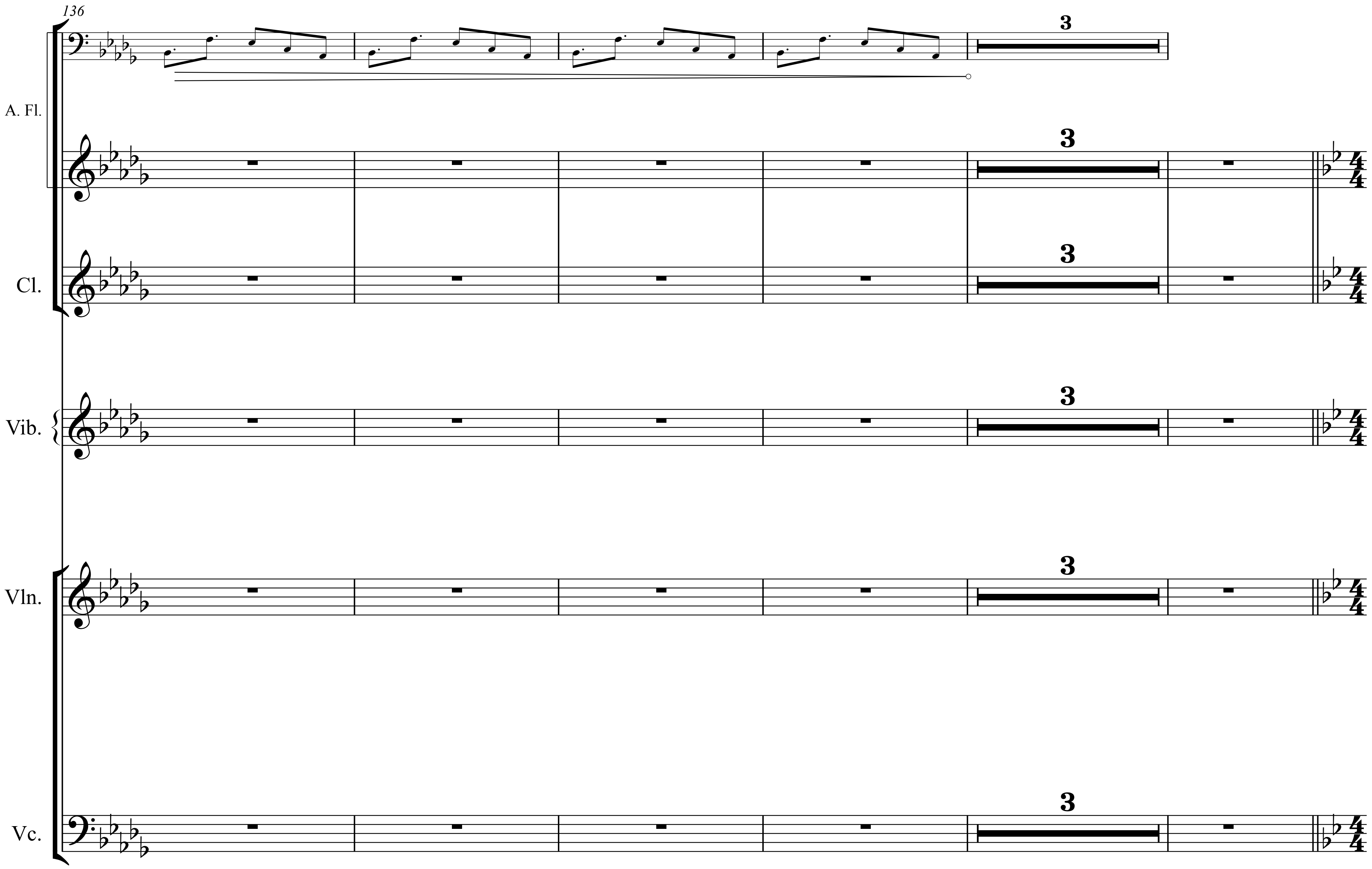
88
A. Fl.
Cl.
Vib.
Vln.
Vc.
p
p
sing.
p
ord.
pp

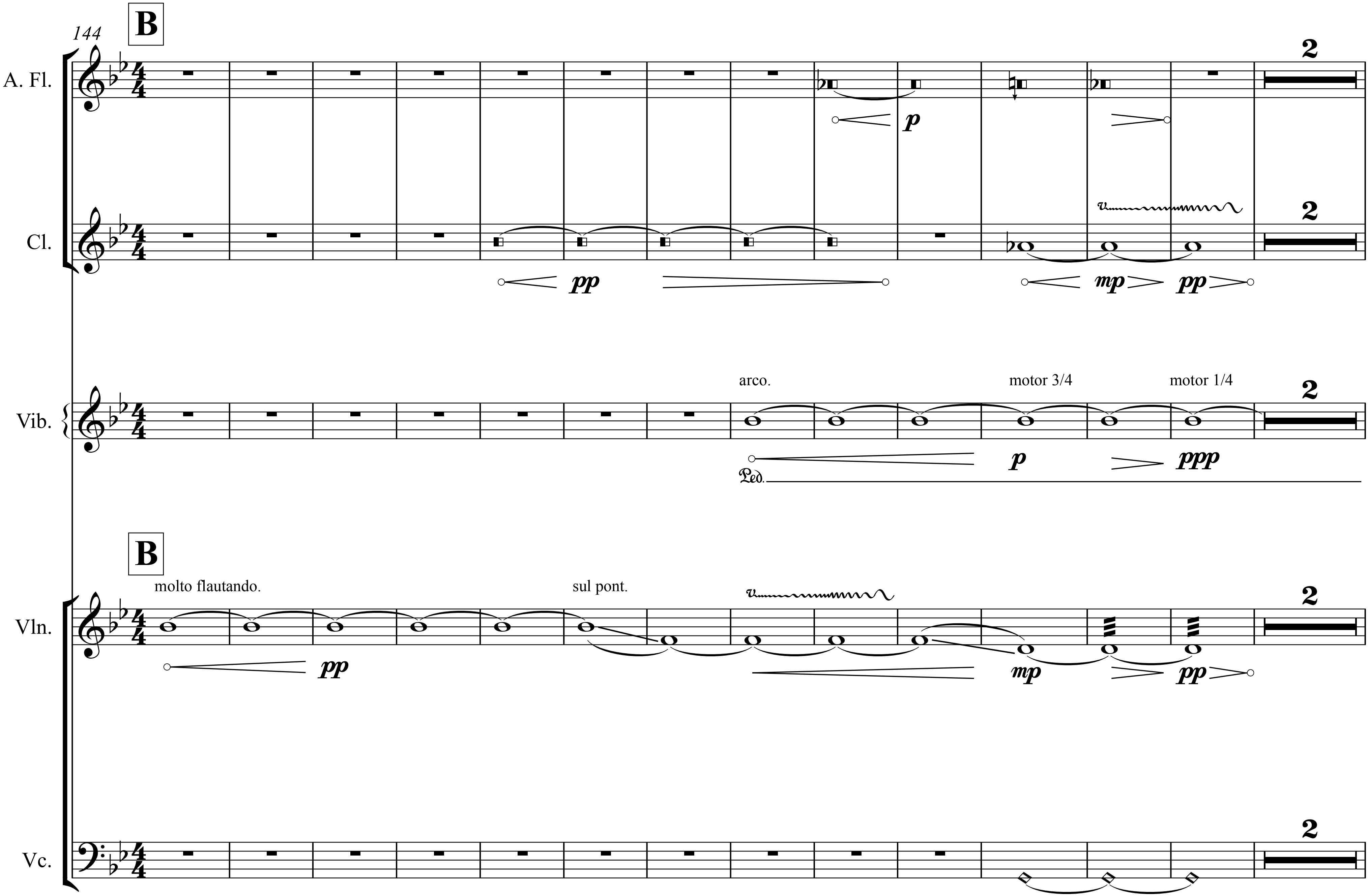

100
A. Fl.
Cl.
Vib.
Vln.
Vc.
5
5
5
5
5
f
mf
ord.
sul pont.
mf
mp
sul pont.
mp
mf
mp
sul pont.

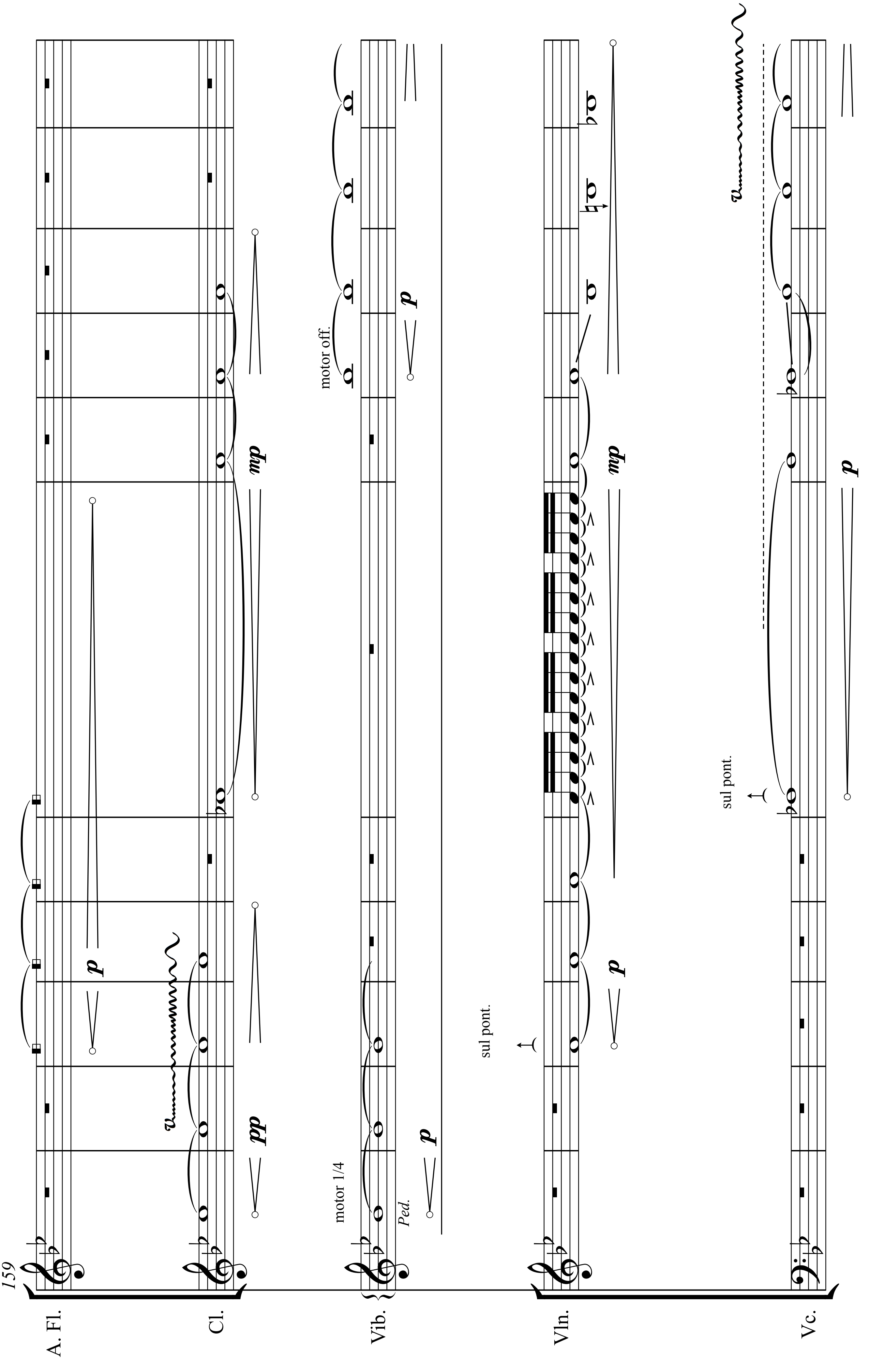

112
A. Fl.
Cl.
Vib.
p
Vib.
Vln.
p
sul pont.
mp
mp
pp
p
Vc.
ord.
p
sul pont.
mf
mp
pp

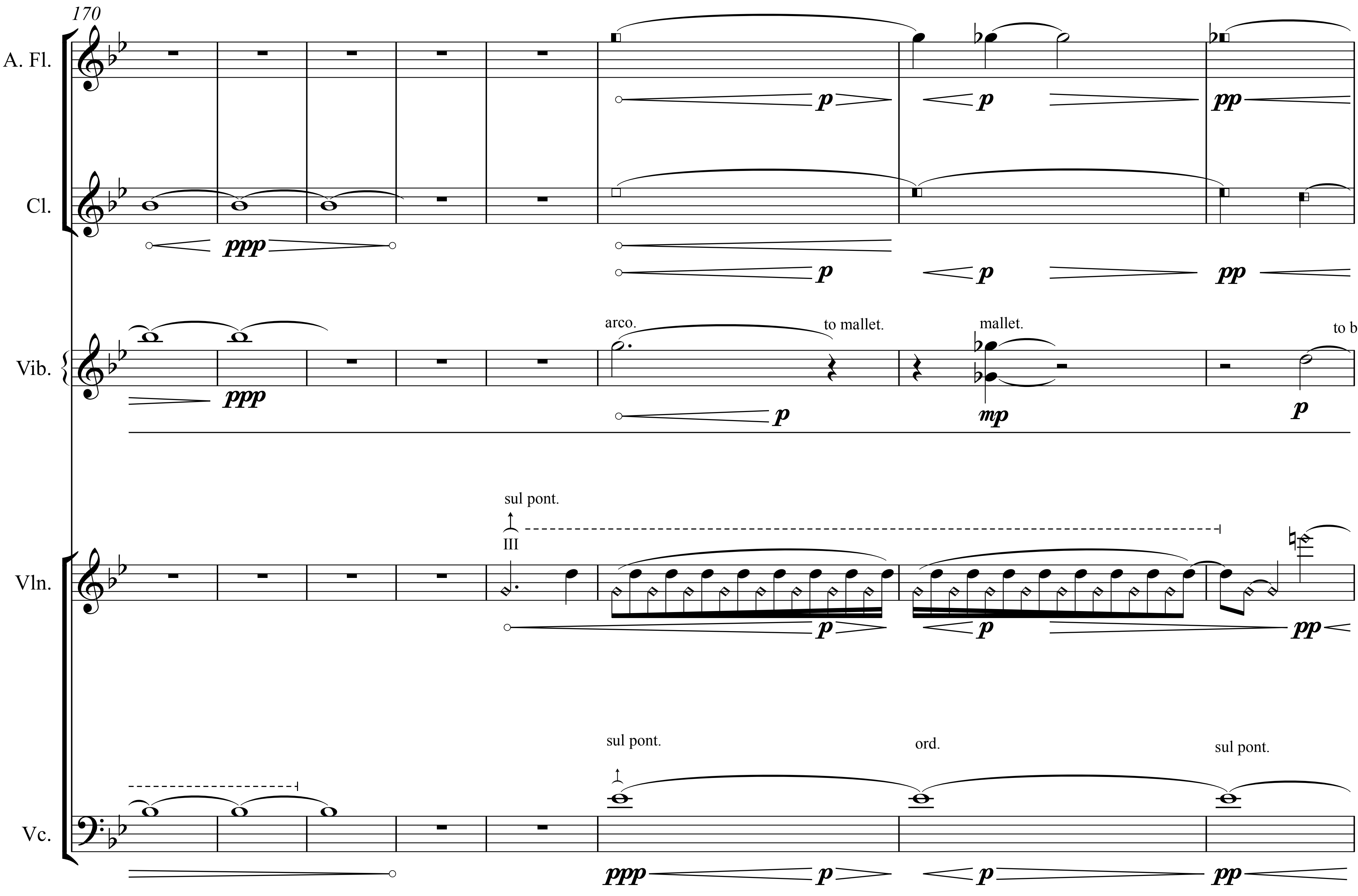

121
A. Fl.
Cl.
Vib.
Vln.
Vc.
p
sing.
motor on 1/4
arco.
Ped.
sul pont.
p
sul pont.
p
port.

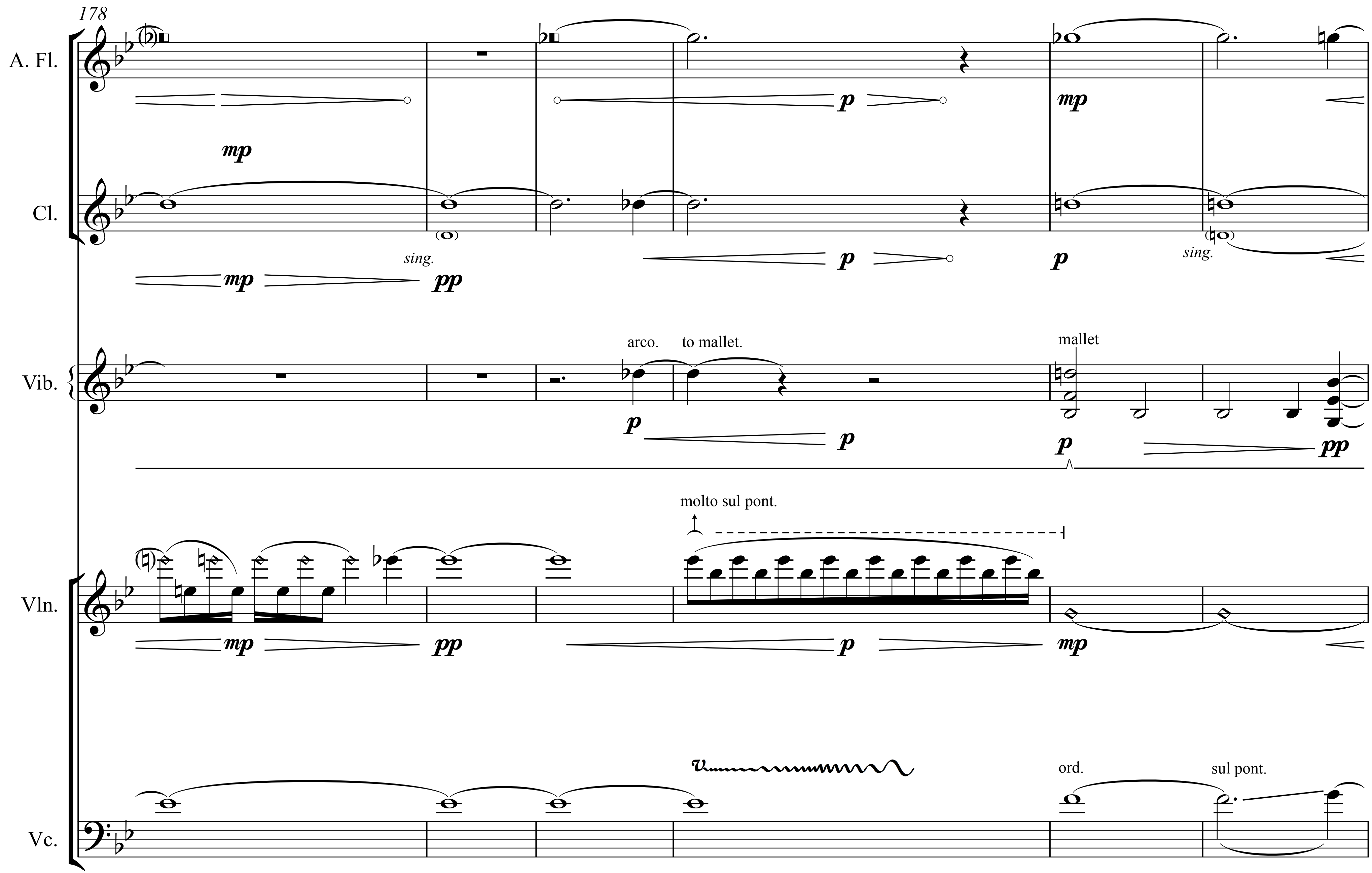
128
A. Fl.
Cl.
Vib.
Vln.
Vc.
p
pp
ord.
sul pont.
5

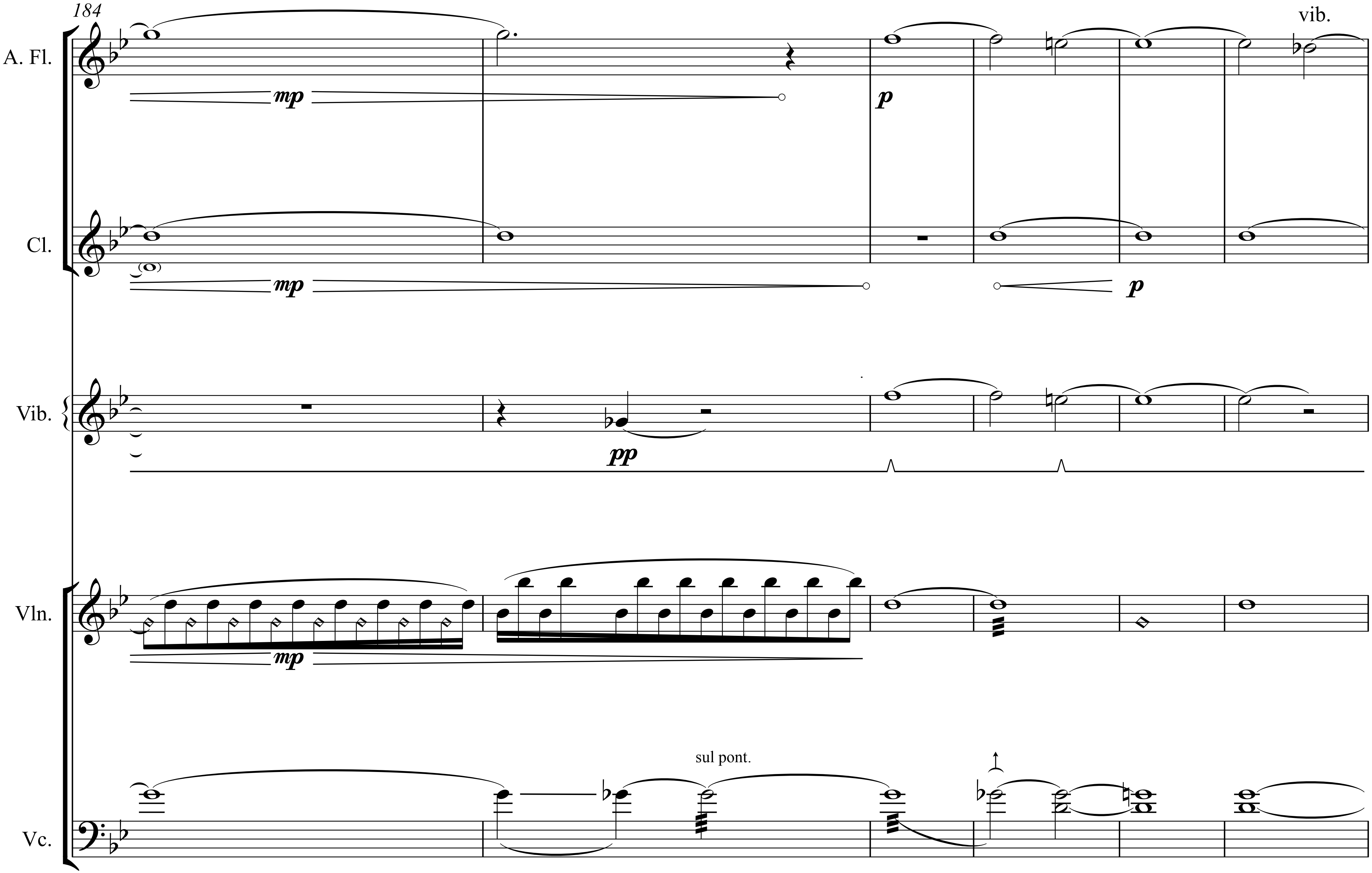

136
A. Fl.
Cl.
Vib.
Vln.
Vc.
3
3
3
3
3
3

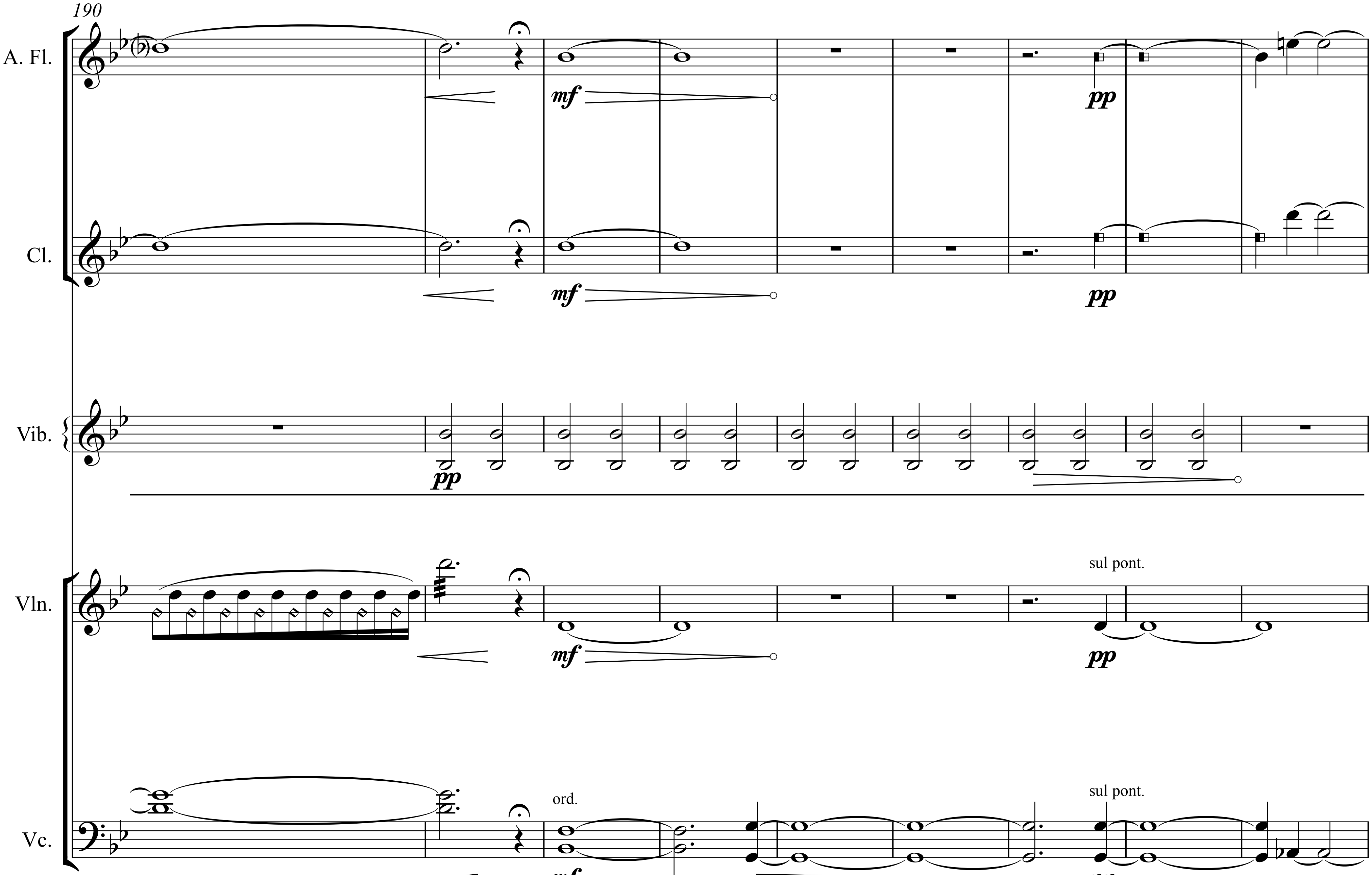
144
B
A. Fl.
Cl.
Vib.
Vln.
Vc.
p
pp
mp
pp
arco.
motor 3/4
motor 1/4
p
ppp
Ped.
B
molto flautando.
sul pont.
pp
mp
pp
p
2

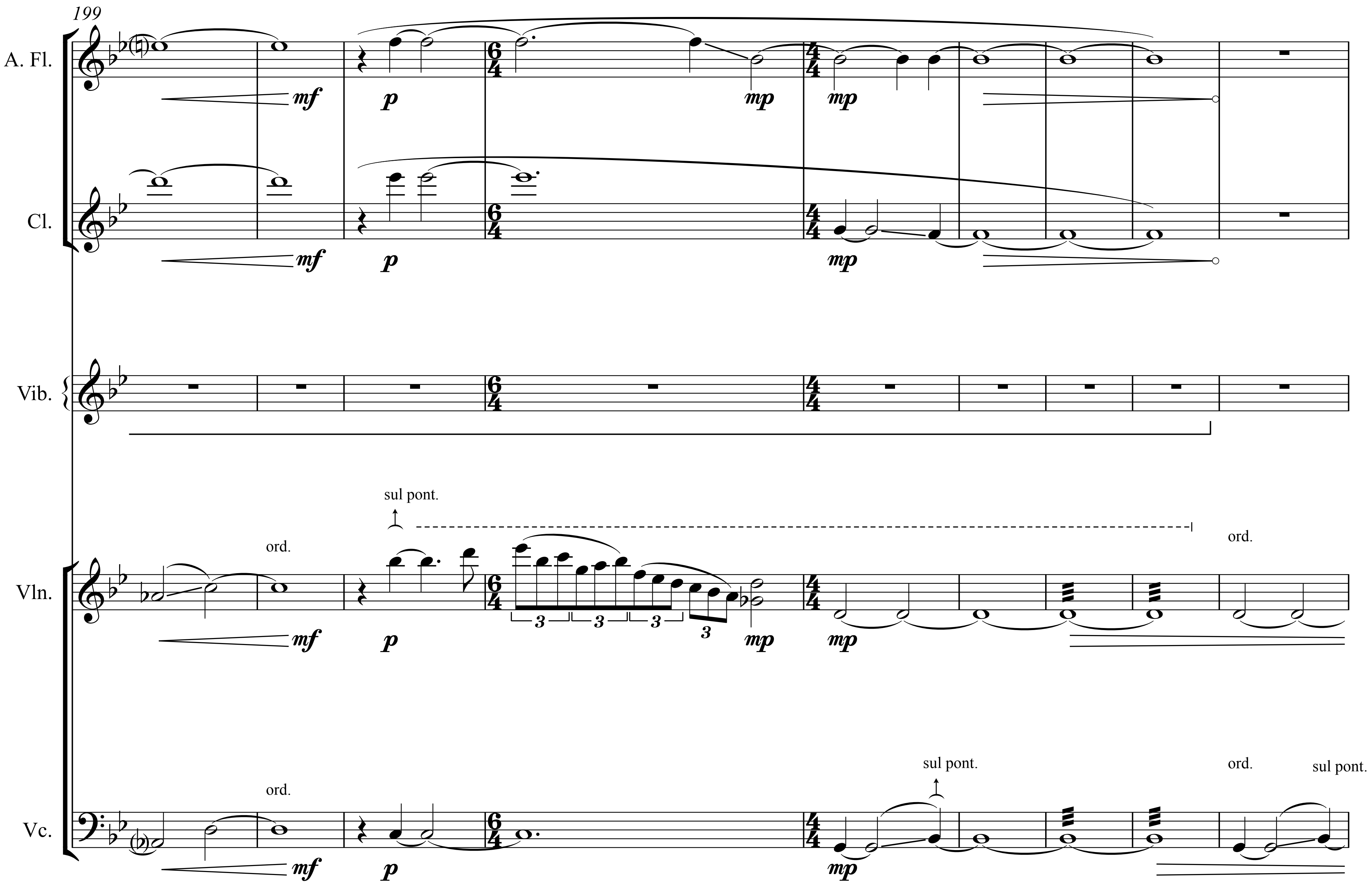

159
A. Fl.
Cl.
Vib.
Vln.
Vc.
pp
p
mp
motor 1/4
Ped.
p
motor off.
p
sul pont.
p
mp
sul pont.
p

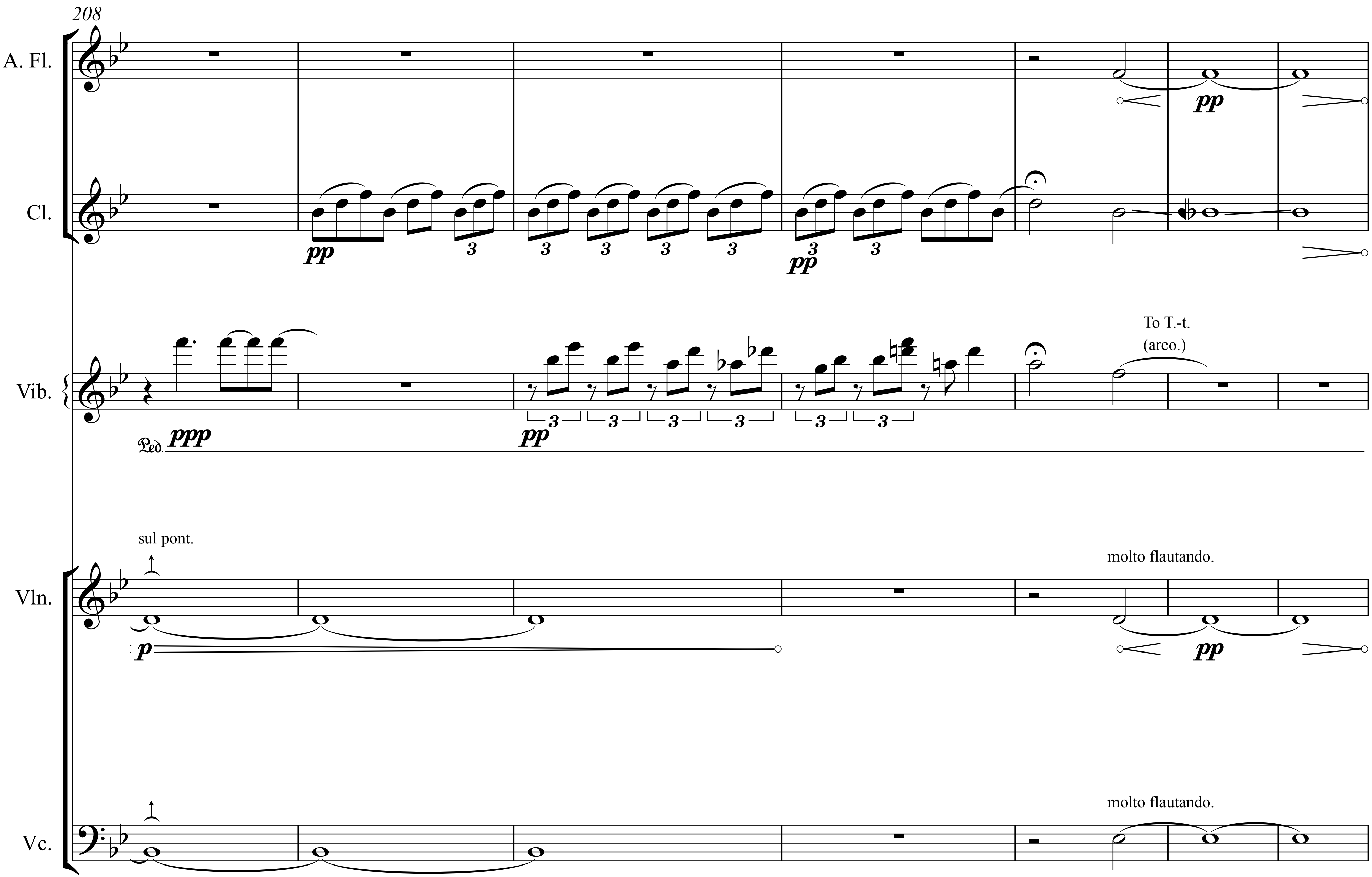

170
A. Fl.
Cl.
Vib.
Vln.
Vc.
p
pp
ppp
mp
arco.
to mallet.
mallet.
to bow.
sul pont.
III
ord.
sul pont.

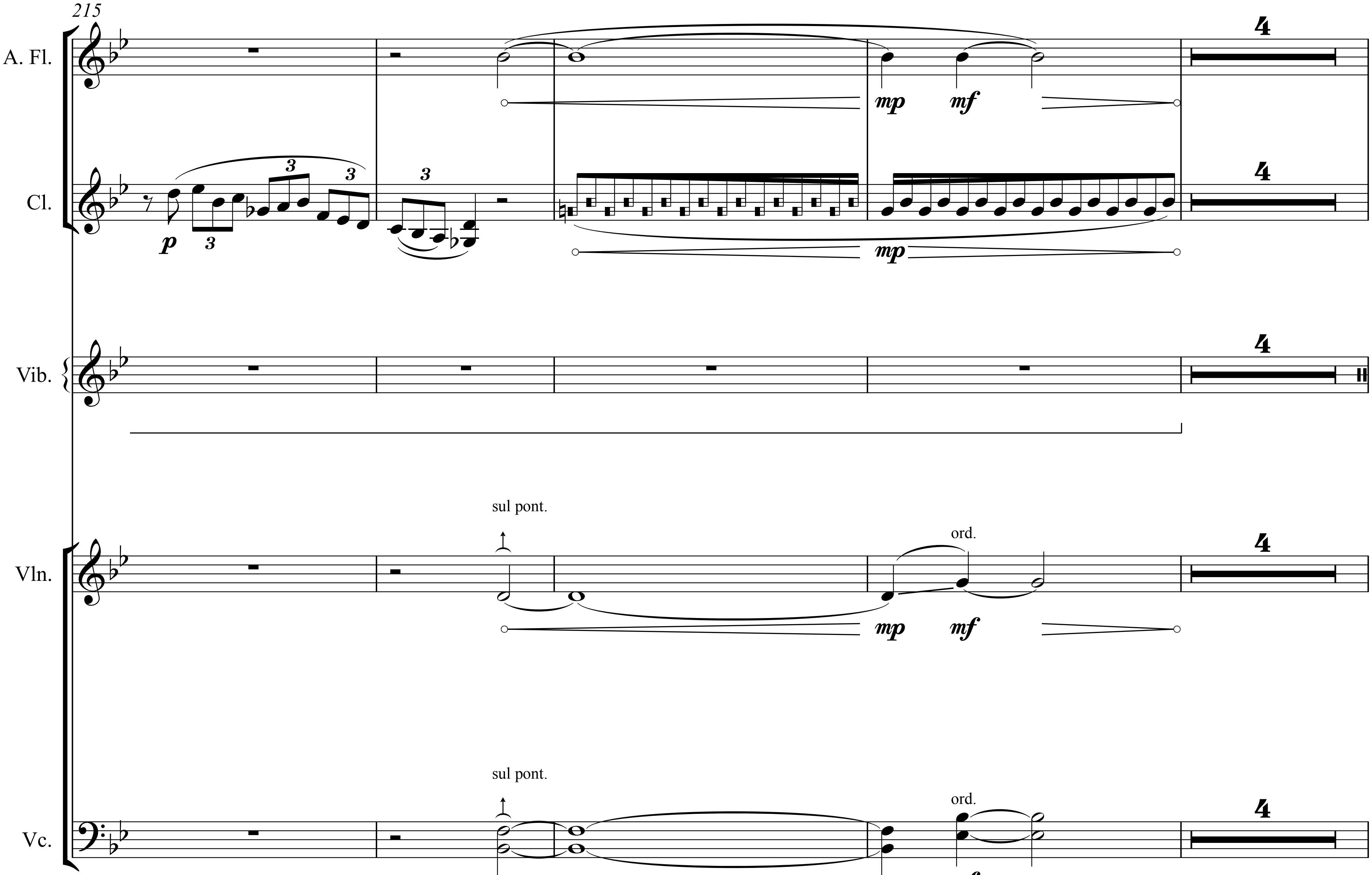

178
A. Fl.
Cl.
Vib.
Vln.
Vc.
mp
p
mp
sing.
pp
arco.
to mallet.
mallet
molto sul pont.
ord.
sul pont.

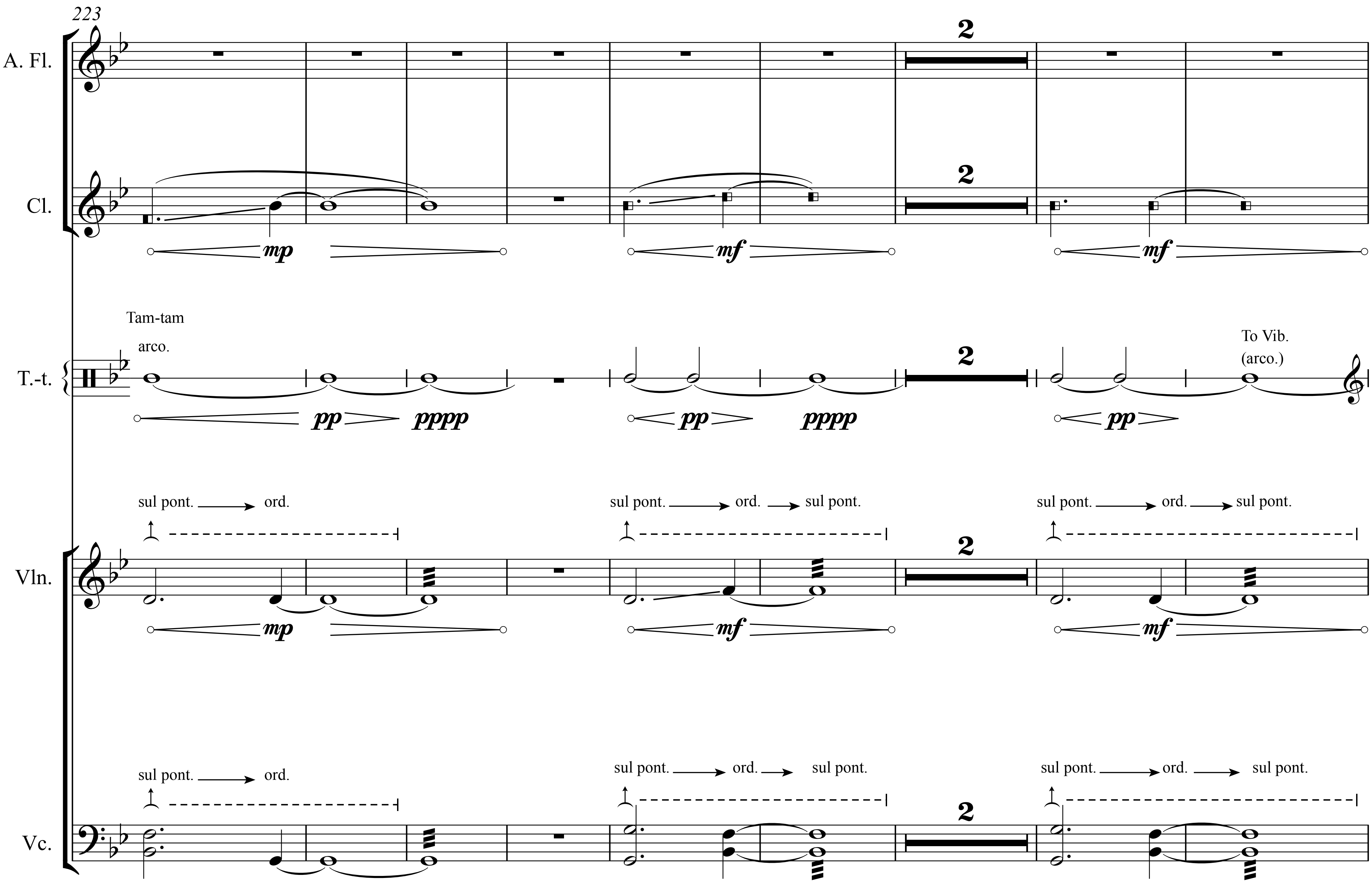

184
vib.
A. Fl.
Cl.
Vib.
Vln.
Vc.
mp
p
pp
ppp
sul pont.

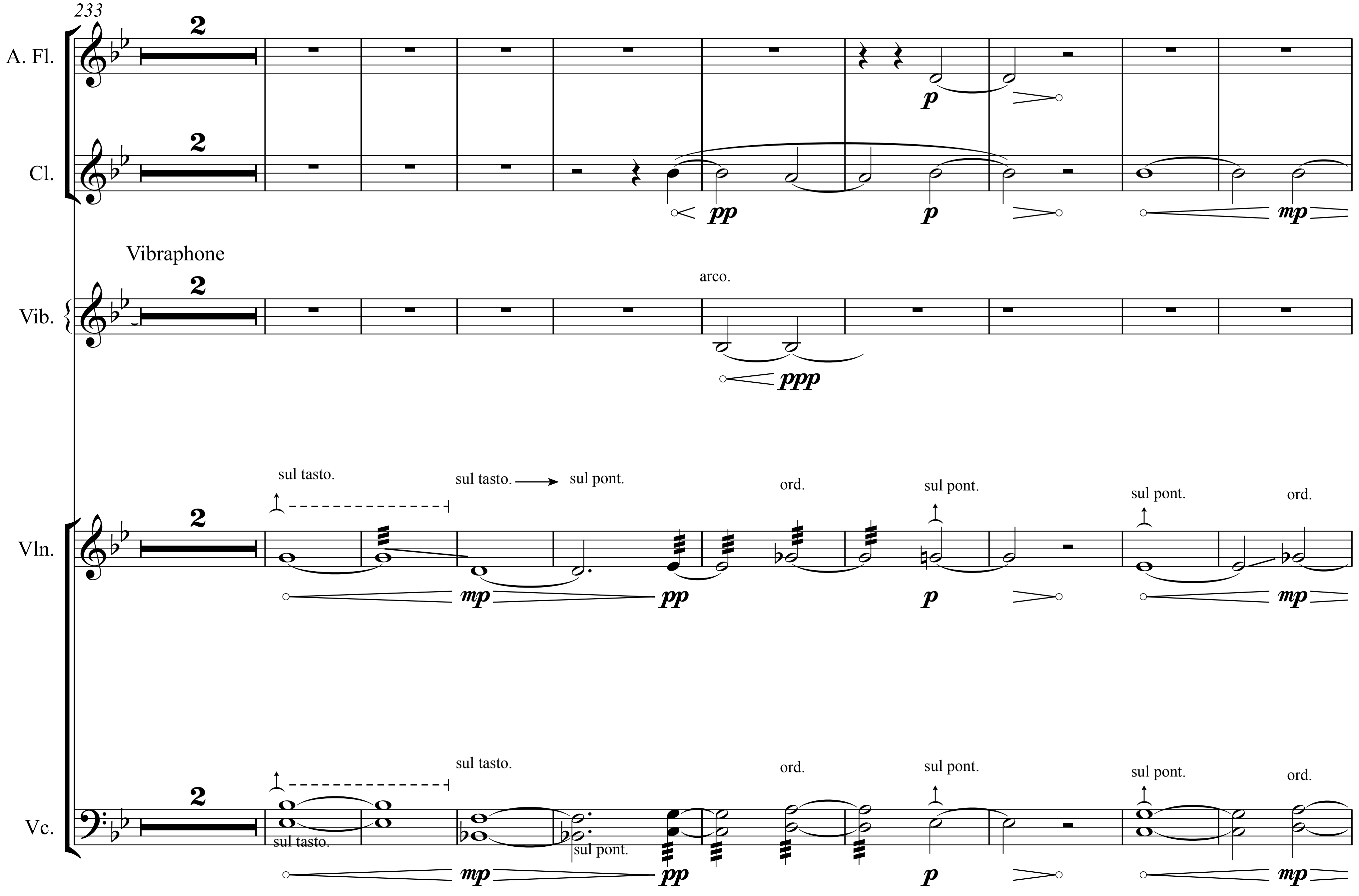

190
A. Fl.
Cl.
Vib.
Vln.
Vc.
mf
pp
ord.
sul pont.
sul pont.

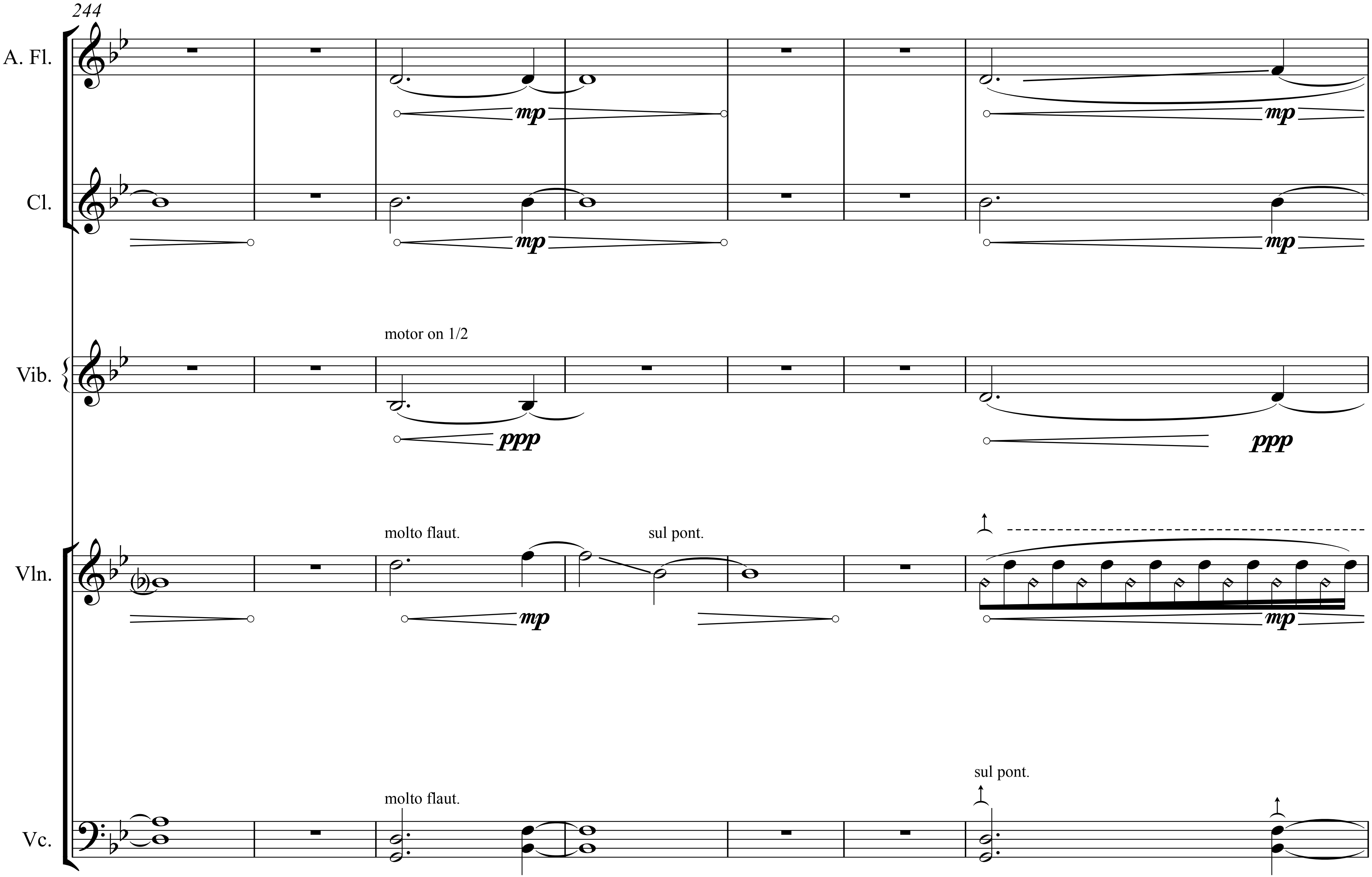

199
A. Fl.
Cl.
Vib.
Vln.
Vc.
mf
p
mp
mp
mf
p
mp
sul pont.
ord.
ord.
mf
p
mp
mp
ord.
sul pont.
ord.
sul pont.
mf
p
mp
3
3
3
3

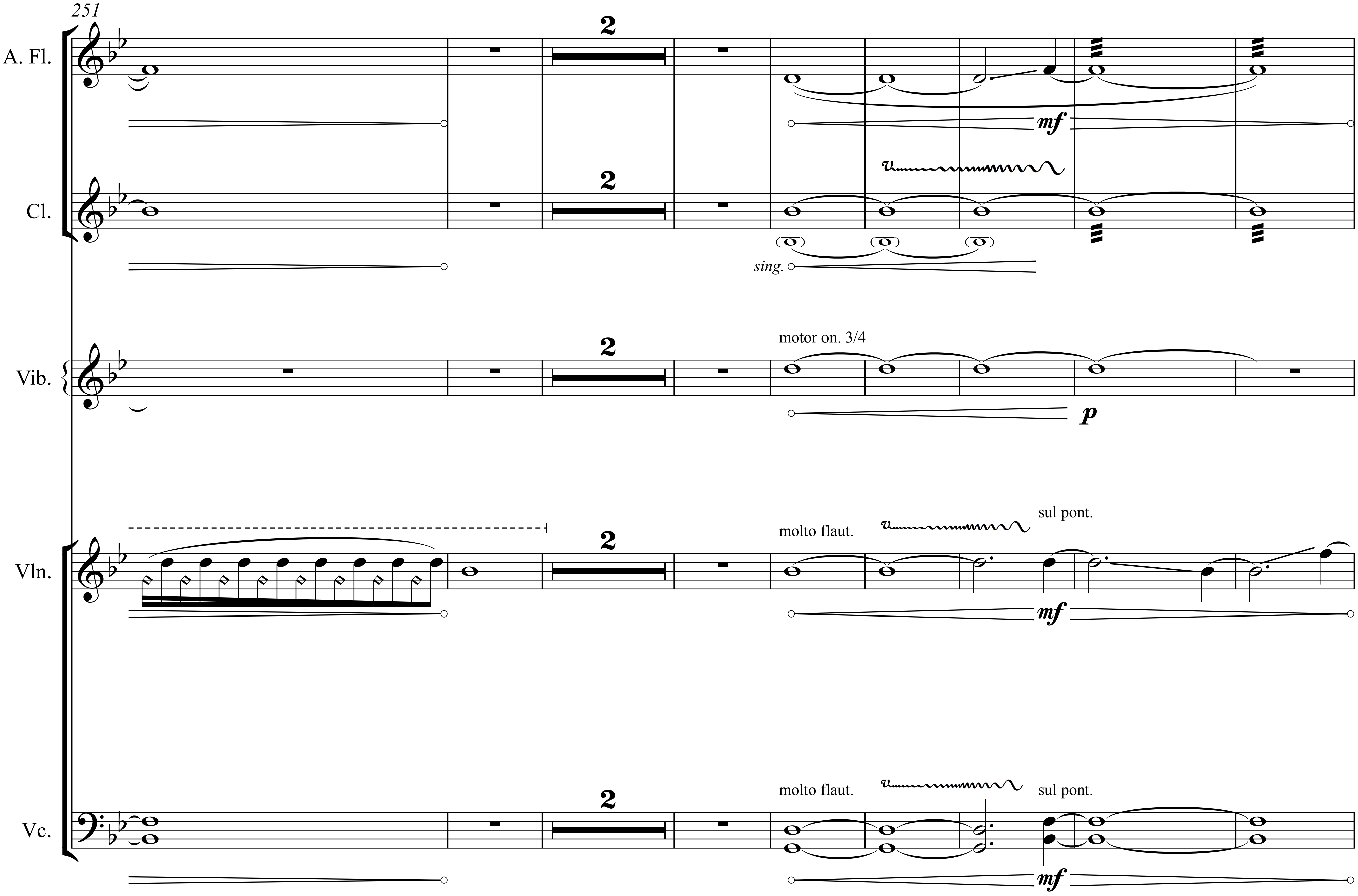

208
A. Fl.
Cl.
Vib.
Vln.
Vc.
pp
pp
3
pp
ppp
Ped.
To T.-t.
(arco.)
sul pont.
p
molto flautando.
molto flautando.

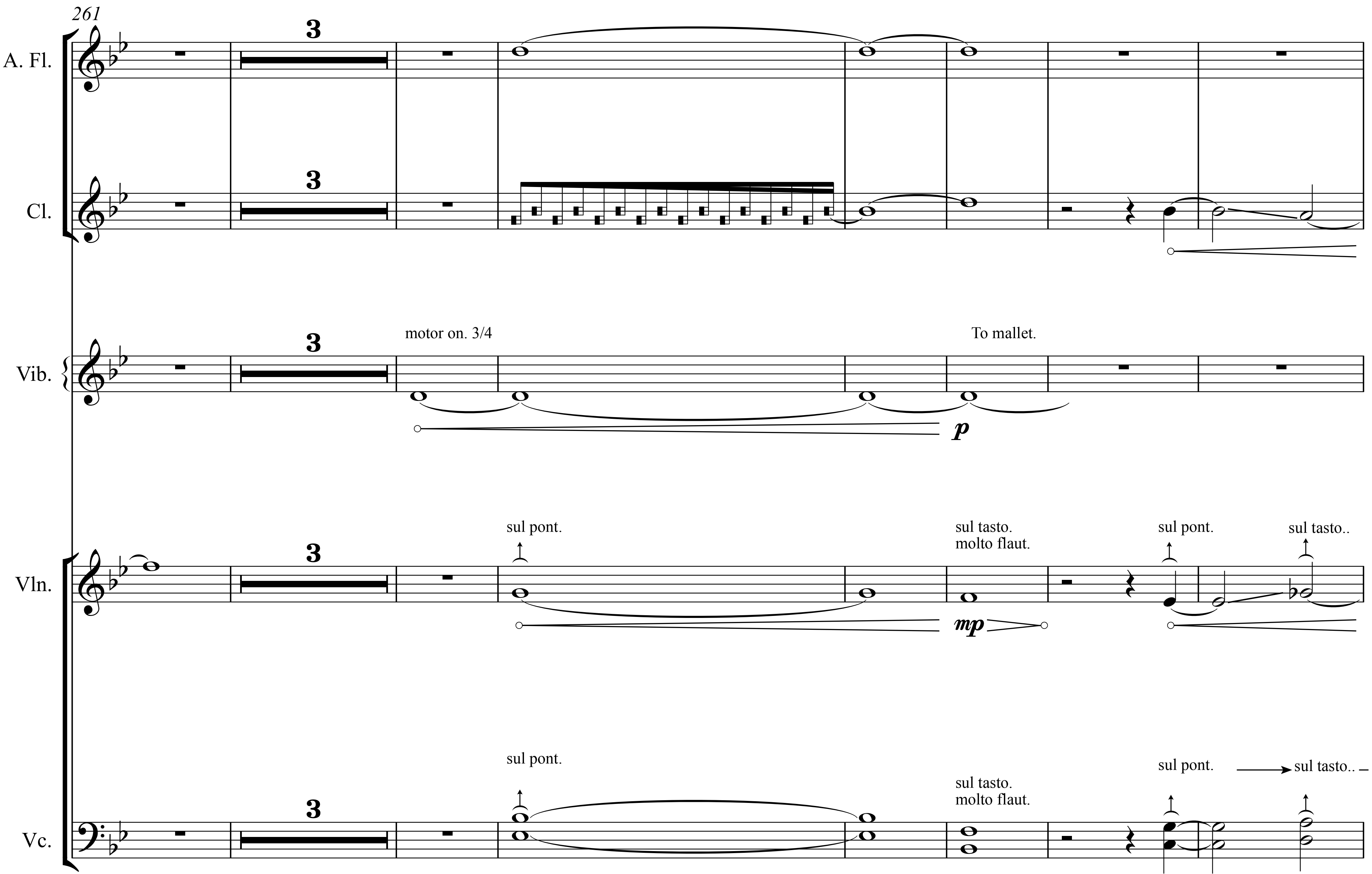
215
A. Fl.
Cl.
Vib.
Vln.
Vc.
3
3
3
3
p
mp
mf
sul pont.
ord.
4

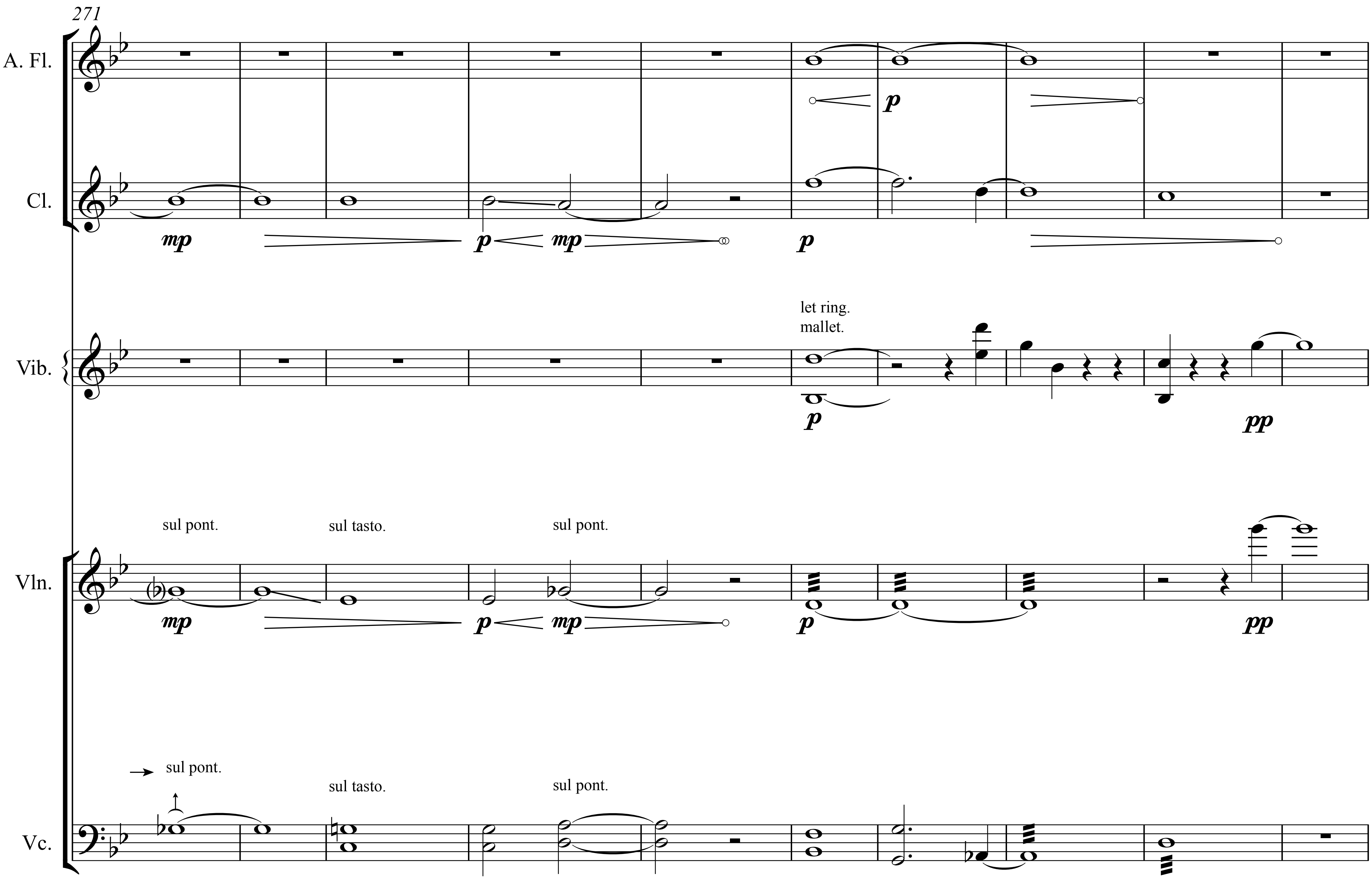

223
A. Fl.
Cl.
T.-t.
Vln.
Vc.
2
mp
mf
Tam-tam
arco.
pp
pppp
To Vib.
(arco.)
sul pont.
ord.

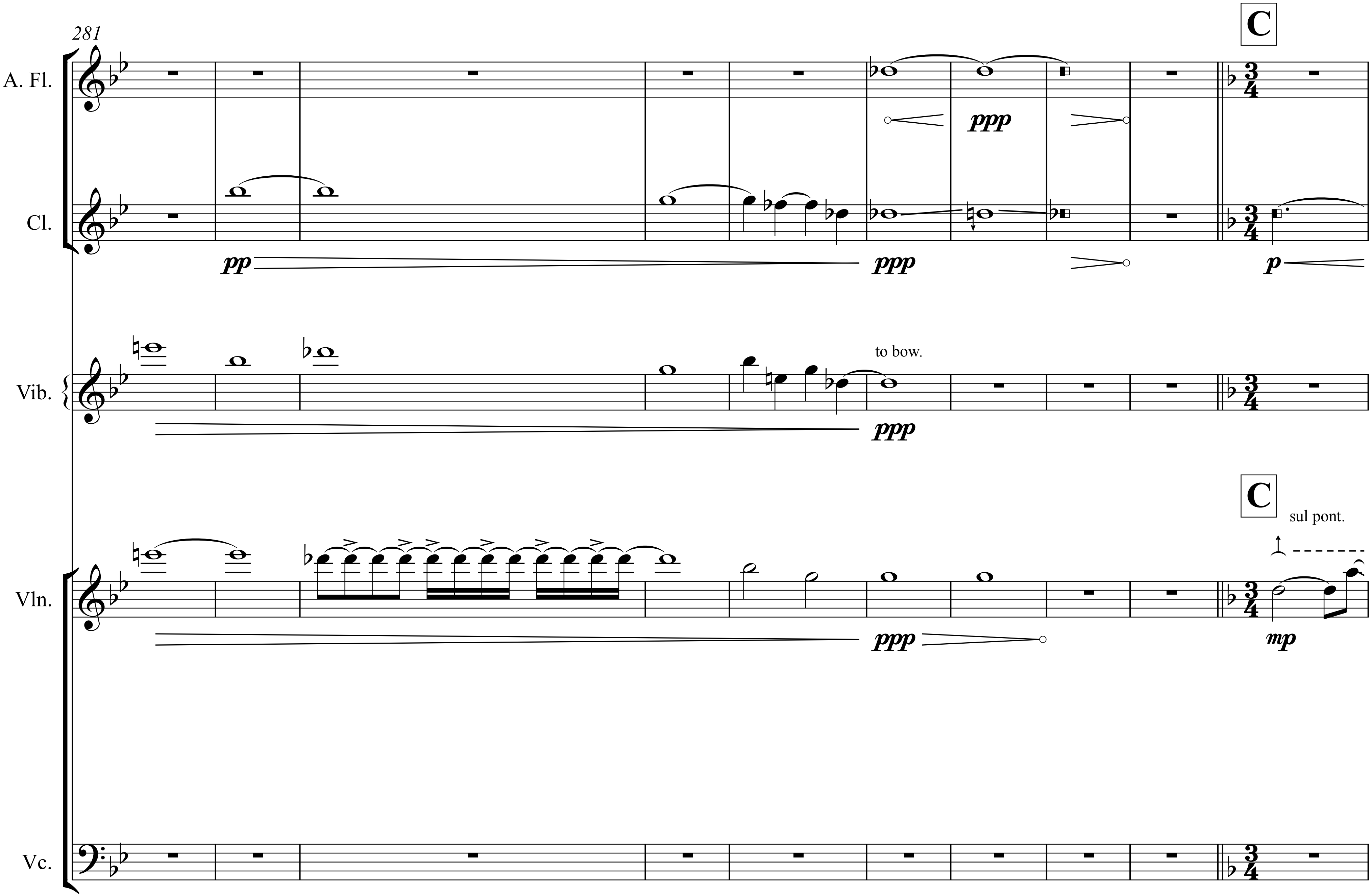

233
A. Fl.
Cl.
Vibraphone
Vib.
Vln.
Vc.
2
arco.
sul tasto.
sul tasto.
sul pont.
ord.
sul pont.
sul pont.
ord.
pp
p
mp
ppp

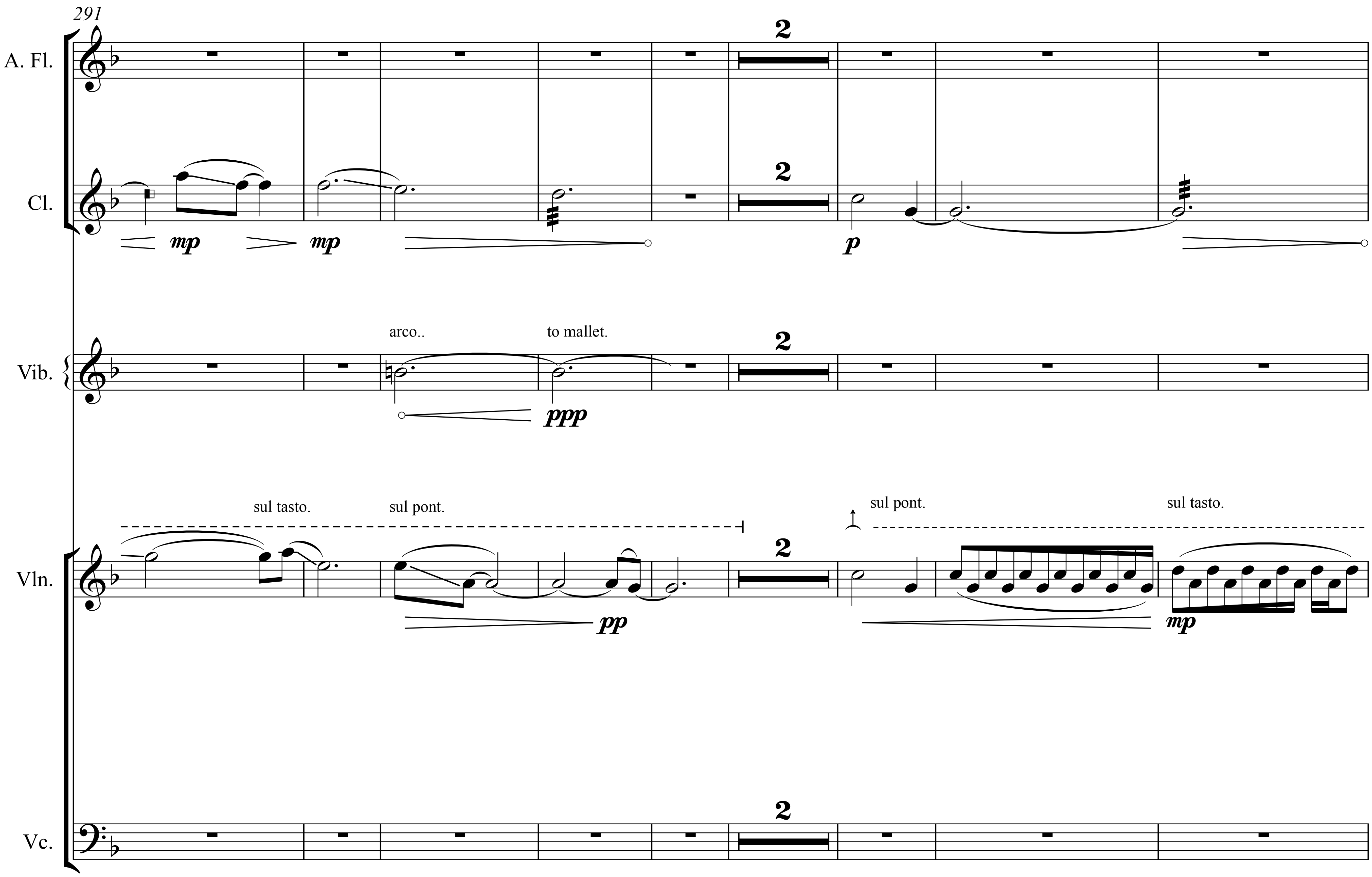

244
A. Fl.
Cl.
Vib.
Vln.
Vc.
mp
mp
mp
mp
motor on 1/2
ppp
ppp
molto flaut.
sul pont.
mp
mp
molto flaut.
sul pont.
mp
mp

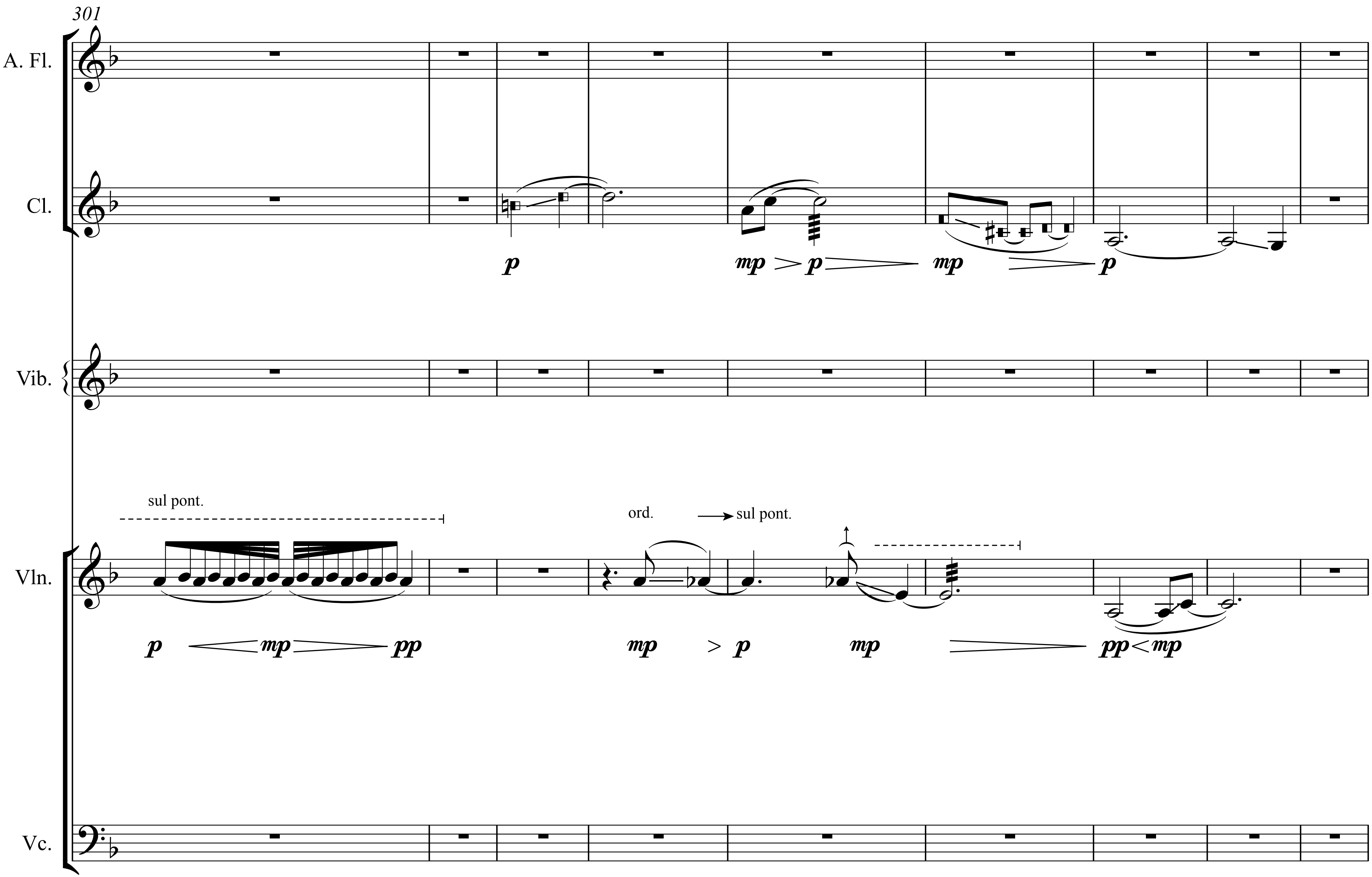

251
A. Fl.
Cl.
Vib.
Vln.
Vc.
2
2
2
2
2
mf
sing.
motor on. 3/4
p
molto flaut.
sul pont.
mf
molto flaut.
sul pont.
mf

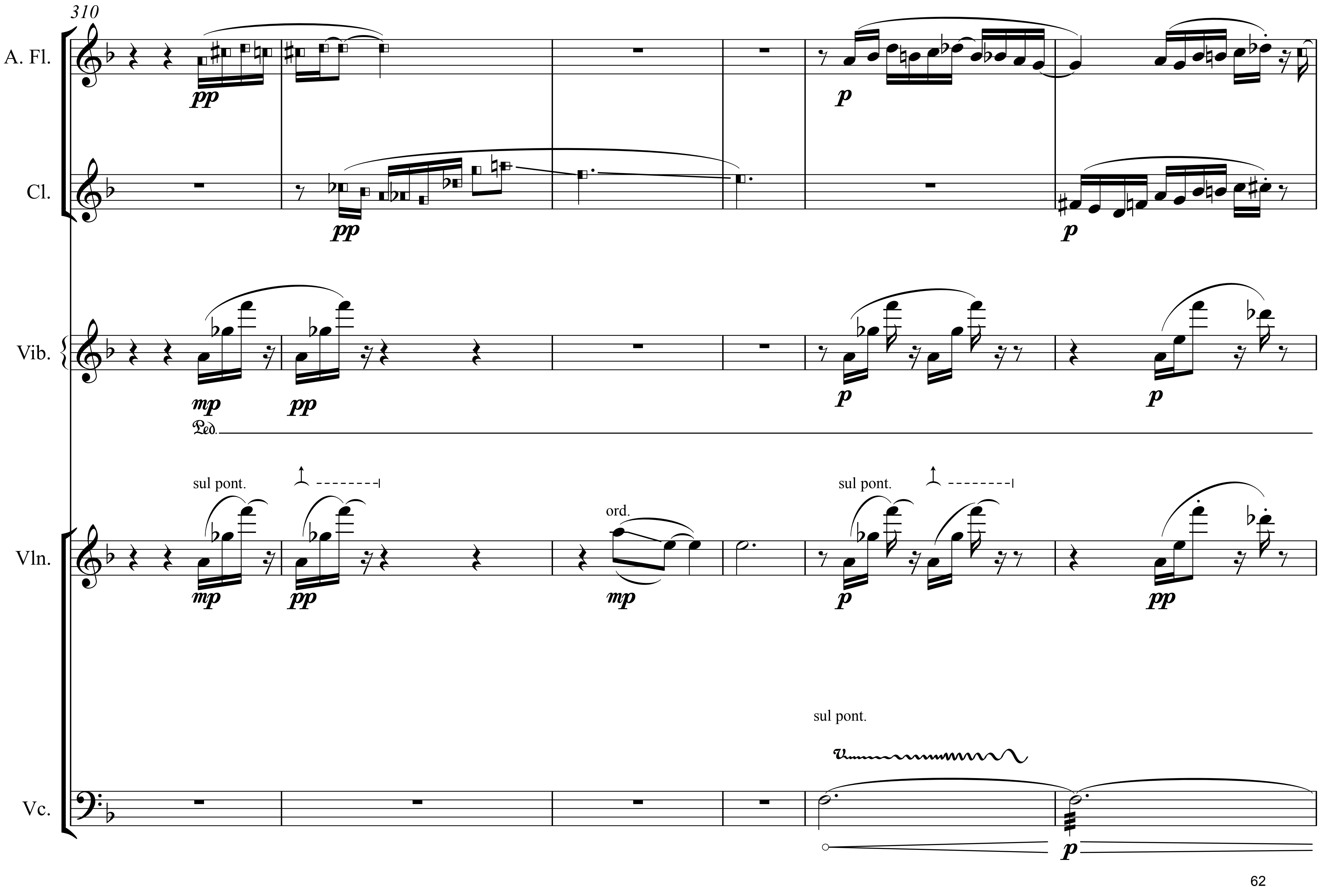

261
A. Fl.
Cl.
Vib.
Vln.
Vc.
3
motor on. 3/4
To mallet.
p
sul pont.
sul tasto.
molto flaut.
mp
sul pont.
sul tasto..
sul pont.
sul tasto.
molto flaut.
mp
sul pont.
sul tasto..

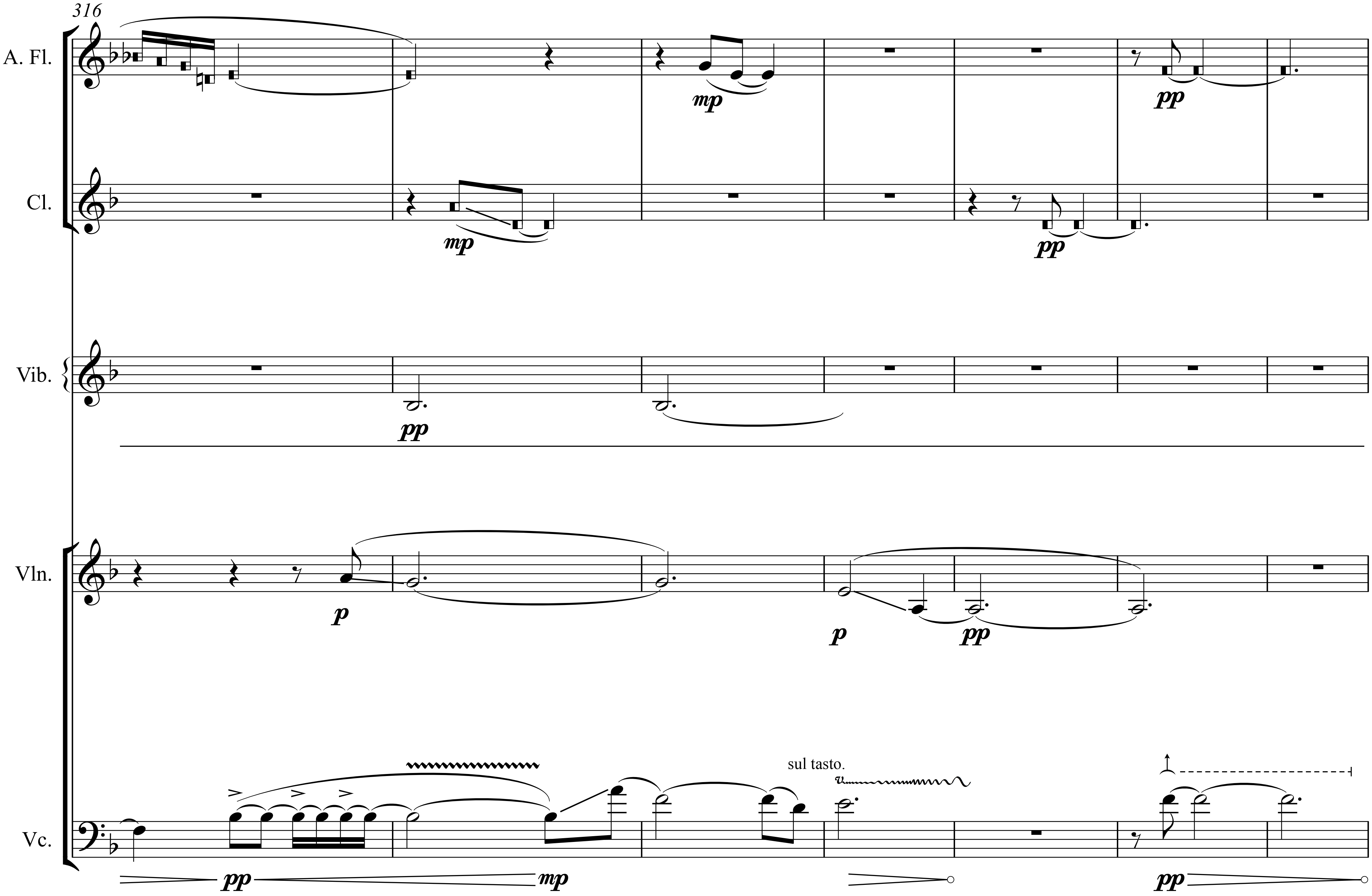

271
A. Fl.
Cl.
Vib.
Vln.
Vc.
mp
p
mp
p
p
let ring.
mallet.
p
pp
sul pont.
sul tasto.
sul pont.
mp
p
mp
p
pp
sul pont.
sul tasto.
sul pont.
mp
p
mp
p

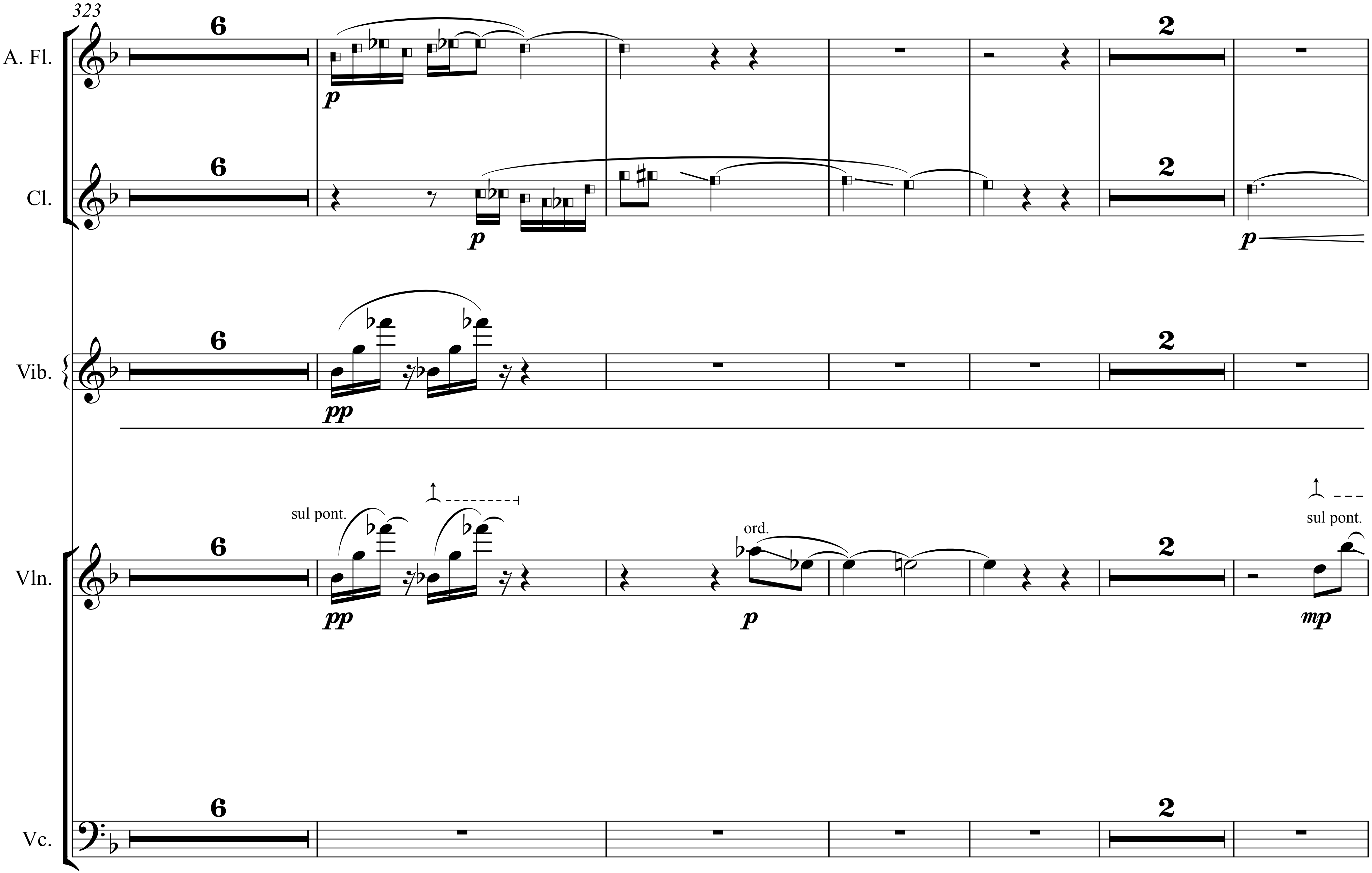

281
A. Fl.
Cl.
Vib.
Vln.
Vc.
C
ppp
pp
ppp
p
to bow.
ppp
C
sul pont.
ppp
mp

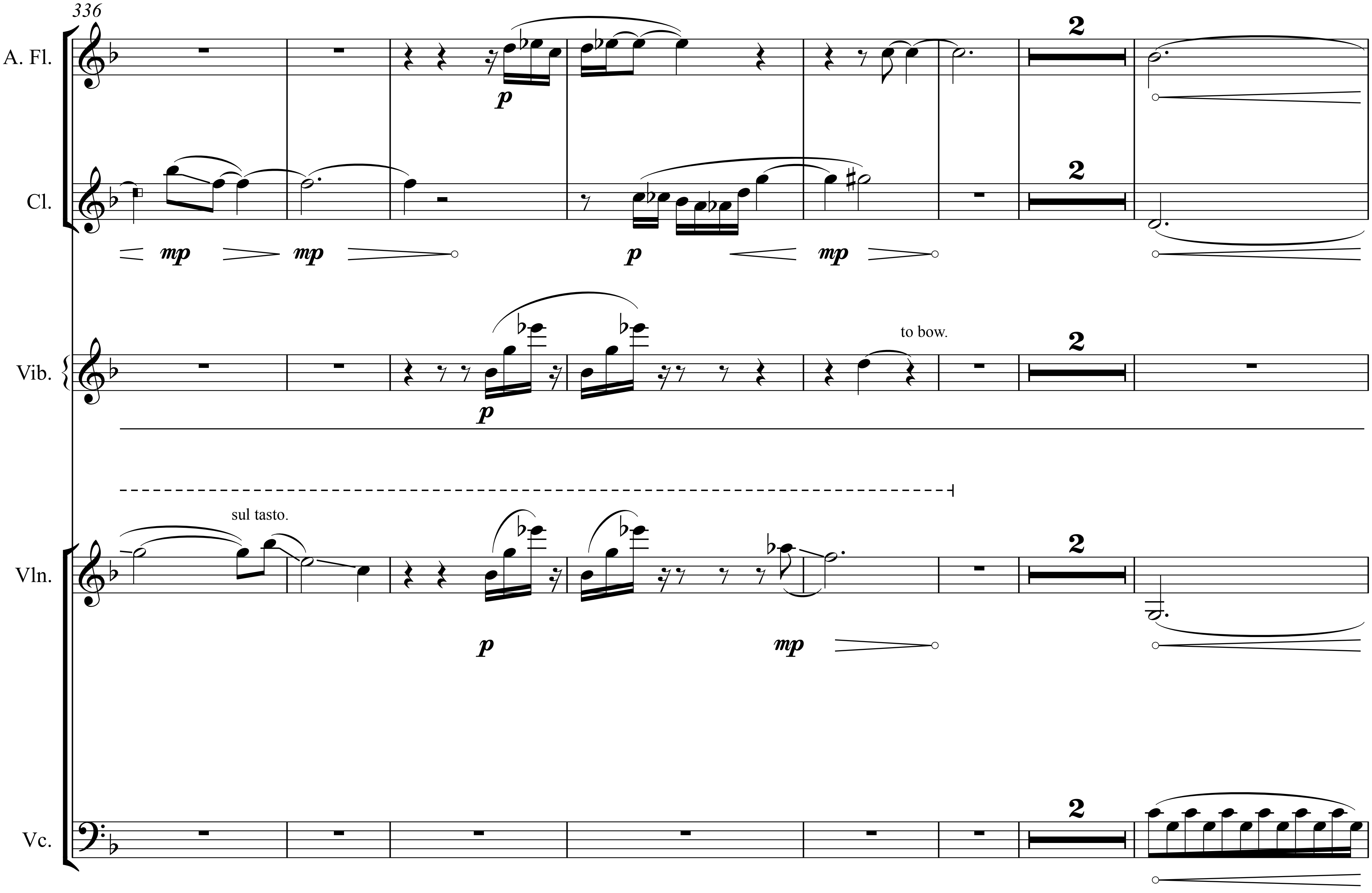

291
A. Fl.
Cl.
Vib.
Vln.
Vc.
2
mp
mp
p
arco..
to mallet.
ppp
sul tasto.
sul pont.
pp
sul pont.
sul tasto.
mp

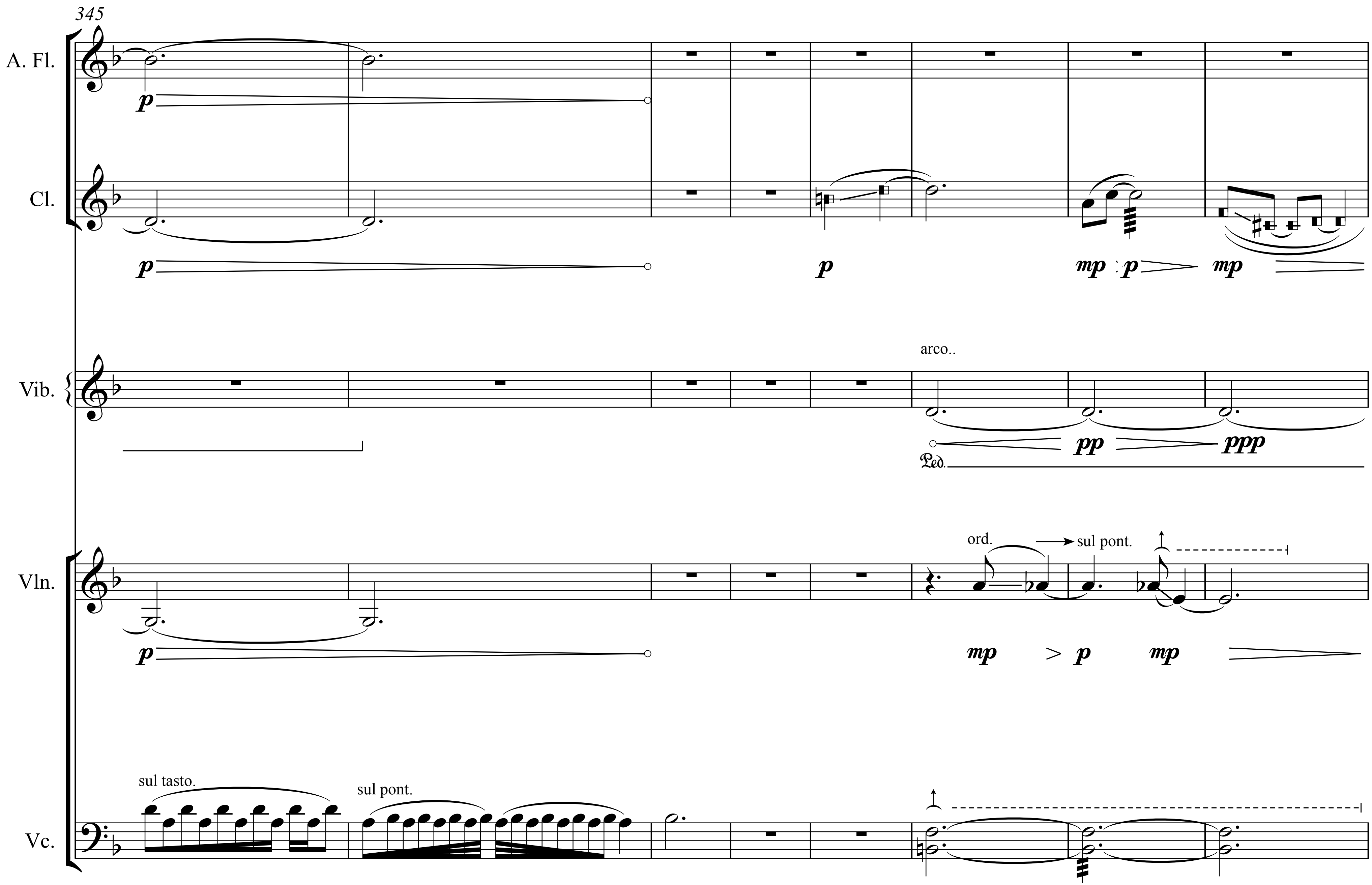

301
A. Fl.
Cl.
Vib.
Vln.
Vc.
p
mp
p
mp
p
sul pont.
ord.
sul pont.
p
mp
pp
mp
p
mp
pp
mp

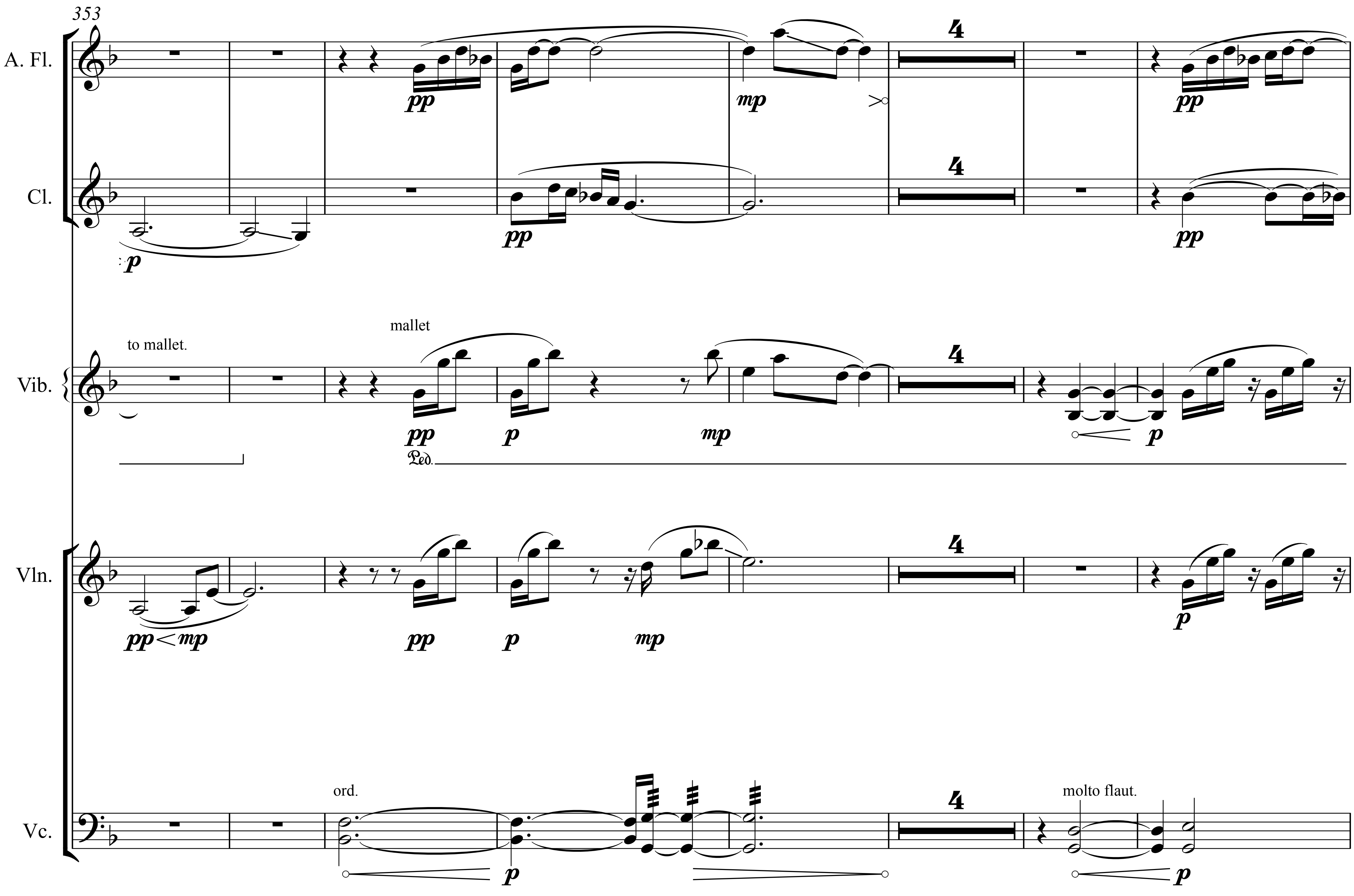

310
A. Fl.
Cl.
Vib.
Vln.
Vc.
pp
p
mp
Ped.
sul pont.
ord.
sul pont.

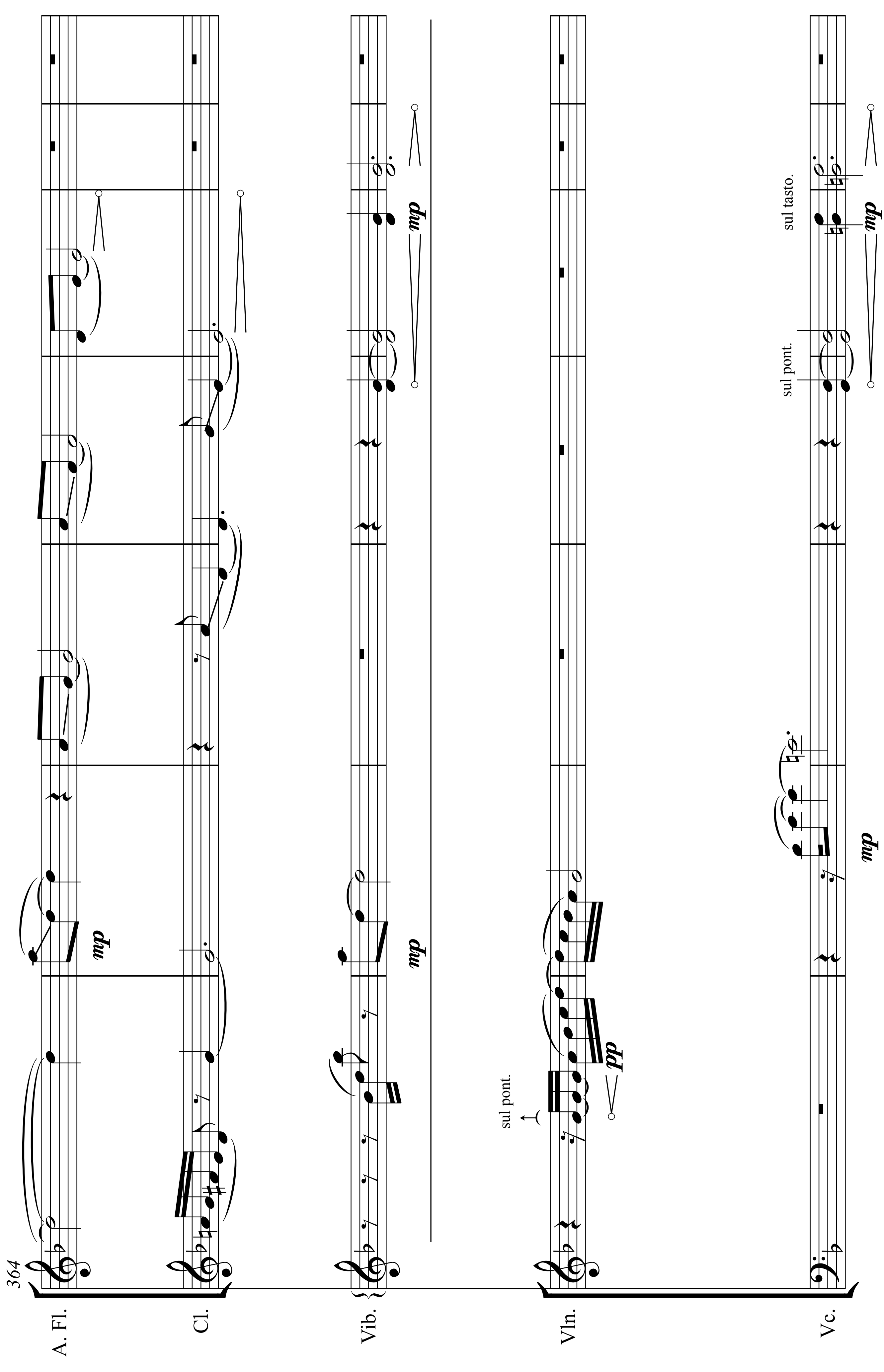

316
A. Fl.
Cl.
Vib.
Vln.
Vc.
mp
pp
mp
pp
pp
p
p
pp
pp
mp
sul tasto.
pp

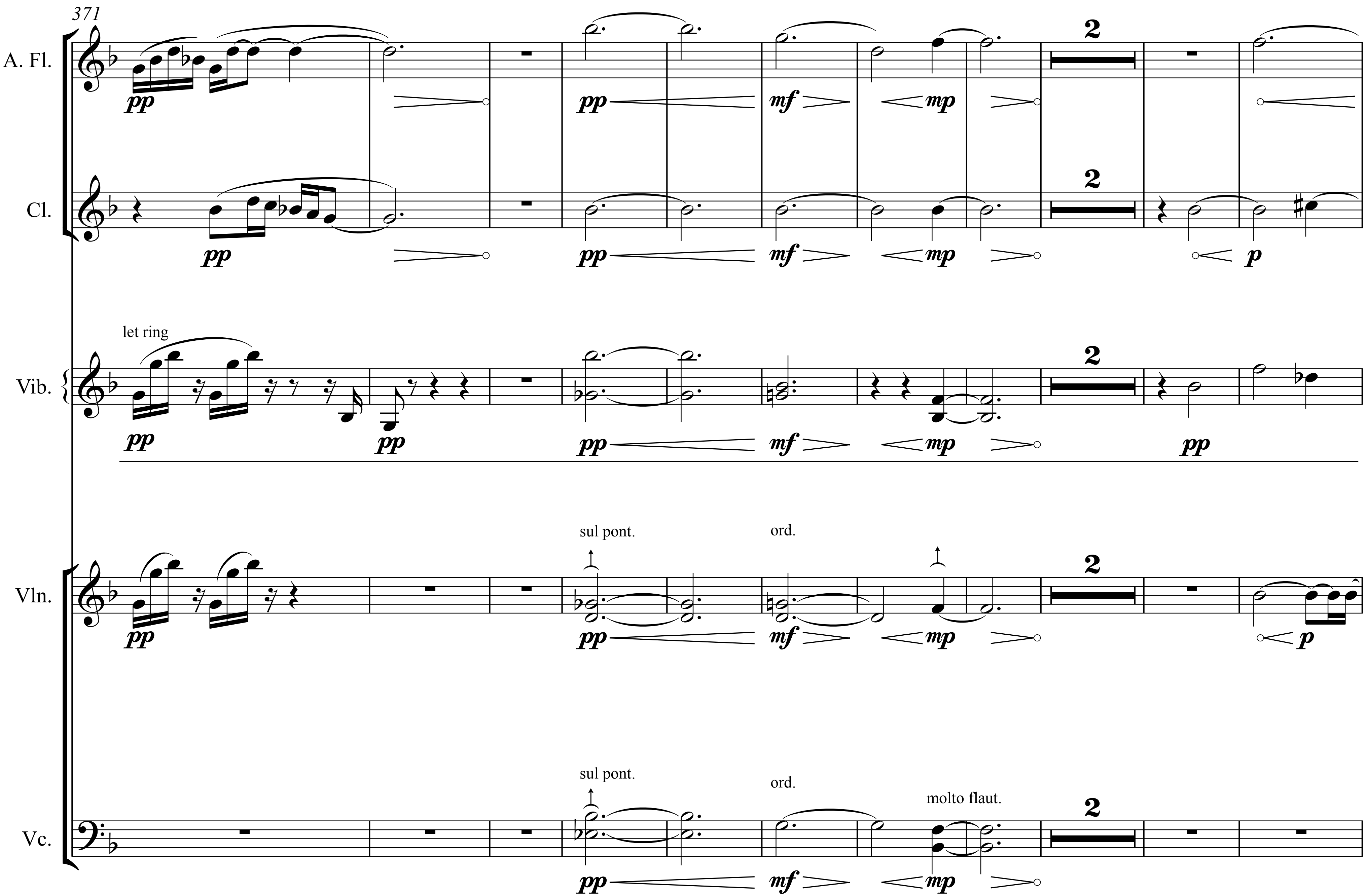

323
A. Fl.
Cl.
Vib.
Vln.
Vc.
6
2
p
pp
sul pont.
ord.
mp

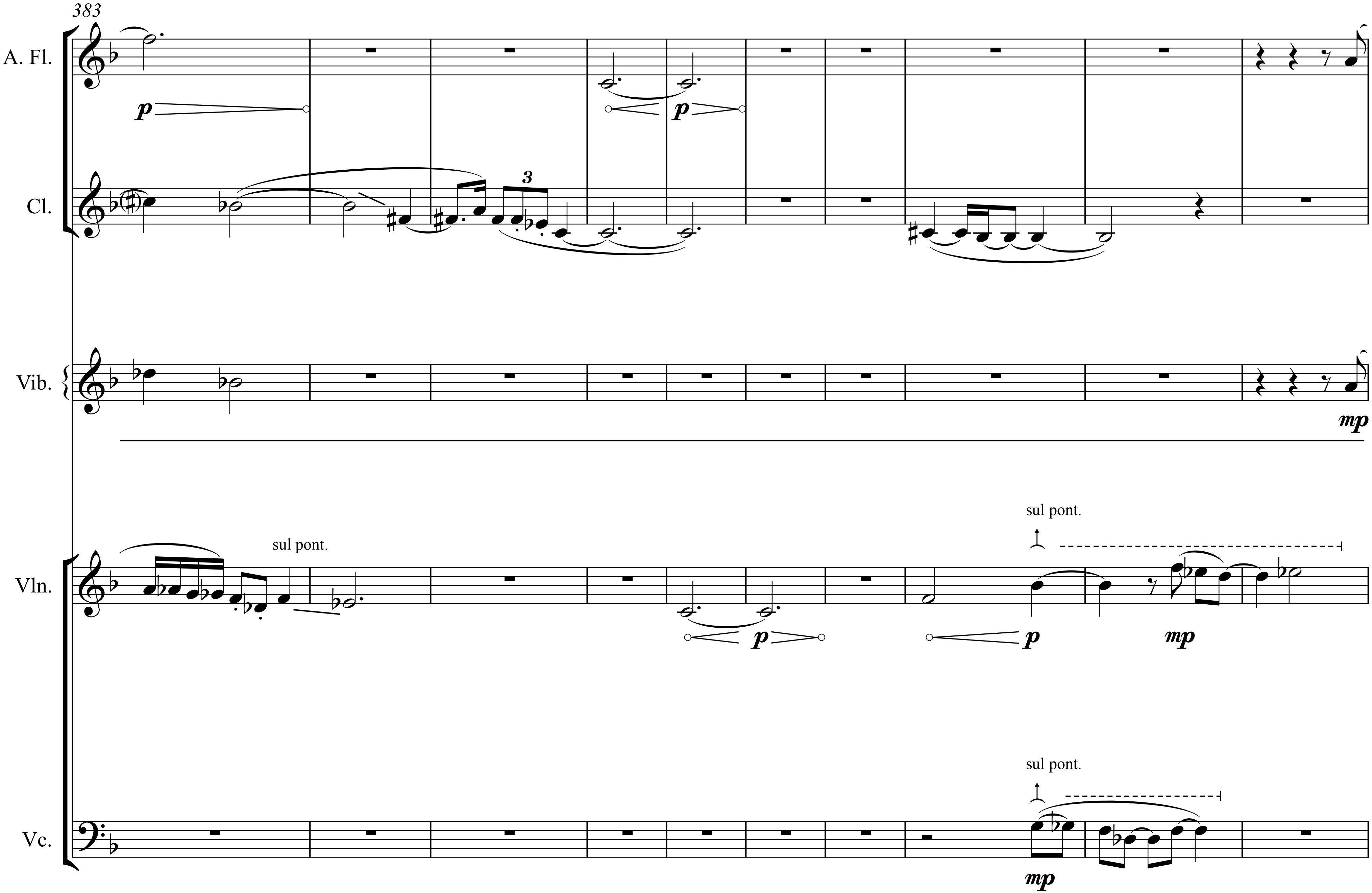

336
A. Fl.
Cl.
Vib.
Vln.
Vc.
p
mp
mp
p
mp
p
to bow.
sul tasto.
p
mp
2
2
2
2
2

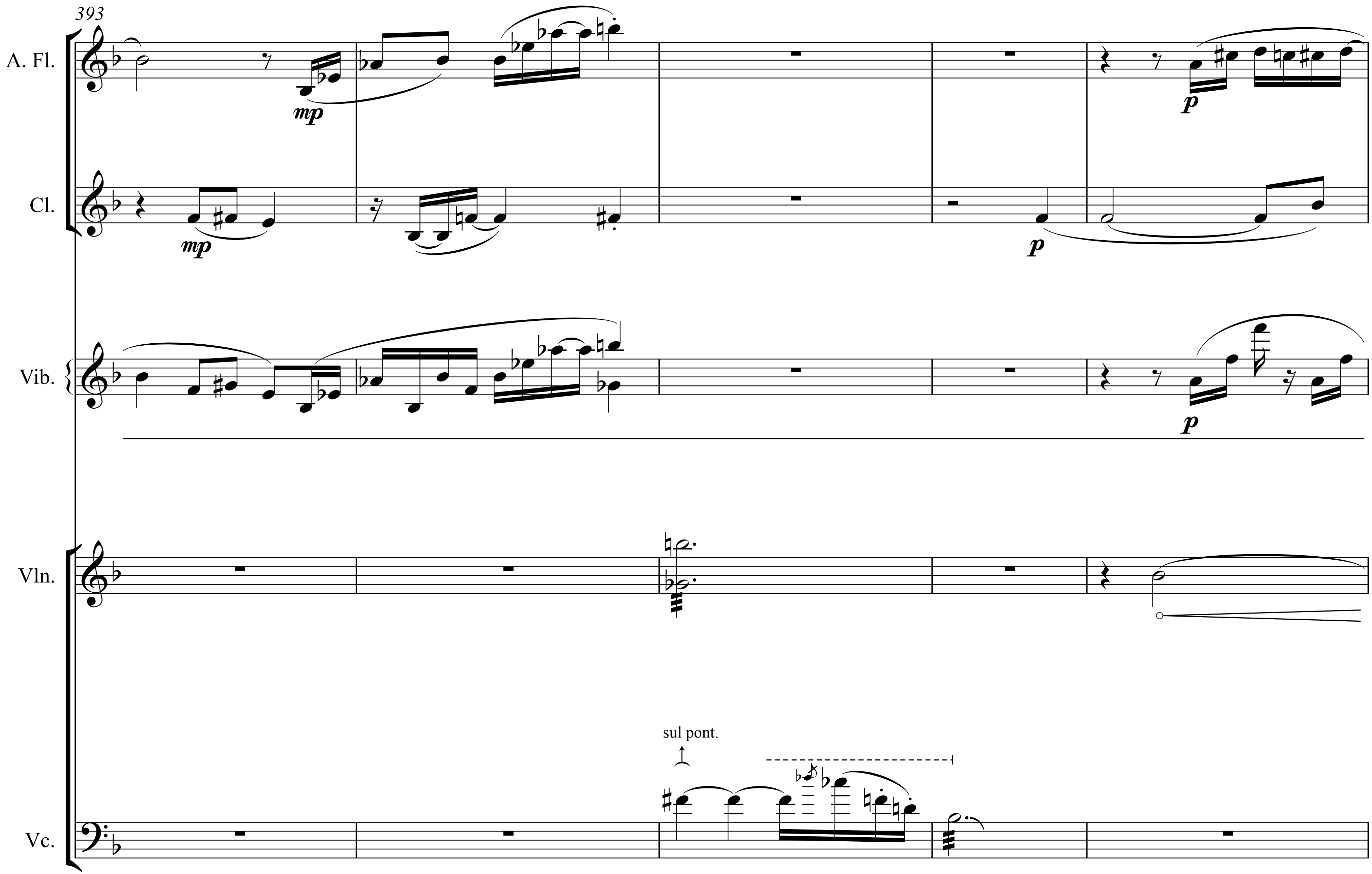

345
A. Fl.
Cl.
Vib.
Vln.
Vc.
p
p
p
mp : p
mp
arco..
pp
ppp
Ped.
ord.
sul pont.
mp
> p
mp
sul tasto.
sul pont.
mp
p
mp
pp
pp

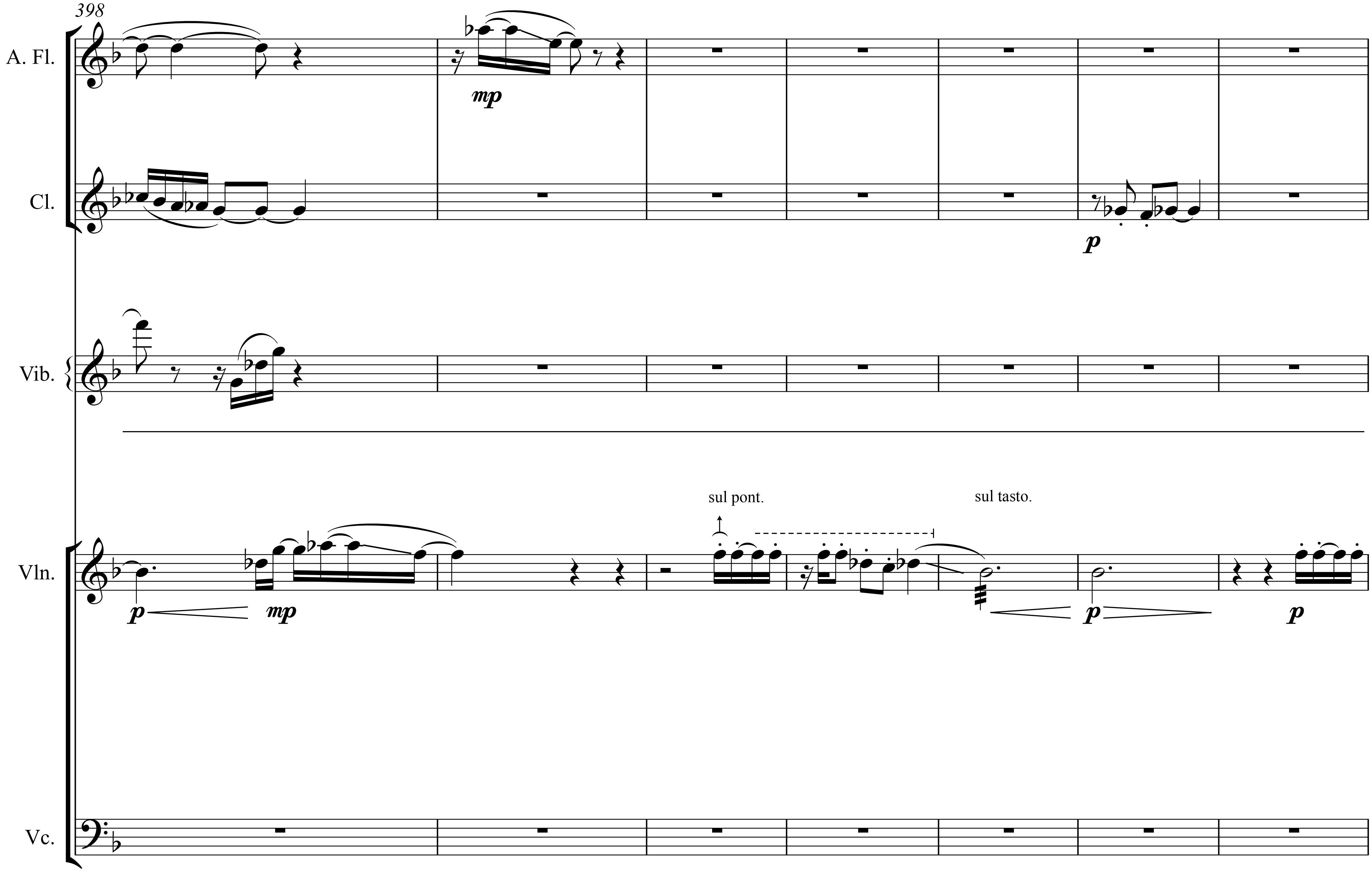

353
A. Fl.
Cl.
Vib.
Vln.
Vc.
pp
mp
p
4
to mallet.
mallet
Ped.
pp<mp
ord.
molto flaut.

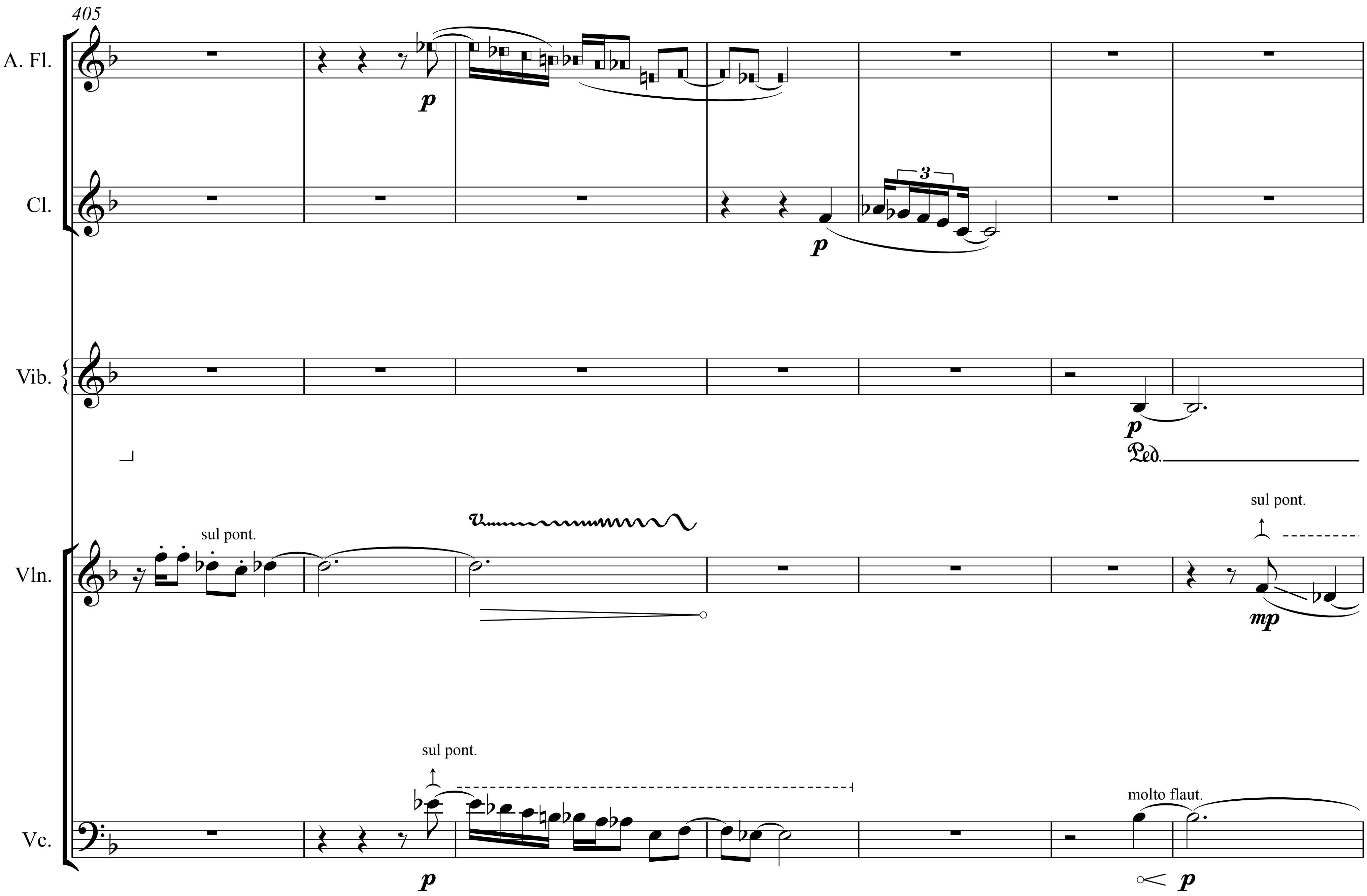

364
A. Fl.
Cl.
Vib.
Vln.
Vc.
mp
mp
pp
sul pont.
mp
mp
mp
sul pont.
sul tasto.
mp

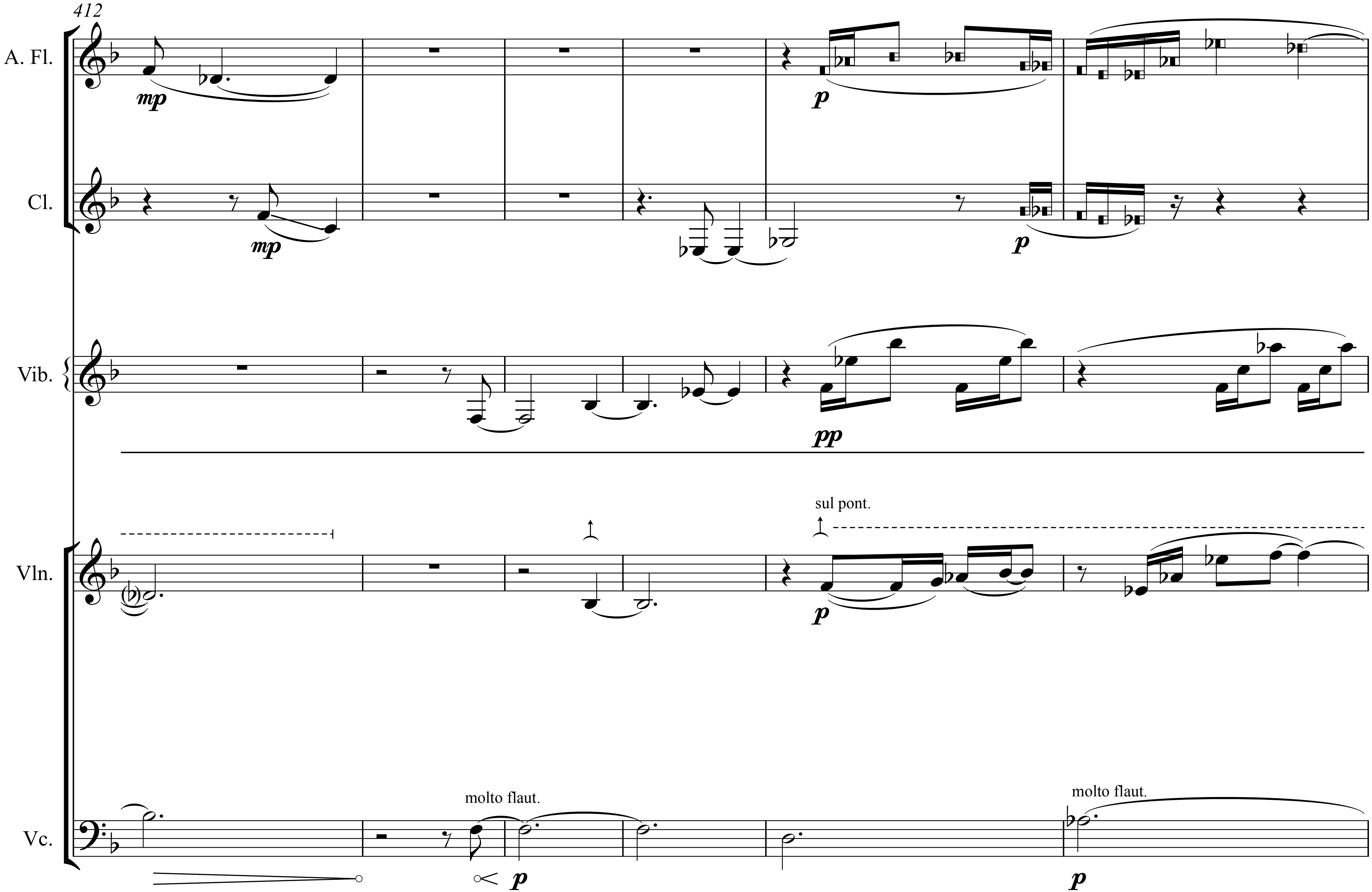

371
A. Fl.
Cl.
Vib.
Vln.
Vc.
let ring
sul pont.
ord.
molto flaut.
2
pp
mf
mp
p

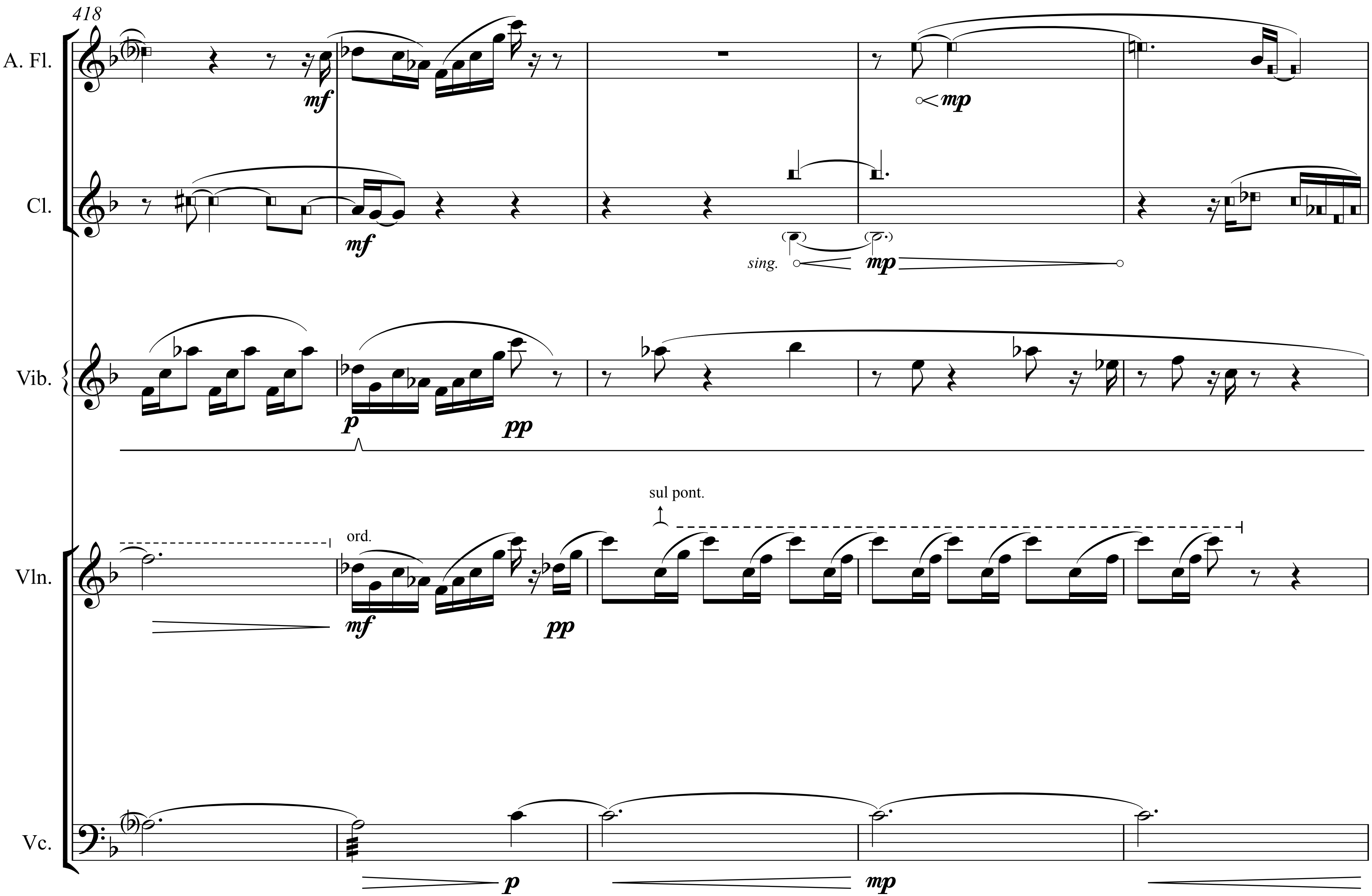

383
A. Fl.
Cl.
Vib.
Vln.
Vc.
p
p
3
mp
sul pont.
sul pont.
p
p
mp
sul pont.
mp

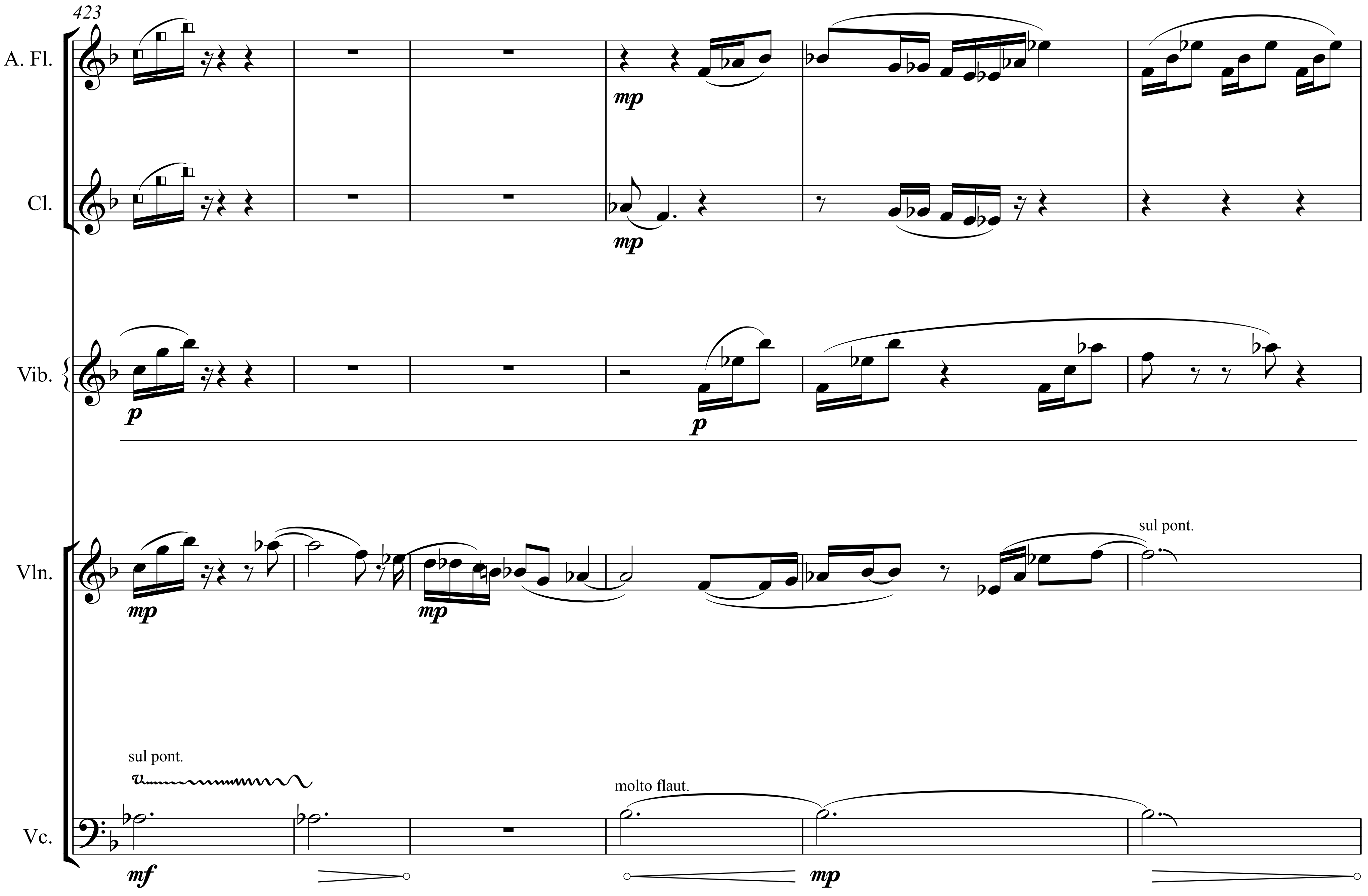

393
A. Fl.
Cl.
Vib.
Vln.
Vc.
mp
mp
p
p
p
sul pont.

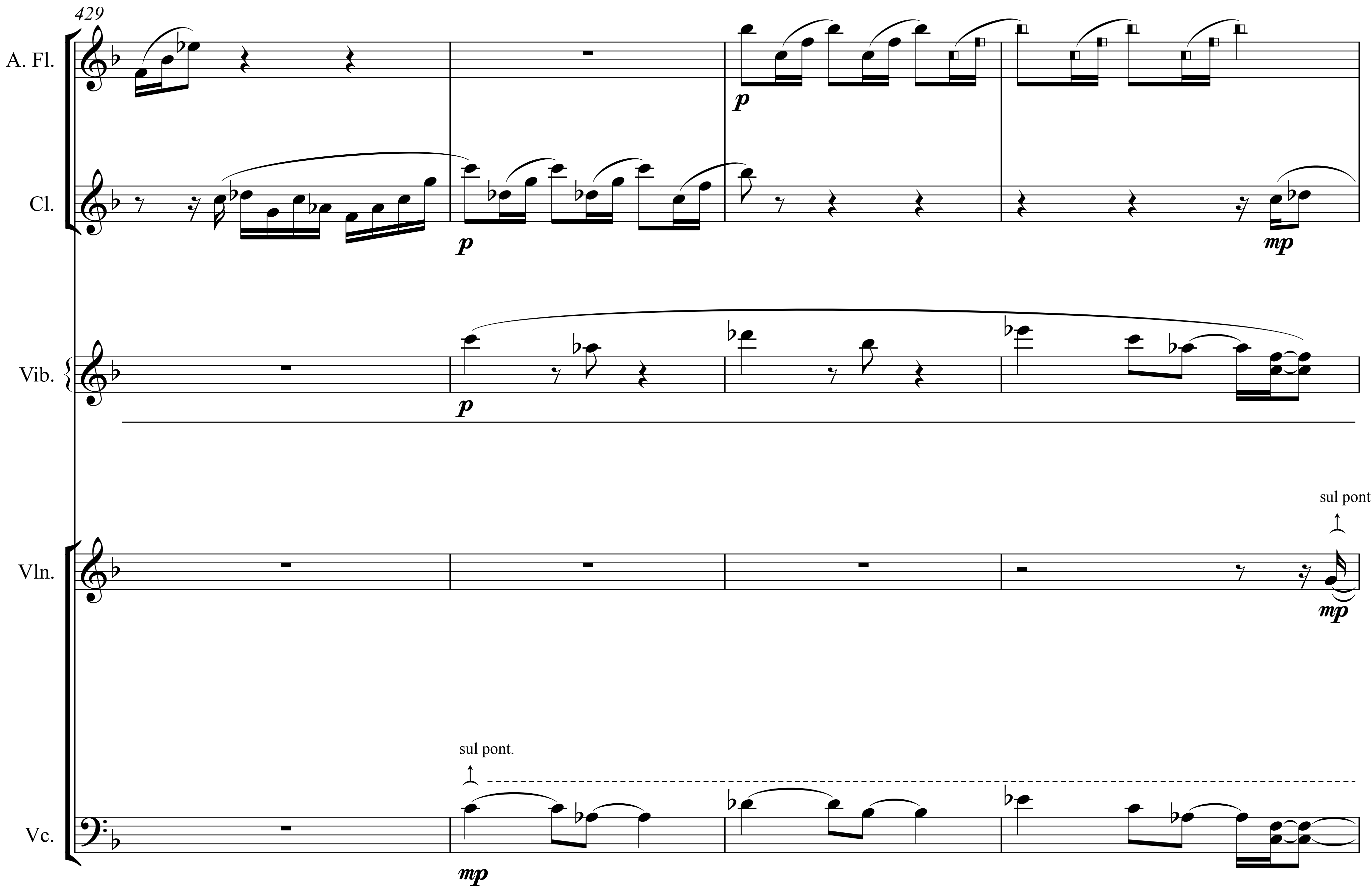

398
A. Fl.
Cl.
Vib.
Vln.
Vc.
mp
p
p
mp
sul pont.
sul tasto.
p
p

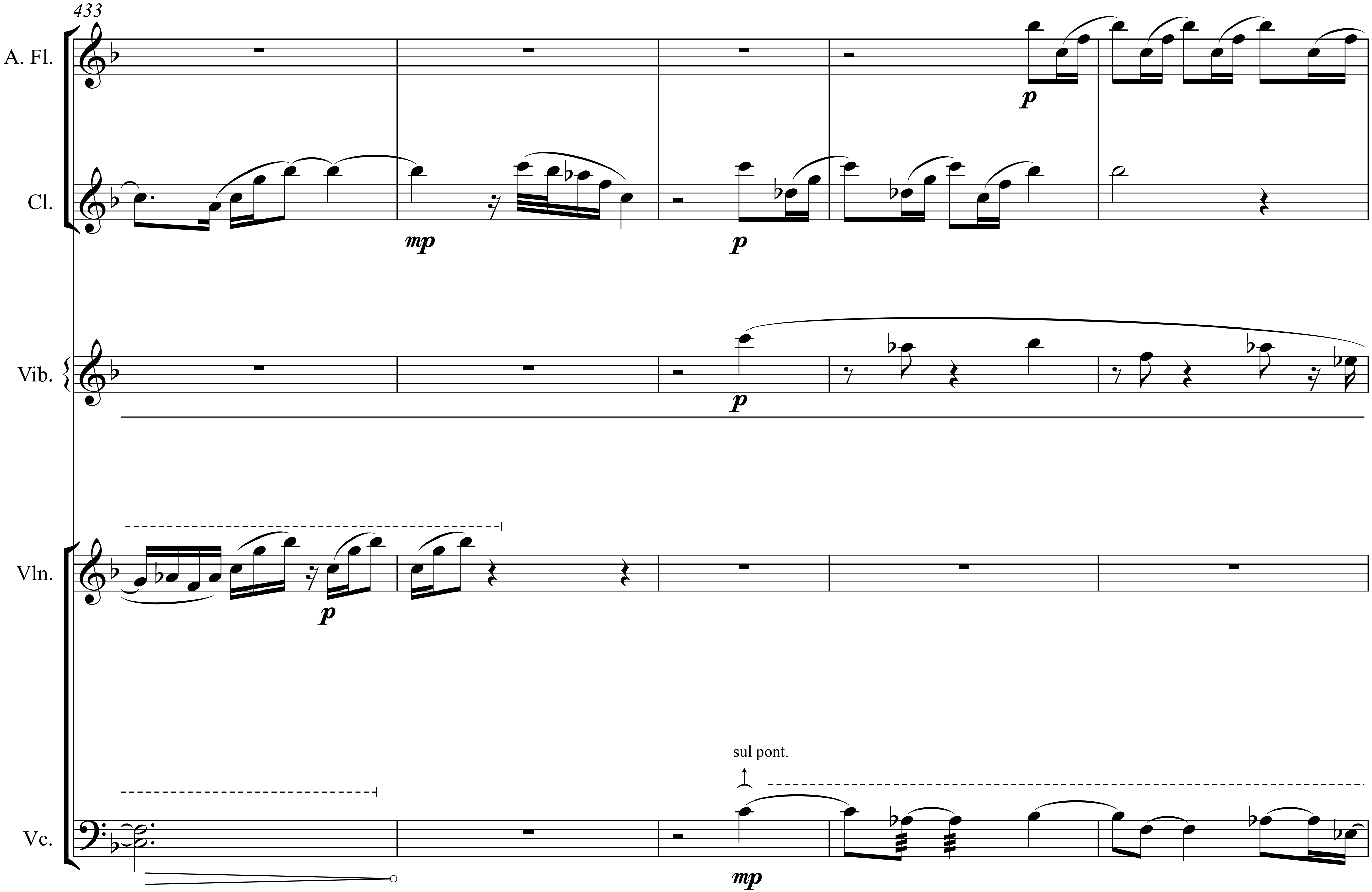

405
A. Fl.
Cl.
Vib.
Vln.
Vc.
p
p
3
p
Ped.
sul pont.
sul pont.
mp
sul pont.
p
molto flaut.
p

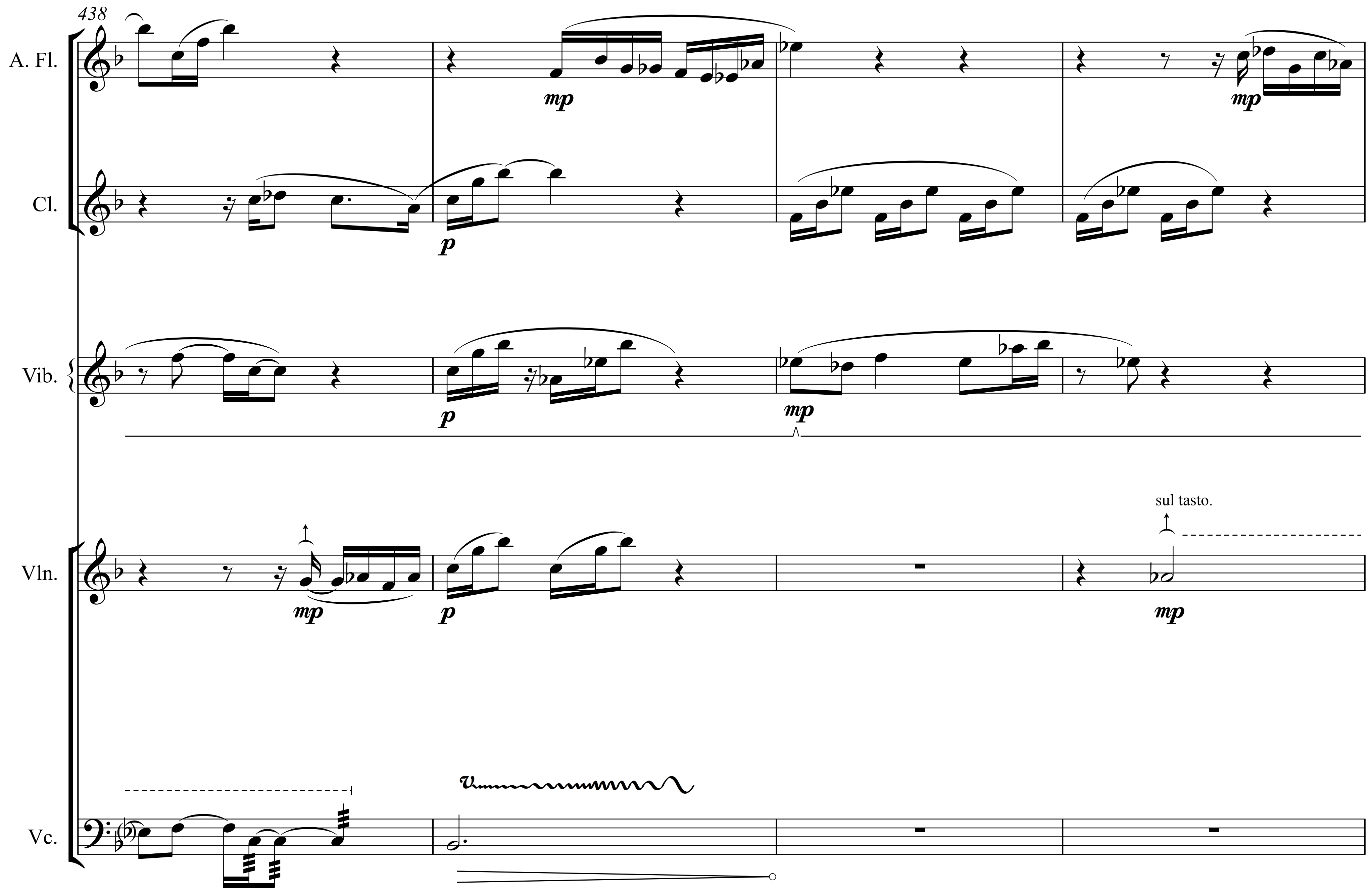

412
A. Fl.
Cl.
Vib.
Vln.
Vc.
mp
mp
p
p
pp
sul pont.
p
molto flaut.
p
molto flaut.
p

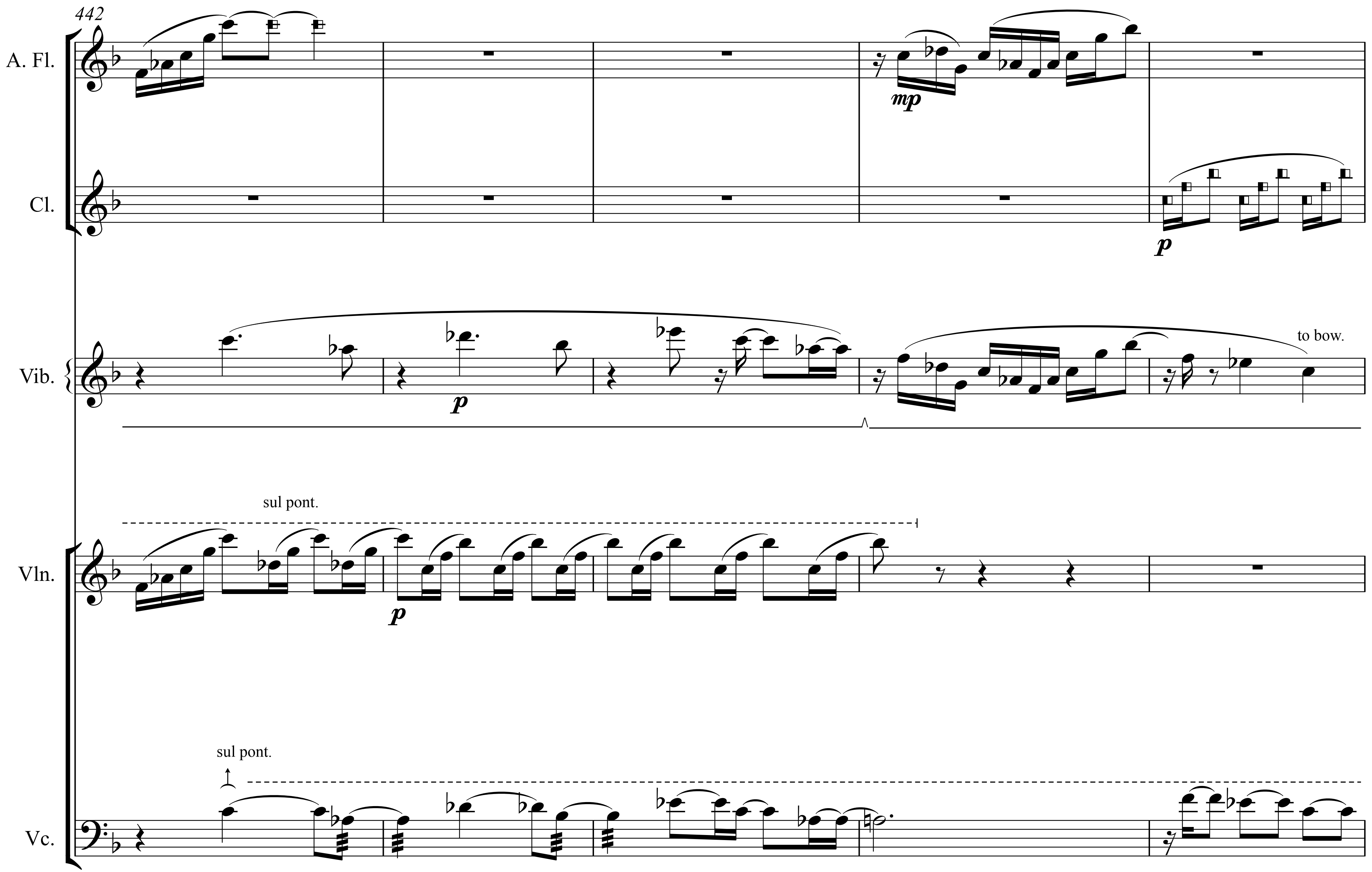

418
A. Fl.
Cl.
Vib.
Vln.
Vc.
mf
mf
p
pp
mf
pp
p
mp
mp
sing.
mp
sul pont.
ord.

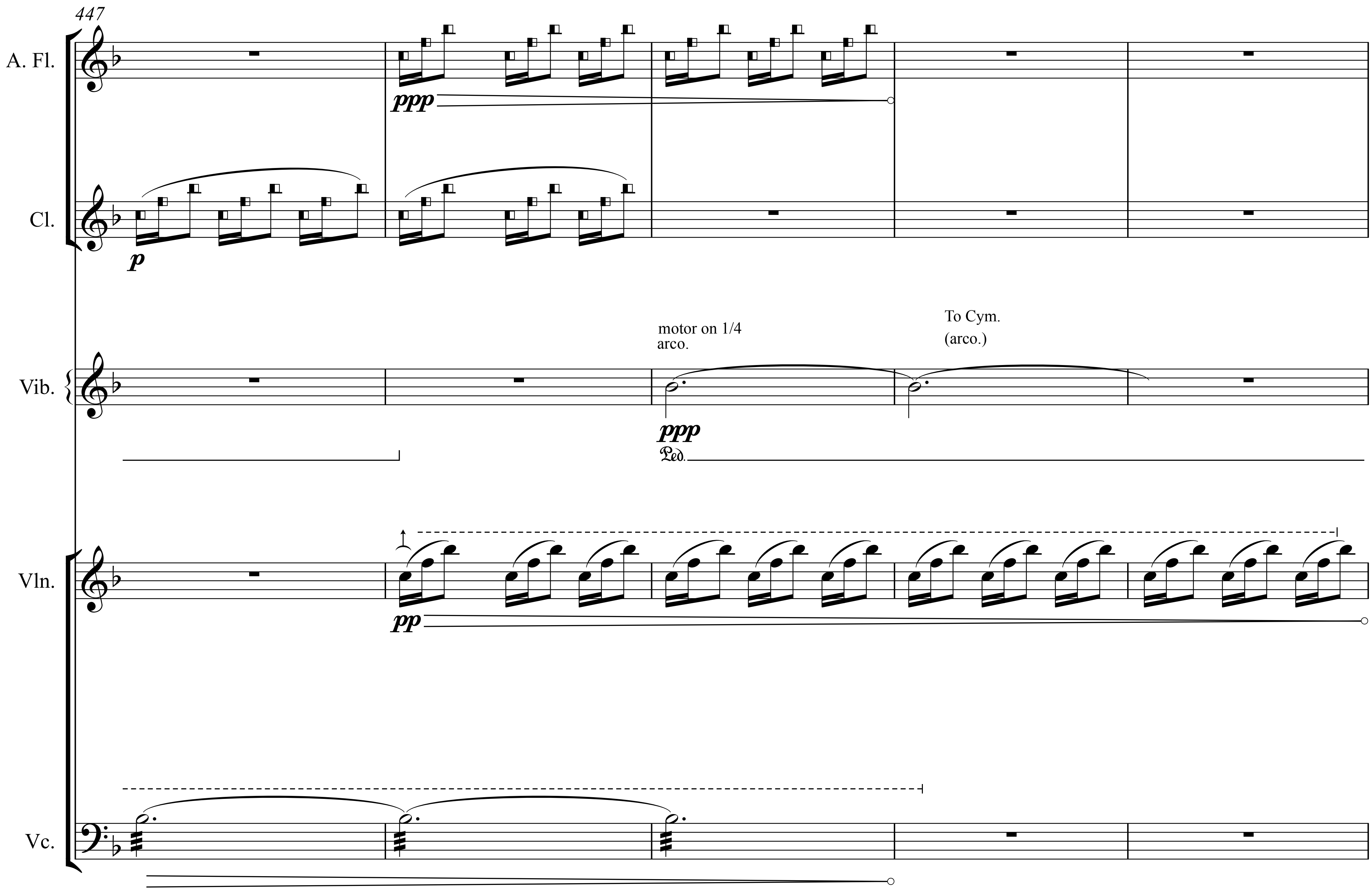

423
A. Fl.
Cl.
Vib.
Vln.
Vc.
mp
mp
p
p
mp
mp
sul pont.
sul pont.
molto flaut.
mf
mp

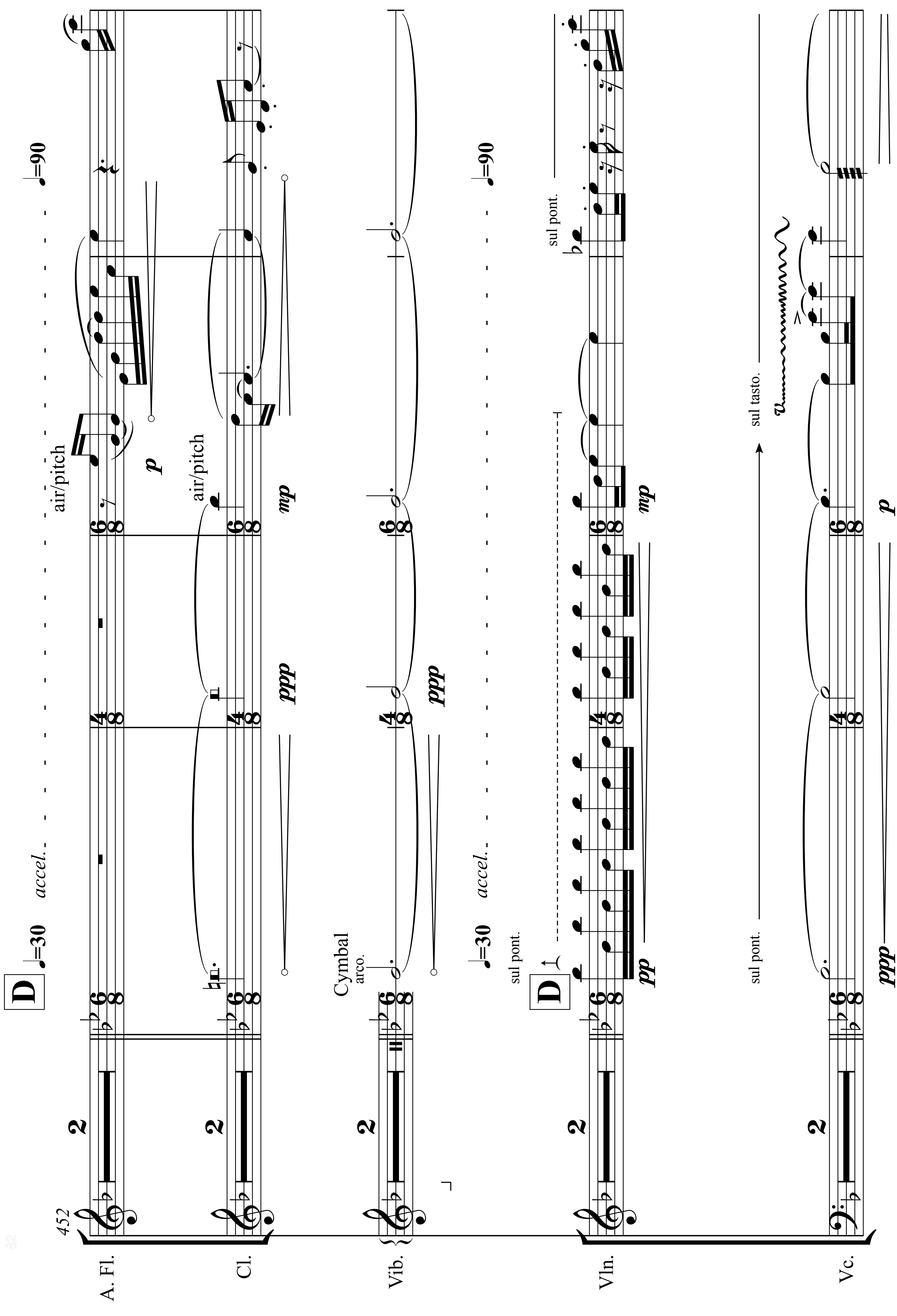

429
A. Fl.
Cl.
Vib.
Vln.
Vc.
p
p
p
mp
mp
mp
sul pont.
sul pont.

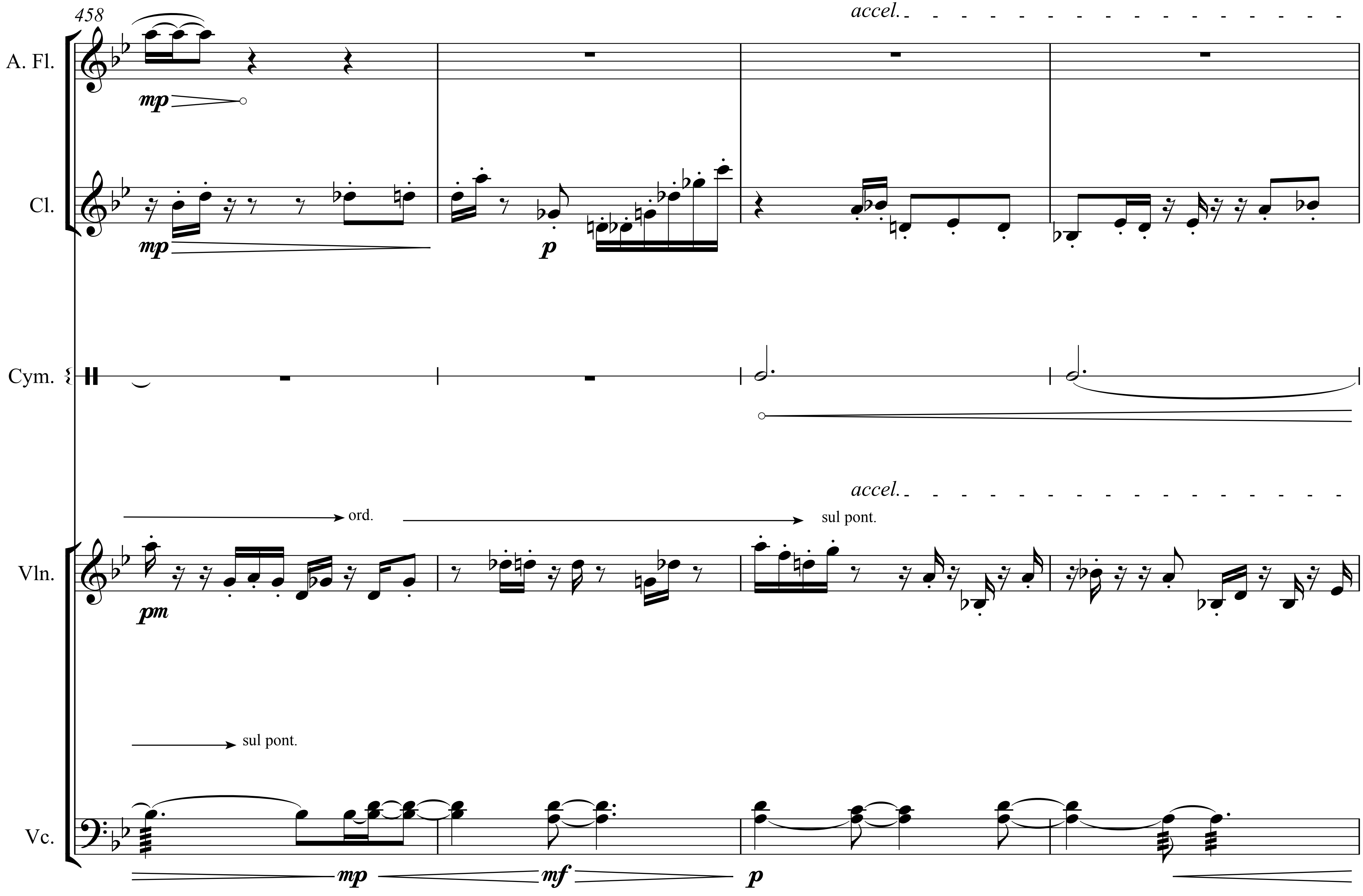

433
A. Fl.
Cl.
Vib.
Vln.
Vc.
mp
p
p
p
p
sul pont.
mp

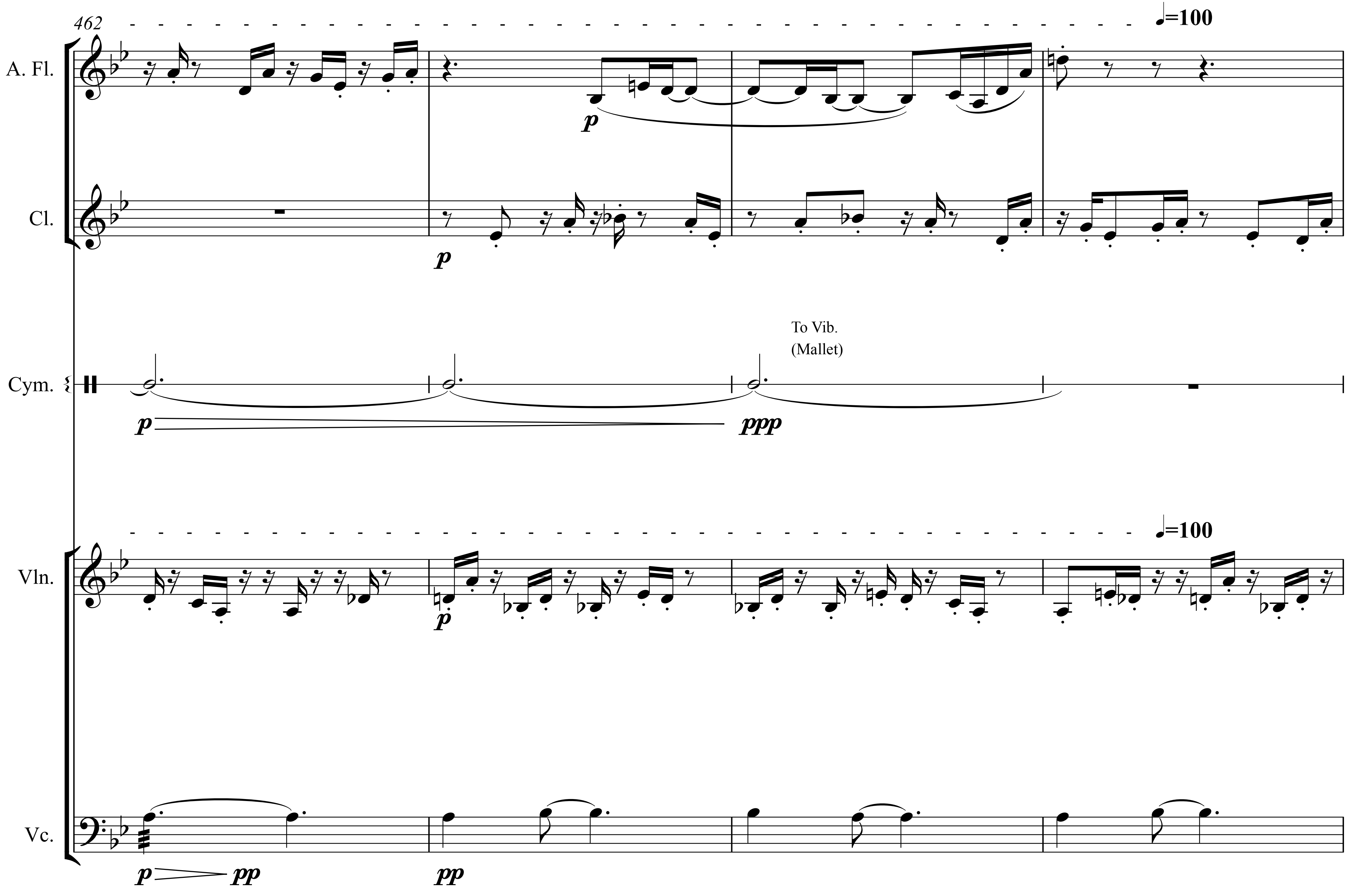

438
A. Fl.
Cl.
Vib.
Vln.
Vc.
mp
p
mp
mp
p
mp
sul tasto.
mp
p
mp

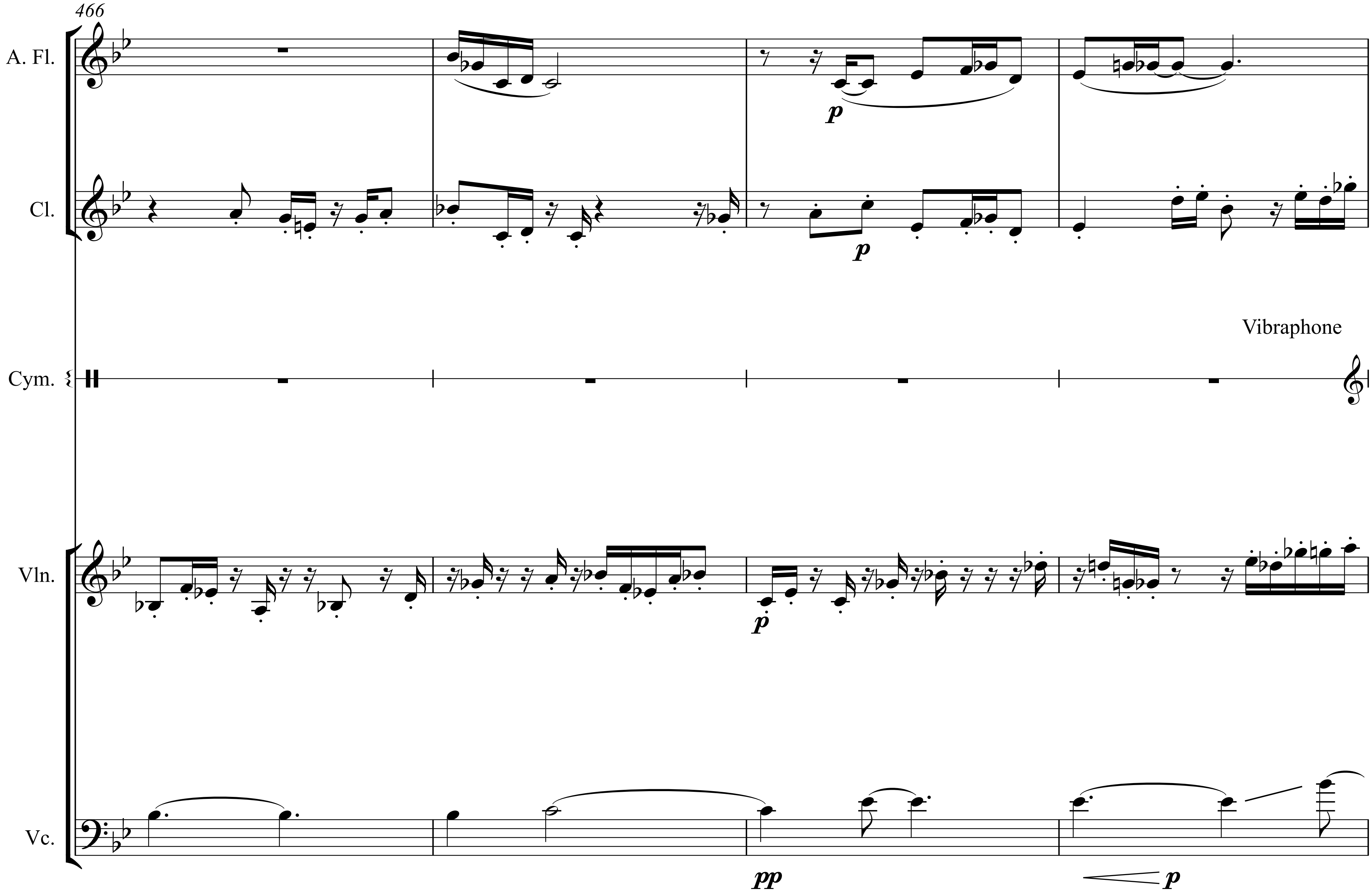
442
A. Fl.
Cl.
Vib.
Vln.
Vc.
mp
p
p
to bow.
sul pont.
p
sul pont.
mp
mp

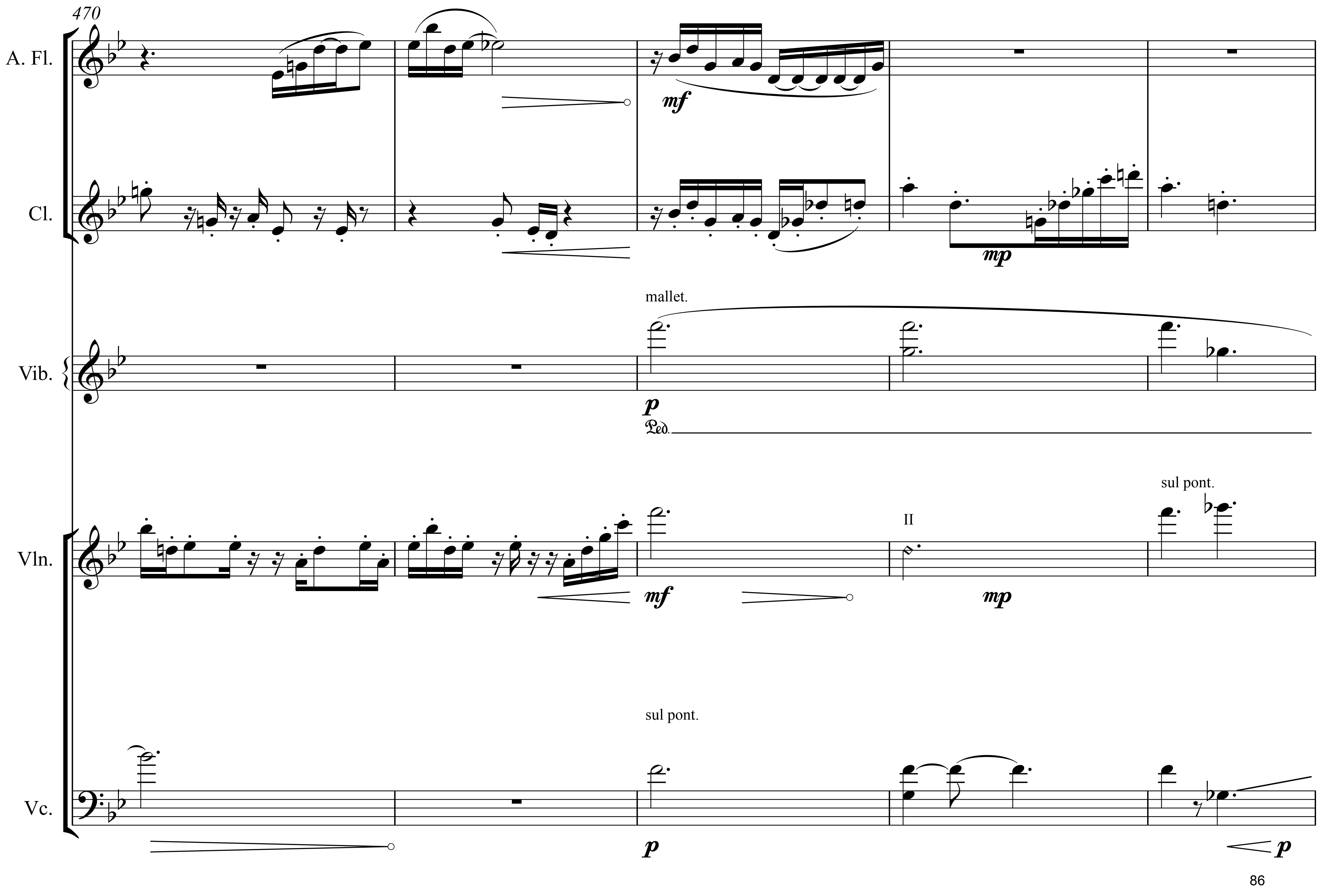

447
A. Fl.
Cl.
Vib.
Vln.
Vc.
ppp
p
motor on 1/4
arco.
To Cym.
(arco.)
ppp
Ped.
pp

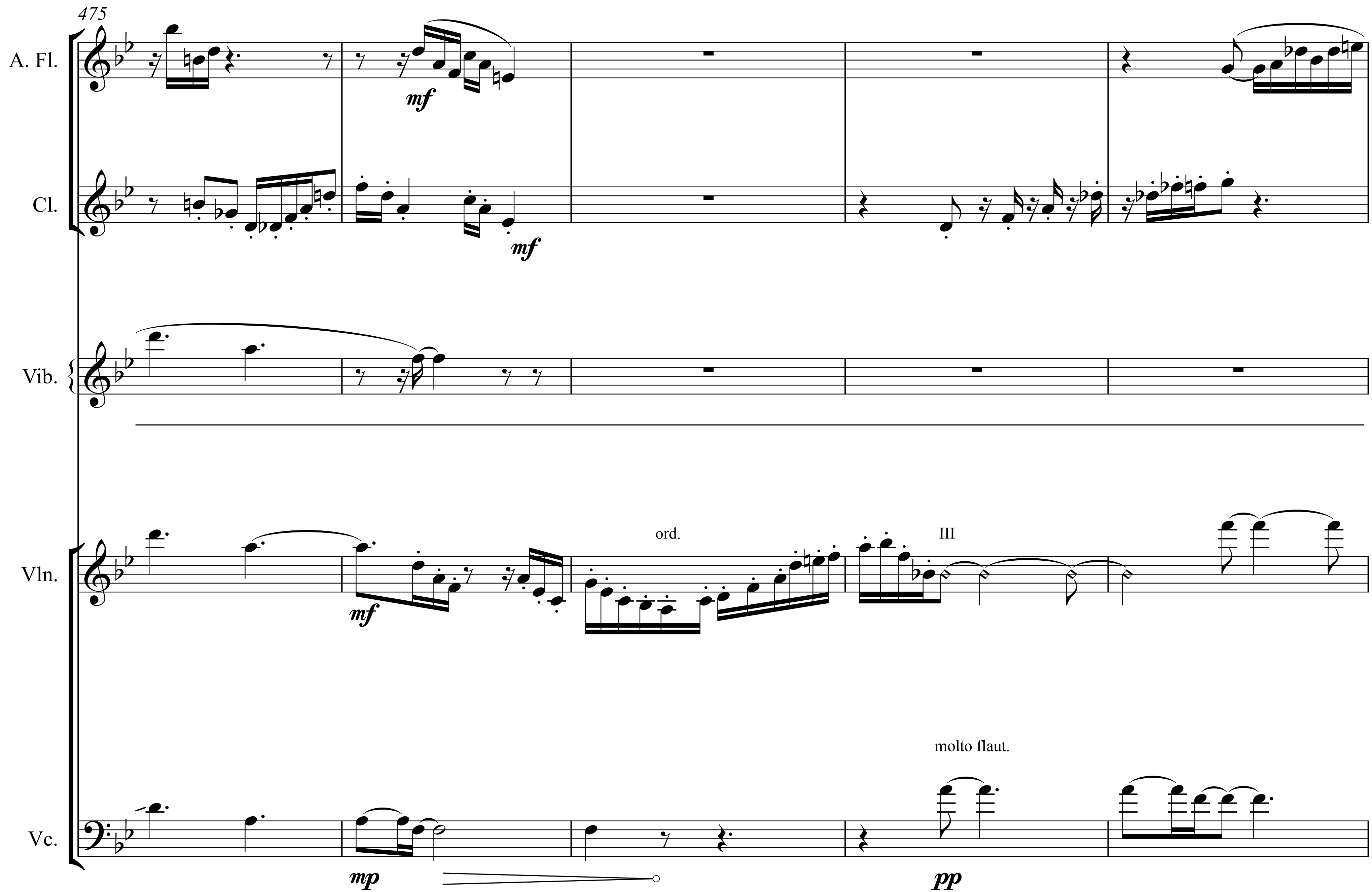

452
A. Fl.
Cl.
Vib.
Vln.
Vc.
2
D
♩=30
accel.
♩=90
air/pitch
p
air/pitch
mp
ppp
Cymbal
arco.
ppp
sul pont.
pp
mp
sul pont.
sul tasto.
sul pont.
ppp
p

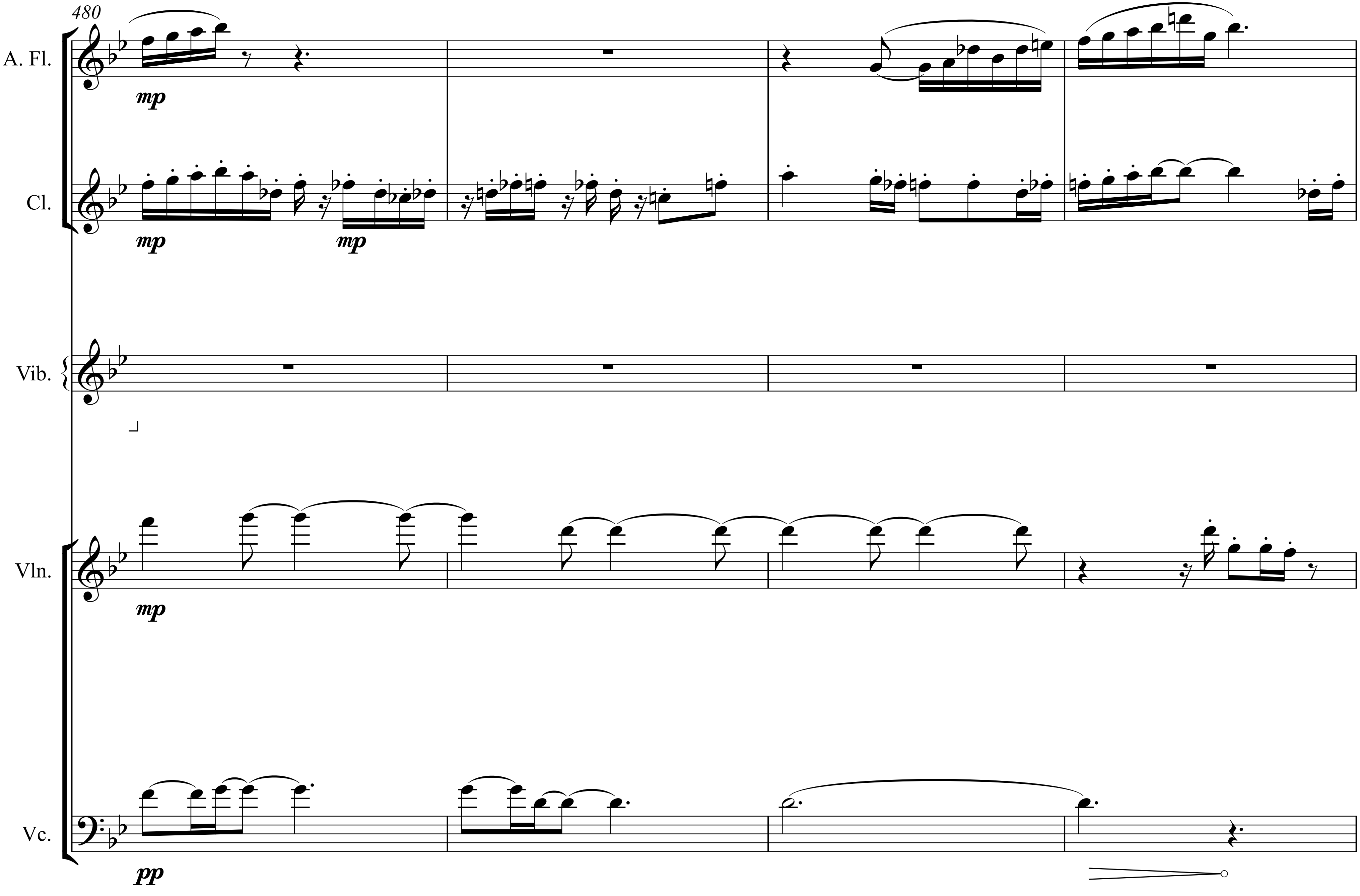

458
accel.
A. Fl.
mp
Cl.
mp
p
Cym.
ord.
sul pont.
accel.
Vln.
pm
sul pont.
Vc.
mp
mf
p

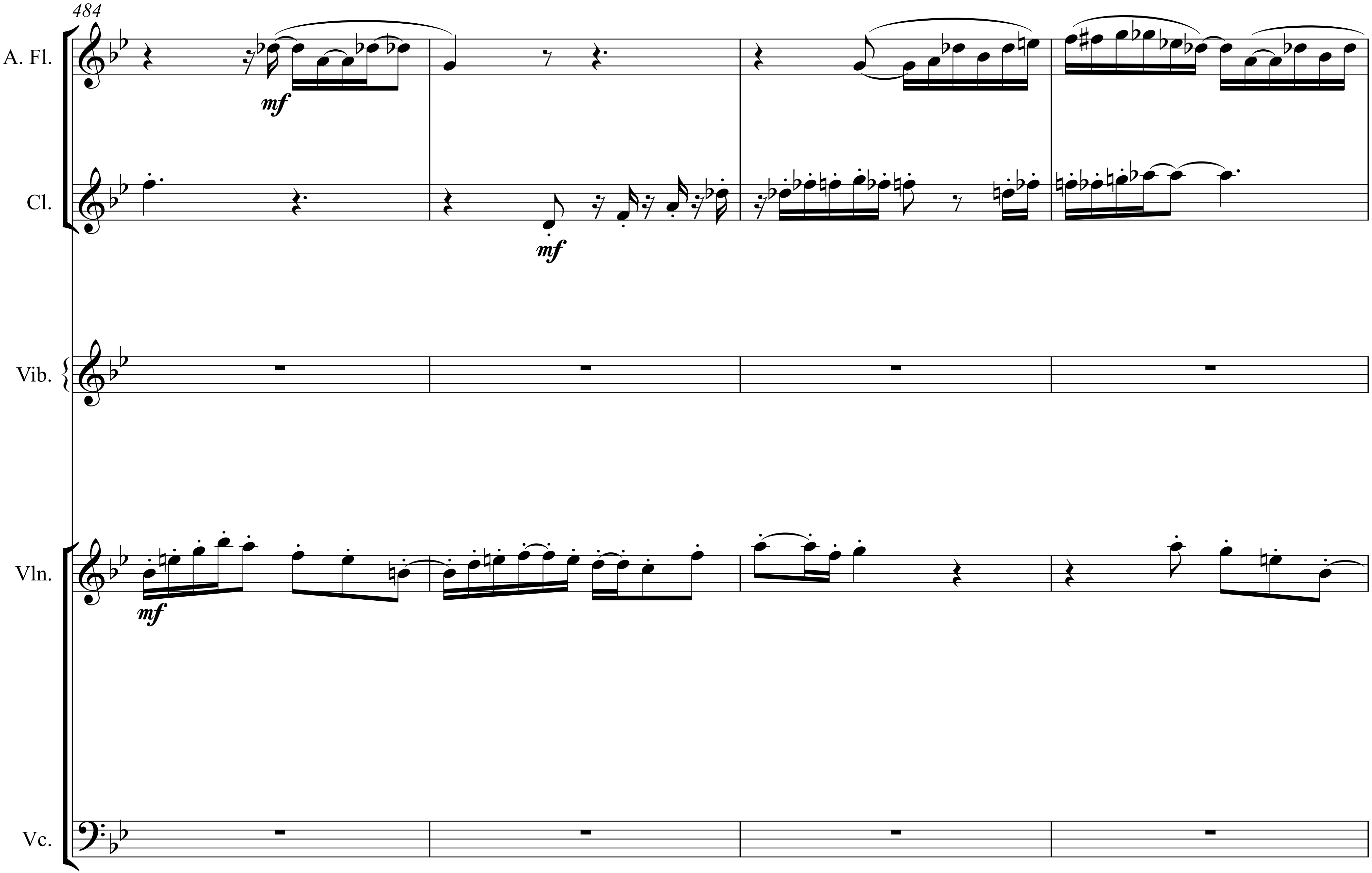

462
♩=100
A. Fl.
p
Cl.
p
To Vib.
(Mallet)
Cym.
p
ppp
♩=100
Vln.
p
Vc.
p
pp
pp

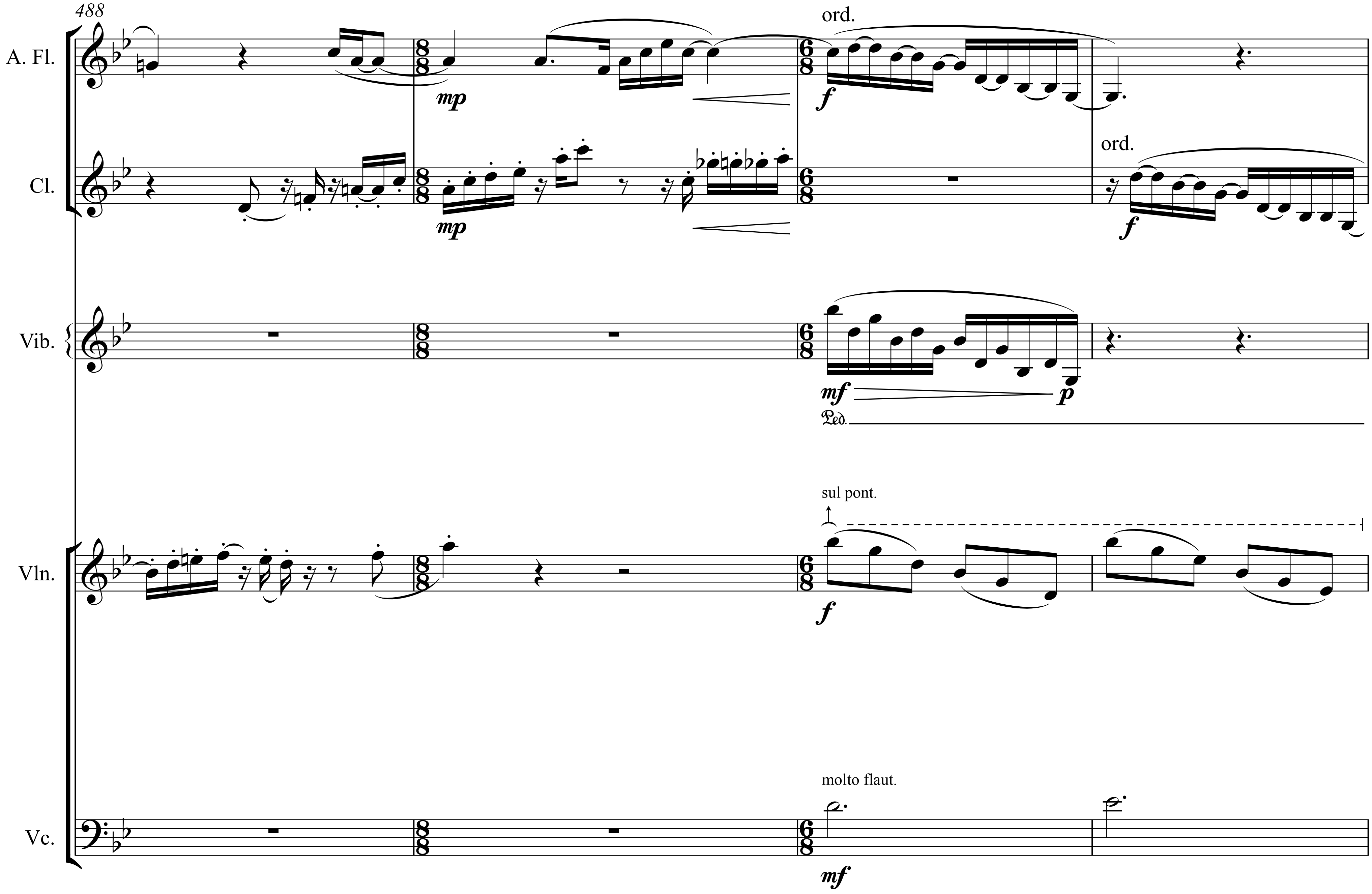

466
A. Fl.
Cl.
Cym.
Vibraphone
Vln.
Vc.
p
p
p
pp
p

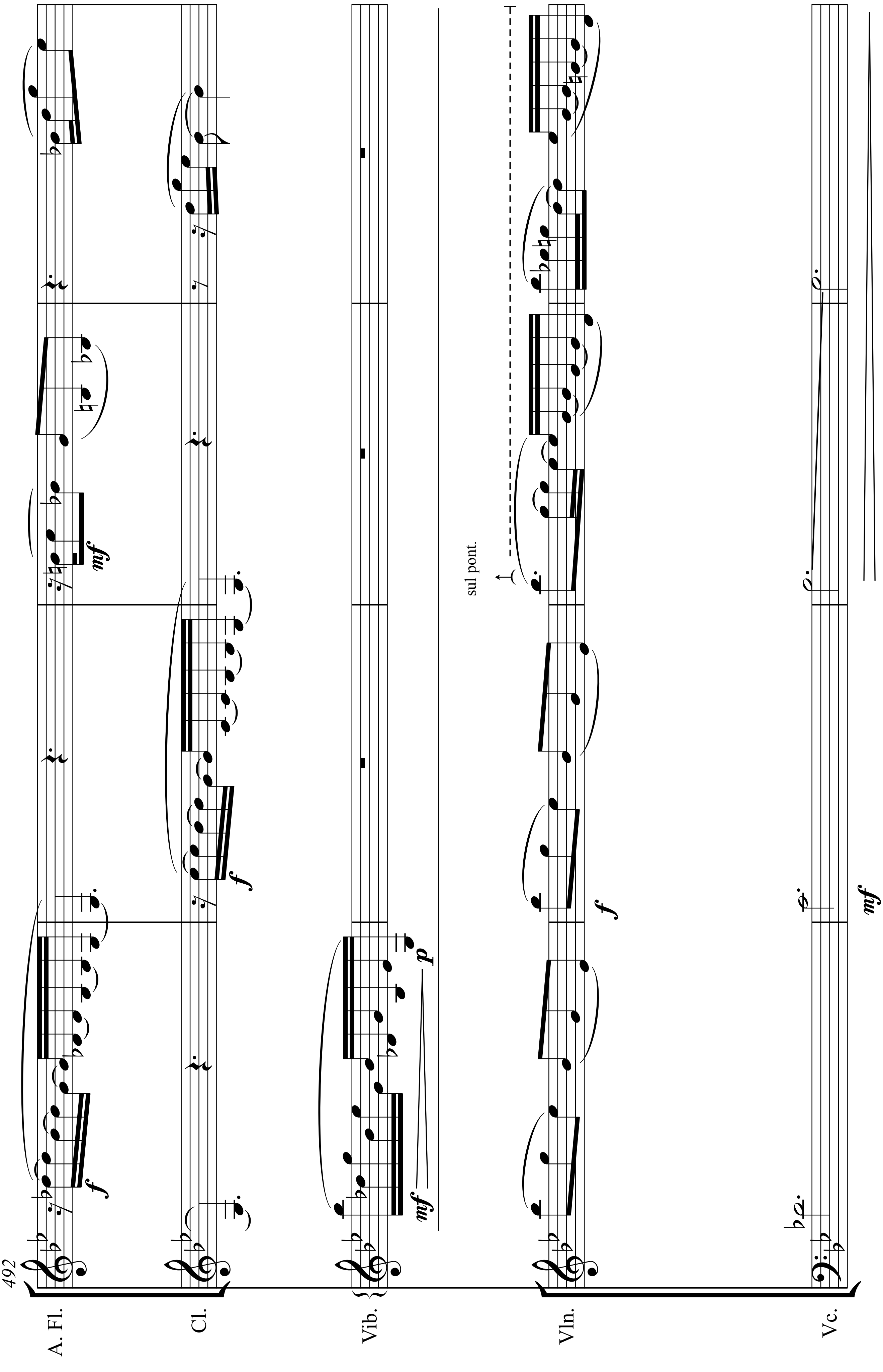

470
A. Fl.
Cl.
Vib.
Vln.
Vc.
mf
mp
mallet.
p
Ped.
sul pont.
II
mf
mp
sul pont.
p
p

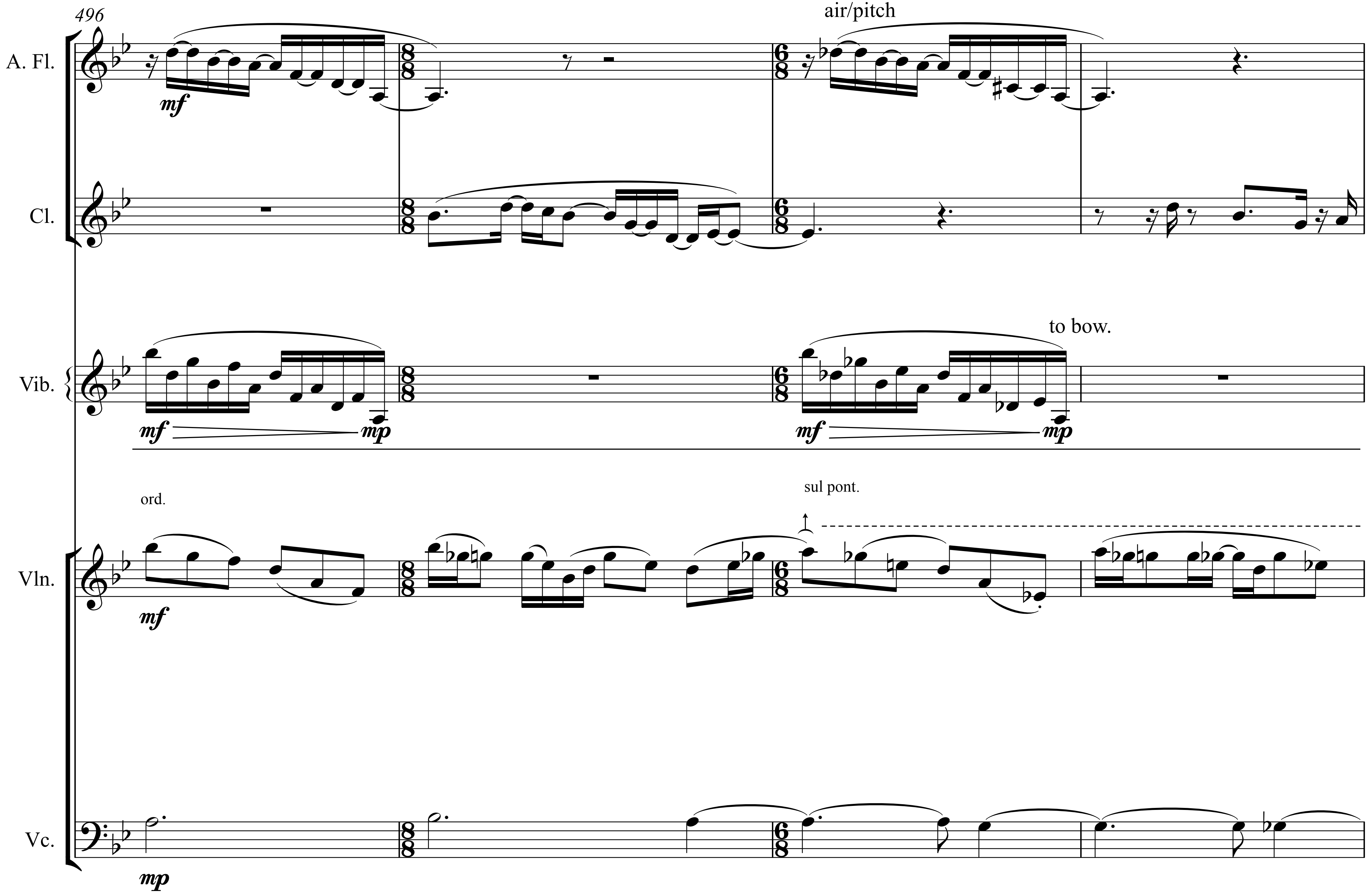

475
A. Fl.
Cl.
Vib.
Vln.
Vc.
mf
mf
mf
mp
ord.
III
molto flaut.
pp

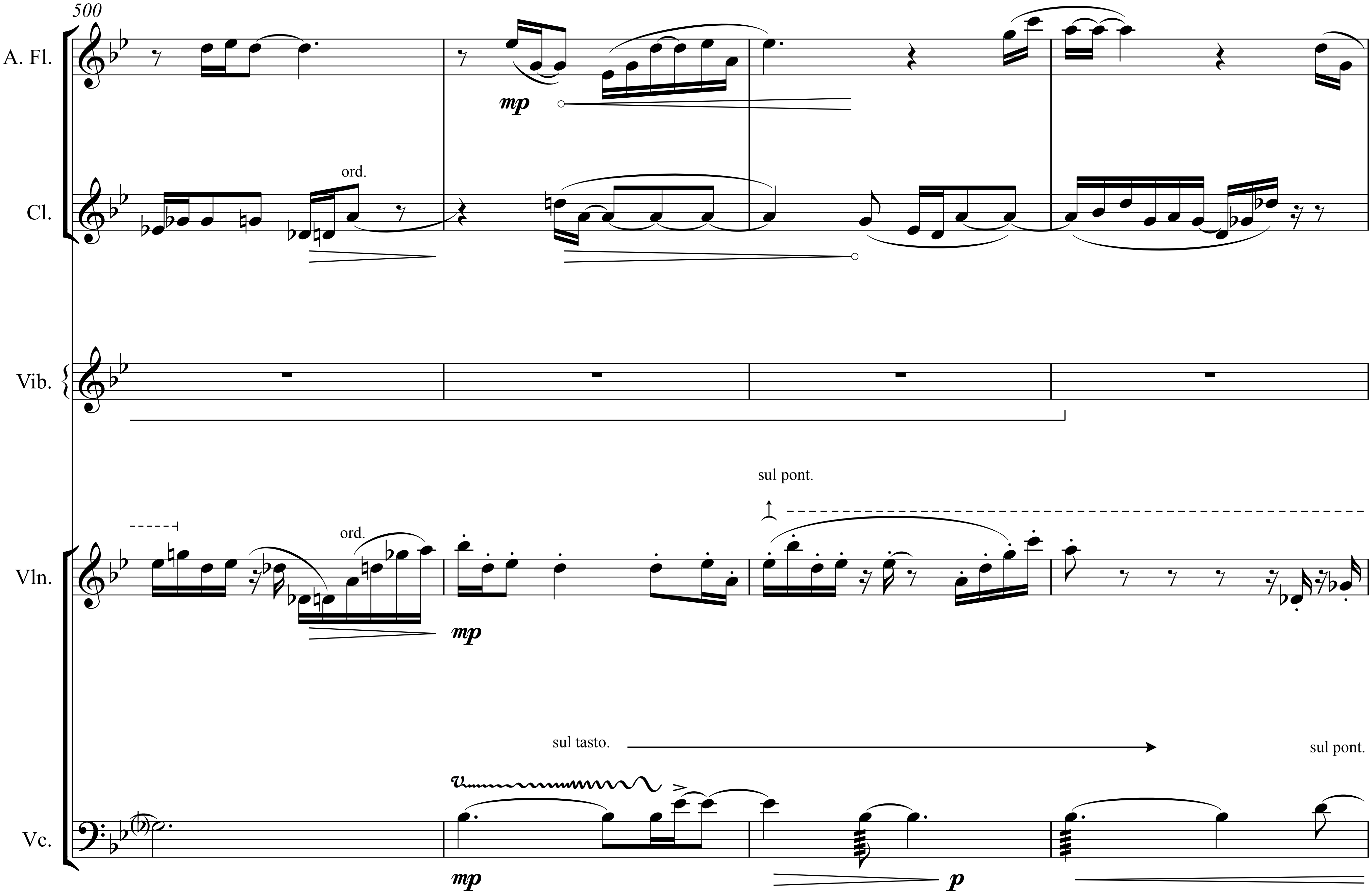

480
A. Fl.
Cl.
Vib.
Vln.
Vc.
mp
mp
mp
mp
pp

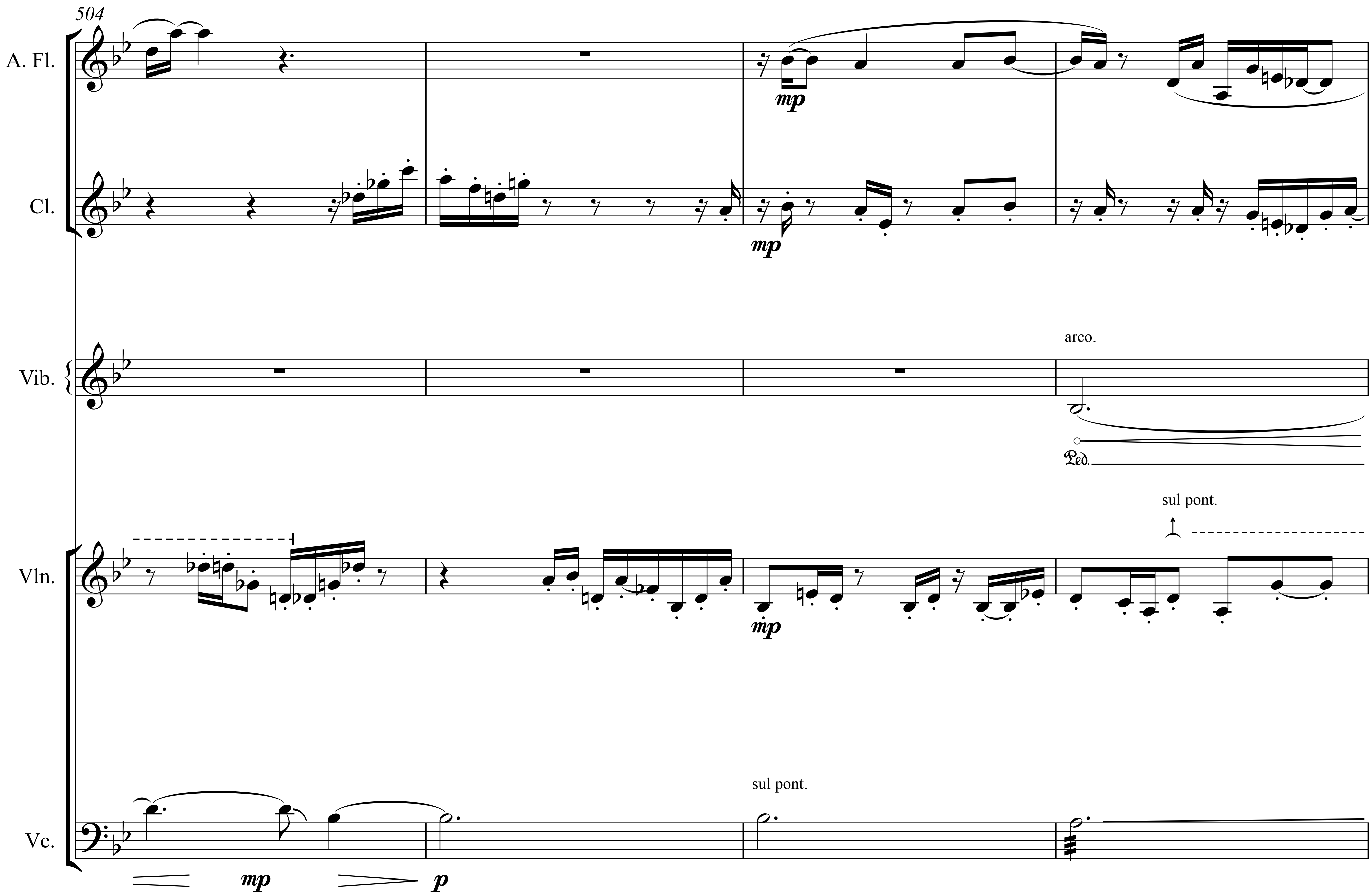

484
A. Fl.
Cl.
Vib.
Vln.
Vc.
mf
mf
mf

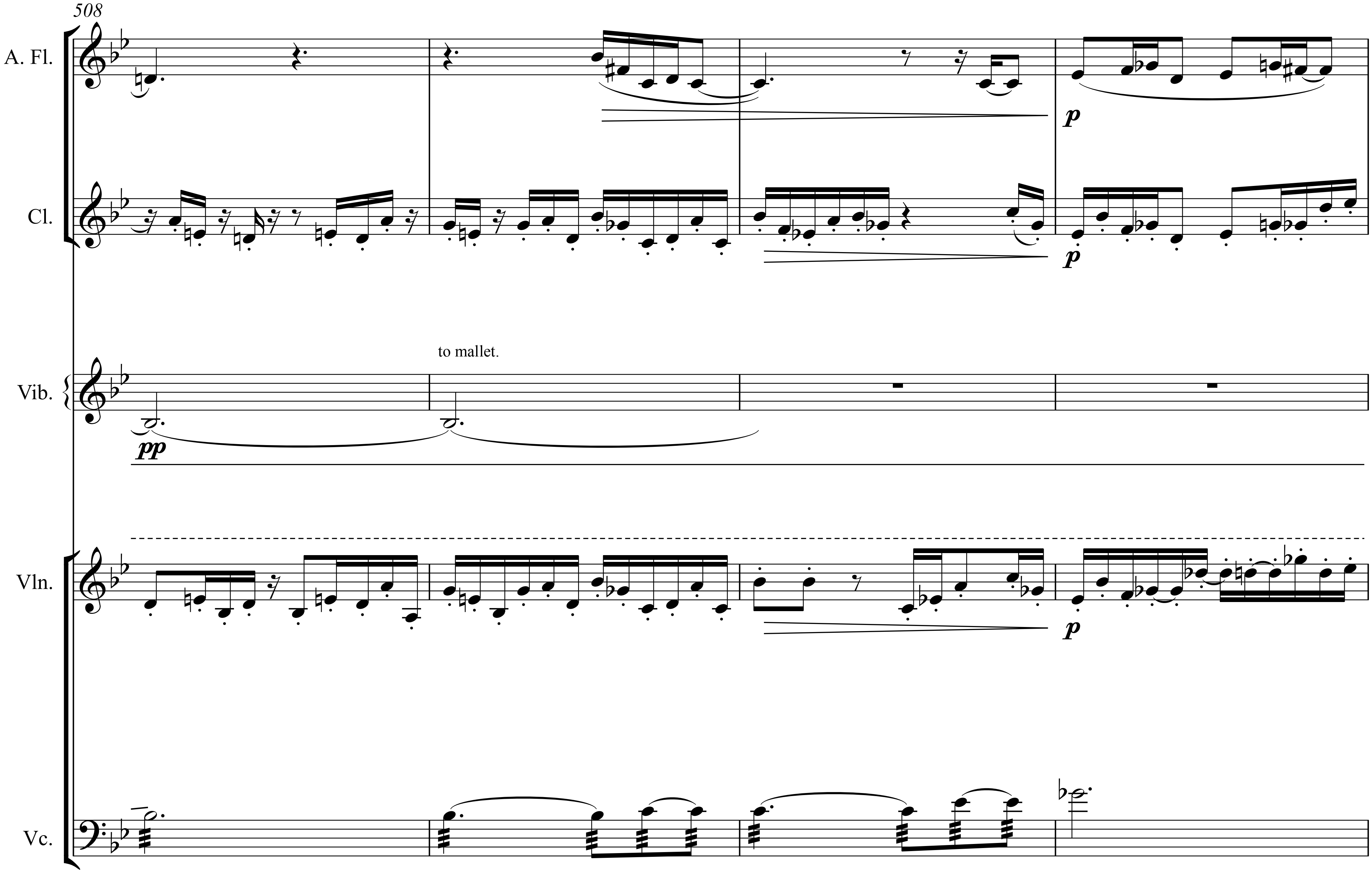

488
A. Fl.
Cl.
Vib.
Vln.
Vc.
mp
mp
ord.
ord.
f
f
mf
p
Ped.
sul pont.
f
molto flaut.
mf

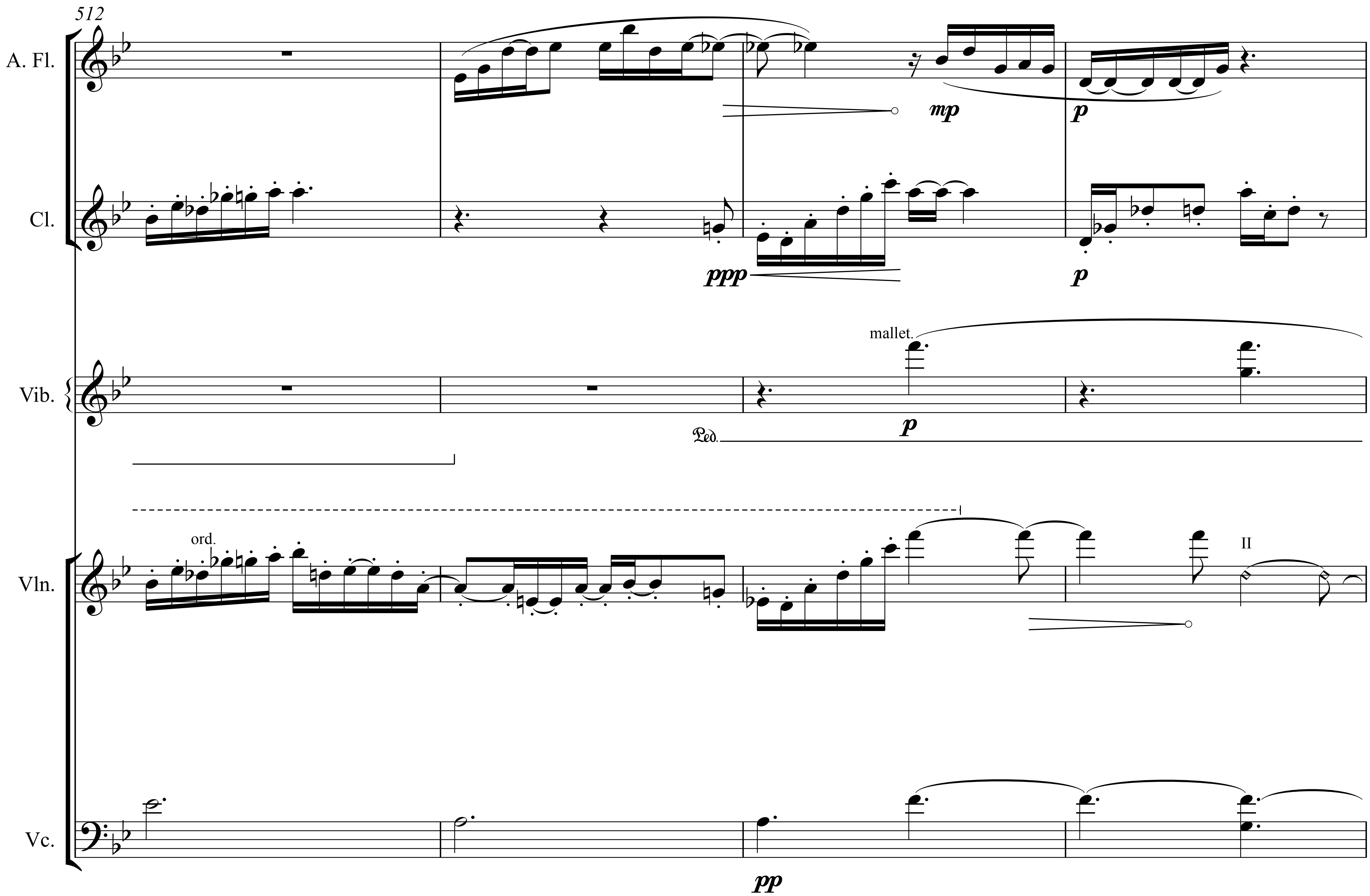

A. Fl.
Cl.
Vib.
Vln.
Vc.
492
f
mf
f
mf
p
f
sul pont.
mf

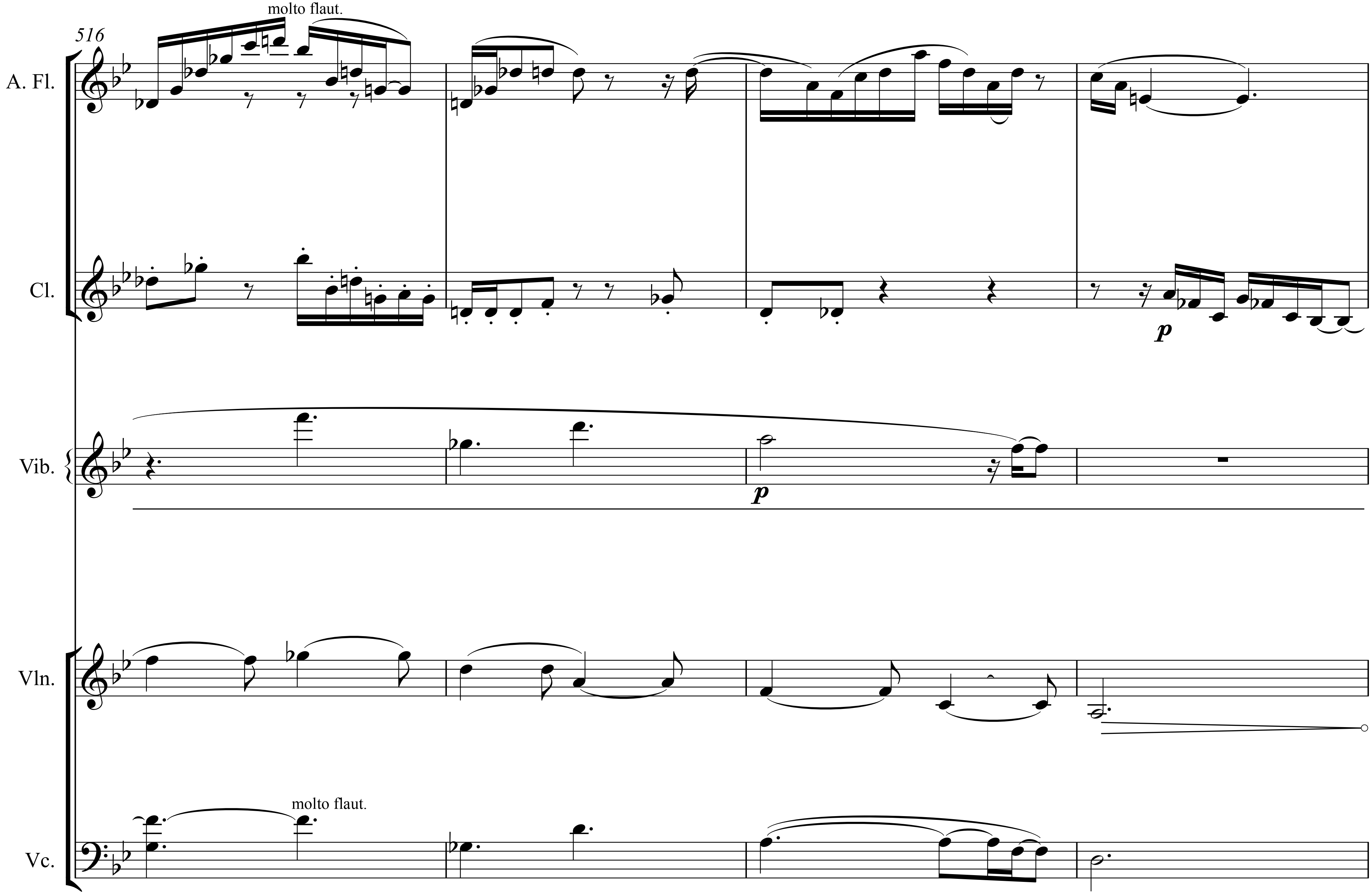

496
A. Fl.
Cl.
Vib.
Vln.
Vc.
mf
air/pitch
to bow.
mf
mp
mf
mp
ord.
sul pont.
mf
mp

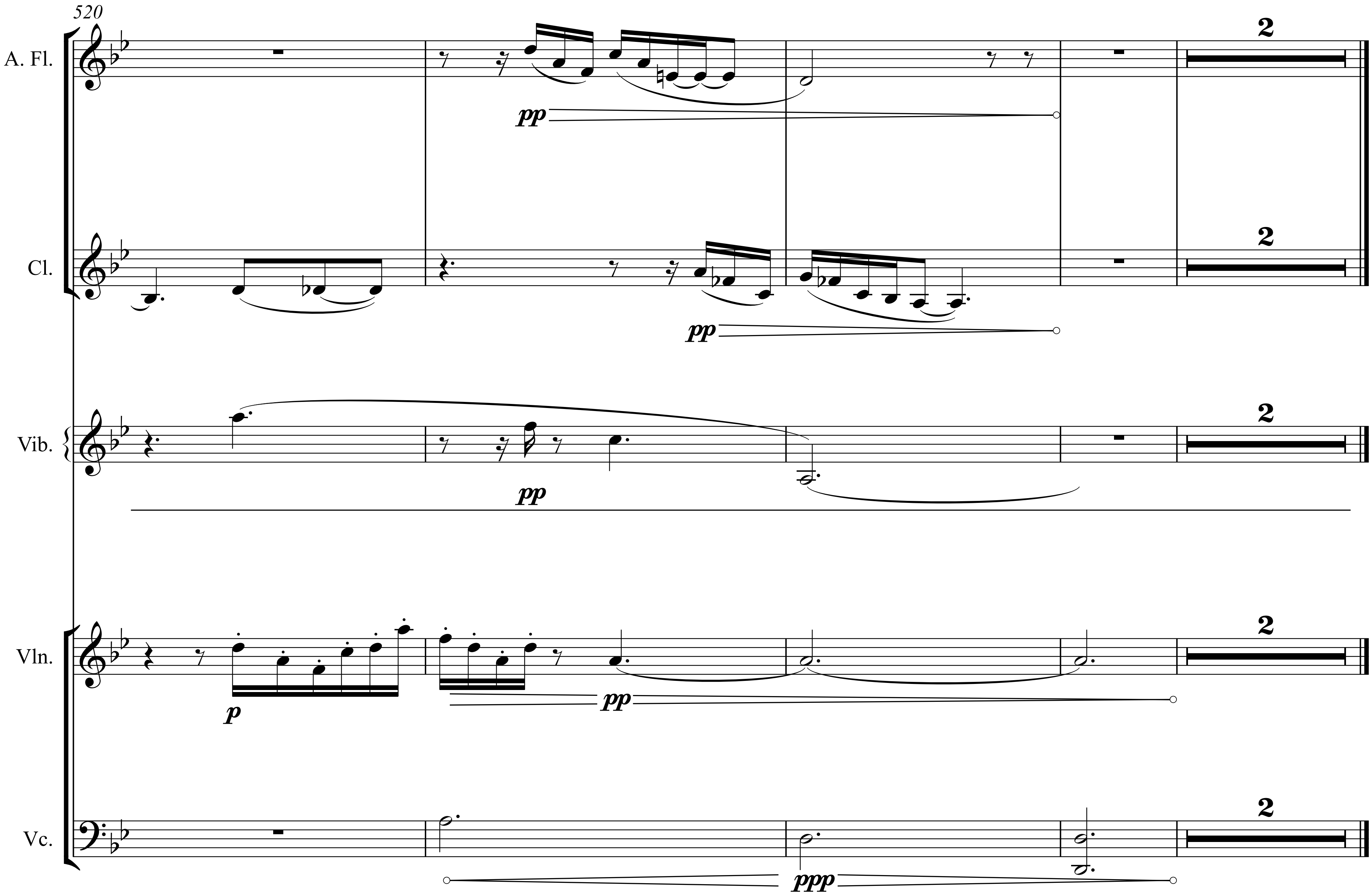

500
A. Fl.
Cl.
Vib.
Vln.
Vc.
mp
ord.
ord.
mp
sul pont.
sul tasto.
sul pont.
mp
p


504
A. Fl.
Cl.
Vib.
Vln.
Vc.
mp
mp
arco.
Ped.
sul pont.
mp
sul pont.
mp
p


508
A. Fl.
Cl.
Vib.
Vln.
Vc.
to mallet.
p
p
pp
p
pp


512
A. Fl.
Cl.
Vib.
Vln.
Vc.
mp
p
ppp
p
mallet.
p
Ped.
ord.
II
pp


516
molto flaut.
A. Fl.
Cl.
p
Vib.
p
Vln.
Vc.
molto flaut.


520
A. Fl.
Cl.
Vib.
Vln.
Vc.
pp
pp
pp
p
pp
ppp
2
2
2
2
2

Daniel J Fallon

Berlin: Symphony of a Metropolis

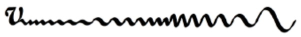
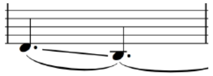
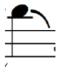
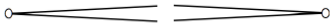
Act V

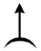
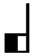
For

Alto Flute
Clarinet in Bb
Percussion
(Tam-tam)
Violin
Violincello

Berlin Symphony of a Metropolis
Act V

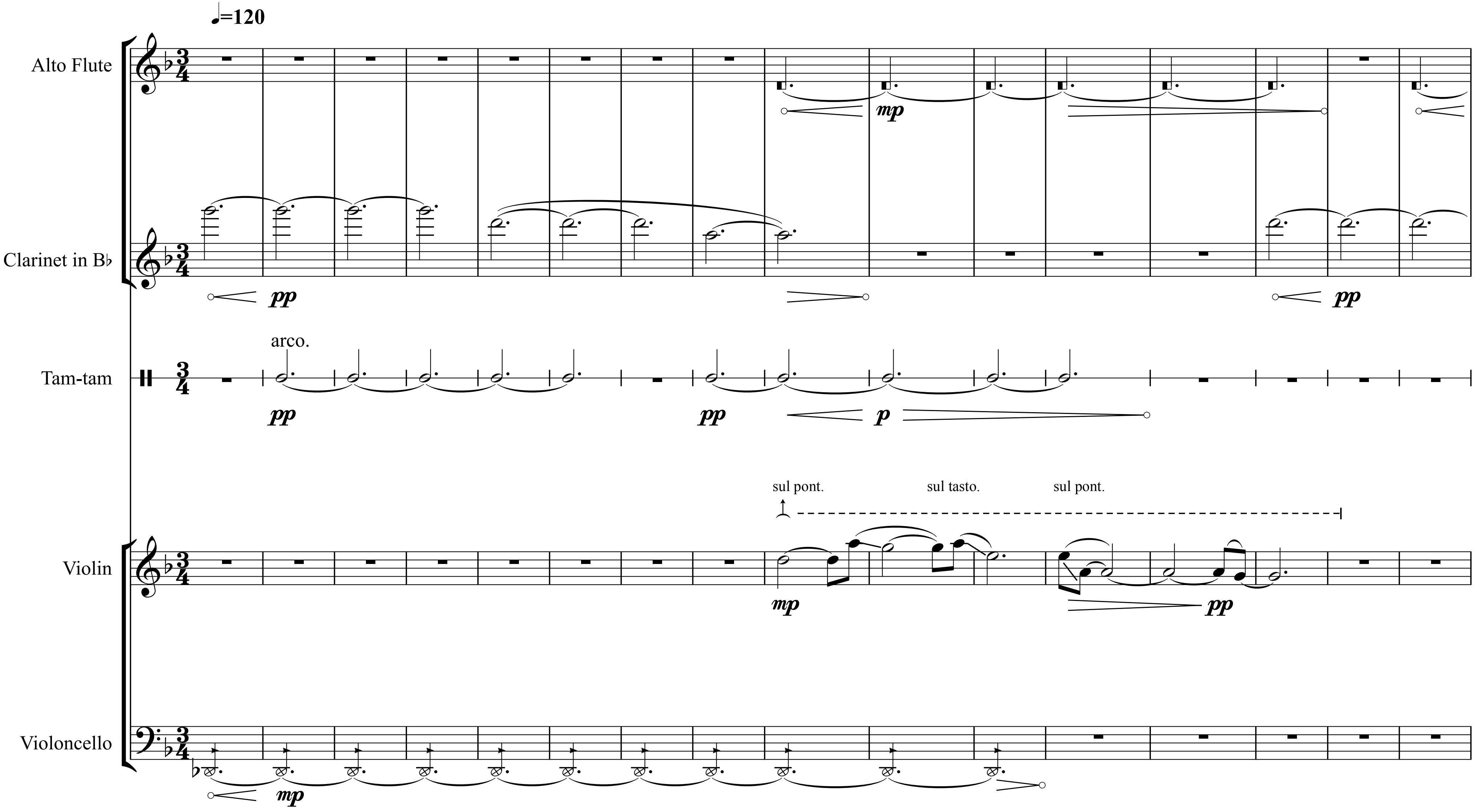
Notation

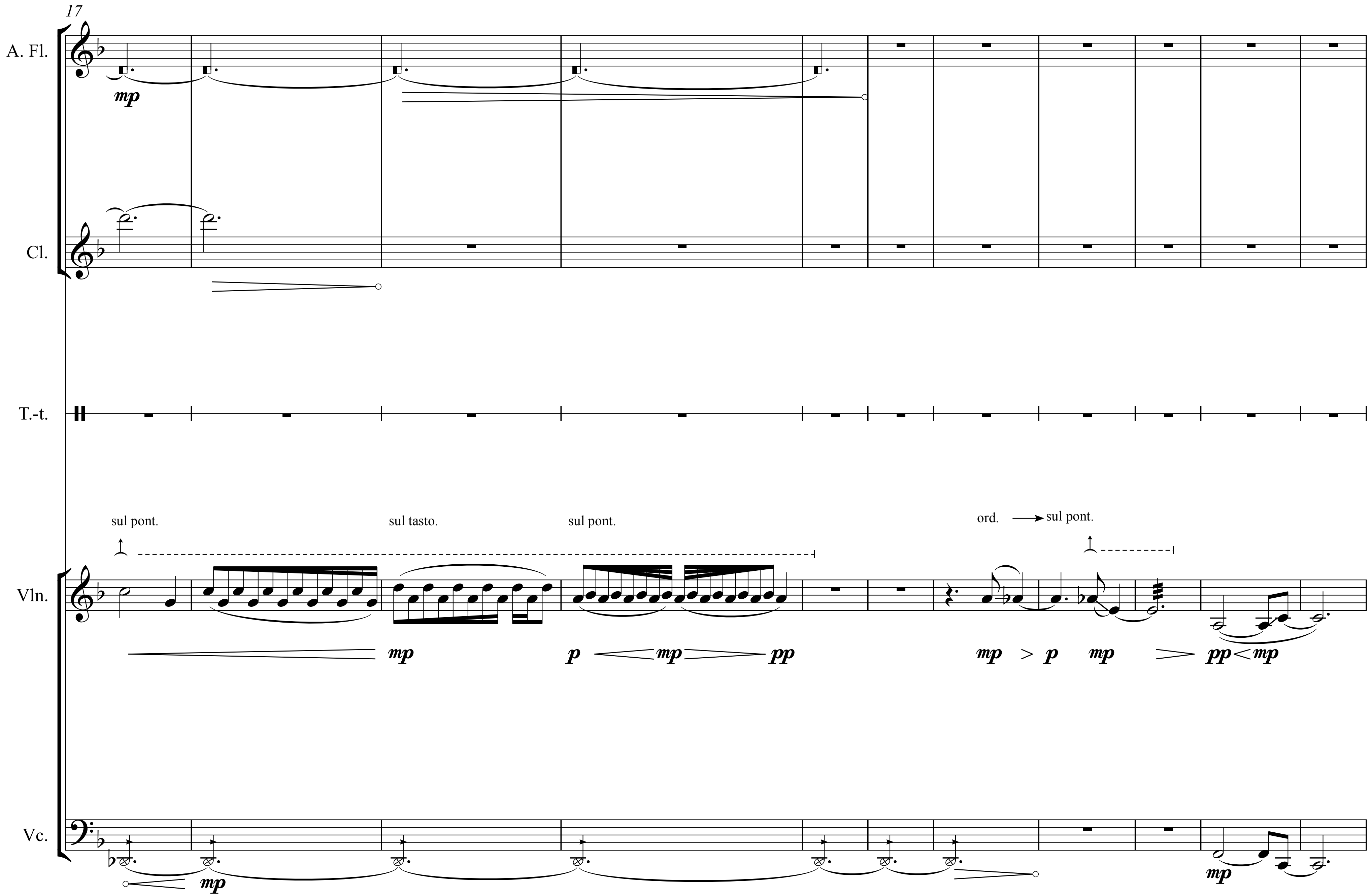
→	Transition smoothly from one articulation to another
	Dramatic, ad. Lib. vibrato
	Portamento
	Drop-off in pitch at the end of a note's duration
	Crescendo *from* and diminuendo *to* silence as seamlessly as possible

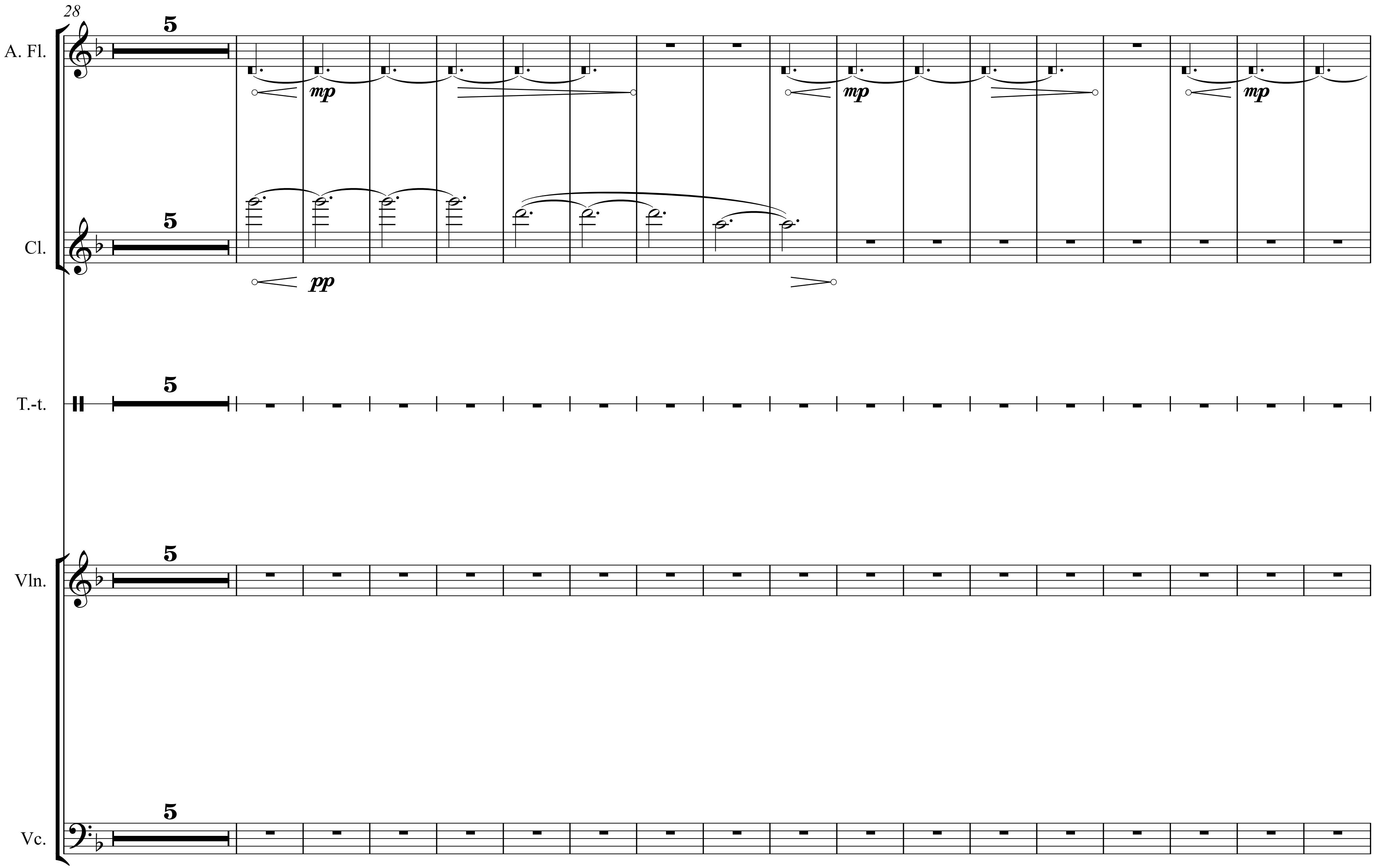
	Bow as lightly as possible while maintaining pitch and volume
	Heavy bow pressure (almost scratch tone)
	Half air noise, half pitch. (an 'airy' or 'breathy' tone)

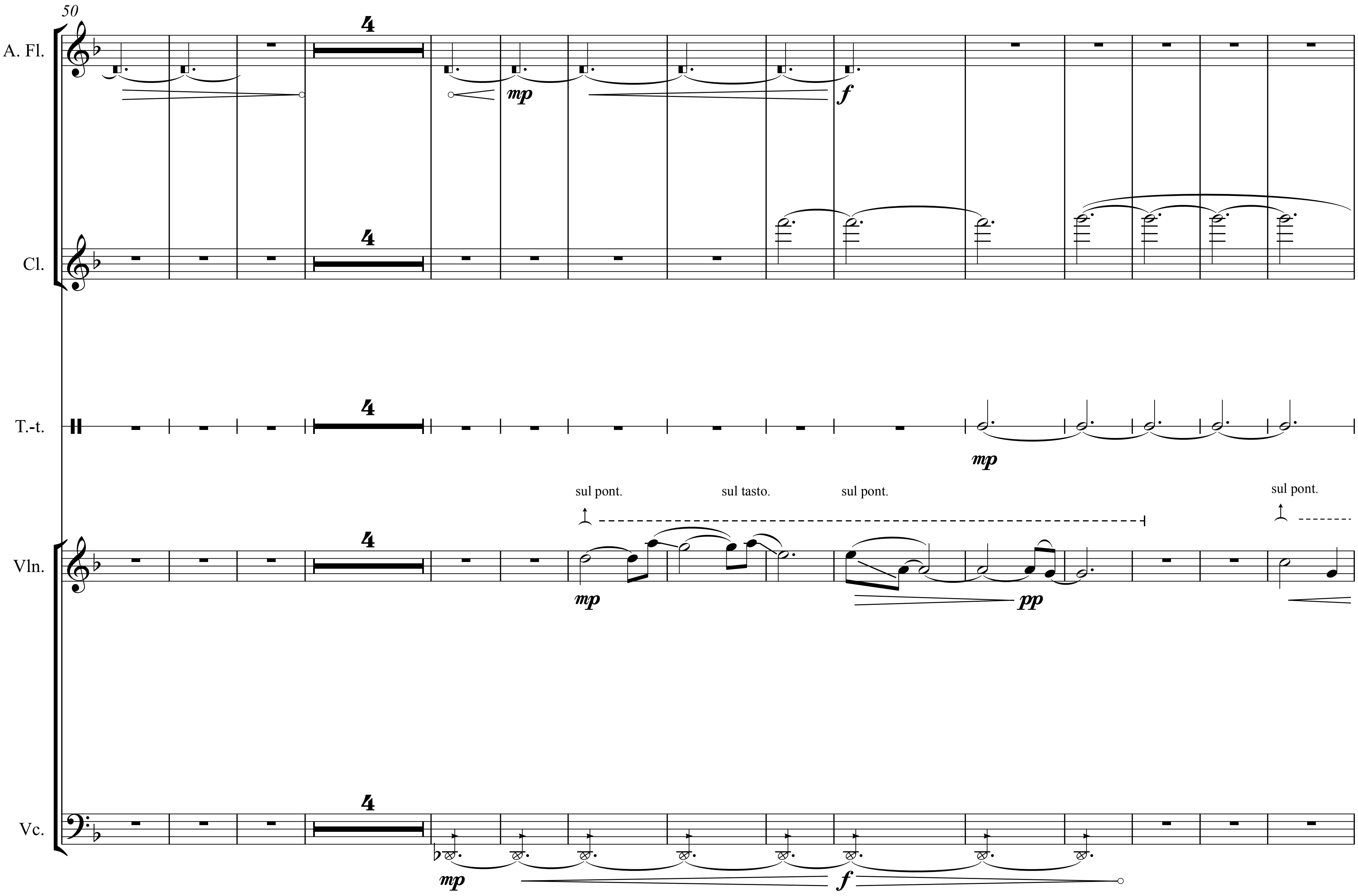
Berlin: Symphony Of A Metropolis
Act V

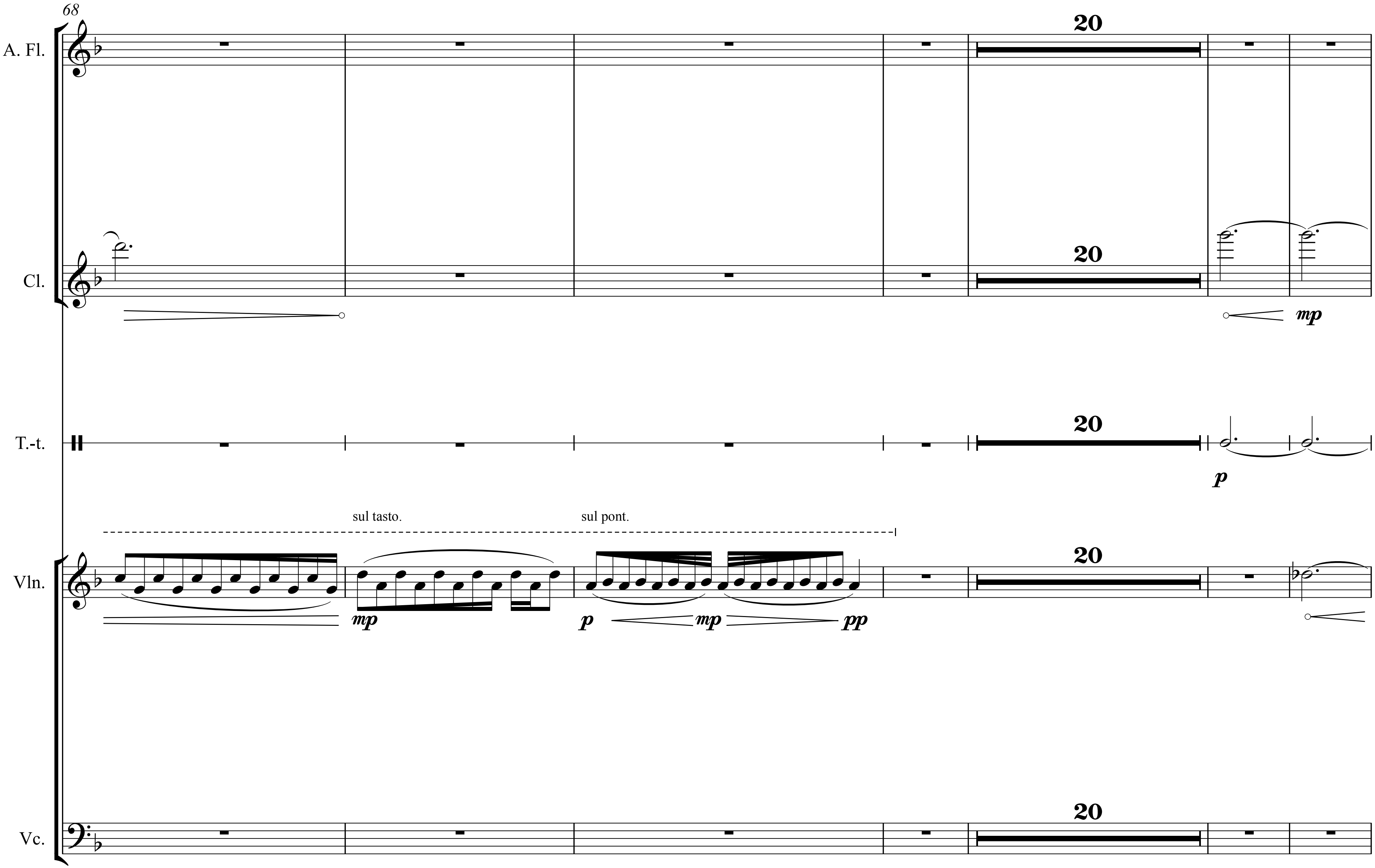
Daniel J Fallon

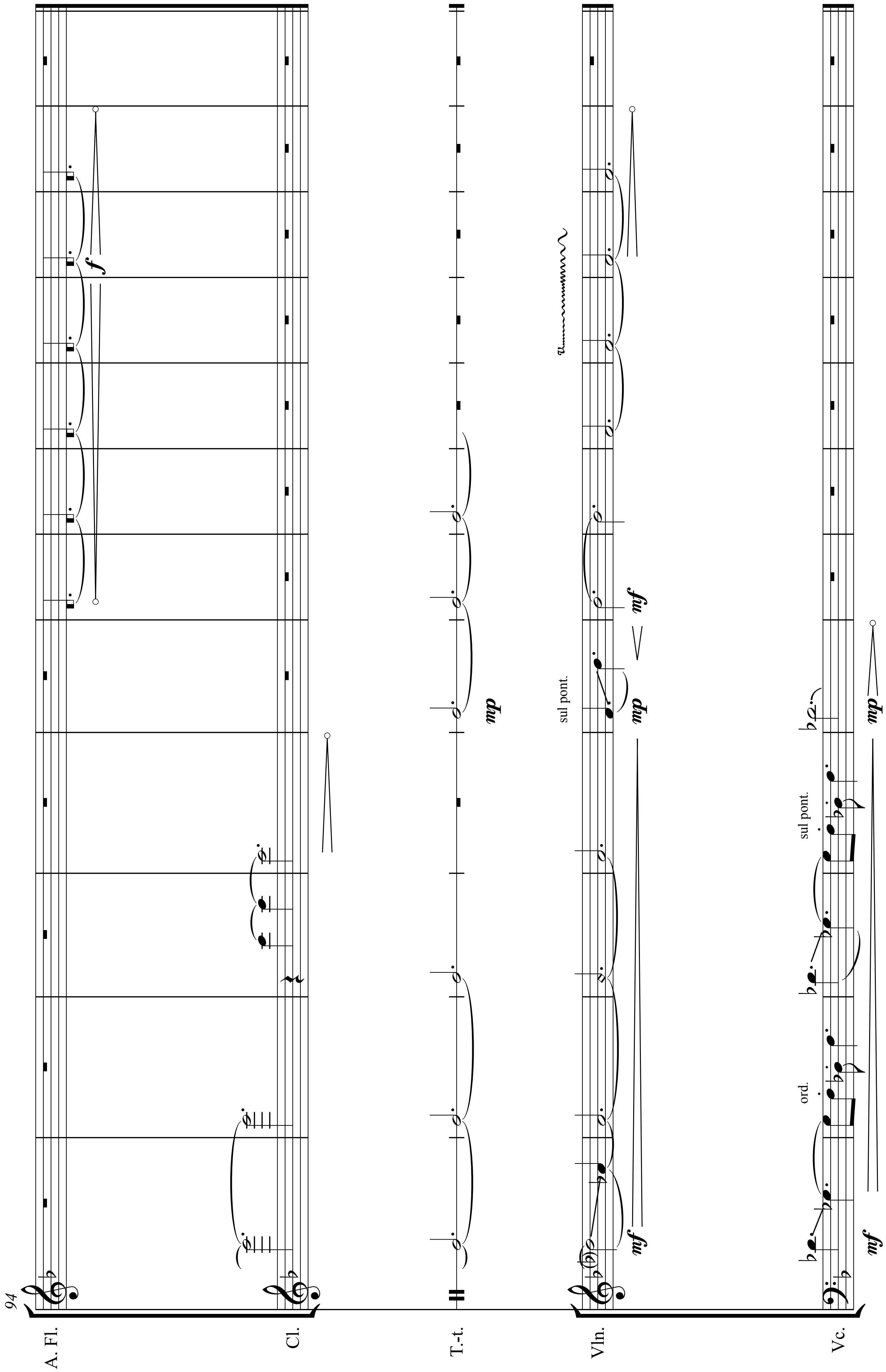

♩=120
Alto Flute
Clarinet in B♭
Tam-tam
Violin
Violoncello
arco.
pp
mp
p
sul pont.
sul tasto.
sul pont.


17
A. Fl.
Cl.
T.-t.
Vln.
Vc.
mp
sul pont.
sul tasto.
sul pont.
ord.
sul pont.
mp
p
mp
pp
mp
p
mp
pp
mp
mp
mp


28
A. Fl.
Cl.
T.-t.
Vln.
Vc.
5
mp
pp


50
A. Fl.
Cl.
T.-t.
Vln.
Vc.
4
4
4
4
4
mp
f
mp
sul pont.
sul tasto.
sul pont.
sul pont.
mp
pp
mp
f


68
A. Fl.
Cl.
T.-t.
Vln.
Vc.
20
20
20
20
20
mp
p
sul tasto.
sul pont.
mp
p
mp
pp


94
A. Fl.
Cl.
T.-t.
Vln.
Vc.
f
mf
mp
sul pont.
ord.
sul pont.
mf
mp
mf
mp

Daniel J Fallon

The Near Woods

For:

Flute
Bass Clarinet in B Flat
Vibraphone
Piano
Violin
Violoncello

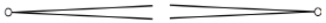
Performance Note

The Near Woods is an electro-acoustic piece. The aim in the instrumental parts is to carry melody and harmony while blending, as much as possible, the timbres of the instruments with the recorded sounds in the pre-recorded electronics or ‘tape’ part accompanying the music in this score. To that end, the performer is free to bring out the full depth of character in his or her instrument, exaggerating what is written, if need be.

Legend

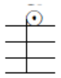
General

→ Transition evenly from one technique or tone to another

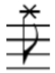


Crescendo *from* and diminuendo *to* silence as seamlessly as possible

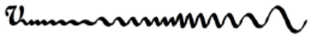
Woodwind



Residual Tone or Breath Tone – Half air, half pitch

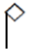


Key Click

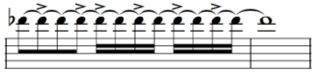


Dramatic, ad. Lib. vibrato

Strings



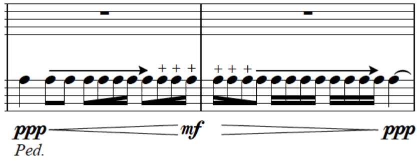
Harmonic/Harmonic pressure



Accent marked beats within a sustained note creating a throbbing effect

Piano

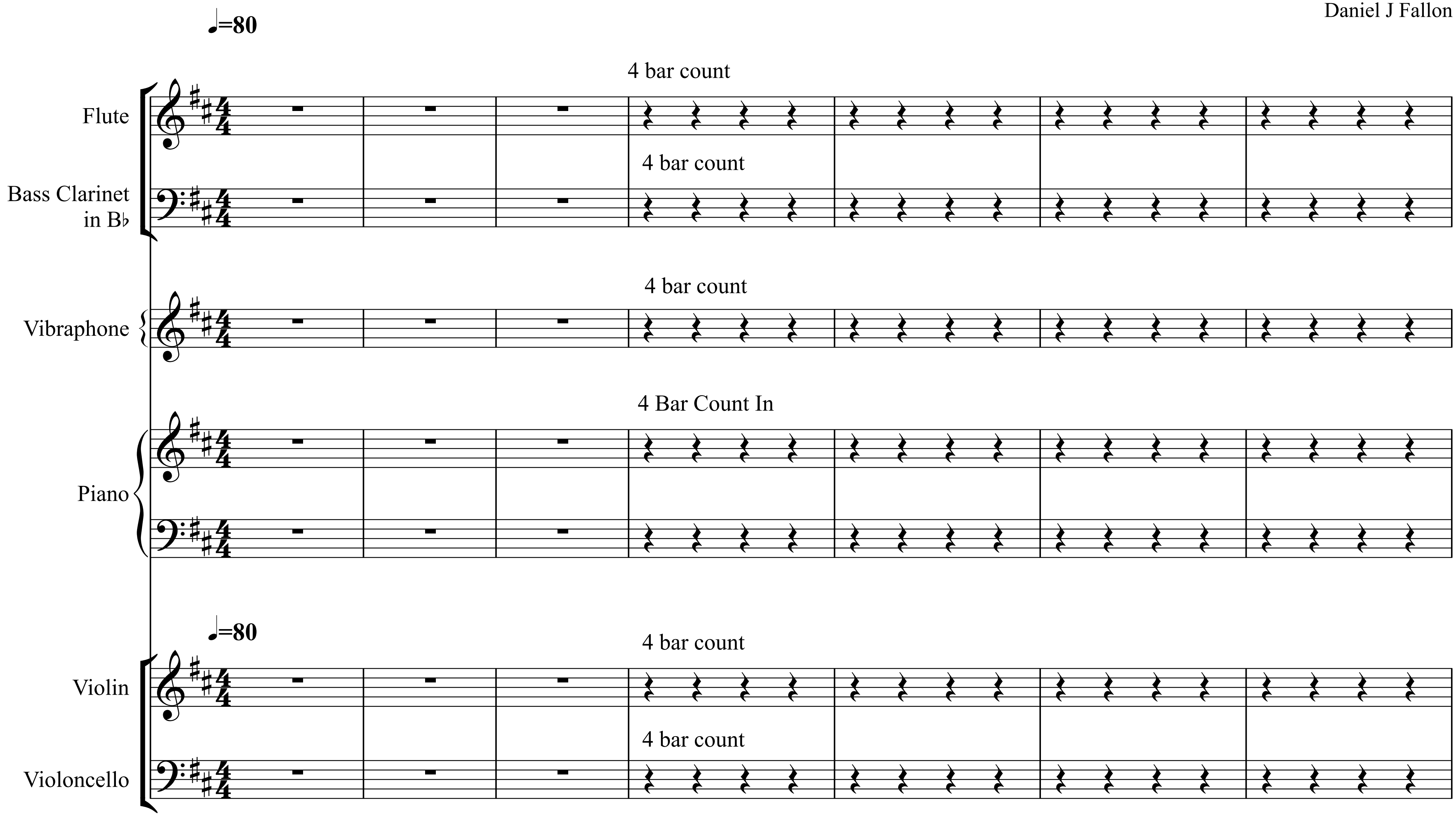
+ Cross above a note - Mute piano string with finger

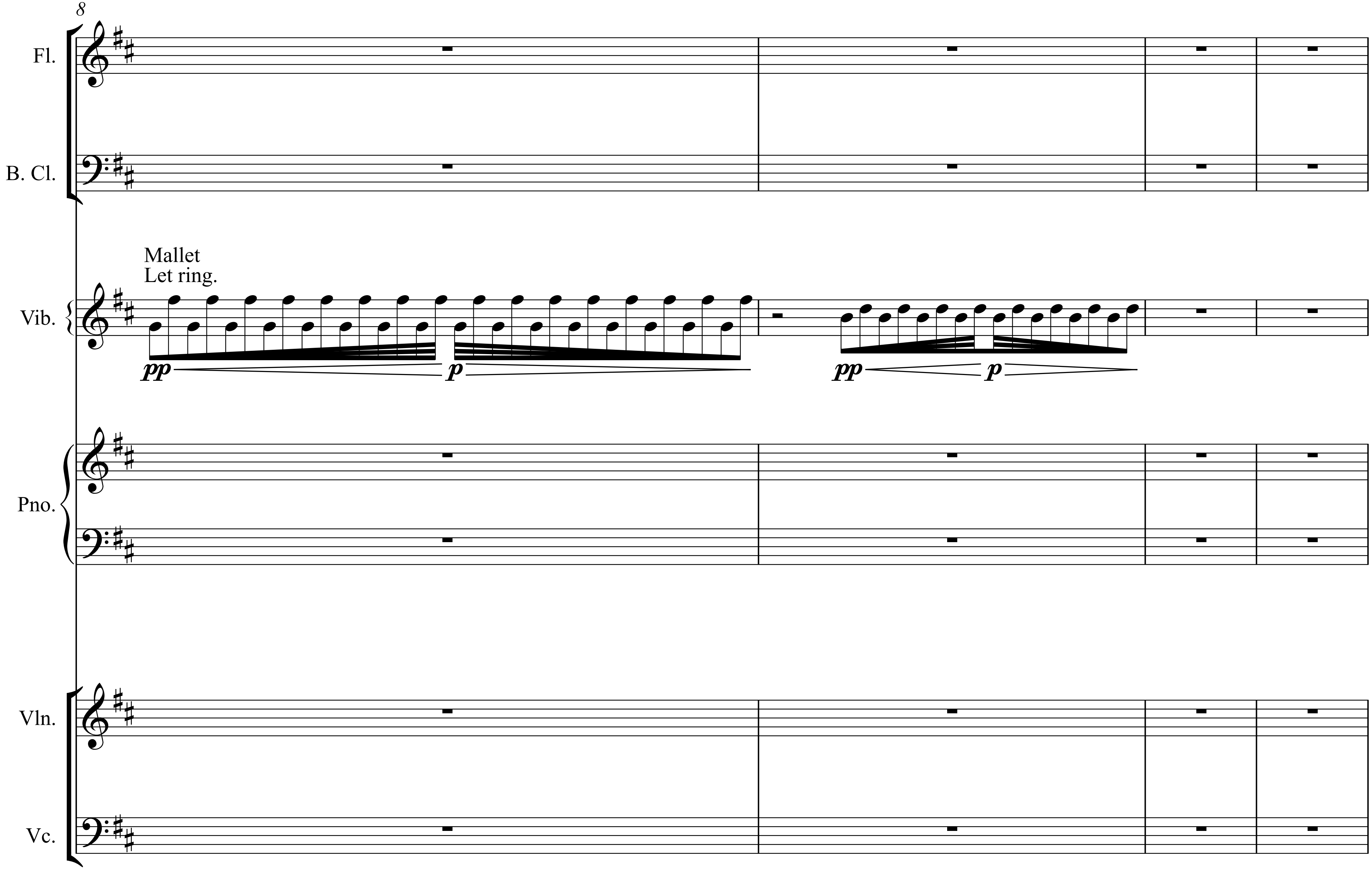


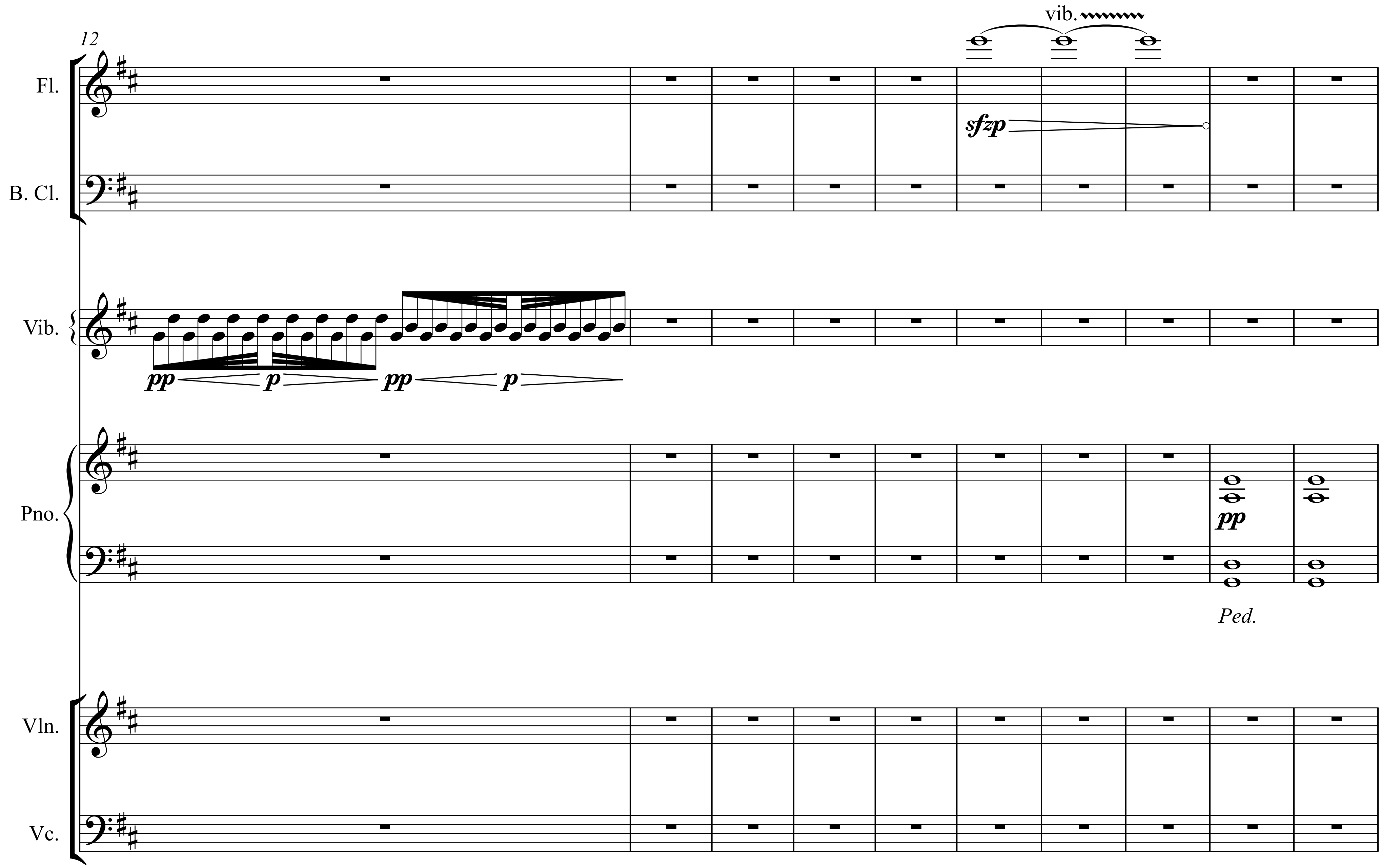
Transition from ordinary articulation to ‘muted’ articulation by applying finger pressure, then steadily increasing it, and vice versa.

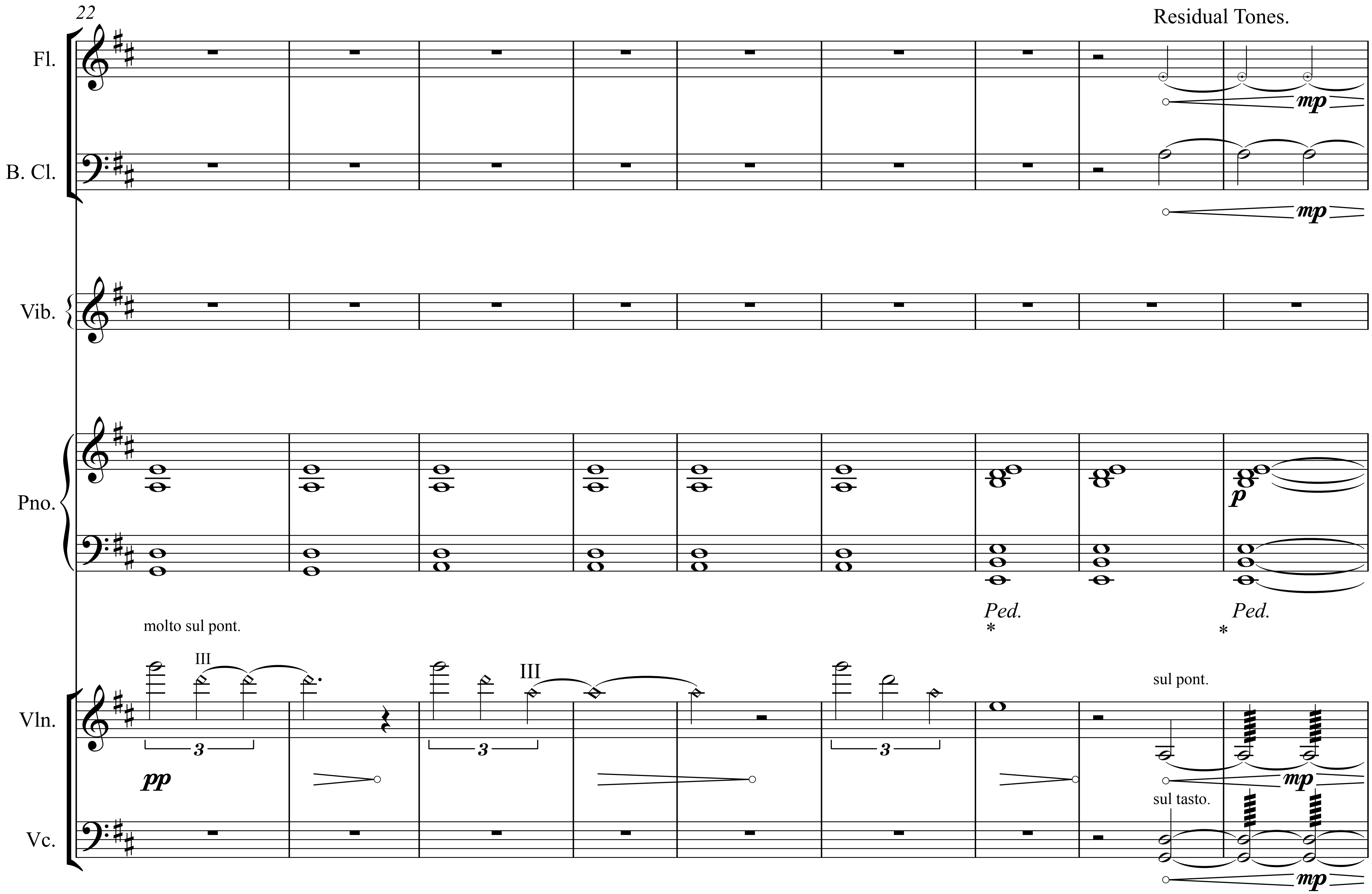
The Near Woods

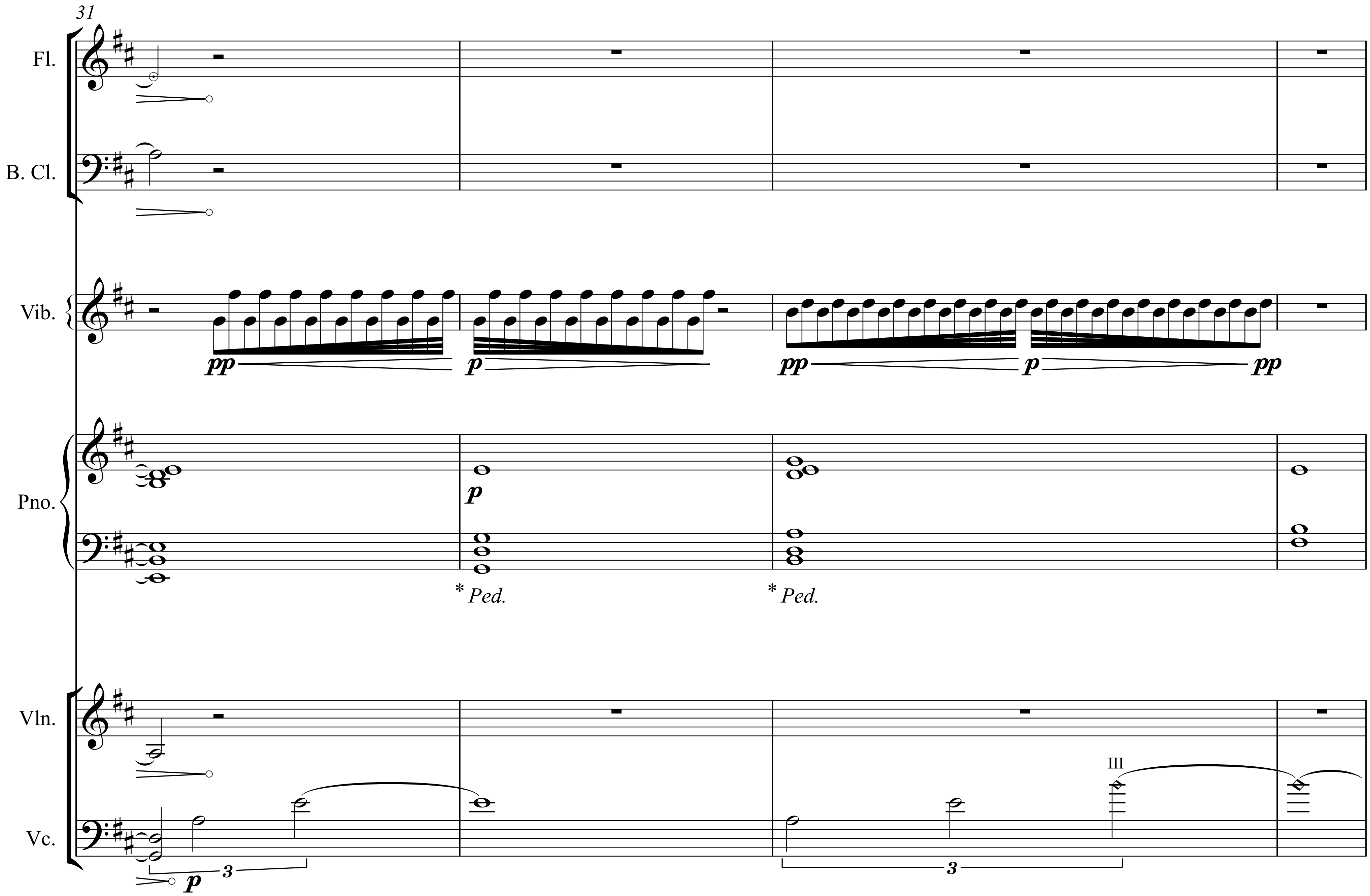
Daniel J Fallon

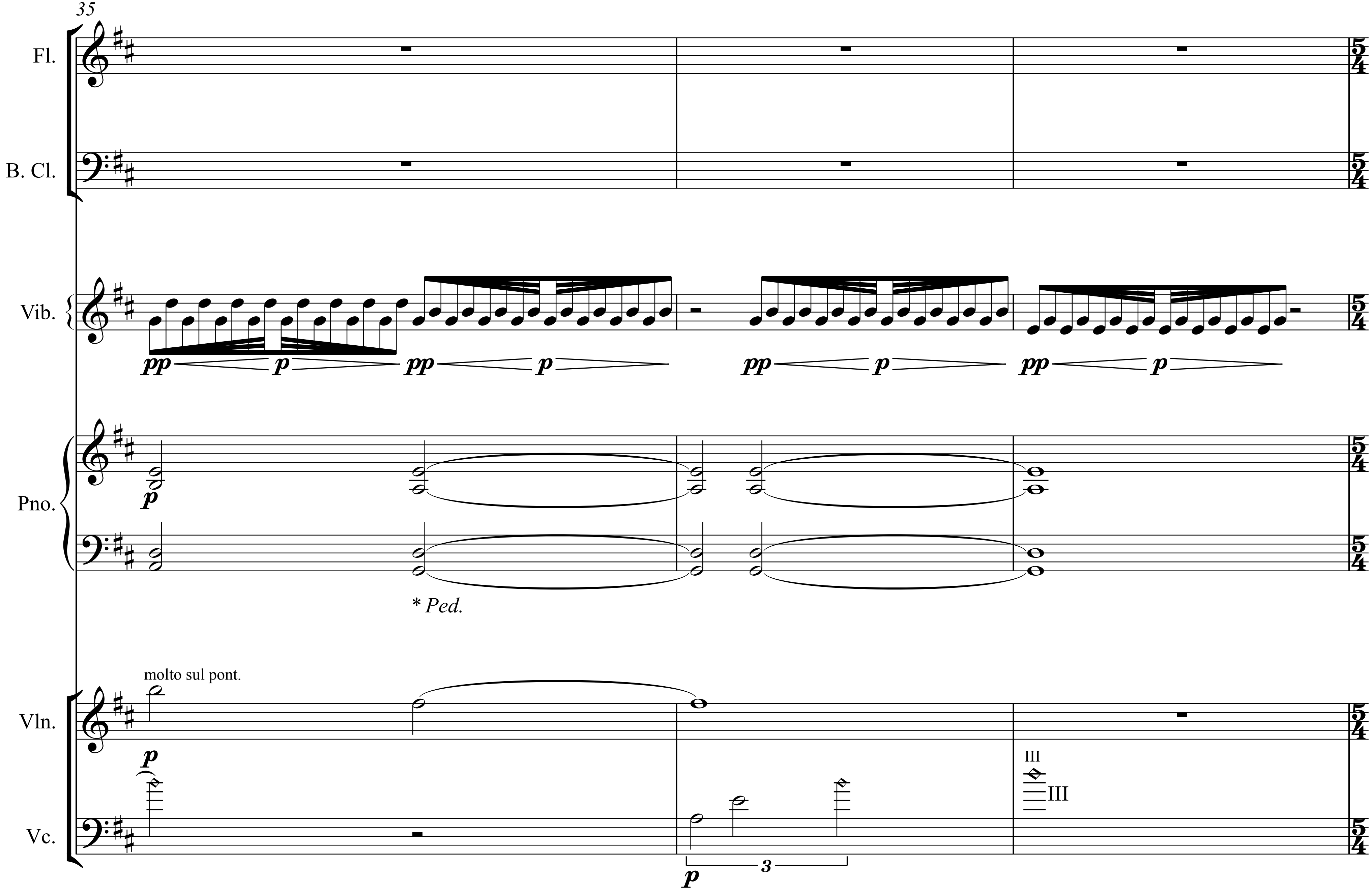

♩=80
4 bar count
Flute
Bass Clarinet in B♭
4 bar count
4 bar count
Vibraphone
4 Bar Count In
Piano
♩=80
4 bar count
Violin
4 bar count
Violoncello

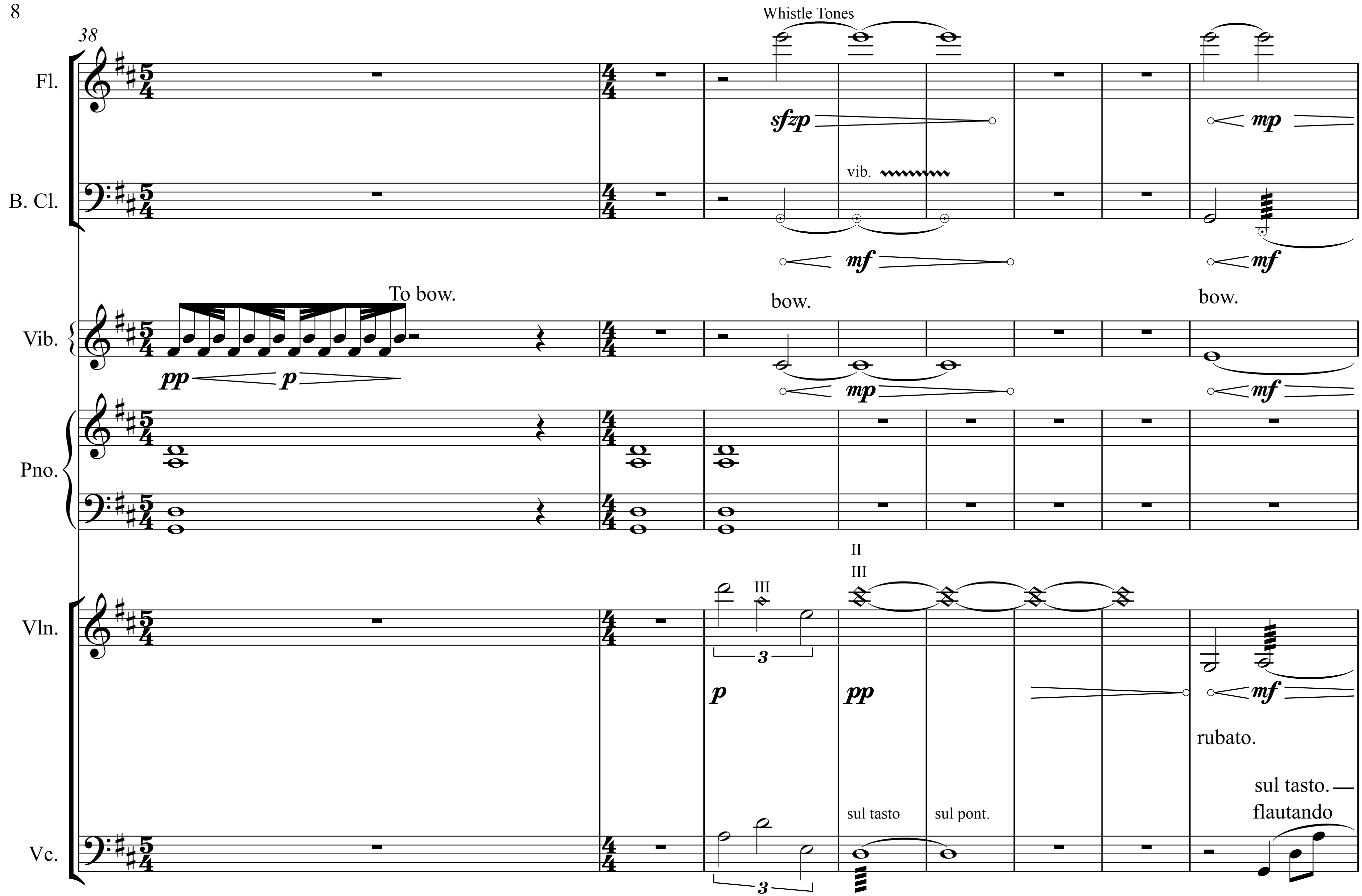

8
Fl.
B. Cl.
Vib.
Mallet
Let ring.
pp
p
pp
p
Pno.
Vln.
Vc.

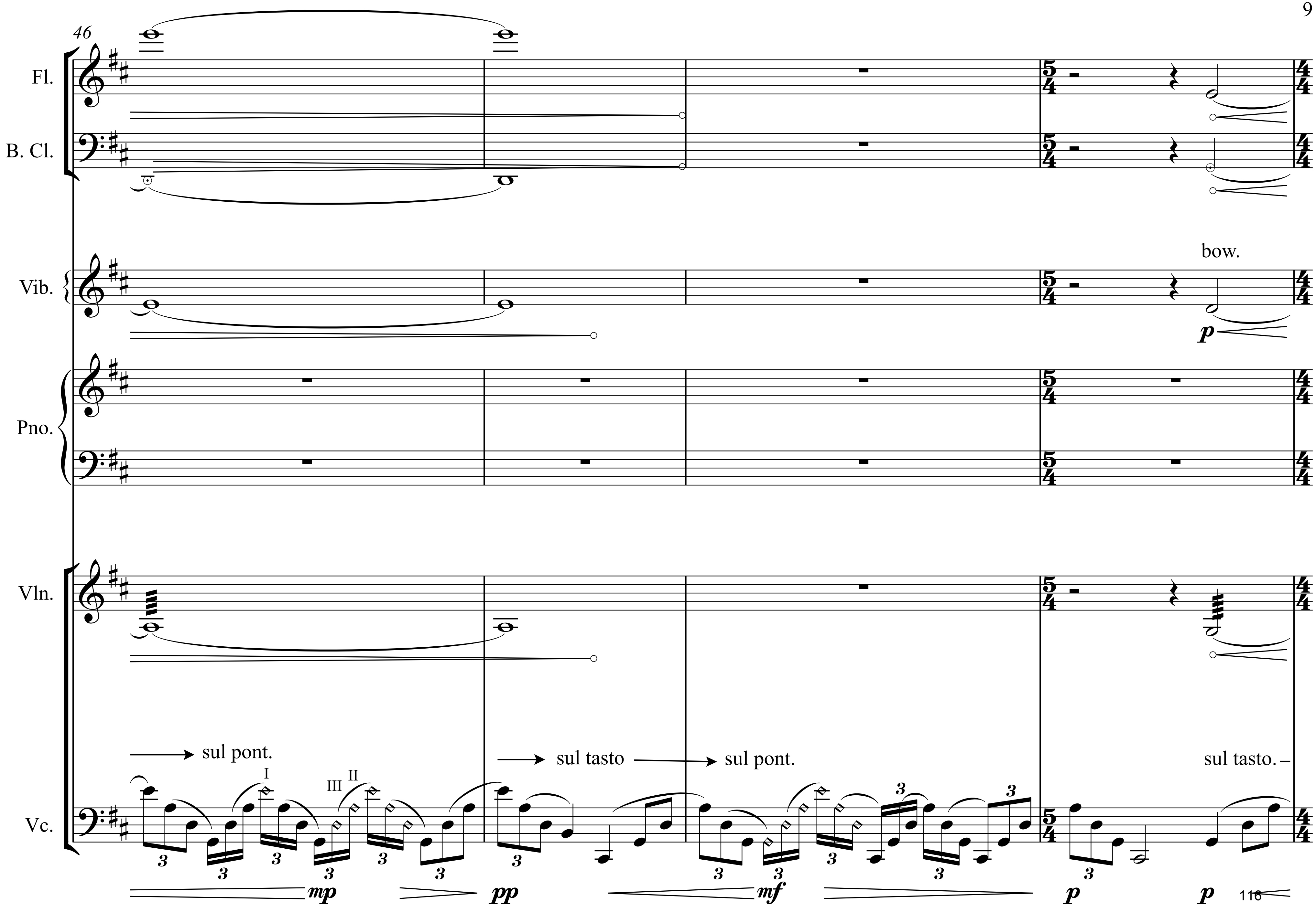

12
vib.
Fl.
sfzp
B. Cl.
Vib.
pp
p
pp
p
Pno.
pp
Ped.
Vln.
Vc.

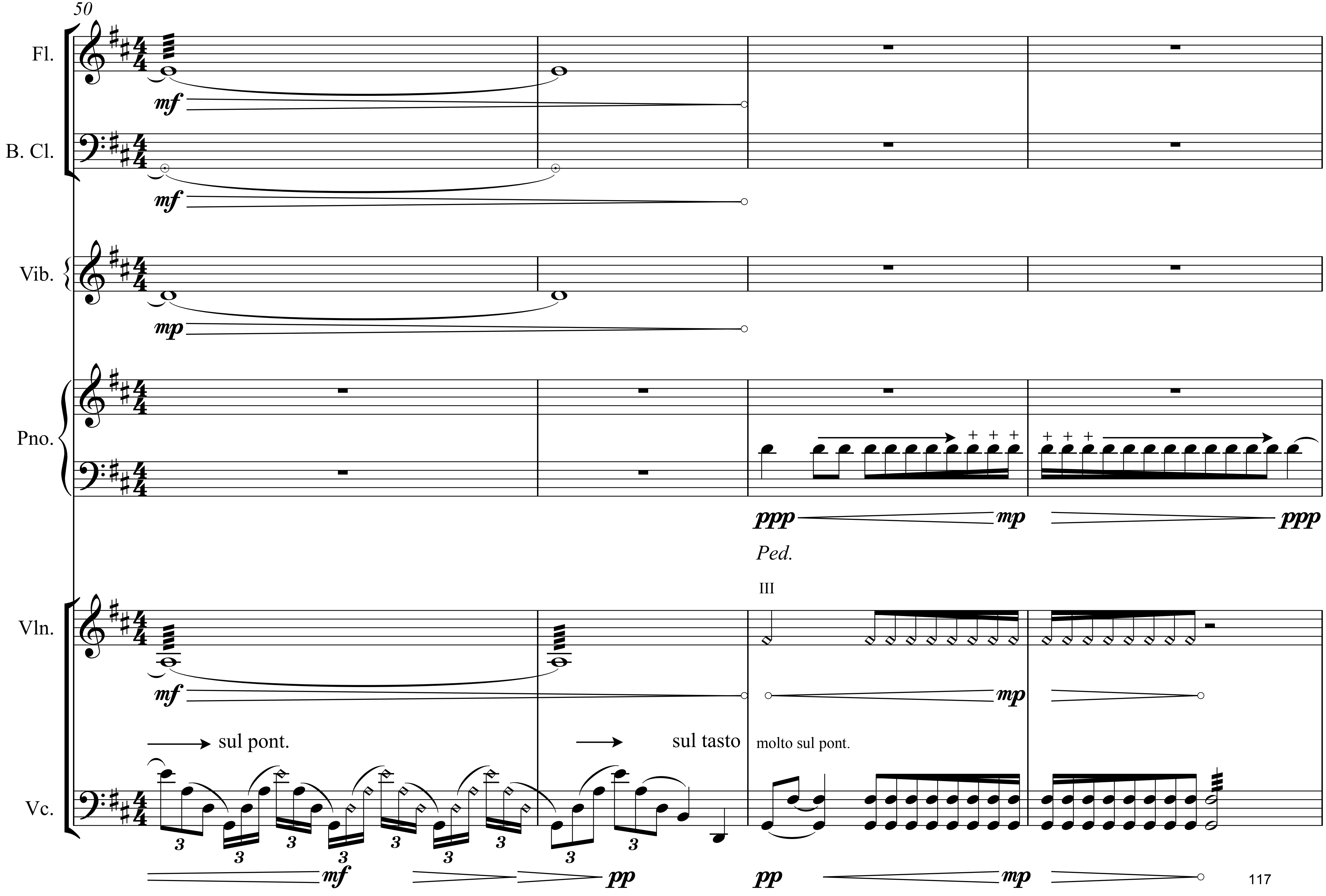

Residual Tones.
22
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
mp
mp
p
Ped.
*
Ped.
*
molto sul pont.
III
III
3
3
3
pp
sul pont.
mp
sul tasto.
mp

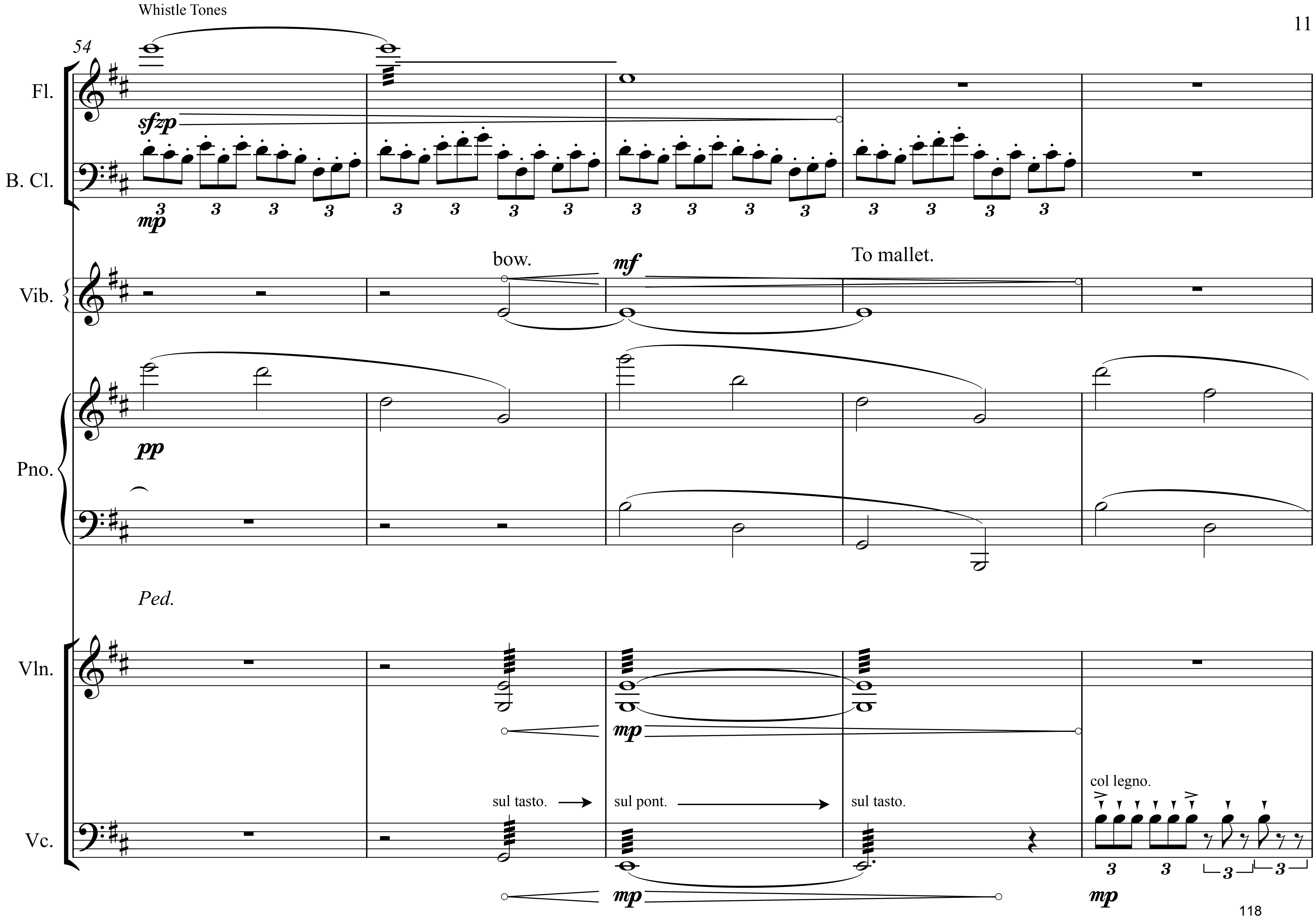

31
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
pp
p
pp
p
pp
p
* Ped.
* Ped.
III
p
3
3

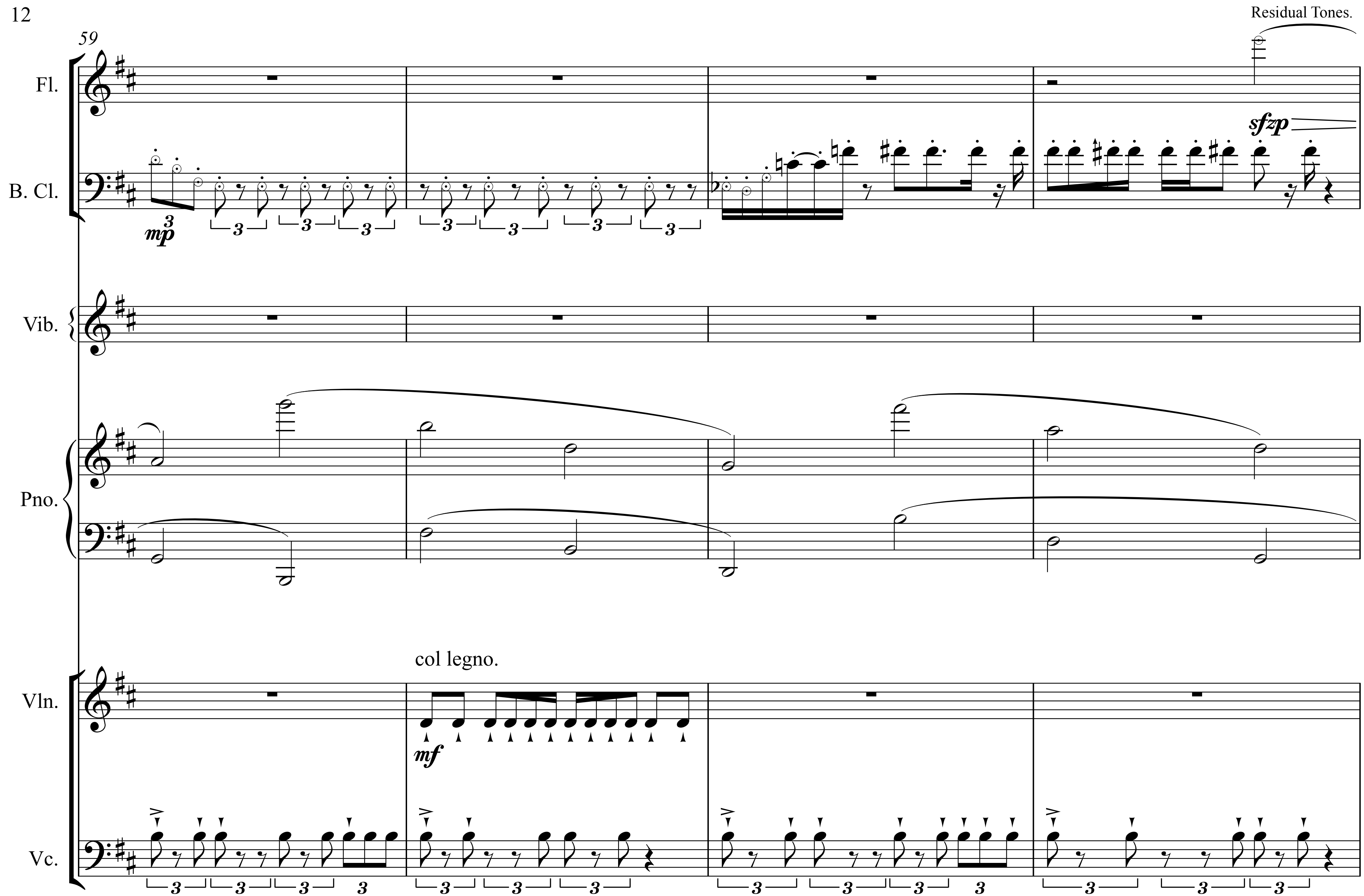

35
Fl.
B. Cl.
Vib.
pp
p
pp
p
pp
p
pp
p
Pno.
p
* Ped.
molto sul pont.
Vln.
p
Vc.
III
III
p
3

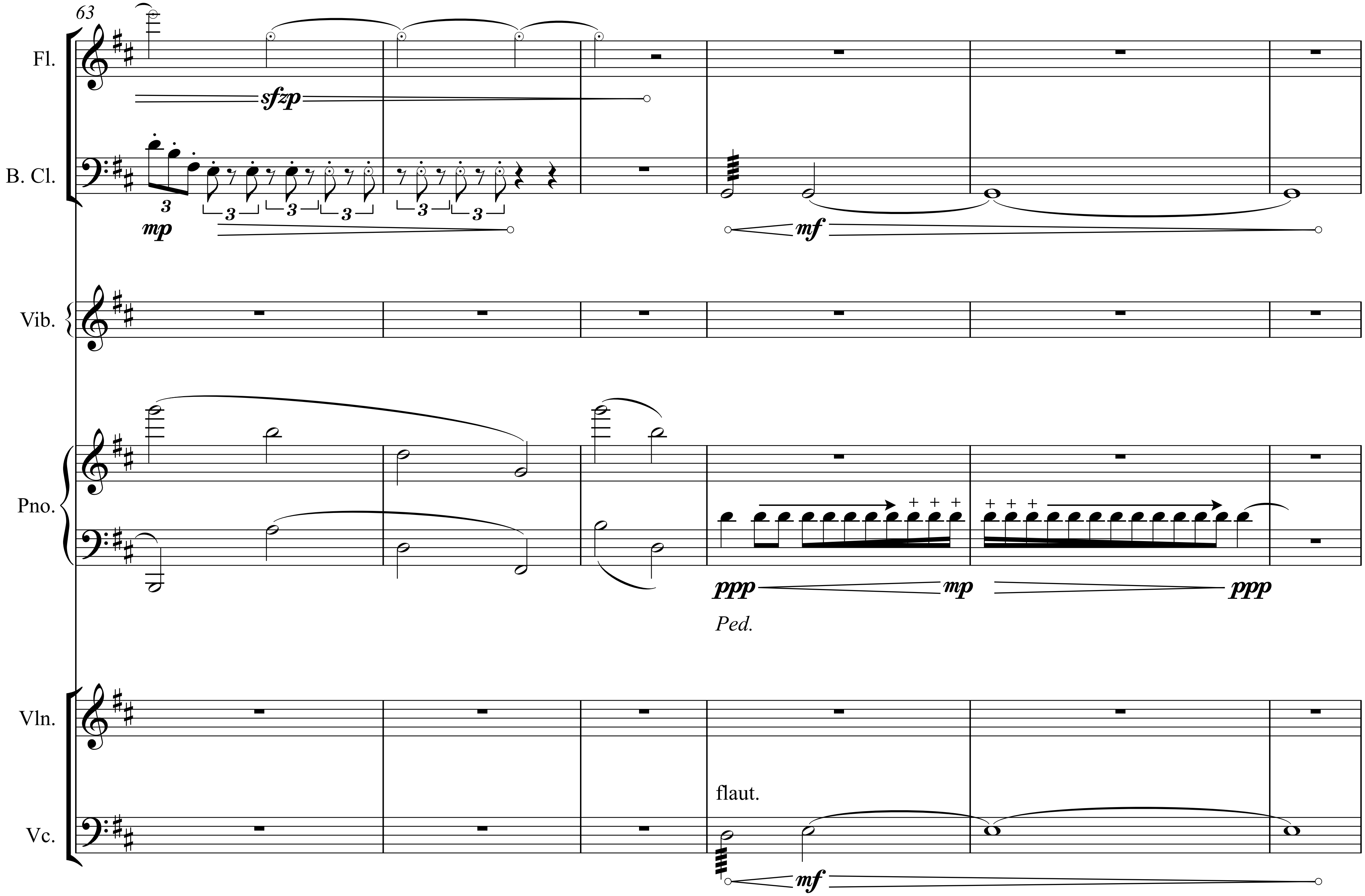

38
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
Whistle Tones
sfzp
mp
vib.
mf
mf
To bow.
bow.
bow.
pp
p
mp
mf
II
III
III
3
p
pp
mf
rubato.
sul tasto
sul pont.
sul tasto.
flautando
3
p
mp
pp

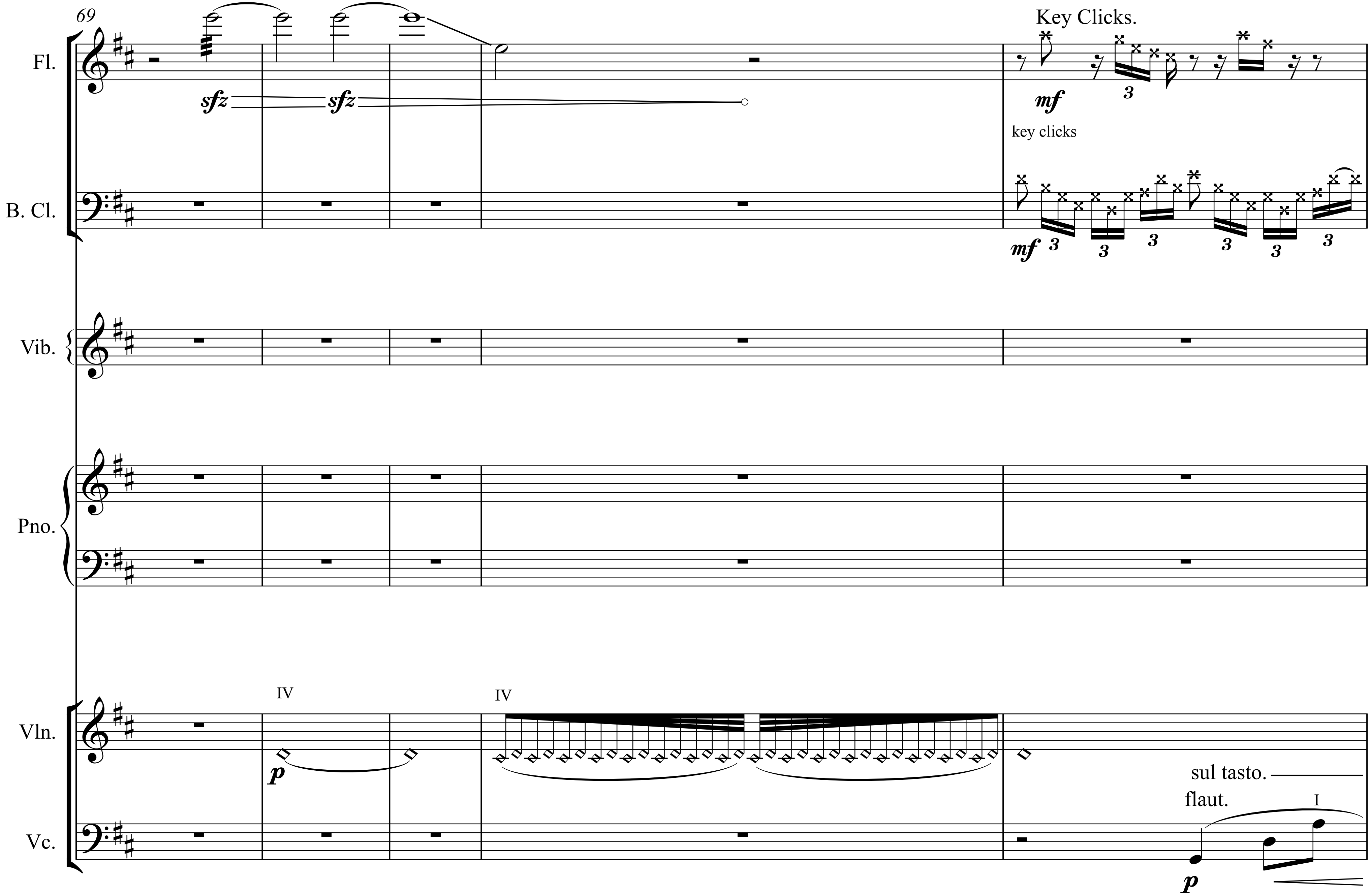

46
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
bow.
p
sul pont.
sul tasto
sul pont.
sul tasto.
I
III
II
3
mp
pp
mf
p
p
116

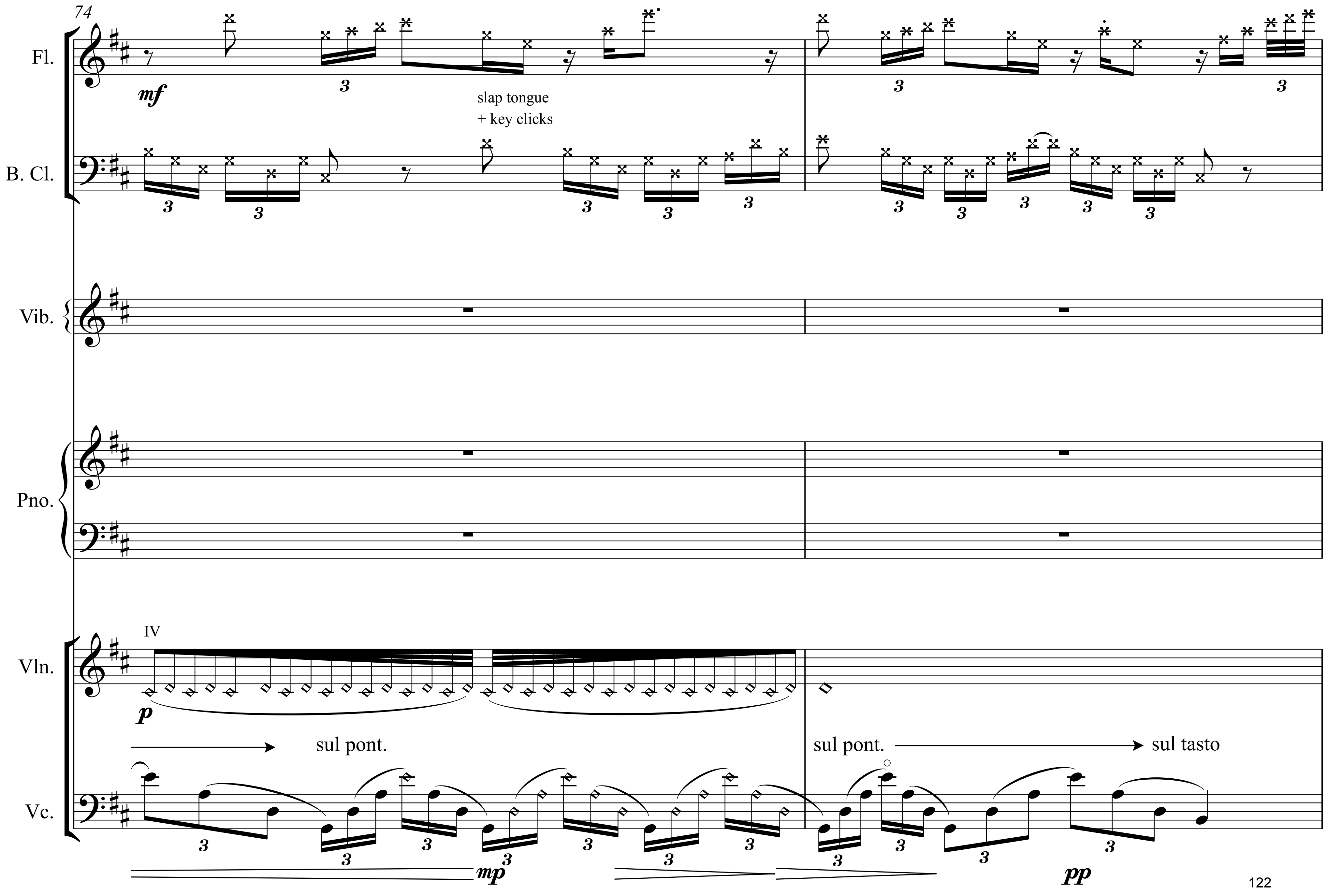

50
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
mf
mf
mp
ppp
mp
ppp
Ped.
III
mf
mp
sul pont.
sul tasto
molto sul pont.
3
mf
pp
pp
mp

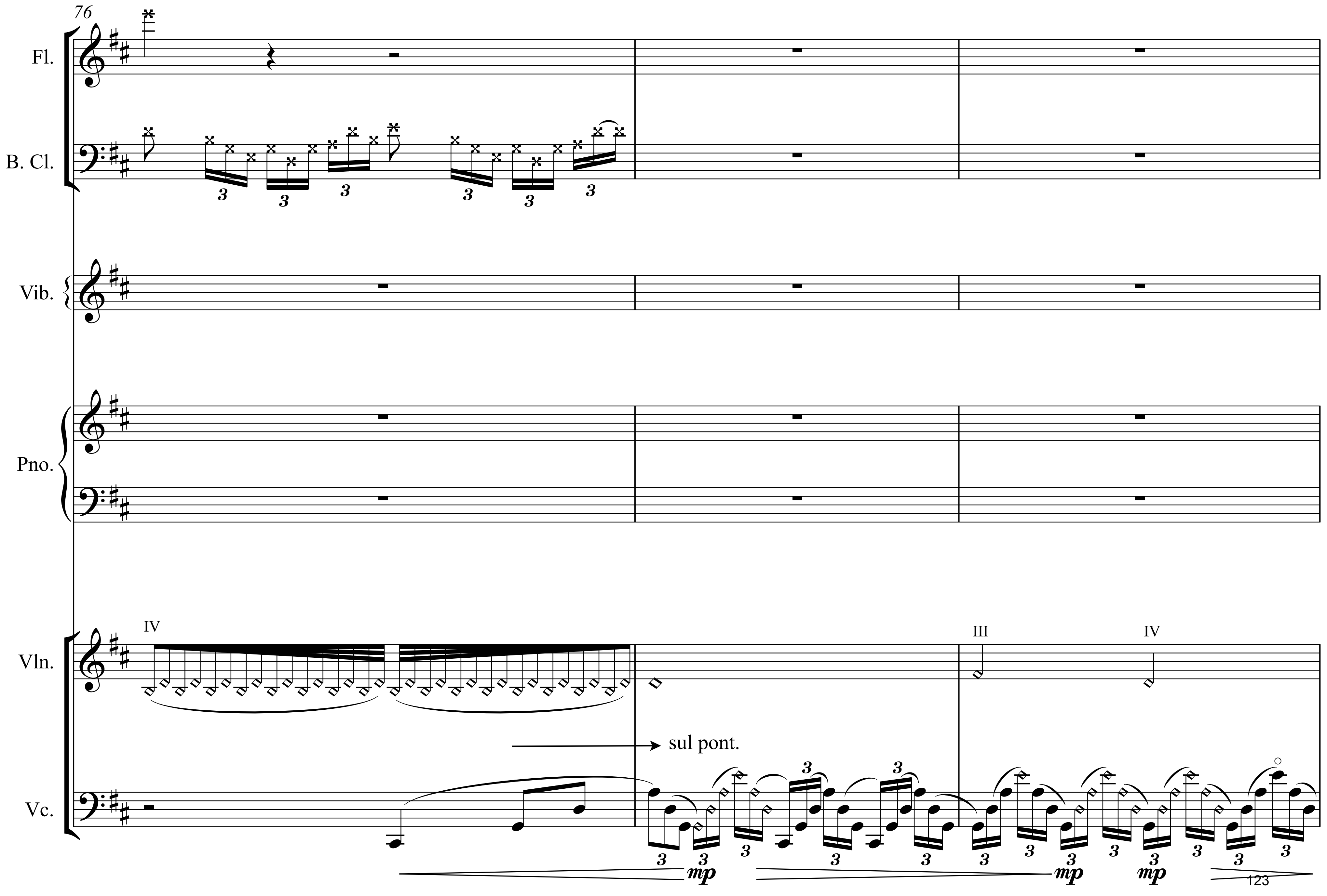

Whistle Tones
54
Fl.
sfzp
B. Cl.
mp
3
Vib.
bow.
mf
To mallet.
Pno.
pp
Ped.
Vln.
mp
Vc.
sul tasto.
sul pont.
sul tasto.
col legno.
mp

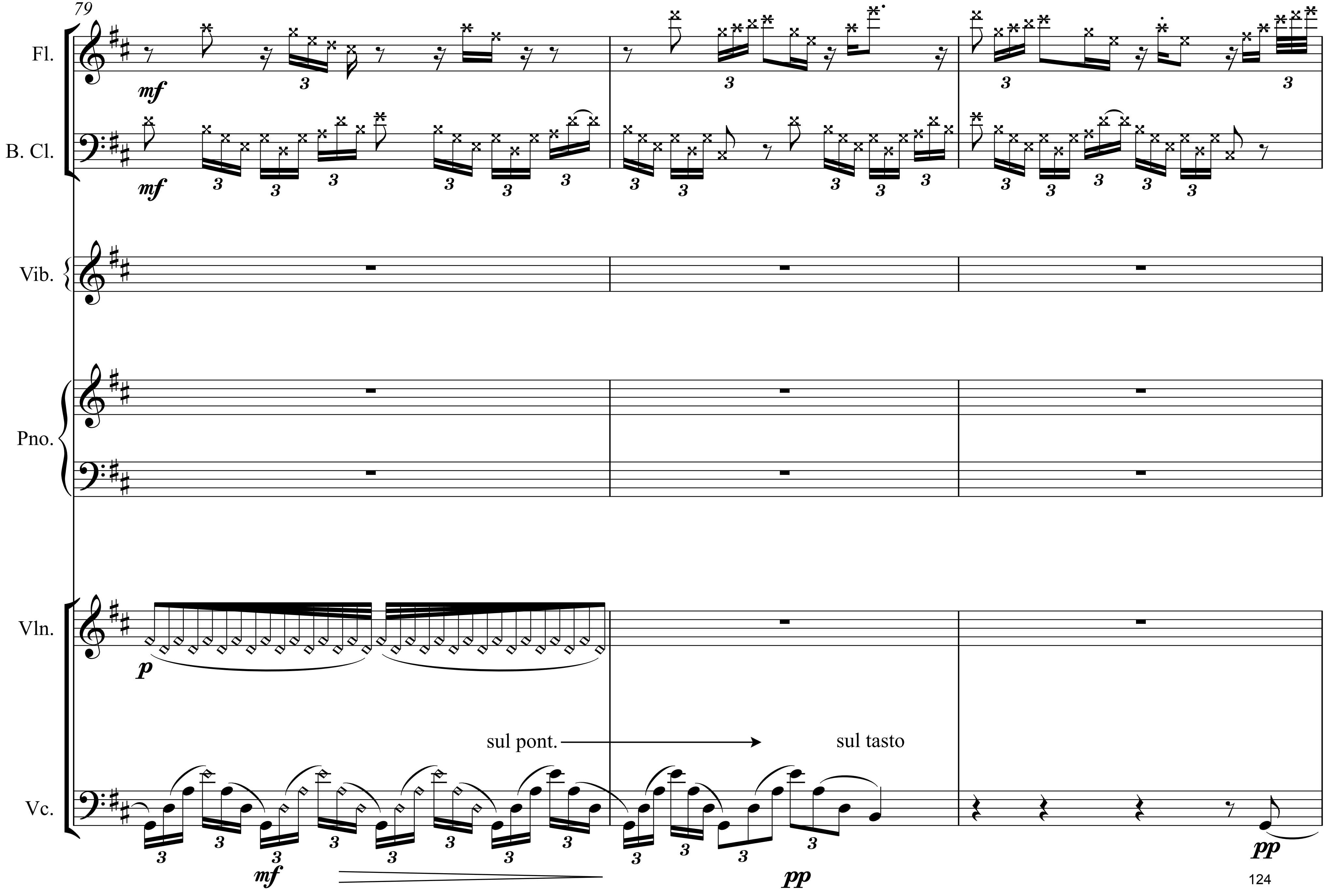

Residual Tones.
59
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
mp
sfzp
col legno.
mf
3

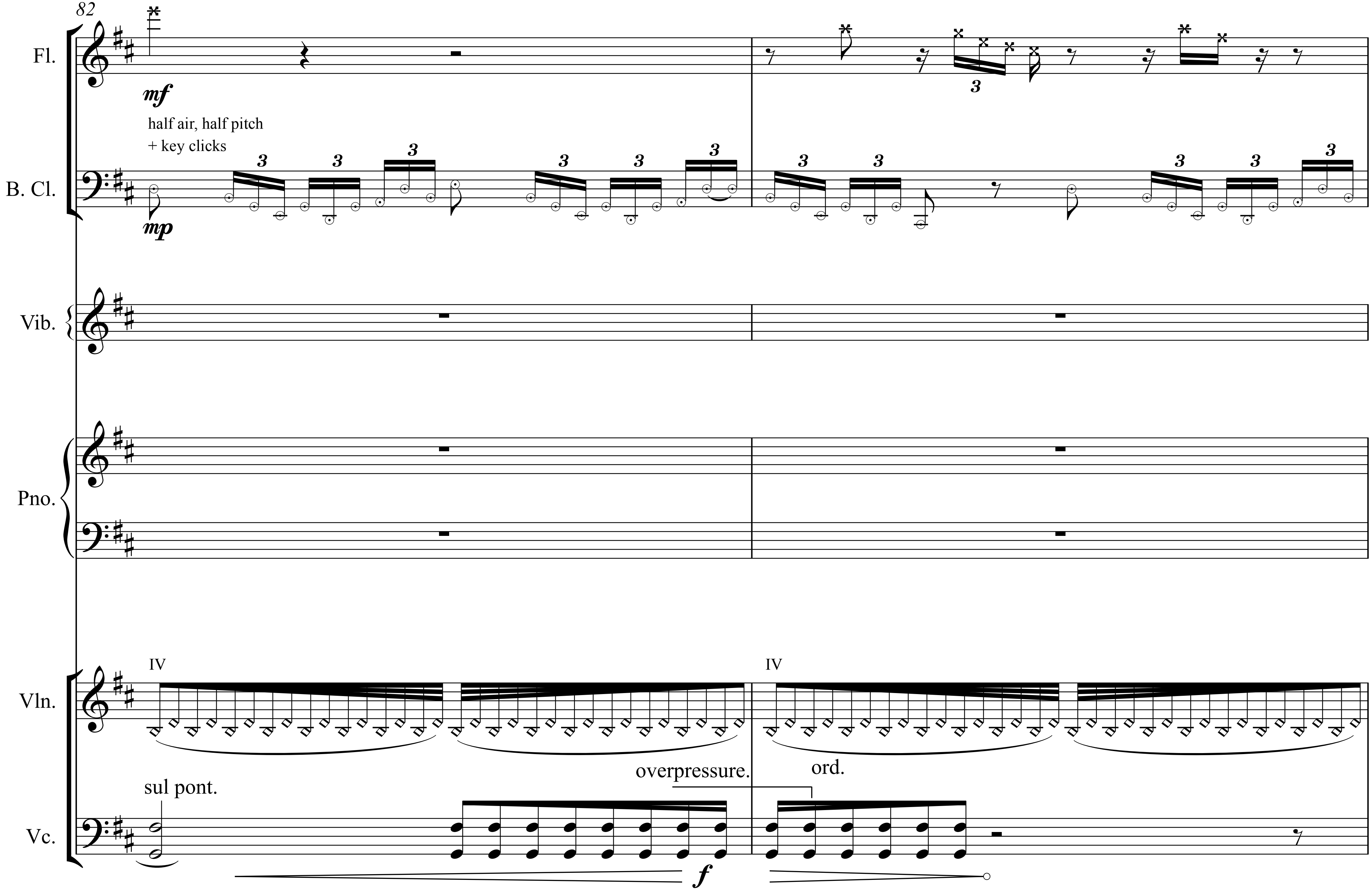

63
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
sfzp
mp
3
mf
ppp
mp
ppp
Ped.
flaut.
mf

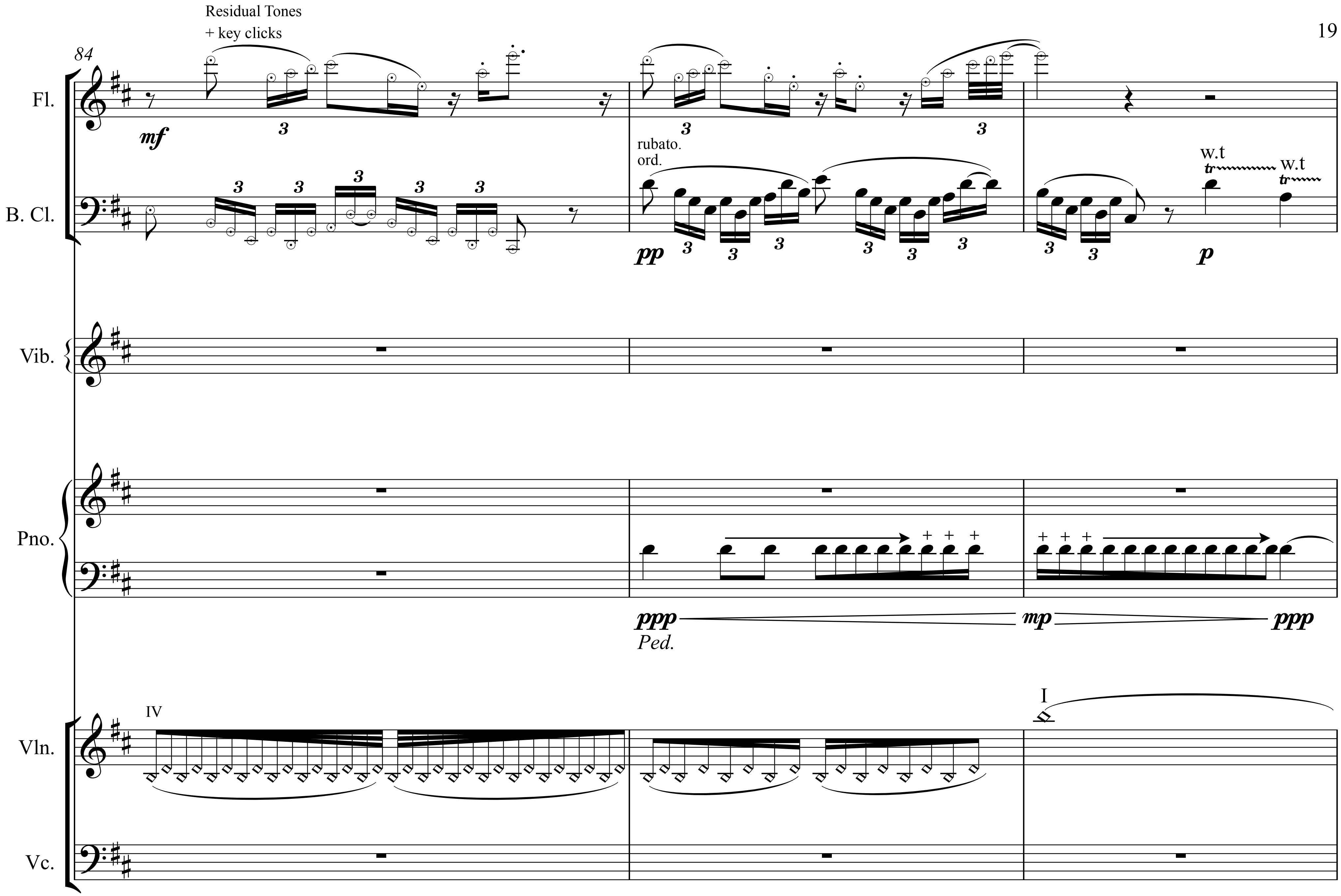

69
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
sfz
sfz
Key Clicks.
mf
3
key clicks
mf
3
3
3
3
3
3
IV
p
IV
sul tasto.
flaut.
I
p

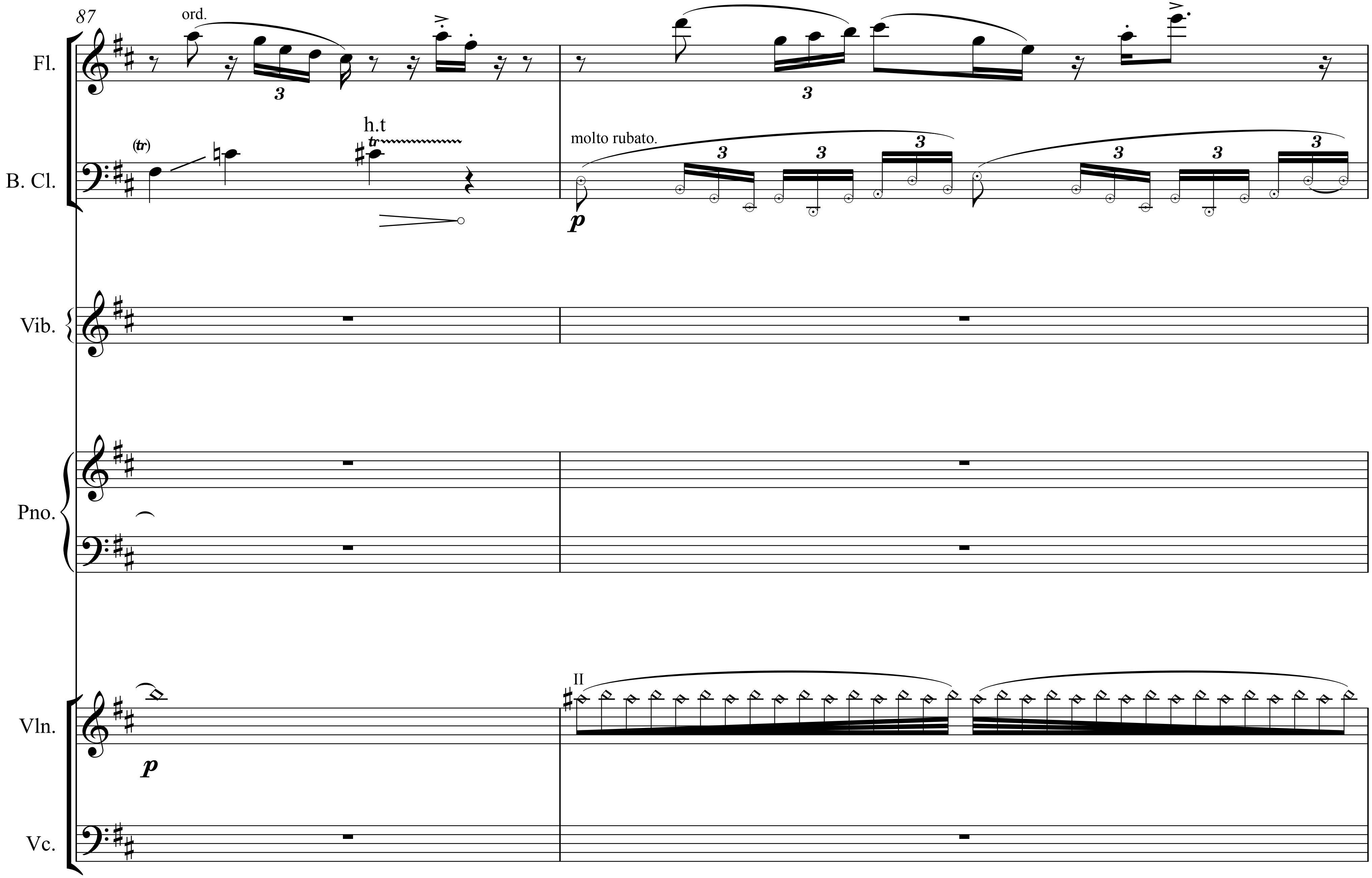

74
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
mf
3
slap tongue
+ key clicks
IV
p
sul pont.
sul pont.
sul tasto
mp
pp

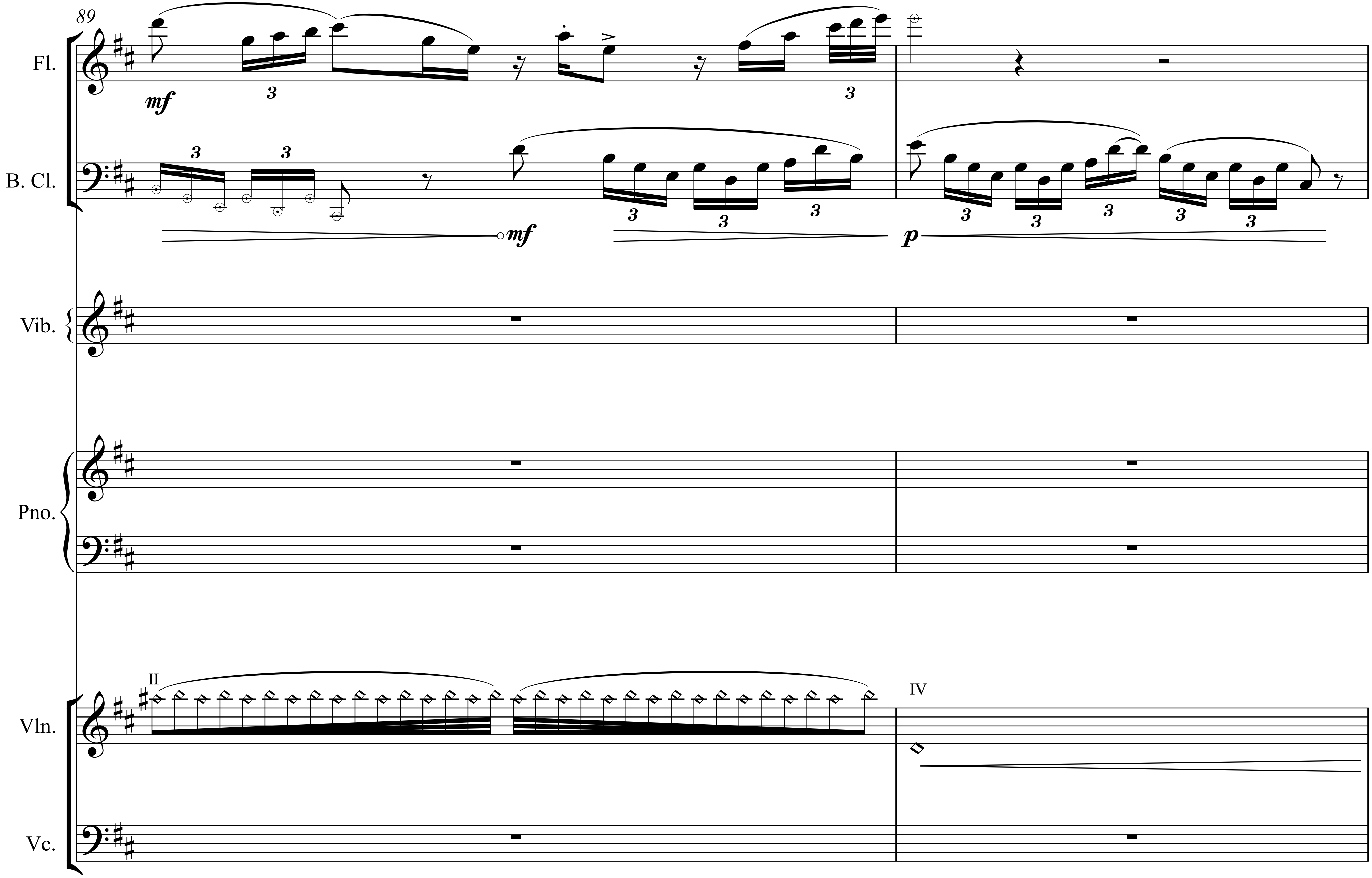

76
Fl.
B. Cl.
3
Vib.
Pno.
Vln.
IV
III
IV
sul pont.
Vc.
3
mp
mp
mp
123

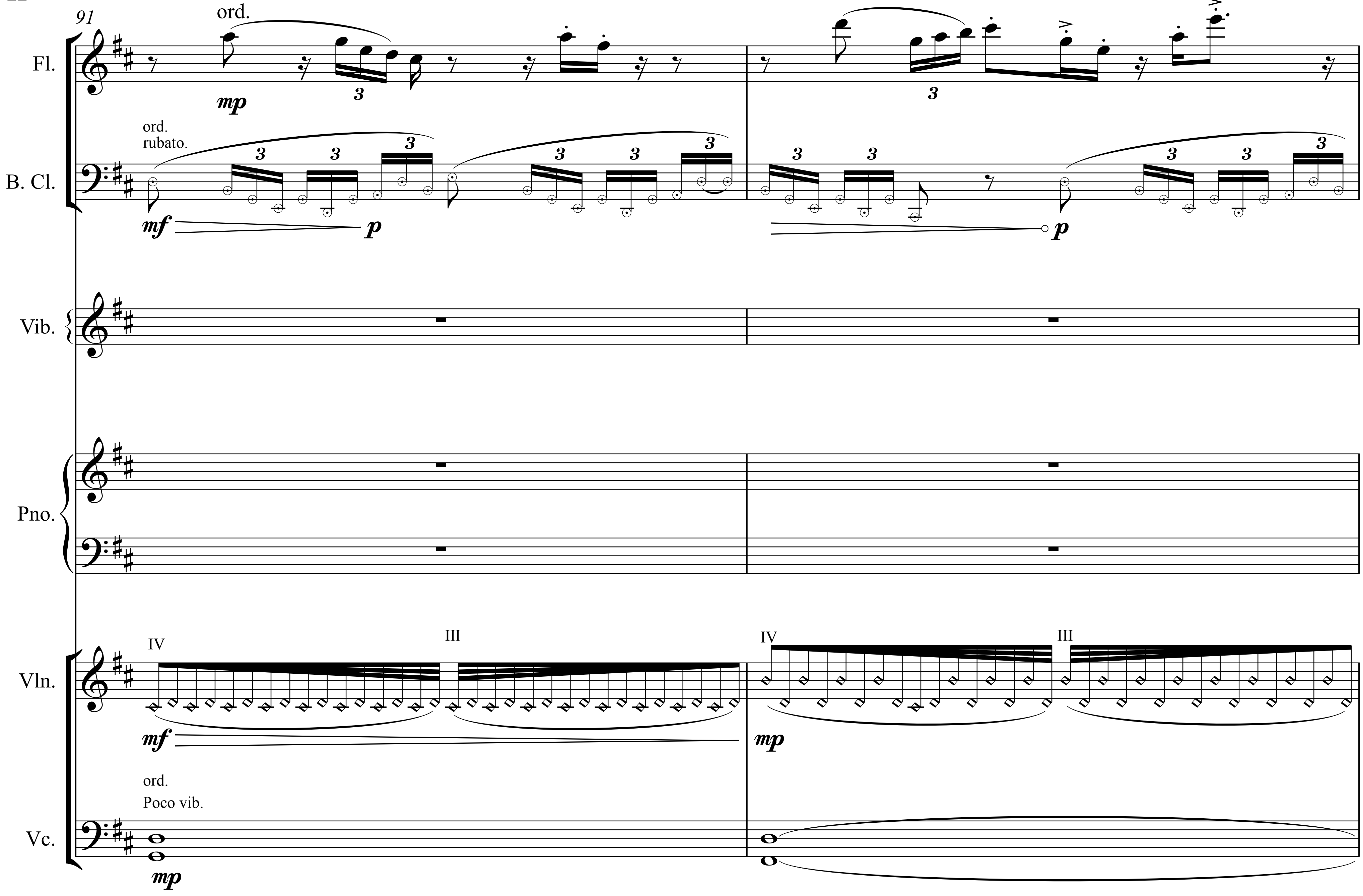

79
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
mf
mf
p
sul pont.
sul tasto
mf
pp
pp
3

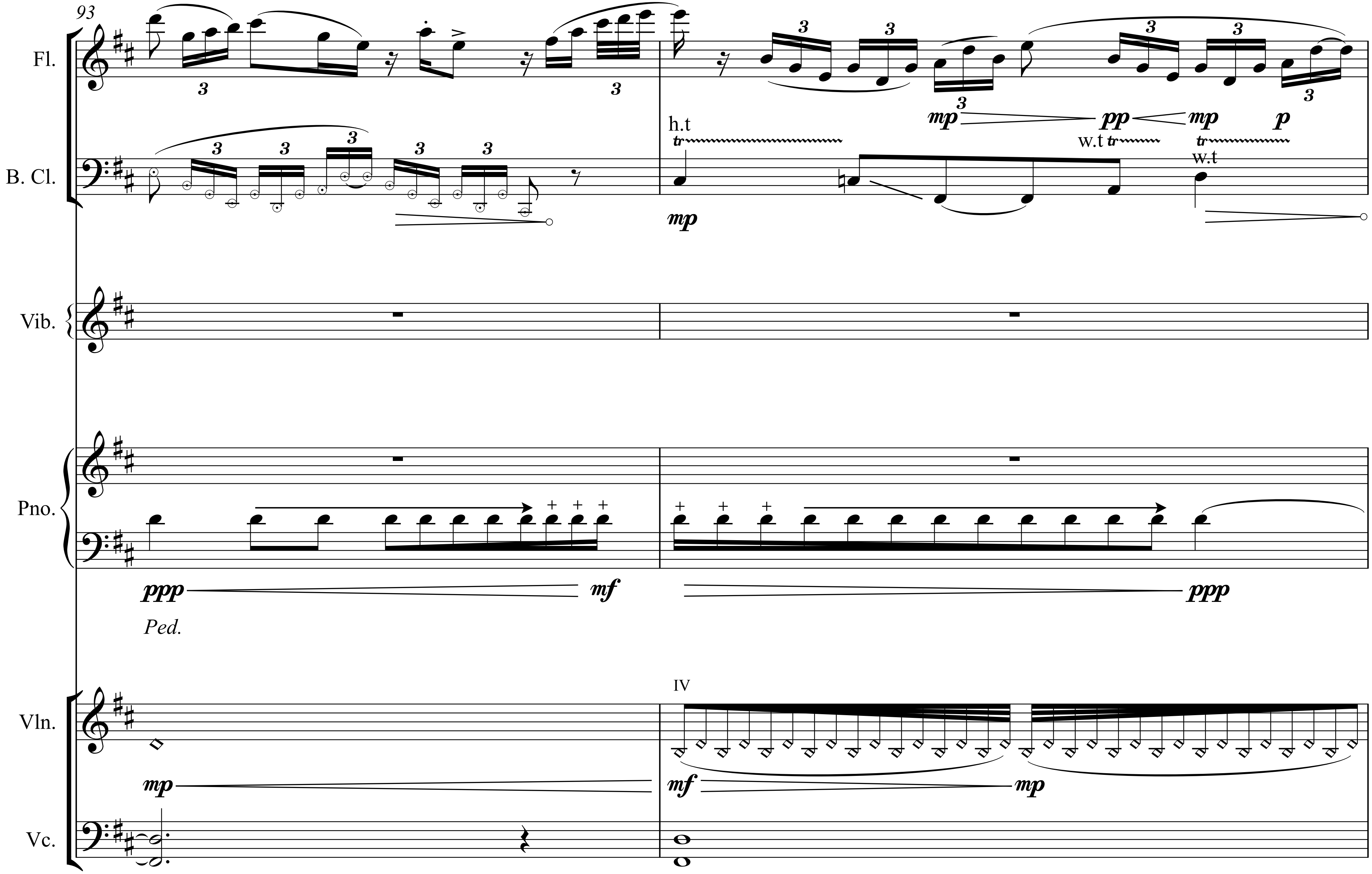

82
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
mf
half air, half pitch
+ key clicks
mp
3
IV
sul pont.
overpressure.
ord.
f

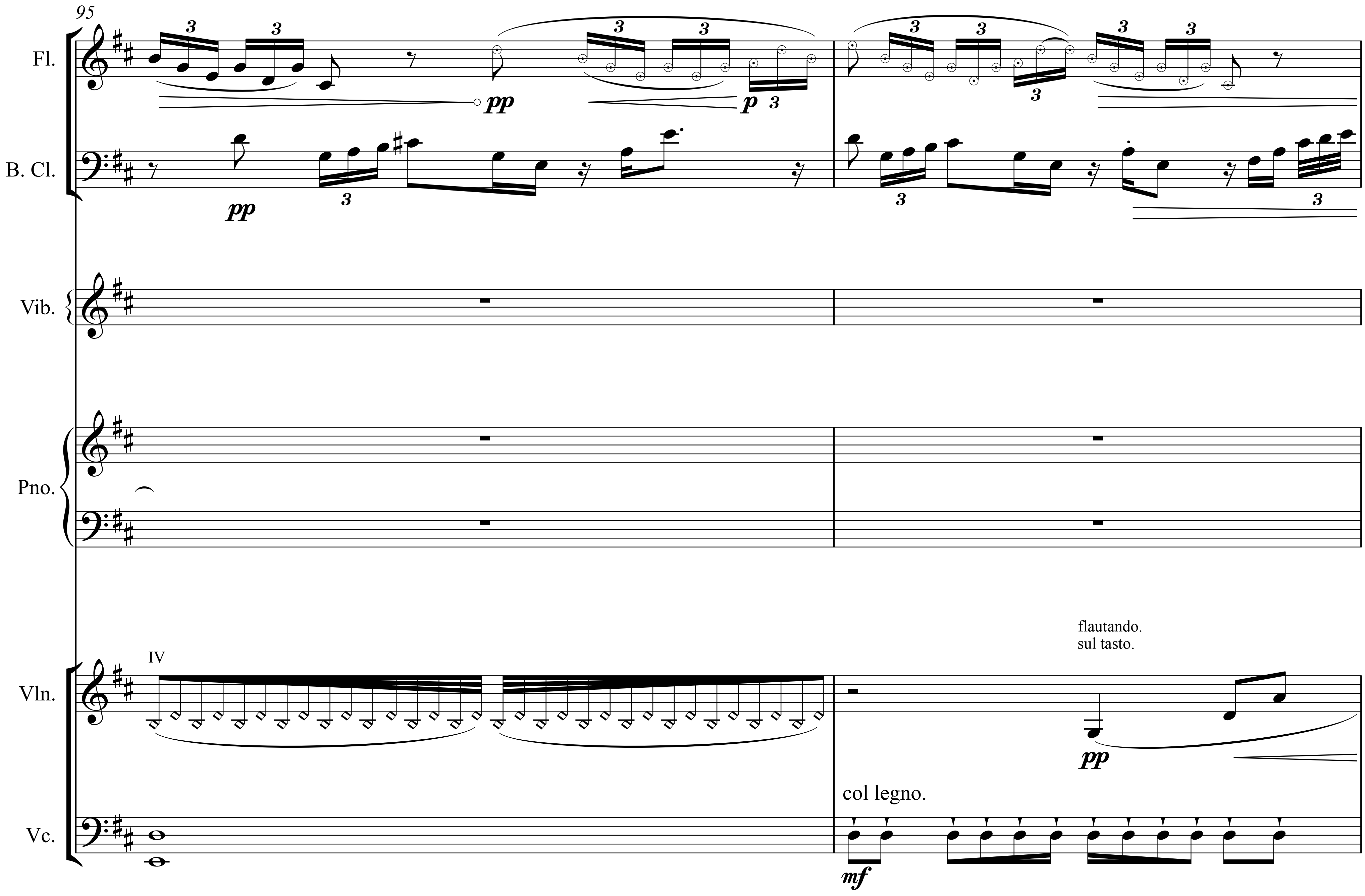

Residual Tones
+ key clicks
84
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
mf
3
rubato.
ord.
pp
w.t
tr
w.t
tr
p
ppp
Ped.
mp
ppp
IV
I

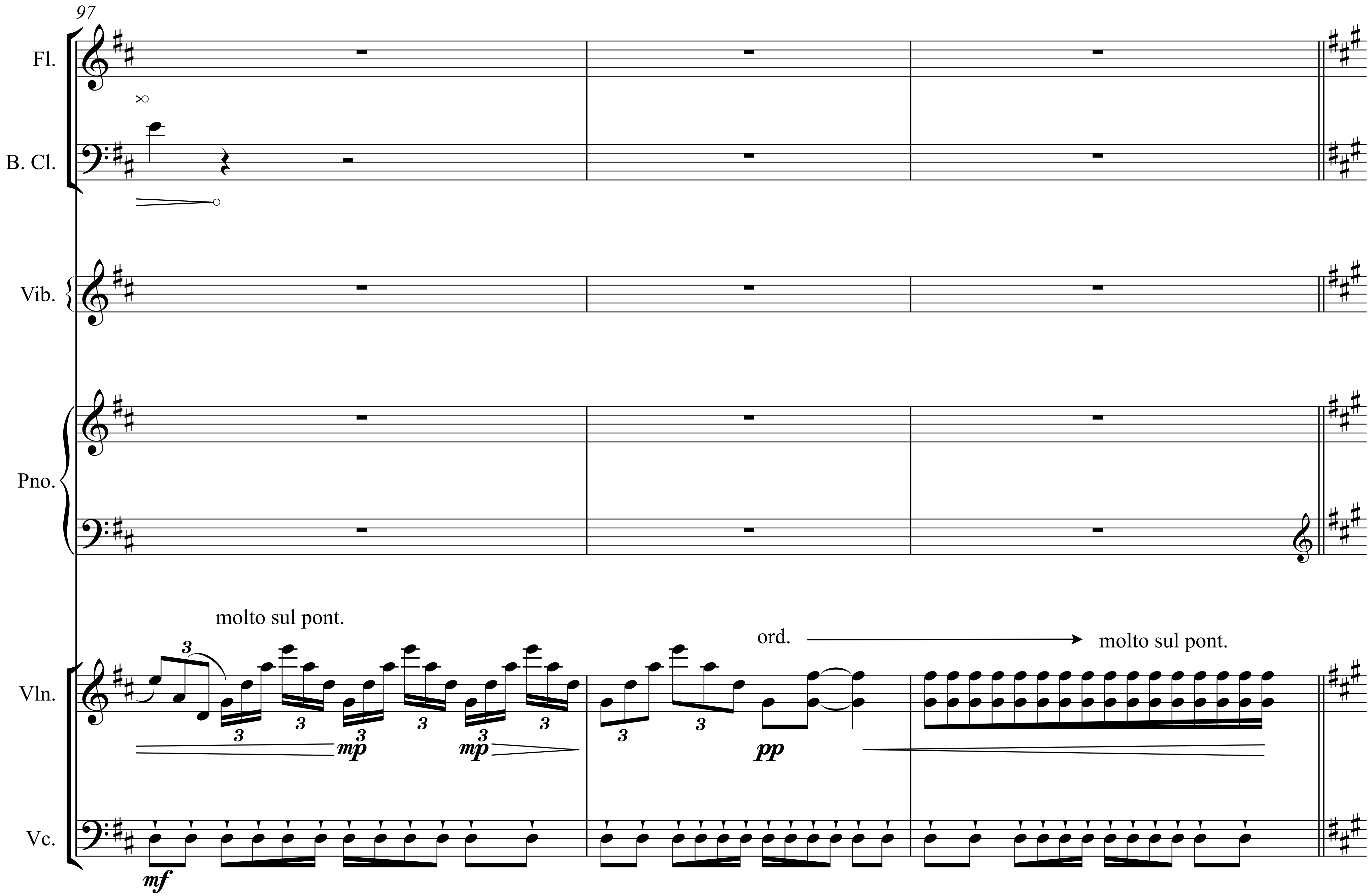

87
ord.
Fl.
3
3
h.t
(tr)
tr
B. Cl.
molto rubato.
3
3
3
3
3
3
p
Vib.
Pno.
II
Vln.
p
Vc.

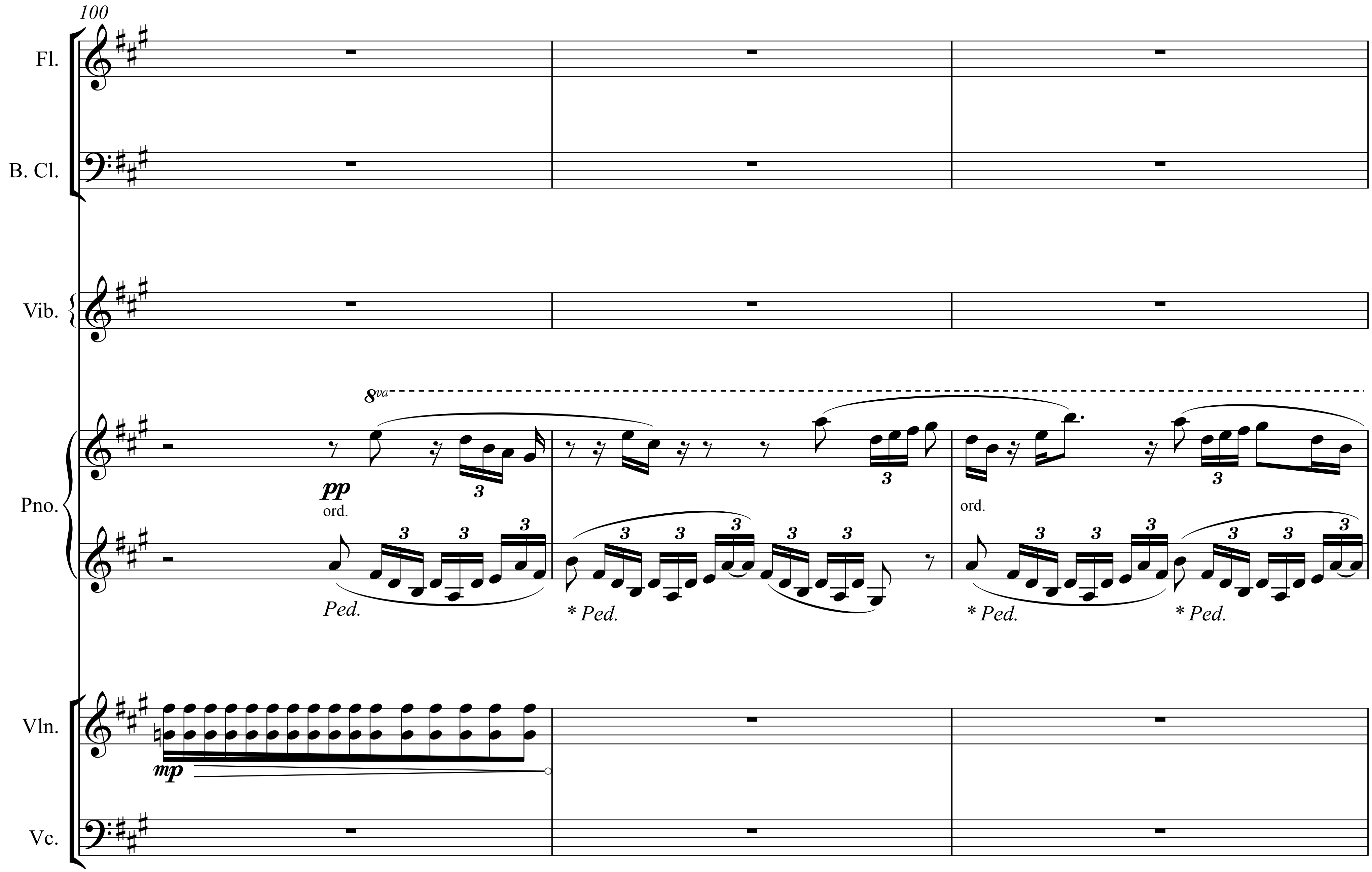

89
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
mf
3
3
3
3
3
3
mf
3
3
3
3
3
p
II
IV

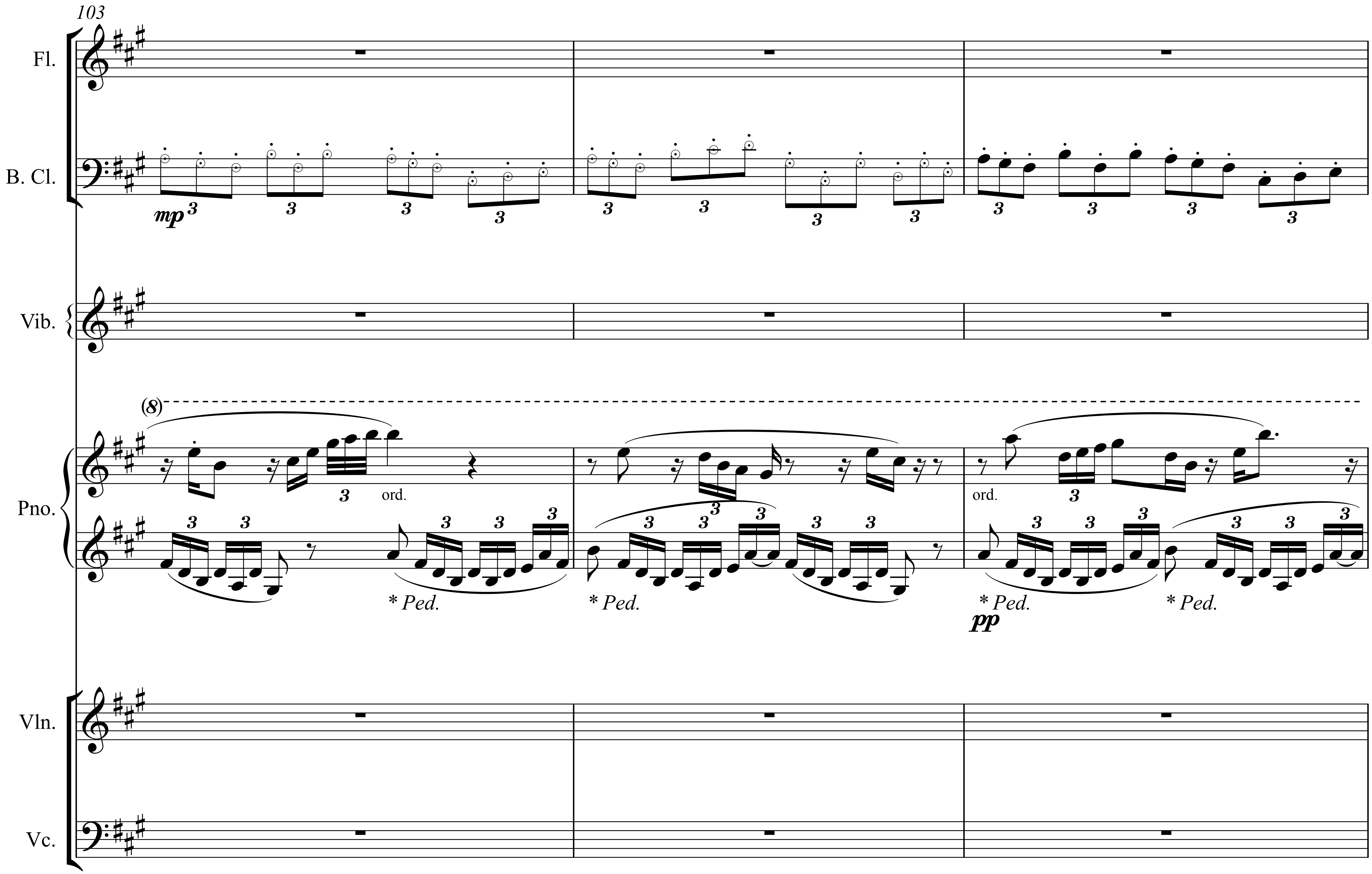

91
ord.
mp
3
Fl.
ord.
rubato.
B. Cl.
mf
p
3
Vib.
Pno.
IV
III
Vln.
mf
mp
ord.
Poco vib.
Vc.
mp

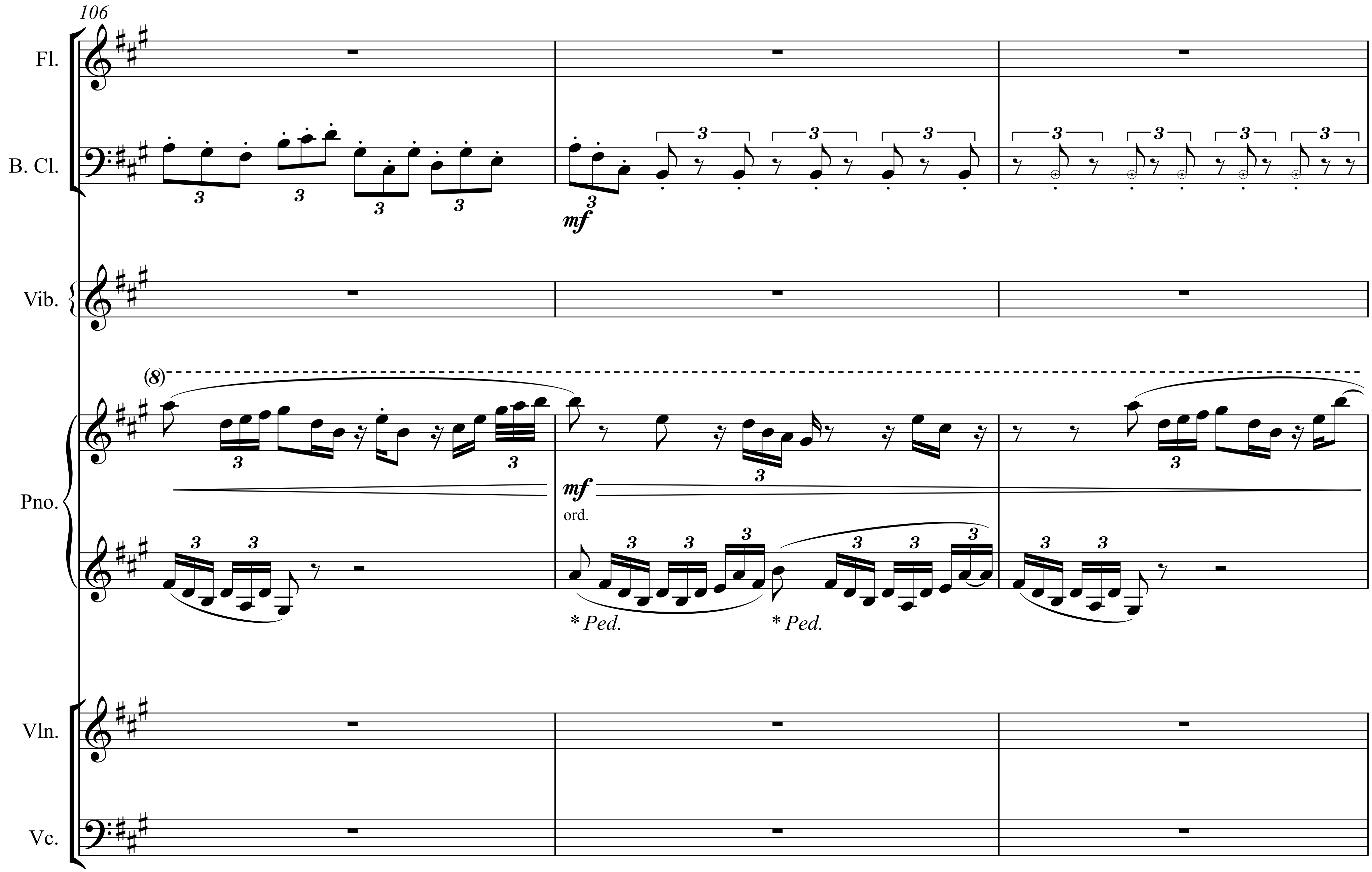

93
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
3
h.t
tr
w.t
mp
pp
p
ppp
mf
Ped.
IV

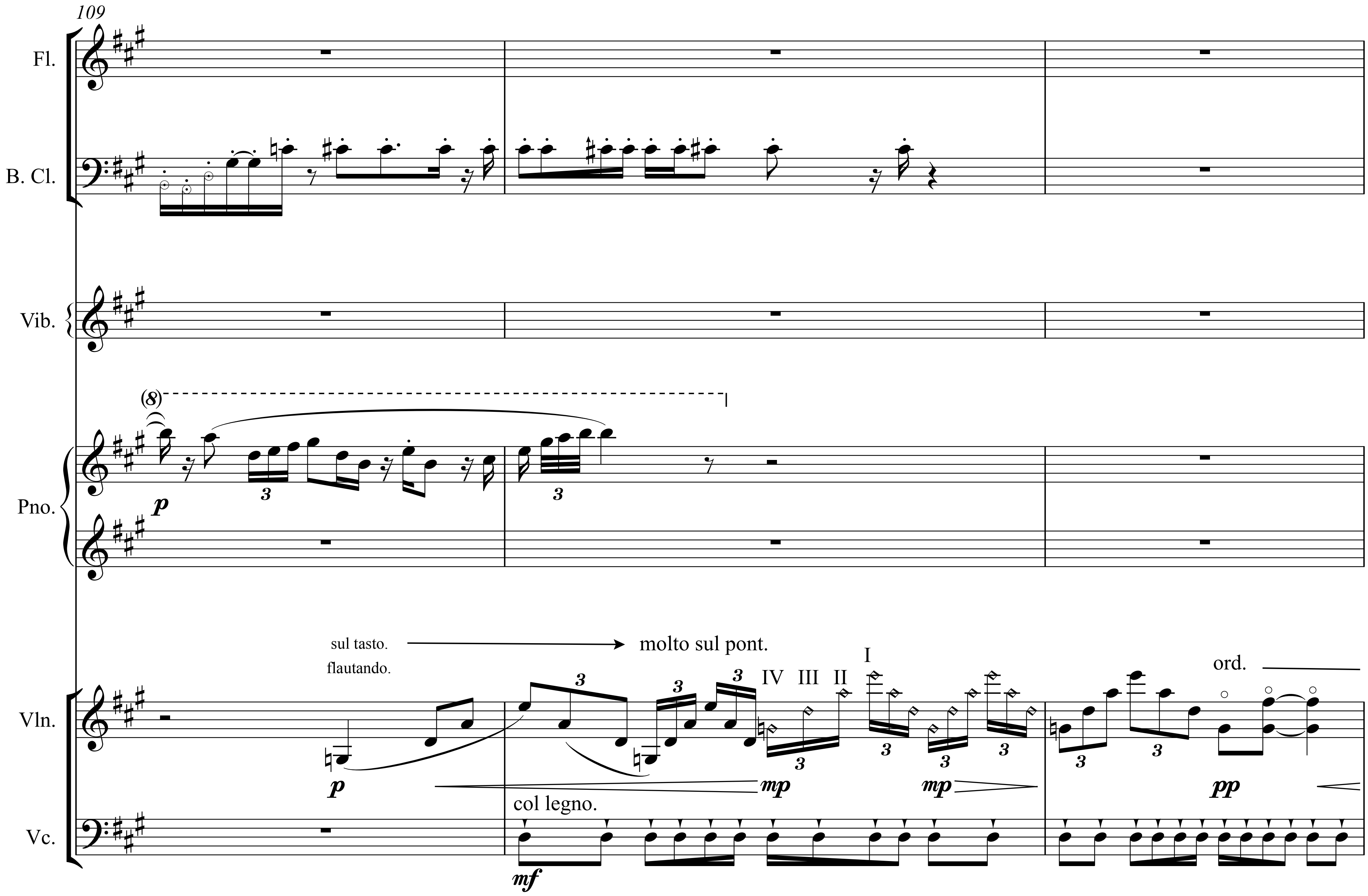

95
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
3
pp
p
IV
flautando.
sul tasto.
col legno.
mf

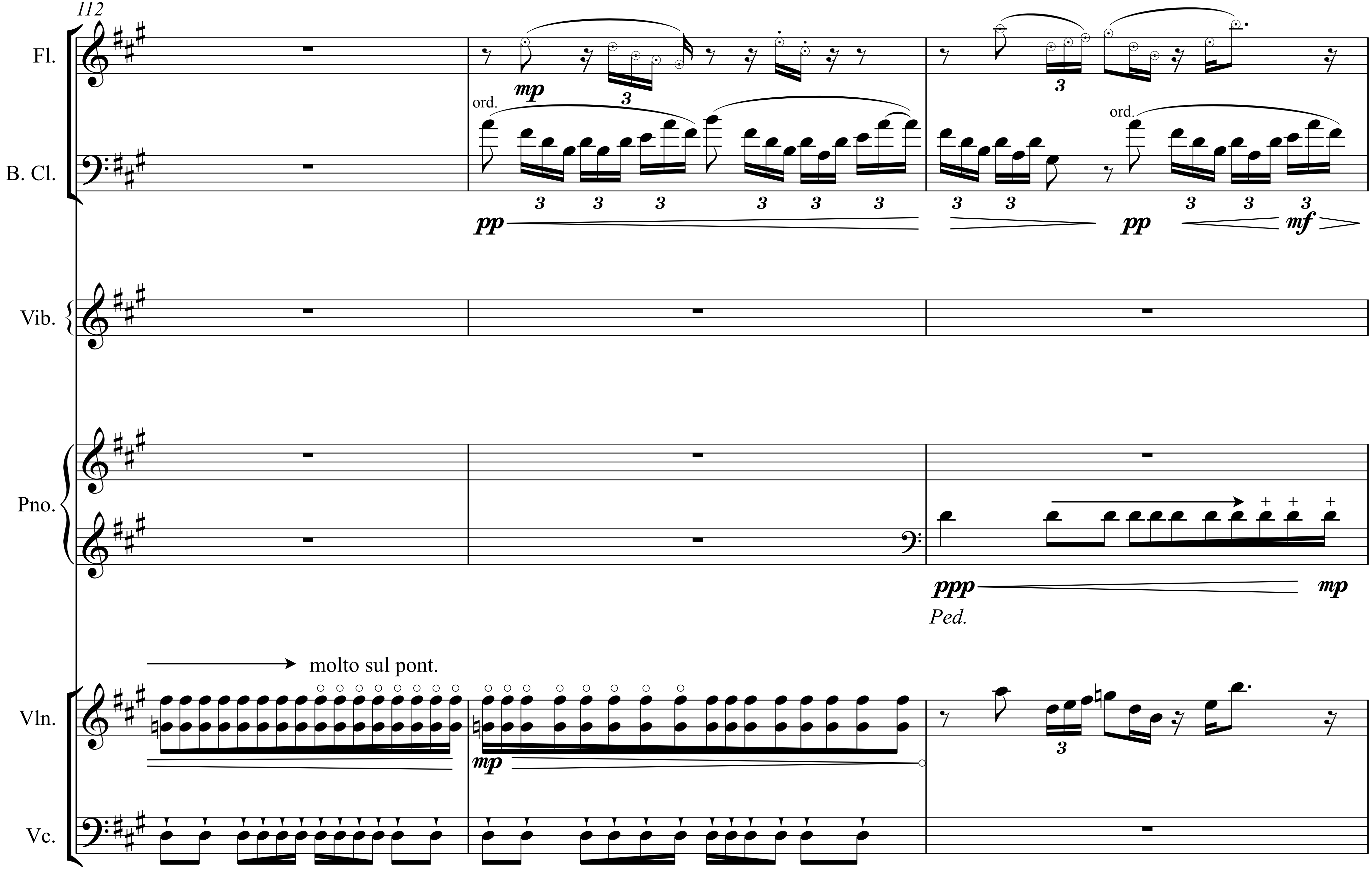

97
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
molto sul pont.
3
mp
mp
pp
ord.
molto sul pont.
mf

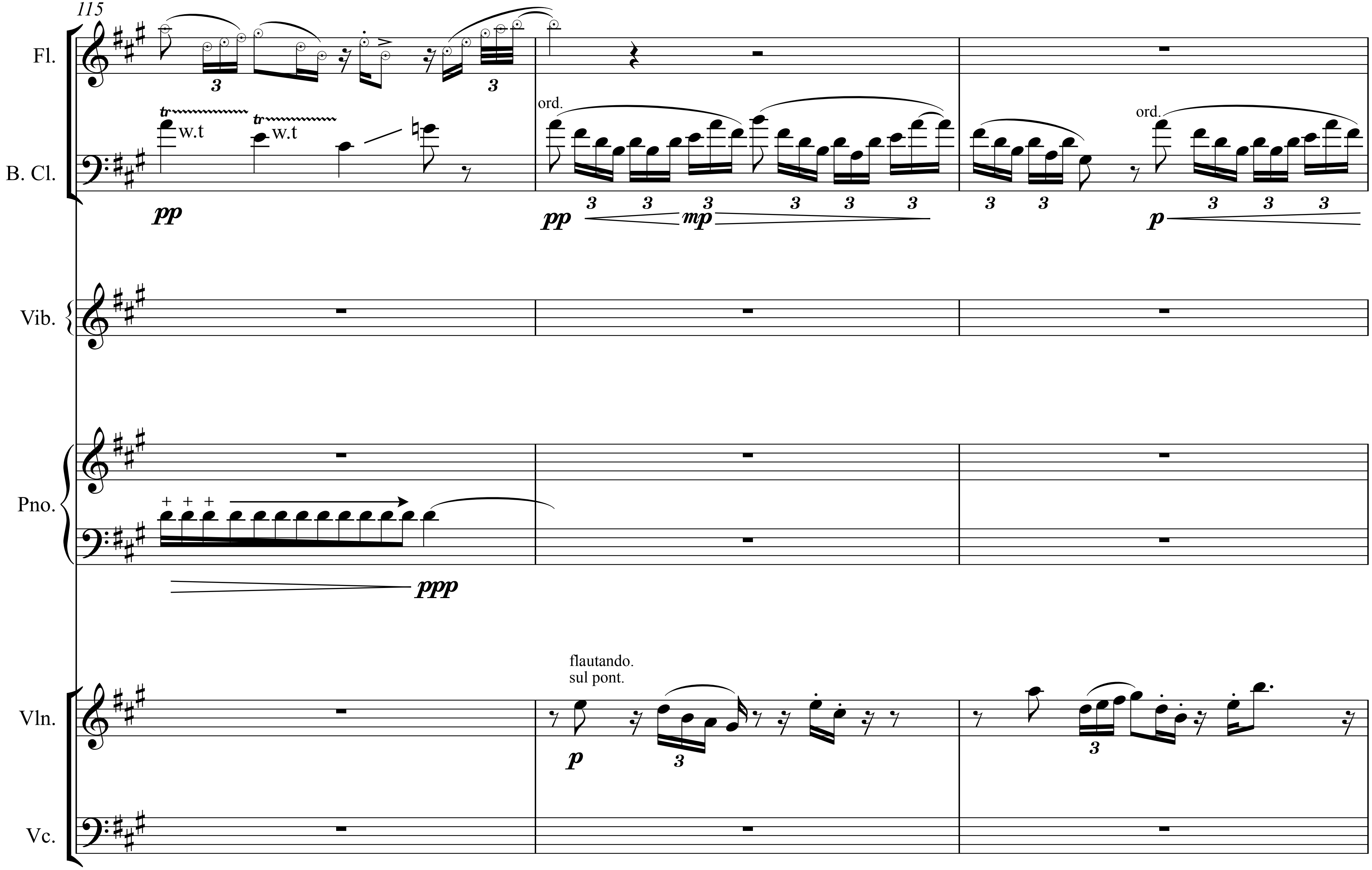

100
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
8va
pp
ord.
3
Ped.
* Ped.
ord.
* Ped.
* Ped.
mp

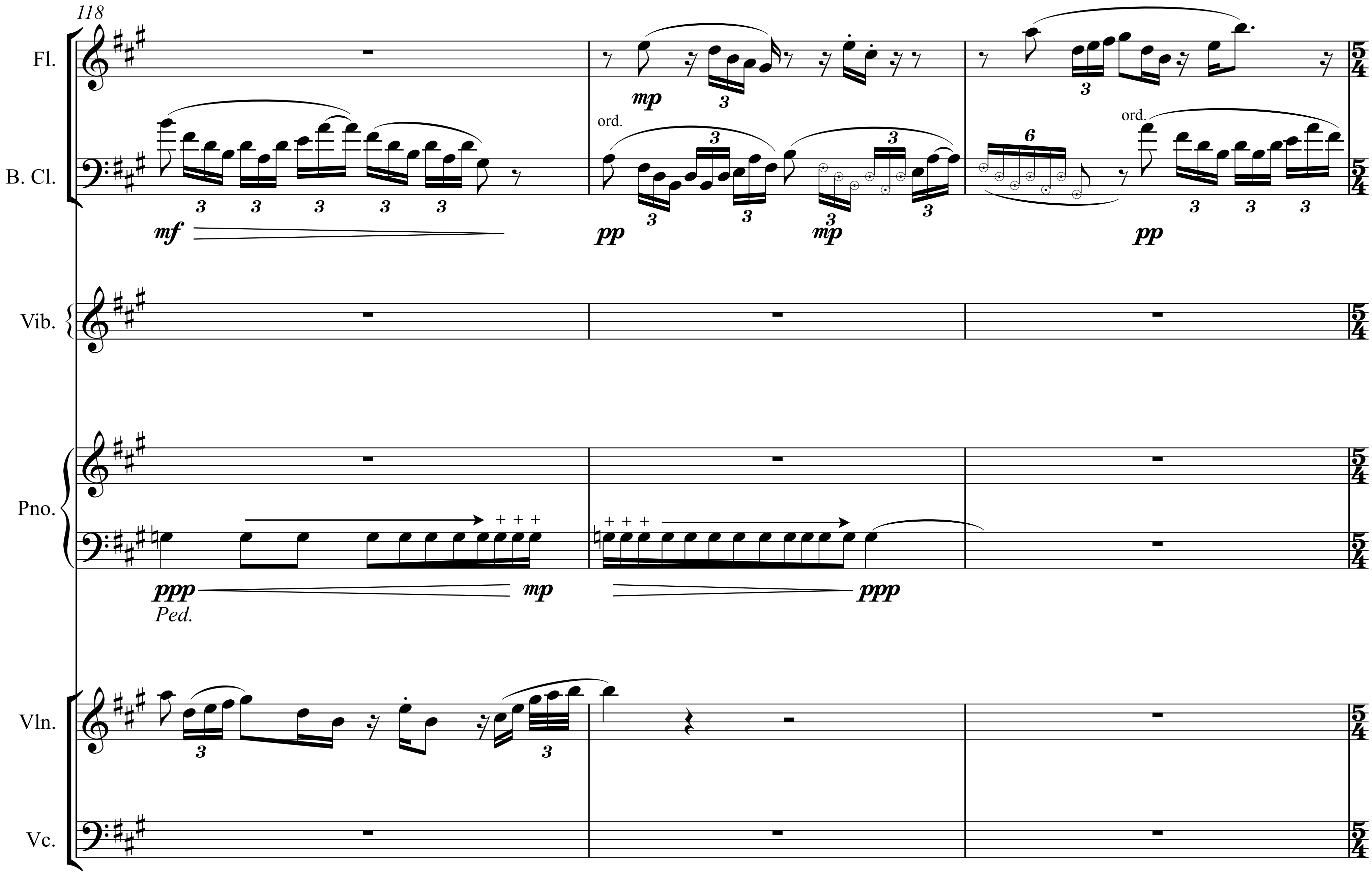

103
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
mp
3
(8)
ord.
* Ped.
pp

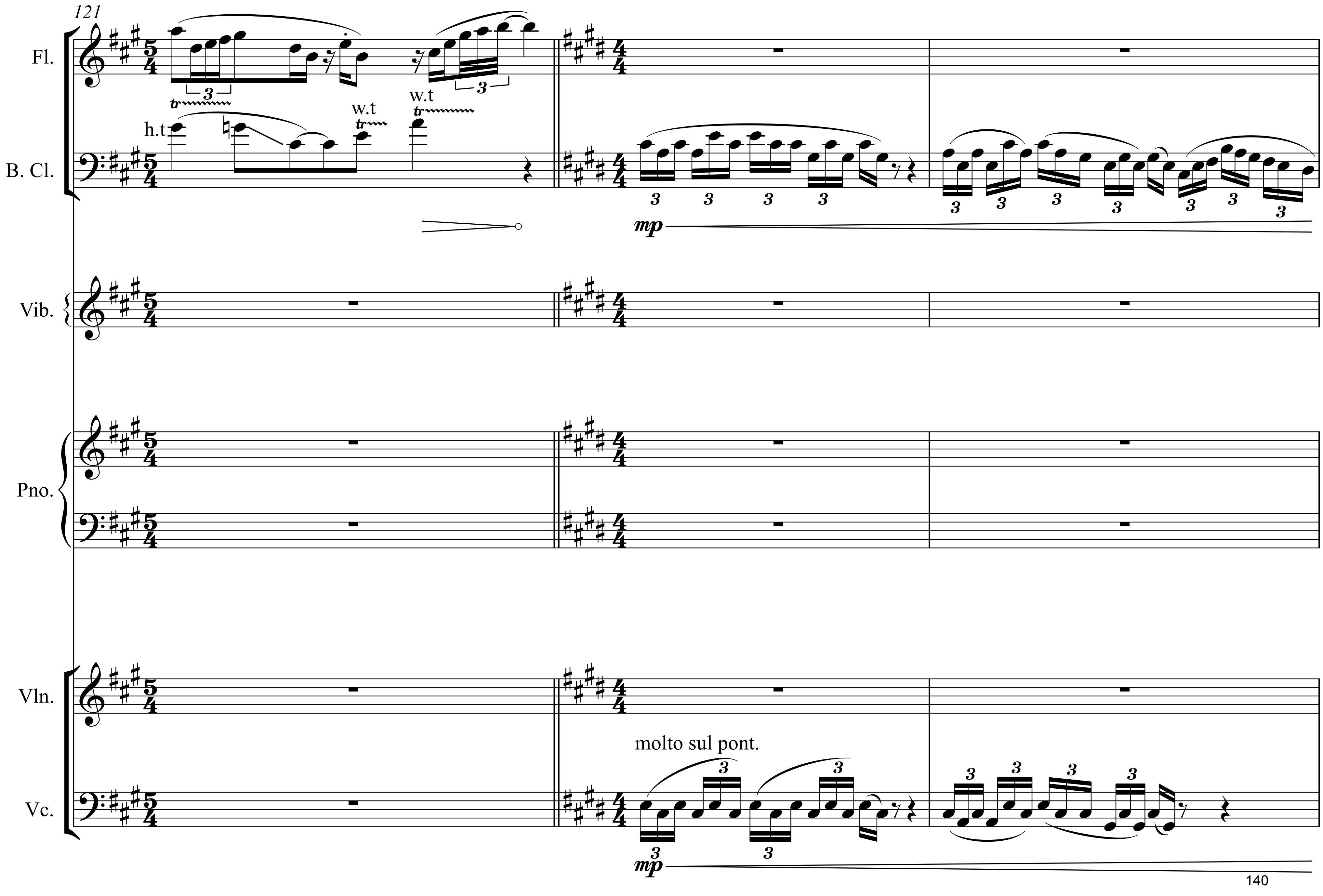

106
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
3
mf
(8)
ord.
* Ped.
* Ped.

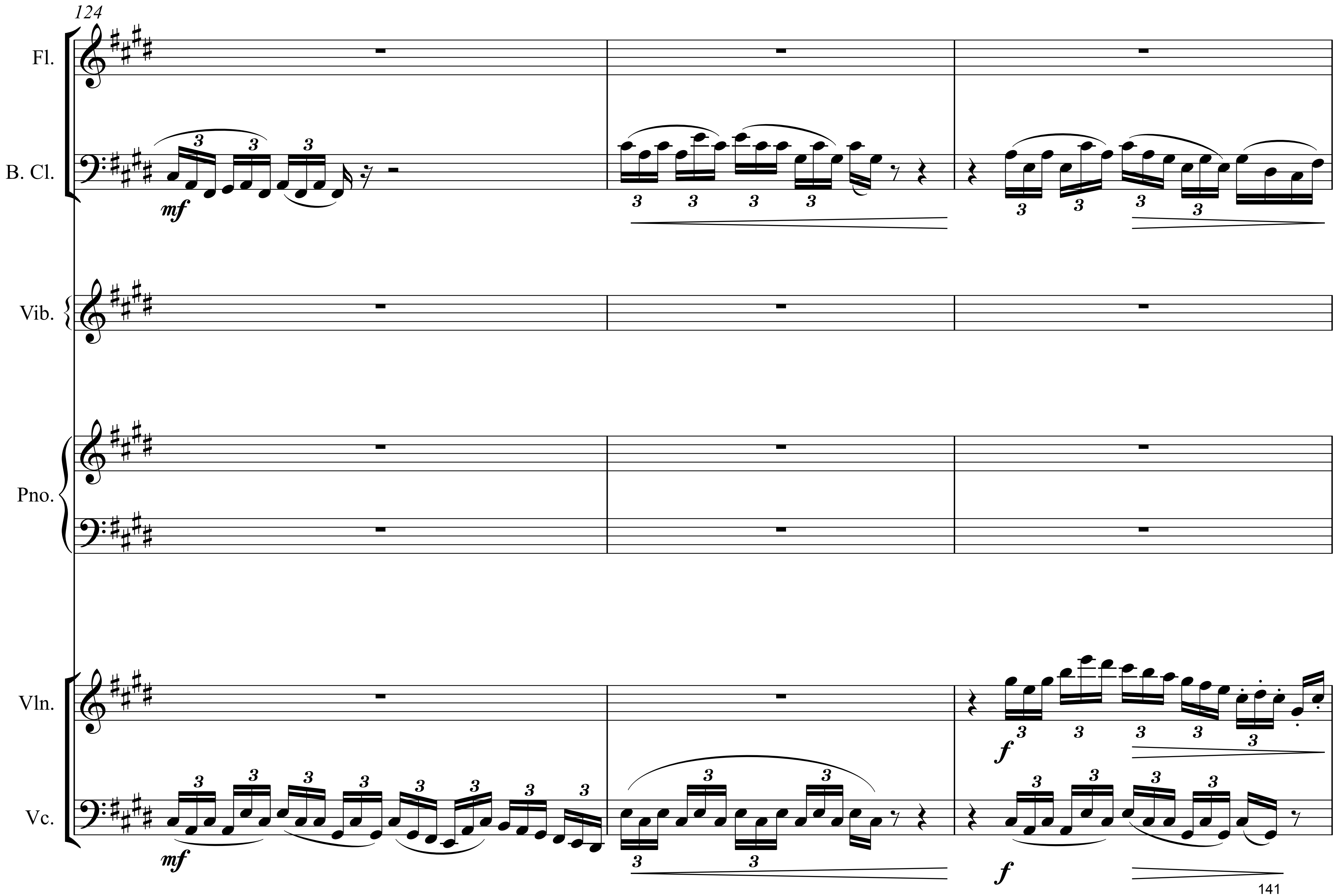

109
Fl.
B. Cl.
Vib.
Pno.
(8)
p
3
3
Vln.
Vc.
sul tasto.
flautando.
molto sul pont.
IV
III
II
I
ord.
p
mp
mp
pp
col legno.
mf

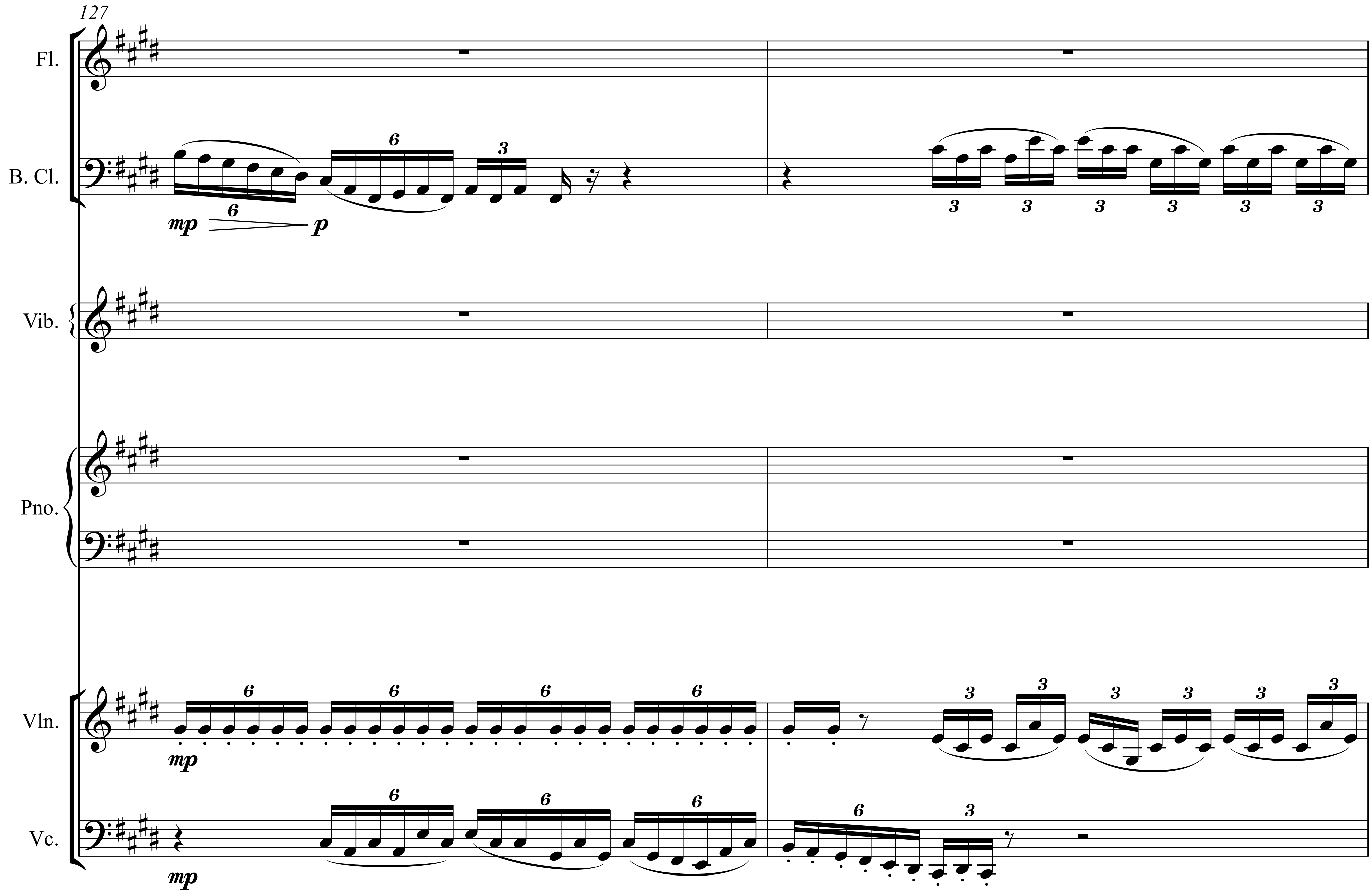

112
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
mp
3
ord.
pp
3
3
3
3
3
3
3
3
pp
ord.
3
3
3
mf
ppp
Ped.
mp
molto sul pont.
mp
3

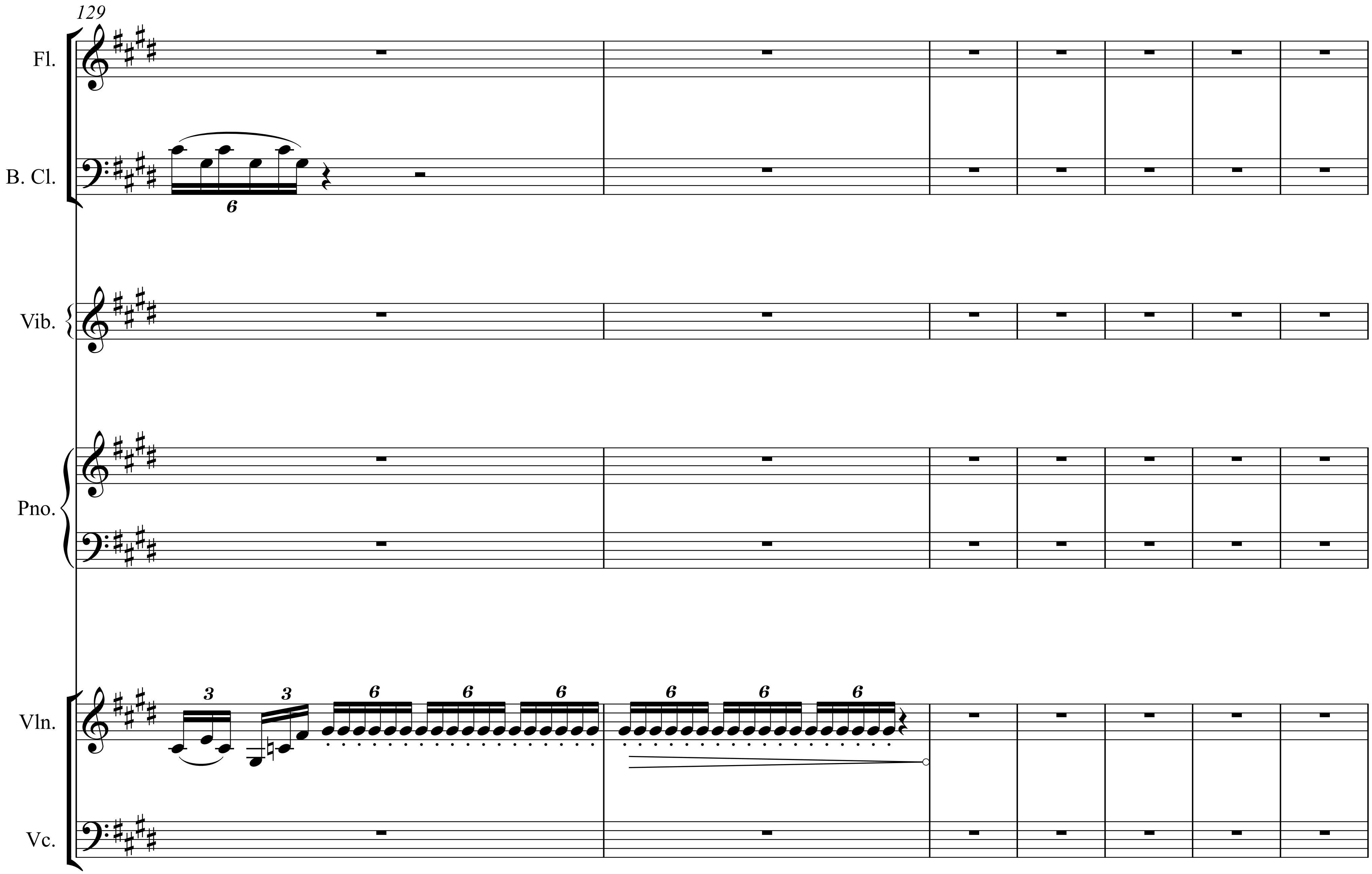

115
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
tr
w.t
tr
w.t
pp
ord.
pp
mp
ord.
p
3
+ + +
ppp
flautando.
sul pont.
p

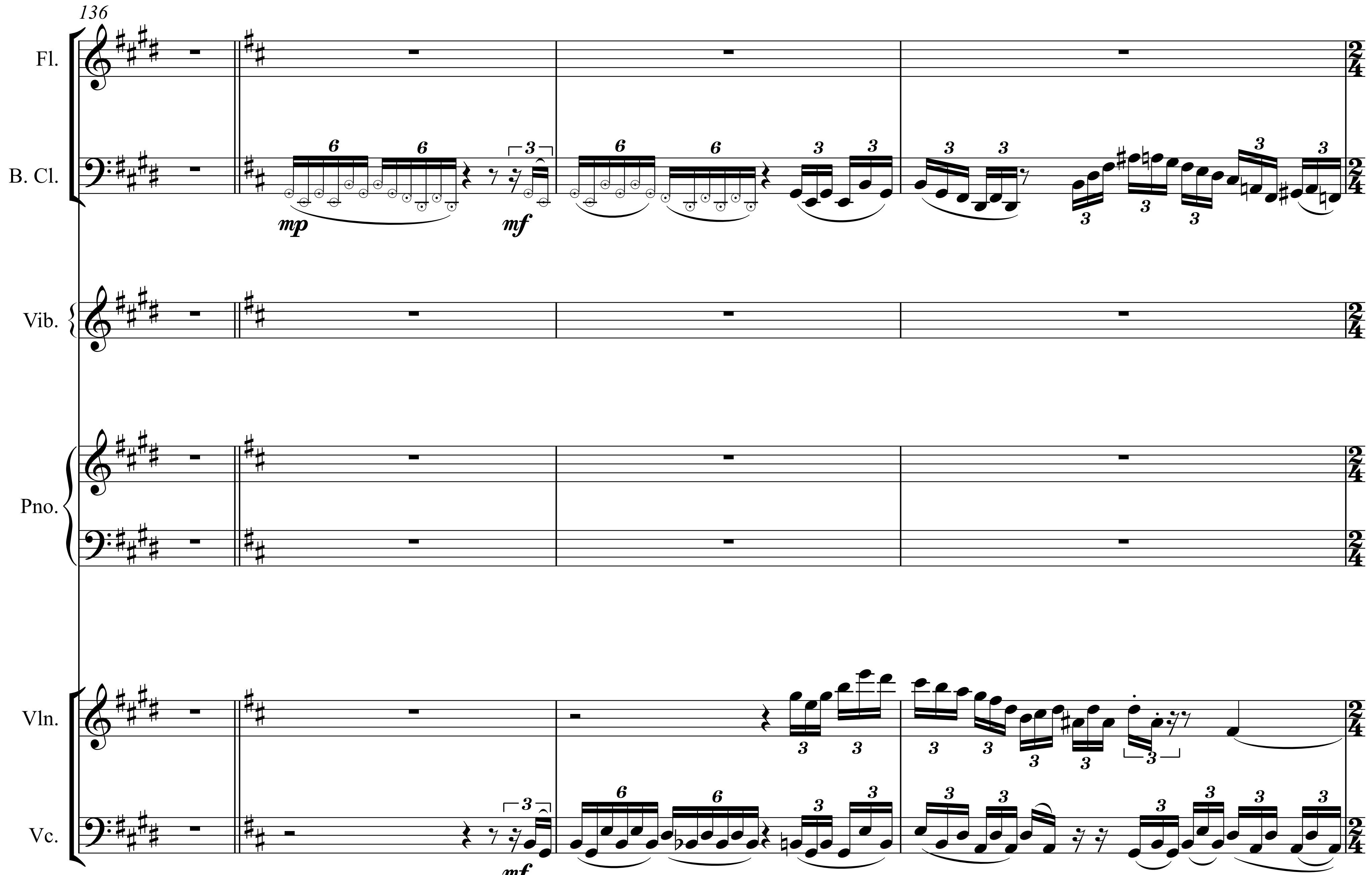

118
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
mp
3
ord.
mf
pp
mp
6
pp
ppp
mp
ppp
Ped.
+ + +
5
4

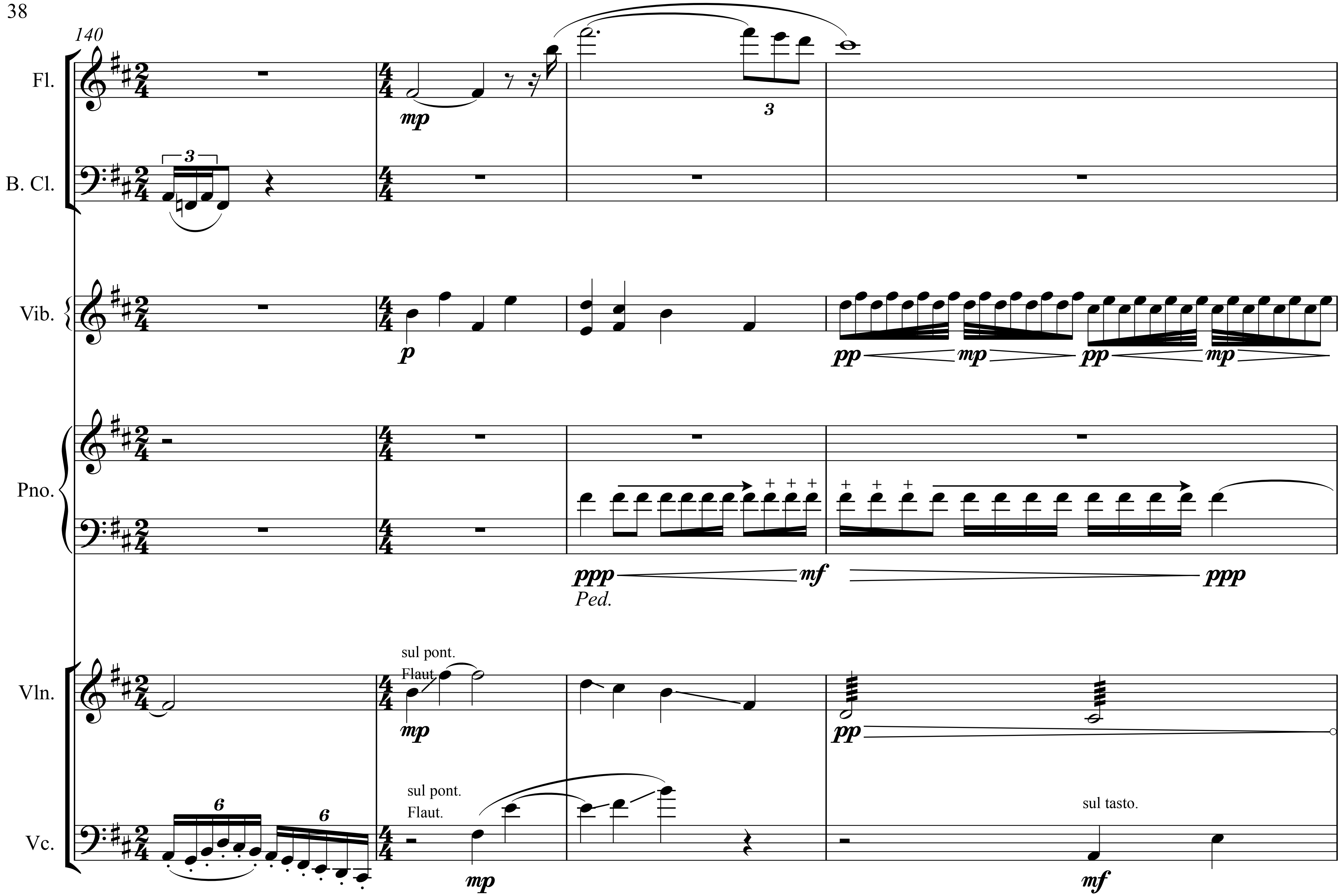

121
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
h.t
w.t
w.t
tr
3
mp
molto sul pont.
mp
140

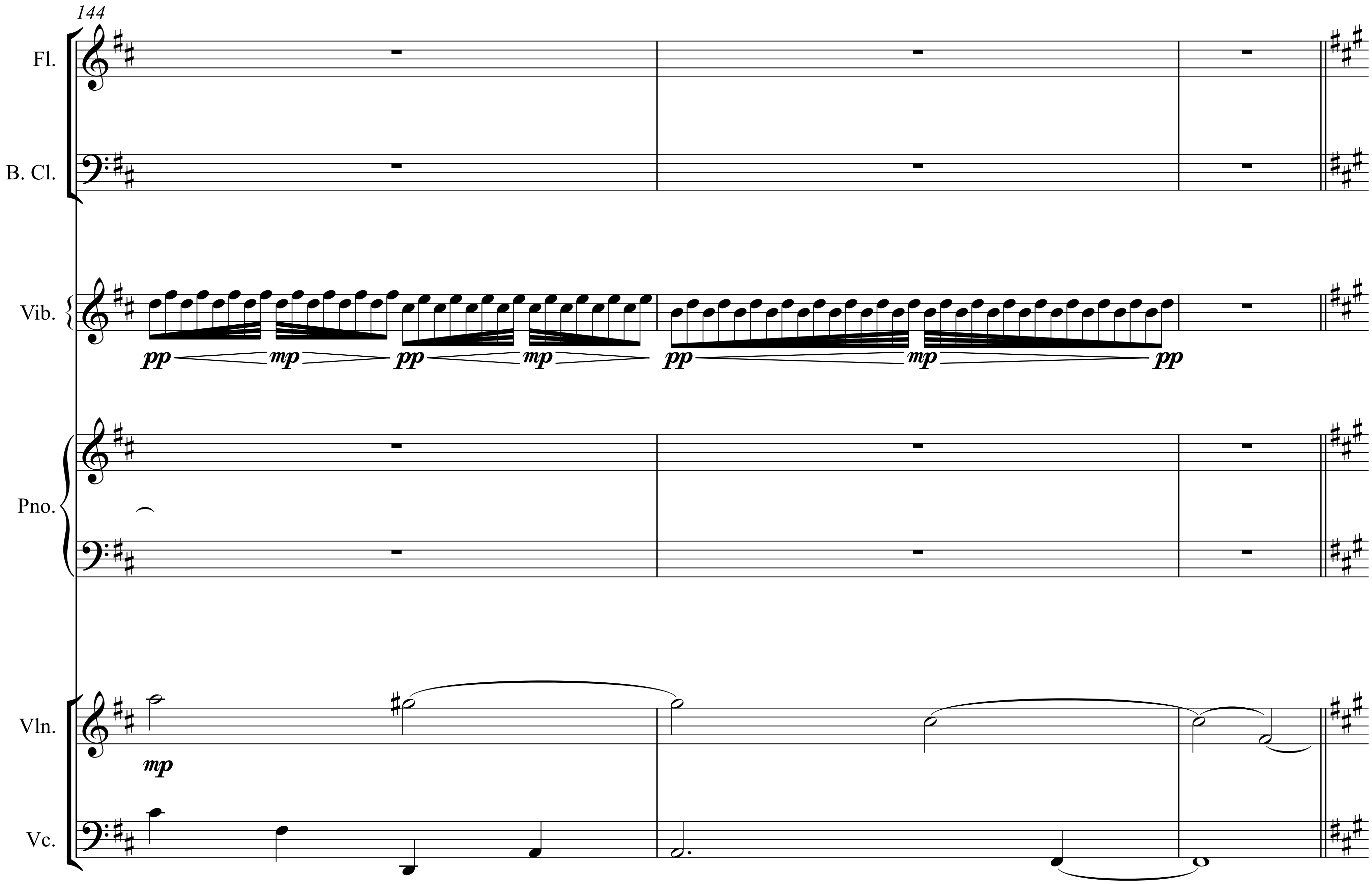

124
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
mf
f
3

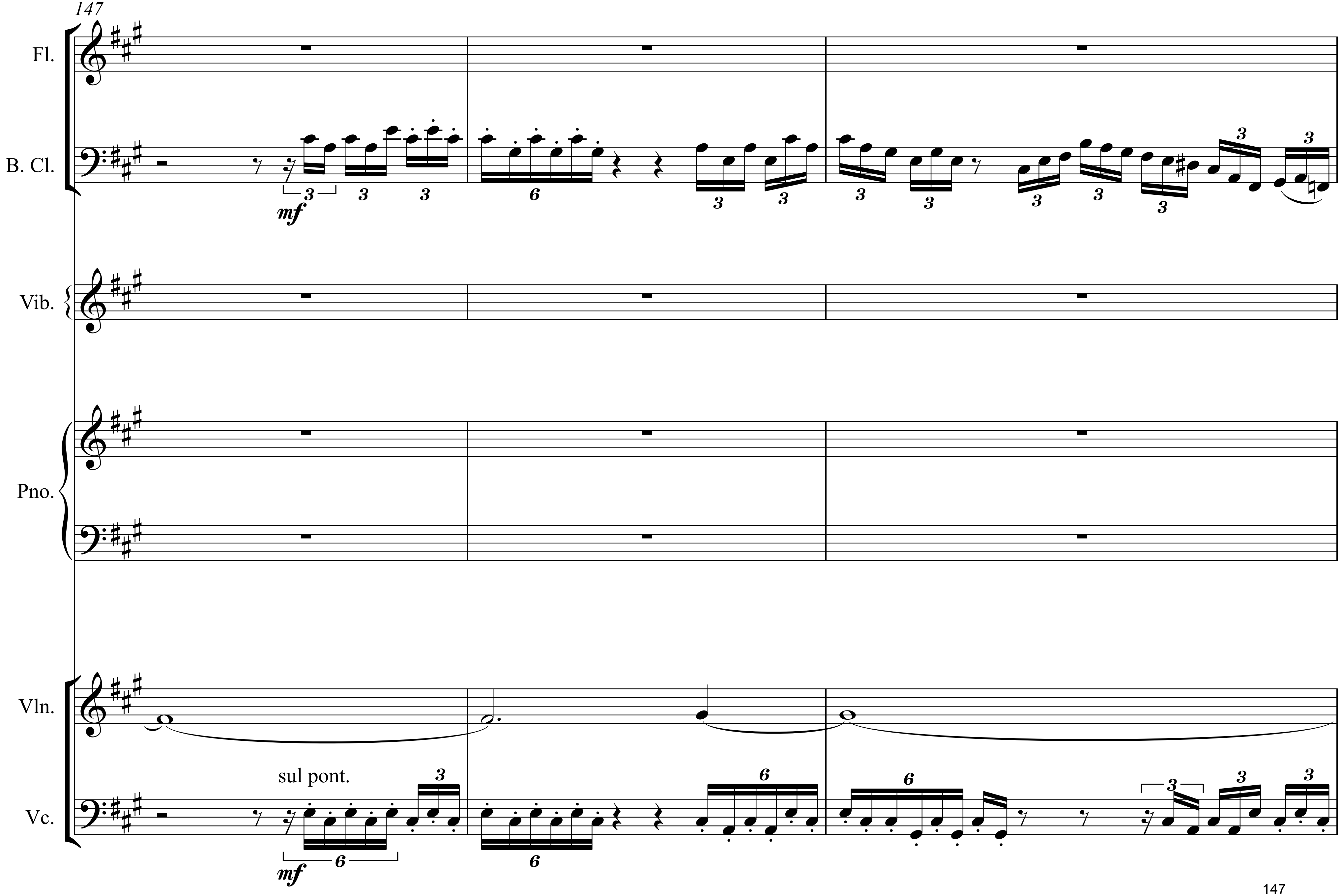

127
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
mp
p
mp
mp
6
3

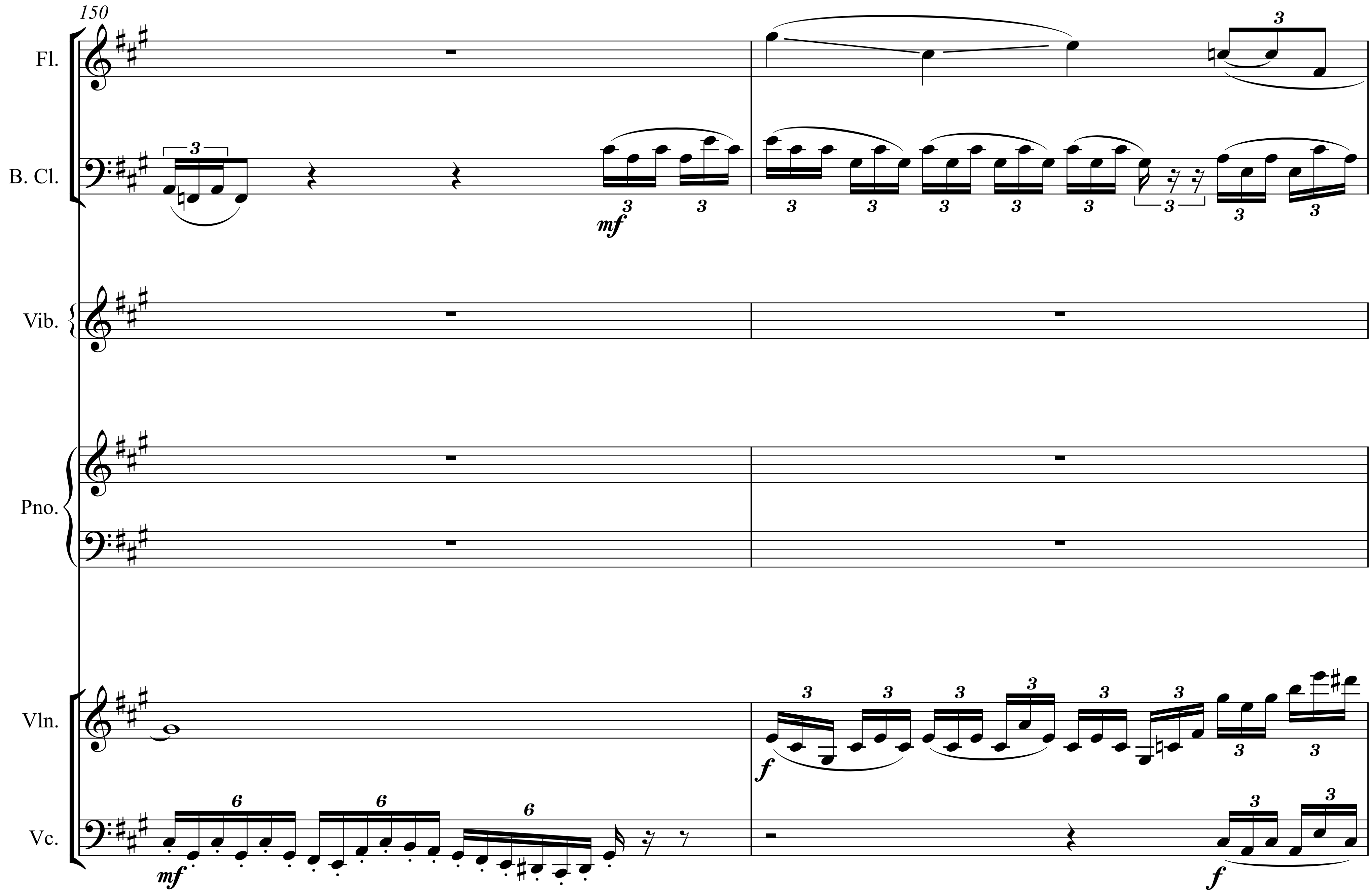

Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.

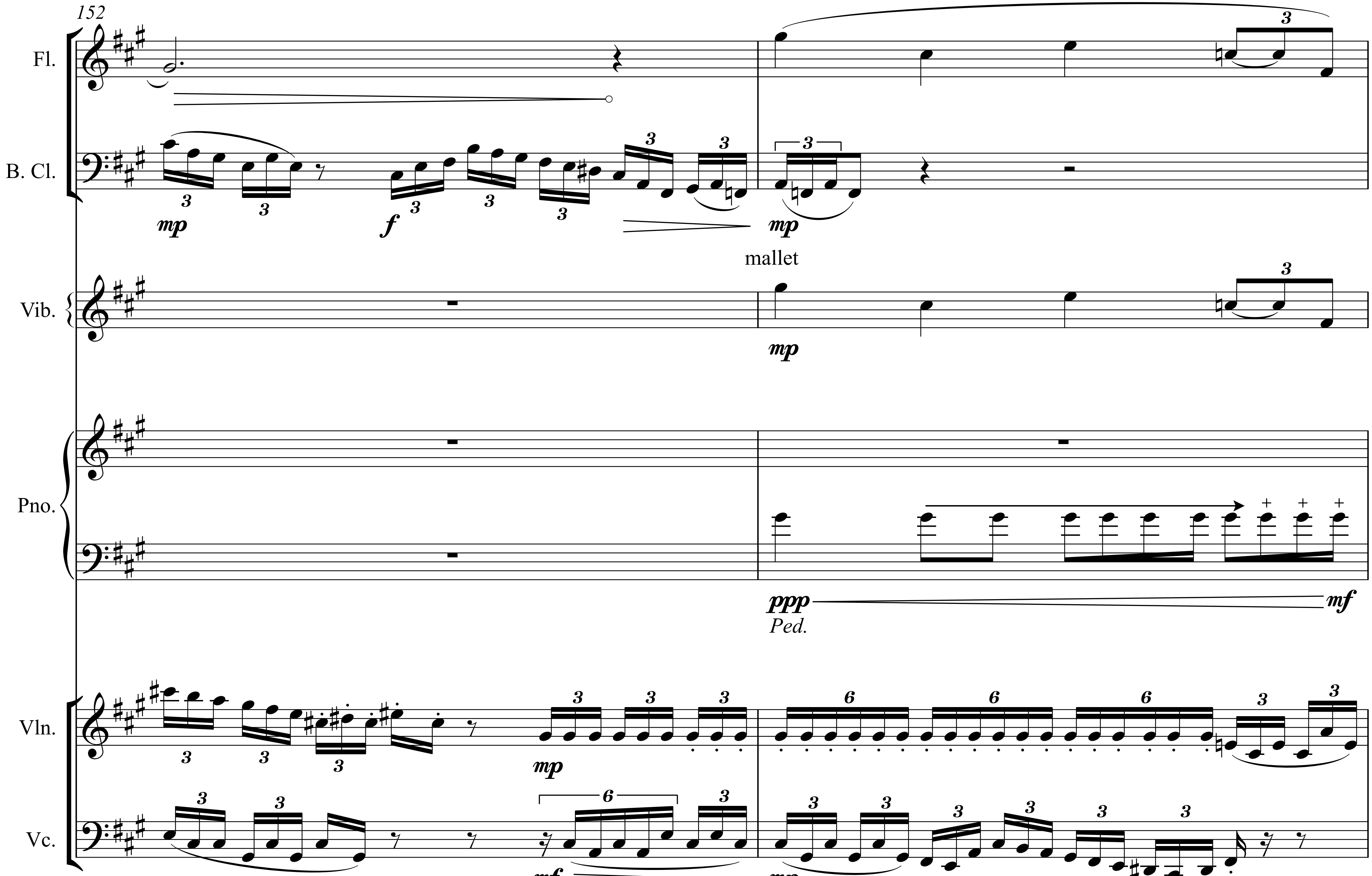

Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
mp
mf
mf

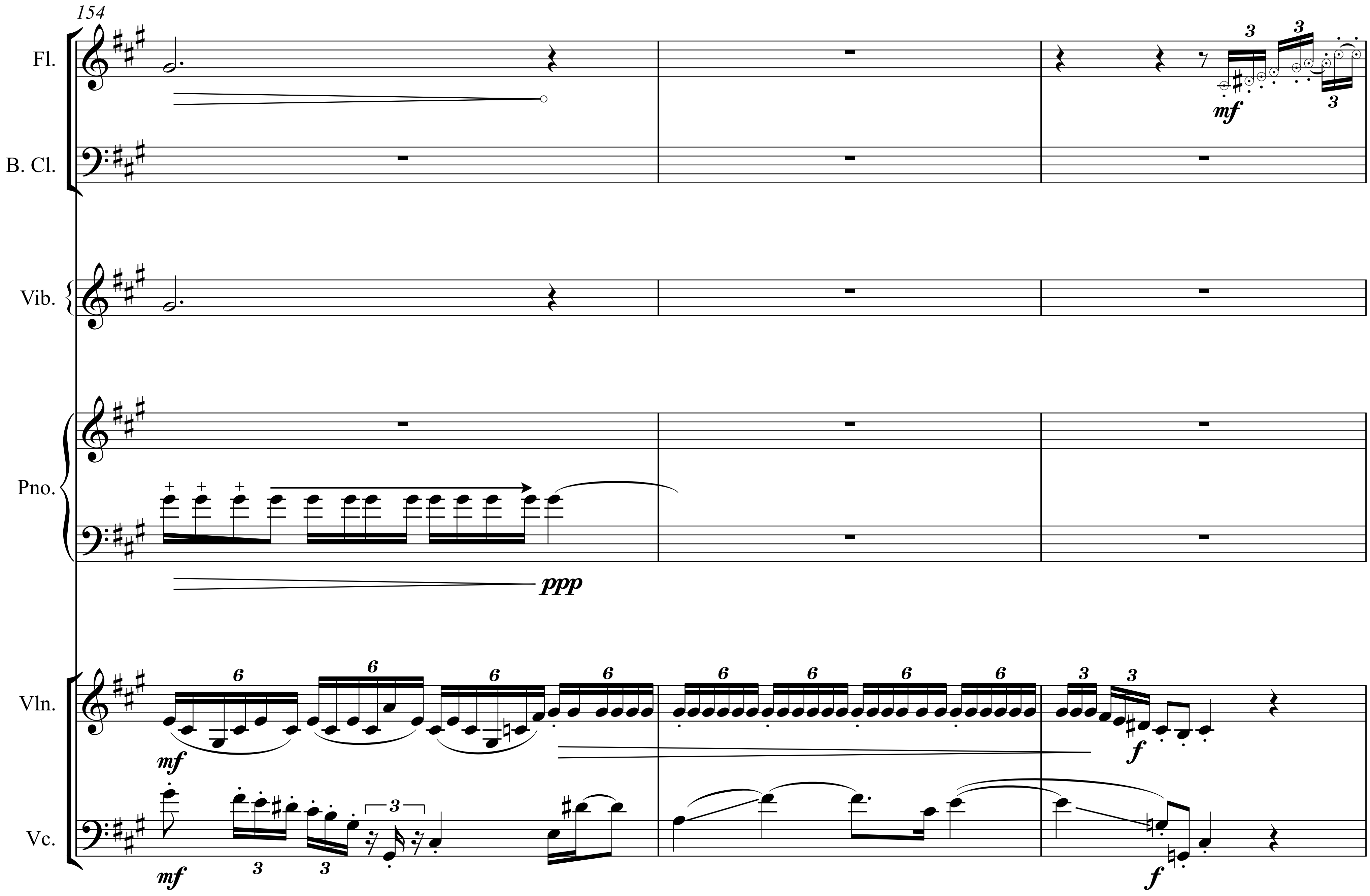

140
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
3
mp
3
p
pp
mp
pp
mp
ppp
mf
ppp
Ped.
sul pont.
Flaut.
mp
pp
6
6
sul pont.
Flaut.
mp
sul tasto.
mf

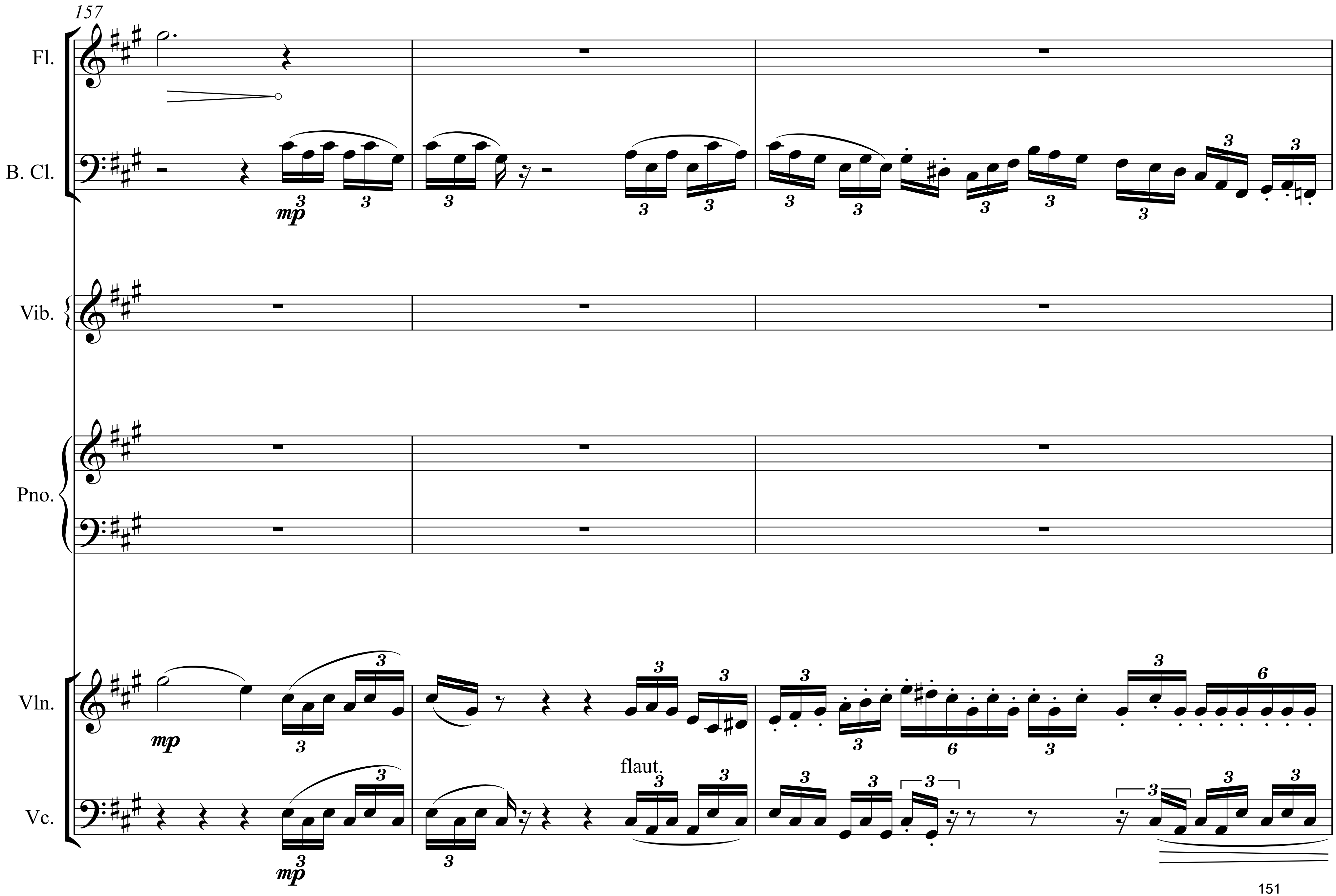

144
Fl.
B. Cl.
Vib.
pp
mp
pp
mp
pp
mp
pp
Pno.
Vln.
mp
Vc.

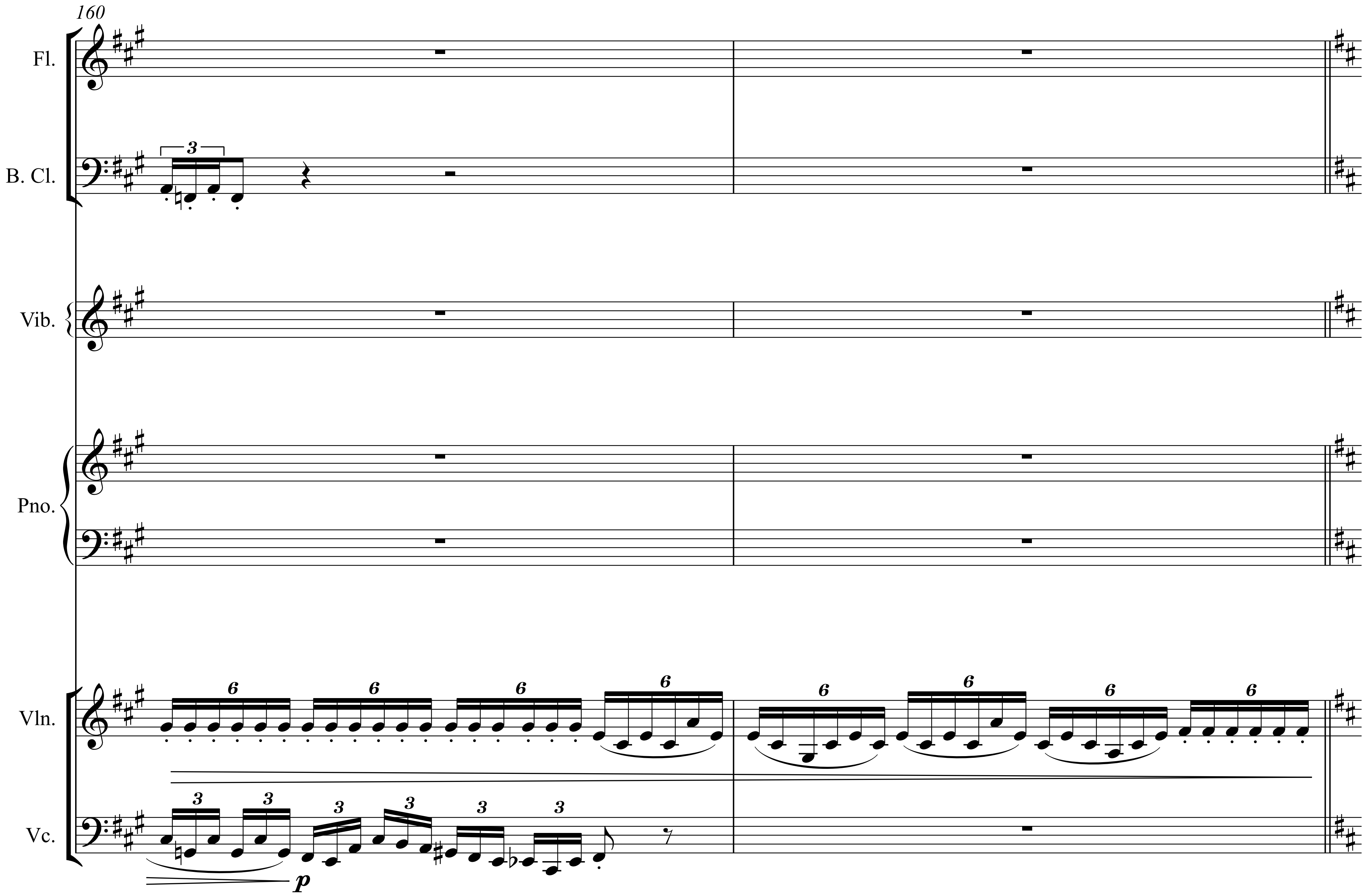

147
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
mf
sul pont.
mf
3
6

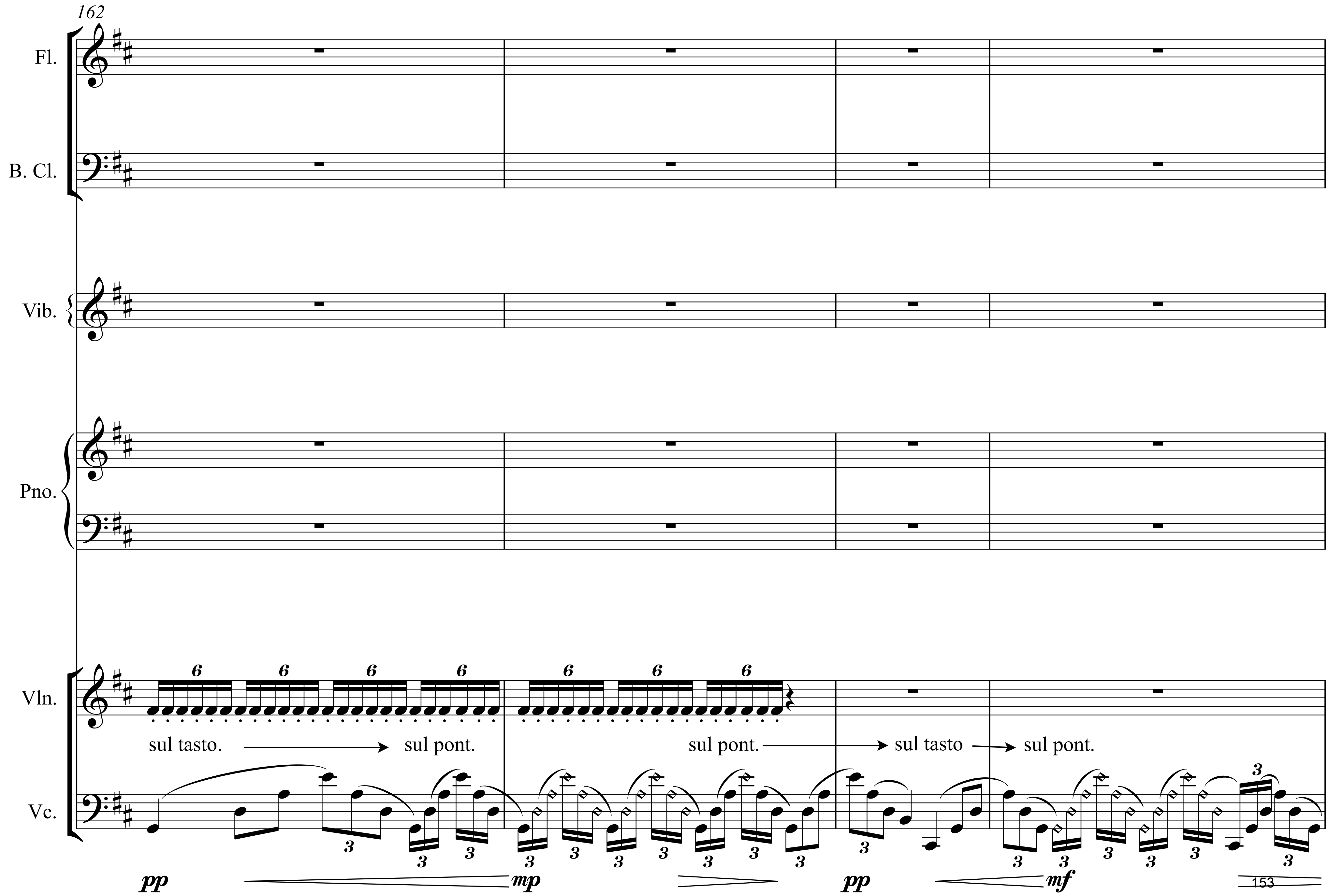

150
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
3
mf
f
6

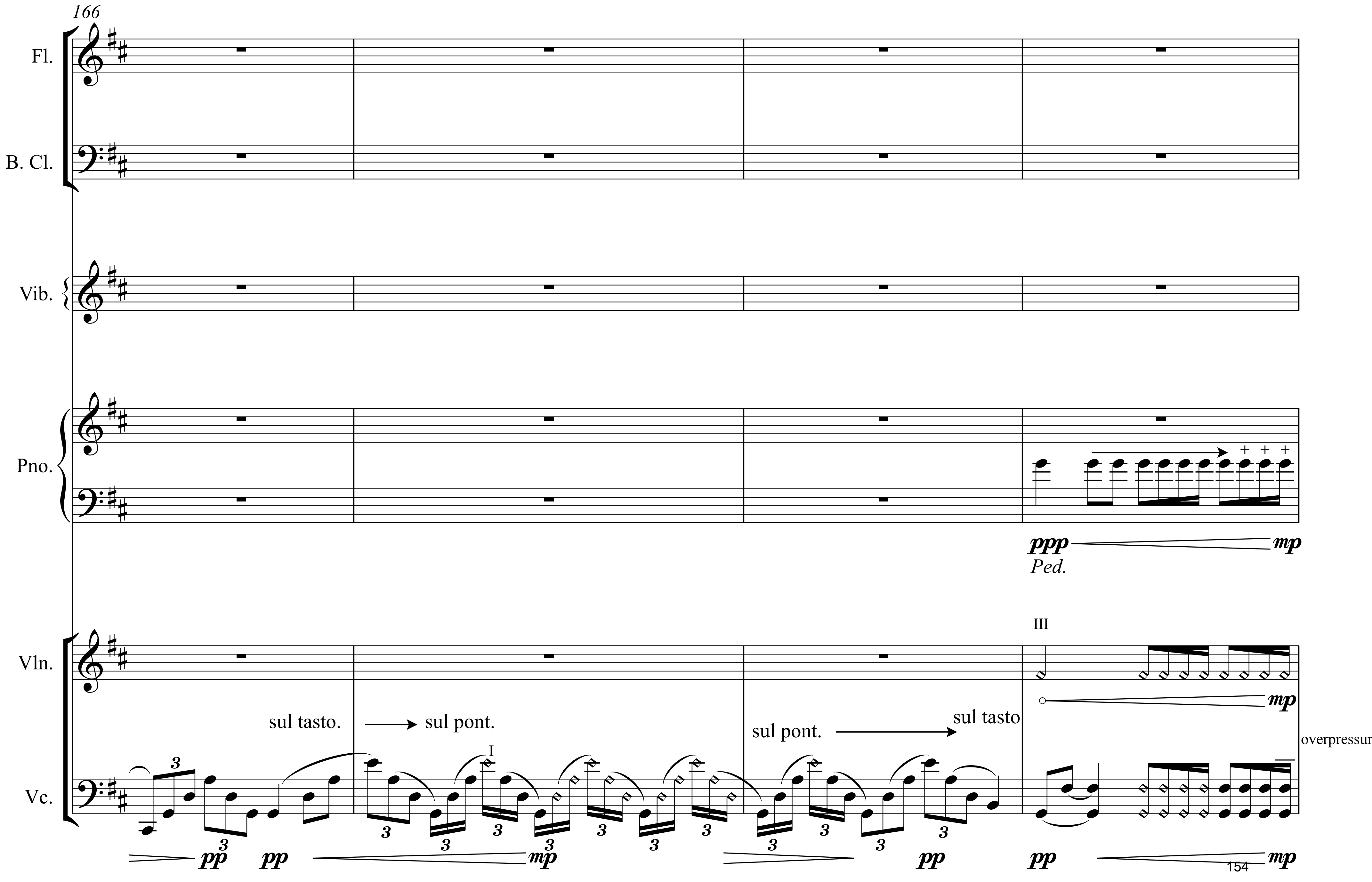

152
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
mp
f
mp
mallet
mp
ppp
mf
Ped.
mp
mf
mp
3
6

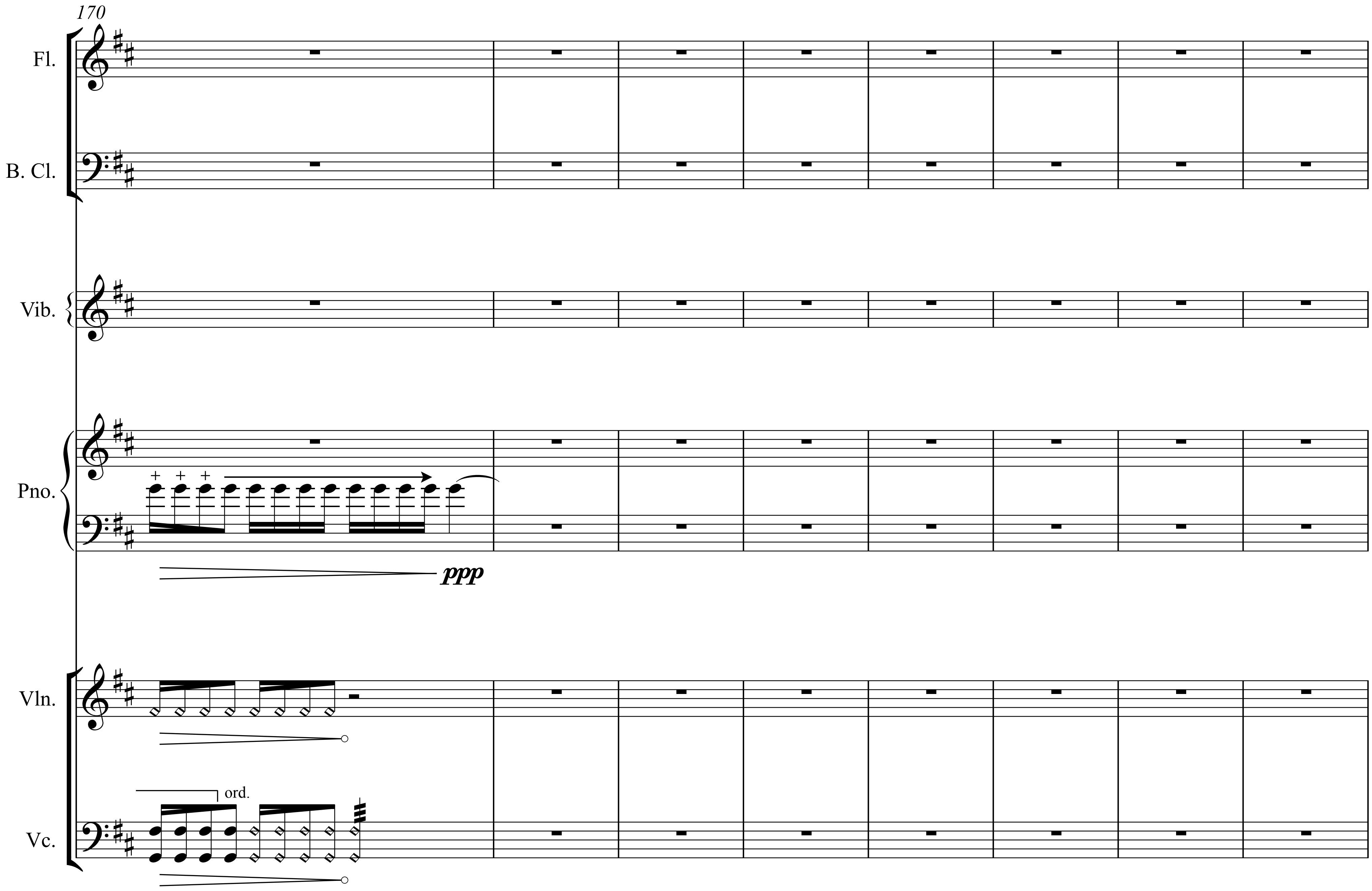

154
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
3
3
3
mf
ppp
6
6
6
6
6
6
6
6
3
3
mf
f
mf
3
3
3
f

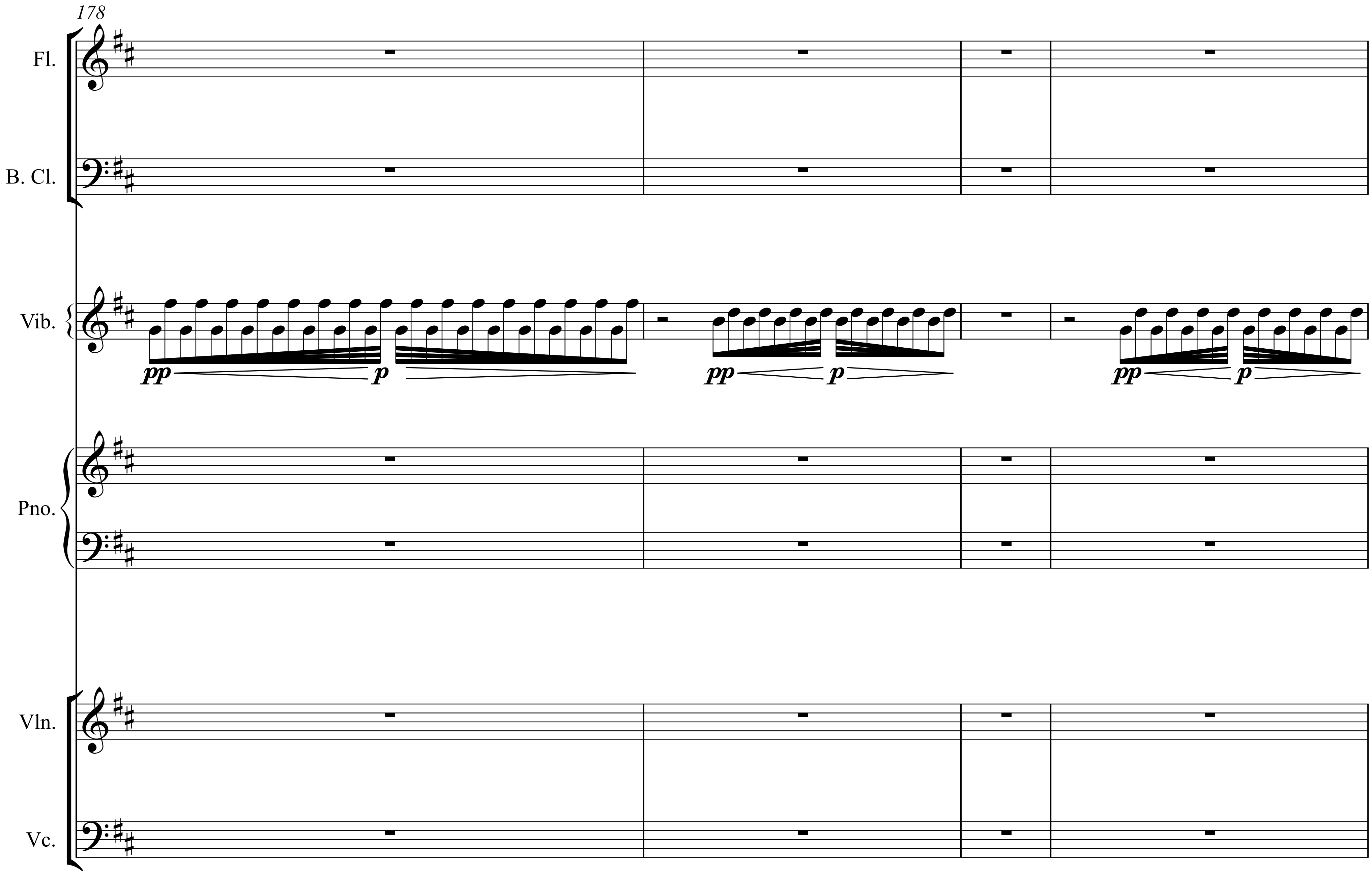

157
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
mp
mp
mp
flaut.
3
6

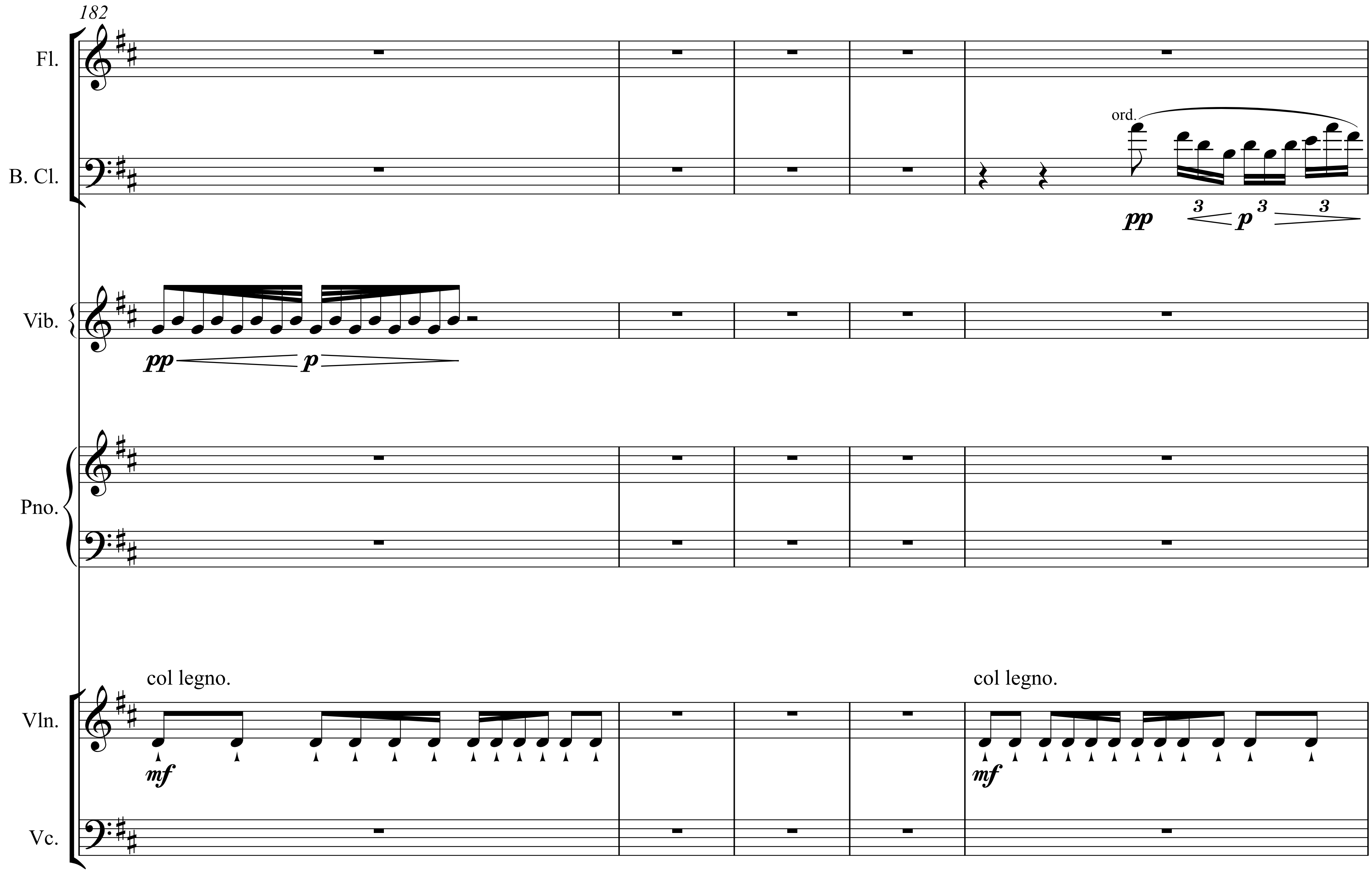

160
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
3
6
p

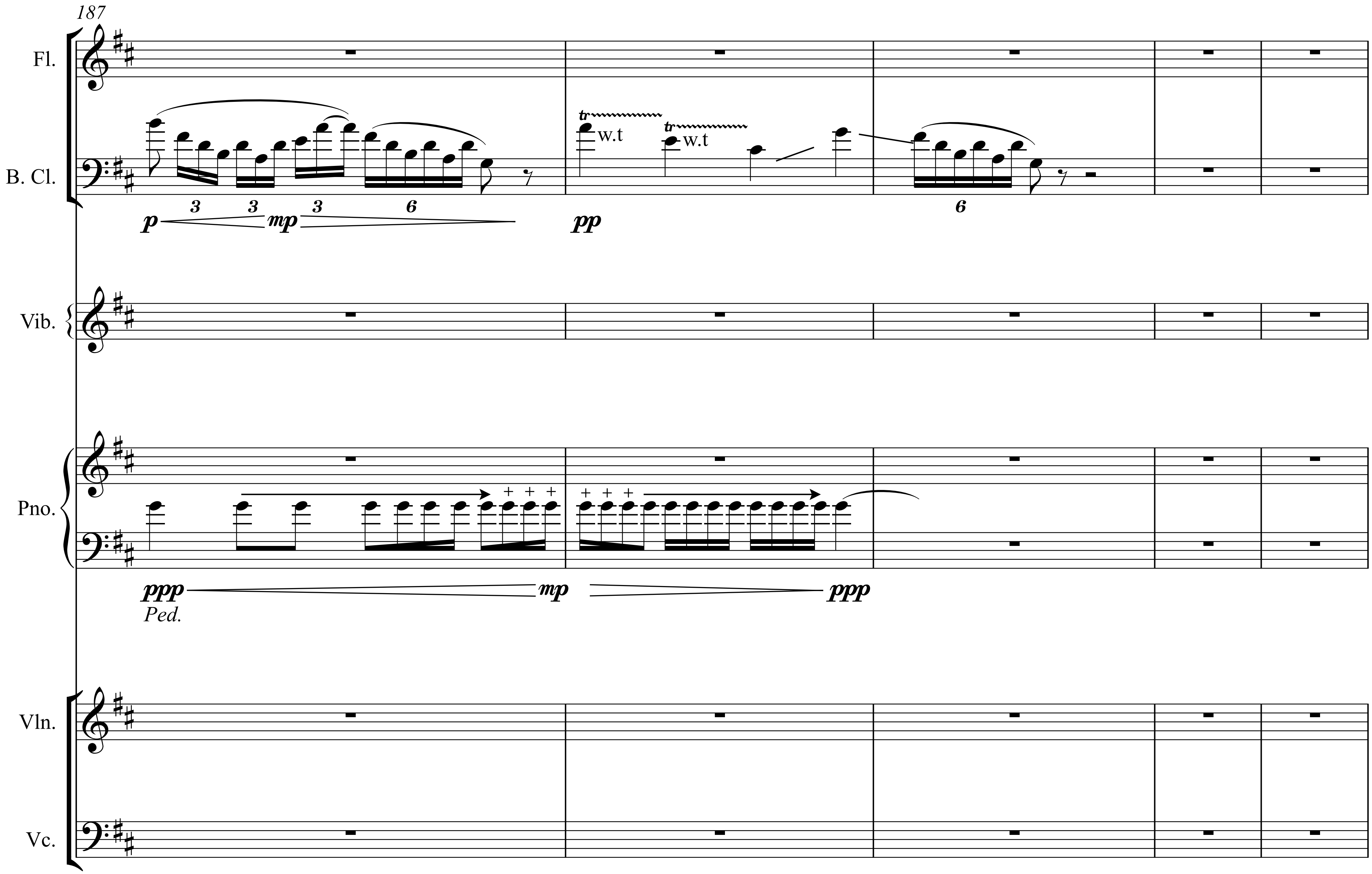

162
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
6
sul tasto.
sul pont.
sul pont.
sul tasto
sul pont.
3
pp
mp
pp
mf

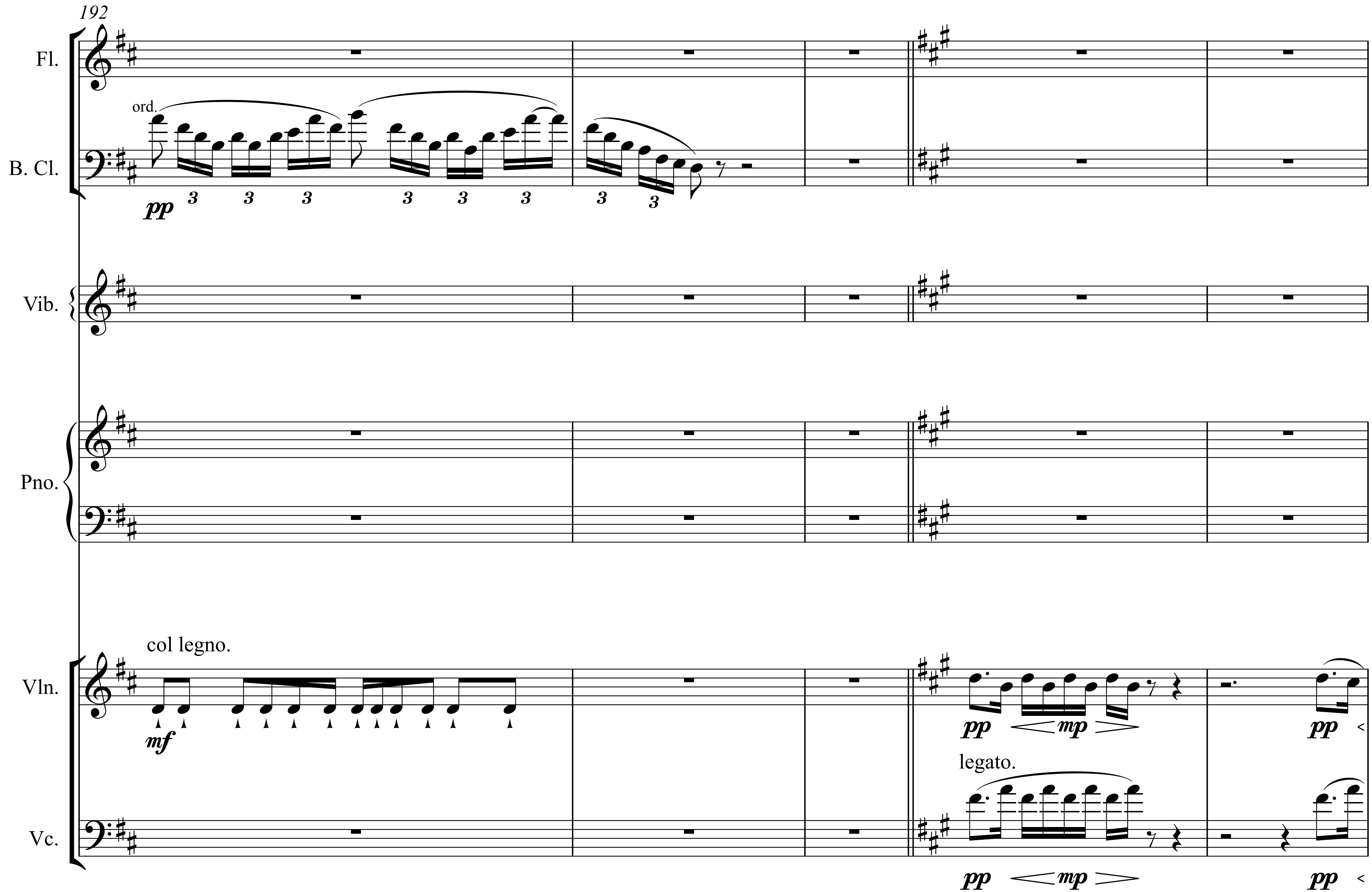

166
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
ppp
mp
Ped.
III
mp
sul tasto.
sul pont.
I
sul pont.
sul tasto
overpressur
3
pp
pp
mp
pp
pp
mp
154

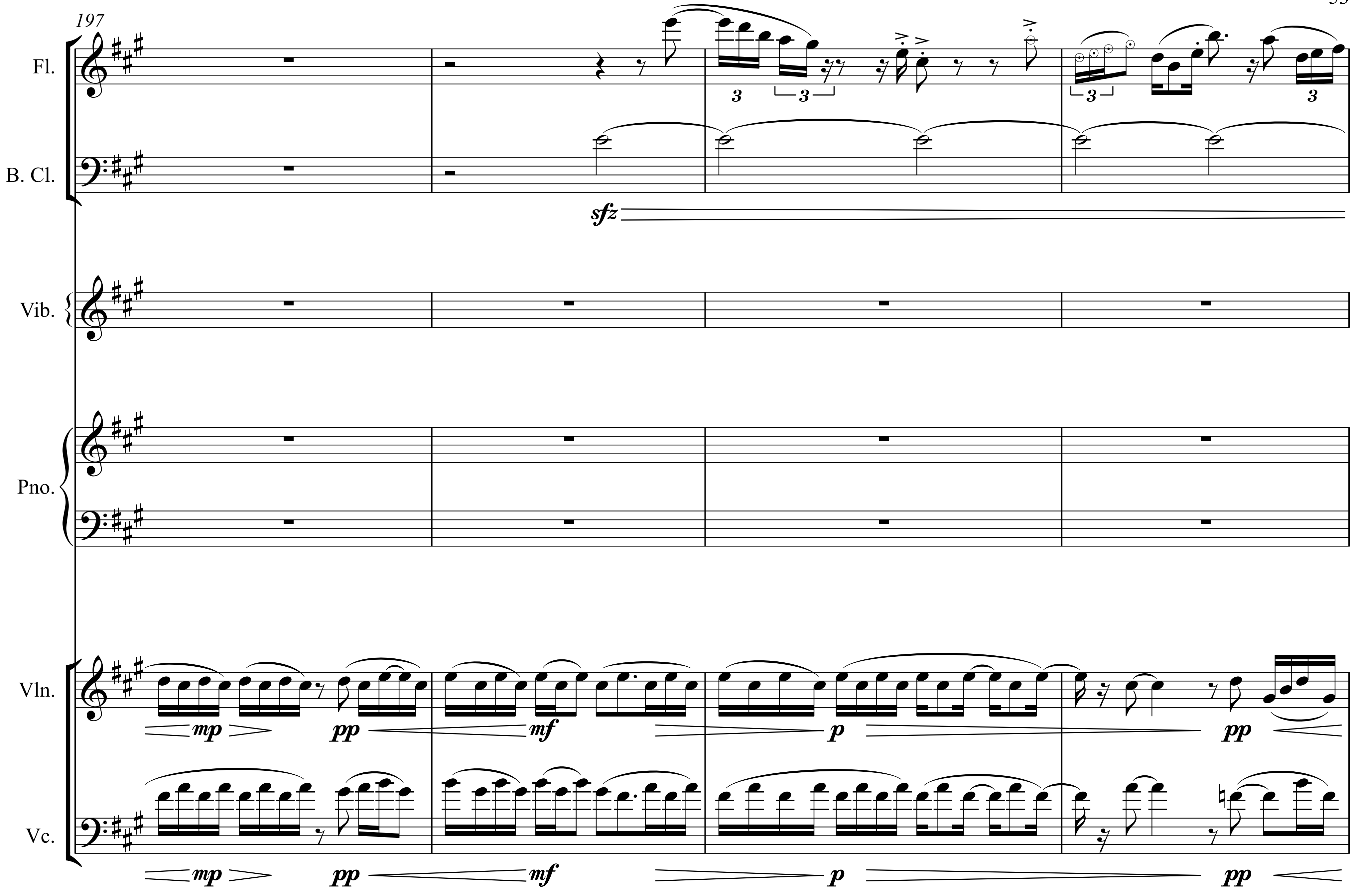

170
Fl.
B. Cl.
Vib.
Pno.
ppp
Vln.
ord.
Vc.

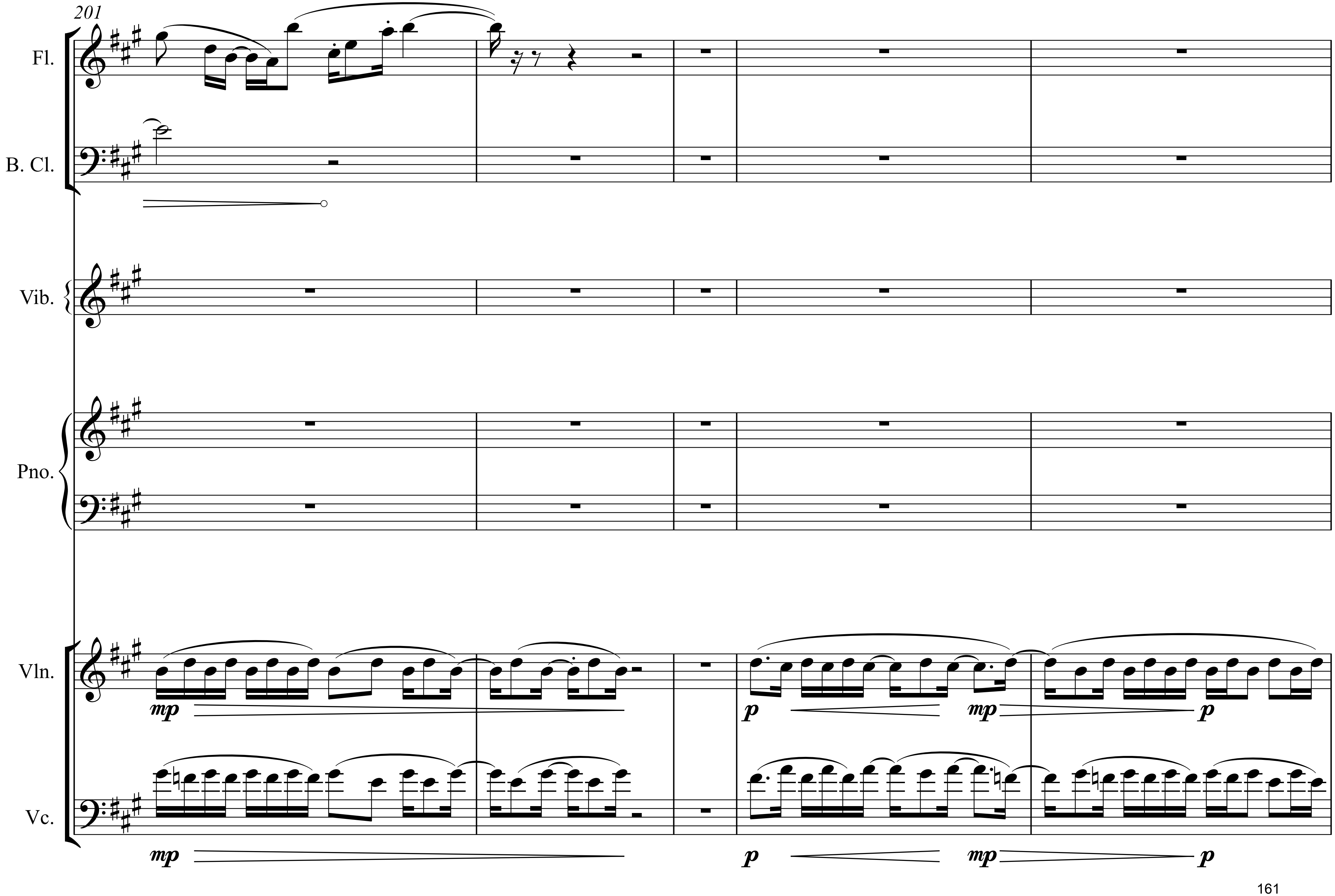

178
Fl.
B. Cl.
Vib.
pp
p
pp
p
pp
p
Pno.
Vln.
Vc.

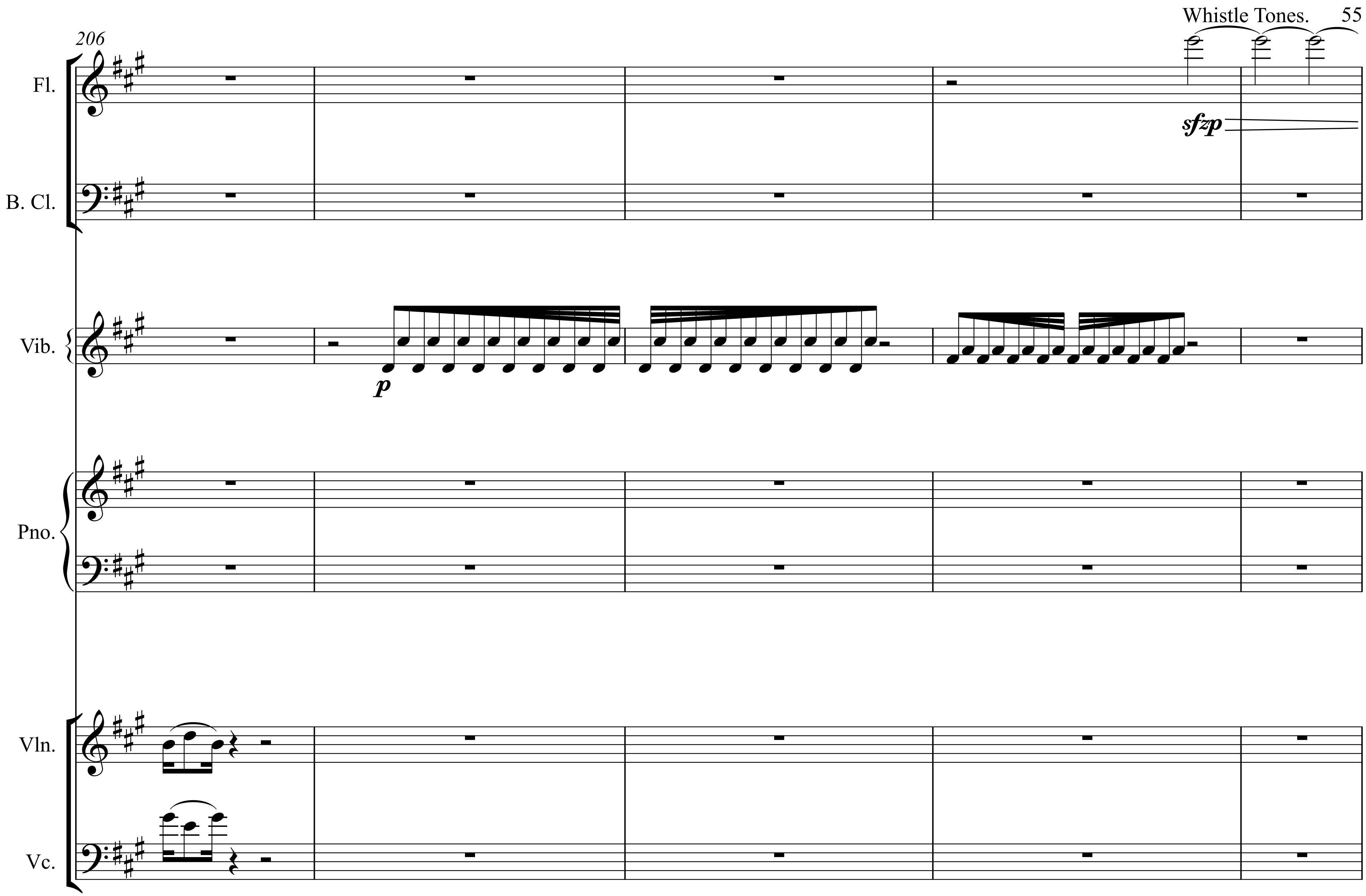

182
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
ord.
pp
3
p
3
3
pp
p
col legno.
mf
col legno.
mf

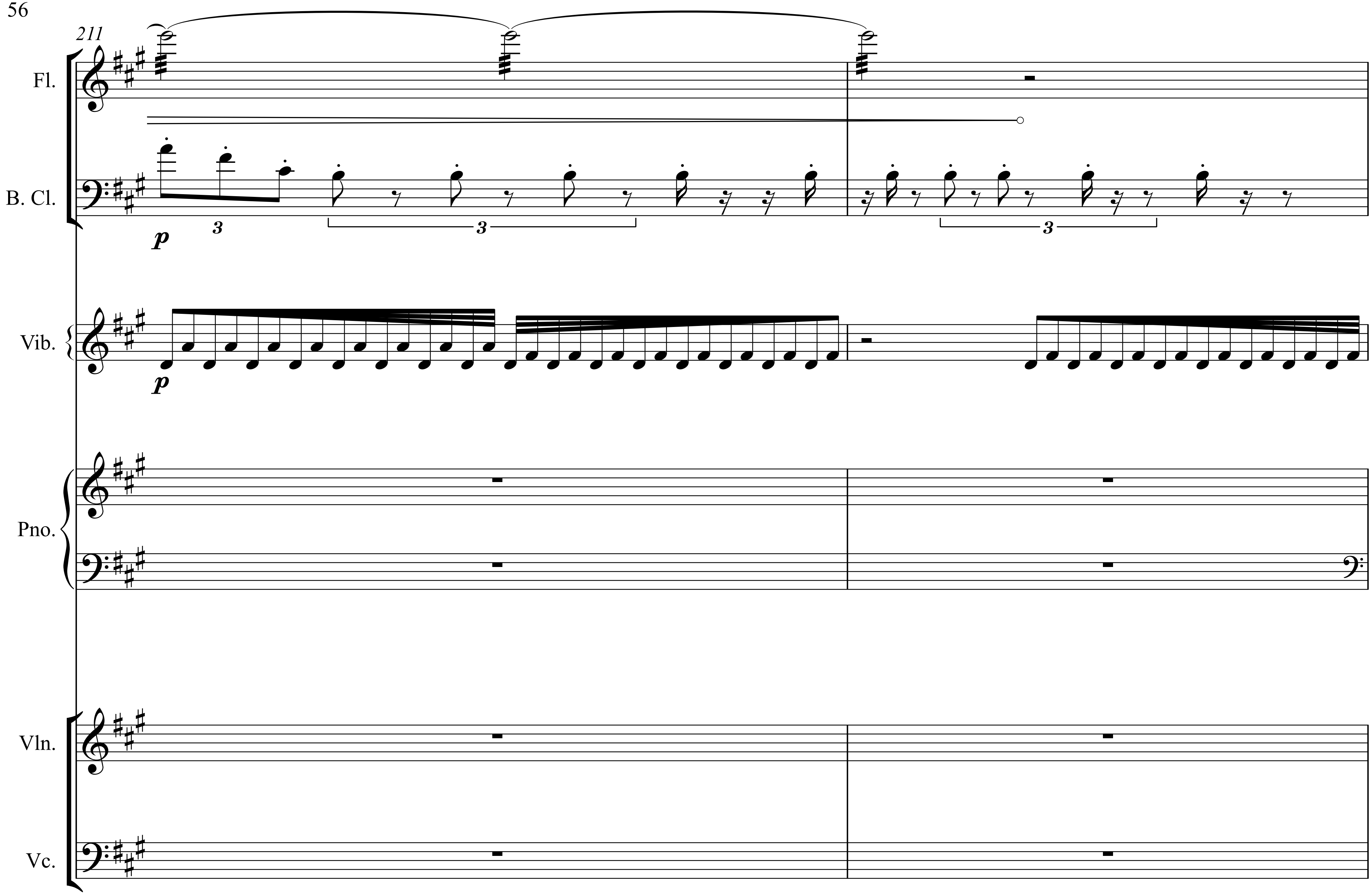

187
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
3
3
3
6
p
mp
pp
tr
w.t
tr
w.t
6
+ + +
+ + +
ppp
Ped.
mp
ppp

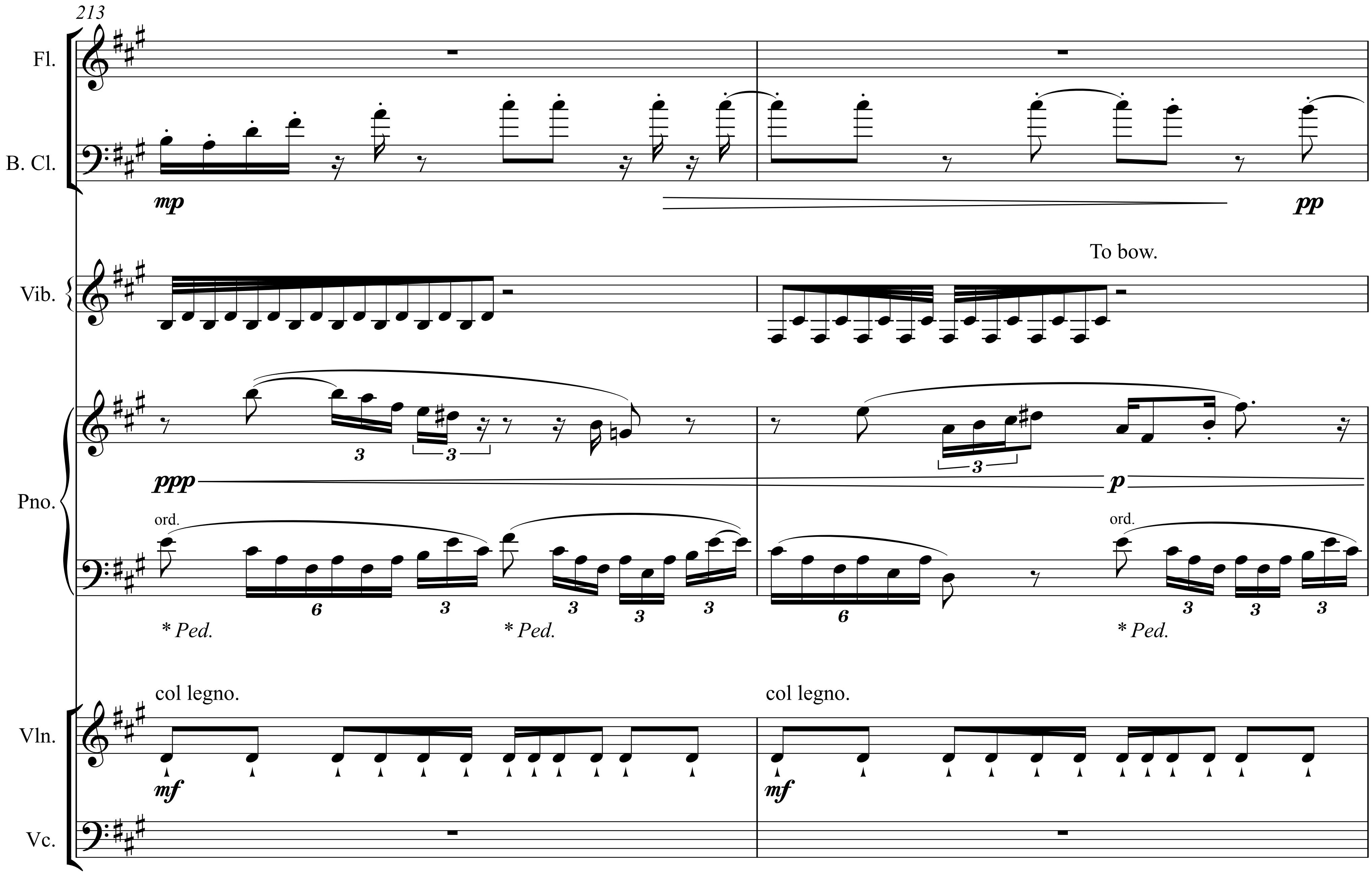

192
Fl.
B. Cl.
ord.
pp
3
3
3
3
3
3
3
3
Vib.
Pno.
col legno.
Vln.
mf
pp
mp
pp
legato.
Vc.
pp
mp
pp

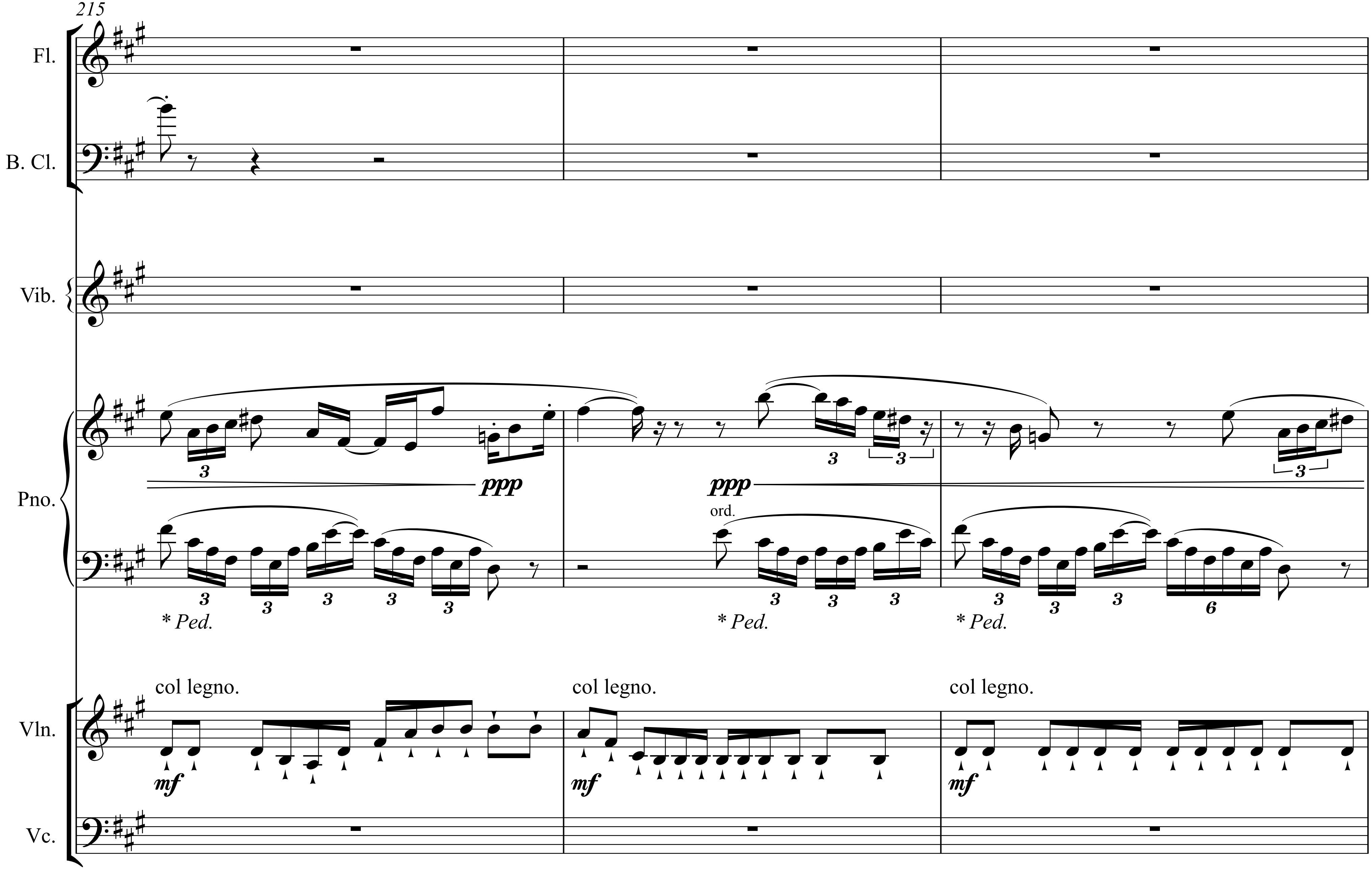

197
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
3
3
3
3
sfz
mp
pp
mf
p
pp
mp
pp
mf
p
pp

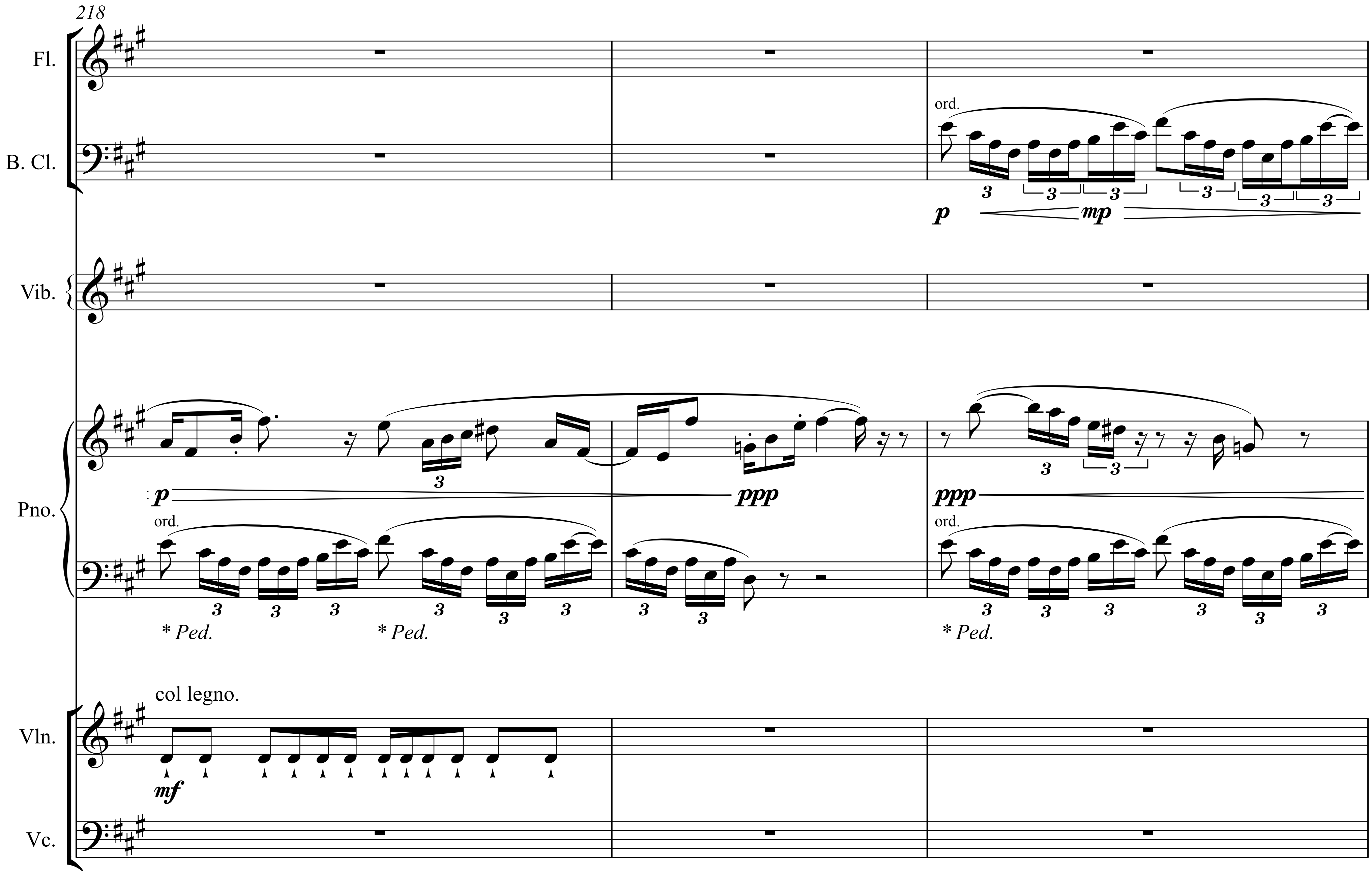

201
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
mp
p
mp
p
mp
p
mp
p

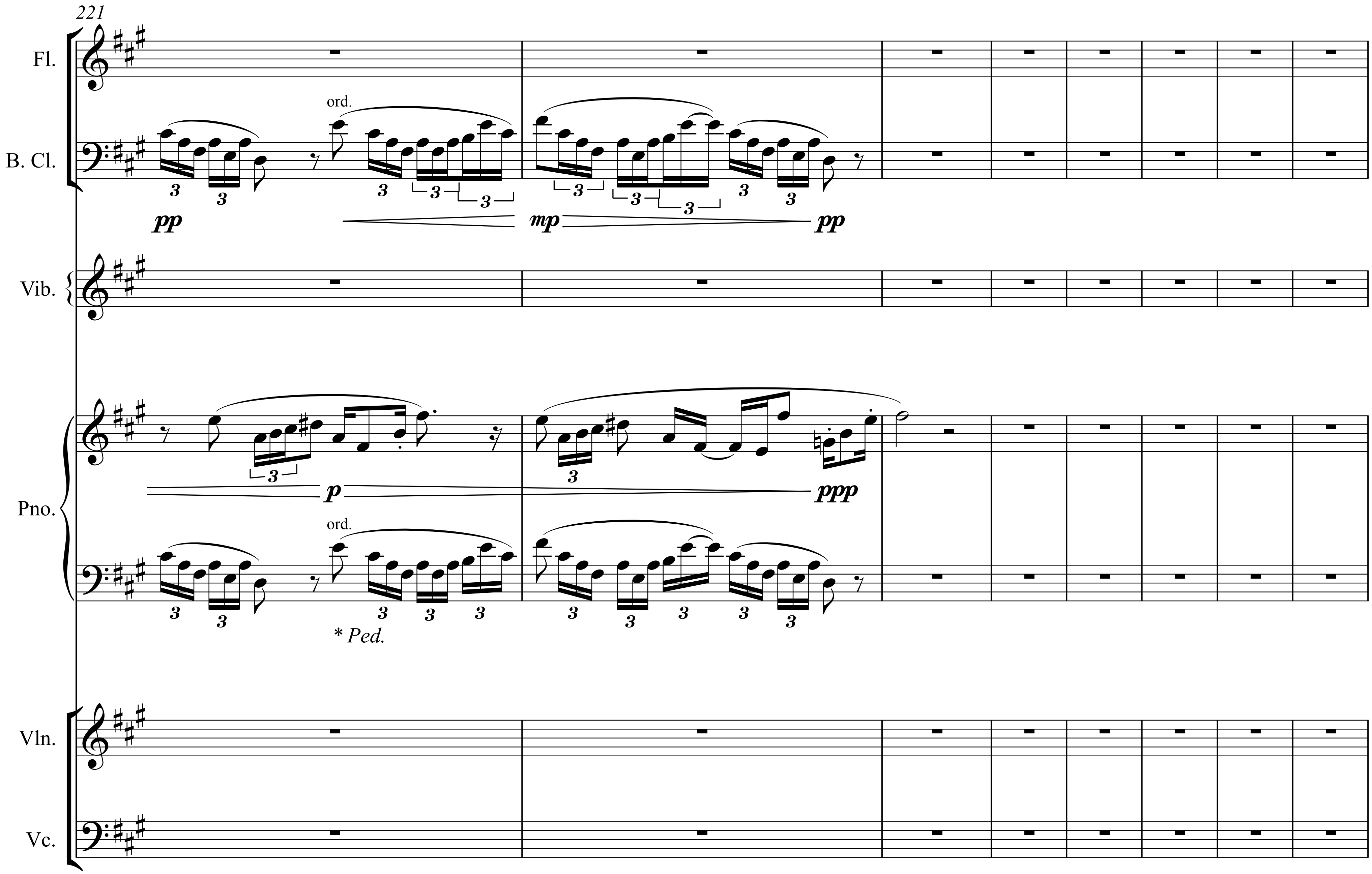

206
Whistle Tones.
55
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
sfzp
p

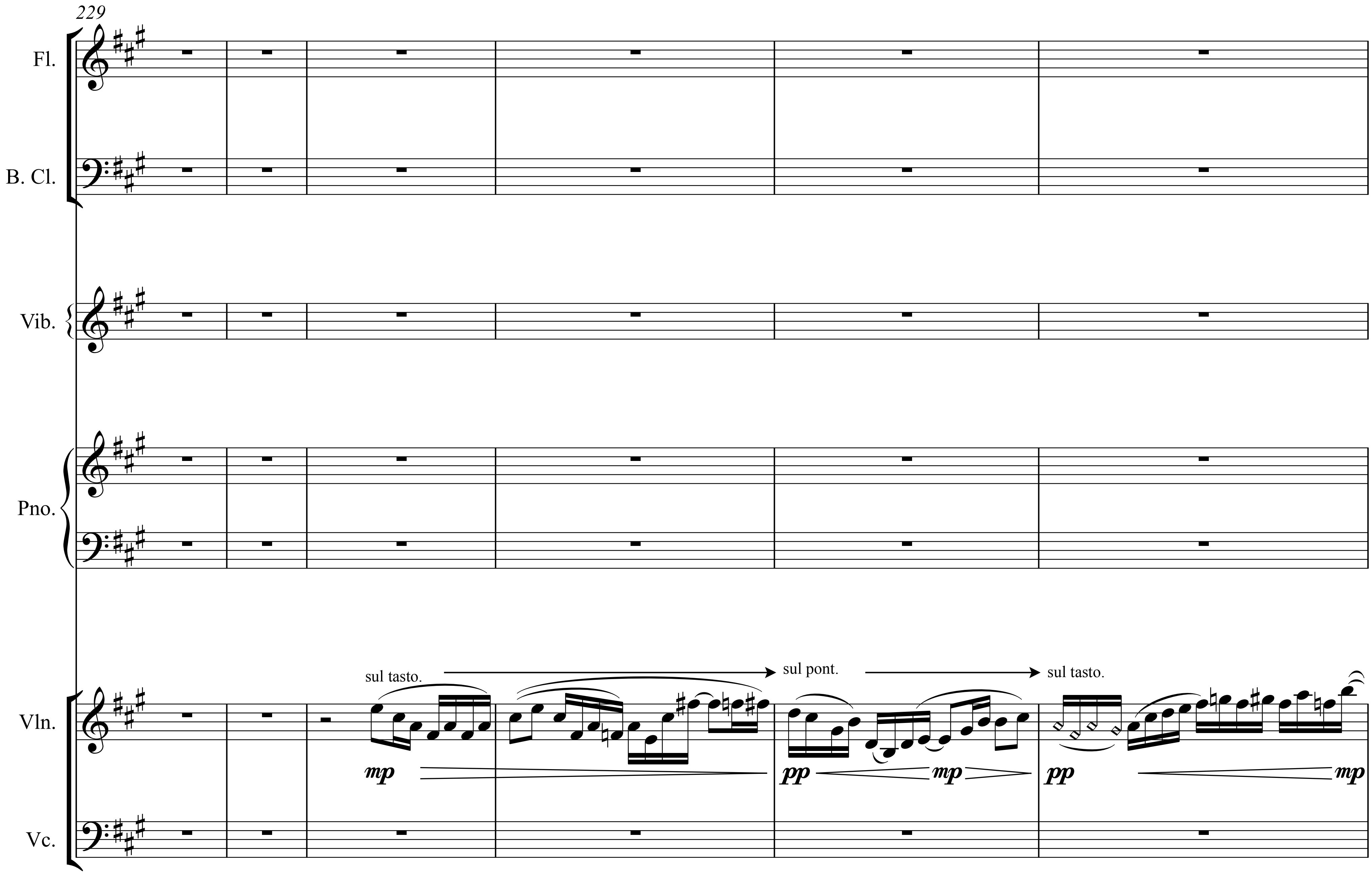

211
Fl.
B. Cl.
p
3
3
3
Vib.
p
Pno.
Vln.
Vc.

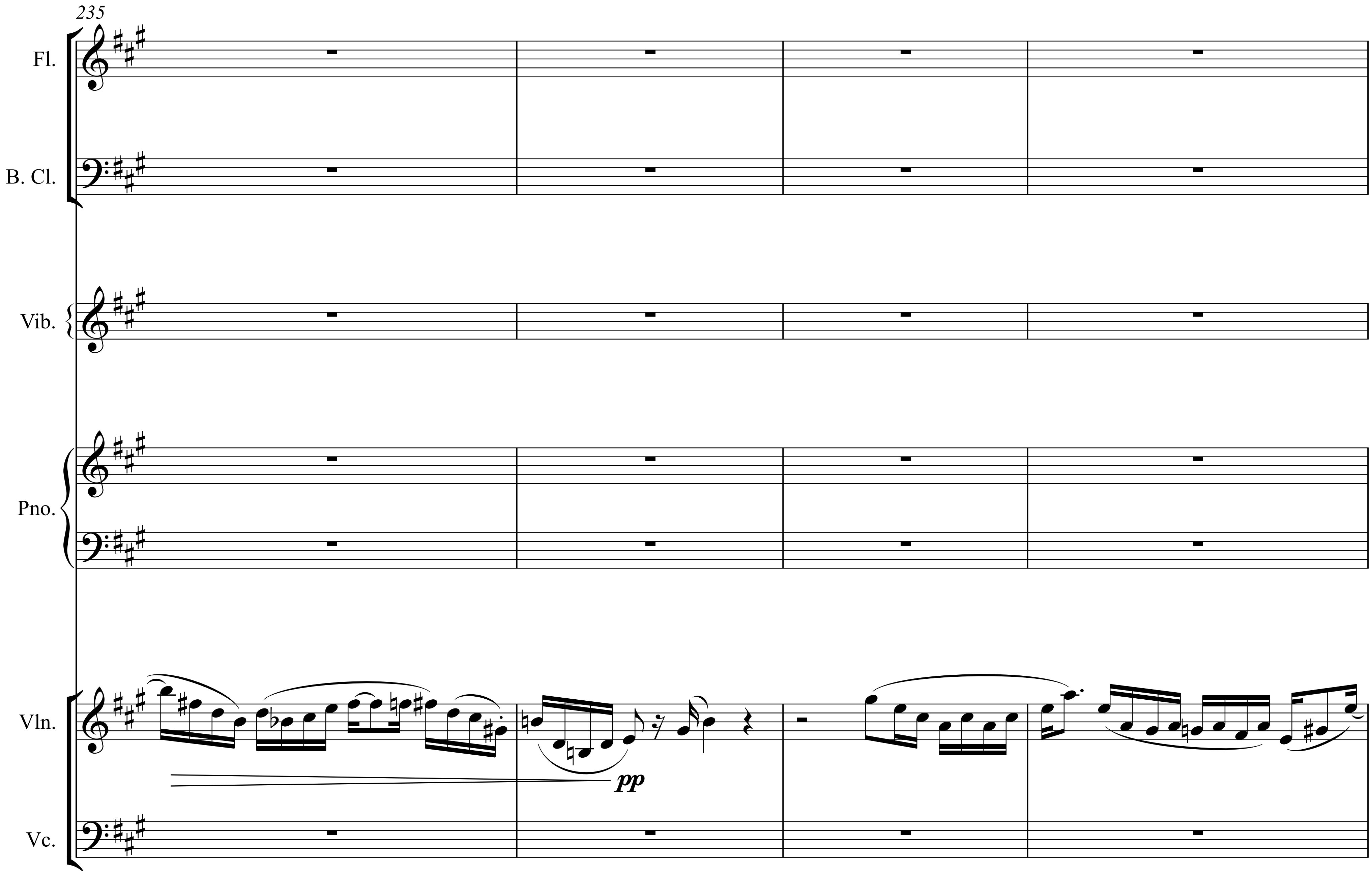

213
Fl.
B. Cl.
mp
pp
To bow.
Vib.
Pno.
ppp
p
3
3
ord.
6
3
3
3
3
* Ped.
* Ped.
* Ped.
col legno.
col legno.
Vln.
mf
mf
Vc.

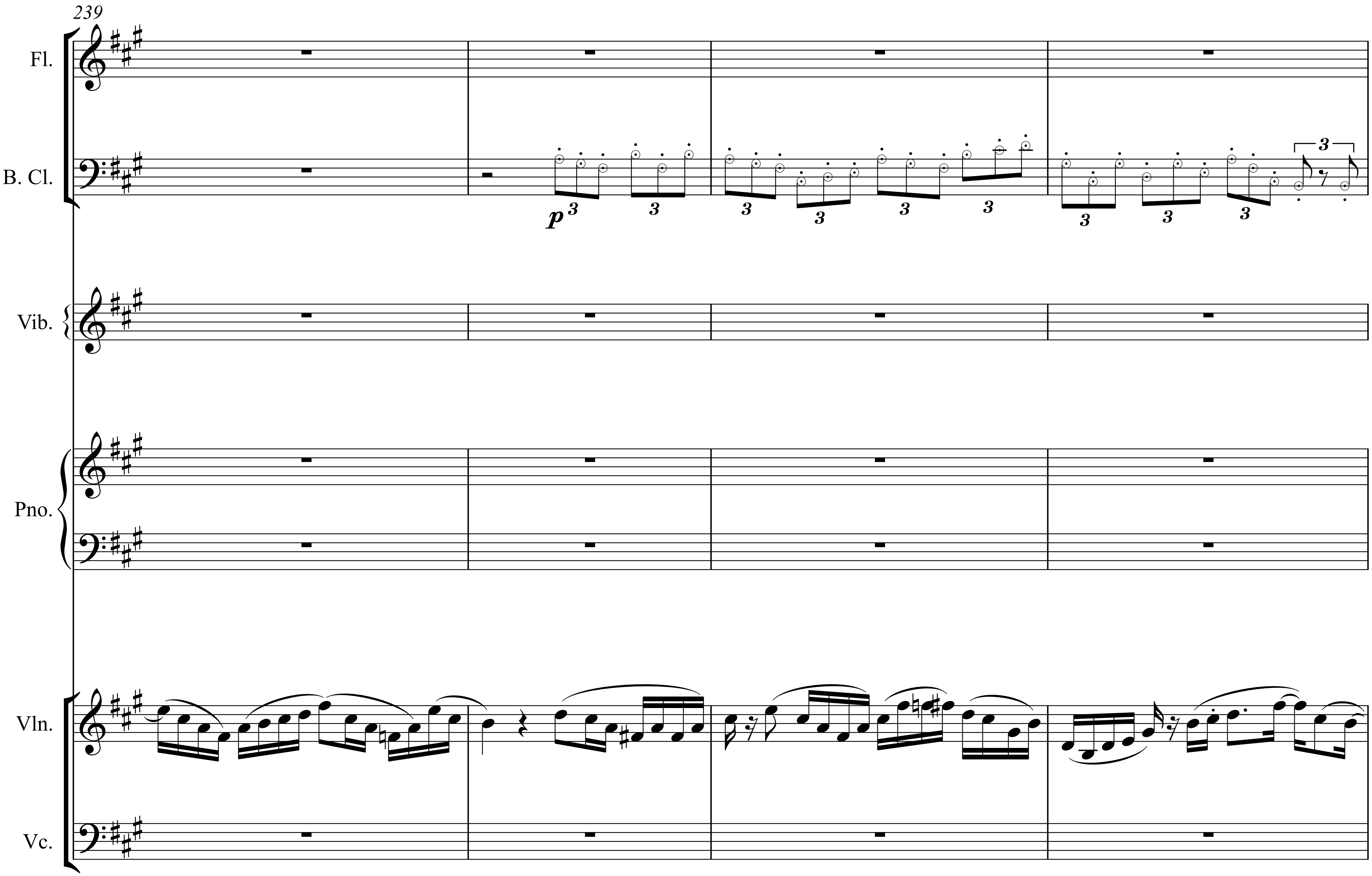

215
Fl.
B. Cl.
Vib.
Pno.
ppp
ppp
ord.
* Ped.
* Ped.
* Ped.
col legno.
col legno.
col legno.
mf
mf
mf
Vln.
Vc.

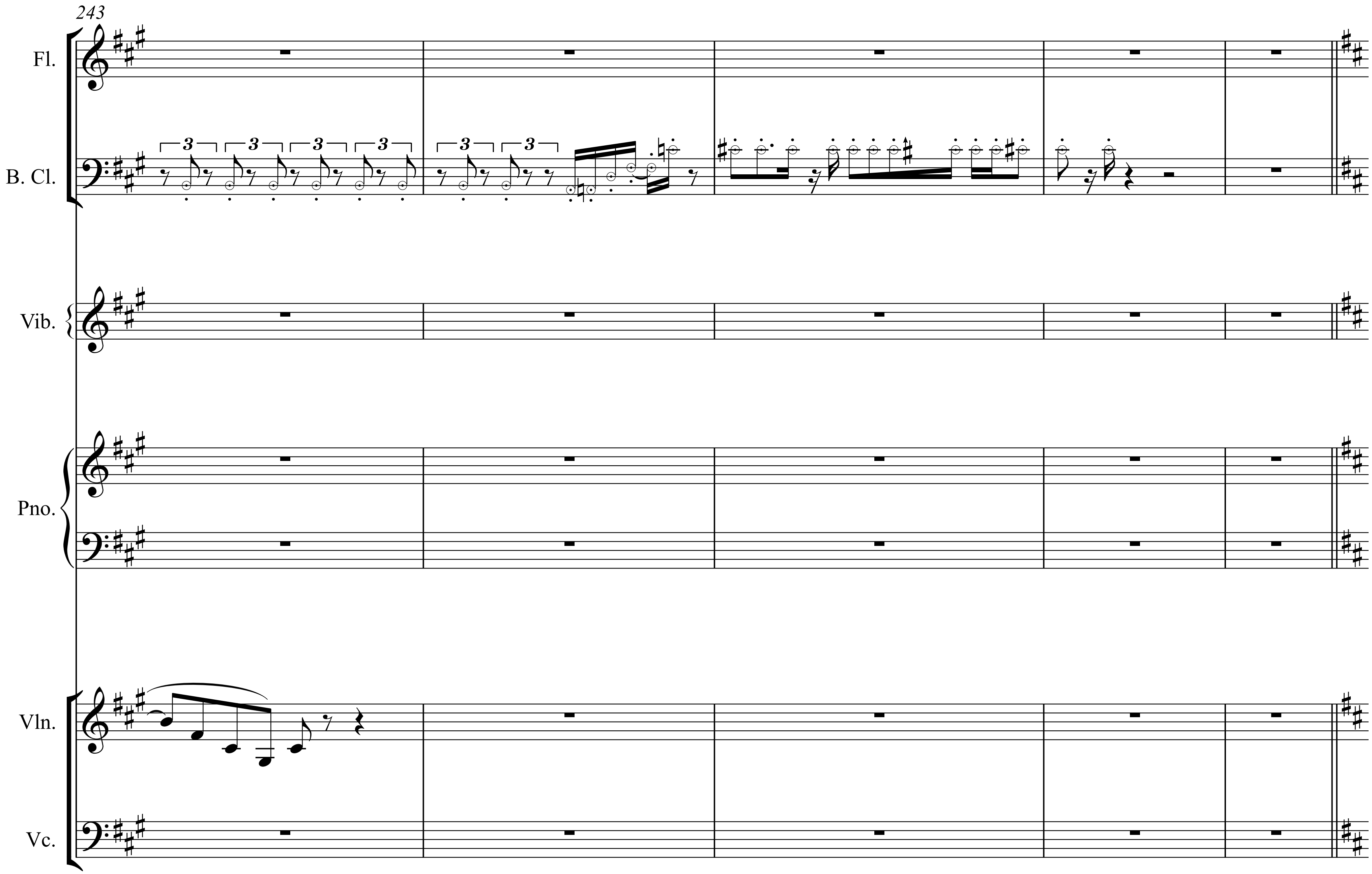

218
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
ord.
3
p
mp
p
ppp
ppp
ord.
* Ped.
* Ped.
* Ped.
col legno.
mf

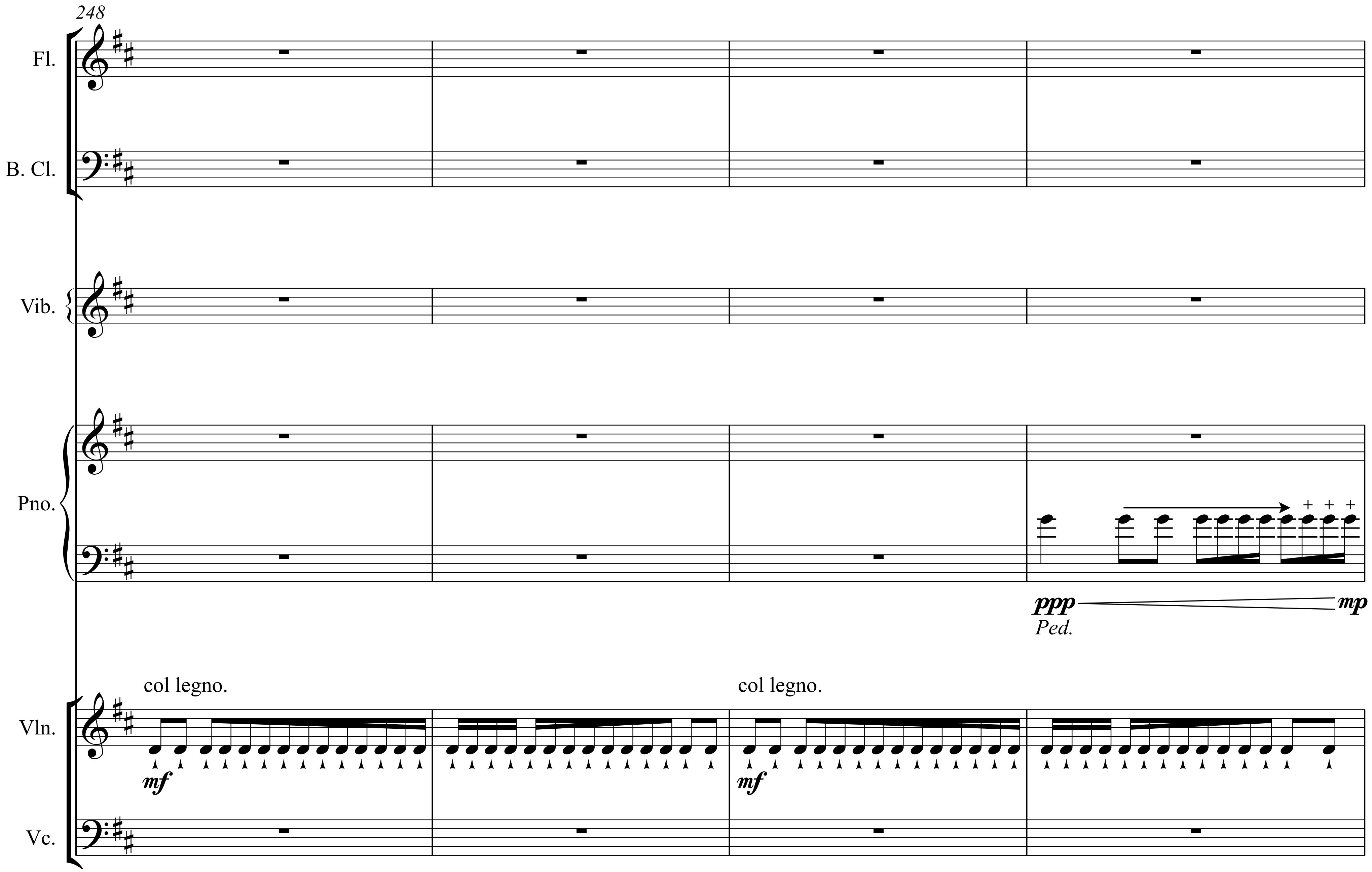

221
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
ord.
pp
mp
pp
p
ppp
ord.
* Ped.

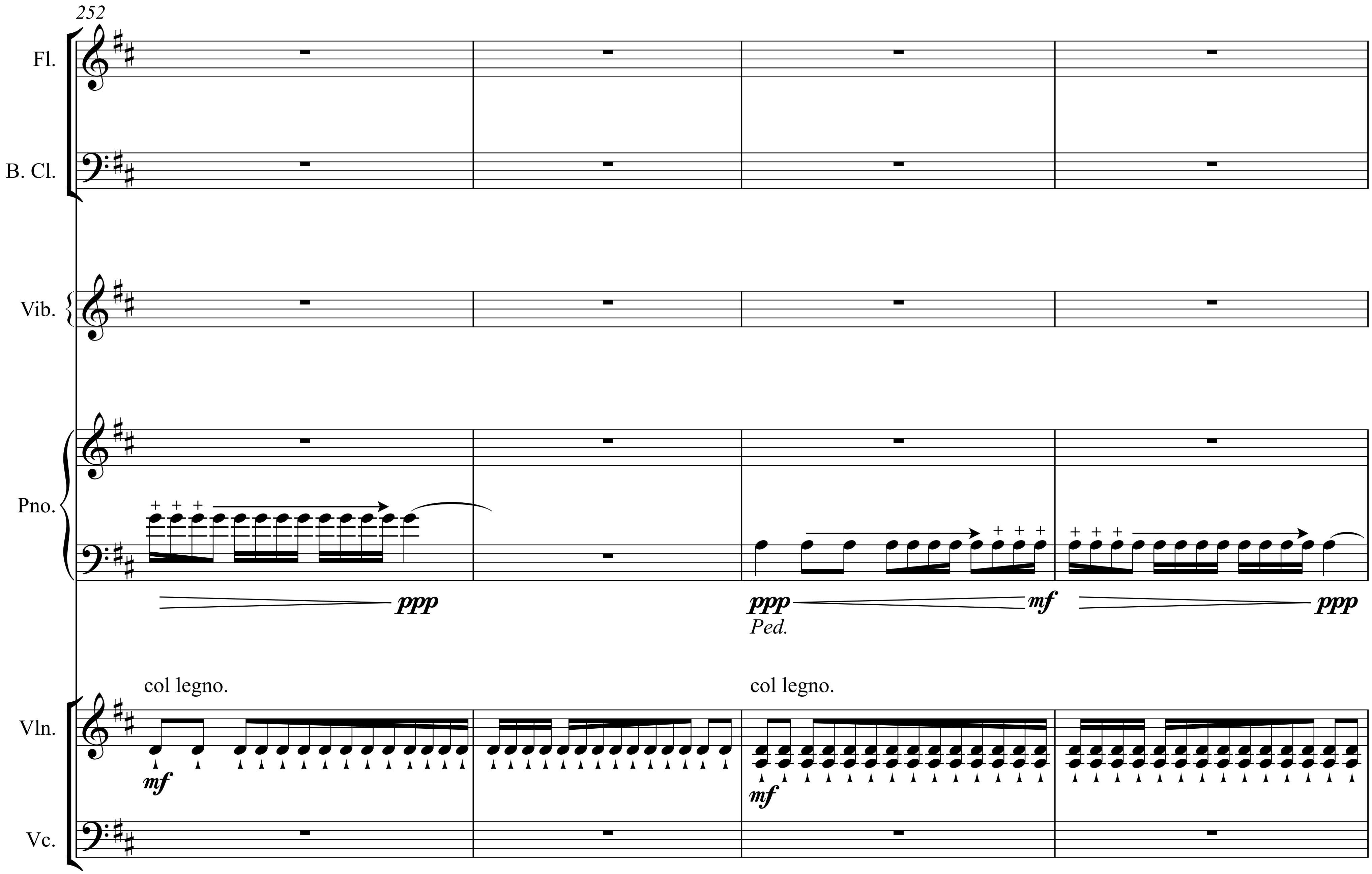

229
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
sul tasto.
sul pont.
sul tasto.
mp
pp
mp
pp
mp

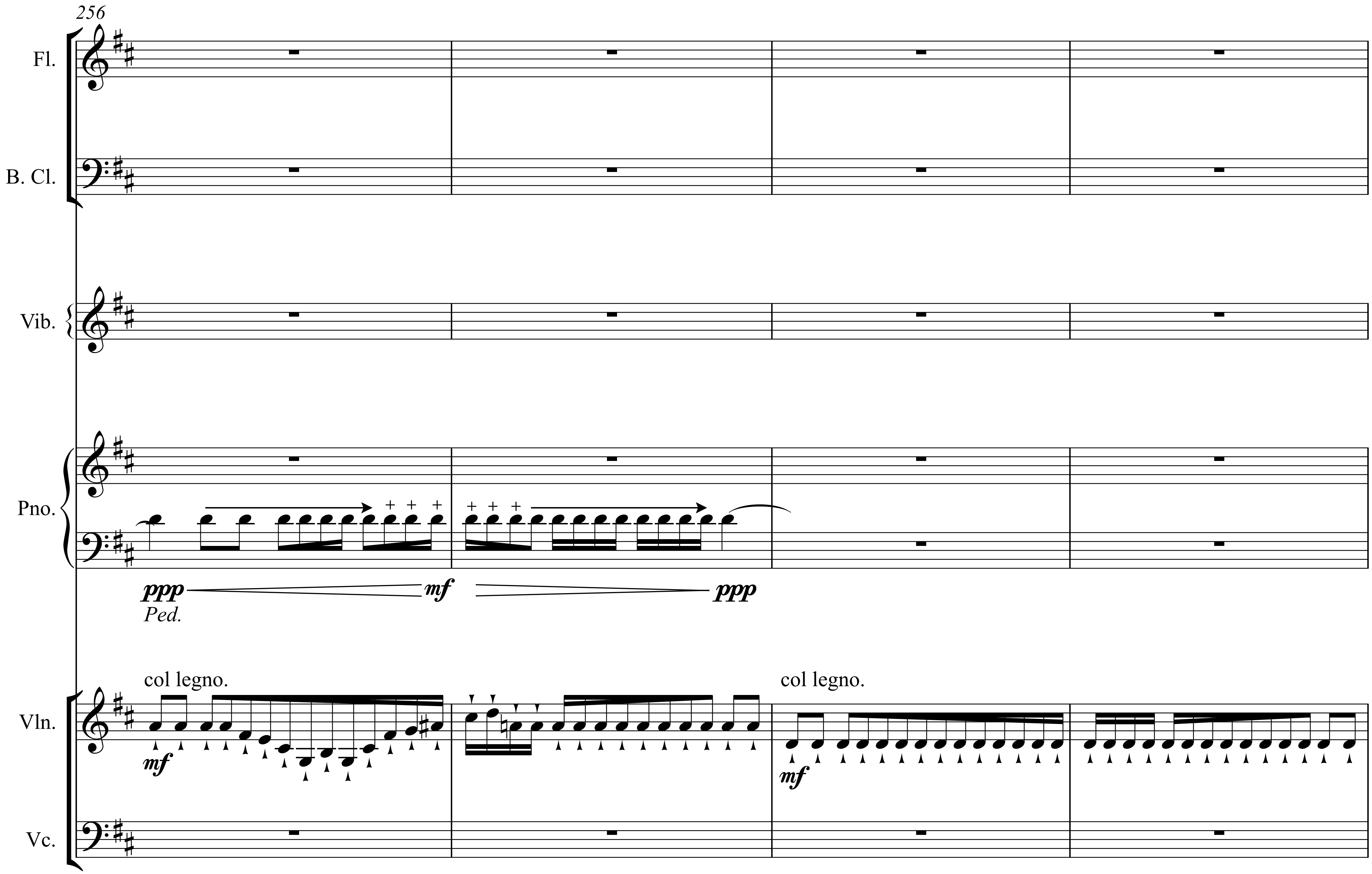

235
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
pp

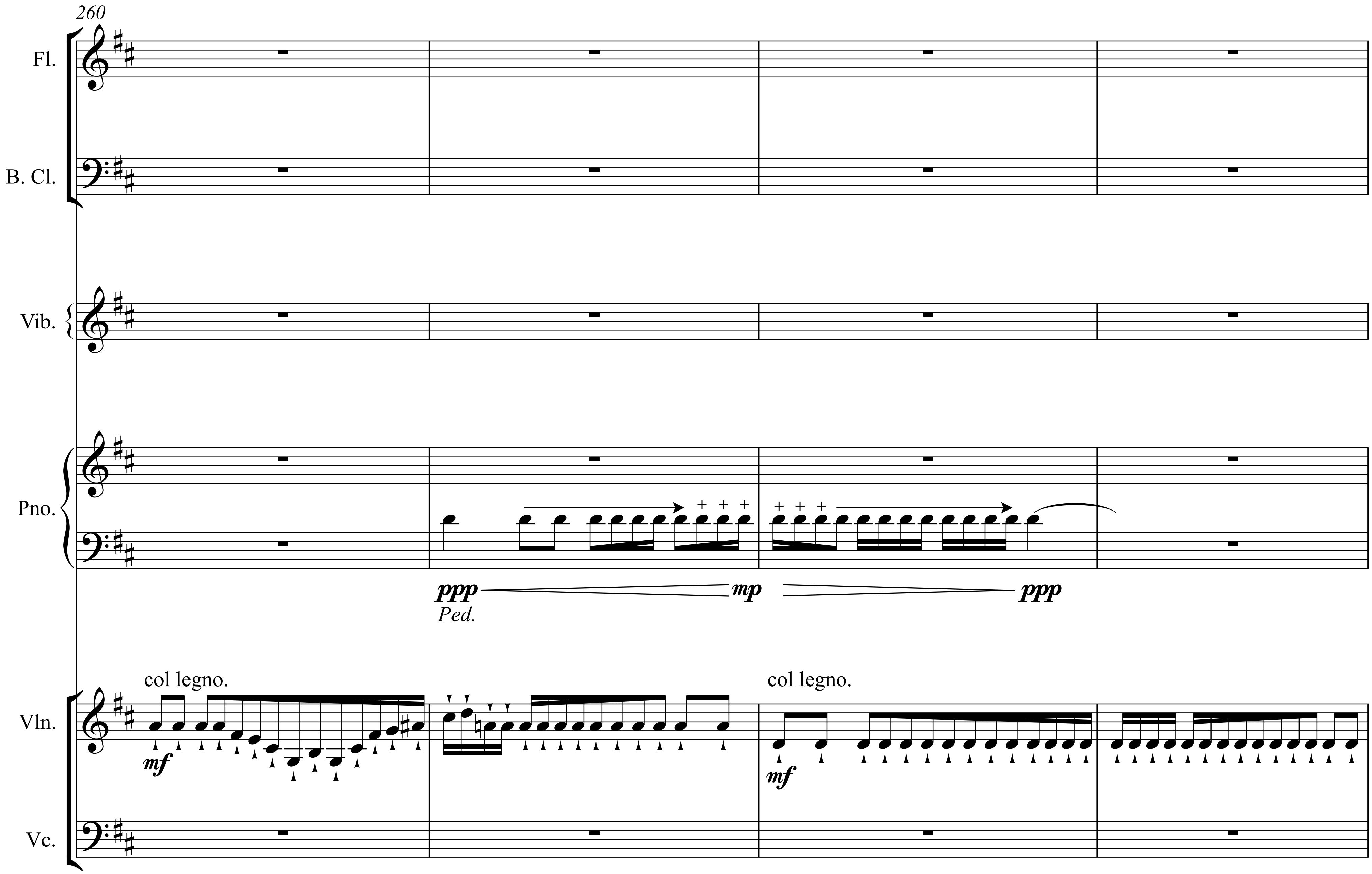

239
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
p
3

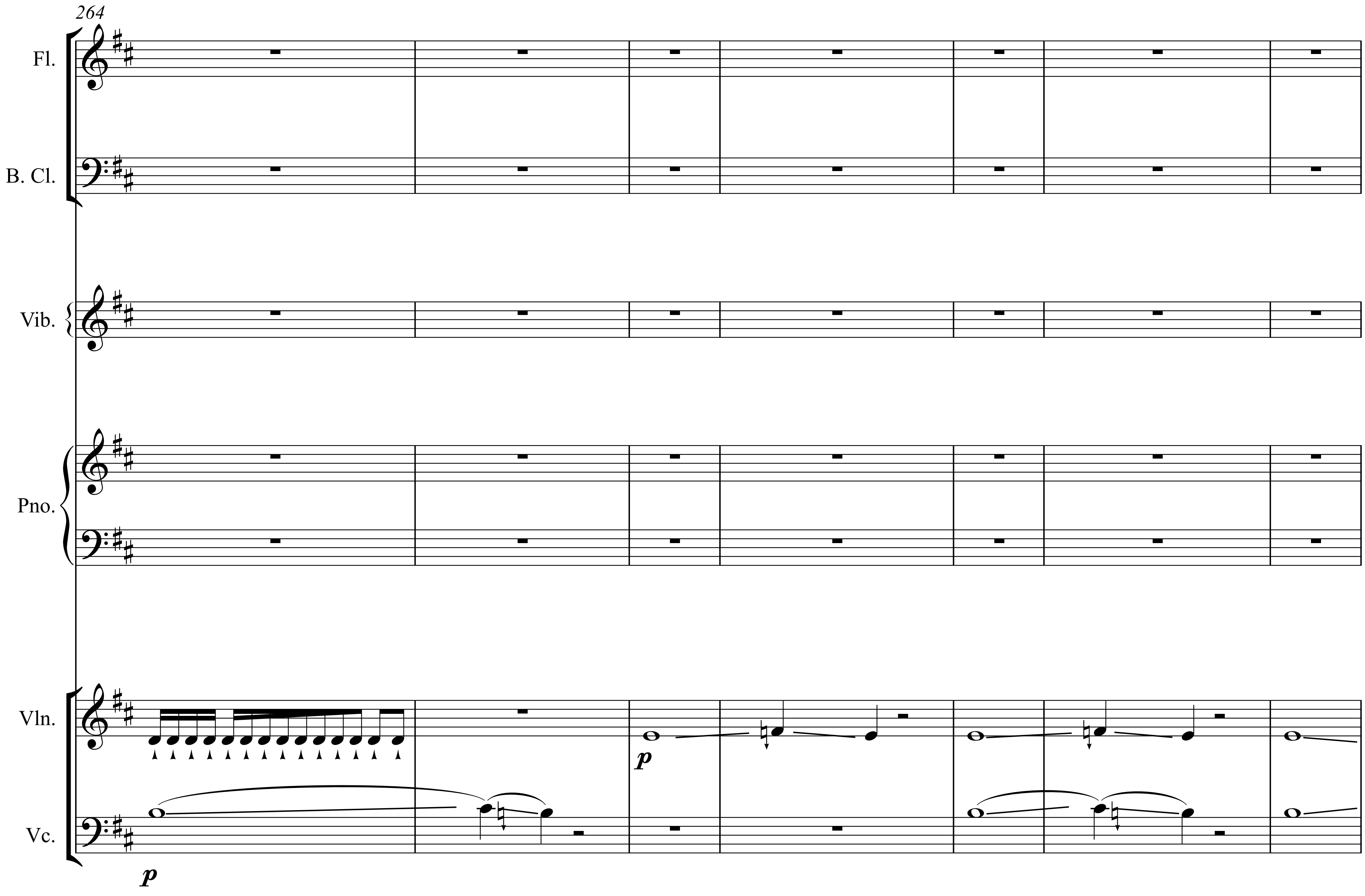

243
Fl.
B. Cl.
3
Vib.
Pno.
Vln.
Vc.

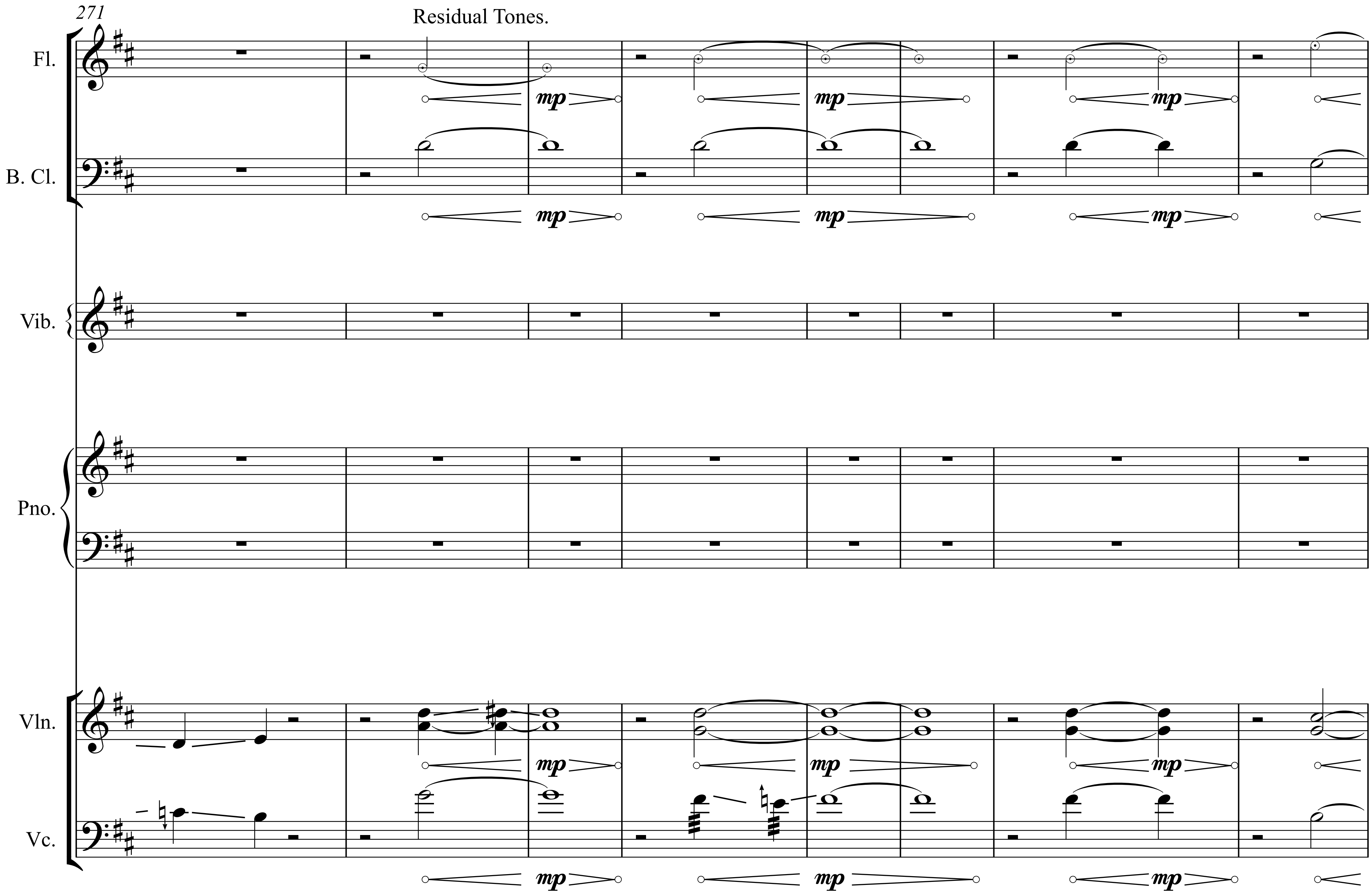

248
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
col legno.
mf
col legno.
mf
ppp
mp
Ped.

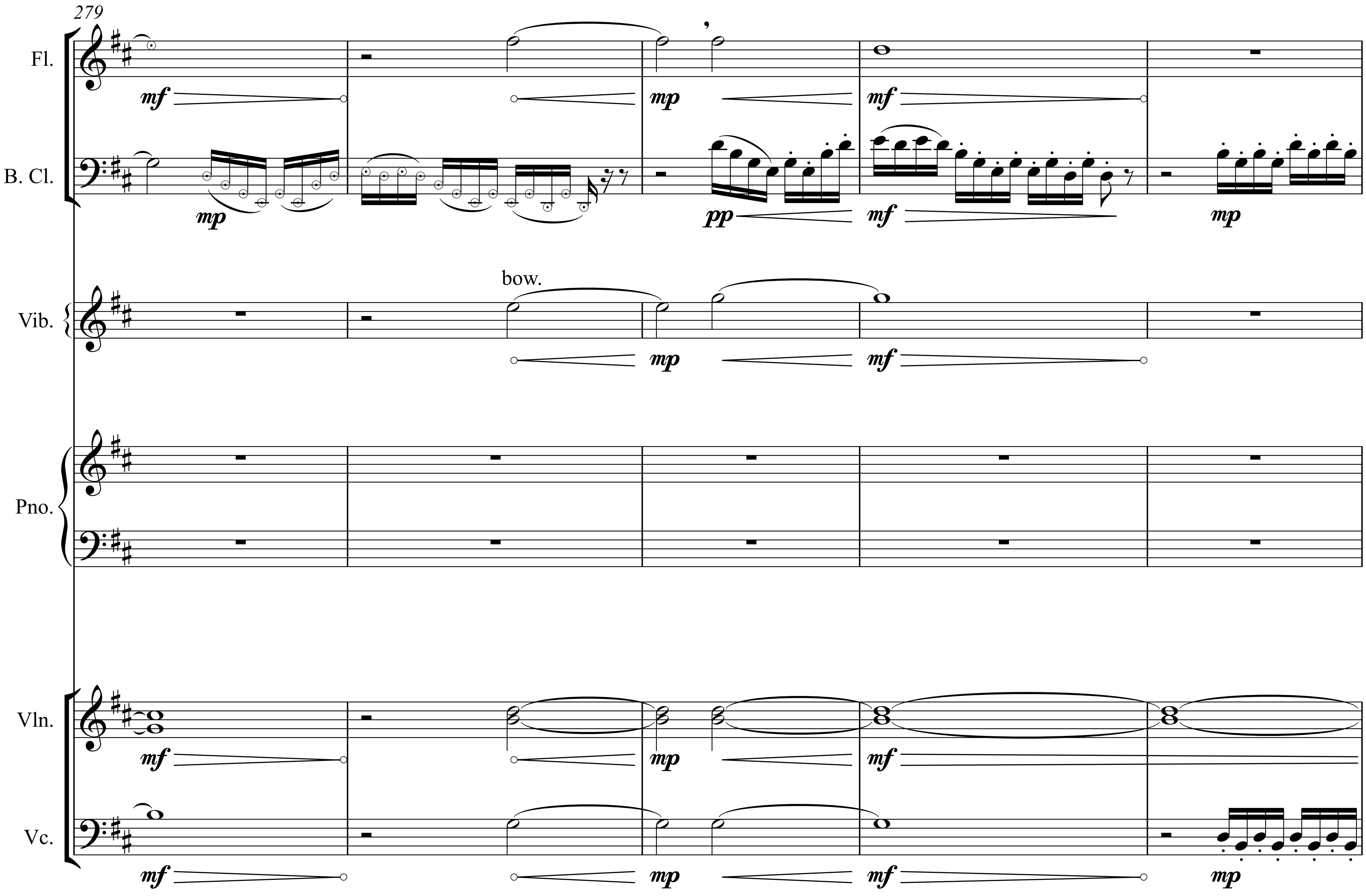

252
Fl.
B. Cl.
Vib.
Pno.
ppp
ppp
Ped.
mf
ppp
col legno.
col legno.
Vln.
mf
mf
Vc.

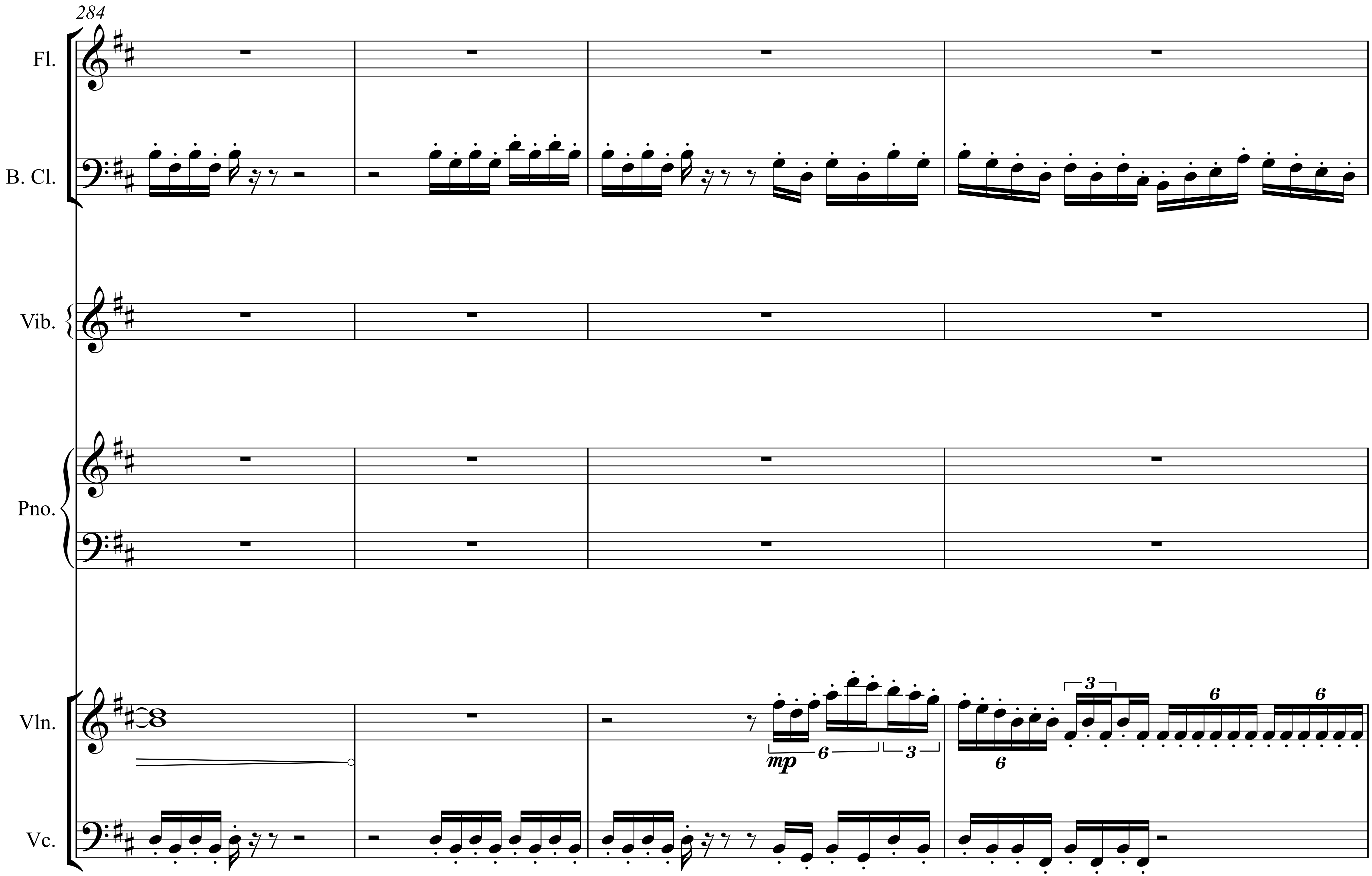

256
Fl.
B. Cl.
Vib.
Pno.
ppp
mf
ppp
Ped.
col legno.
col legno.
mf
mf
Vln.
Vc.

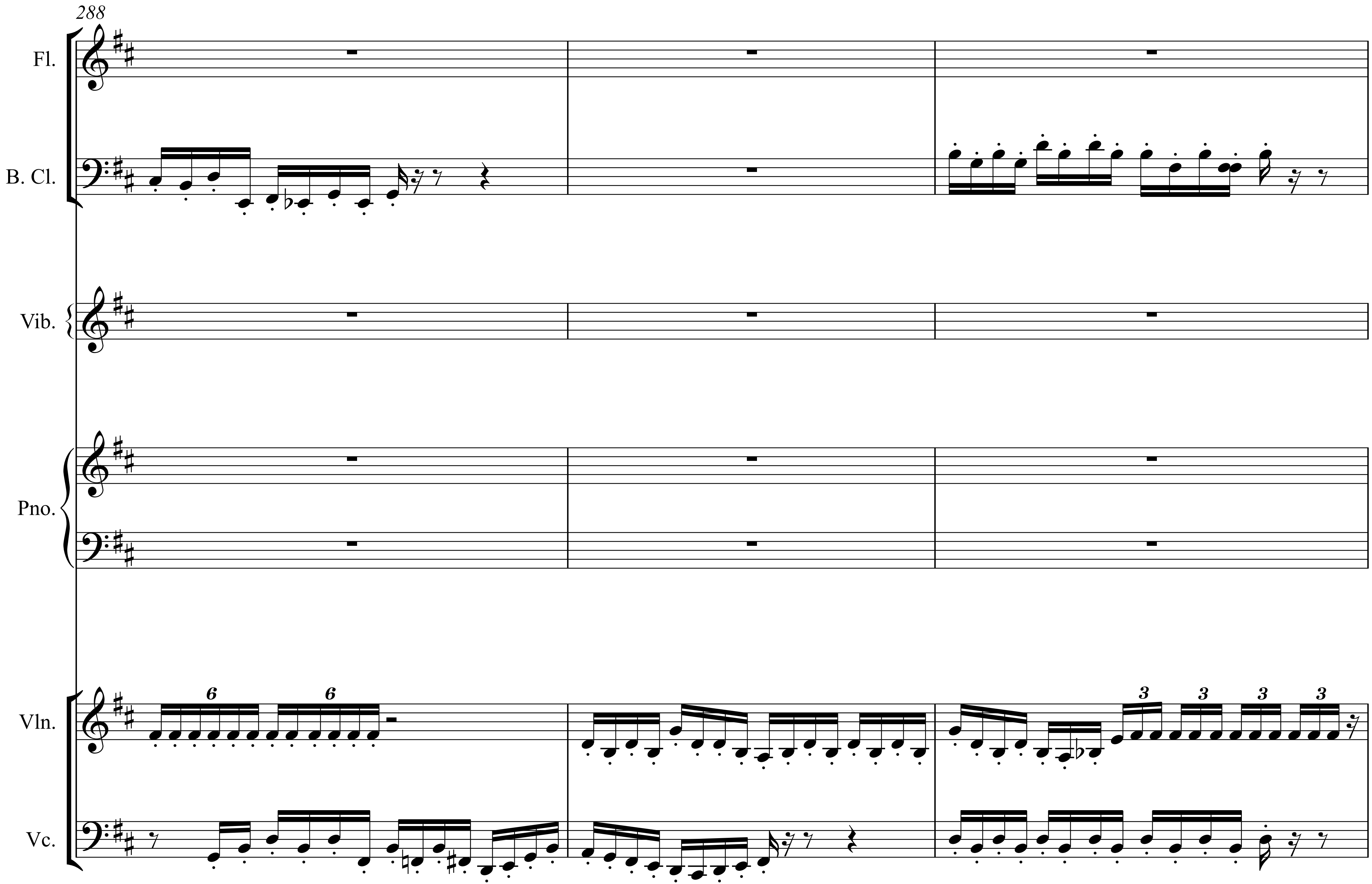

260
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
ppp
Ped.
mp
ppp
col legno.
mf
col legno.
mf

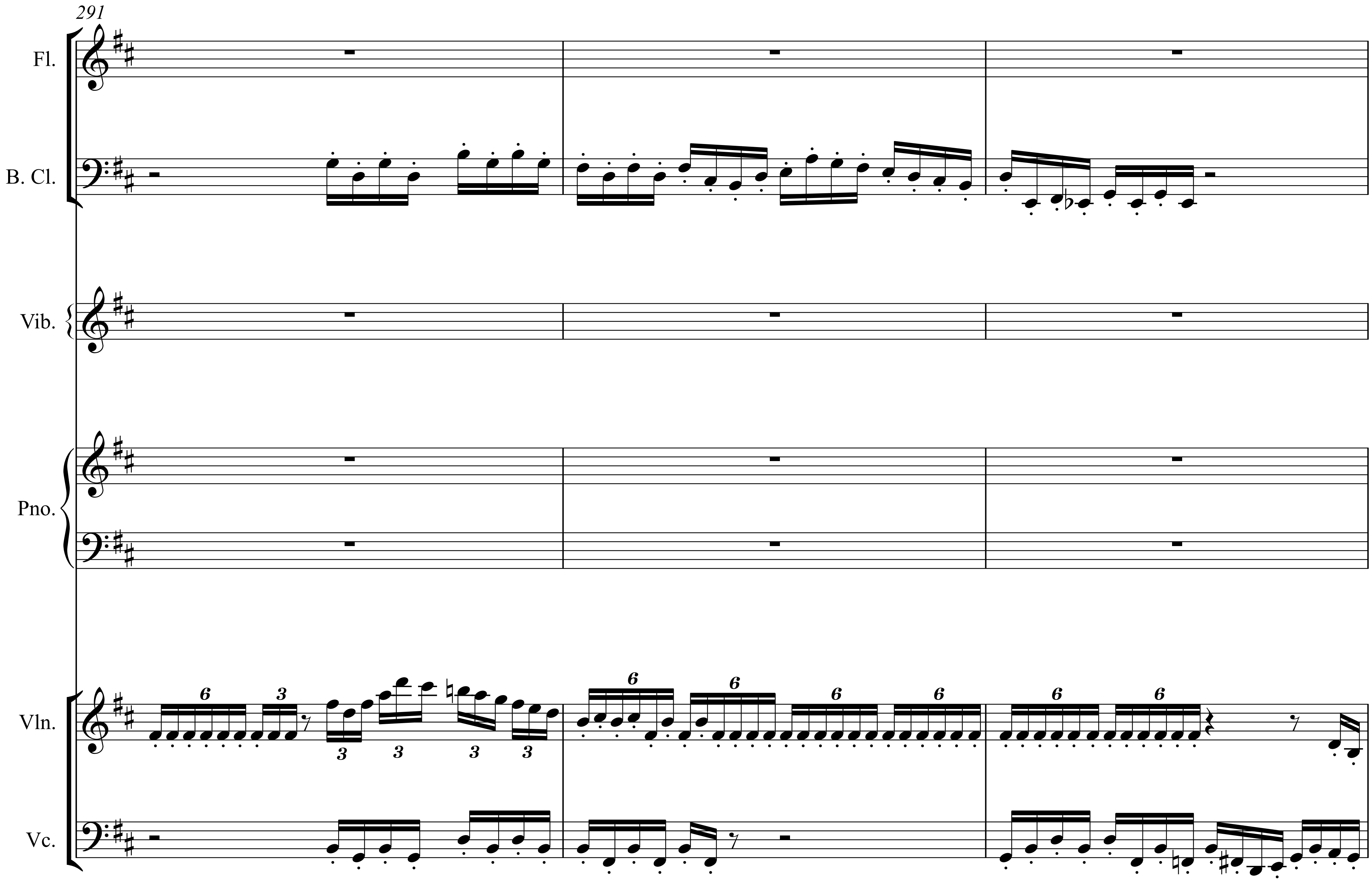

264
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
p
p

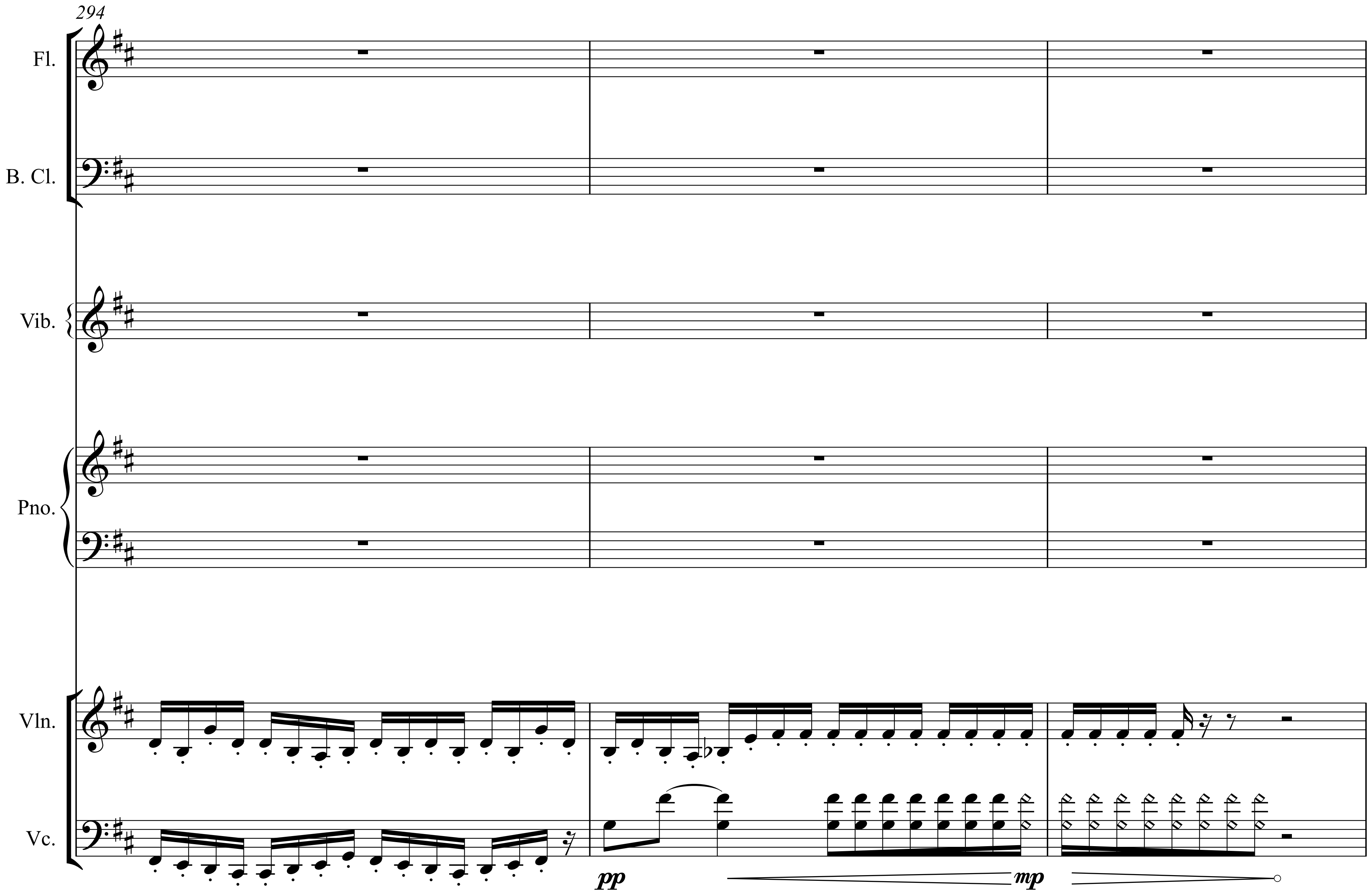

271
Residual Tones.
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
mp
mp
mp
mp
mp
mp
mp
mp
mp
mp
mp
mp

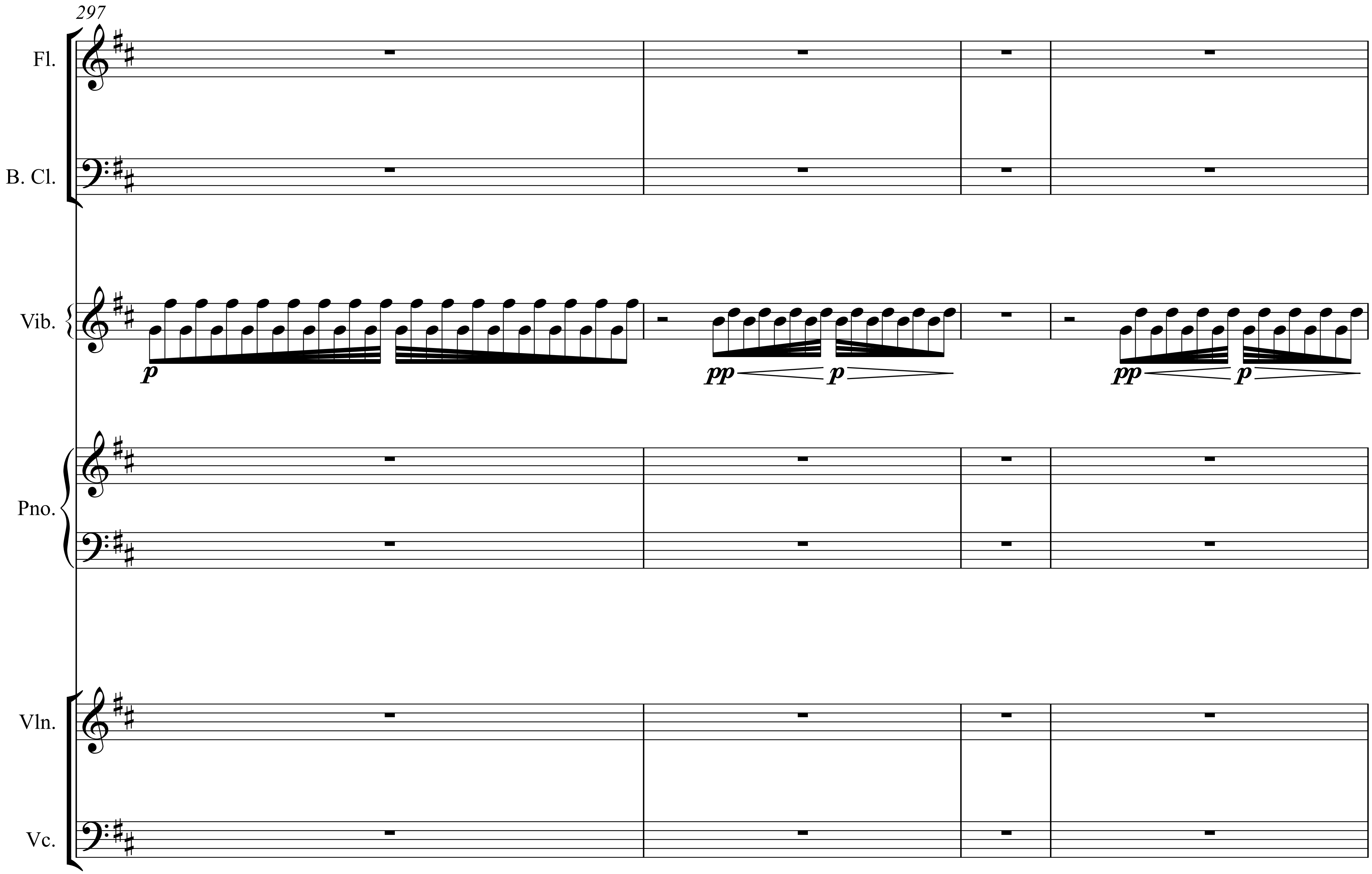

279
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
bow.
mf
mp
pp

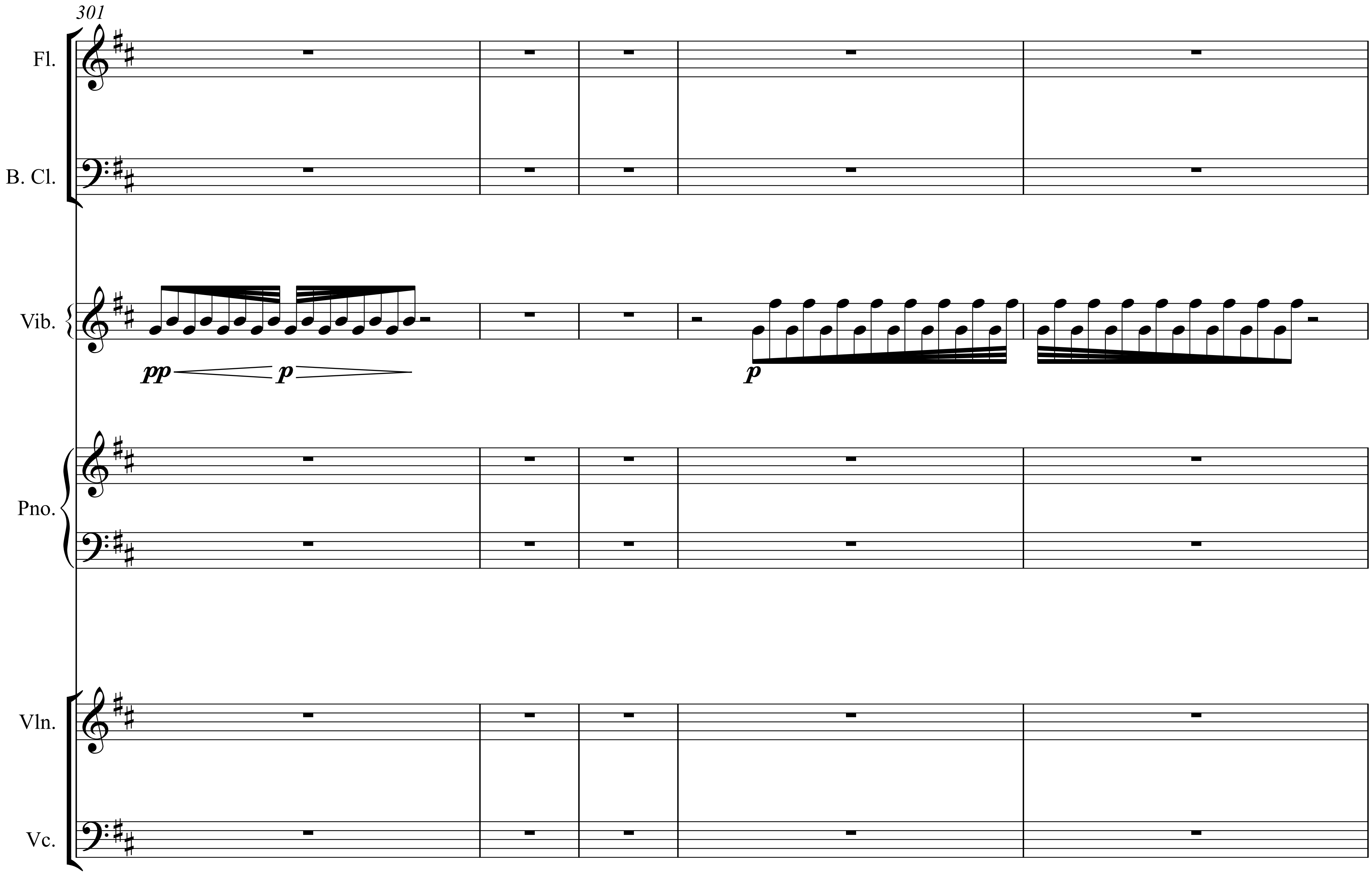

284
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
mp
6
3
6
3
6
6

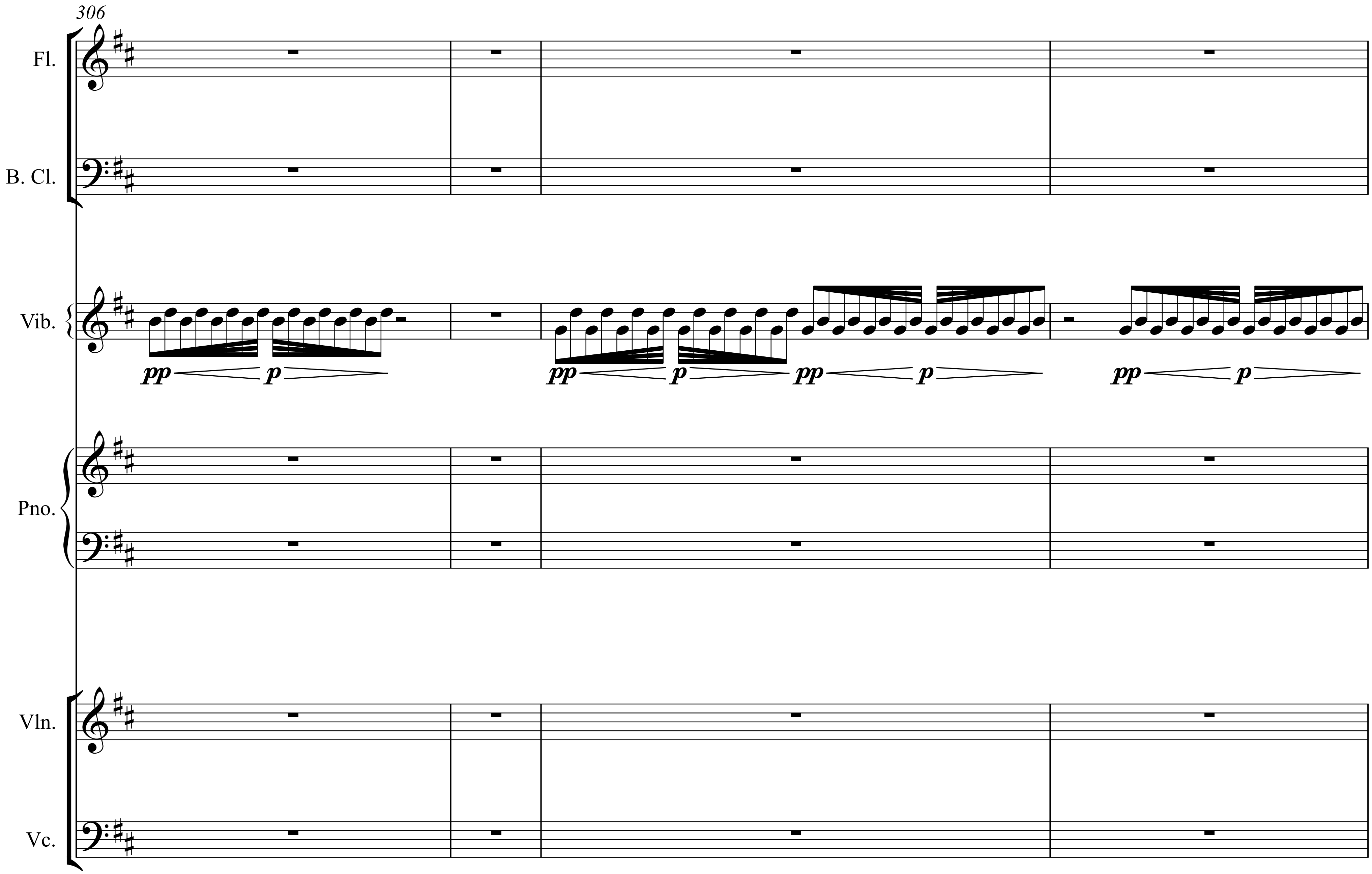

288
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
6
6
3
3
3
3

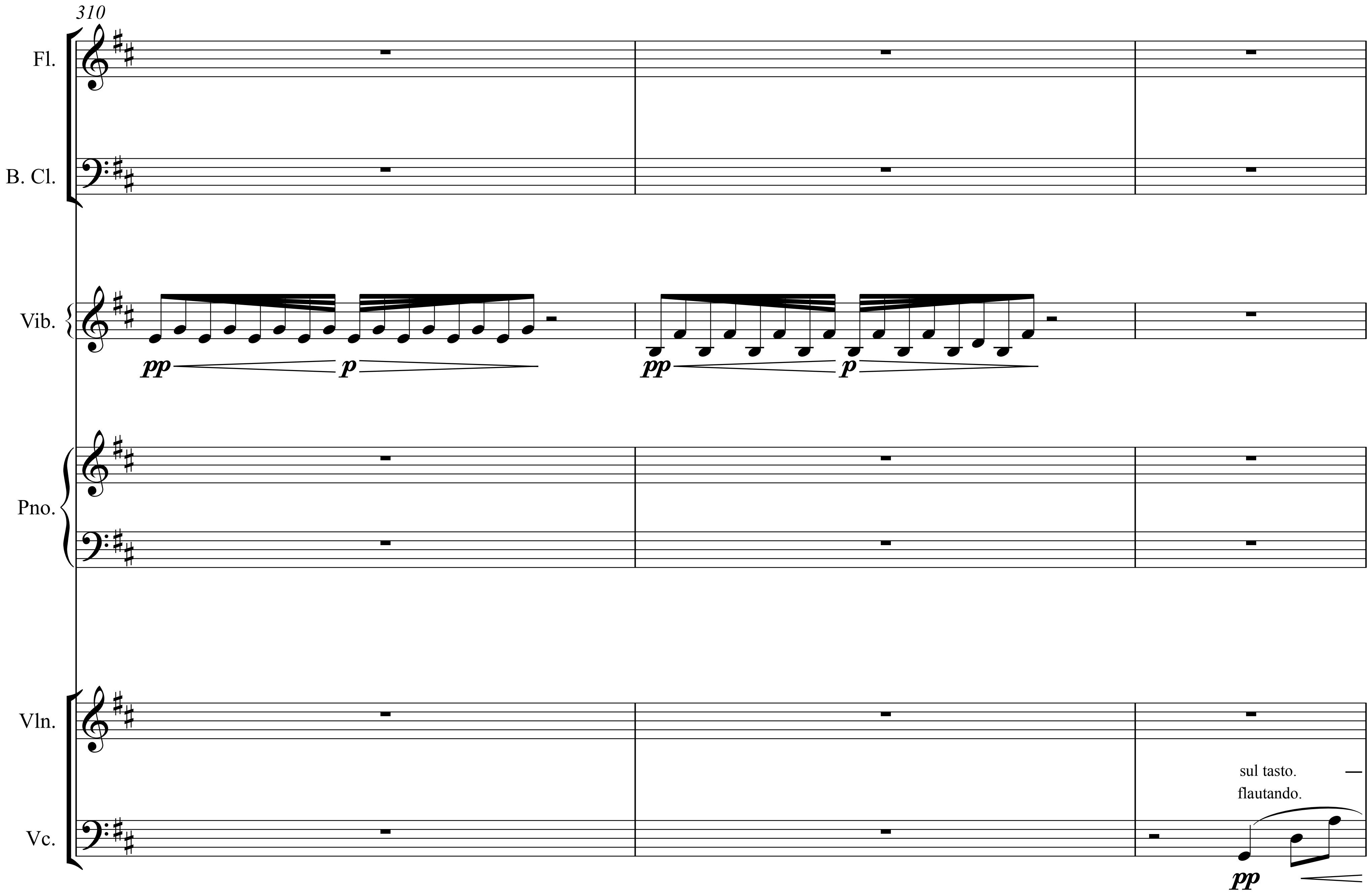

Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.

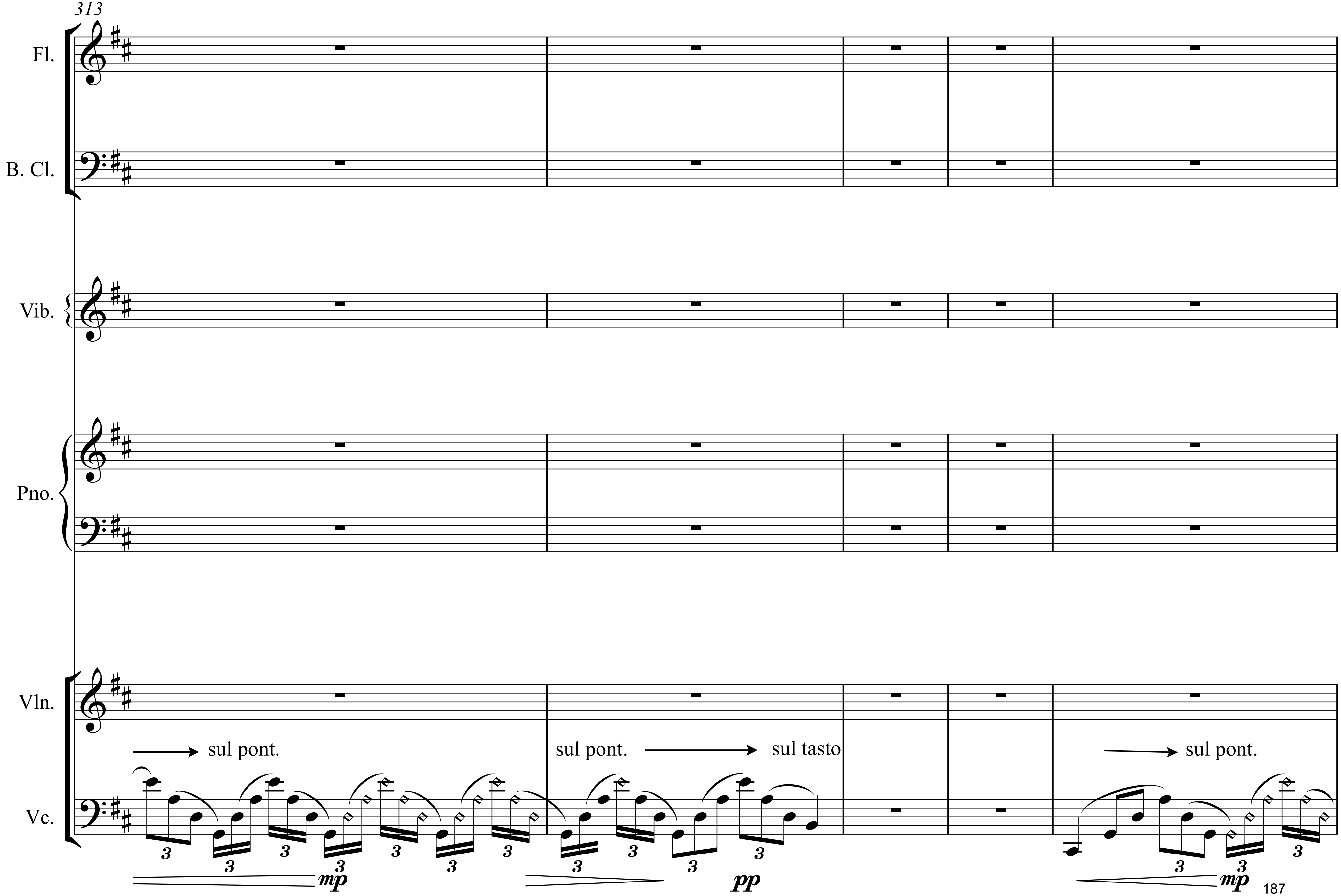

294
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
pp
mp

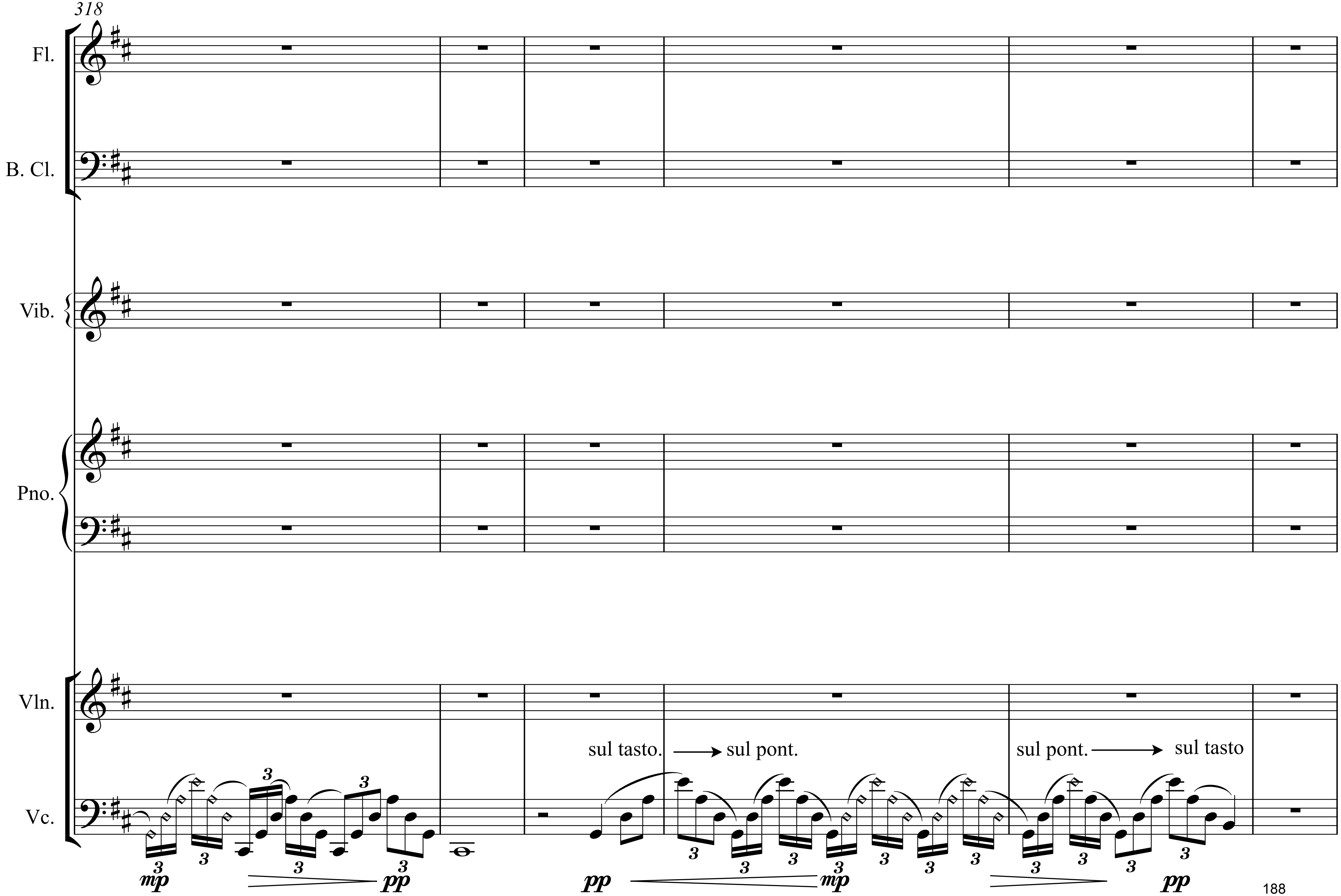

297
Fl.
B. Cl.
Vib.
p
pp
p
pp
p
Pno.
Vln.
Vc.

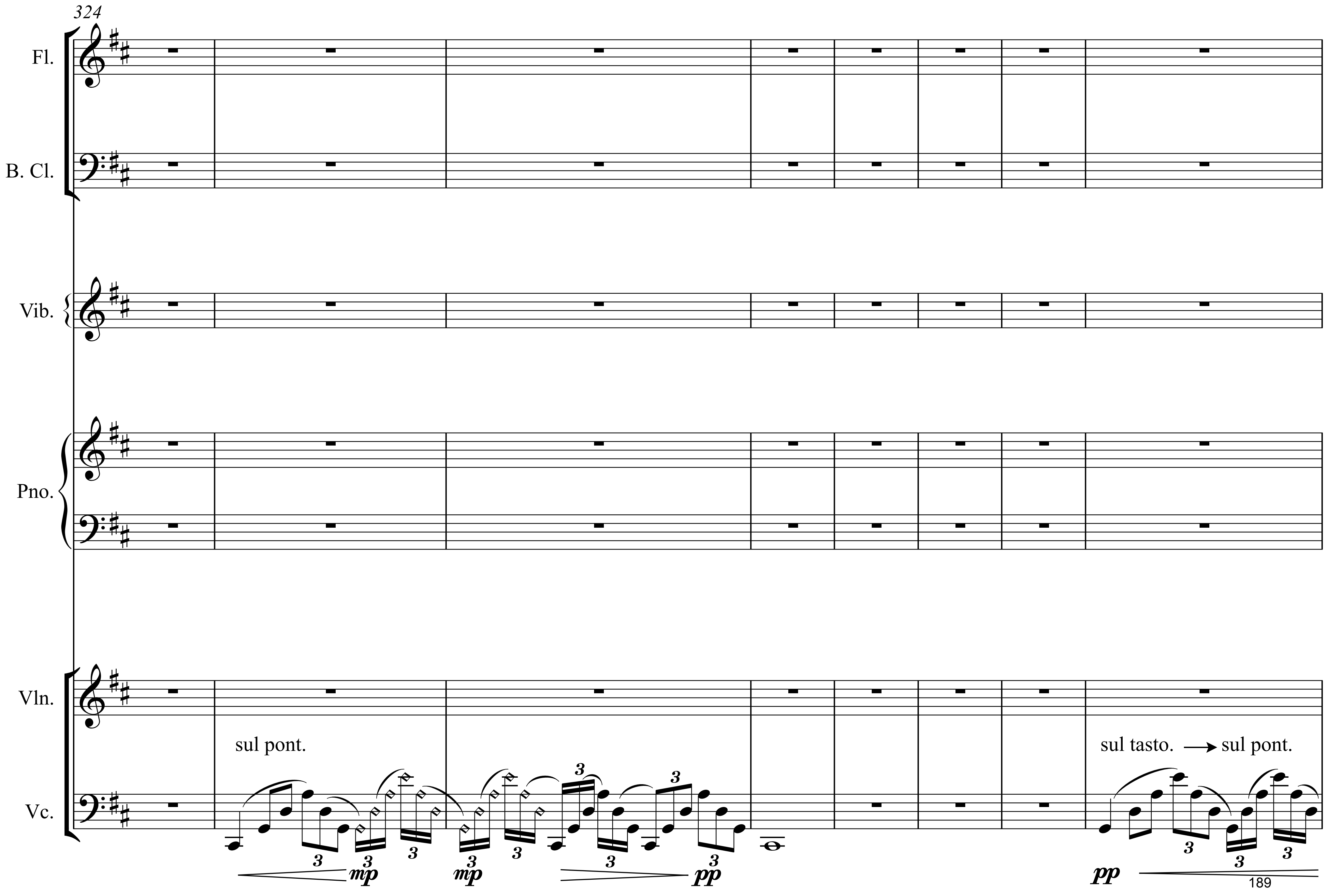

301
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
pp
p
p

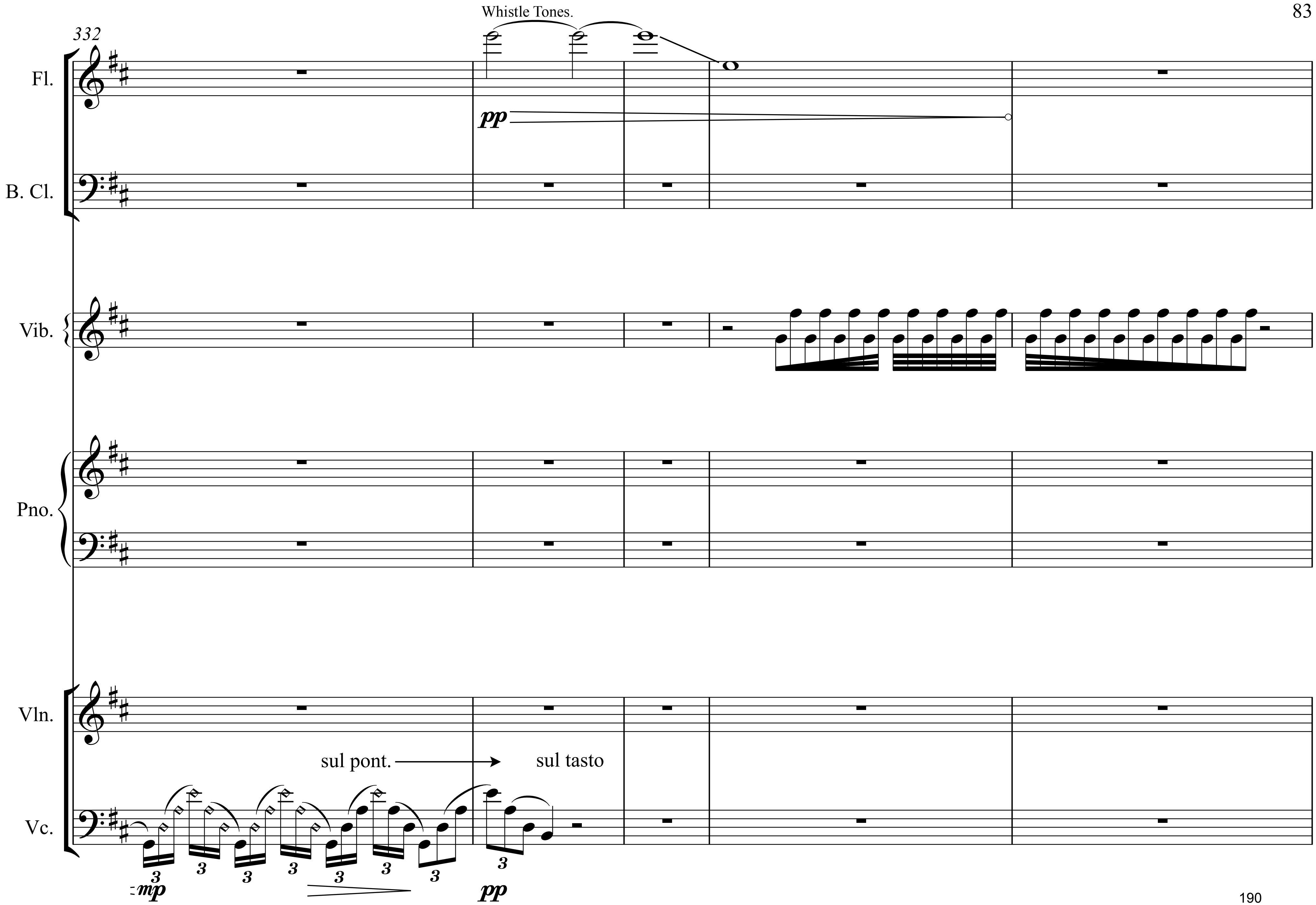

306
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
pp
p
pp
p
pp
p
pp
p

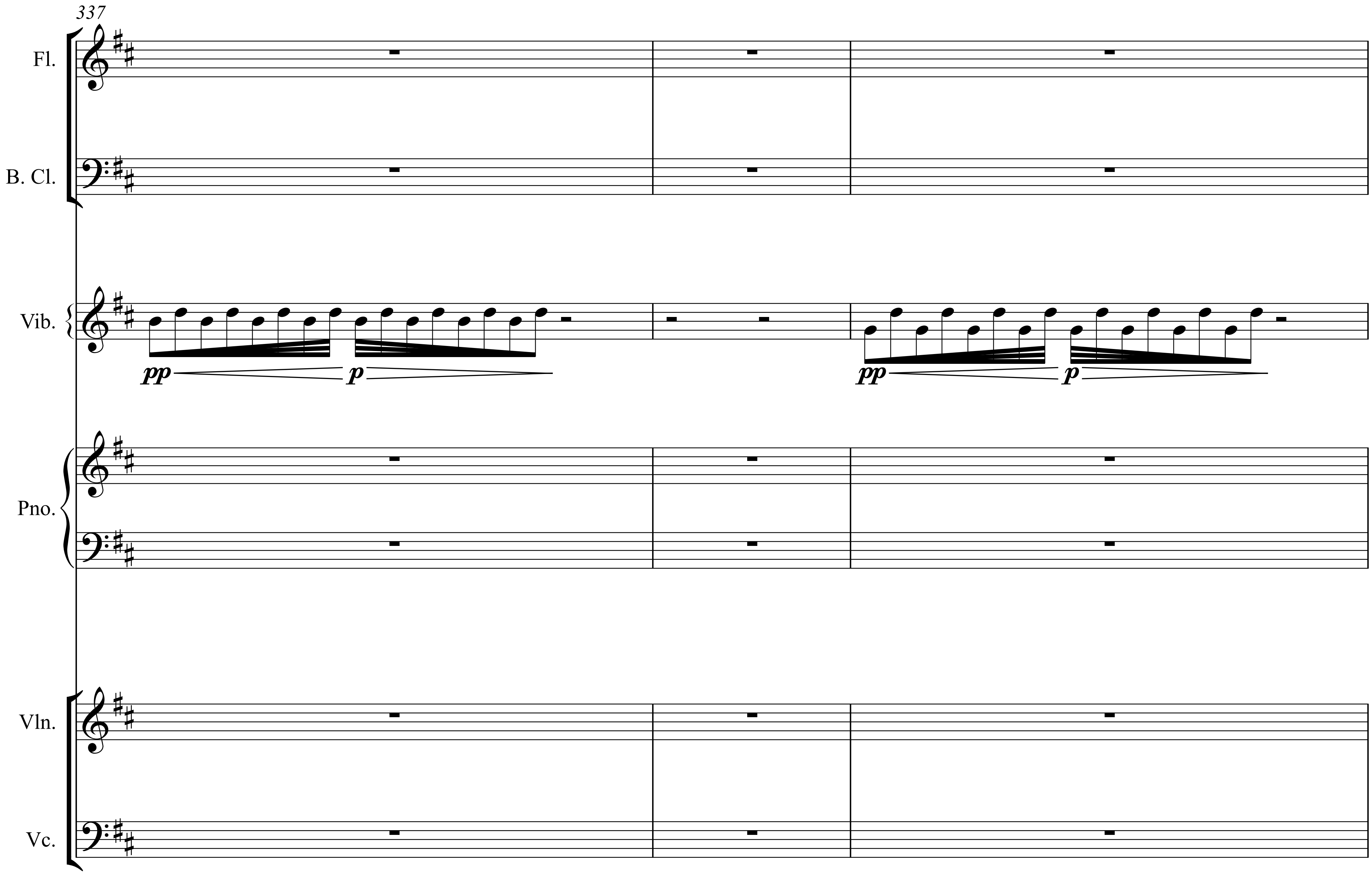

310
Fl.
B. Cl.
Vib.
pp
p
pp
p
Pno.
Vln.
sul tasto.
flautando.
Vc.
pp

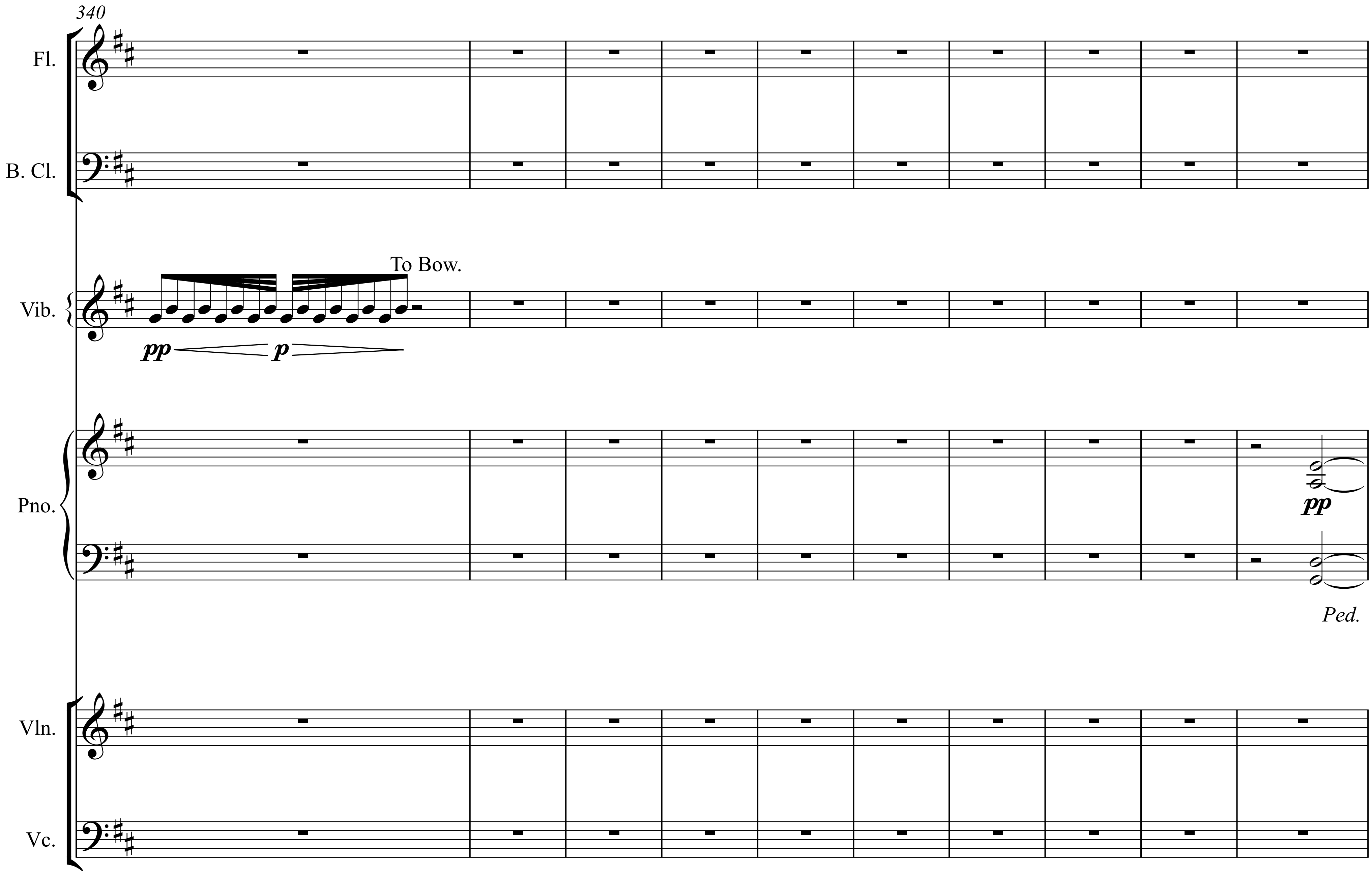

313
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
sul pont.
sul pont.
sul tasto
sul pont.
3
mp
pp
mp

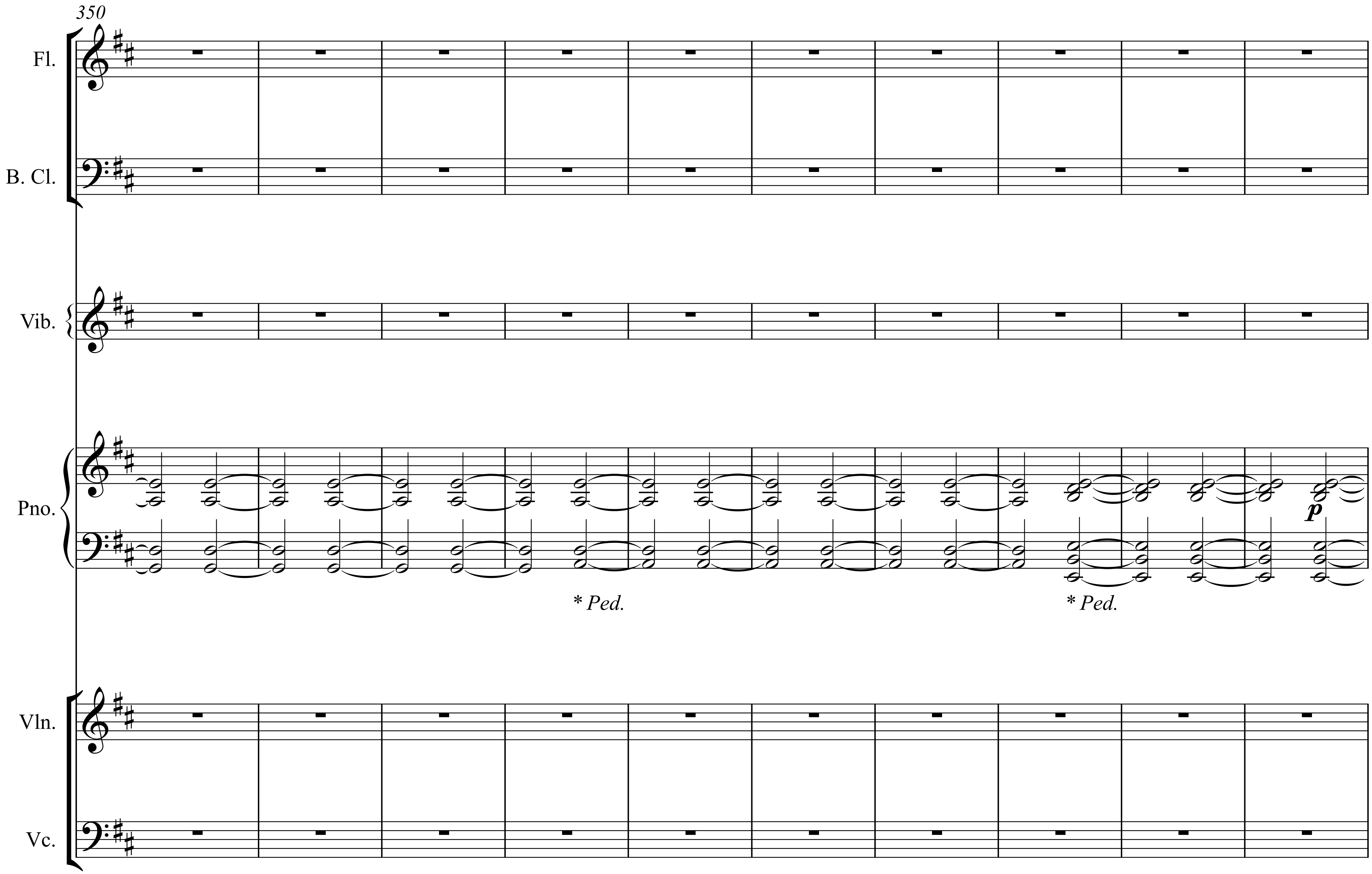

318
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
sul tasto.
sul pont.
sul pont.
sul tasto
3
mp
pp
pp
mp
pp

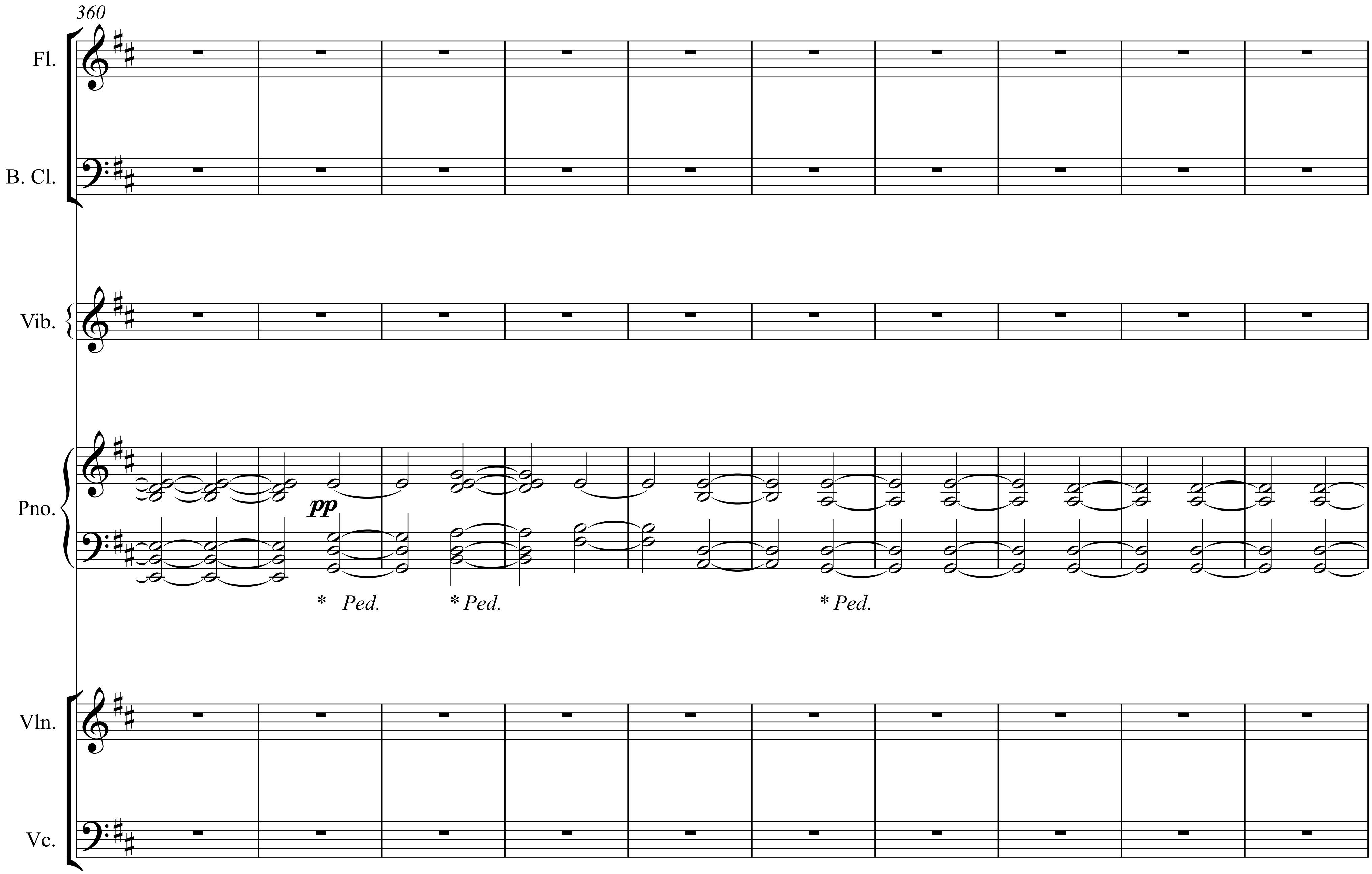

324
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
sul pont.
3
mp
mp
3
pp
sul tasto. ⟶ sul pont.
pp

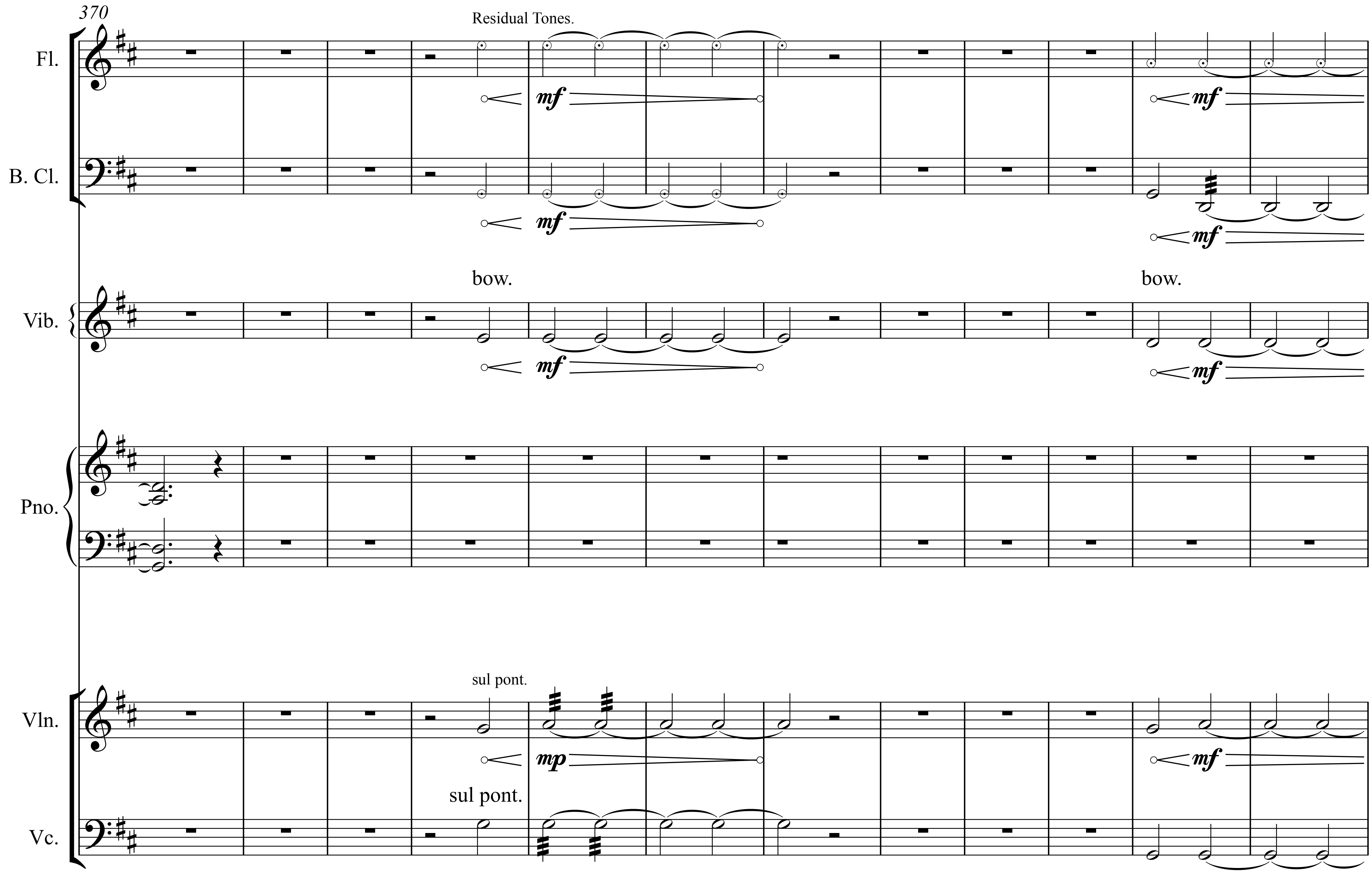

332
Whistle Tones.
Fl.
pp
B. Cl.
Vib.
Pno.
Vln.
sul pont.
sul tasto
Vc.
3
mp
pp

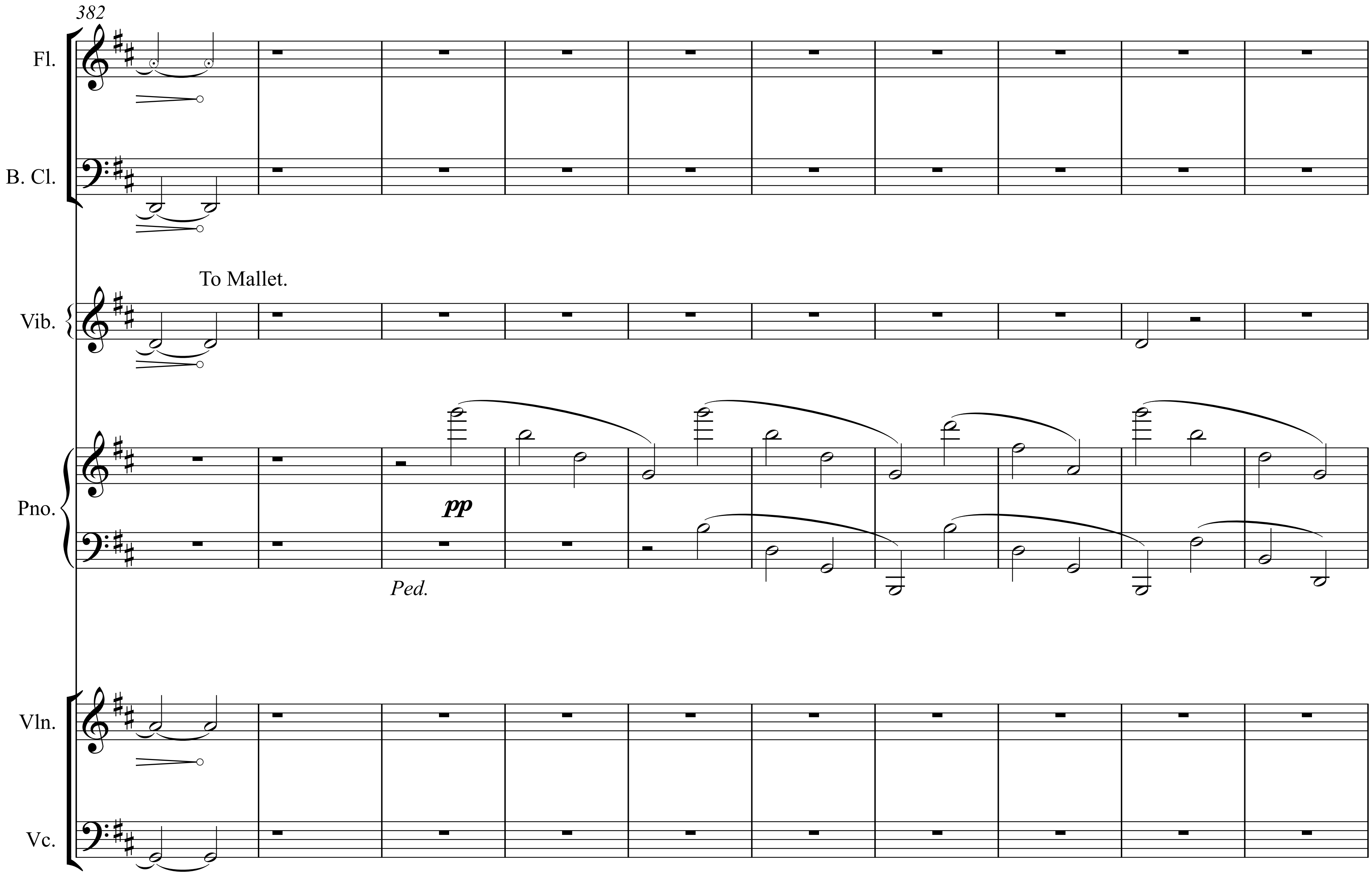

337
Fl.
B. Cl.
Vib.
pp
p
pp
p
Pno.
Vln.
Vc.

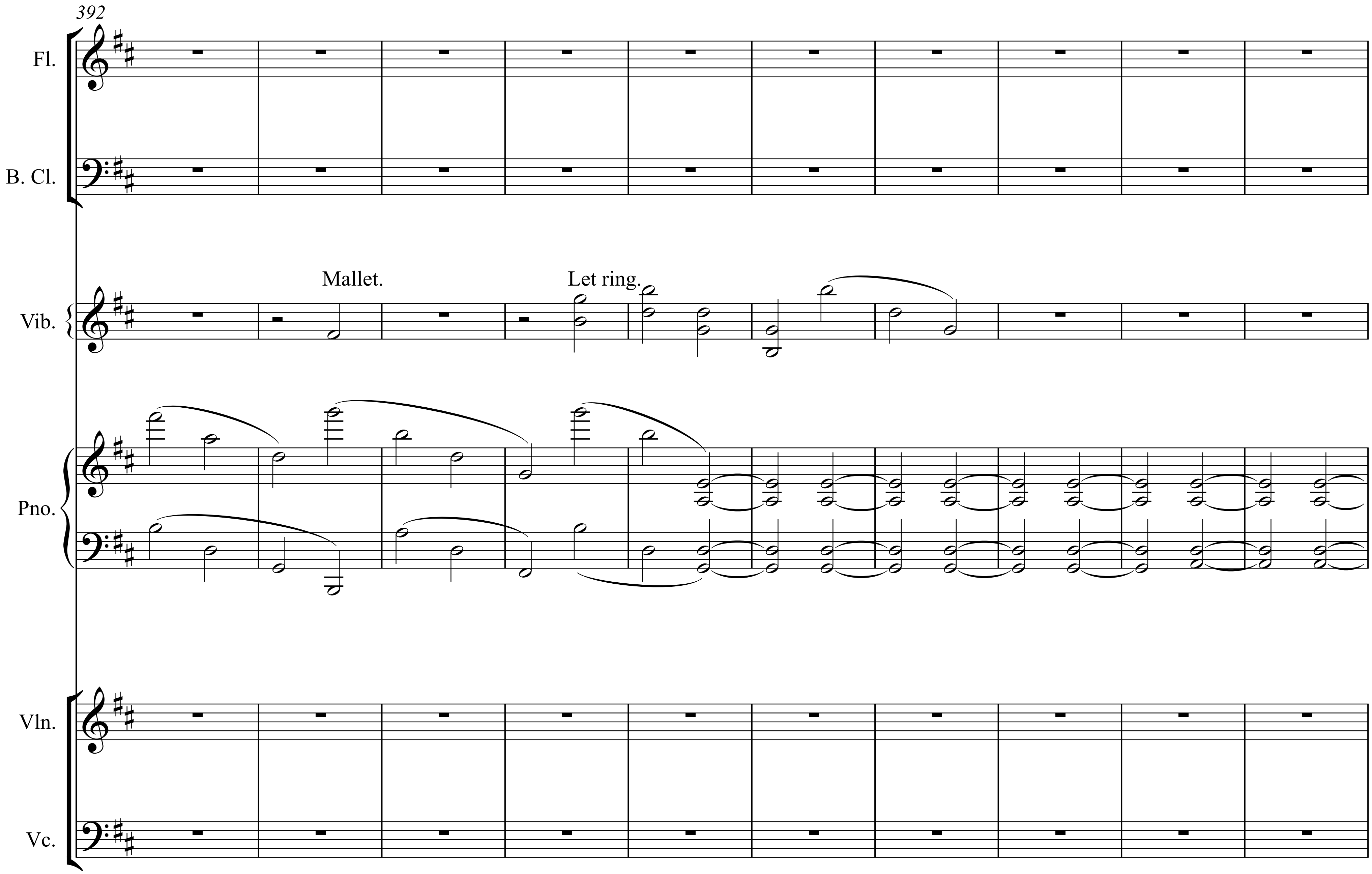

340
Fl.
B. Cl.
Vib.
To Bow.
pp
p
Pno.
pp
Ped.
Vln.
Vc.

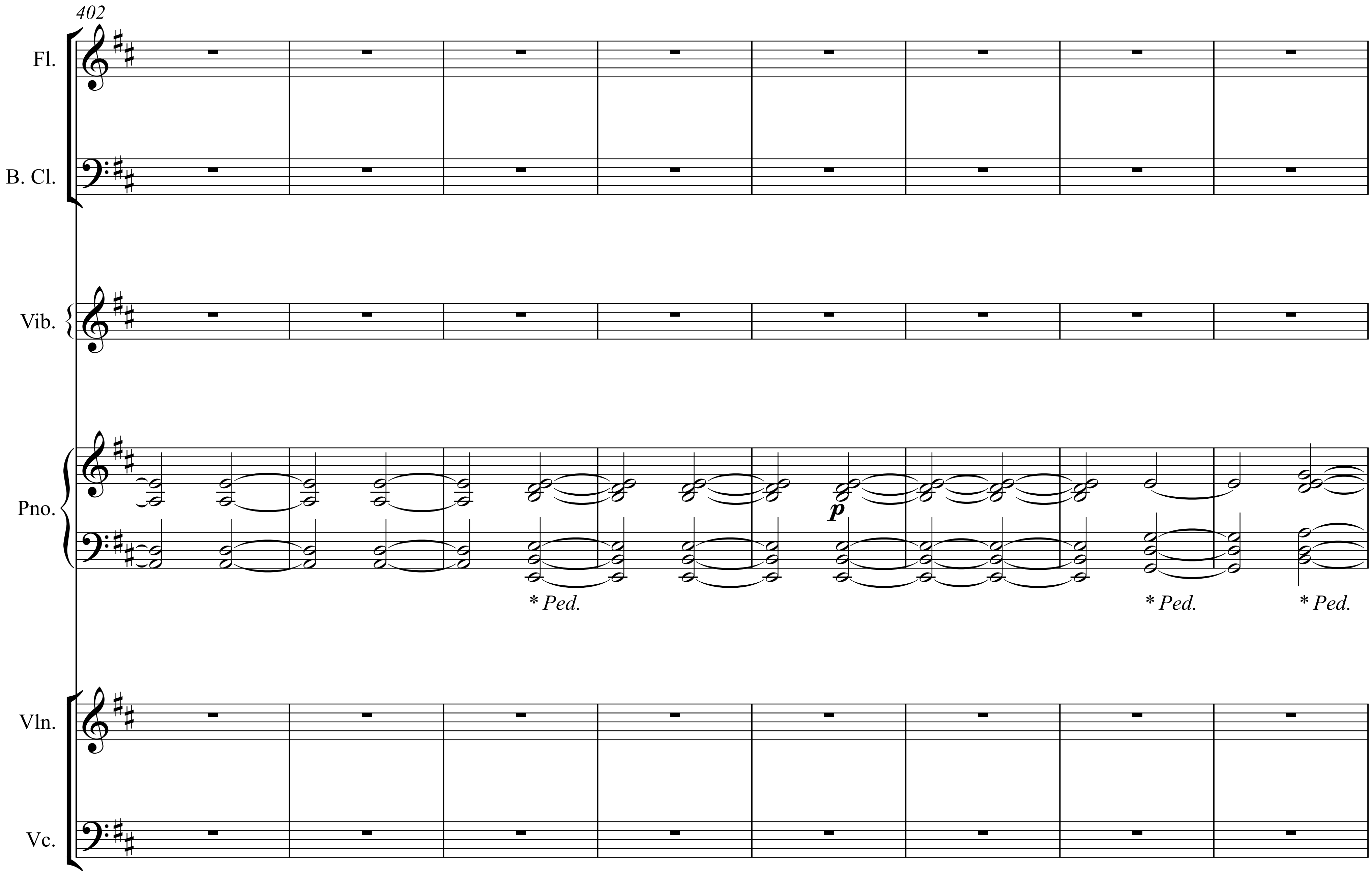

350
Fl.
B. Cl.
Vib.
Pno.
p
* Ped.
* Ped.
Vln.
Vc.

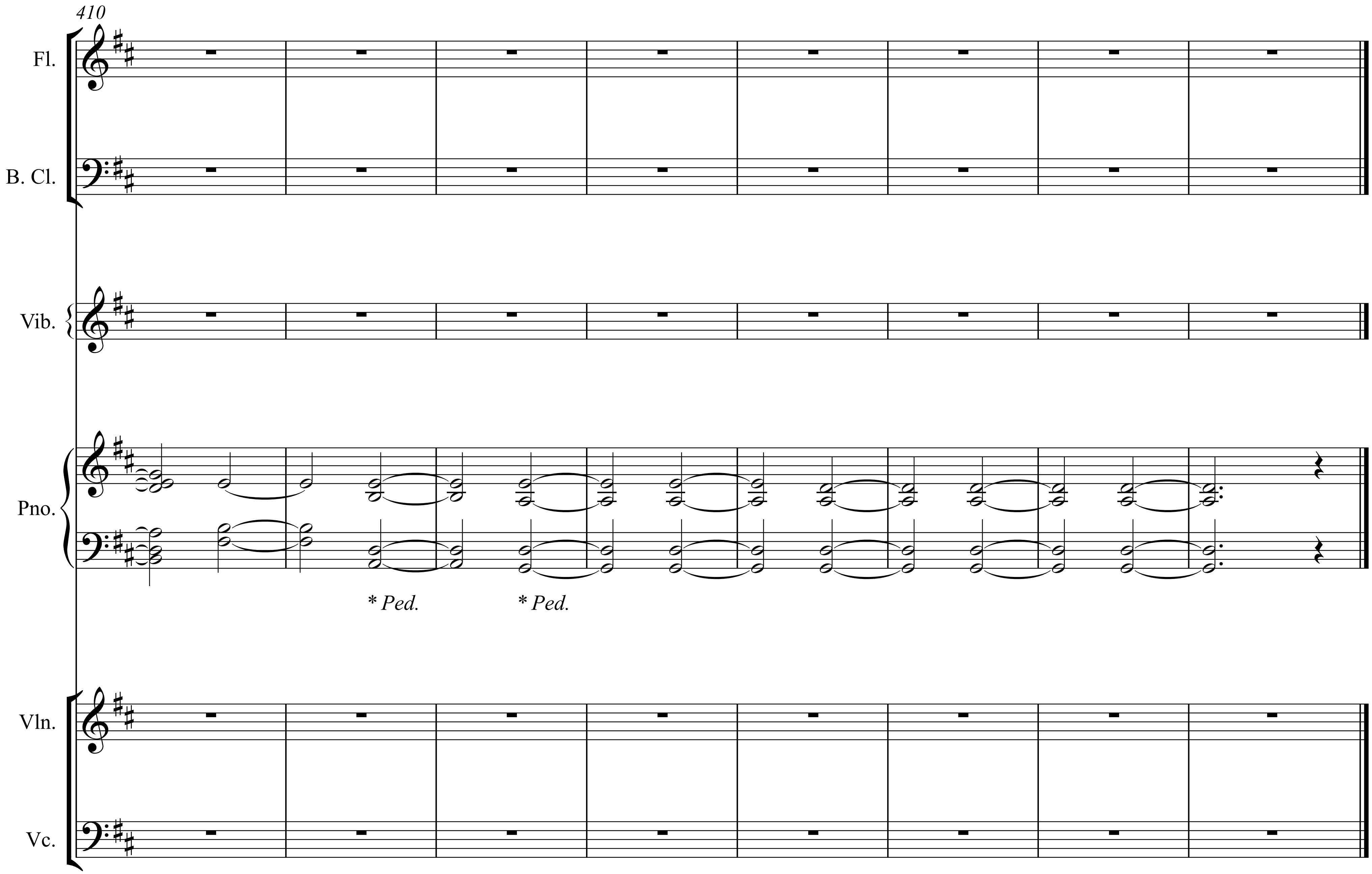

360
Fl.
B. Cl.
Vib.
Pno.
pp
* Ped.
* Ped.
* Ped.
Vln.
Vc.


370
Residual Tones.
Fl.
B. Cl.
Vib.
Pno.
Vln.
Vc.
bow.
bow.
sul pont.
sul pont.
mf
mf
mf
mf
mf
mf
mf
mp
mp


382
Fl.
B. Cl.
To Mallet.
Vib.
Pno.
pp
Ped.
Vln.
Vc.


392
Fl.
B. Cl.
Vib.
Mallet.
Let ring.
Pno.
Vln.
Vc.


402
Fl.
B. Cl.
Vib.
Pno.
p
* Ped.
* Ped.
* Ped.
Vln.
Vc.


410
Fl.
B. Cl.
Vib.
Pno.
* Ped.
* Ped.
Vln.
Vc.

Note on Appendix 3

The Near Woods: Recording of Instrumental Performance mixed, but otherwise unaltered to help demonstrate significance of post-processing following a performance or recording session in the compositional method.