Dave Soldier
& Brad Garton

String Quartet #3 opus 21
with electroencephalograms or recordings

"The Essential"

after the second movement of Arnold Schoenberg's Second String Quartet

1. Sample & Hold Variation
2. Fractal Variation "Benoit meets Arnold in 5 Dimensions"
3. Fourier Transformations
4. Integral Variation
5. First Derivative Variation

June 14 2011 version

about 30 minutes

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Performance notes for "The Essential Quartet"

This piece can either be performed by a string quartet using EEG headbands that trigger previously recorded samples, or using a fifth musician as an engineer who triggers the samples. The EEG triggering is accomplished via MAX/MSP programs that Brad Garton has devised. The triggered samples are only required in the first movement, but a creative programmer can use the EEGs to trigger appropriate sounds for the other movements except for the Fractal Variation, which should be entirely live. Samples already prepared for the 1st and 3rd movement can be downloaded from my website davesoldier.com

1. *Sample & Hold*

This uses the EEGs or the prerecorded music. The sections with repeat signs are repeated at will by the players: move on when they become tedious unless you decide that tedium is actually desired. Either the EEGs or the engineer can repeat the same sections out of phase. Thus, these repeat sections can either use tracks the players have recorded previously, or one could download versions that we have already prepared.

2. *Fractal Variation*

Inspired by Benoit Mandelbrot, who passed away just before this piece was written, a fractal shows similarity and multiple scales. We took five pitches that reoccur throughout Schoenberg's and produced a fractal pattern where the same intervals occur between each set of 5 note, every 5^{th} note, every 25^{th} note, and every 125^{th} note. It should be played very quickly, and extreme changes in timbre to the taste of the performers are encouraged – do your best to make this not sound dry and predictable and to have the rapid notes sound as if they are passed from voice to voice.

3. Fourier Transformations

The bar graphs show each instrument's pitches times it's total duration times its volume. For instance if C is played for 8 beats in the 2^{nd} movement of Schoenberg's second, and Eb for 16 beats, and both are at the same volume, the bar is twice as high for Eb. Choose the notes at will, and use whatever sounds and effects you like, but attempt to represent them as the fractions shown, i.e., in the case above, Eb should be played twice as much as C. Don't let it last to the point where it is tedious, unless that's the effect you would like for your listeners. Here too, timbral changes and a thick sound are desired. Eventually, drift to your average note, which is the average of all your bars in the graph, and eventually everyone slowly slides together to the average note of the entire piece.

4. Integral Variation

This sums all of the pitches, and this rapidly goes beyond the range that the instruments can play, and then beyond the range of hearing. It is thus very short.

The value of the lowest note is an arbitrary constant: the reason that the cello lasts longest is that the low D is chosen as the constant, so that succeeding Ds add zeroes, and the low C makes the integral negative. Nevertheless, even starting at a very low range, the pitches inevitably climb rapidly.

5. *First Derivative Variation*

This uses the first derivative of each separate part. For example, if the viola plays in succession C, E, Bb below the C, the intervals are a major third up and a tritone below. If A is chosen as the pitch center, the resulting notes would be A, C# (A plus a major third), D# (A minus a tritone).

While all of the notes are from the first derivative of the original Schoenberg movement, quite a few are removed to make the piece less dense: it feels like making a sculpture of David by removing everything from the stone that isn't David.

-Brad Garton & Dave Soldier NYC April 18, 2011

Score

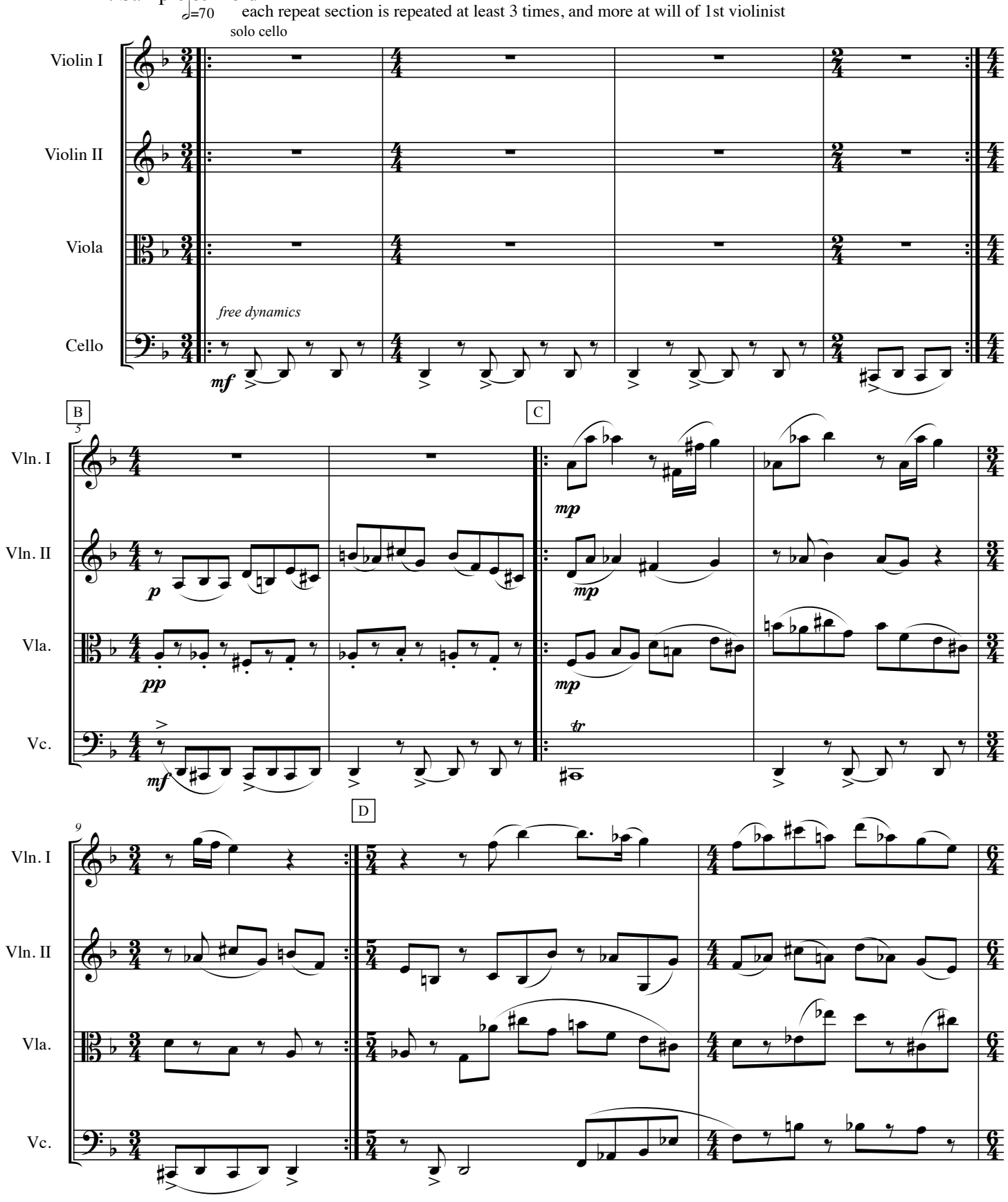
String Quartet #3 "The Essential"

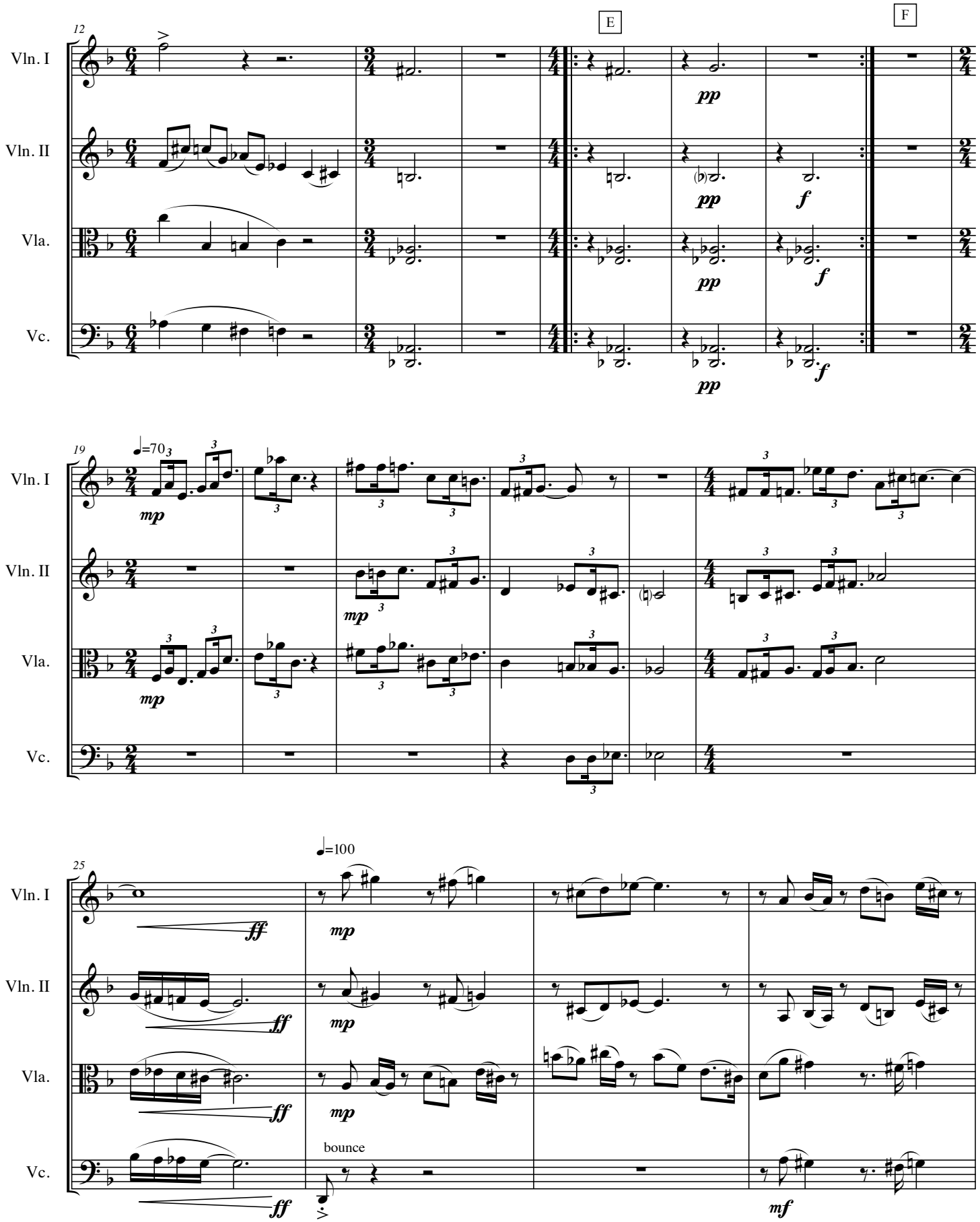
June 12, 2011 version

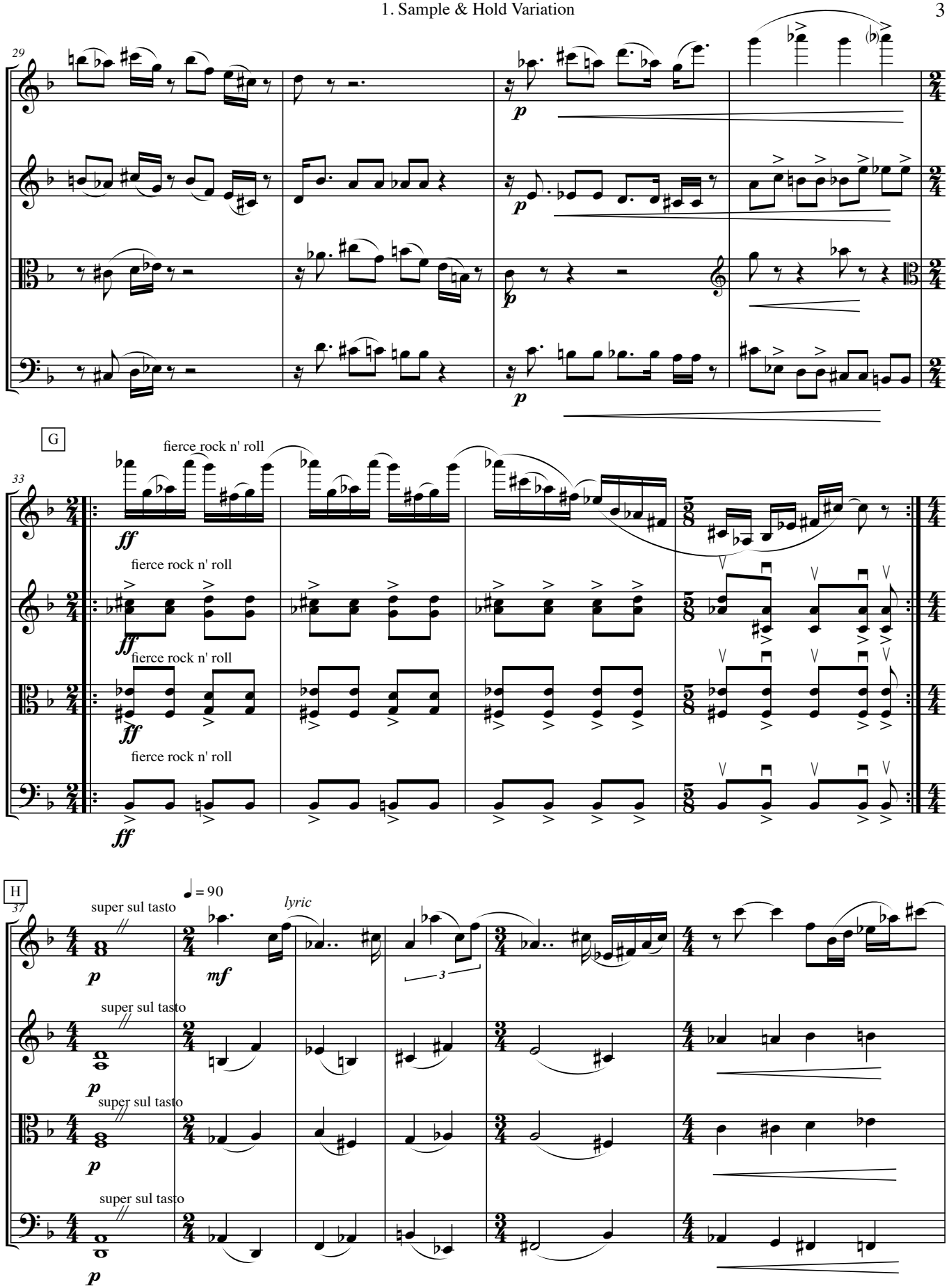
after Arnold Schoenberg's 2nd Quartet, with electroencephalograms

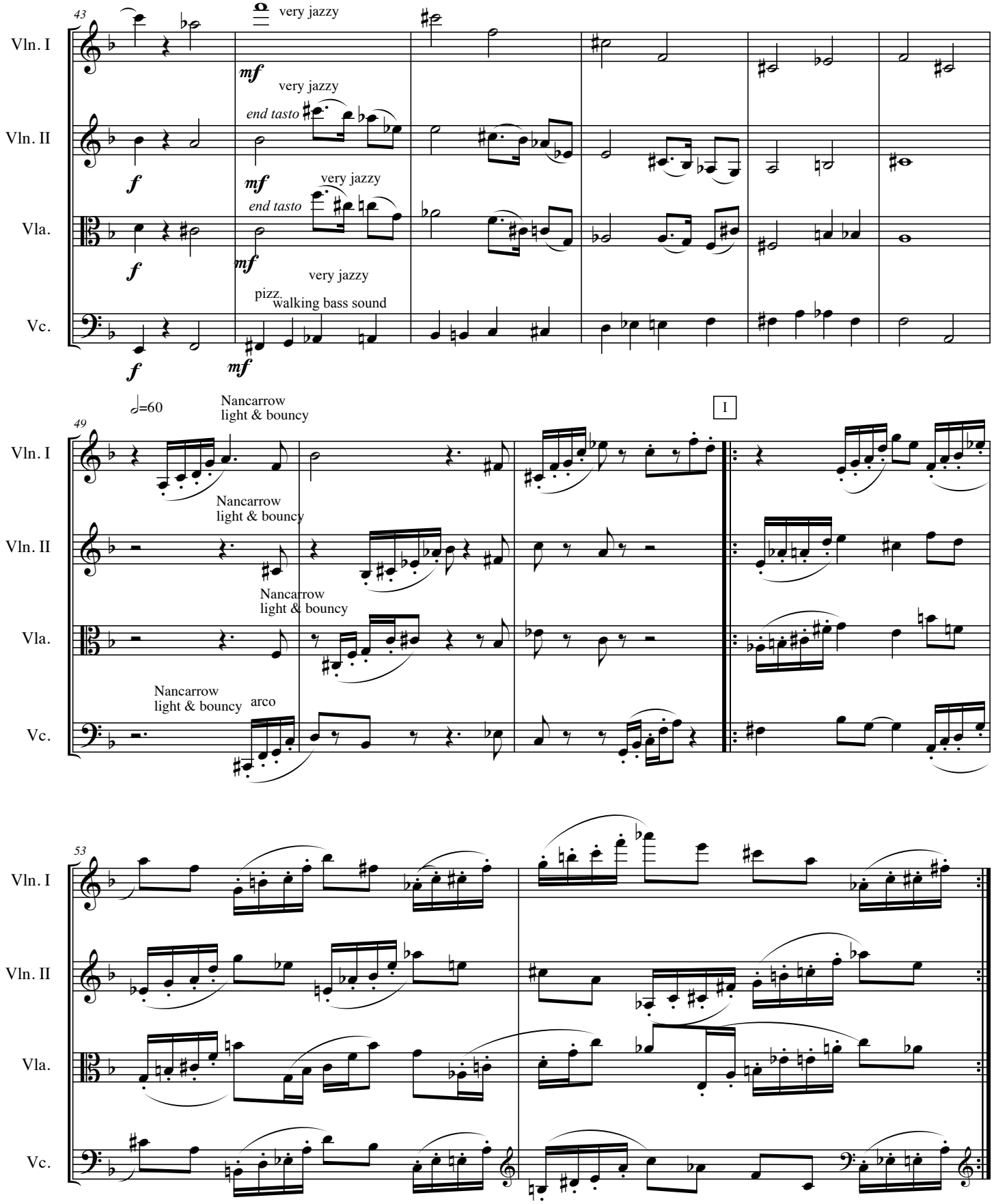
Dave Soldier & Brad Garton

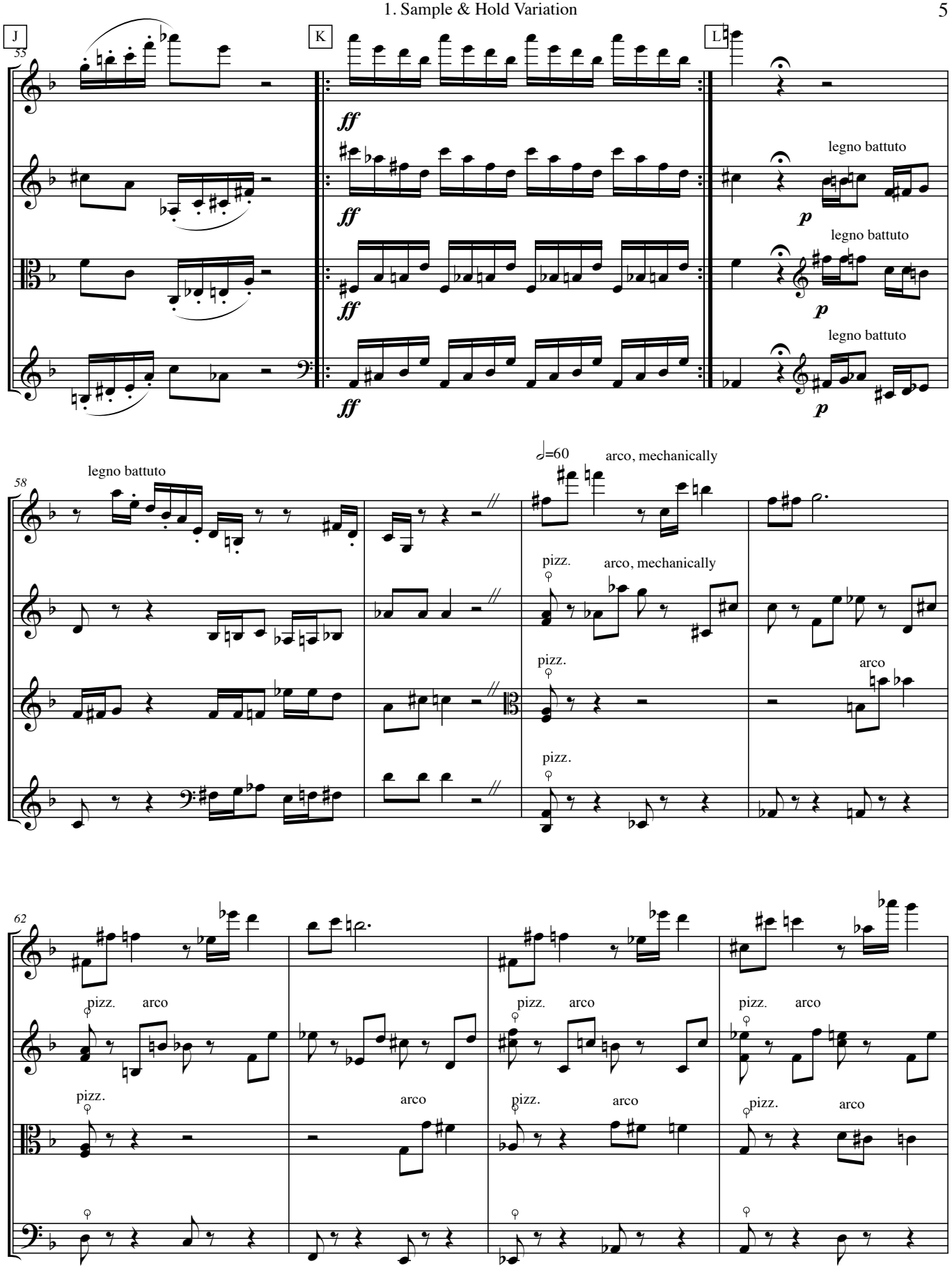
1. Sample & Hold

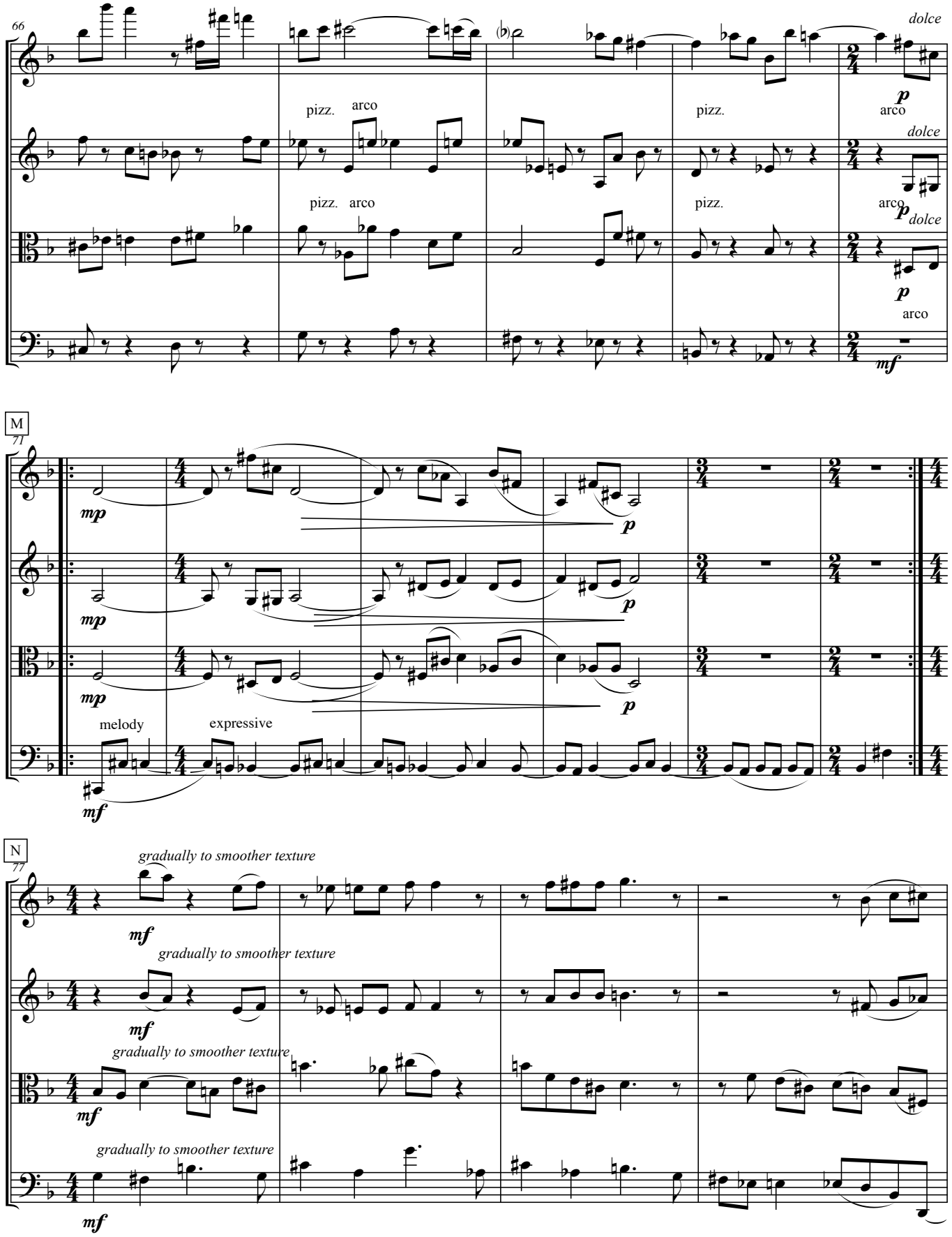


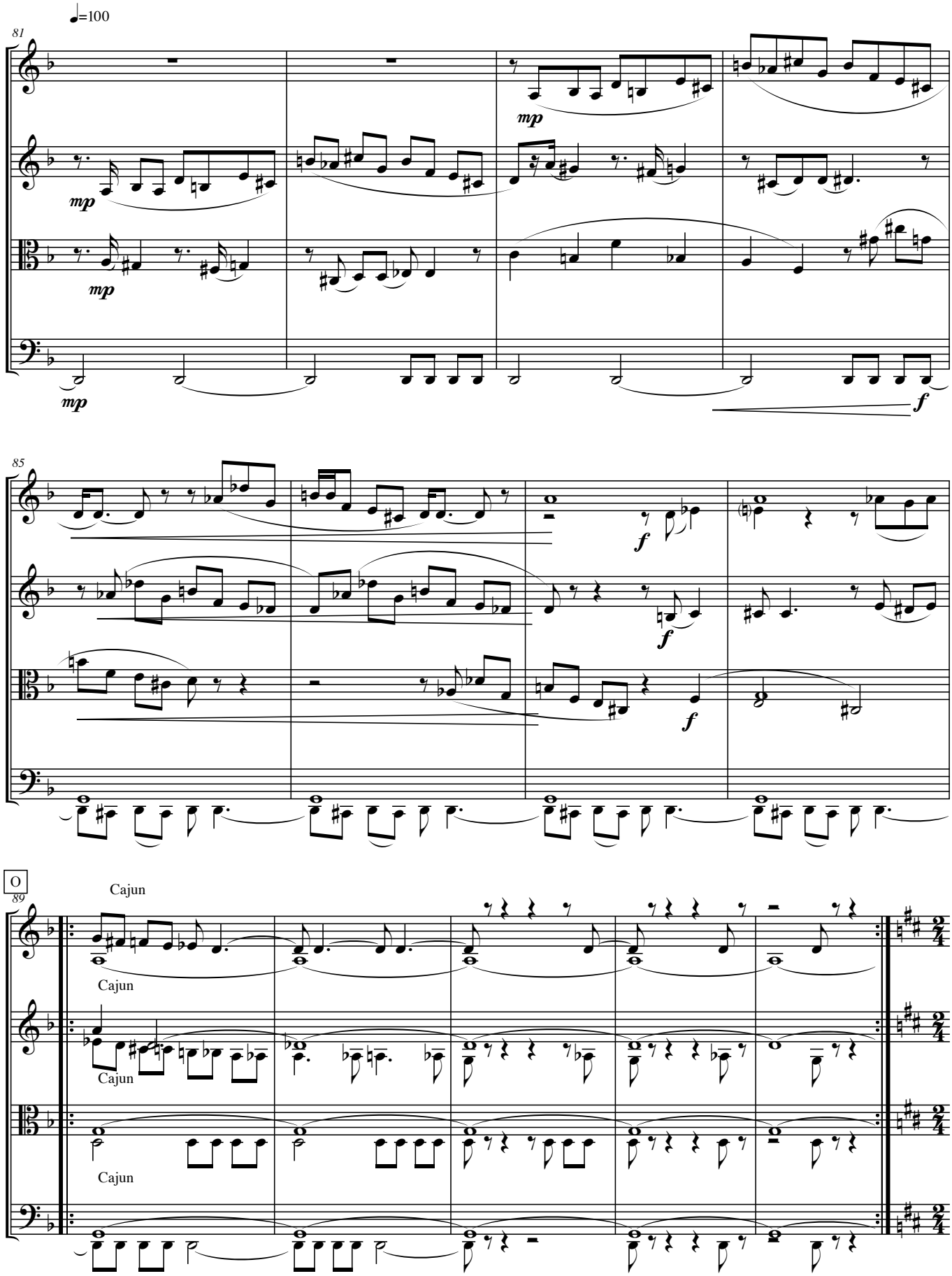

12
E
F
Vln. I
Vln. II
Vla.
Vc.
pp
f
19
♩=70
mp
25
♩=100
ff
bounce
mf

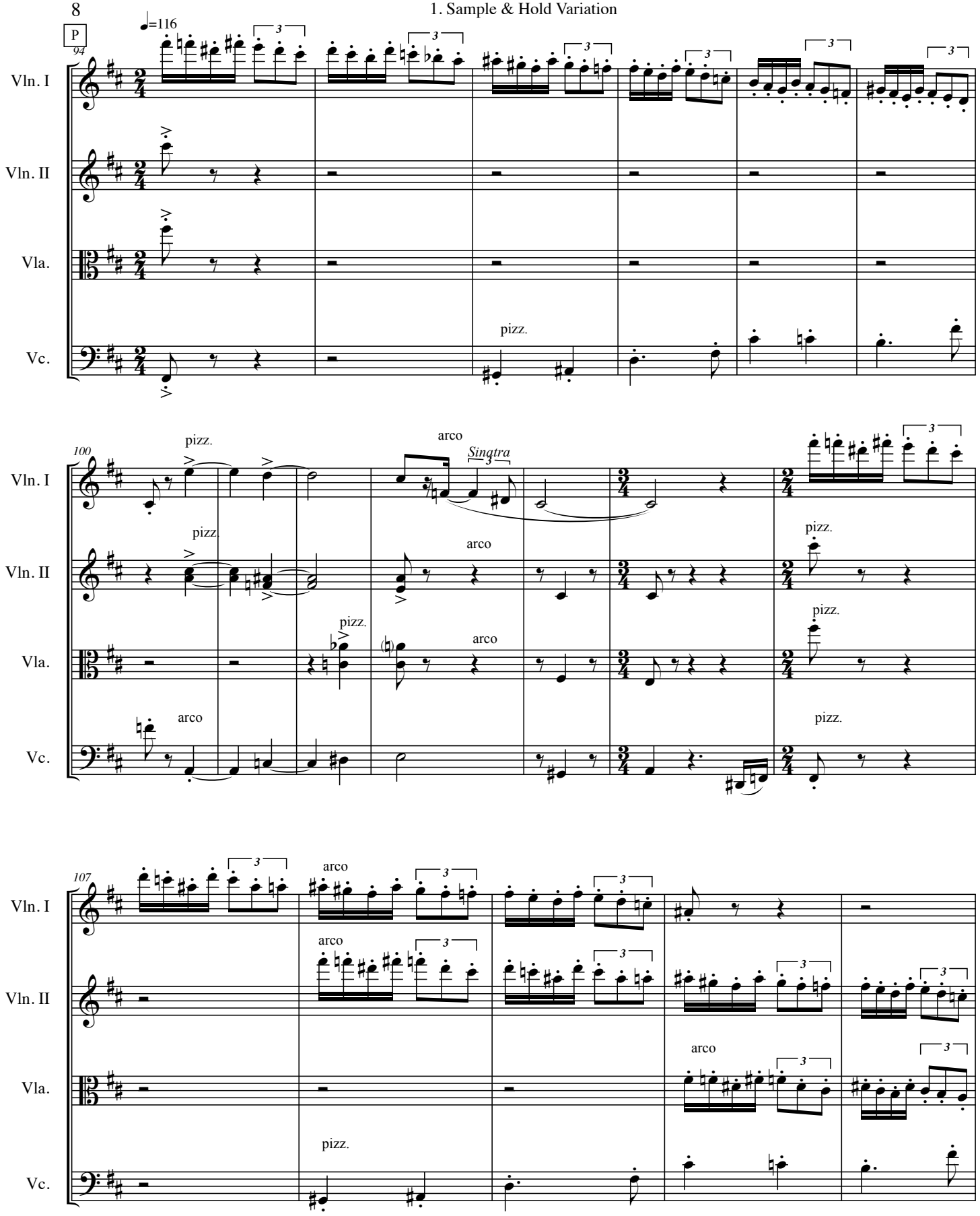

29
Vln. I
Vln. II
Vla.
Vc.
p
G
33
fierce rock n' roll
ff
H
37
super sul tasto
♩ = 90
lyric
mf
3

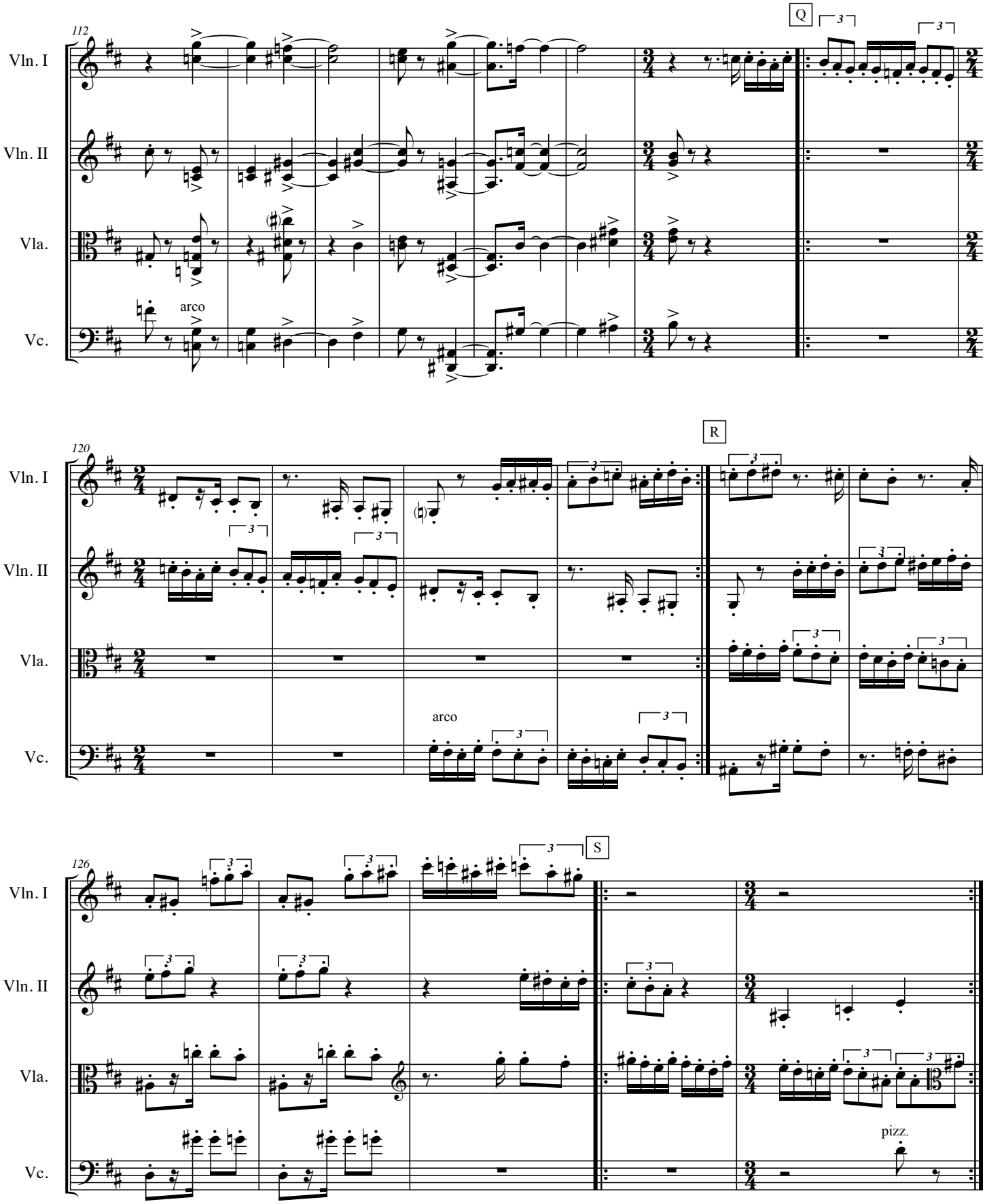

43
very jazzy
Vln. I
mf
very jazzy
end tasto
Vln. II
f
mf
very jazzy
end tasto
Vla.
f
mf
very jazzy
pizz.
walking bass sound
Vc.
f
mf
49
♩=60
Nancarrow
light & bouncy
I
Vln. I
Nancarrow
light & bouncy
Vln. II
Nancarrow
light & bouncy
Vla.
Nancarrow
light & bouncy
arco
Vc.
53
Vln. I
Vln. II
Vla.
Vc.

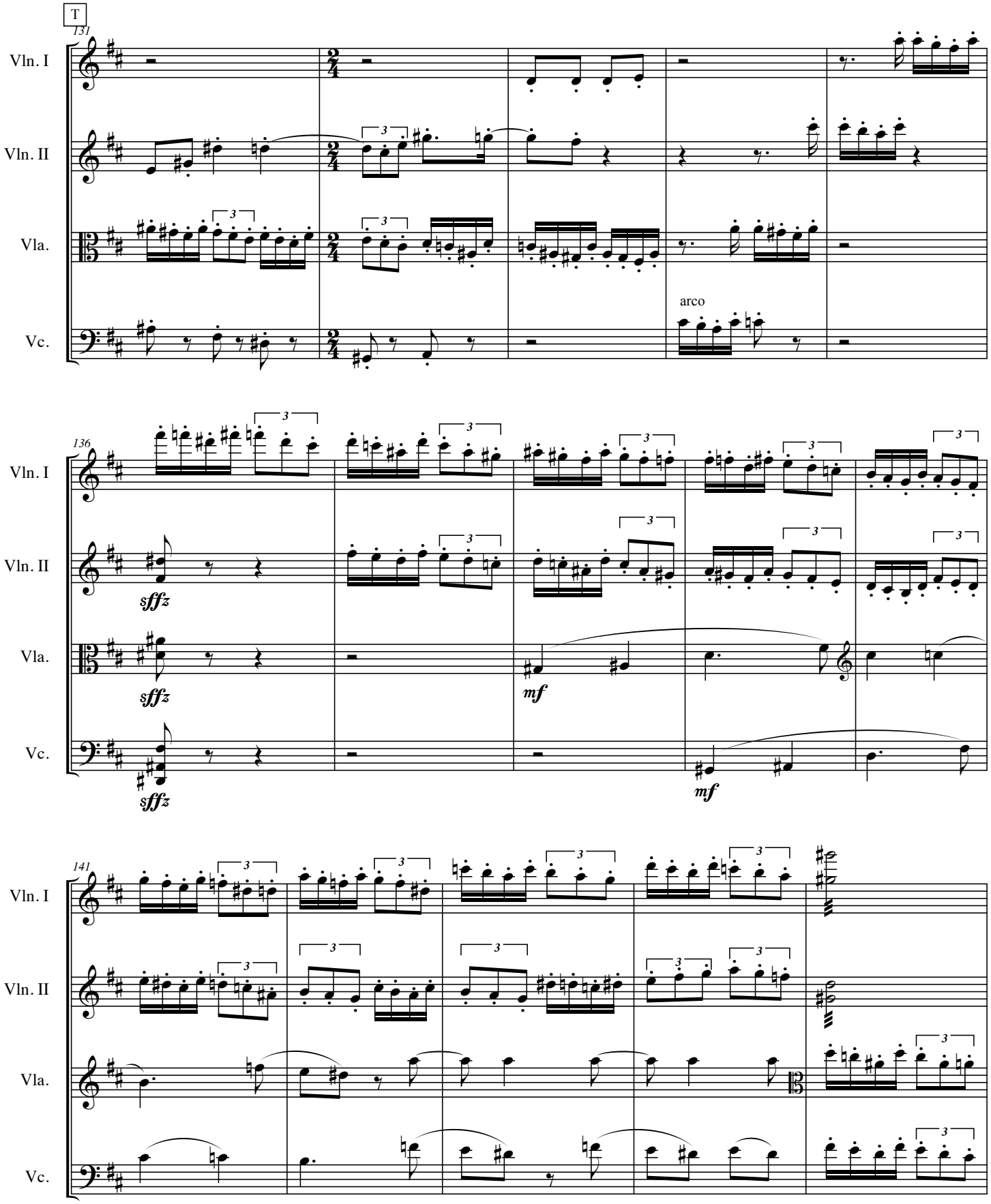

J
K
L
55
Vln. I
Vln. II
Vla.
Vc.
ff
legno battuto
p
58
♩=60
arco, mechanically
pizz.
arco
62

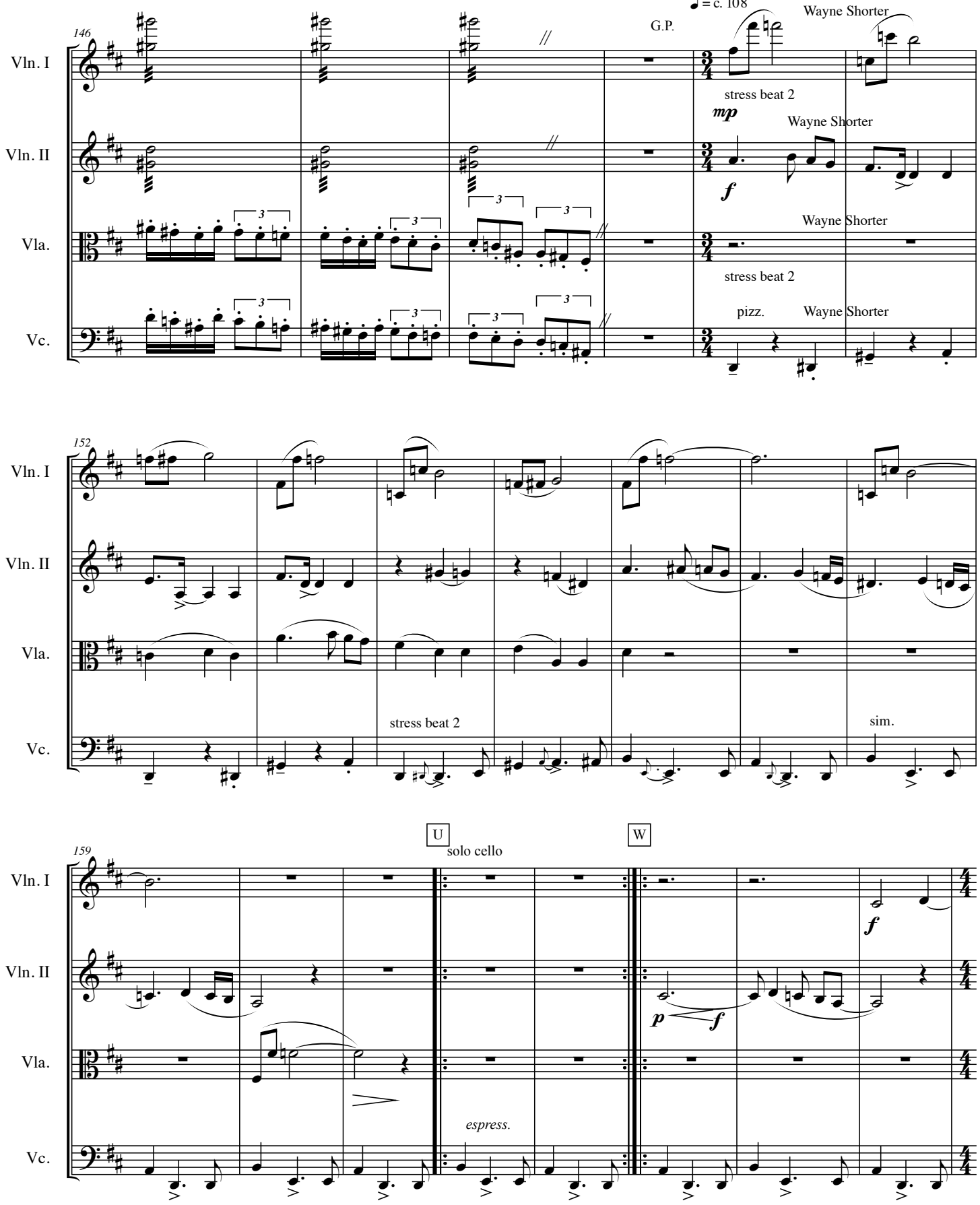

66
Vln. I
Vln. II
Vla.
Vc.
dolce
pizz.
arco
p
mf
M
77
mp
melody
expressive
N
gradually to smoother texture

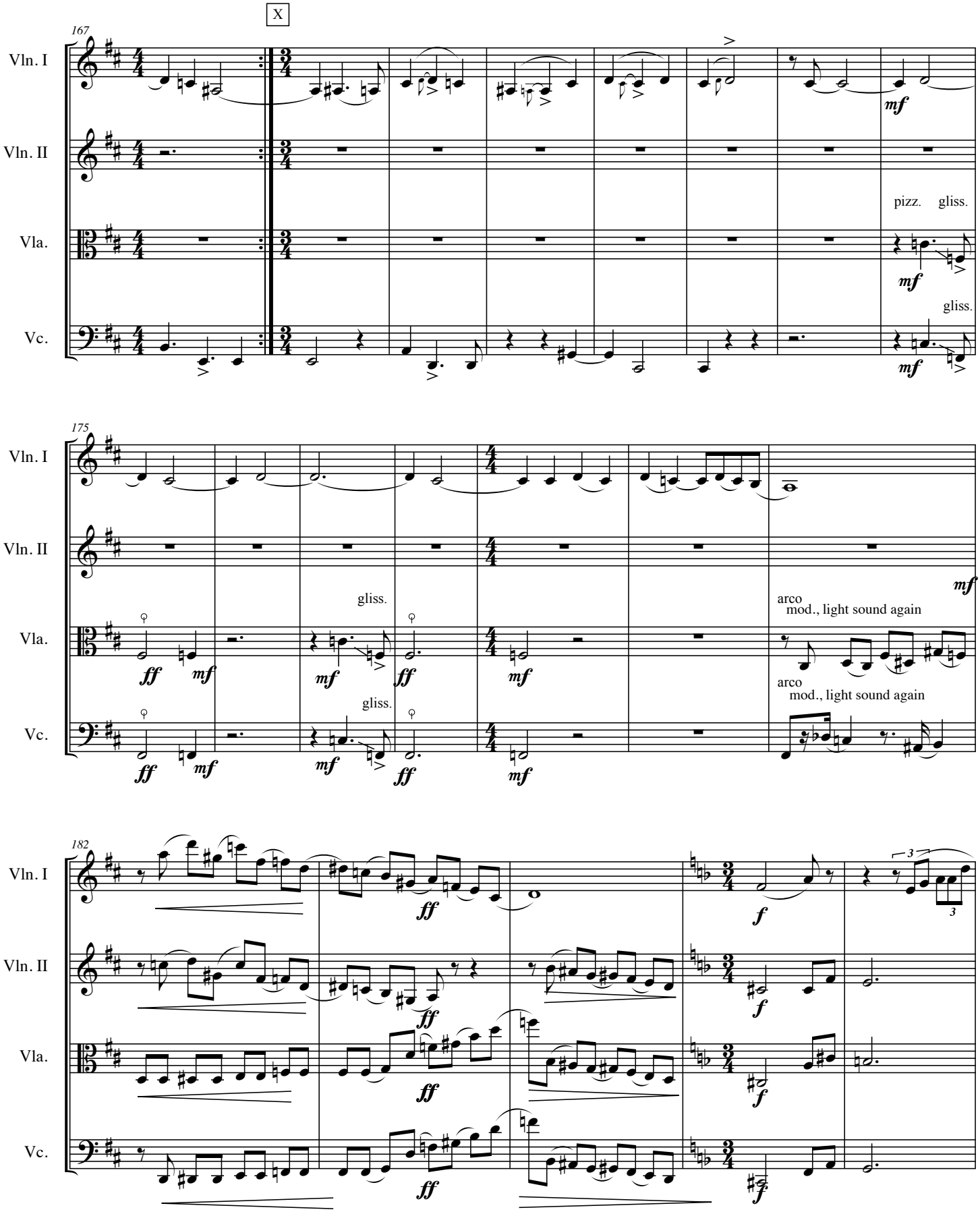

♩=100
81
Vln. I
Vln. II
Vla.
Vc.
mp
mp
mp
mp
f
85
Vln. I
Vln. II
Vla.
Vc.
f
f
f
O
89
Cajun
Vln. I
Vln. II
Vla.
Vc.
Cajun
Cajun
Cajun

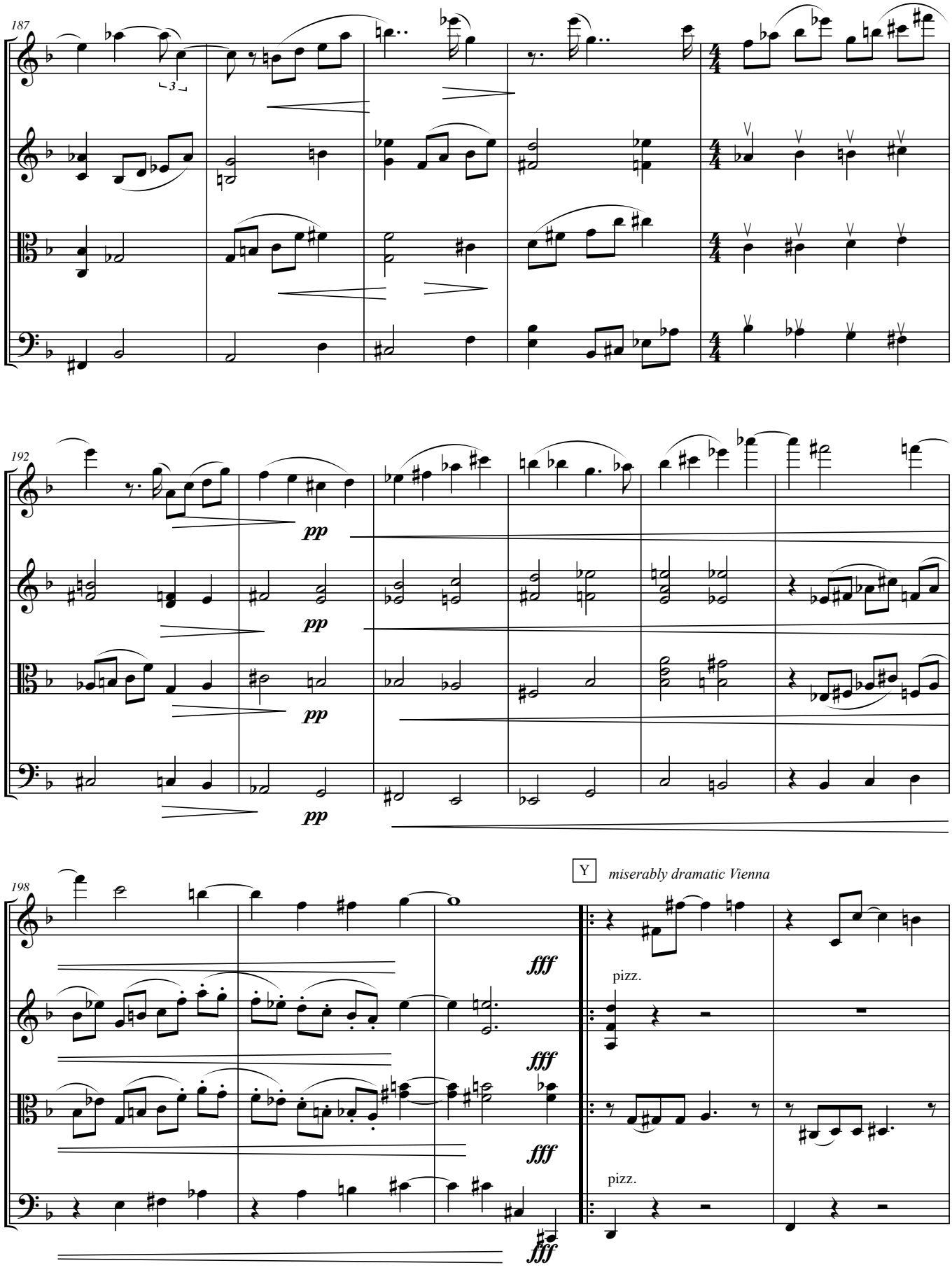

P
94
♩=116
Vln. I
Vln. II
Vla.
Vc.
pizz.
100
arco
Sinqtra
107

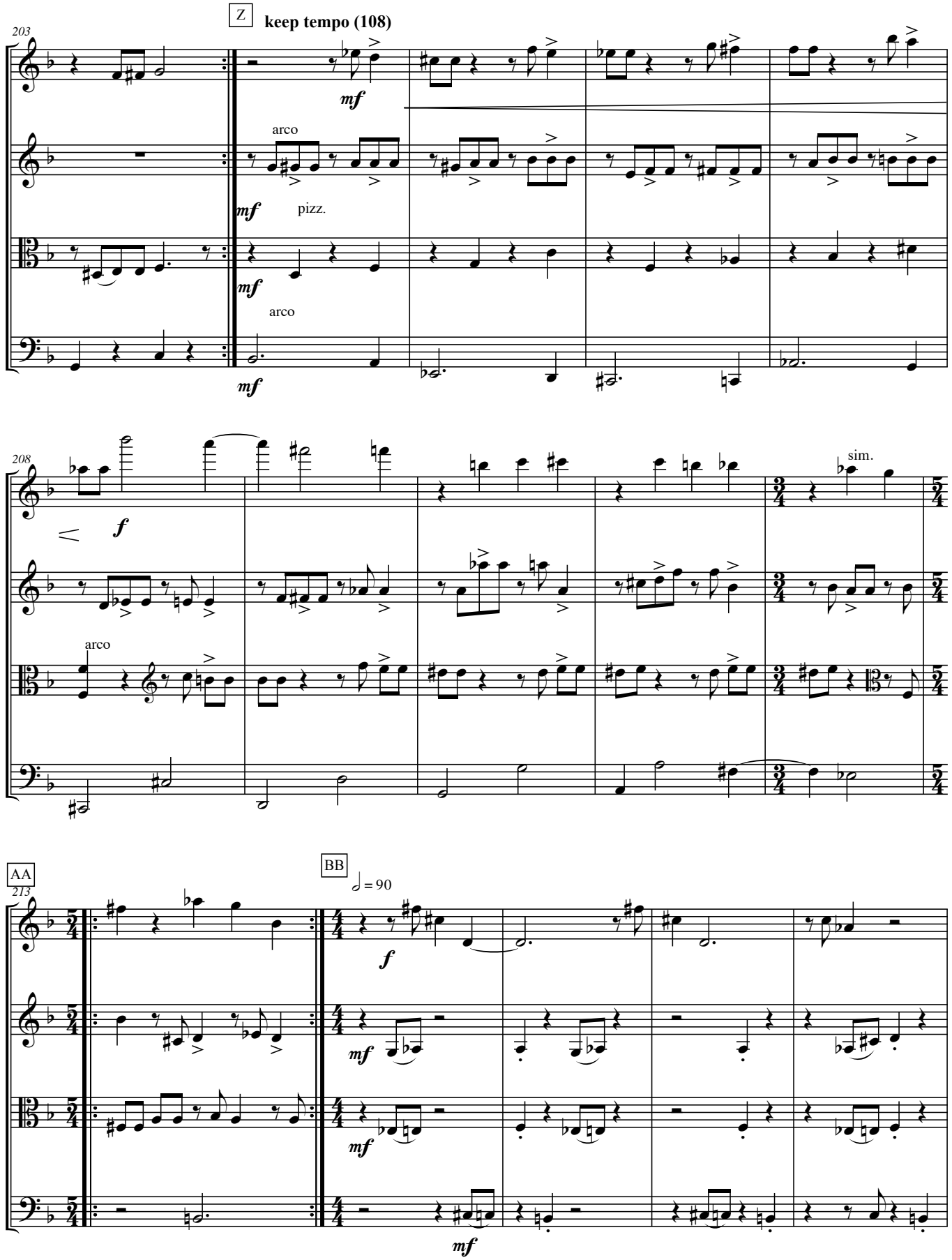

112
Q
Vln. I
Vln. II
Vla.
Vc.
arco
120
R
arco
126
S
pizz.

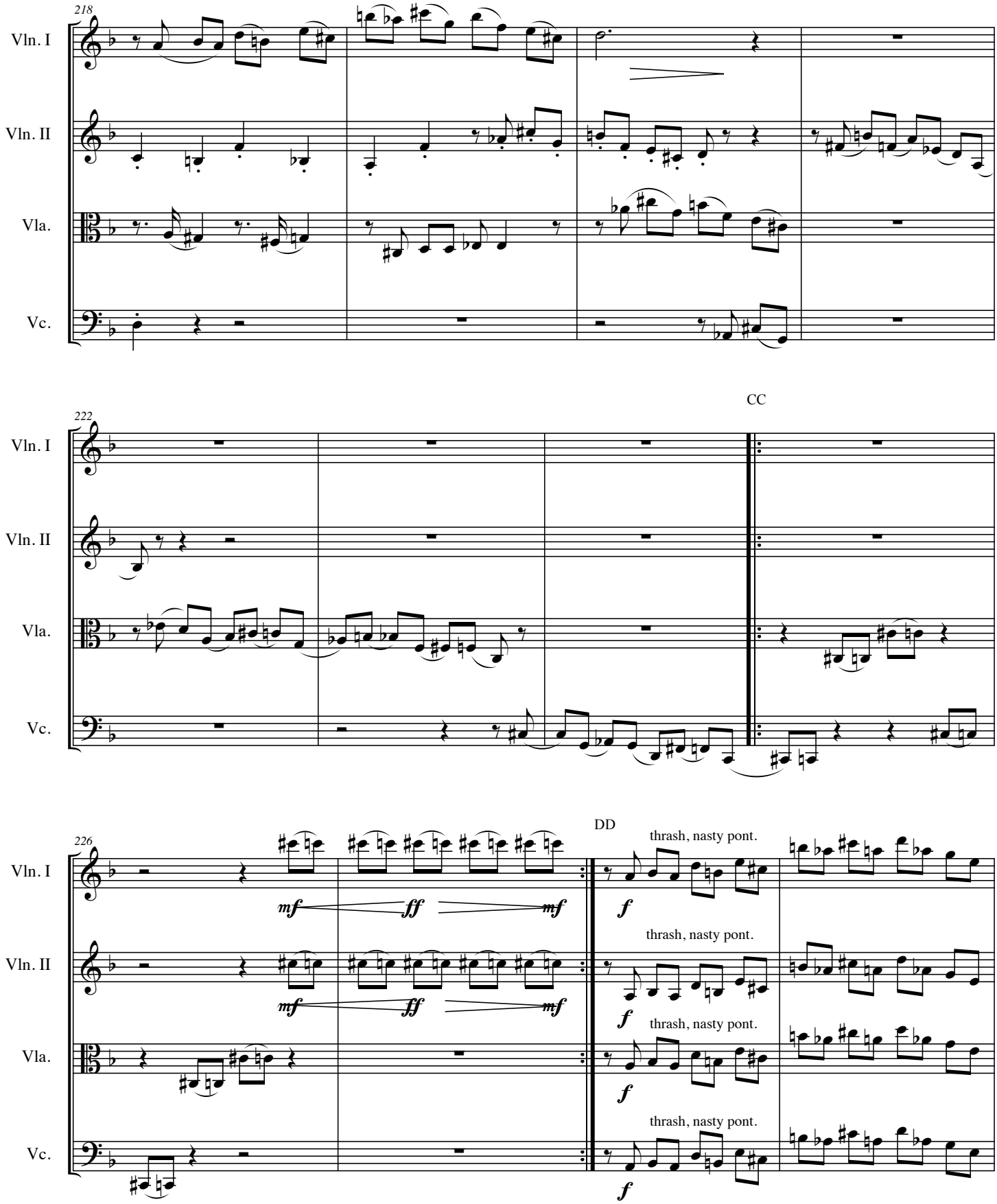

T
131
Vln. I
Vln. II
Vla.
Vc.
arco
136
sffz
mf
141

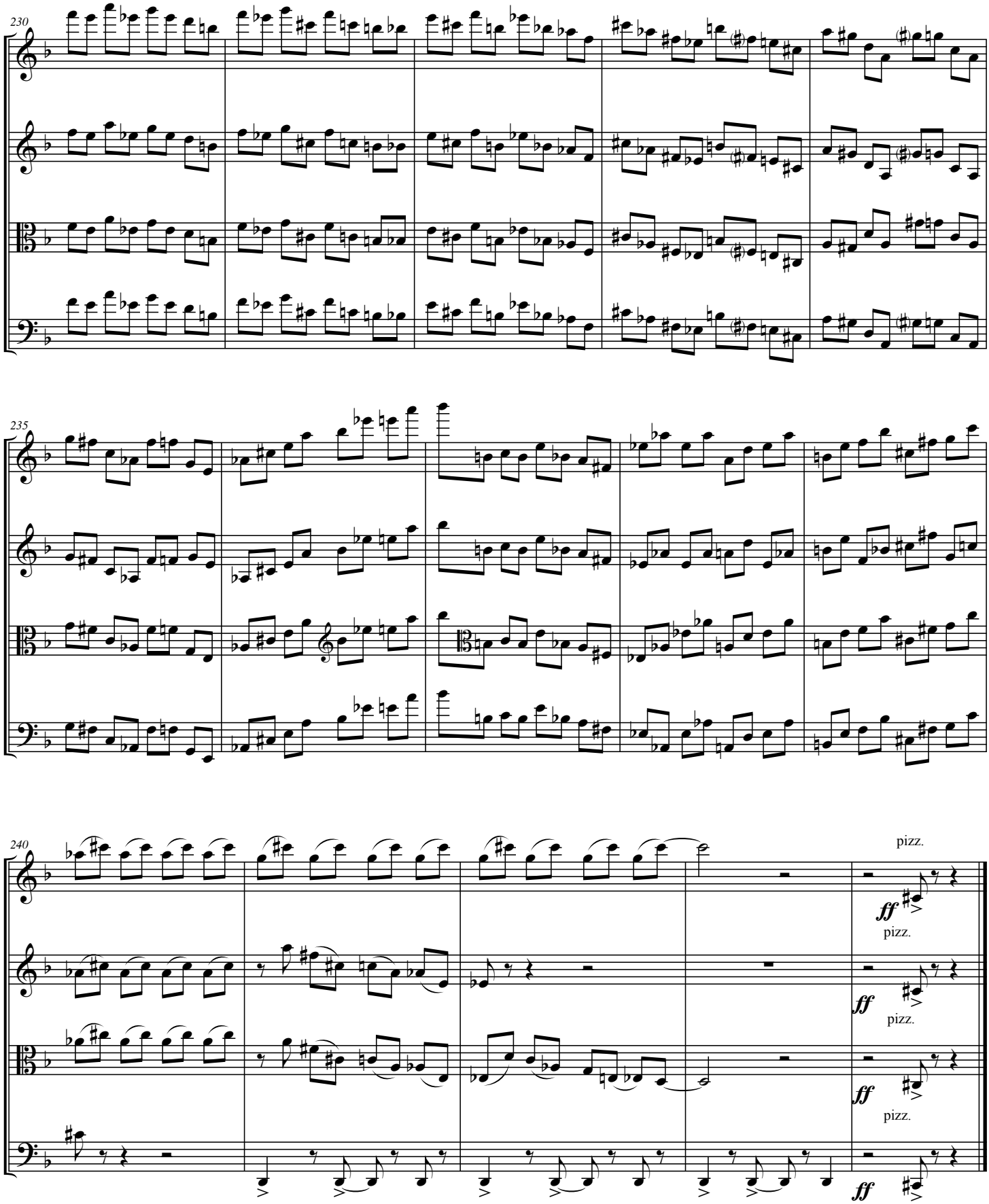

146
Vln. I
Vln. II
Vla.
Vc.
♩ = c. 108
G.P.
Wayne Shorter
stress beat 2
mp
f
pizz.
152
stress beat 2
sim.
159
U
solo cello
W
espress.
p


X
167
Vln. I
Vln. II
Vla.
Vc.
mf
pizz.
gliss.
175
ff
gliss.
arco
mod., light sound again
182
f
3

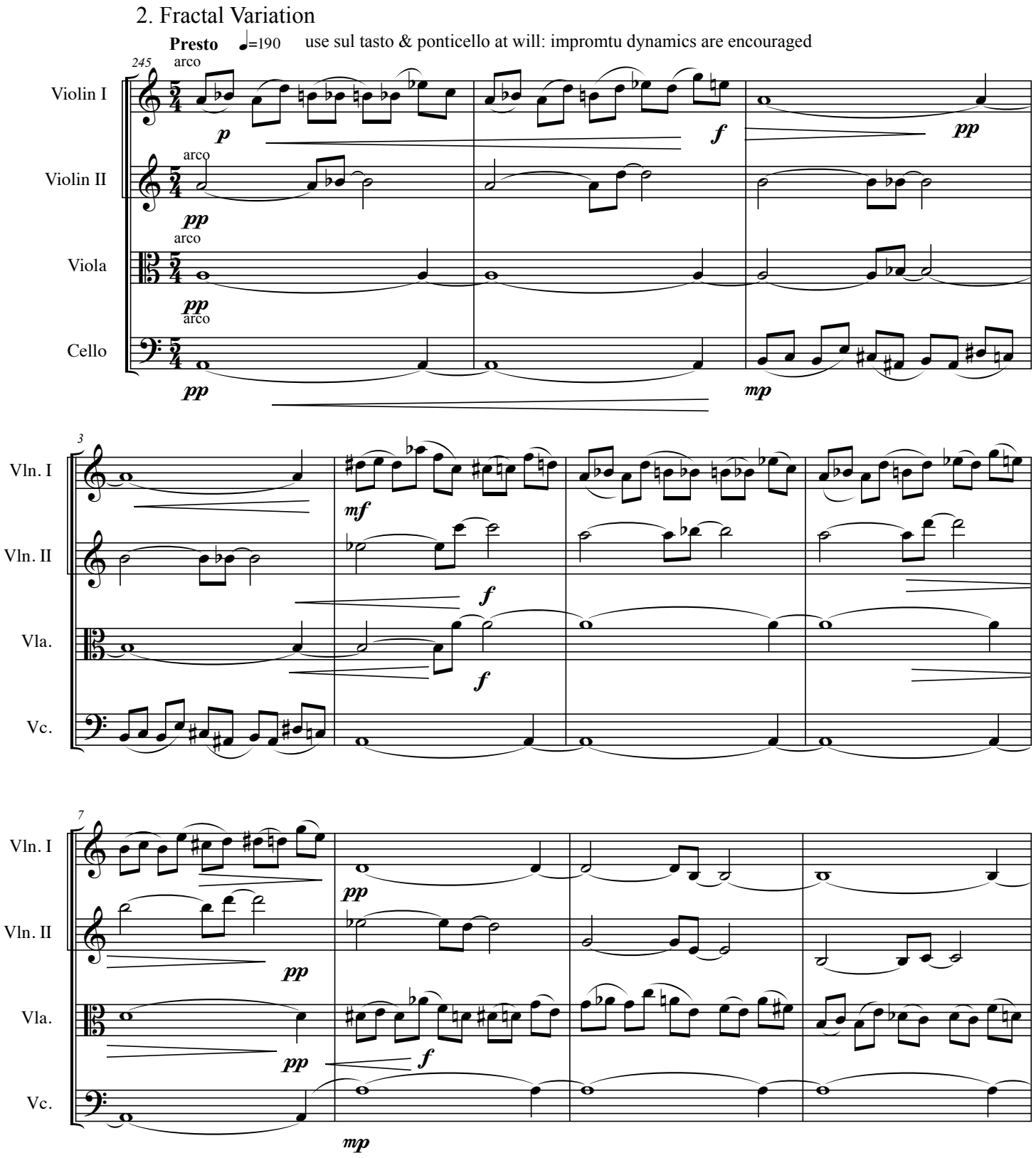

187
Vln. I
Vln. II
Vla.
Vc.
3
192
pp
198
fff
Y
miserably dramatic Vienna
pizz.


Z
keep tempo (108)
203
Vln. I
Vln. II
Vla.
Vc.
mf
arco
pizz.
208
f
sim.
AA
213
BB
♩ = 90

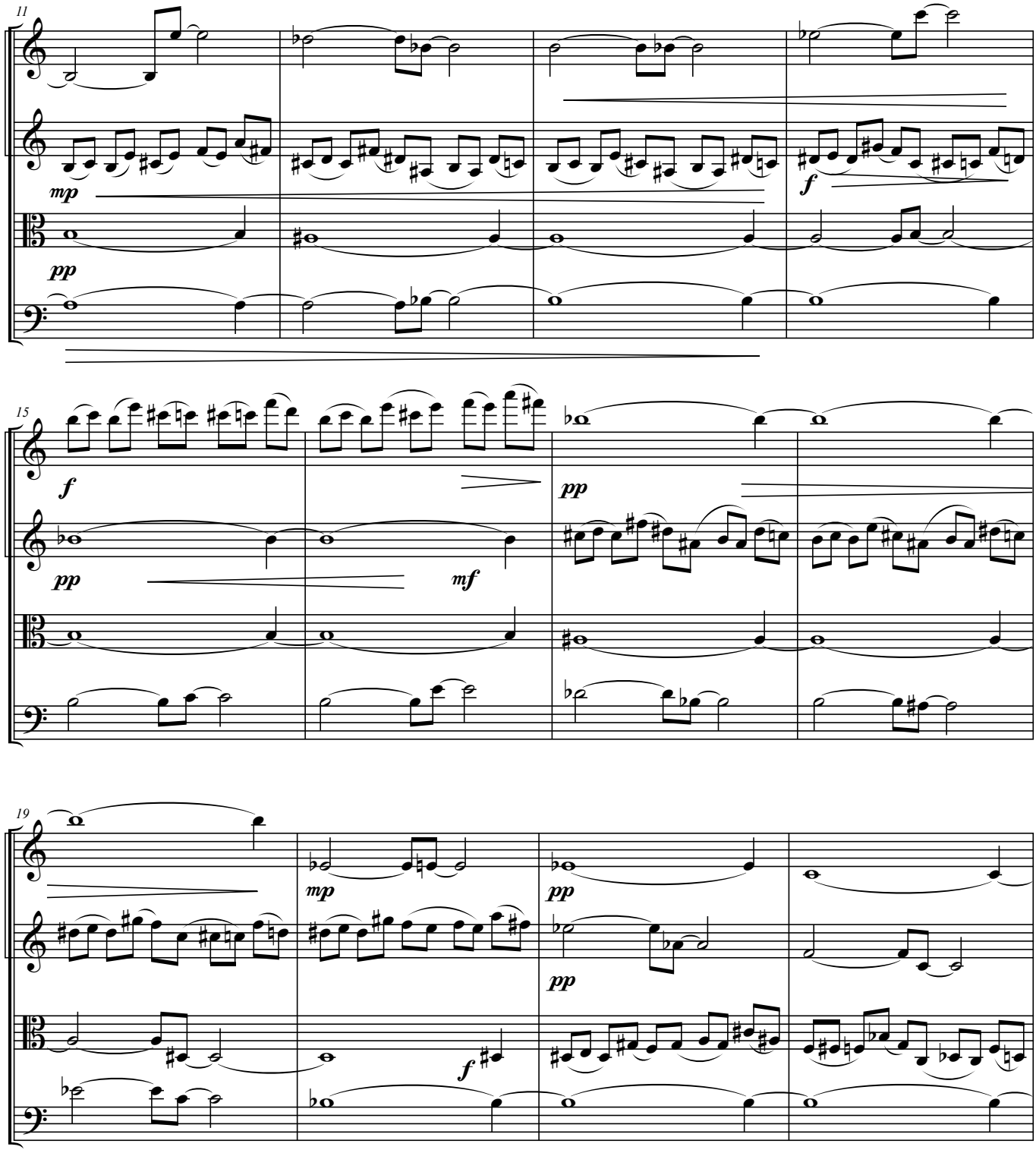

218
Vln. I
Vln. II
Vla.
Vc.
222
CC
226
DD
thrash, nasty pont.
mf
ff
f

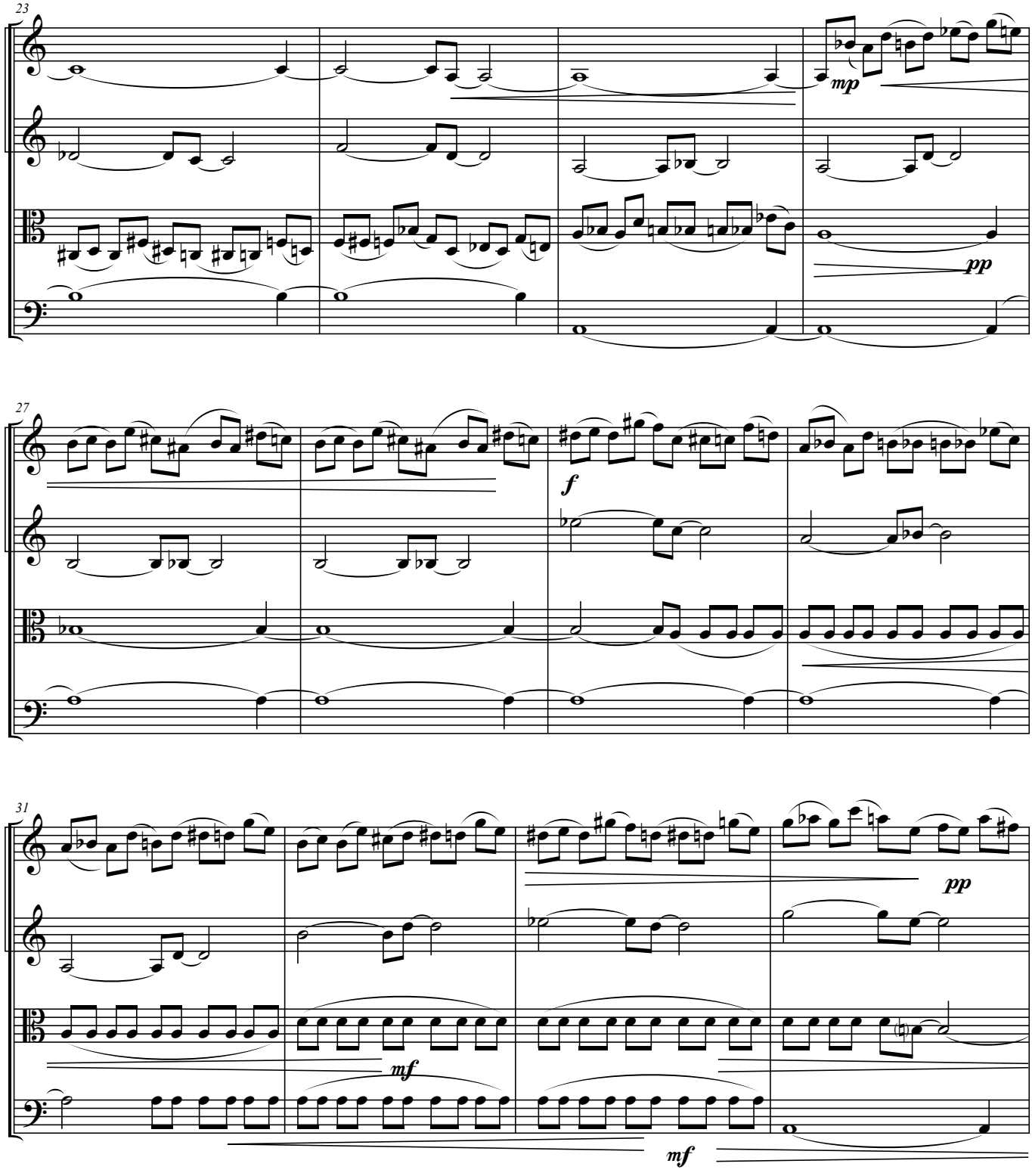

230
Vln. I
Vln. II
Vla.
Vc.
235
Vln. I
Vln. II
Vla.
Vc.
240
pizz.
Vln. I
ff
pizz.
Vln. II
ff
pizz.
Vla.
ff
pizz.
Vc.
ff

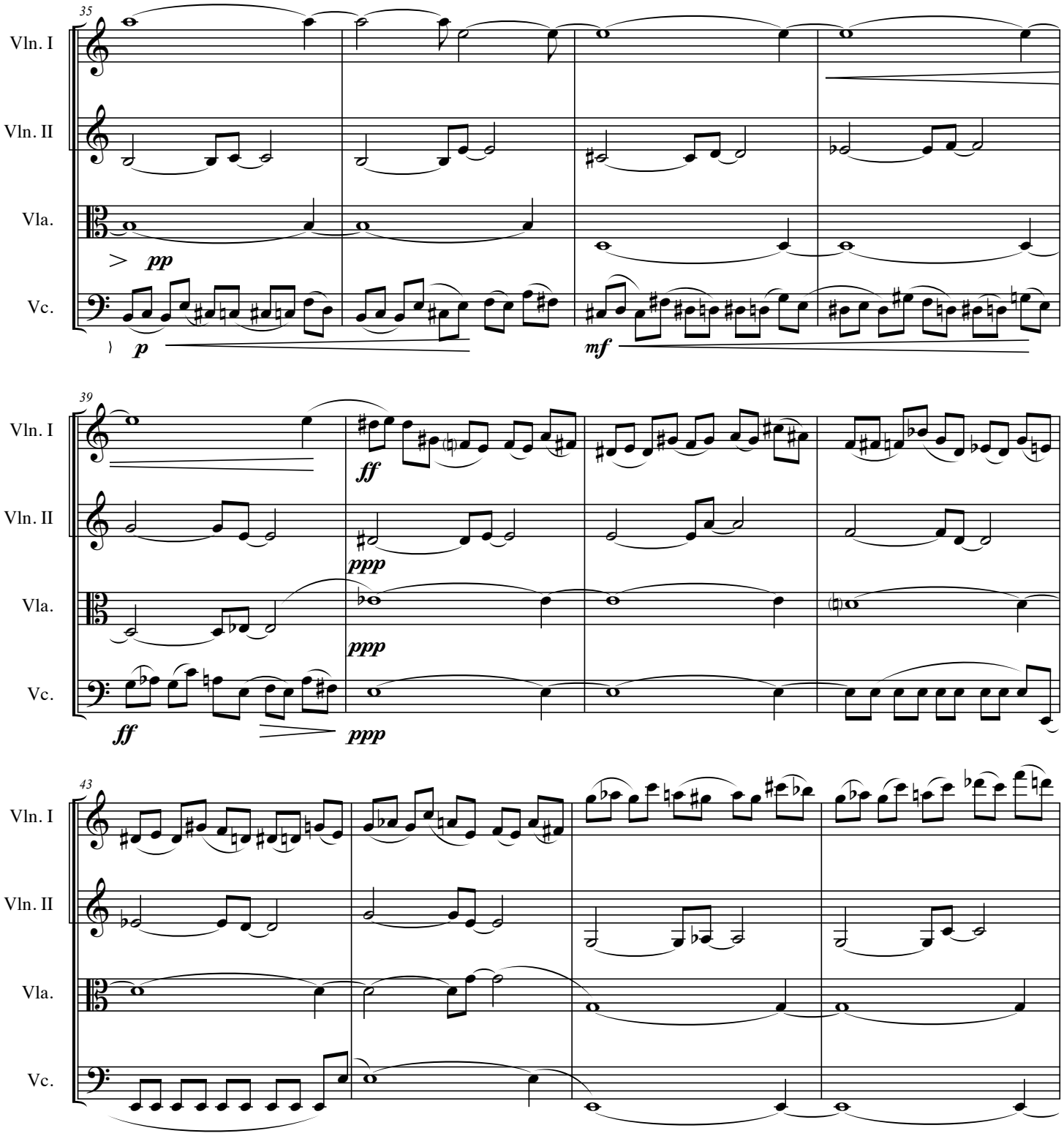
2. Fractal Variation: Arnold & Benoit in 5 Dimensions

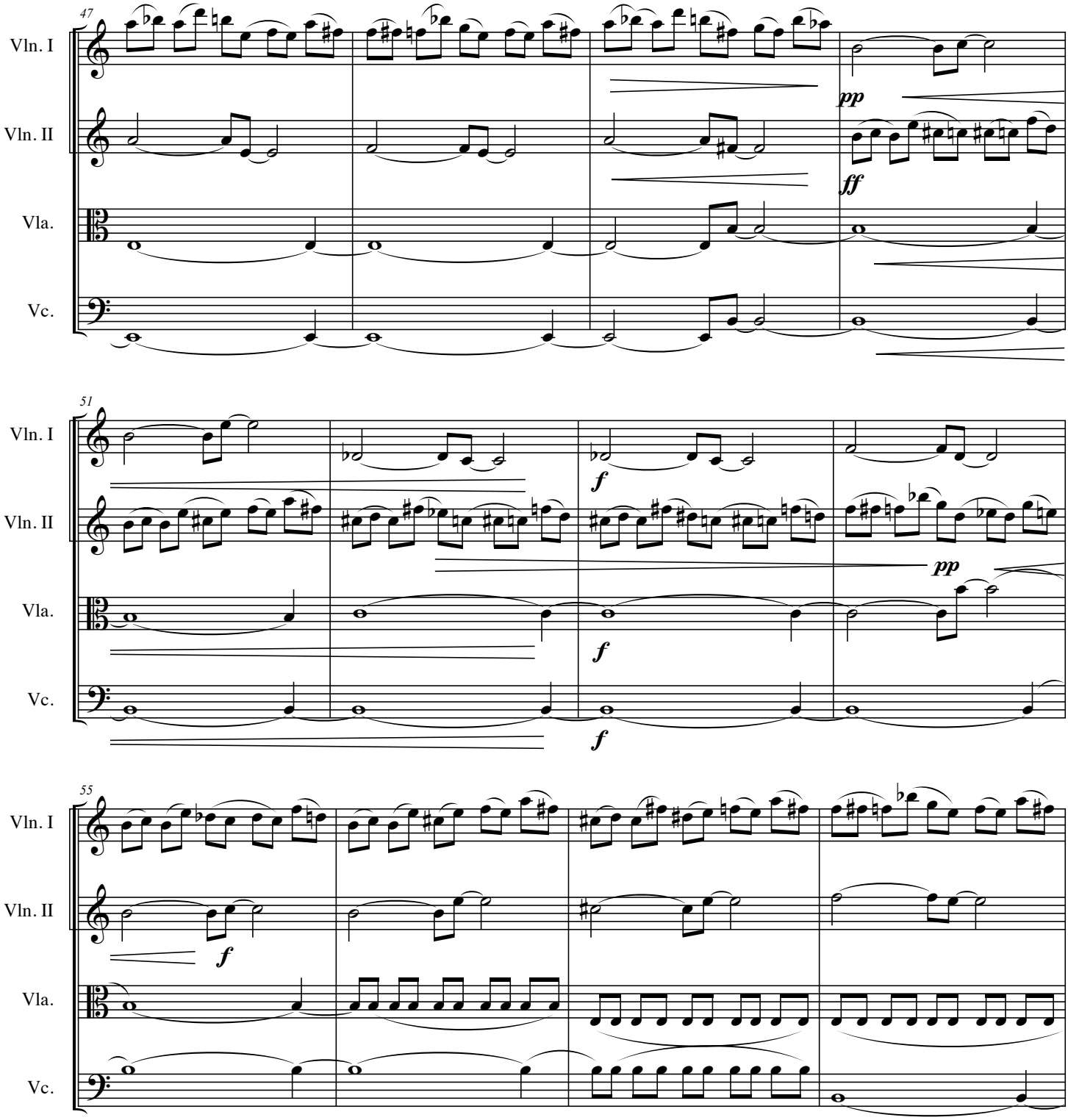


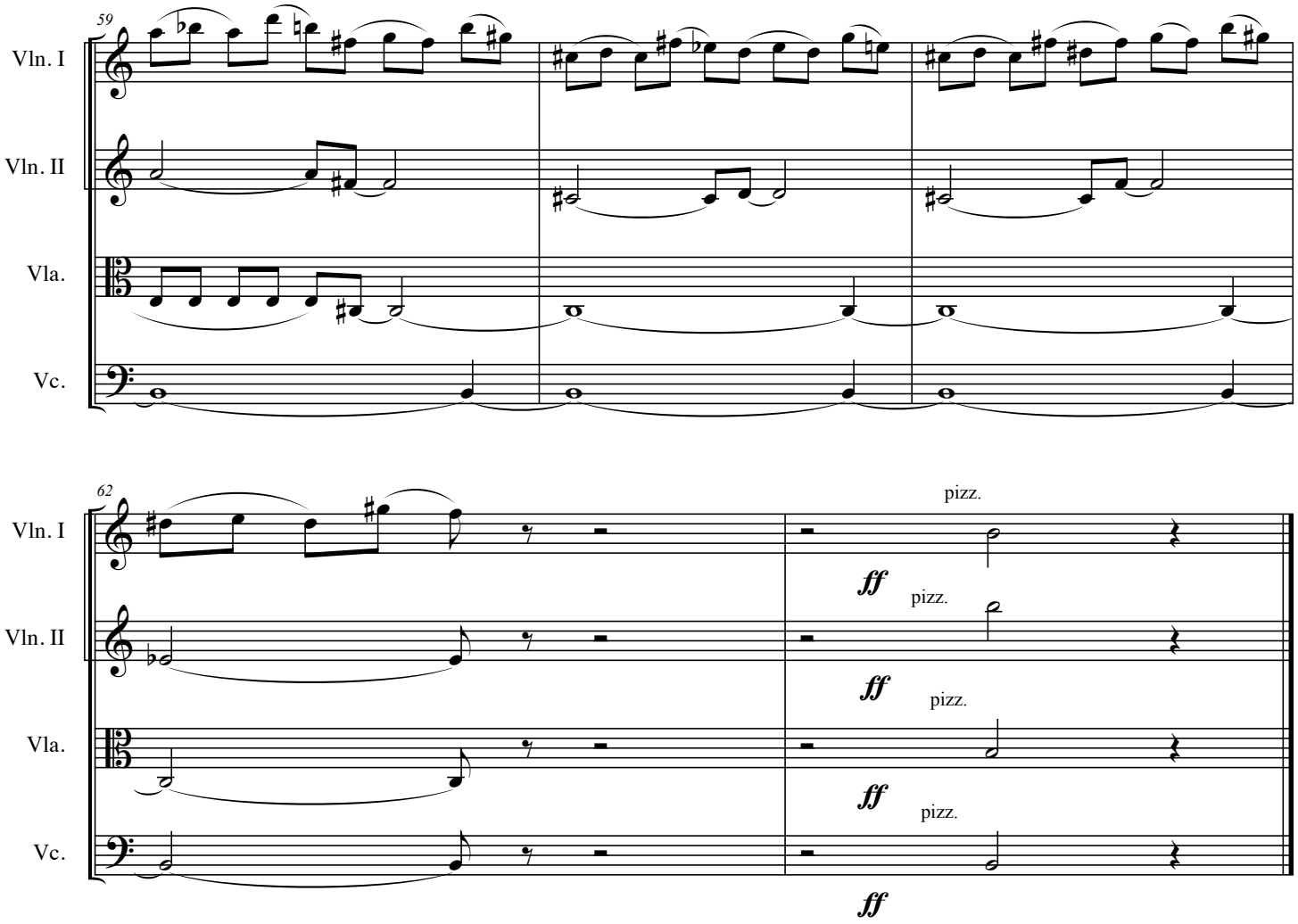
©2010


11
Vln. I
Vln. II
Vla.
Vc.
mp
pp
f
15
Vln. I
Vln. II
Vla.
Vc.
f
pp
pp
mf
pp
19
Vln. I
Vln. II
Vla.
Vc.
mp
pp
pp
f

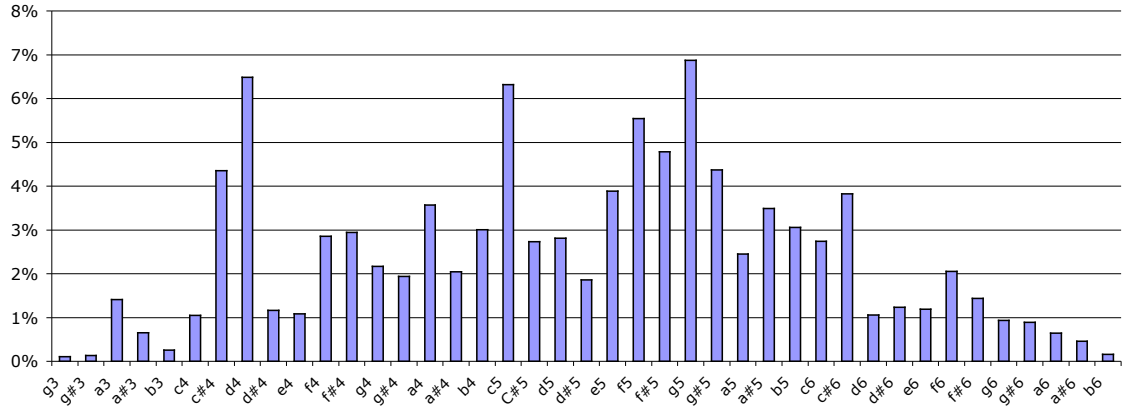

23
Vln. I
Vln. II
Vla.
Vc.
mp
pp
27
Vln. I
Vln. II
Vla.
Vc.
f
31
Vln. I
Vln. II
Vla.
Vc.
pp
mf
mf


35
Vln. I
Vln. II
Vla.
Vc.
pp
p
mf
39
ff
ppp
ppp
ff
ppp
43


47
Vln. I
Vln. II
Vla.
Vc.
pp
ff
51
Vln. I
Vln. II
Vla.
Vc.
f
pp
f
f
55
Vln. I
Vln. II
Vla.
Vc.
f


59
Vln. I
Vln. II
Vla.
Vc.
62
pizz.
ff
pizz.
ff
pizz.
ff
pizz.
ff

3. Fourier Transformations
April 20, 2011 version
from the Essential String Quartet
VIOLIN 1 PART



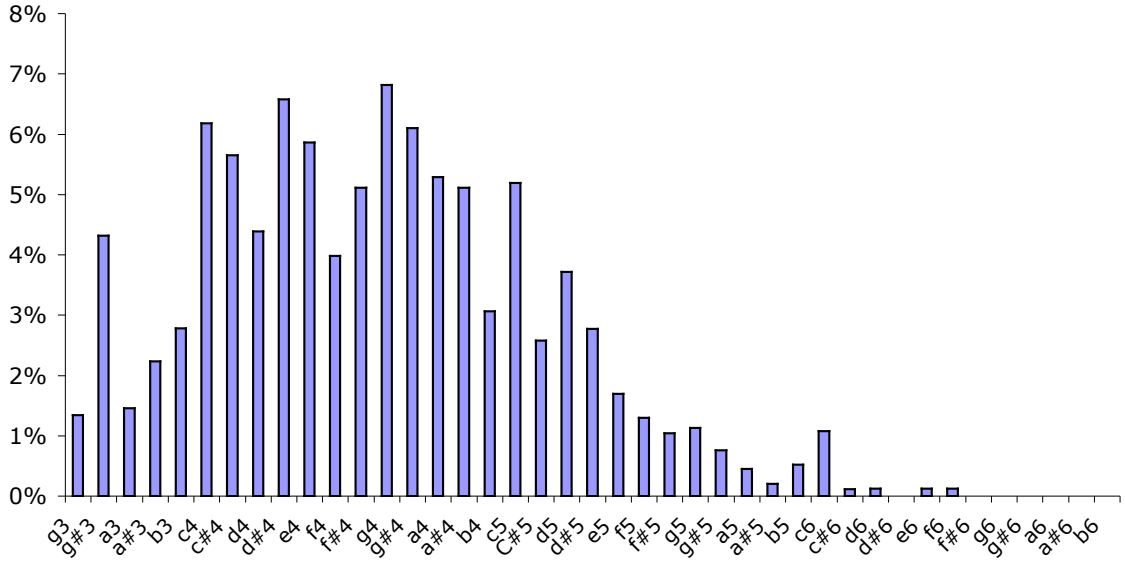
Bars indicate the power (duration * volume) for each pitch in the original Schoenberg piece. C4 is middle C.

Play the amount of each pitch represented (for example, D above middle C, C above middle C, and G on top line of treble clef should be played the twice as much as notes that are around 3%). You can use double stops, different tones, and rhythms at will, but try to make a sustained sound with the entire group.

At cue 1, take 30-40 sec to slowly move the pitches closer to your average note:
e5.1 (the open E string plus a tiny bit sharp)

At cue 2, take 30-40 sec to slowly move \ to the average note of the entire piece:
e4.8, which is the e above middle C very sharp (almost F).

3. Fourier Transformations
April 20, 2011 version
VIOLIN 2 PART



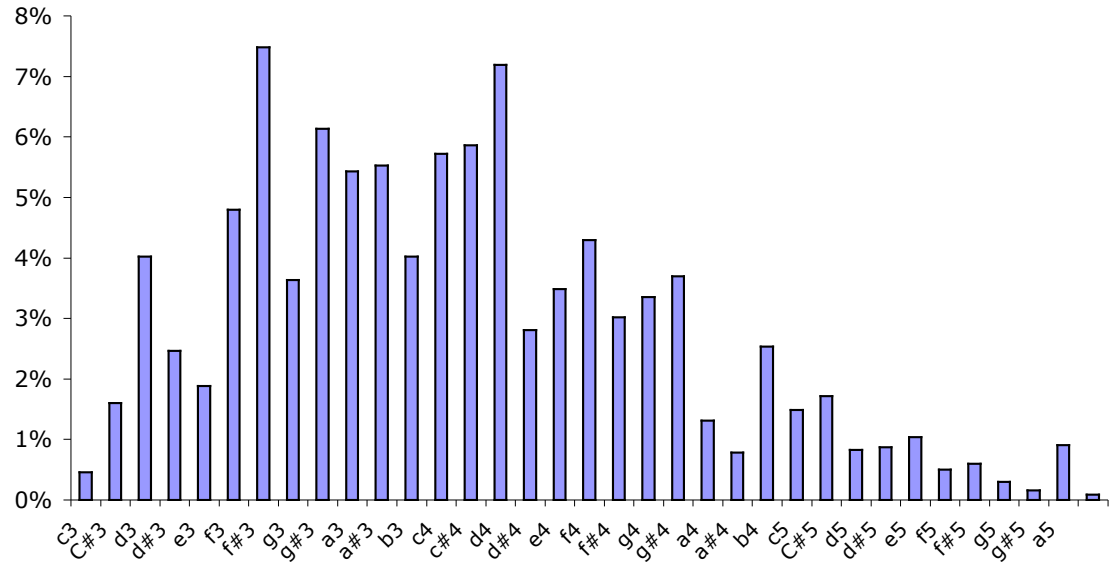
Bars indicate the power (duration * volume) for each pitch in the original Schoenberg piece. C4 is middle C.

Play the amount of each pitch represented (for example, D above middle C, G above middle C should be played the most. You can use double stops, different tones, and rhythms at will, but try to make a sustained sound with the entire group.

At cue 1, take 30-40 sec to slowly move the pitches closer to your average note:
G#4.1 (G# below the A string a tiny bit sharp).

At cue 2, take 30-40 sec to slowly move \ to the average note of the entire piece:
e4.8, which is the e above middle C very sharp (almost F).

3. Fourier Transformations
April 20, 2011 version
VIOLA PART



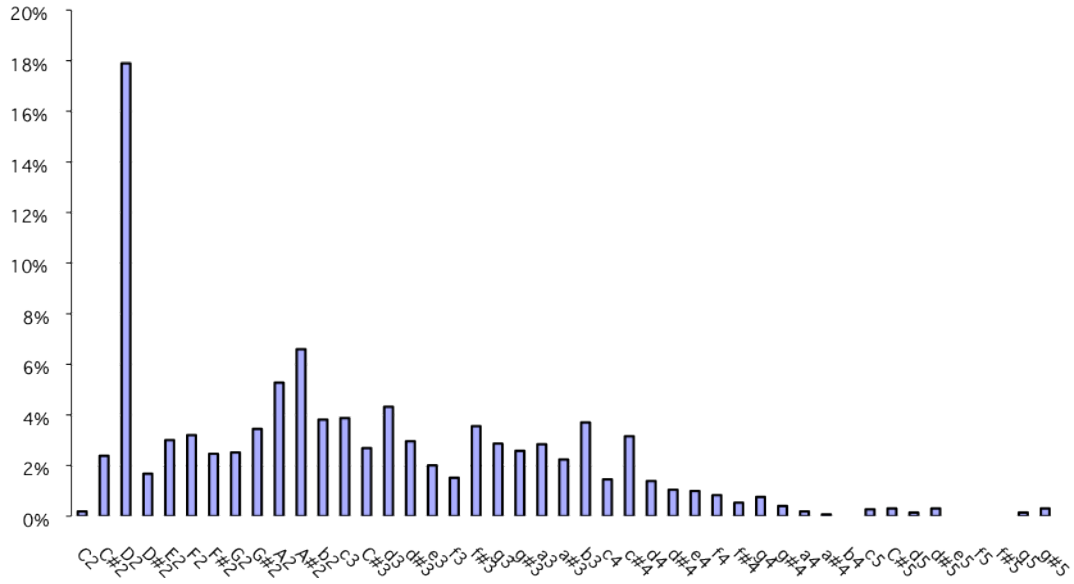
Bars indicate the power (duration * volume) for each pitch in the original Schoenberg piece. C4 is middle C.

Play the amount of each pitch represented (for example, F# below middle C is the loudest and most played, followed by the D above middle C). You can use double stops, different tones, and rhythms at will, but try to make a sustained sound with the entire group.

At cue 1, take 30-40 sec to slowly move the pitches closer to your average note: C#4.5, which is the C# above middle C plus a quarter tone.

At cue 2, take 30-40 sec to slowly move \ to the average note of the entire piece: e4.8, which is the e above middle C very sharp (almost F).

3. Fourier Transformations
April 20, 2011 version
CELLO PART



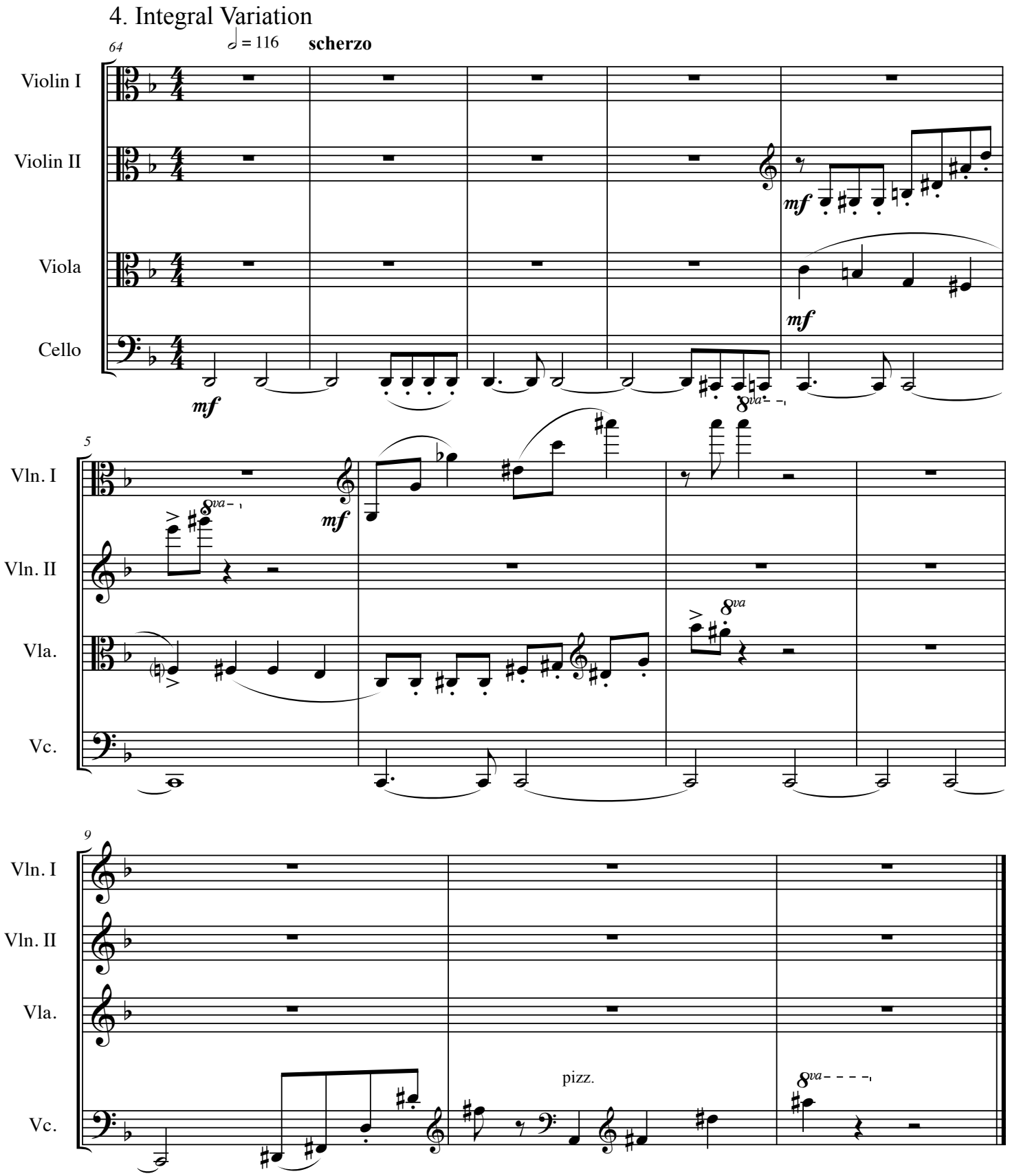
Bars indicate the power (duration * volume) for each pitch in the original Schoenberg piece. C4 is middle C.

Play the amount of each pitch represented (for example, D above middle C, C ablve middle C, and G on top line of treble clef should be played the twice as much as notes that are around 3%). You can use double stops, different tones, and rhythms at will, but try to make a sustained sound with the entire group.

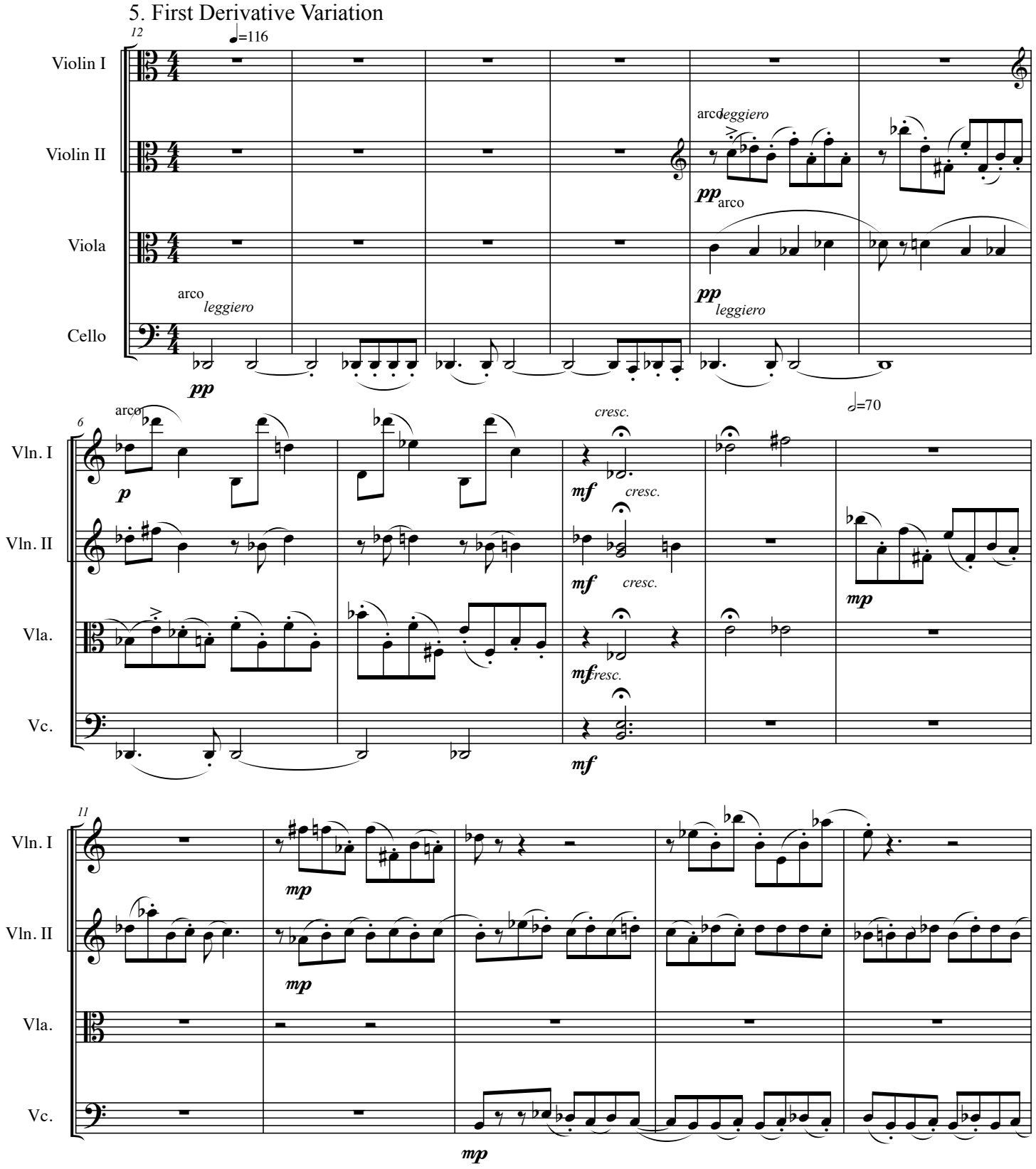
At cue 1, take 30-40 sec to slowly move the pitches closer to your average note: D3.3, which is the open D string plus a 3rd tone sharp.

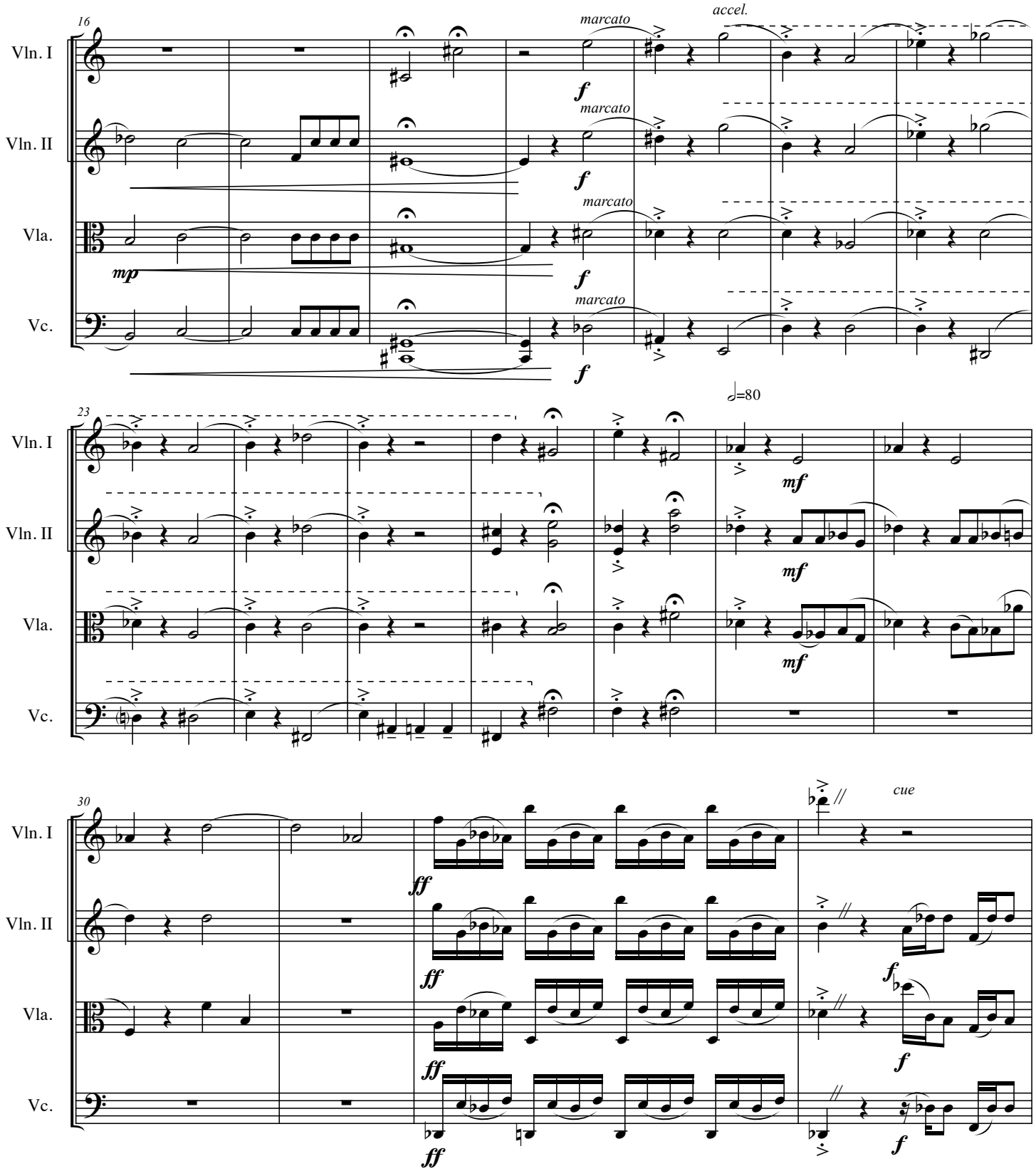
At cue 2, take 30-40 sec to slowly move \ to the average note of the entire piece: e4.8, which is the e above middle C very sharp (almost F).

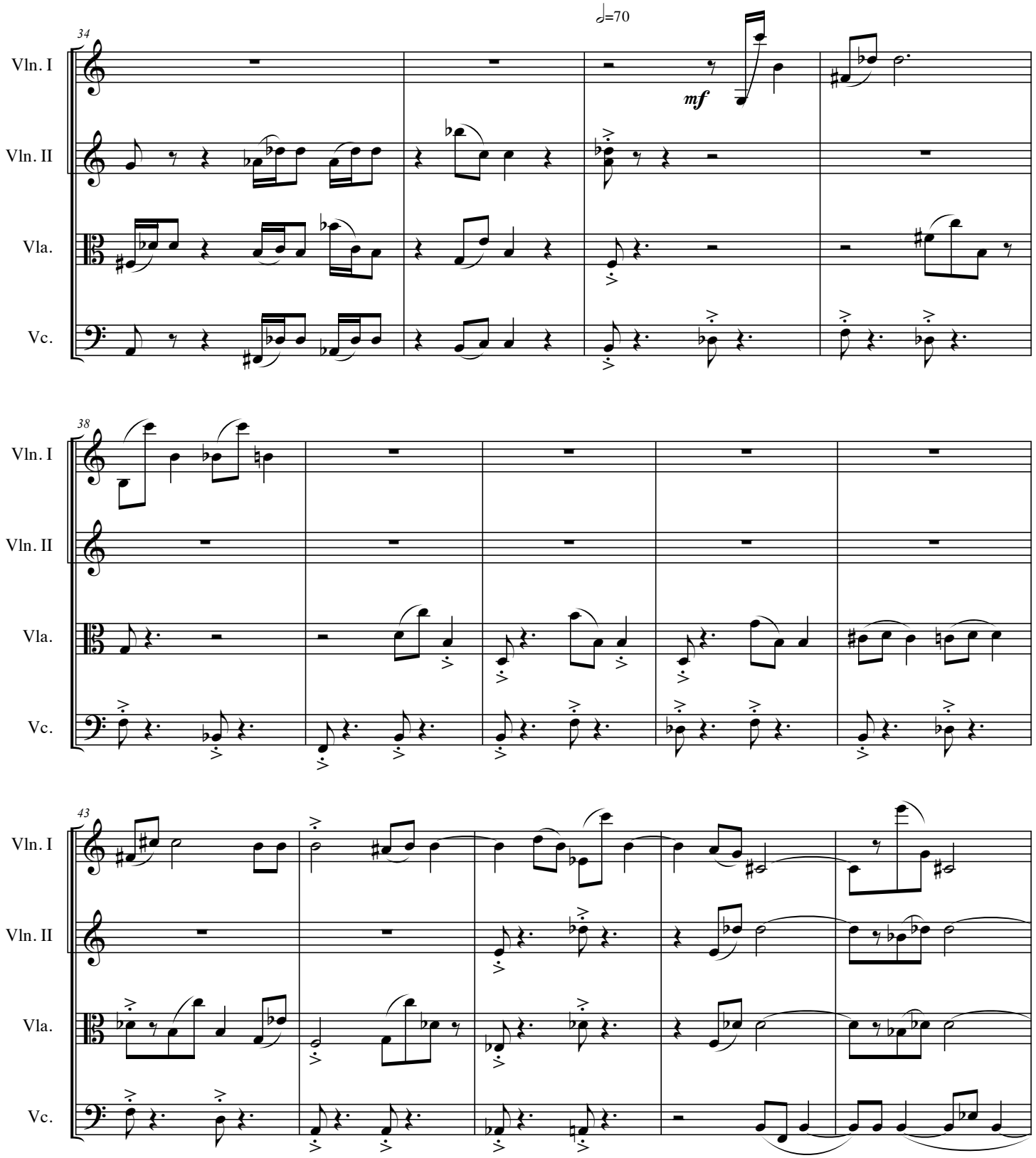
4. Integral Variation

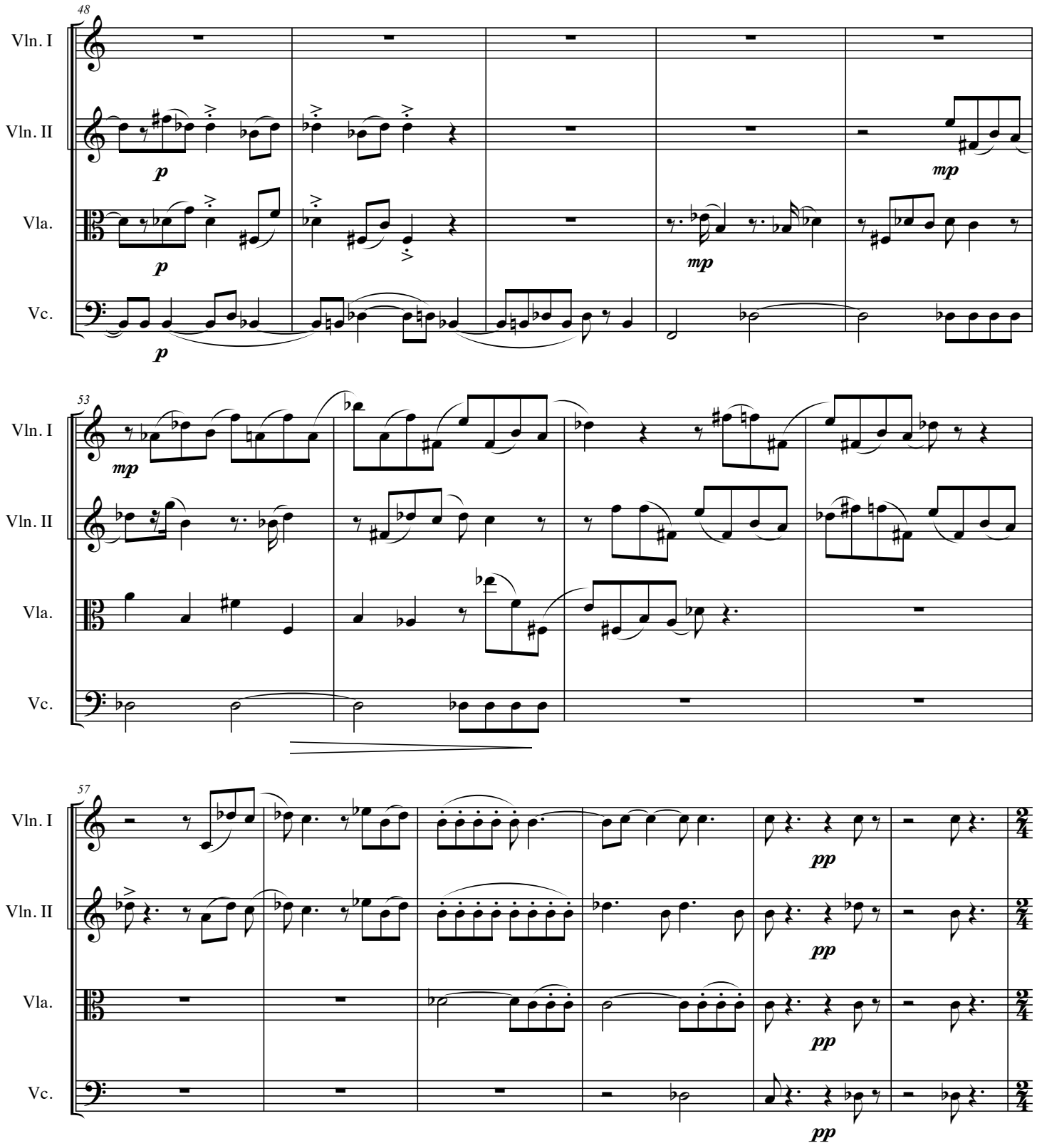


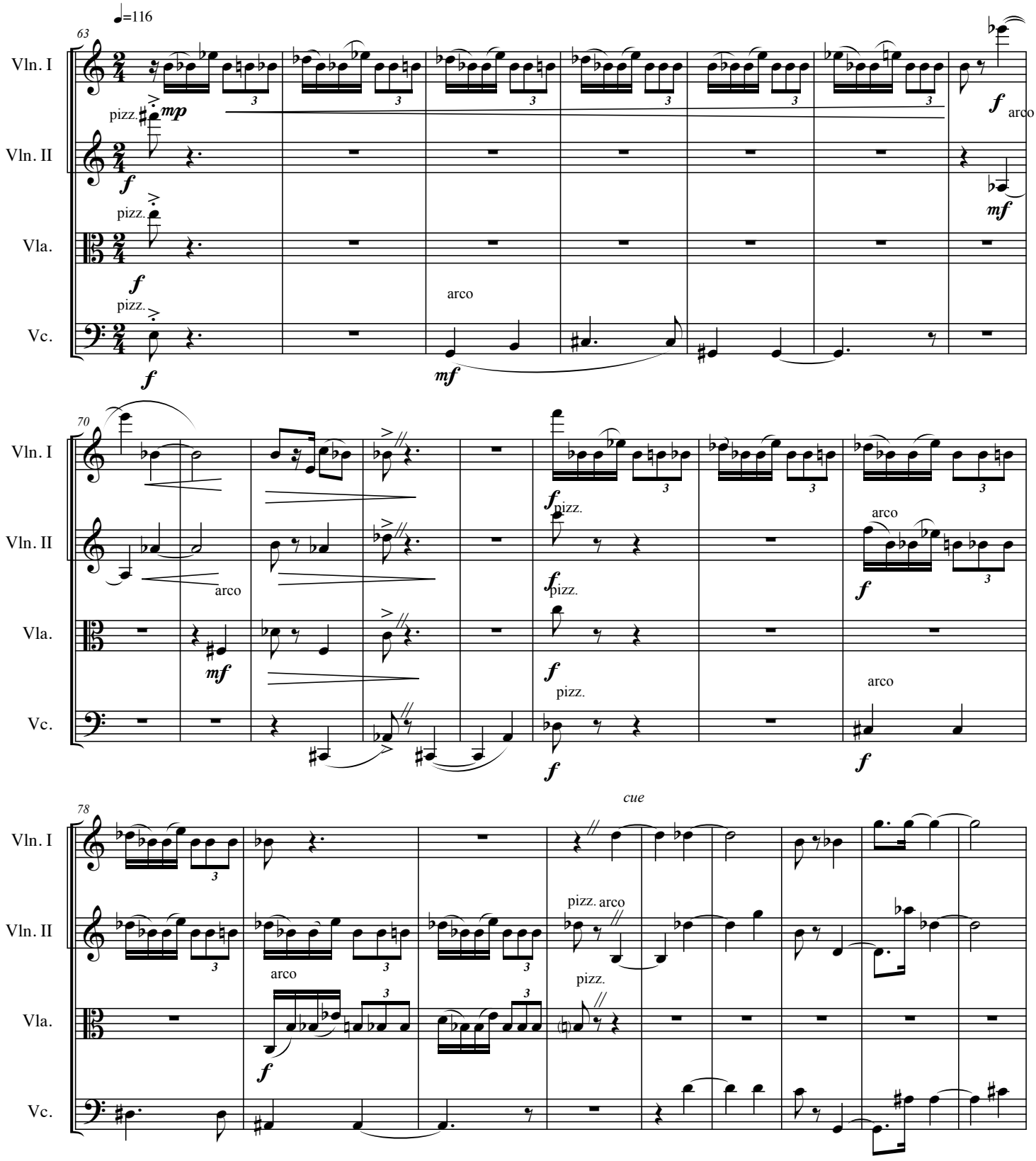
5. First Derivative Variation

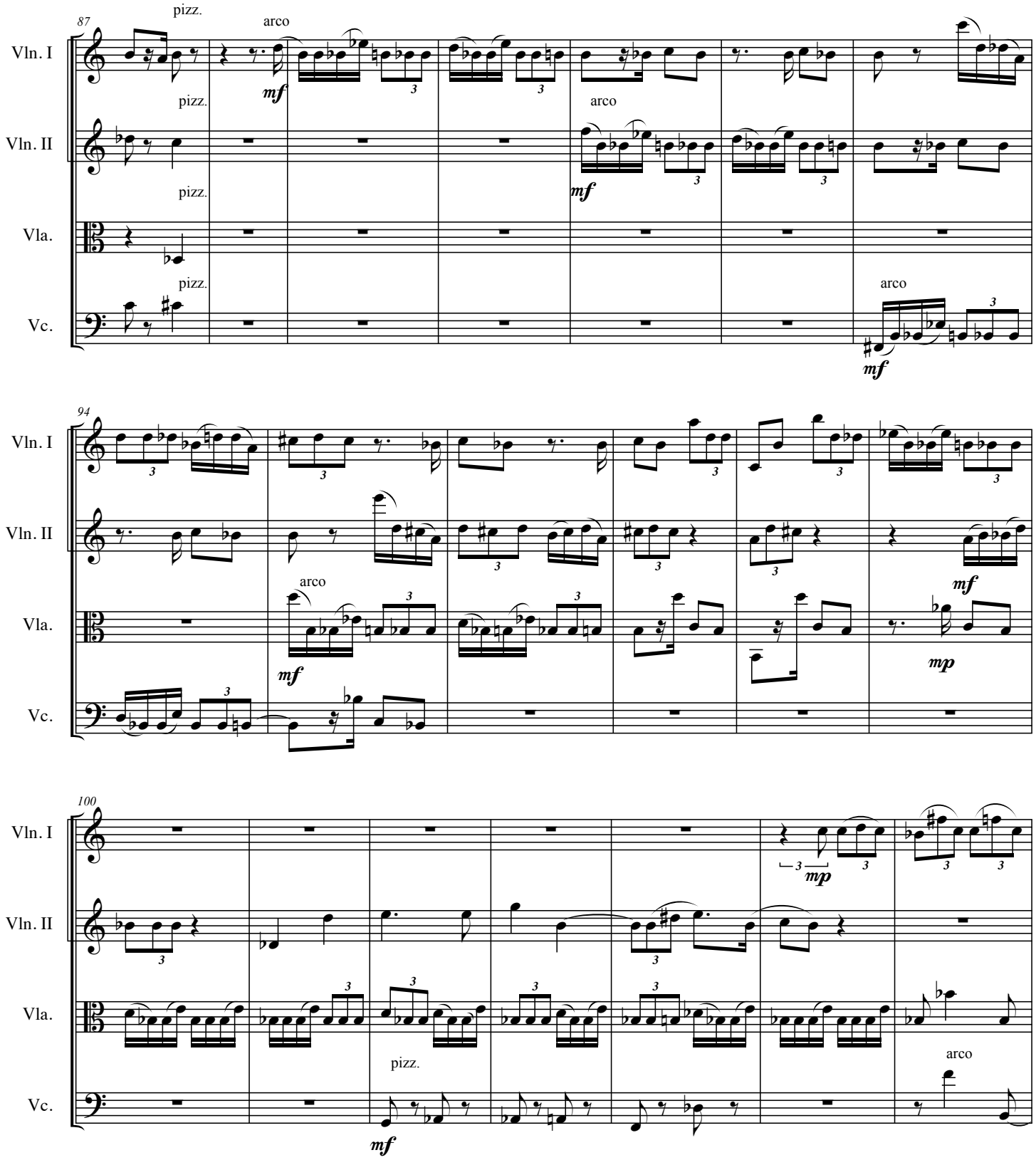


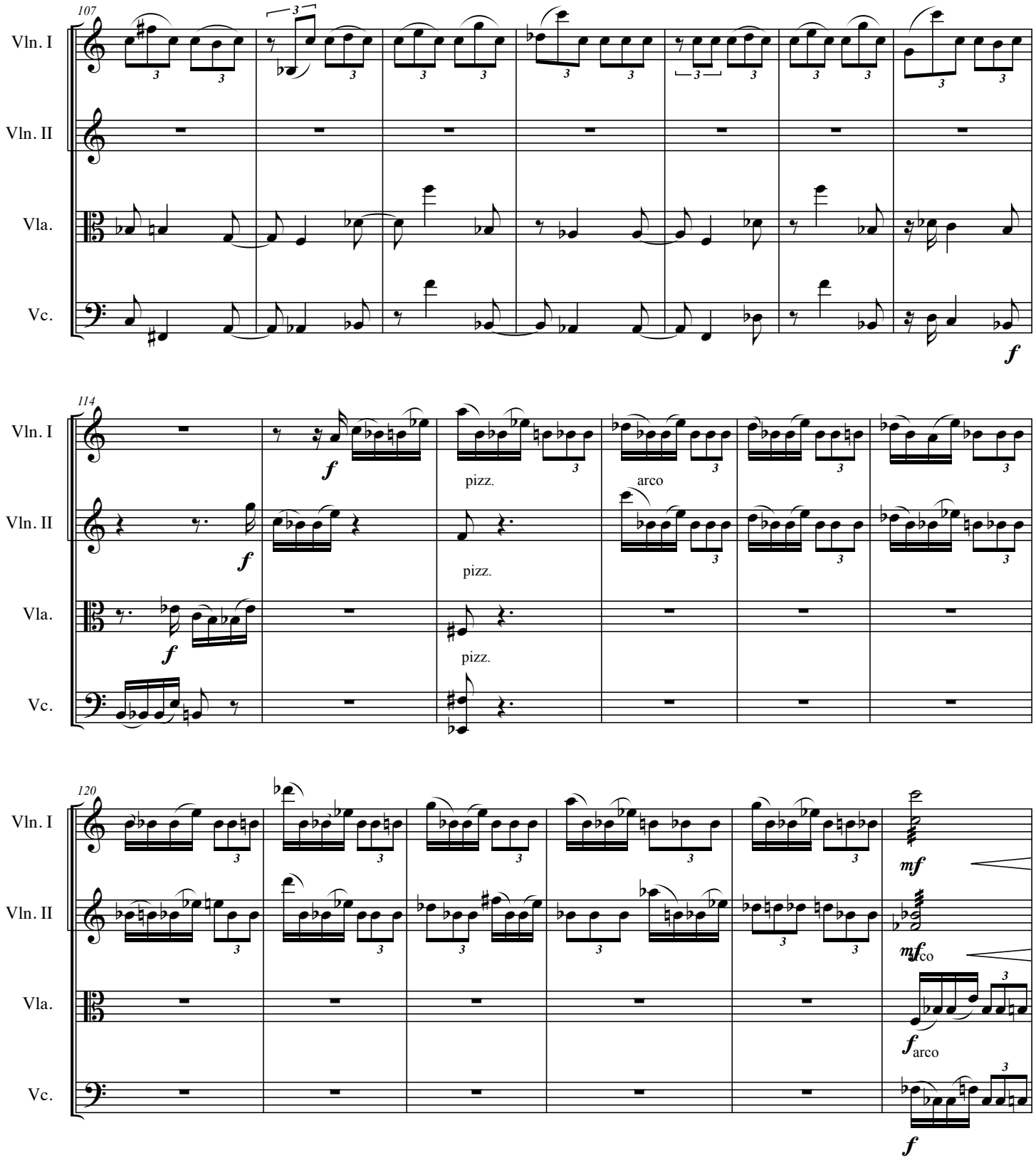

16
Vln. I
Vln. II
Vla.
Vc.
marcato
accel.
f
mp
23
♩=80
mf
30
cue
ff

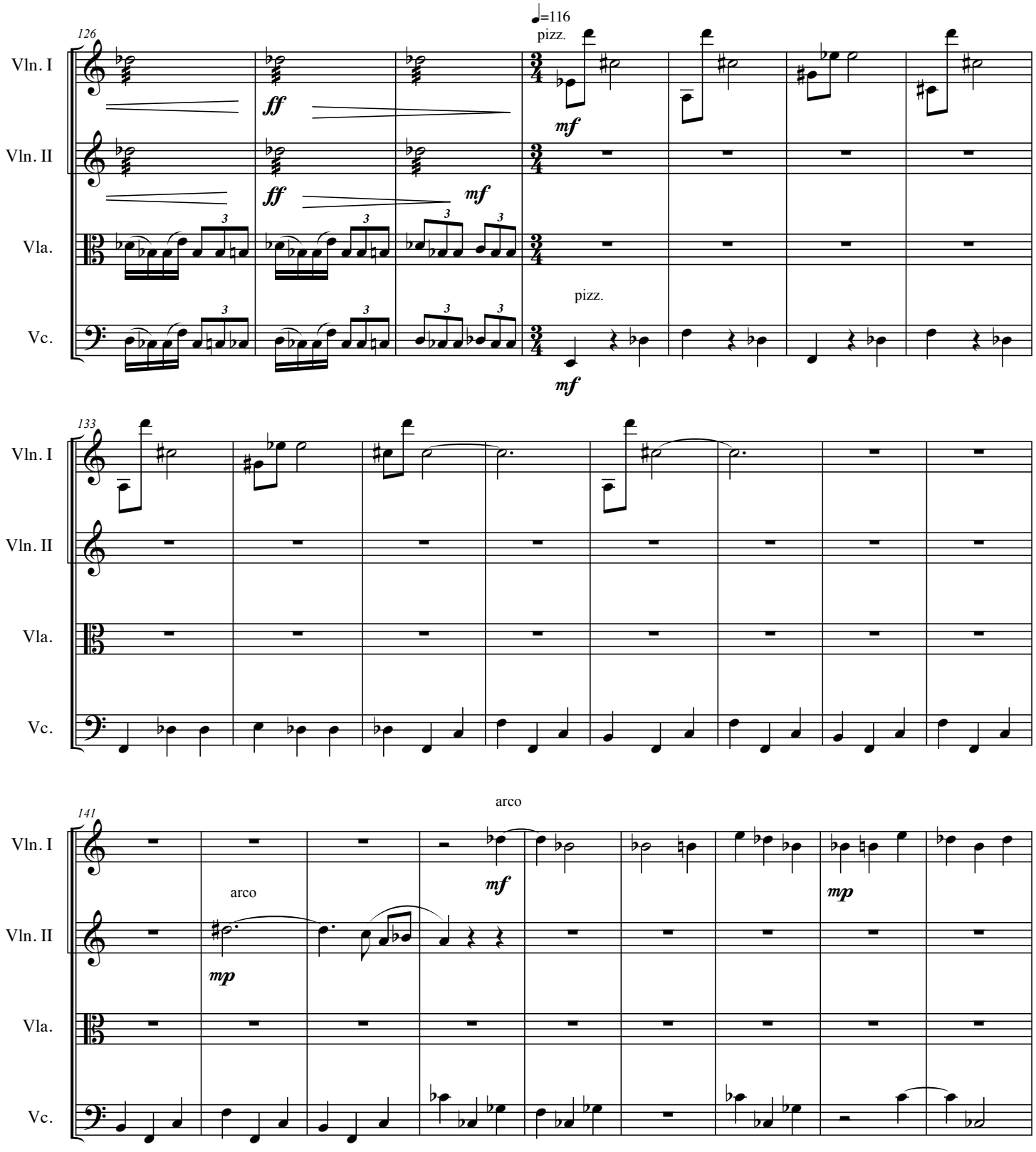

♩=70
34
Vln. I
Vln. II
Vla.
Vc.
mf
38
43

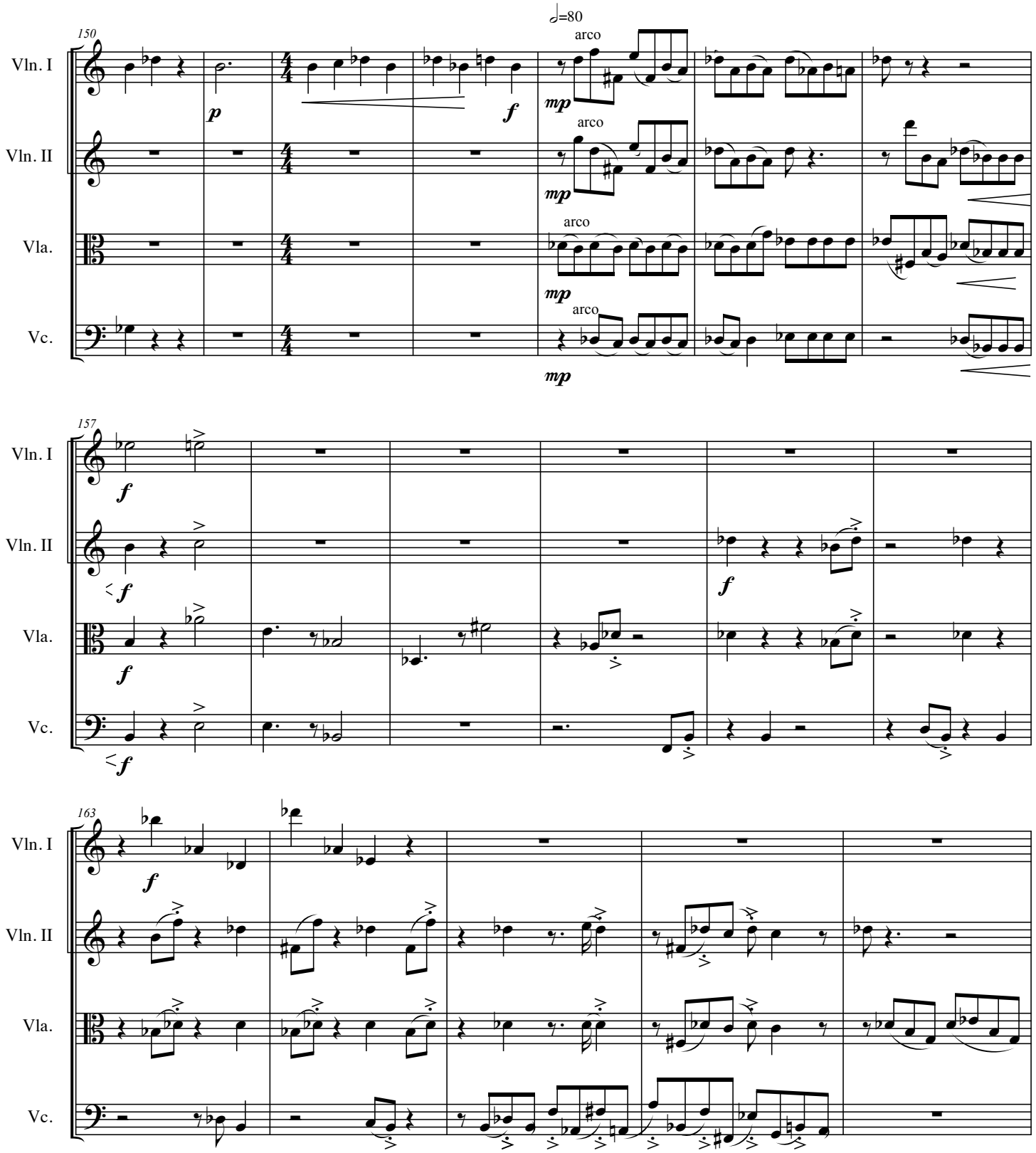

48
Vln. I
Vln. II
Vla.
Vc.
p
mp
53
mp
57
pp

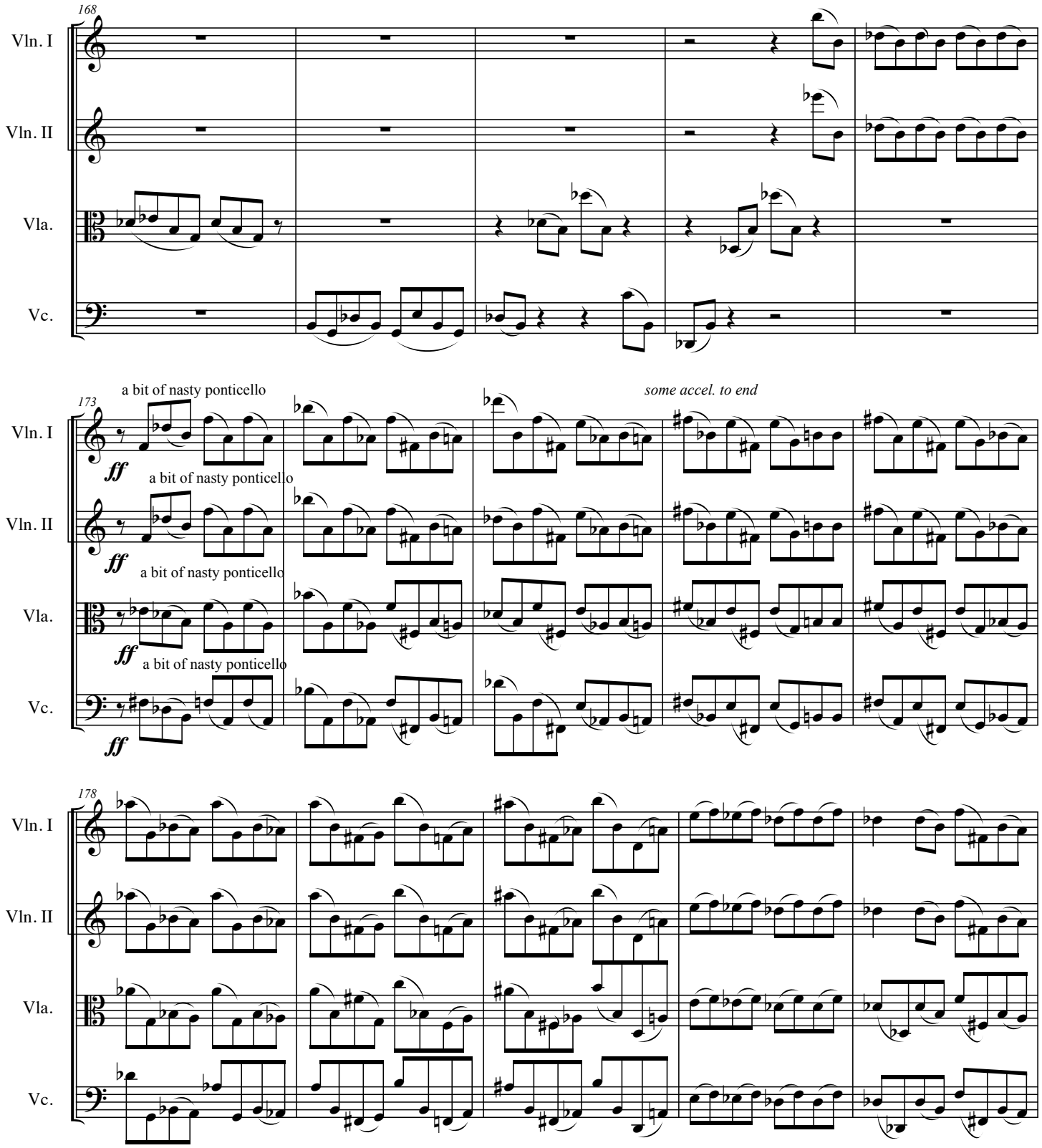

♩=116
63
Vln. I
Vln. II
Vla.
Vc.
pizz.
mp
f
arco
mf
70
cue
78
pizz. arco

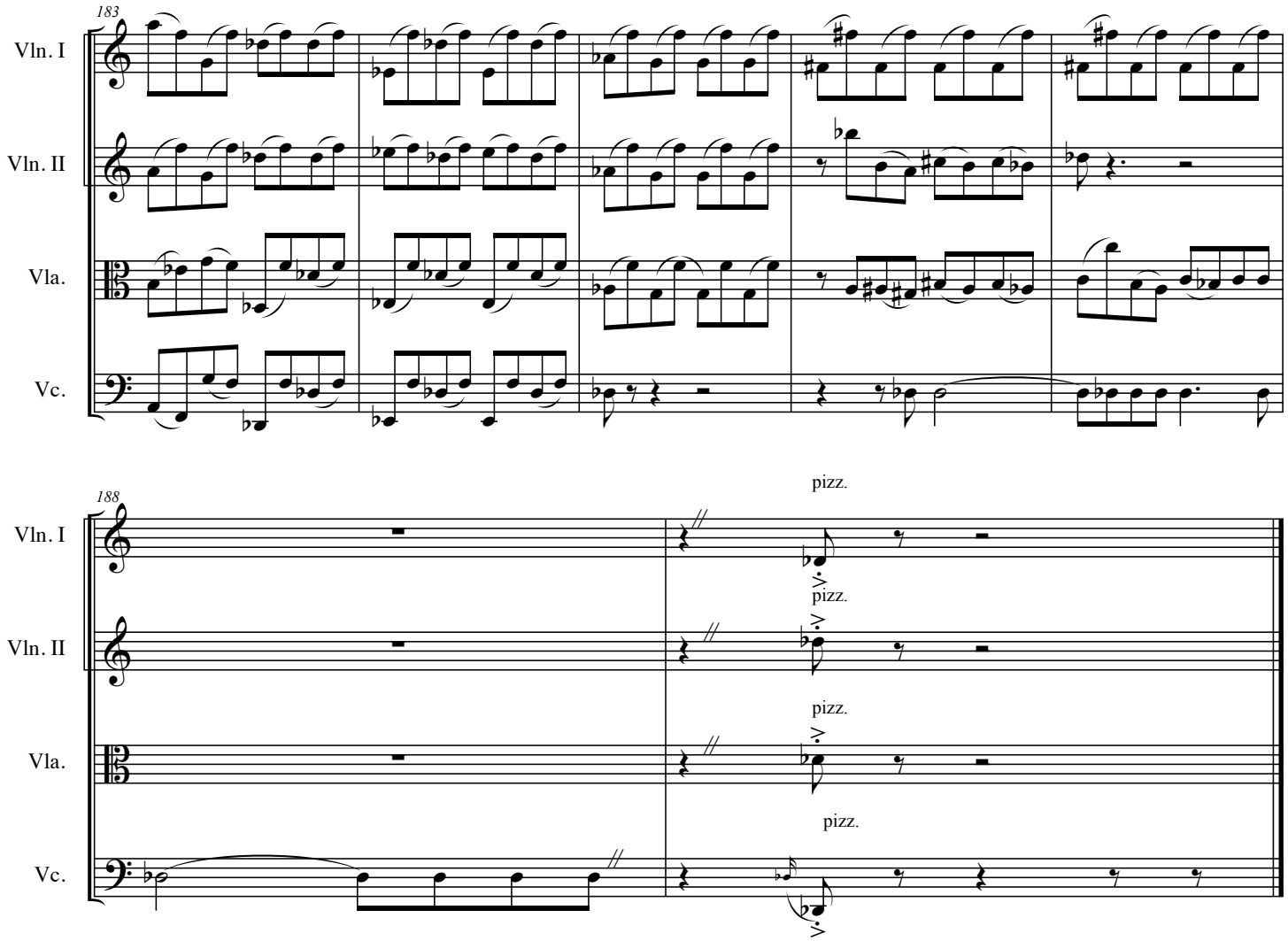

87
Vln. I
Vln. II
Vla.
Vc.
pizz.
arco
mf
94
mp
100


107
Vln. I
Vln. II
Vla.
Vc.
f
114
pizz.
arco
pizz.
pizz.
120
mf
mf arco
f arco
f


126
♩=116
pizz.
Vln. I
Vln. II
Vla.
Vc.
ff
mf
pizz.
133
141
arco
mp


♩=80
150
Vln. I
Vln. II
Vla.
Vc.
arco
p
f
mp
157
163


168
Vln. I
Vln. II
Vla.
Vc.
173
a bit of nasty ponticello
some accel. to end
ff
a bit of nasty ponticello
a bit of nasty ponticello
a bit of nasty ponticello
178


183
Vln. I
Vln. II
Vla.
Vc.
188
pizz.
pizz.
pizz.
pizz.