Timepiece

for amplified chamber ensemble and electronics

by

Thomas Limbert

Department of Music
Duke University

Date:_____

Approved:

_____
Stephen Jaffe, Supervisor

_____
Louise Meintjes

_____
James Lee

_____
Anthony Kelley

_____
Scott Lindroth

Dissertation submitted in partial fulfillment of
the requirements for the degree of Doctor of
Philosophy in the Department of
Music in the Graduate School
of Duke University
2010

ABSTRACT

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ABSTRACT

Music reminds us that time is not a static entity of existence. It is a pervasive concept across eras, cultures and disciplines, yet it eludes simple definition. Time as an idea can mean many things.

The overall goal of *Timepiece* is to create a musical whole that addresses various aspects of time as experienced both musically and cognitively; in art and in life. The composition aims to highlight the multiple ways in which we understand and think about time as an abstract concept and as a part of human experience. Each of the four movements considers a specific approach to time while emphasizing the ways in which music is a temporal art.

Timepiece is scored for an amplified chamber ensemble consisting of nine players: oboe/english horn, bassoon/alto saxophone, electric guitar, electric bass/electric guitar, piano/midi keyboard, percussion (vibraphone, crotales, marimba and drumset), violin, viola and cello. The composition also features live electronics and digital processing.

Movement I, *history becoming memory*, explores time as it relates to change; the movement from past through present to future as represented by the changing states of ending, being and becoming as well as the role of history and memory as informing musical language. Movement II, *circadian cycles* maps an infant's sleep and feeding cycle on to musical parameters. Movement III, *relative and noisy* uses digitally processed sound samples of modeled cosmic events that would cause ripples in the fabric of space-time as the background to which the instrumentalists musically react. The final movement, *second fastest land animal for short distances,* explores ideas of speed and rapidity using elements, both

composed and sequenced, of common "breakbeats" found in certain genres of electronic dance music.

As each instrument is amplified, musical temporalities distinguish themselves, highlighted by the distinct sounds produced both acoustically and electronically. Beyond the basic acoustical variance between the sound of the individual instruments locally and their sound projected through speakers, the amplified sound is manipulated through both sound mixing and digital processing. In many ways, as technology has given rise to musical ideas surrounding the complexity of time itself, so it serves to aid in the expression of the temporal multiplicity in this composition.

DEDICATION

For my Dad. His time was too short.

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ACKNOWLEDGMENTS

I owe deep gratitude to the musicians who joined me in the premiere performance of *Timepiece* on March 28th, 2010 in Baldwin Auditorium on the campus of Duke University. I extend special thanks to my dear friends of pulsoptional, Sidney Boquiren, Marc Faris, Todd Hershberger, John Mayrose and Carrie Shull for truly helping to put this music into action and being wonderful artistic advocates and collaborators. I am especially grateful to my advisor, Stephen Jaffe, who has been invaluable as a mentor in guiding me in my graduate study and working with me on this composition. Special thanks also go to my other dissertation committee members, Anthony Kelley, Jim Lee, Scott Lindroth and especially Louise Meintjes for her continual support and academic mentorship. Finally, I extend my most sincere gratitude to my wife, Marge, without whom none of my academic and artistic achievements would be possible.

INSTRUMENTATION

Oboe/English Horn

Bassoon/Alto Saxophone

Percussion

Vibraphone, Crotales, Marimba, Drums Set (crash cymbal, splash cymbal, ride cymbal, hi-hat, high snare drum, low snare drum, high tom, medium tom, low tom, kick drum)

Piano/Midi Keyboard

Electric Guitar

Electric Bass/Electric Guitar

Violin

Viola

Violoncello

The use of a conductor and sound technician is recommended, either of which can operate the computer running Max/MSP.

Duration: c. 25 minutes

Performance materials (including scores, parts, Max/MSP patches, recordings) can be obtained from the composer. For more information, contact thom@pulsoptional.org.

PERFORMANCE NOTES

1. The score is in C with the exception of the electric bass and electric guitars which sound an octave lower than written and the crotales which sound two octaves higher than written.

2. Accidentals carry through the measure in the octave in which first occur.

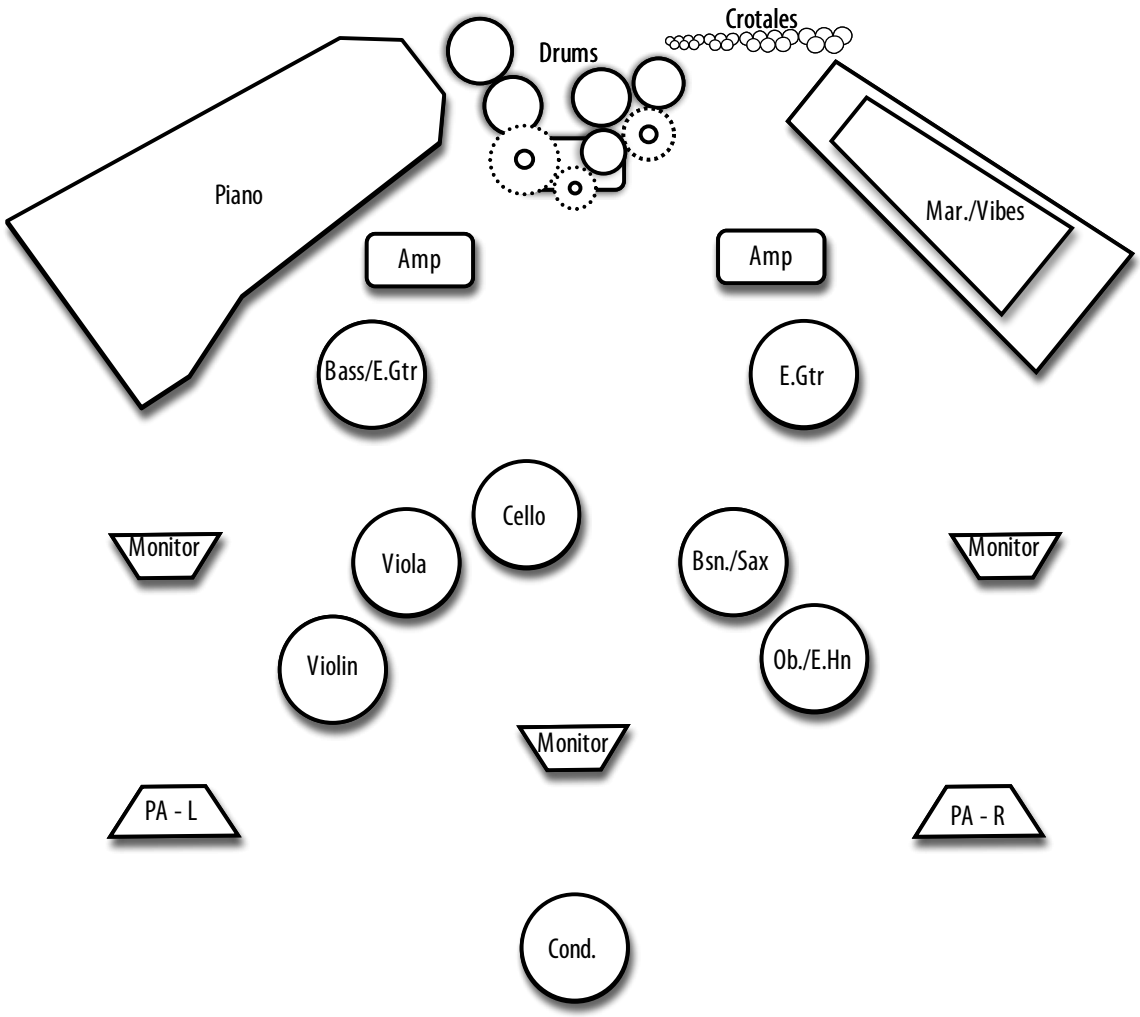
3. Unless specifically notated, pedaling on the piano and vibraphone is left to the discretion of the performer.

4. The piece requires the use of a PA and all instruments should be amplified.

5. The violin, viola, cello and piano need to be fed into the computer running Max/MSP in addition to being directly amplified. The composer recommends the use of small clip-on condenser microphones on the strings rather than pick-ups.

6. The Max/MSP patch should be started to begin movement III. In the first performance this was operated by the conductor who followed the progression of the electronic accompaniment in order to cue the musicians at the start of each new section throughout movement III and at the beginning of movement IV. N.B. The patch is left running as movement IV begins attacca.

Suggested ensemble stage configuration:

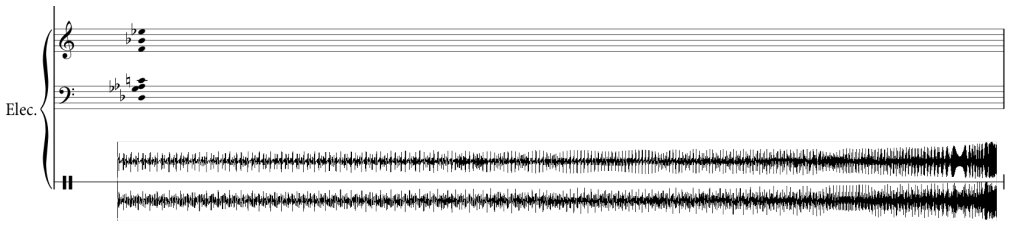


GUIDE TO NOTATION FOR MOVEMENT III

relative and noisy

In the third movement, the instrumentalists accompany electronic sound comprised of a series of modeled cosmic events that are digitally processed. The movement contains fourteen sections that are lettered A through N. The start of each section is indicated by boxed text containing a letter followed by the approximate duration, in seconds, of that section. **G - 12"**

The electronics are notated in three staves, the bottom of which consists of a waveform graphic representing the processed sound and its overall shape. Above the waveform staff is a grand staff that indicates the harmonic material for that section.



The instrumentalists should use the notated electronic part as a guide to how each section progresses and as an indication of when each new section starts.

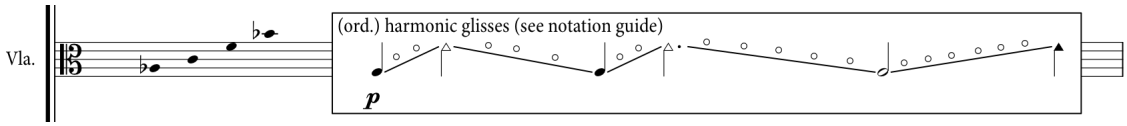
The instrumental part in each section first lists the pitches or sounds from which the player may freely choose during the entirety of that section. In the case of traditionally notated pitch material (plain, stemless noteheads) the player may transpose the pitches up one octave. To the right of the pitches/sound indications in the staff are boxed rhythmic figures that indicate the rhythm in which the pitches should be played. The performer should repeat the rhythms in the box as many times they would like until the section ends.

Within each section, the rhythms should be played at a consistent tempo at the players choosing, between ♩= 44 and 72. The musicians should not make any attempt to metrically coordinate their chosen tempo with other players or the electronic sound. The instrumentalists should generally play very soft while attempting to follow the dynamic contour of the electronics, however, unless otherwise indicated the dynamic should never exceed ***mp***.

For those places where the boxed notation does not occur (guitars in section I, winds and strings in section L, piano from section K until the end) the player should freely interpret the pitches and/or text instructions and continue throughout the section.

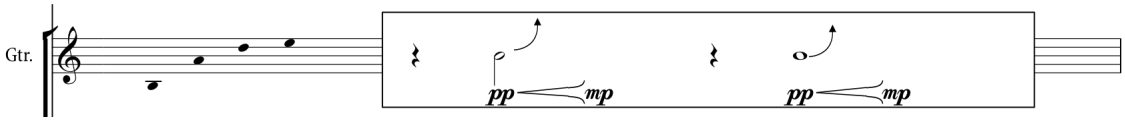
Certain special playing techniques found in the score are detailed below.

Harmonic Gliss (section H in strings):



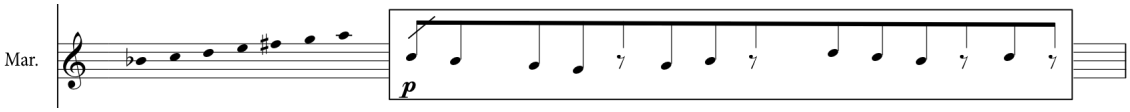
The string player should begin by bowing one of the pitches on the left, and throughout the gliss, gradually lift the finger of the left-hand to create harmonics, traveling all the way up the fingerboard. The player should then return down the fingerboard slowly reapplying pressure with the finger of left-hand before starting the next gesture beginning with another pitch on the left.

Exponential Gliss (sections K & L in guitars; sections M & N in strings):



The player should start at one of the pitches on the left, and using the rhythmic duration indicated in the box at the right, gliss up the fingerboard beginning slowly, but increasing gliss speed as the player moves up as in an exponential curve. The dynamic increase should follow the same trajectory. Upon reaching the end of the fingerboard, the player should end the gliss with a short and abrupt pitched or non-pitched articulation.

Rapid Filigree: (sections M & N in winds and marimba; section M in guitars):

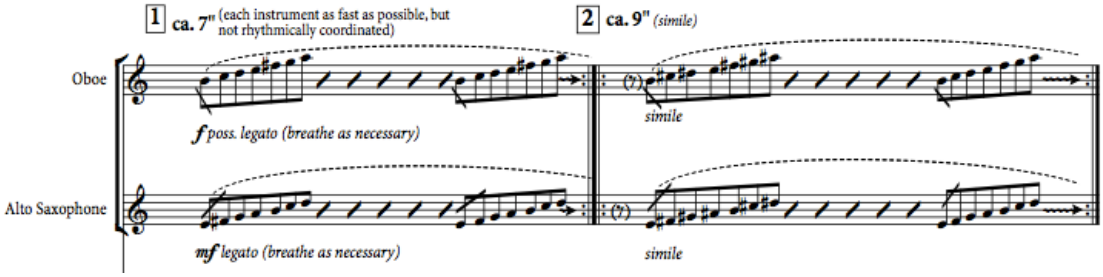


Freely choosing from the pitches at the left the player should play as fast as possible, generally in a stepwise manner with occasional breaks in the sound.

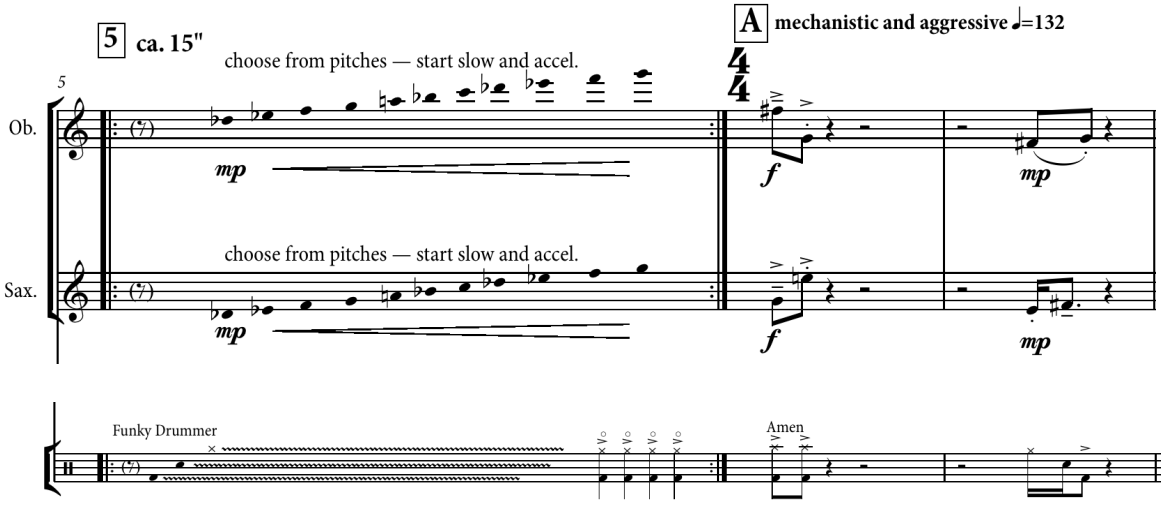
GUIDE TO NOTATION FOR MOVEMENT IV

second fastest land animal for short distances

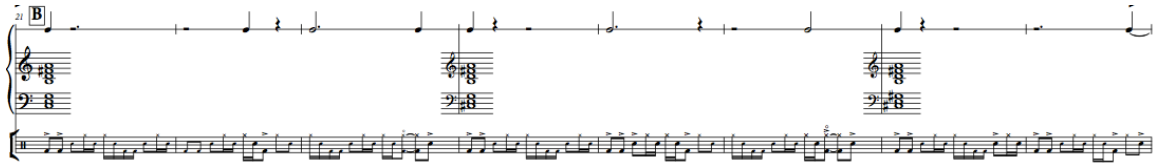
Movement IV begins attacca from movement III with five numbered sections each with a corresponding approximate duration:



In conjunction with the electronic accompaniment, each section proceeds for the duration listed and abruptly stops, pausing briefly before the next section begins. The players should make every effort to stop and start each section in sync with the corresponding electronics. This may be most easily facilitated by the conductor cuing the start and end of each section. The fifth and final section should start softly and gain intensity before four distinct quarter notes are heard in the electronics counting off the start of rehearsal letter A:



This movement contains an audio input part for the string trio and piano whose signals are fed into the computer running Max/MSP. This part contains four staves:



The bottom staff shows the sampled drum tracks that occur in the electronic accompaniment throughout the movement. The grand staff contains the pitches from which the four players may freely choose. The single-line staff above contains the rhythms with which the pitches should be played. The pitch(es) chosen by the player can change (but don't have to) on each new rhythm but should still be drawn from the pitch collection in the bottom staff until a new set of pitches in that staff occurs. The four players should make an effort to avoid large leaps when changing pitches and should be as quiet as possible, only faintly being audible in the performance space but loud enough to provide a strong audio signal to the computer.

DESCRIPTION OF MOVEMENTS

Movement I, *history becoming memory*, explores time as it relates to change; the movement from past through present to future as represented by the changing states of ending, being and becoming. This movement also considers the role of history and memory as informing musical language. It includes musical devices employed by other composers who also investigate time as an entity in their own work. Specifically, much of the movement uses the non-retrogradable rhythms found in the *Quartet for the End of Time* by Olivier Messiaen, who saw his use of these "mirror" rhythms as operating on time itself, revealing its nature. In his words, "without musicians, time would be much less understood."[1]

Movement II, *circadian cycles*, involves the mapping onto musical parameters particular psychological research material articulating the sleep and feeding patterns of the first six months of an infant's life (see graph on following page). Where the musical representation of the data is explicit, the lines denoting sleep are represented by sustained notes and the dots denoting feeding as short staccato notes. In these instances, eight bars of music represents a time-span of 24 hours. Over the course of the movement, I attempt to let the listener in to the infant's entrainment, or pulling into phase of a more regular circadian sleep and feeding cycle.

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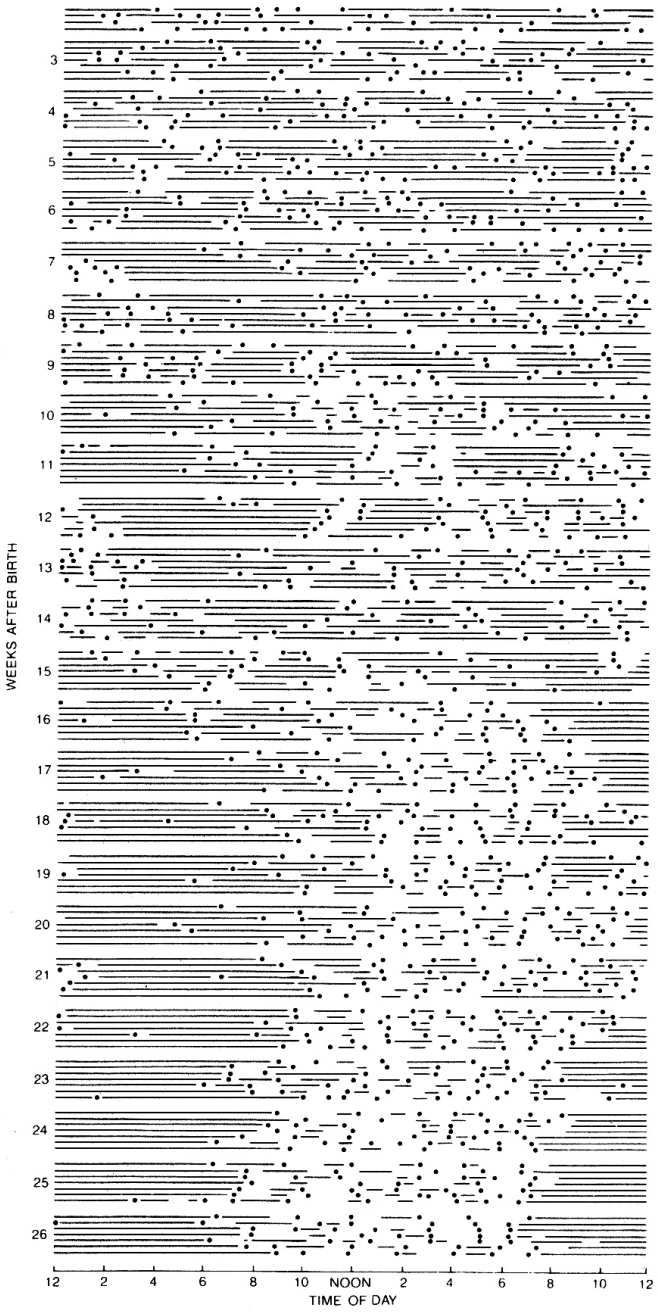
[1] Anthony Pople, *Messiaen, Quatuor Pour La Fin Du Temps*, Cambridge Music Handbooks (Cambridge ; New York: Cambridge University Press, 1998), 13.



Entrainment of an infant's circadian rhythm.[2]

[2] JT Fraser, *Time, the Familiar Stranger* (Amherst: University of Massachusetts Press, 1987), 118.

Movement III, *relative and noisy*, uses digitally processed sound samples of modeled cosmic events that would cause ripples in the fabric of space-time as the background to which the musicians aleatorically react. These ripples, known in the scientific community as gravitational waves, are phenomena that, if detected, would be the last step in proving Einstein's ideas about space-time and his general theory of relativity. There are several gravitational wave observatories operating in different parts of the world, some of which act as super-sensitive microphones of sorts, tuned to the audible frequency range, listening for the "sounds" of these ripples that, in theory, reshape space and time in the regions through which they pass.[3] (For the source of the audio samples used in this movement, please refer to the bibliography.)

The final movement, *second fastest land animal for short distances*, explores ideas of speed and rapidity using elements, both composed and sequenced, of common "breakbeats" found in certain genres of electronic dance music. The breakbeat is the short snippet of sampled drum groove (usually taken from 70's soul and R&B songs) that when looped, lays the rhythmic foundation for much electronic dance music and hip-hop. The music for this movement stems from my attraction to jungle or drum 'n' bass music where breakbeats are sped up at inordinately fast tempos and split into short rhythmic fragments that when sequenced, create a frenetic chain of syncopated drum patterns. I derived much of the rhythmic and tonal contour of the composition from "sampling" and "fragmenting" specific breakbeats that are commonly heard in jungle/drum 'n' bass. (These particular breakbeats

---

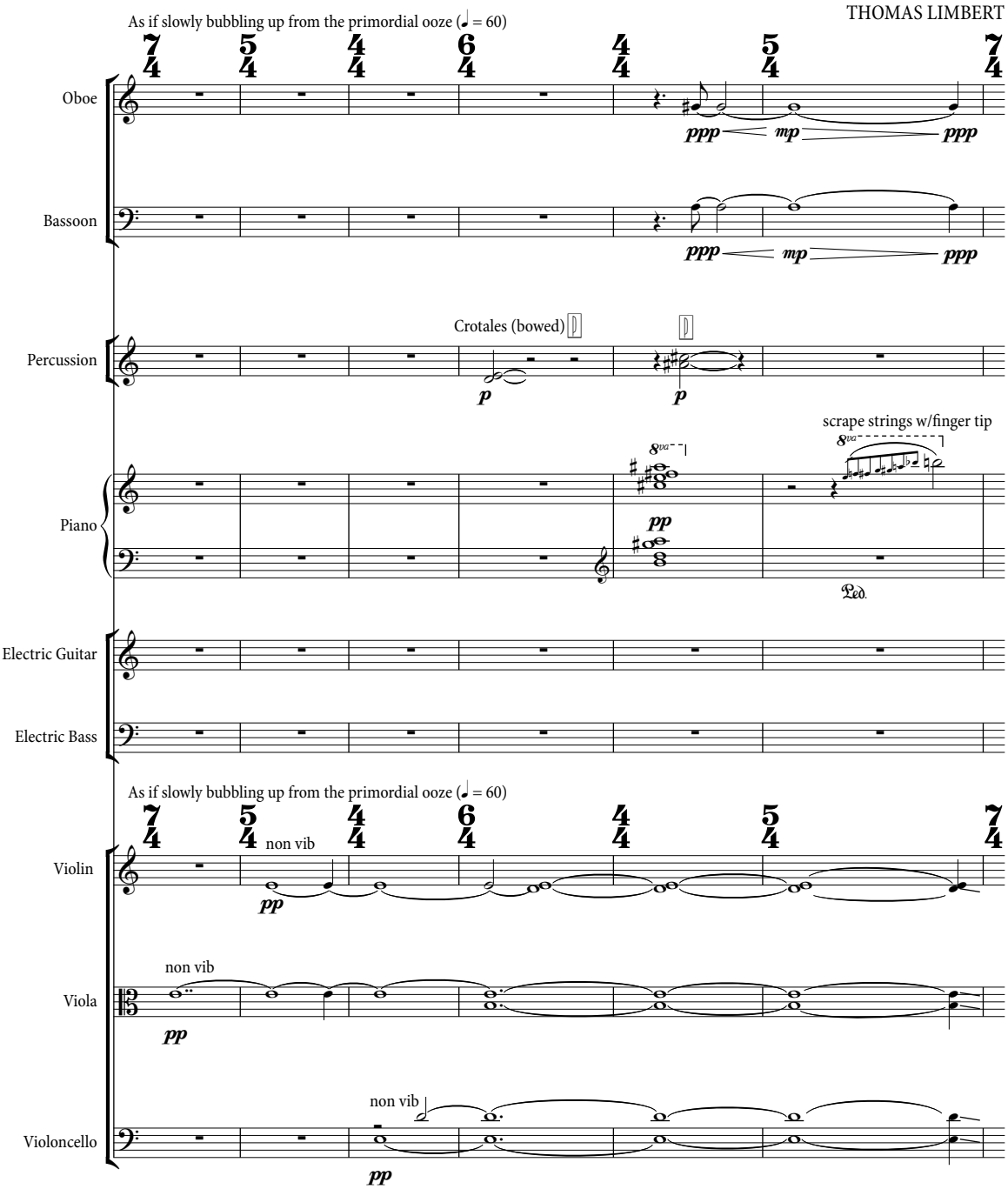
[3] M Bartusiak, *Einstein's Unfinished Symphony : Listening to the Sounds of Space-Time* (Washington, D.C.: Joseph Henry Press, 2000).

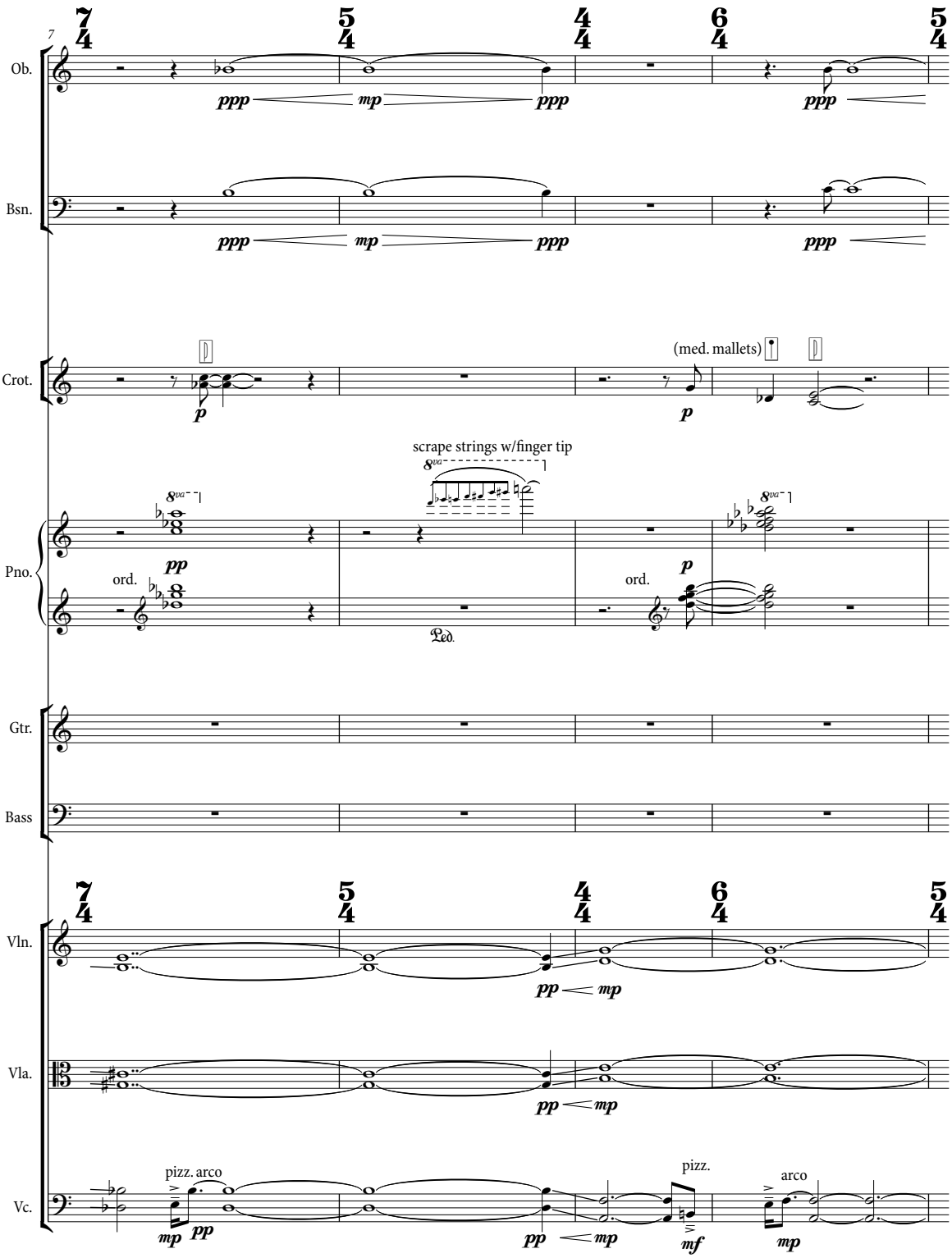
are cited in the bibliography.) I then mapped each component of the beat to specific instruments. The digitally processed, live electronic accompaniment in this movement consists of the specific breakbeats, both whole and broken, that form the rhythmic skeleton of the entire movement.

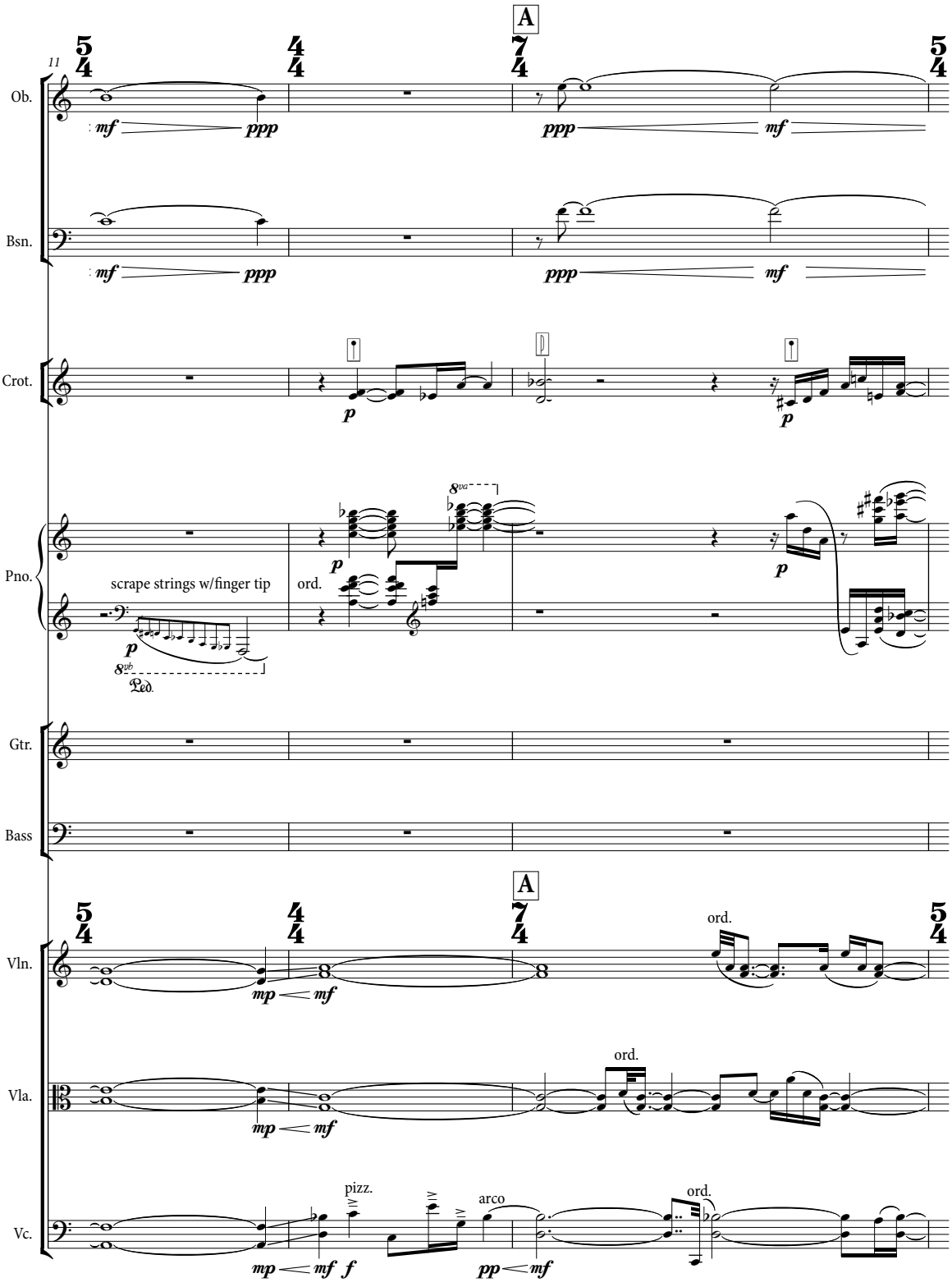
TIMEPIECE

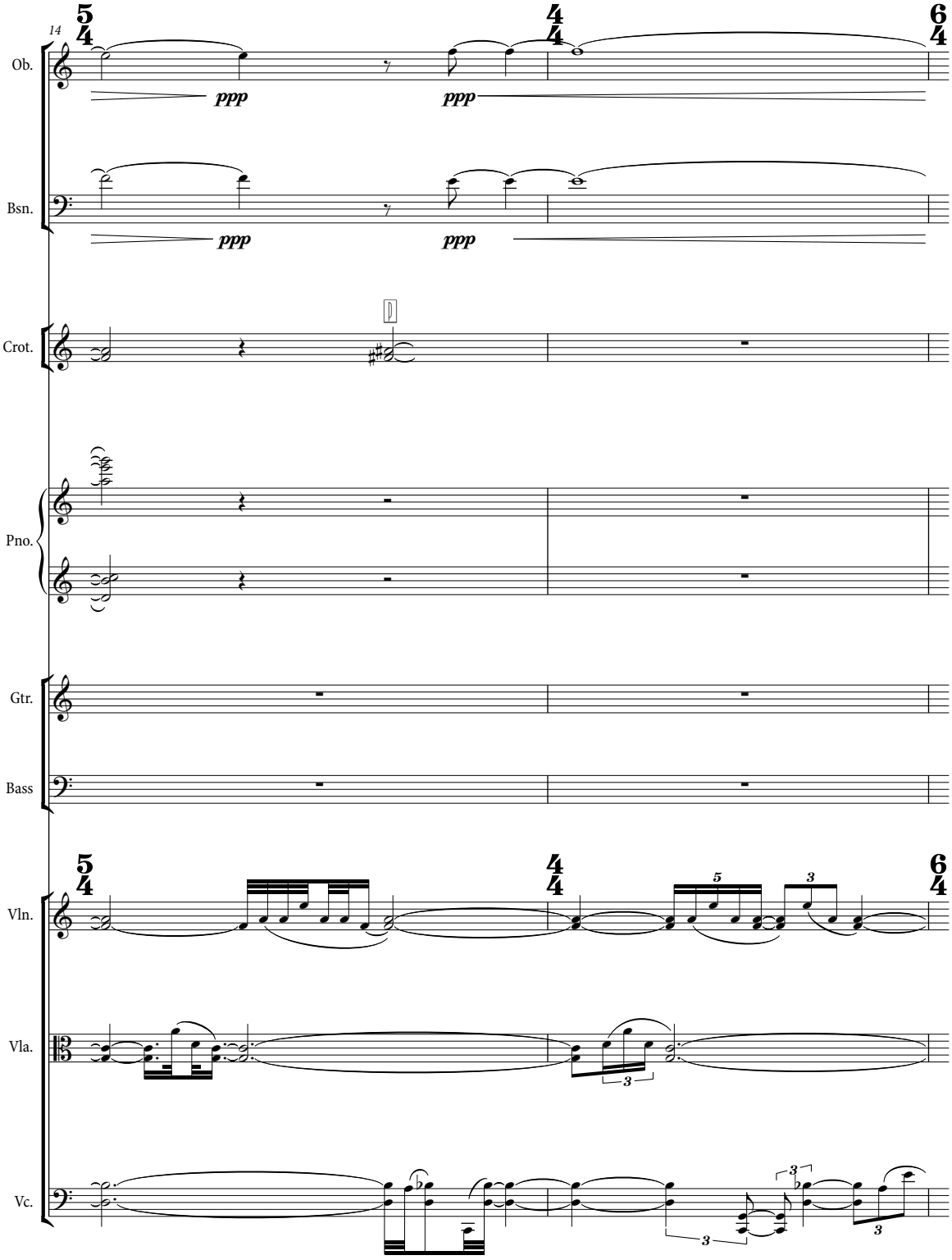
I. history becoming memory

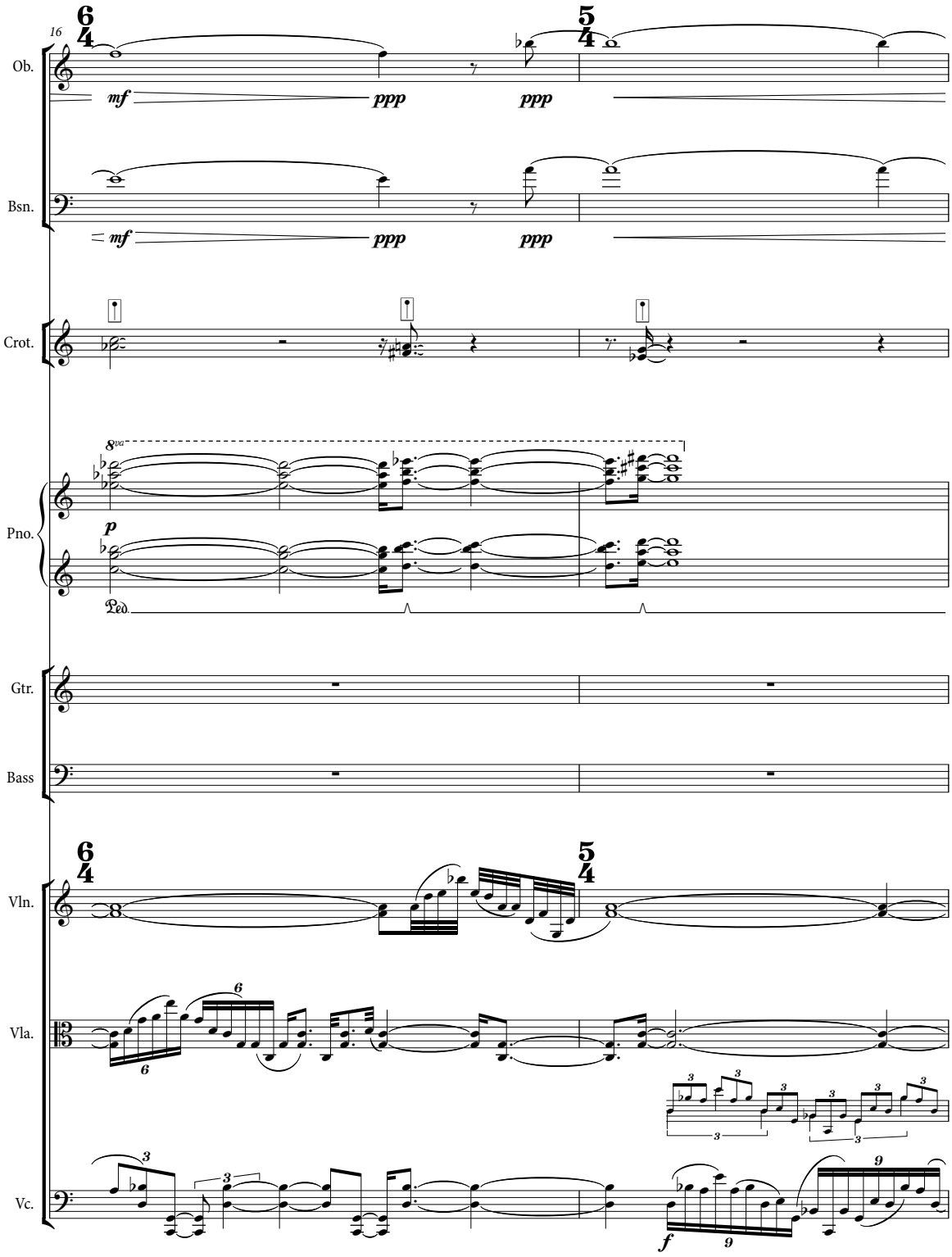
THOMAS LIMBERT

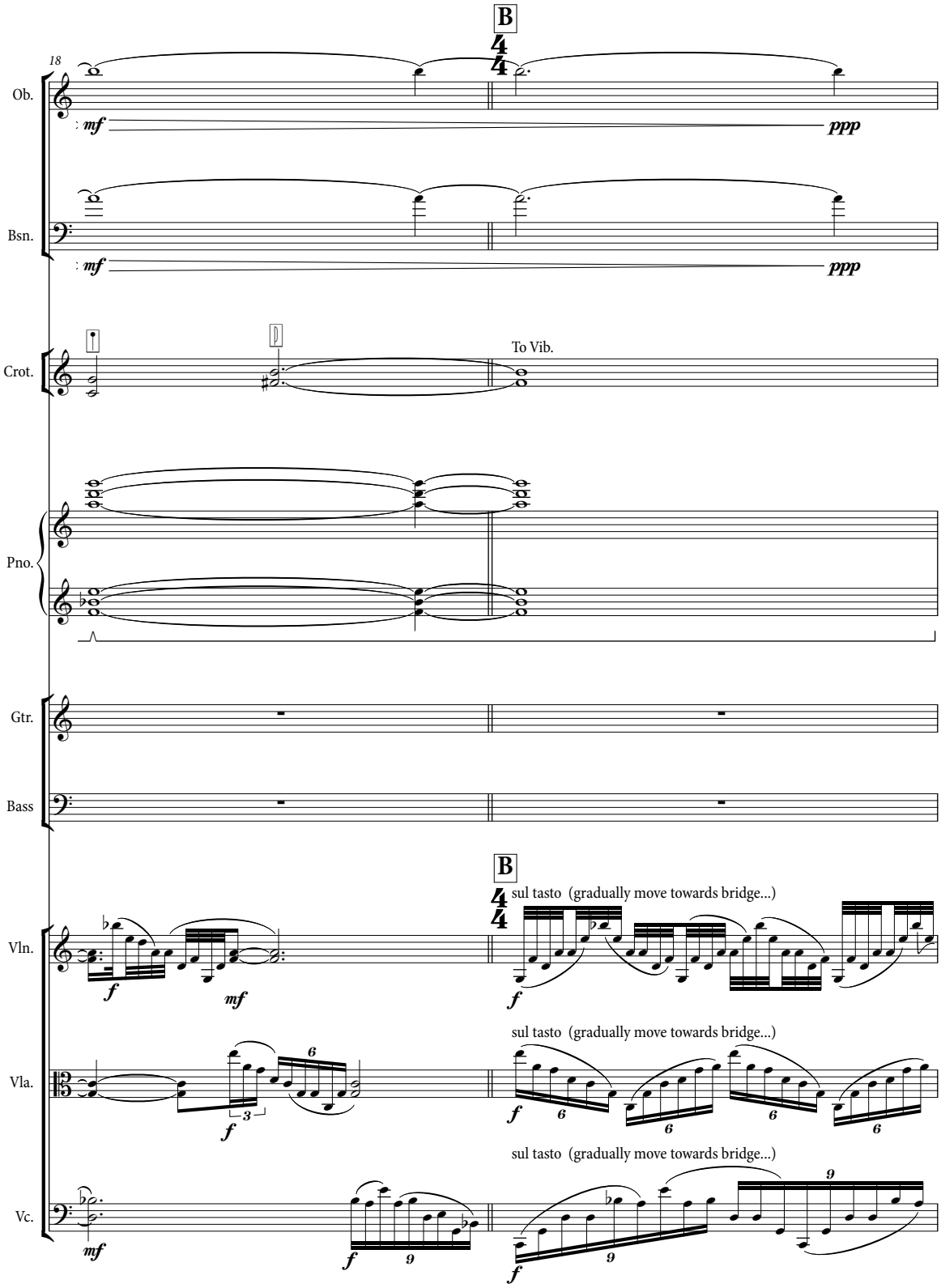


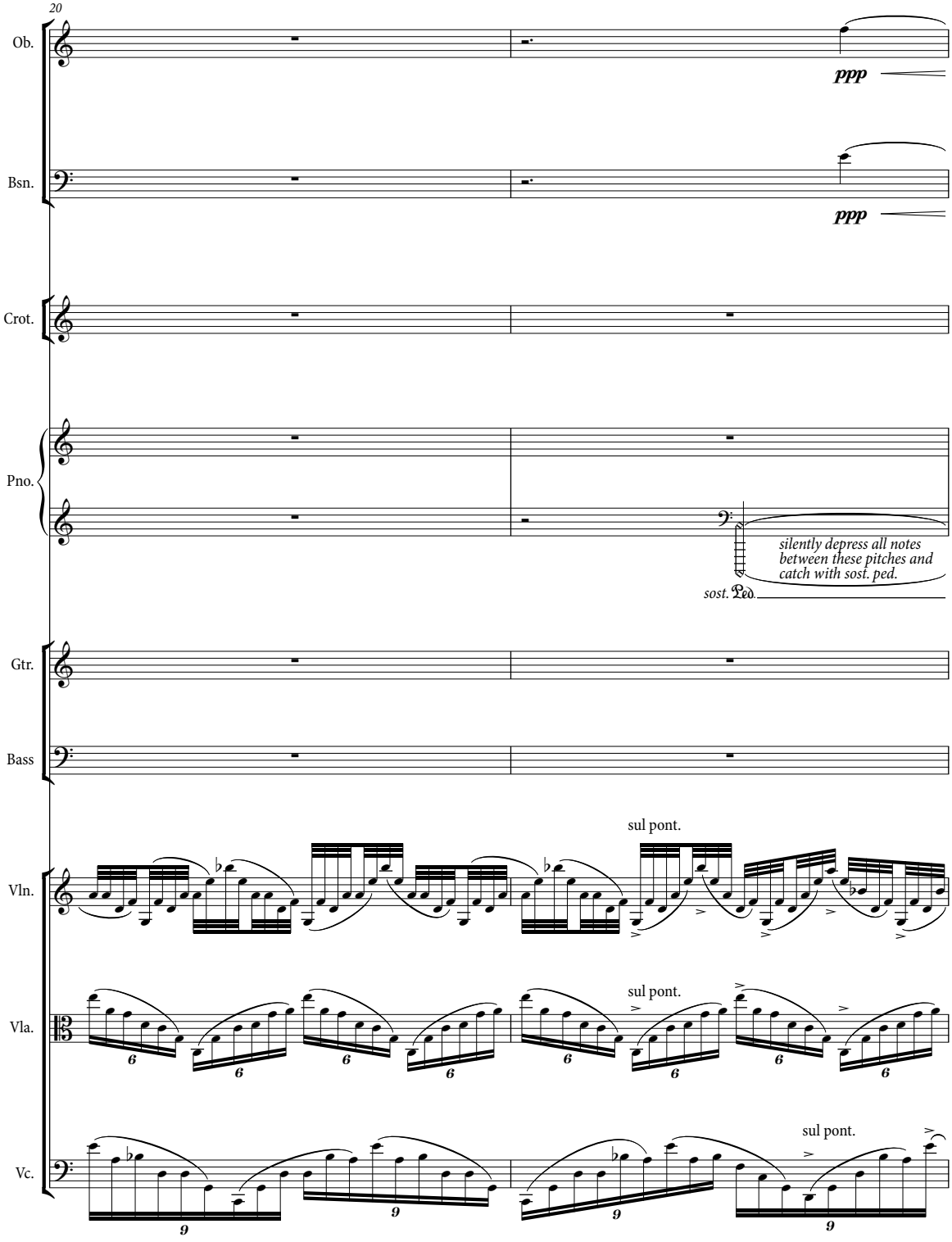

7
Ob.
Bsn.
Crot.
(med. mallets)
Pno.
scrape strings w/finger tip
ord.
ord.
Gtr.
Bass
Vln.
Vla.
Vc.
pizz. arco
pizz.
arco

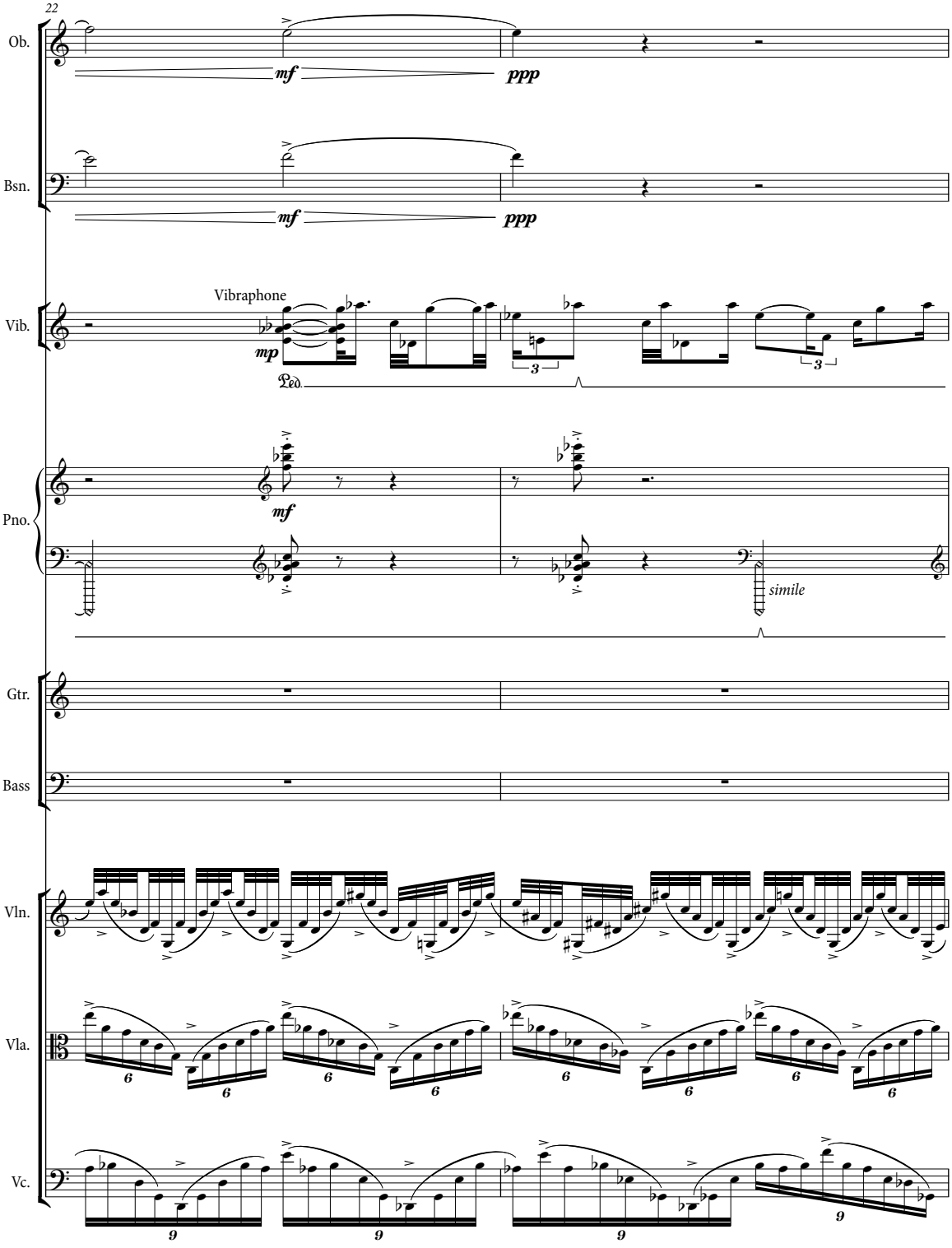

11
A
Ob.
Bsn.
Crot.
Pno.
scrape strings w/finger tip
ord.
Gtr.
Bass
Vln.
Vla.
Vc.
pizz.
arco

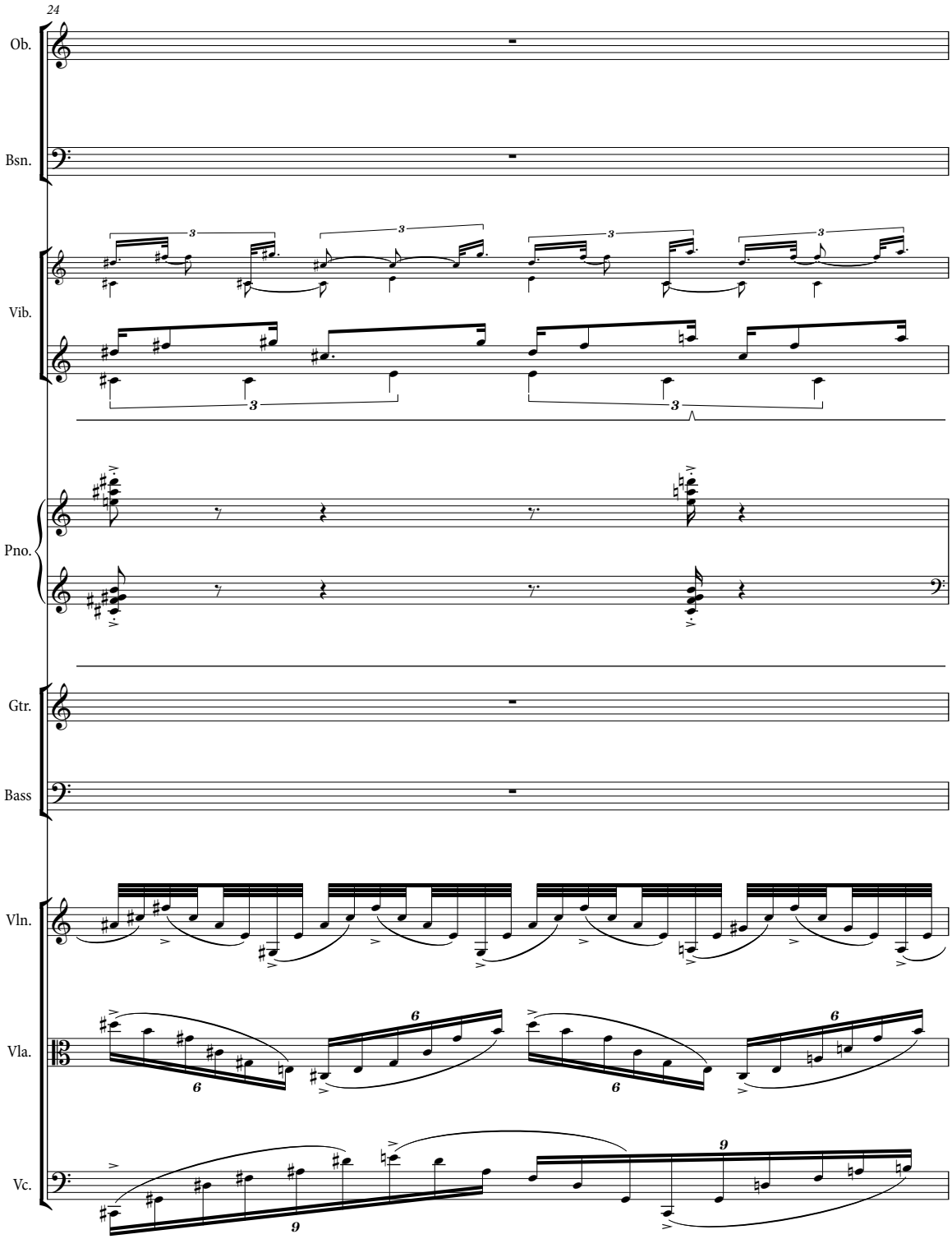

14
Ob.
Bsn.
Crot.
Pno.
Gtr.
Bass
Vln.
Vla.
Vc.
ppp
ppp
ppp
ppp

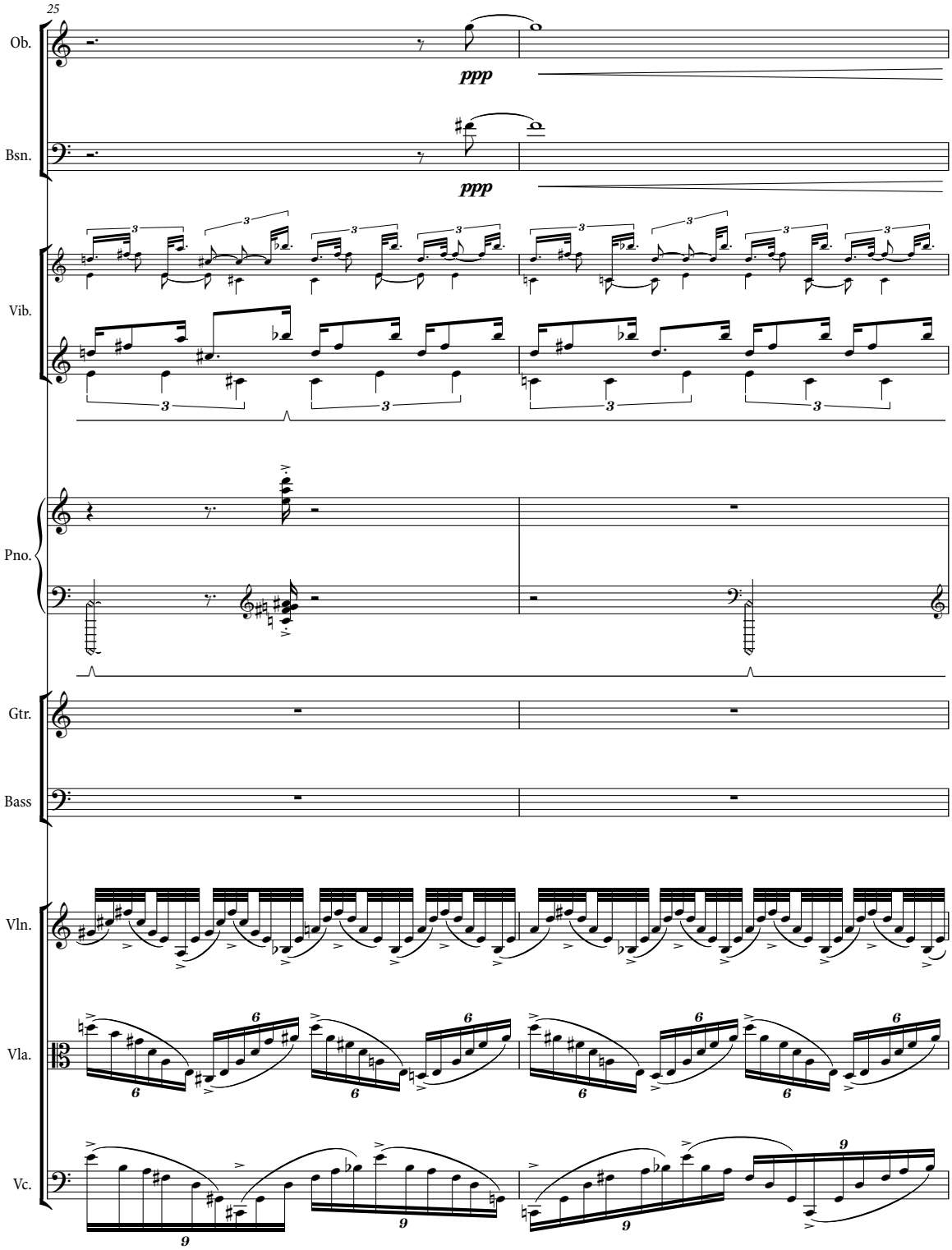

16
Ob.
Bsn.
Crot.
Pno.
Gtr.
Bass
Vln.
Vla.
Vc.
mf
ppp
p
f

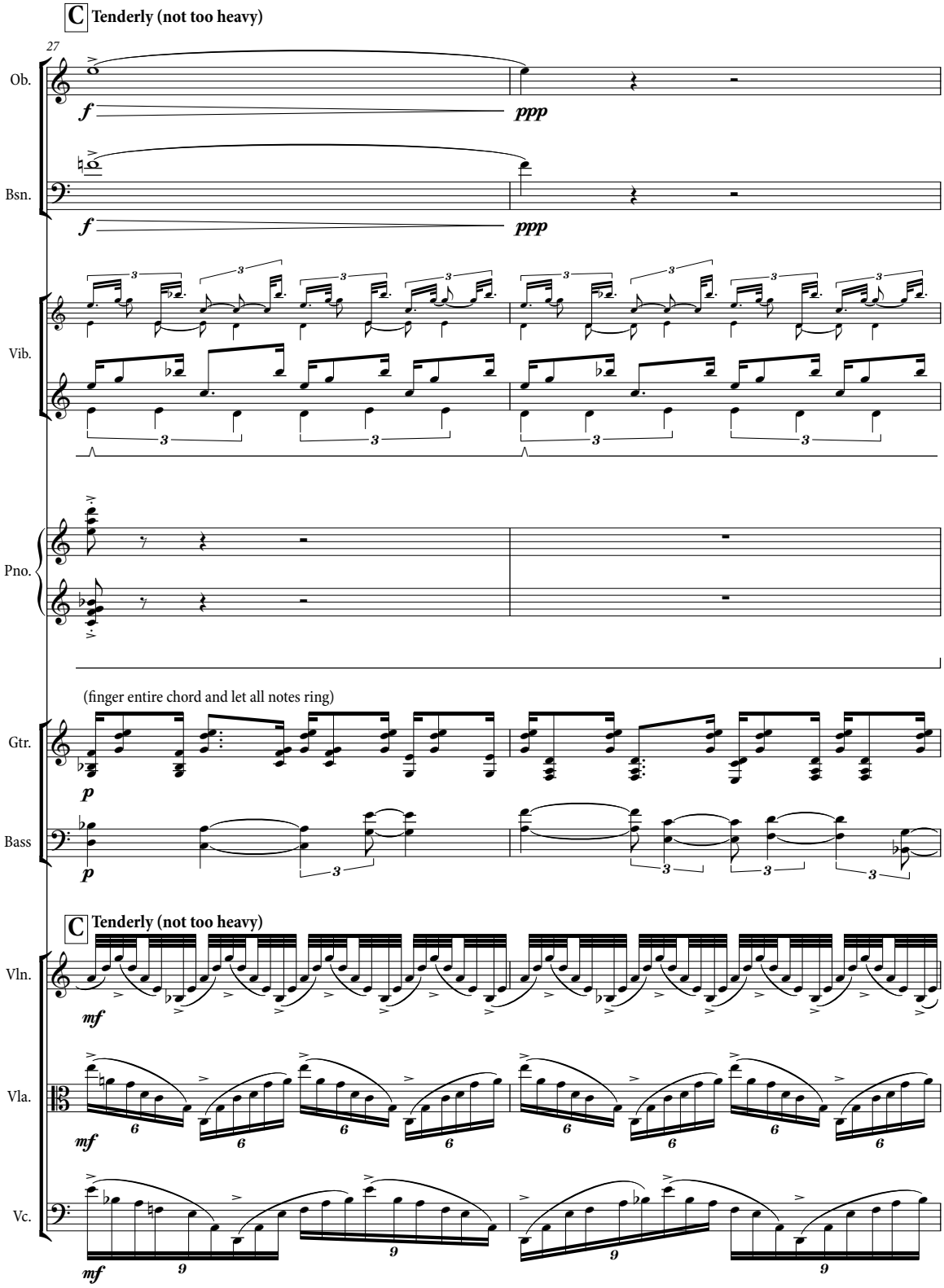

18
B
Ob.
mf
ppp
Bsn.
mf
ppp
Crot.
To Vib.
Pno.
Gtr.
Bass
B
Vln.
f
mf
f
sul tasto (gradually move towards bridge...)
Vla.
f
f
sul tasto (gradually move towards bridge...)
Vc.
mf
f
f
sul tasto (gradually move towards bridge...)

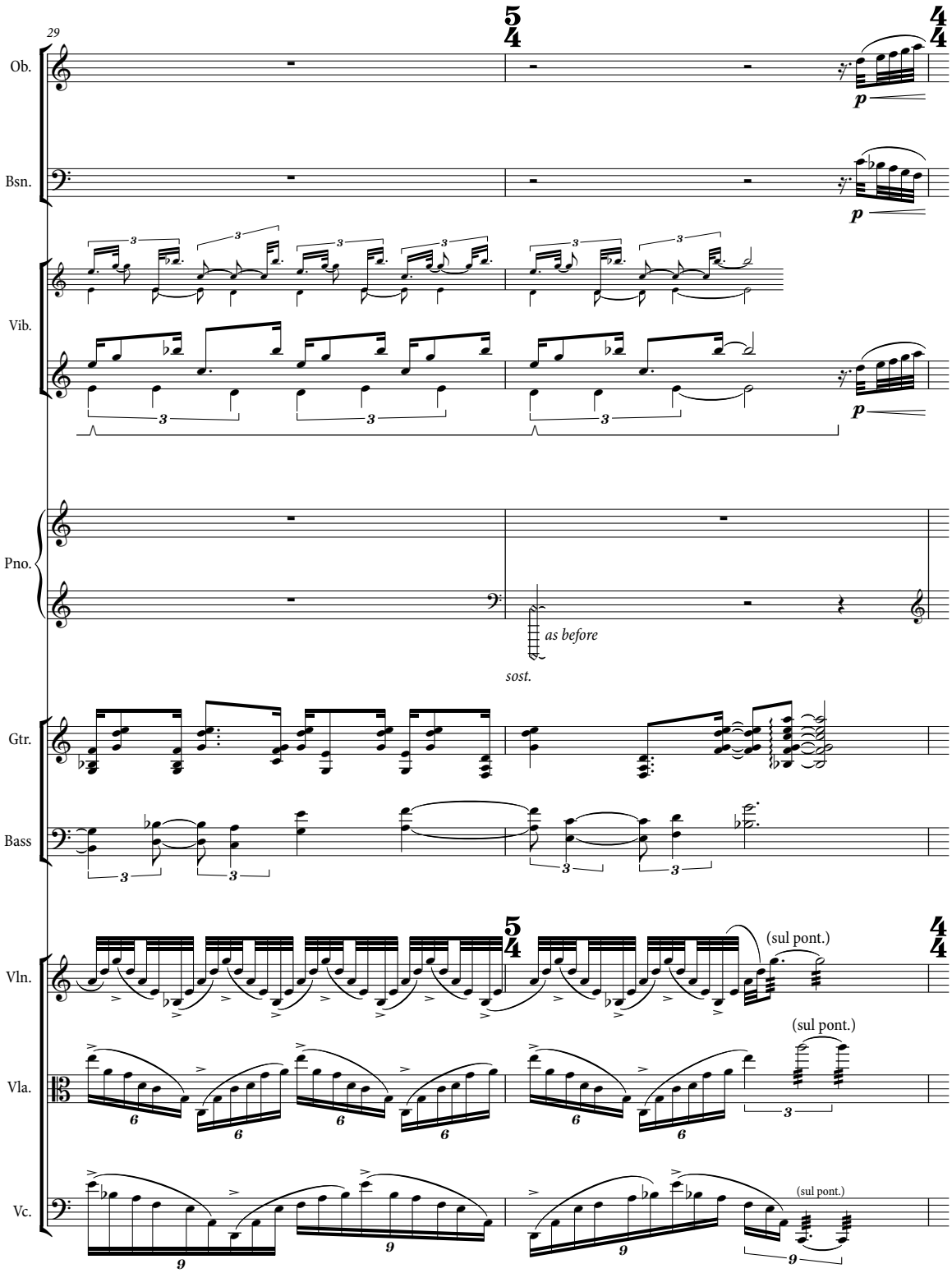

20
Ob.
ppp
Bsn.
ppp
Crot.
Pno.
silently depress all notes
between these pitches and
catch with sost. ped.
sost. Ped.
Gtr.
Bass
sul pont.
Vln.
sul pont.
Vla.
sul pont.
Vc.

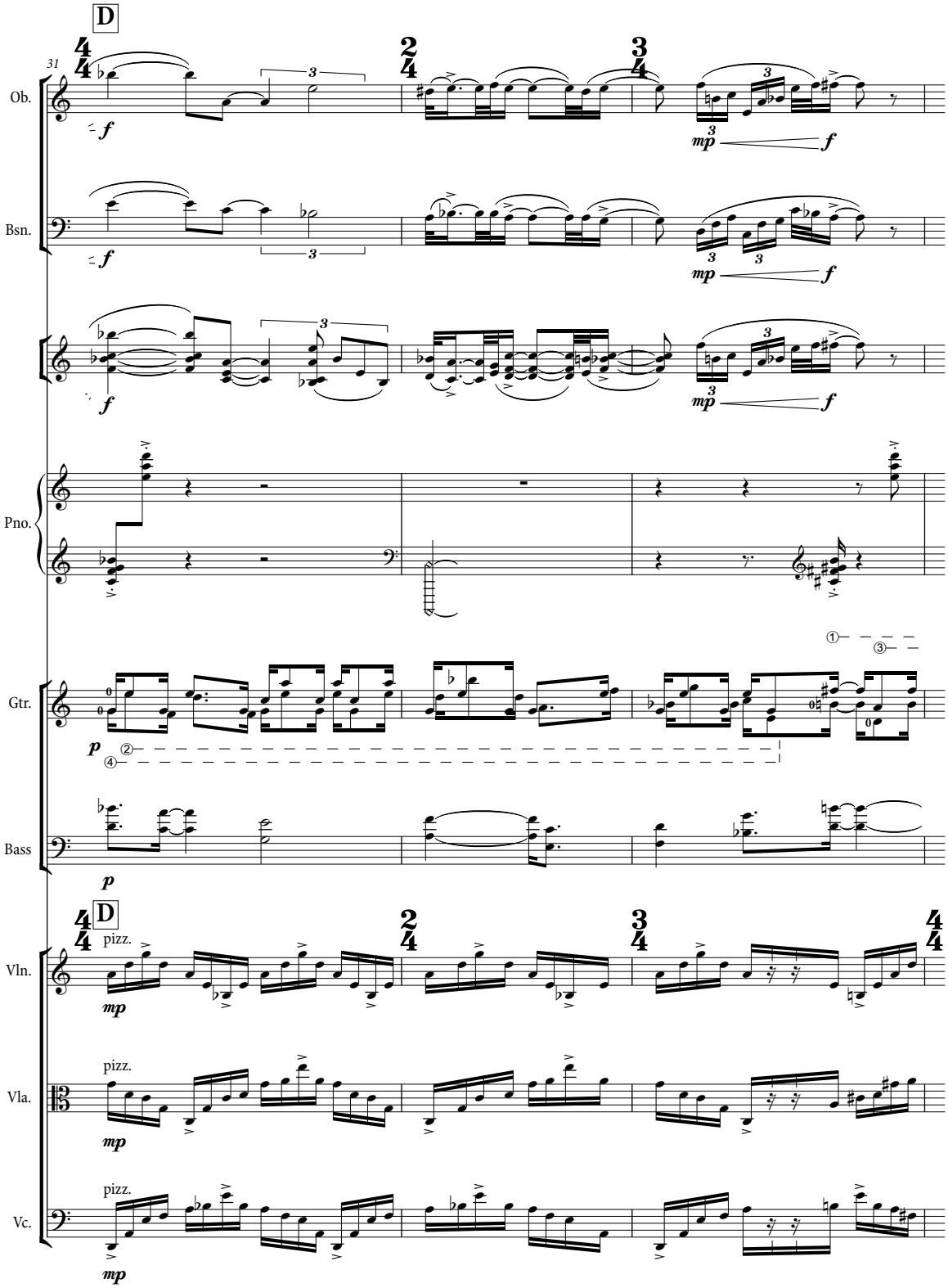

22
Ob.
mf
ppp
Bsn.
mf
ppp
Vib.
Vibraphone
mp
Ped.
Pno.
mf
simile
Gtr.
Bass
Vln.
Vla.
Vc.

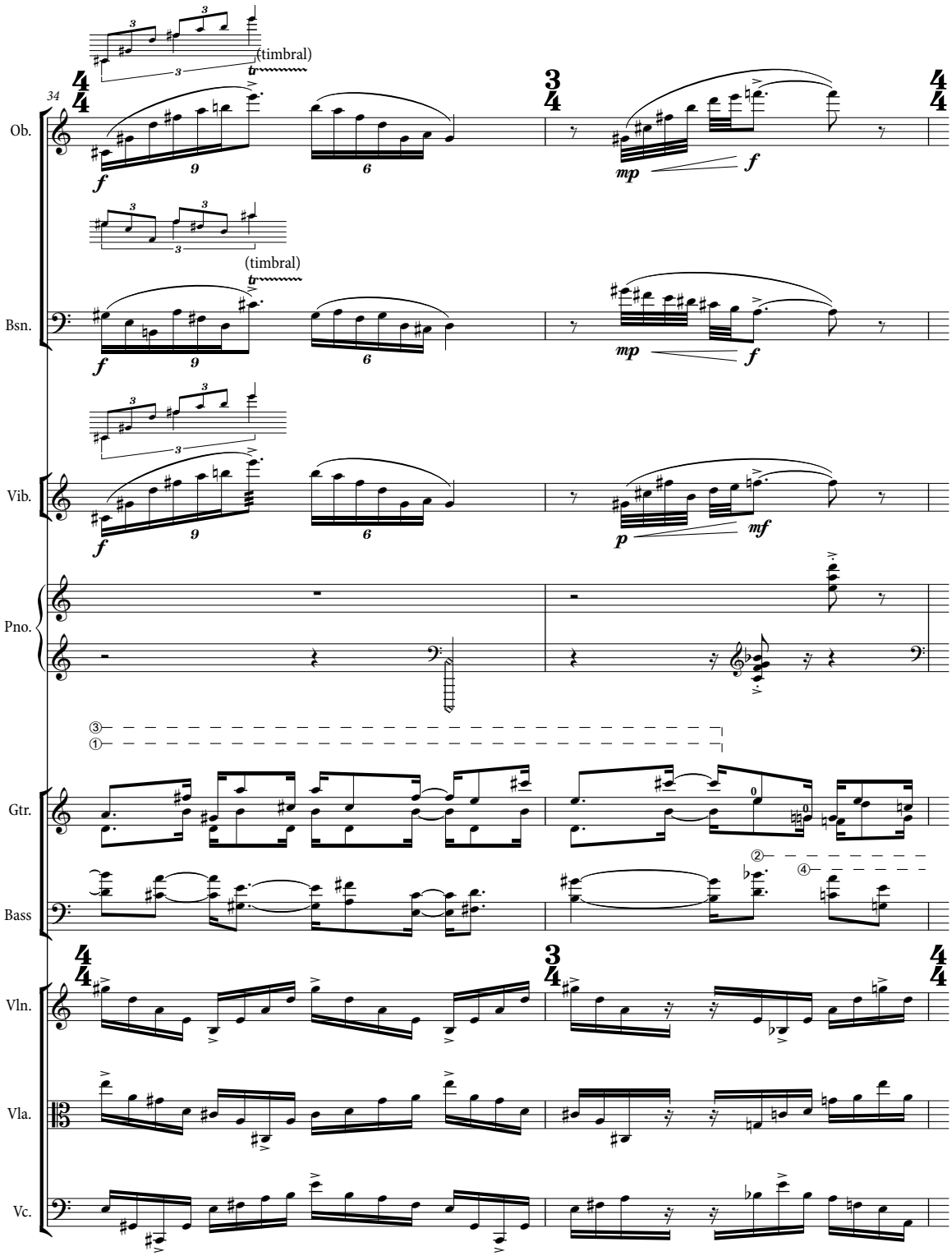

24
Ob.
Bsn.
Vib.
Pno.
Gtr.
Bass
Vln.
Vla.
Vc.

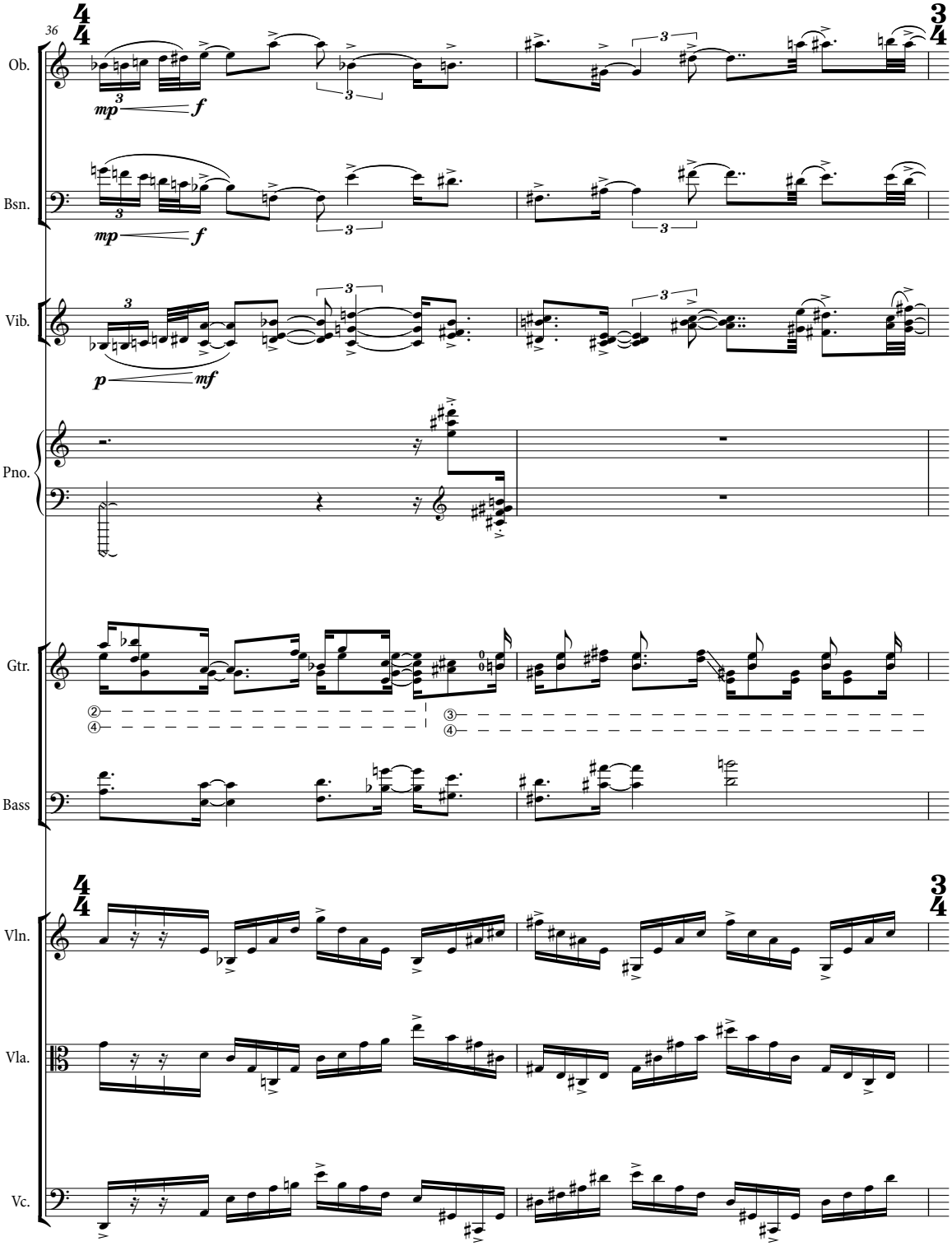

25
Ob.
ppp
Bsn.
ppp
Vib.
Pno.
Gtr.
Bass
Vln.
Vla.
Vc.

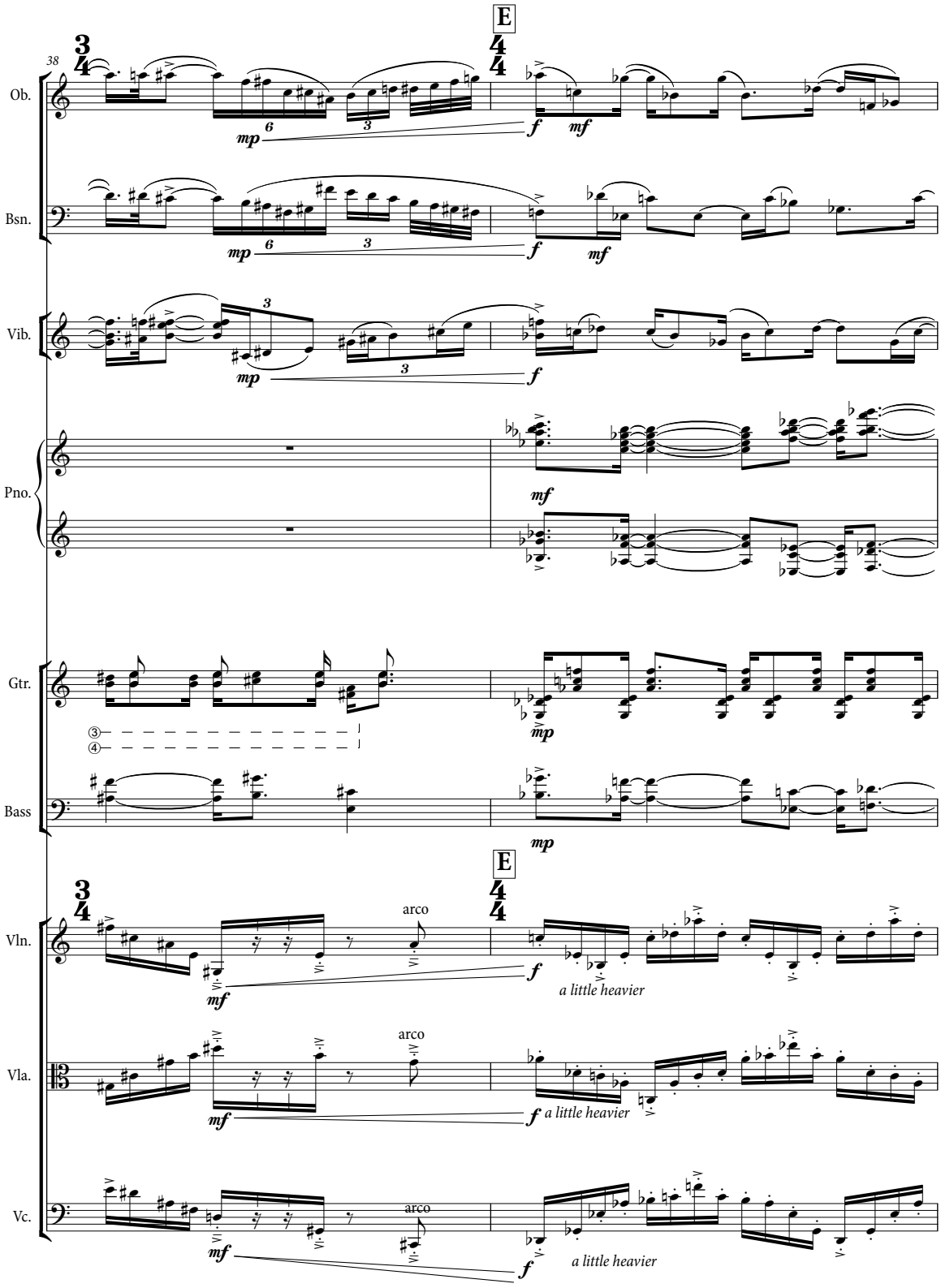

C Tenderly (not too heavy)
27
Ob.
Bsn.
Vib.
Pno.
(finger entire chord and let all notes ring)
Gtr.
Bass
C Tenderly (not too heavy)
Vln.
Vla.
Vc.

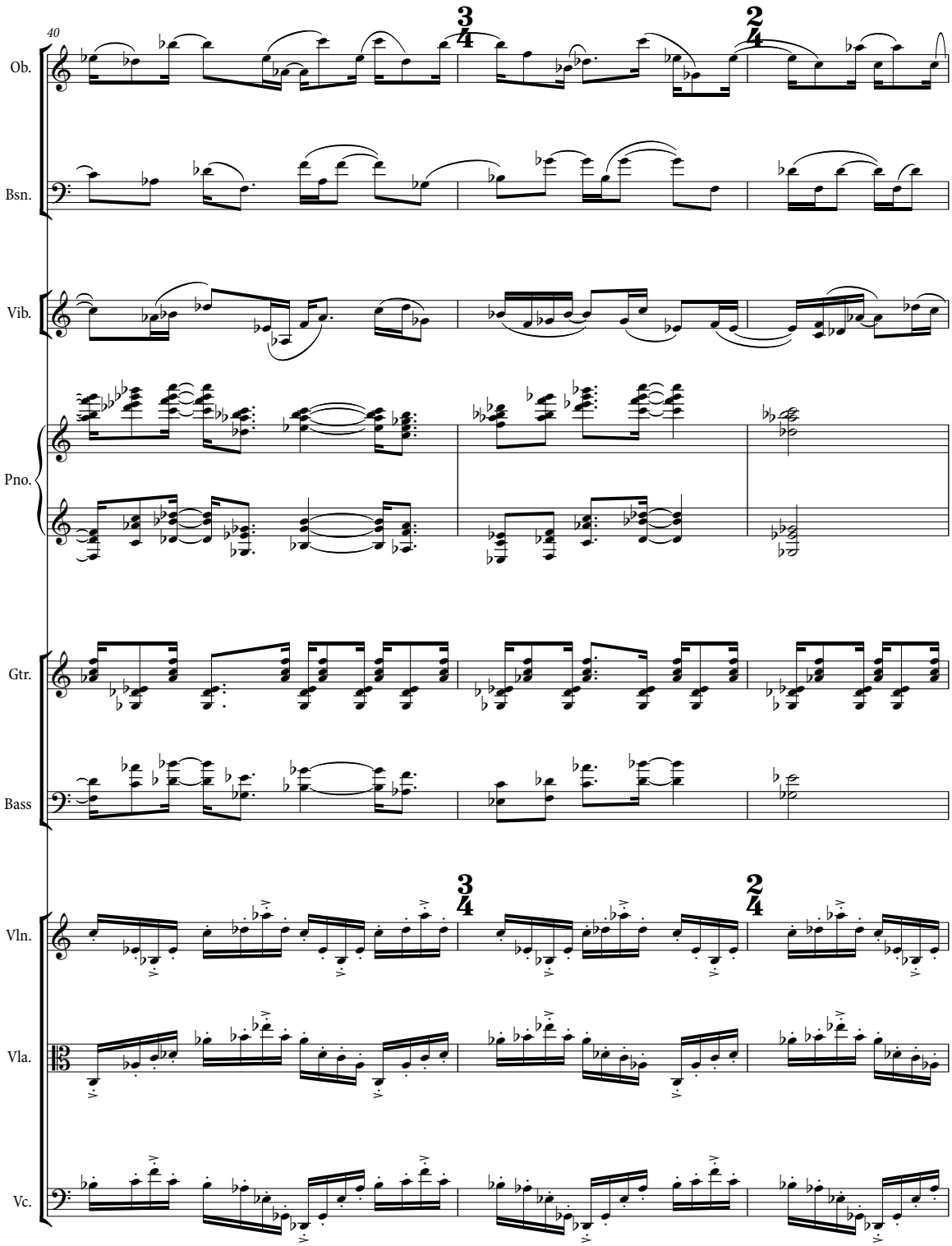

29
Ob.
Bsn.
Vib.
Pno.
Gtr.
Bass
Vln.
Vla.
Vc.
p
as before
sost.
(sul pont.)
(sul pont.)
(sul pont.)

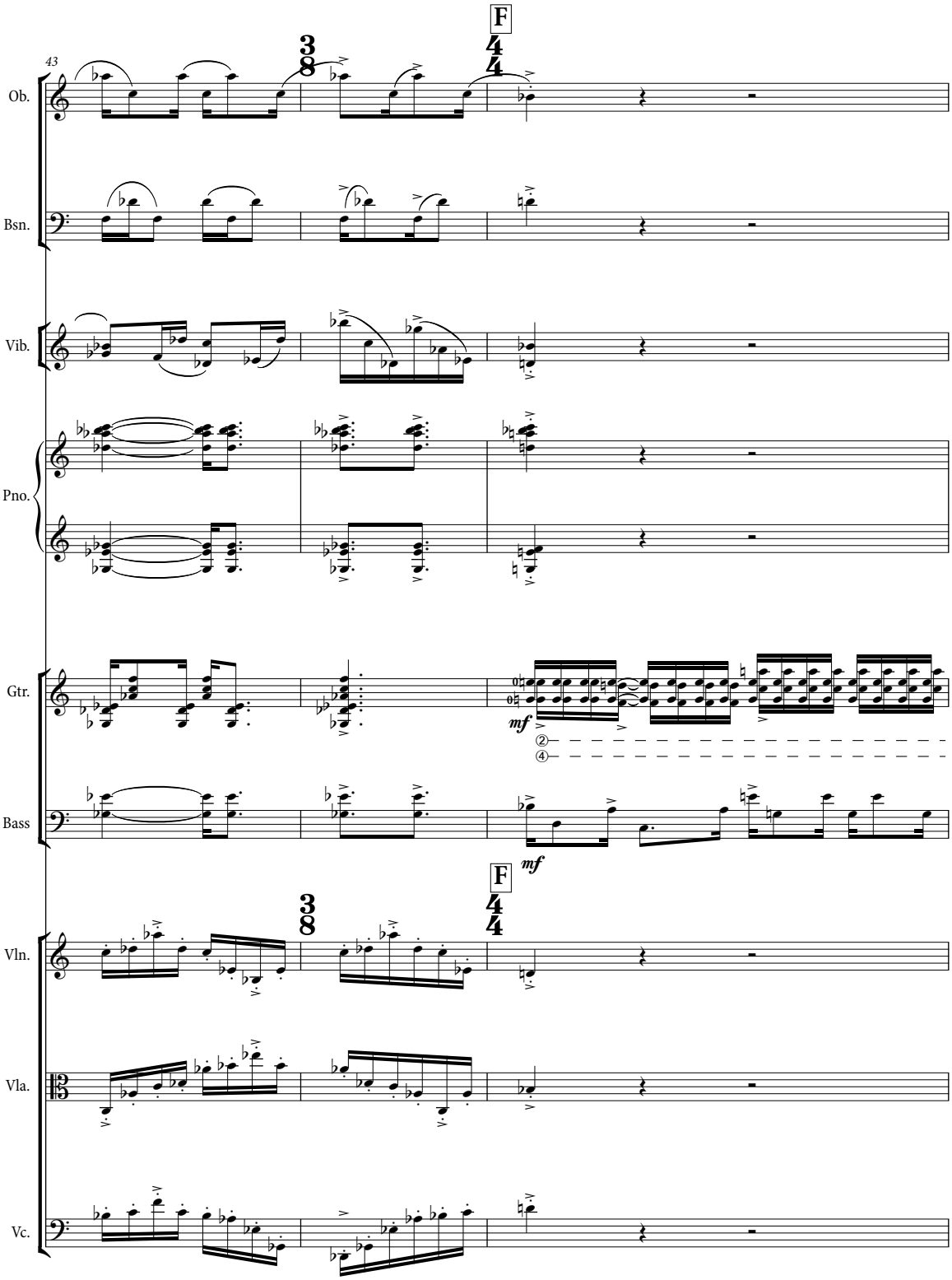

D
31
Ob.
Bsn.
Pno.
Gtr.
Bass
D
pizz.
Vln.
Vla.
Vc.

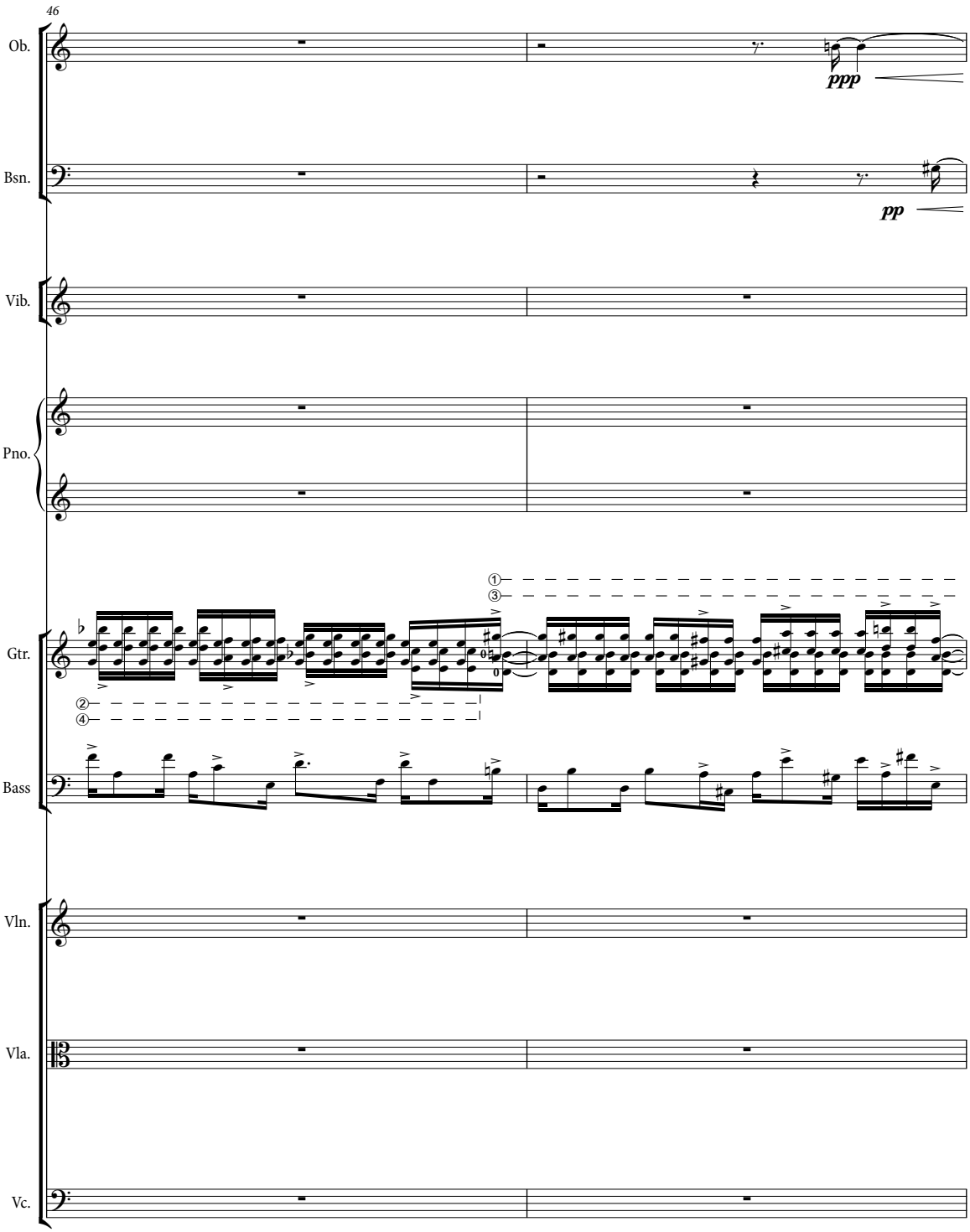

34
Ob.
Bsn.
Vib.
Pno.
Gtr.
Bass
Vln.
Vla.
Vc.
(timbral)
(timbral)

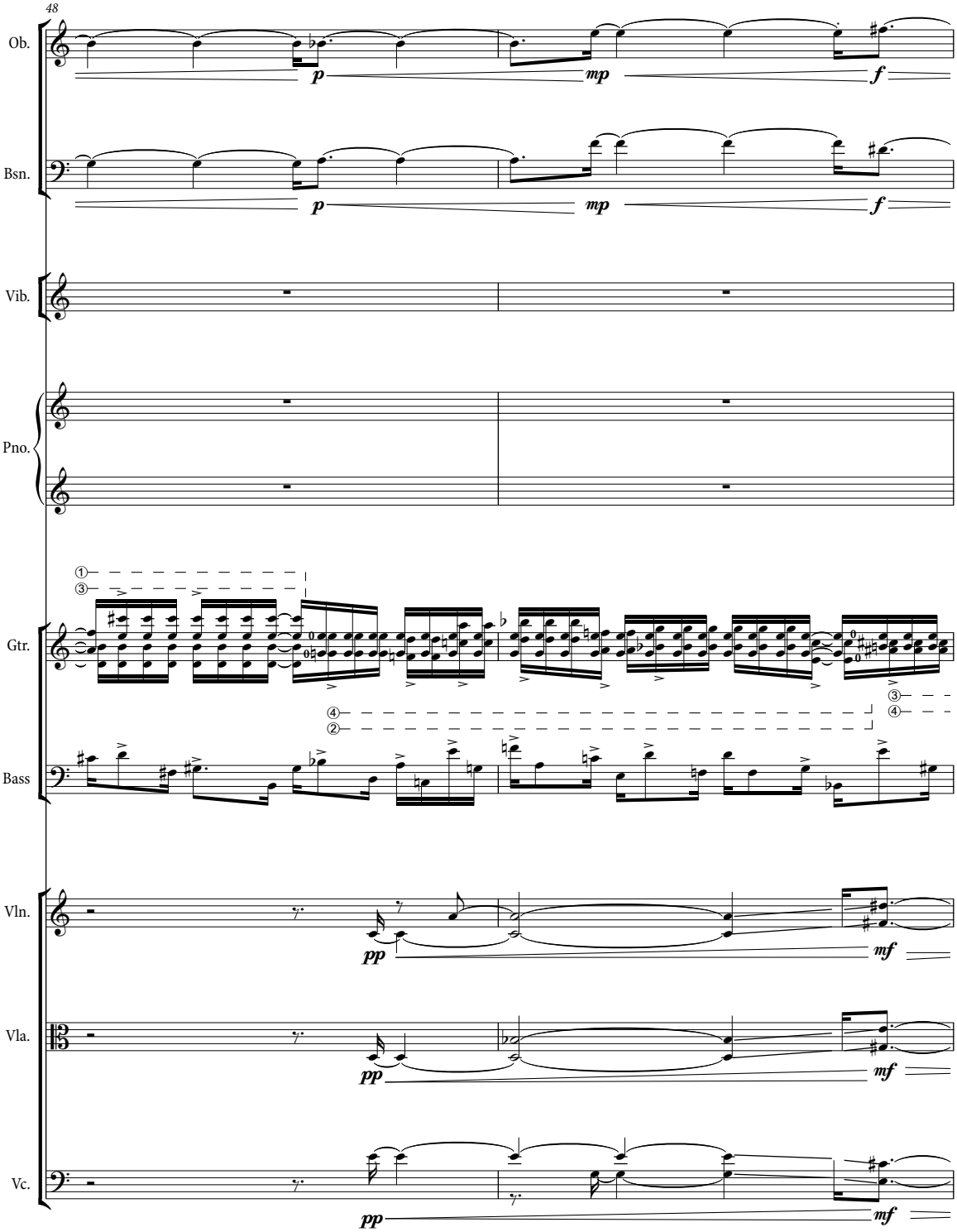

36
Ob.
Bsn.
Vib.
Pno.
Gtr.
Bass
Vln.
Vla.
Vc.
mp
f
p
mf

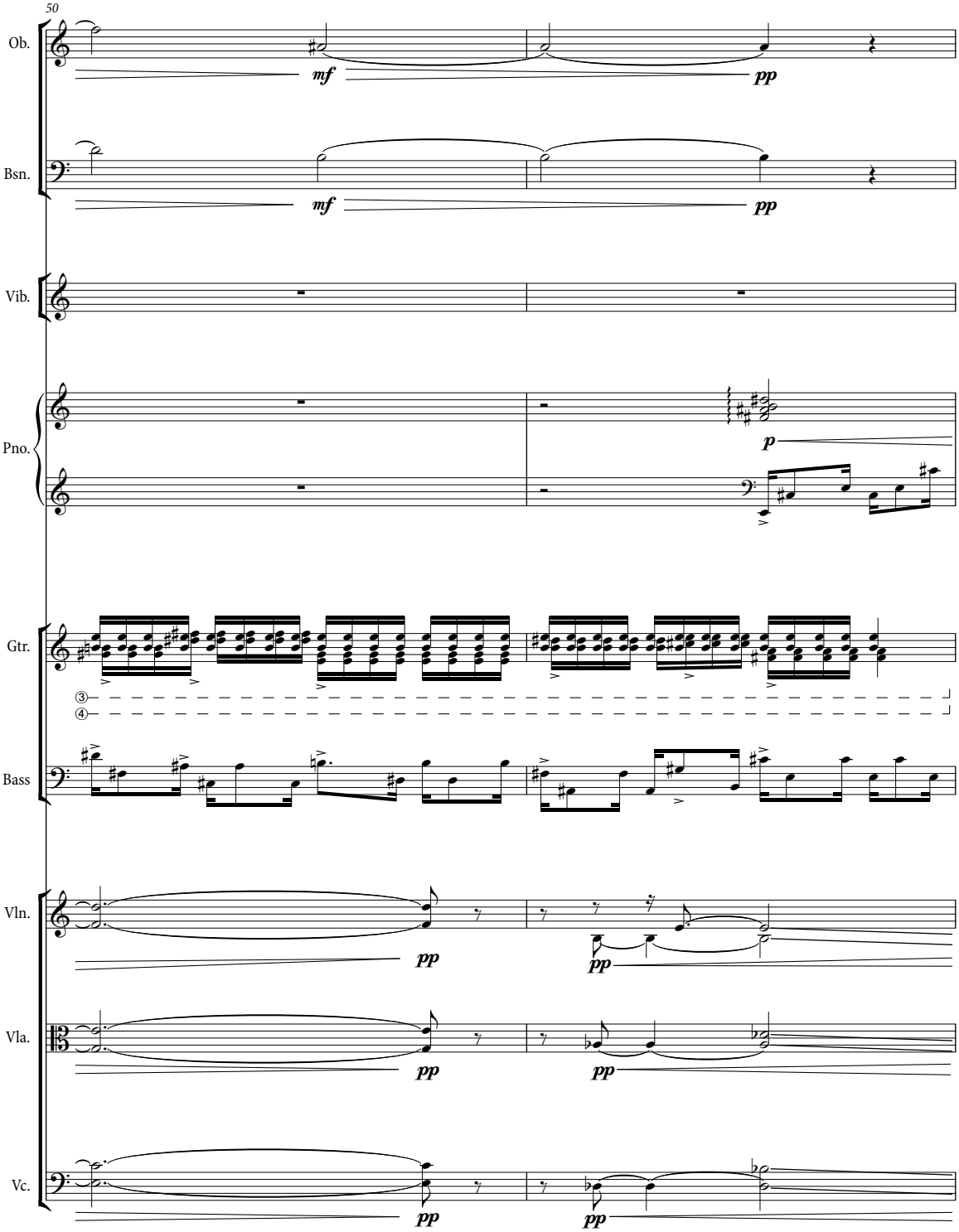

38
E
Ob.
Bsn.
Vib.
Pno.
Gtr.
Bass
Vln.
Vla.
Vc.
arco
a little heavier

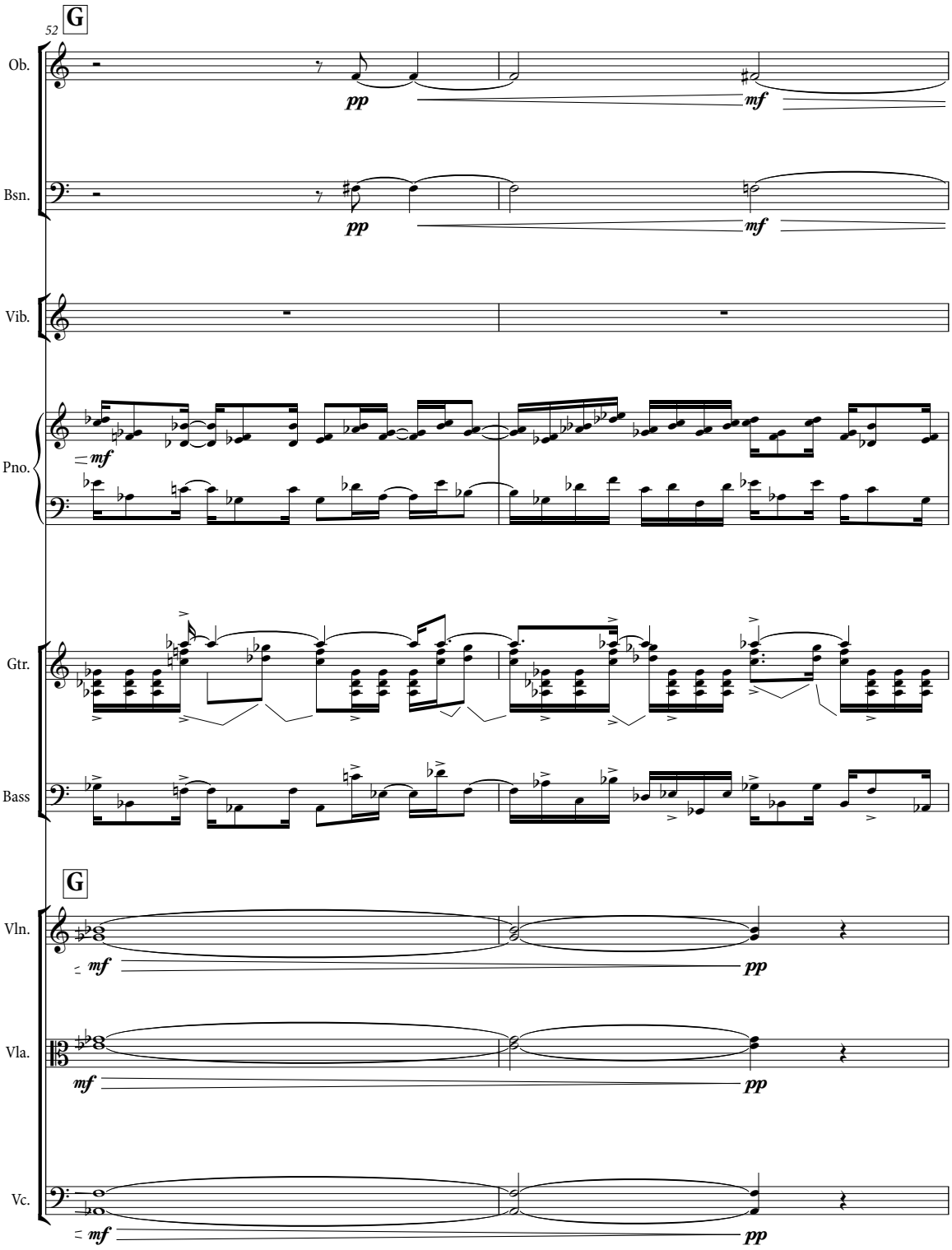

40
Ob.
Bsn.
Vib.
Pno.
Gtr.
Bass
Vln.
Vla.
Vc.

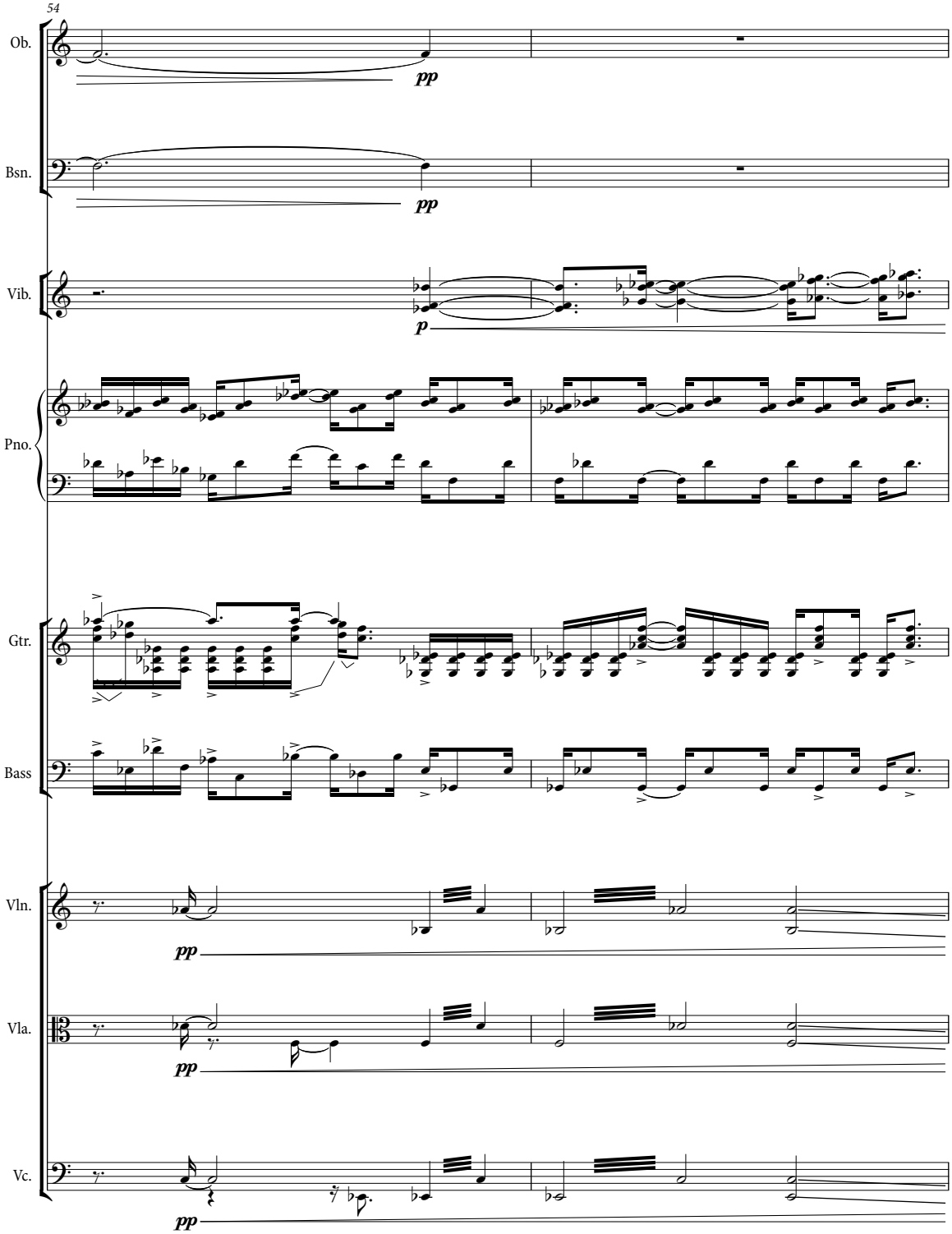

43
Ob.
Bsn.
Vib.
Pno.
Gtr.
Bass
Vln.
Vla.
Vc.
F
mf

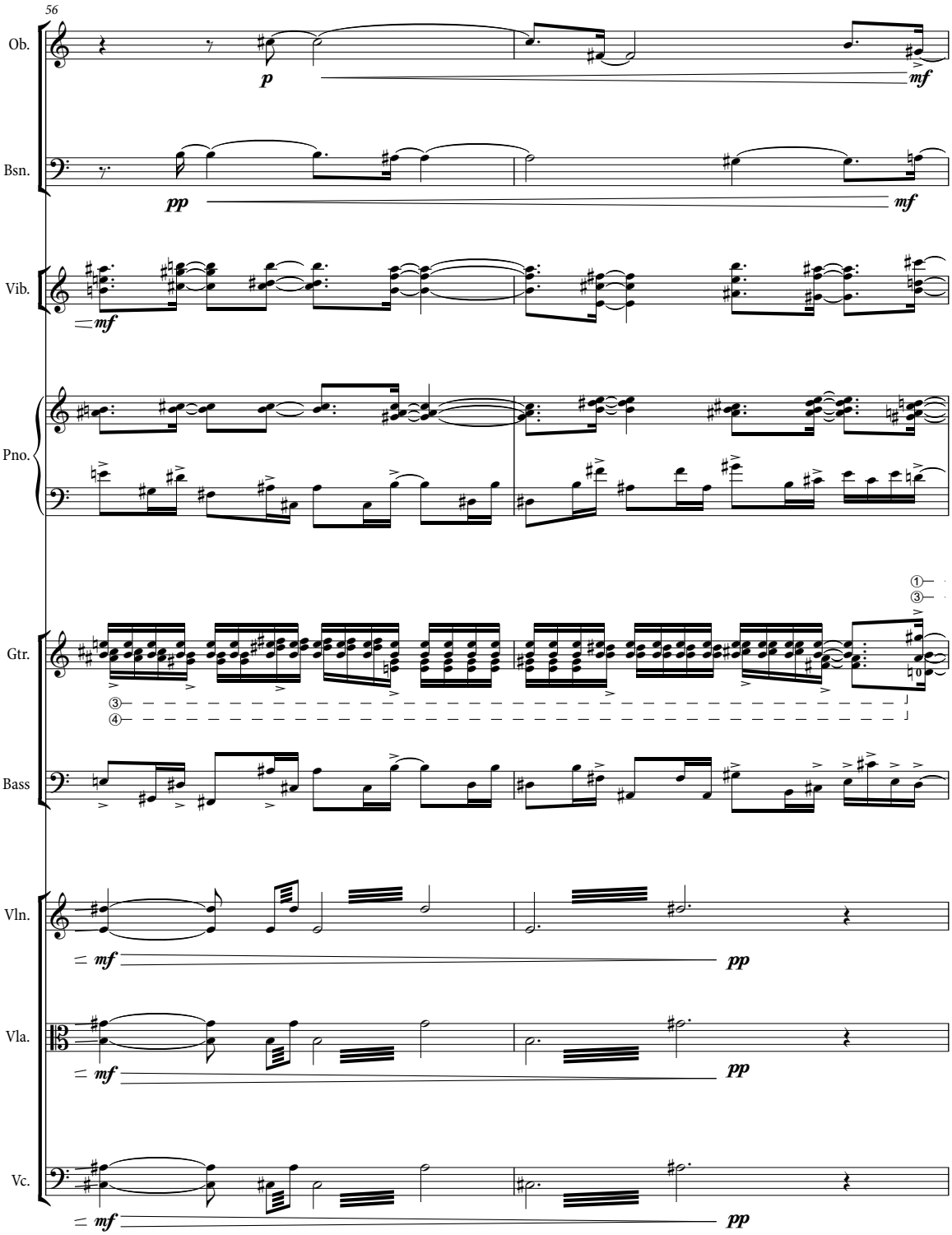

46
Ob.
ppp
Bsn.
pp
Vib.
Pno.
Gtr.
Bass
Vln.
Vla.
Vc.

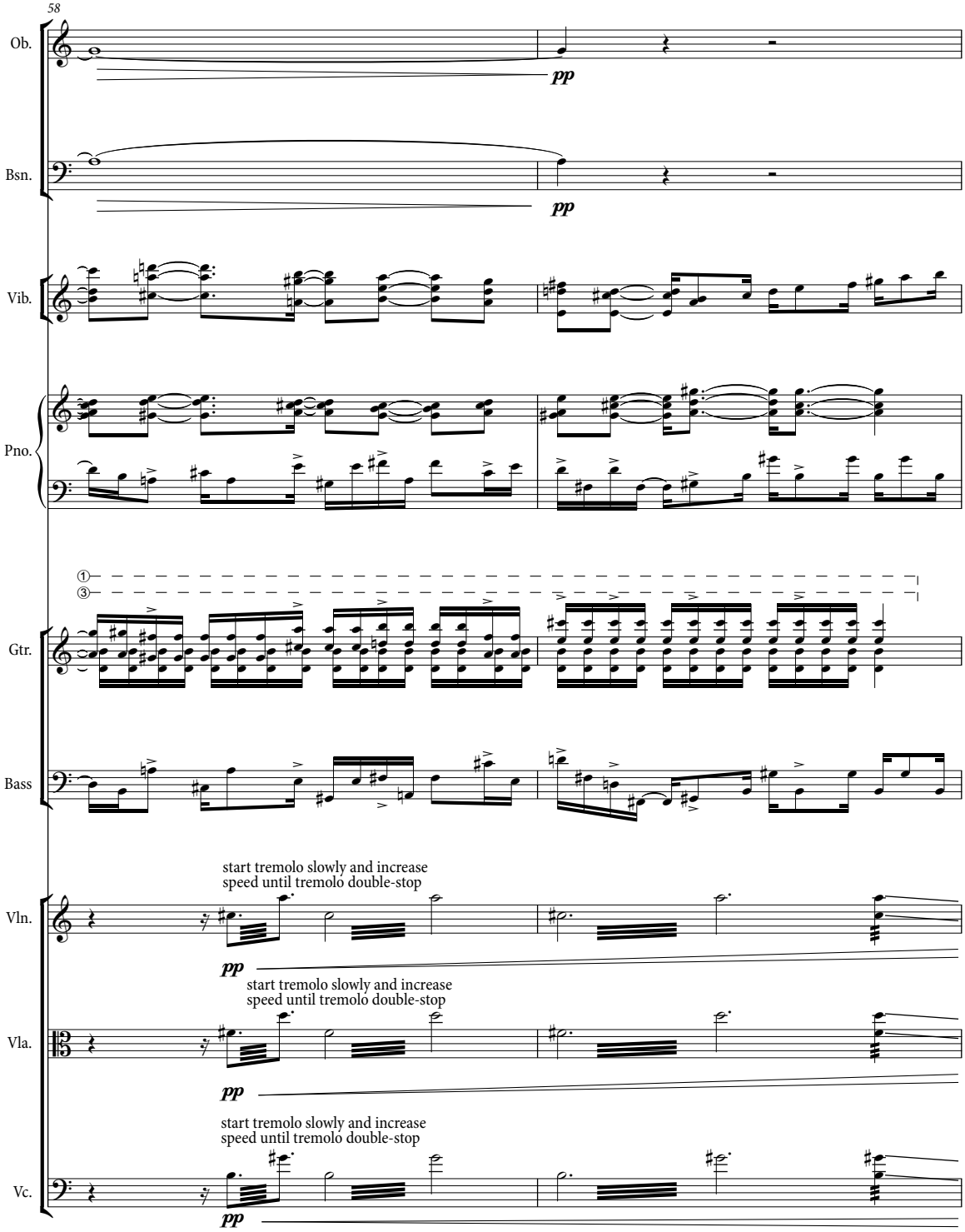

48
Ob.
Bsn.
Vib.
Pno.
Gtr.
Bass
Vln.
Vla.
Vc.
p
mp
f
pp
mf

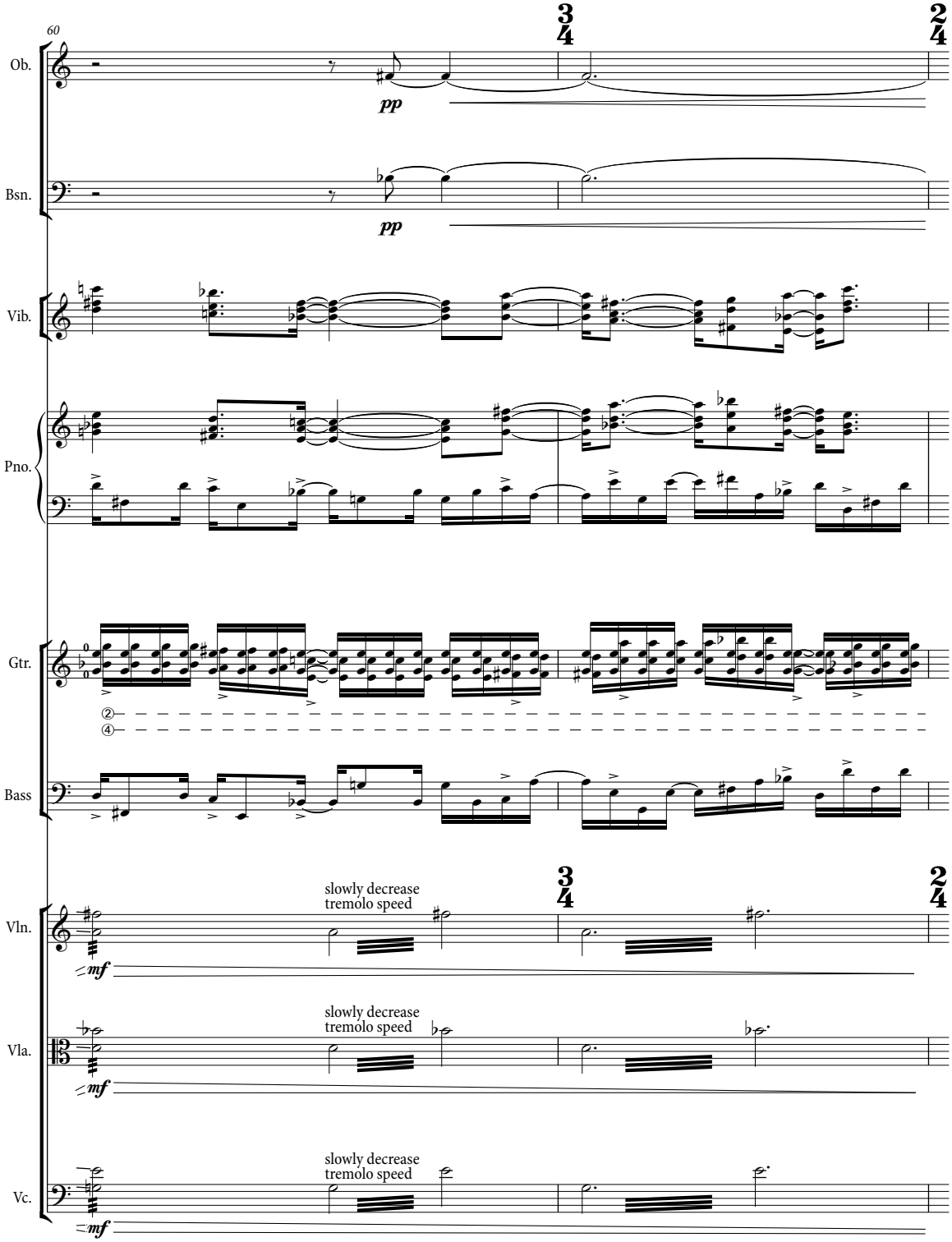

50
Ob.
mf
pp
Bsn.
mf
pp
Vib.
Pno.
p
Gtr.
Bass
Vln.
pp
pp
Vla.
pp
pp
Vc.
pp
pp

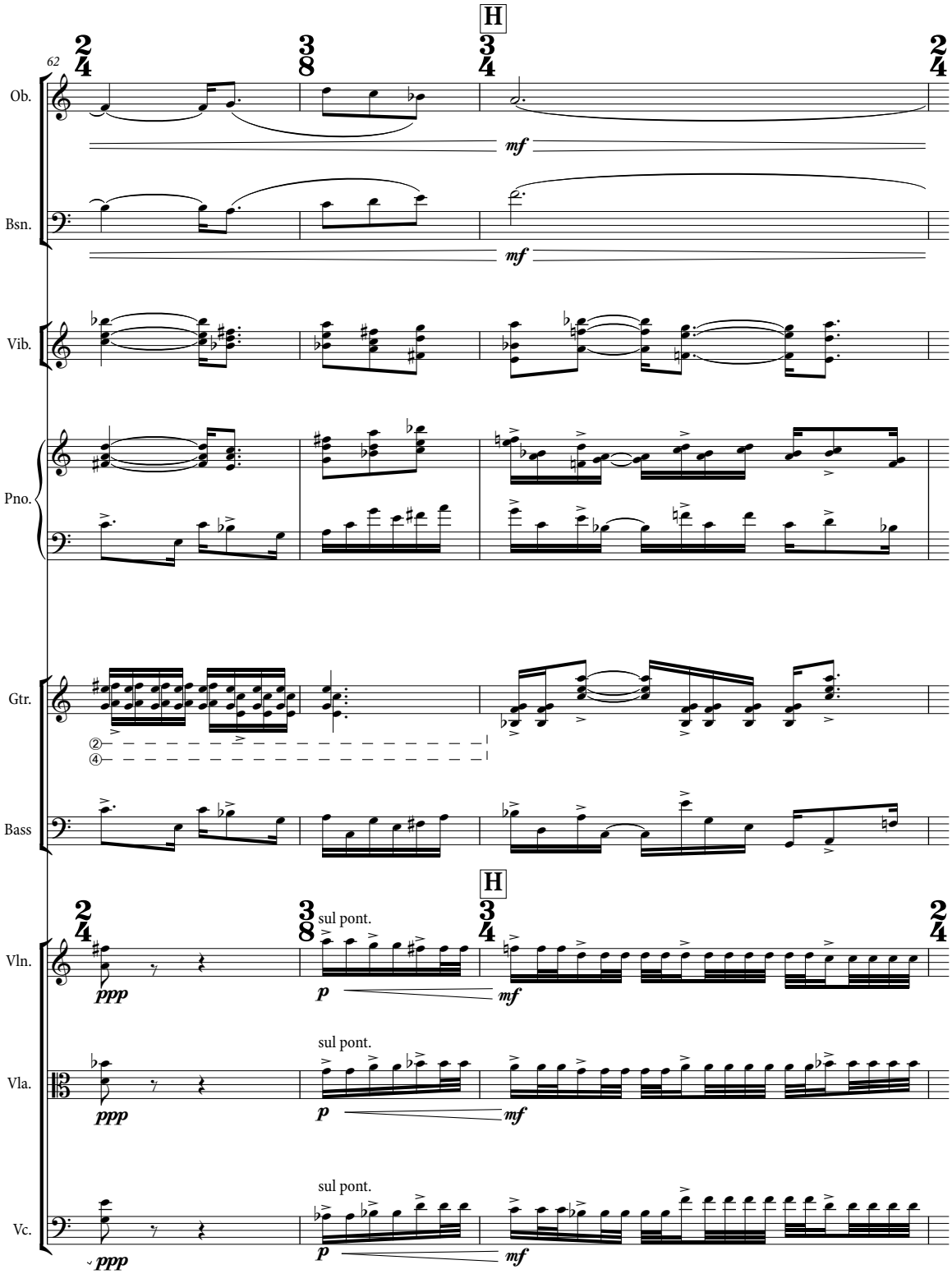

52
G
Ob.
pp
mf
Bsn.
pp
mf
Vib.
Pno.
mf
Gtr.
Bass
G
Vln.
mf
pp
Vla.
mf
pp
Vc.
mf
pp

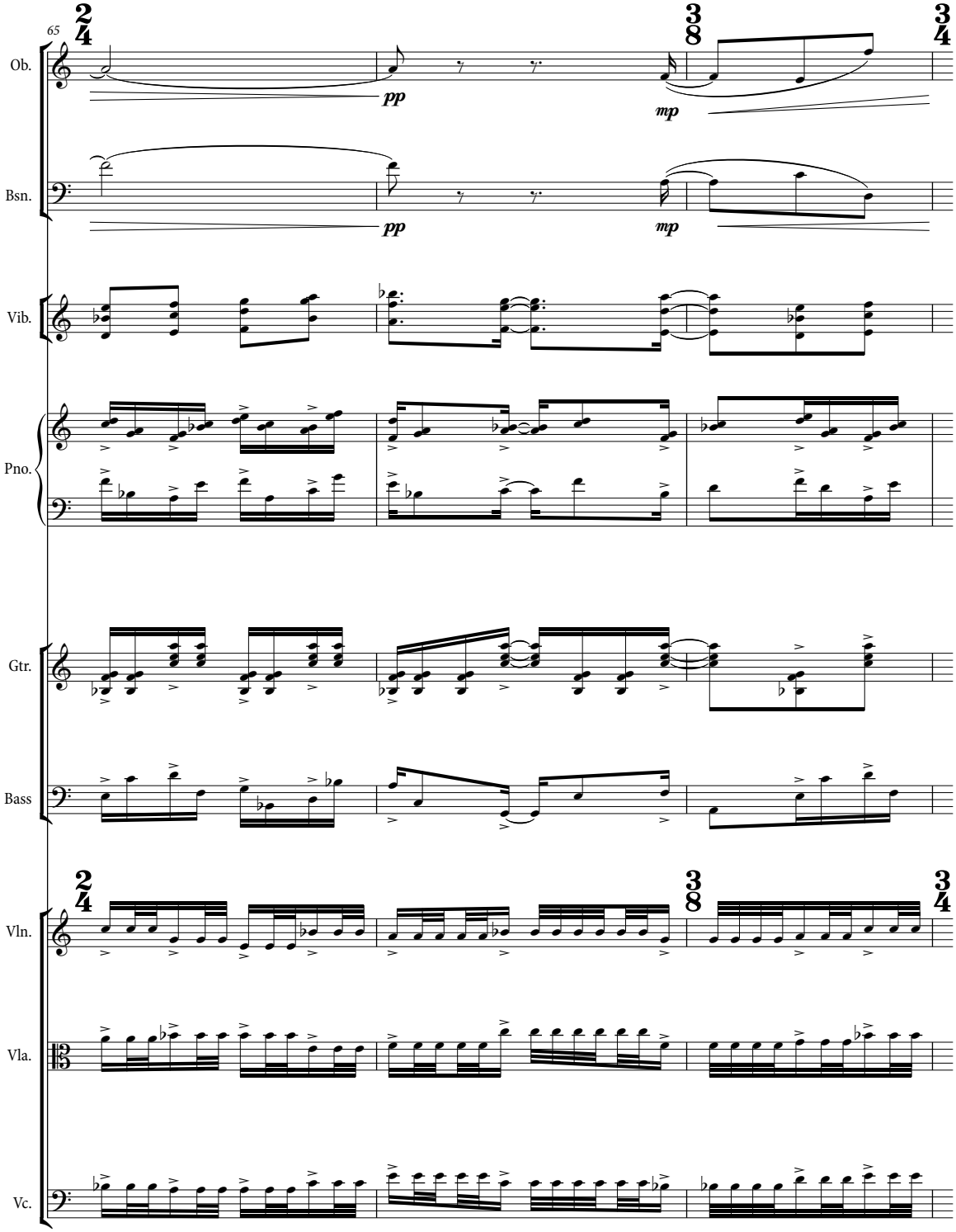

54
Ob.
pp
Bsn.
pp
Vib.
p
Pno.
Gtr.
Bass
Vln.
pp
Vla.
pp
Vc.
pp

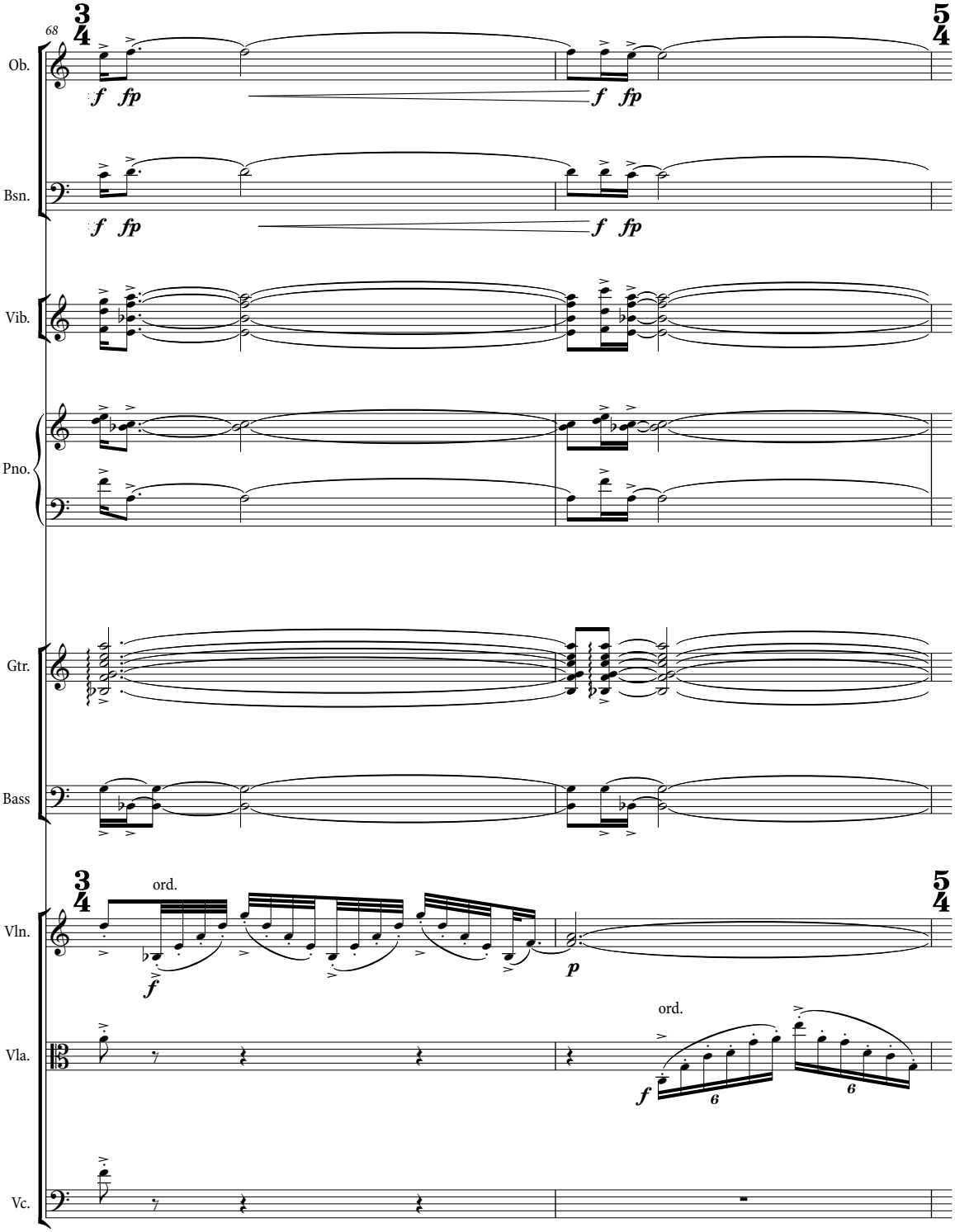

56
Ob.
Bsn.
Vib.
Pno.
Gtr.
Bass
Vln.
Vla.
Vc.
p
mf
pp
mf
mf
mf
pp
mf
pp
mf
pp

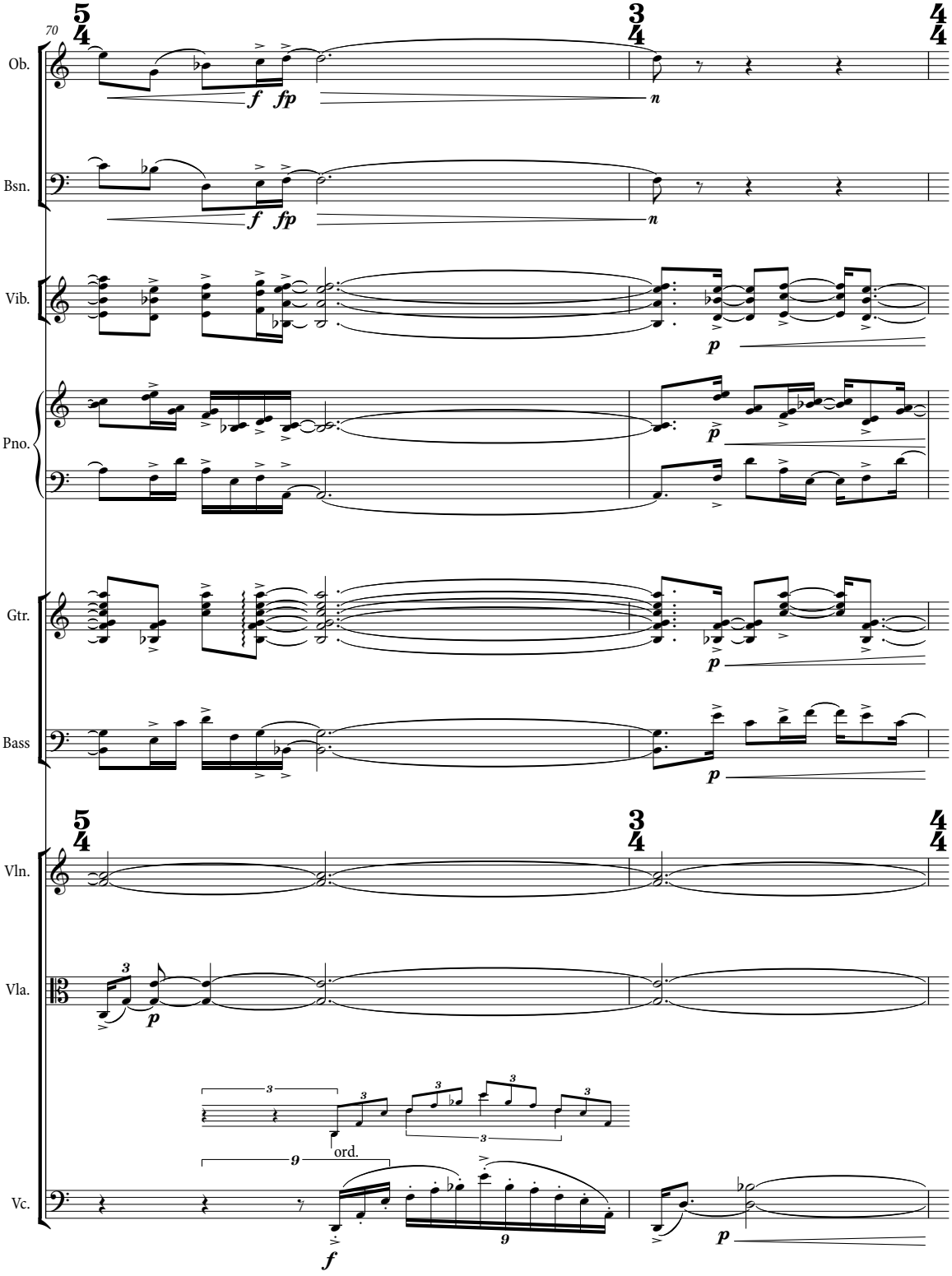

58
Ob.
pp
Bsn.
pp
Vib.
Pno.
①
③
Gtr.
Bass
start tremolo slowly and increase speed until tremolo double-stop
Vln.
pp
start tremolo slowly and increase speed until tremolo double-stop
Vla.
pp
start tremolo slowly and increase speed until tremolo double-stop
Vc.
pp

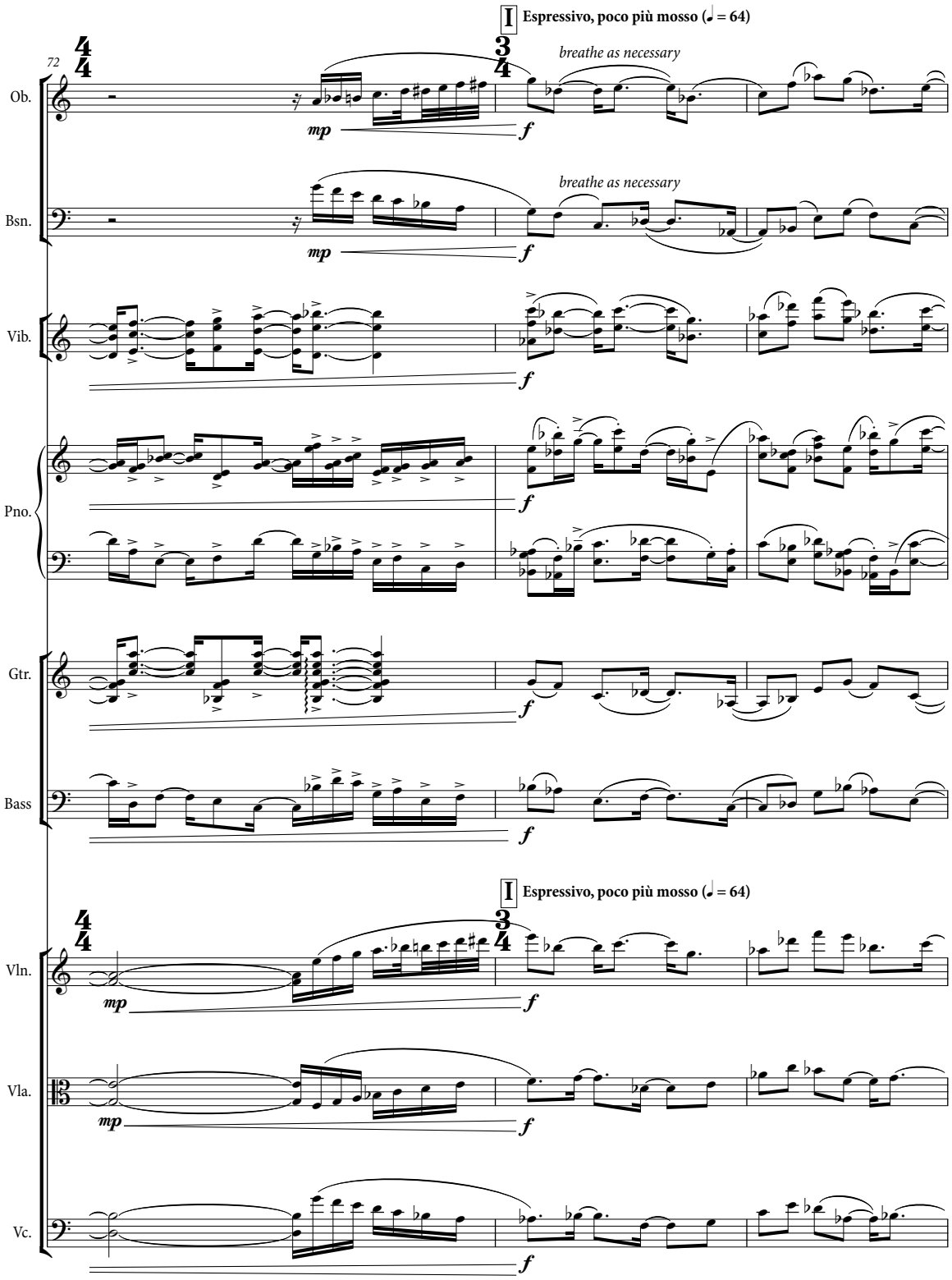

60
Ob.
Bsn.
Vib.
Pno.
Gtr.
Bass
Vln.
Vla.
Vc.
pp
pp
mf
mf
mf
slowly decrease tremolo speed
slowly decrease tremolo speed
slowly decrease tremolo speed

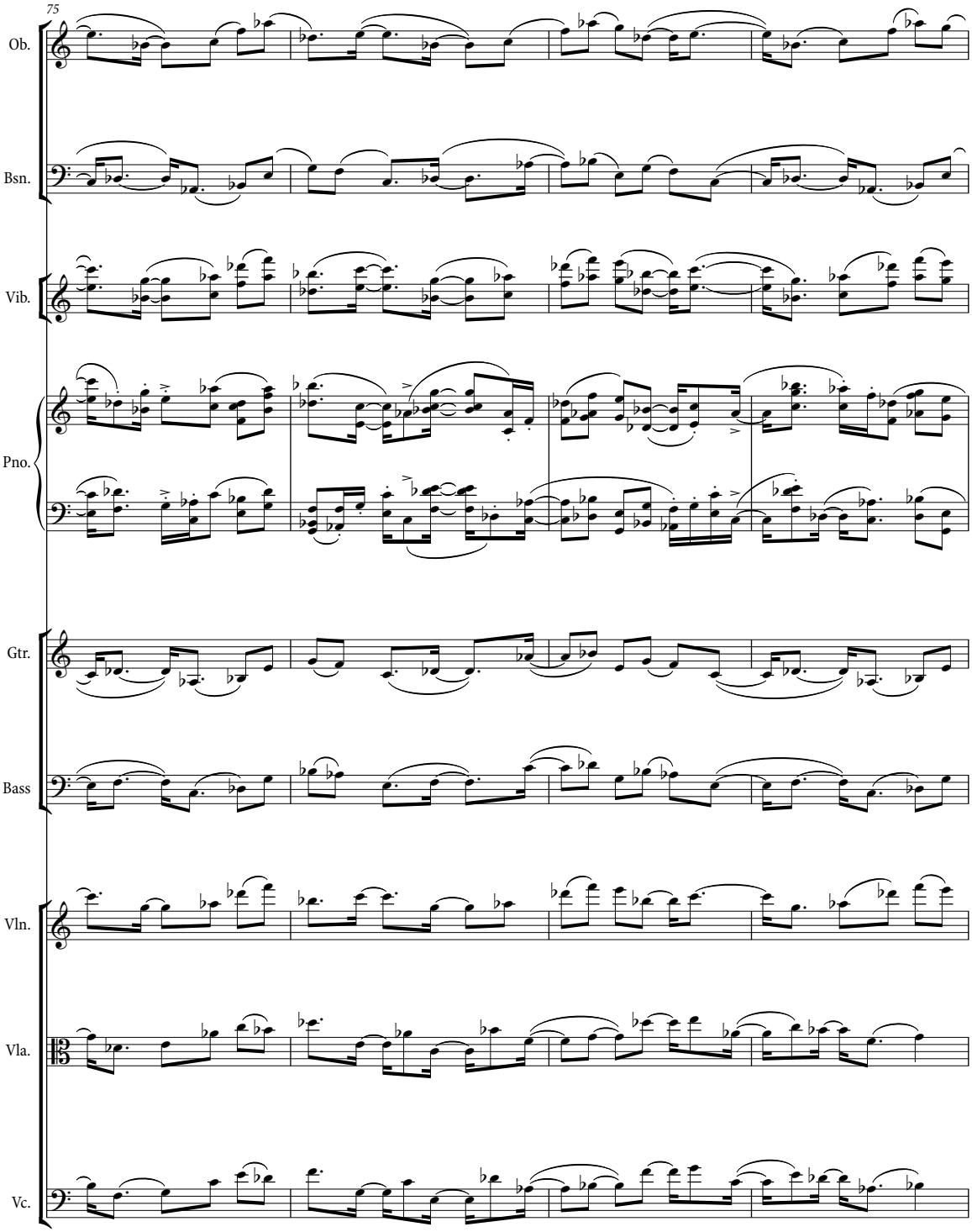

62
H
Ob.
Bsn.
Vib.
Pno.
Gtr.
Bass
Vln.
Vla.
Vc.
mf
sul pont.
ppp
p

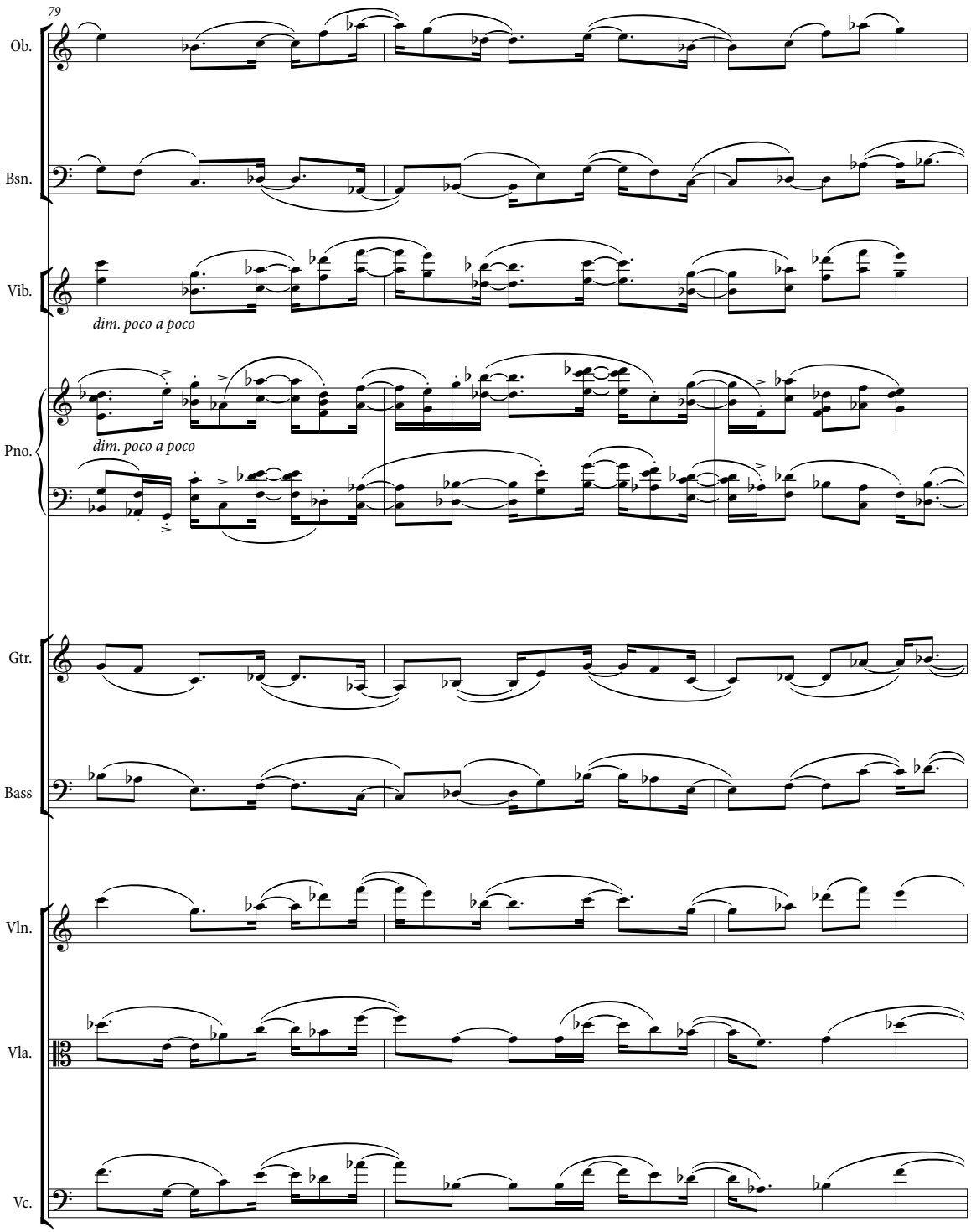

65
Ob.
Bsn.
Vib.
Pno.
Gtr.
Bass
Vln.
Vla.
Vc.
pp
mp

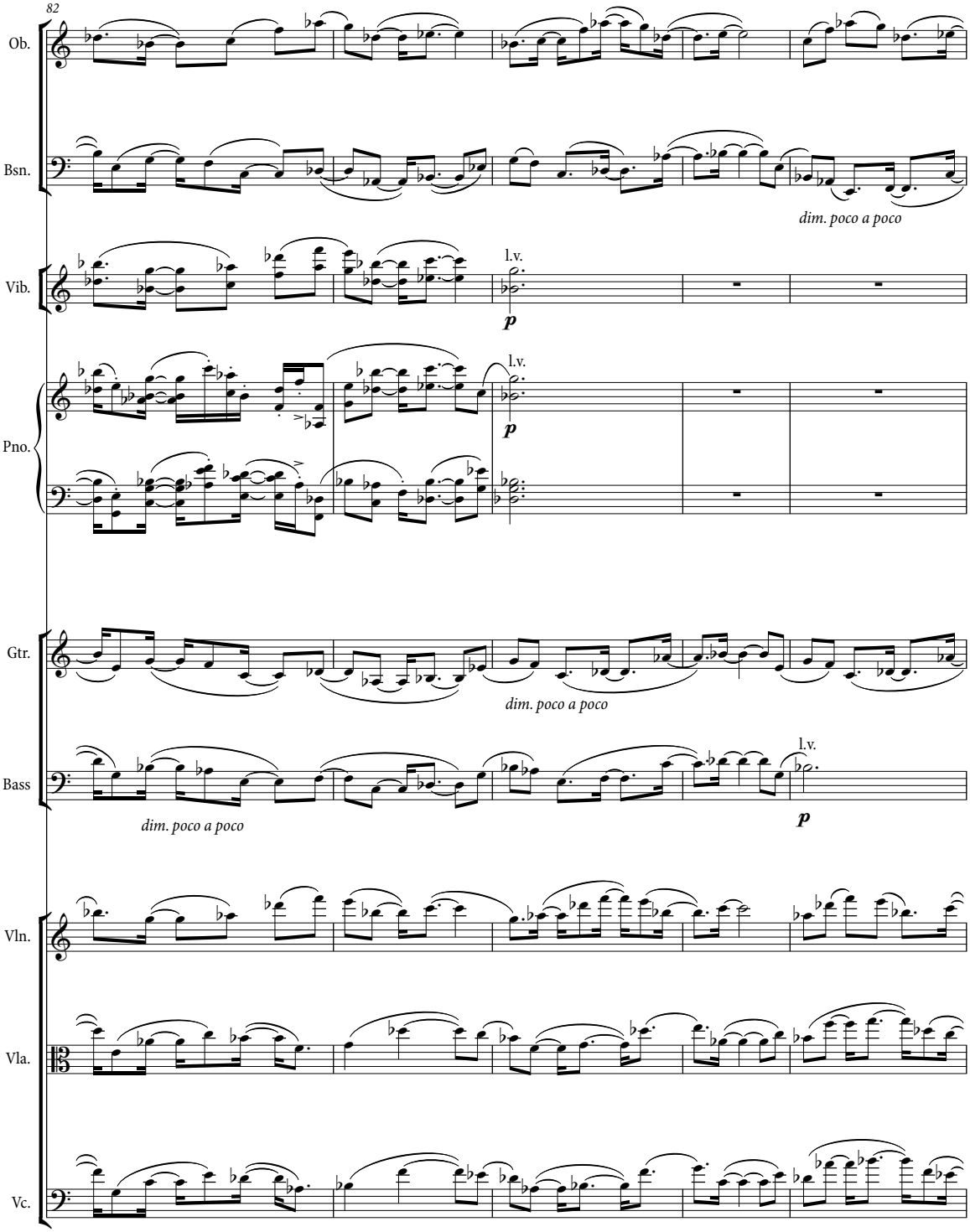

68
Ob.
Bsn.
Vib.
Pno.
Gtr.
Bass
Vln.
Vla.
Vc.
ord.
ord.

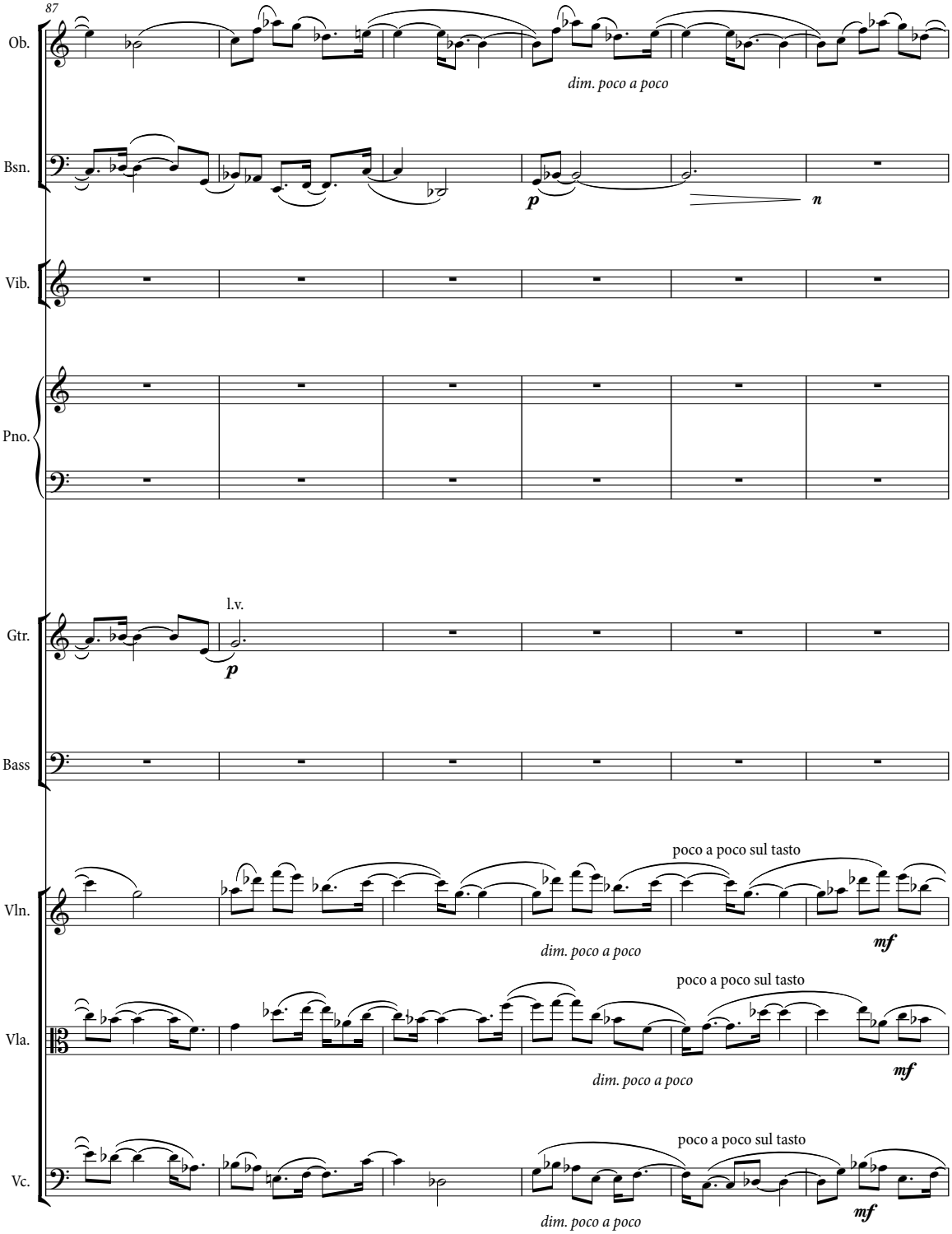

70
Ob.
Bsn.
Vib.
Pno.
Gtr.
Bass
Vln.
Vla.
Vc.
ord.

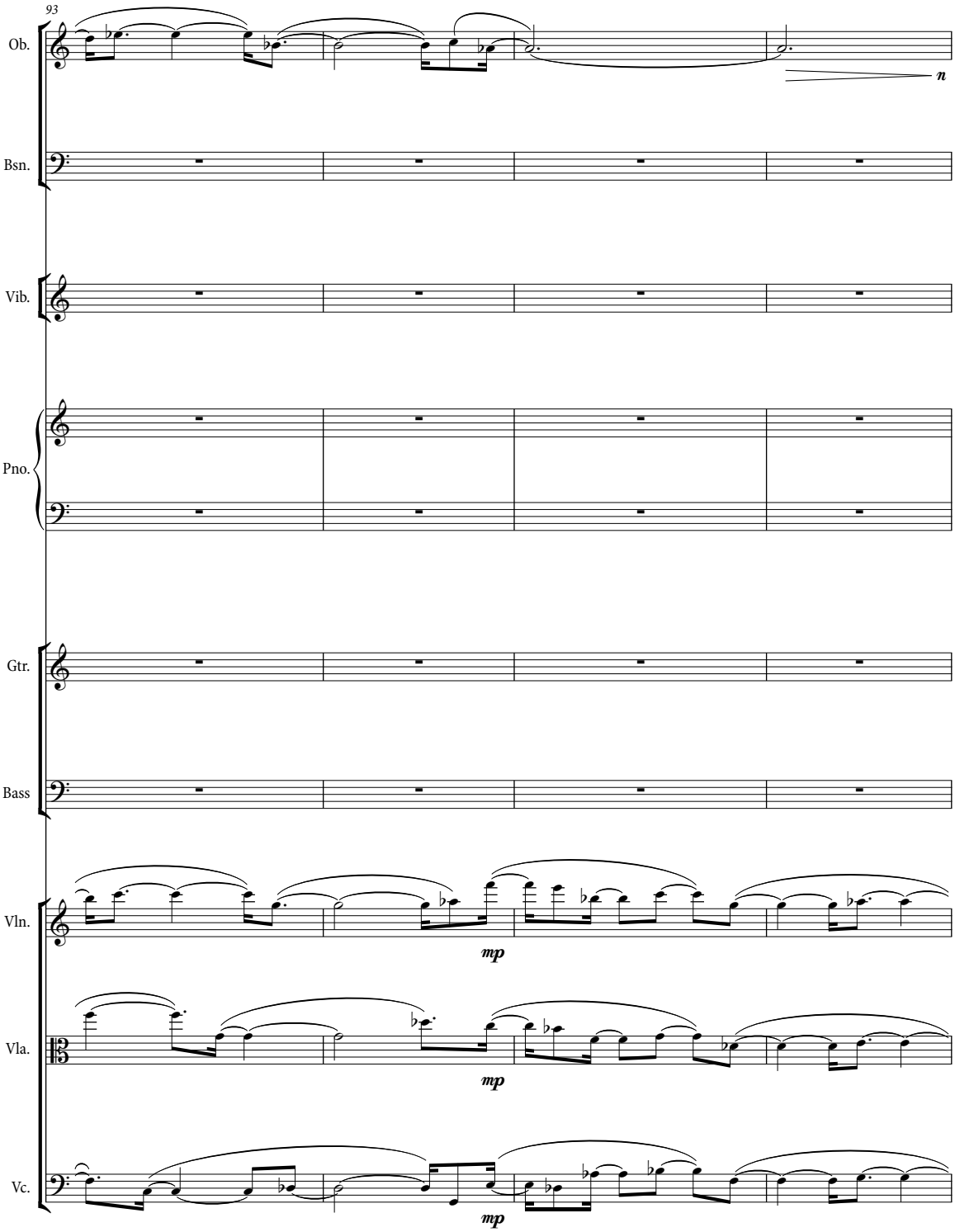

I Espressivo, poco più mosso (♩ = 64)
72
Ob.
Bsn.
Vib.
Pno.
Gtr.
Bass
Vln.
Vla.
Vc.
breathe as necessary
mp
f

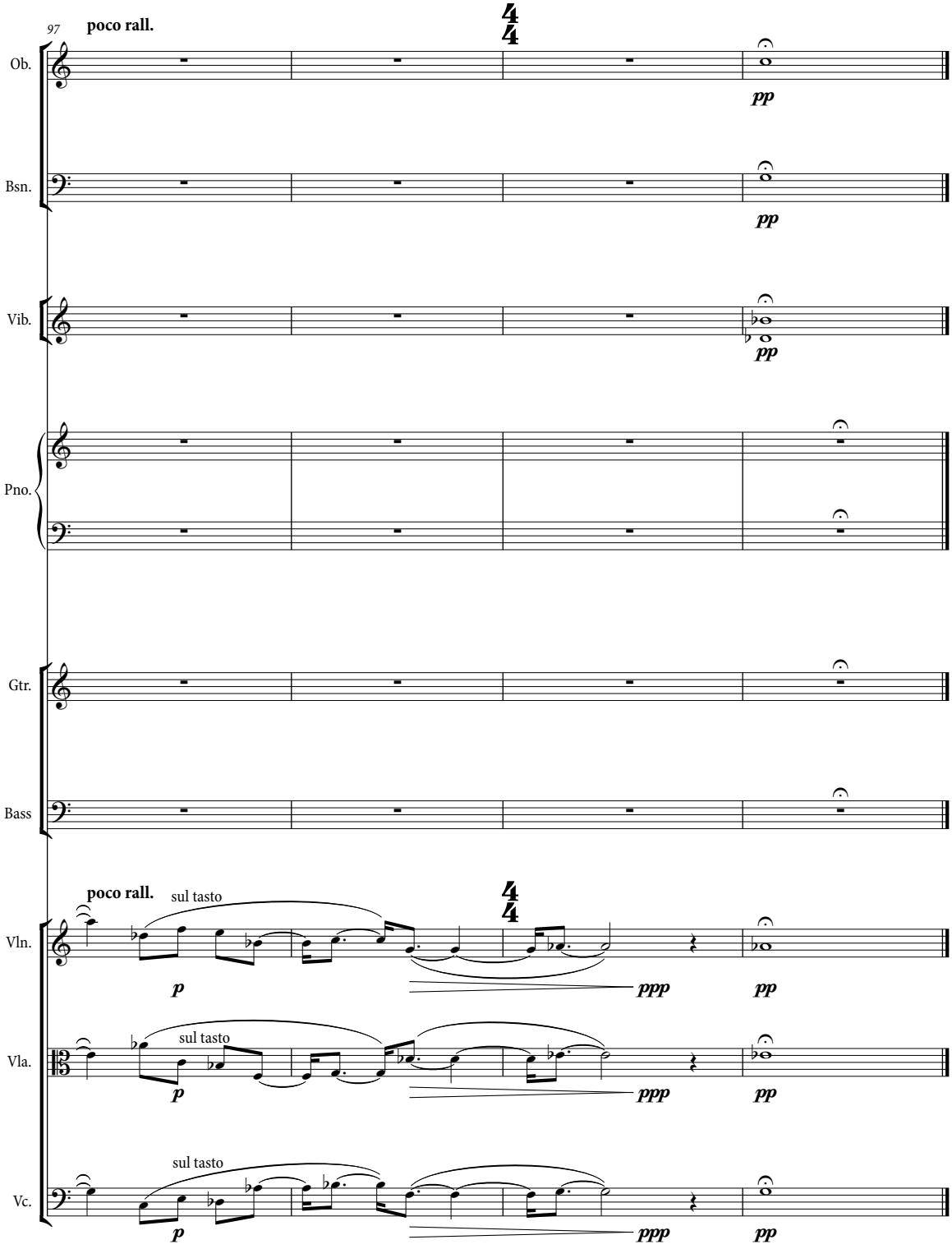

75
Ob.
Bsn.
Vib.
Pno.
Gtr.
Bass
Vln.
Vla.
Vc.


79
Ob.
Bsn.
Vib.
dim. poco a poco
Pno.
dim. poco a poco
Gtr.
Bass
Vln.
Vla.
Vc.

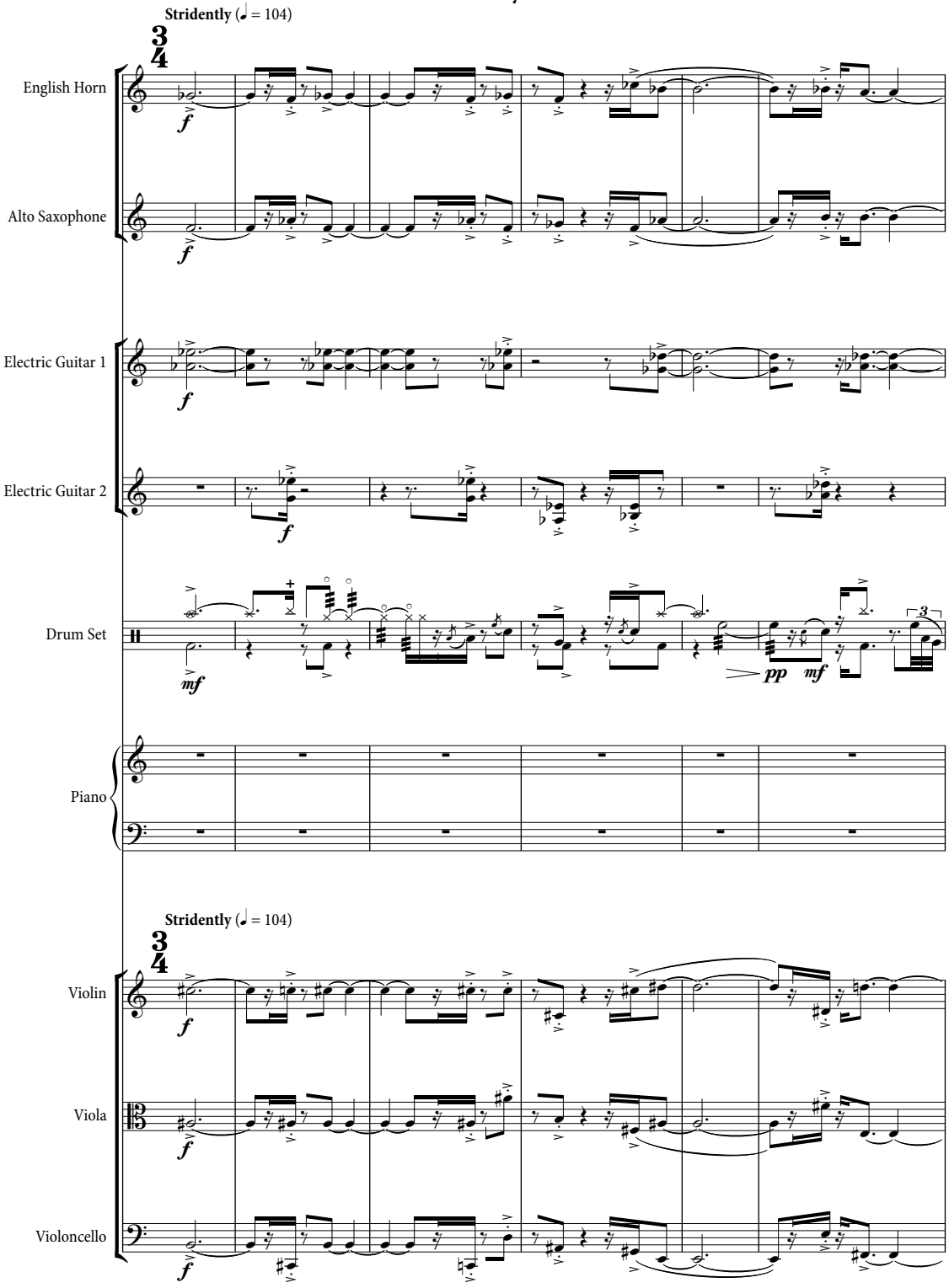

82
Ob.
Bsn.
dim. poco a poco
Vib.
l.v.
p
Pno.
l.v.
p
Gtr.
dim. poco a poco
Bass
dim. poco a poco
l.v.
p
Vln.
Vla.
Vc.

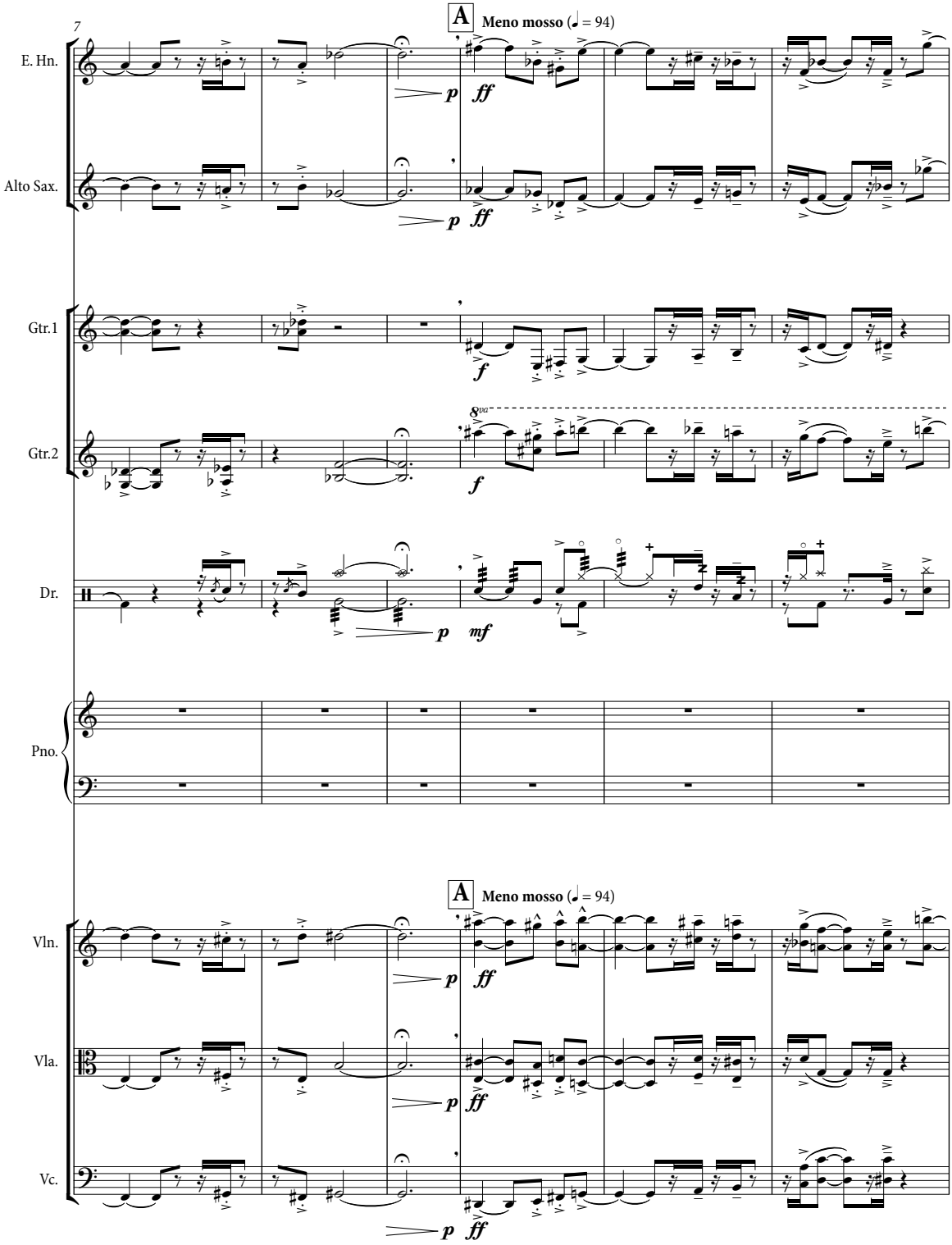

87
Ob.
dim. poco a poco
Bsn.
p
n
Vib.
Pno.
Gtr.
l.v.
p
Bass
Vln.
poco a poco sul tasto
dim. poco a poco
mf
Vla.
poco a poco sul tasto
dim. poco a poco
mf
Vc.
poco a poco sul tasto
dim. poco a poco
mf

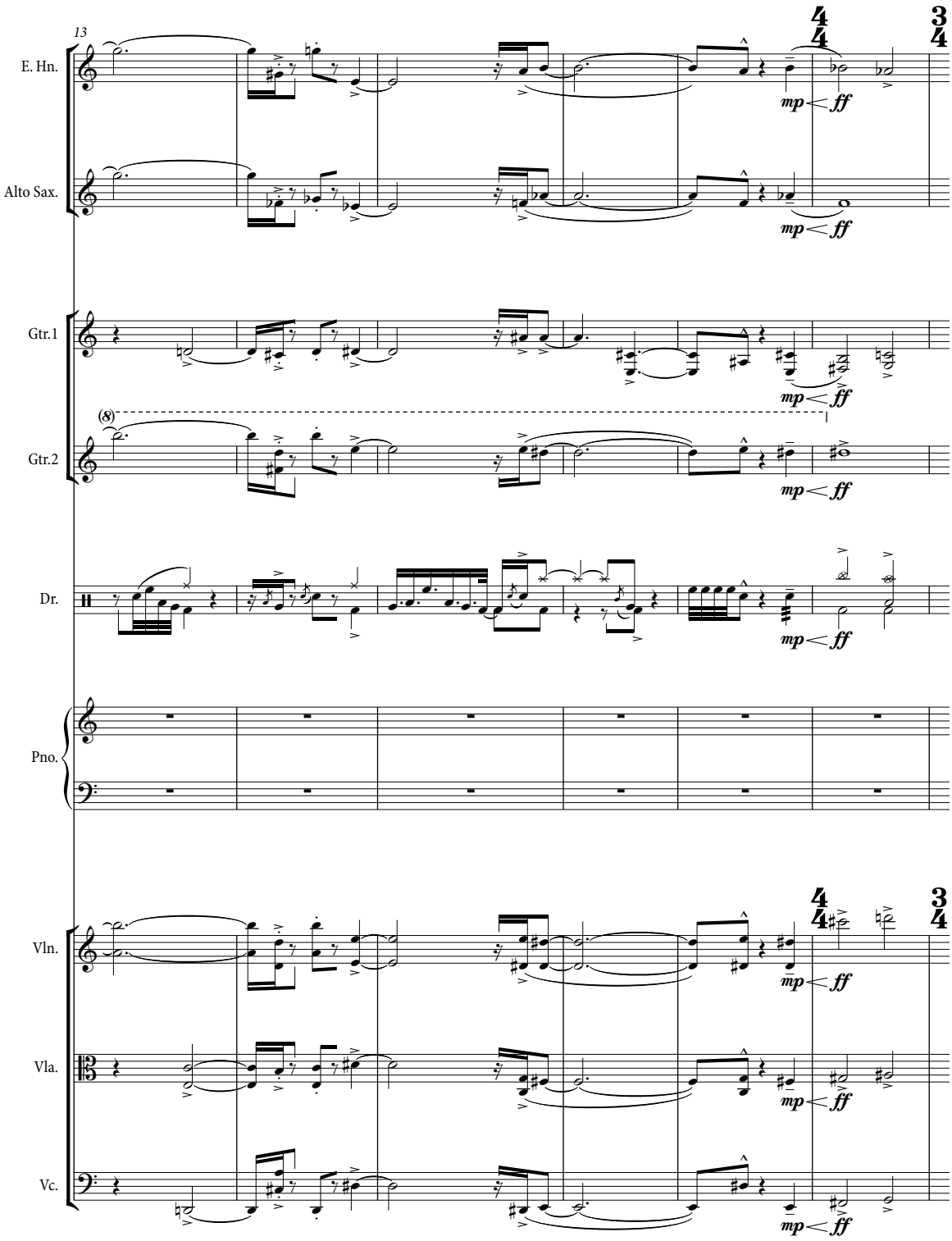

93
Ob.
n
Bsn.
Vib.
Pno.
Gtr.
Bass
Vln.
mp
Vla.
mp
Vc.
mp

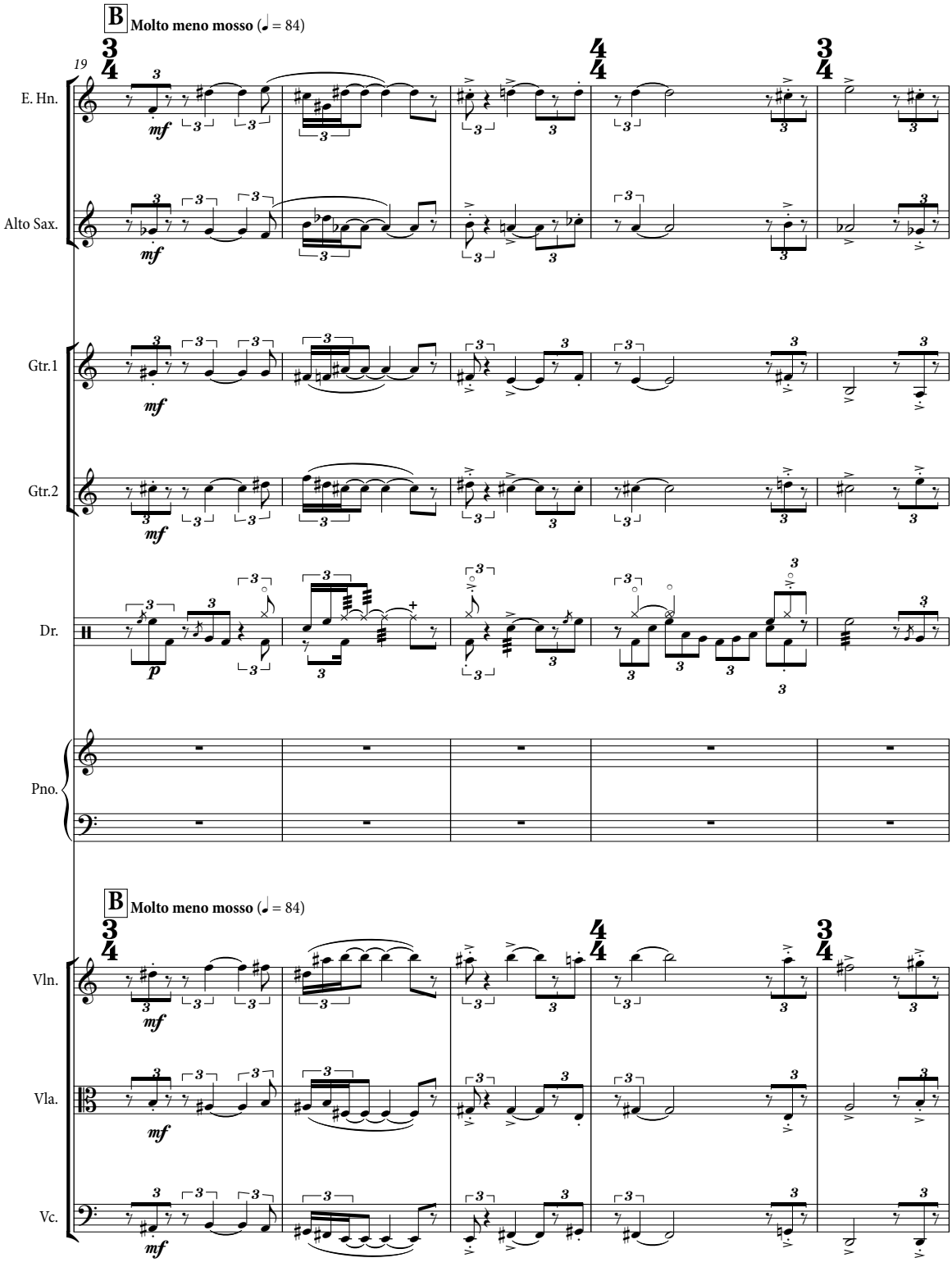

97
poco rall.
Ob.
Bsn.
Vib.
Pno.
Gtr.
Bass
poco rall.
sul tasto
Vln.
Vla.
Vc.
p
ppp
pp

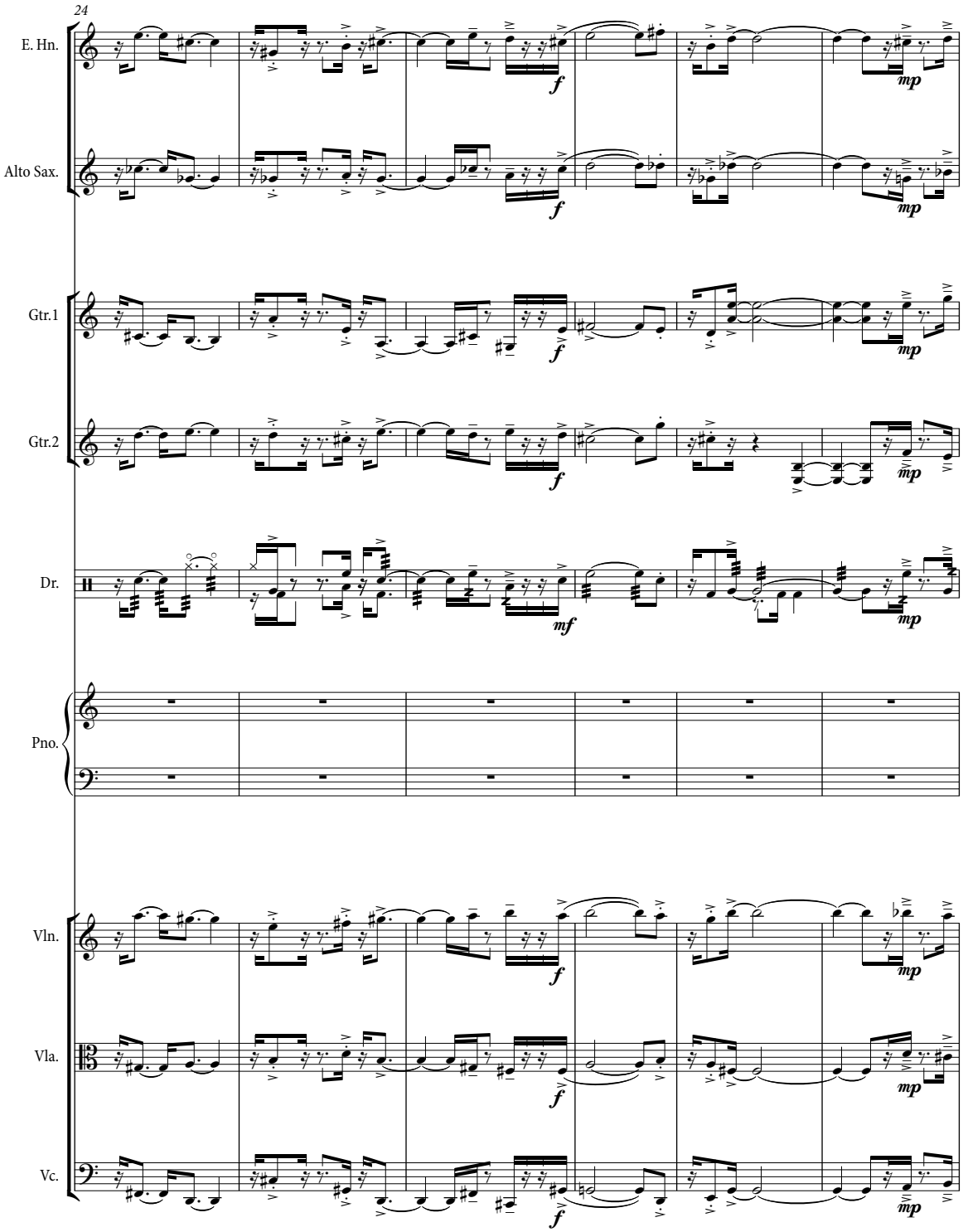
II. circadian cycles

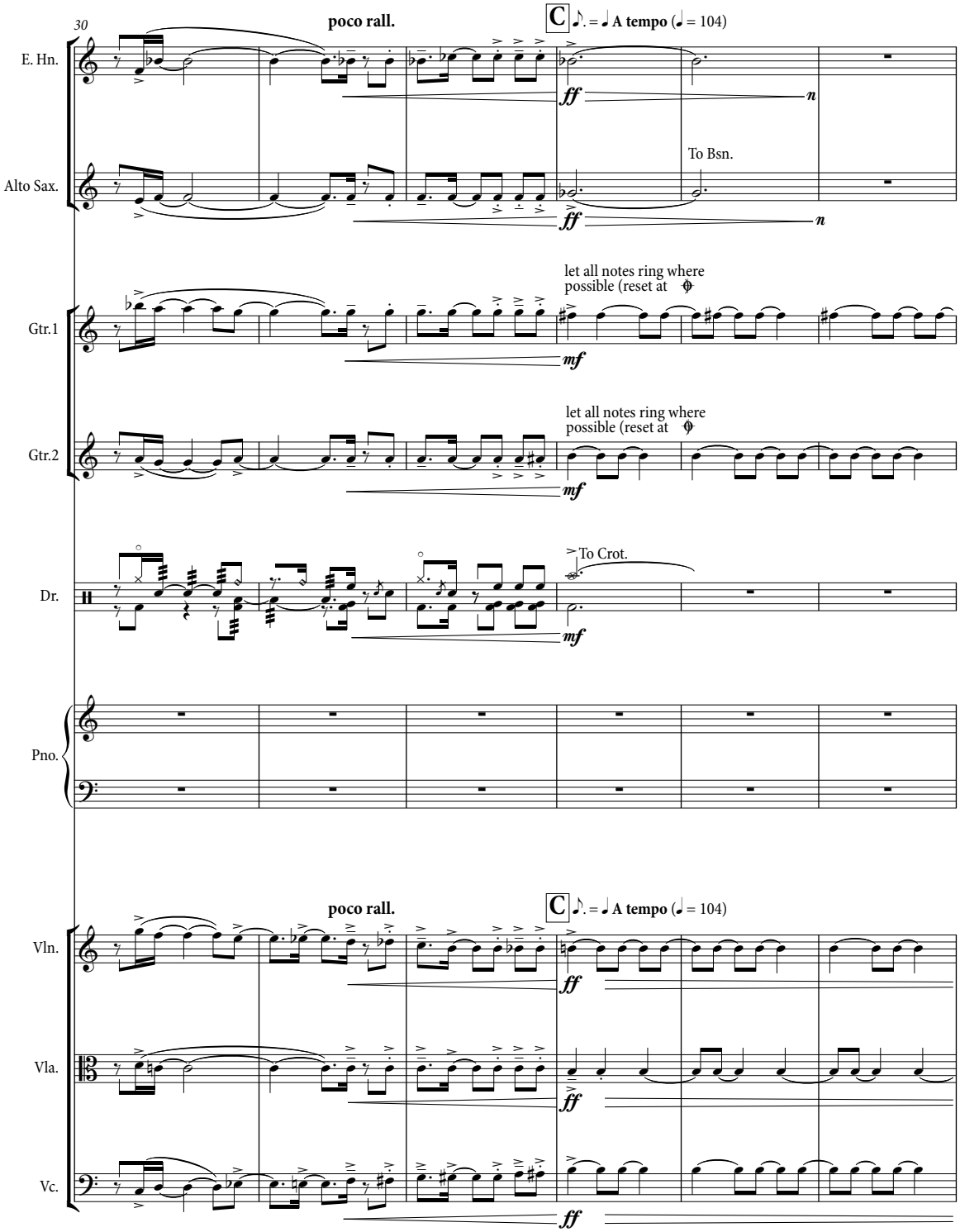


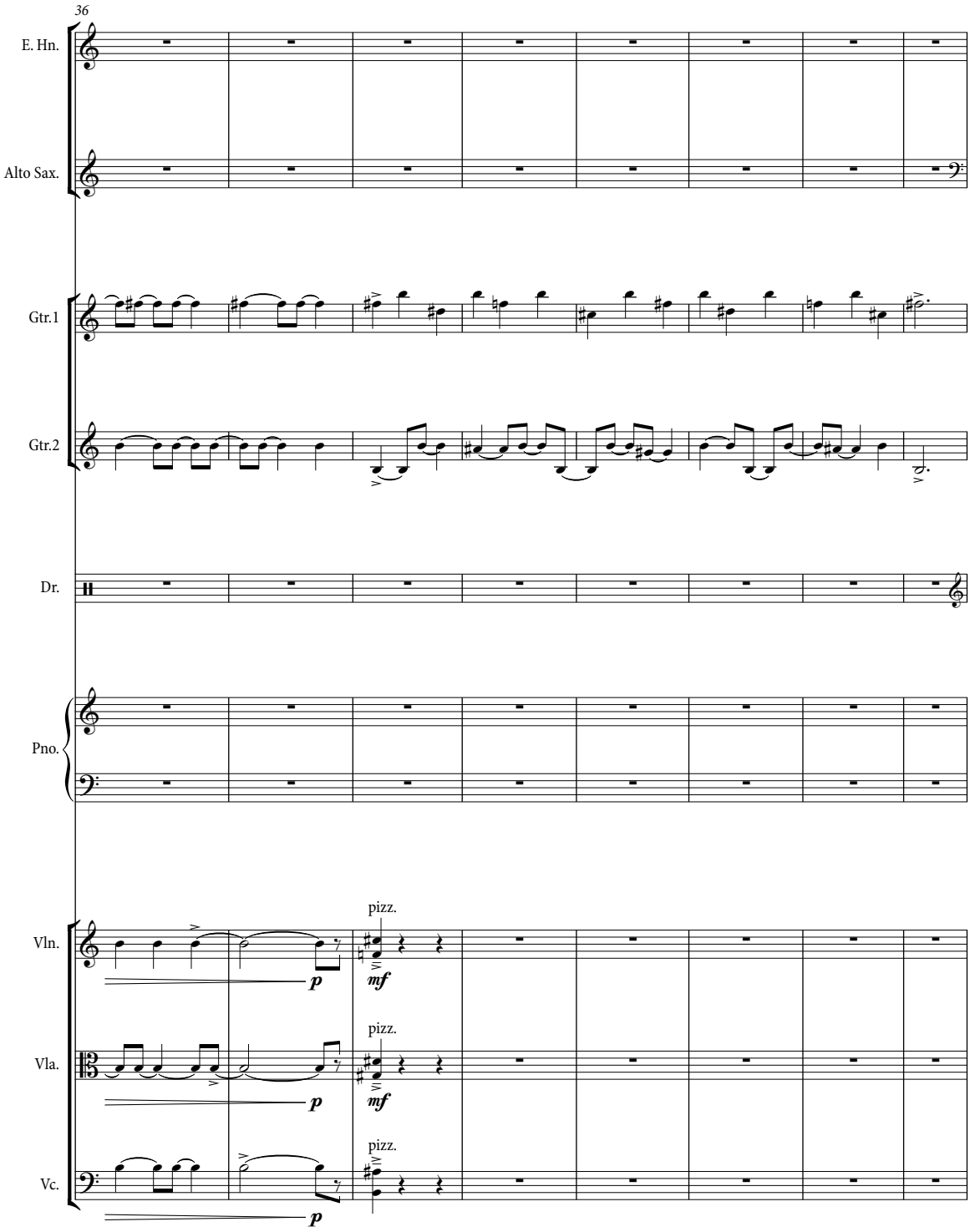

7
A
Meno mosso (♩ = 94)
E. Hn.
Alto Sax.
Gtr.1
Gtr.2
8va
Dr.
Pno.
Vln.
Vla.
Vc.
p
ff
f
mf

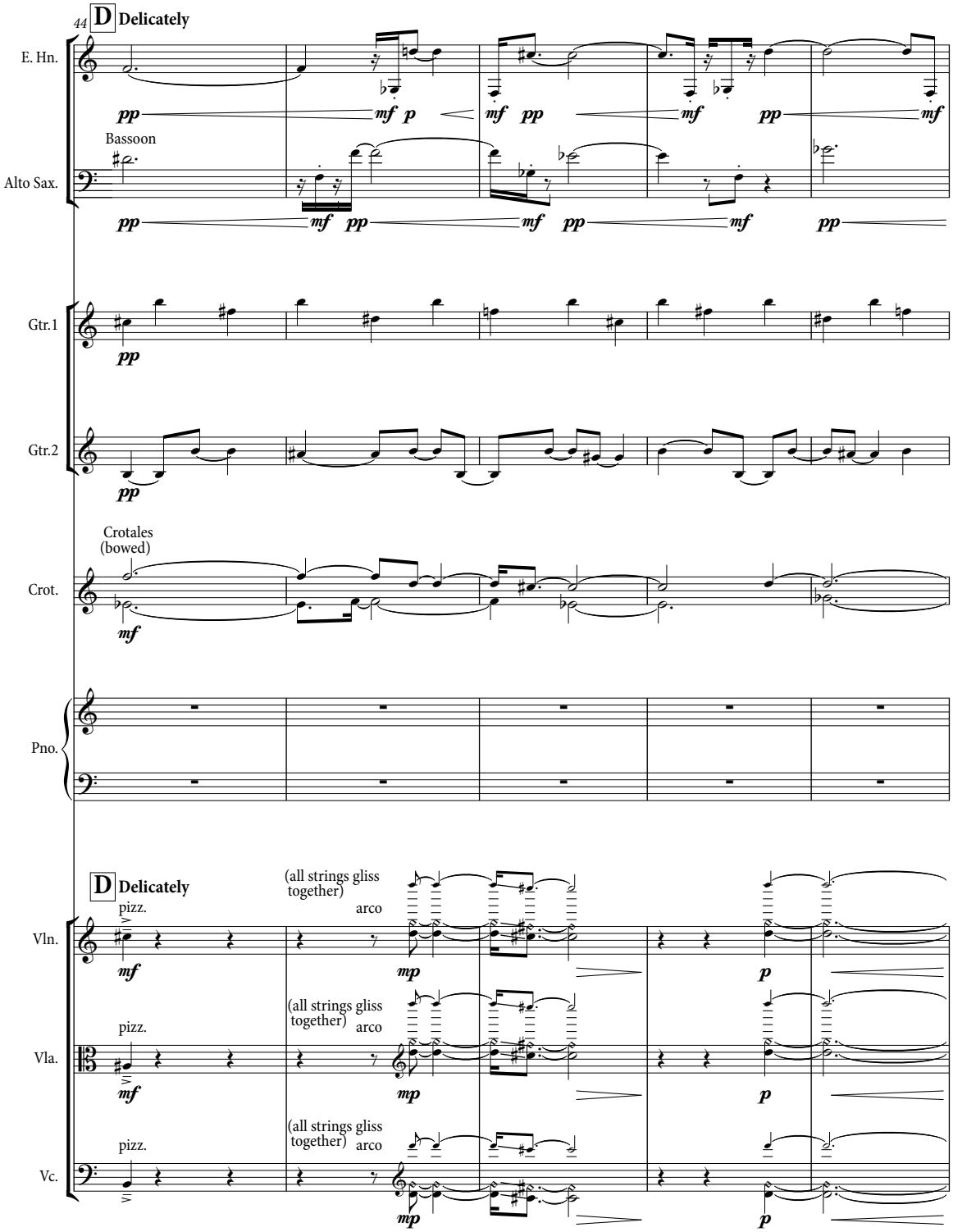

13
E. Hn.
Alto Sax.
Gtr.1
Gtr.2
Dr.
Pno.
Vln.
Vla.
Vc.
mp
ff

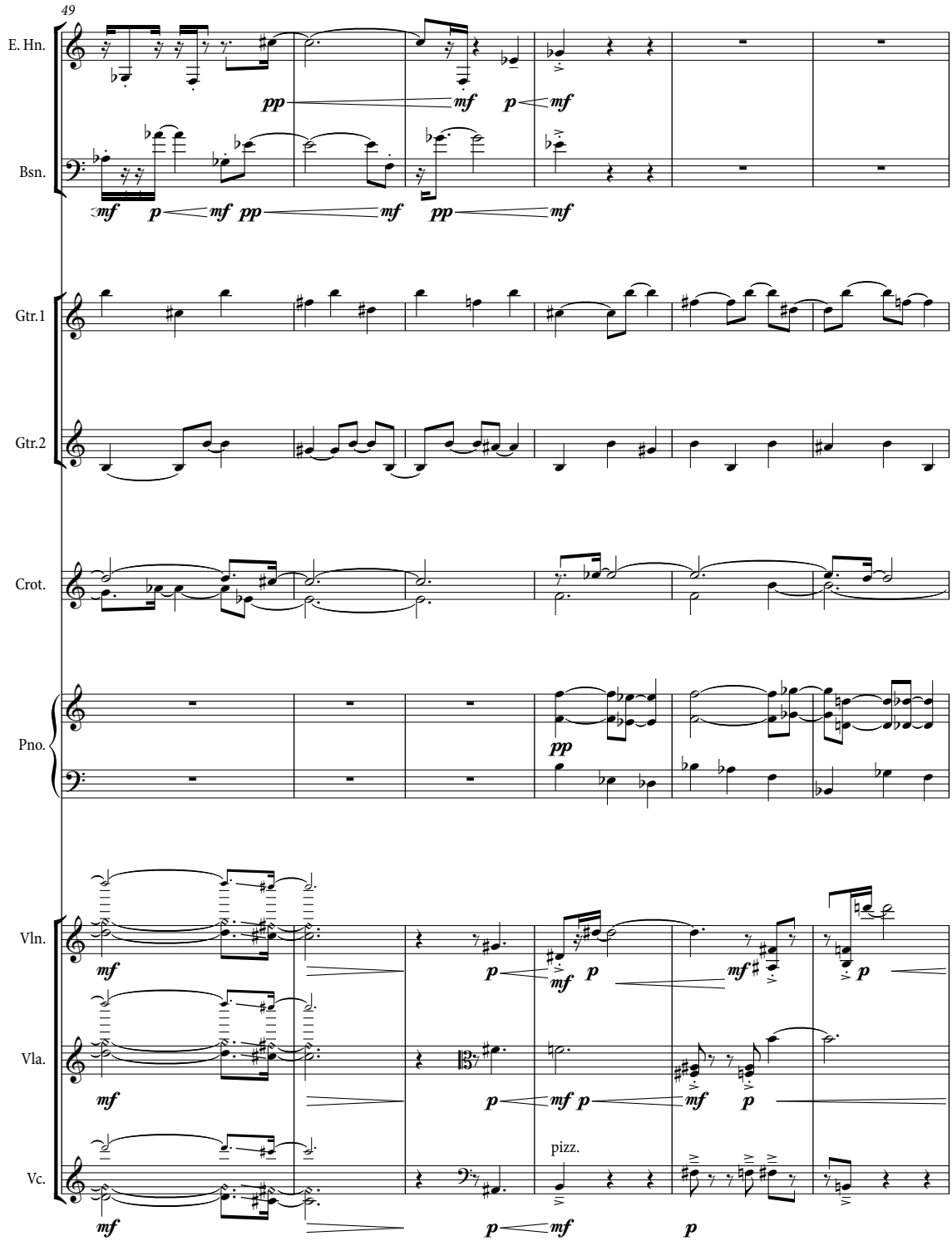

B
Molto meno mosso (♩ = 84)
19
E. Hn.
Alto Sax.
Gtr.1
Gtr.2
Dr.
Pno.
B
Molto meno mosso (♩ = 84)
Vln.
Vla.
Vc.

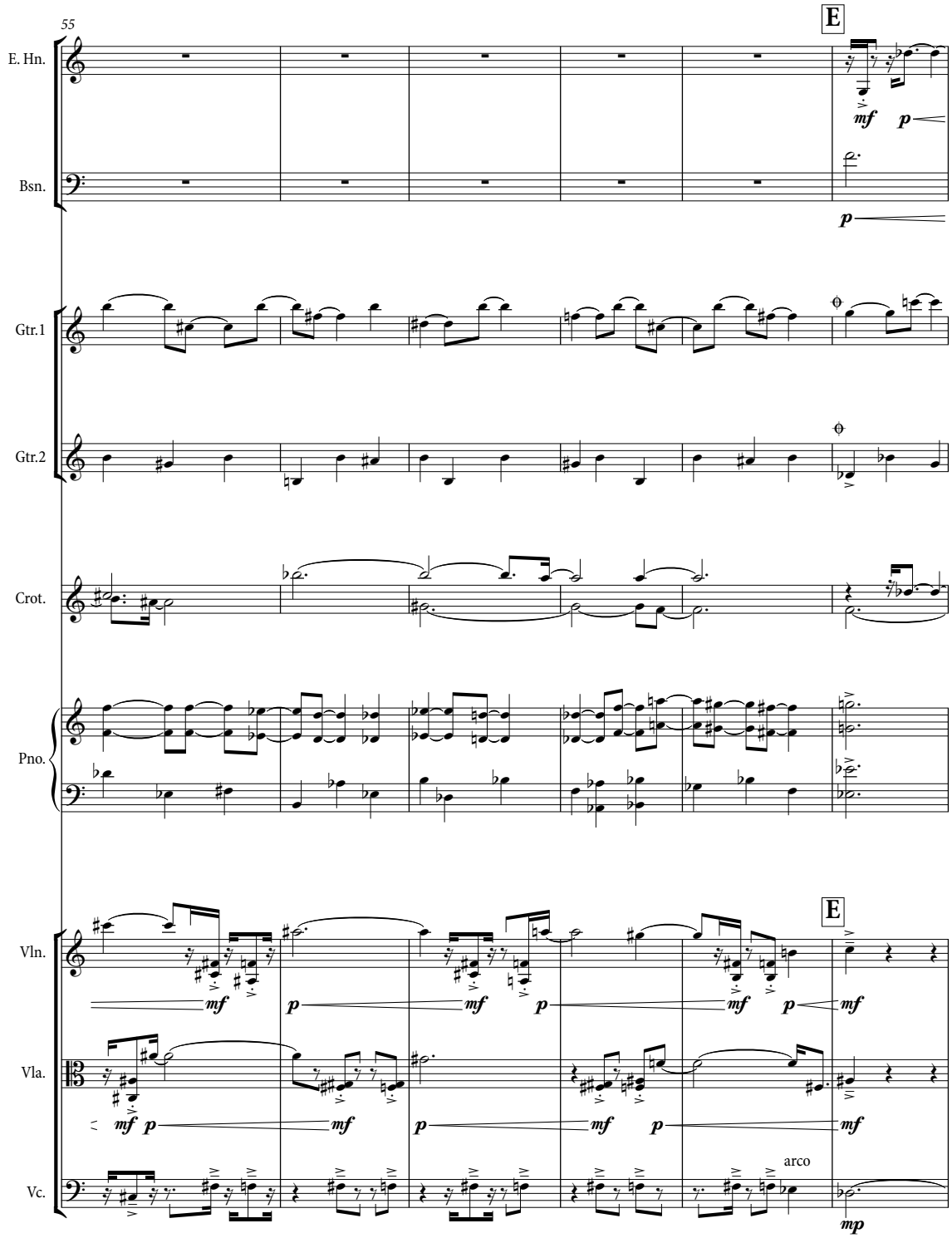

24
E. Hn.
Alto Sax.
Gtr.1
Gtr.2
Dr.
Pno.
Vln.
Vla.
Vc.
f
mp
mf

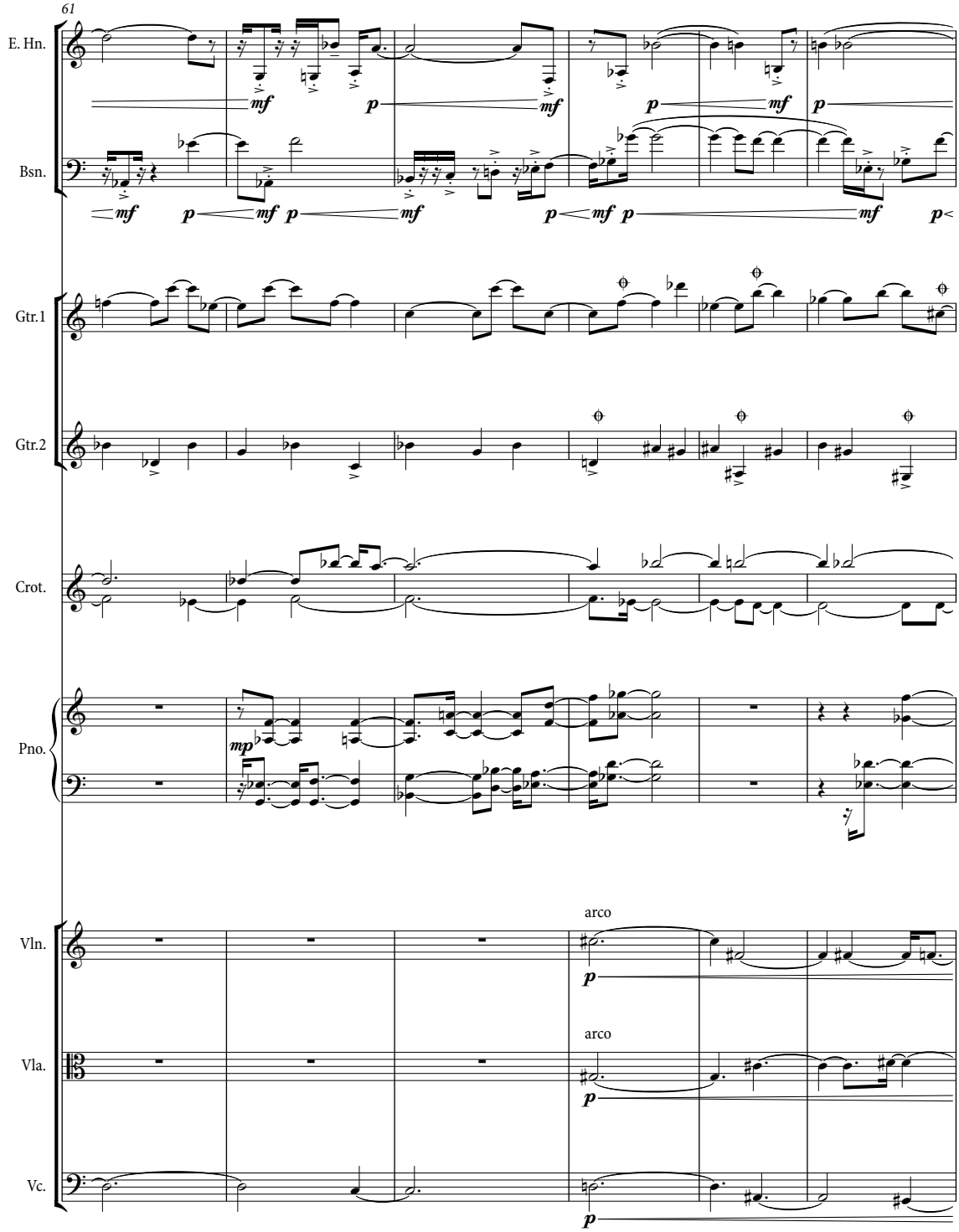

30
poco rall.
C
♪. = ♩ A tempo (♩ = 104)
E. Hn.
ff
n
Alto Sax.
To Bsn.
ff
n
Gtr.1
let all notes ring where possible (reset at
mf
Gtr.2
let all notes ring where possible (reset at
mf
Dr.
To Crot.
mf
Pno.
poco rall.
C
♪. = ♩ A tempo (♩ = 104)
Vln.
ff
Vla.
ff
Vc.
ff

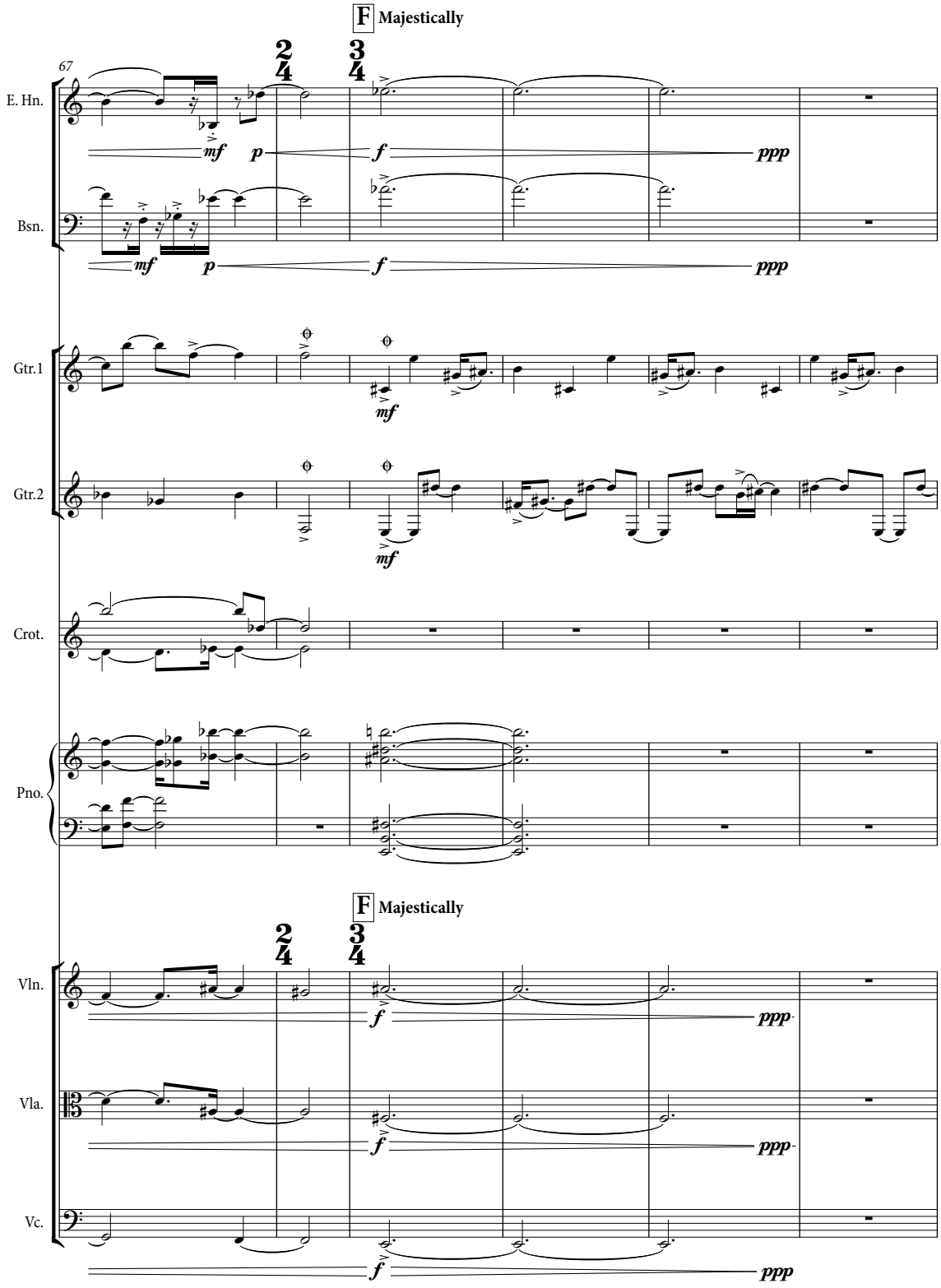

36
E. Hn.
Alto Sax.
Gtr.1
Gtr.2
Dr.
Pno.
Vln.
Vla.
Vc.
pizz.
p
mf

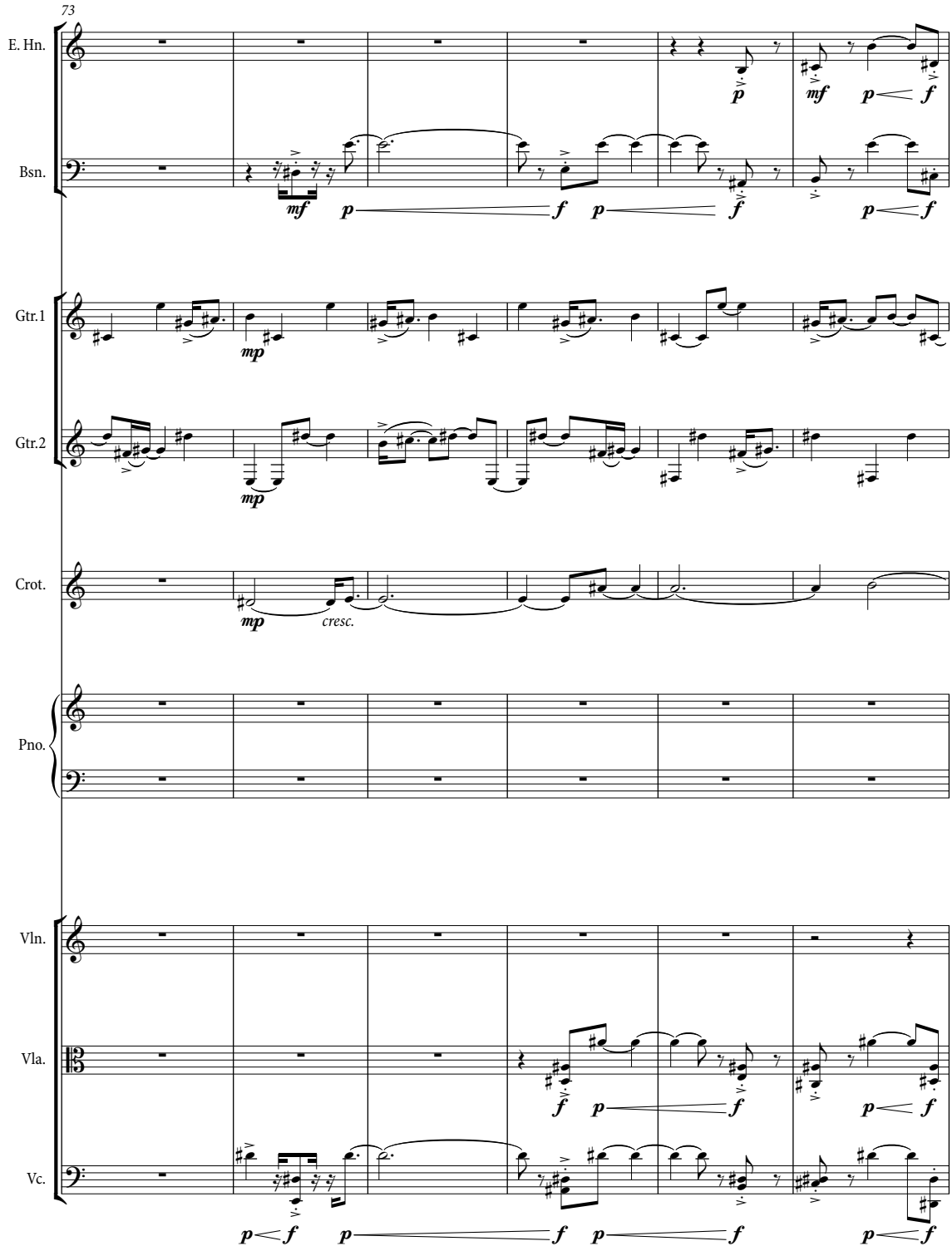

44
D Delicately
E. Hn.
Bassoon
Alto Sax.
Gtr.1
Gtr.2
Crotales
(bowed)
Crot.
Pno.
D Delicately
pizz.
(all strings gliss
together)
arco
Vln.
Vla.
Vc.

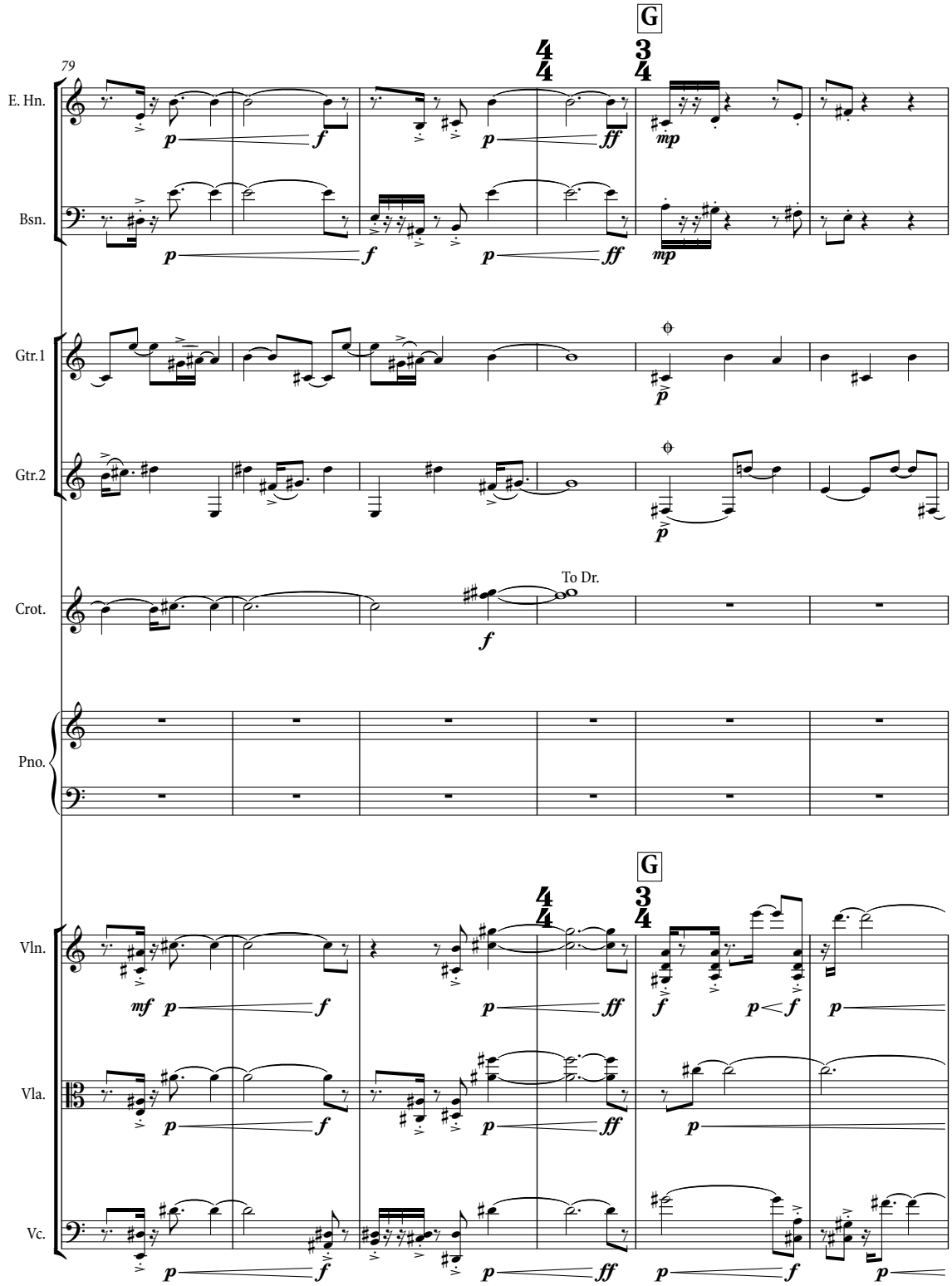

49
E. Hn.
Bsn.
Gtr.1
Gtr.2
Crot.
Pno.
Vln.
Vla.
Vc.
pizz.

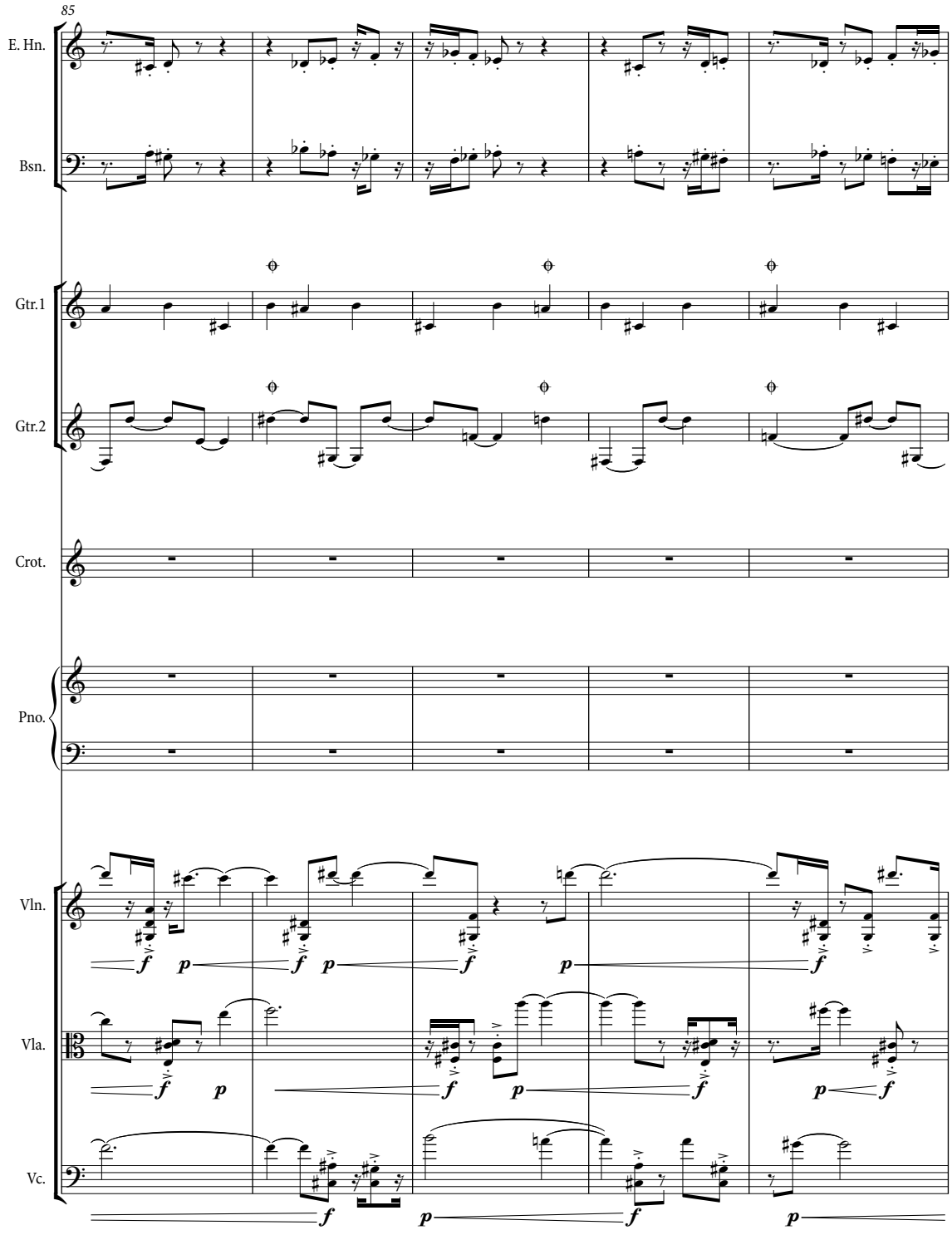

55
E
E. Hn.
Bsn.
Gtr.1
Gtr.2
Crot.
Pno.
Vln.
Vla.
Vc.
arco

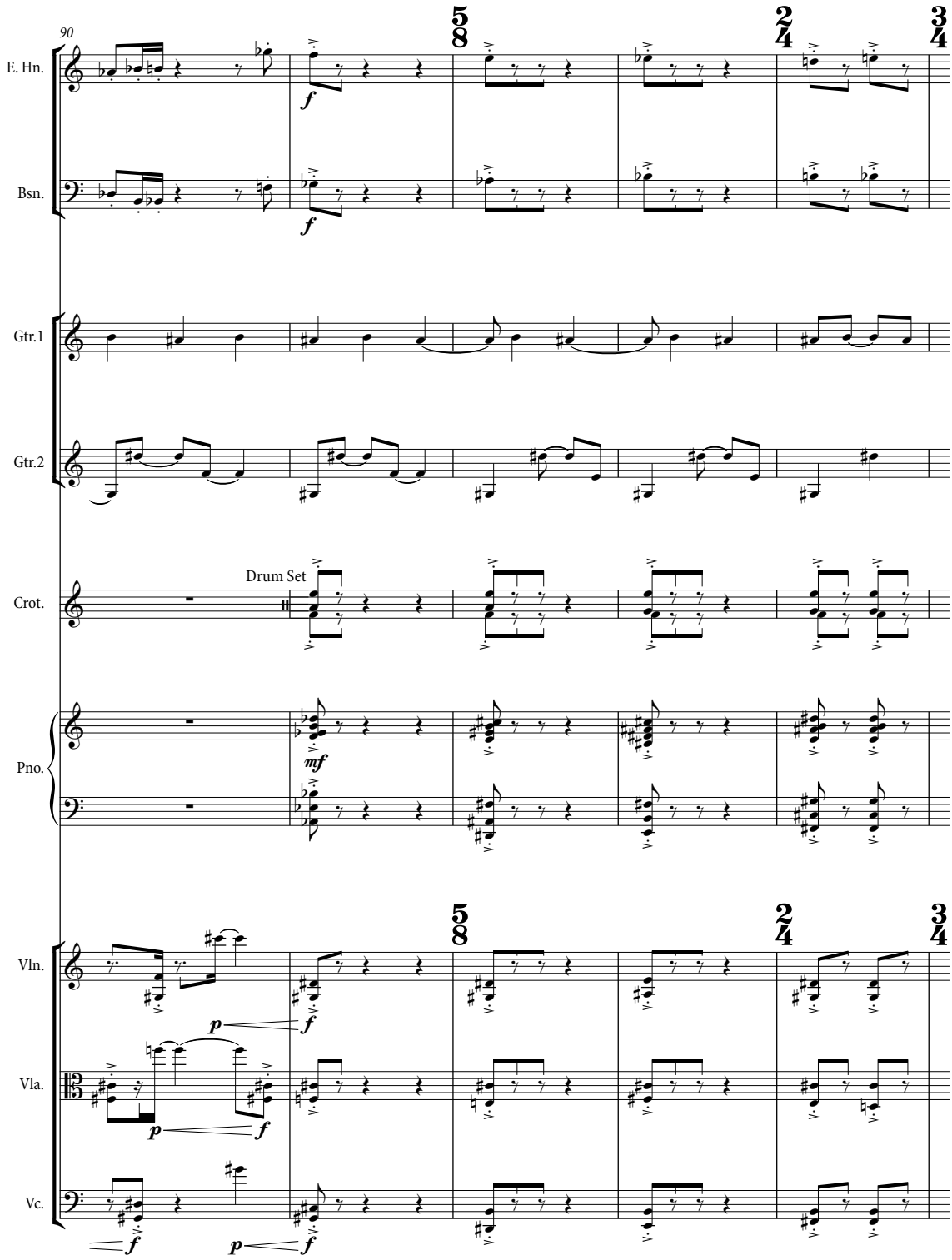

61
E. Hn.
Bsn.
Gtr.1
Gtr.2
Crot.
Pno.
Vln.
Vla.
Vc.
arco
arco

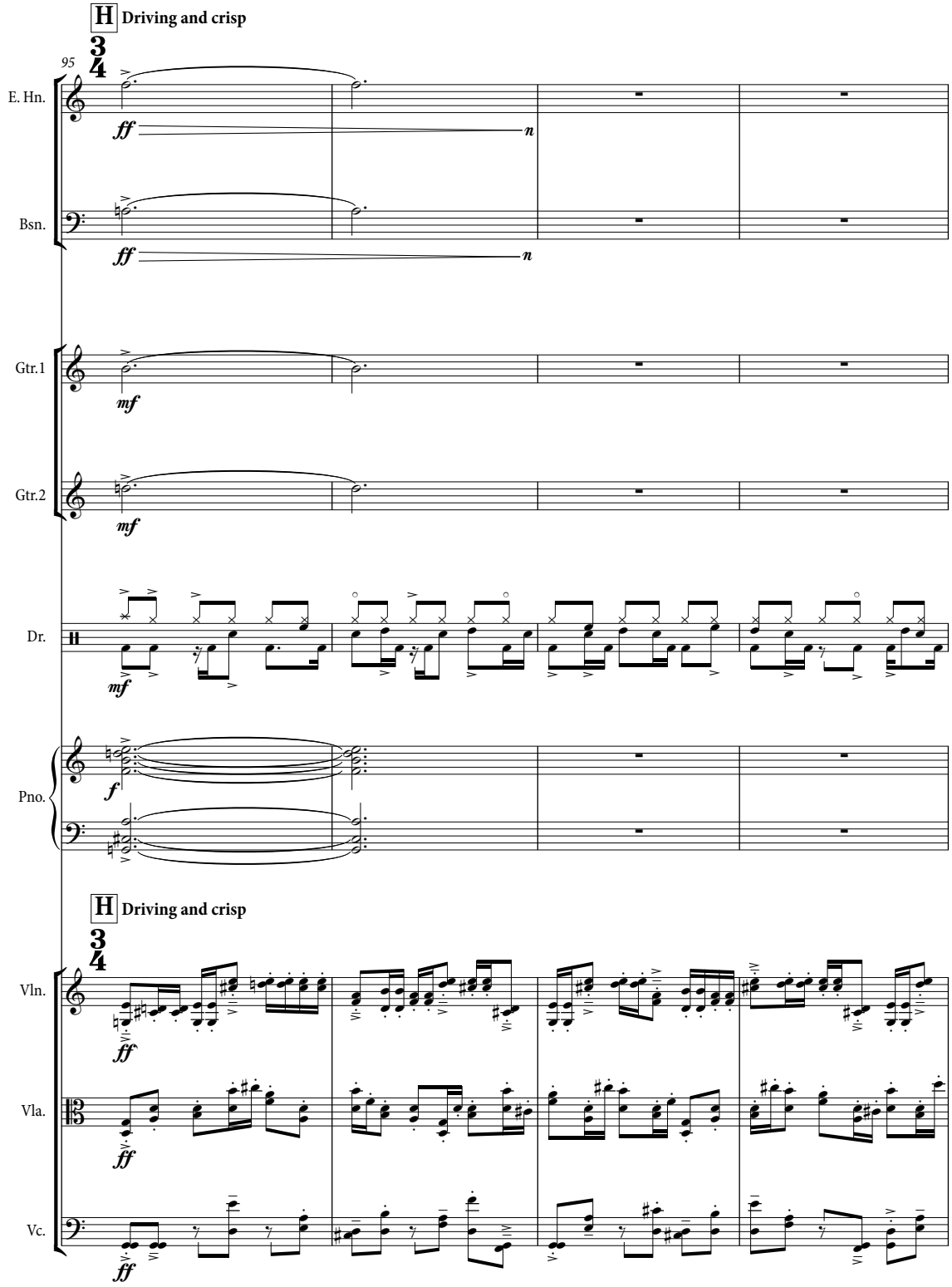

F Majestically
67
E. Hn.
Bsn.
Gtr.1
Gtr.2
Crot.
Pno.
F Majestically
Vln.
Vla.
Vc.

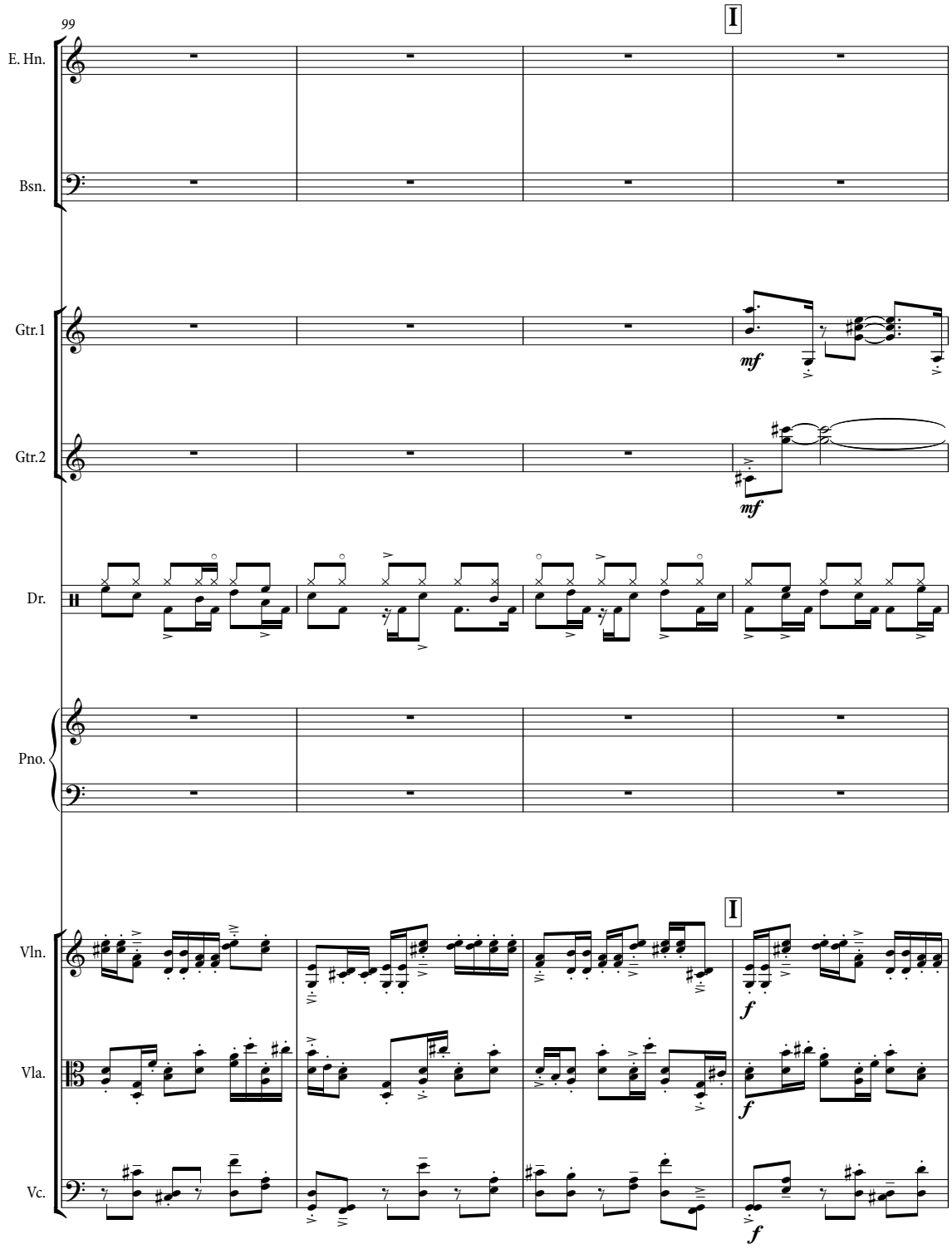

73
E. Hn.
Bsn.
Gtr.1
Gtr.2
Crot.
Pno.
Vln.
Vla.
Vc.
cresc.

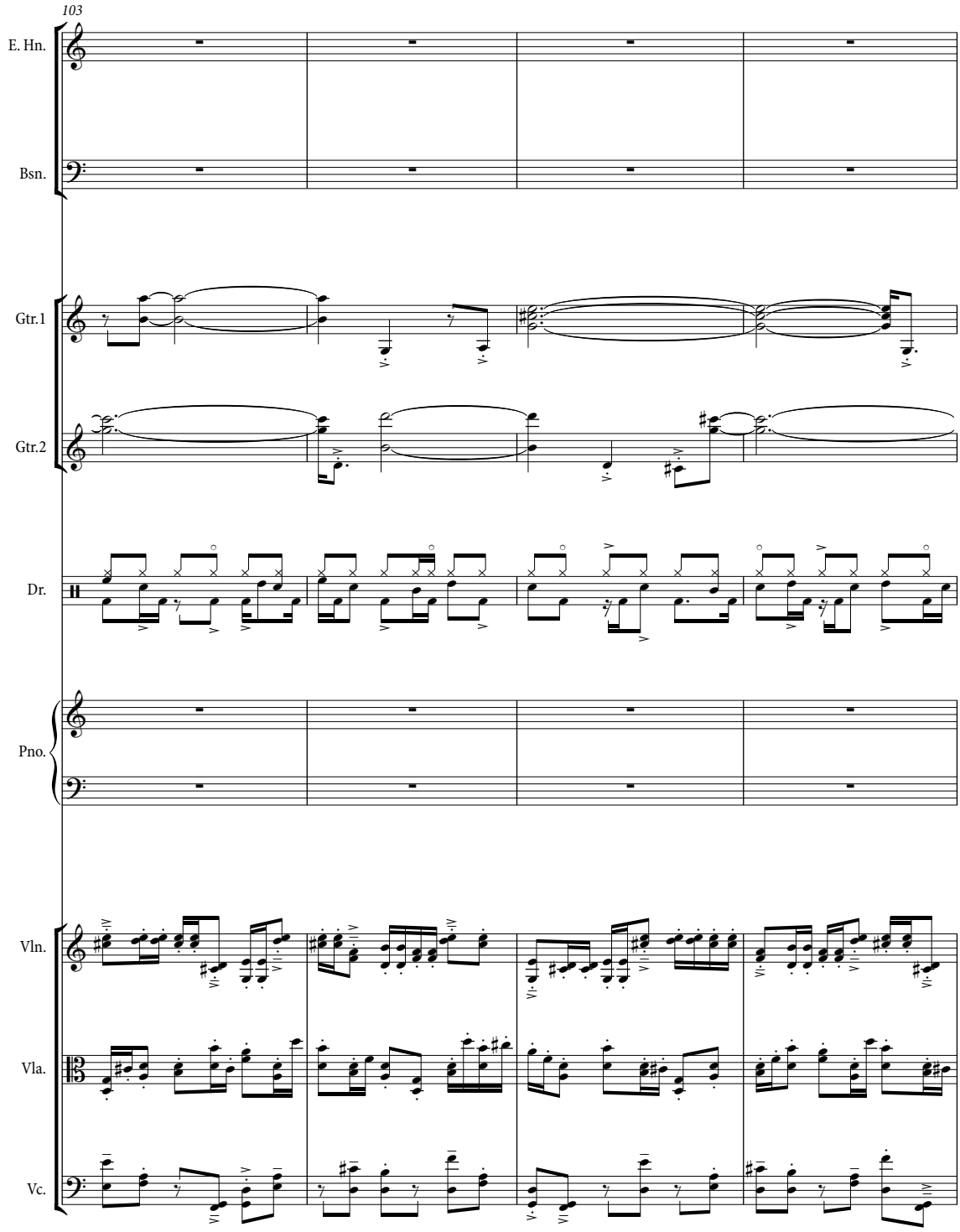

79
G
G
E. Hn.
Bsn.
Gtr.1
Gtr.2
Crot.
To Dr.
Pno.
Vln.
Vla.
Vc.

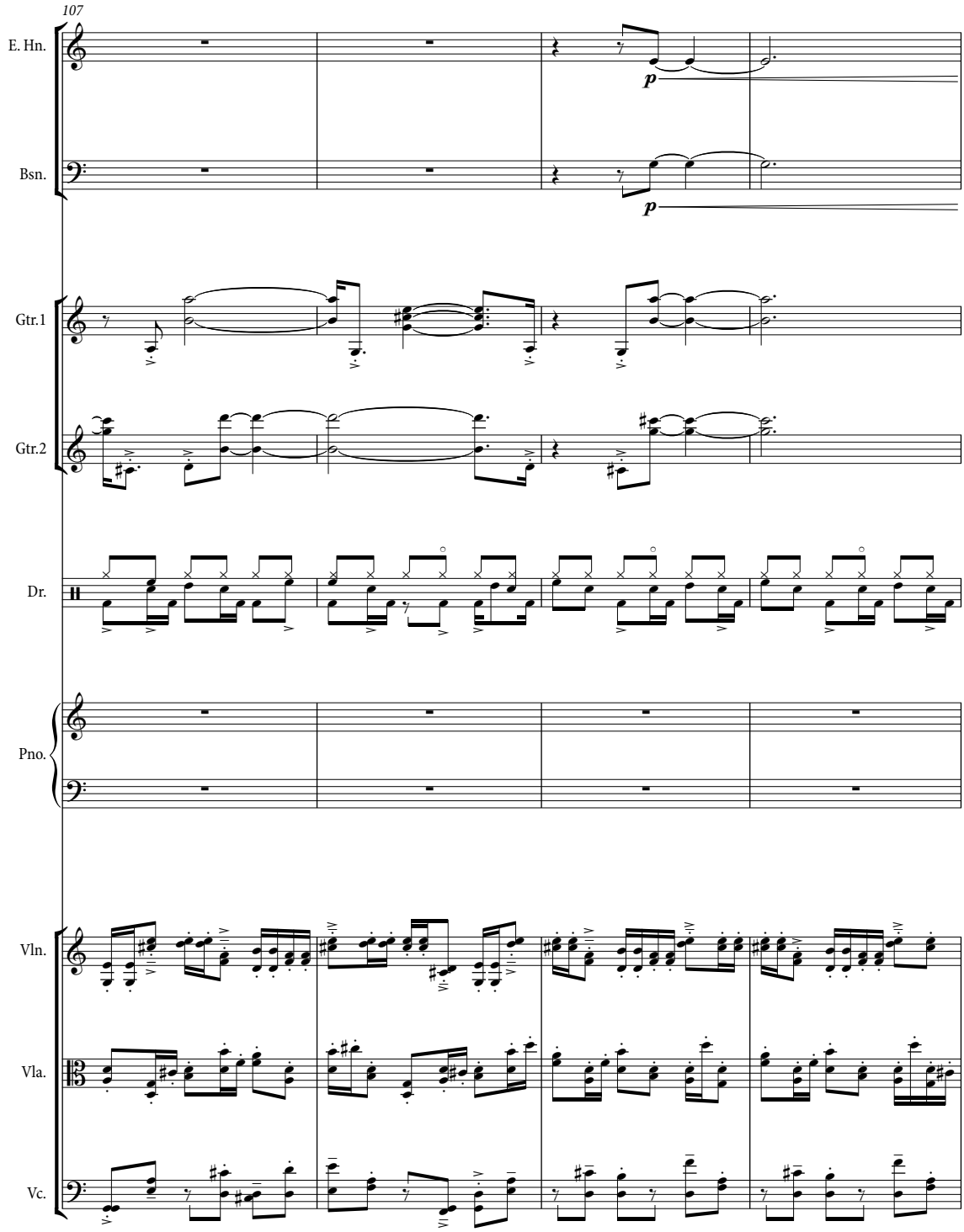

85
E. Hn.
Bsn.
Gtr.1
Gtr.2
Crot.
Pno.
Vln.
Vla.
Vc.

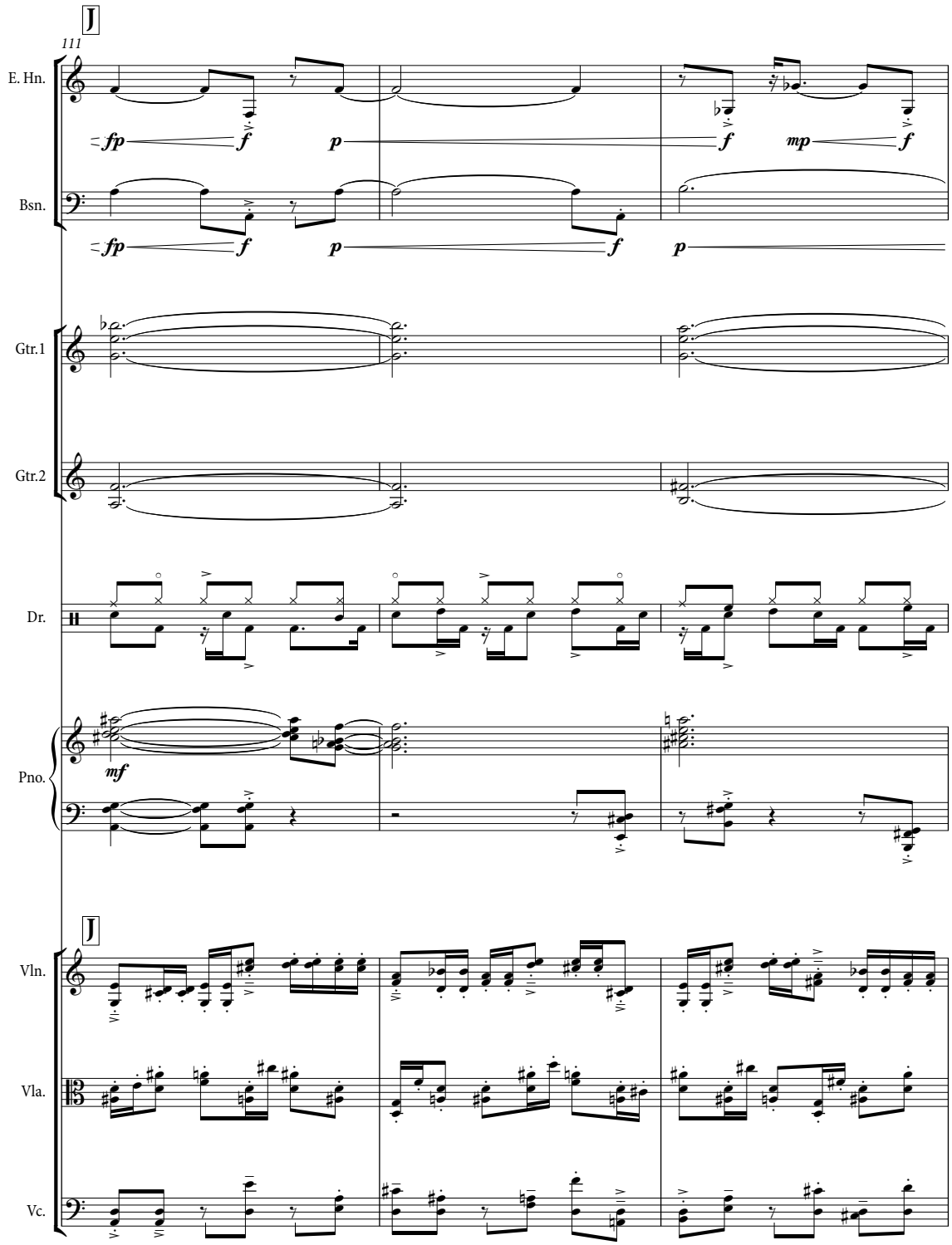

90
E. Hn.
Bsn.
Gtr.1
Gtr.2
Crot.
Drum Set
Pno.
Vln.
Vla.
Vc.
5/8
2/4
3/4
f
mf
p

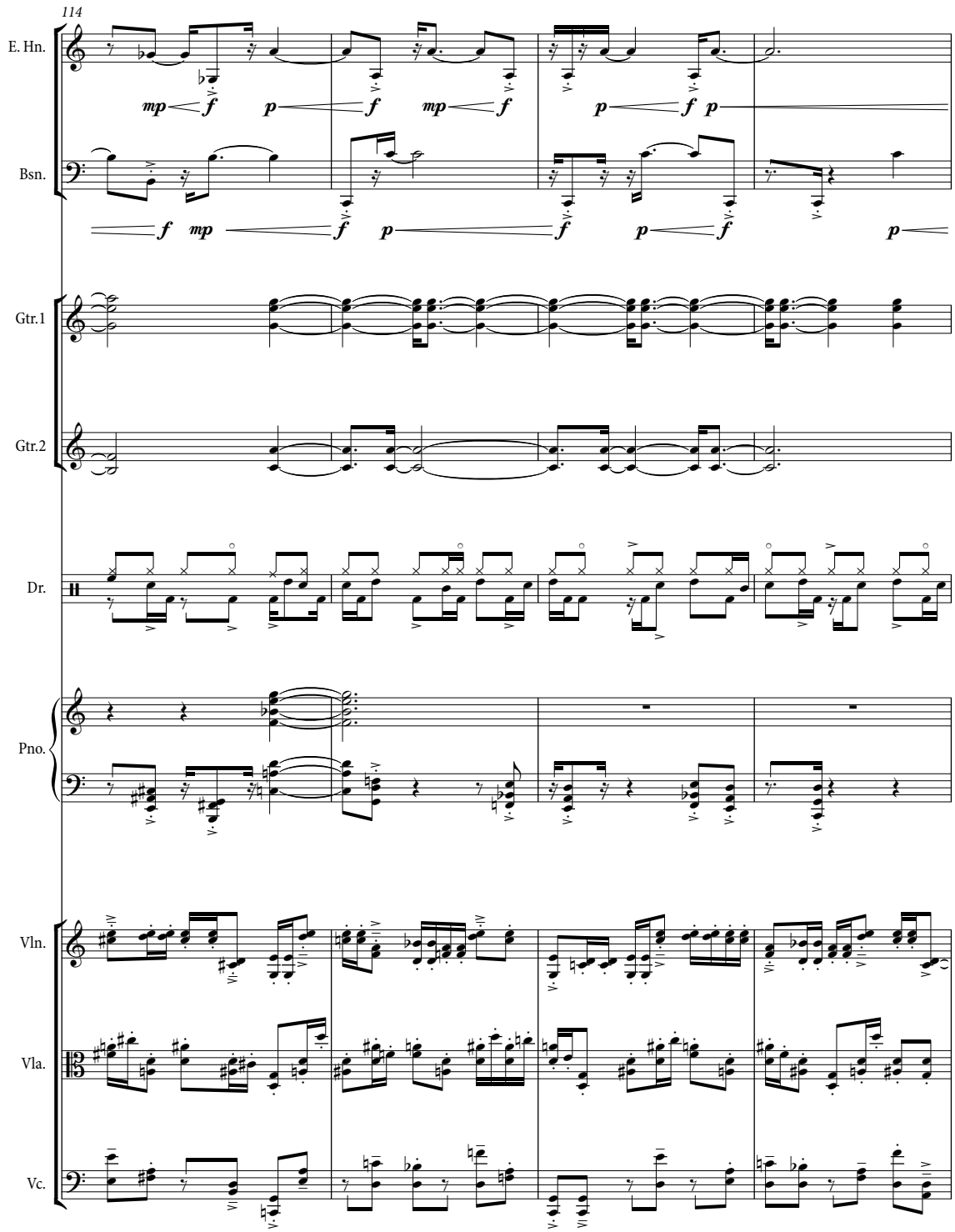

H Driving and crisp
95
E. Hn.
Bsn.
Gtr.1
Gtr.2
Dr.
Pno.
H Driving and crisp
Vln.
Vla.
Vc.

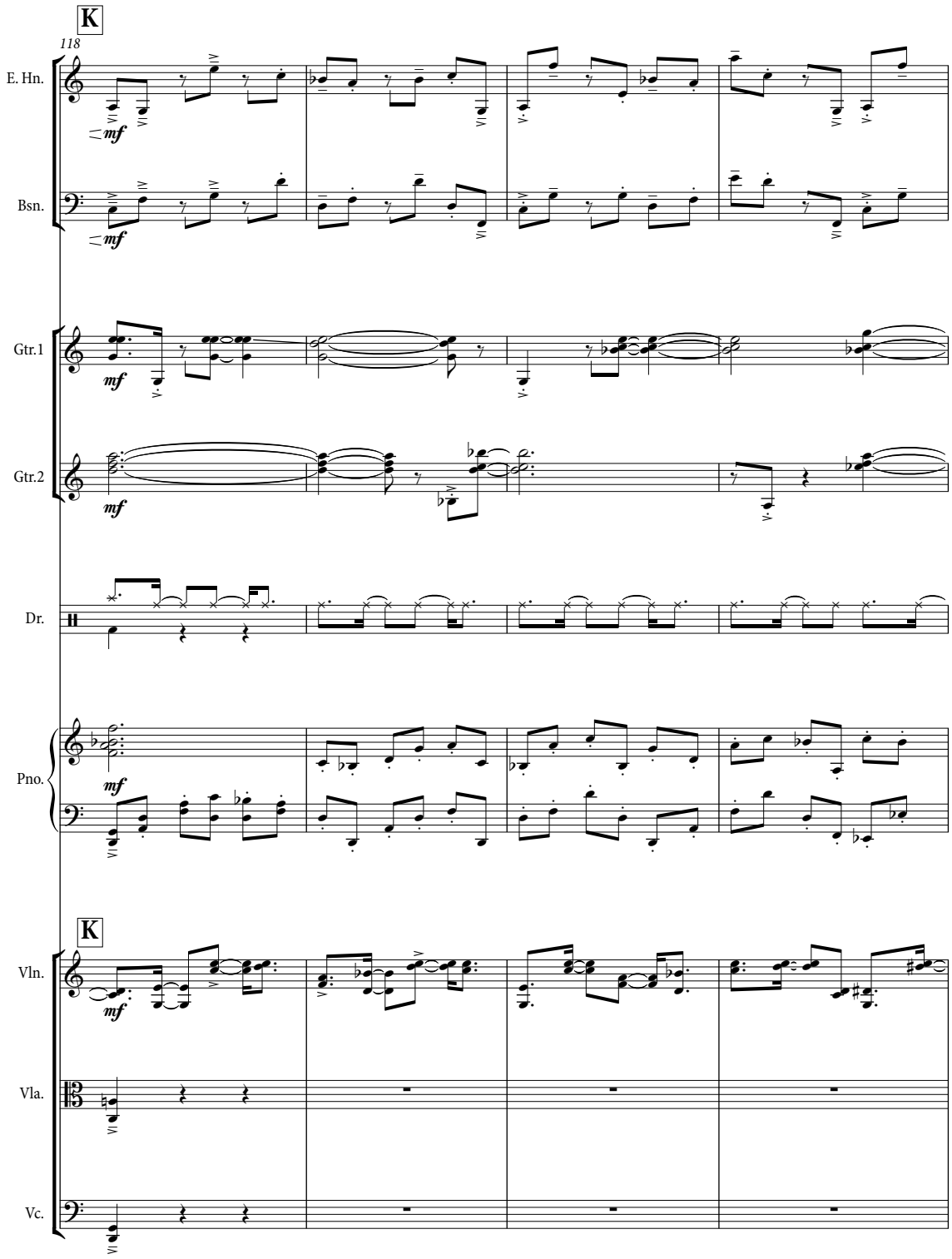

99
I
E. Hn.
Bsn.
Gtr.1
mf
Gtr.2
mf
Dr.
Pno.
I
Vln.
f
Vla.
f
Vc.
f

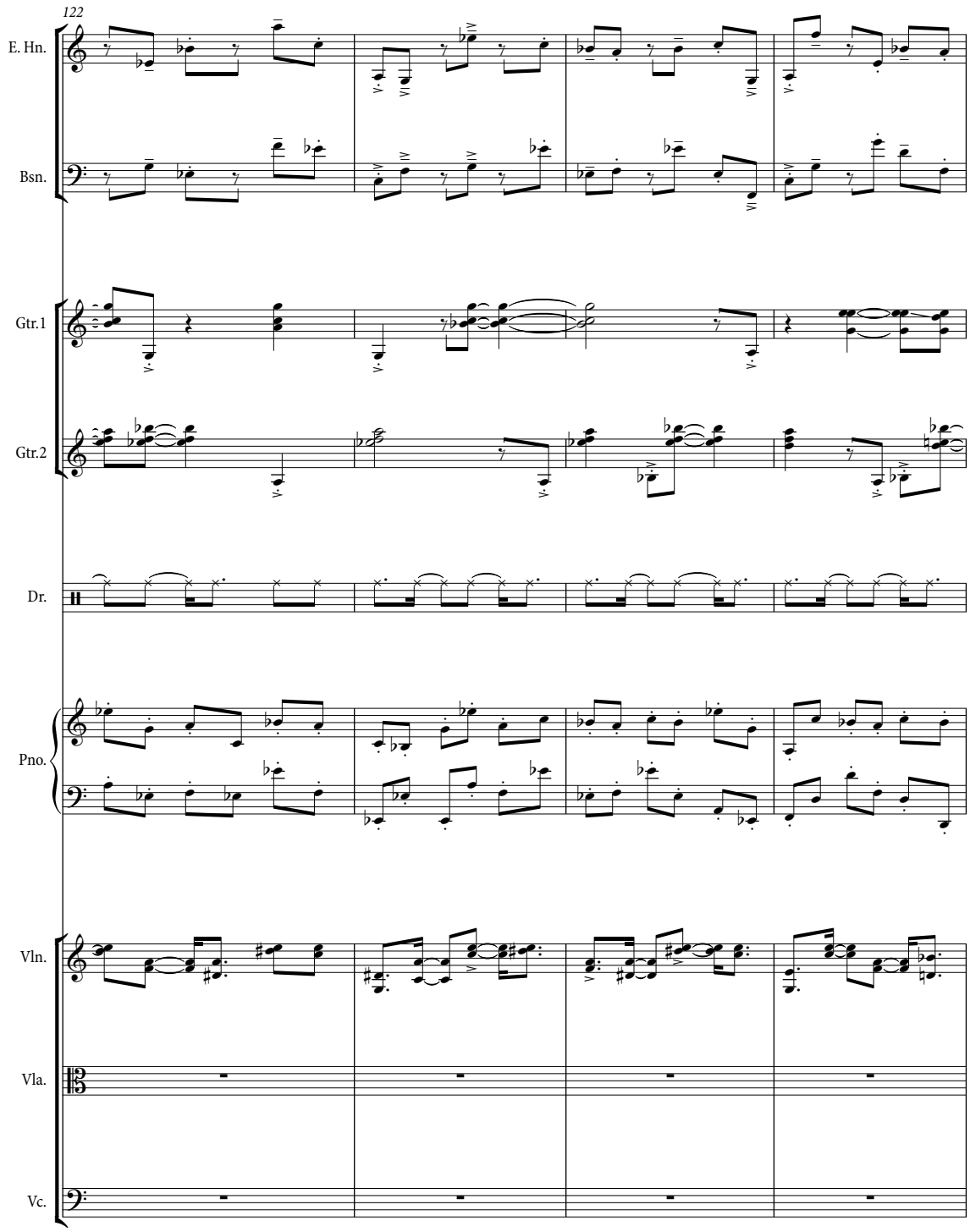

103
E. Hn.
Bsn.
Gtr.1
Gtr.2
Dr.
Pno.
Vln.
Vla.
Vc.

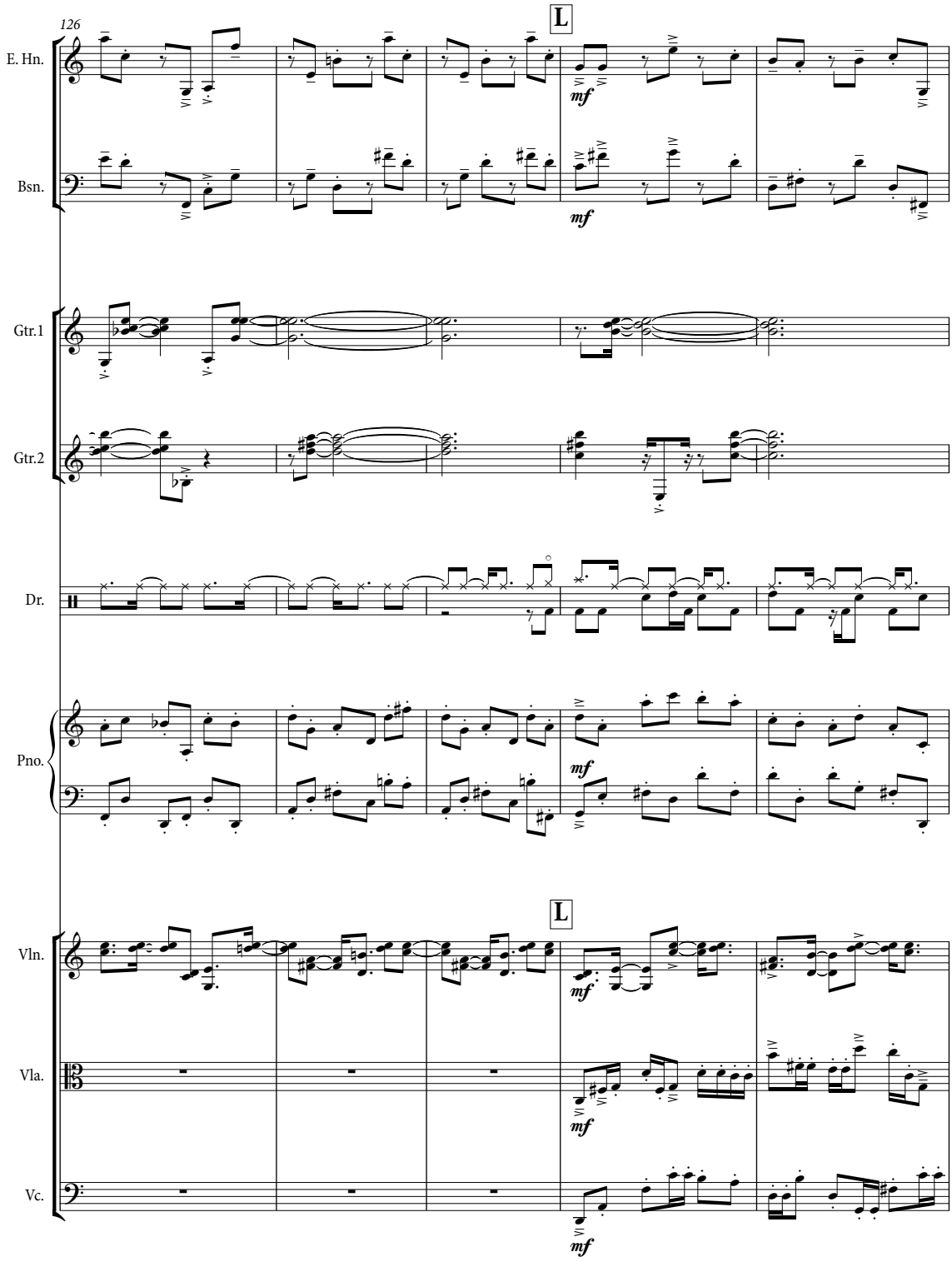

107
E. Hn.
Bsn.
Gtr.1
Gtr.2
Dr.
Pno.
Vln.
Vla.
Vc.
p
p

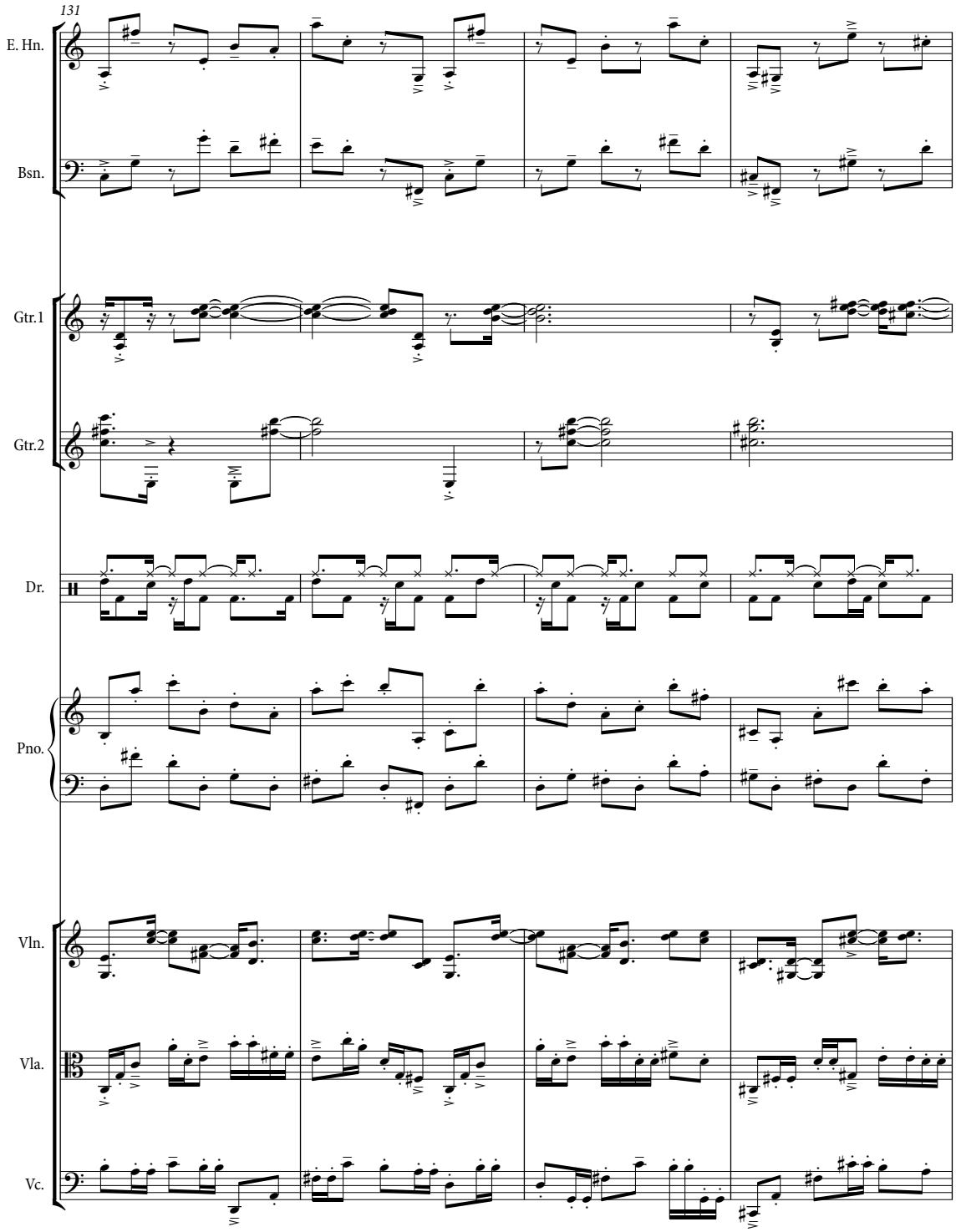

J
111
E. Hn.
Bsn.
Gtr.1
Gtr.2
Dr.
Pno.
J
Vln.
Vla.
Vc.

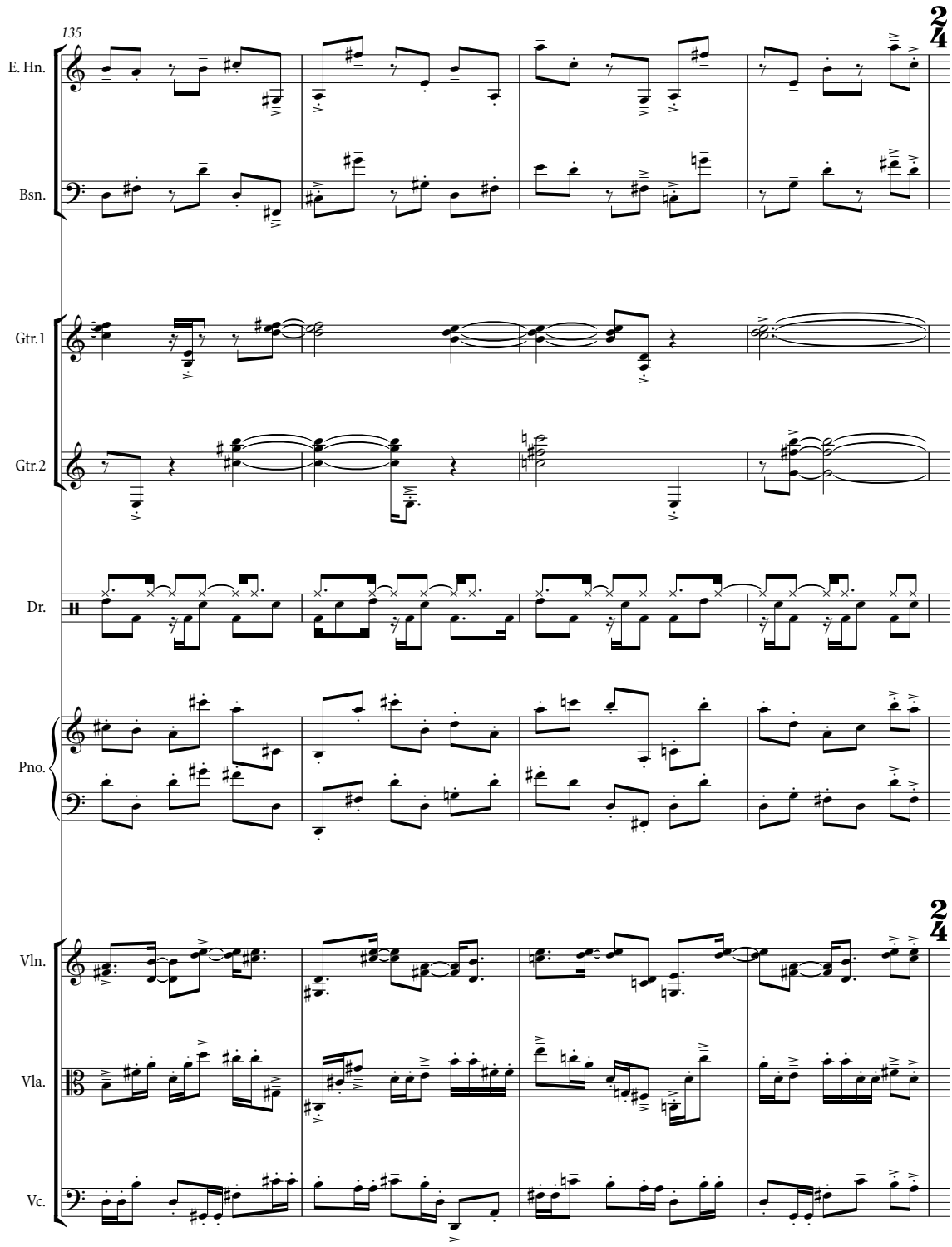

114
E. Hn.
Bsn.
Gtr.1
Gtr.2
Dr.
Pno.
Vln.
Vla.
Vc.

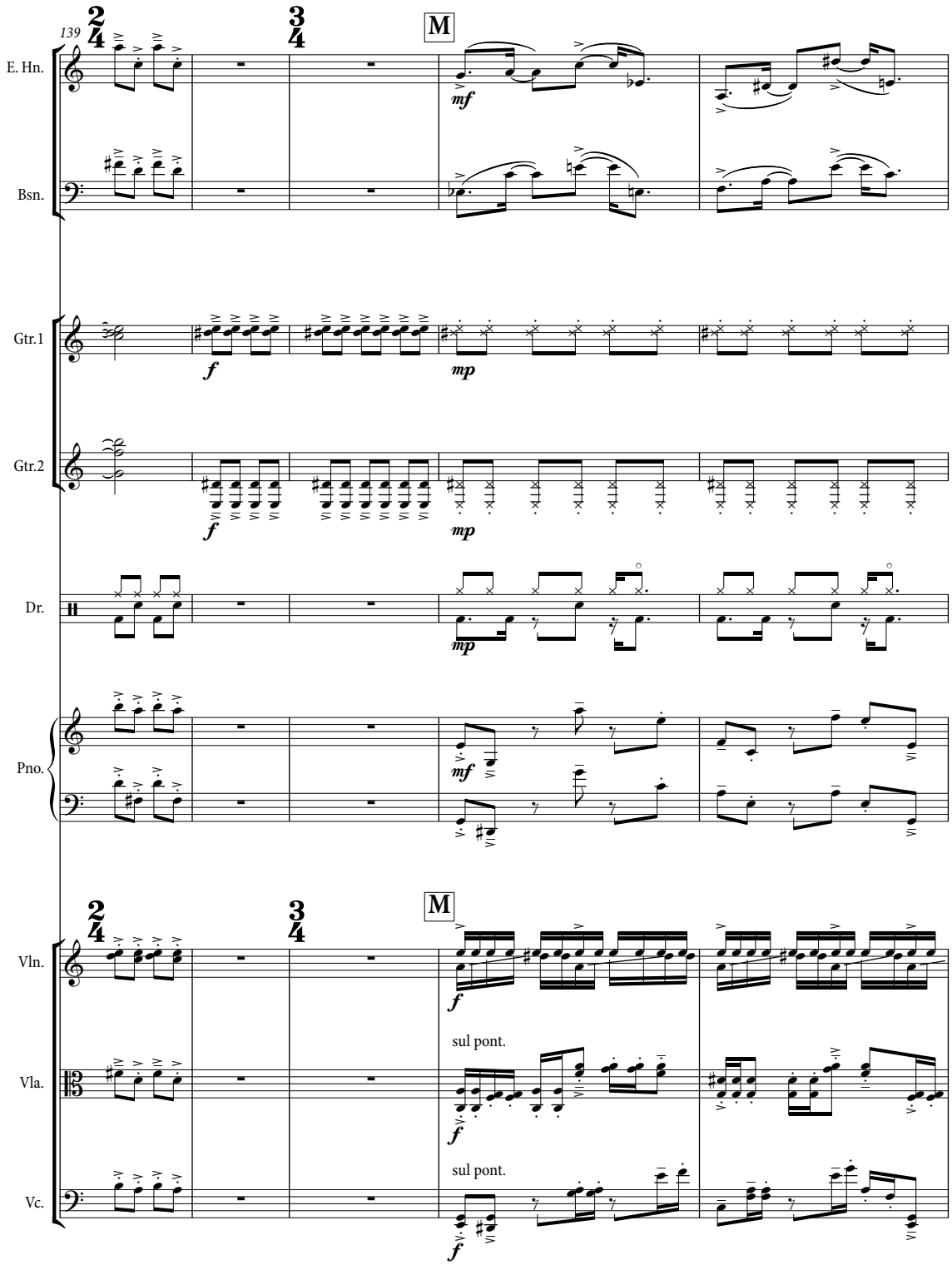

K
118
E. Hn.
Bsn.
Gtr.1
Gtr.2
Dr.
Pno.
K
Vln.
Vla.
Vc.
mf

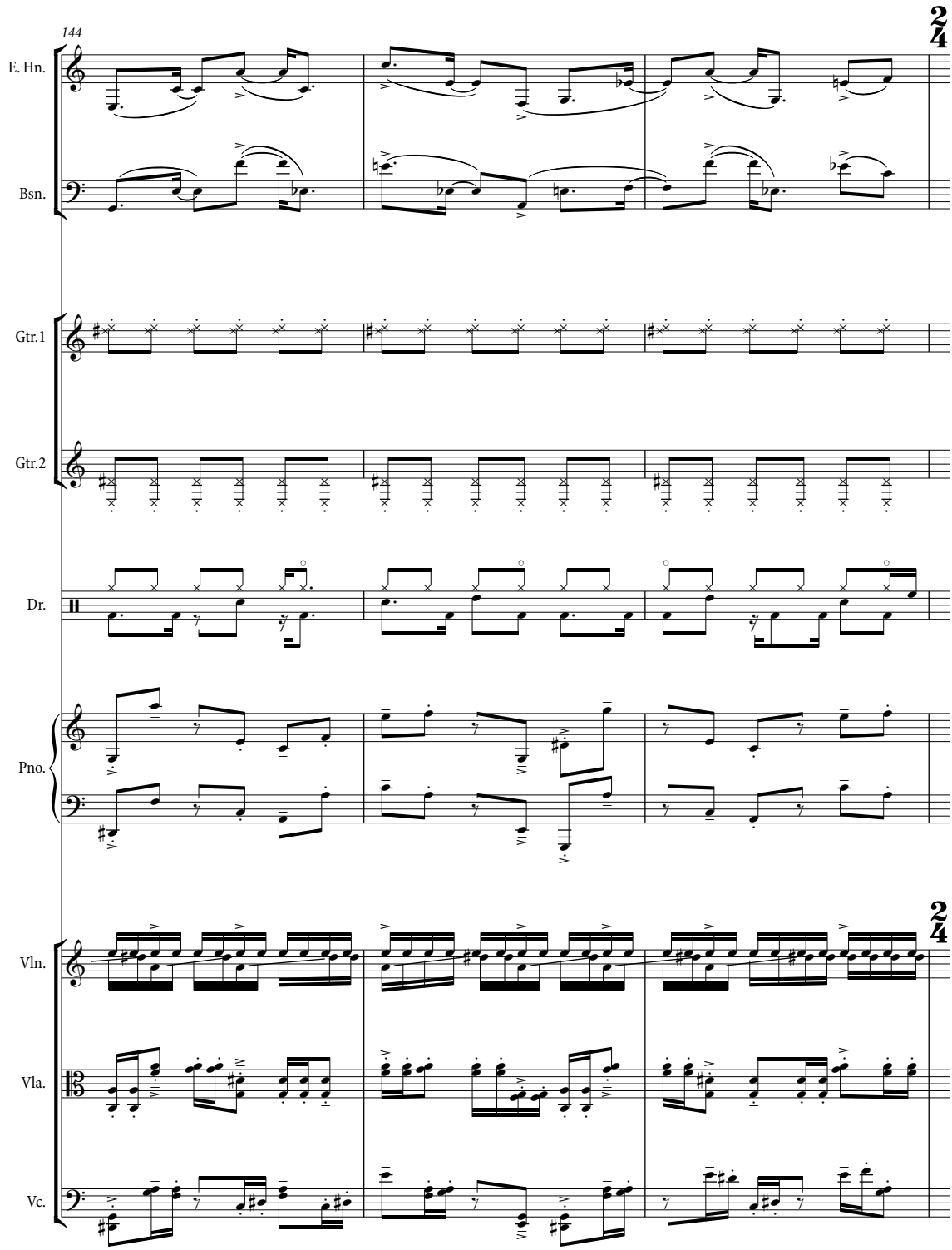

122
E. Hn.
Bsn.
Gtr.1
Gtr.2
Dr.
Pno.
Vln.
Vla.
Vc.

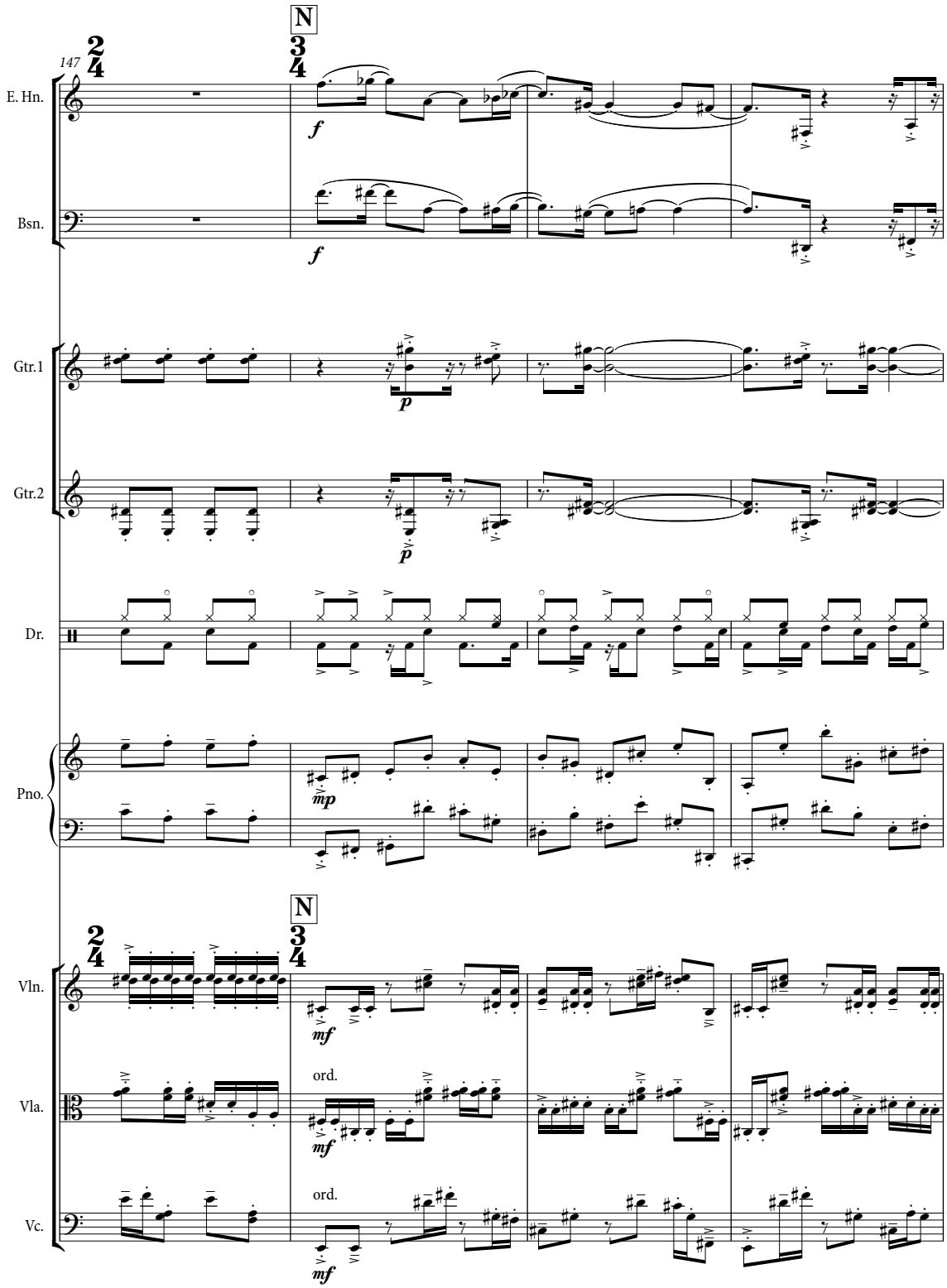

126
L
E. Hn.
Bsn.
Gtr.1
Gtr.2
Dr.
Pno.
L
Vln.
Vla.
Vc.
mf

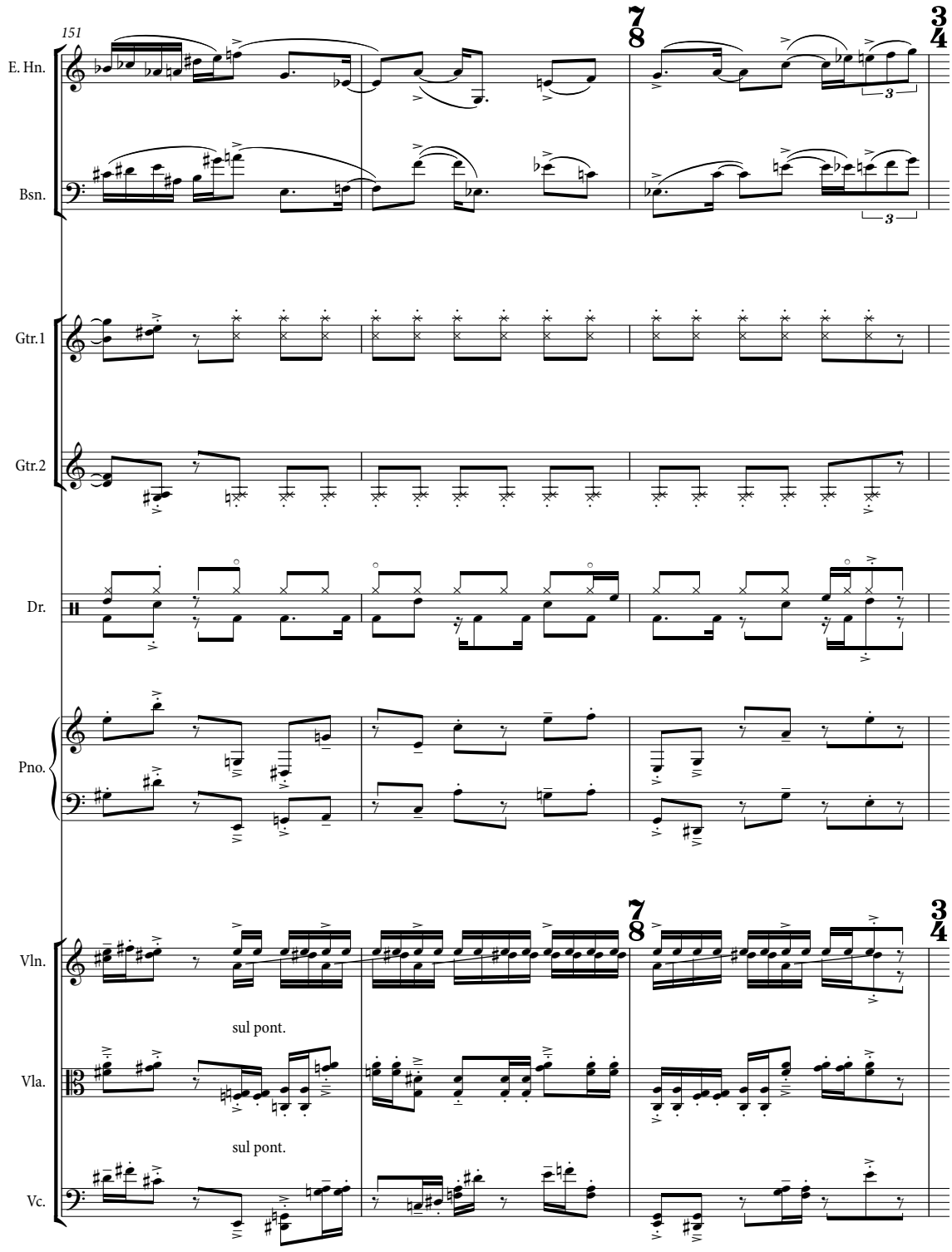

131
E. Hn.
Bsn.
Gtr.1
Gtr.2
Dr.
Pno.
Vln.
Vla.
Vc.

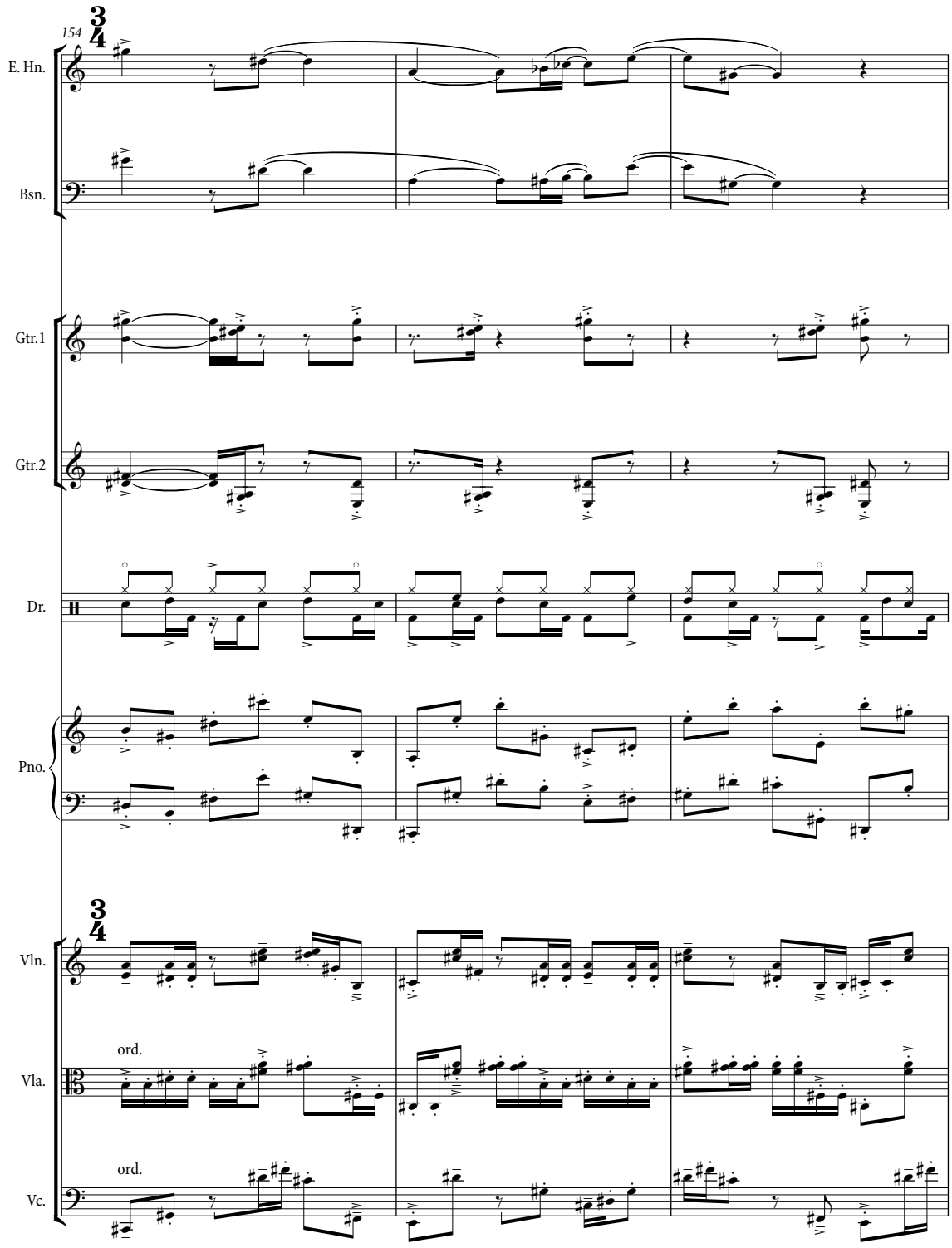

135
E. Hn.
Bsn.
Gtr.1
Gtr.2
Dr.
Pno.
Vln.
Vla.
Vc.

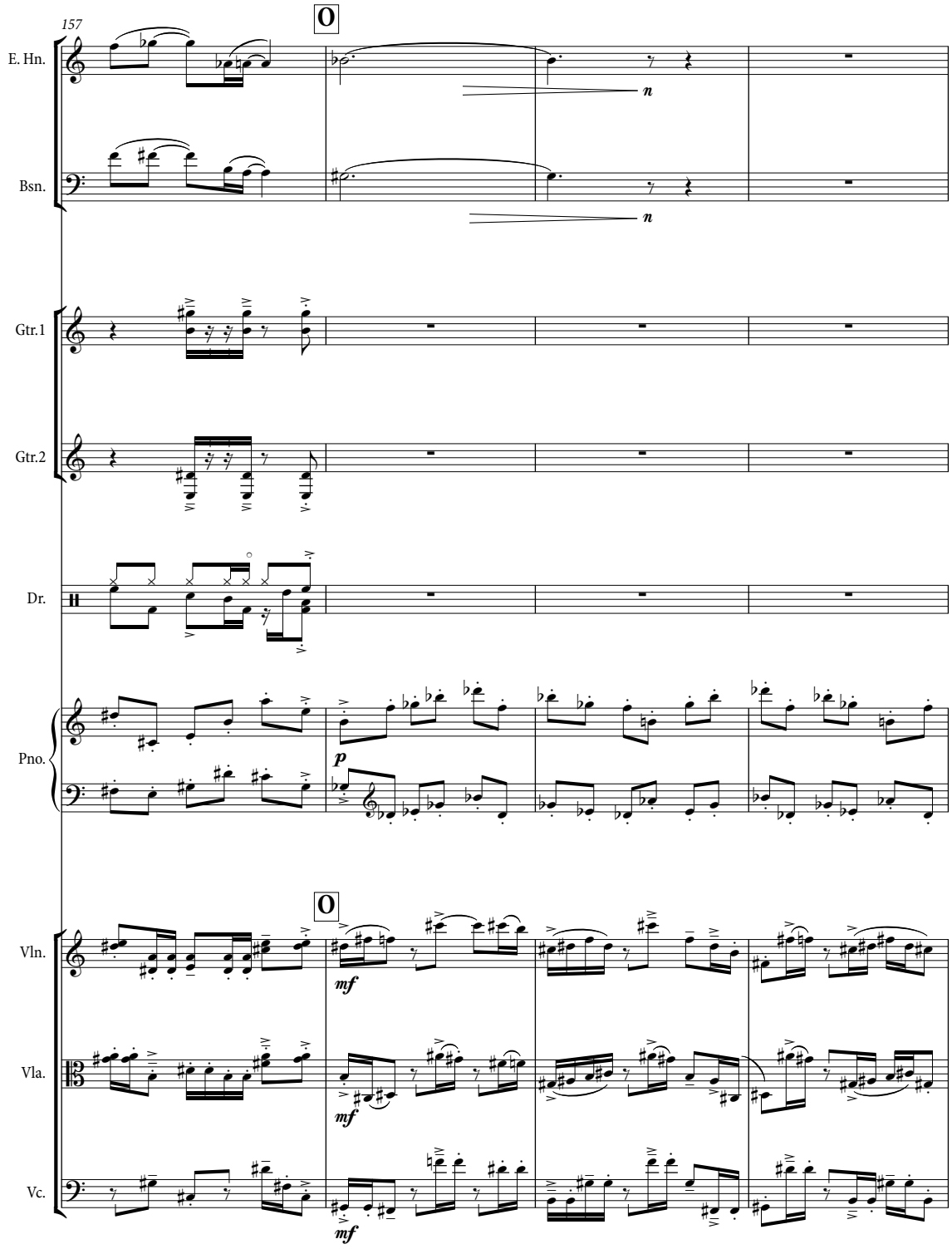

139
E. Hn.
Bsn.
Gtr.1
Gtr.2
Dr.
Pno.
Vln.
Vla.
Vc.
M
mf
f
mp
sul pont.

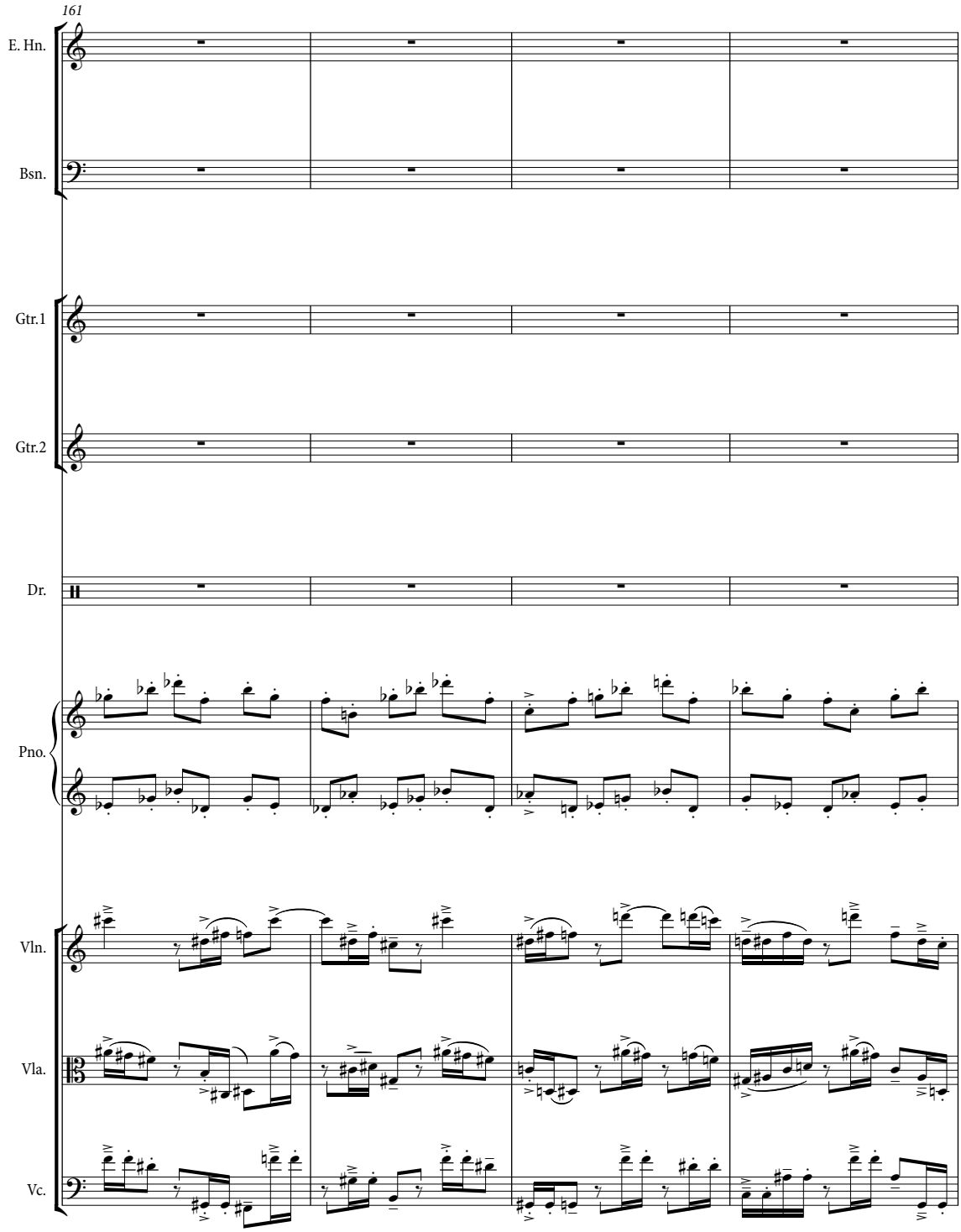

144
E. Hn.
Bsn.
Gtr.1
Gtr.2
Dr.
Pno.
Vln.
Vla.
Vc.

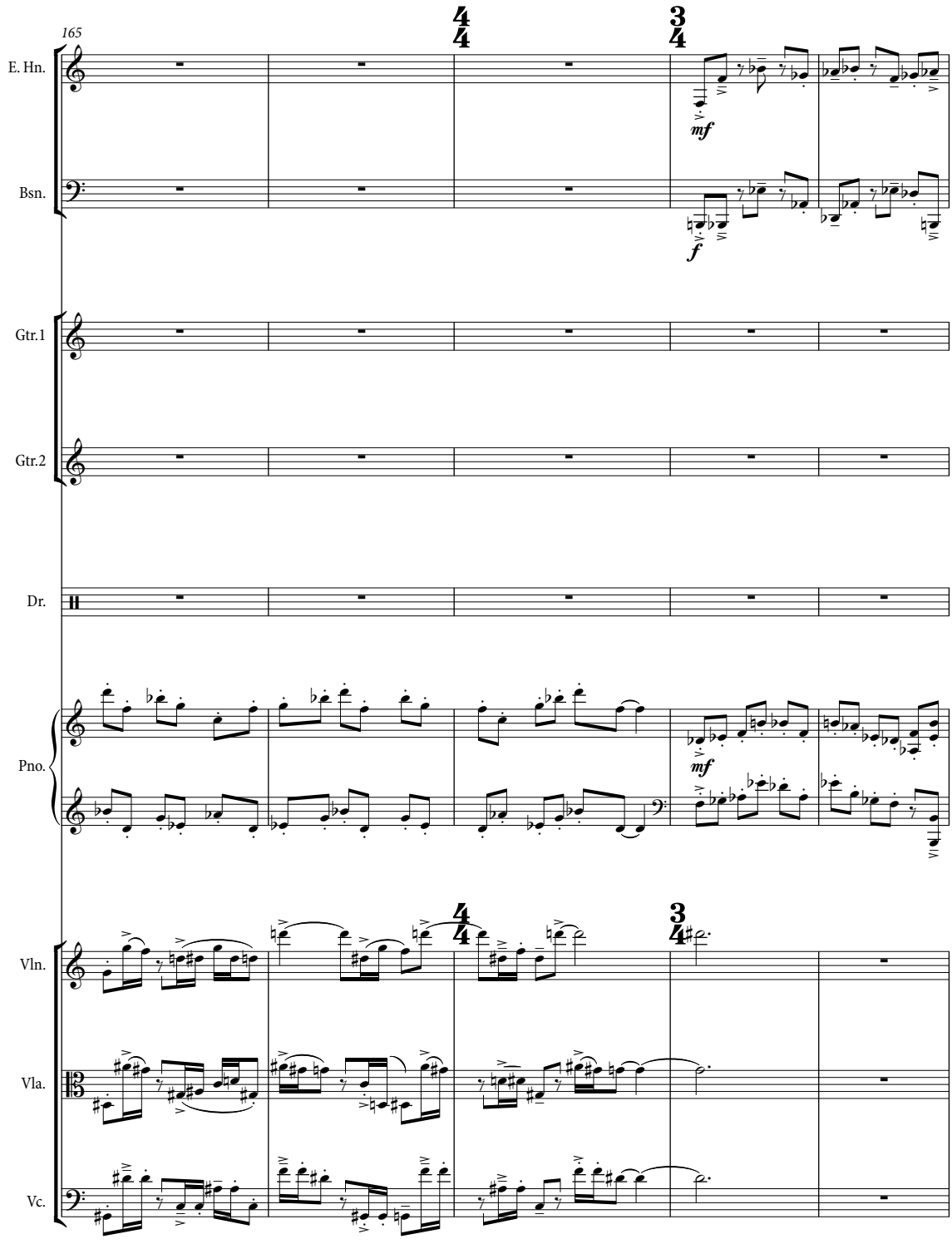

147
N
2/4
3/4
E. Hn.
Bsn.
Gtr.1
Gtr.2
Dr.
Pno.
Vln.
Vla.
Vc.
f
p
mp
mf
ord.

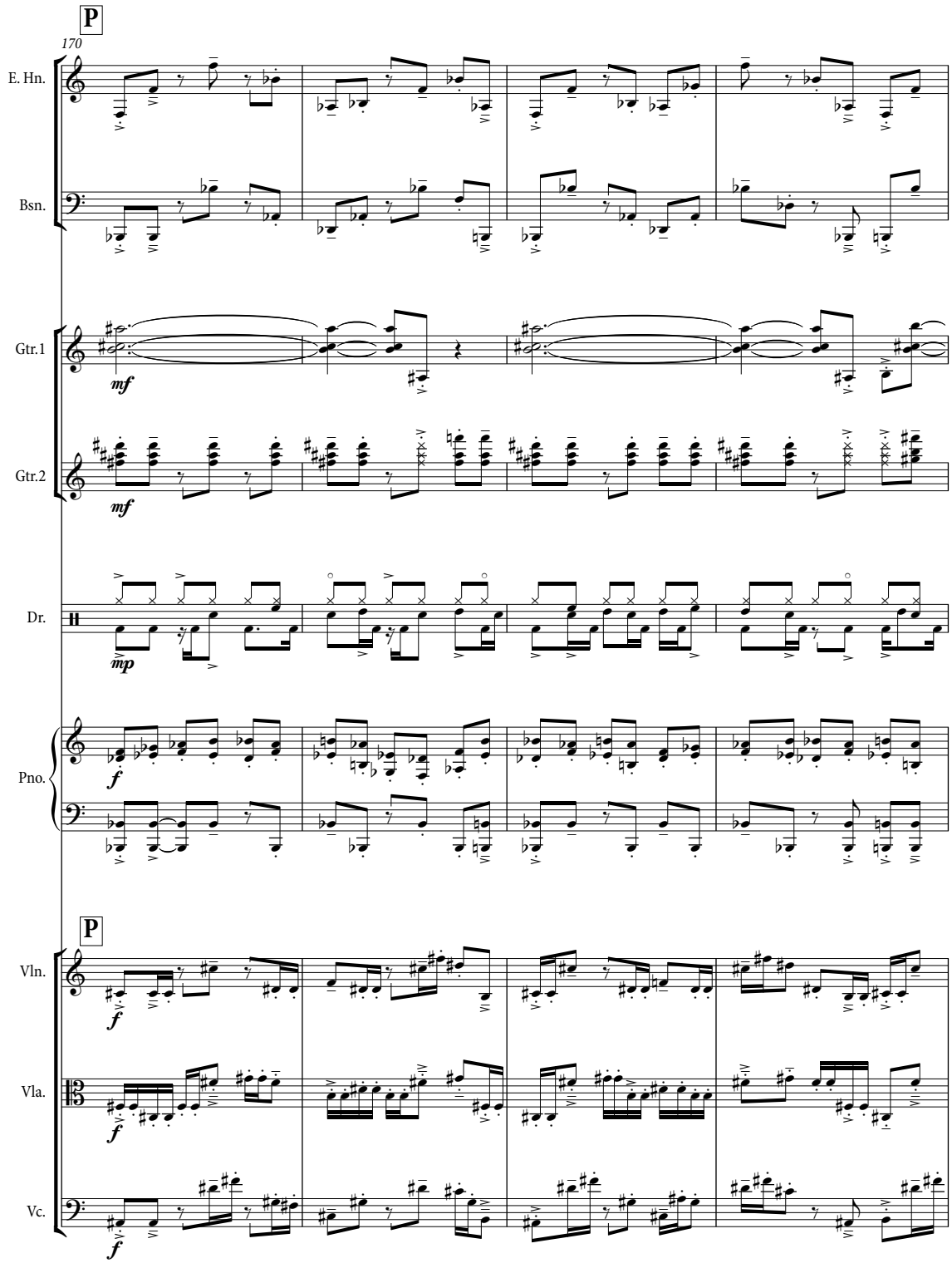

151
E. Hn.
Bsn.
Gtr.1
Gtr.2
Dr.
Pno.
Vln.
Vla.
Vc.
7/8
3/4
3
sul pont.
sul pont.

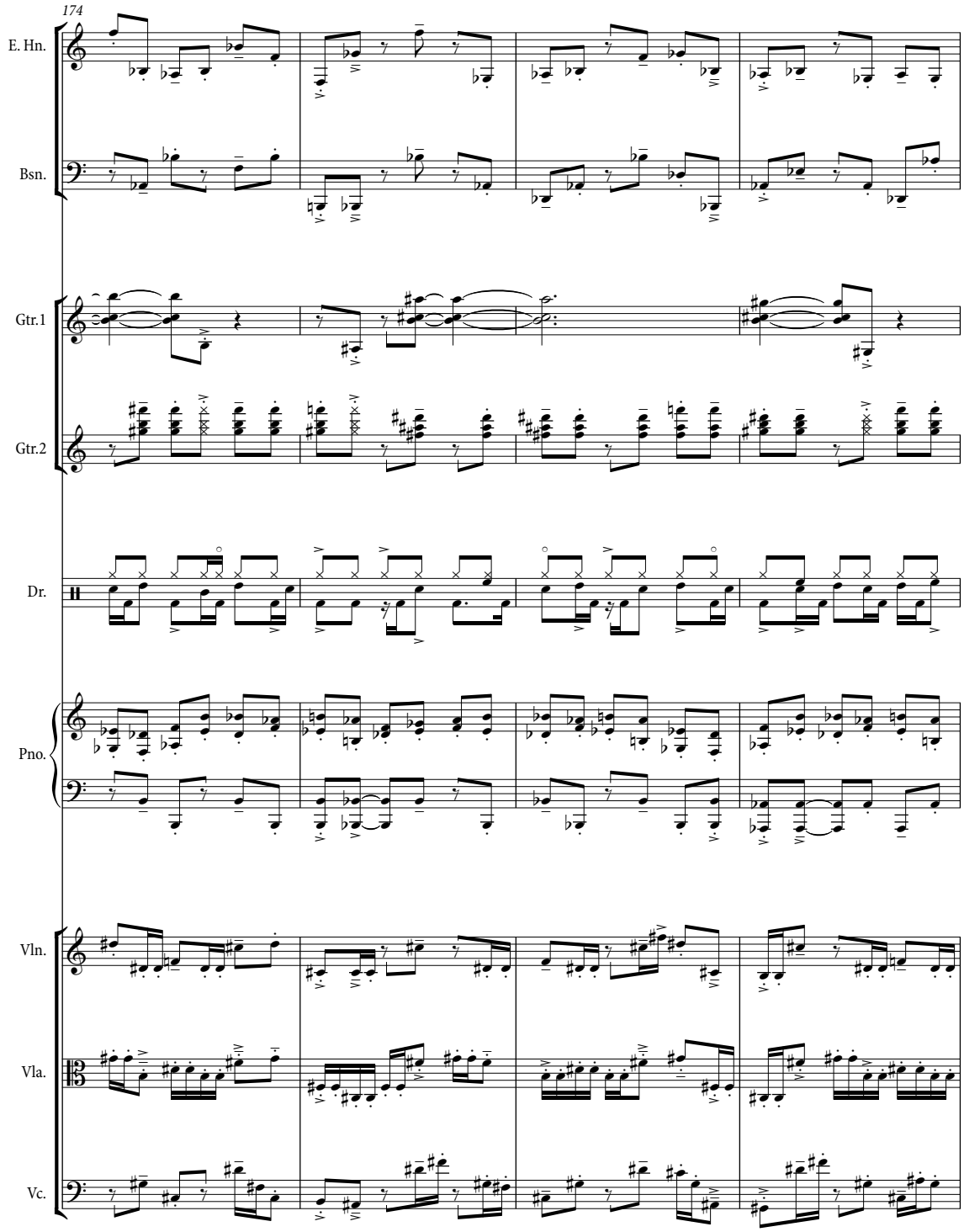

154
E. Hn.
Bsn.
Gtr.1
Gtr.2
Dr.
Pno.
Vln.
Vla.
Vc.
ord.
ord.

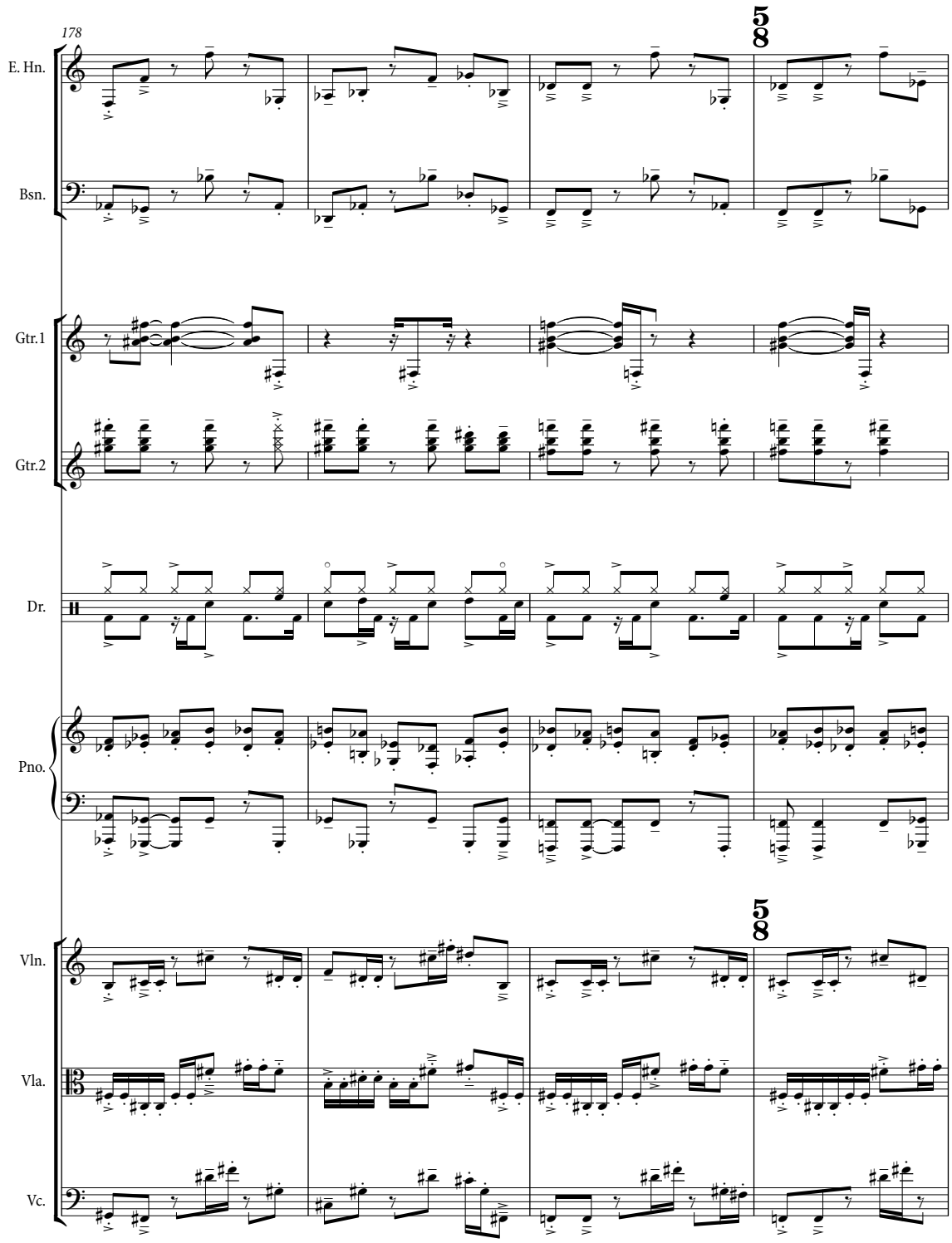

157
O
E. Hn.
Bsn.
n
n
Gtr.1
Gtr.2
Dr.
Pno.
p
O
Vln.
mf
Vla.
mf
Vc.
mf

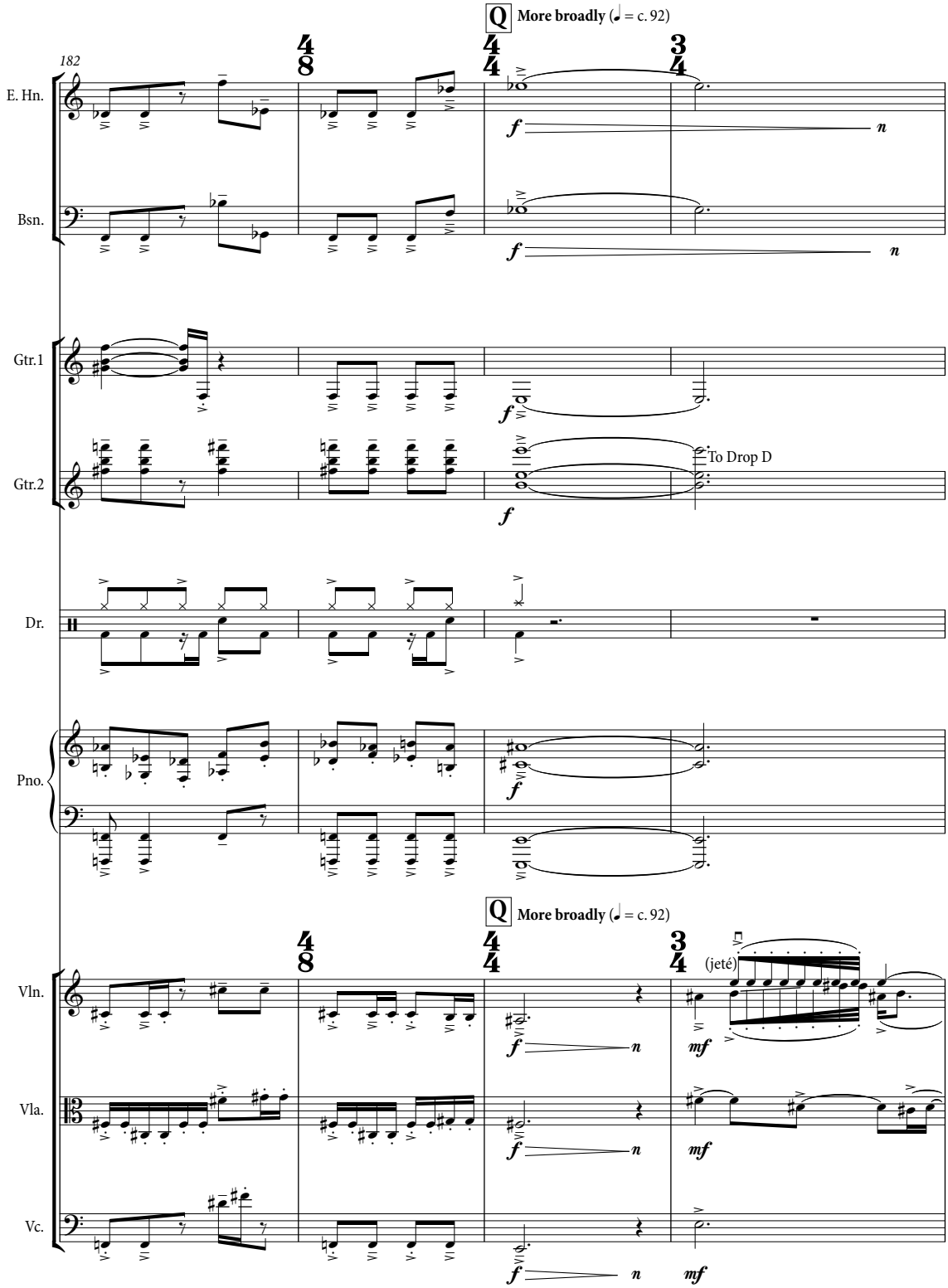

161
E. Hn.
Bsn.
Gtr.1
Gtr.2
Dr.
Pno.
Vln.
Vla.
Vc.

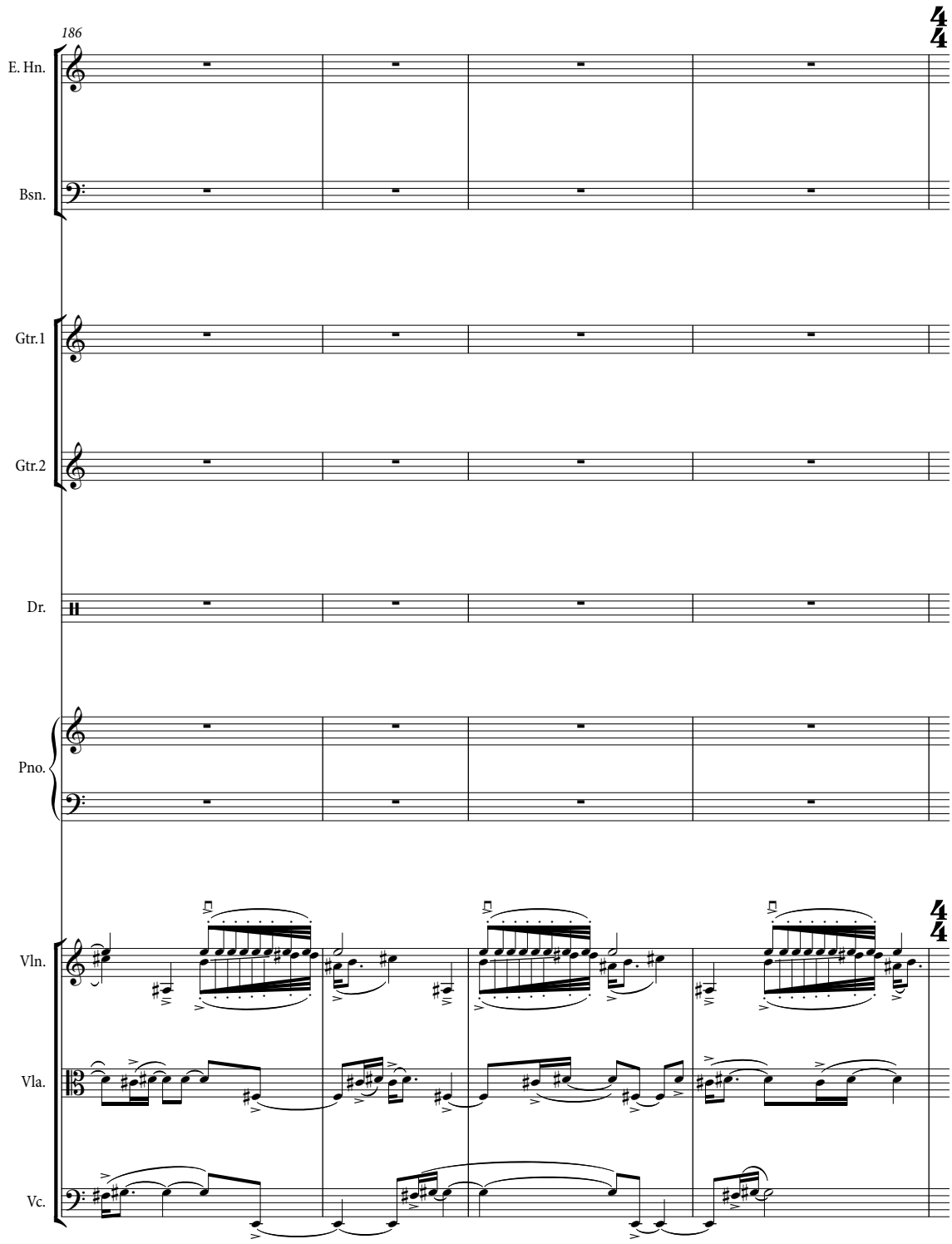

165
E. Hn.
Bsn.
Gtr.1
Gtr.2
Dr.
Pno.
Vln.
Vla.
Vc.
mf
f
mf

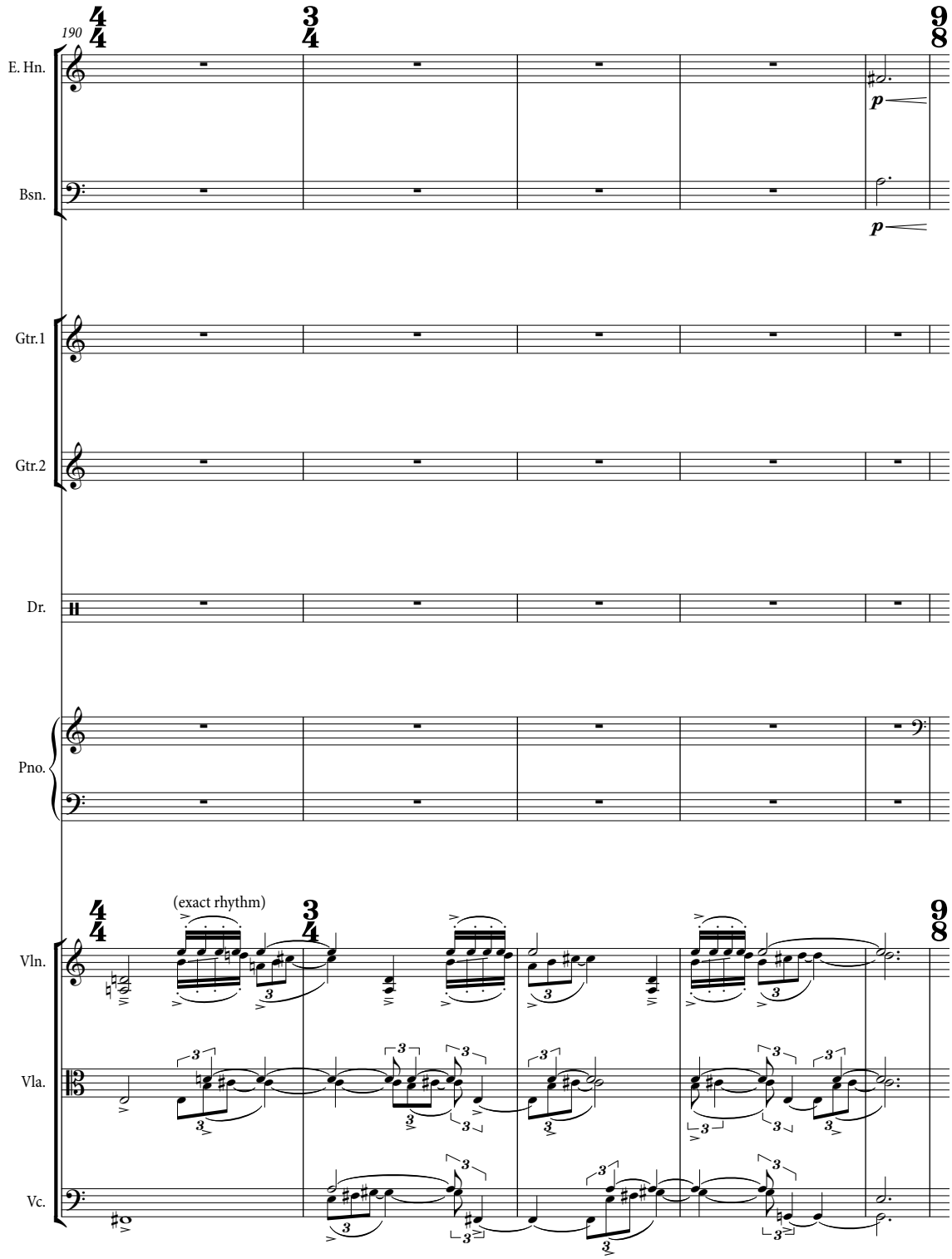

P
170
E. Hn.
Bsn.
Gtr.1
mf
Gtr.2
mf
Dr.
mp
Pno.
f
P
Vln.
f
Vla.
f
Vc.
f

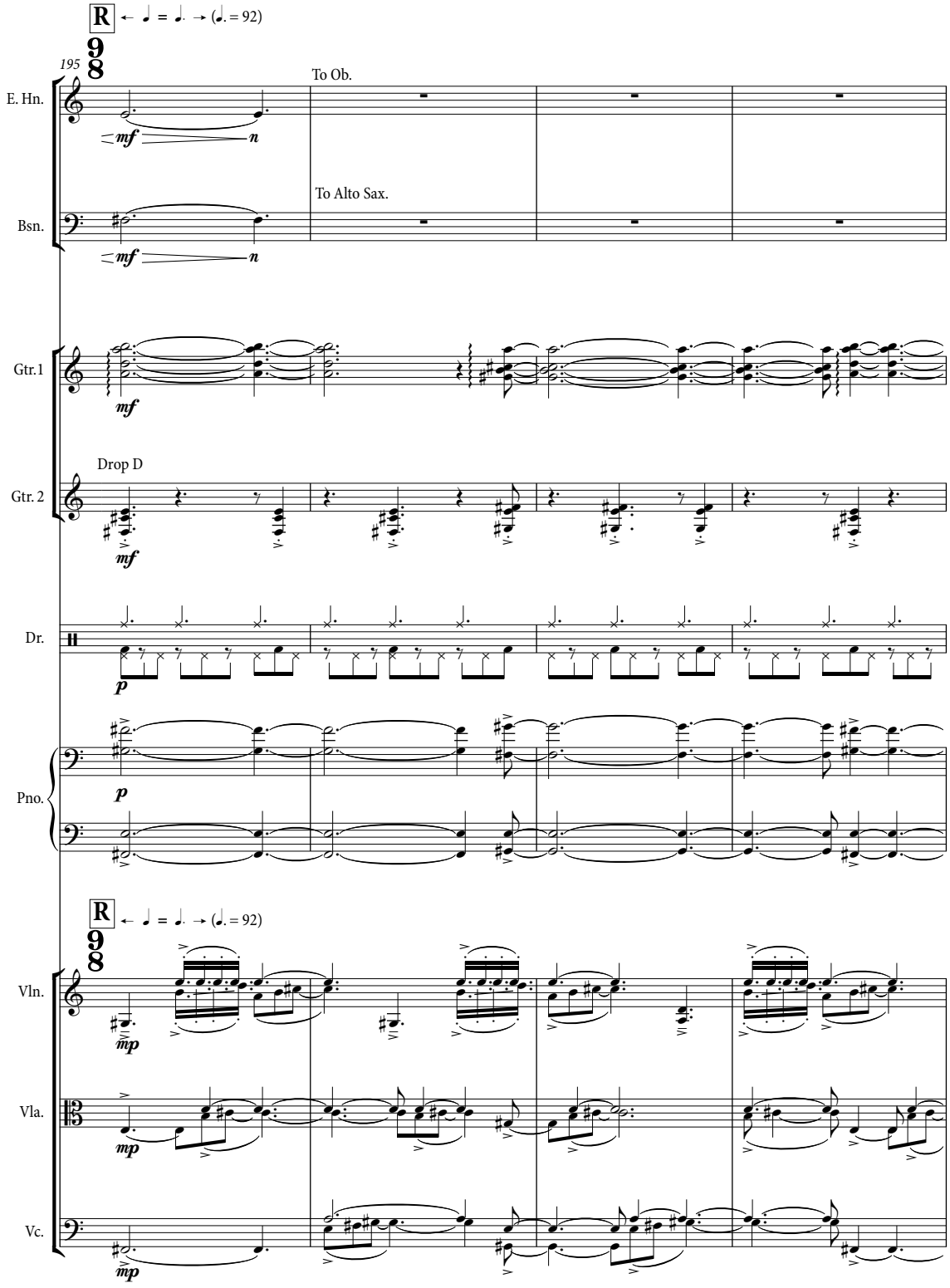

174
E. Hn.
Bsn.
Gtr.1
Gtr.2
Dr.
Pno.
Vln.
Vla.
Vc.

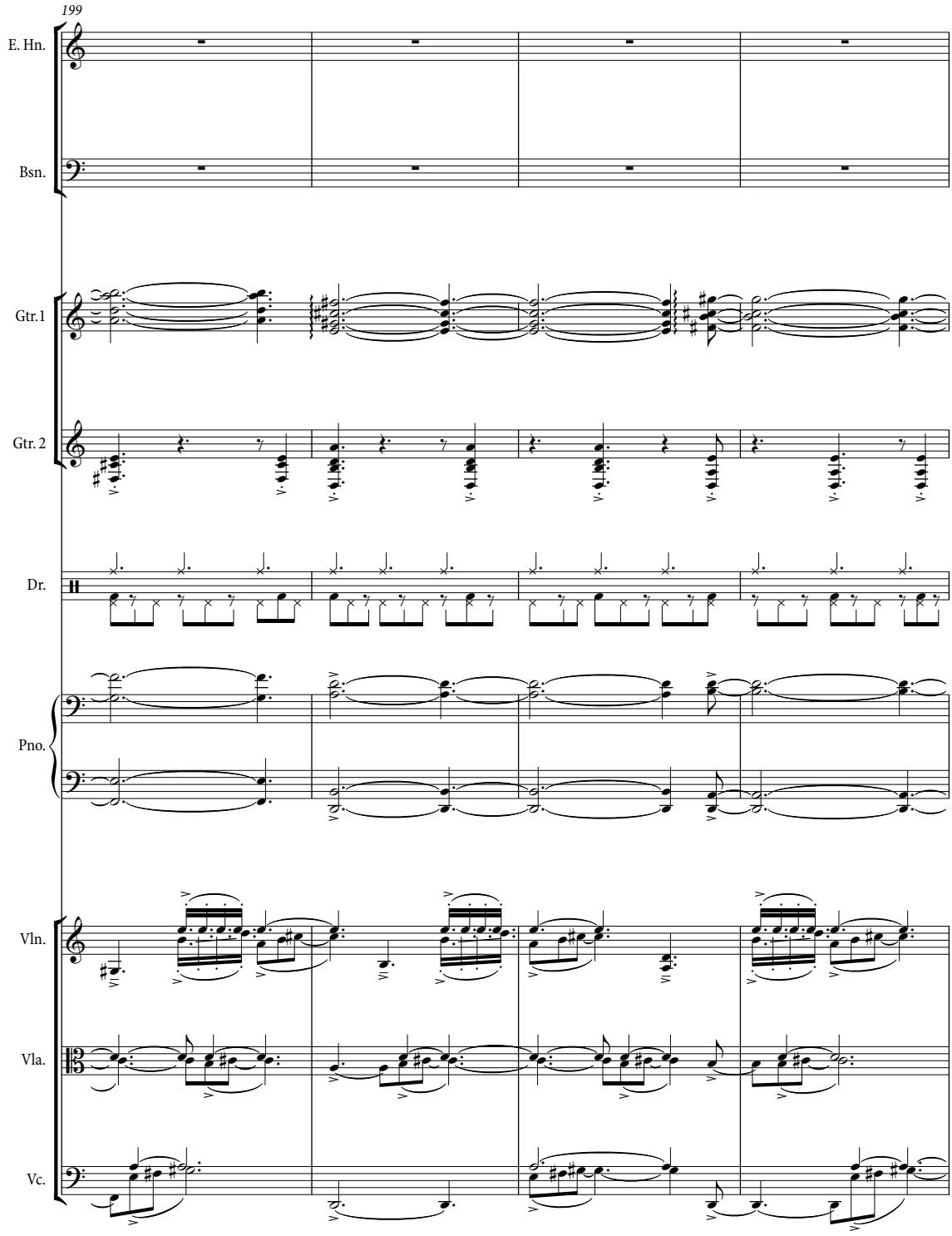

178
E. Hn.
Bsn.
Gtr.1
Gtr.2
Dr.
Pno.
Vln.
Vla.
Vc.
5
8
5
8

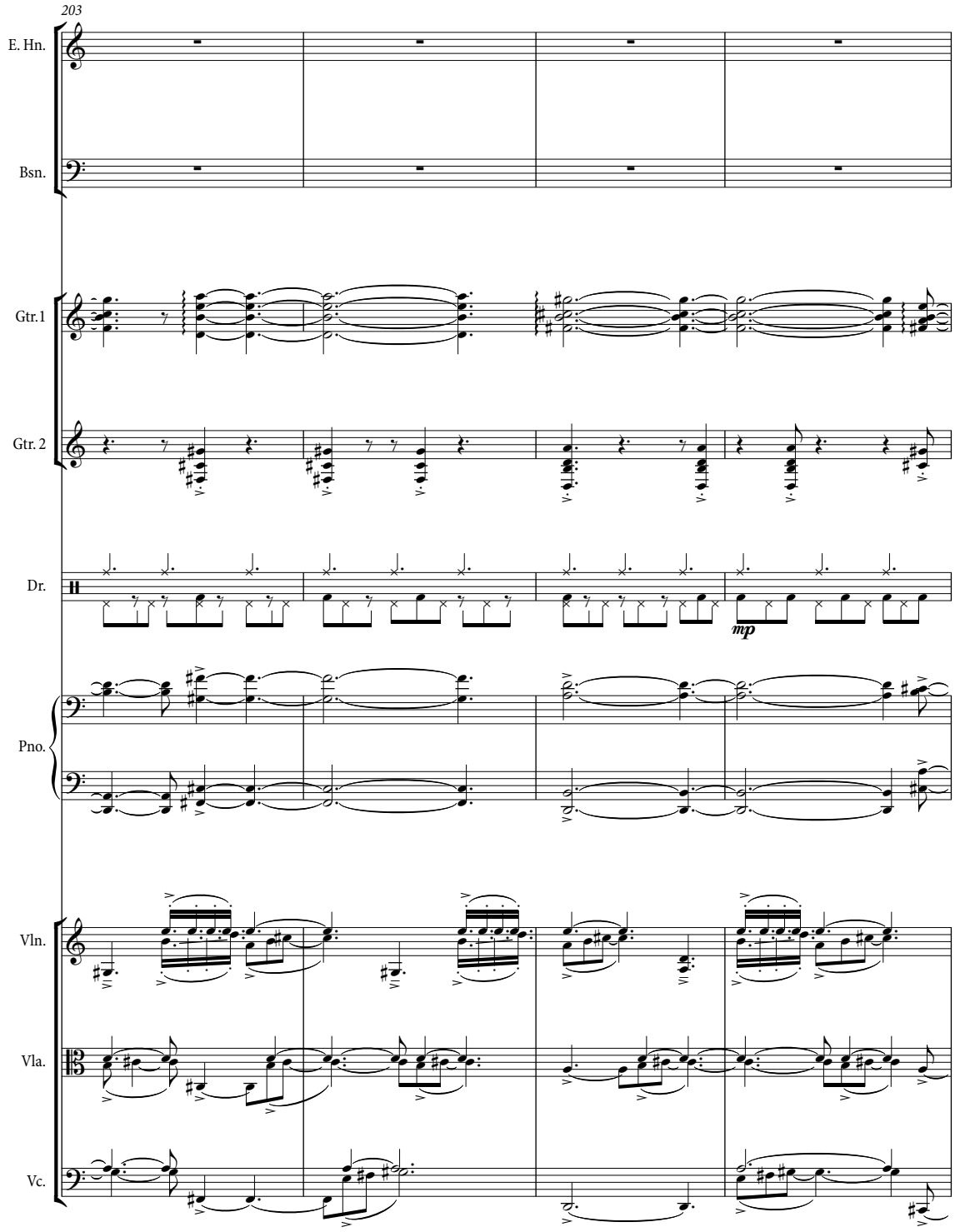

Q More broadly (♩ = c. 92)
182
E. Hn.
Bsn.
Gtr.1
Gtr.2
To Drop D
Dr.
Pno.
Q More broadly (♩ = c. 92)
(jeté)
Vln.
Vla.
Vc.

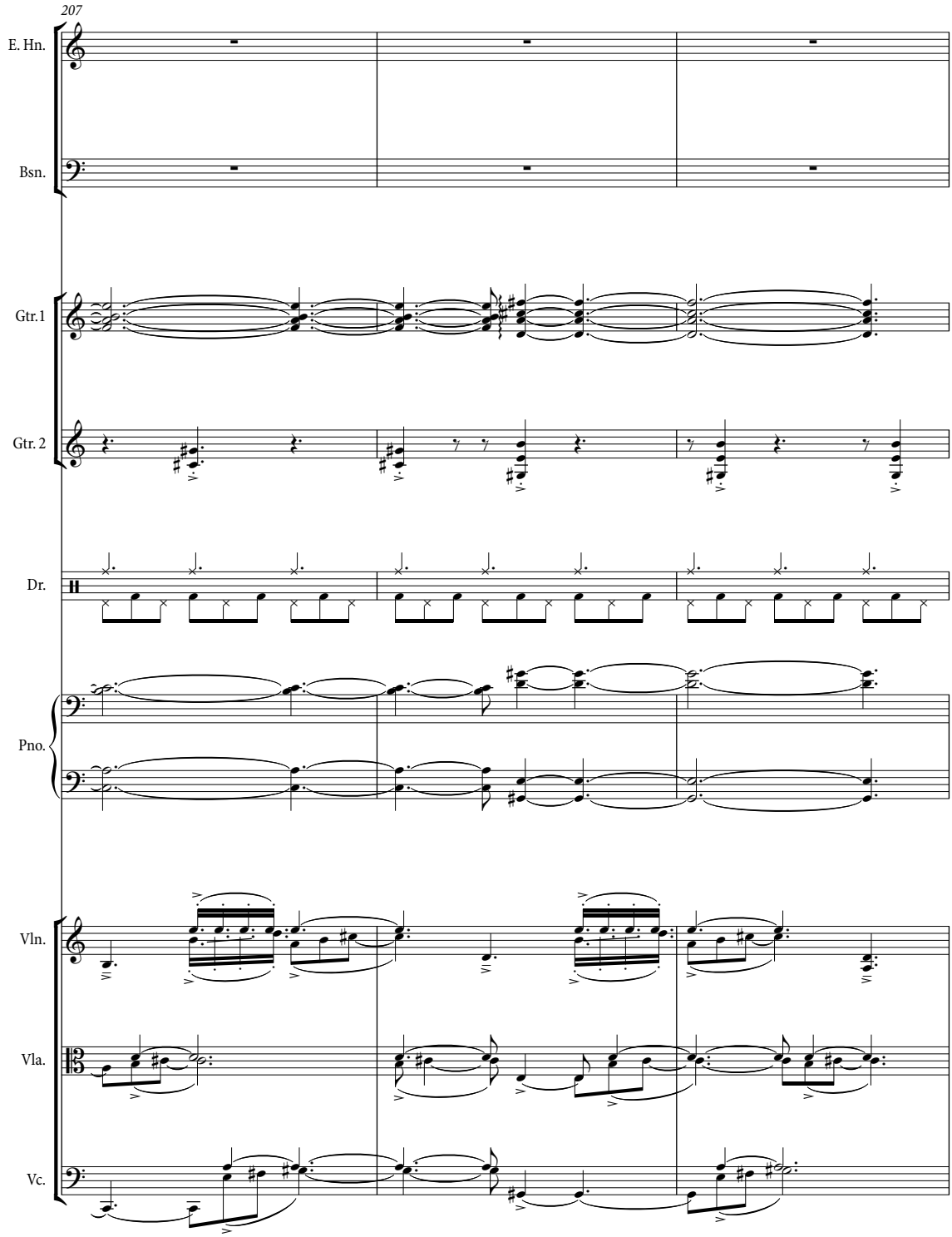

186
E. Hn.
Bsn.
Gtr.1
Gtr.2
Dr.
Pno.
Vln.
Vla.
Vc.

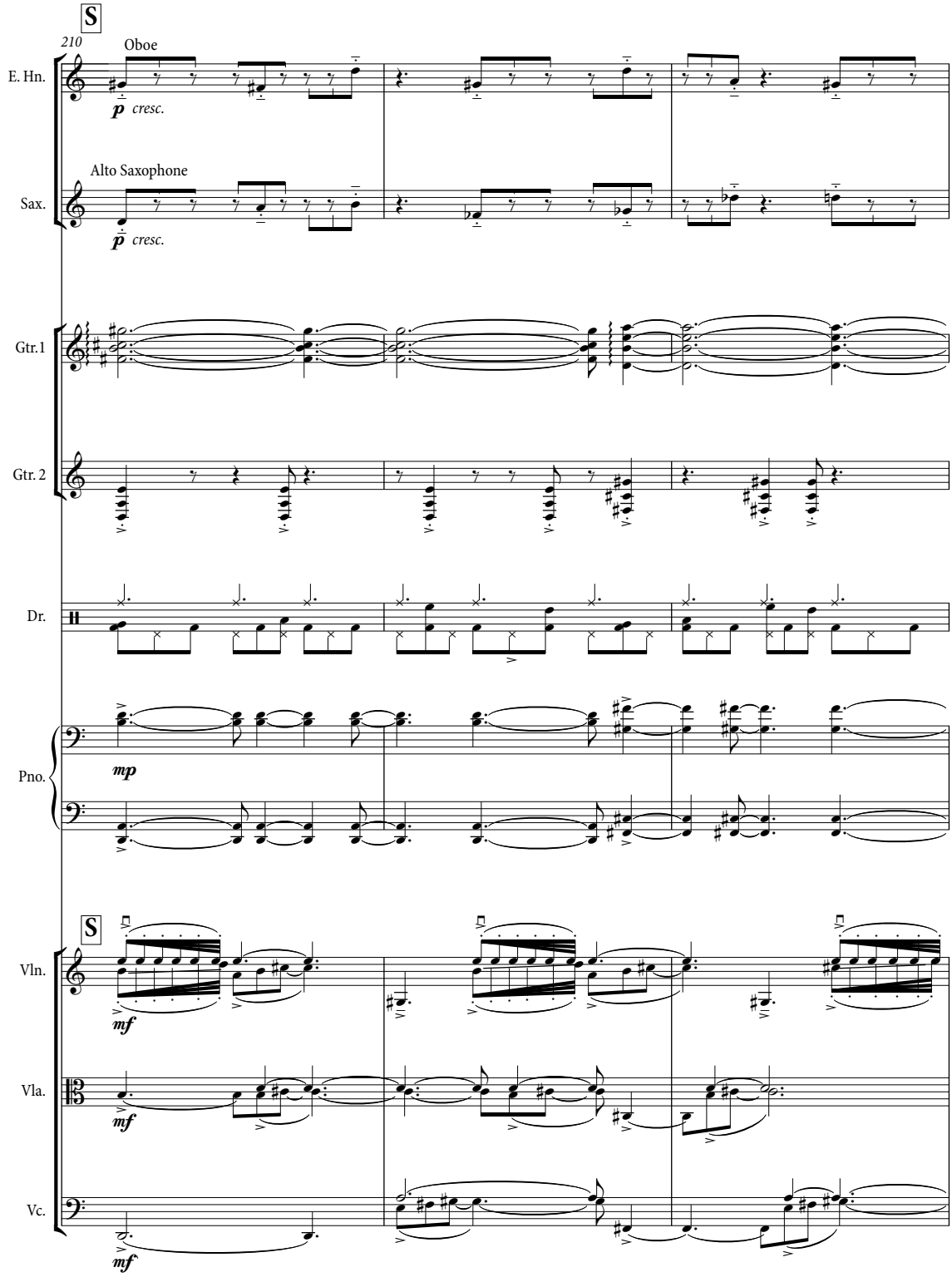

190
E. Hn.
Bsn.
Gtr.1
Gtr.2
Dr.
Pno.
Vln.
Vla.
Vc.
(exact rhythm)

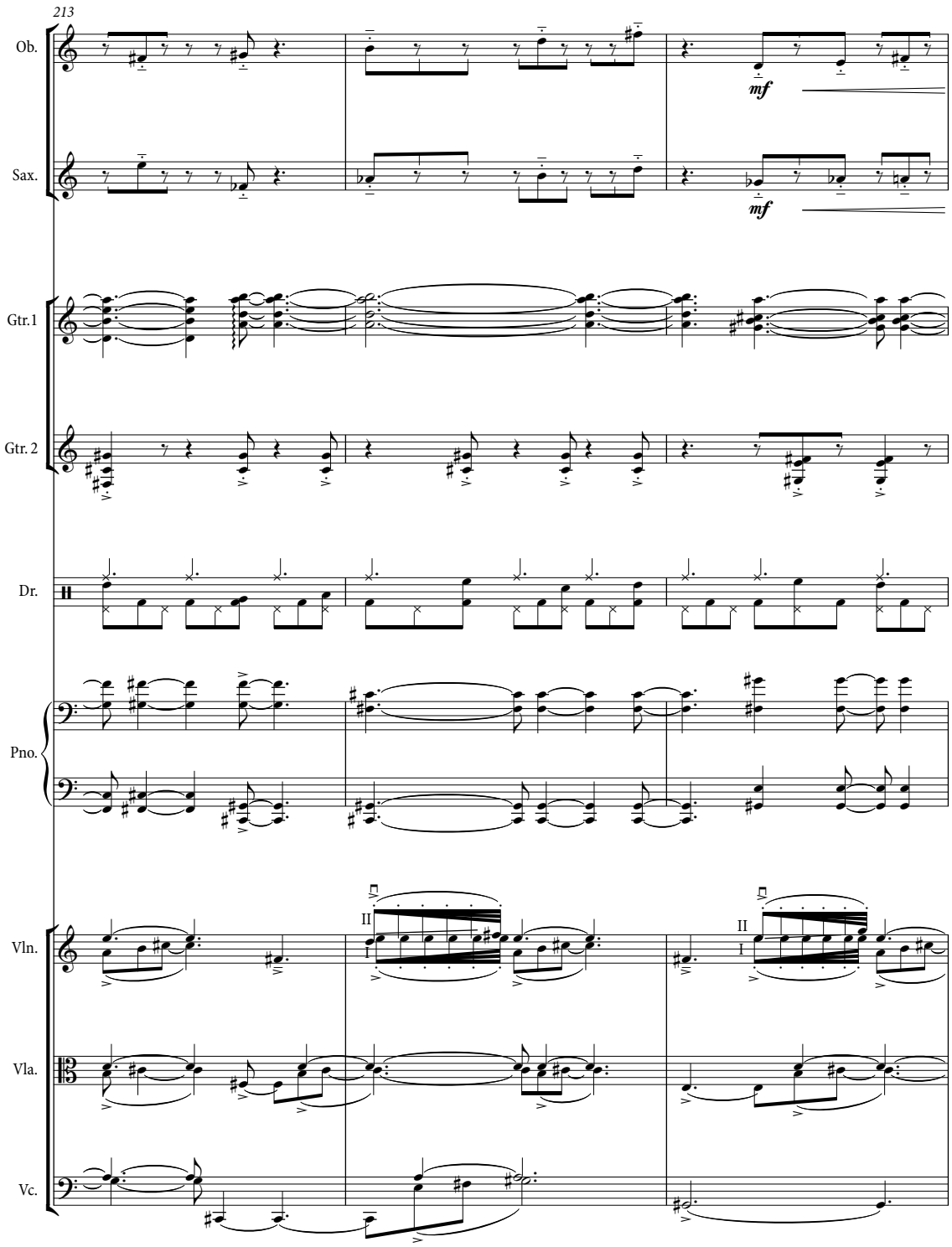

R
195
To Ob.
E. Hn.
mf
n
To Alto Sax.
Bsn.
mf
n
Gtr.1
mf
Drop D
Gtr. 2
mf
Dr.
p
Pno.
p
R
Vln.
mp
Vla.
mp
Vc.
mp

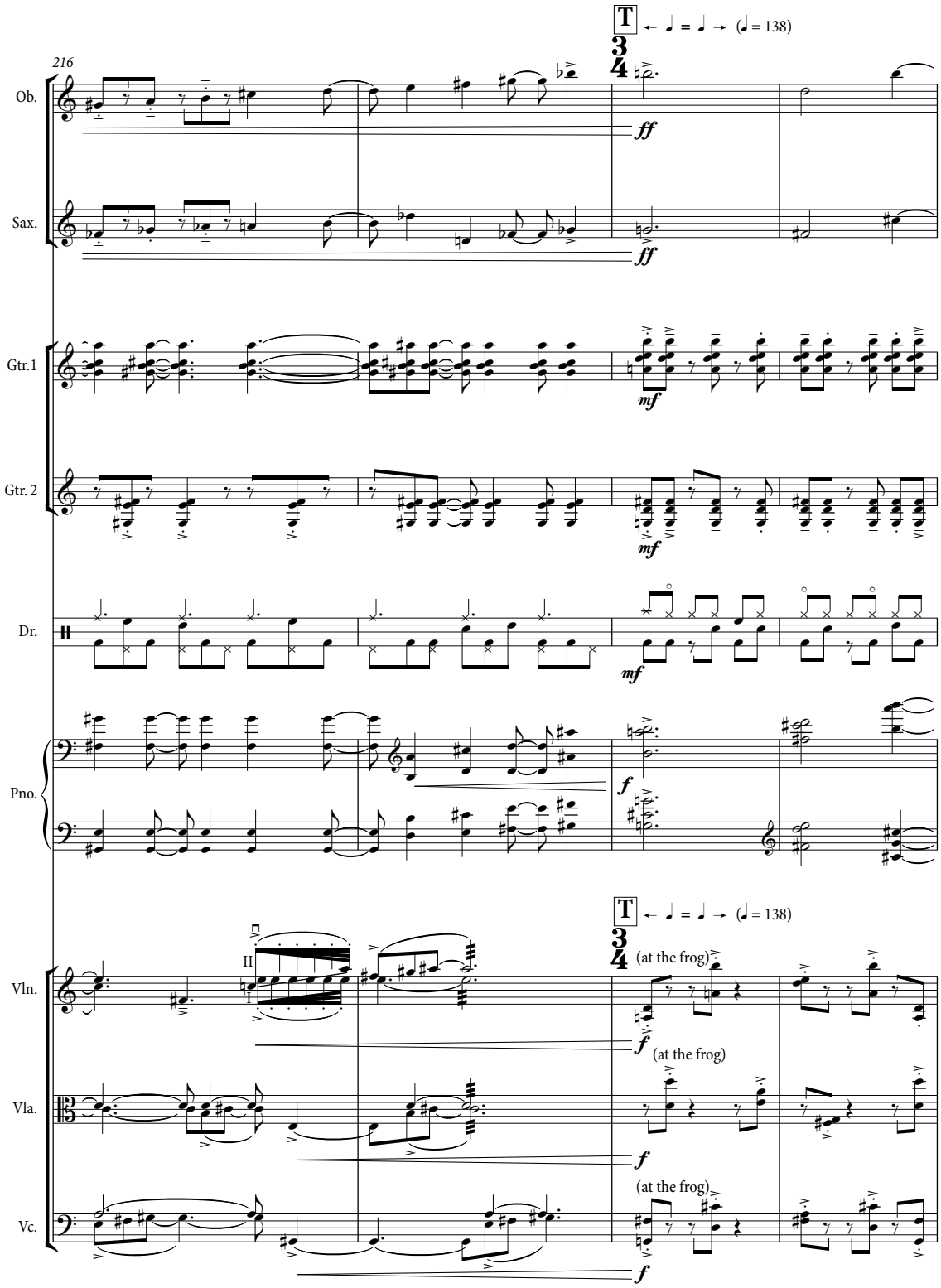

199
E. Hn.
Bsn.
Gtr.1
Gtr. 2
Dr.
Pno.
Vln.
Vla.
Vc.

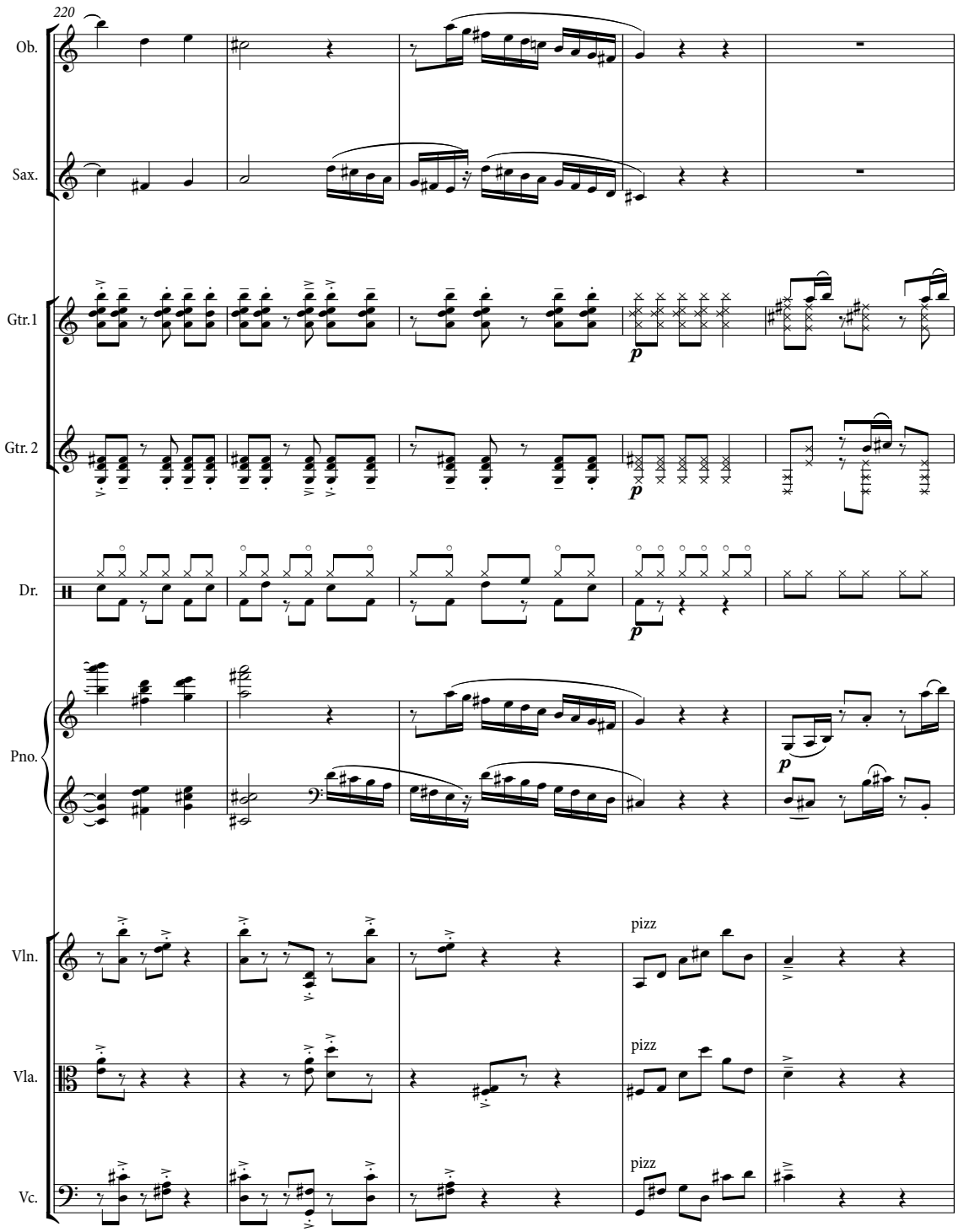

203
E. Hn.
Bsn.
Gtr.1
Gtr. 2
Dr.
mp
Pno.
Vln.
Vla.
Vc.

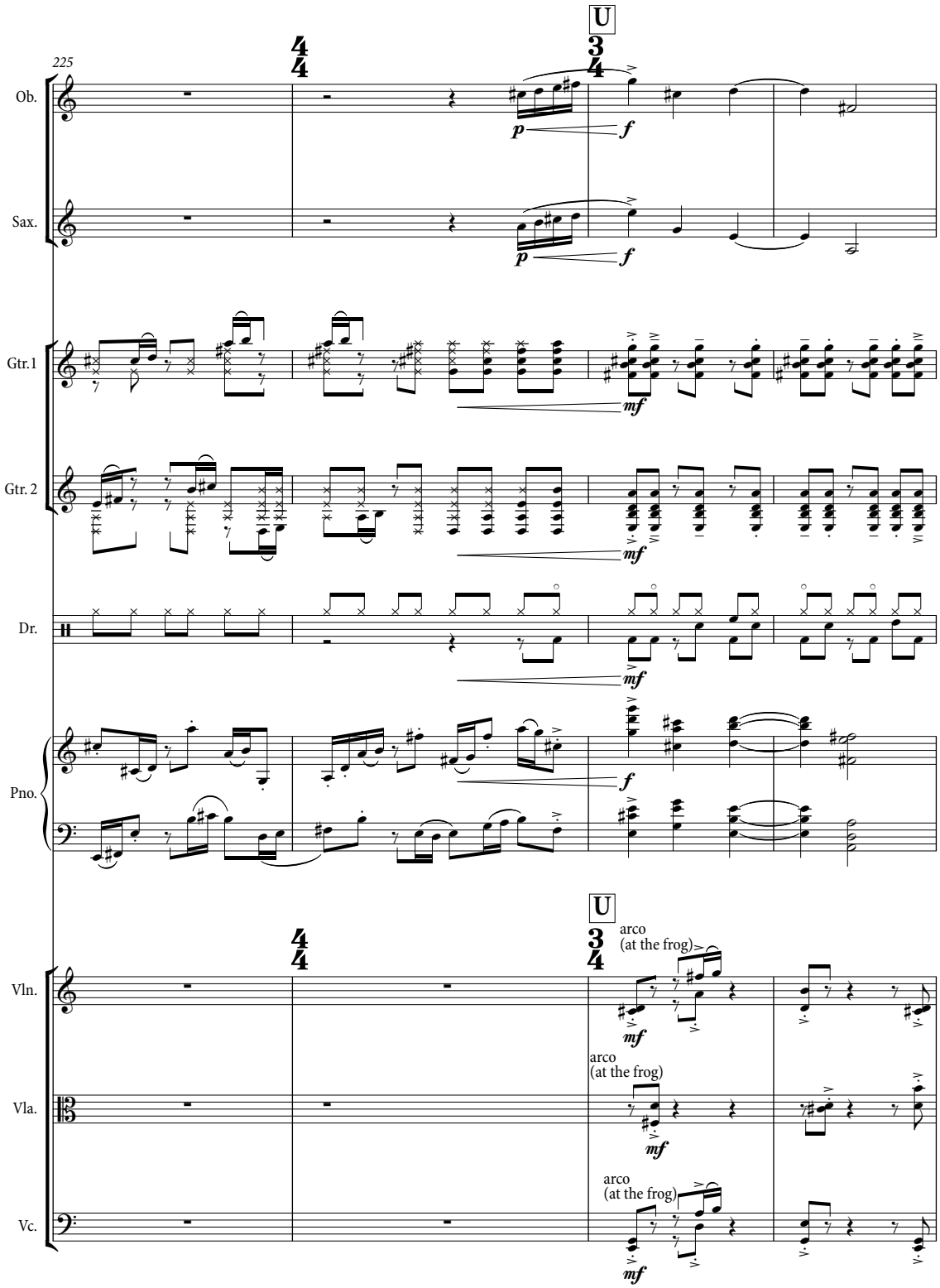

207
E. Hn.
Bsn.
Gtr.1
Gtr. 2
Dr.
Pno.
Vln.
Vla.
Vc.

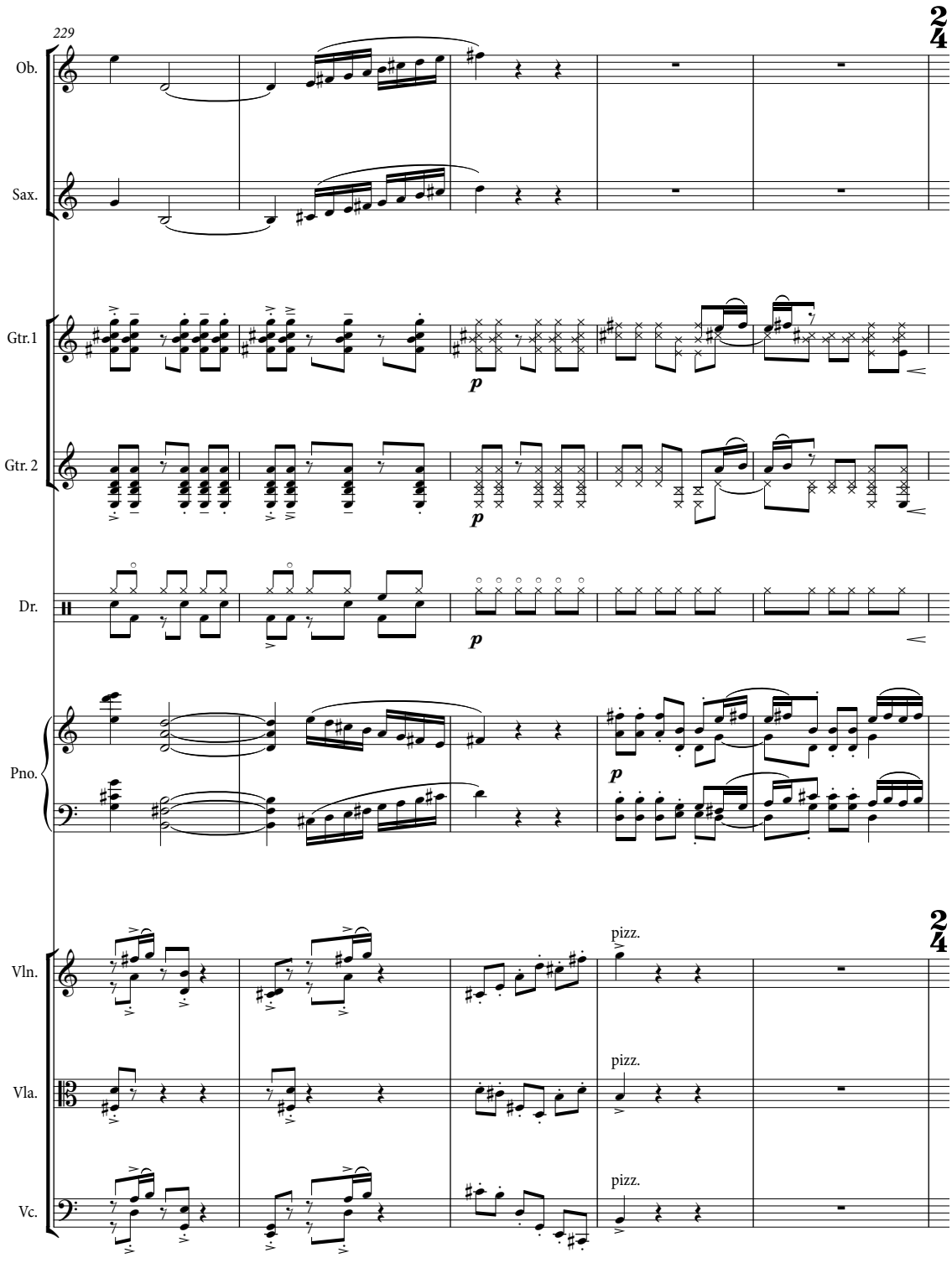

S
210
Oboe
E. Hn.
p cresc.
Alto Saxophone
Sax.
p cresc.
Gtr.1
Gtr. 2
Dr.
Pno.
mp
S
Vln.
mf
Vla.
mf
Vc.
mf

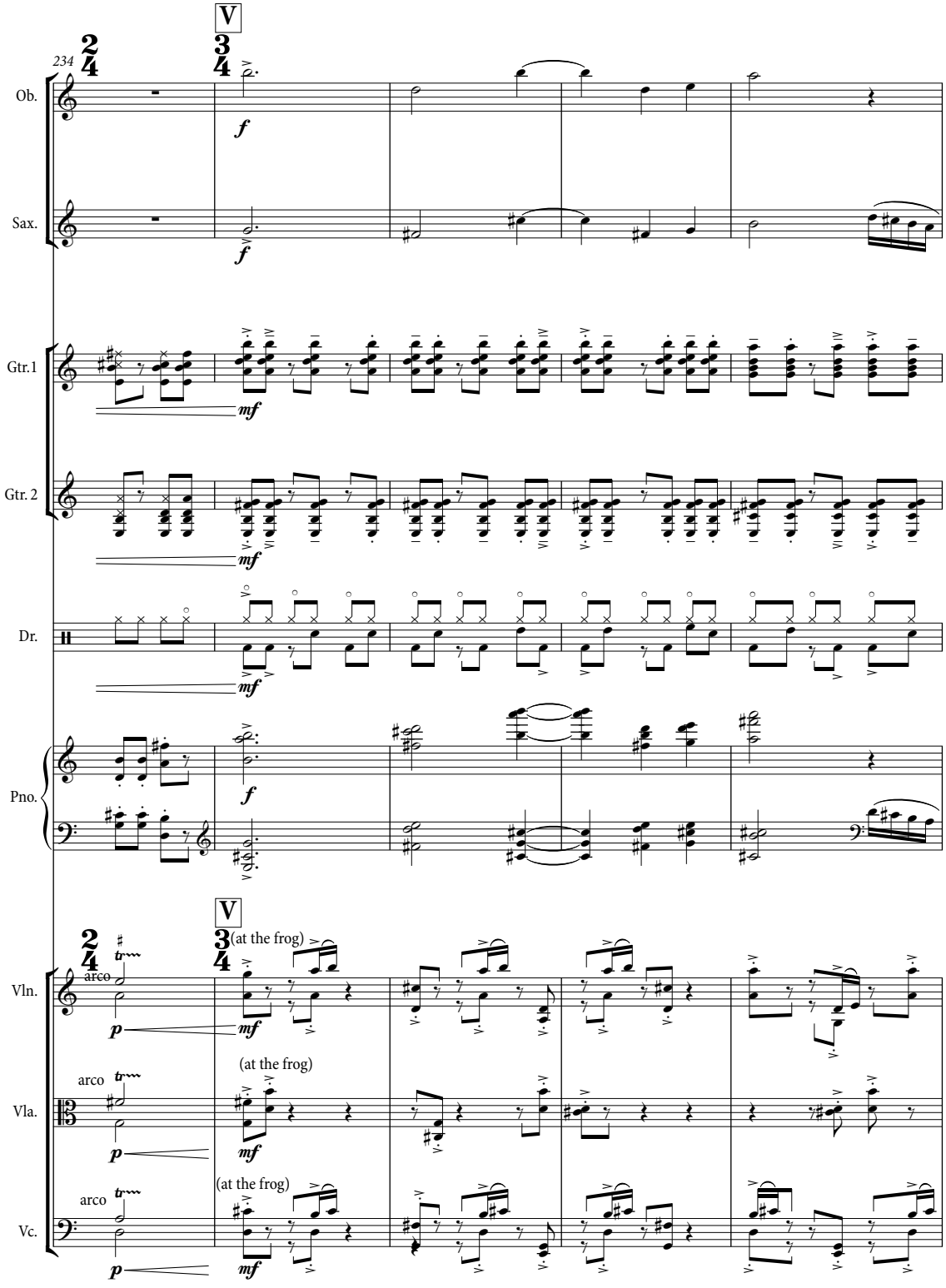

213
Ob.
mf
Sax.
mf
Gtr.1
Gtr. 2
Dr.
Pno.
Vln.
II
I
II
I
Vla.
Vc.

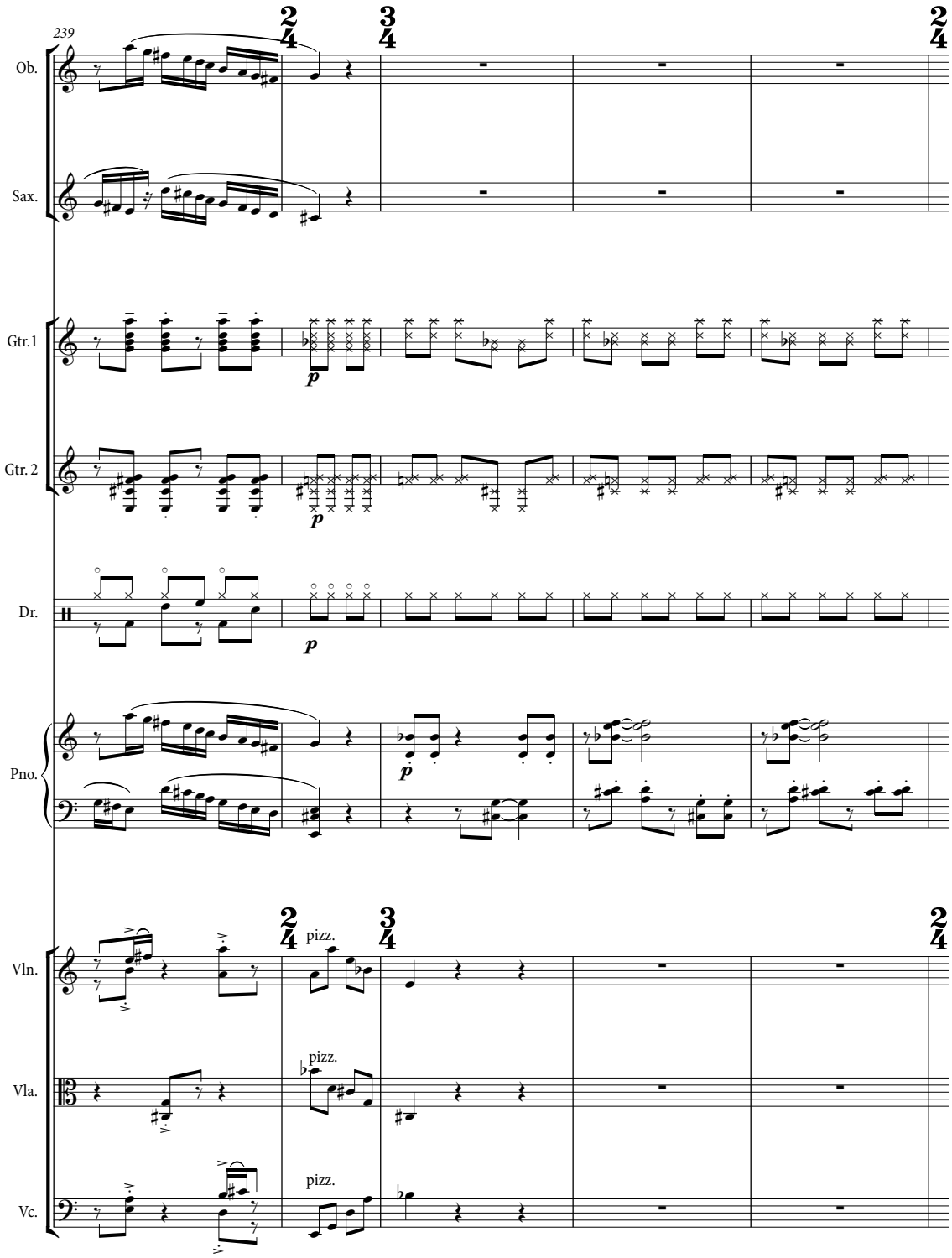

T
← ♩ = ♩ → (♩ = 138)
216
Ob.
Sax.
Gtr.1
Gtr. 2
Dr.
Pno.
Vln.
Vla.
Vc.
ff
mf
f
II
I
(at the frog)

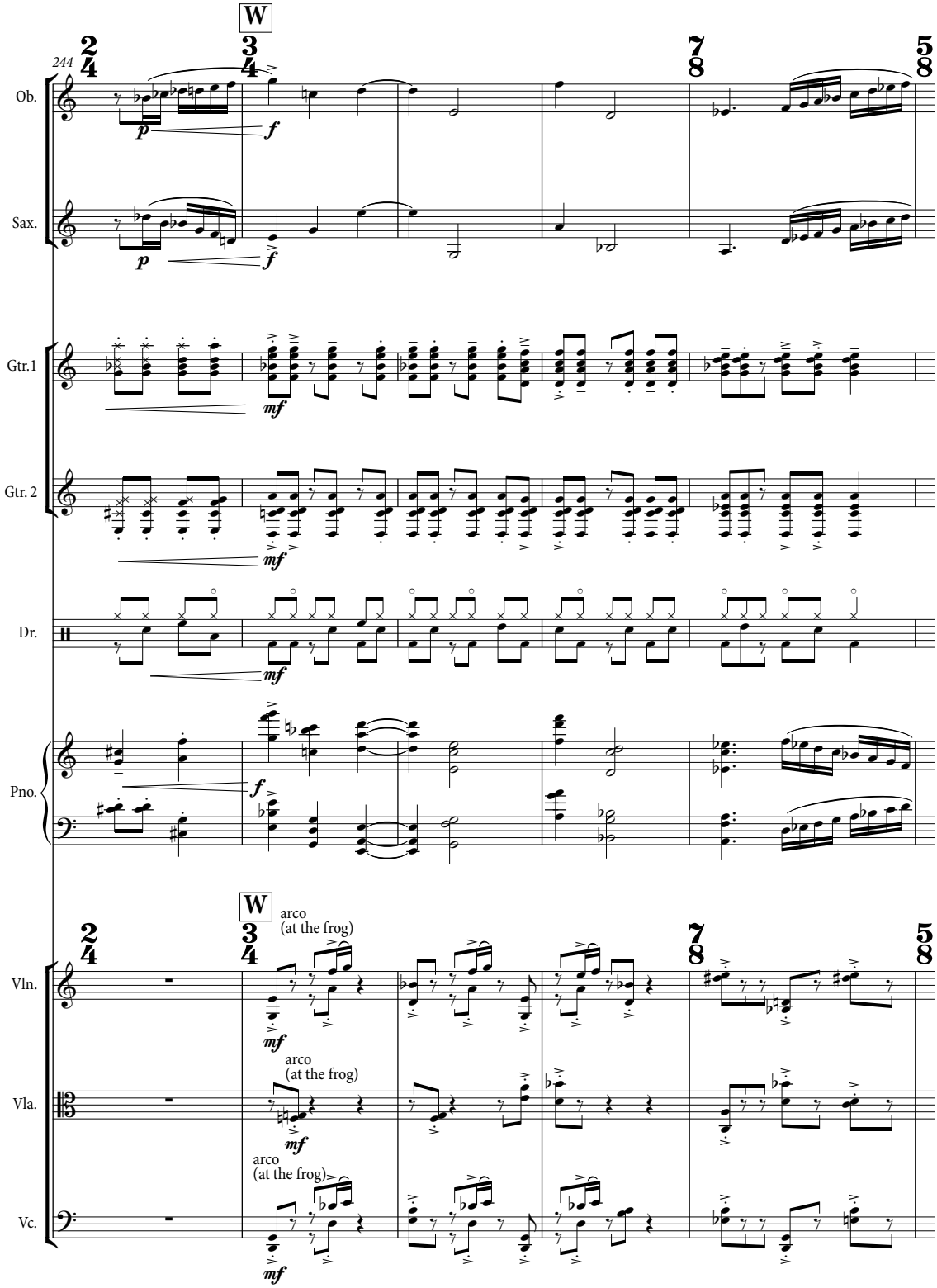

220
Ob.
Sax.
Gtr.1
Gtr. 2
Dr.
Pno.
Vln.
Vla.
Vc.
p
p
p
pizz
pizz
pizz

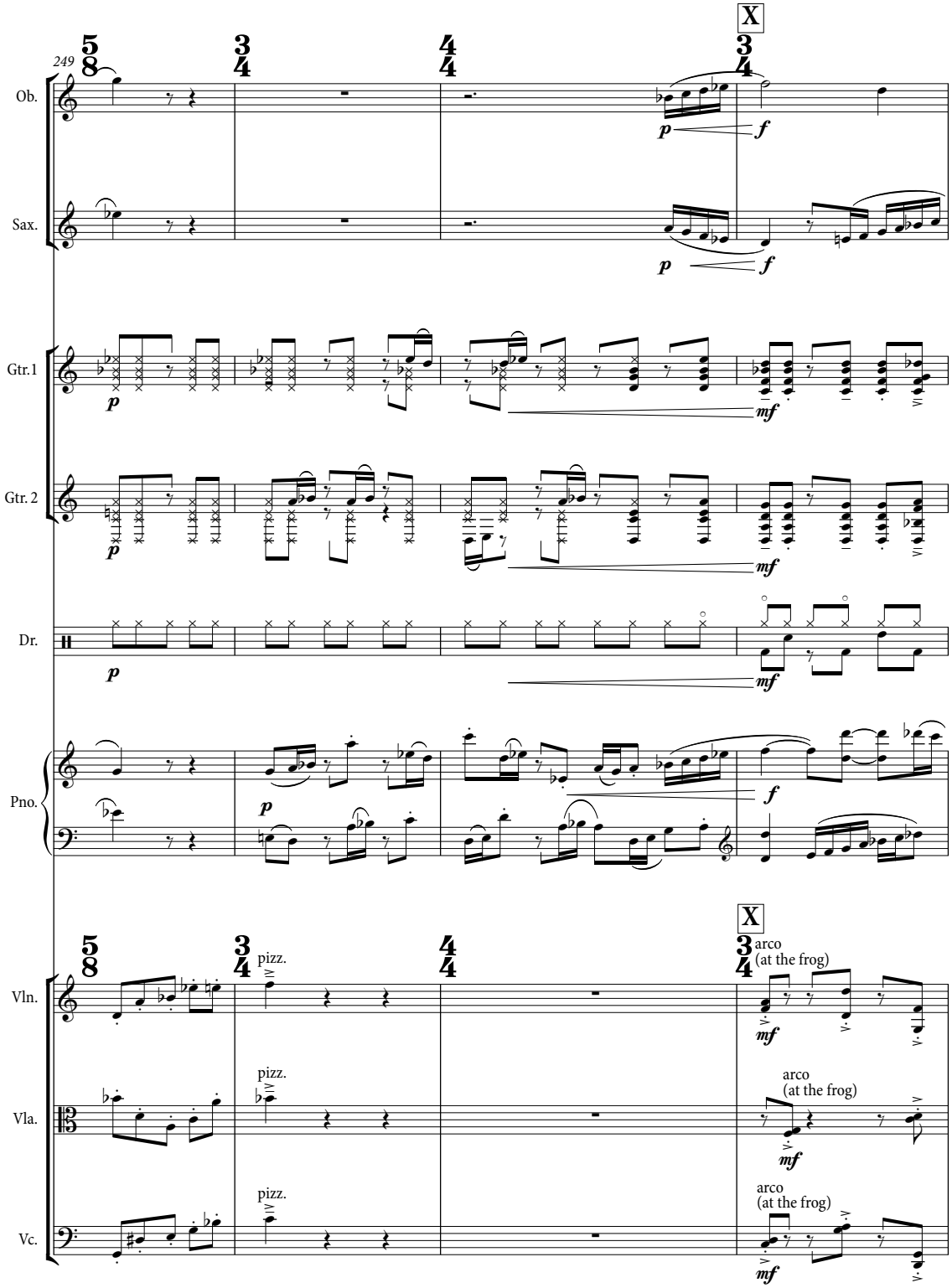

225
U
Ob.
Sax.
Gtr.1
Gtr. 2
Dr.
Pno.
Vln.
Vla.
Vc.
arco
(at the frog)

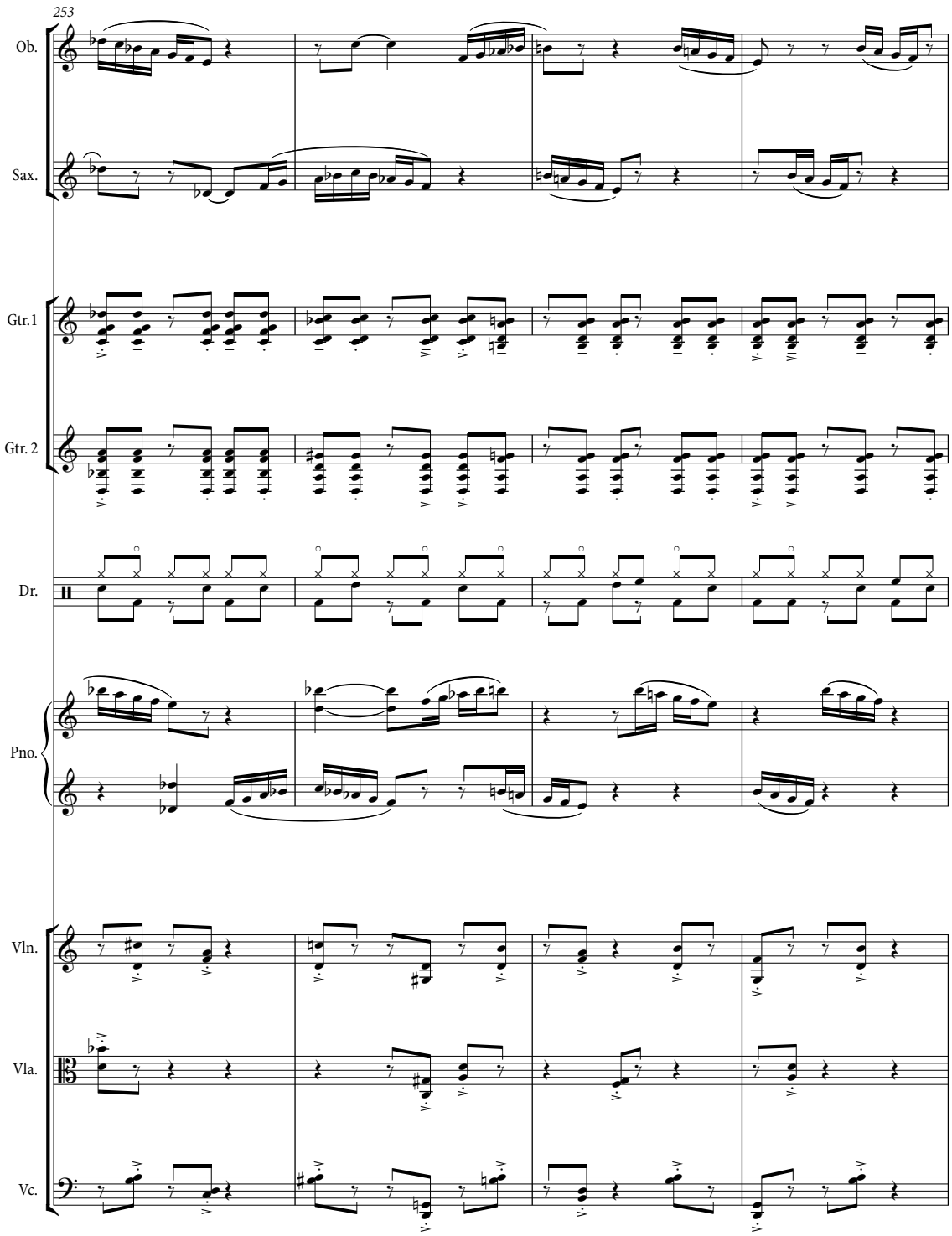

229
Ob.
Sax.
Gtr.1
Gtr. 2
Dr.
Pno.
Vln.
Vla.
Vc.
p
pizz.

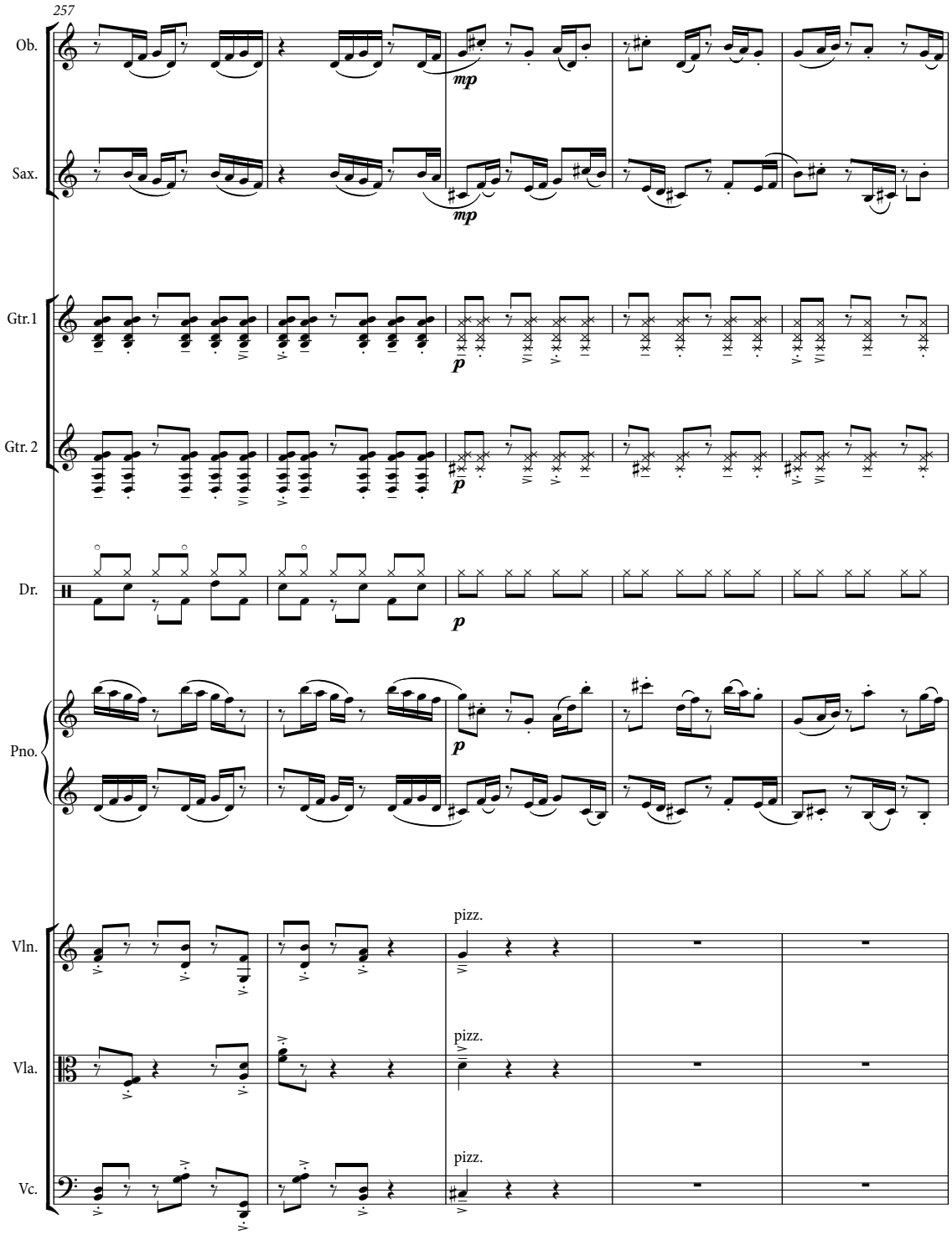

234
V
Ob.
Sax.
Gtr.1
Gtr. 2
Dr.
Pno.
V
(at the frog)
arco
Vln.
Vla.
Vc.

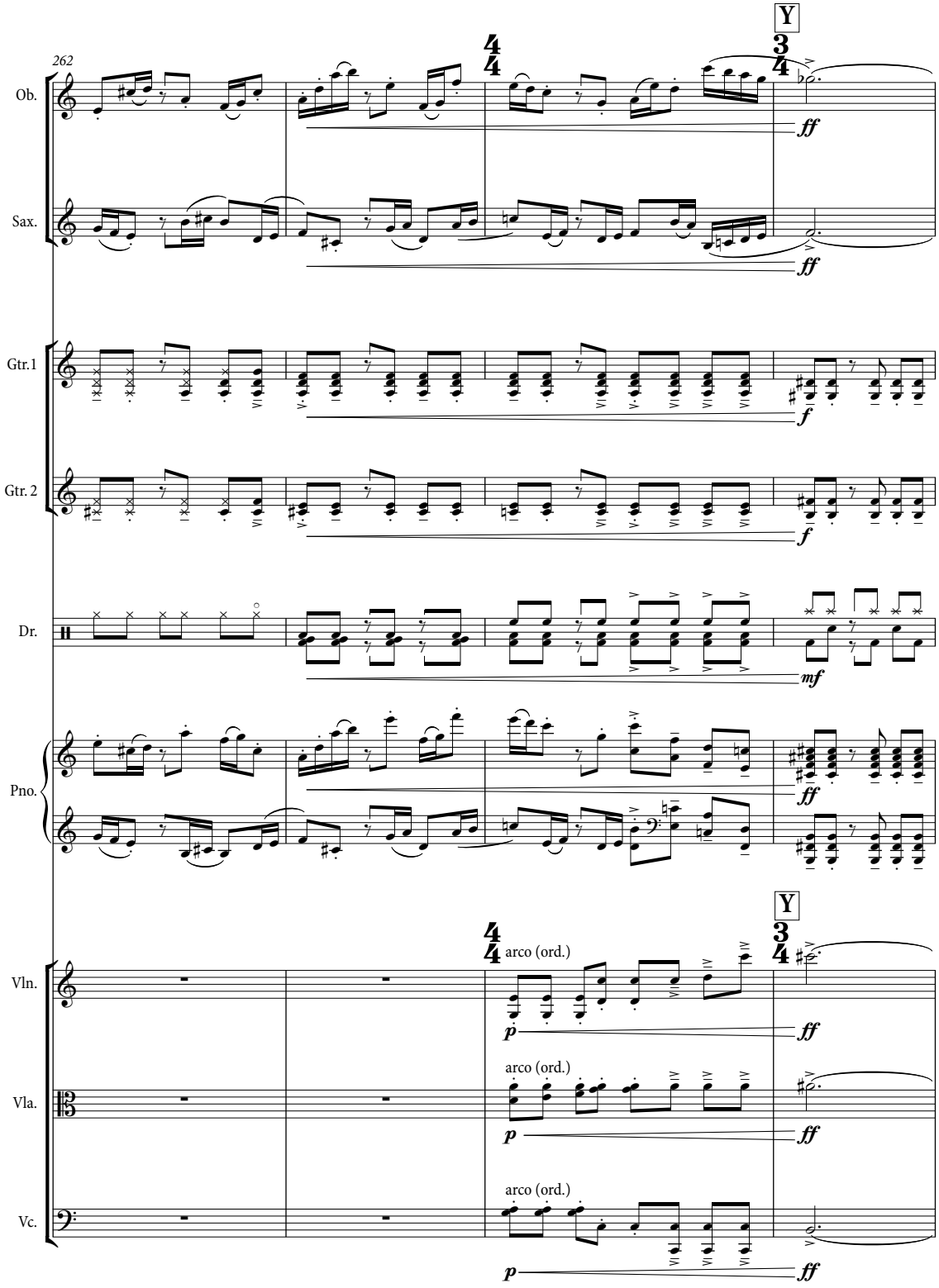

239
Ob.
Sax.
Gtr.1
Gtr. 2
Dr.
Pno.
Vln.
Vla.
Vc.
pizz.
pizz.
pizz.

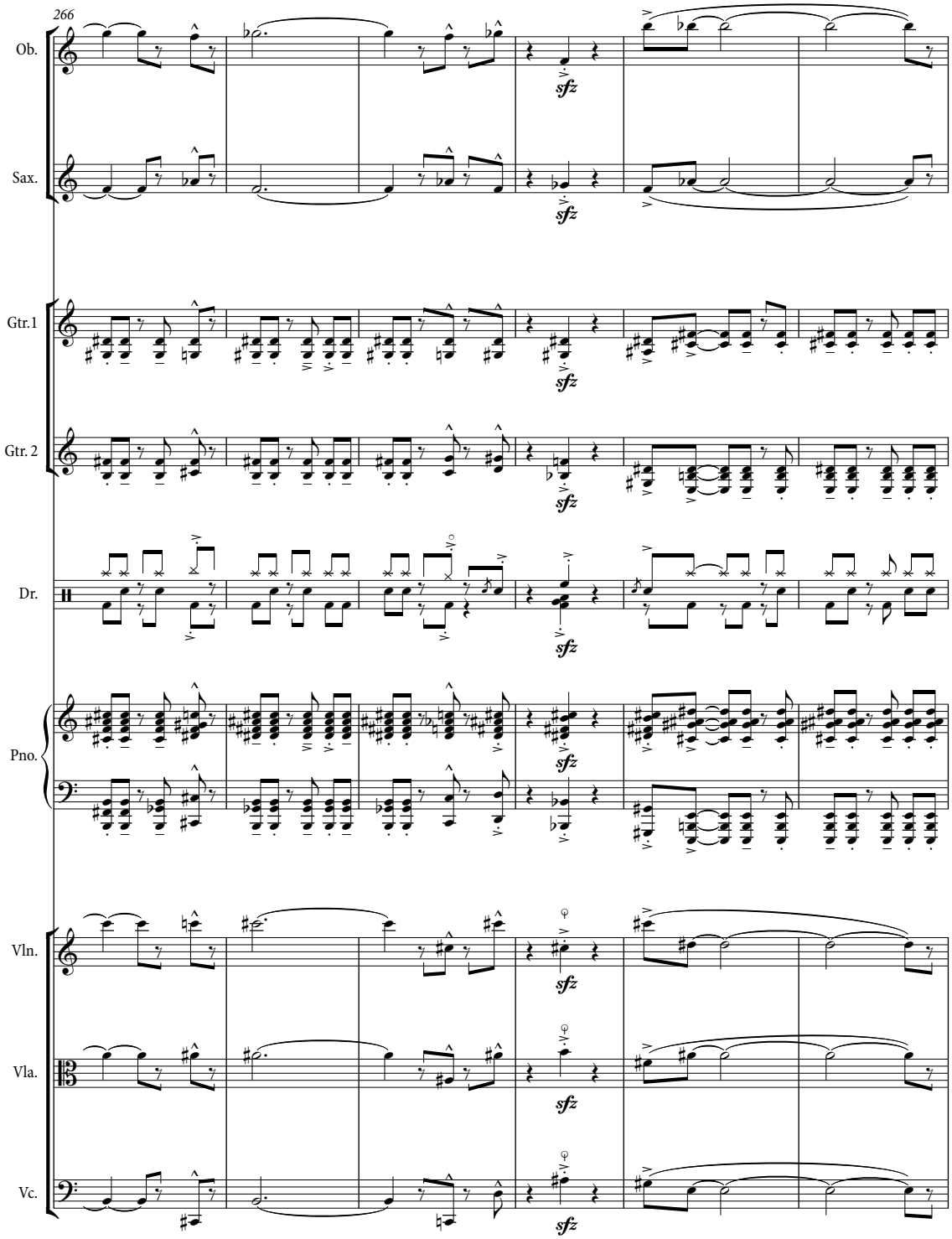

244
W
Ob.
Sax.
Gtr.1
Gtr. 2
Dr.
Pno.
Vln.
Vla.
Vc.
arco
(at the frog)

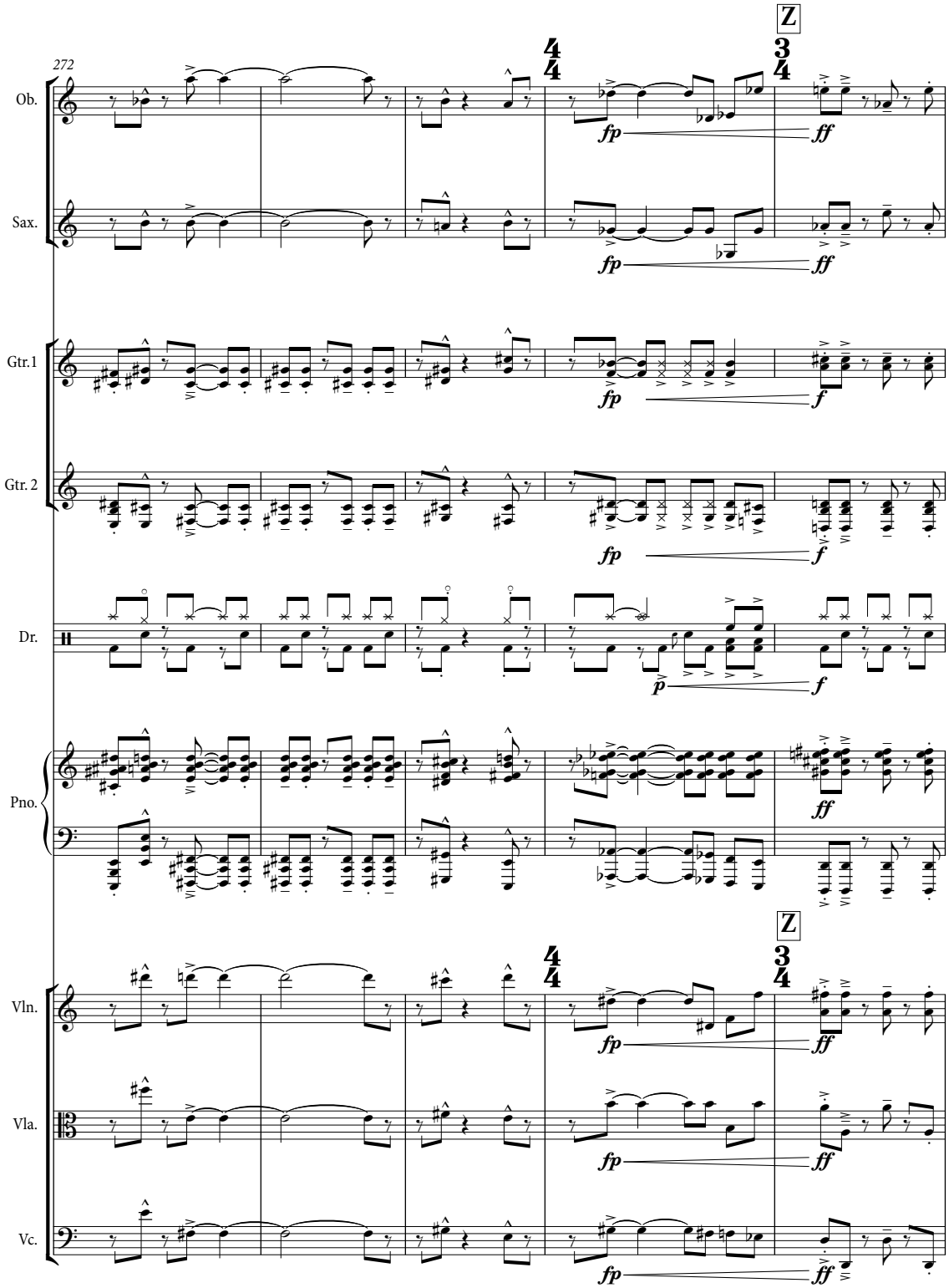

249
X
Ob.
Sax.
Gtr.1
Gtr. 2
Dr.
Pno.
Vln.
Vla.
Vc.
pizz.
arco
(at the frog)

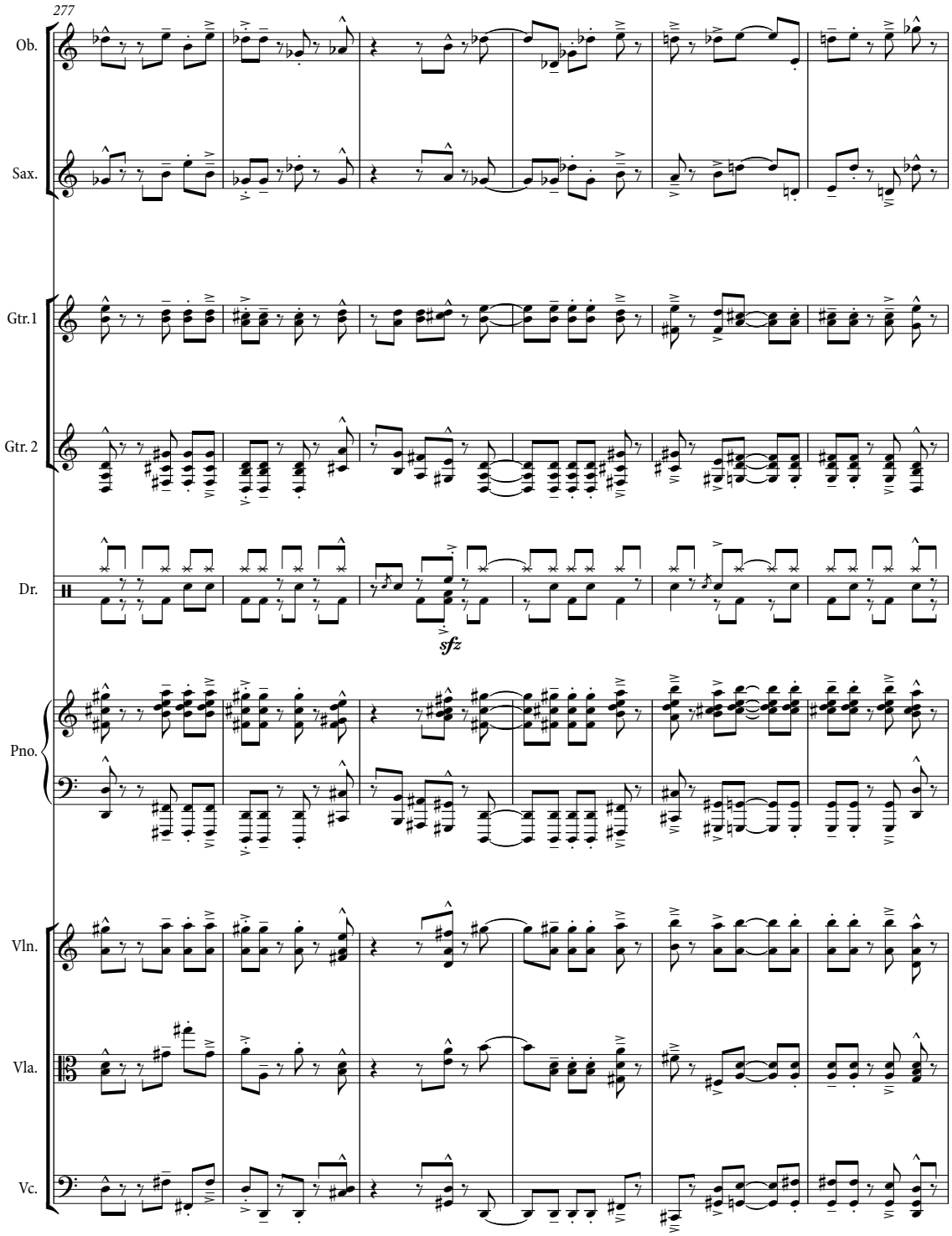

253
Ob.
Sax.
Gtr.1
Gtr. 2
Dr.
Pno.
Vln.
Vla.
Vc.

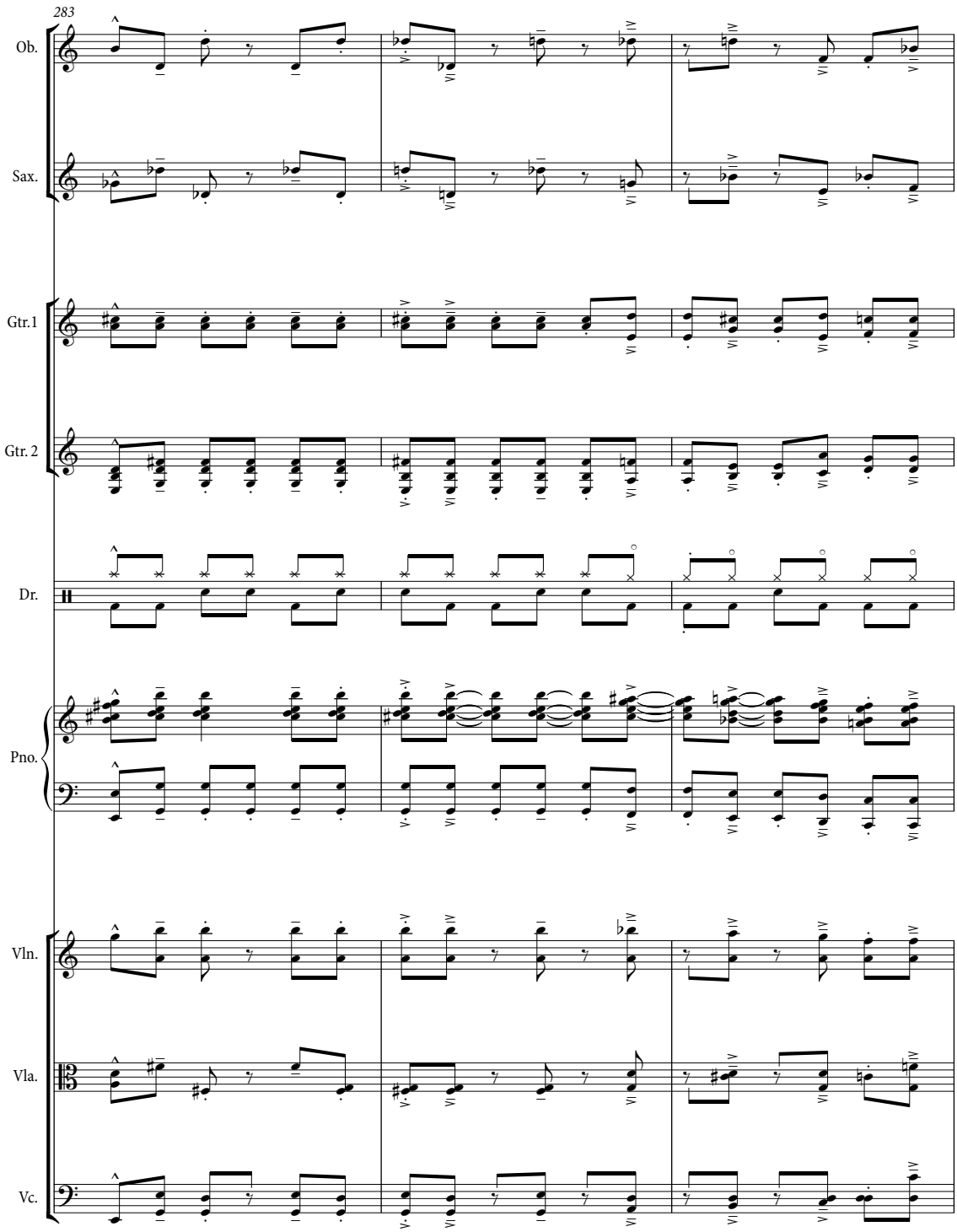

257
Ob.
Sax.
Gtr.1
Gtr. 2
Dr.
Pno.
Vln.
Vla.
Vc.
mp
mp
p
p
p
pizz.
pizz.
pizz.

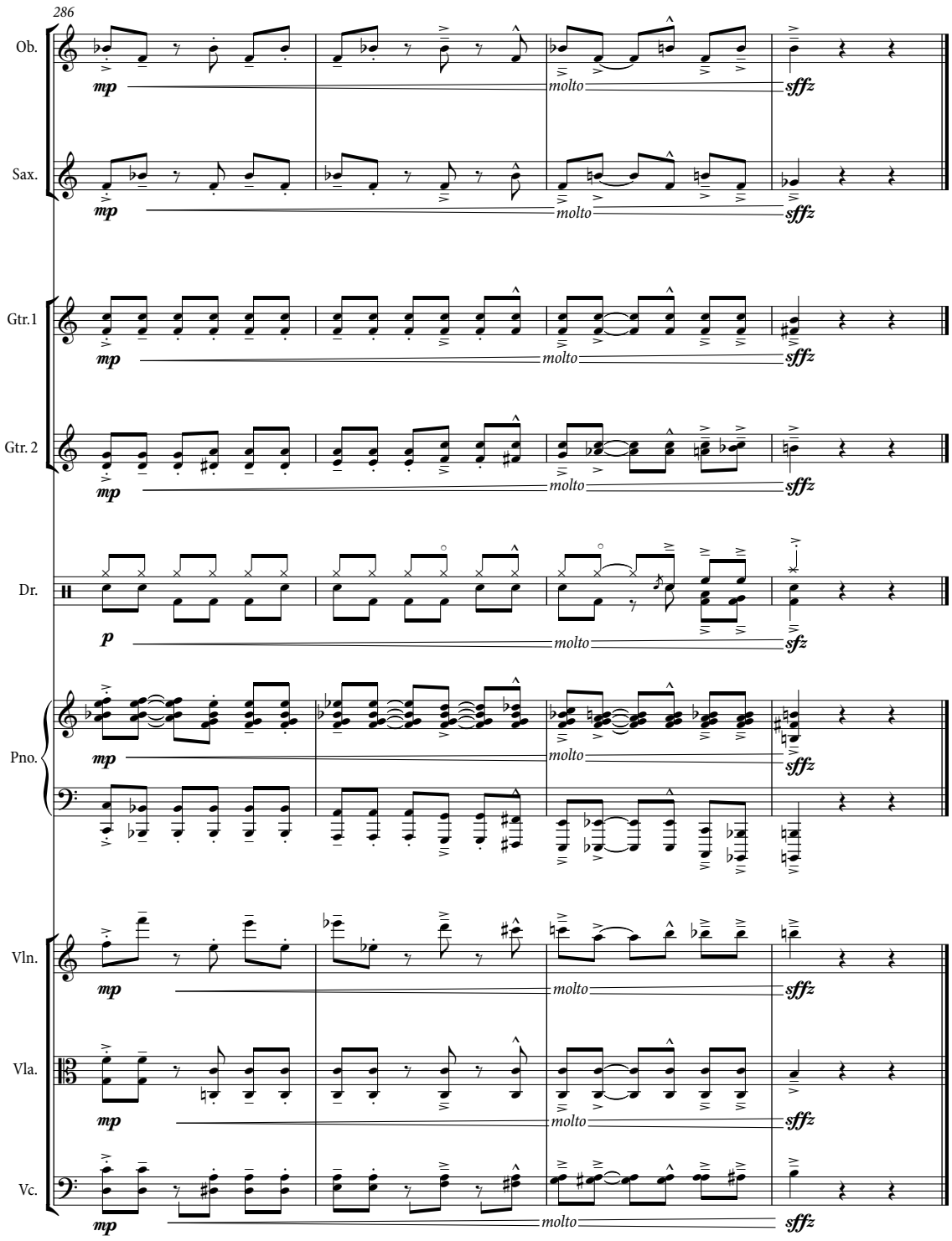

262
Y
Ob.
Sax.
Gtr.1
Gtr. 2
Dr.
Pno.
Vln.
Vla.
Vc.
arco (ord.)
arco (ord.)
arco (ord.)


266
Ob.
Sax.
Gtr.1
Gtr. 2
Dr.
Pno.
Vln.
Vla.
Vc.
sfz

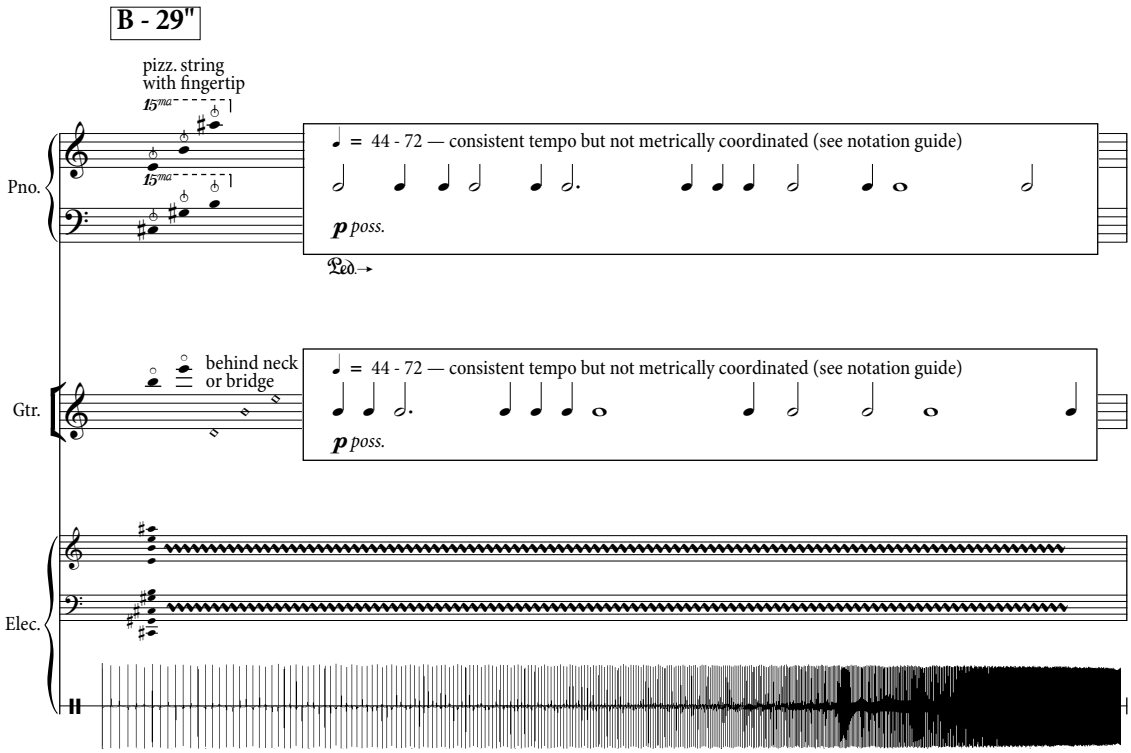

272
Z
Ob.
Sax.
Gtr.1
Gtr. 2
Dr.
Pno.
Vln.
Vla.
Vc.

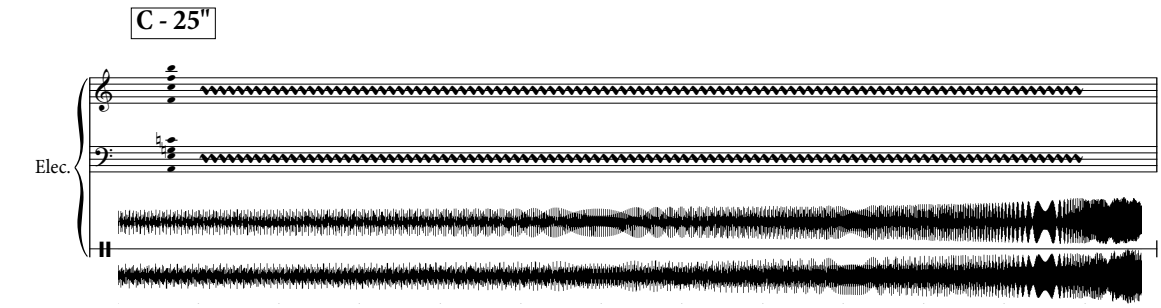

277
Ob.
Sax.
Gtr.1
Gtr. 2
Dr.
sfz
Pno.
Vln.
Vla.
Vc.

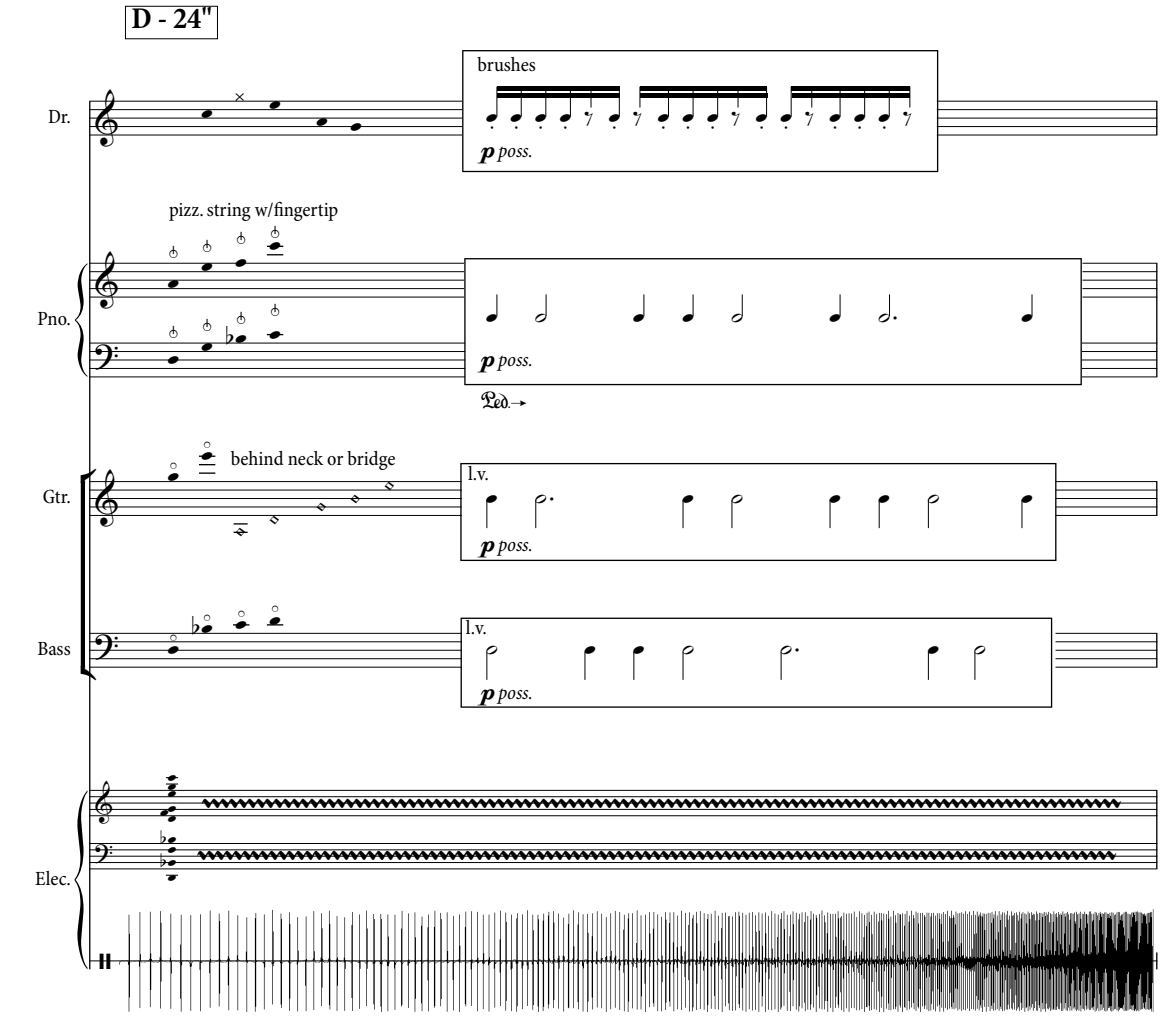

283
Ob.
Sax.
Gtr.1
Gtr. 2
Dr.
Pno.
Vln.
Vla.
Vc.

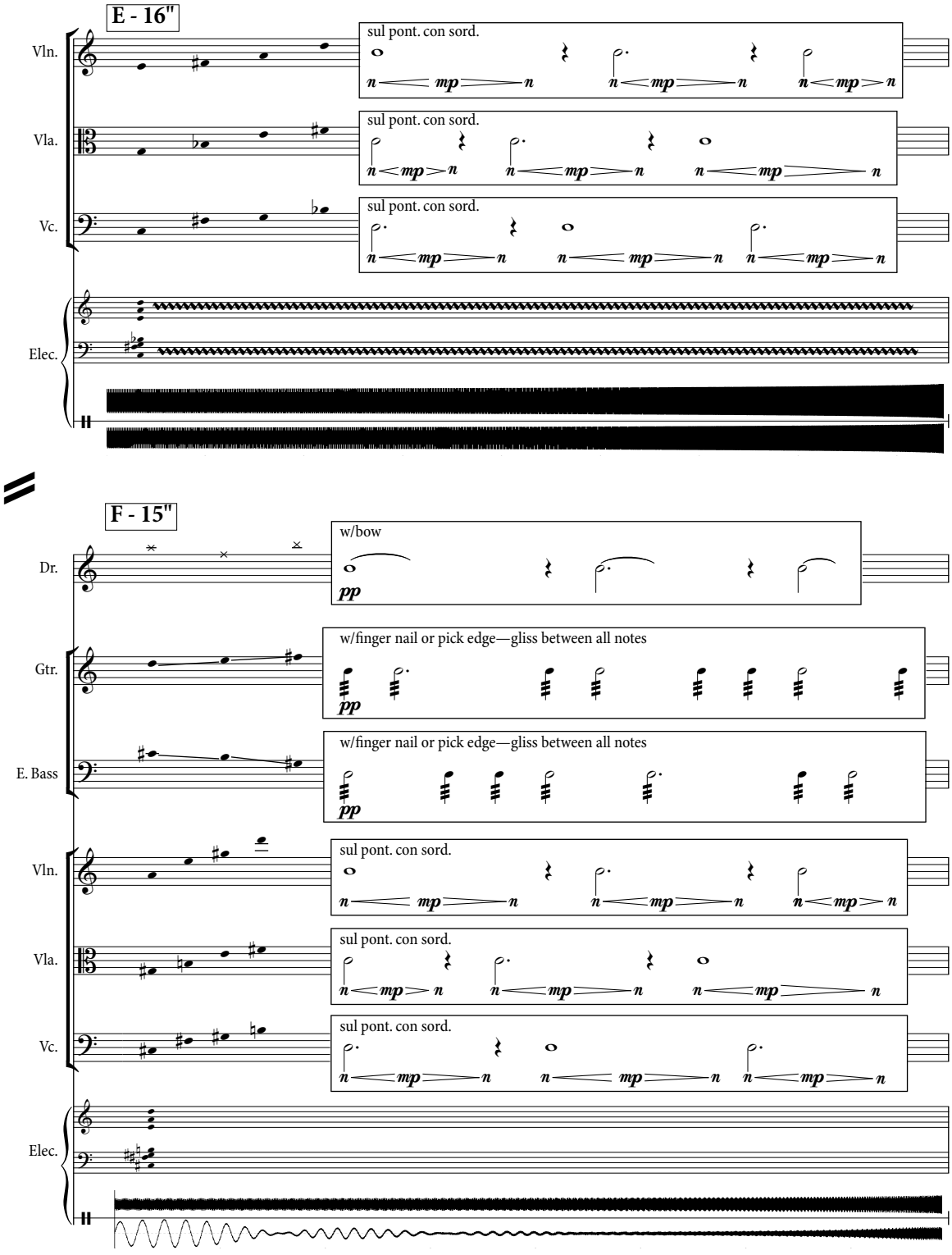

286
Ob.
Sax.
Gtr.1
Gtr. 2
Dr.
Pno.
Vln.
Vla.
Vc.
mp
molto
sffz
p
sfz

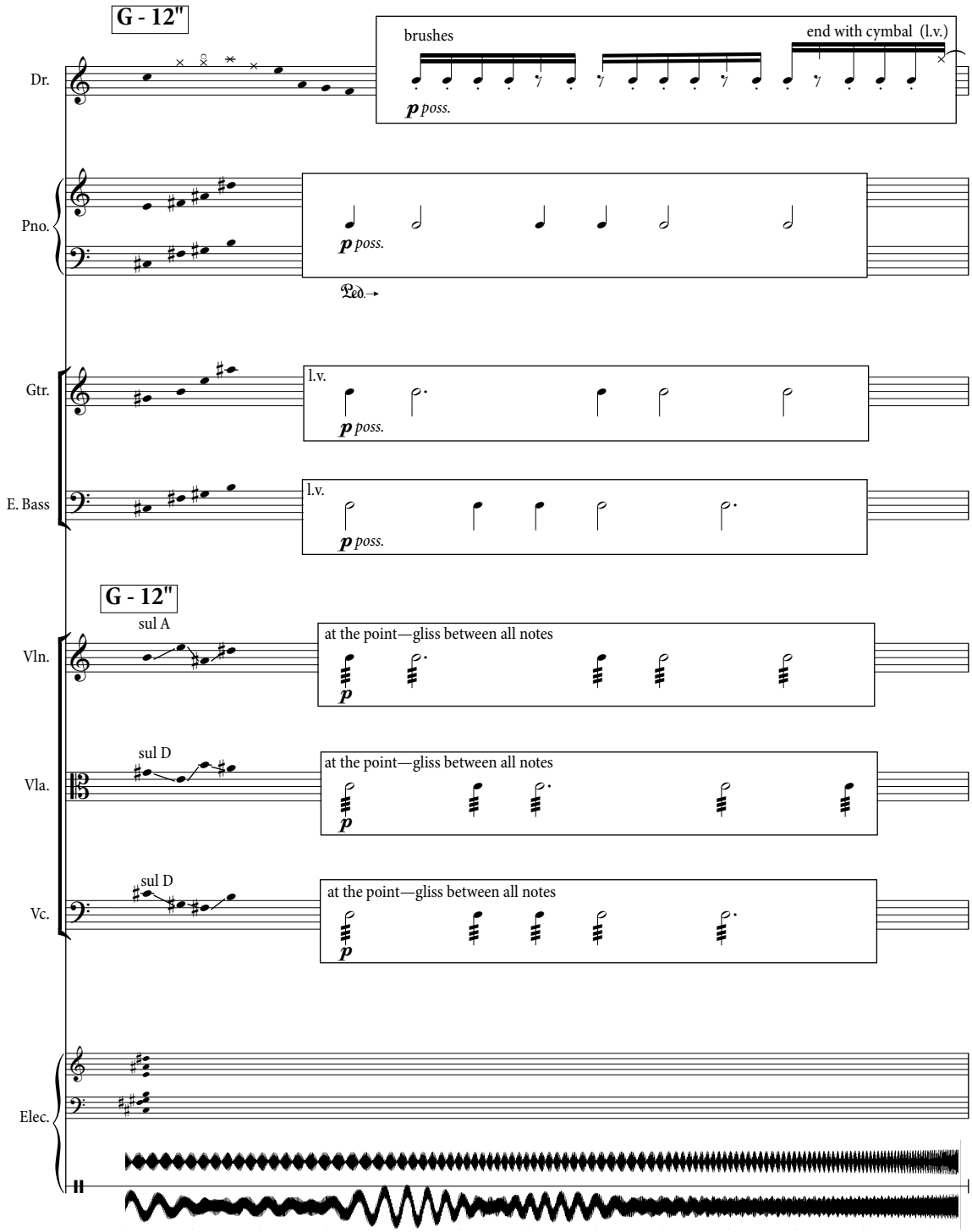
III. relative and noisy

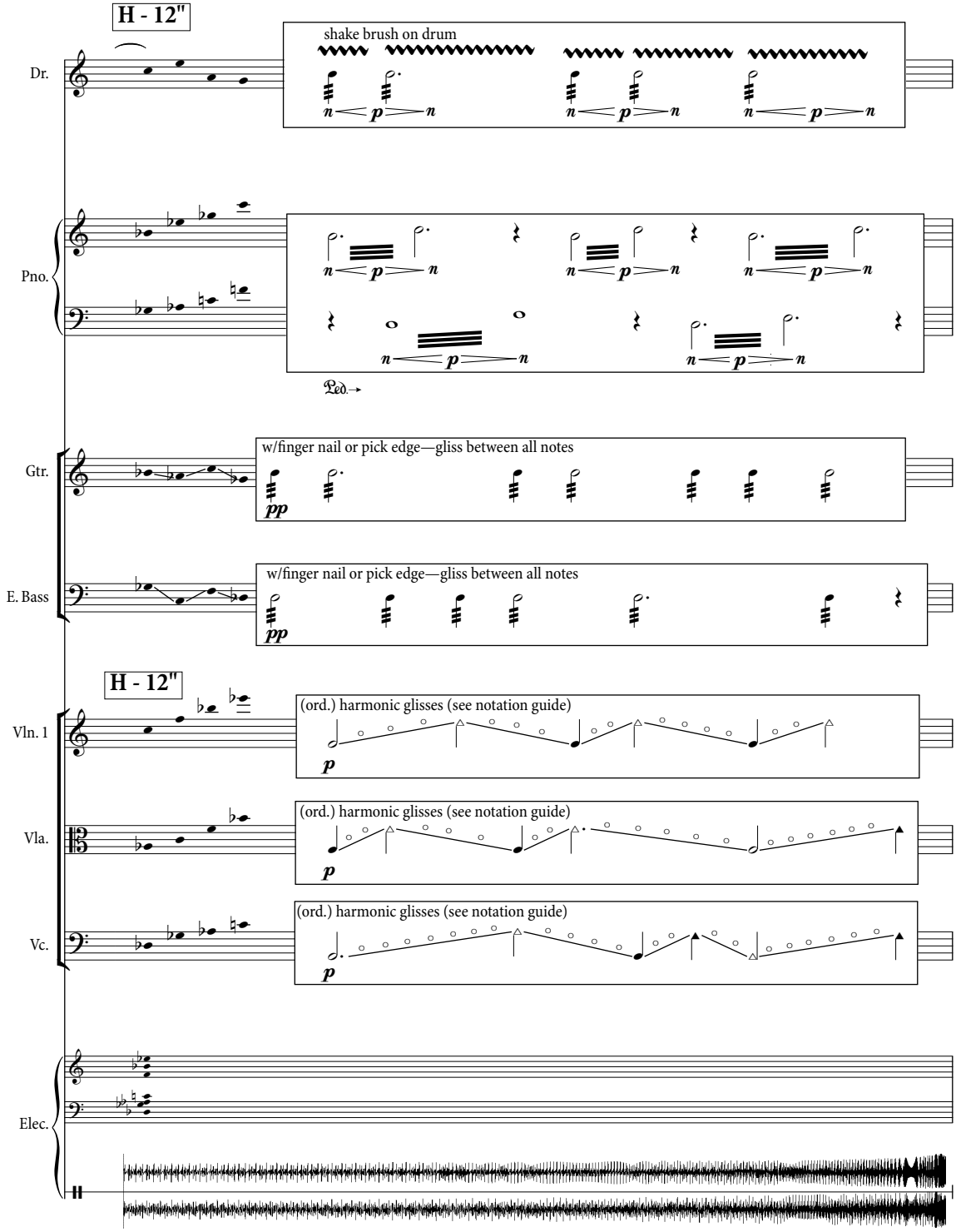


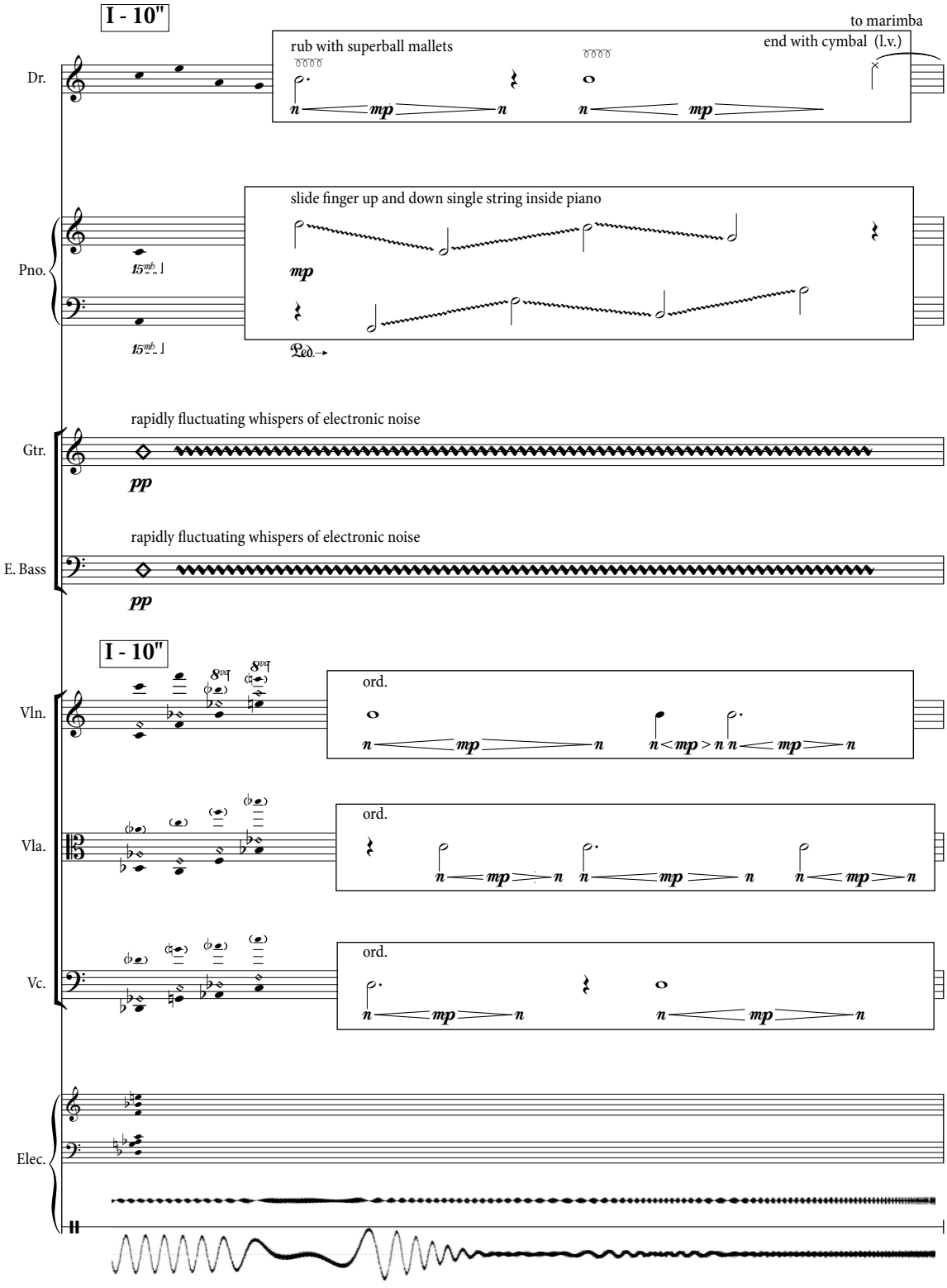

C - 25"
Elec.

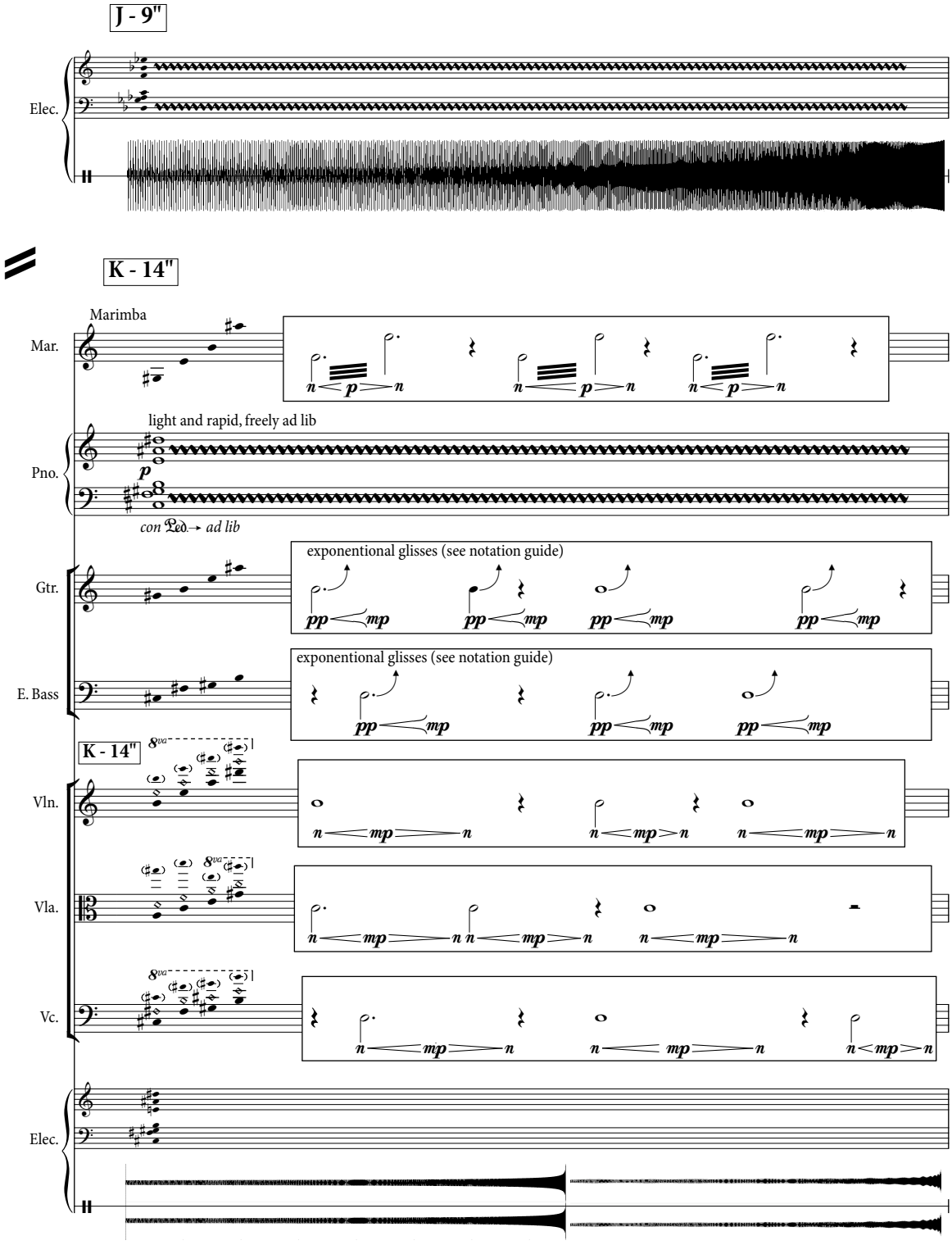

D - 24"
Dr.
brushes
p poss.
pizz. string w/fingertip
Pno.
p poss.
Ped.
Gtr.
behind neck or bridge
l.v.
p poss.
Bass
l.v.
p poss.
Elec.

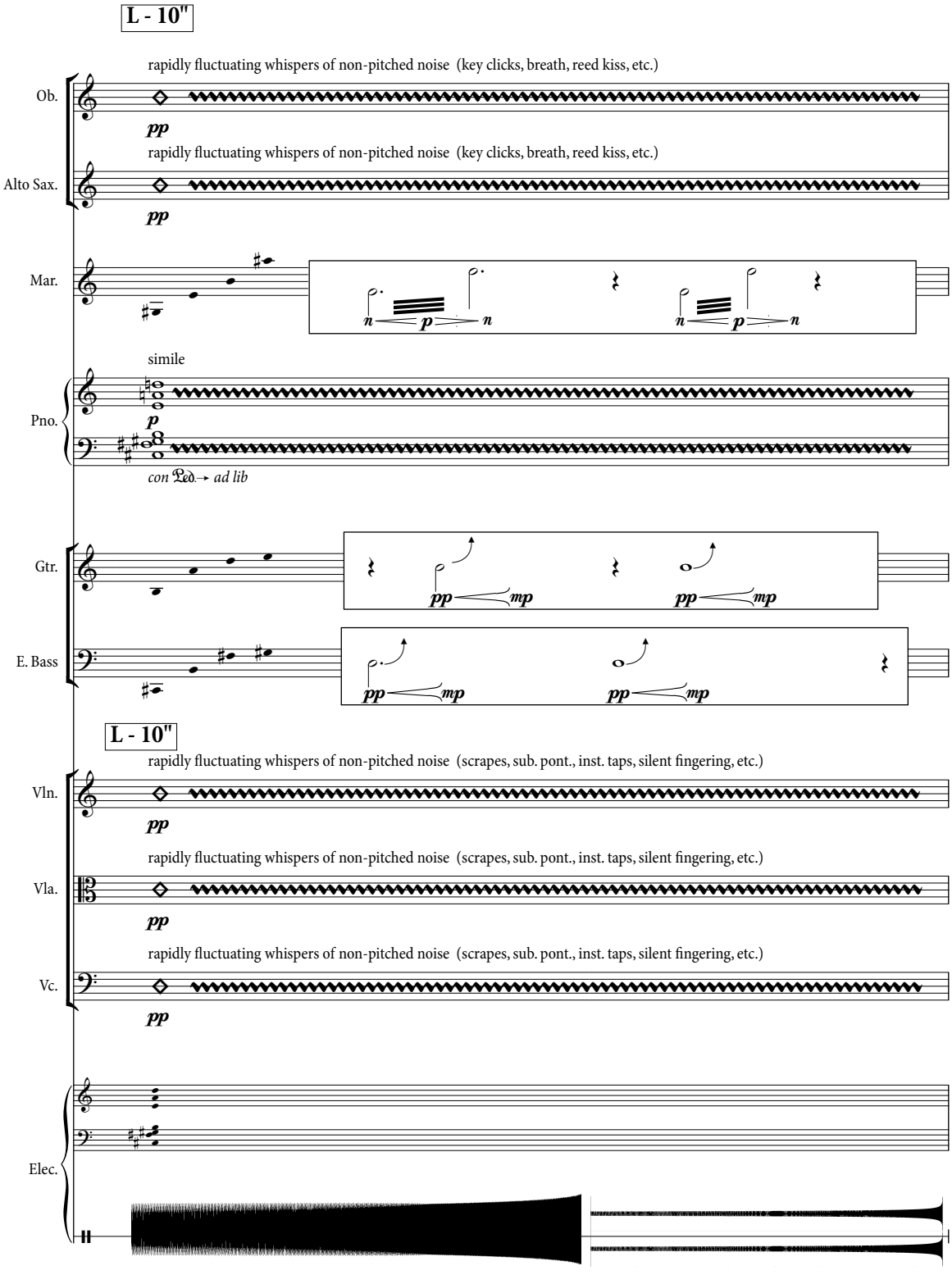

E - 16"
Vln.
sul pont. con sord.
Vla.
sul pont. con sord.
Vc.
sul pont. con sord.
Elec.
F - 15"
Dr.
w/bow
pp
Gtr.
w/finger nail or pick edge—gliss between all notes
pp
E. Bass
w/finger nail or pick edge—gliss between all notes
pp
Vln.
sul pont. con sord.
Vla.
sul pont. con sord.
Vc.
sul pont. con sord.
Elec.

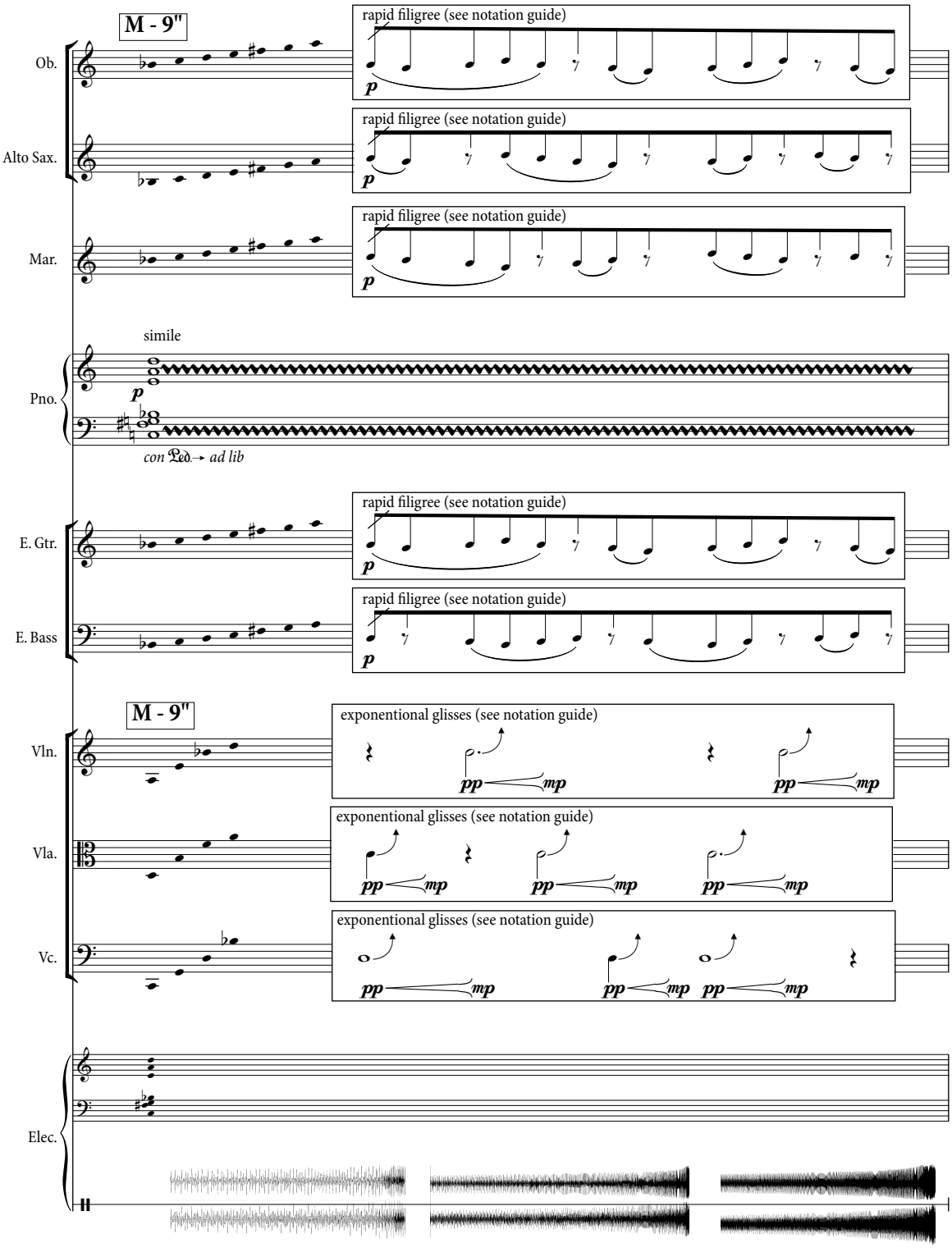

G - 12"
brushes
end with cymbal (l.v.)
Dr.
p poss.
Pno.
p poss.
Ped.
Gtr.
l.v.
p poss.
E. Bass
l.v.
p poss.
G - 12"
sul A
Vln.
at the point—gliss between all notes
p
sul D
Vla.
at the point—gliss between all notes
p
sul D
Vc.
at the point—gliss between all notes
p
Elec.

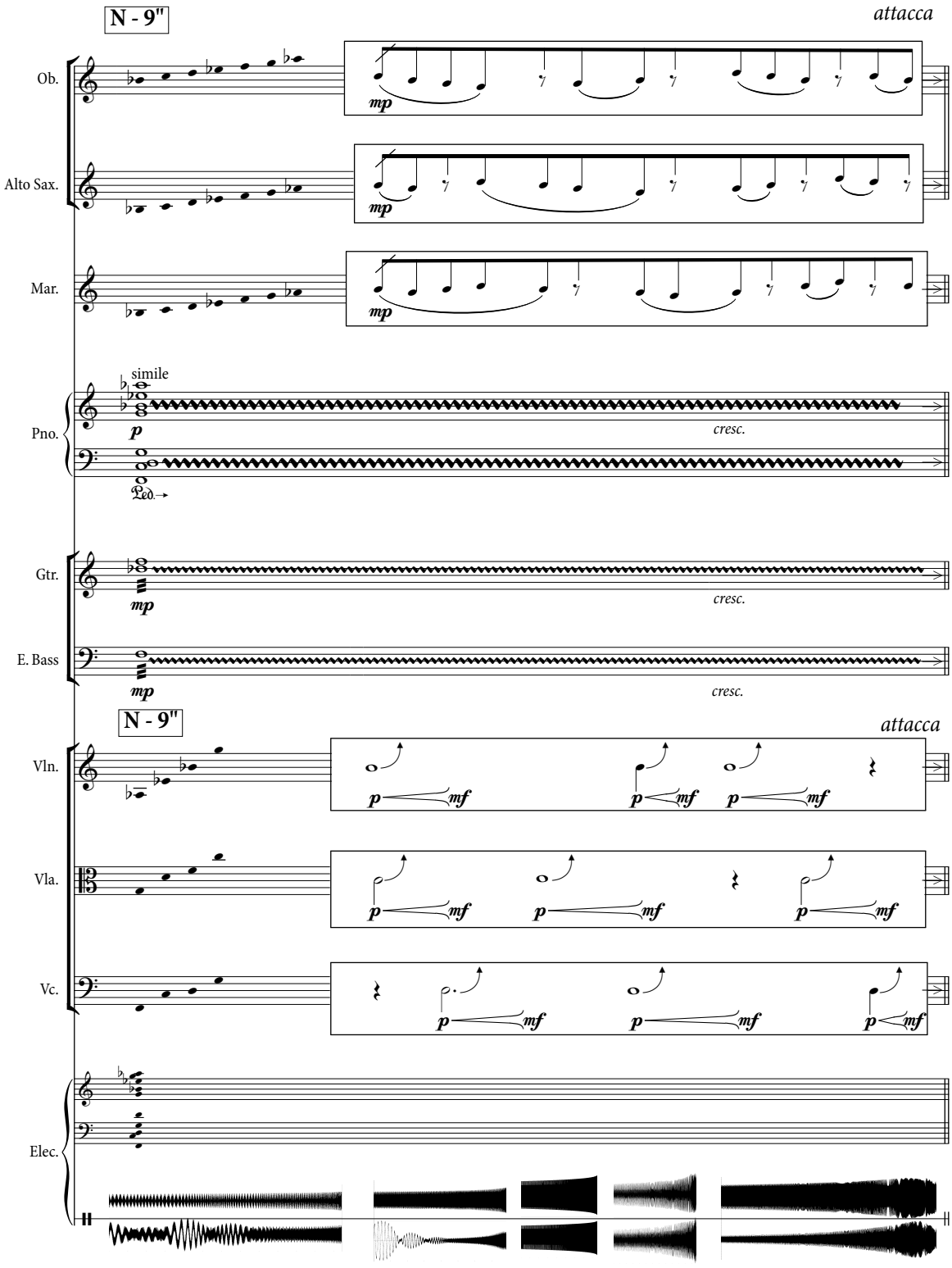

H - 12"
shake brush on drum
Dr.
Pno.
Ped.
w/finger nail or pick edge—gliss between all notes
Gtr.
w/finger nail or pick edge—gliss between all notes
E. Bass
H - 12"
(ord.) harmonic glisses (see notation guide)
Vln. 1
(ord.) harmonic glisses (see notation guide)
Vla.
(ord.) harmonic glisses (see notation guide)
Vc.
Elec.


I - 10"
to marimba
end with cymbal (l.v.)
rub with superball mallets
Dr.
slide finger up and down single string inside piano
Pno.
rapidly fluctuating whispers of electronic noise
Gtr.
rapidly fluctuating whispers of electronic noise
E. Bass
I - 10"
ord.
Vln.
ord.
Vla.
ord.
Vc.
Elec.


J - 9"
Elec.
K - 14"
Marimba
Mar.
light and rapid, freely ad lib
Pno.
con Ped. → ad lib
exponentional glisses (see notation guide)
Gtr.
exponentional glisses (see notation guide)
E. Bass
K - 14"
Vln.
Vla.
Vc.
Elec.

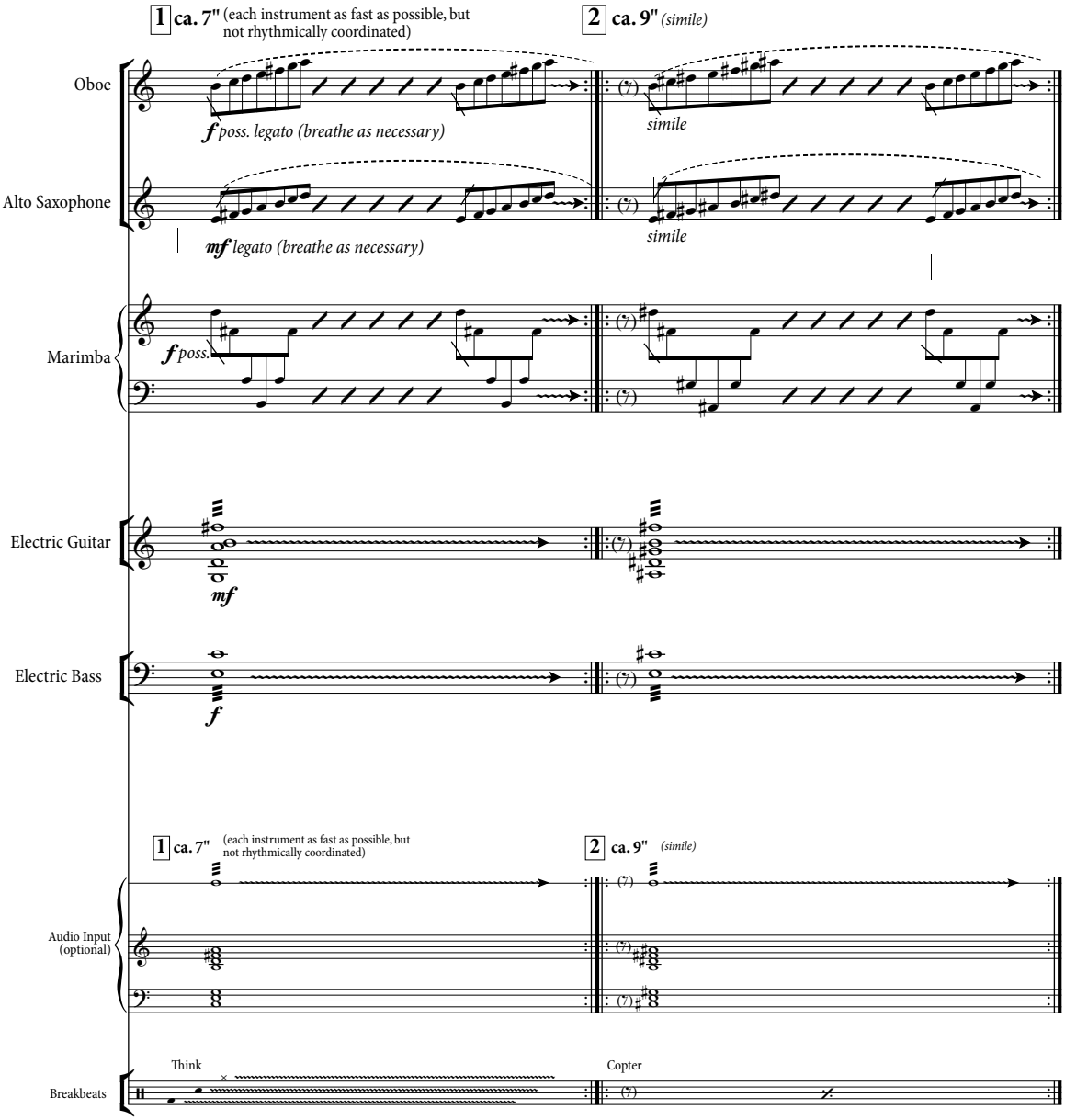

L - 10"
rapidly fluctuating whispers of non-pitched noise (key clicks, breath, reed kiss, etc.)
Ob.
pp
rapidly fluctuating whispers of non-pitched noise (key clicks, breath, reed kiss, etc.)
Alto Sax.
pp
Mar.
n p n
n p n
simile
Pno.
p
con Ped. ad lib
Gtr.
pp mp
pp mp
E. Bass
pp mp
pp mp
L - 10"
rapidly fluctuating whispers of non-pitched noise (scrapes, sub. pont., inst. taps, silent fingering, etc.)
Vln.
pp
rapidly fluctuating whispers of non-pitched noise (scrapes, sub. pont., inst. taps, silent fingering, etc.)
Vla.
pp
rapidly fluctuating whispers of non-pitched noise (scrapes, sub. pont., inst. taps, silent fingering, etc.)
Vc.
pp
Elec.


M - 9"
Ob.
rapid filigree (see notation guide)
p
Alto Sax.
rapid filigree (see notation guide)
p
Mar.
rapid filigree (see notation guide)
p
simile
Pno.
p
con Ped. → ad lib
E. Gtr.
rapid filigree (see notation guide)
p
E. Bass
rapid filigree (see notation guide)
p
M - 9"
Vln.
exponentional glisses (see notation guide)
pp mp
pp mp
Vla.
exponentional glisses (see notation guide)
pp mp
pp mp
pp mp
Vc.
exponentional glisses (see notation guide)
pp mp
pp mp
pp mp
Elec.

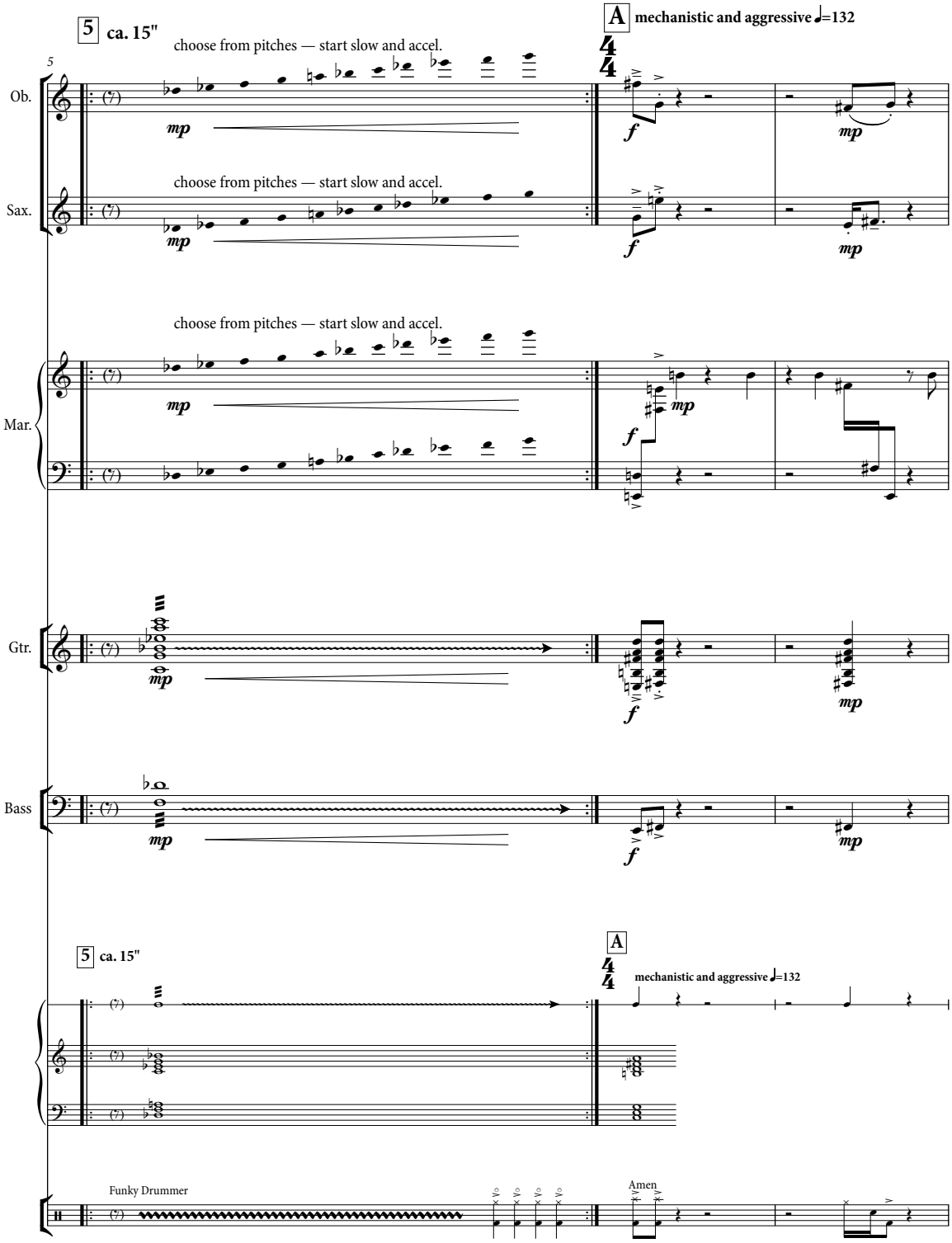

N - 9"
attacca
Ob.
Alto Sax.
Mar.
simile
Pno.
cresc.
Gtr.
cresc.
E. Bass
cresc.
N - 9"
attacca
Vln.
Vla.
Vc.
Elec.

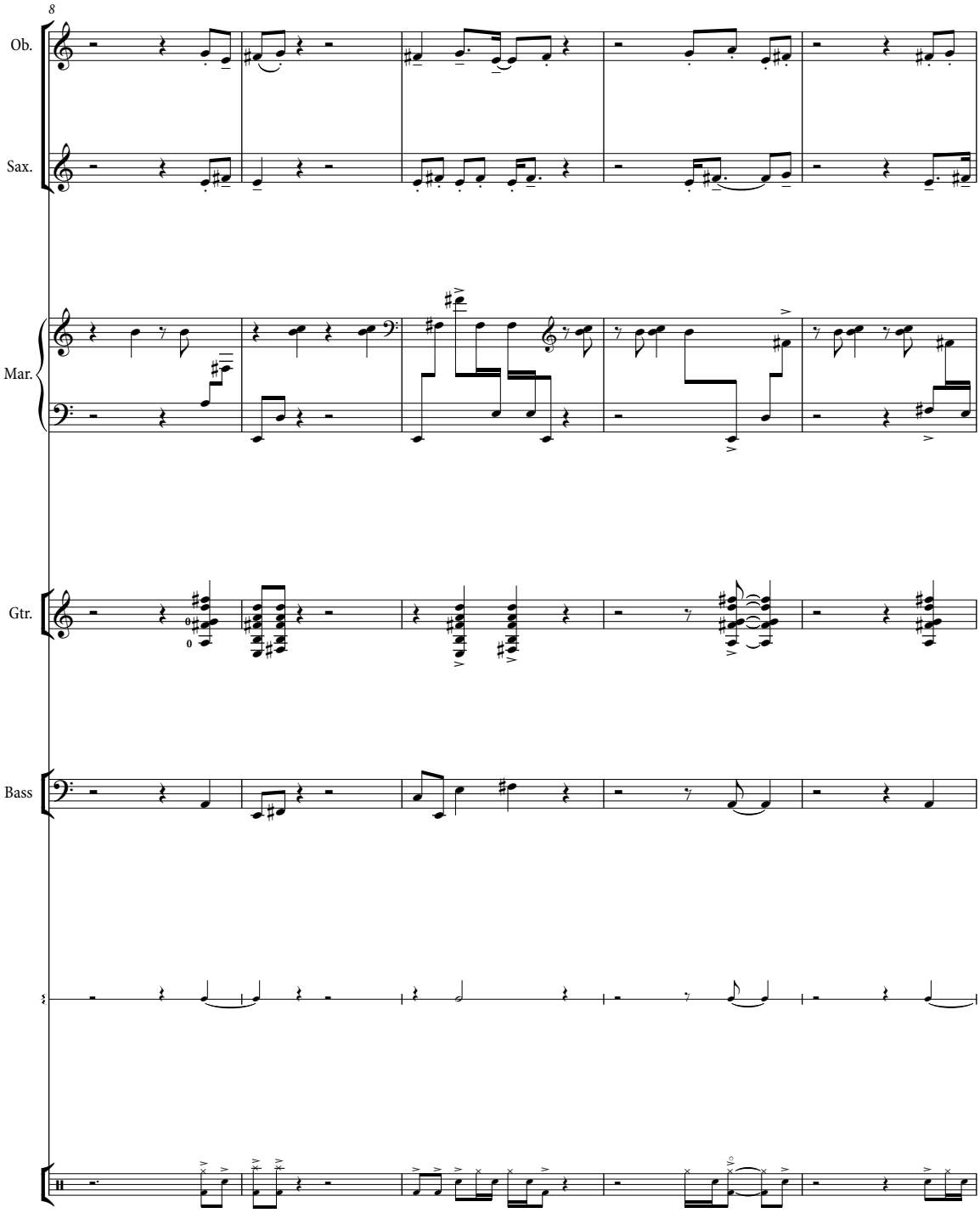
for pulsoptional
(and lena & roger)

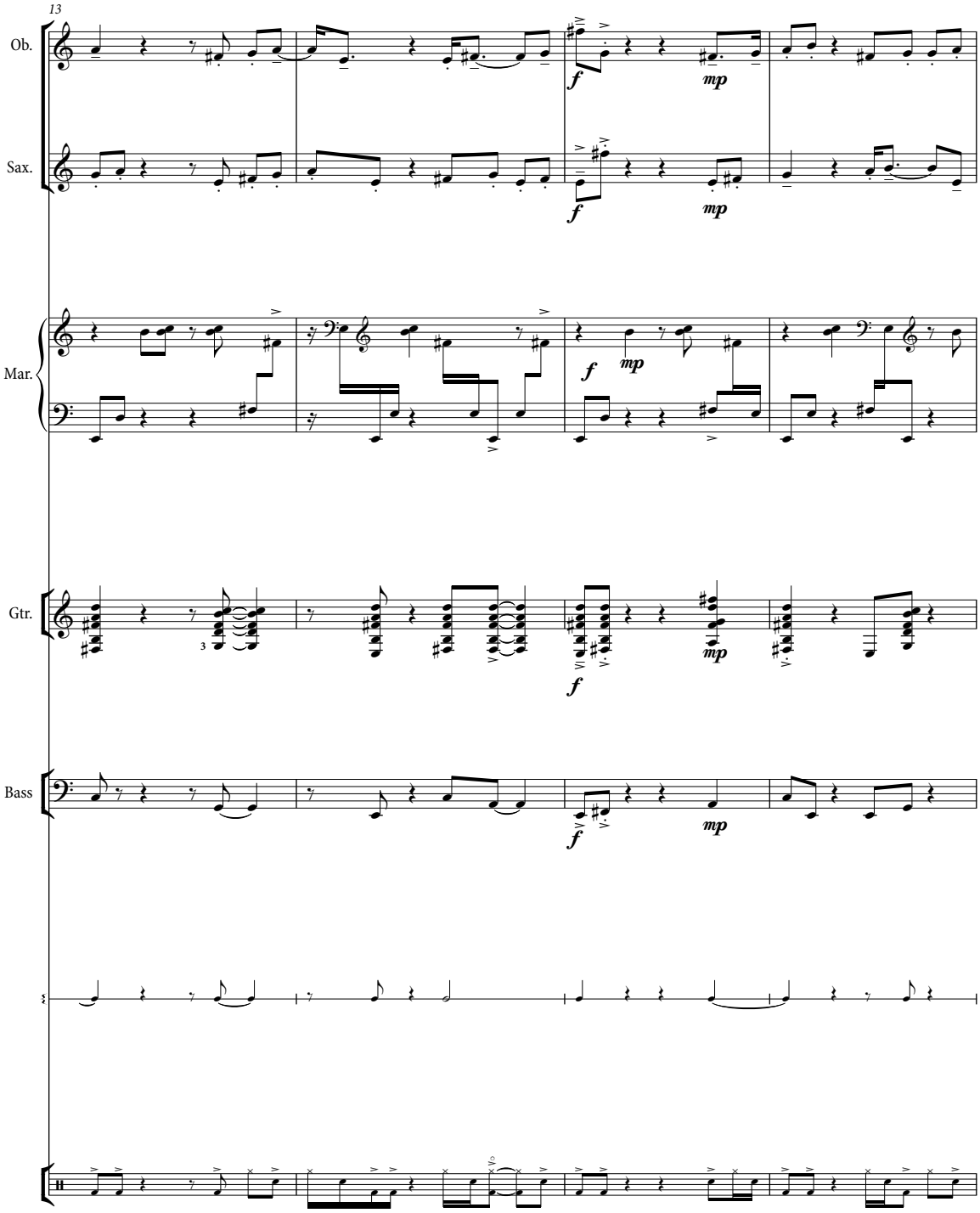
IV. second fastest land animal for short distances

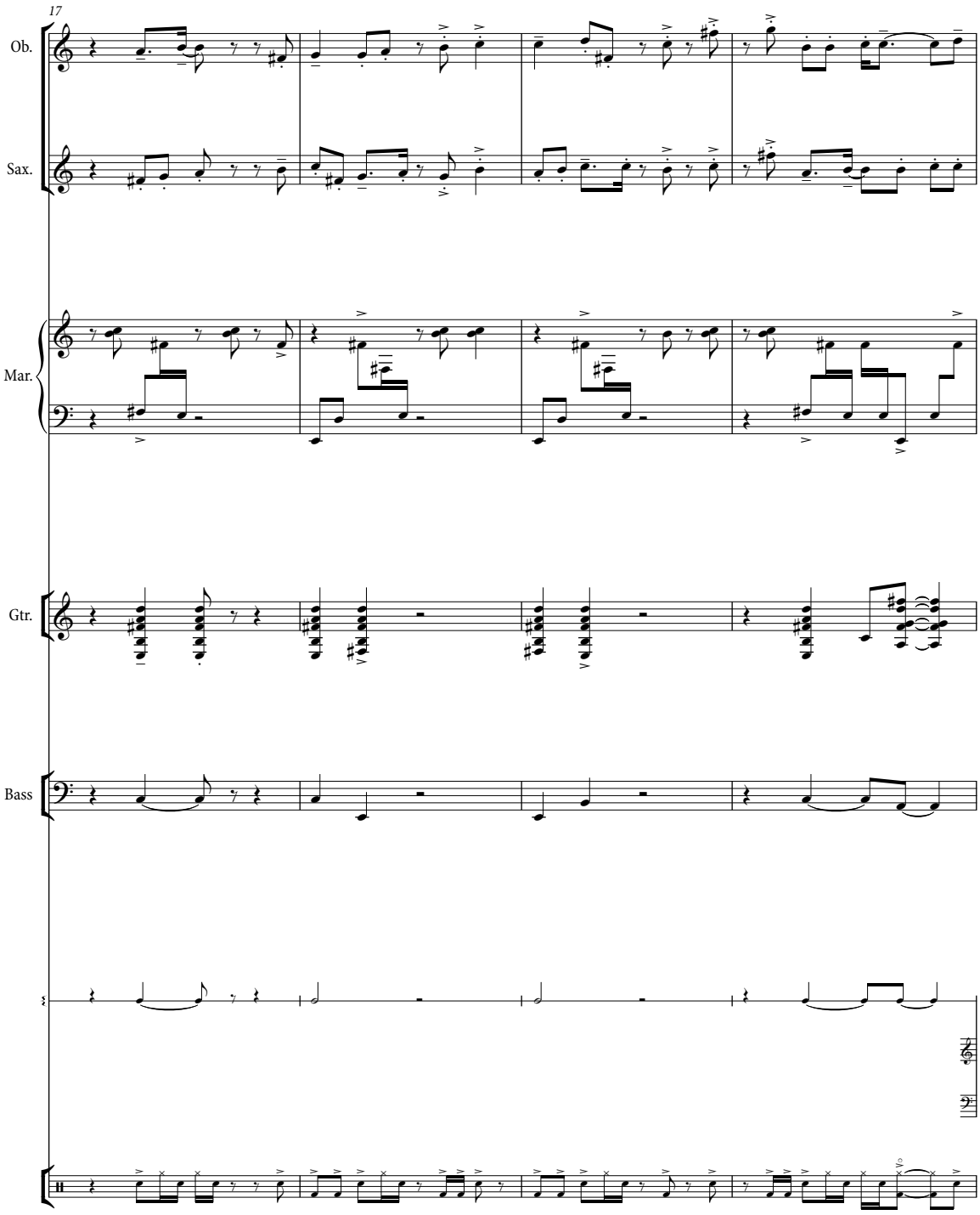


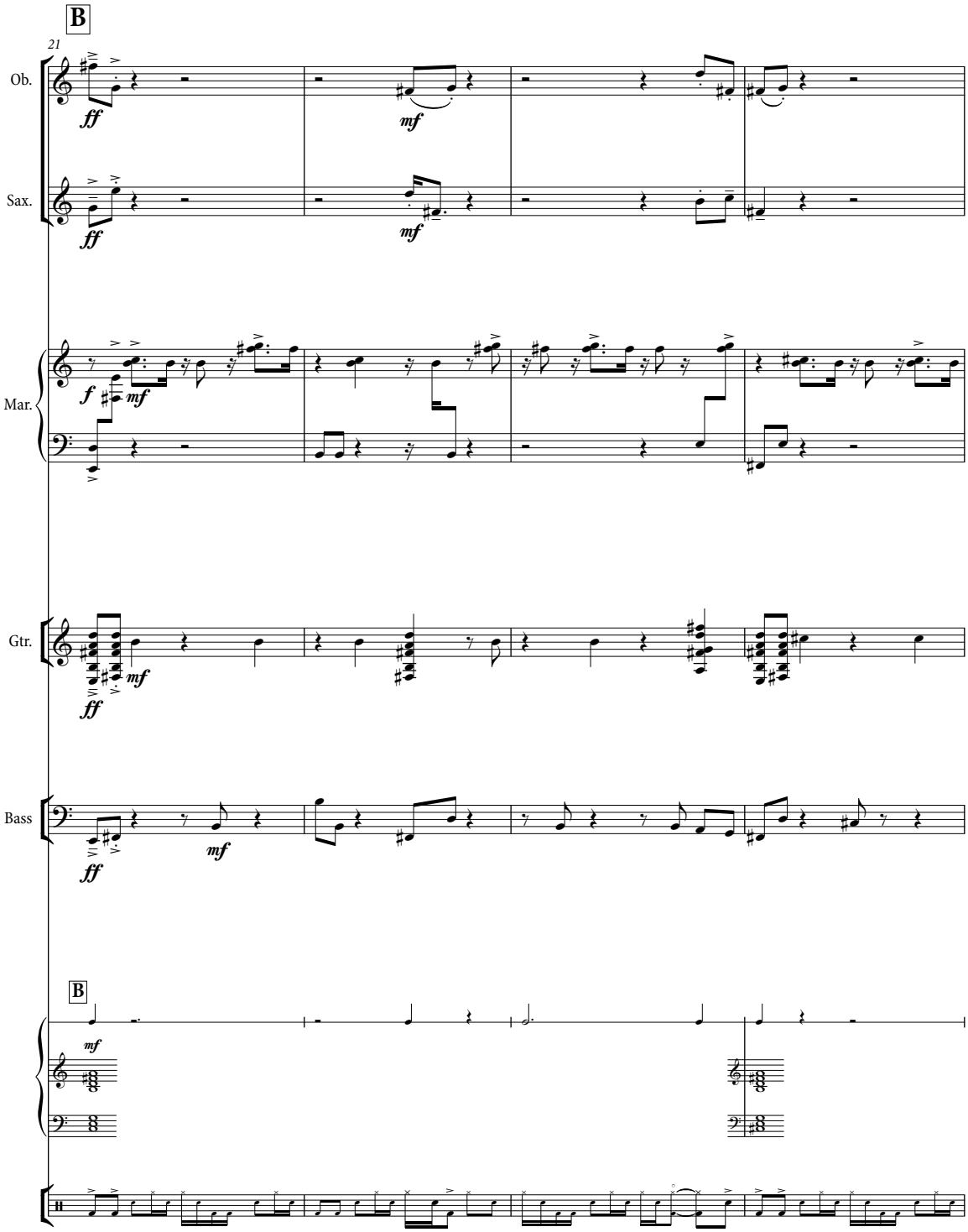
3 ca. 11"
4 ca. 11"
Ob.
Sax.
Mar.
Gtr.
sweep through chord during tremolo
simile
Bass
3 ca. 11"
4 ca. 11"
Hot Pants
Apache

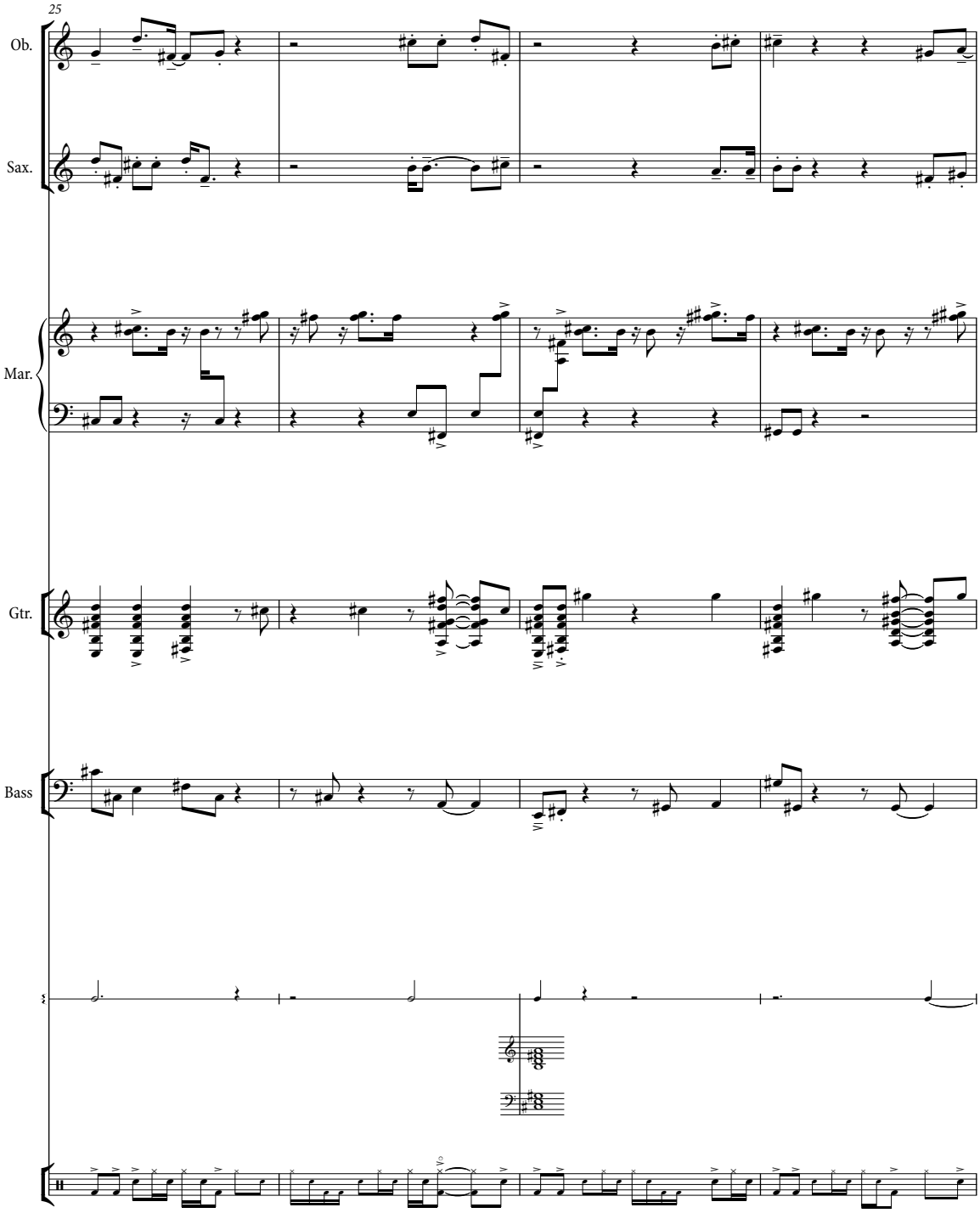

5
5 ca. 15"
choose from pitches — start slow and accel.
A
mechanistic and aggressive ♩=132
Ob.
Sax.
Mar.
Gtr.
Bass
mp
f
Funky Drummer
Amen

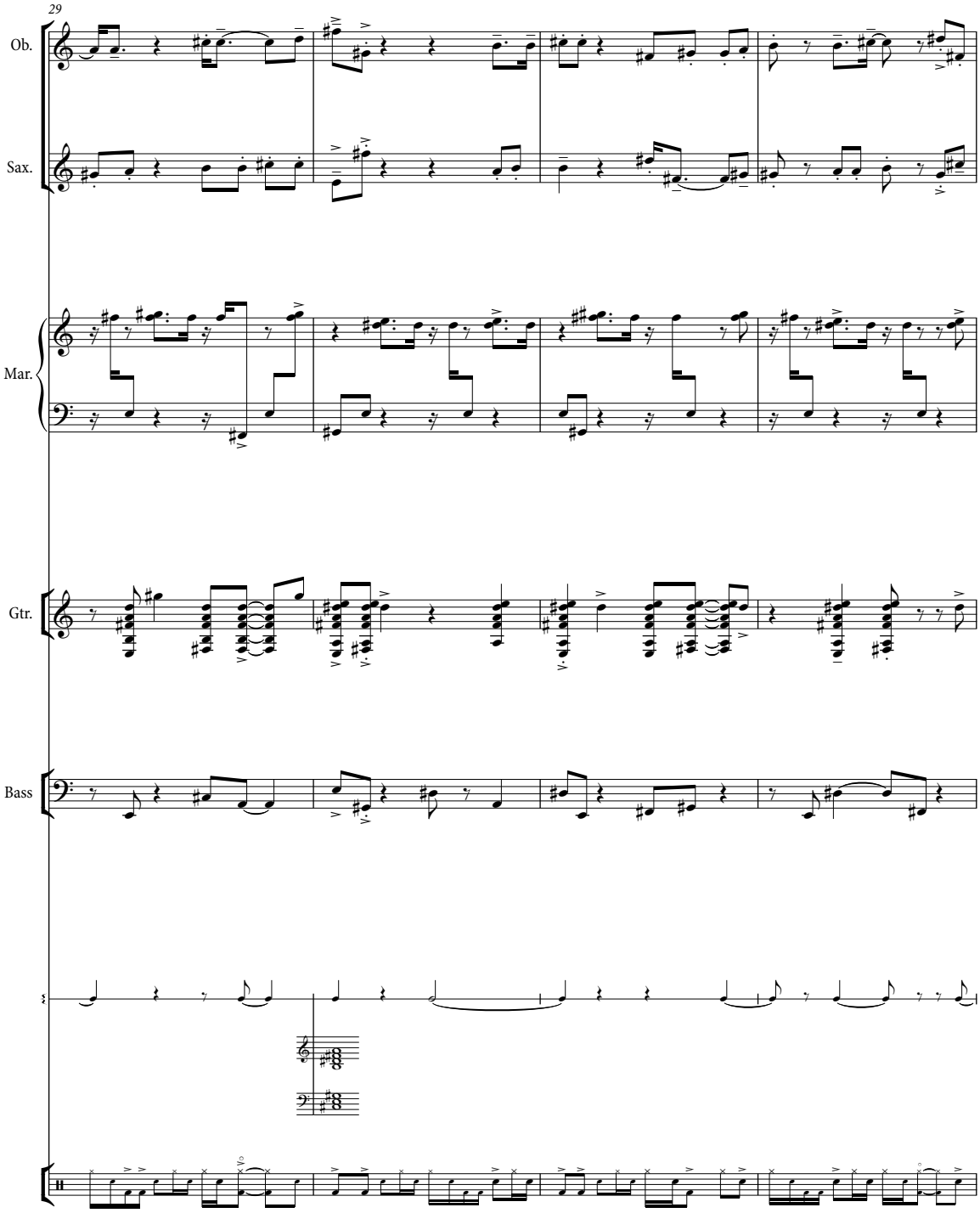

8
Ob.
Sax.
Mar.
Gtr.
Bass

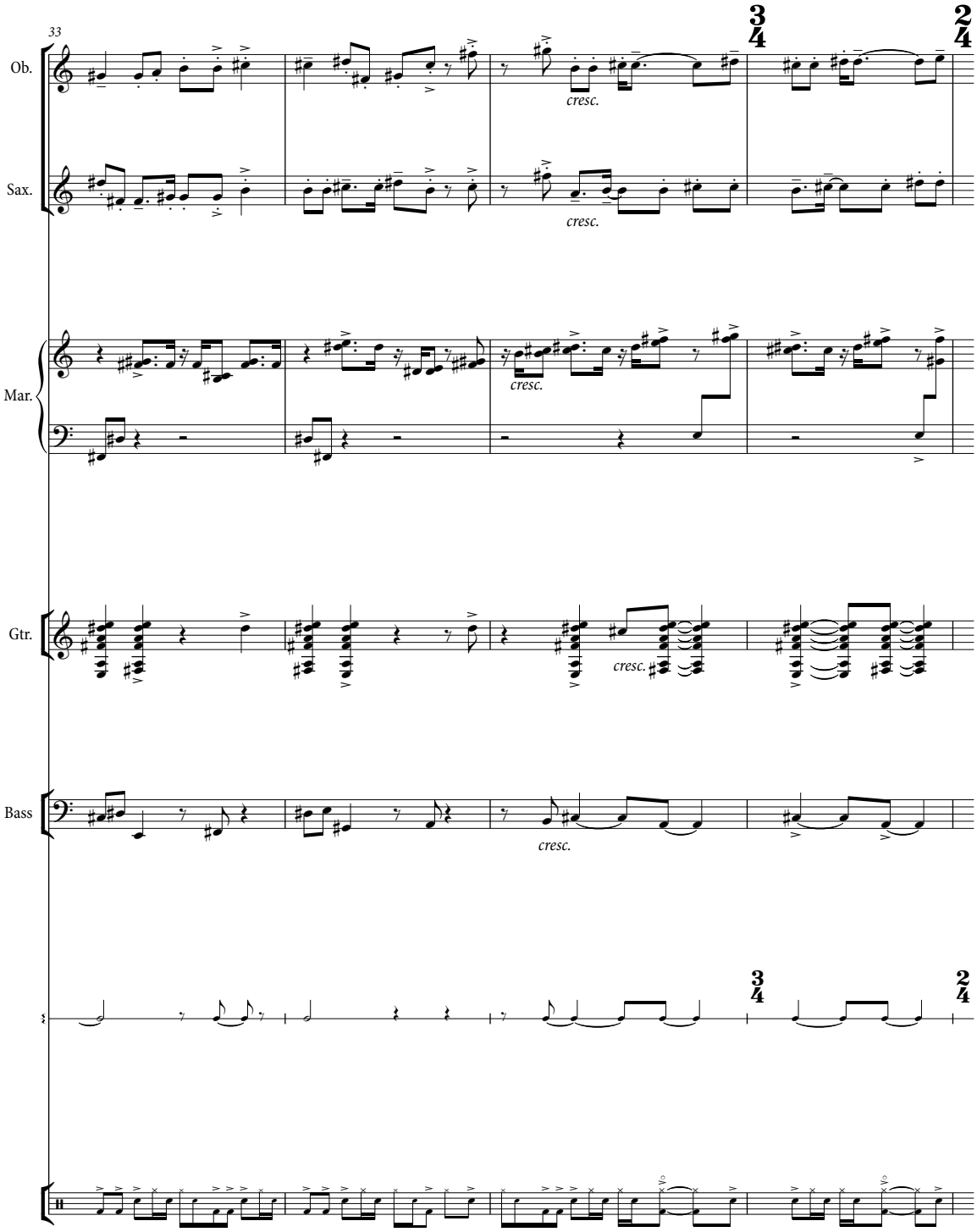

13
Ob.
Sax.
Mar.
Gtr.
Bass
f
mp

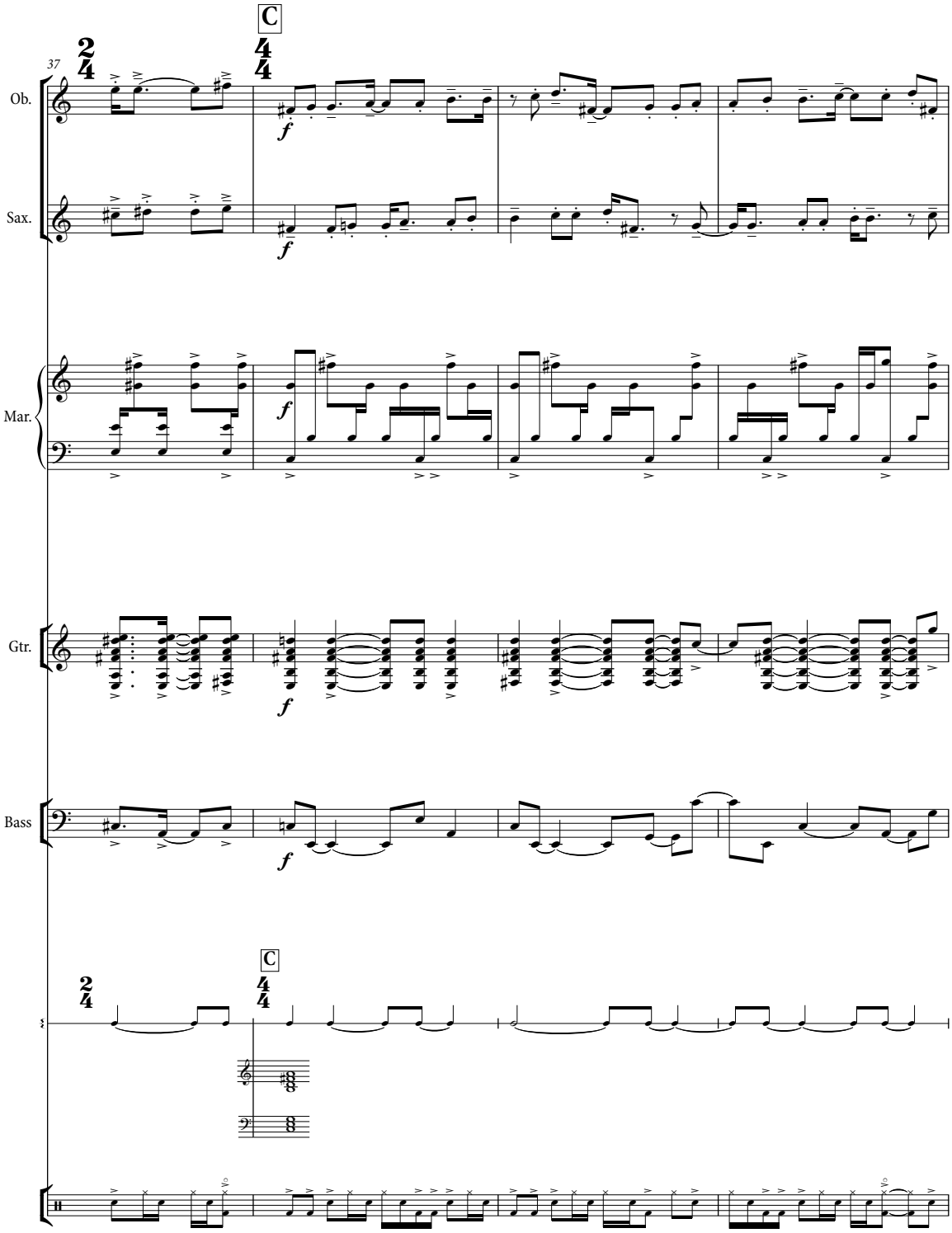

17
Ob.
Sax.
Mar.
Gtr.
Bass

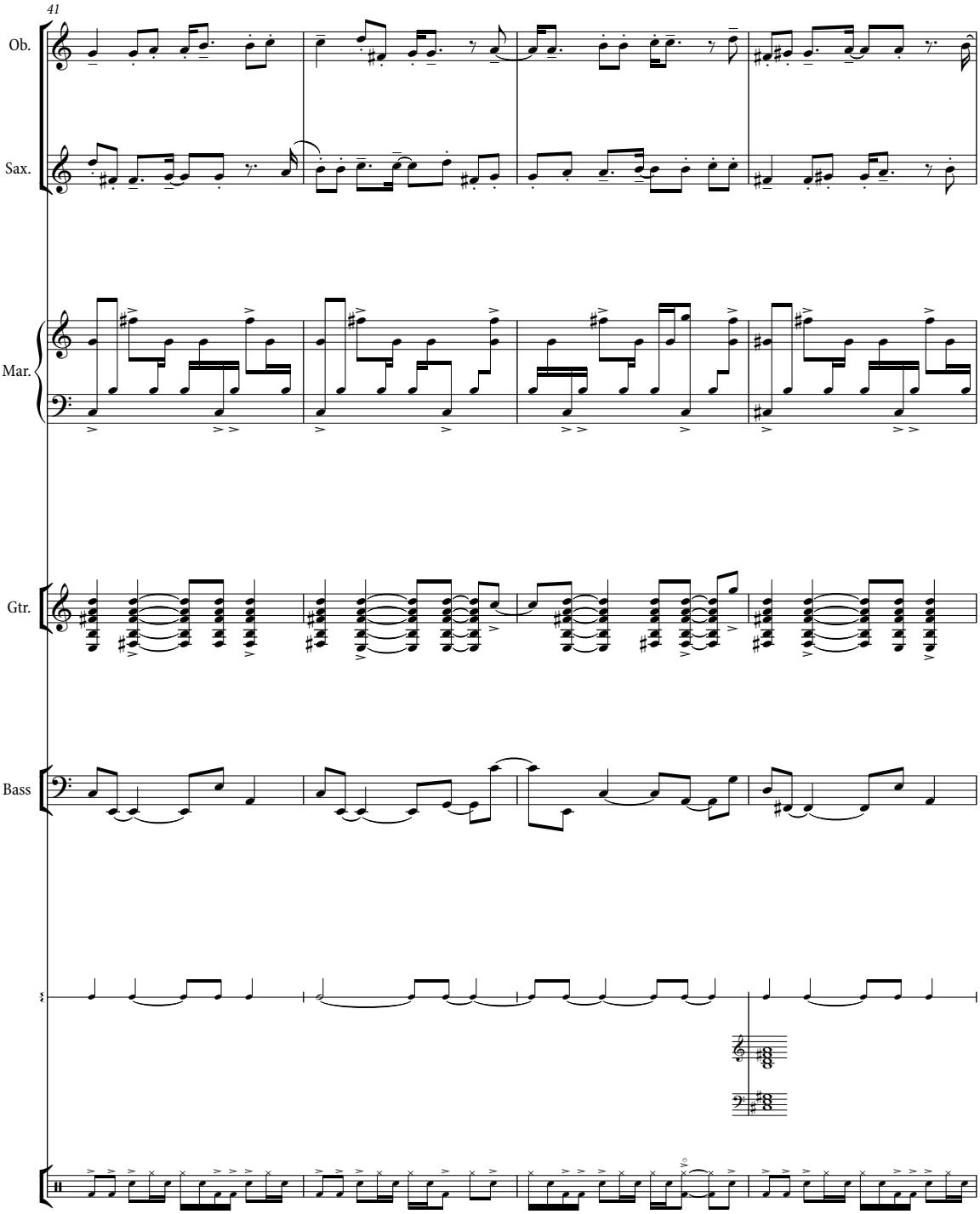

B
21
Ob.
Sax.
Mar.
Gtr.
Bass
B

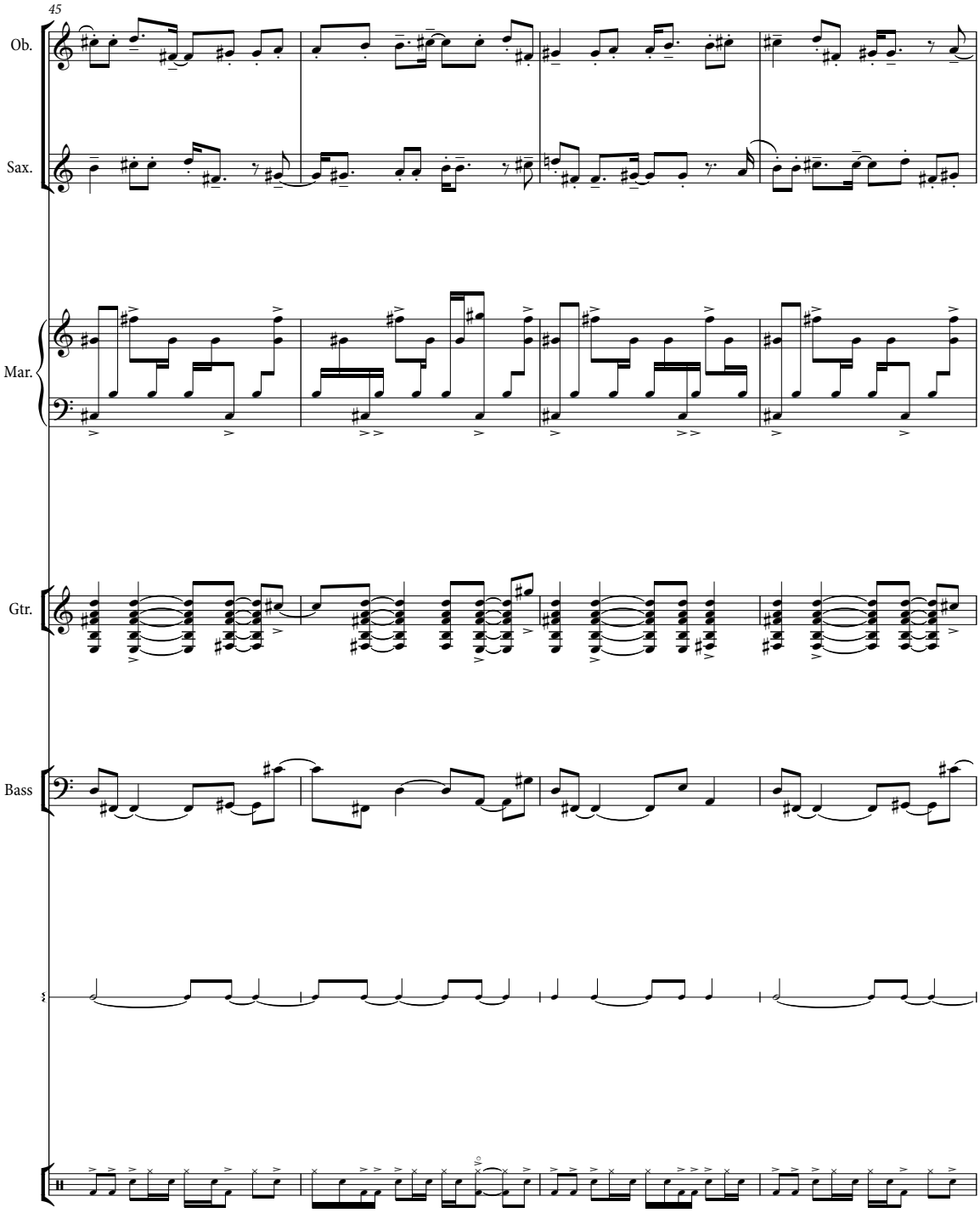

25
Ob.
Sax.
Mar.
Gtr.
Bass

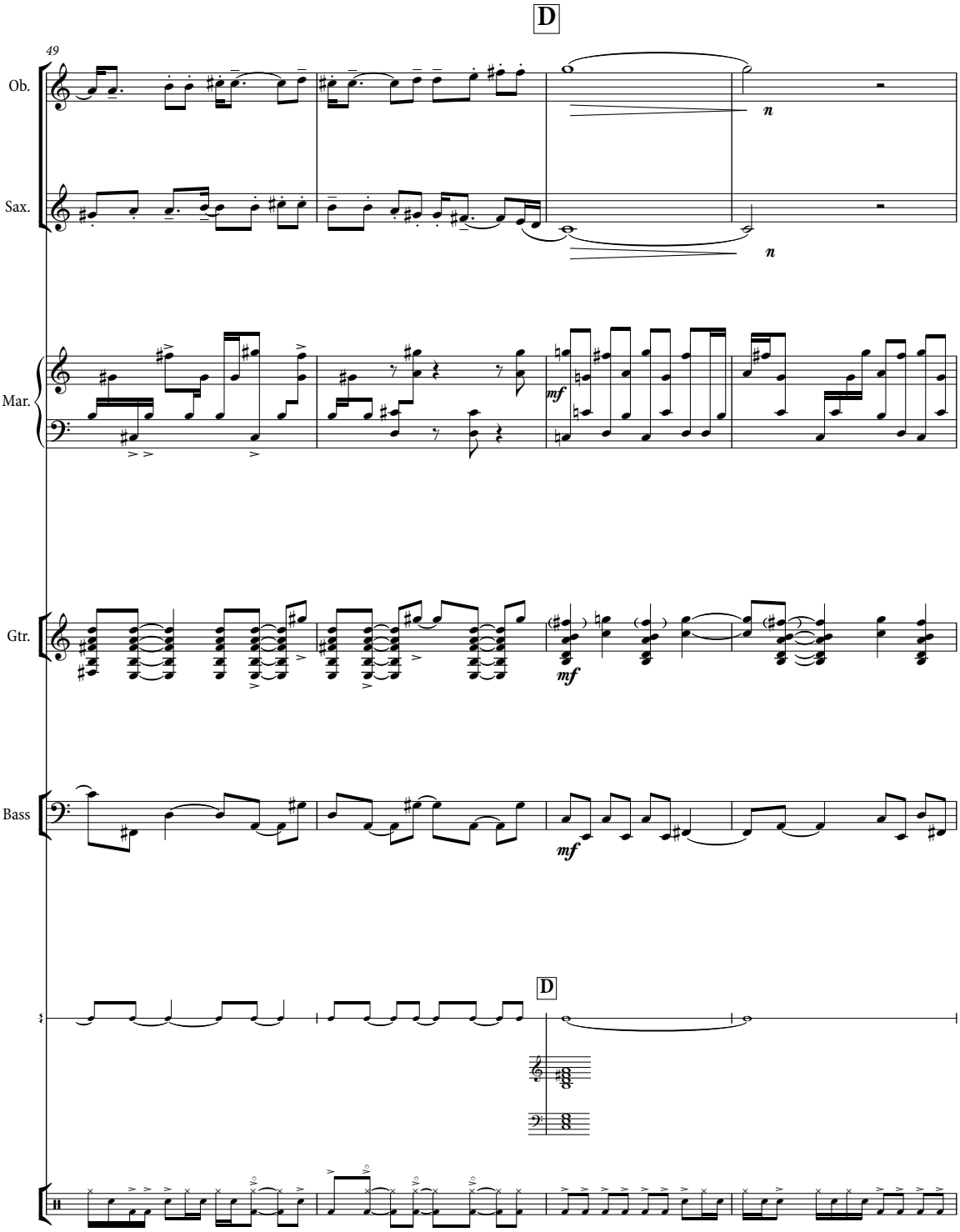

29
Ob.
Sax.
Mar.
Gtr.
Bass

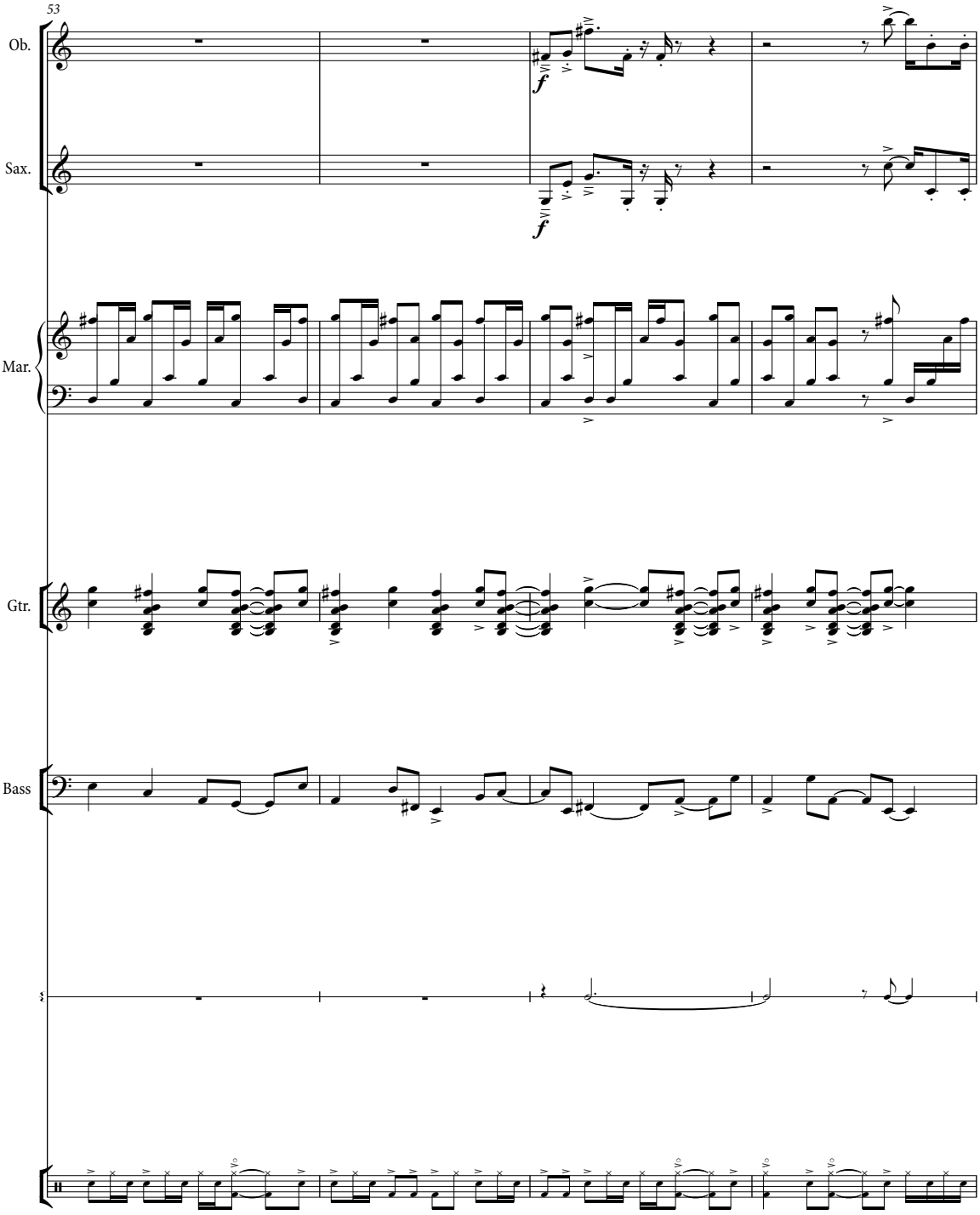

33
Ob.
Sax.
Mar.
Gtr.
Bass
cresc.
cresc.
cresc.
cresc.
cresc.
3
4
2
4
3
4
2
4

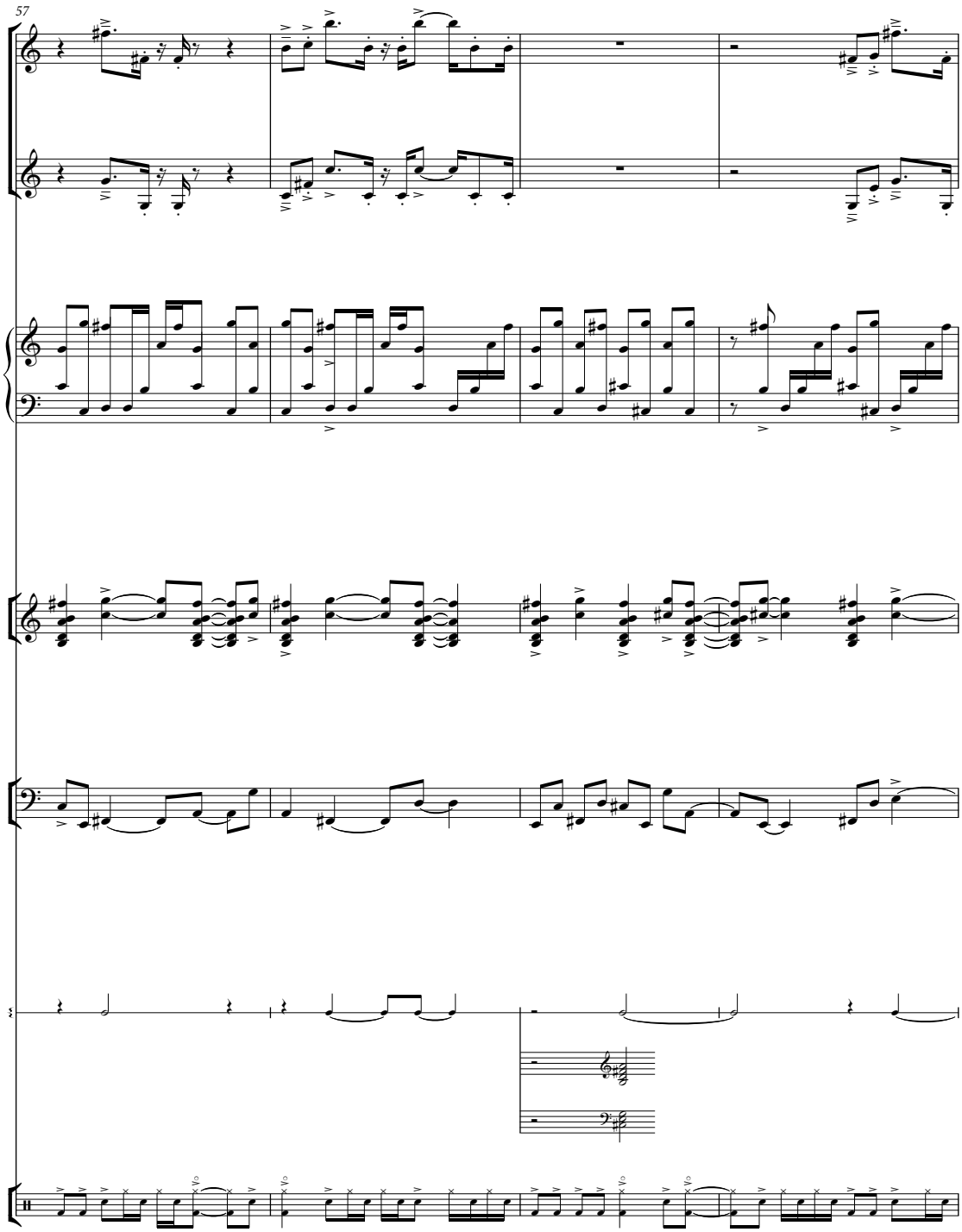

37
C
Ob.
Sax.
Mar.
Gtr.
Bass
f

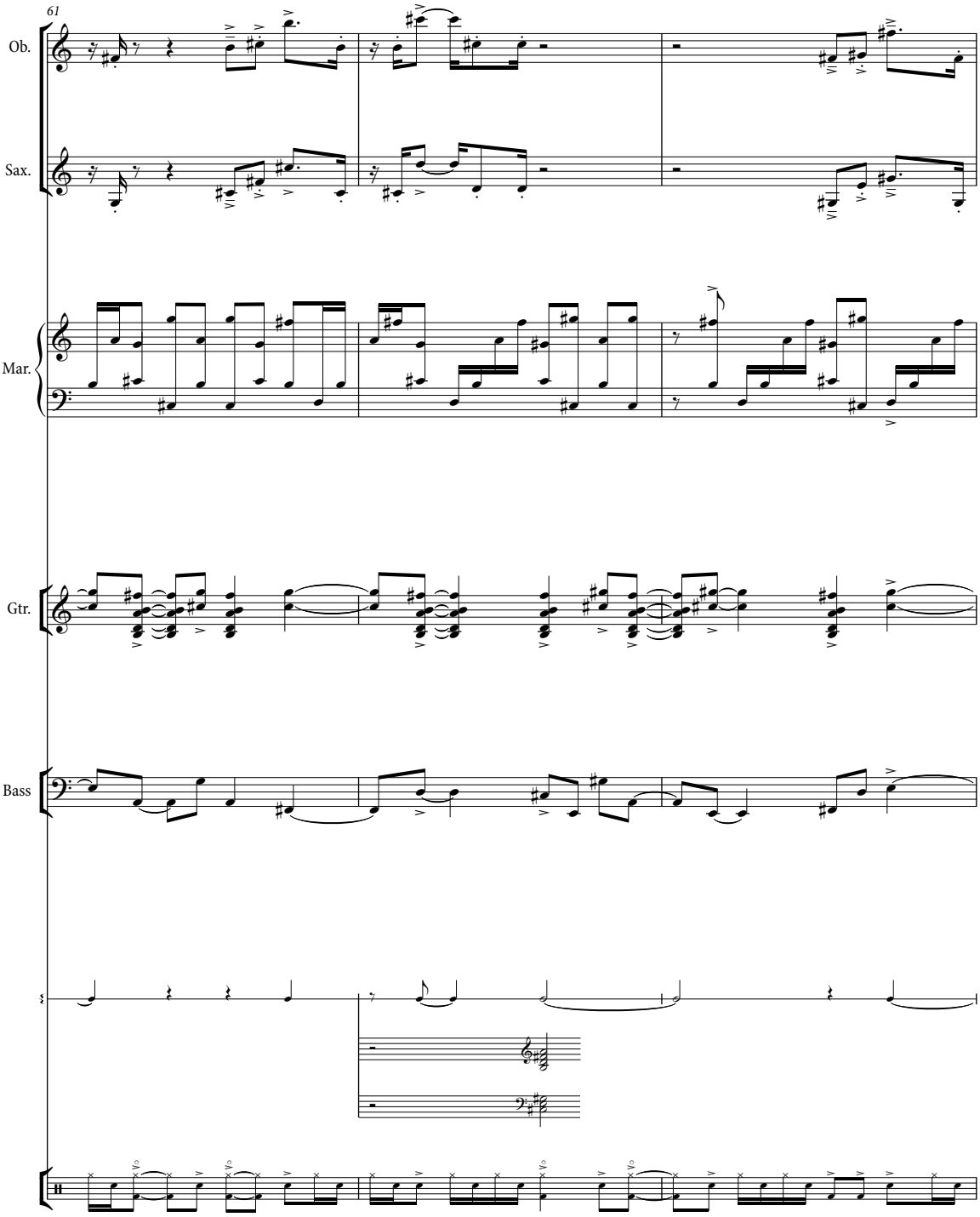

41
Ob.
Sax.
Mar.
Gtr.
Bass

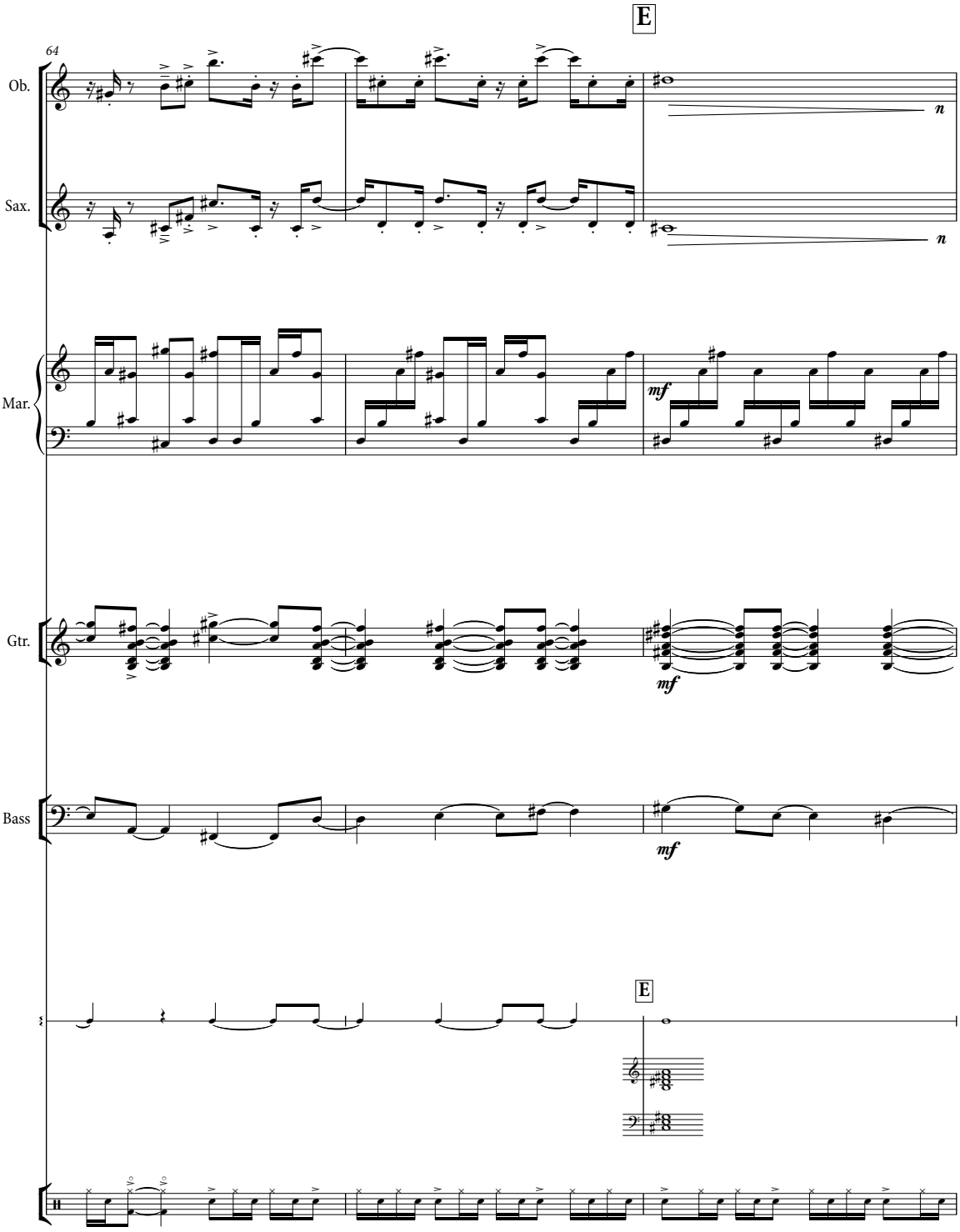

45
Ob.
Sax.
Mar.
Gtr.
Bass

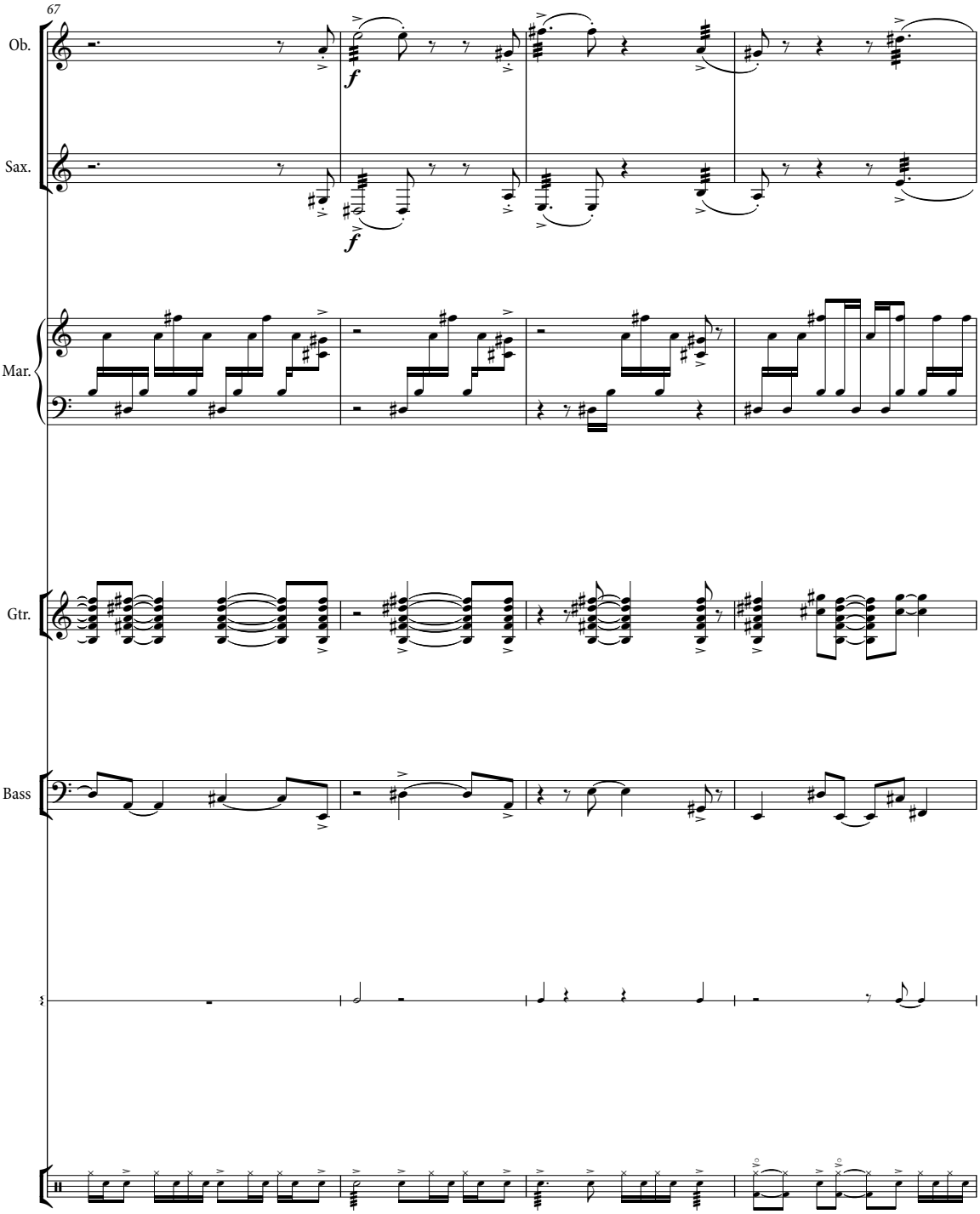

D
49
Ob.
Sax.
Mar.
Gtr.
Bass
mf
n
D


53
Ob.
Sax.
Mar.
Gtr.
Bass

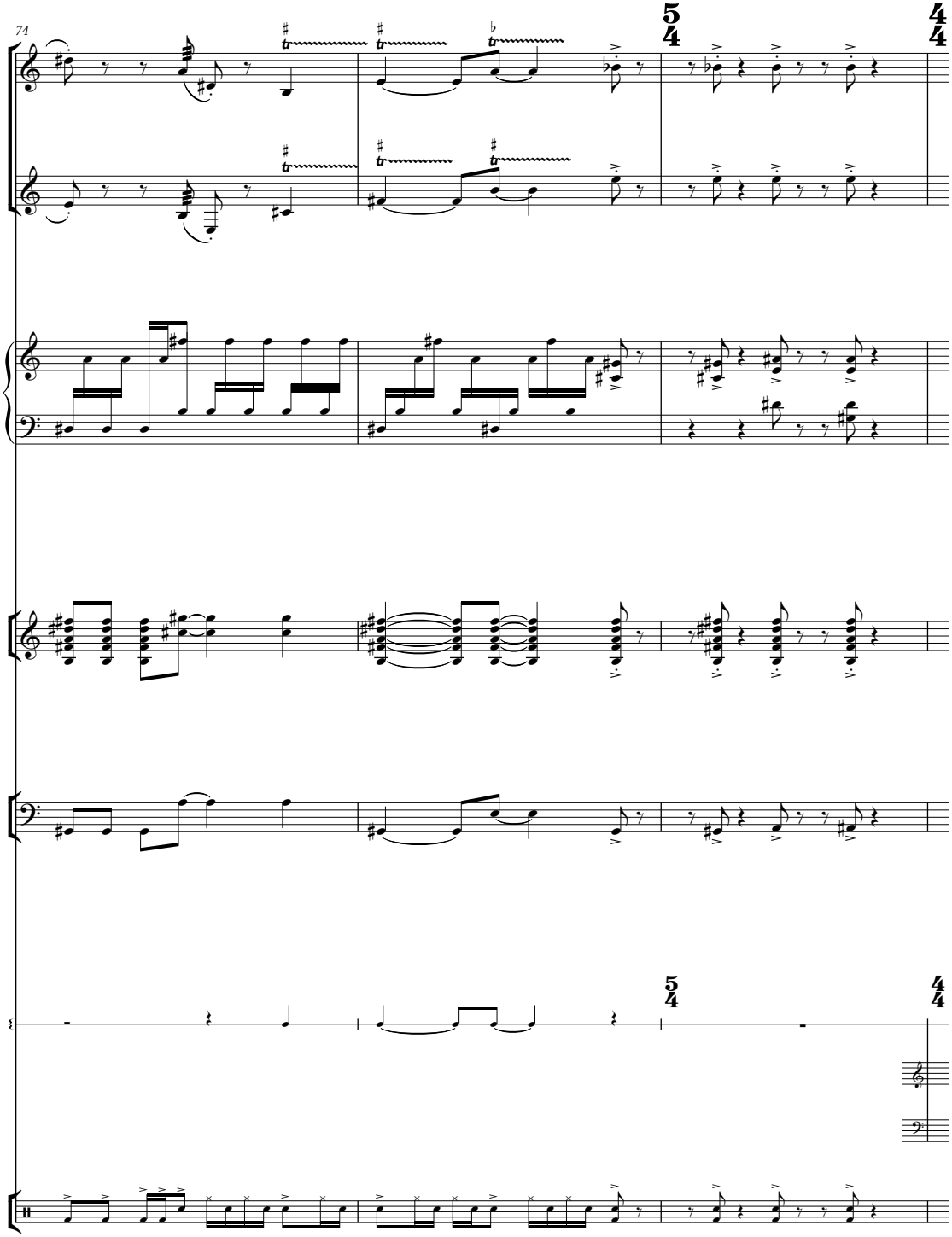

57
Ob.
Sax.
Mar.
Gtr.
Bass

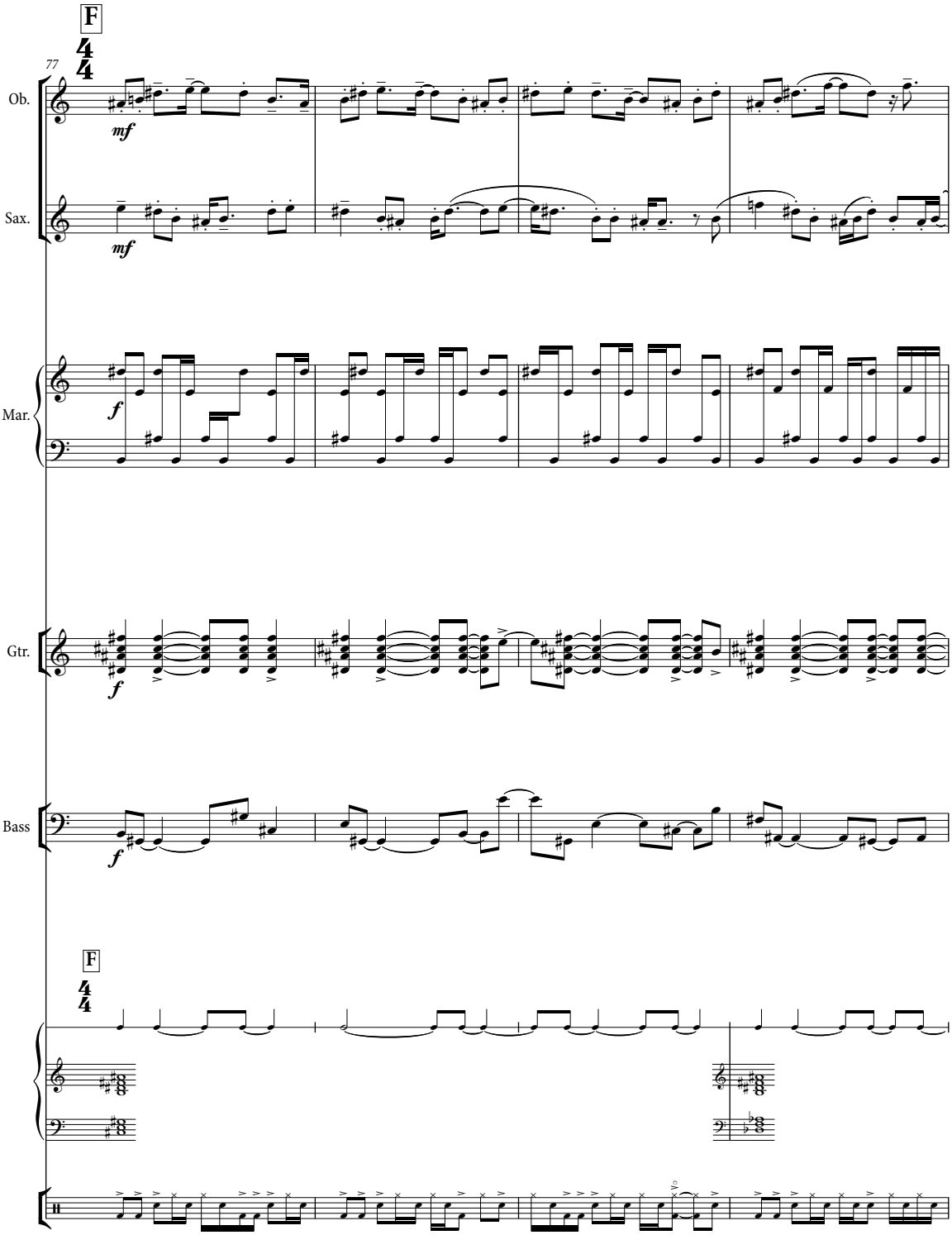

61
Ob.
Sax.
Mar.
Gtr.
Bass

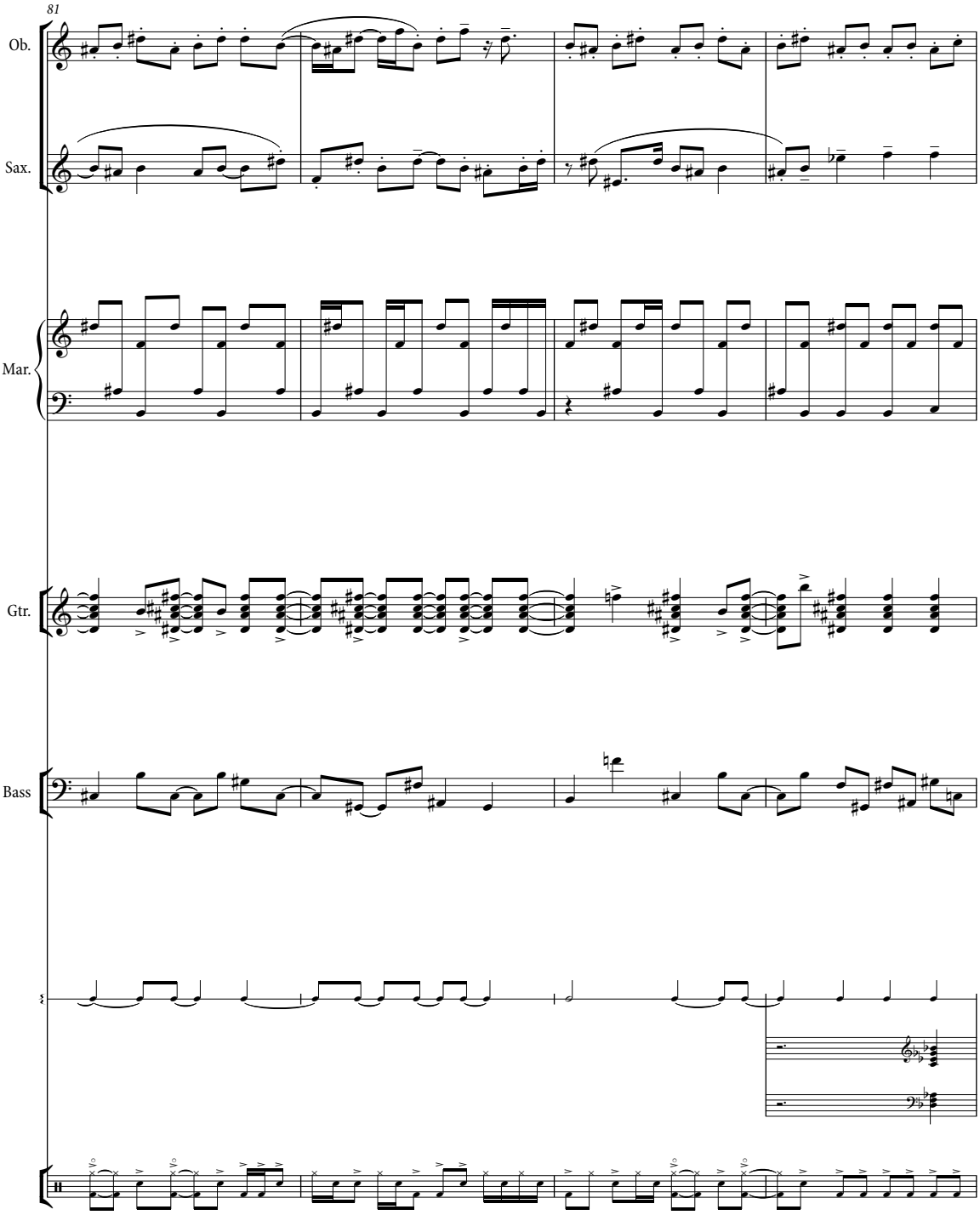

E
64
Ob.
Sax.
Mar.
Gtr.
Bass
mf
mf
mf
E

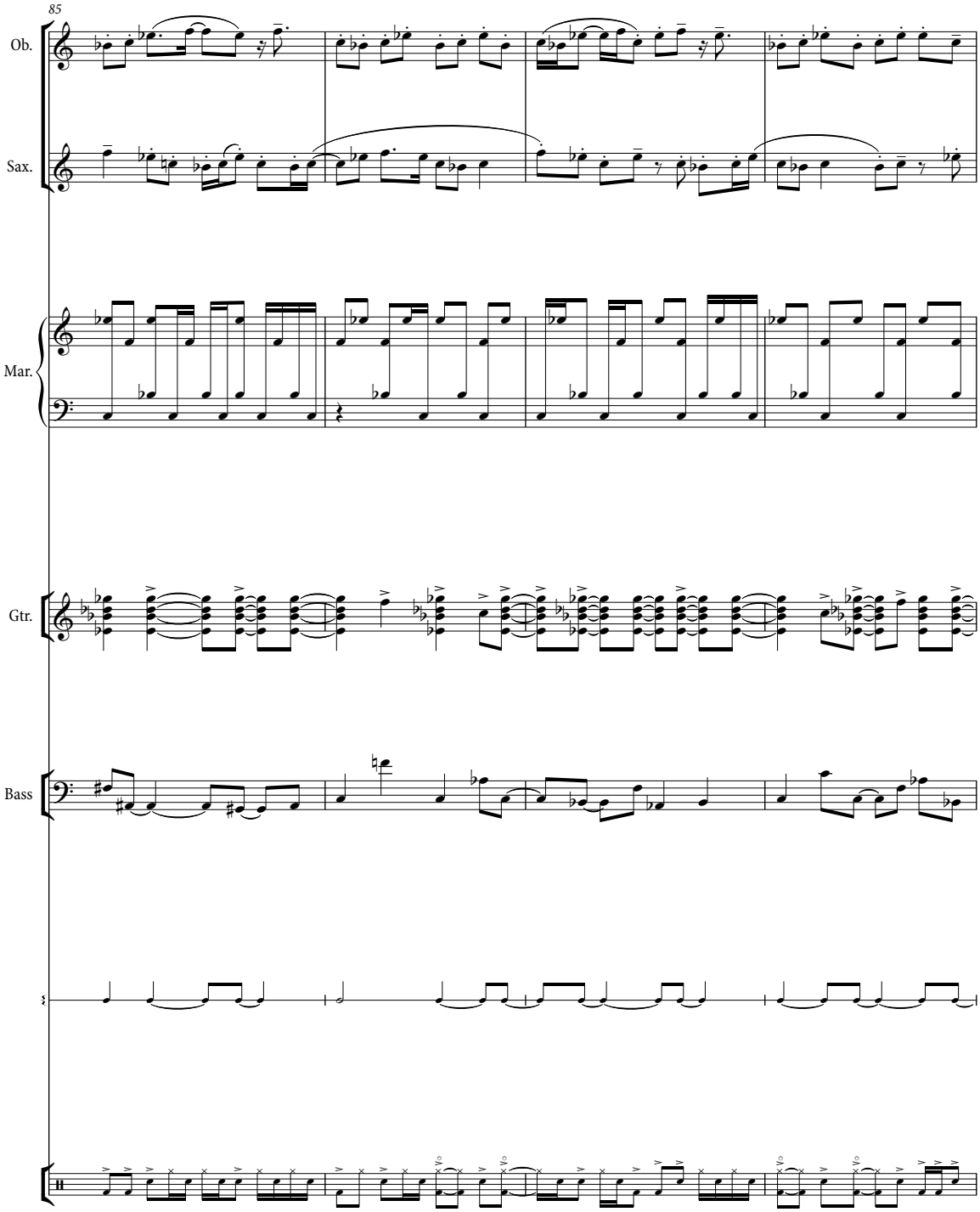

67
Ob.
Sax.
Mar.
Gtr.
Bass
f
f

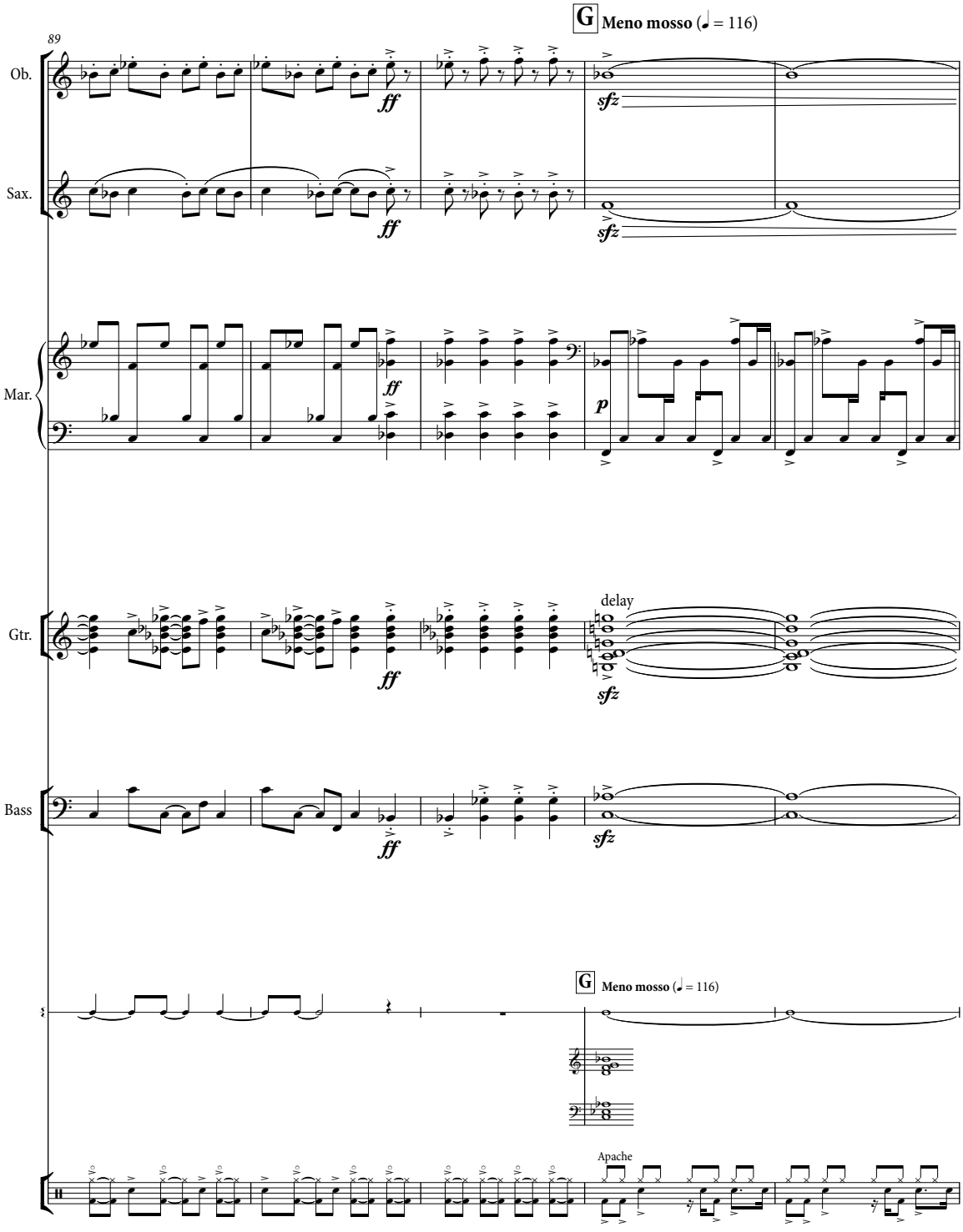
71
Ob.
Sax.
Mar.
Gtr.
Bass

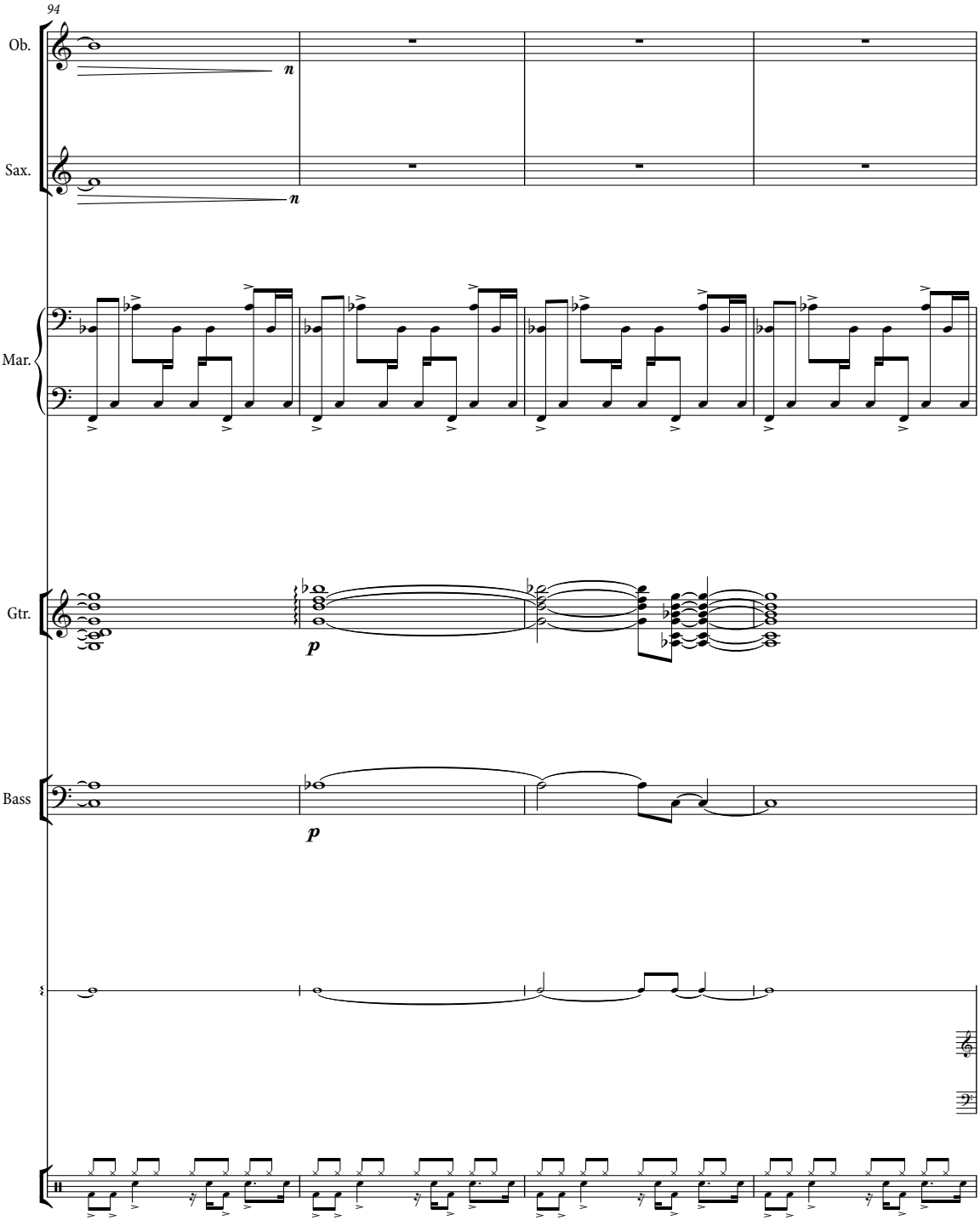

74
Ob.
Sax.
Mar.
Gtr.
Bass
5/4
4/4

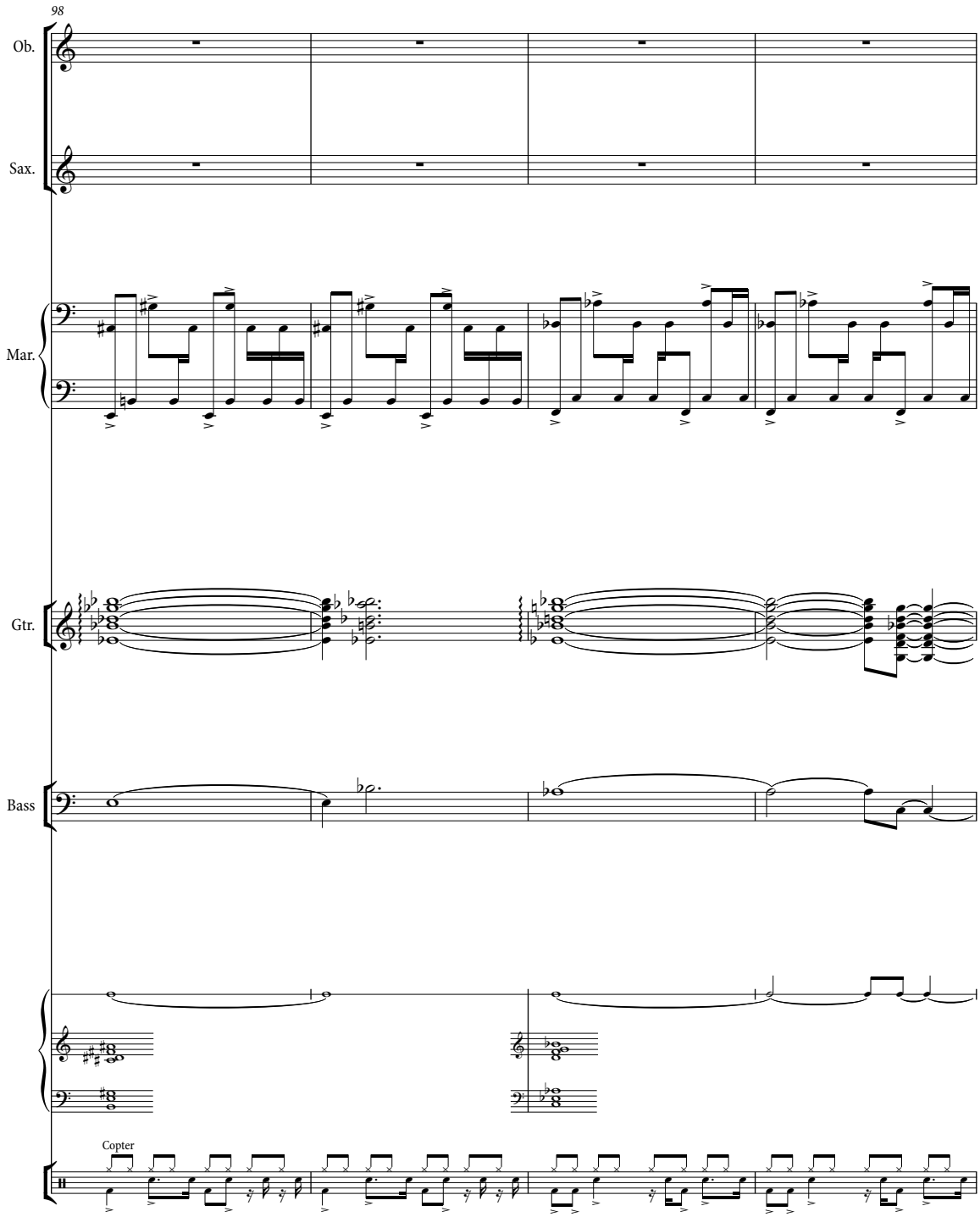

F
77
Ob.
mf
Sax.
mf
Mar.
f
Gtr.
f
Bass
f
F

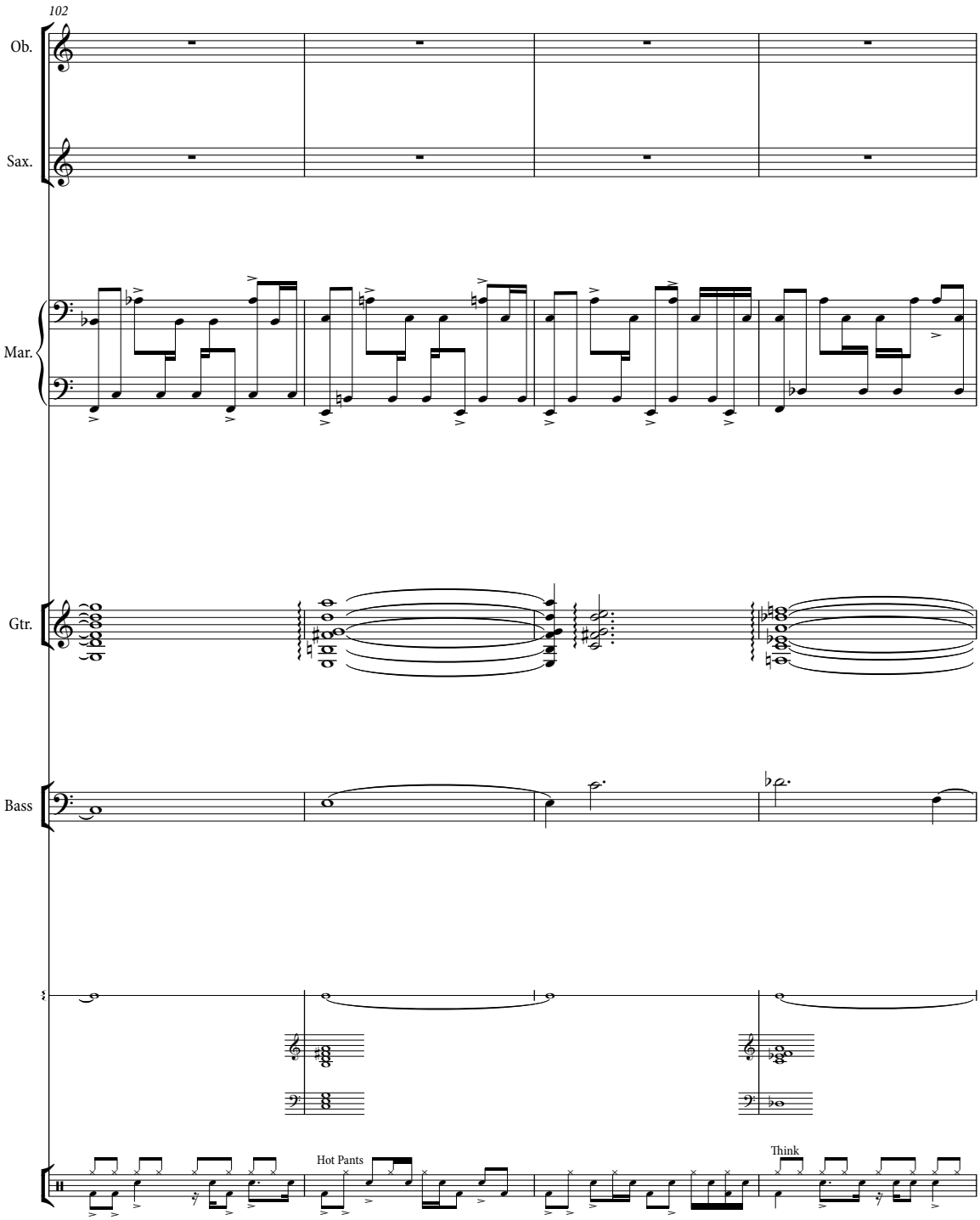

81
Ob.
Sax.
Mar.
Gtr.
Bass

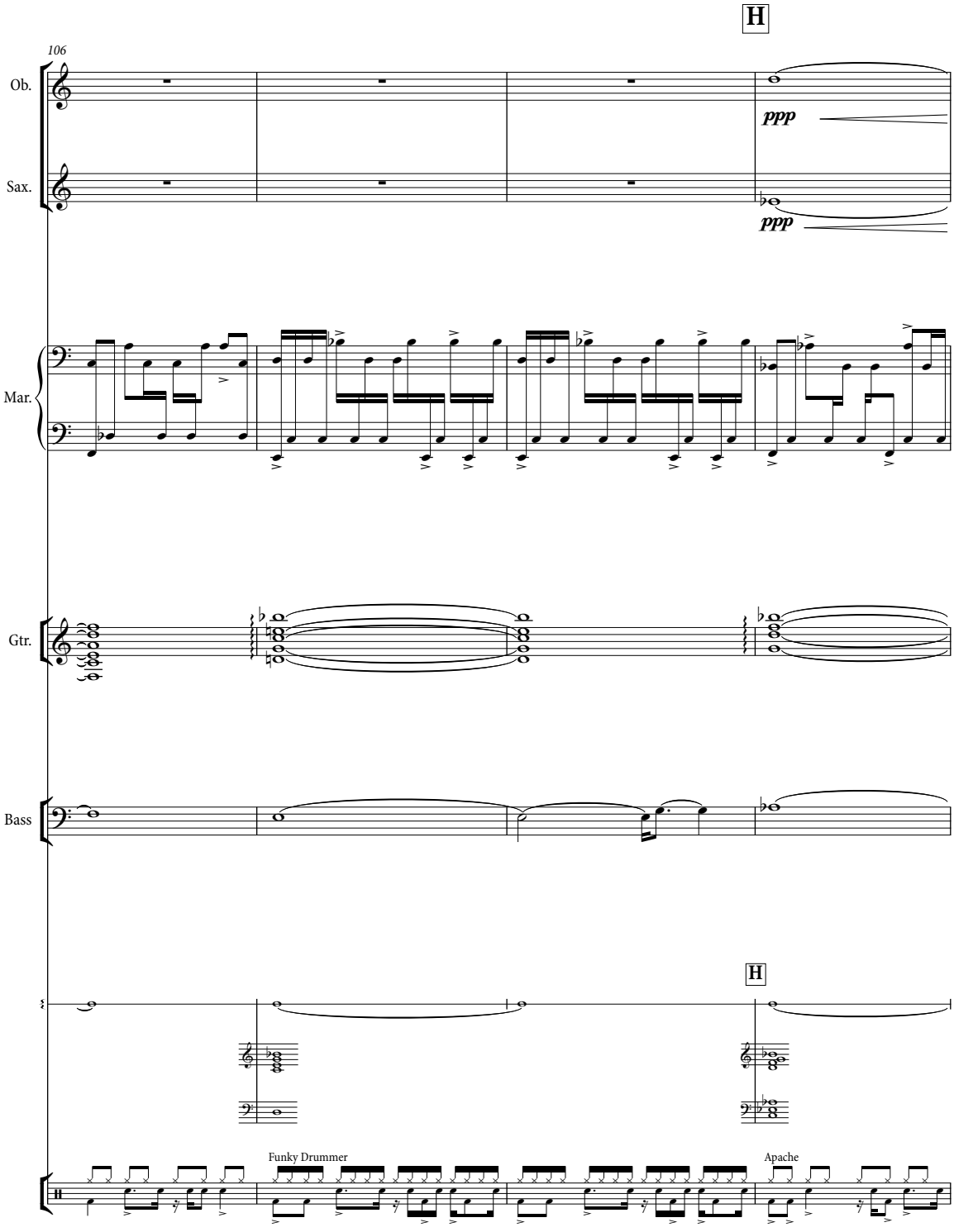

85
Ob.
Sax.
Mar.
Gtr.
Bass

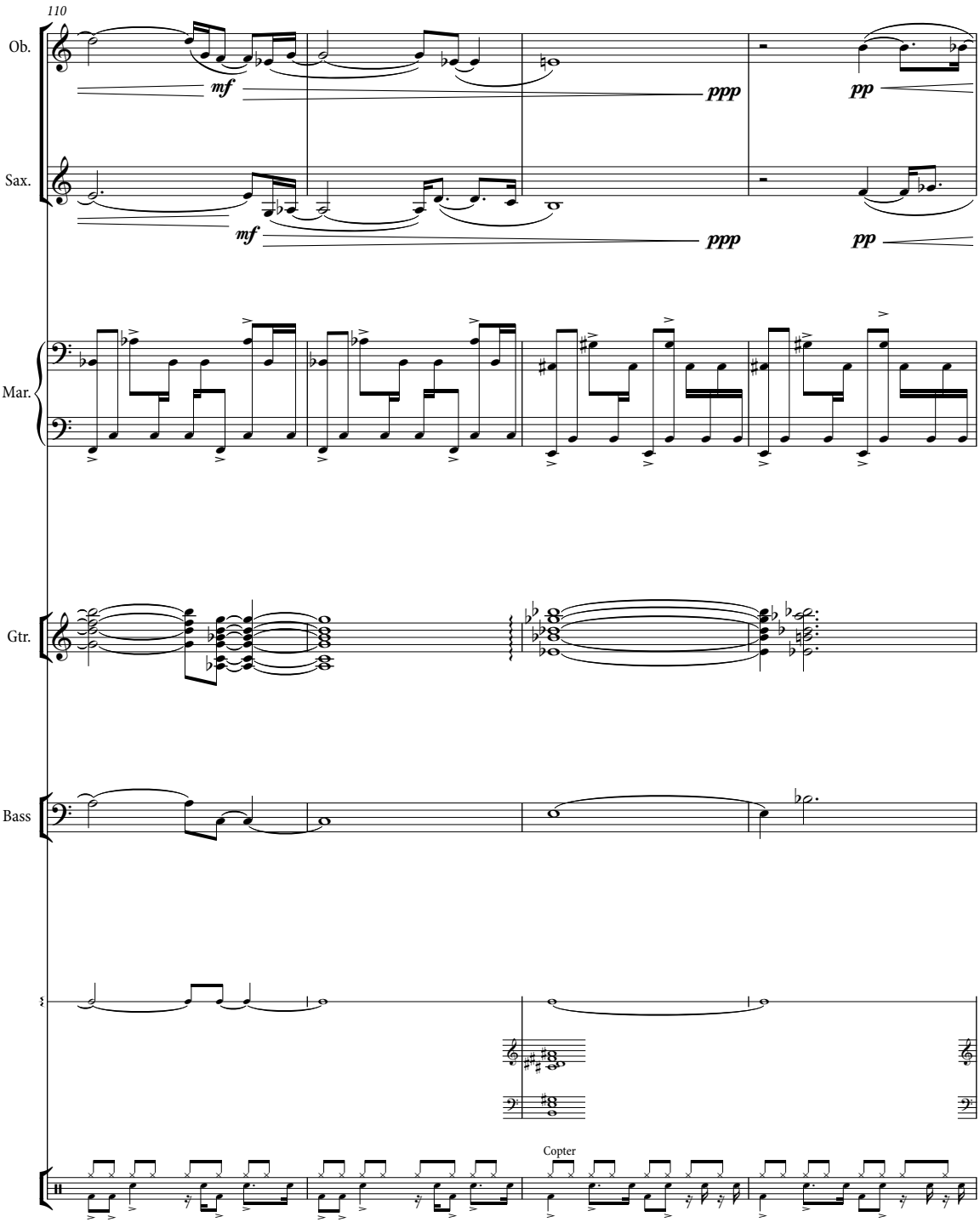

G Meno mosso (♩ = 116)
89
Ob.
Sax.
Mar.
Gtr.
Bass
ff
sfz
p
delay
G Meno mosso (♩ = 116)
Apache

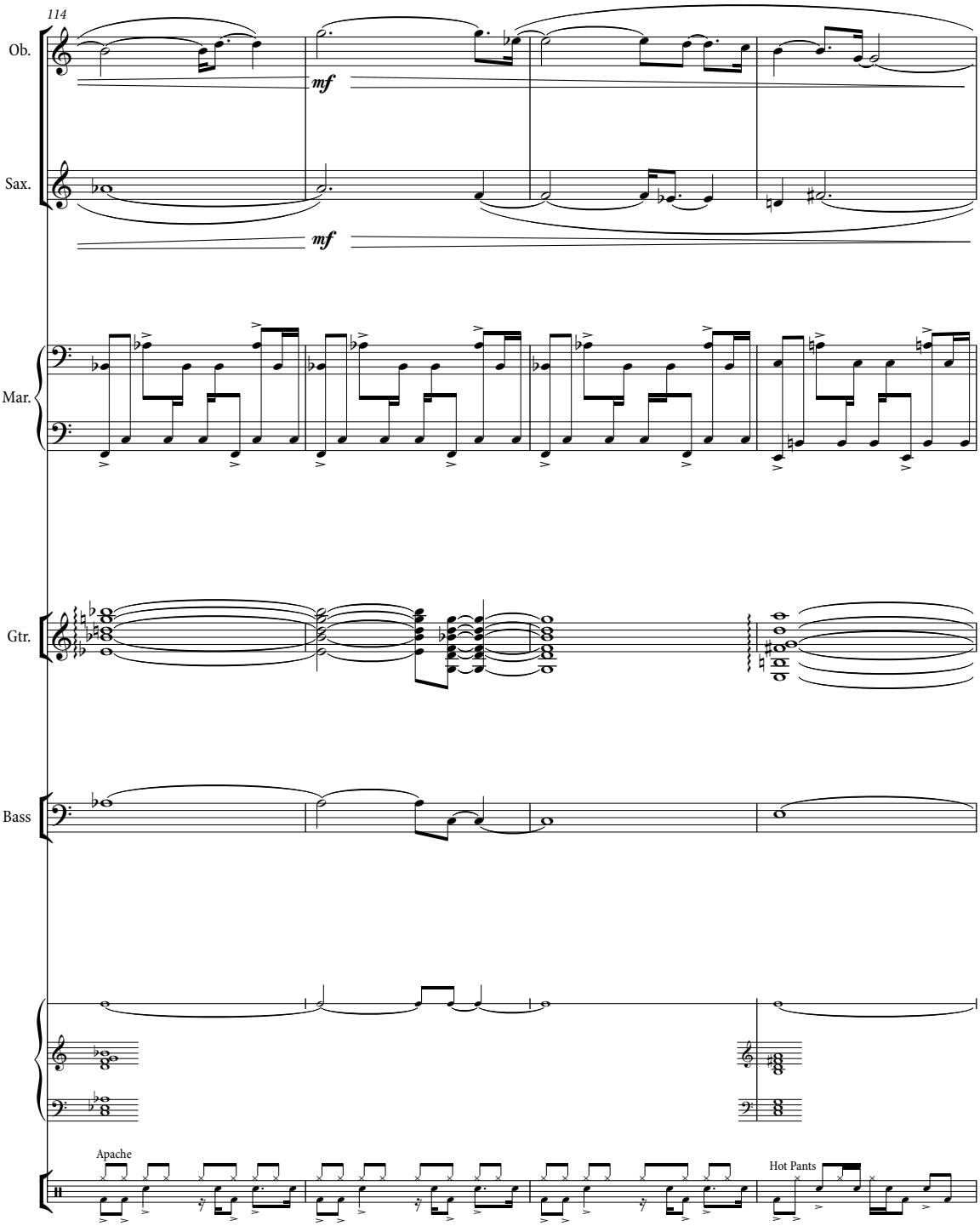

94
Ob.
n
Sax.
n
Mar.
Gtr.
p
Bass
p

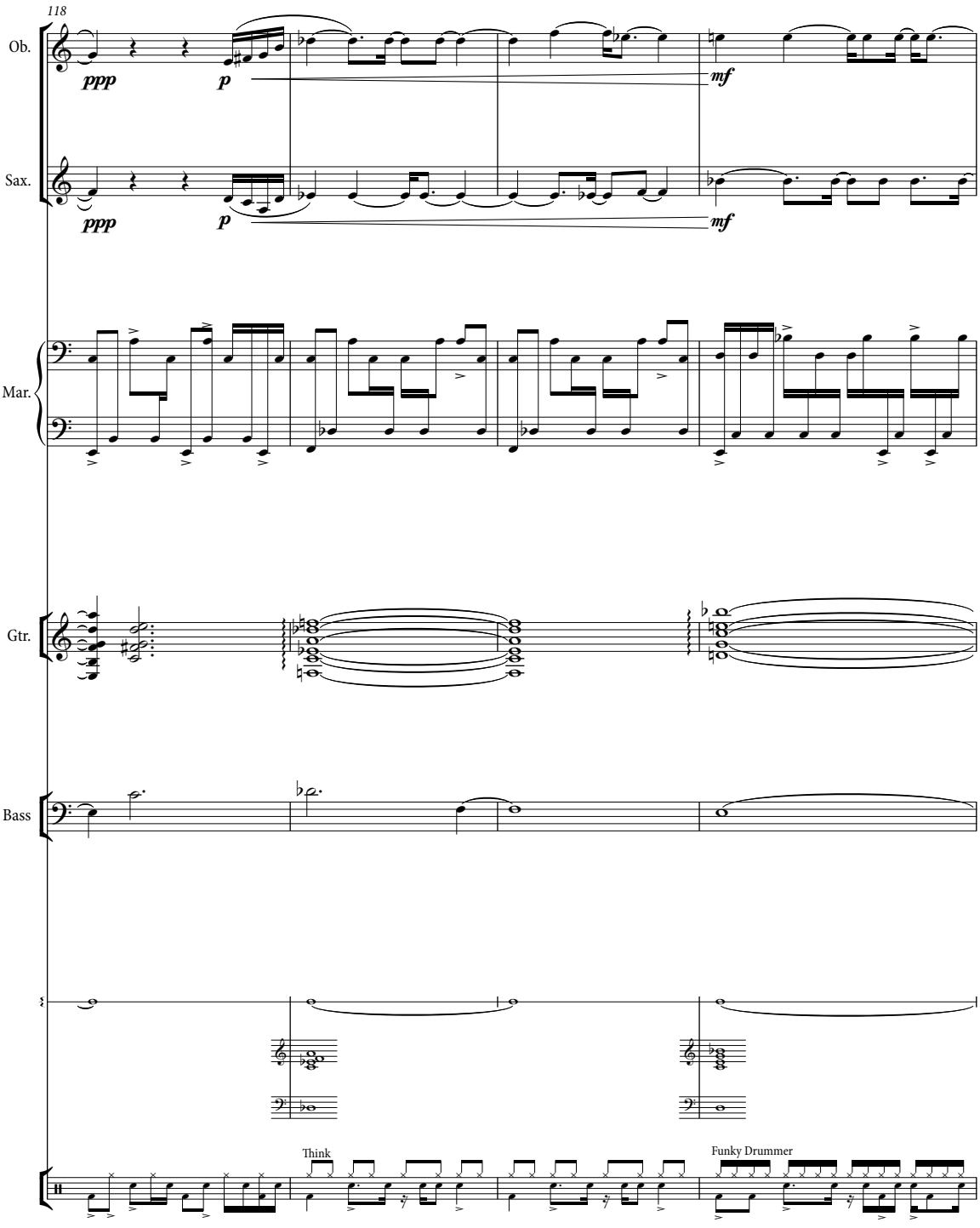

98
Ob.
Sax.
Mar.
Gtr.
Bass
Copter

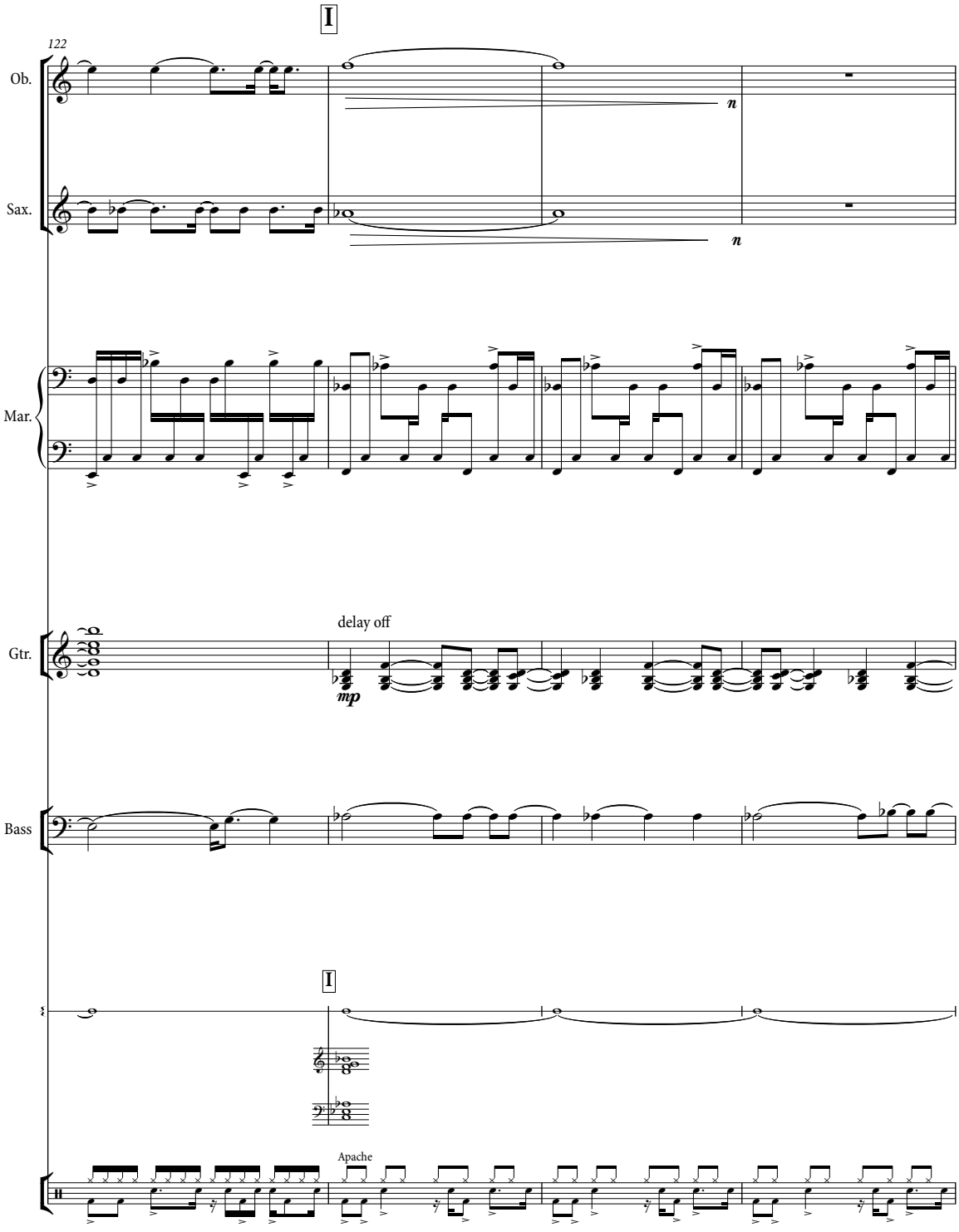

102
Ob.
Sax.
Mar.
Gtr.
Bass
Hot Pants
Think


H
106
Ob.
Sax.
ppp
ppp
Mar.
Gtr.
Bass
H
Funky Drummer
Apache


110
Ob.
mf
ppp
pp
Sax.
mf
ppp
pp
Mar.
Gtr.
Bass
Copter

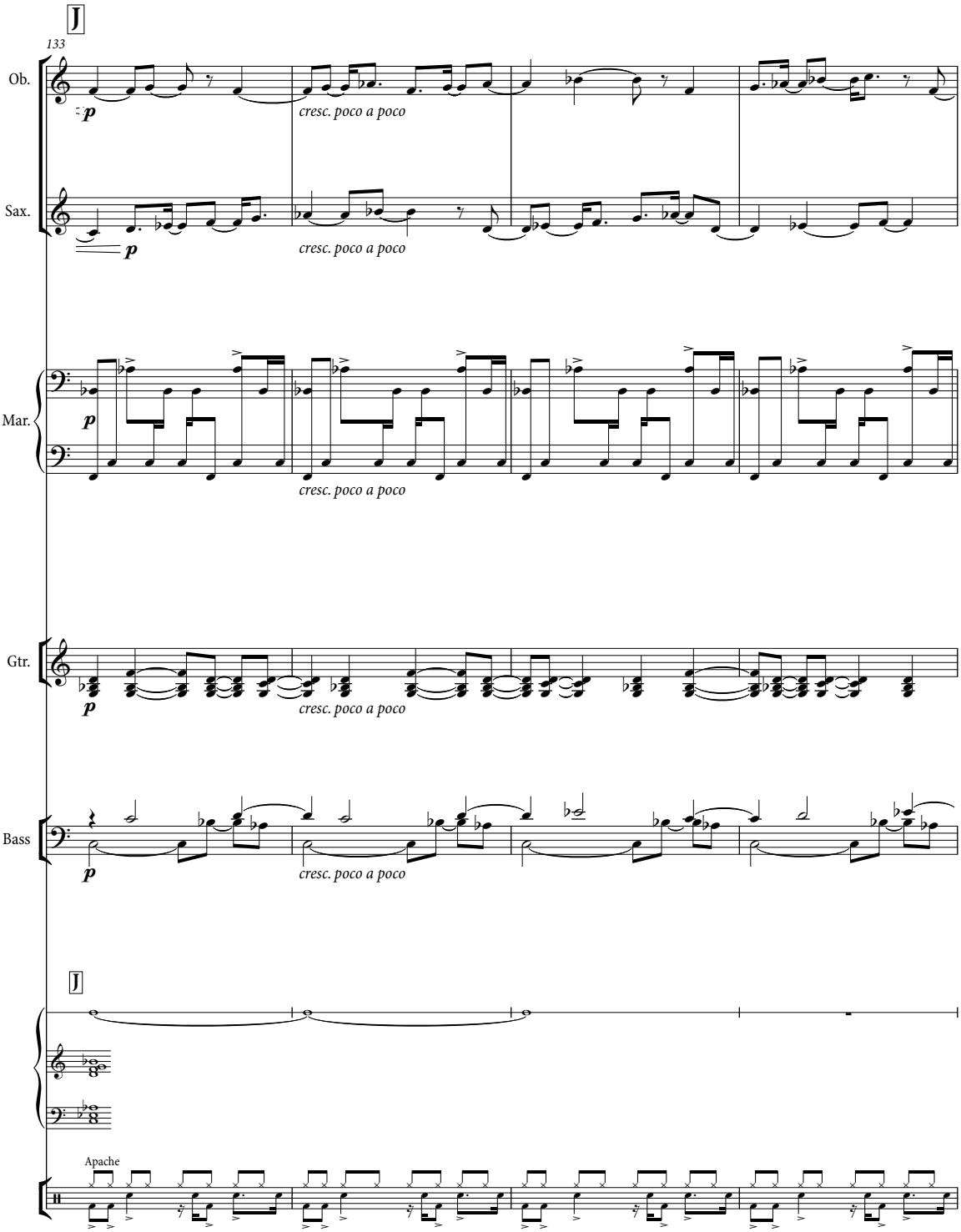

114
Ob.
mf
Sax.
mf
Mar.
Gtr.
Bass
Apache
Hot Pants

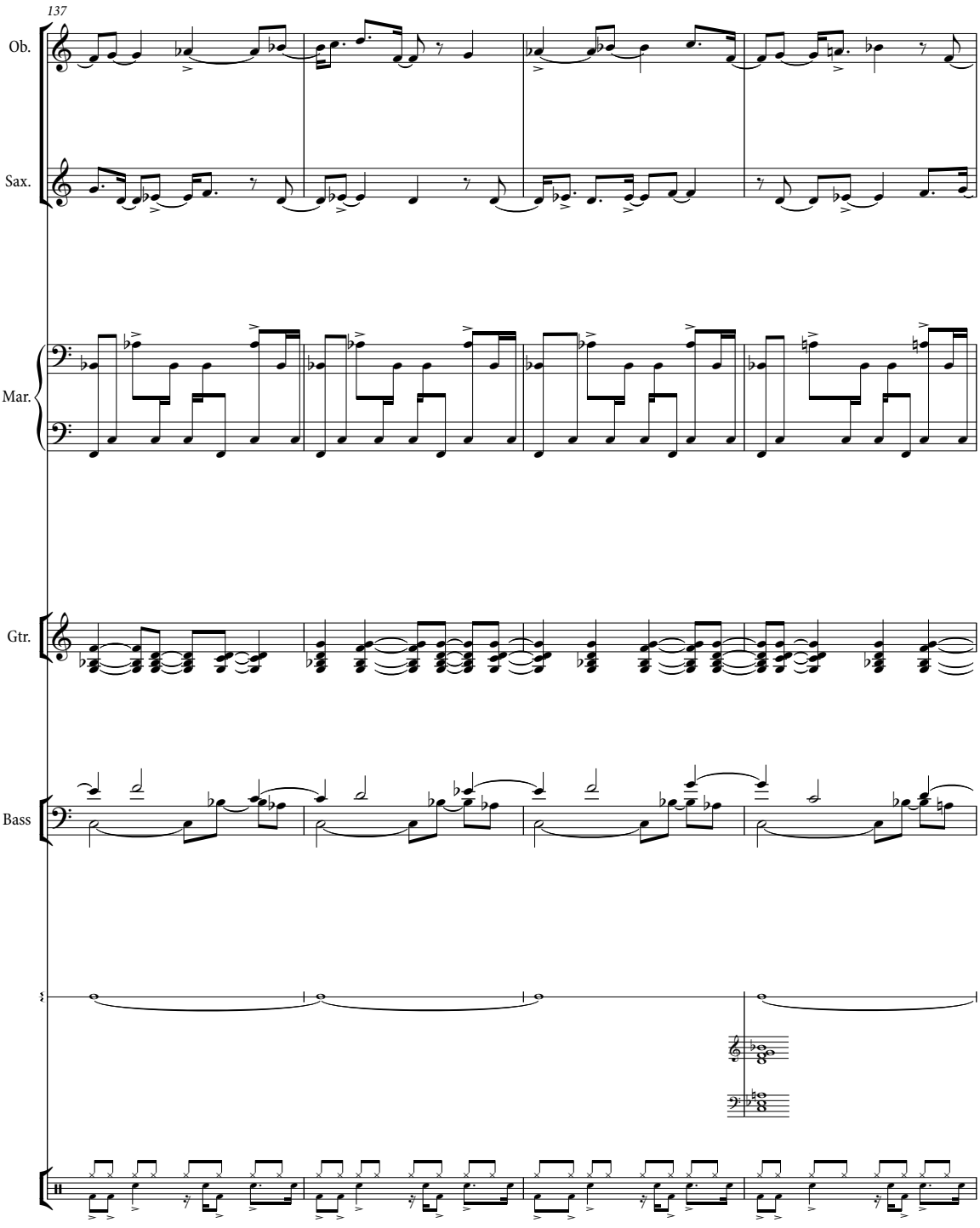

118
Ob.
ppp
p
mf
Sax.
ppp
p
mf
Mar.
Gtr.
Bass
Think
Funky Drummer

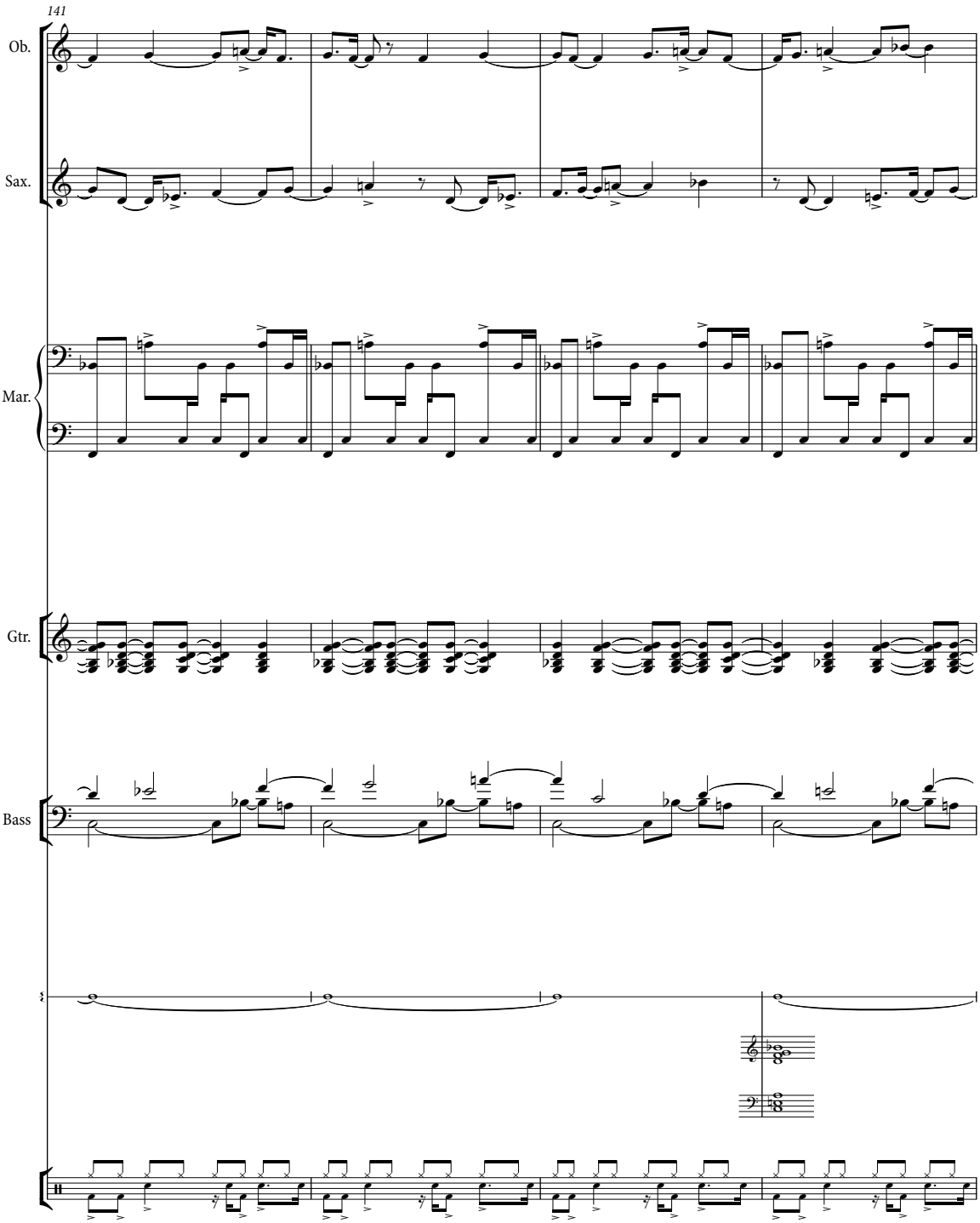

I
122
Ob.
Sax.
n
n
Mar.
delay off
Gtr.
mp
Bass
I
Apache

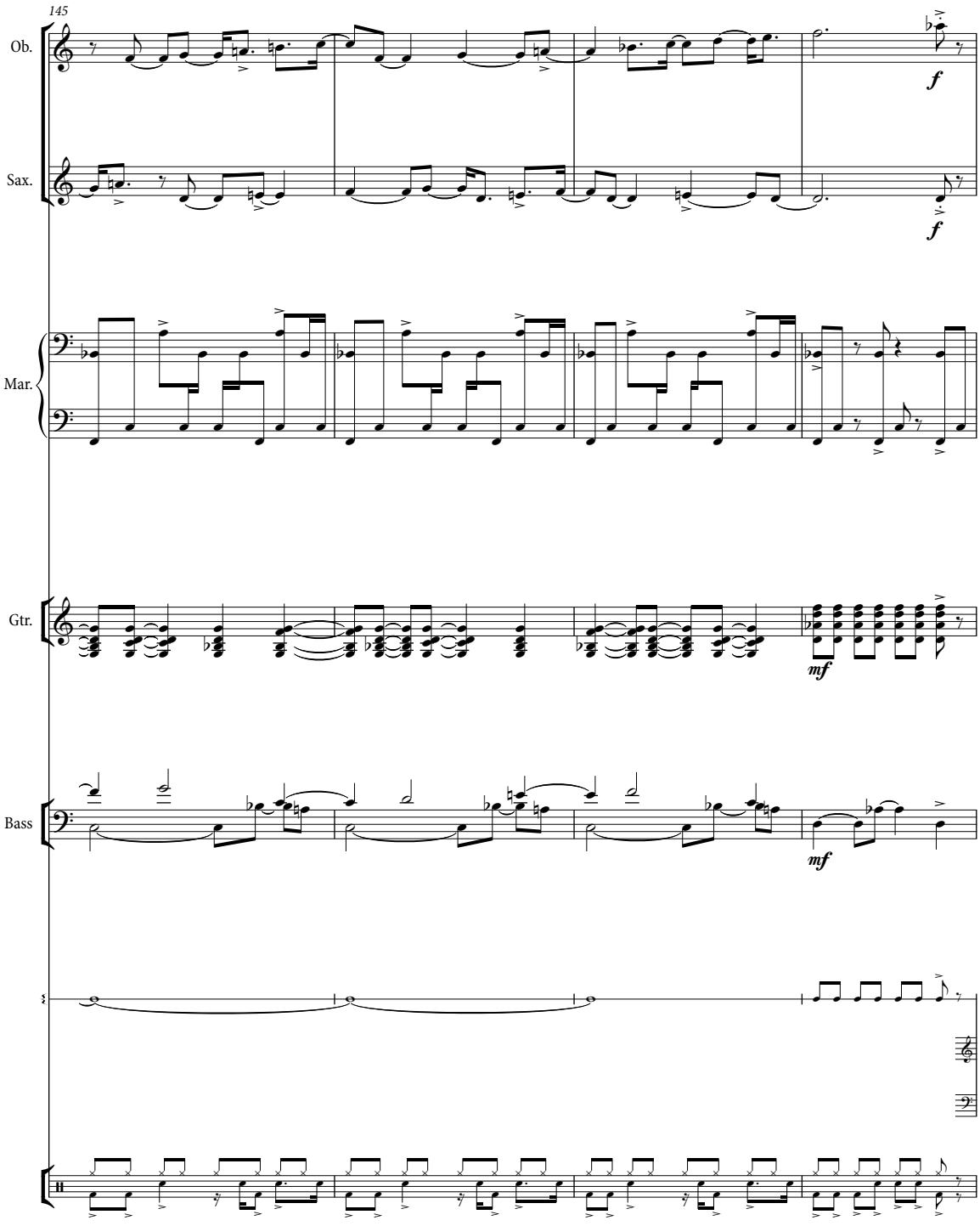
126
Ob.
Sax.
Mar.
Gtr.
Bass
Hot Pants
Think

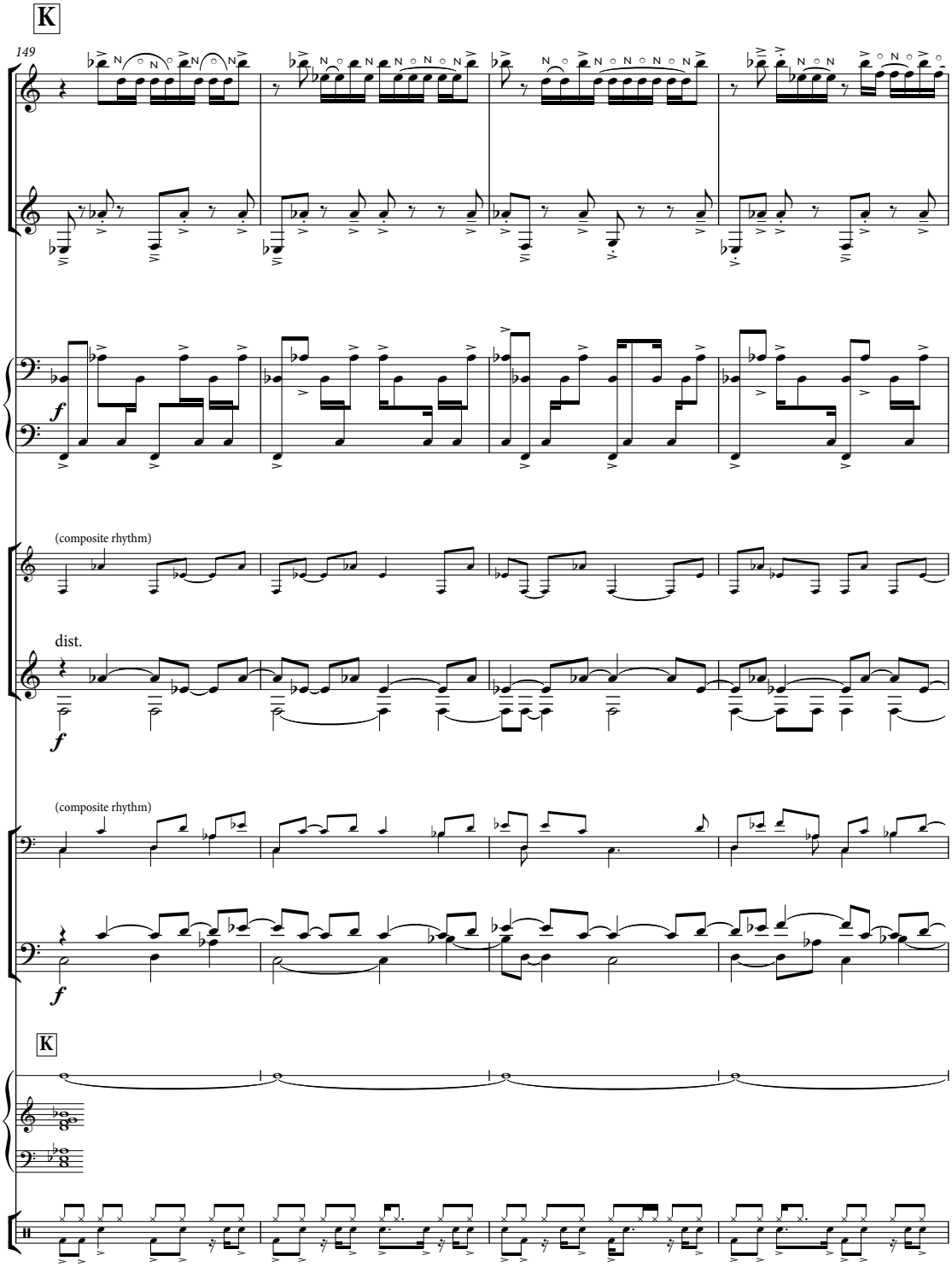
130
Ob.
Sax.
Mar.
Gtr.
Bass
ppp
ppp
Funky Drummer

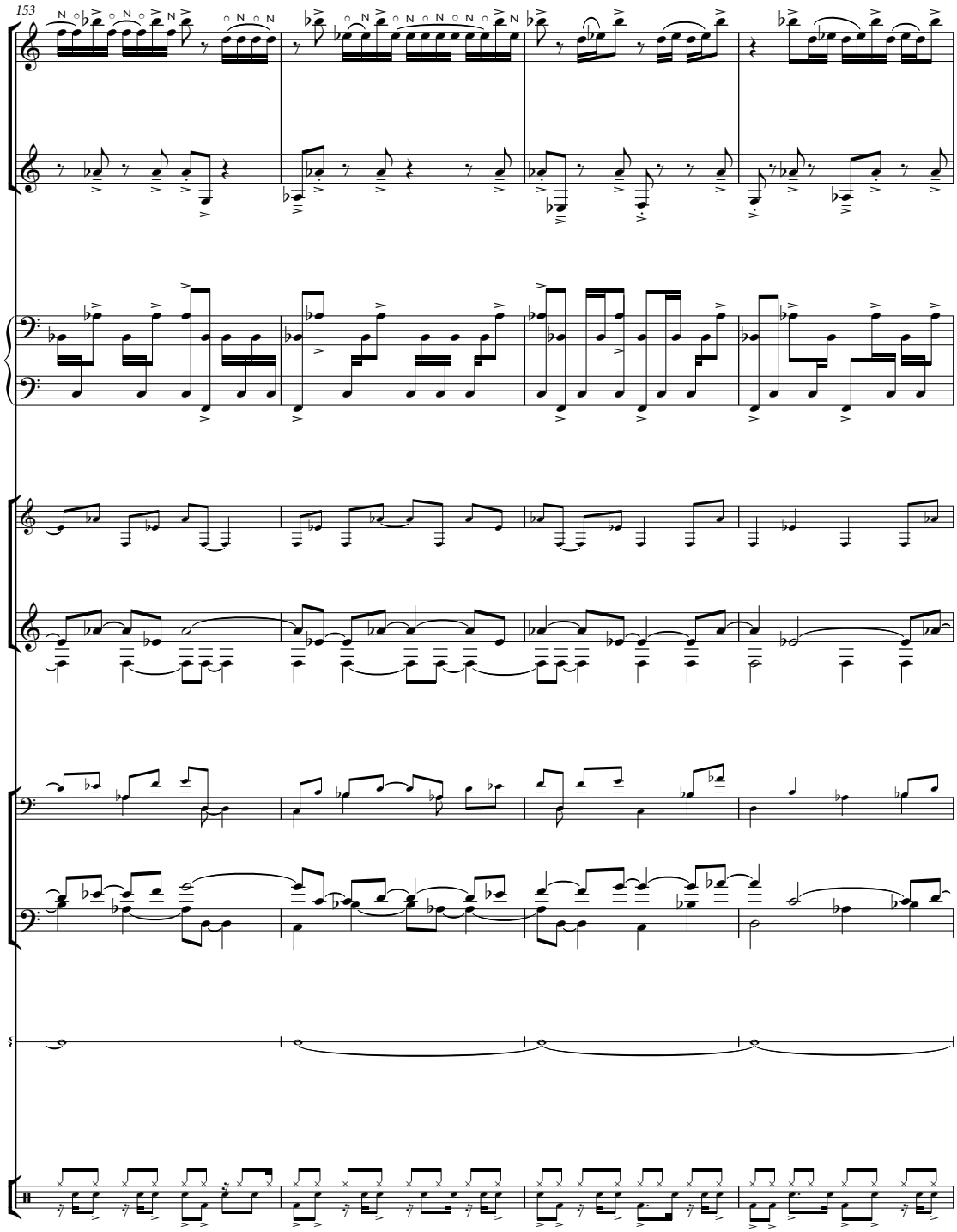

J
133
Ob.
p
cresc. poco a poco
Sax.
p
cresc. poco a poco
Mar.
p
cresc. poco a poco
Gtr.
p
cresc. poco a poco
Bass
p
cresc. poco a poco
J
Apache

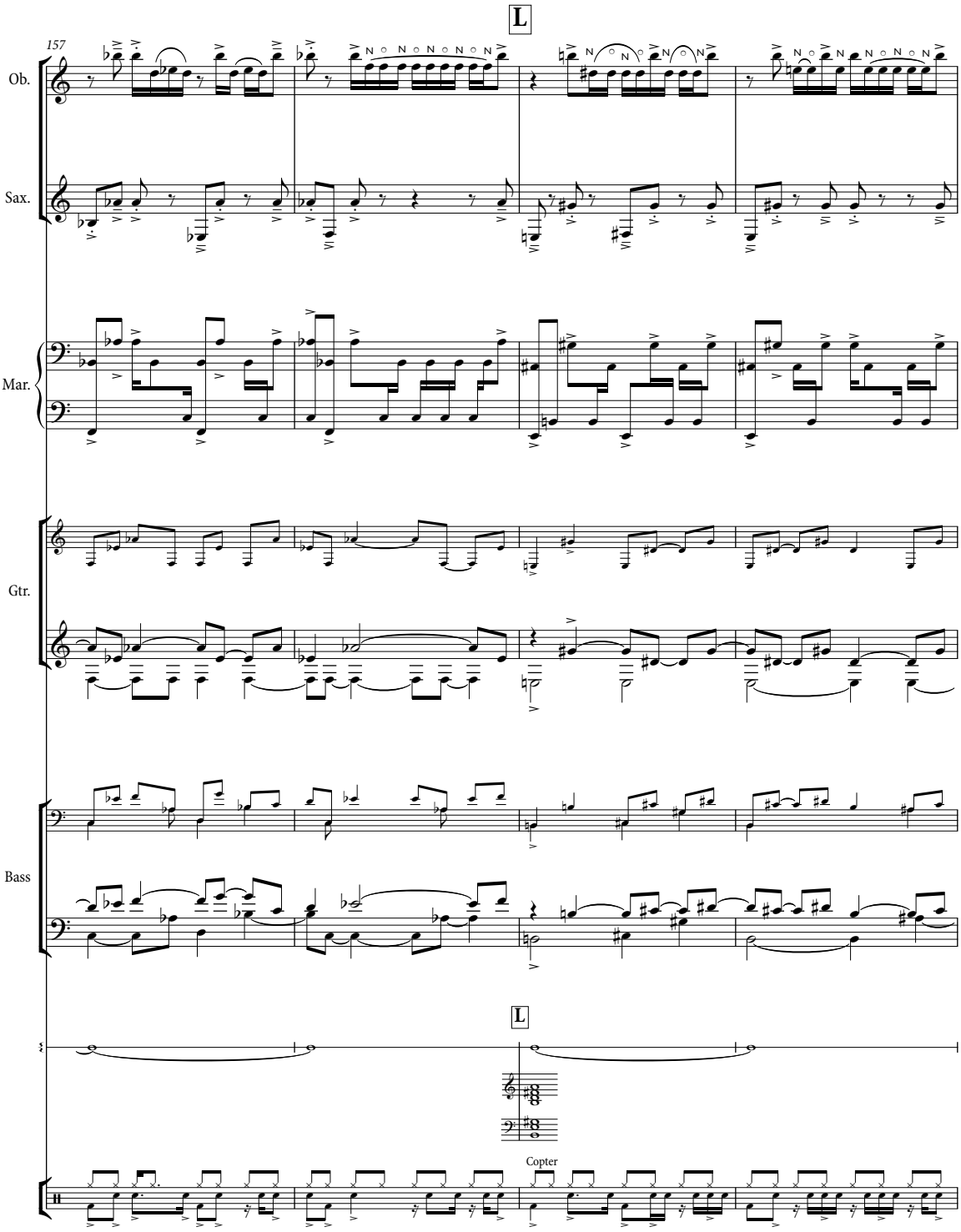

137
Ob.
Sax.
Mar.
Gtr.
Bass

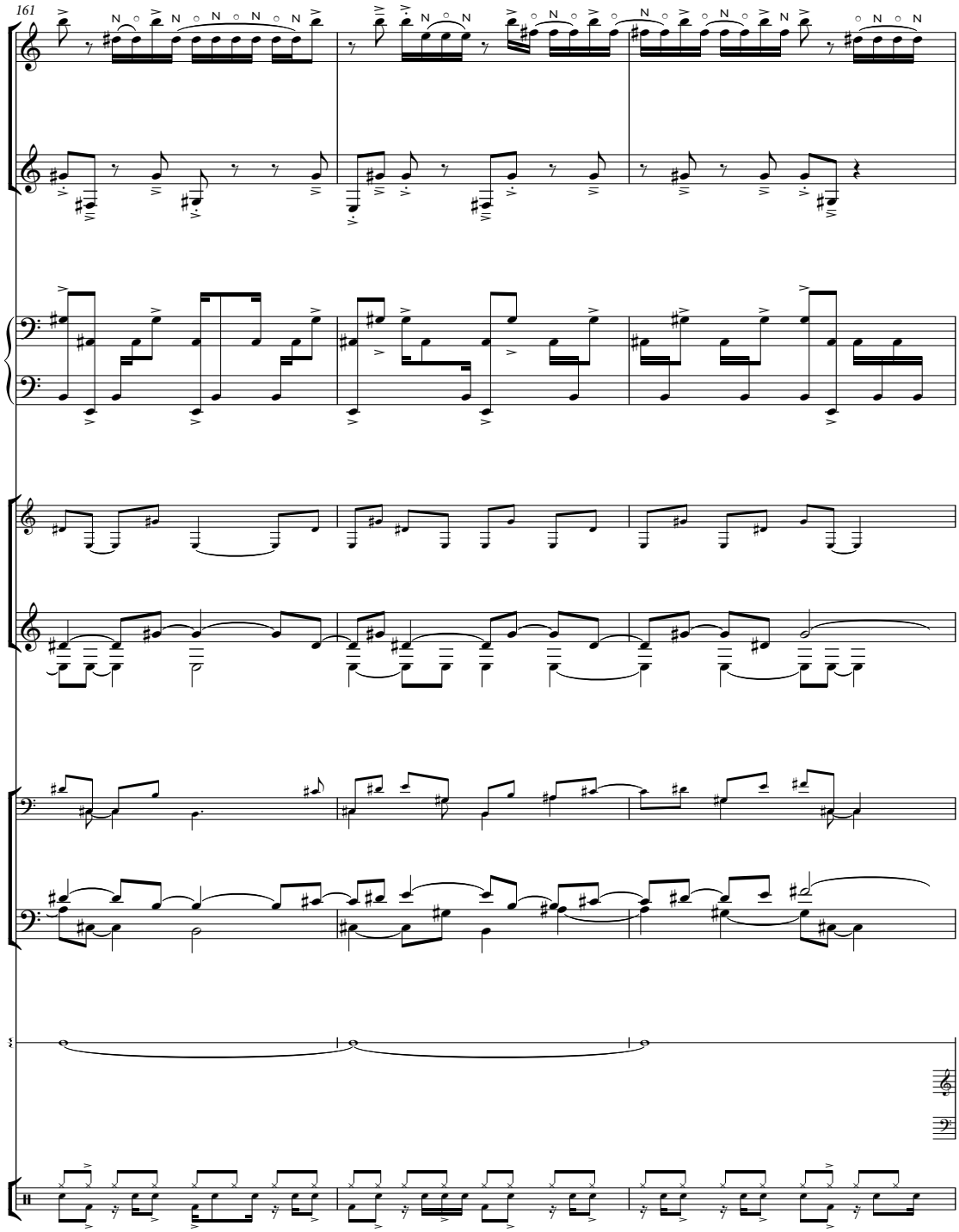

141
Ob.
Sax.
Mar.
Gtr.
Bass

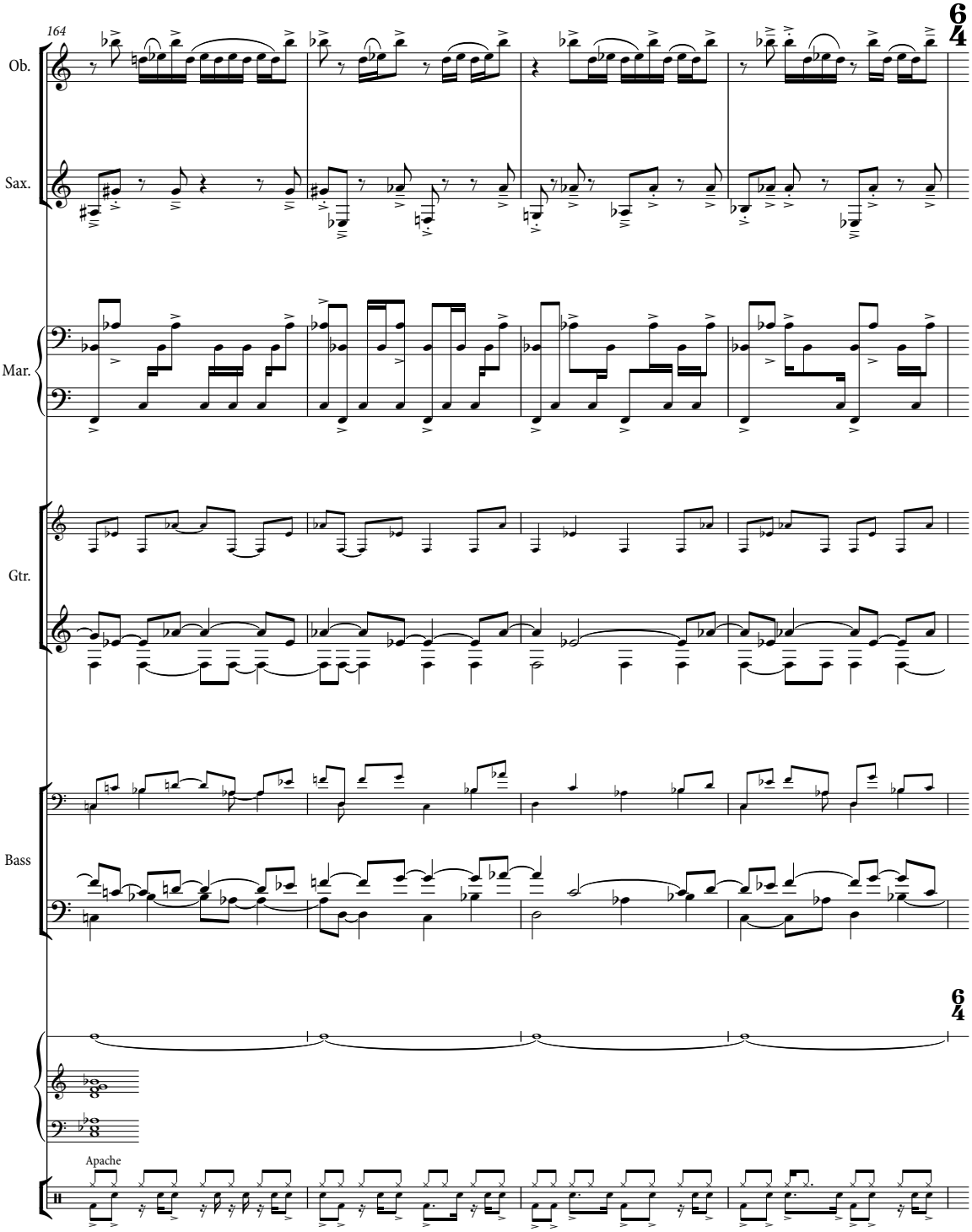

145
Ob.
Sax.
Mar.
Gtr.
Bass
f
f
mf
mf

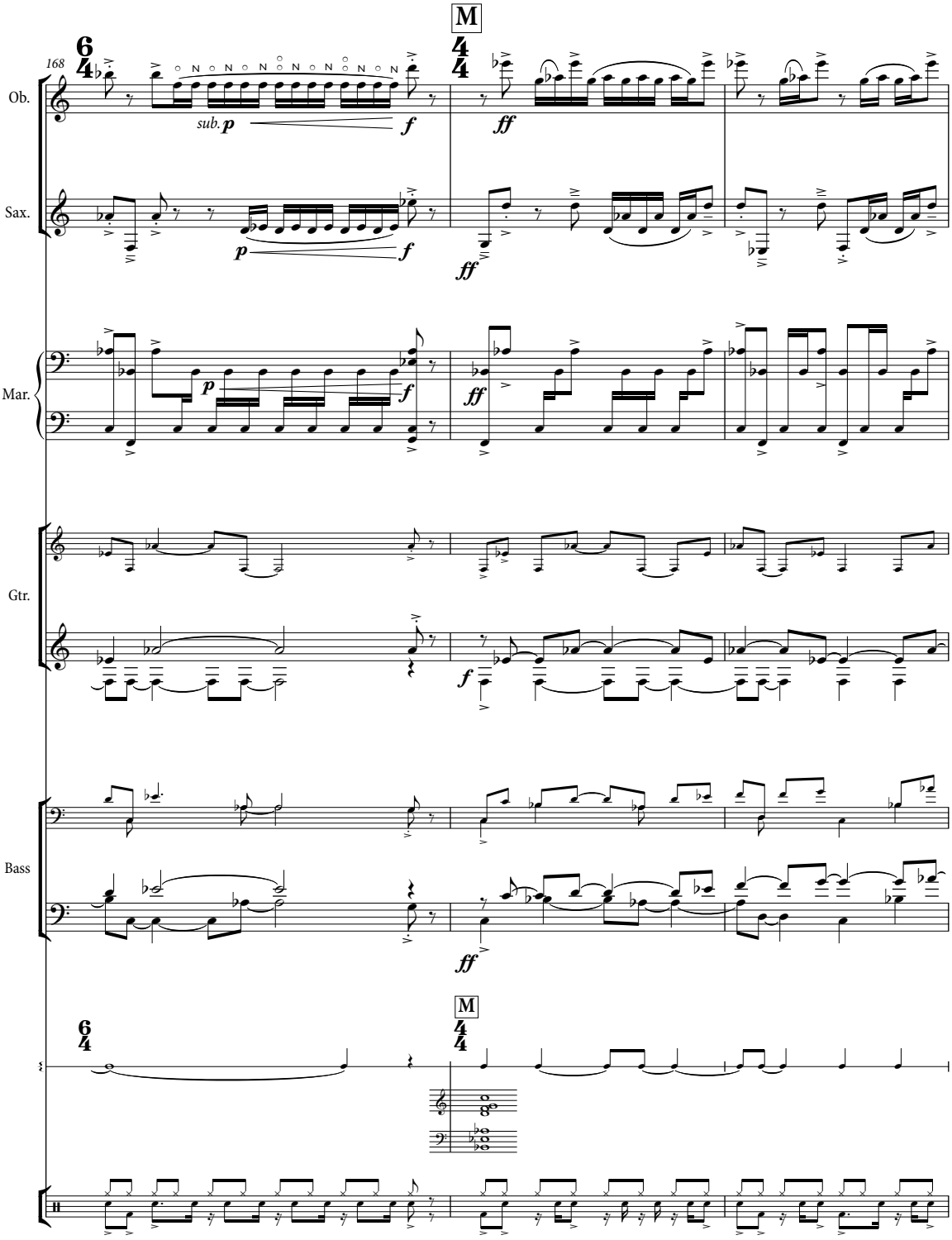

K
149
Ob.
Sax.
Mar.
f
(composite rhythm)
Gtr.
dist.
f
(composite rhythm)
Bass
f
K

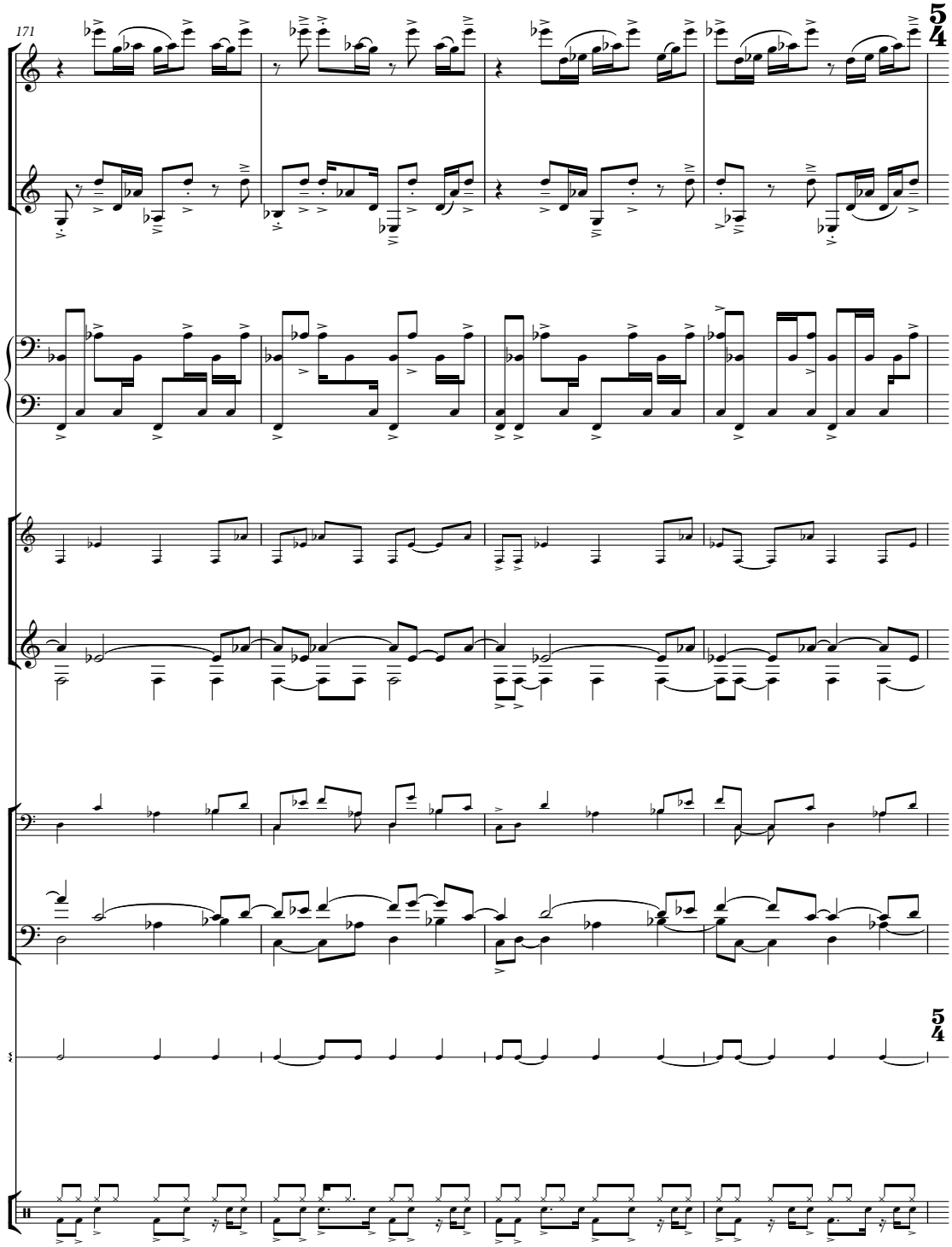

153
Ob.
Sax.
Mar.
Gtr.
Bass

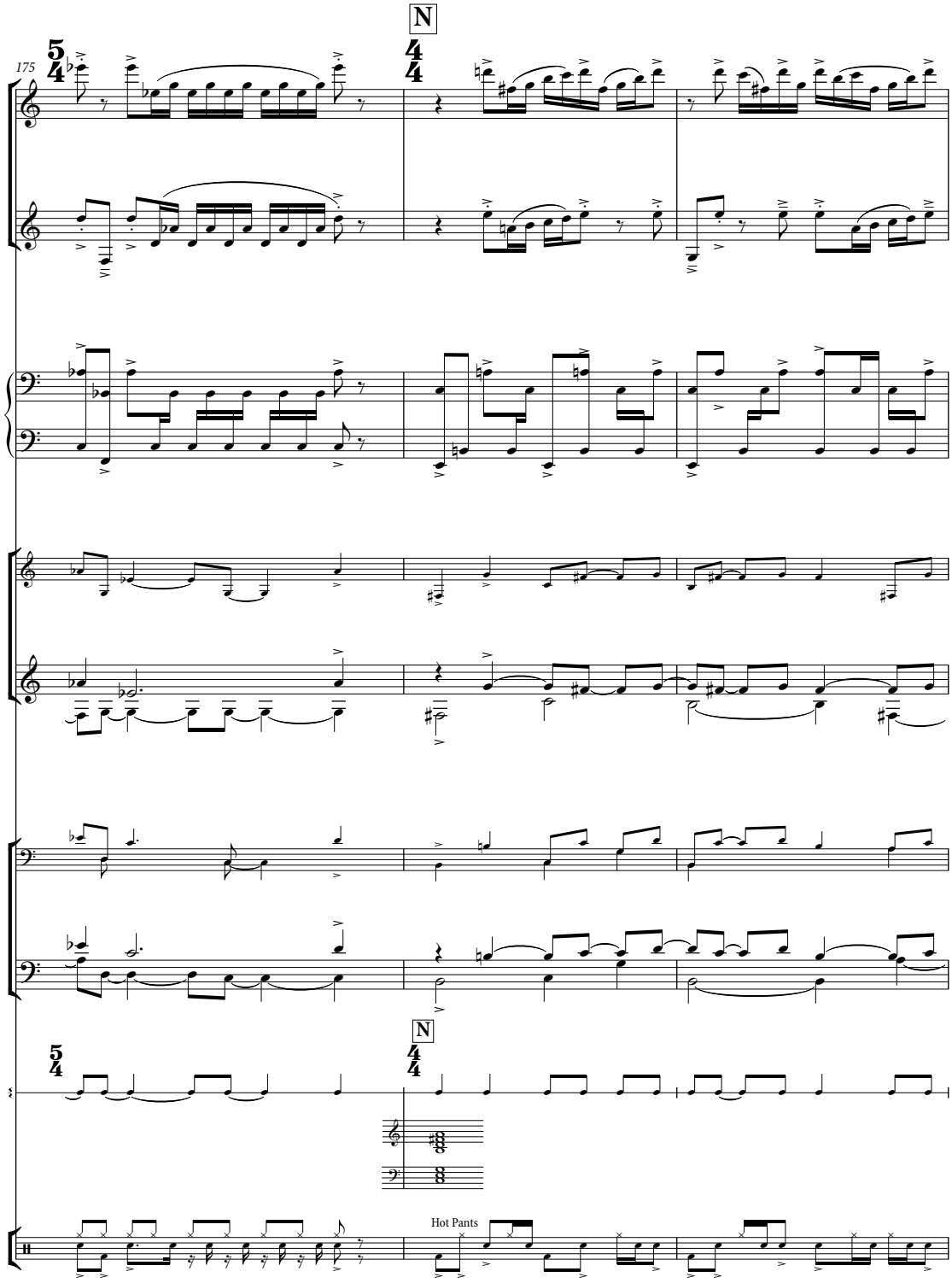

L
157
Ob.
Sax.
Mar.
Gtr.
Bass
L
Copter

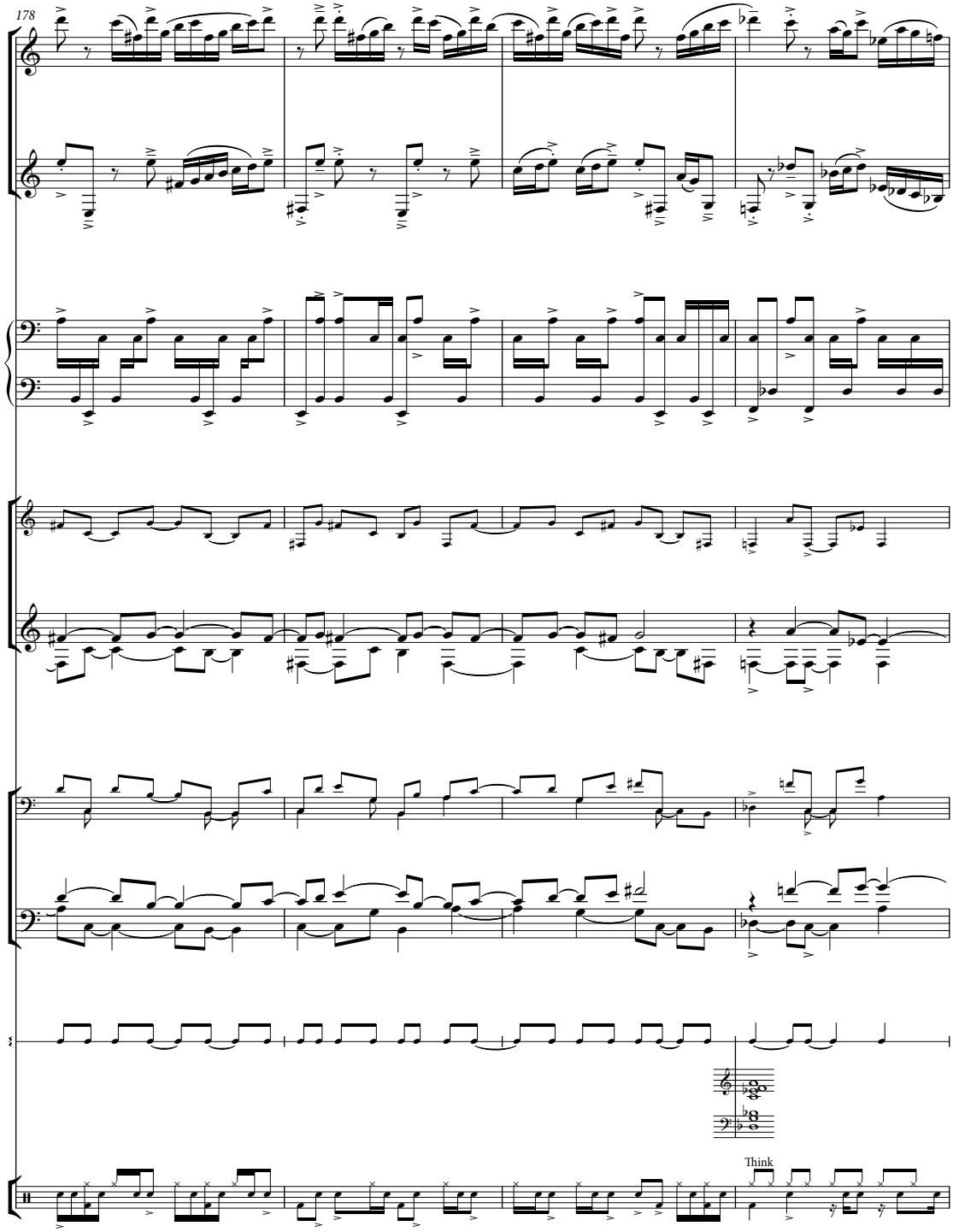

161
Ob.
Sax.
Mar.
Gtr.
Bass

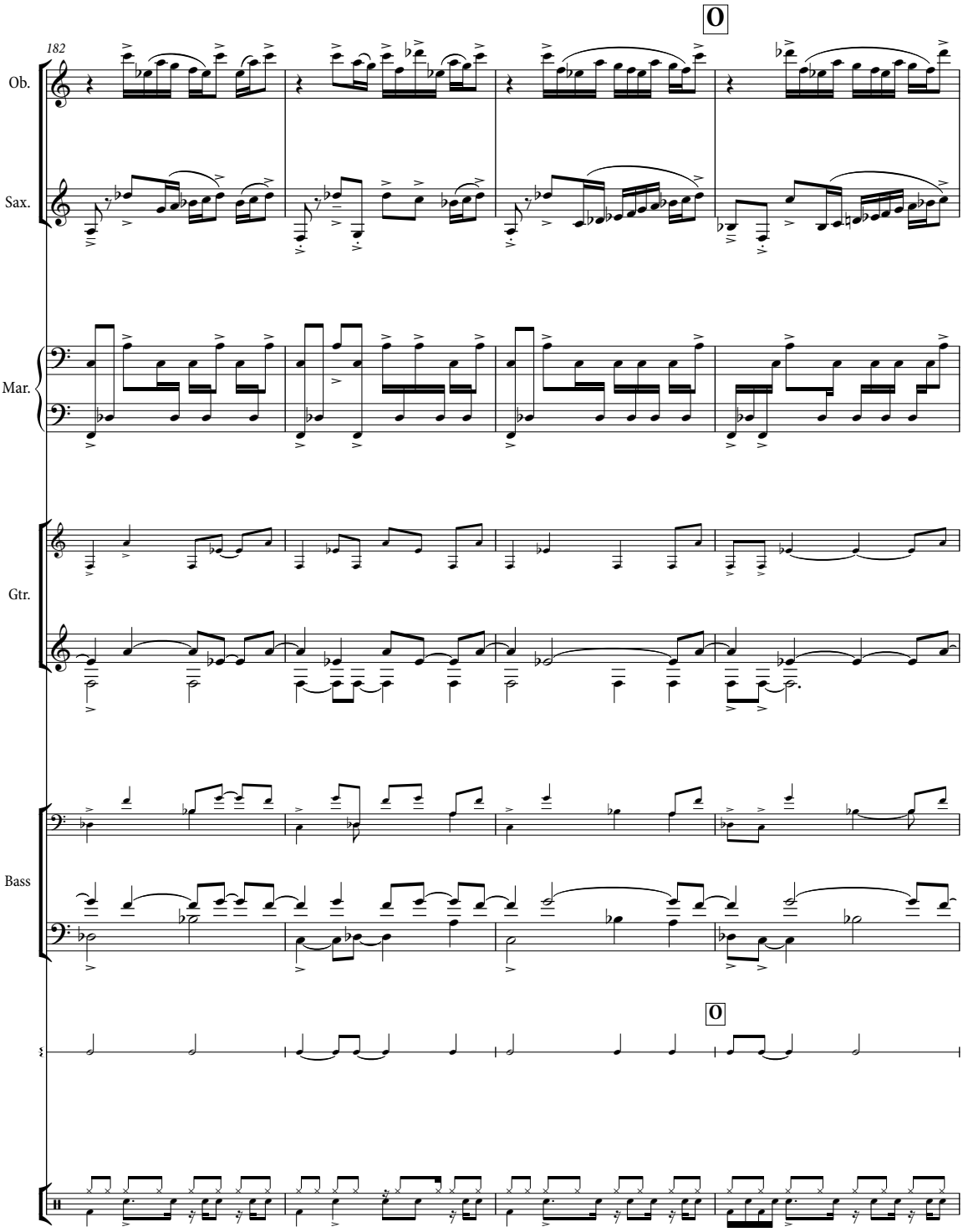

164
Ob.
Sax.
Mar.
Gtr.
Bass
Apache

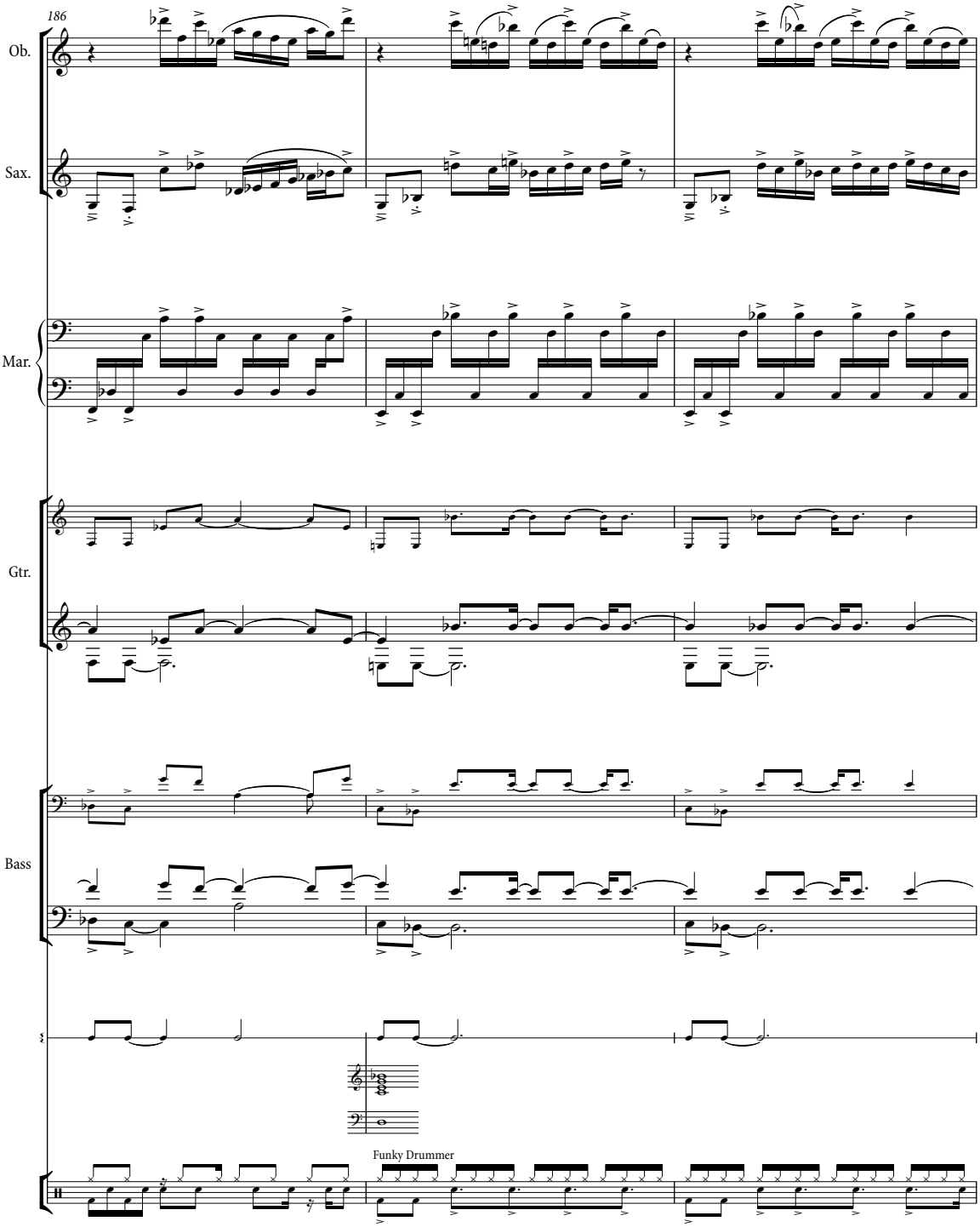

168
M
Ob.
Sax.
Mar.
Gtr.
Bass
sub. p
f
ff
p
f
ff
p
f
ff
f
ff
M

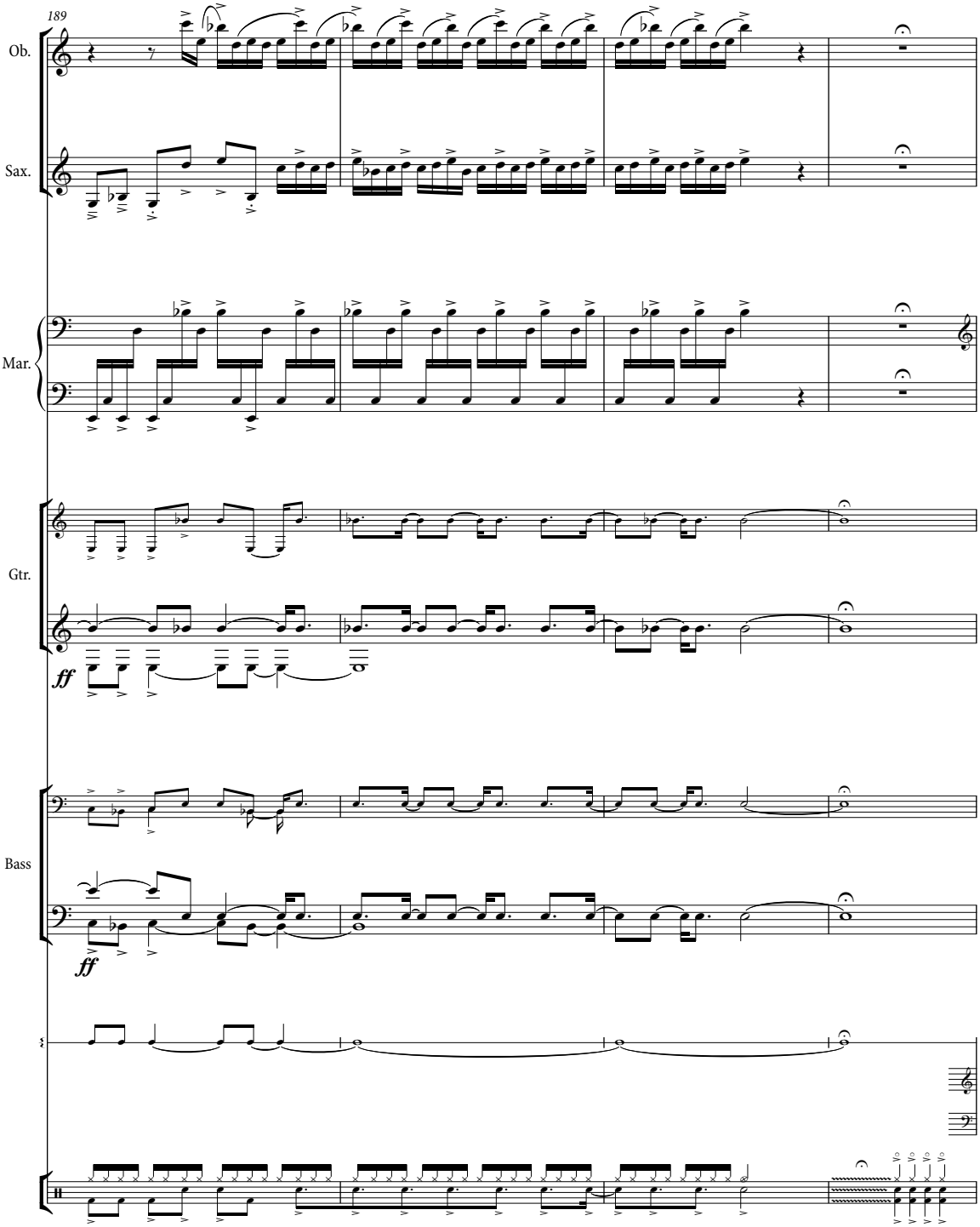

171
Ob.
Sax.
Mar.
Gtr.
Bass
5
4
5
4

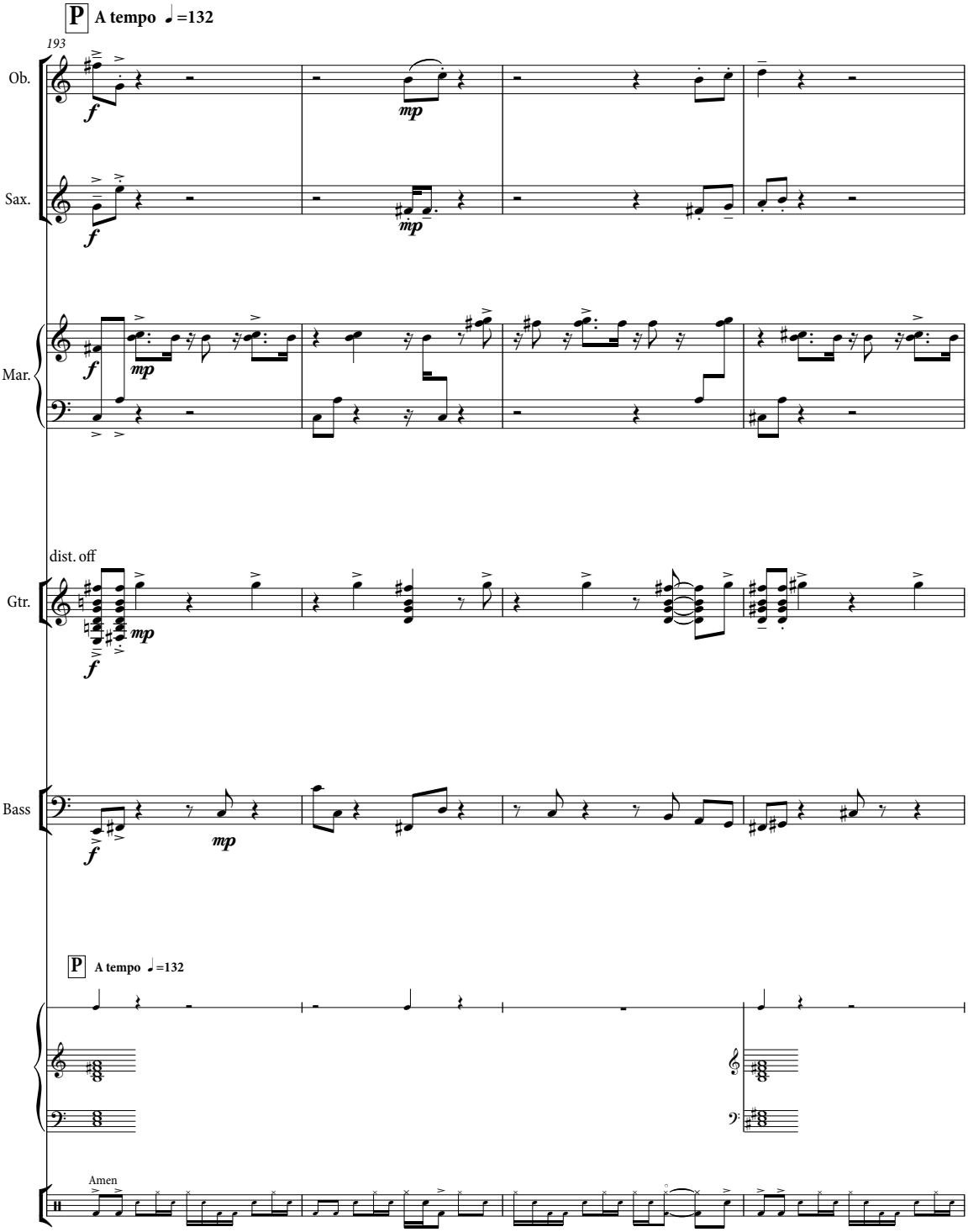

175
N
Ob.
Sax.
Mar.
Gtr.
Bass
N
Hot Pants

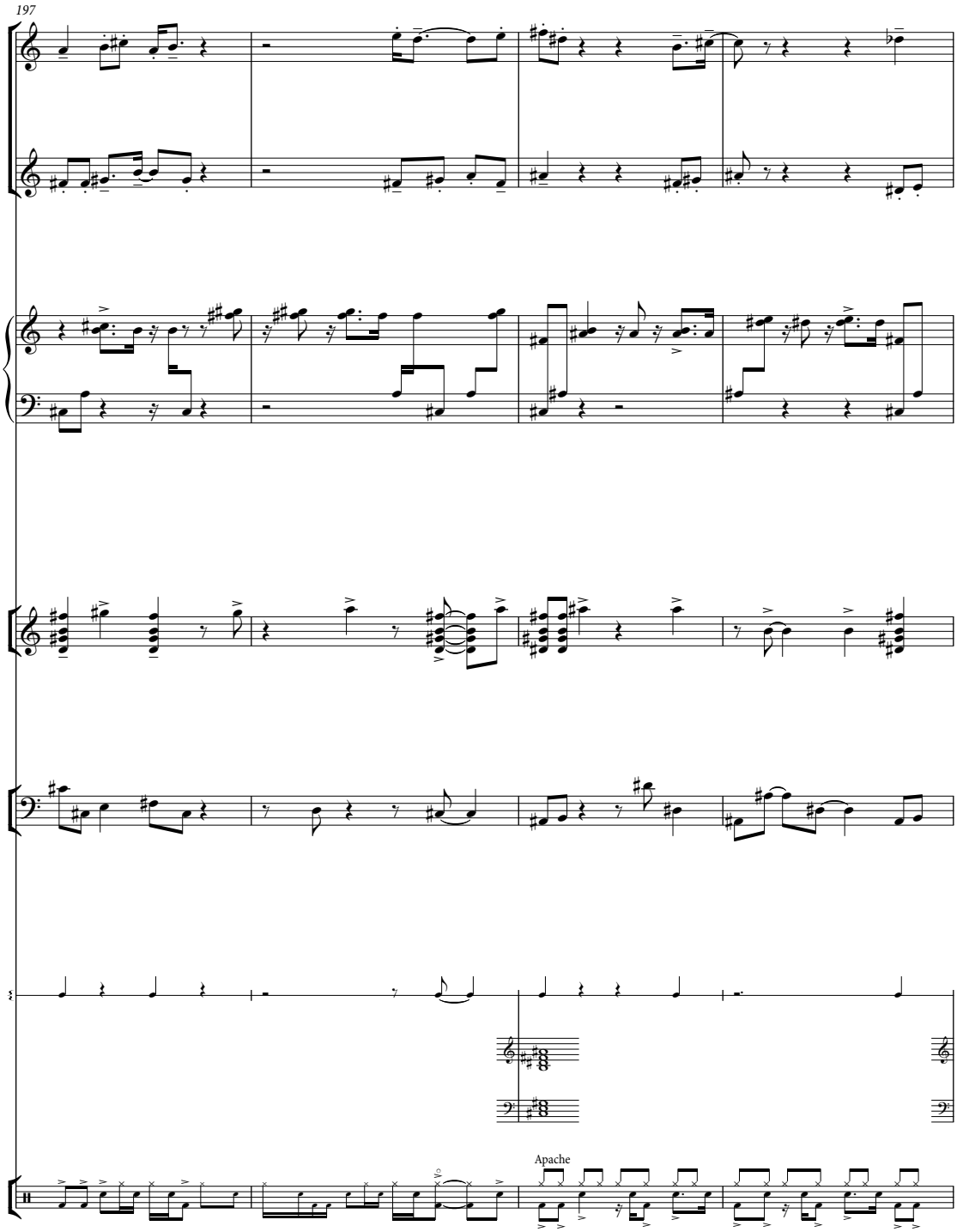

178
Ob.
Sax.
Mar.
Gtr.
Bass
Think

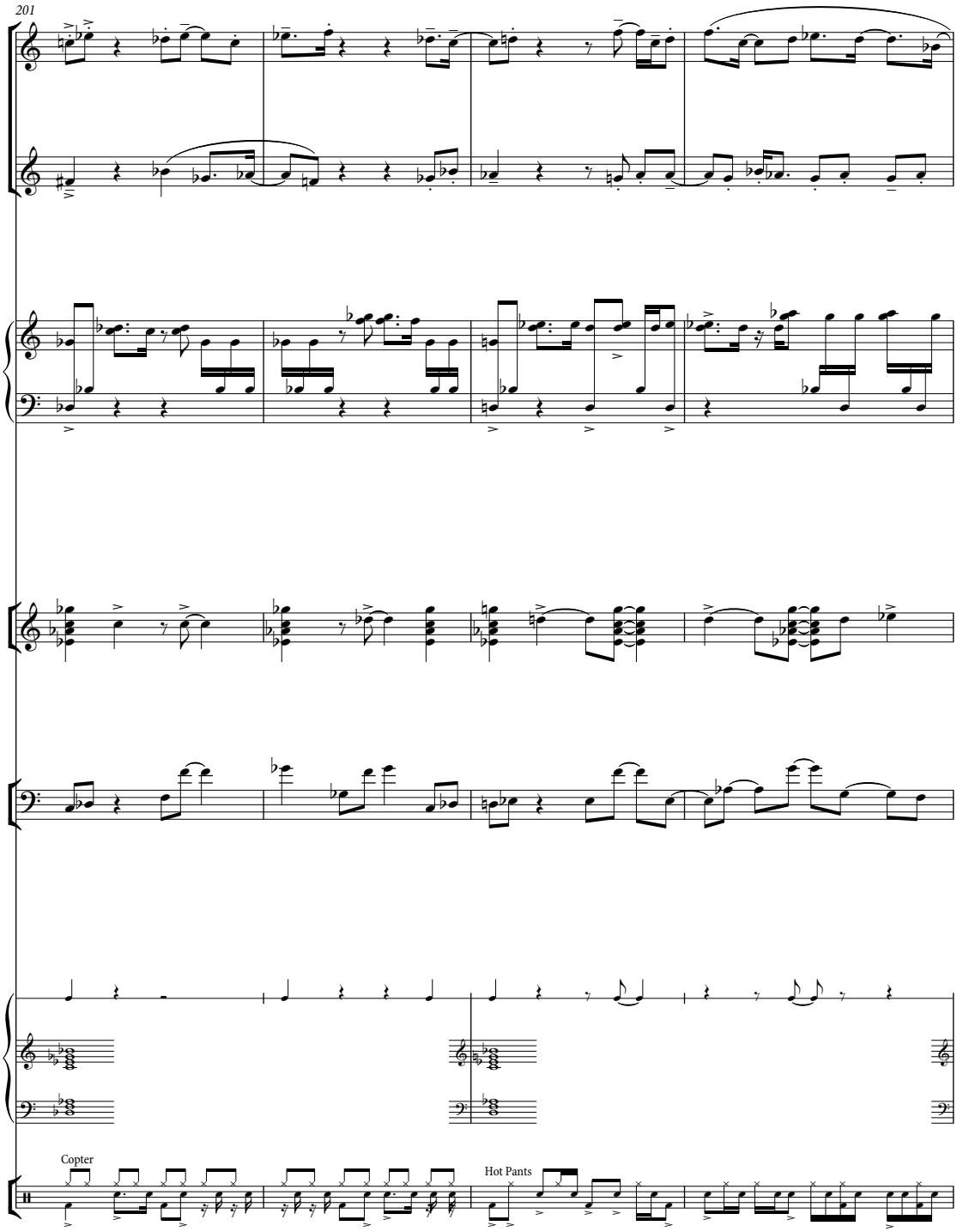

182
Ob.
Sax.
Mar.
Gtr.
Bass

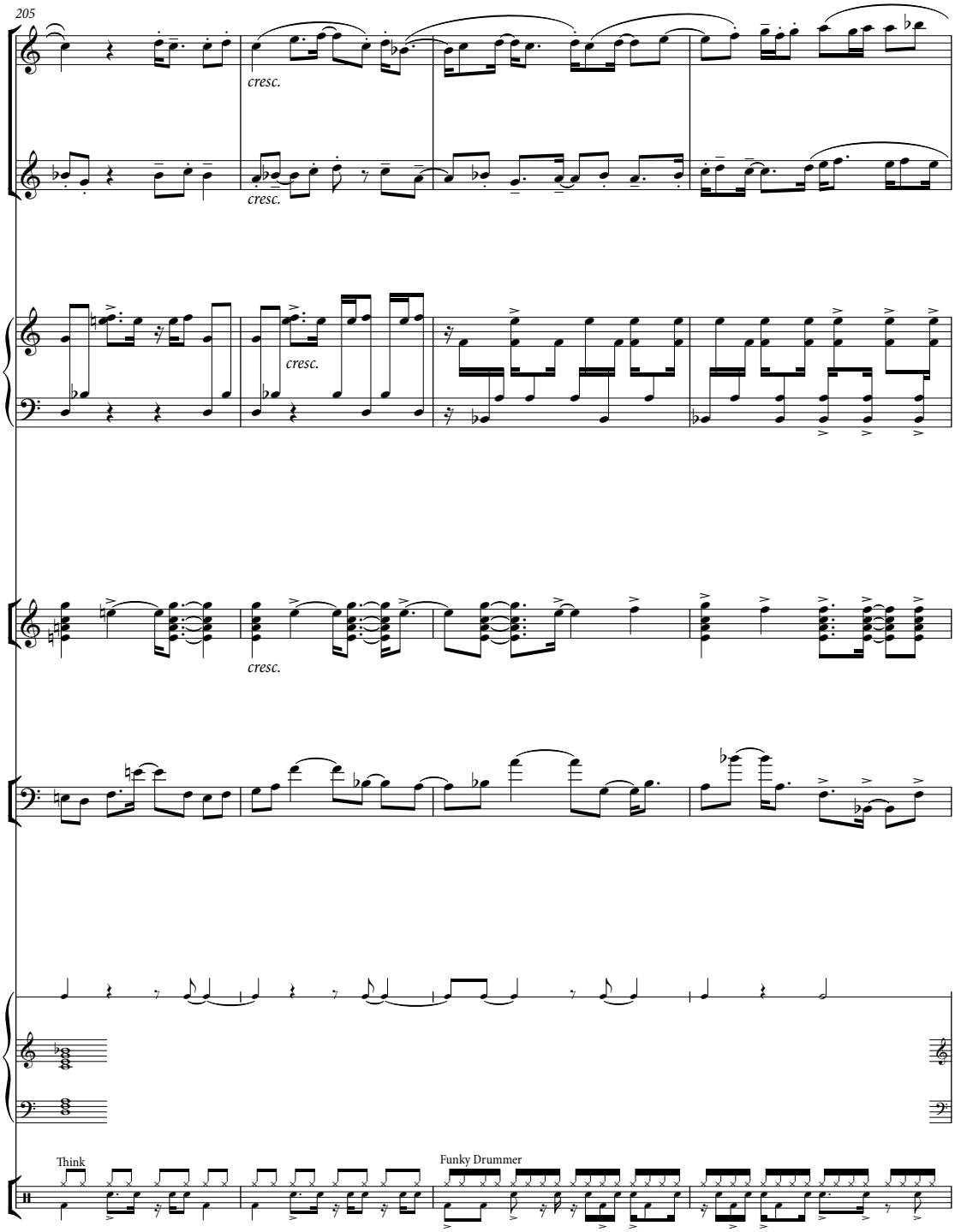

186
Ob.
Sax.
Mar.
Gtr.
Bass
Funky Drummer

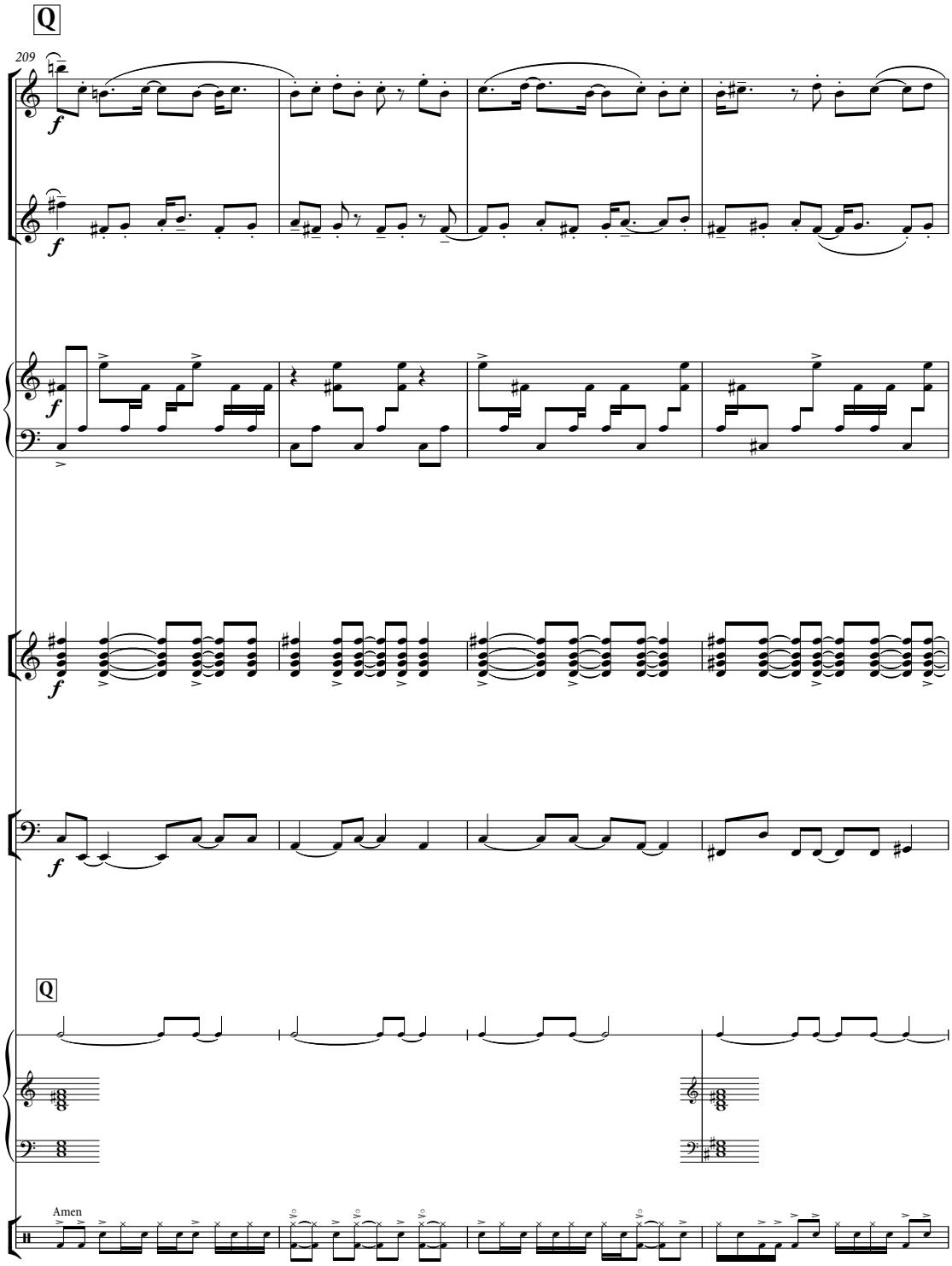

189
Ob.
Sax.
Mar.
Gtr.
ff
Bass
ff

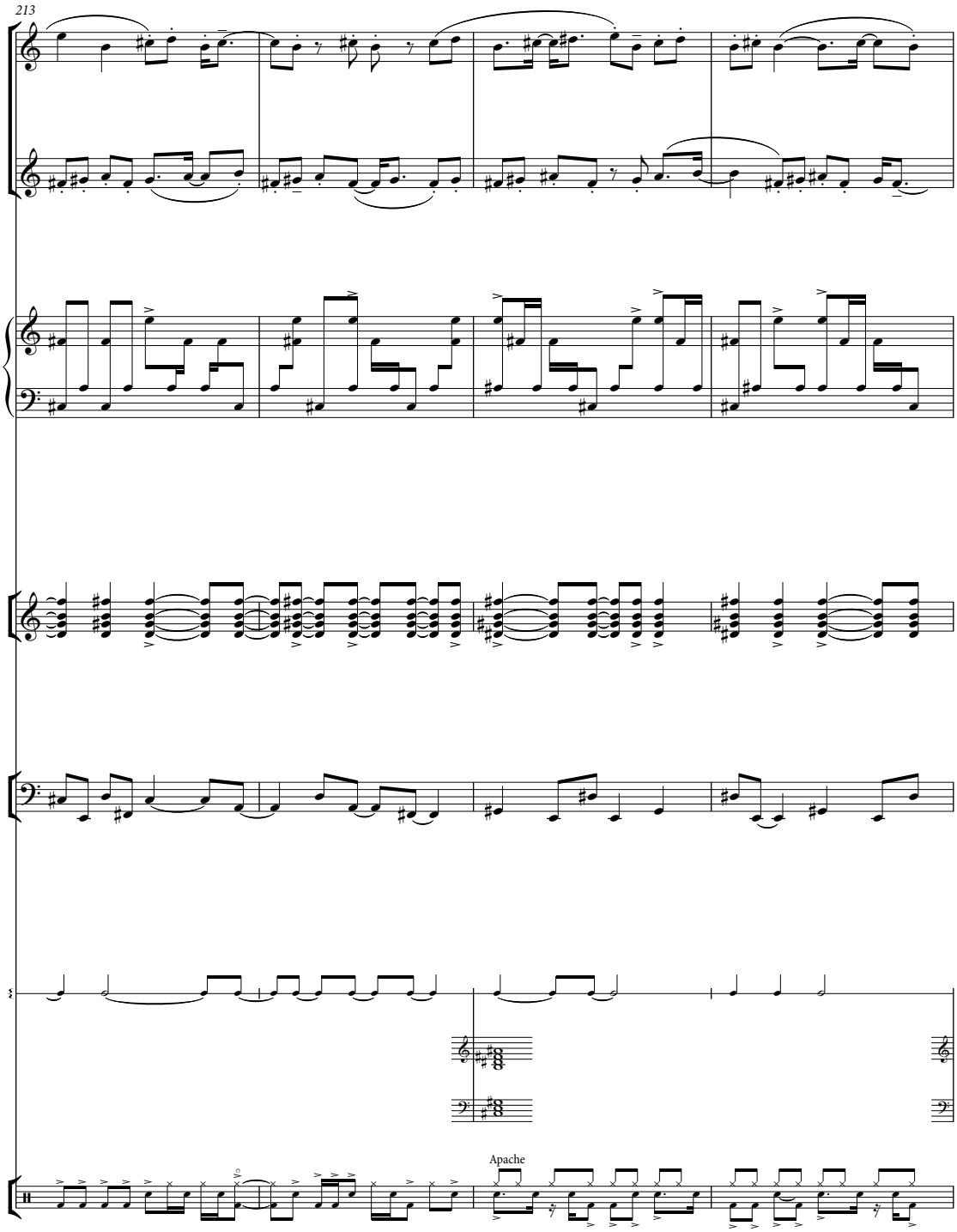

P A tempo ♩=132
193
Ob.
Sax.
Mar.
dist. off
Gtr.
Bass
P A tempo ♩=132
Amen

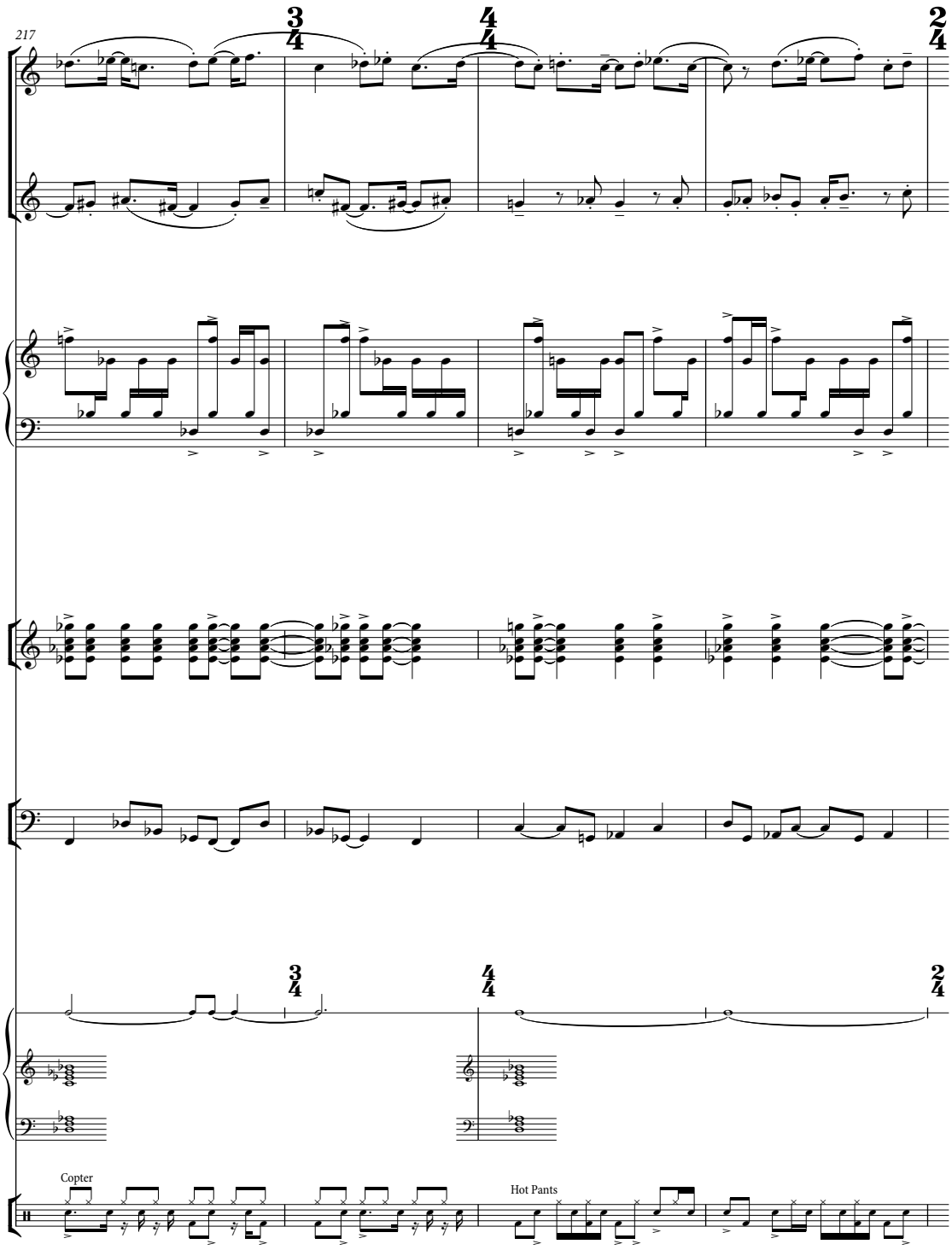

197
Ob.
Sax.
Mar.
Gtr.
Bass
Apache

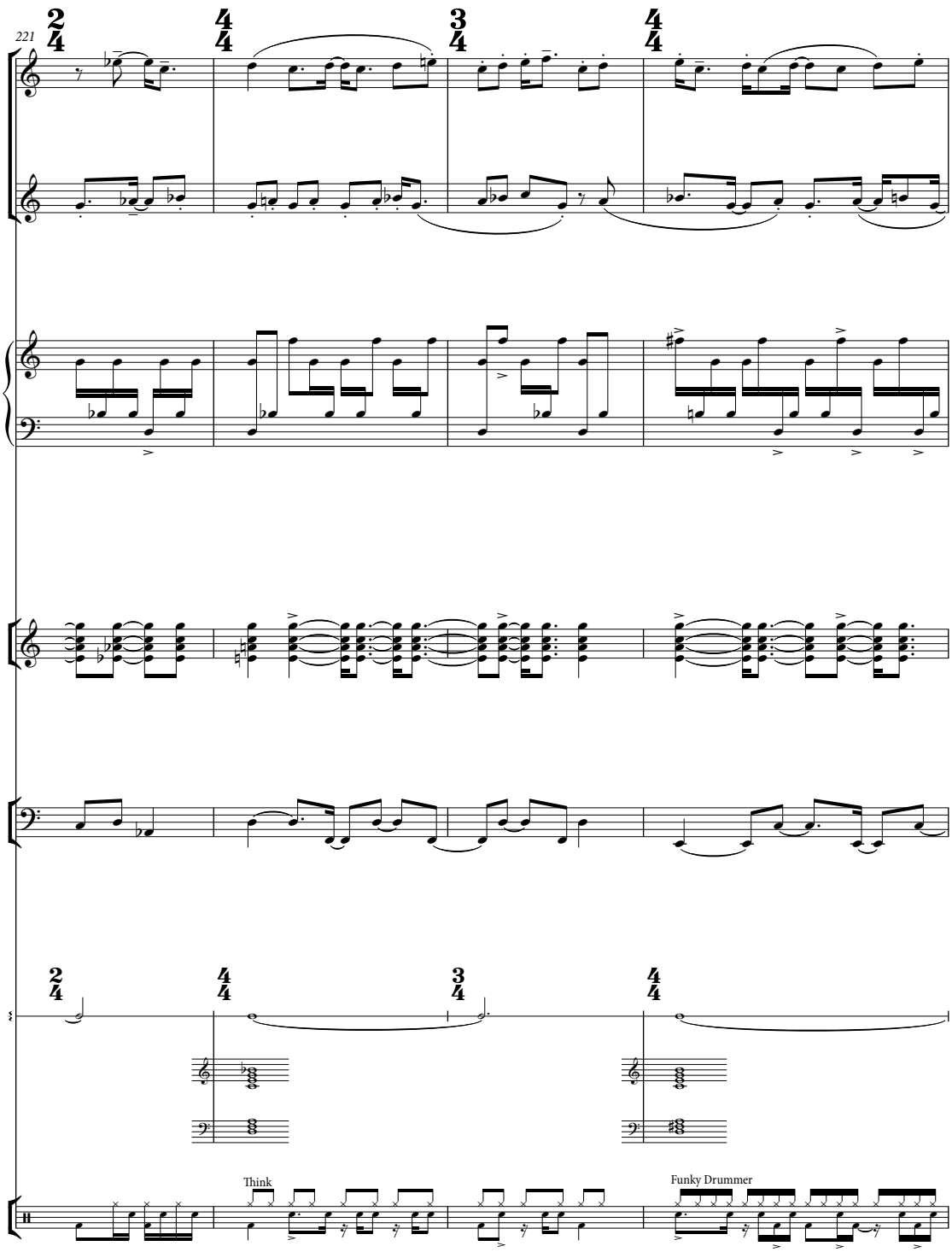

201
Ob.
Sax.
Mar.
Gtr.
Bass
Copter
Hot Pants

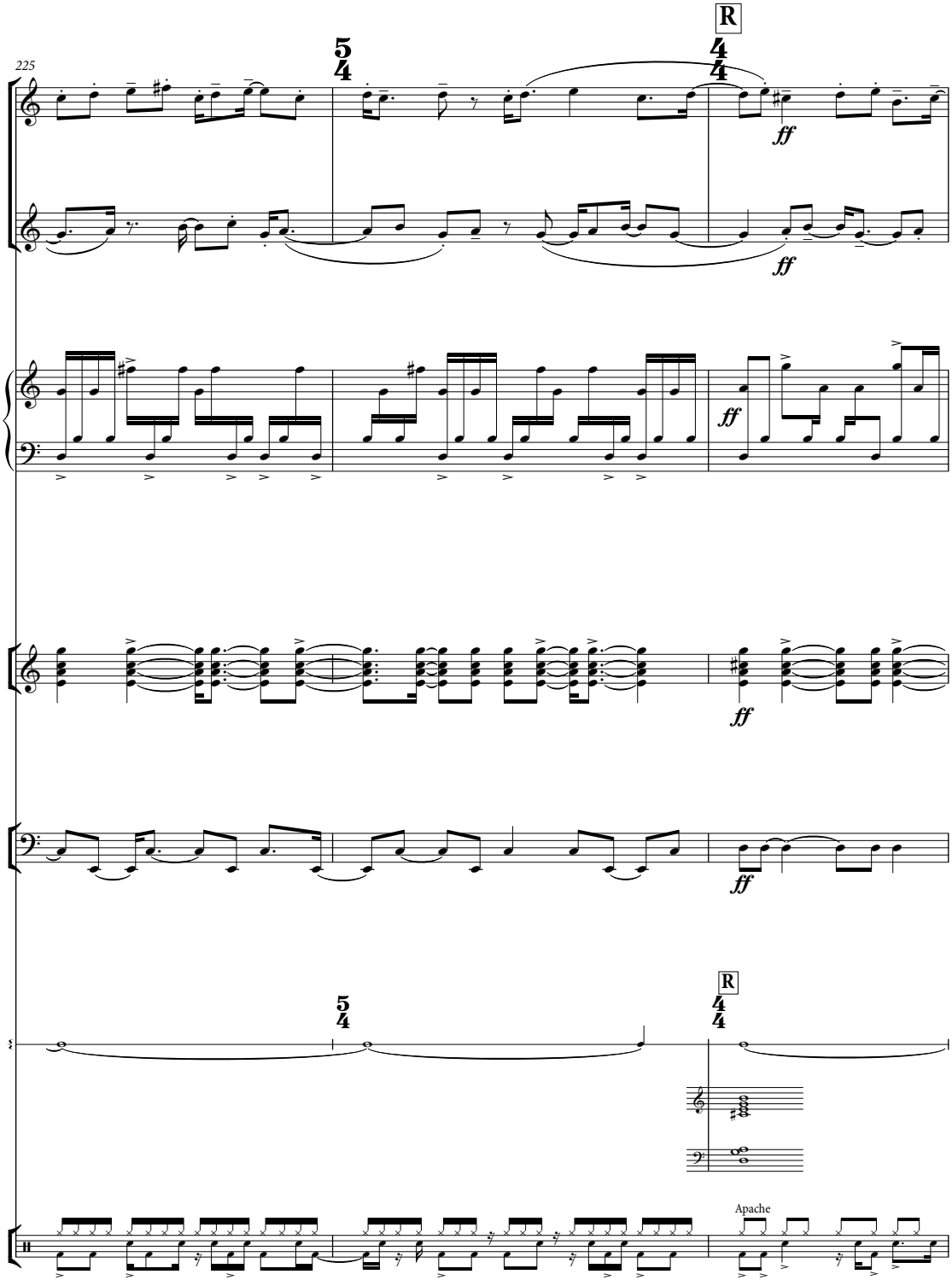

205
Ob.
cresc.
Sax.
cresc.
Mar.
cresc.
Gtr.
cresc.
Bass
Think
Funky Drummer

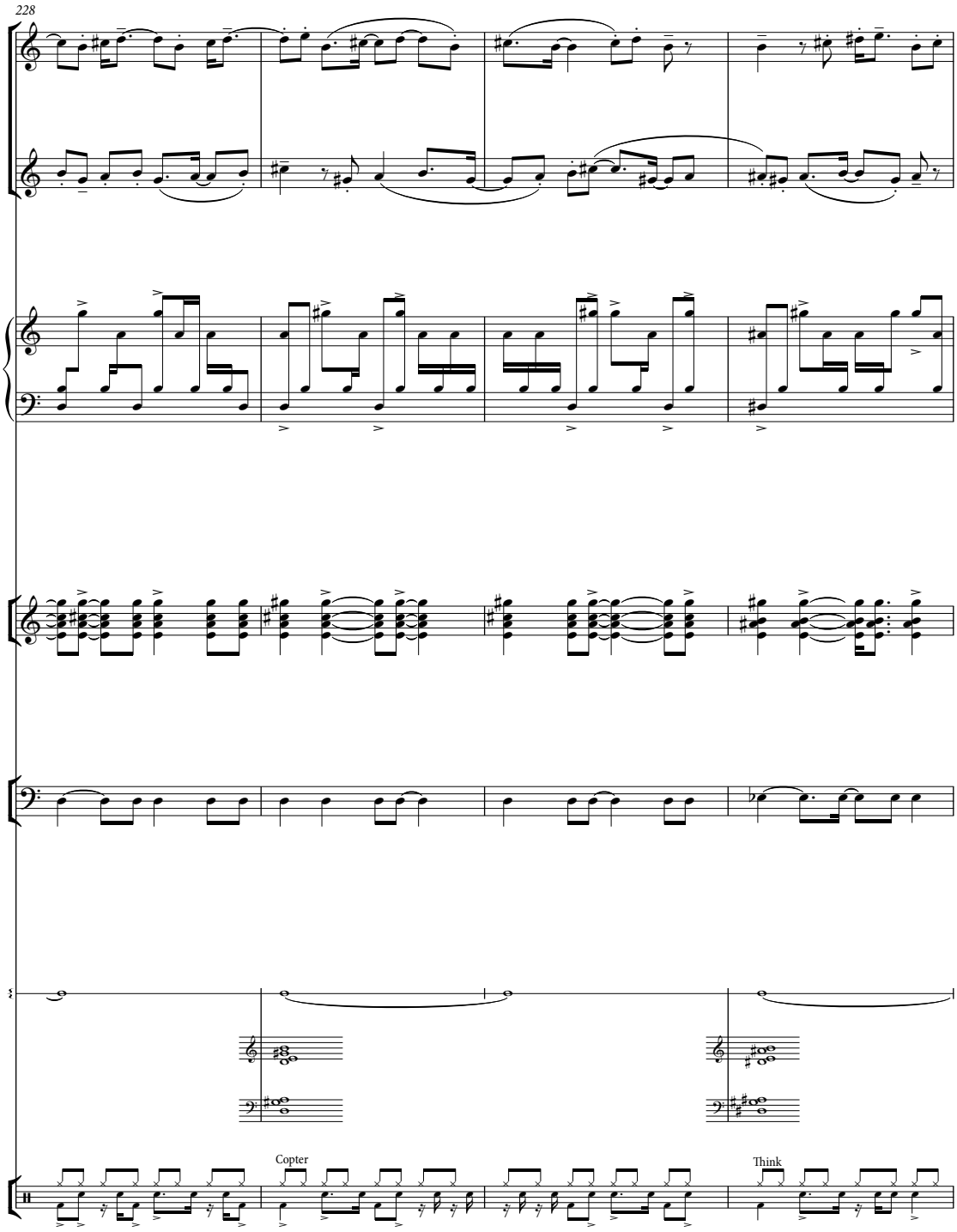

Q
209
Ob.
Sax.
Mar.
Gtr.
Bass
Q
Amen


213
Ob.
Sax.
Mar.
Gtr.
Bass
Apache

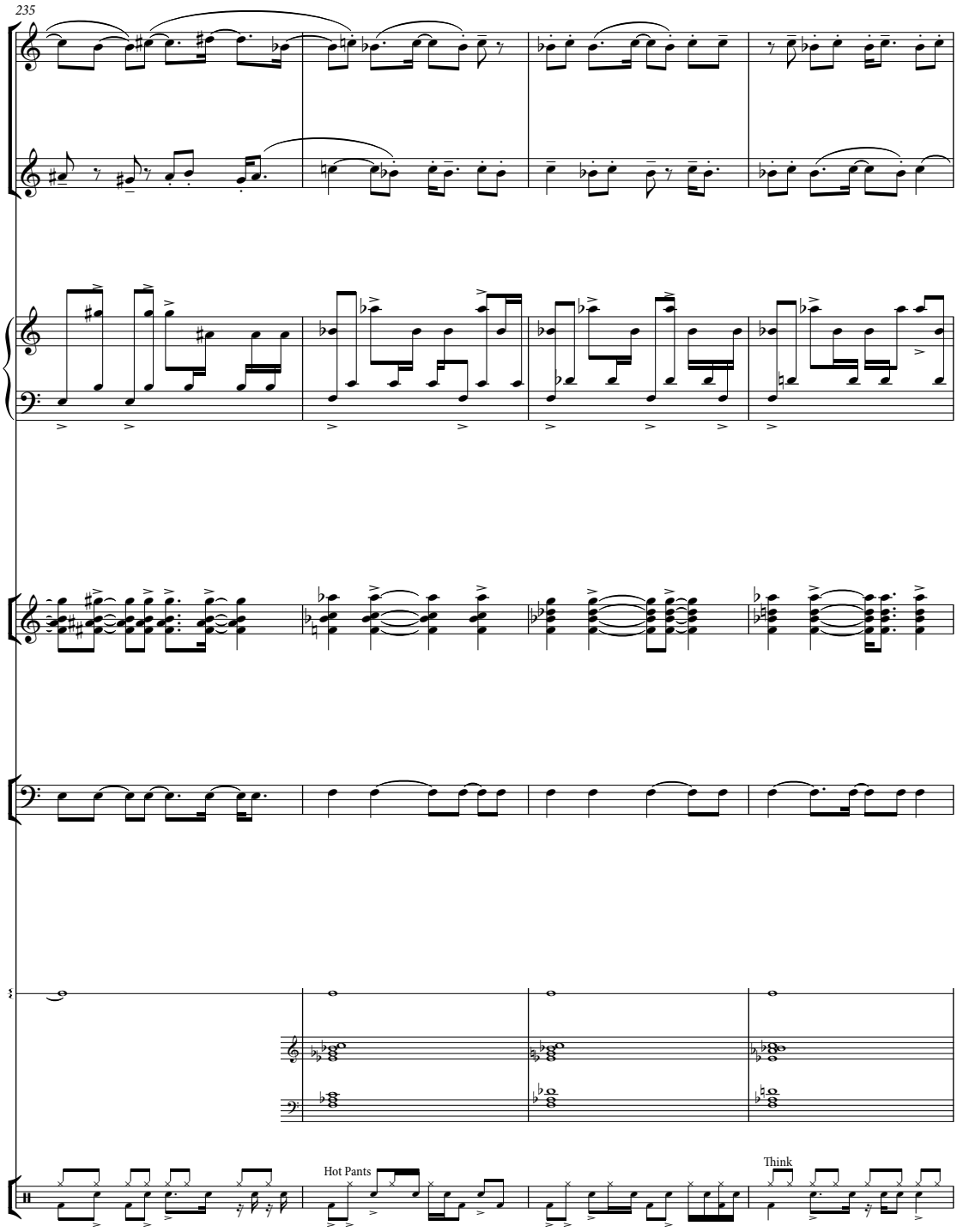

217
Ob.
Sax.
Mar.
Gtr.
Bass
Copter
Hot Pants

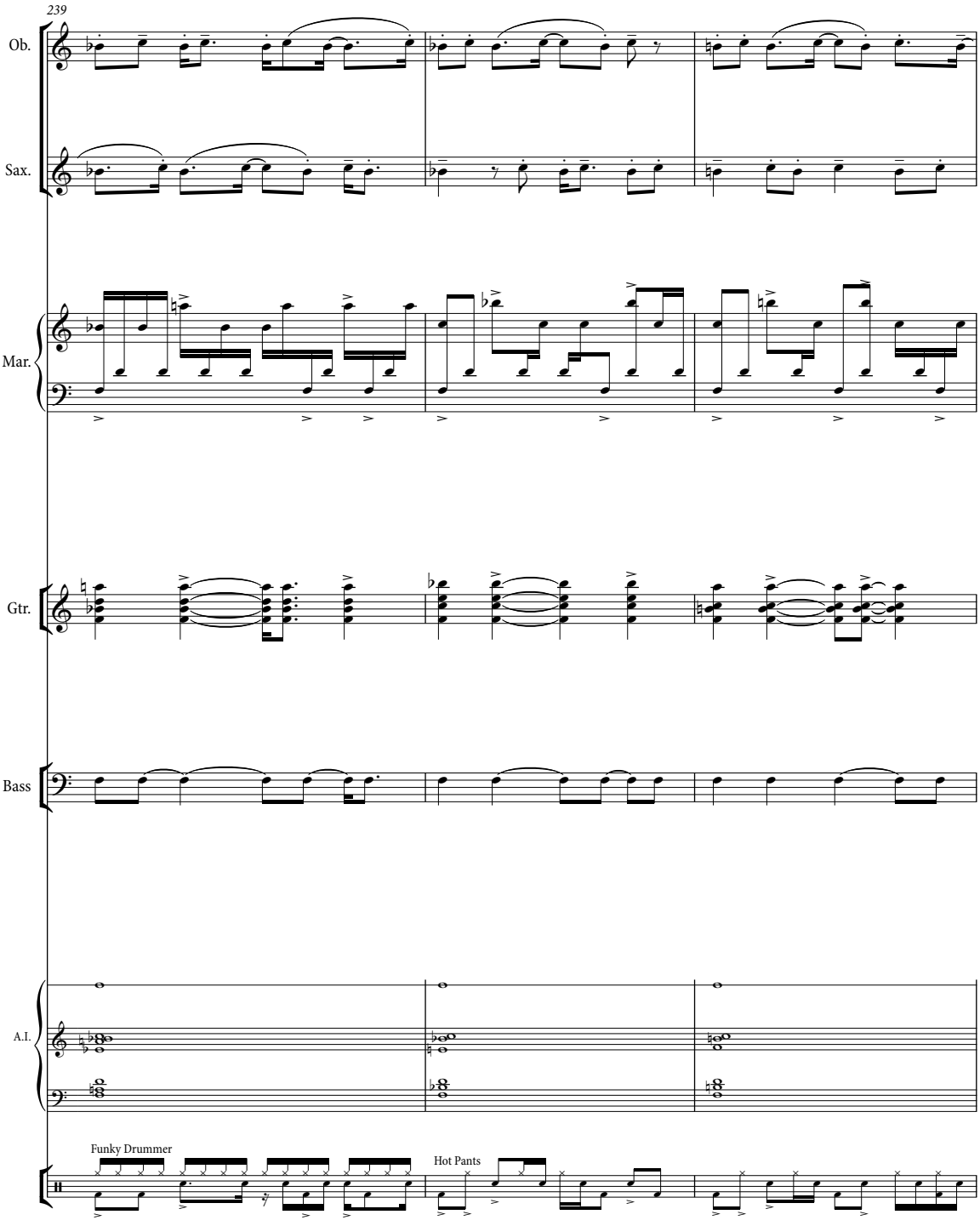

221
Ob.
Sax.
Mar.
Gtr.
Bass
Think
Funky Drummer

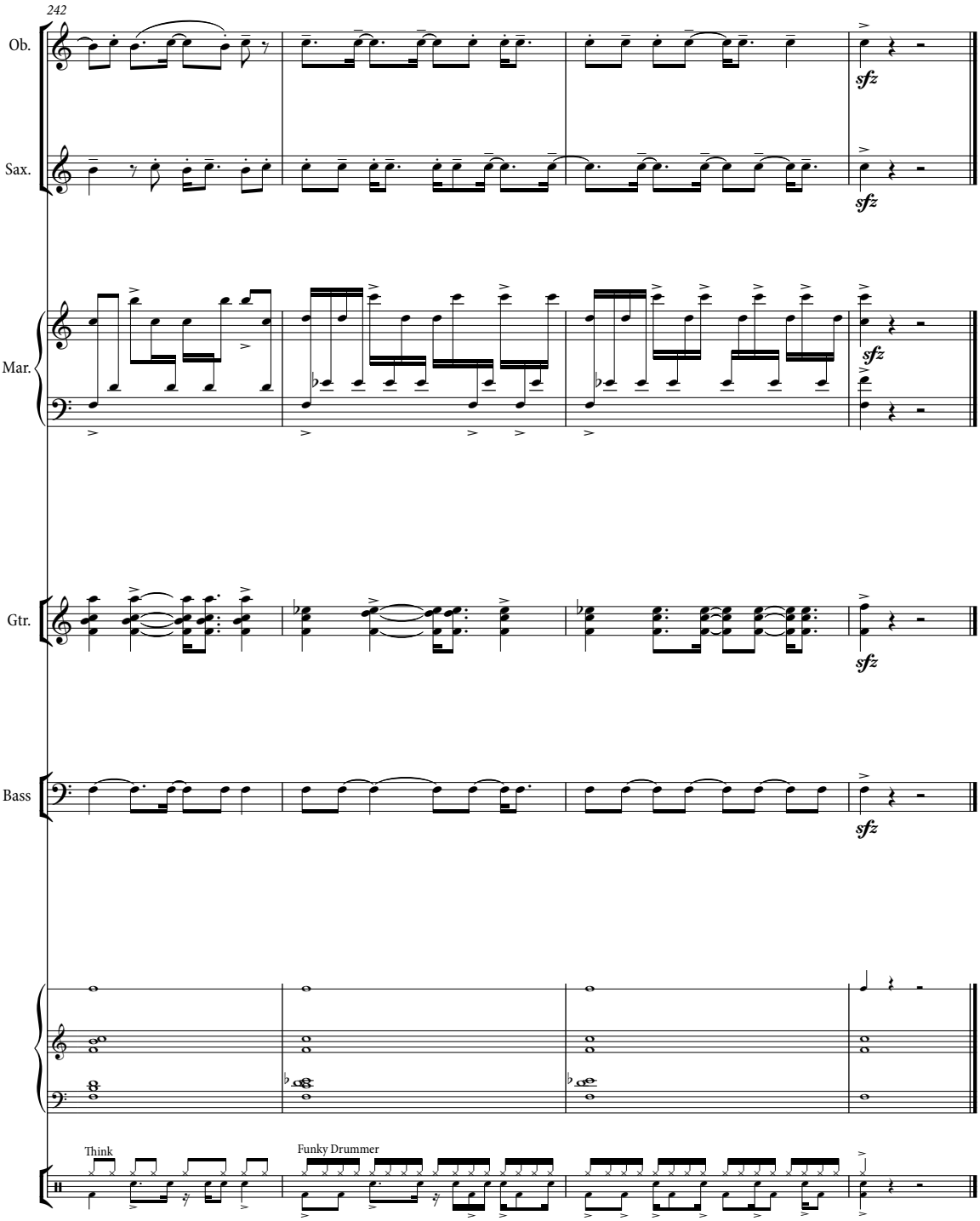

225
Ob.
Sax.
Mar.
Gtr.
Bass
R
ff
Apache


228
Ob.
Sax.
Mar.
Gtr.
Bass
Copter
Think

232
Ob.
Sax.
Mar.
Gtr.
Bass
A.I.
Funky Drummer
Copter


235
Ob.
Sax.
Mar.
Gtr.
Bass
Hot Pants
Think


239
Ob.
Sax.
Mar.
Gtr.
Bass
A.I.
Funky Drummer
Hot Pants


242
Ob.
Sax.
Mar.
Gtr.
Bass
sfz
Think
Funky Drummer

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BIOGRAPHY

Born in Washington DC in 1974, Thomas Limbert graduated from the Univ. of North Carolina at Chapel Hill (BA, Music & Philsophy, 1997), receiving the Thelma Thompson award for composition. He subsequently served on the percussion faculty of UNC-CH and worked as an audio engineer before starting graduate work in composition at Duke University. He is active as a composer and performer in the Triangle area of NC having composed both acoustic and electronic music for Burning Coal Theater Company and Duke Theater Studies productions and performed with Duke's Encounters New Music series, Duke/UNC Milestones Festival, Peace College Chamber Singers and Mallarmé Chamber Players. Thom is also a member of pulsoptional, a composers collective and new music ensemble based in Durham, NC. In addition to playing percussion and composing for the group, Thom recorded and mixed their self-titled debut CD which was released in April, 2007. In 2008, Thom was awarded the Alice Blackmore Hicks Endowment Summer Research Fellowship. Thom's music has been performed across North America and abroad by, among others, the UNC Percussion Ensemble, the Duke & UNC Symphony Orchestras, Sarah Gaston and the Polish Radio Amadeus Chamber Orchestra, So Percussion, Alarm Will Sound, Rhymes With Opera, Women's Voices Chorus and pulsoptional. His music is published by Studio 4 Music, Keyboard Percussion Publications and FuguFish publishing (ASCAP). His principal teachers have included Allen Anderson, Lynn Glassock, Stephen Jaffe, Anthony Kelley and Scott Lindroth.