Firmament

For two Basses and Electronics

Alex Matterson

2024

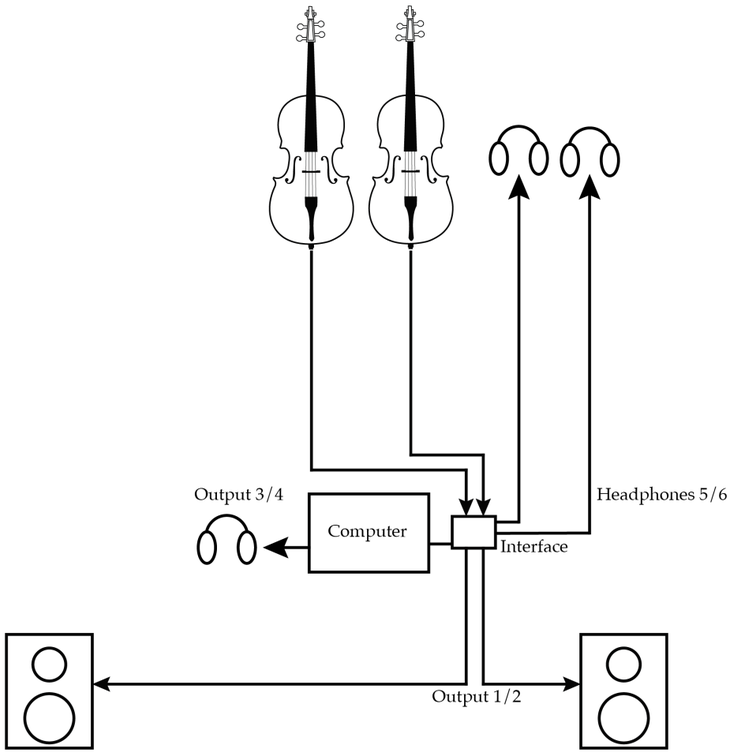
About the Piece

Firmament aims to represent just that, a massive wall holding up the heavens. The listener is but a tiny speck at the bottom of a massive wall, too huge to be fully comprehended. Even massive walls that hold up the sky have small details upon looking closely. Small blemishes that peak their way through upon closer inspection. The basses play the part of this massive wall, with the help of electronic processing. The beginning of the piece is an unrelenting wall of sound. As we move through this section, small details begin to reveal themselves as more variation is introduced, culminating in a new section. This new section aims to contrast entirely the first section, showing the many facets and details of this wall compared to the intimidating mass that it is in the first section. The music slowly loses detail and complexity as the wall fades into the vastness of the sky. *Firmament* was written during 2023-2024, and was written for my graduation recital from UVic school of music.

About the Electronics

The electronics play the part of augmenting the acoustic instruments. The goal is to evoke an otherworldly and aggressive aspect, and to augment the altered tuning of the basses.
The combination of the scordatura and the electronics aim to mimic sounds heard in *Harsh Noise Wall* music. The idea for the piece being about a wall holding up heaven was partially inspired by this desired sound. This type of music has always been weirdly ritualistic and divine to me. In my mind something about the ineffability of the divine, and the density of noise music that links them together in an intimate way.

Electronics Set up

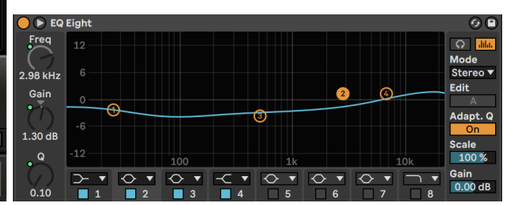


Routing

Each double bass is either equipped with a pickup system of some kind, or a contact microphone. Each signal is sent into the audio interface, where it is processed and sent out to the speakers. The processing is detailed down below. In addition to the processed sound being sent to the speakers, or output 1/2, there is a metronome track that is being sent to headphones 5/6, which are the headphones for the performers, and output 3/4, which is the headphones for the electronics performer. A headphone splitter may be used as well and the three headphones may be on the same channel, but this setup limits the flexibility of the electronics performer in choosing to hear the metronome plus the processed sound if wanted. Along with the metronome, a recording of the rehearsal marks read out loud should be sent to all the performers. This assures synchronicity and if the performers were to lose their place, these callouts mark waypoints to sync. A diagram is provided on the left to facilitate set up.

Processing

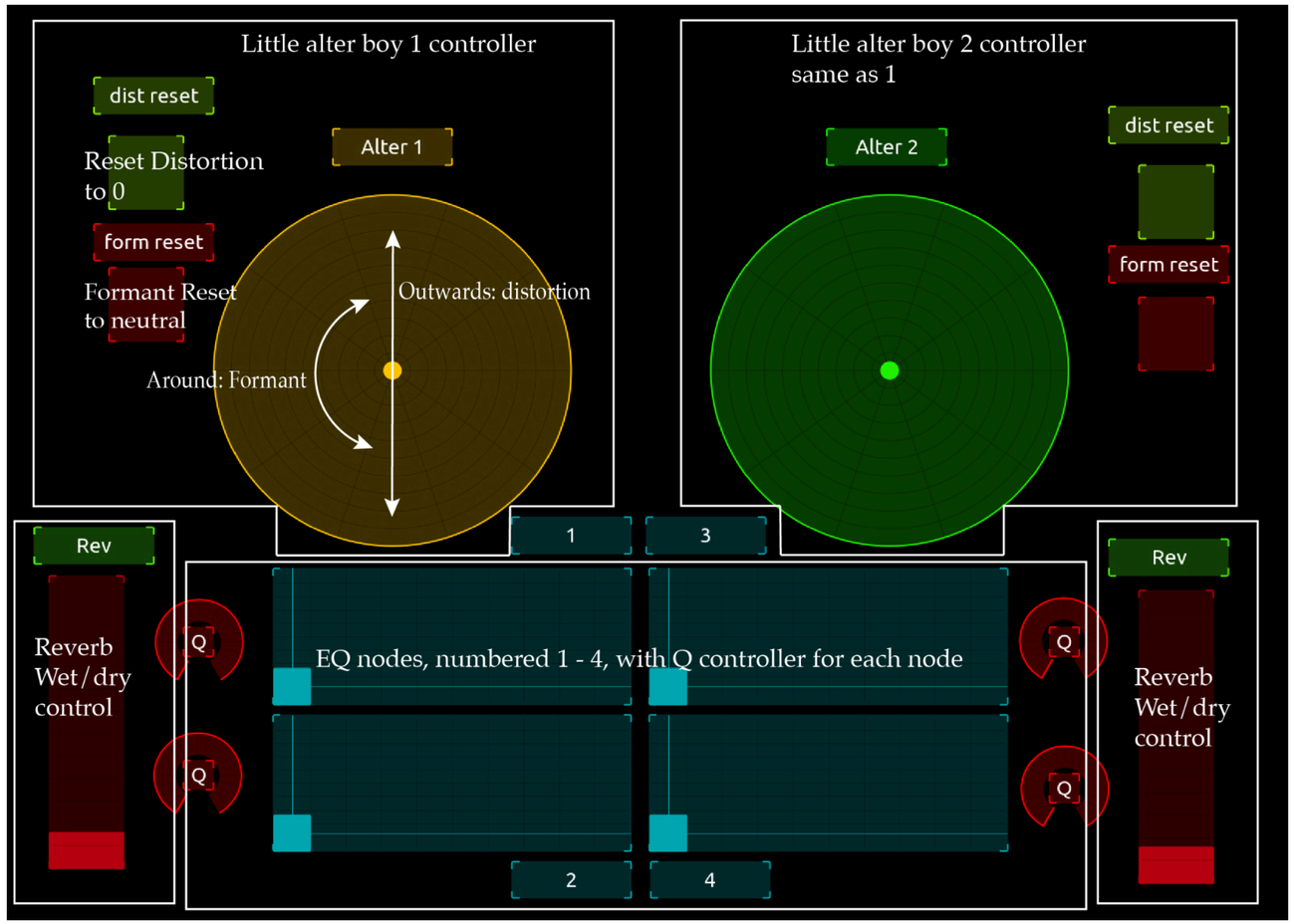
The processing of the signal coming from the basses is handled by an effects rack in Ableton live with 4 plug-ins. The signal chain begins with a pitch-shifter. Any one may be used as long as it has independent formant and pitch, and each is manipulatable up to an octave down and an octave up. The pitch shift component of the plug-in is never used, but the formant is used extensively. It helps if the plug in has a distortion built in as well. If it does not, a distortion plug-in must be added directly after the pitch shifter. The distortion should be 100% wet. I use Soundtoys *Little Alterboy* which works well as it has a built in distortion. Following this first pitch shifter is a reverb. The reverb should be set to 6 seconds with 0 predelay. The only setting that is changed is the dry/wet of the reverb. Following the reverb is another instance of the pitch shifter with distortion. Following this second distortion is a four band EQ. Below are screenshots that show the signal chain, some of the base settings of the plugins.



Controller

For controlling the electronics, an ipad with TouchOSC is recommended. The notation within the score is visually representative of the controls in TouchOSC that were used. Another controller may be used, but the notation is intended to be read with a specific set of controls including radial controllers for the *little alter boy* plugins. Below is a diagram that explains all of the controls.

Each set of controls is colour-coded within the score to allow for greater playability. Each colour is reflected within the score as well.

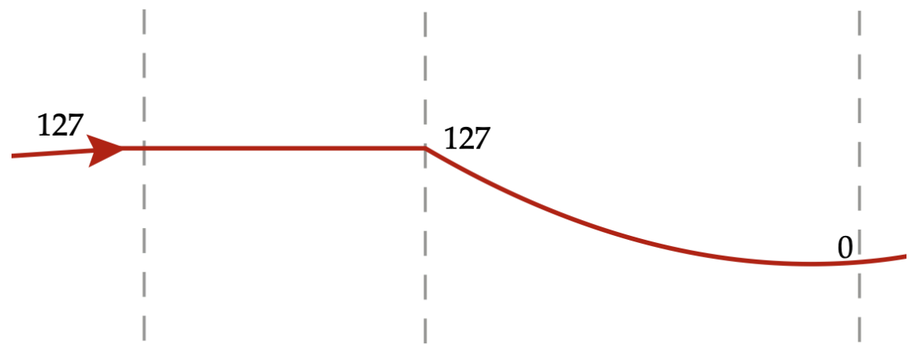


Notation

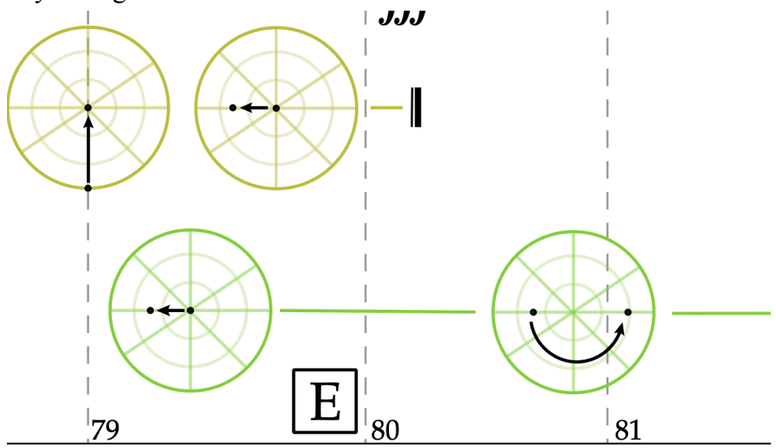
Electronics

The electronic sounds are notated graphically. Each parameter is colour coded to match the controls within the TouchOSC file.
Reverb is represented in RED, alter boy 1 is represented in YELLOW, alter boy 2 is represented in GREEN, and the EQ is represented in BLUE.
The starting midi values of each plug-in is indicated at the beginning of the score.

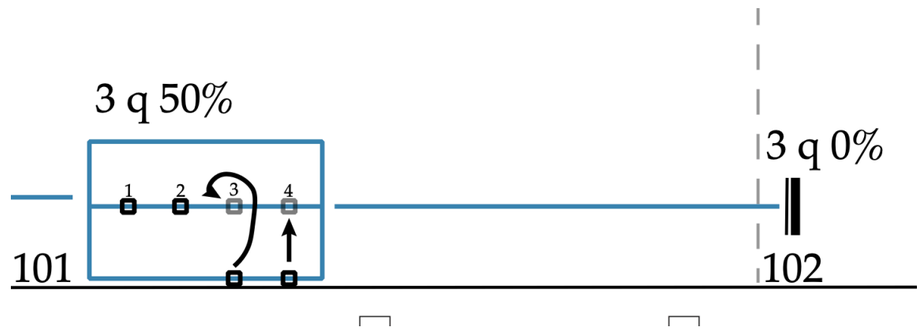
Reverb: Functions as a graphic line which goes up or down as a representation of the Dry/Wet setting, with added numbers to show midi values, from 0-127. In the below example, we see a short rise to the maximum value of 127, and then a curved descent down to the value of 0.



Little Alter Boy 1 and 2: The controls are ostensibly represented the same within the notation, just with different colours. Below is an example of the notation. Each movement to be made with the controller is shown graphically on a representation of the radial controller. The time in which each movement should be made is represented by the straight lines between motions. In this section we can see a short movement in the alter boy 1 part followed by another short movement and stop. The double bar line means the control should be stopped in the position it is in and not moved until another indicated direction. The notation for the first alter boy will always be above the second. The second alter boy in this section is an example of a longer movement. If the word RESET is written that means that both the distortion and the formant should be reset by hitting the reset button.

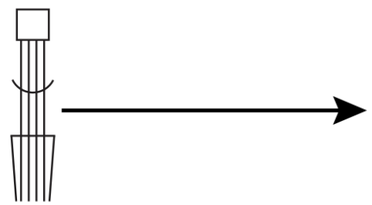


EQ: Each square within the larger rectangle is representative of each EQ node. The bottom of the blue rectangle is the minimum value of the EQ nodes gain, and the top is the maximum value. Below we see an example that begins with nodes 3 and 4 and the minimum, and then they rise to a neutral position with node 3 taking a small detour. Above the EQ box is a written instruction for the Q of the node. Below we see 3 q 50%. This means that the Q of node 3 should be adjusted to 50%. Later on at the double bar line we see the q return to 0%.



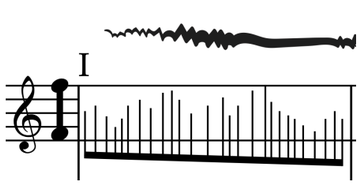
Bass

The bass notation is standard with a few exceptions. Below is a table that explains each marking.



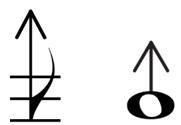
Bow Location. Where the player should bow the strings of the instrument. The top is the tailpiece and the bottom is the fingerboard. The bridge is represented by the small arc. The arrow can show a change of direction between two of the marks which indicates movement between the two positions.

Over pressure. This indicates the player should use over pressure from the bow. The desired sound is a scratchy distorted sound.

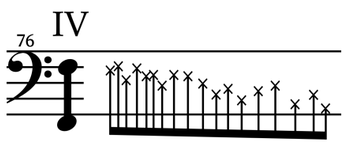


Bowing Graphic. The graphic line above the staff is indicating the bowing speed and intensity.

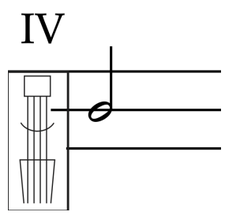
Open staff. This is preceded by a range indicator which shows the maximum and minimum range this should occur within. Each line within the staff represents a note which should be played. The bowing graphic and the notes shouldn't be unified. The rhythm of the notes is proportional within each bar. The indications should be followed as closely as possible.



Represents the highest possible note.



The x represents an audible hammer-on.



Bow location staff. Indicates bowing at the indicated position on the indicated string.

♩ = 60

Scord.

I

II

IV

III

fff

ppp

f

mp

p

Hit reset buttons before start!!

Alter 1 63, 0
Verb 0
Alter 2 63, 0
EQ all flat

Electronics

Verb (0-127)

127

0

127 sim.

Alter 1

rebow when needed

A

RESET ONCE CLOSE TO MIDDLE

Alter 2

slowly

RESET

Qs 0

1 2 3 4

1 2 3 4

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

I

II

fff

fff

mf

3

3

3

5

5

5

5

f

fff

Rev

127

0

sim.

0

25

26

27

28

29

30

31

32

33

34

35

36

37

B

5

f

fff

p

fff

5

5

5

mf

f

fff

slowly, x1

0

38

39

40

41

42

43

44

45

46

47

48

49

50

51

B

C

I

II

pp

pp

Subtle variation

RESET

127

0

0

RESET

Qs 0

bisb.

C

52 53 54 55 56 57 58 59 60 61

62 63 64 65 66 67 68 69 70 71 72 73 74 75

ff pp ff ff mp pp

p ff p

repeat

bisb.

bisb.

D

wound part of string

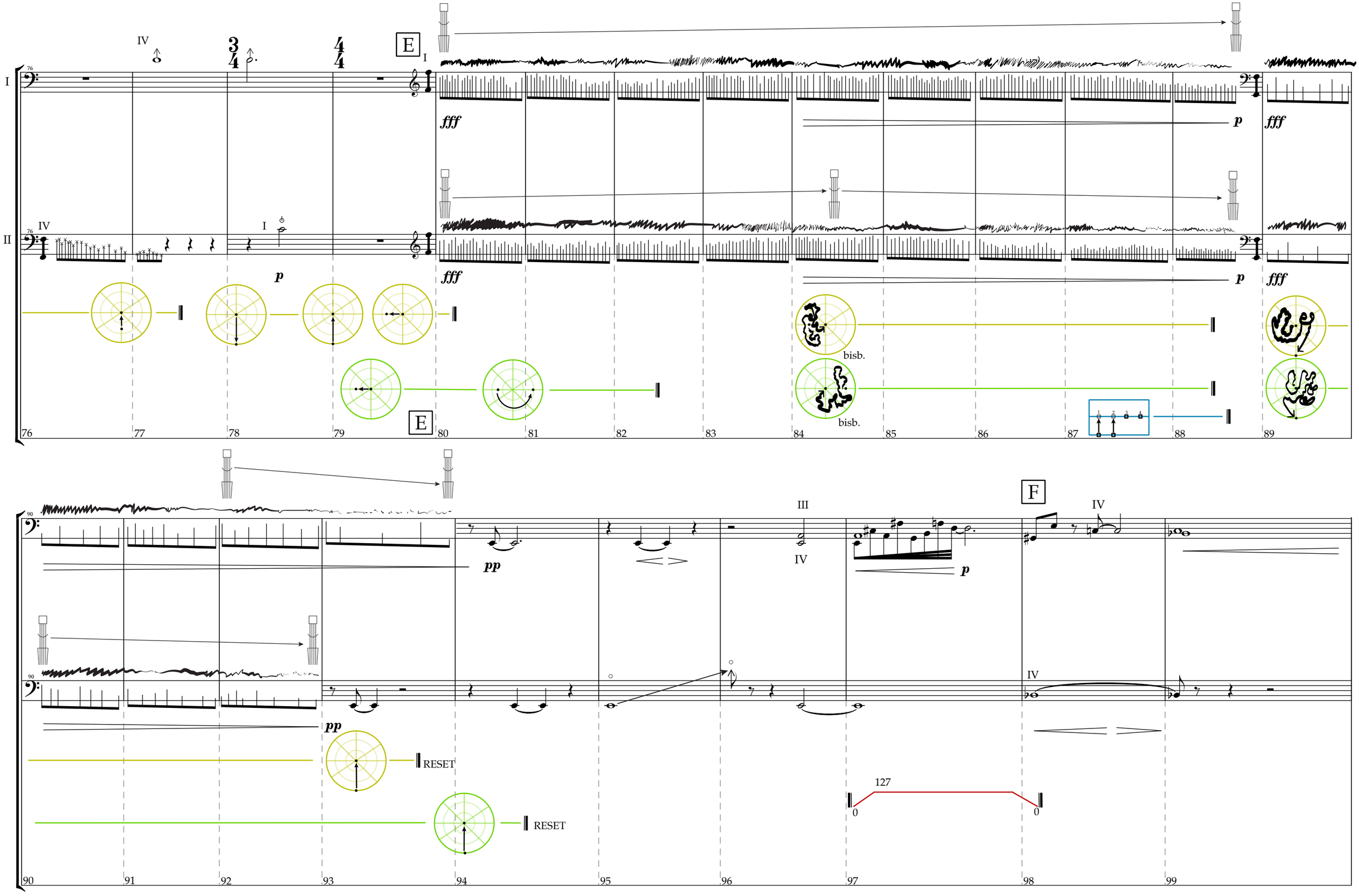
R.H.

L.H.

bisb.

ff

D



E
I
II
IV
fff
p
bisb.
76
77
78
79
80
81
82
83
84
85
86
87
88
89
F
III
pp
RESET
127
0
90
91
92
93
94
95
96
97
98
99

I

II

III

IV

ppp

mp

p

pp

3

3 q 50%

3 q 0%

60

0

100

101

102

103

104

105

106

107

G

127

RESET

108

109

110

111

112

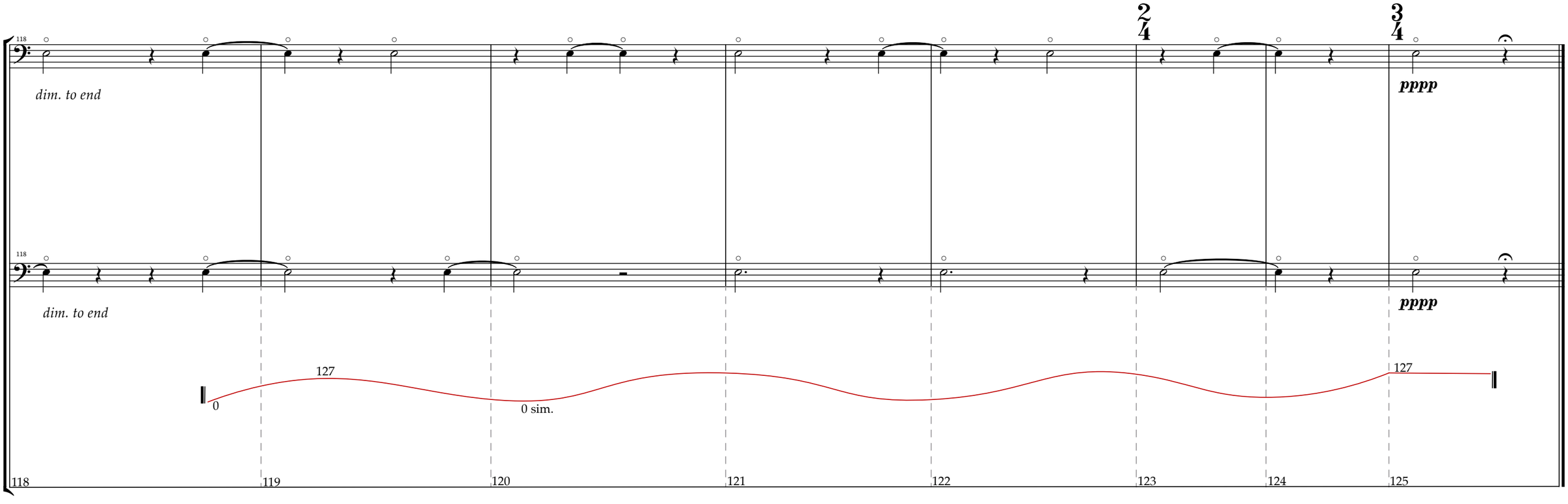
113

114

115

116

117


I
II
118
dim. to end
2/4
3/4
pppp
0
127
0 sim.
118
119
120
121
122
123
124
125