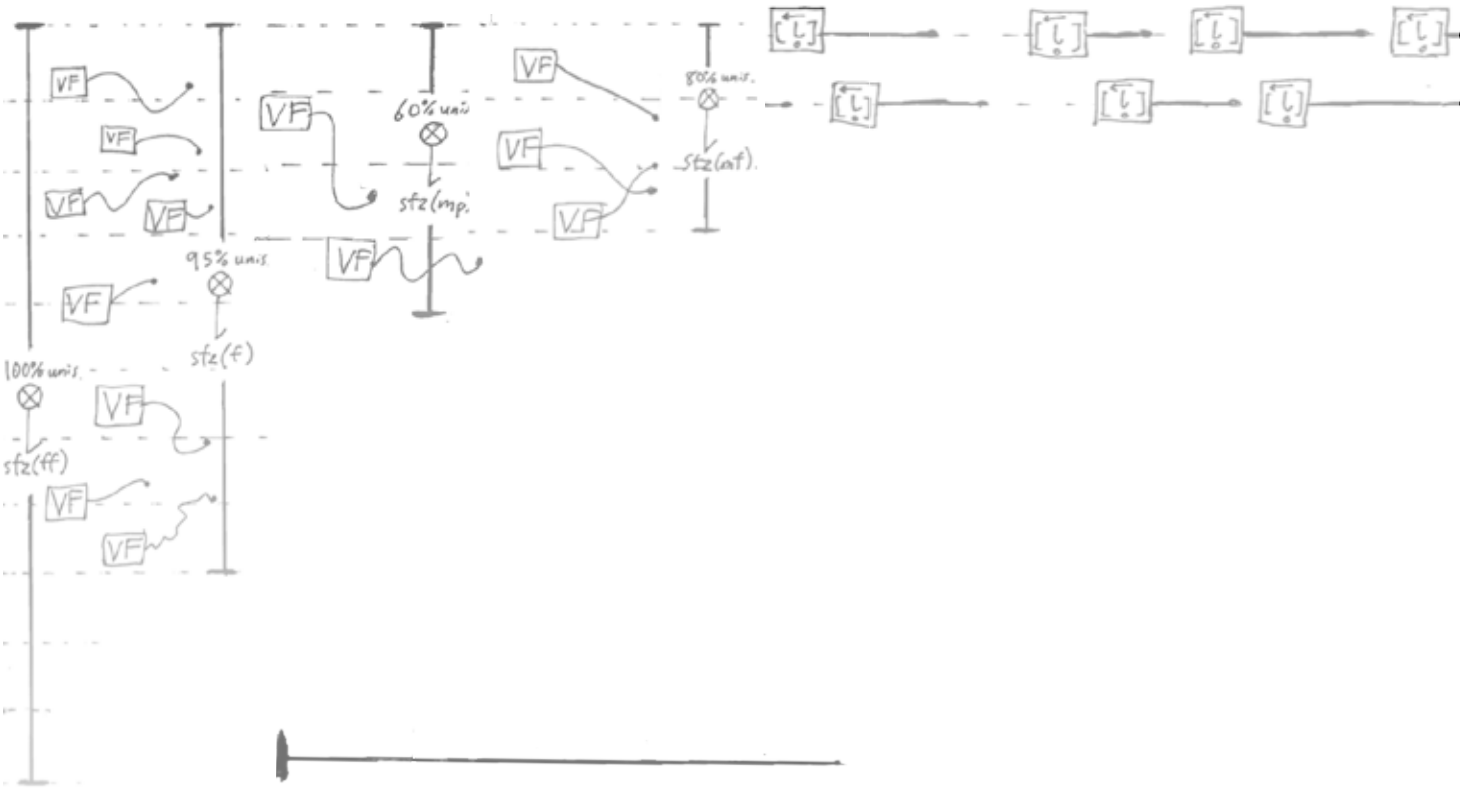


A Social Network

for two electric guitars

by Marc Evans

Whiskers and Paws Publishing

The Background

I've been interested in networks and their musical applications for quite some time now, so when I received a commission to write for an electric guitar duo, I decided to take a shot at a bit of network sonification.

Leafing through a book on networks that I have (and have been meaning to actually read for a while), I was attracted to the following image:

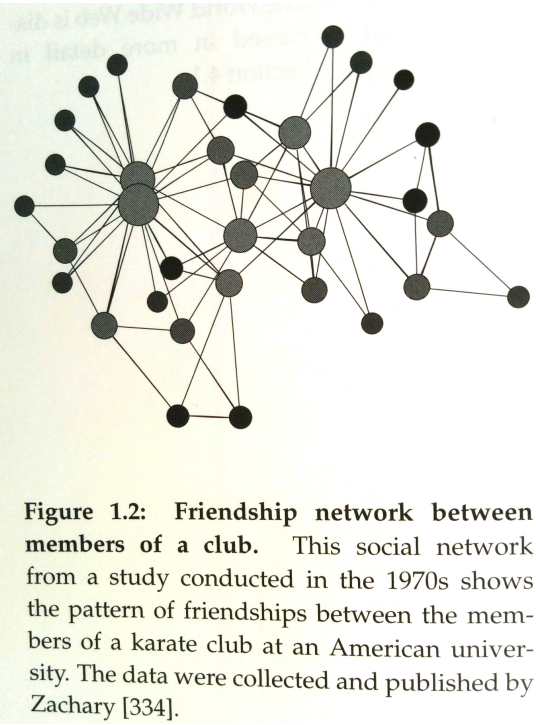


Figure 1.2: Friendship network between members of a club. This social network from a study conducted in the 1970s shows the pattern of friendships between the members of a karate club at an American university. The data were collected and published by Zachary [334].

Figure 1: My muse.

I had my muse: *the social dynamics of a karate club from the 1970's*.

Eyeballing the diagram, it was clear that there were a couple of main karate-ers who were especially well connected. (Such people are generally known as "hubs" in the Network literature.) You know which ones I mean: if the diagram is an owl's face – which, I mean, it seriously looks like an owl – then these people are the eyes.

In assigning pitch material, I decided to make these two social butterflies the fundamentals of the E and Bb harmonic series, and to make their close associates the overtones. The music would bounce around from one member to another by traveling along lines of friendship. One guitar would be specially tuned to play pitches from one series, the other from the other series, so the music would pass back and forth between the two guitars, as it passed back and forth between the two main sub-groups. Members whose allegiance was somewhat ambiguous were assigned high pitches that alternated between being tuned as an E overtone and a Bb overtone.

Having thus taken care of the pitch material, I played around with a few algorithms for the rhythms, and eventually arrived at the score you see before you.

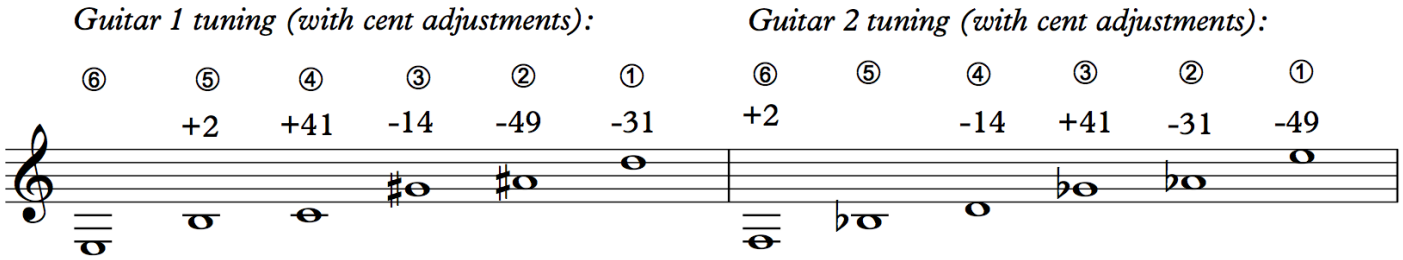
Funnily enough, shortly before the piece was performed, I was chatting with my sister-in-law, and telling her about the project. She was getting a PhD in Public Health at the time, and networks come into play frequently in her work (such as in studying the spread of disease or the

dissemination of health information). It turned out she had the exact same network book that I did (though I think she's actually read it), so she looked up the page with my chosen network, and to my surprise she knew the network by name ("That's the karate club network!"). It turns out to be one of the most studied networks in the history of the field (of networks). This seemed like a hilarious coincidence, though now that I think about it, I'm not sure what else I should have expected from the introductory chapter of an introductory book about networks.

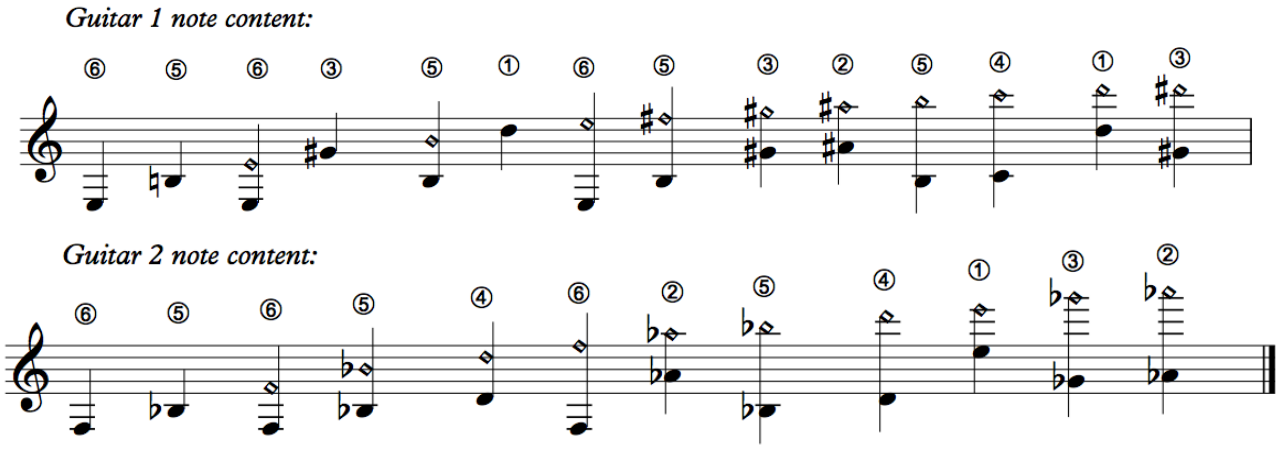
What was most funny, however, was that it turned out that shortly after the data was collected, Hub A and Hub B had a falling out and the club was "chopped" into two rival karate clubs. Thus, I had inadvertently constructed my piece in perfect counterpart to the real life situation the network portrayed! It was a proud moment.

The Middle-Ground:

The tuning of the two guitars is as follows:



Thereby allowing them to play the following perfectly-tuned harmonic series, without resorting to harmonics above the 3rd on any individual string:



(The fundamental is left out of the Bb series)

The string and fret of each harmonic is shown in the score at their first appearance.

The Foreground:

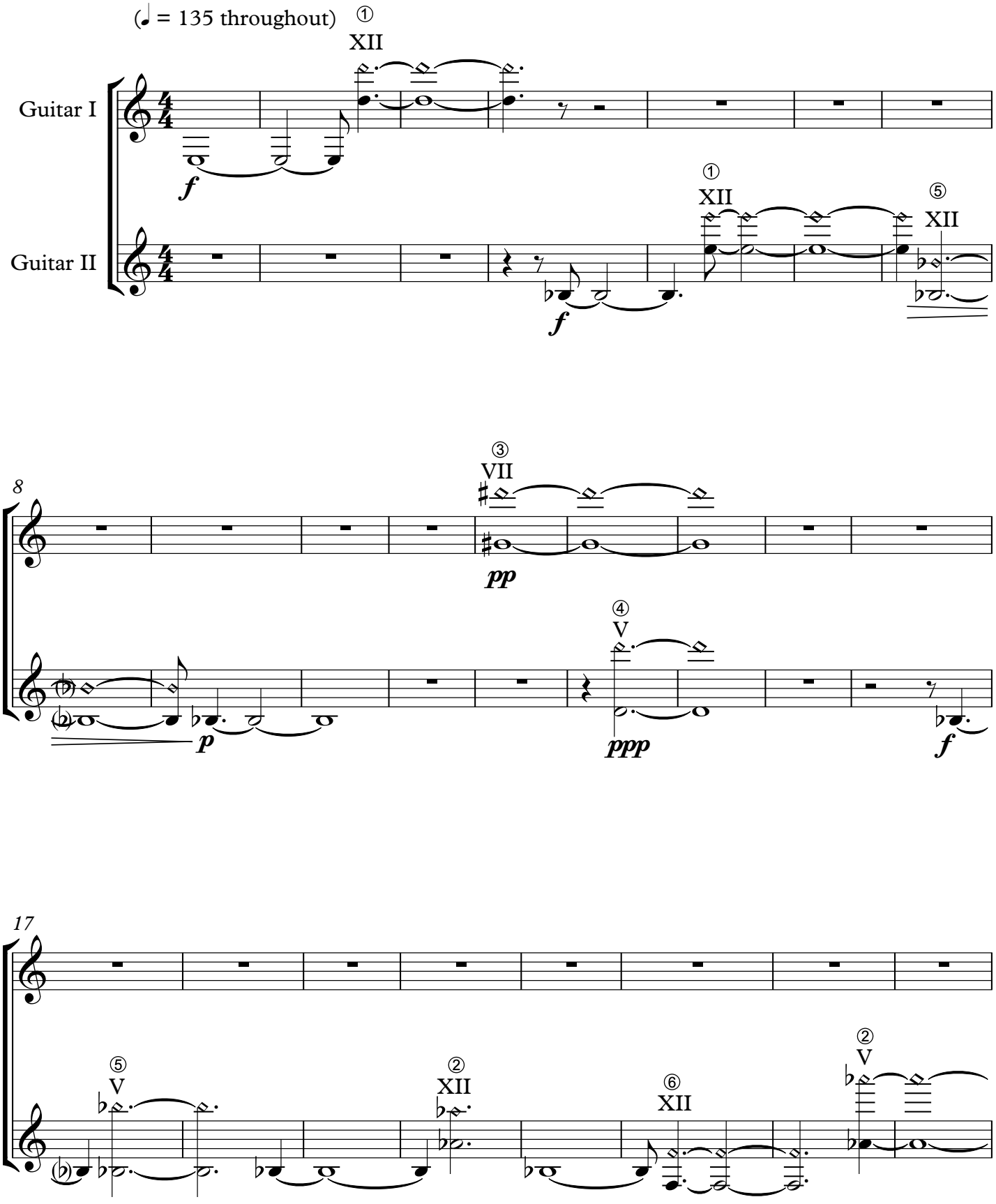
(Please turn to score on next page)

A Social Network

Marc Evans
March 2014

0 **Exploring the Space**

(♩ = 135 throughout)



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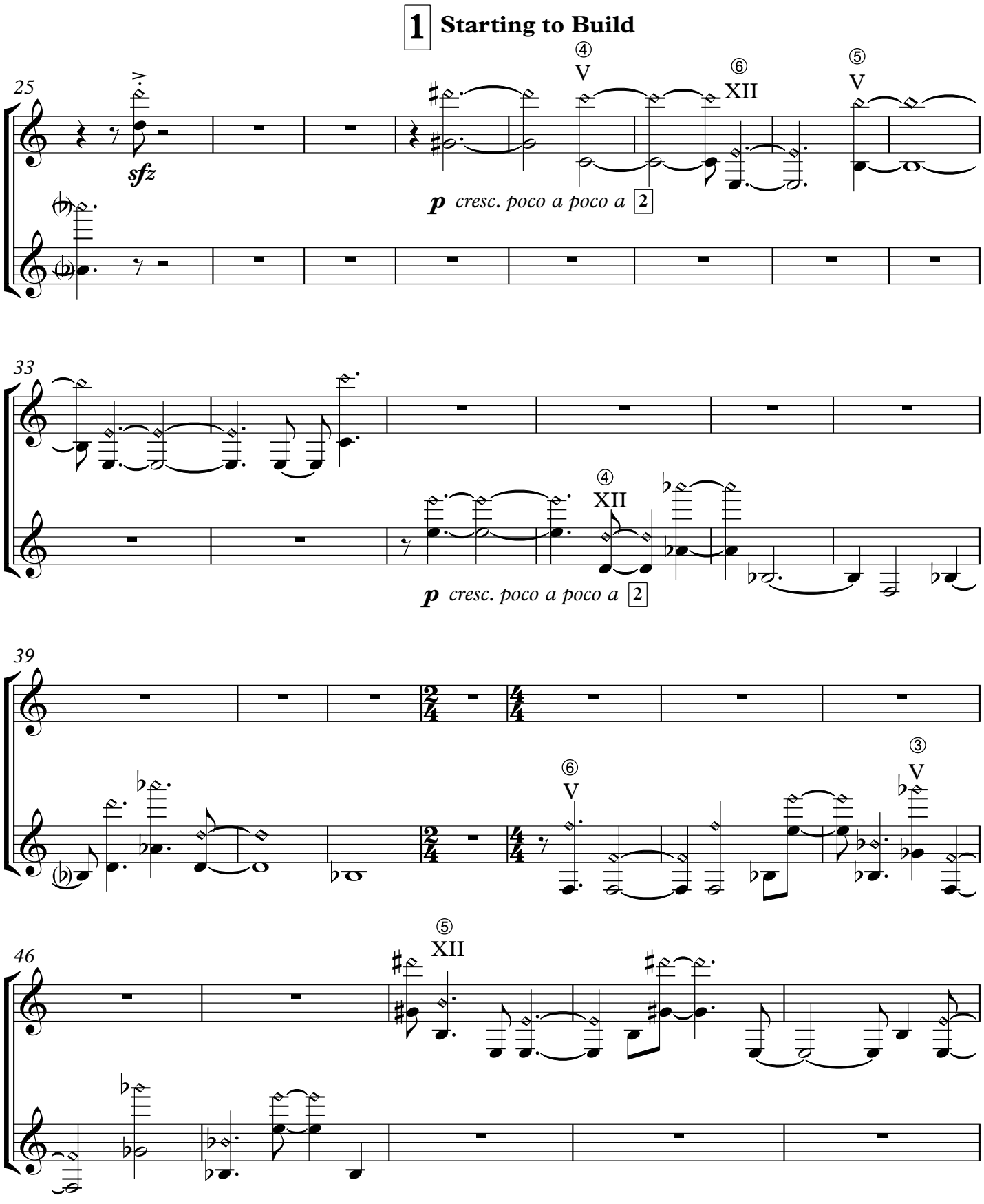
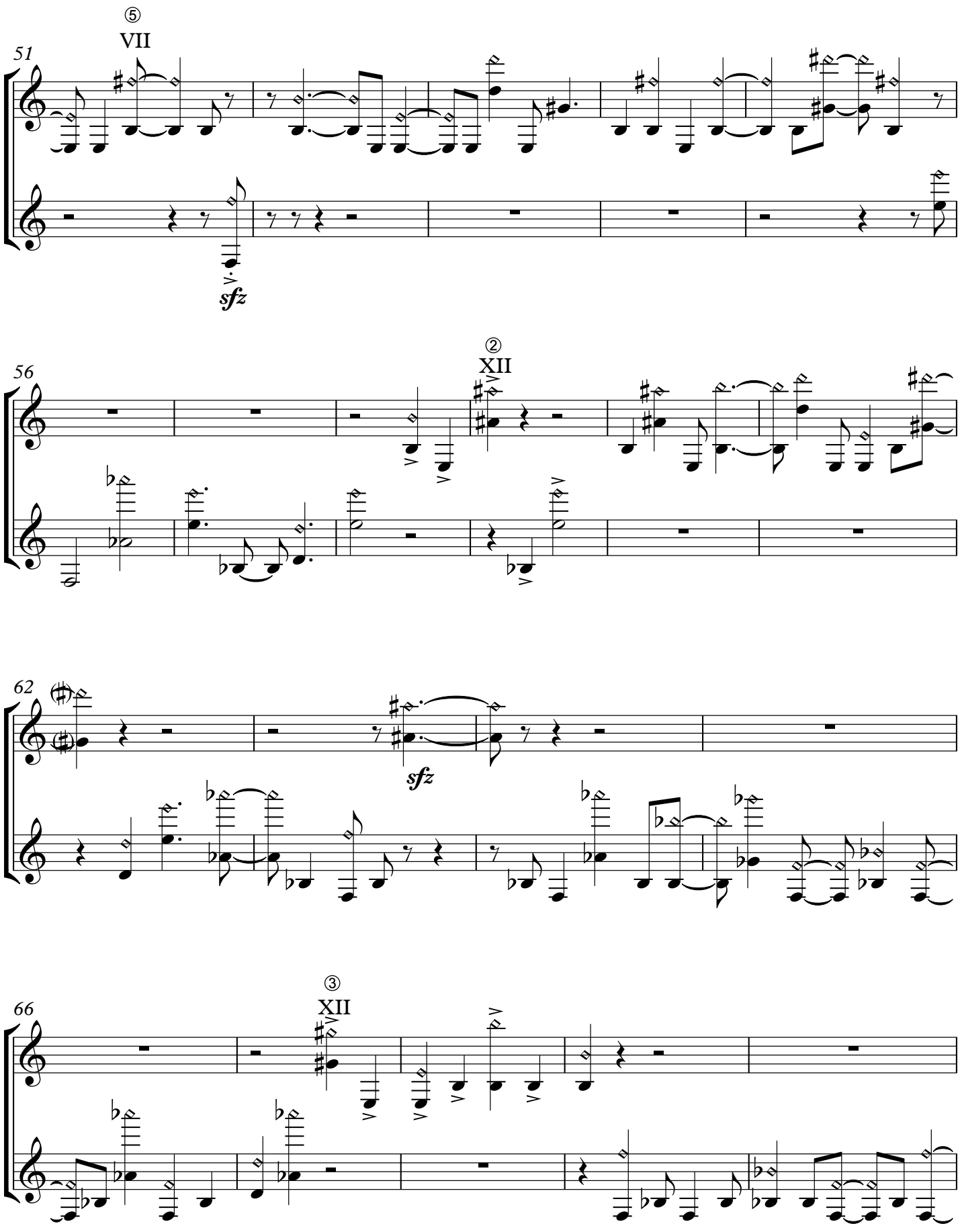
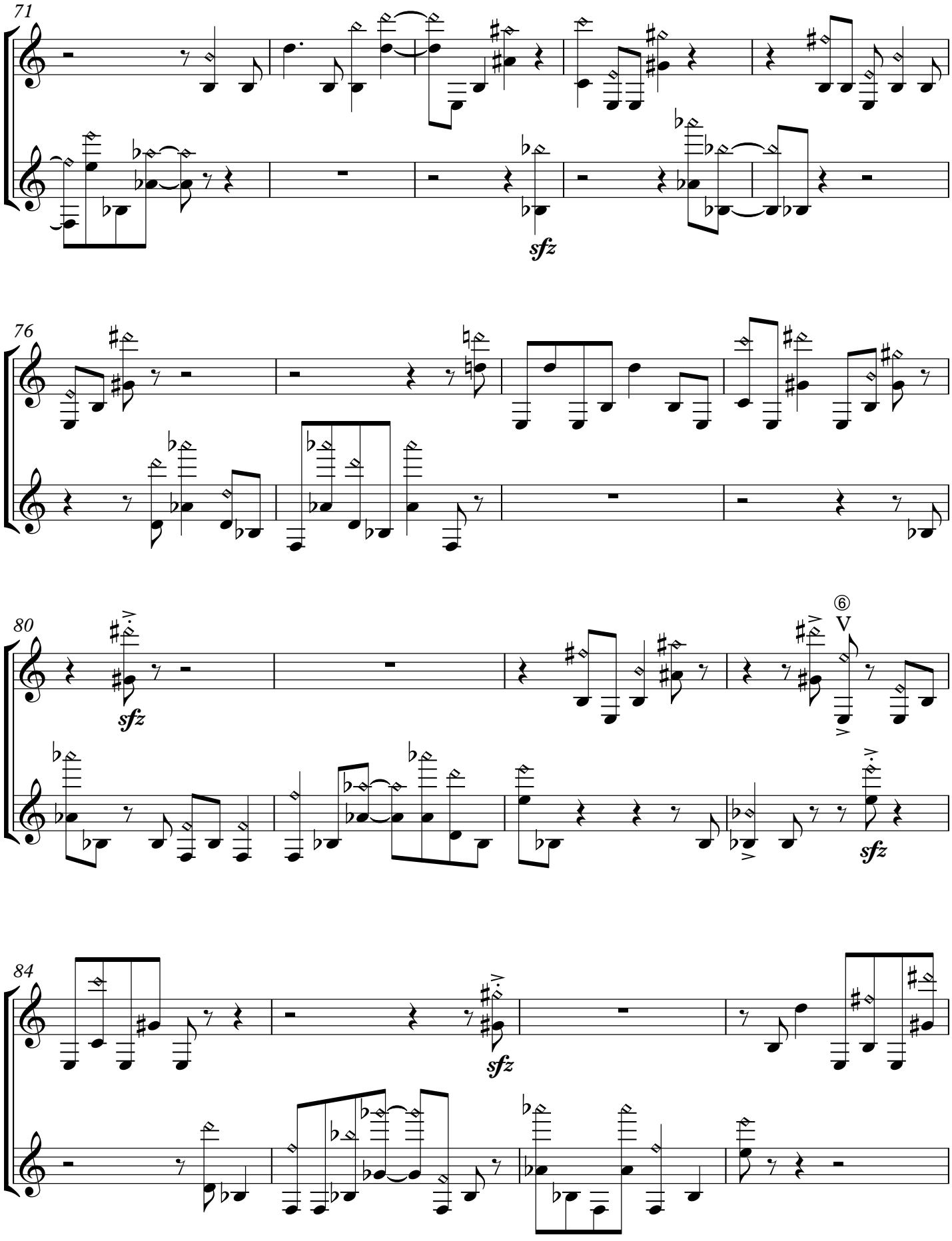
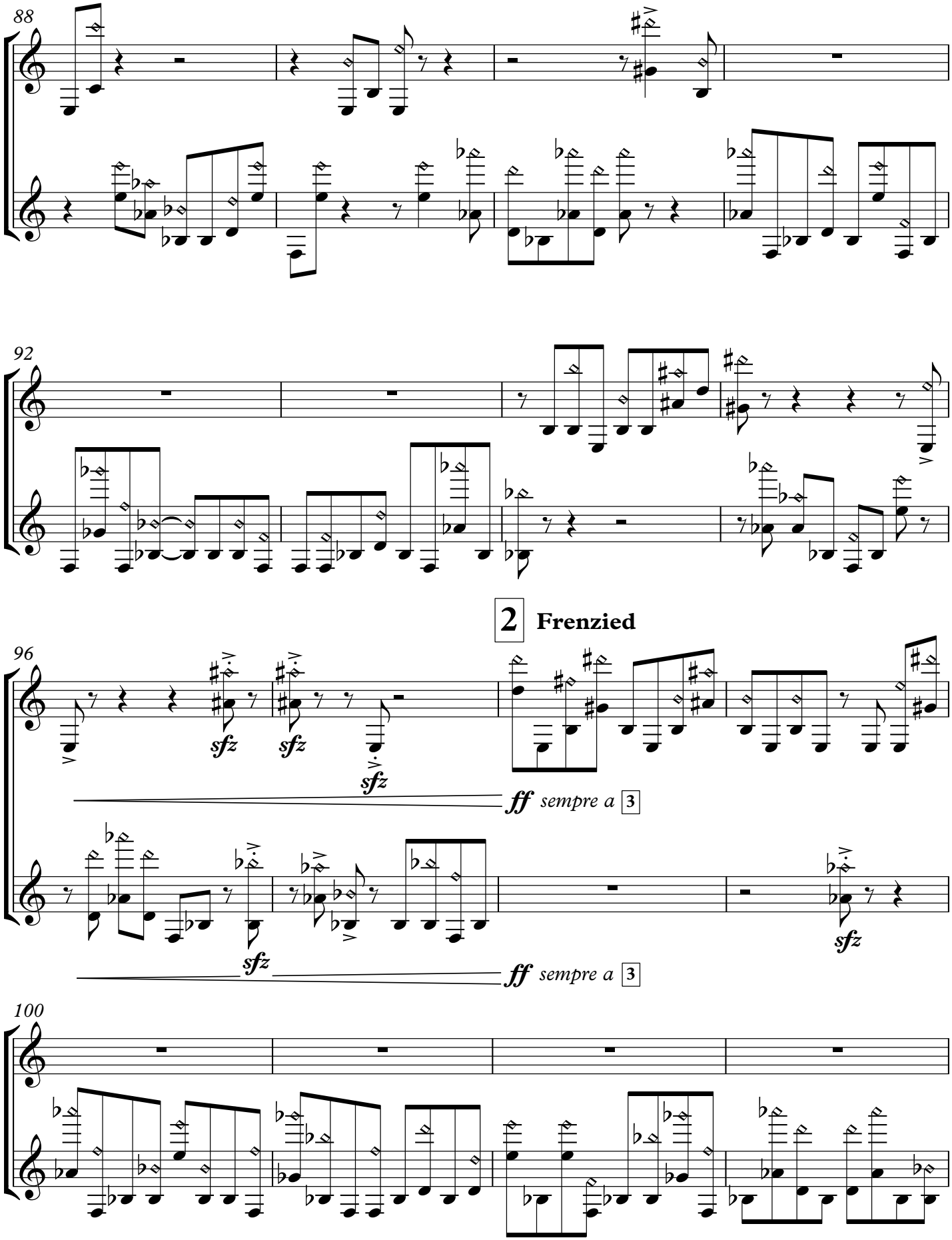
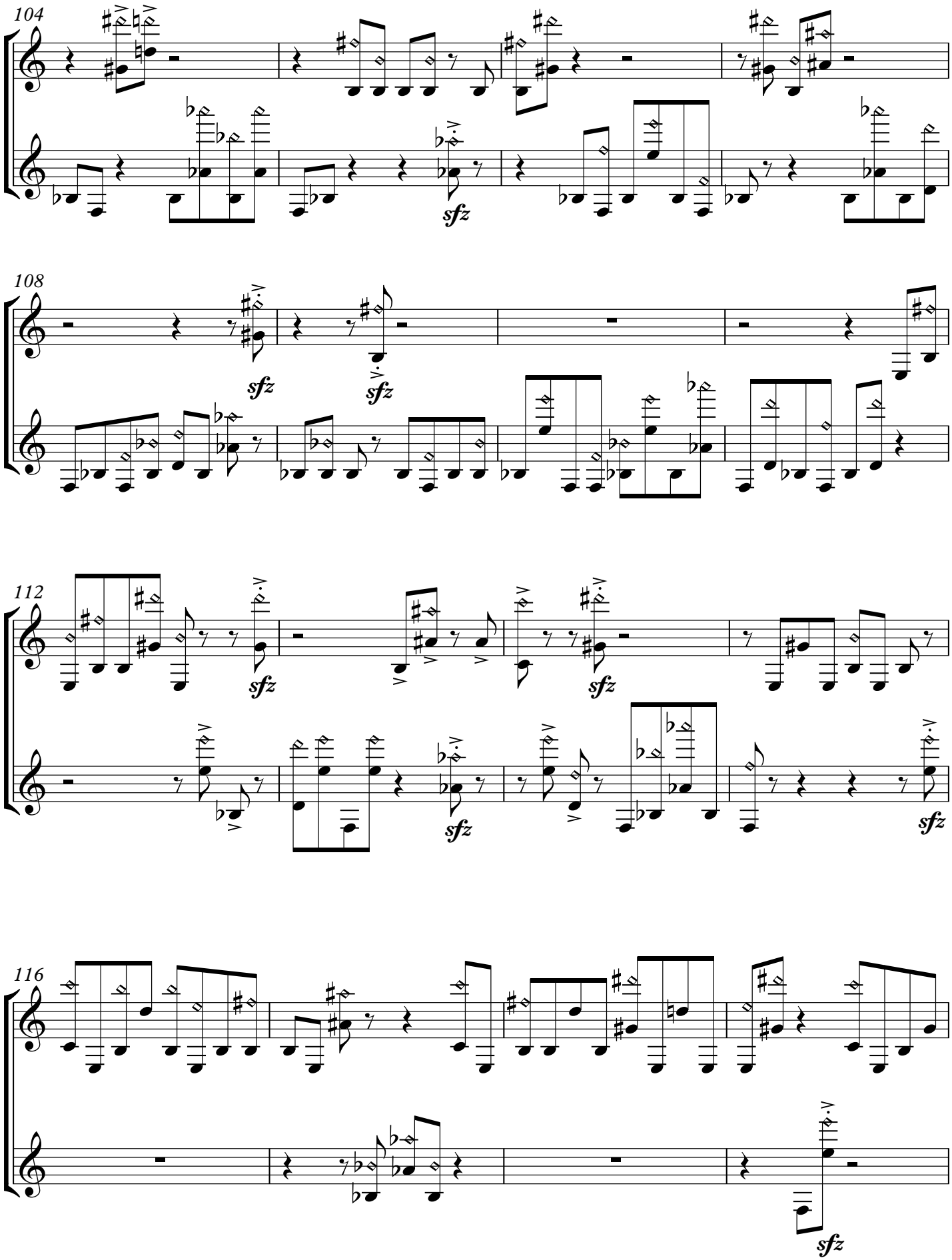
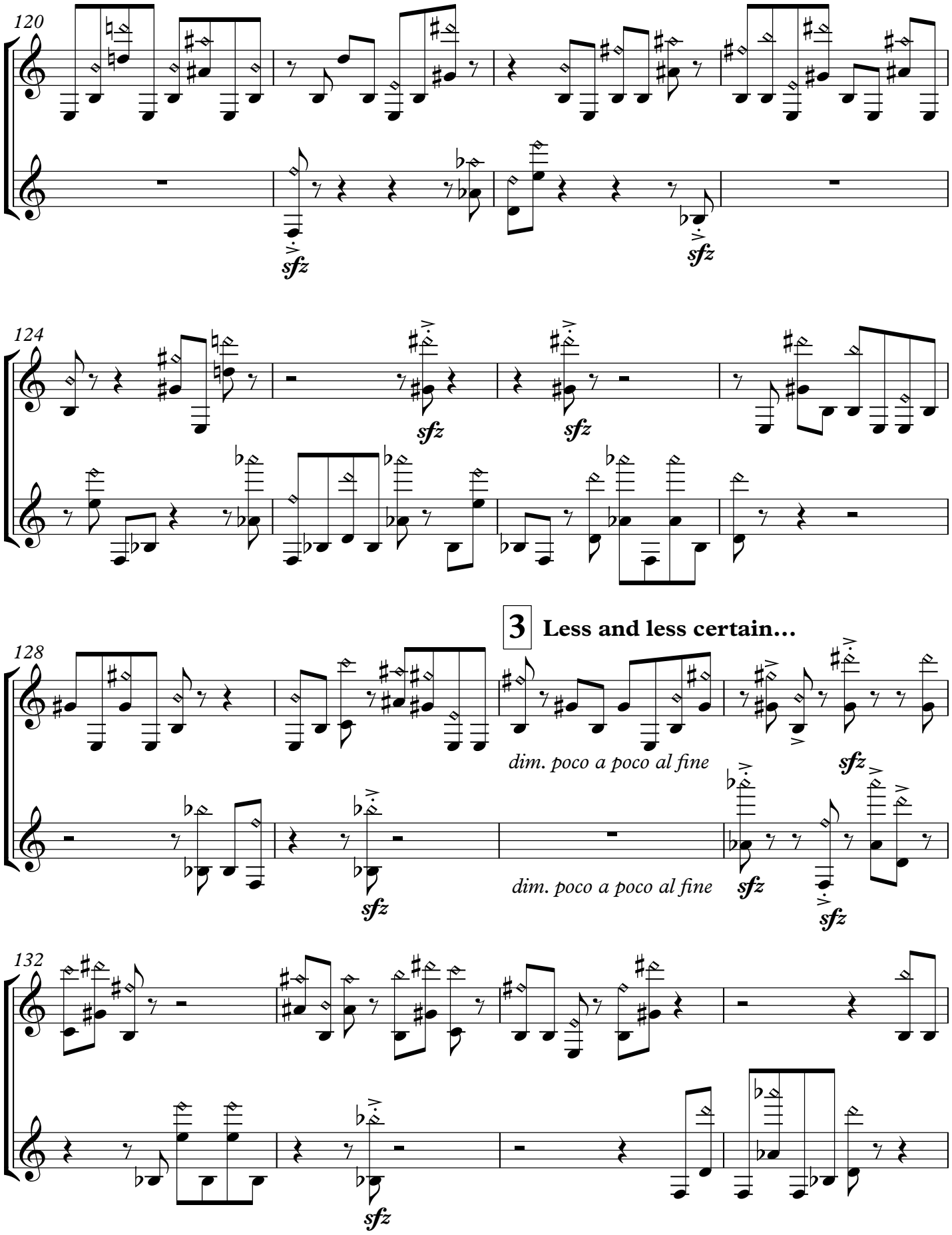

1 Starting to Build
25
sfz
④ V
⑥ XII
⑤ V
p cresc. poco a poco a 2
33
④ XII
p cresc. poco a poco a 2
39
⑥ V
③ V
46
⑤ XII

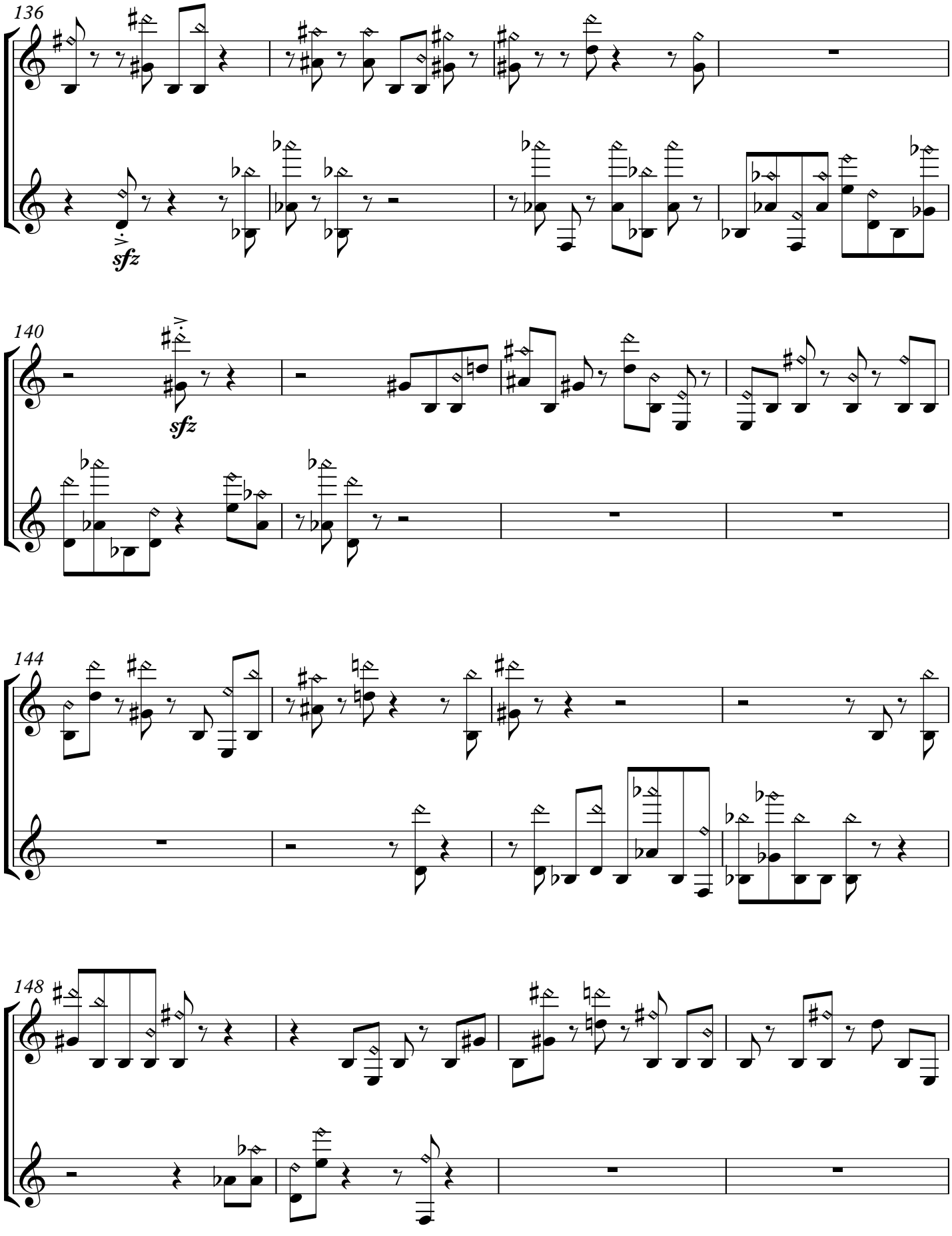

51
⑤
VII
sfz
56
②
XII
62
sfz
66
③
XII

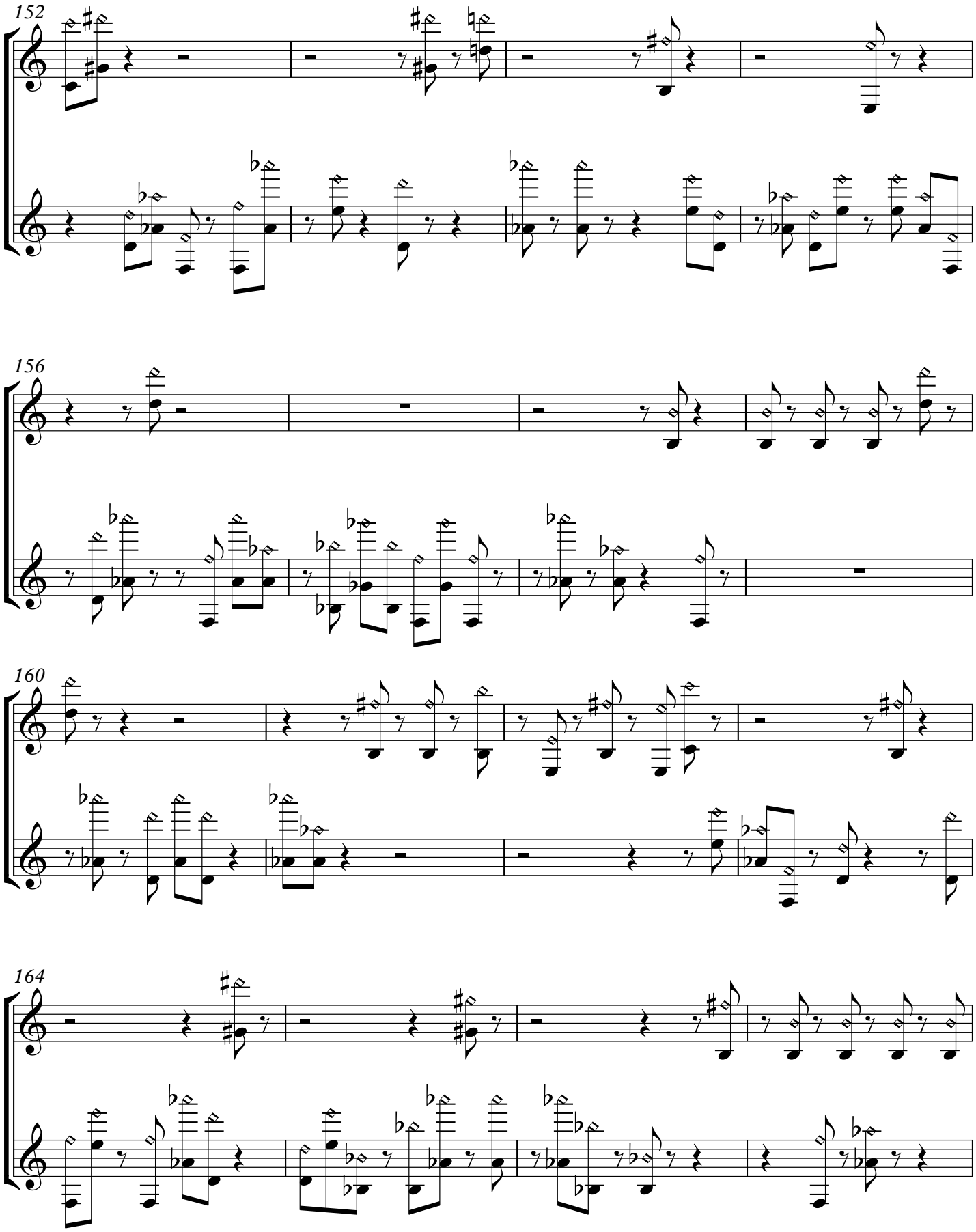

71
sfz
76
80
sfz
⑥
V
sfz
84
sfz


88
92
2 Frenzied
96
sfz
sfz
sfz
ff sempre a 3
sfz
sfz
ff sempre a 3
100


104
sfz
108
sfz
sfz
112
sfz
sfz
sfz
116
sfz


120
sfz
sfz
124
sfz
sfz
3
Less and less certain…
128
dim. poco a poco al fine
sfz
sfz
dim. poco a poco al fine
sfz
sfz
132
sfz


136
sfz
140
sfz
144
148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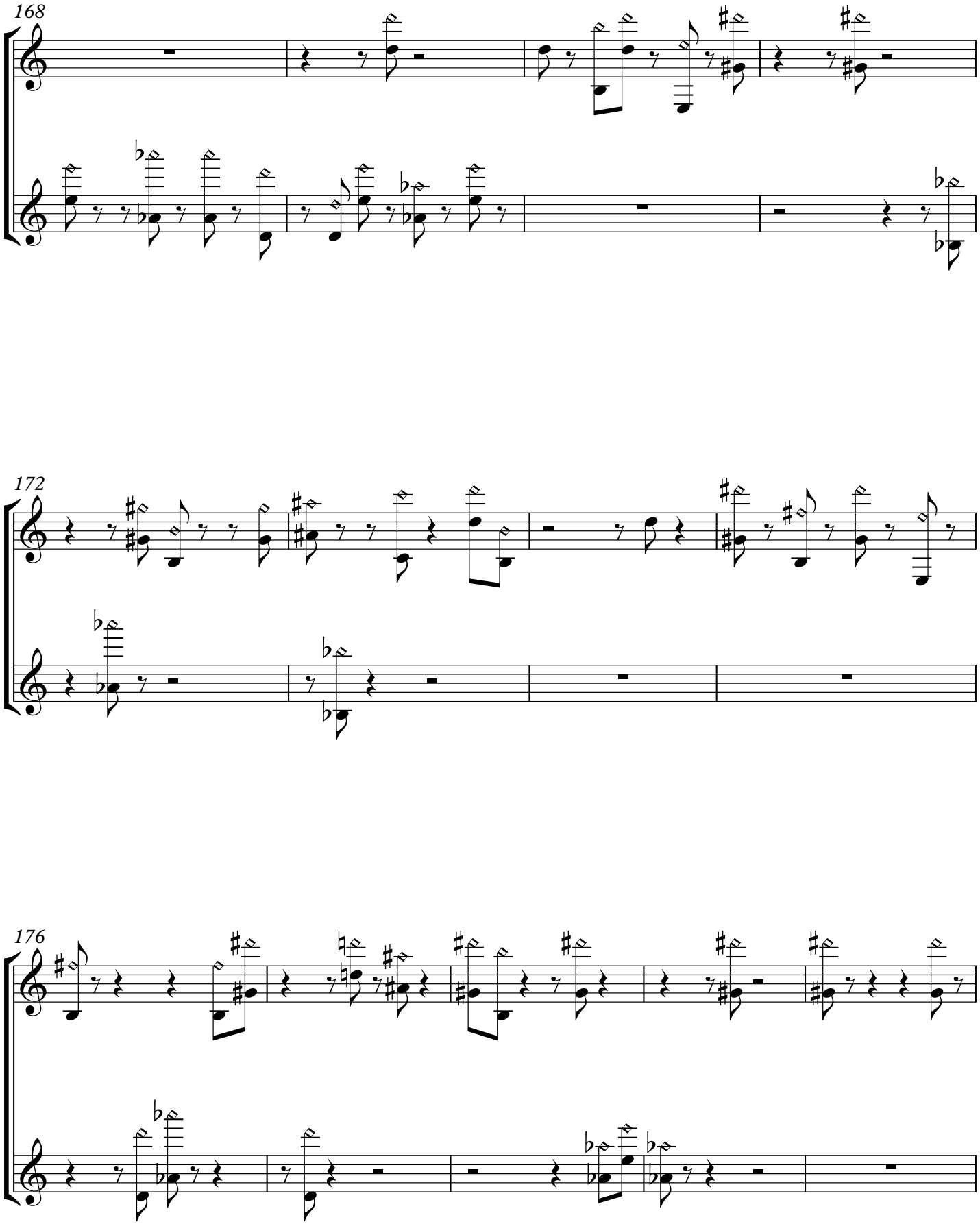
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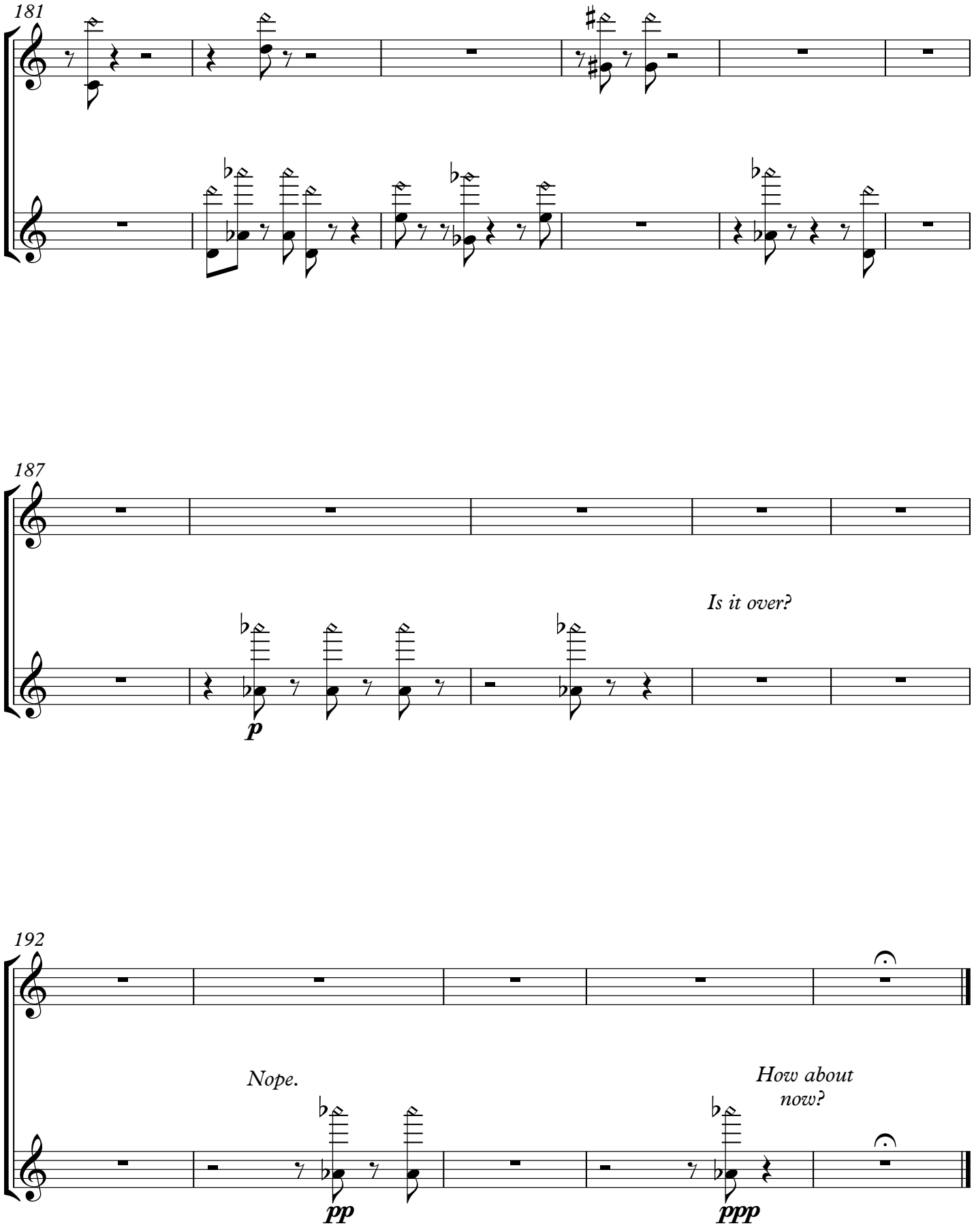
181
187
Is it over?
p
192
Nope.
How about
now?
Yep.
pp
ppp