c a s c a d e s

Darcy Copeland

A thesis

submitted in partial fulfillment of the

requirements for the degree of

MASTER OF MUSIC

University of Washington

2021

Committee:

Joël François Durand

Huck Hodge

Program Authorized to Offer Degree:

School of Music

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Darcy Copeland

University of Washington

Abstract

c a s c a d e s

Darcy Copeland

Chair of the Supervisory Committee:

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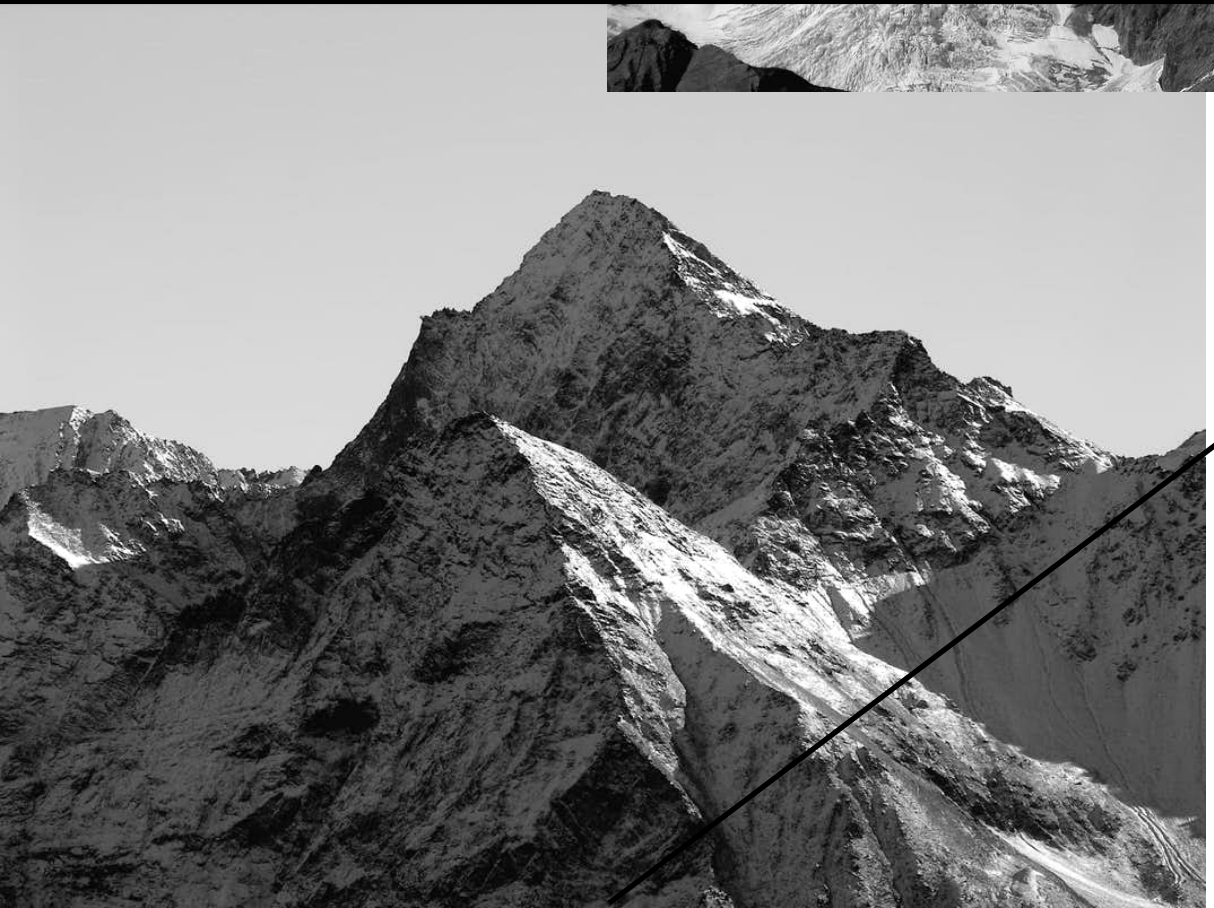
School of Music

Philosopher and ecologist Timothy Morton refers to climate change as a hyperobject, “a conceptual fact so large and complex that, like the internet, it can never be properly comprehended. Much of the complexity surrounding the idea of climate change is due to the incomprehensibility of the extent of an intricate and seemingly infinitely connected web of biofeedback loops, such as the albedo effect, which are accelerating the already staggering rate of climate devastation. *c a s c a d e s* is informed by these feedback loops and attempts to bring the intimately impactful, yet seemingly distant, effects of these feedback loops to the forefront of our perception. throughout the piece, electronics distort the listeners

perception of cause and effect, what is real and what is artificial, what is impacting and what is being impacted.

cascades



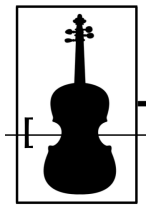
for string quartet, live electronics, & video
ca. 15 mins

d a r c y c o p e l a n d

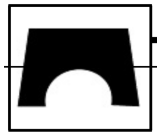
[2 0 2 1]

performance notes:

A large portion of the piece involves bowing various parts of the body of the instrument. These actions are notated graphically as follows:



bow on body of instrument; exact location indicated via brackets or text



bow horizontally across bridge (unless instructed via text to bow the side of bridge)

The right hand (bowing) staff is used when the performer is playing the strings rather than on the body of the instrument. The staff consists of four lines designating the following techniques:

beyond bridge

on bridge

molto sul pont

sul pont

ordinario

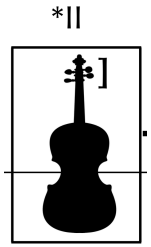
sul tasto

molto sul tasto

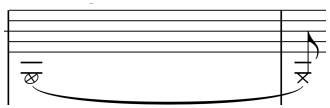
The following two lines will appear on the right hand staff, and indicate the following:

bow ordinario, hair to string

col lengo



indicates to bow tuning peg; specific tuning pegs indicated with *. in this example, the performer should play the tuning peg corresponding with string II.



cross noteheads indicate to play on a string muted with the left hand. in every case, all four strings should be muted with the left hand, though only the indicated string will be played with the bow.

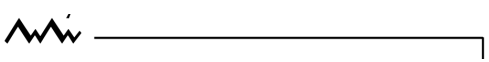
unstable harmonic

multi phonic

overpressure gradient

microtonal trill (above and below)

harmonic to stopped pressure trill



shaky, unstable, and irregular bow, varying pressure. duration indicated with horizontal bracket. unrelated to tremolo; bow direction is continuous.

ord. vibrato

wide vibrato

technical notes:

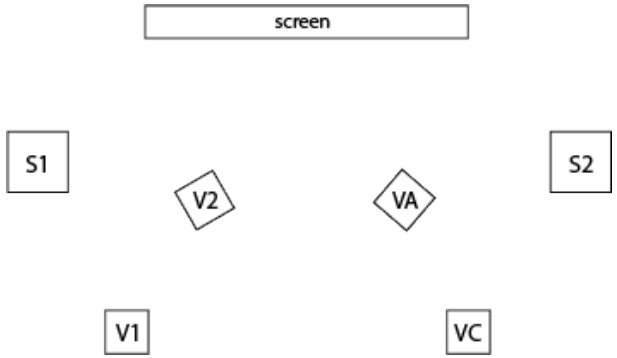
microphones: the electronics set up for this piece requires four condenser microphones to be placed as closely to each performer as possible without disrupting movement. microphones mounted on the bridge should not be used as they will disrupt the gestures. an audio interface with at least 4 input channels is necessary. the instruments themselves should be amplified and sent to the same speakers as the playback/ electronic sounds—the resulting sound should be carefully blended.

speakers: the piece requires two large speakers to be placed on stage on either side of the performers.

video: the video should be projected onto a **large** screen behind the performers. preferably, using a projector, with light from the image falling slightly over the performers.

lighting: the piece should be performed in a dark, dim space to emphasize the video. at the end of the piece, the lights should slowly fade to black as the performers lower their instruments and the electronic sounds sustain.

S1 - speaker 1
S2 - speaker 2



notation of electronics:

the score includes a visual guide for how the density and frequency of electronic playback should occur, but the expectation is that this is largely improvisational and felt. there is the possibility of altering the panning rate at any point between 0.01 (at beginning of piece) and 1 (towards the end of the piece). there is also the possibility to alter the playback rate so as to modulate and time stretch samples down an octave and for twice their speed. a few moments are explicitly notated, such as m. 108 - 109, m. 144, and the final page—these should be followed as closely as possible.

playback is signified with a solid black line corresponding to the instrument line indicated by placement (vln 1 on top line down to cello on the bottom).
recording is signified with a dashed line corresponding to the instrument line indicated by placement (vln 1 on top line down to cello on the bottom).

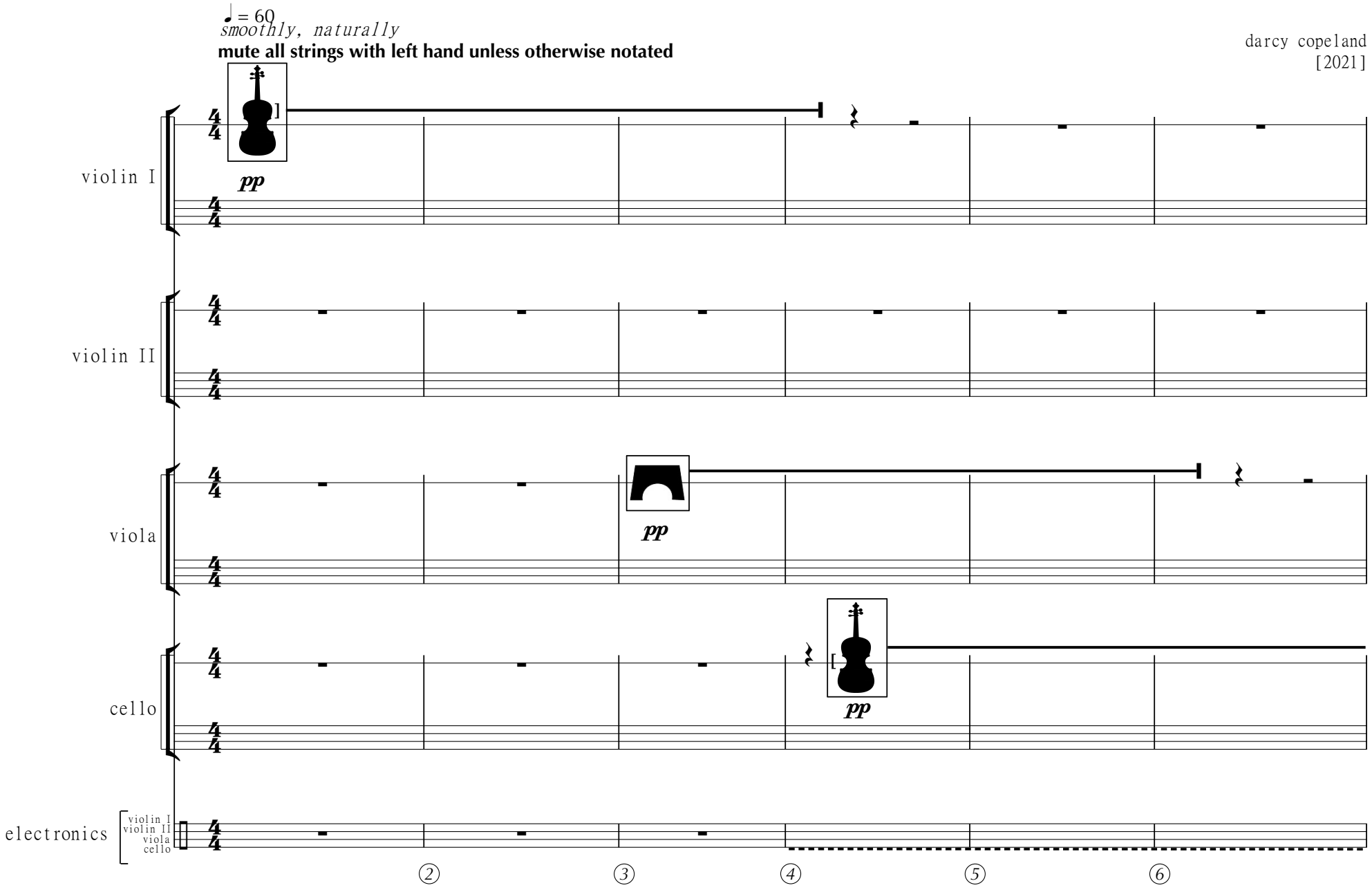
program note:

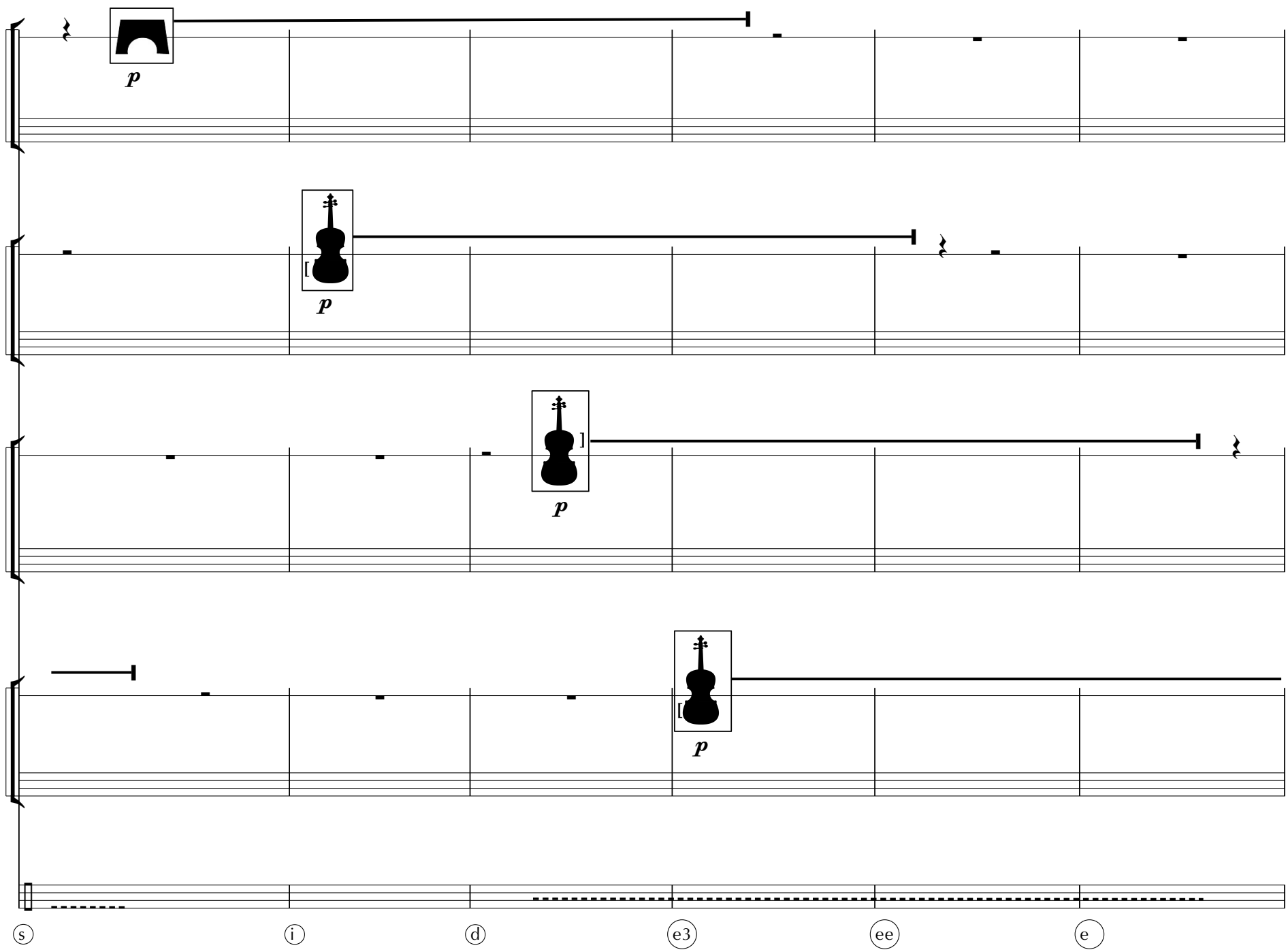
Philosopher and ecologist Timothy Morton refers to climate change as a hyperobject, "a conceptual fact so large and complex that, like the internet, it can never be properly comprehended."* Much of the complexity of the idea of climate change is due to the incomprehensibility of the extent of an intricate, seemingly infinitely connected web of biofeedback loops such as forest dieback and the albedo effect which are compounding and accelerating the already staggering rate of climate change. These loops create a snowball effect, a cascade of impact escaping our control. *c a s c a d e s* is informed by these feedback loops and attempts to bring the intimately impactful, yet seemingly distant, effects of climate change to the forefront of our perception. Electronics distort the listeners idea of cause and effect, what is real and what is artificial, what is impacting and what is being impacted.

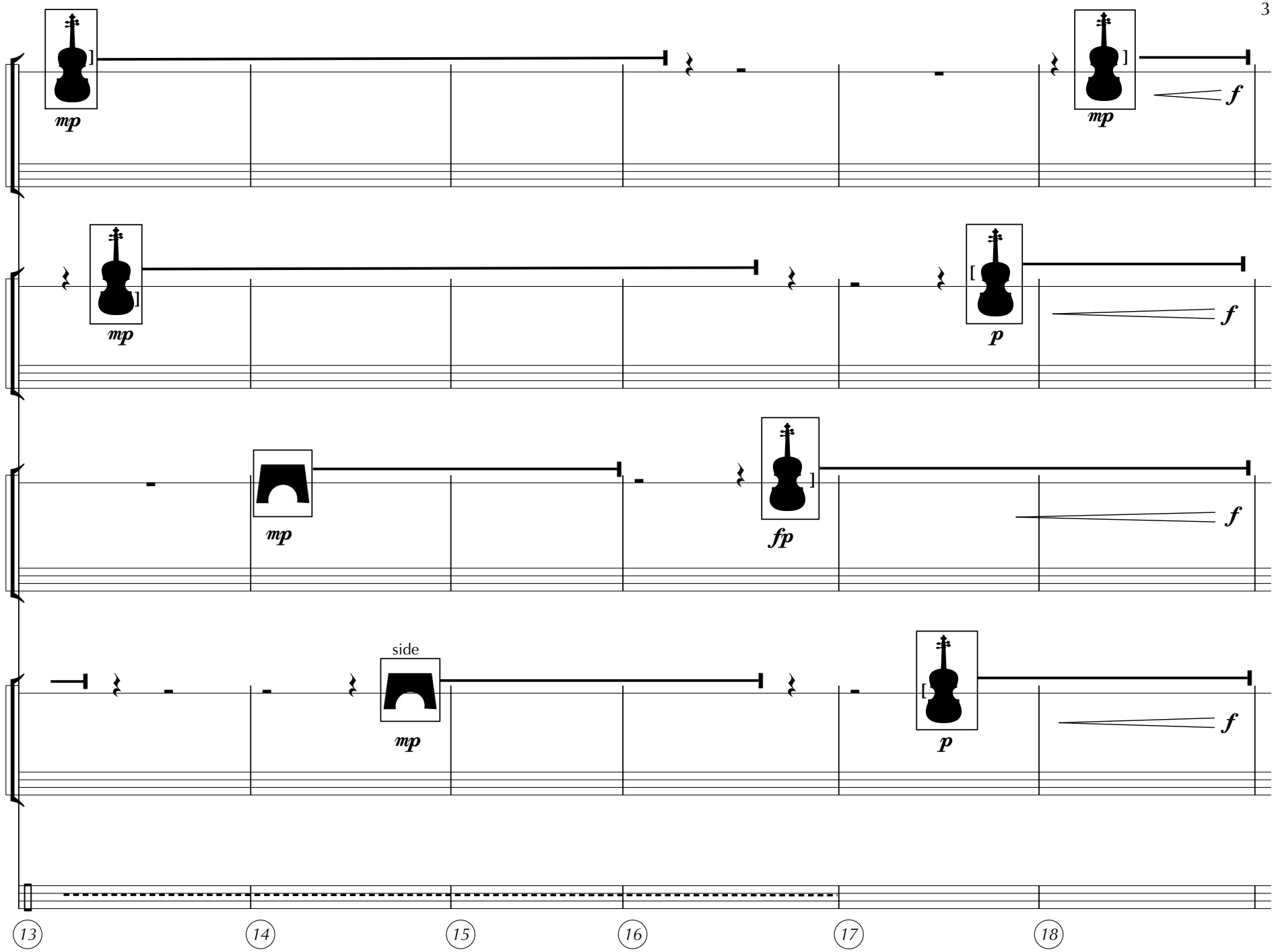
This piece was composed as my thesis in completion of graduation requirements for my master of music degree in music composition from the University of Washington in 2021.

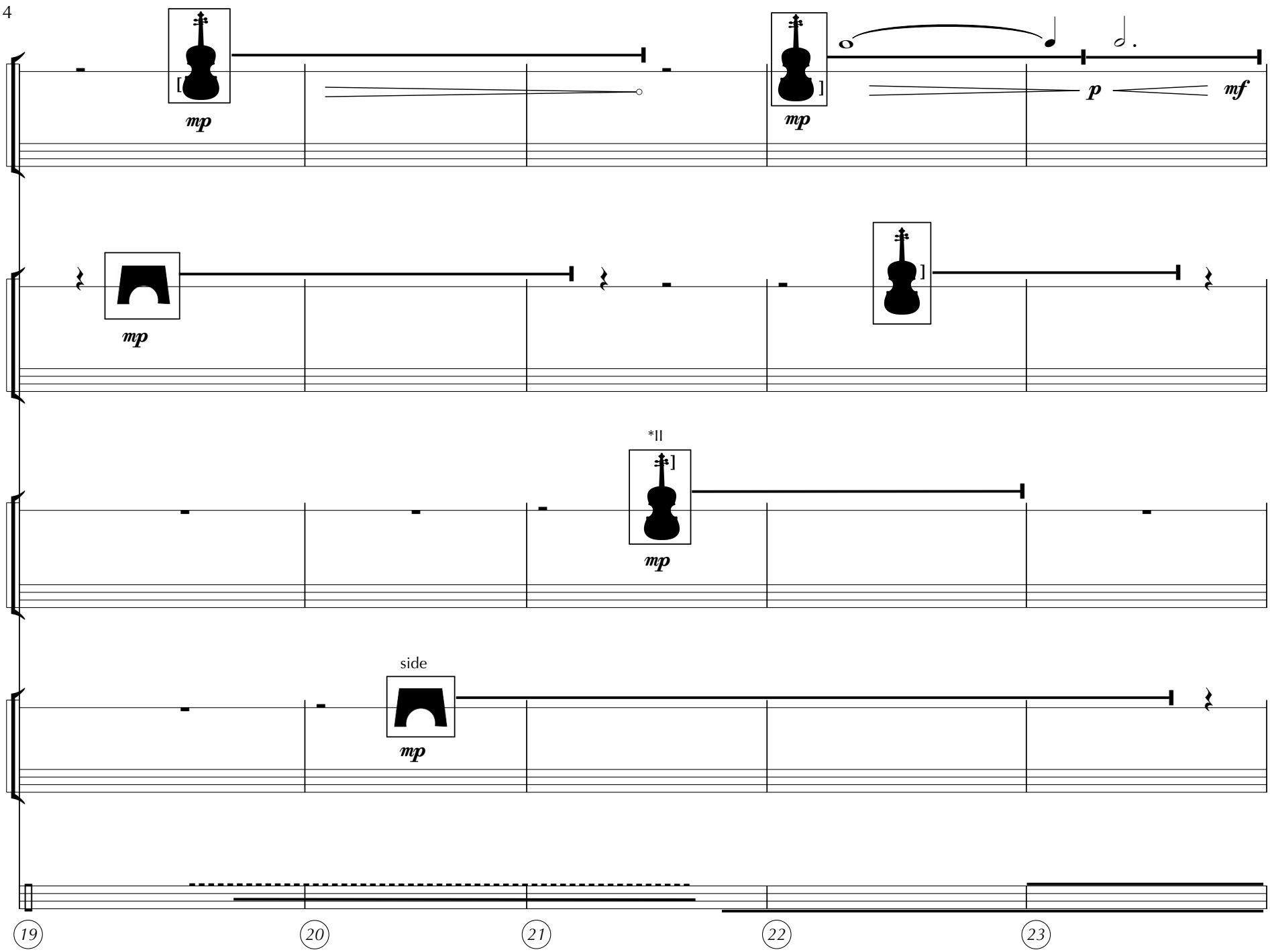
*quoted from a description in David Wallace-Wells' *The Uninhabitable Earth.*

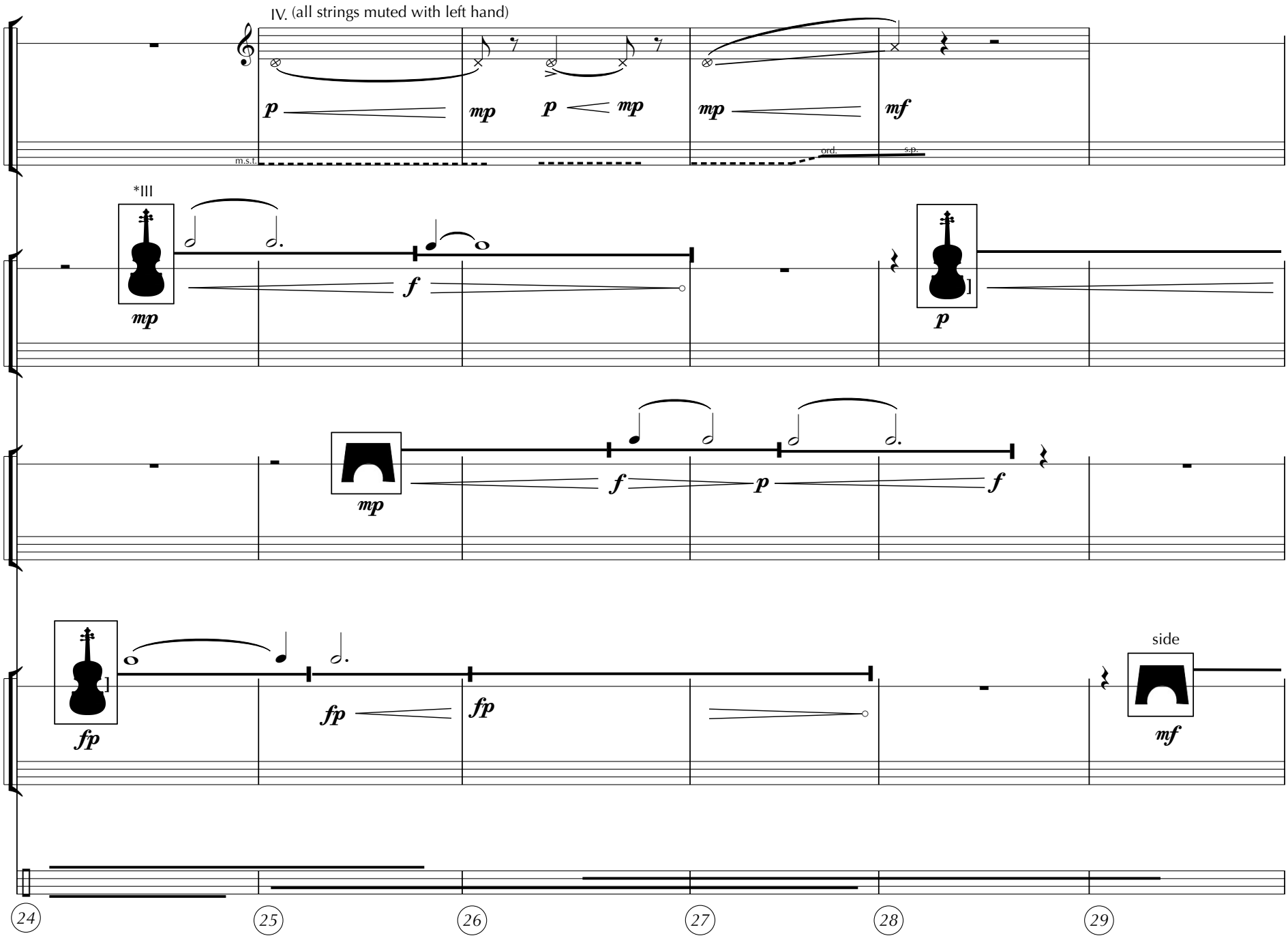
c a s c a d e s

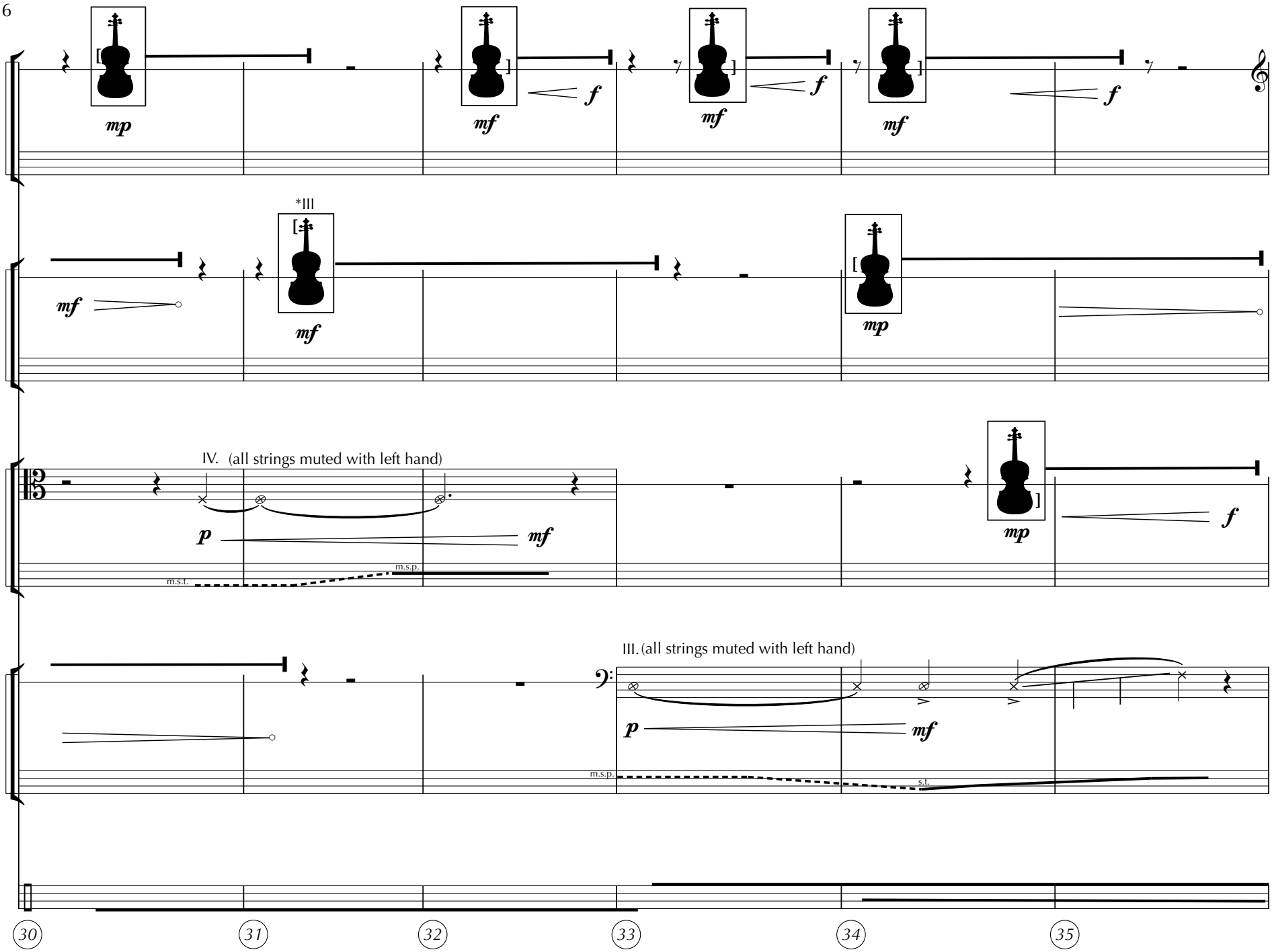

♩ = 60
smoothly, naturally
mute all strings with left hand unless otherwise notated
darcy copeland
[2021]
violin I
violin II
viola
cello
electronics
violin I
violin II
viola
cello
pp
pp
pp
2
3
4
5
6

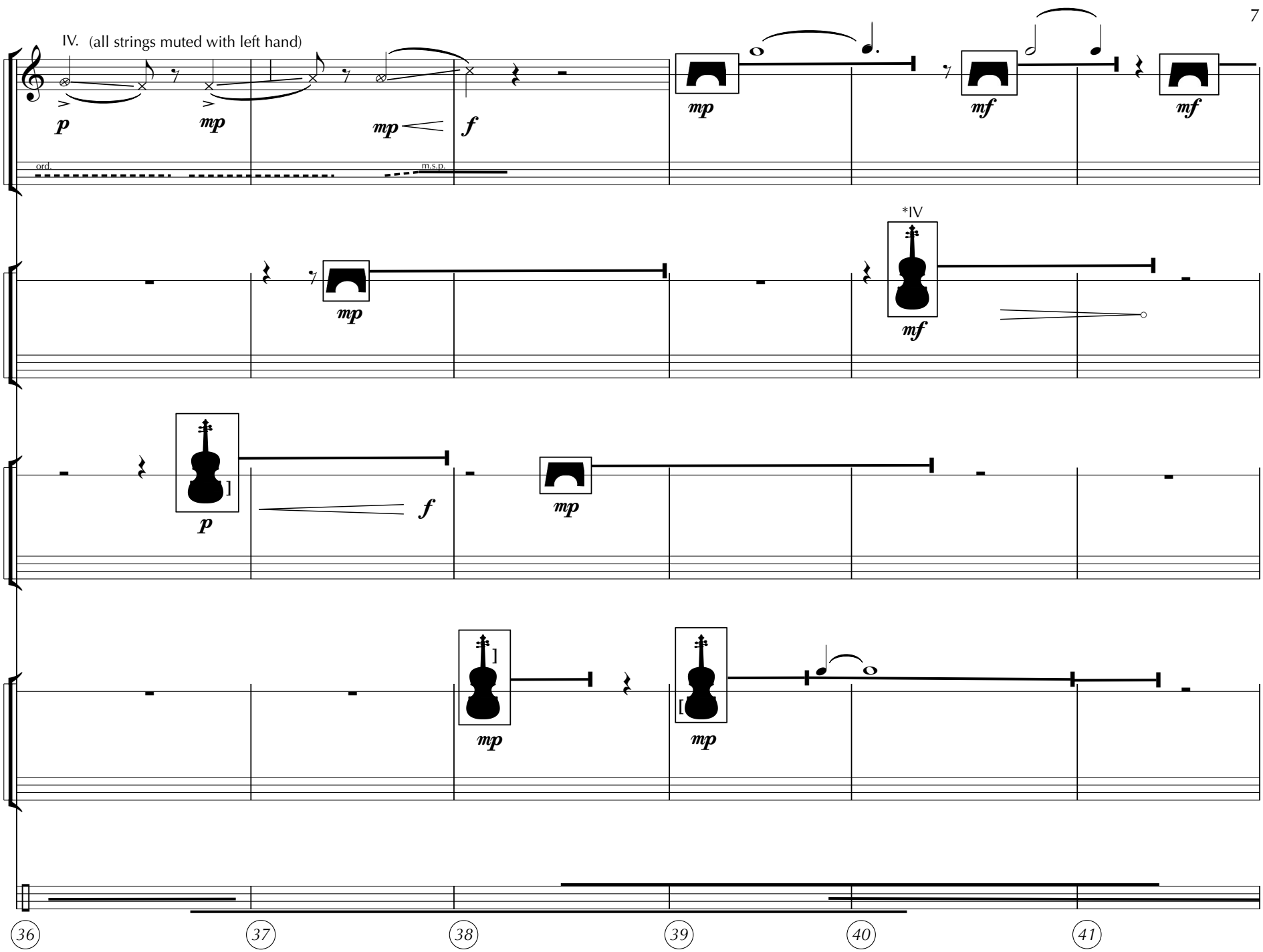

p
p
p
p
s
i
d
e3
ee
e

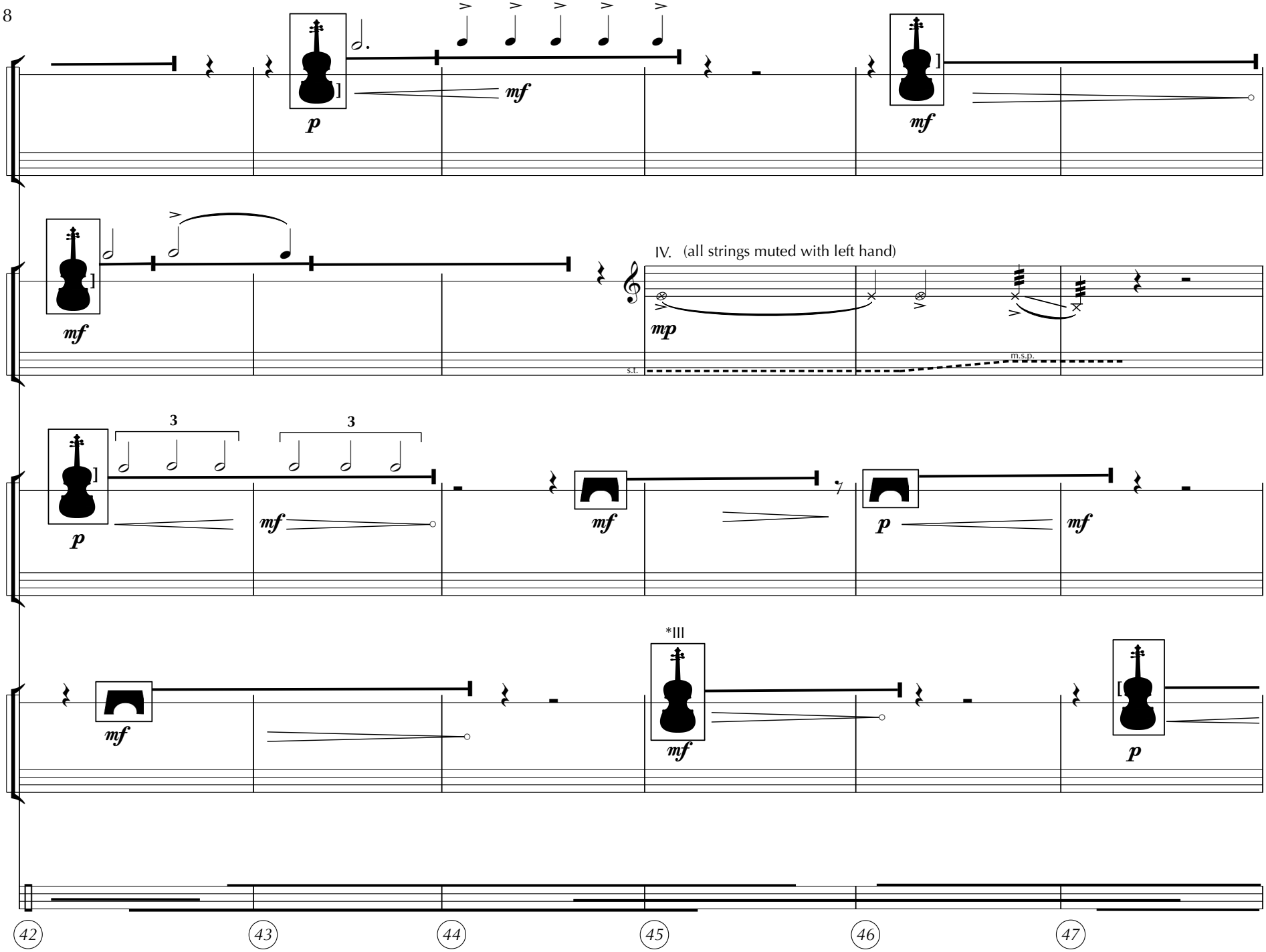

mp
f
mp
mp
p
f
mp
fp
f
side
mp
p
f
13
14
15
16
17
18

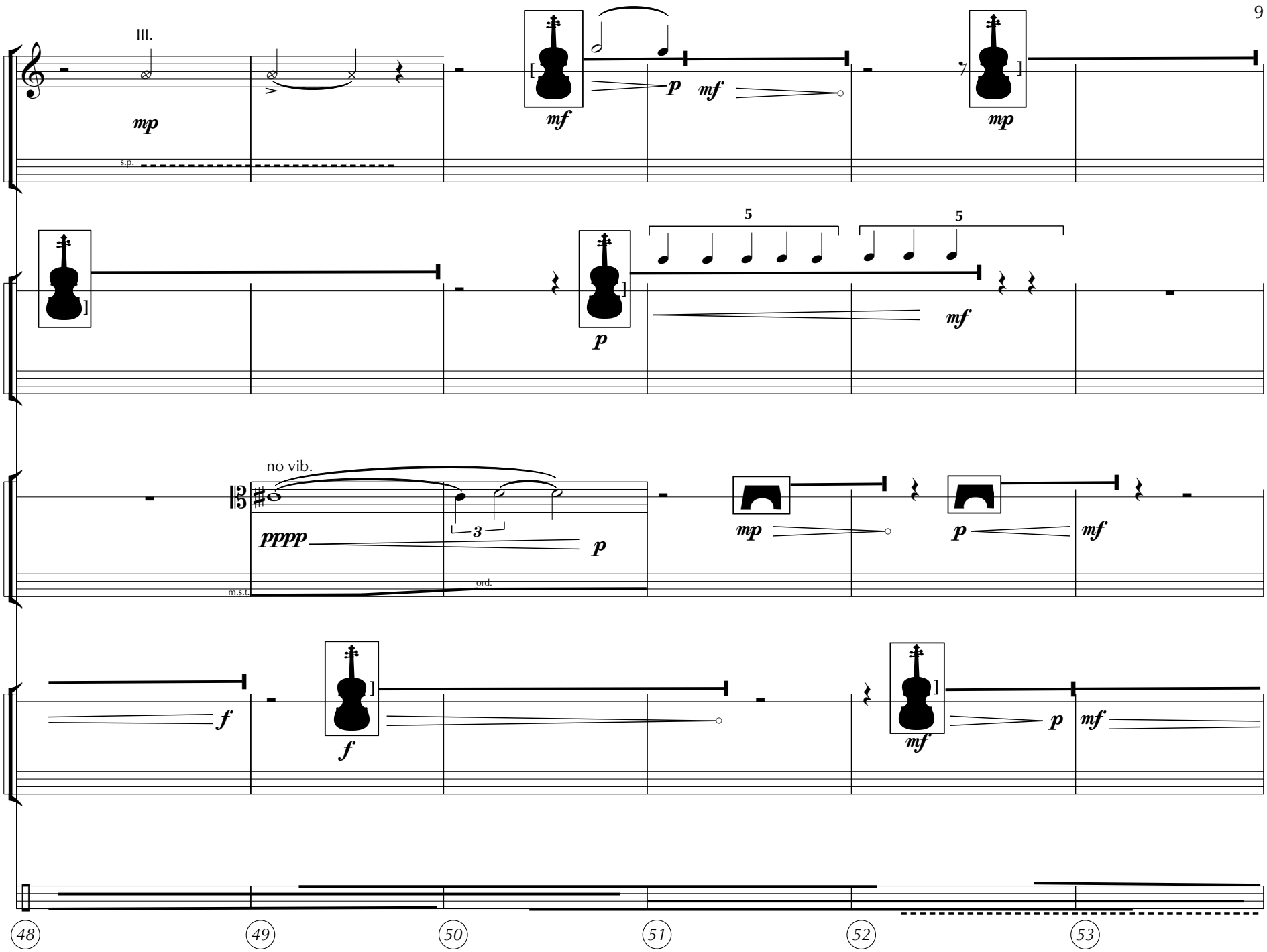

mp
mp
p
mf
mp
mp
*II
mp
side
mp
19
20
21
22
23

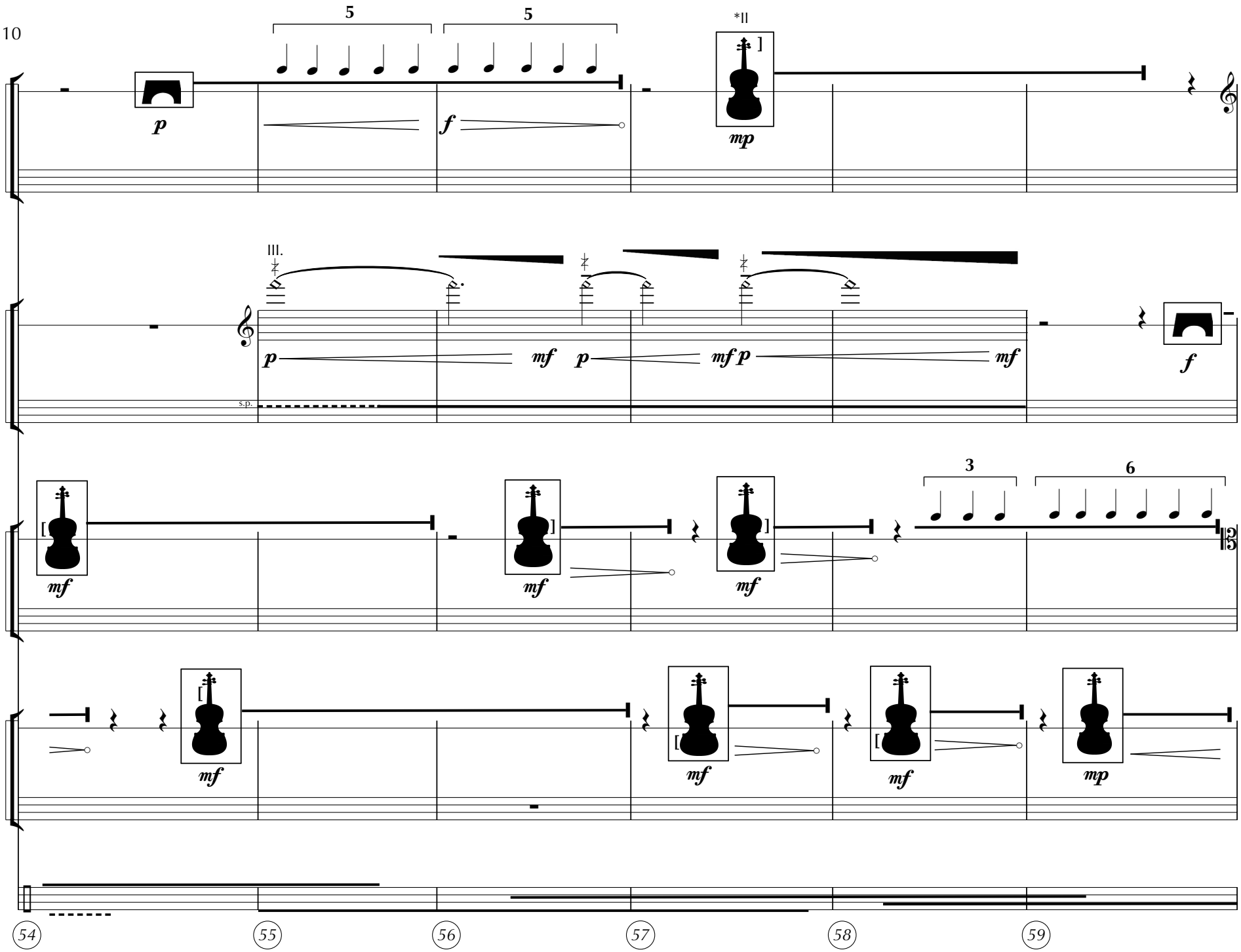

IV. (all strings muted with left hand)
p
mp
p
mp
mp
mf
m.s.t.
ord.
s.p.
*III
mp
f
p
mp
f
p
f
fp
fp
fp
side
mf
24
25
26
27
28
29

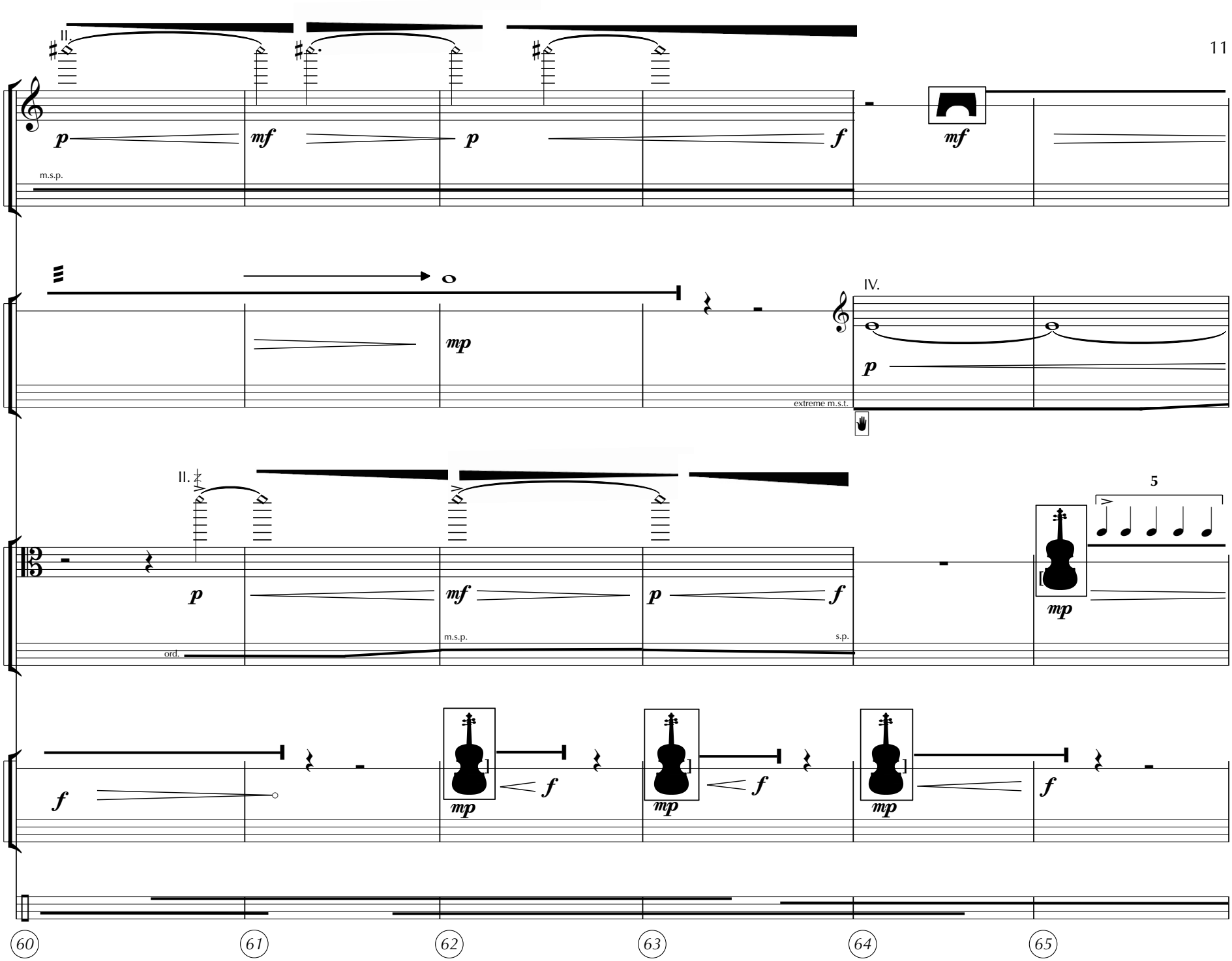

mp
mf
f
mf
f
mf
f
*III
mf
mf
mp
IV. (all strings muted with left hand)
p
mf
m.s.t.
m.s.p.
mp
f
III. (all strings muted with left hand)
p
mf
m.s.p.
s.t.
30
31
32
33
34
35

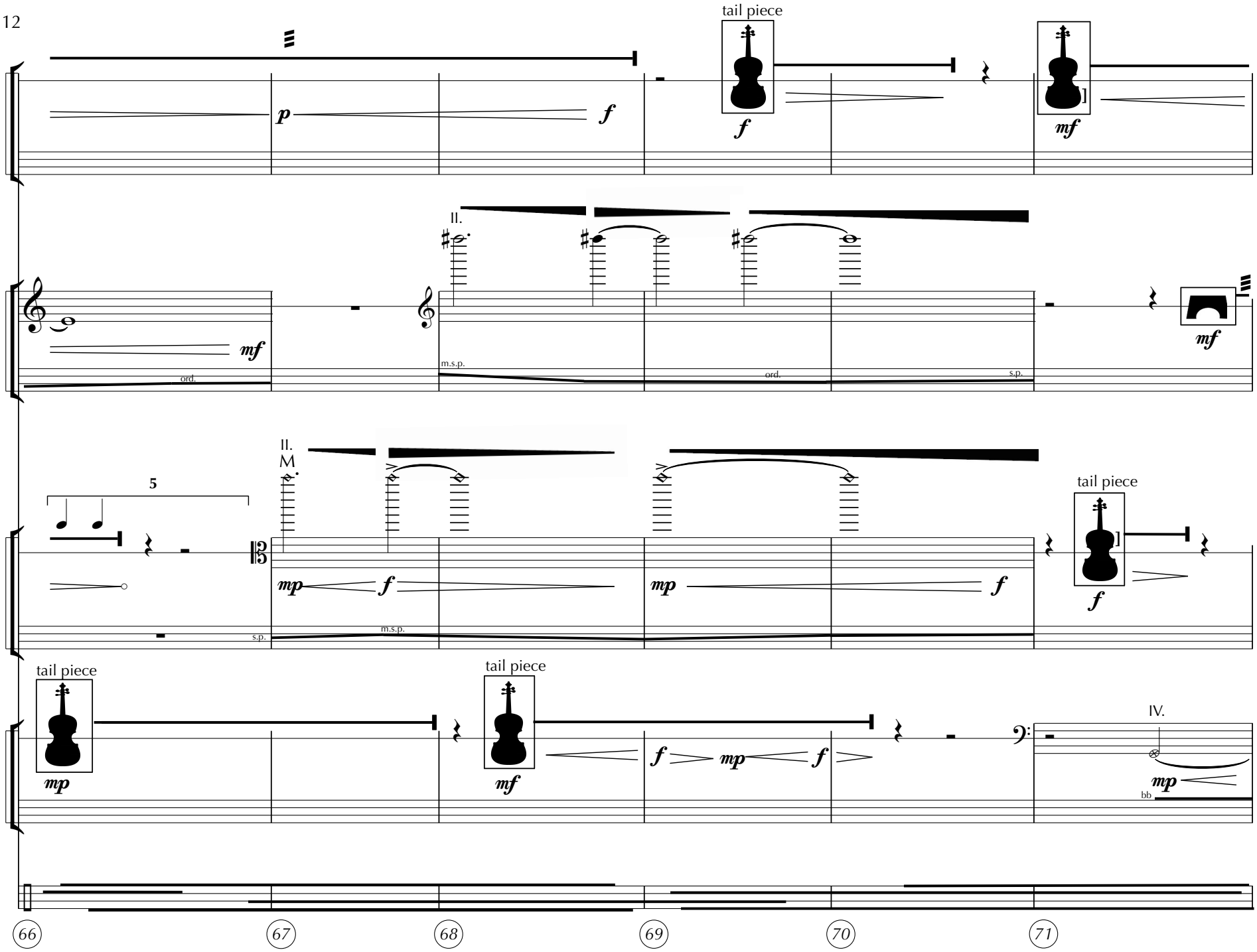

IV. (all strings muted with left hand)
p
mp
mp
f
ord.
m.s.p.
mp
mf
mf
*IV
mp
mf
p
f
mp
mp
mp
36
37
38
39
40
41

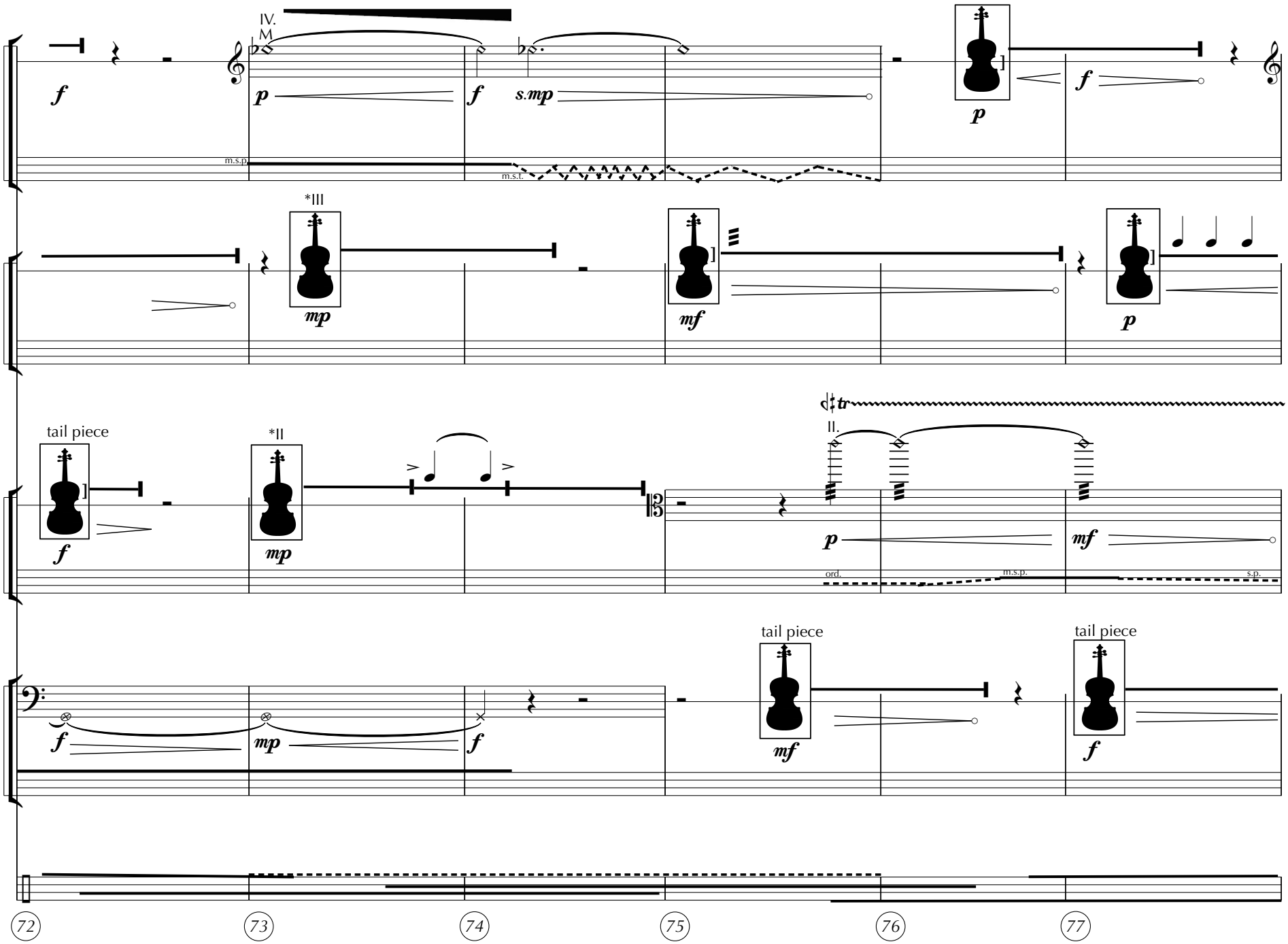

p
mf
mf
mf
IV. (all strings muted with left hand)
mp
s.t.
m.s.p.
3
3
p
mf
mf
p
mf
mf
*III
mf
[
p
42
43
44
45
46
47

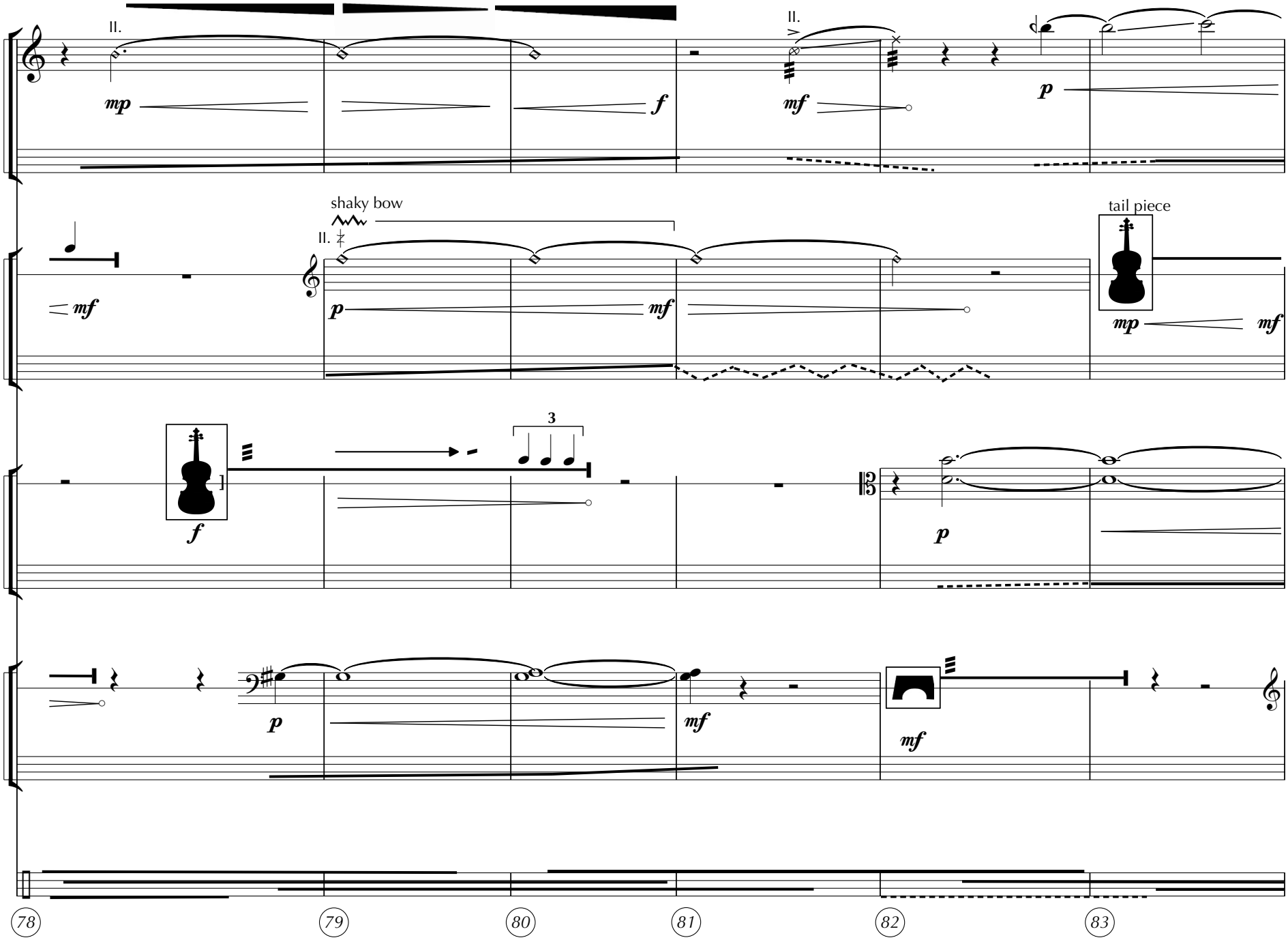

III.
mp
s.p.
mf
p
mf
mp
5
5
p
mf
no vib.
pppp
3
p
m.s.t.
ord.
mp
p
mf
f
f
mf
p
mf
48
49
50
51
52
53

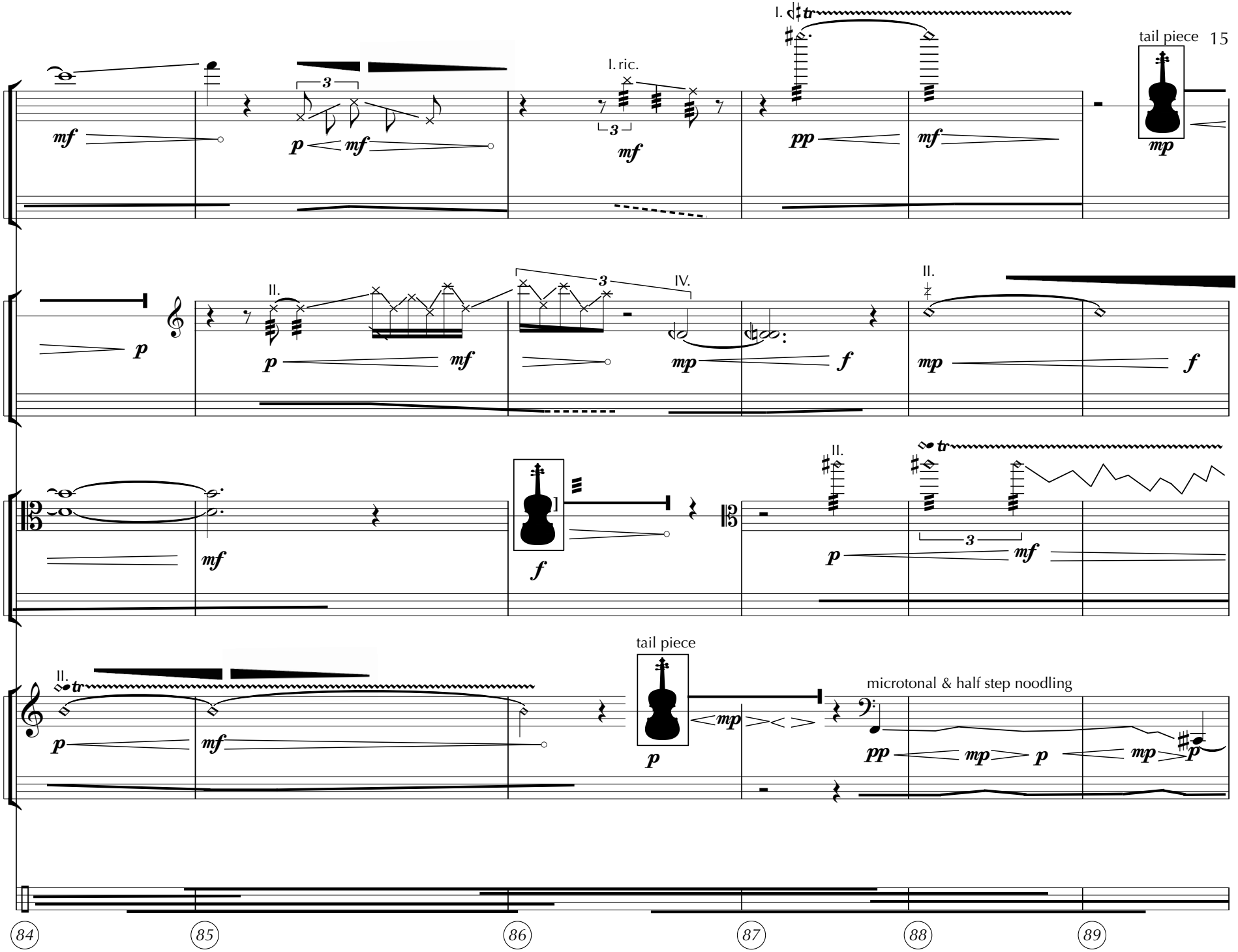

5
5
*II
p
f
mp
III.
p
mf
p
mf p
mf
s.p.
f
3
6
mf
mf
mf
mf
mf
mf
mp
54
55
56
57
58
59

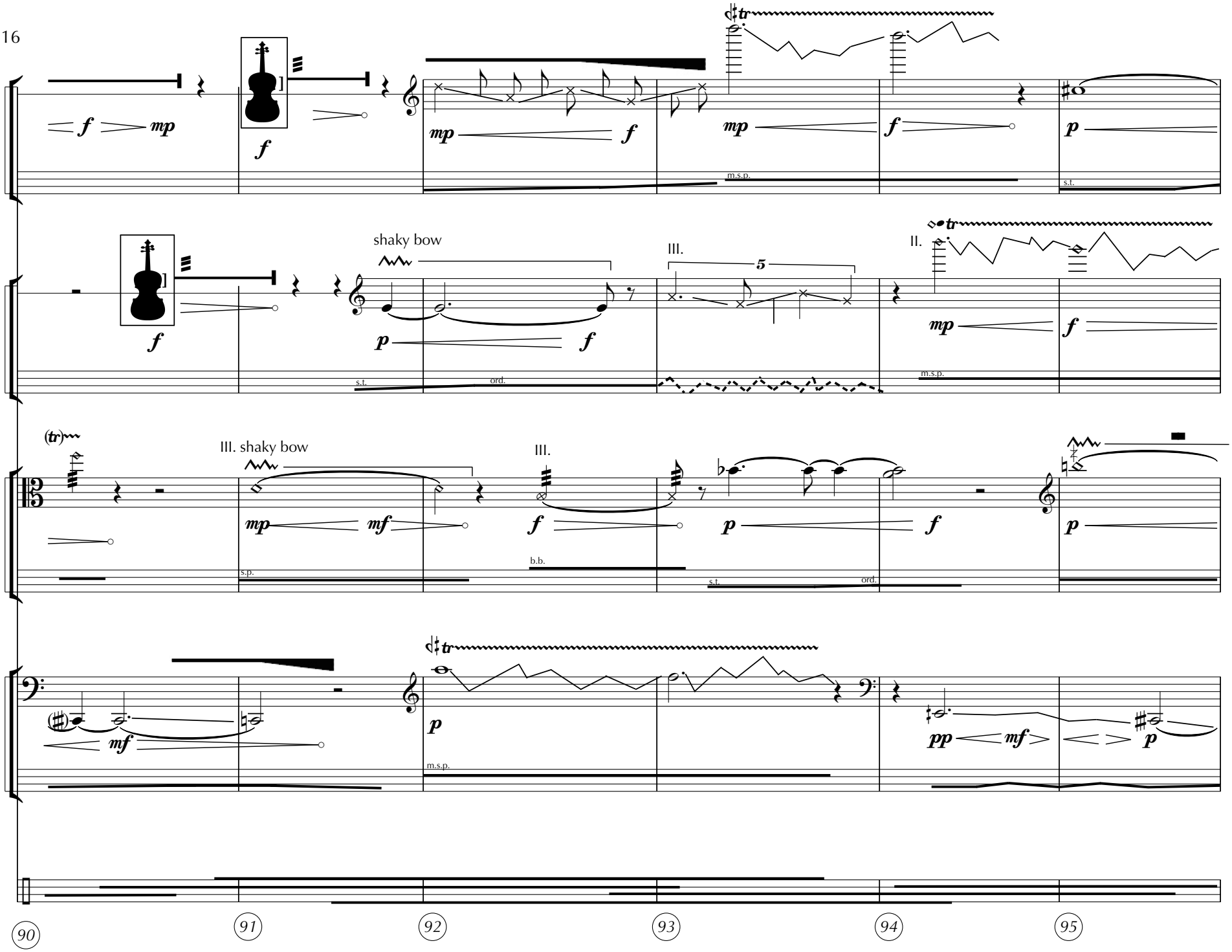

II.
p
mf
p
f
mf
m.s.p.
mp
IV.
p
extreme m.s.t.
II.
p
mf
p
f
m.s.p.
s.p.
ord.
5
mp
f
mp
f
mp
f
mp
f
60
61
62
63
64
65

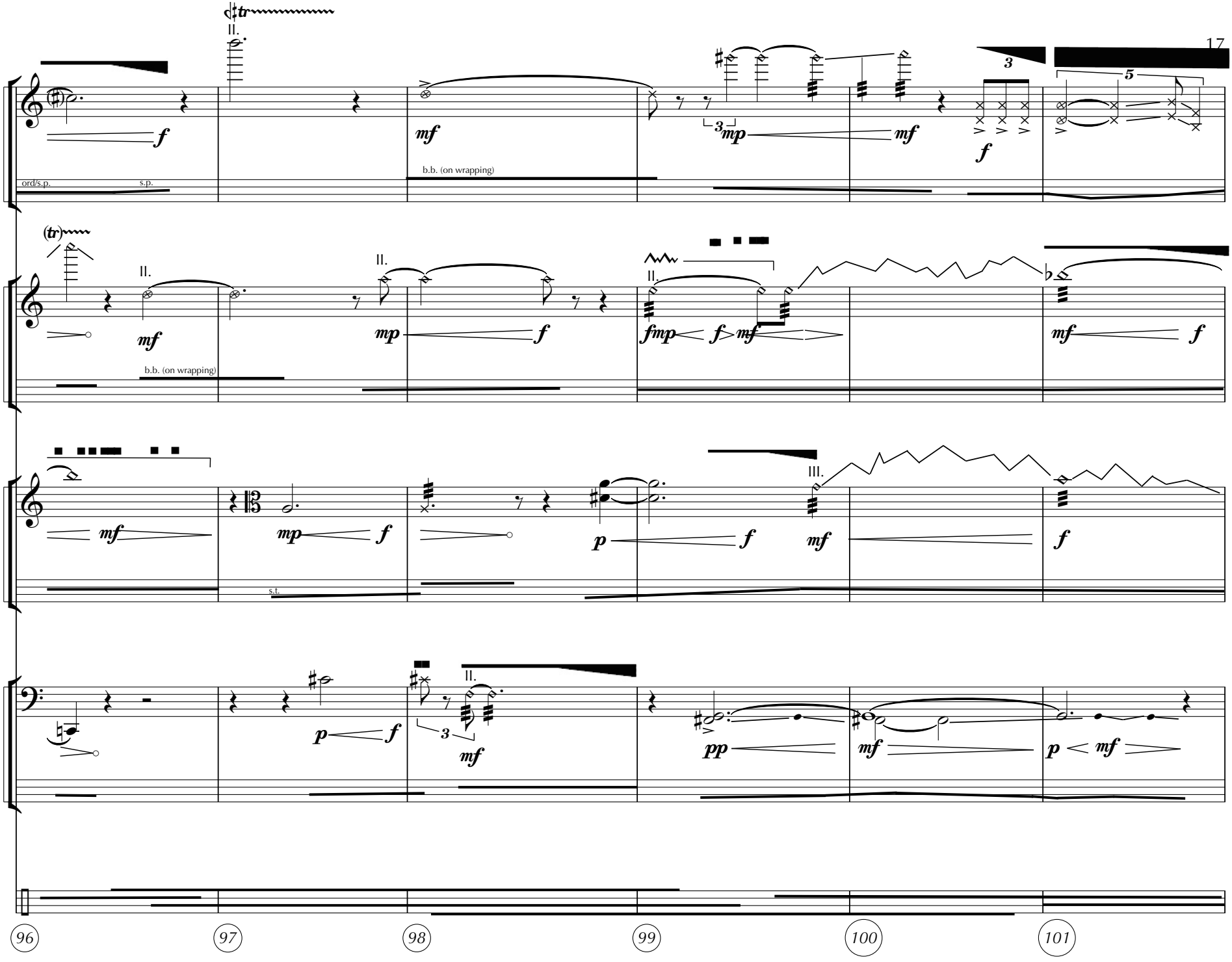

tail piece
II.
ord.
m.s.p.
ord.
s.p.
II.
M.
5
s.p.
m.s.p.
tail piece
tail piece
tail piece
IV.
bb
66
67
68
69
70
71

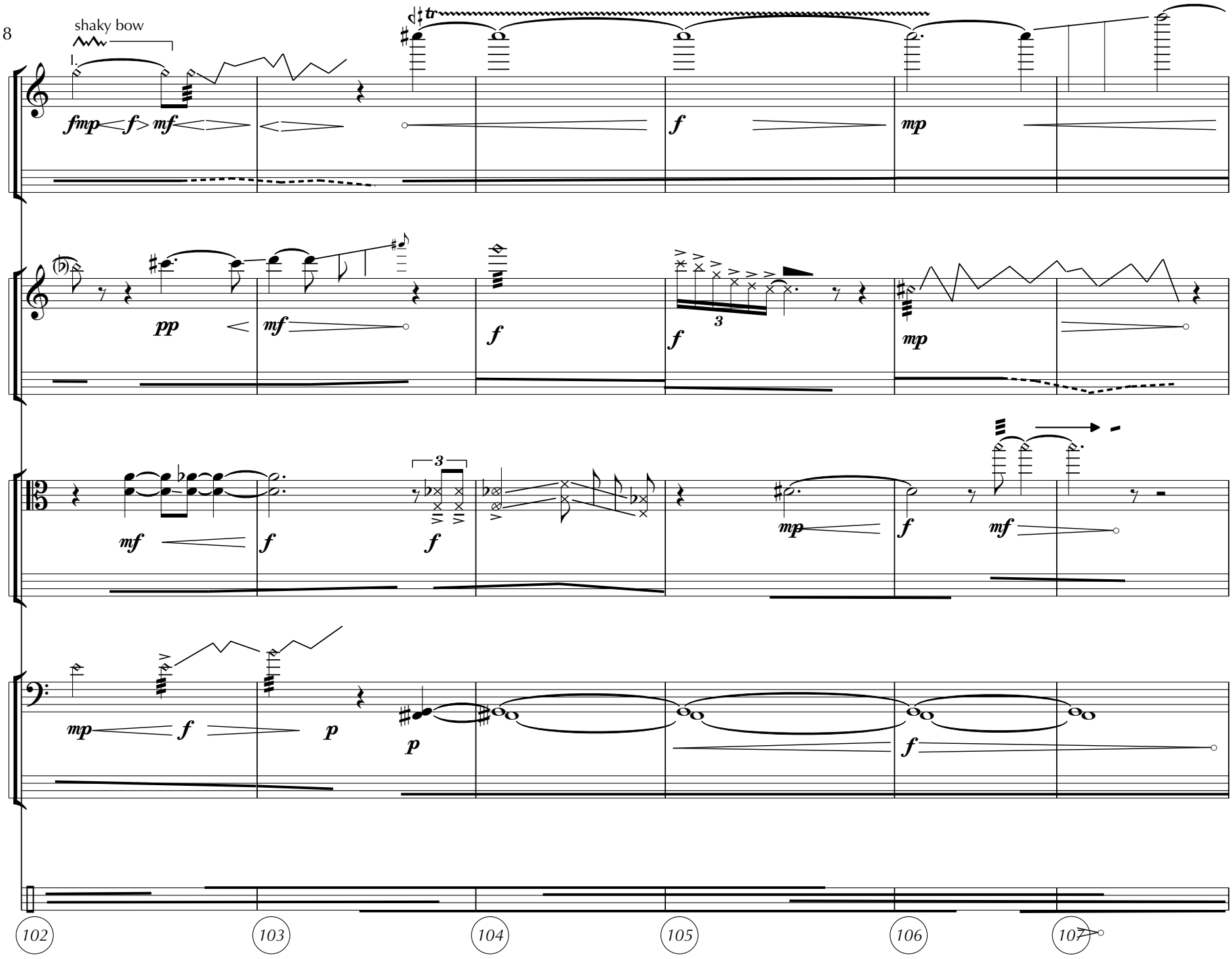

IV.
M
f
p
f
s.mp
p
f
m.s.p.
m.s.t.
*III
mp
mf
p
tail piece
*II
f
mp
tr
II.
p
mf
ord.
m.s.p.
s.p.
f
mp
f
tail piece
mf
tail piece
f
72
73
74
75
76
77

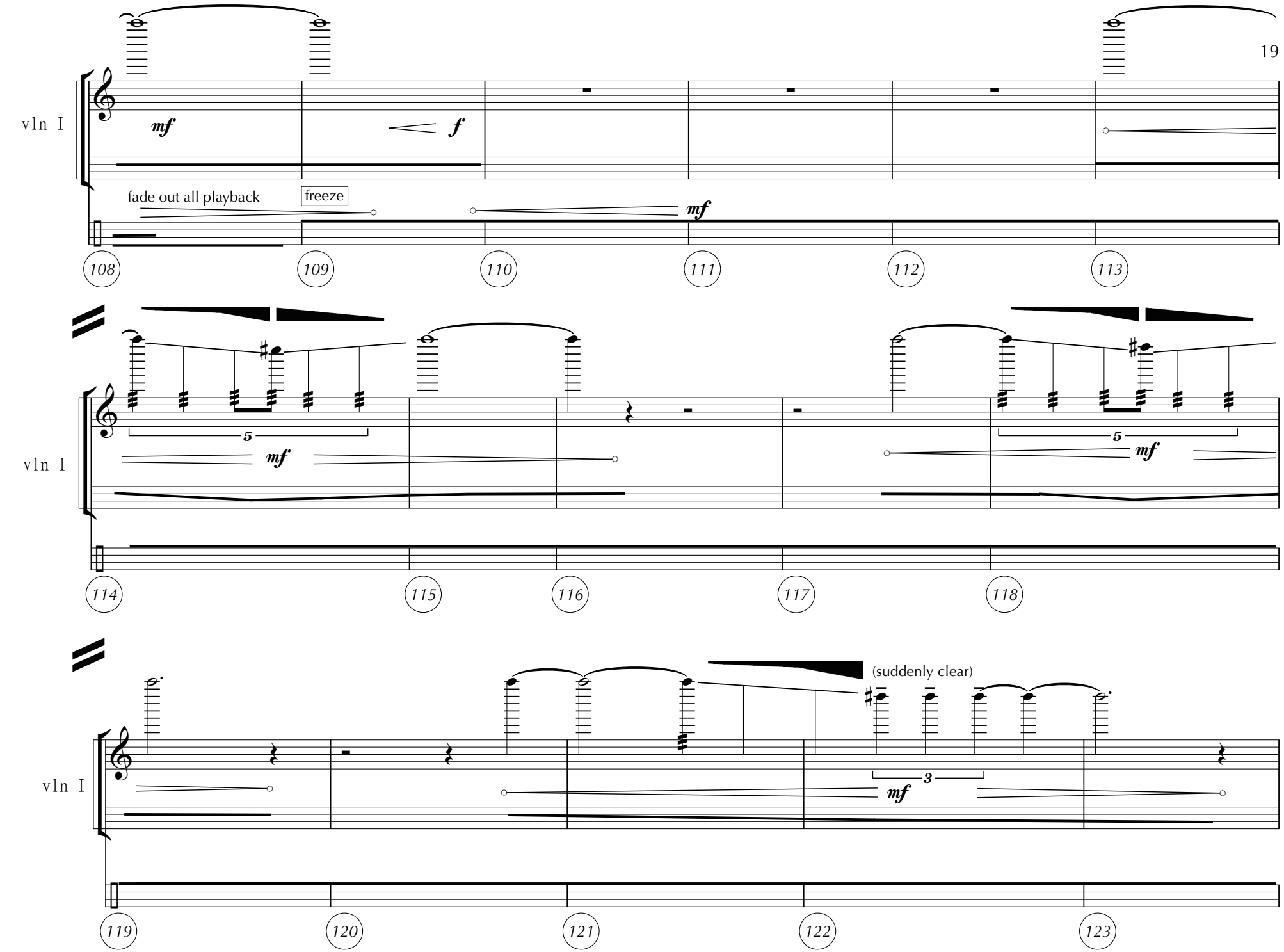

II.
mp
f
II.
mf
p
shaky bow
II.
mf
p
mf
tail piece
mp
mf
3
f
p
p
mf
mf
78
79
80
81
82
83

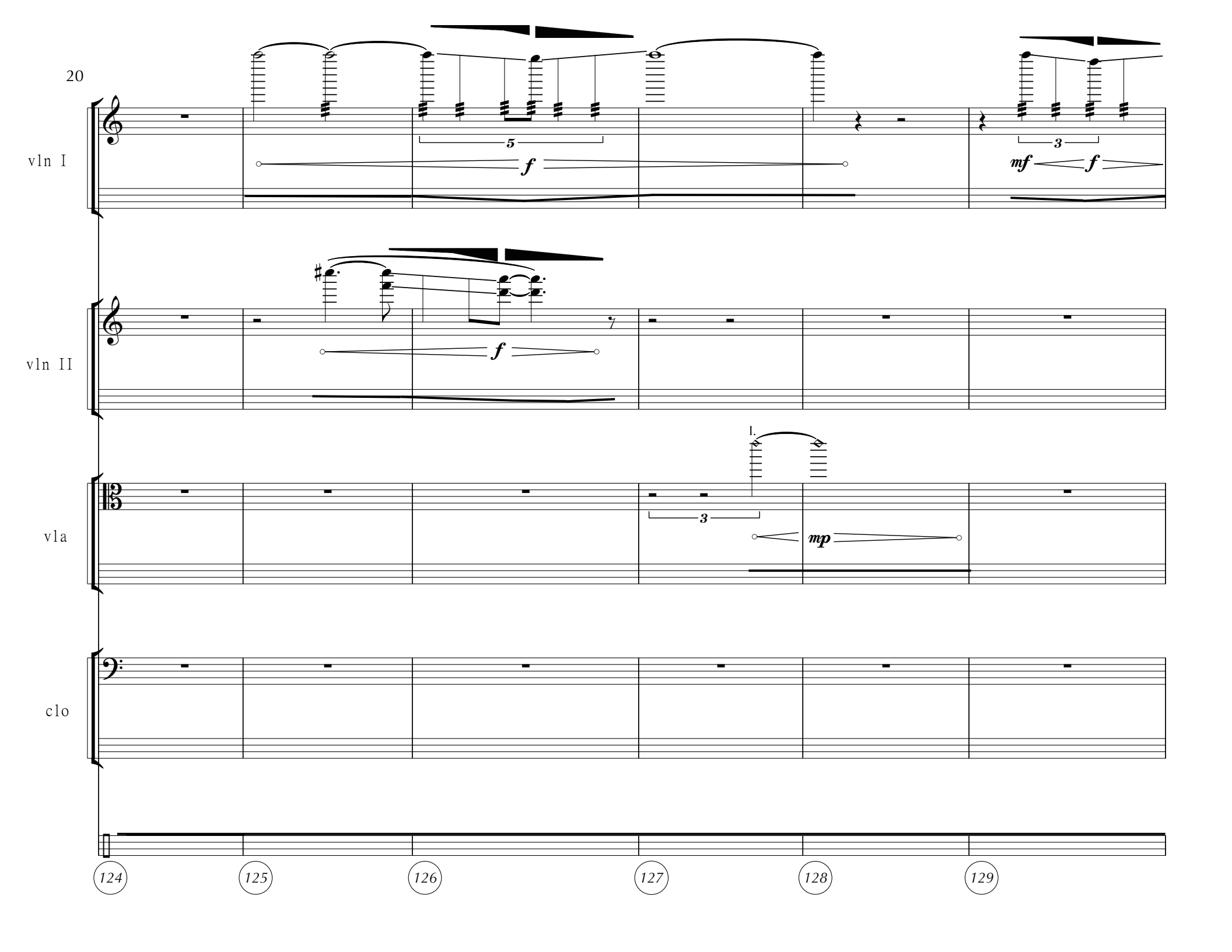

I. ric.
tail piece
II.
IV.
microtonal & half step noodling
84
85
86
87
88
89

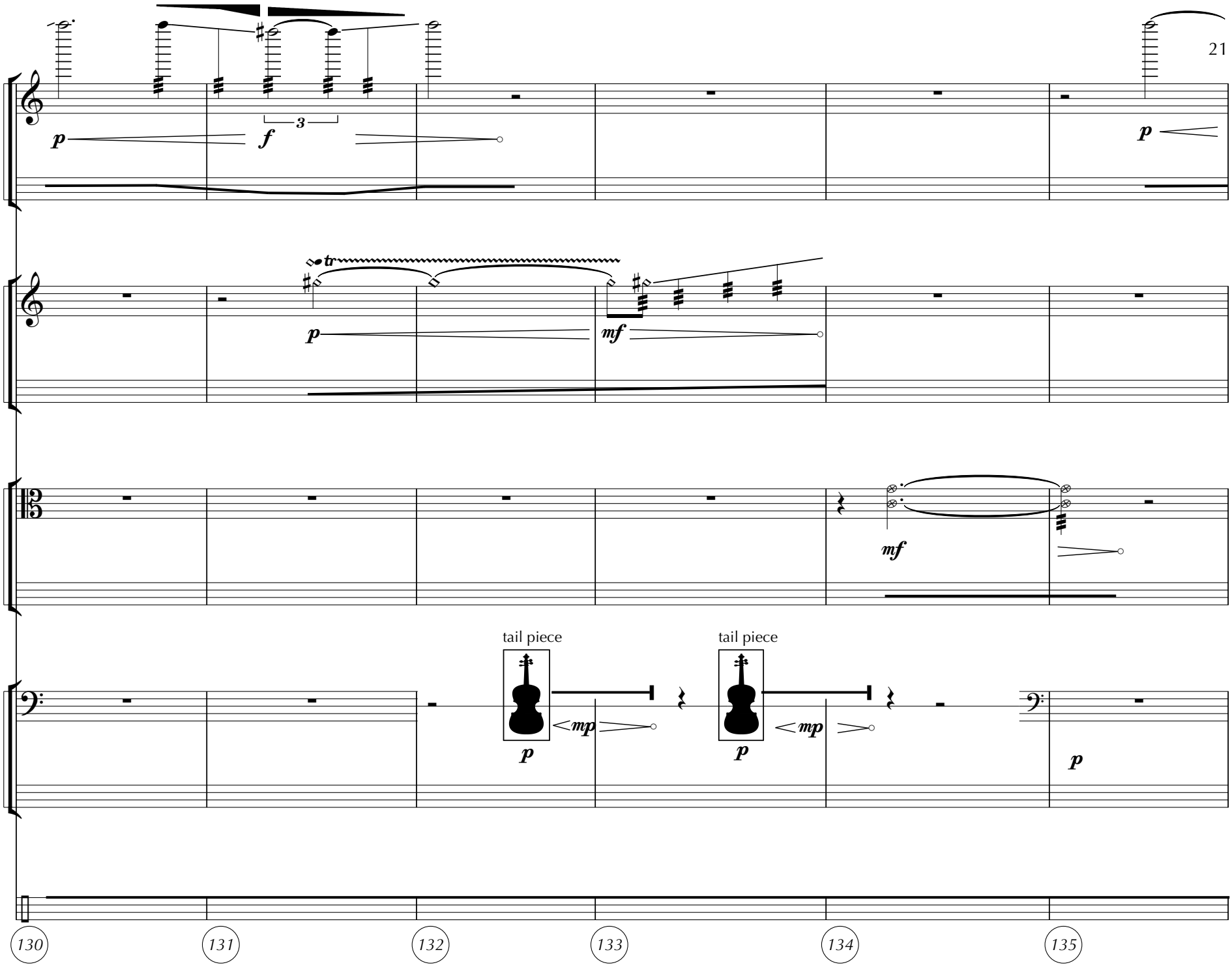

shaky bow
III.
II.
III. shaky bow
III.
m.s.p.
s.t.
ord.
s.p.
b.b.
90
91
92
93
94
95

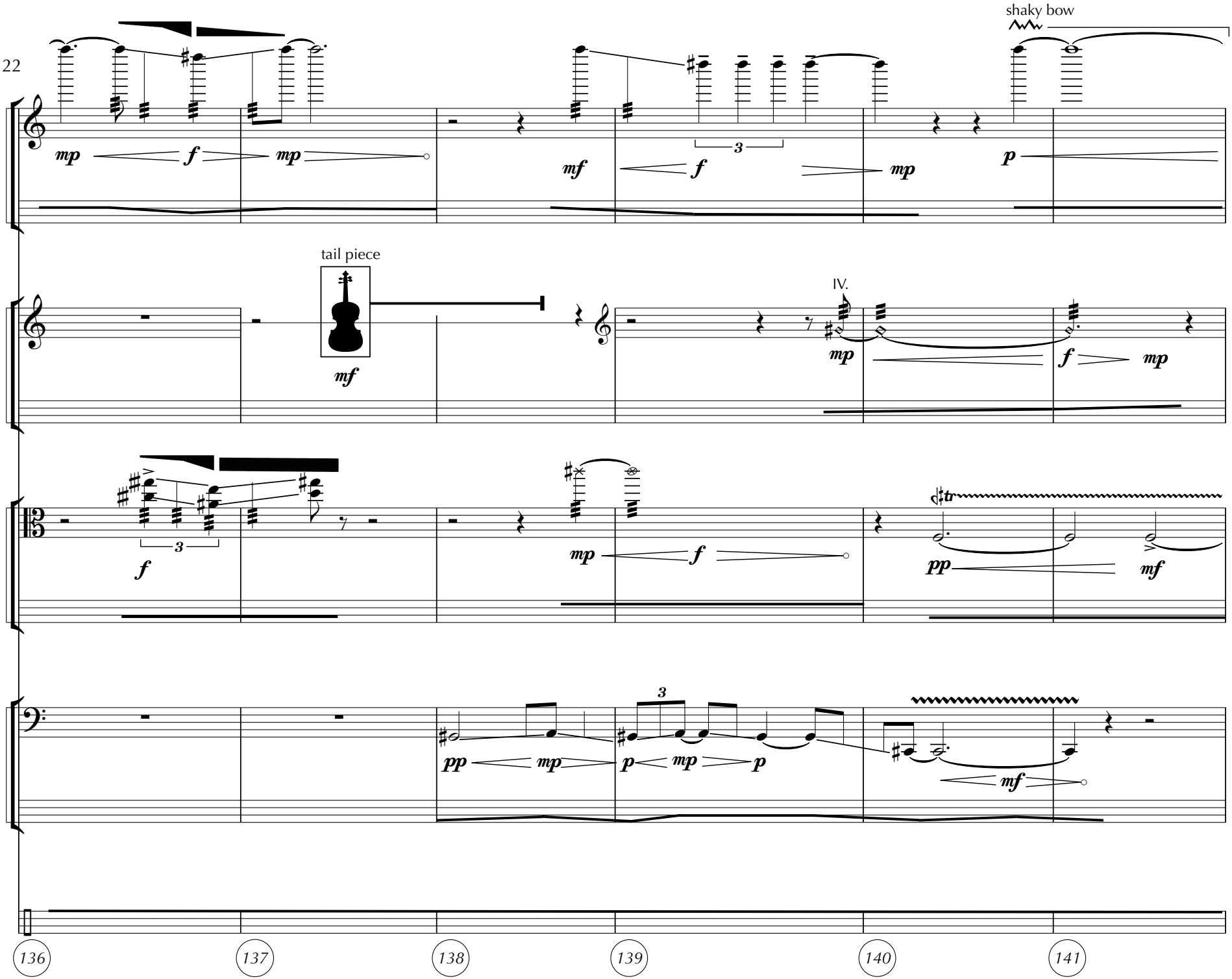

II.
f
mf
b.b. (on wrapping)
ord/s.p.
s.p.
3
mp
5
(tr)
mp
fmp
III.
s.t.
pp
96
97
98
99
100
101

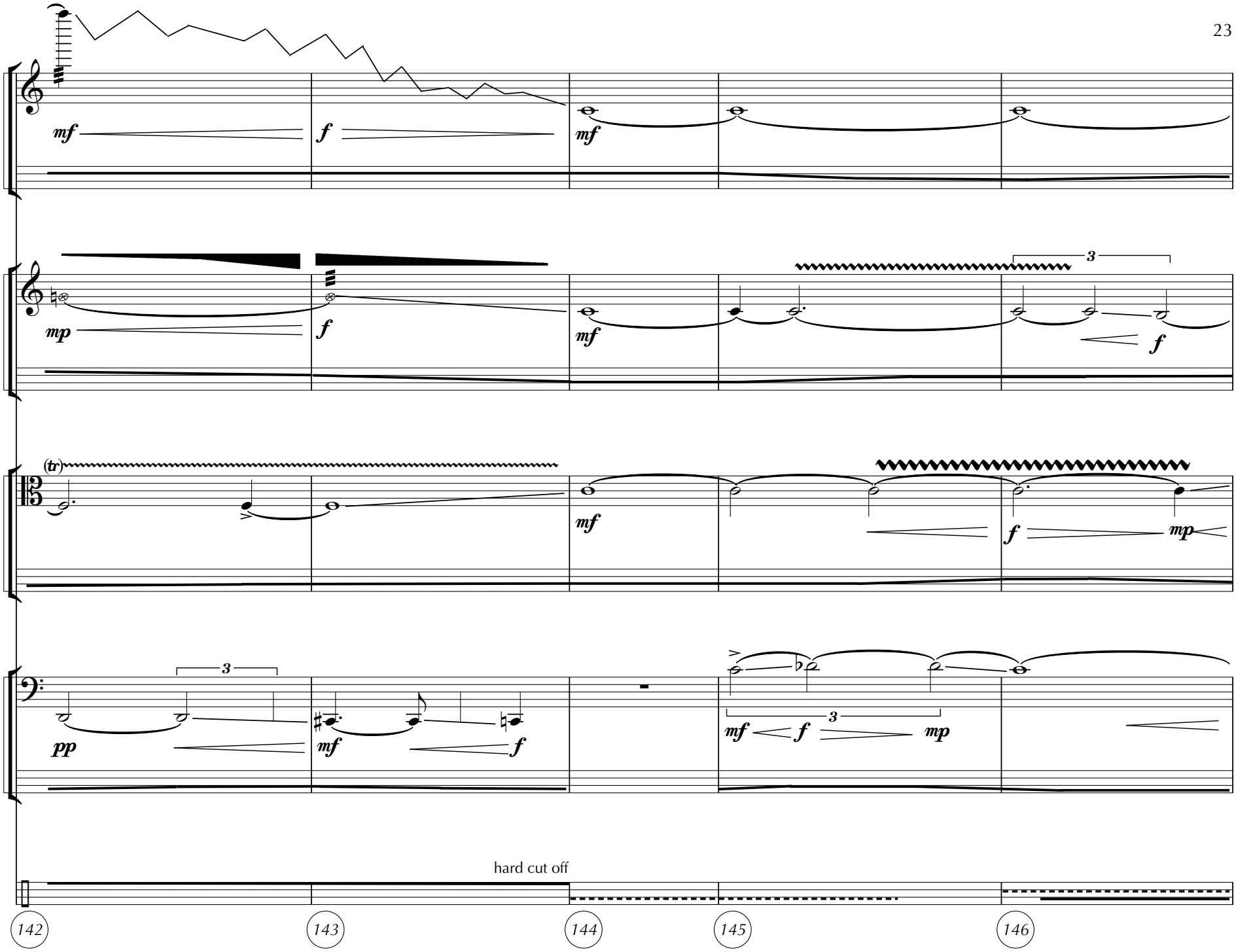

shaky bow
fmp
f
mf
tr
f
mp
pp
mf
f
f
3
mp
mf
f
3
f
mp
f
mf
mp
f
p
p
f
102
103
104
105
106
107

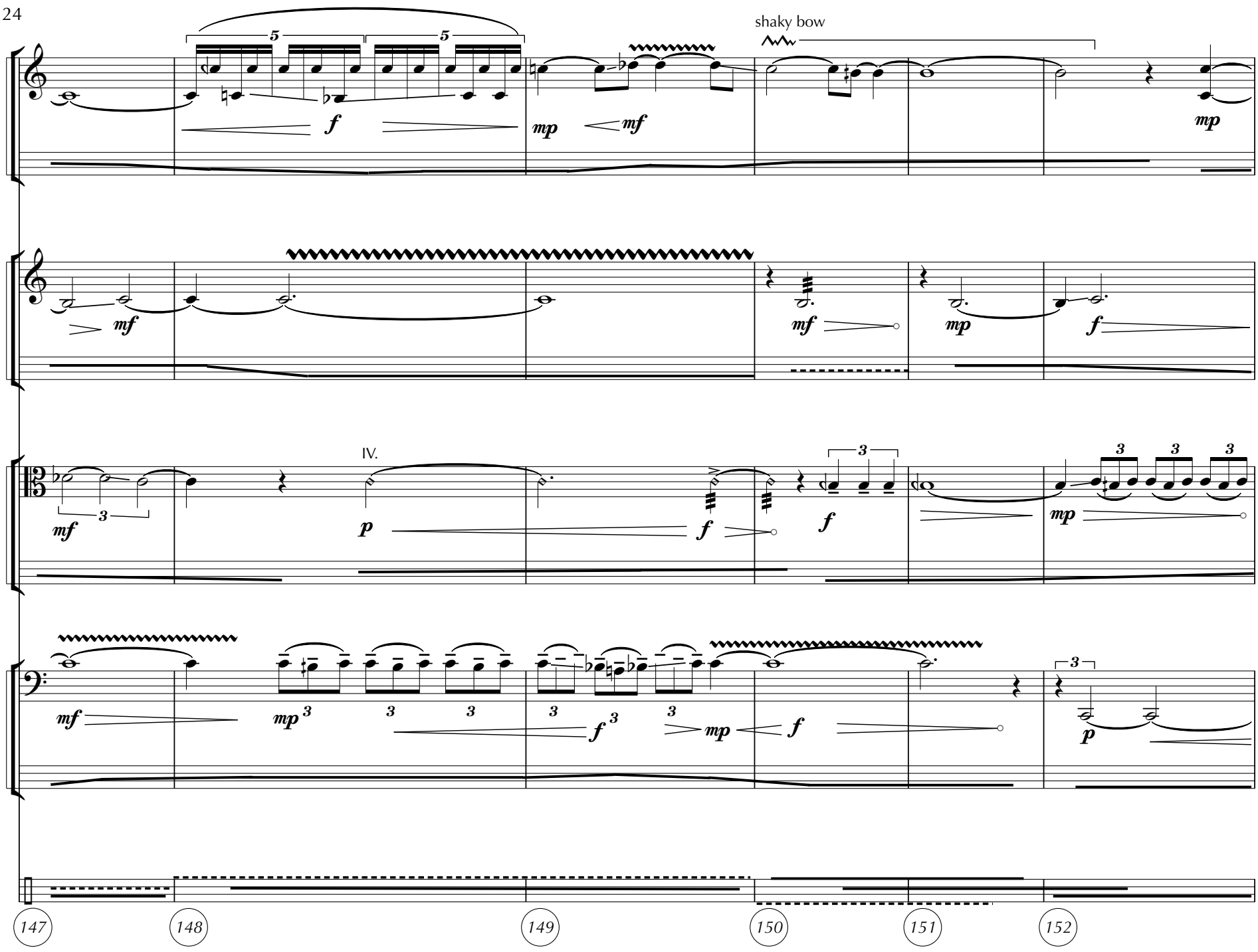

vln I
mf
f
fade out all playback
freeze
mf
108
109
110
111
112
113
vln I
5
mf
5
mf
114
115
116
117
118
vln I
(suddenly clear)
3
mf
119
120
121
122
123

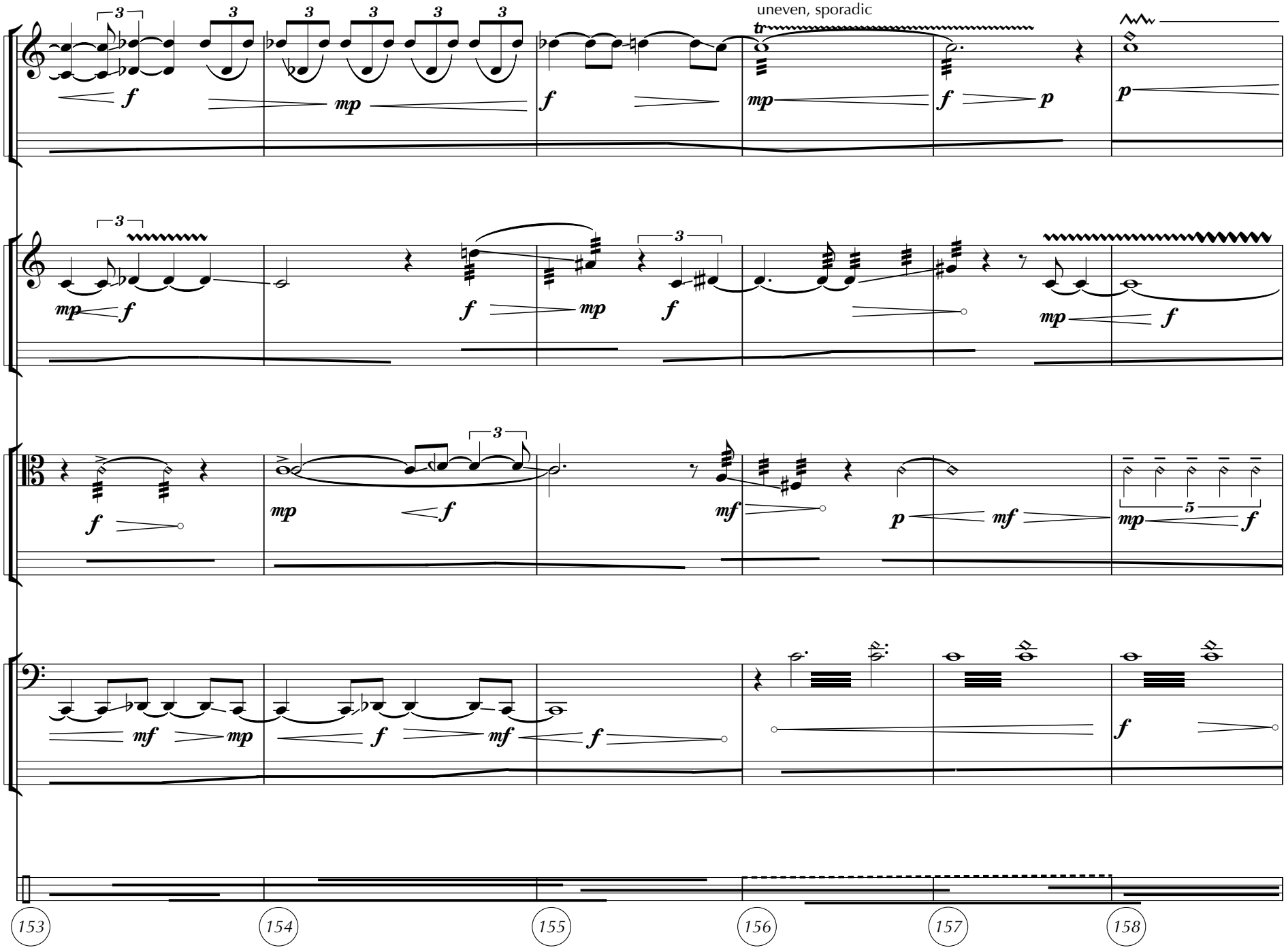

20
vln I
vln II
vla
clo
5
f
3
mf
f
f
l.
3
mp
124
125
126
127
128
129

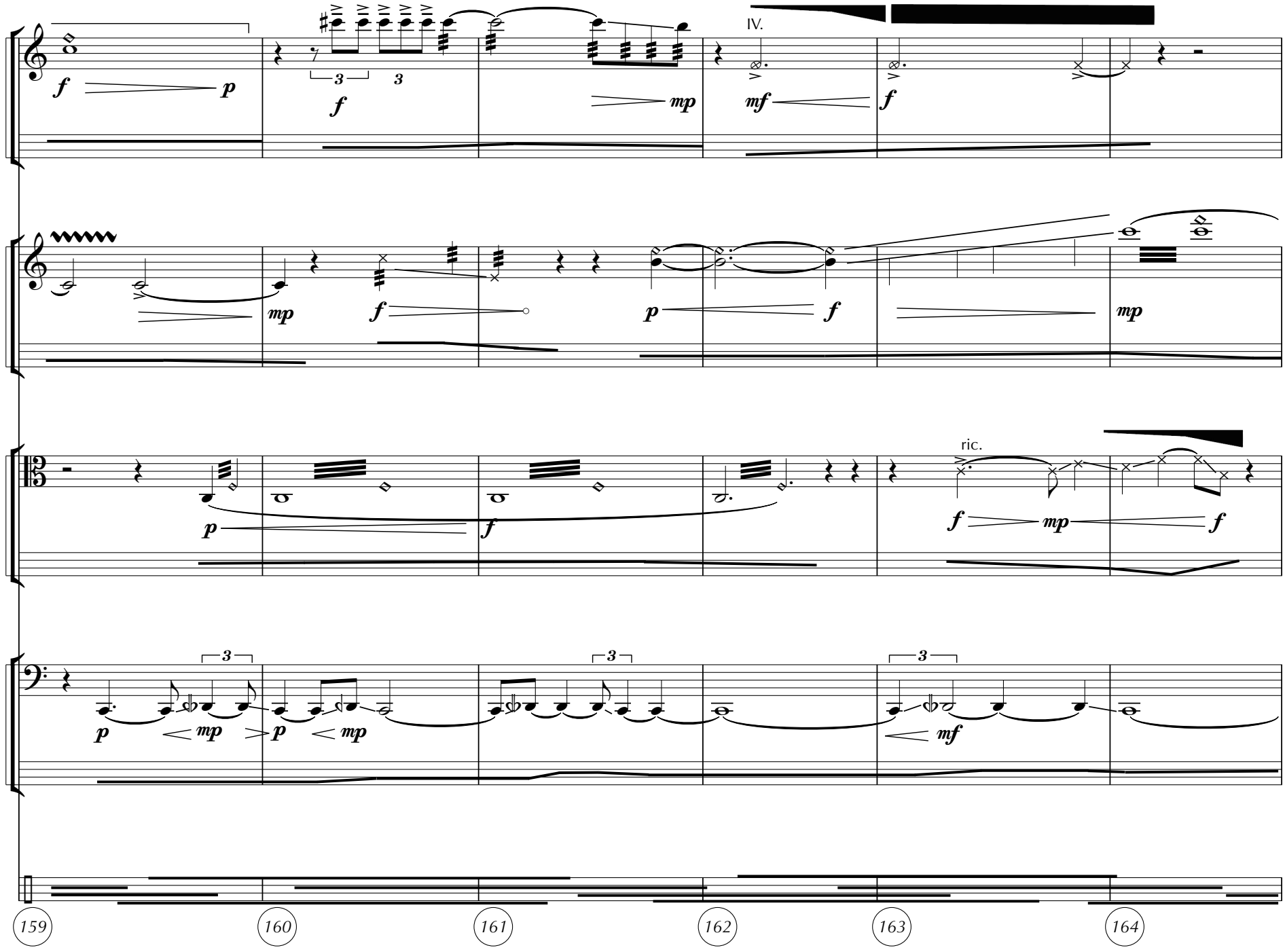

p
3
f
p
tr
p
mf
mf
tail piece
mp
p
tail piece
mp
p
p
130
131
132
133
134
135

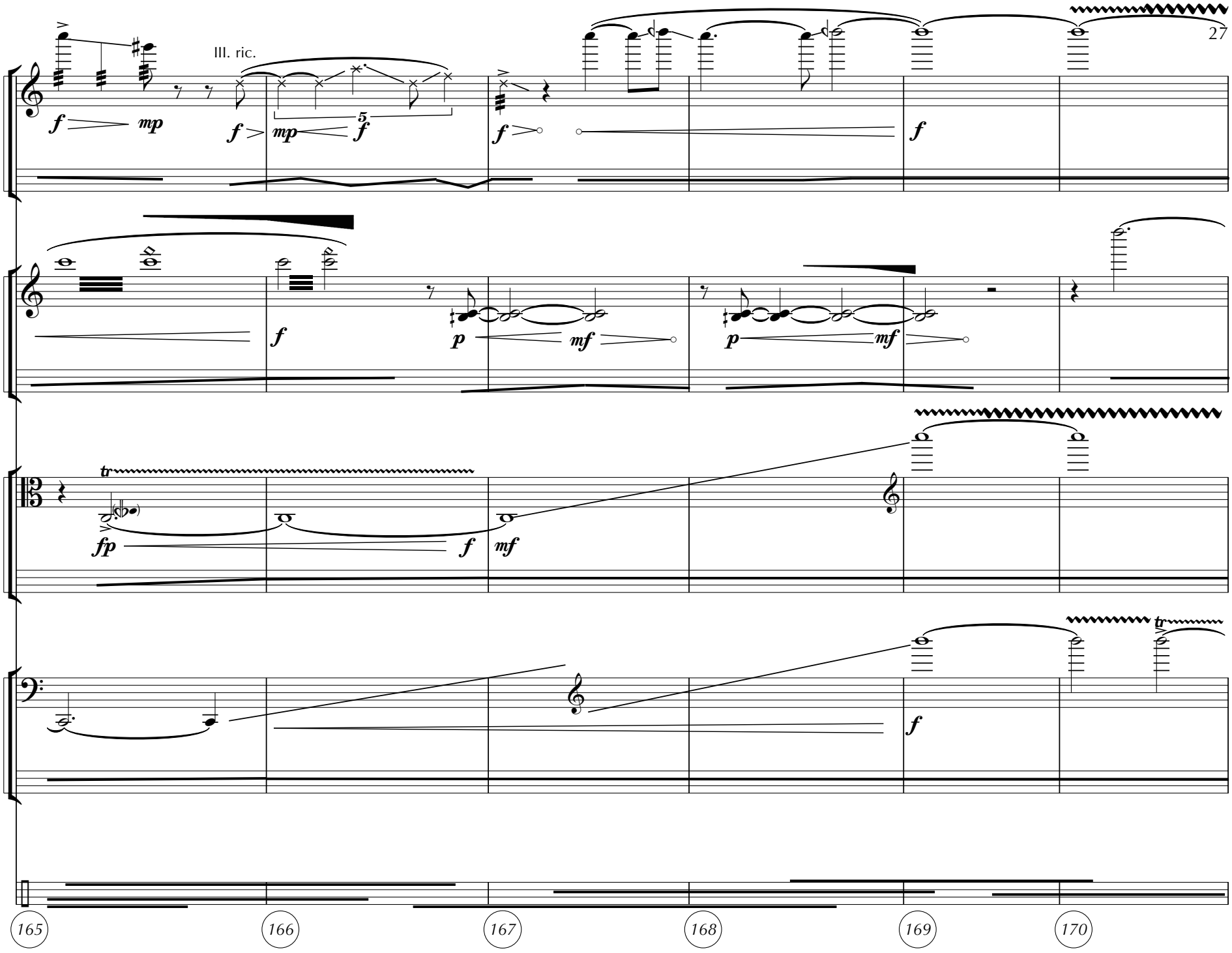

shaky bow
tail piece
IV.
136
137
138
139
140
141


mf
f
mf
mp
f
mf
3
f
(tr)
mf
f
mp
pp
3
mf
f
mf
f
3
mp
hard cut off
142
143
144
145
146

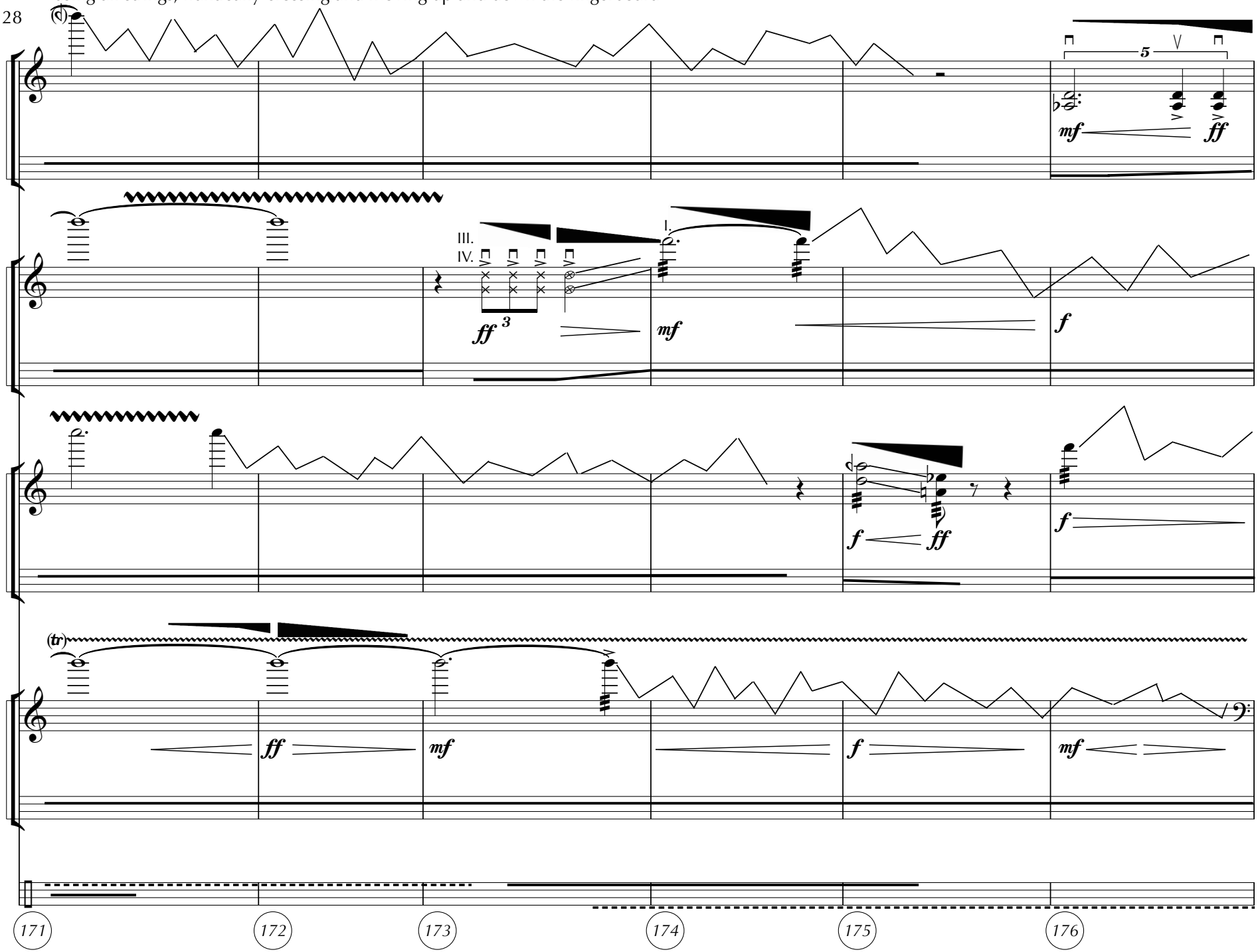

shaky bow
IV.
147
148
149
150
151
152

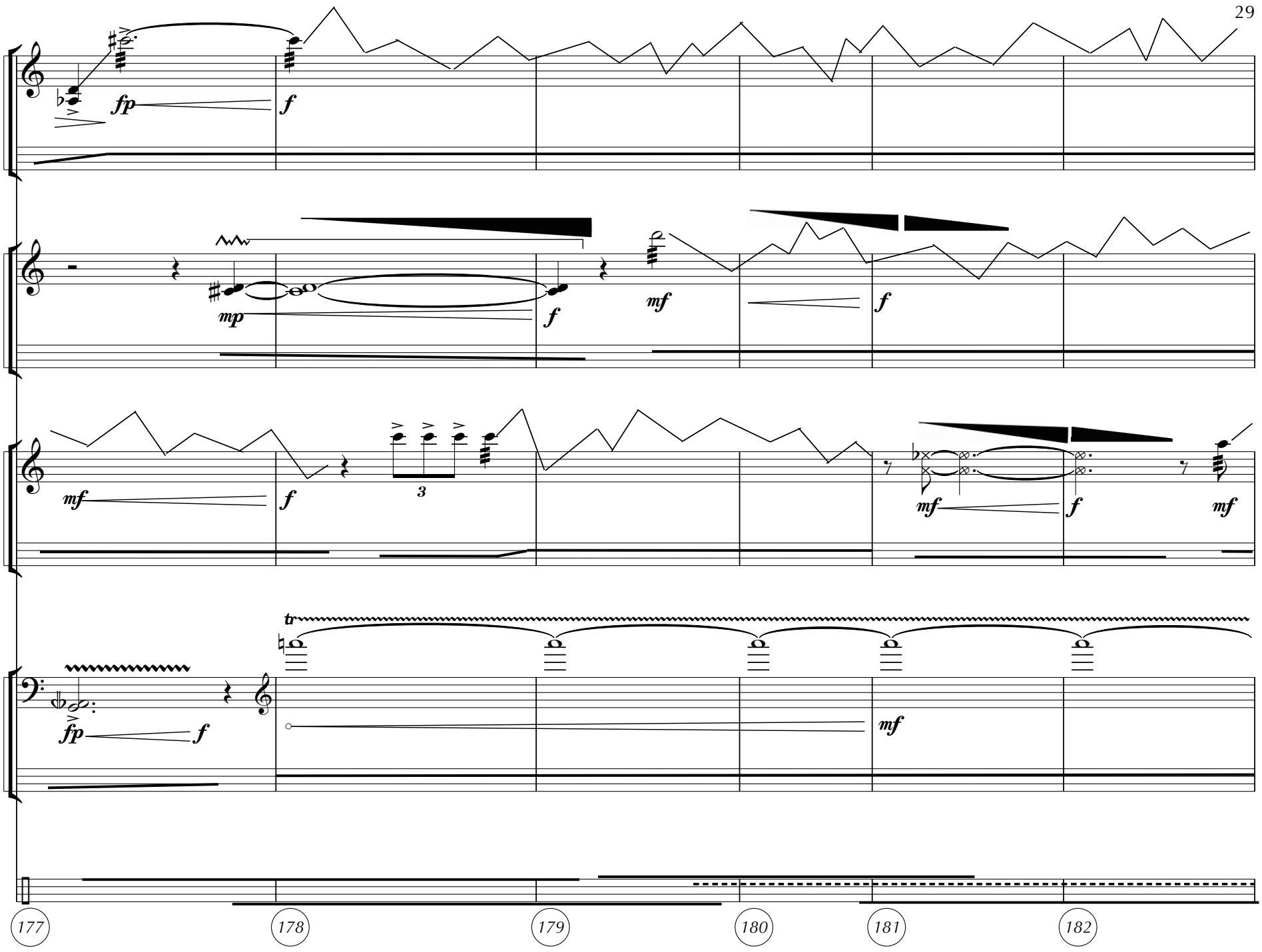

uneven, sporadic
153
154
155
156
157
158

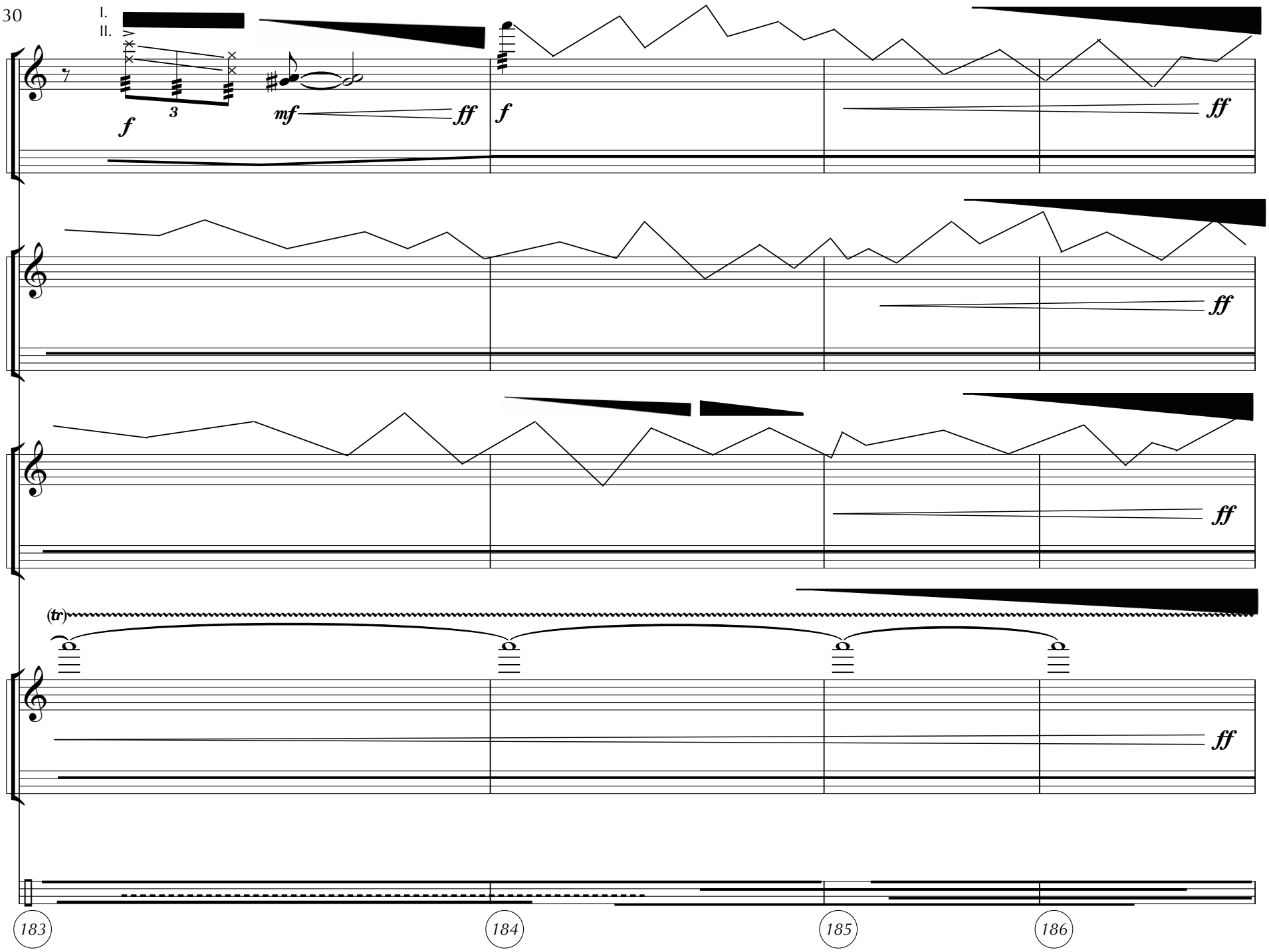

IV.
ric.
159
160
161
162
163
164


III. ric.
f
mp
f
mp
5
f
f
f
f
p
mf
p
mf
tr
fp
f
mf
f
tr
165
166
167
168
169
170

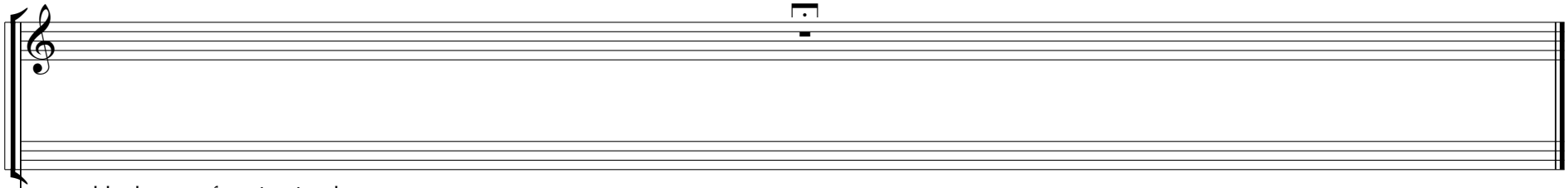
frantic
using all strings, frantically crossing and moving up and down the fingerboard



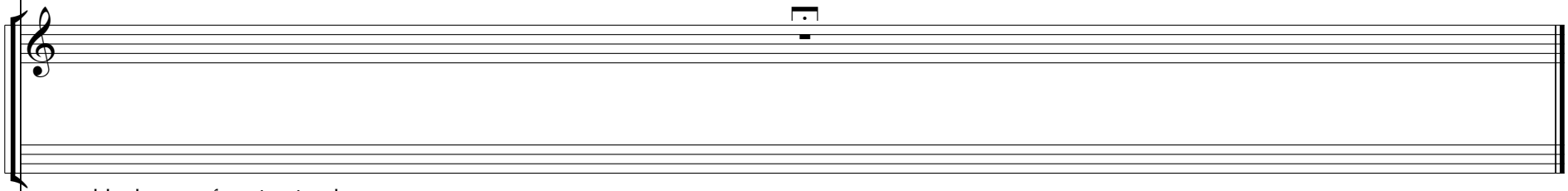

fp
f
mp
f
mf
f
mf
f
3
mf
f
mf
tr
fp
f
mf
177
178
179
180
181
182


I.
II.
f
3
mf
ff
f
ff
ff
ff
(tr)
ff
183
184
185
186

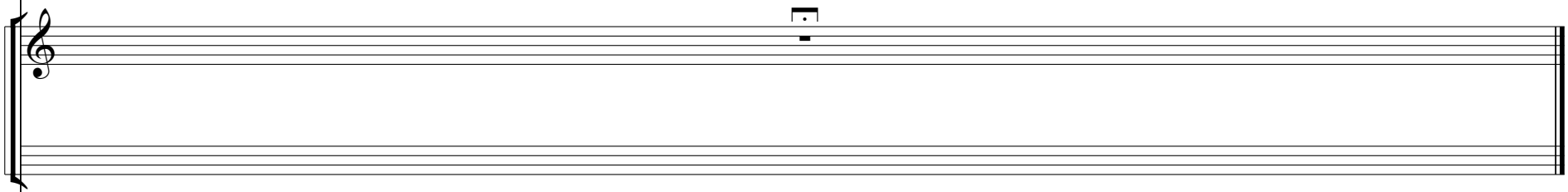
suddenly stop, freezing in place.
after about 10 or more seconds, begin to slowly (& silently) lower instruments to lap or floor.



suddenly stop, freezing in place.
after about 10 or more seconds, begin to slowly (& silently) lower instruments to lap or floor.



suddenly stop, freezing in place.
after about 10 or more seconds, begin to slowly (& silently) lower instruments to lap or floor.



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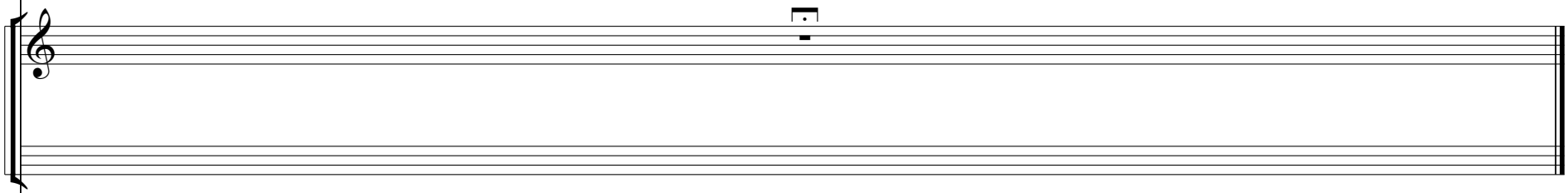

continue playback for at least 1 minute.

low drone comes in for at least 1 minute.
modulate LFO between 2 and 4 hz.

ff