Through a Window

for 4-6 distributed performers and electronics

3 nodes

Naithan Bosse

(2017)

Through A Window

4-6 distributed instruments and electronics
3 locations
Year: 2017
Duration: ~23 minutes

Movements

I. Stained Glass and Copper Wire 4 minutes
II. In Strange Lines and Distances 12 minutes
III. A Twisted Pair 7 minutes

Instrumentation

Sustaining soprano instrument 1
Ideal range: C4-C7.
Minimum required range: C4-G6.

Sustaining soprano instrument 2
Ideal range: F3-G6
Minimum required range: G3-G6.

Sustaining soprano instrument 3 **(optional)**
Range: C4-G6

Sustaining tenor instrument **(optional)**
Ideal range: C2-Bb5
Minimum required range: E2-C#5.

Percussion
- Mallet instrument
  Range: F3-F5
- Unpitched percussion instrument(s)

Keyboard (acoustic or electronic)

- Additionally, each performer must have 1 party balloon and 1 mobile phone.
- When possible, soprano 1, percussion, and keyboard should be distributed to different locations.
- Several versions of each part have been created to accommodate a variety of instrumental ranges and transpositions. Choose the version that most closely matches your instrument.
- If the optional instruments are not present, several sections should be performed by other instruments. See the cue list below.

Performance Instructions

Latency
The amount of time needed to send sound from one location to another over a network can be significant enough that synchronizing with remote musicians becomes impossible. With such a delay, performing in perfect alignment in your own location will sound terribly behind the beat in the remote locations. Typically everyone will unintentionally slow down to compensate for the delay. I have included the following directions in the score to help navigate performance over long distances and to help mitigate the effects of the delay.

Anchor: 

The musician acting as anchor is responsible for maintaining the tempo. The remote musicians align to the anchor musician's performance in their respective locations. As a result, the anchor musician will perceive the remote musicians as lagging behind the written score. It is the responsibility of the anchor musician to maintain the performance tempo without regard for the lagging remote musicians. If you find yourself decelerating while performing as anchor, you can compensate by performing with a slight and continuous accelerando. It is the responsibility of the non-anchor musicians to adapt to the acceleration in their own locations. Anchor sections are notated as cues in all parts.

Cue:
Since audio is transmitted more quickly than video over the network, visual conducting is ineffective. Several cues are embedded in the score (and parts) to help provide aural landmarks for all remote musicians. Cues should always be performed incisively and rigidly.

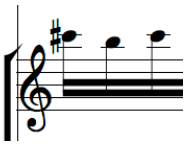
Clock-time
Several extended sections use stopwatches to measure time. A custom stopwatch mobile app allows computer 1 to remotely start, stop, and reset the stopwatch settings for all performers. The clock app should be open for the full performance. The clock rate can be increased or decreased to allow for slower rehearsal or faster performance while still displaying the correct clock-times.

Notation Legend

Accidentals:

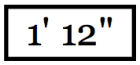
In clock-time sections: *A la note*.
Accidentals modify only a single note plus any immediately following notes of the same pitch. (The figure is performed C#, B, C in clock-time sections)

In metered sections: Standard notation.
Modified pitches remain modified for the duration of the bar. (The figure is performed C#, B, C# in metered sections).



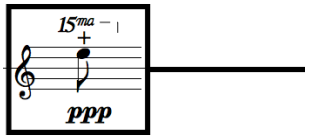
Start timer: Computer 1 starts the stopwatch app.

Time-code: Describes the running stopwatch time at the end of the current system and the start of the following system.



Duration bar: Hold note for length of the bar

Mobile: Repeatedly (or continuously) perform the boxed music segment for the length of time indicated by the duration bar.

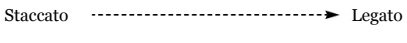


Jitter cue: Perform the contents of the 'jitter' mobile anytime the jitter button flashes in the phone app.

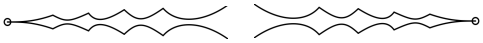
Recite: Recite the indicated text in a near-whisper. Stand close to the mic.

White noise: This can be interpreted in a variety of ways depending on your instrument. For example, a bowed string instrument may choose to interpret the direction by performing an extreme sul. pont. or by bowing the body of the instrument. A wind instrument may interpret the direction by performing a breath tone.

Dash arrow: Gradually modulate from one playing style to another.



Pulsed crescendo/diminuendo: Perform several small crescendi/diminuendi embedded inside a larger-scale crescendo/diminuendo.



Slowly deflate balloon: Use the air stream to create a sound like ocean waves. Avoid directing the air stream directly into the microphone as this will create an overly bassy sound. Instead, direct the air-stream into the mic at an oblique angle.

Unpitched: Percussive. This can be interpreted in several ways depending on your instrument. A wind instrument may use key clicks while a bowed string instrument may pluck a muted string.

Muted: If performing on an acoustic piano, reach inside the body of the instrument and mute the string with your palm. Avoid exciting ringing harmonics.

Pitched: ● Partially pitched: ◒ Unpitched: ○

Similar to the 'white noise' note-head, the pitched/partially-pitched/unpitched directions can be interpreted creatively based on what is appropriate for your instrument.

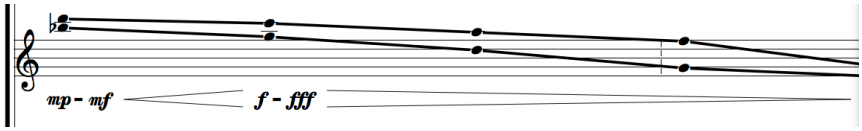
Feathered beams:

Accelerate

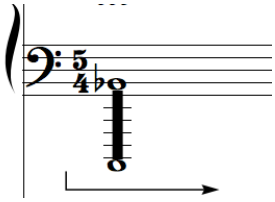
Decelerate

Highest possible pitch on your instrument:

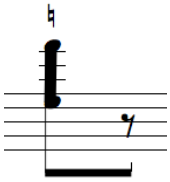
Pitch boundaries: Improvise within the indicated pitch ranges.



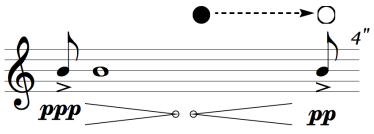
Chromatic Cluster: Perform all pitches between the outer pitches (inclusive). (C1-Bb2 in the figure)



White-note cluster: Signified by the natural sign above the cluster, perform all white-notes between the outer pitches (inclusive). (Treble clef E5-F6 in the figure)



Movement 1, pp. 3-9 and movement 3, pp. 61-66.
Each time you are instructed to perform a cell, select and perform one fragment from the available pool of cells notated above the staff as a numbered “generation.” The cells are notated proportionally with the duration specified in seconds at the end of each cell. (The figure shows a 4 second long cell from generation 3).



Electronics

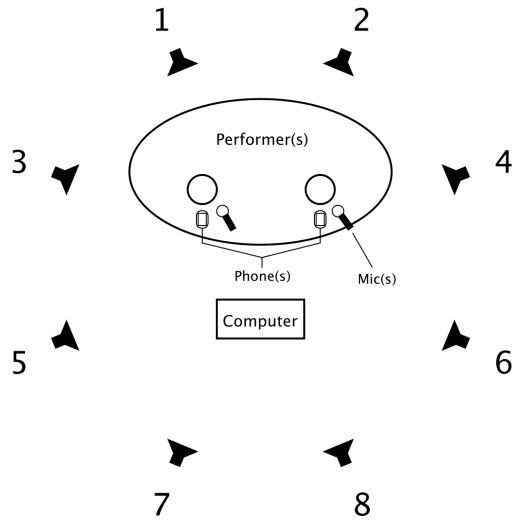
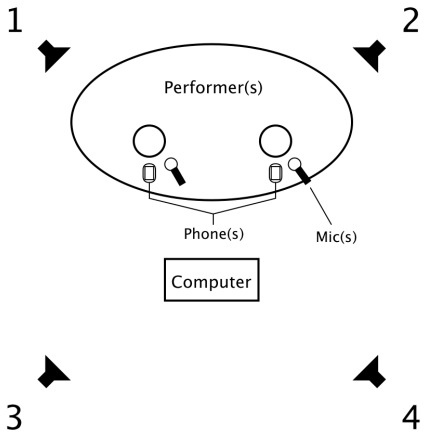
Hardware requirements

- 1 microphone per performer. (DPA mics are preferred)
- 1 phone per performer (including computer performers)
- At each location:
  - 1 computer
  - 8-channel audio system (4 channels is also possible)
  - High-speed wired internet connection (fiber-optic).

Software requirements

- Max performance patches (available at www.naithanbosse.com/ThroughAWindow)
  - TAW_node1.maxpat
  - TAW_node2.maxpat
  - TAW_node3.maxpat
  - nb.toolbox.zip
- MaxComm/Mira (available on the Apple App Store)
  - TAW.maxcomm
- Skype
- Jack Audio Connection Kit (with Qjackctrl)
- Select one of the following and follow the corresponding setup instructions (below).
  - Jacktrip
  - ArtsMesh

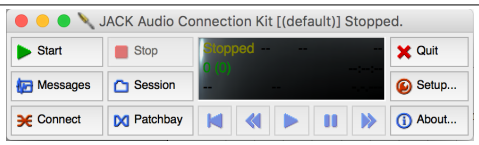
Speaker configuration (stereo pairs)

8-channels	4 channels
	

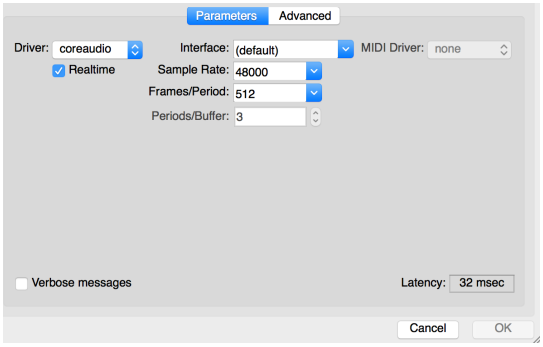
Audio Setup – Jacktrip Version

1. Make sure that Max is closed and you are connected to the correct network.

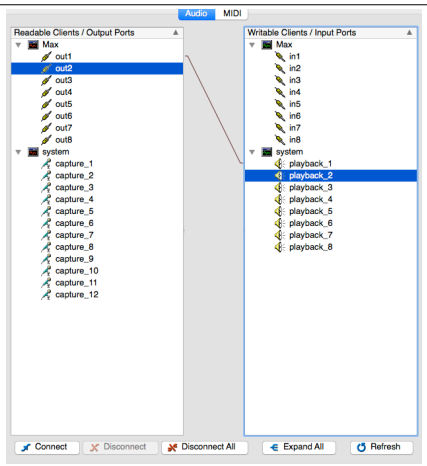
2. Open QJackCtrl
3. Click “Setup”



4. All nodes agree upon a Sample Rate and Frames/Period size. (Sample Rate: _____ Frames: _____)
5. Set “Driver” to coreaudio and click OK



6. In the main window, click Start to activate the Jack server.
7. Open Max and follow the setup instructions.
8. Start a Skype call with the remote locations.
9. In QJackCtrl, open the Connect window.
10. When connecting to a remote node, Jacktrip will automatically cross connect your system input/output with the remote location. Make sure your audio levels are set low or even muted to avoid feedback.

11. Node 1: In terminal, type “jacktrip -s -n2 -b24 -r3 --clientname node2” Wait until node 2 is ready and hit enter. Click “Disconnect all” in the QJackCtrl connect window.	11. Node 2: In terminal, type “jacktrip -c [enter node1 ip here] -n2 -b24 -r3 --clientname node1” Wait until node 1 is ready and hit enter. Click “Disconnect all” in the QJackCtrl connect window.
12. Node 1: Open a new terminal window and type “jacktrip -s -n2 -b24 -r3 --clientname node3 -o10” Wait until node 3 is ready and hit enter. Click “Disconnect all” in the QJackCtrl connect window.	12. Node 3: In terminal, type “jacktrip -c [node1 ip here] -n2 -b24 -r3 --clientname node1 -o10” Wait until node 1 is ready and hit enter. Click “Disconnect all” in the QJackCtrl connect window.
13. Node 2: Open a new terminal window and type “jacktrip -s -n2 -b24 -r3 --clientname node3 -o20” Wait until node 3 is ready and hit enter. Click “Disconnect all” in the QJackCtrl connect window.	13. Node 3: In terminal, type “jacktrip -c [node1 ip here] -n2 -b24 -r3 --clientname node2 -o20” Wait until node 2 is ready and hit enter. Click “Disconnect all” in the QJackCtrl connect window.
14. Create the following audio connections in the Connect window in QjackCtrl by highlighting the desired inputs and outputs and clicking the connect button.	

Node 1:	Node 2:	Node 3:
System receive 1-n => Max send 1-n	System receive 1-n => Max send 1-n	System receive 1-n => Max send 1-n
Max receive 1-8 => System send 1-8	Max receive 1-8 => System send 1-8	Max receive 1-8 => System send 1-8
Max receive 9-10 => Node 2 send 1-2	Max receive 9-10 => Node 1 send 1-2	Max receive 9-10 => Node 1 send 1-2
Max receive 11-12 => Node 3 send 1-2	Max receive 11-12 => Node 3 send 1-2	Max receive 11-12 => Node 2 send 1-2
Node 2 receive 1-2 => Max send 5-6	Node 1 receive 1-2 => Max send 5-6	Node 1 receive 1-2 => Max send 5-6
Node 3 receive 1-2 => Max send 7-8	Node 3 receive 1-2 => Max send 7-8	Node 2 receive 1-2 => Max send 7-8

15. Follow the instructions in Max to perform sound-check.
16. Mute Skype during performance.

Cue list

If either or both of the optional instrumental parts are missing, then the following excerpts should be covered by other instruments according to the list below. These cues are also notated and labelled in the appropriate parts.

A Copper Wire

Missing Instrument...	...at excerpt...	...is covered by
Soprano 3	0:00-0:24	Keyboard
Tenor	1:12-1:36	Computer 1

In Strange Lines and Distances

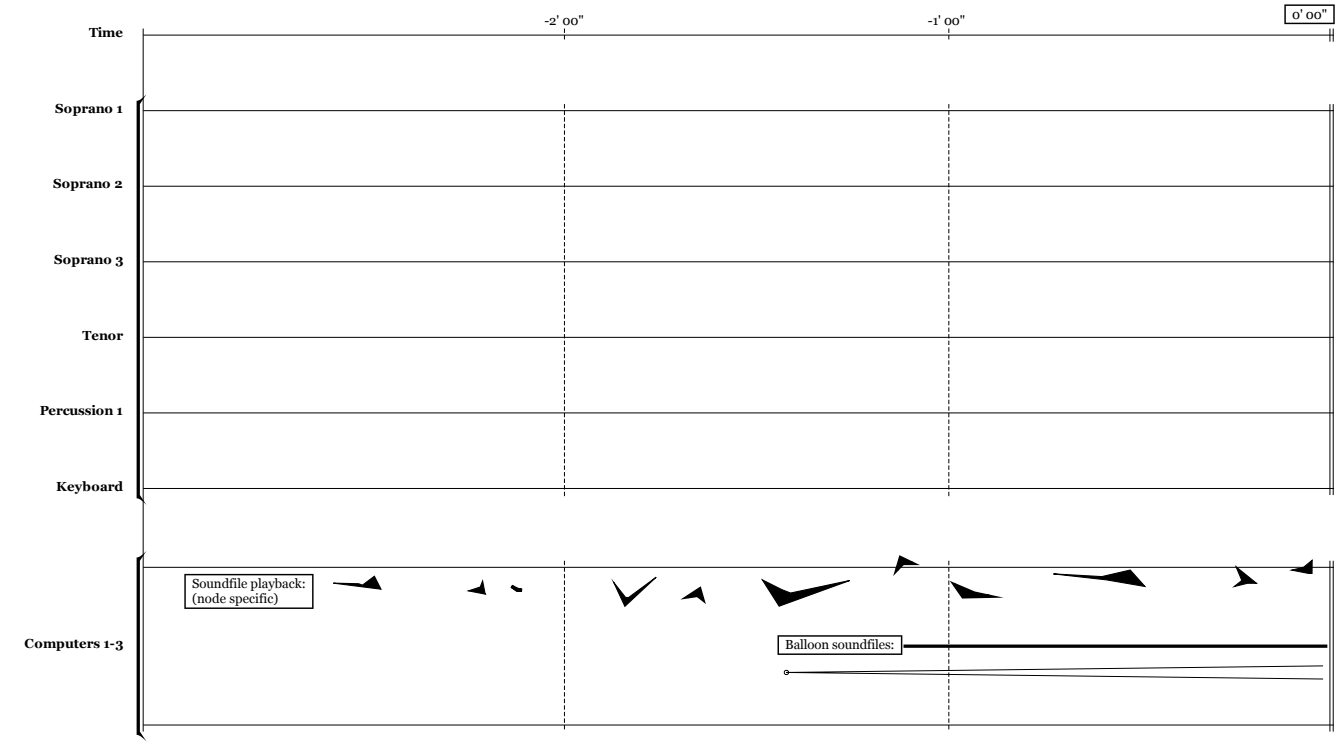
Missing Instrument...	...at excerpt...	...is covered by
Soprano 3	mm. 5-12	Computer 1
Tenor	mm. 6-13	Soprano 2
Tenor	mm. 22-33	Soprano 2
Soprano 3	m. 139	Percussion
Tenor	mm. 140-148	Percussion (transposed)
Soprano 3	m. 150	Keyboard
Soprano 3/Tenor	mm. 157-169	Computer 1 (change processing)
Tenor	m. 203	Keyboard
Soprano 3	m. 204	Percussion
Tenor	m. 206	Percussion/Soprano 2/Keyboard
Soprano 3	mm. 207-209	Percussion
Tenor	mm. 211-213	Computer 1
Tenor	mm. 215-219	Keyboard
Soprano 3	mm. 215-219	Soprano 2
Soprano 3	mm. 221-222	Soprano 1
Soprano 3	mm. 223-224	Soprano 2
Soprano 3	m. 233	Percussion
Soprano 3	mm. 238-268	Computer 2
Tenor	mm. 231-258	Computer 1
Tenor	m. 260	Keyboard
Tenor	mm. 264-269	Soprano 2 (transposed)
Tenor	mm. 273-274	Percussion (transposed)
Tenor	mm. 277-279	Soprano 1 (transposed)

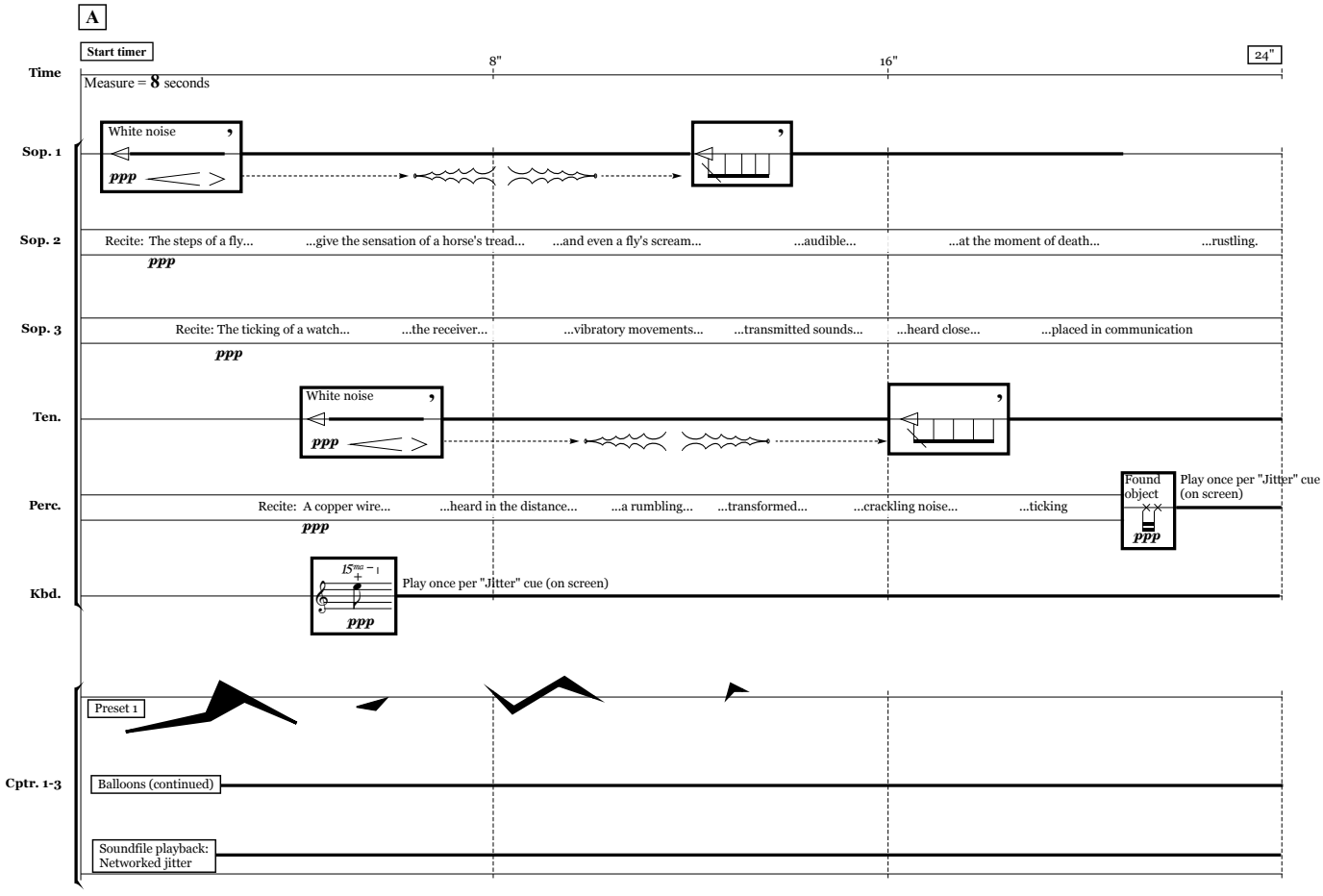
A Twisted Pair

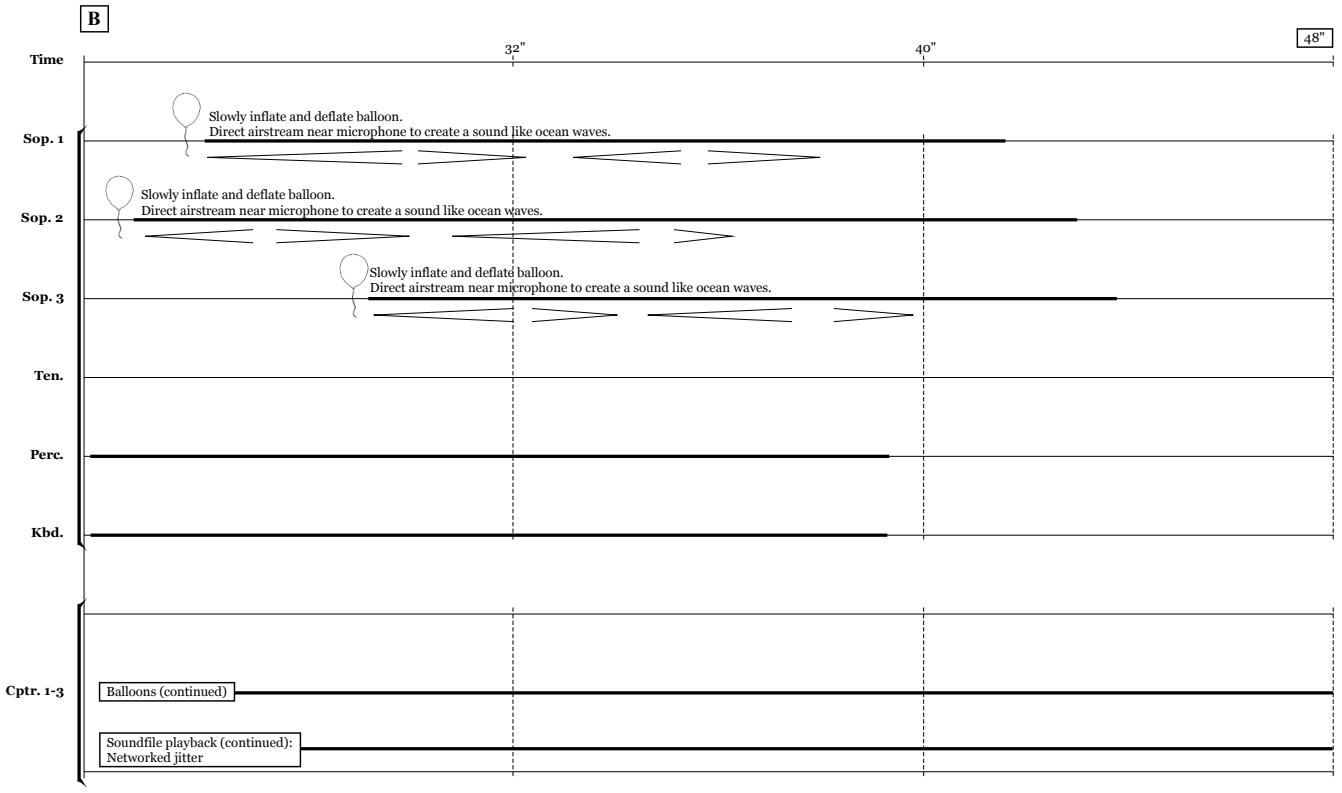
Missing Instrument...	...at excerpt...	...is covered by
Soprano 3	m. 2	Soprano 2
Soprano 3	m. 6	Percussion
Soprano 3	mm. 7-10	Keyboard
Tenor	mm. 16-19	Percussion
Soprano 3	mm. 40-71	Computer 1
Tenor	mm. 40-71	Computer 2
Soprano 3/Tenor	mm. 75-103	Soprano 2/Computer 1
Tenor	m. 129	Percussion
Tenor	mm. 133-134	Keyboard
Tenor	mm. 137-140	Keyboard
Tenor	mm. 141-146	Soprano 2
Tenor	mm. 149-152	Soprano 1

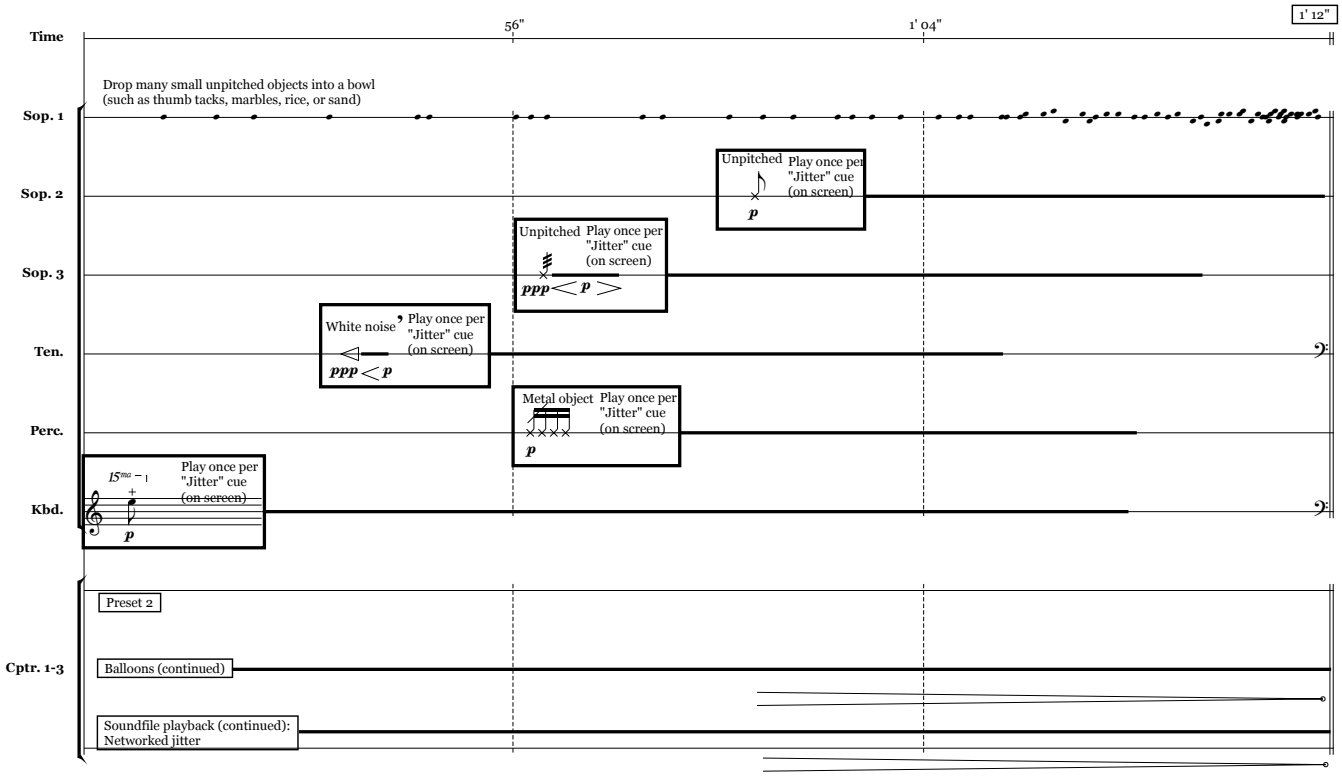
I. Stained Glass

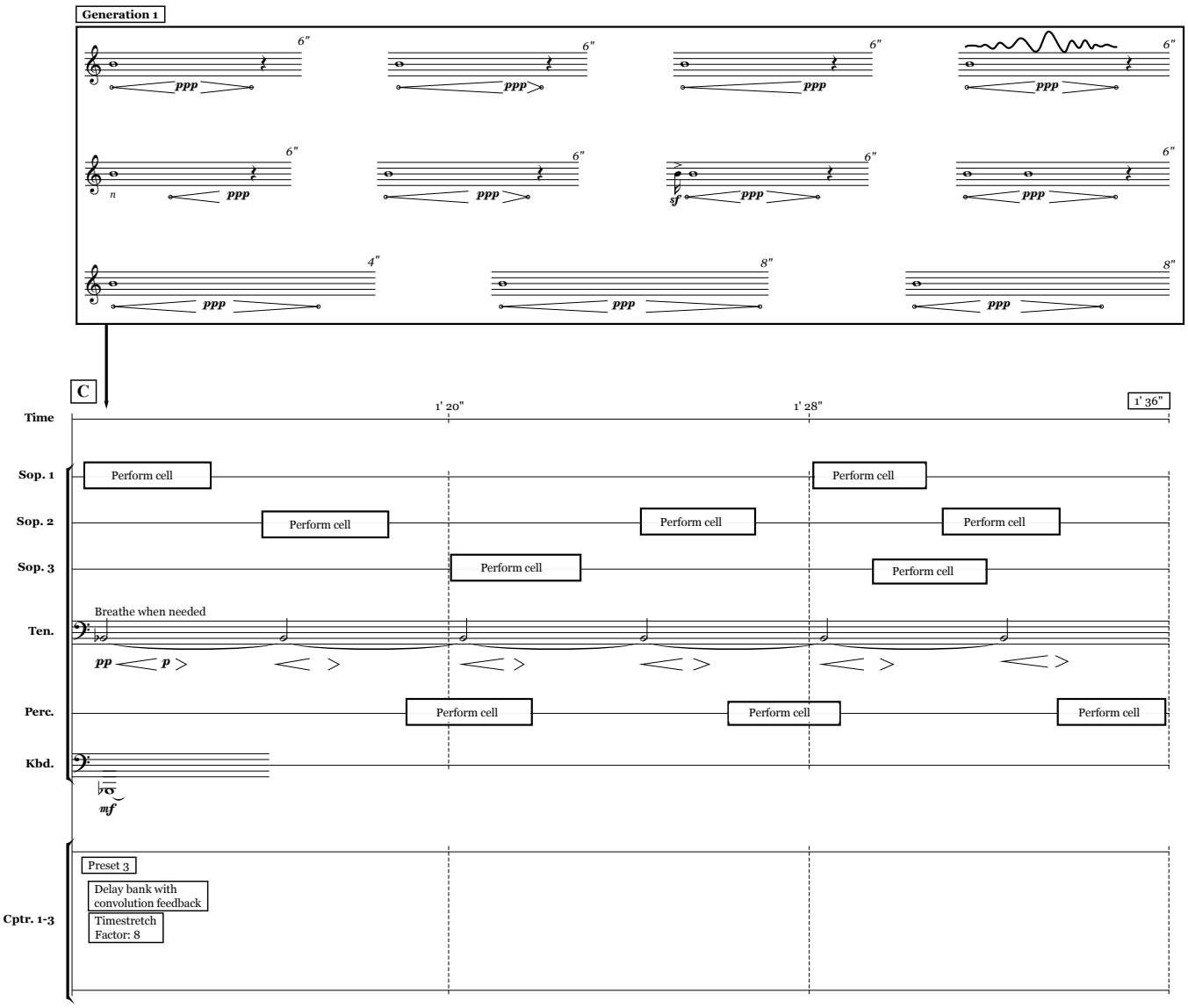
Naithan Bosse

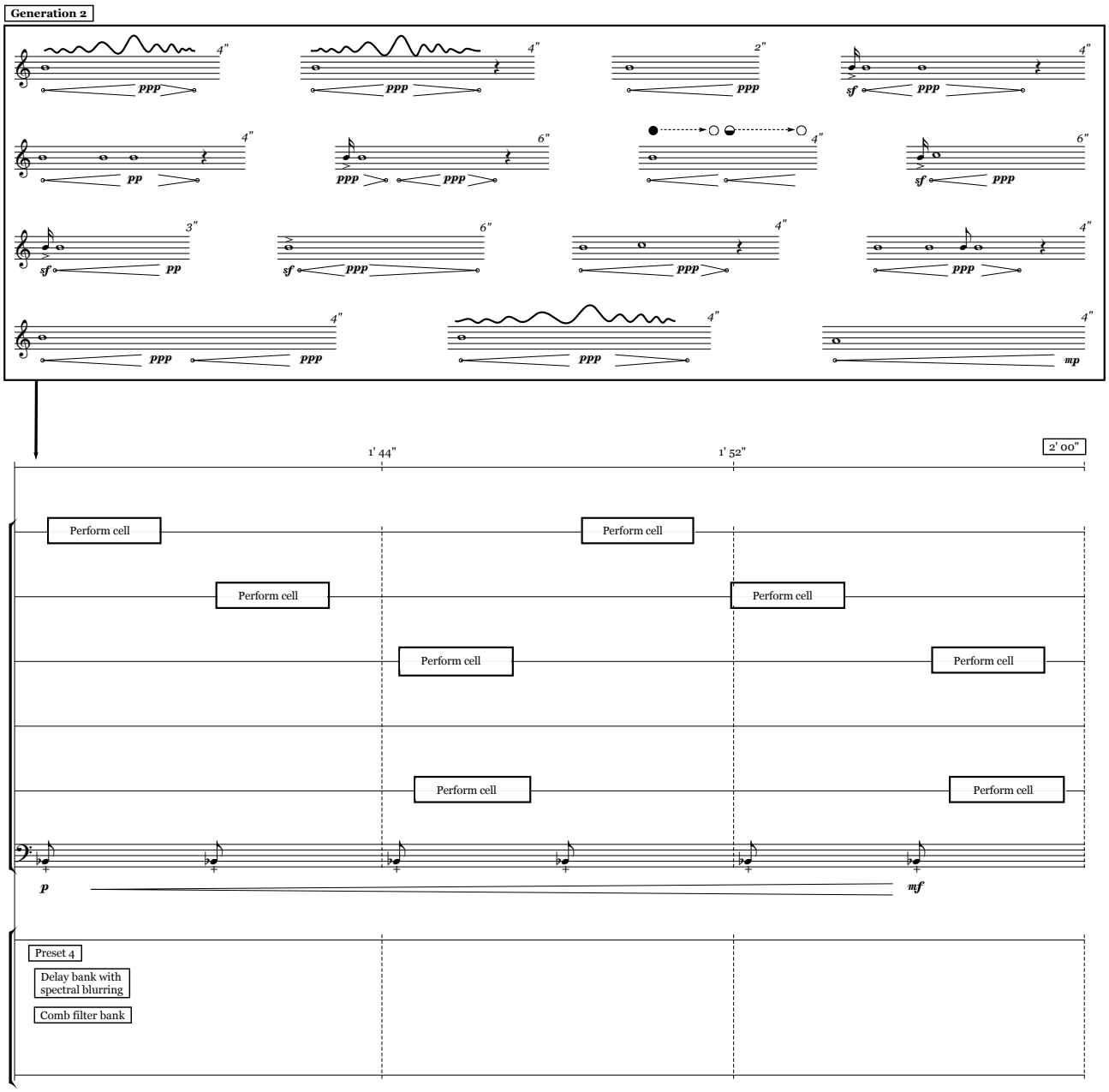




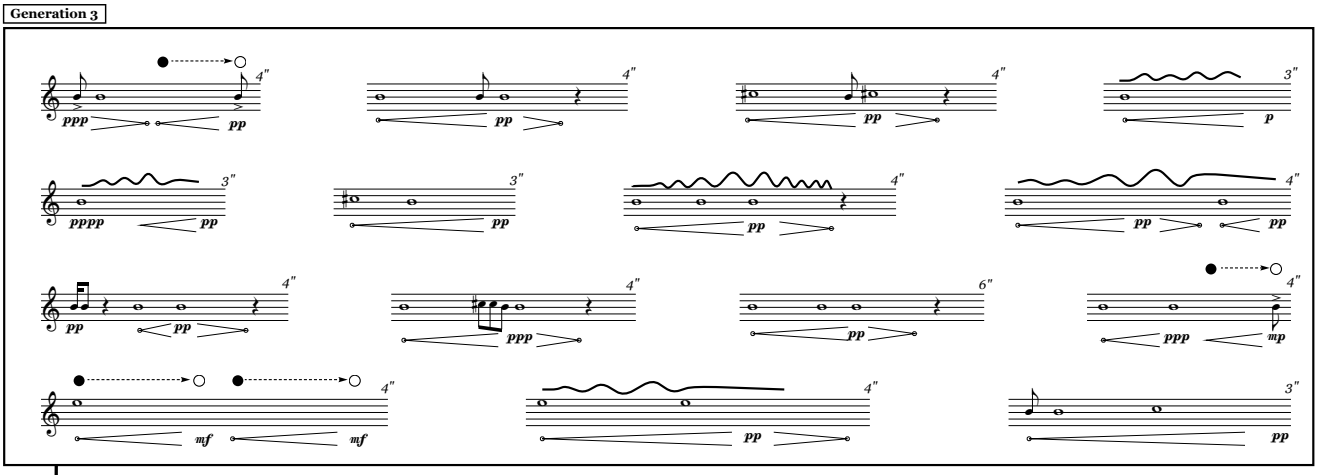

B
Time
32"
40"
48"
Sop. 1
Slowly inflate and deflate balloon.
Direct airstream near microphone to create a sound like ocean waves.
Sop. 2
Slowly inflate and deflate balloon.
Direct airstream near microphone to create a sound like ocean waves.
Sop. 3
Slowly inflate and deflate balloon.
Direct airstream near microphone to create a sound like ocean waves.
Ten.
Perc.
Kbd.
Cptr. 1-3
Balloons (continued)
Soundfile playback (continued):
Networked jitter

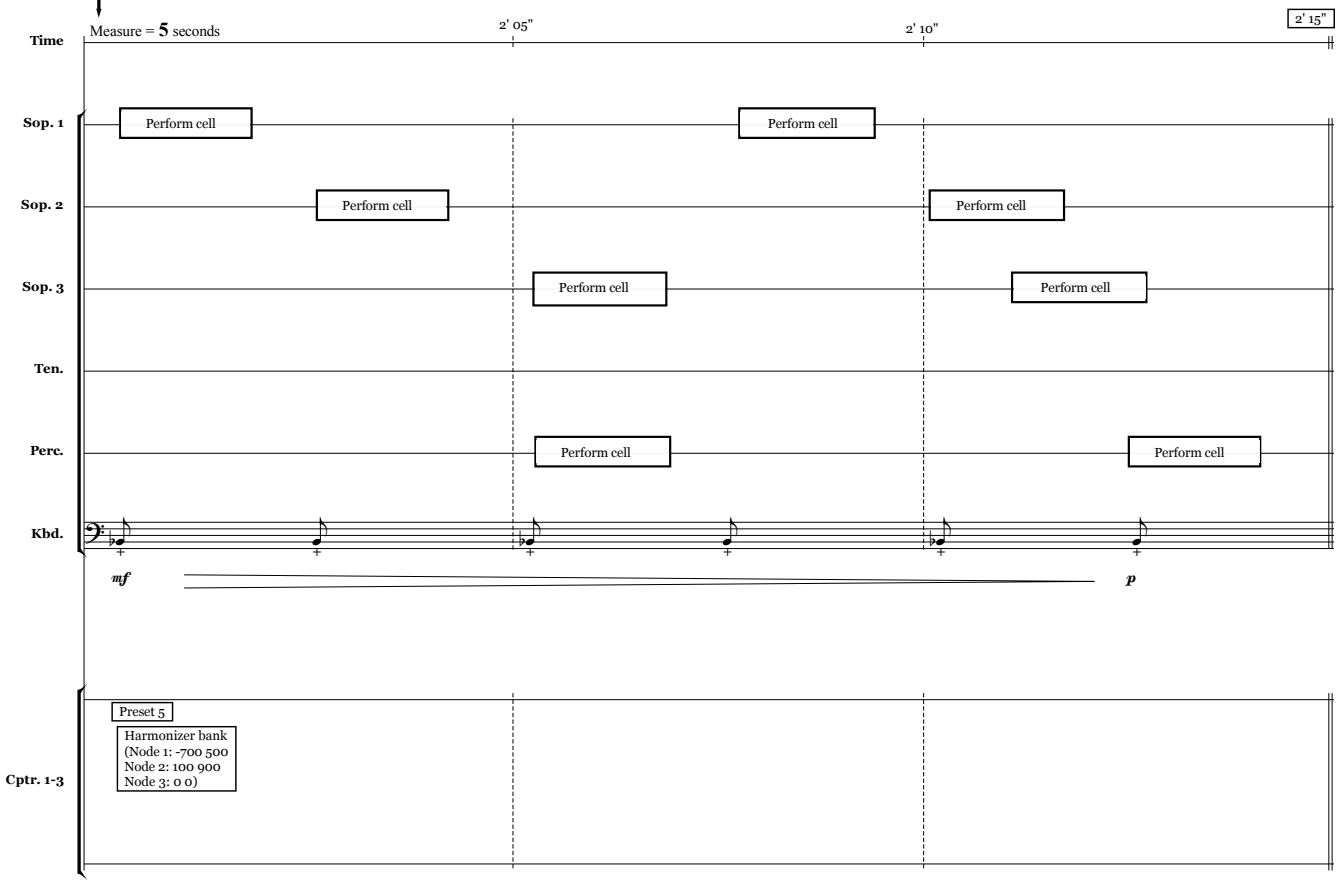

Time
56"
1' 04"
1' 12"
Drop many small unpitched objects into a bowl
(such as thumb tacks, marbles, rice, or sand)
Sop. 1
Sop. 2
Unpitched
Play once per "Jitter" cue (on screen)
p
Sop. 3
Unpitched
Play once per "Jitter" cue (on screen)
ppp p
Ten.
White noise
Play once per "Jitter" cue (on screen)
ppp p
Perc.
Metal object
Play once per "Jitter" cue (on screen)
p
Kbd.
15ma
Play once per "Jitter" cue (on screen)
p
Preset 2
Cptr. 1-3
Balloons (continued)
Soundfile playback (continued):
Networked jitter


Generation 1
6″
ppp
4″
8″
C
Time
1' 20"
1' 28"
1' 36"
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
Perform cell
Breathe when needed
pp
p
mf
Preset 3
Delay bank with convolution feedback
Timestretch Factor: 8

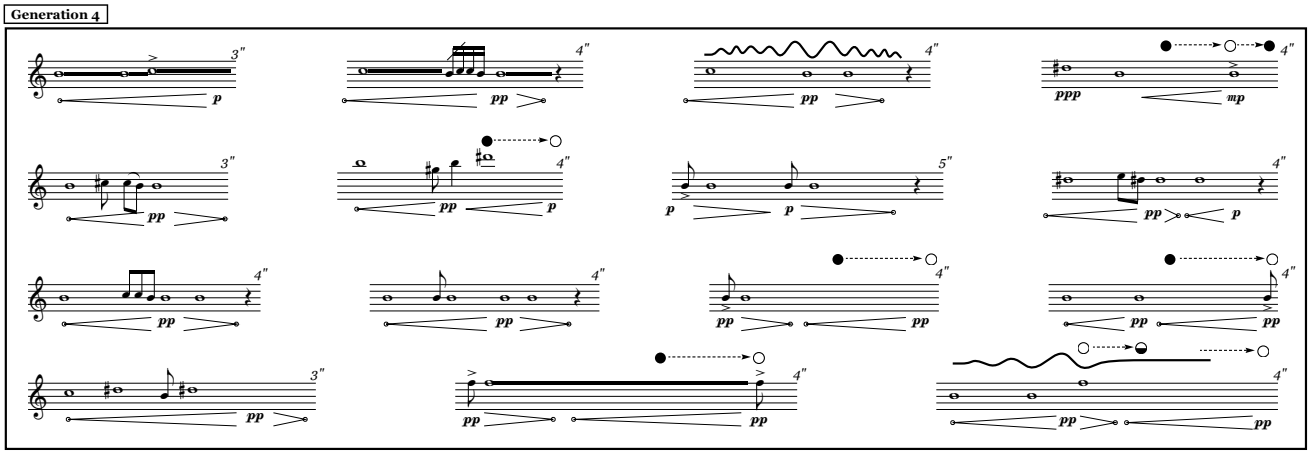

Generation 2
Time
1' 44"
1' 52"
2' 00"
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
Perform cell
Preset 4
Delay bank with spectral blurring
Comb filter bank

Generation 3

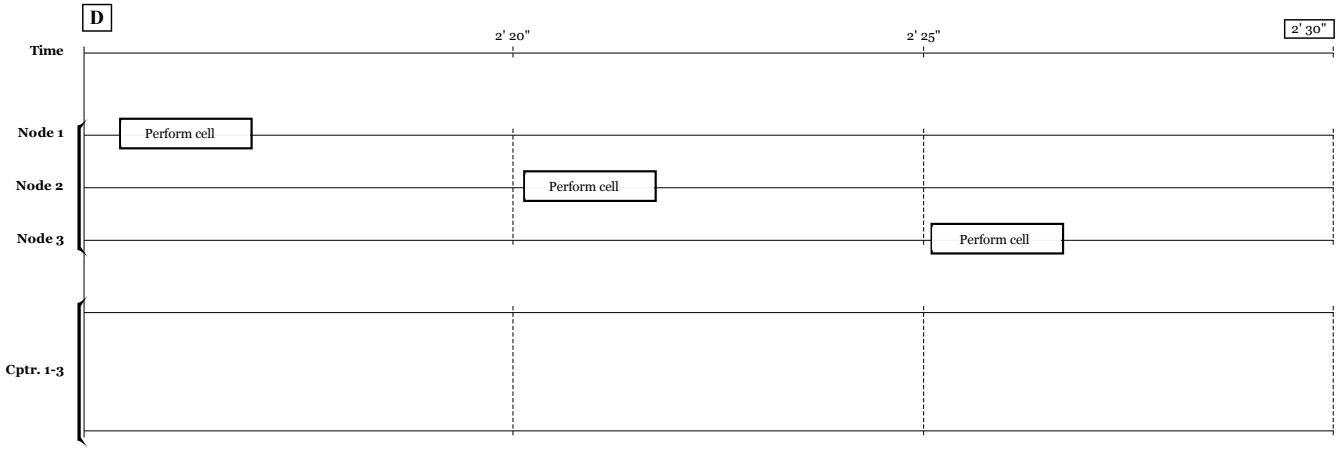




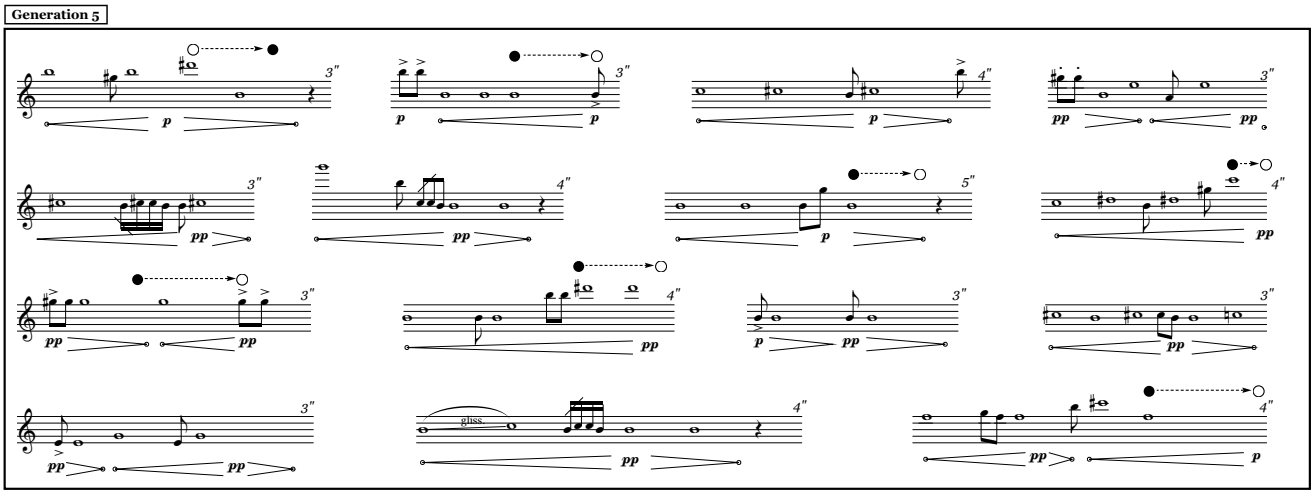
Generation 4

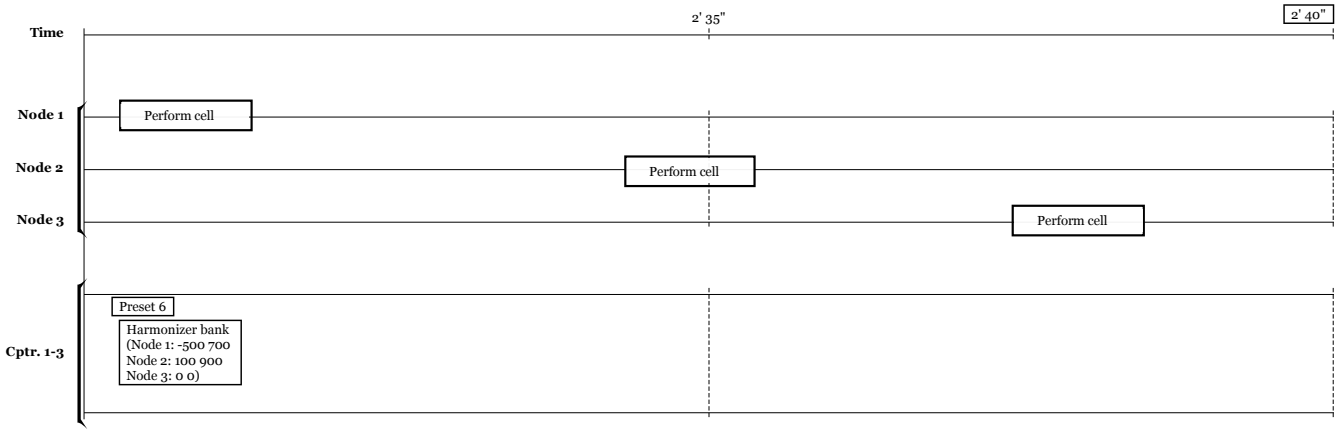


D

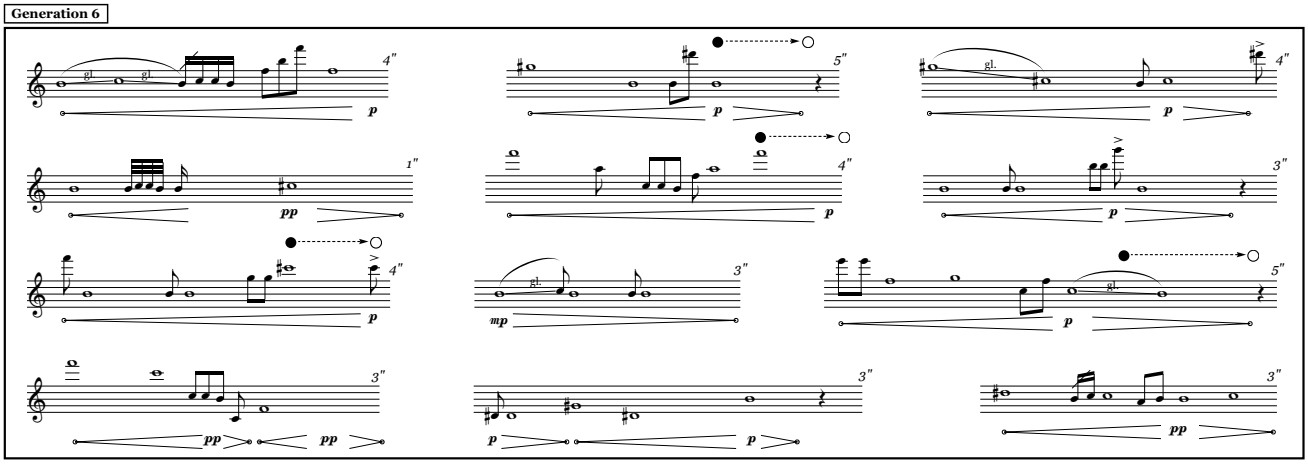


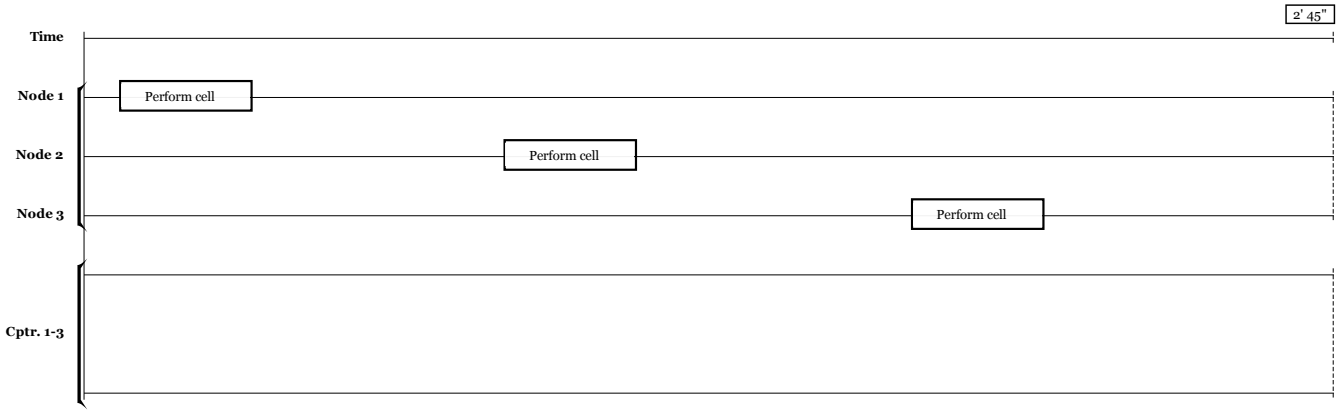
Generation 5



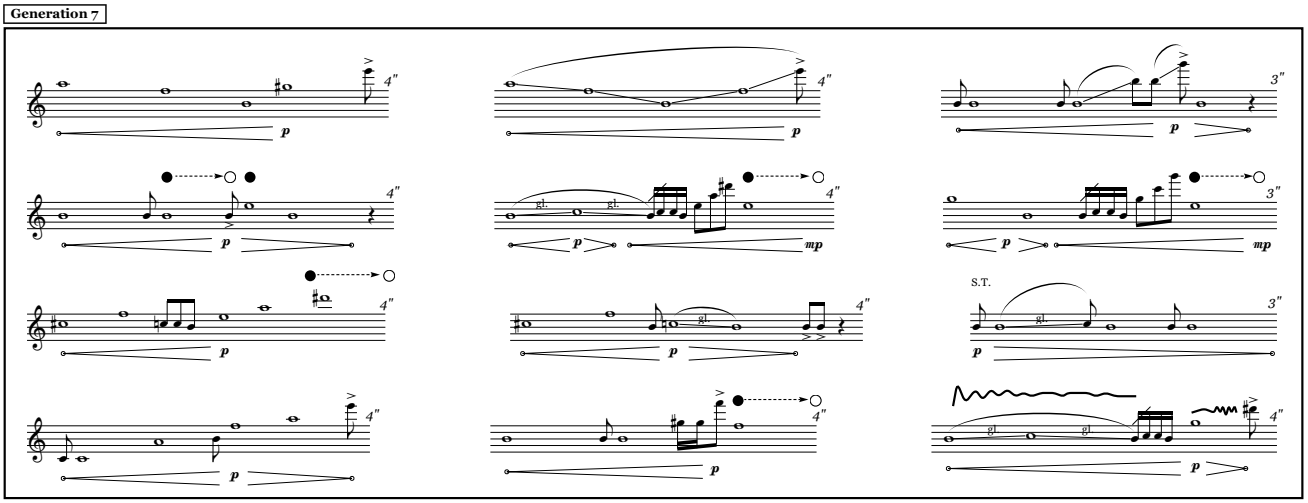


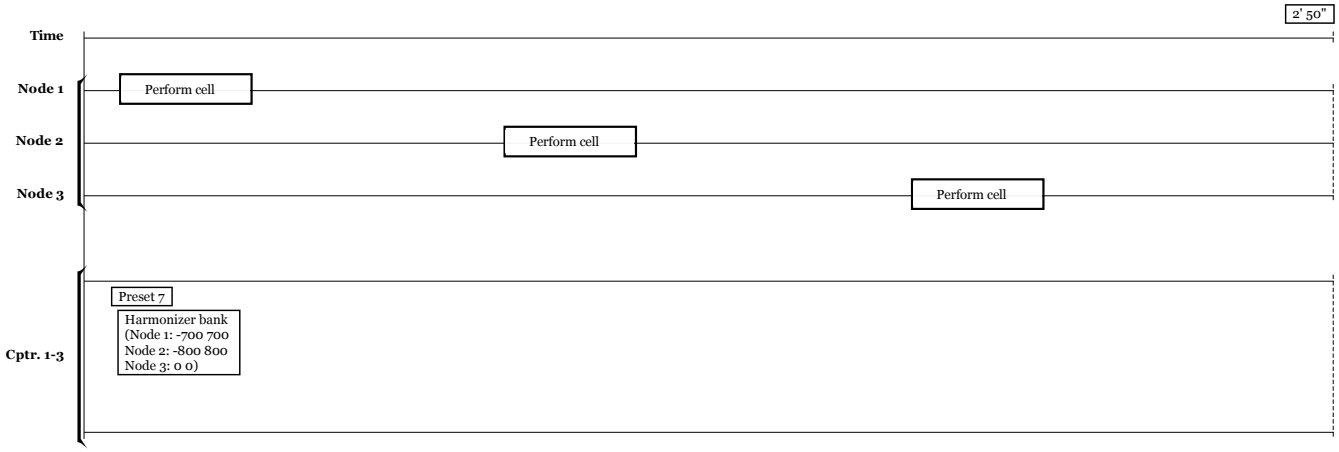
Generation 6



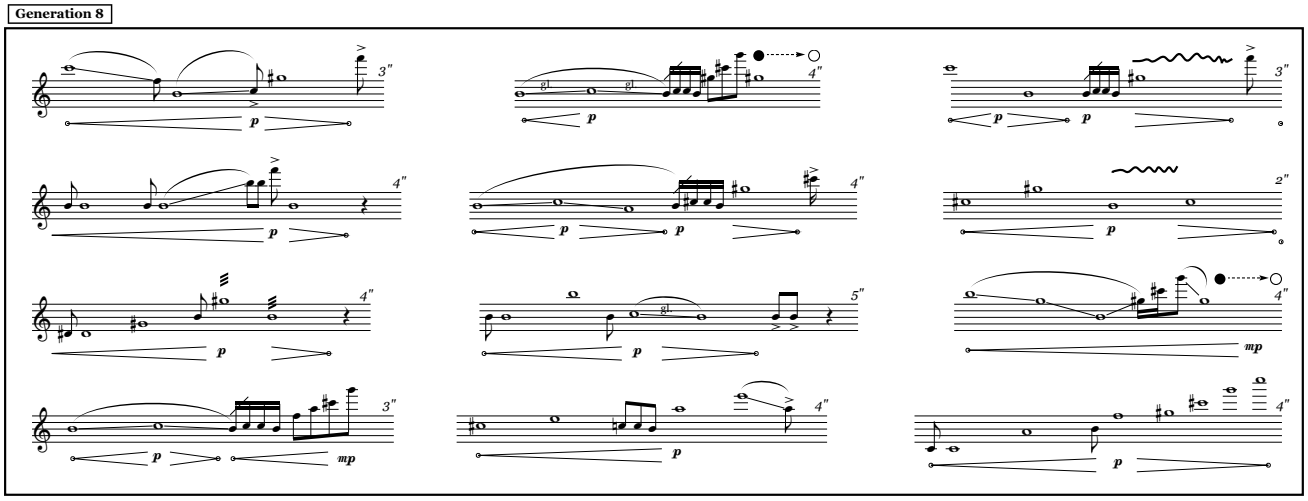


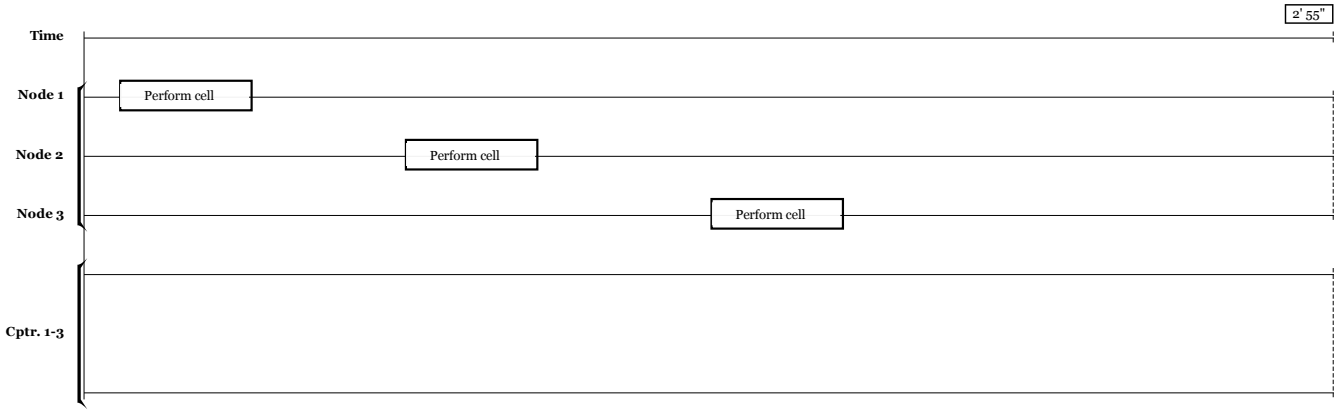
Generation 7



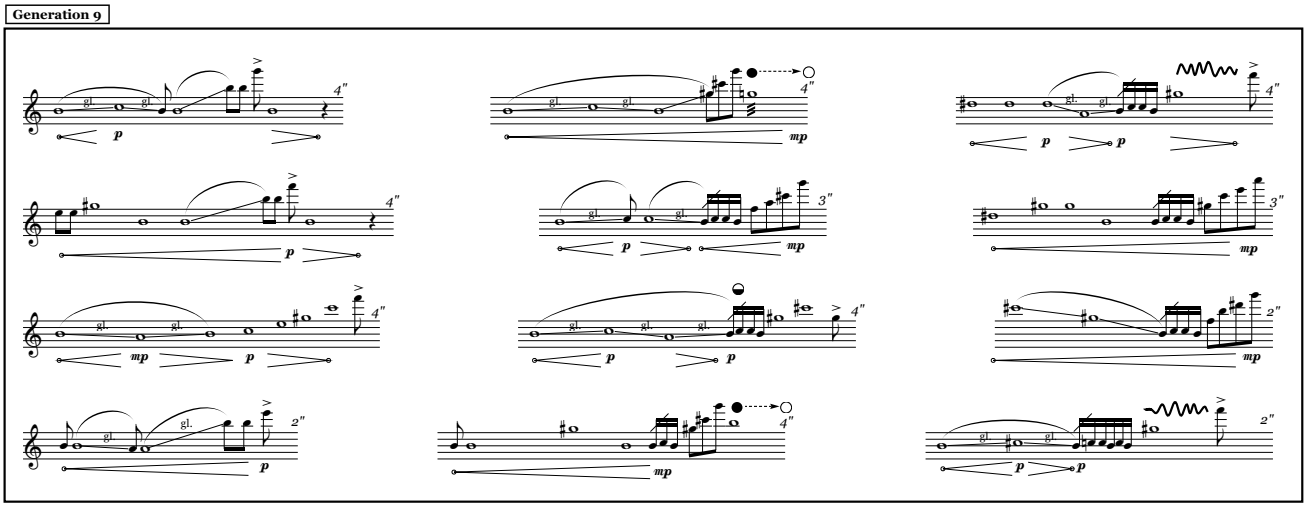


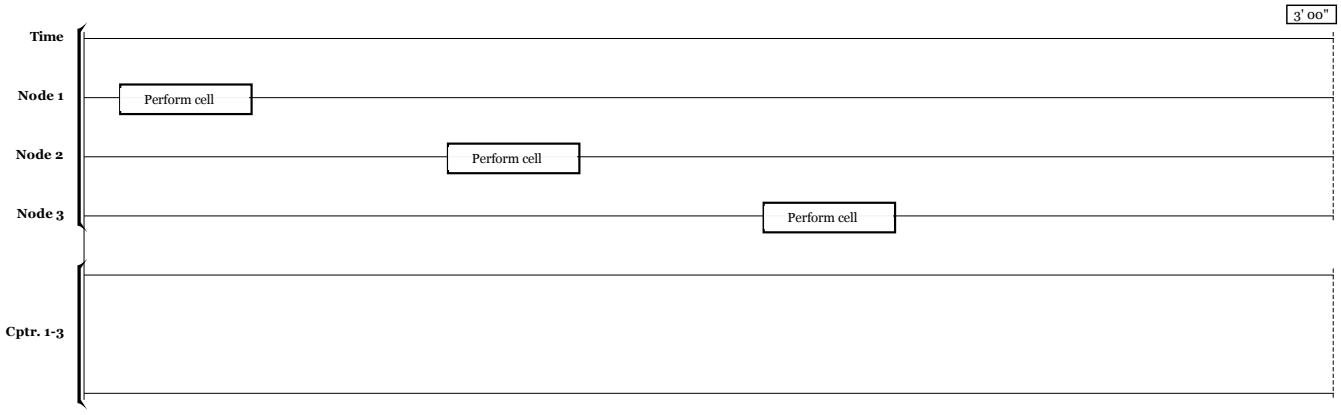
Generation 8



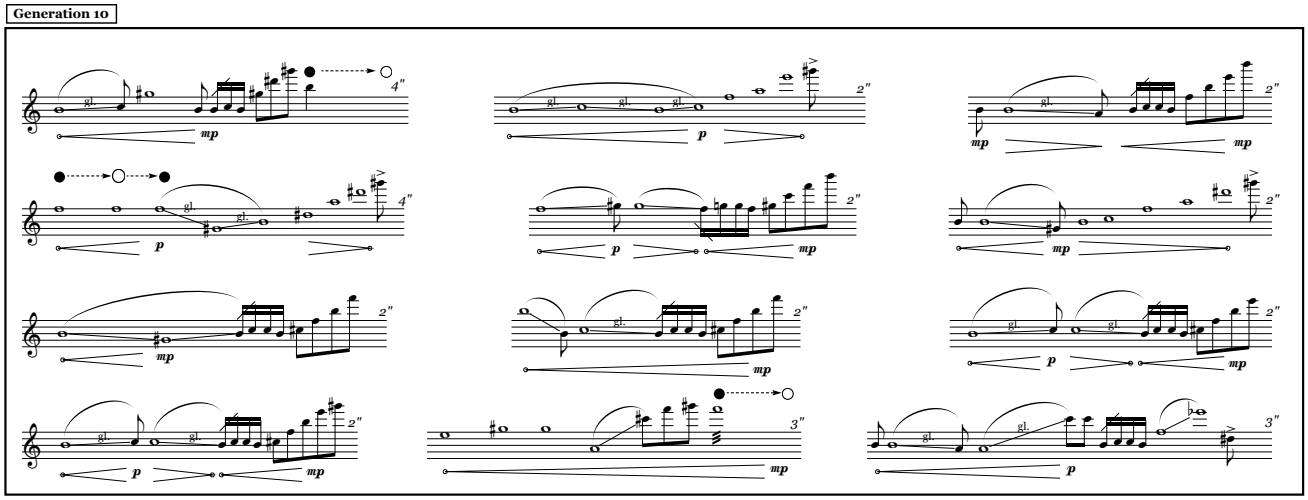


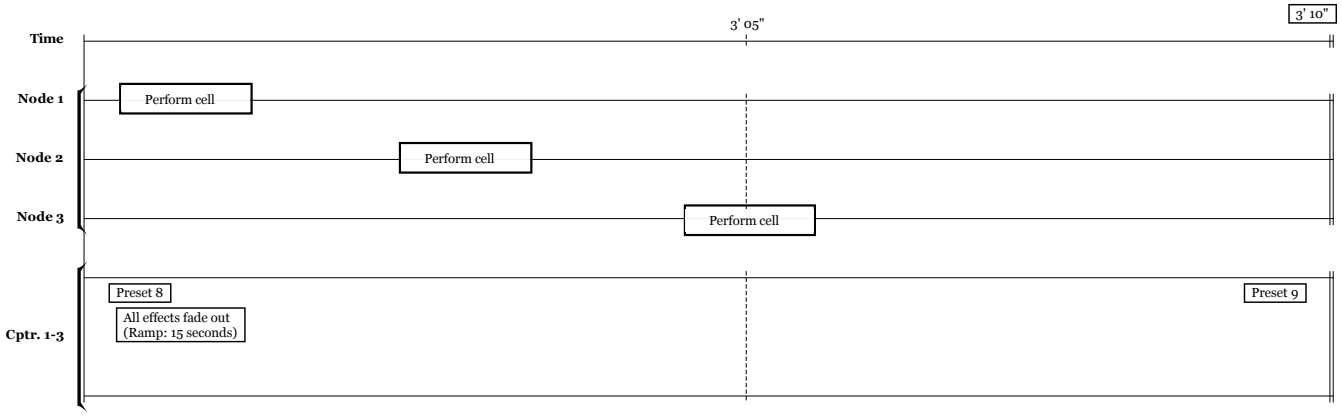
Generation 9



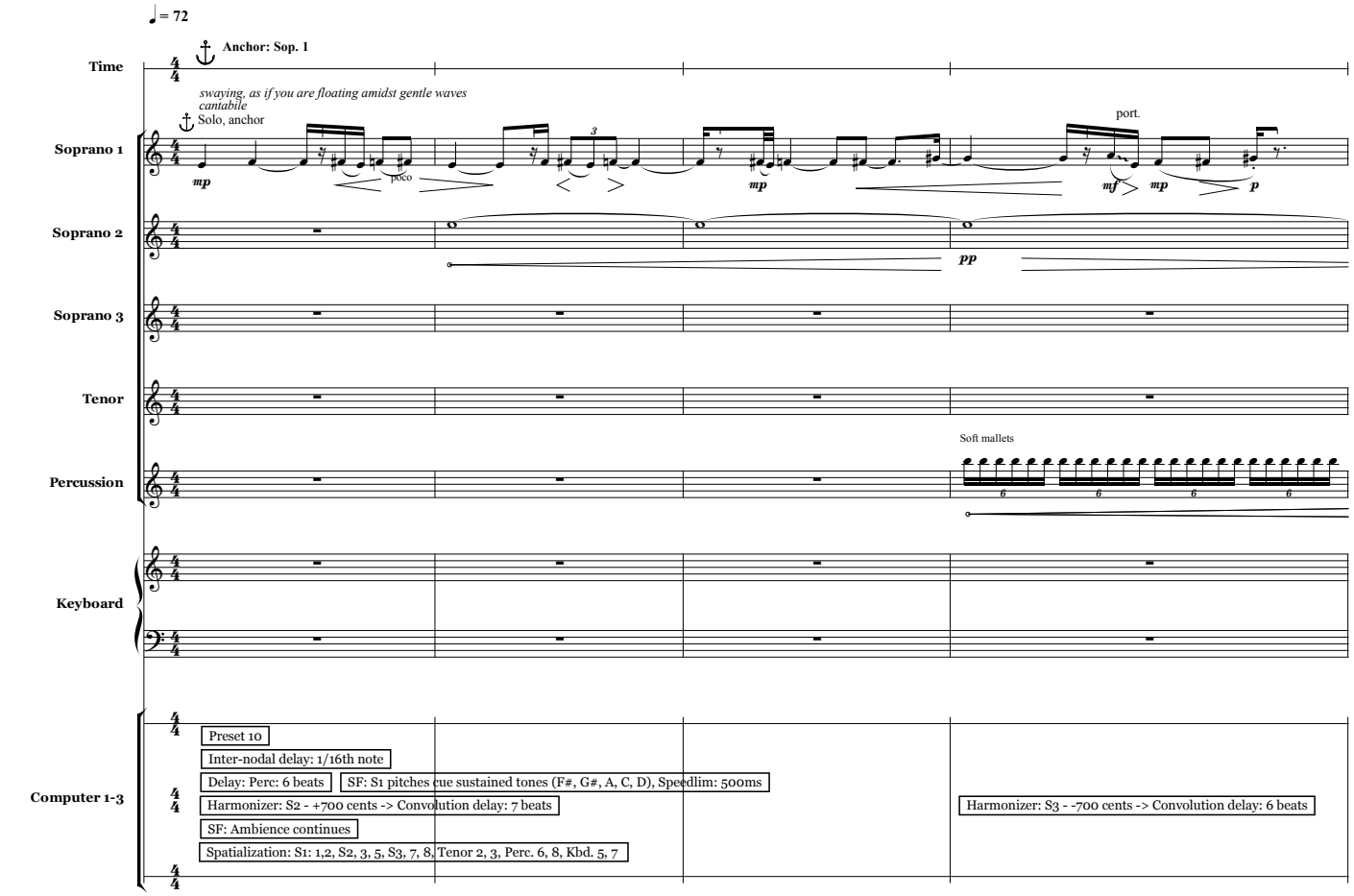


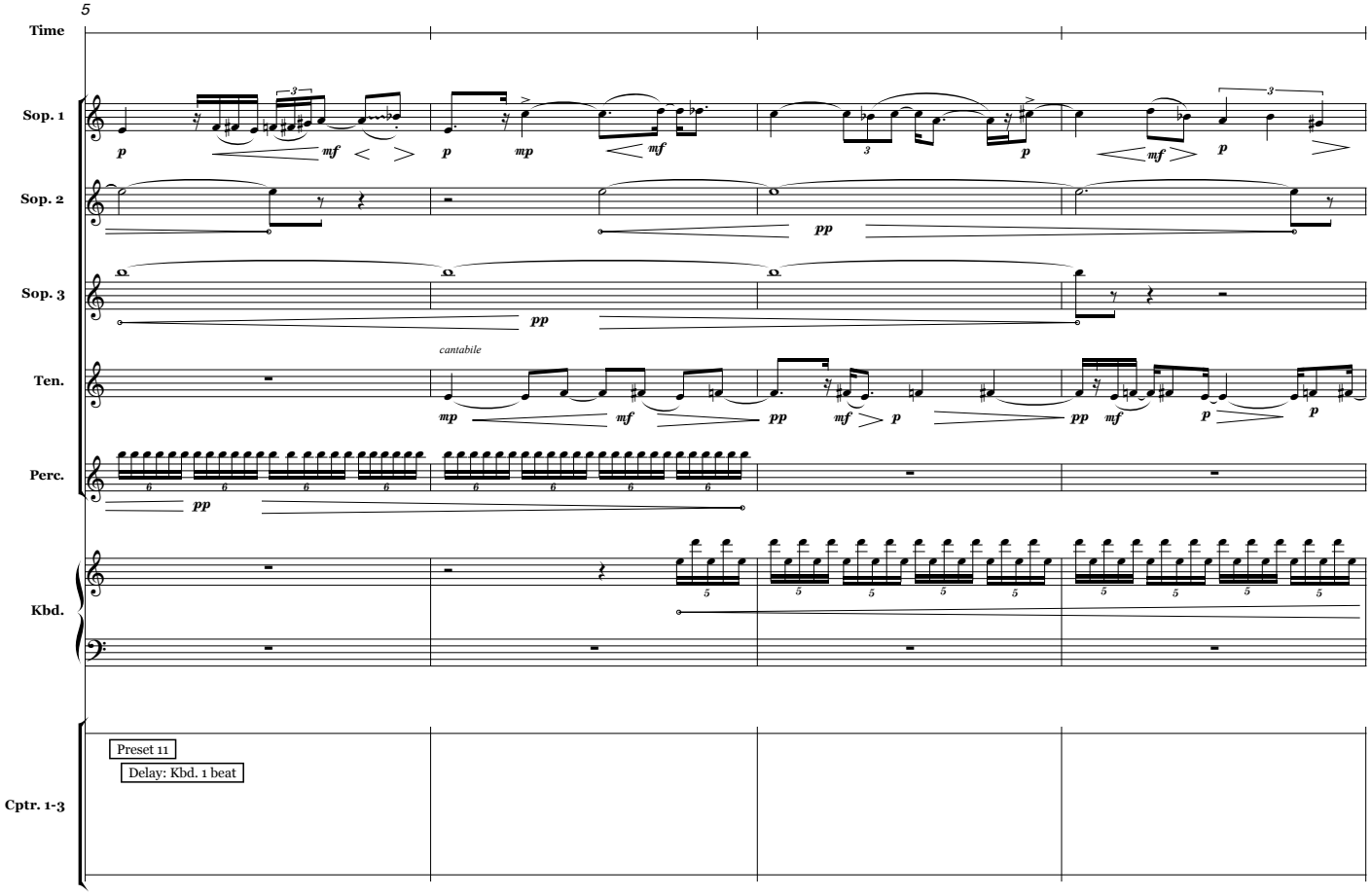
Generation 10

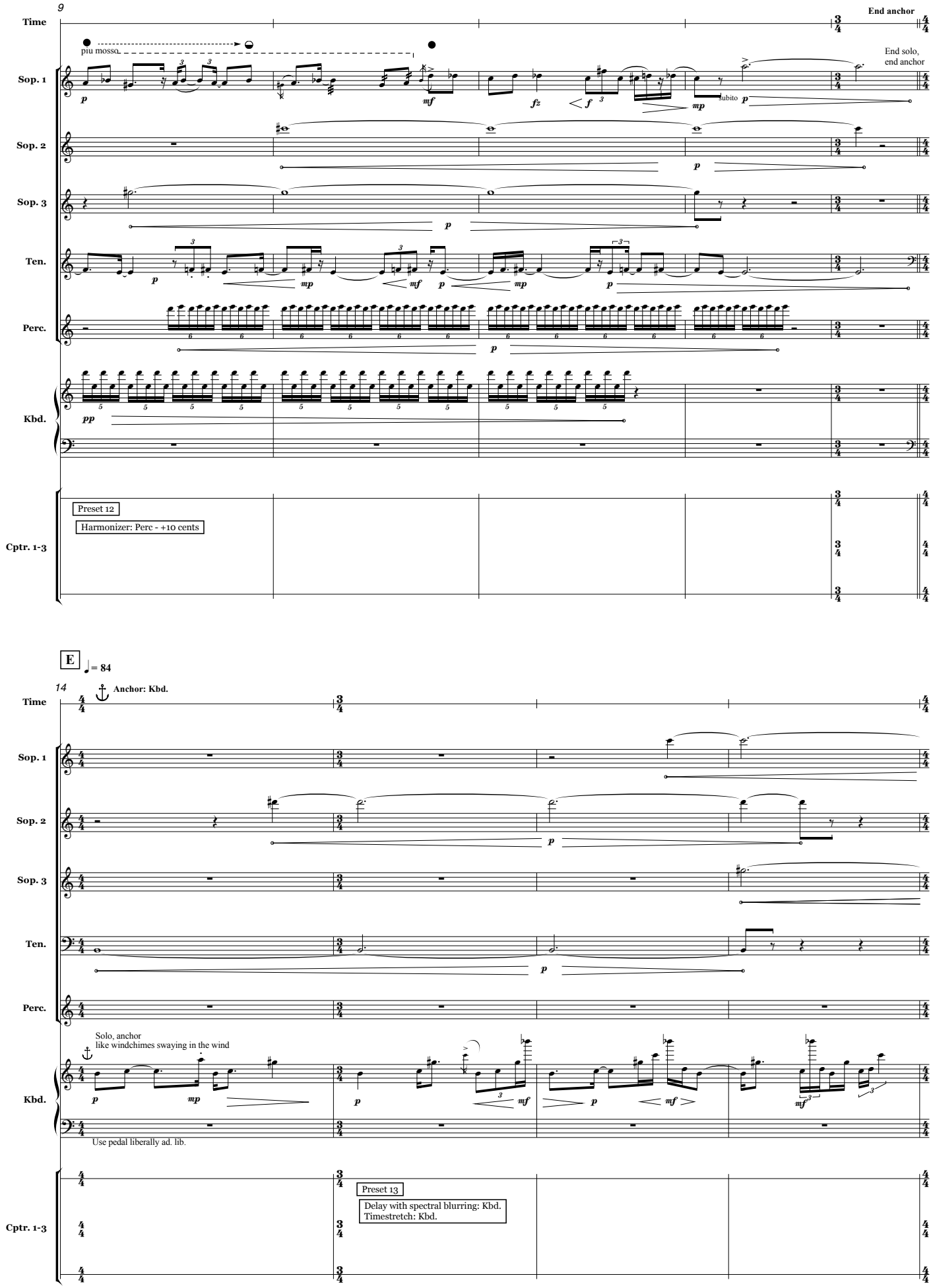


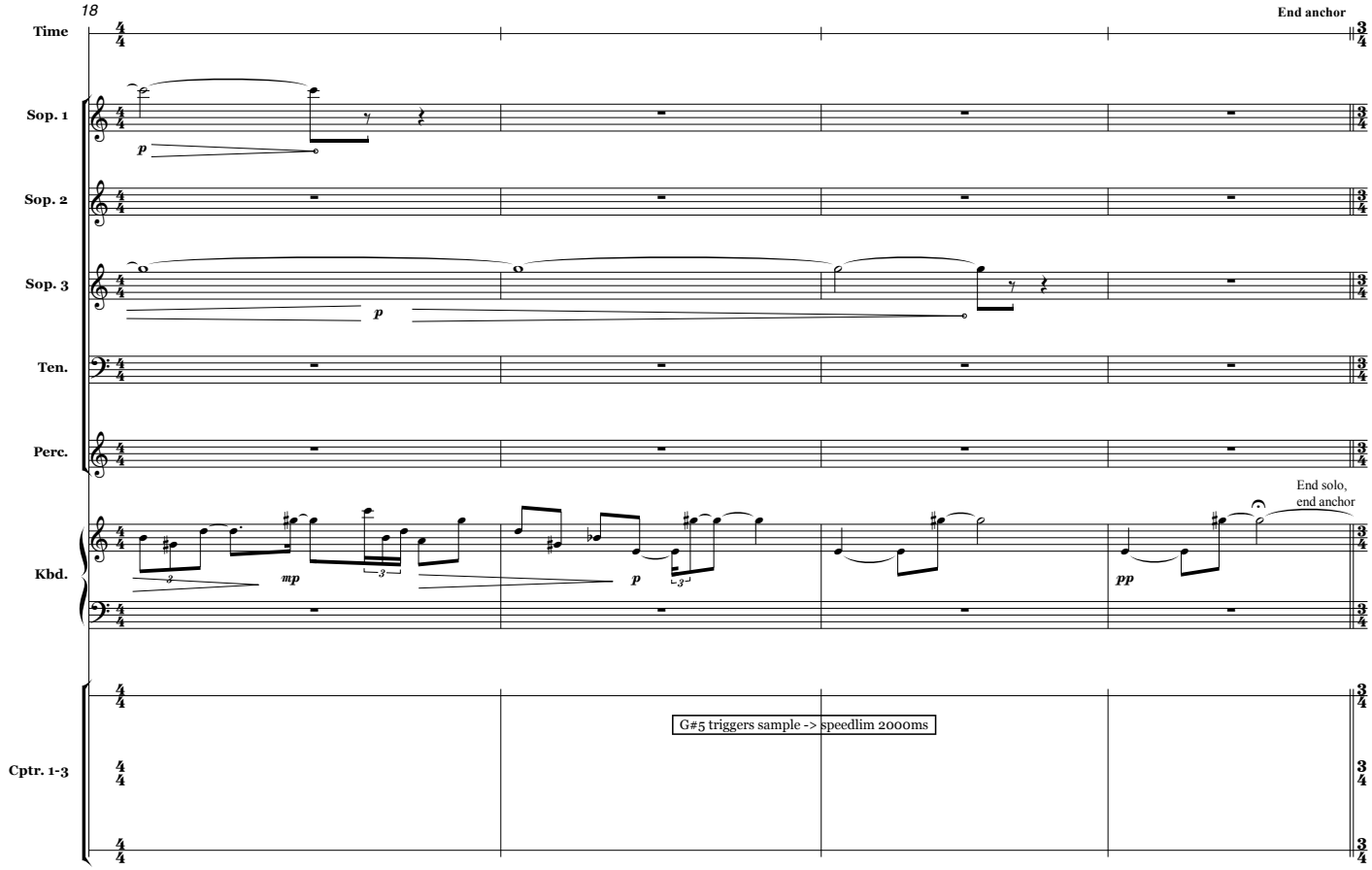


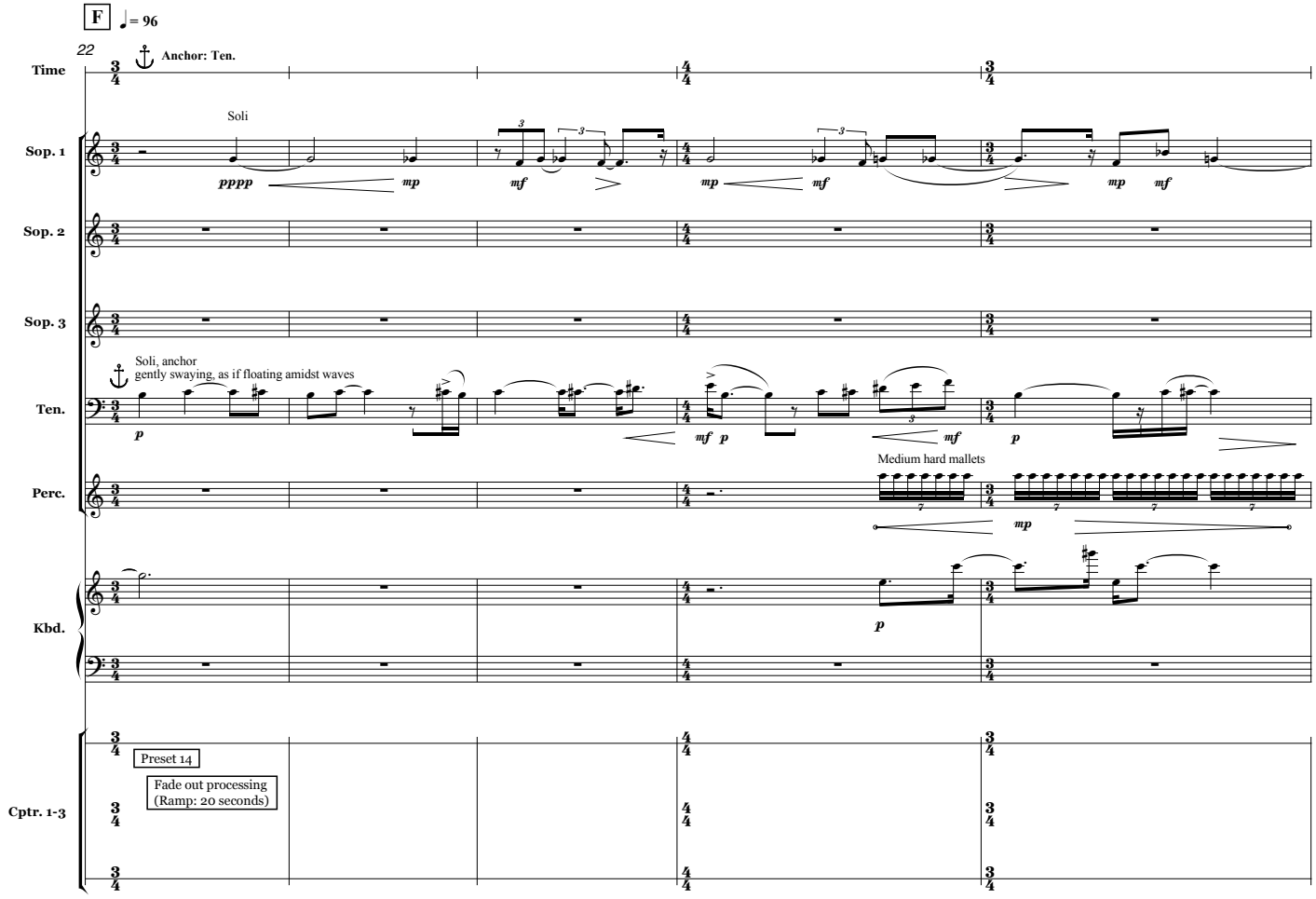
II. In Strange Lines and Distances

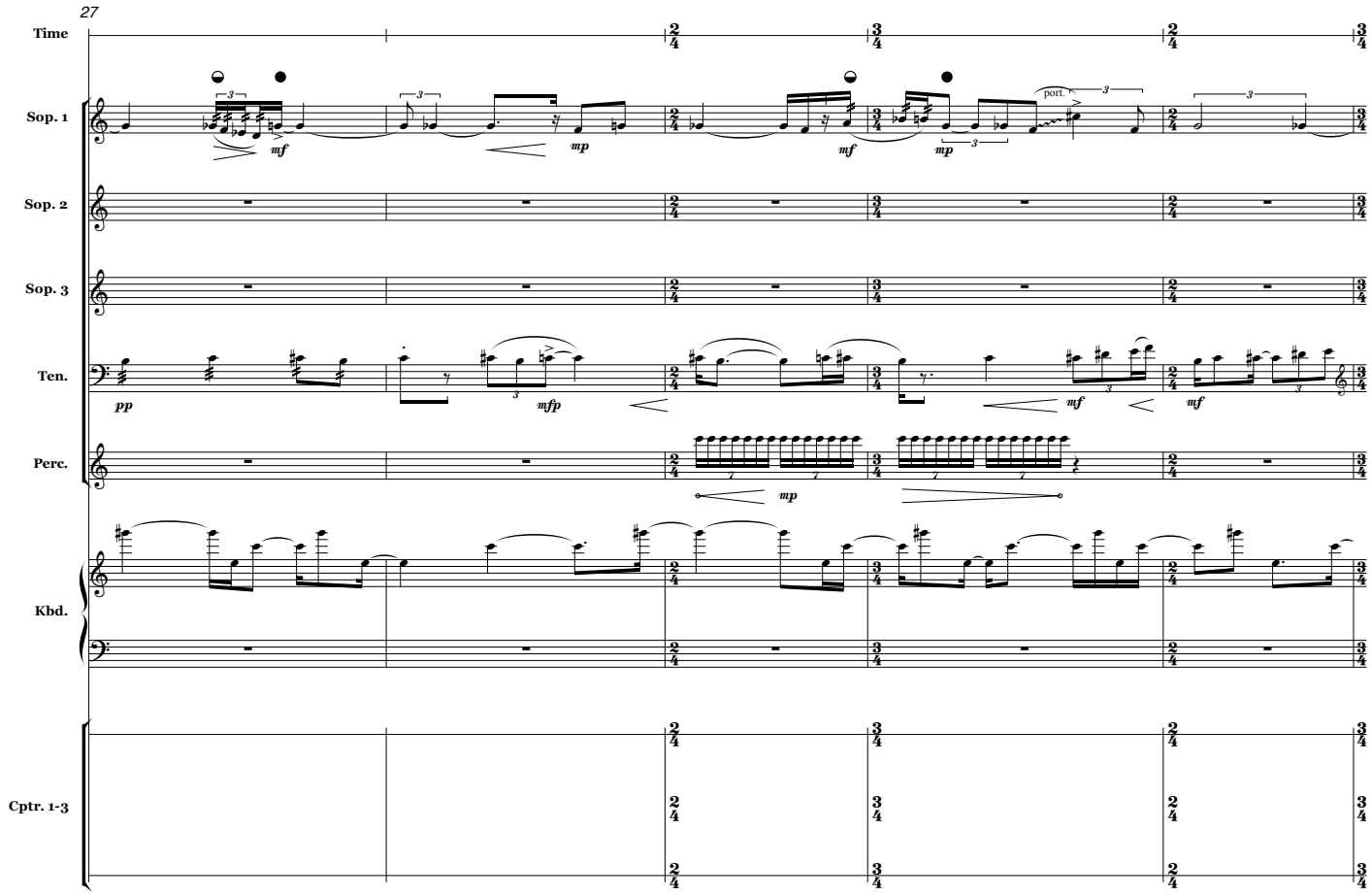


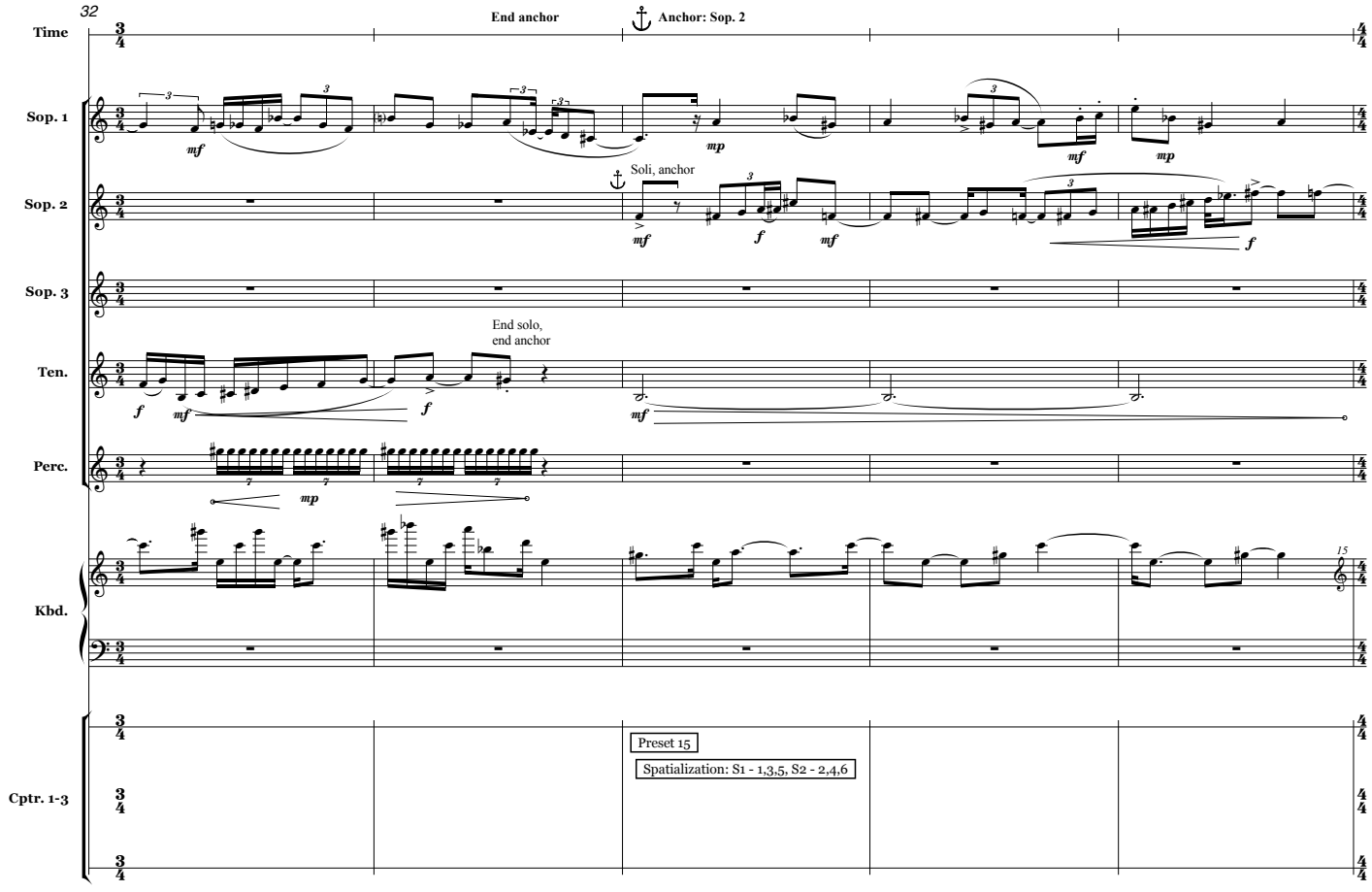


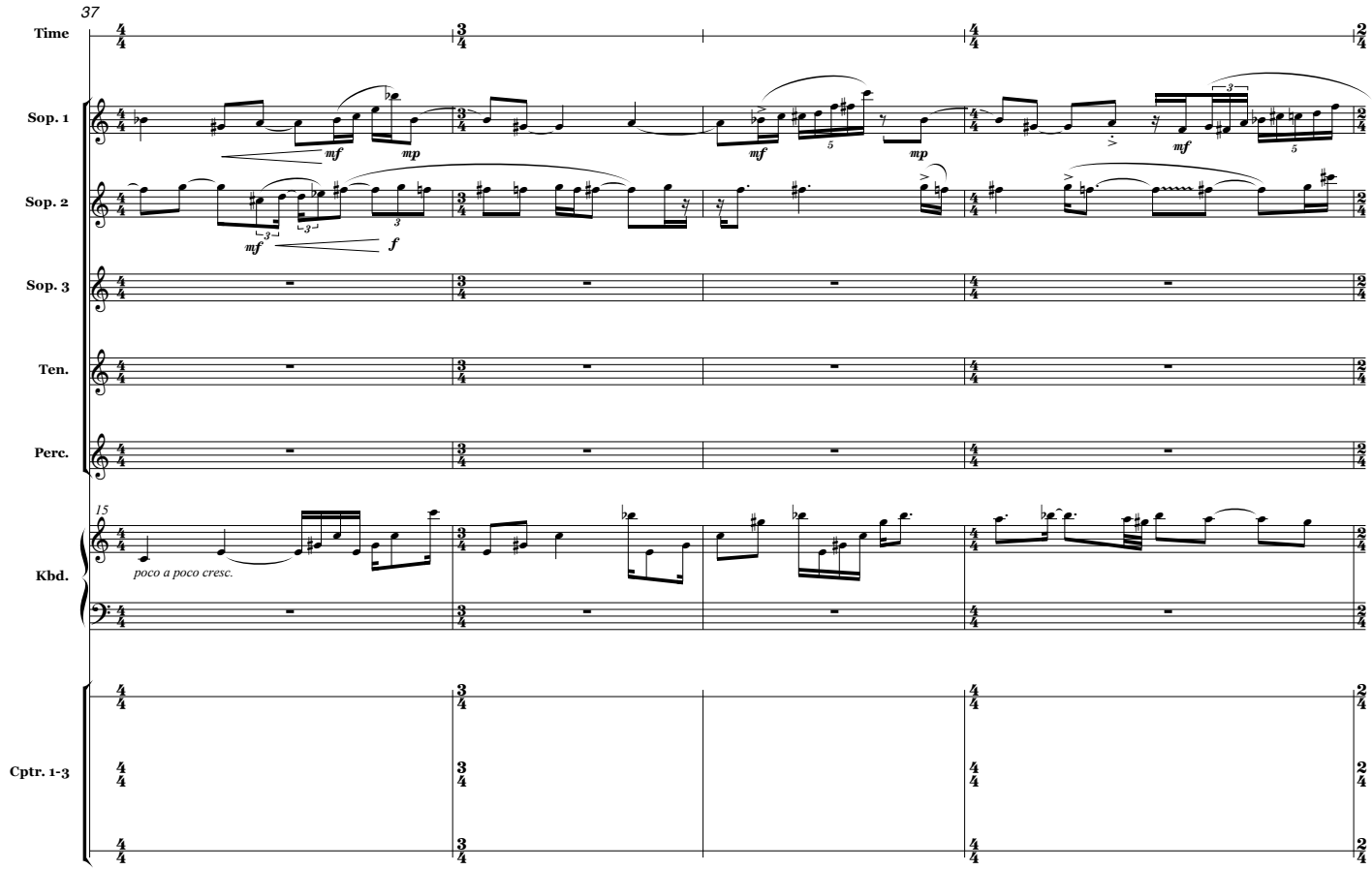

9
Time
End anchor
piu mosso
End solo, end anchor
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
subito
Preset 12
Harmonizer: Perc - +10 cents
Cptr. 1-3
E
= 84
14
Anchor: Kbd.
Solo, anchor like windchimes swaying in the wind
Use pedal liberally ad. lib.
Preset 13
Delay with spectral blurring: Kbd.
Timestretch: Kbd.

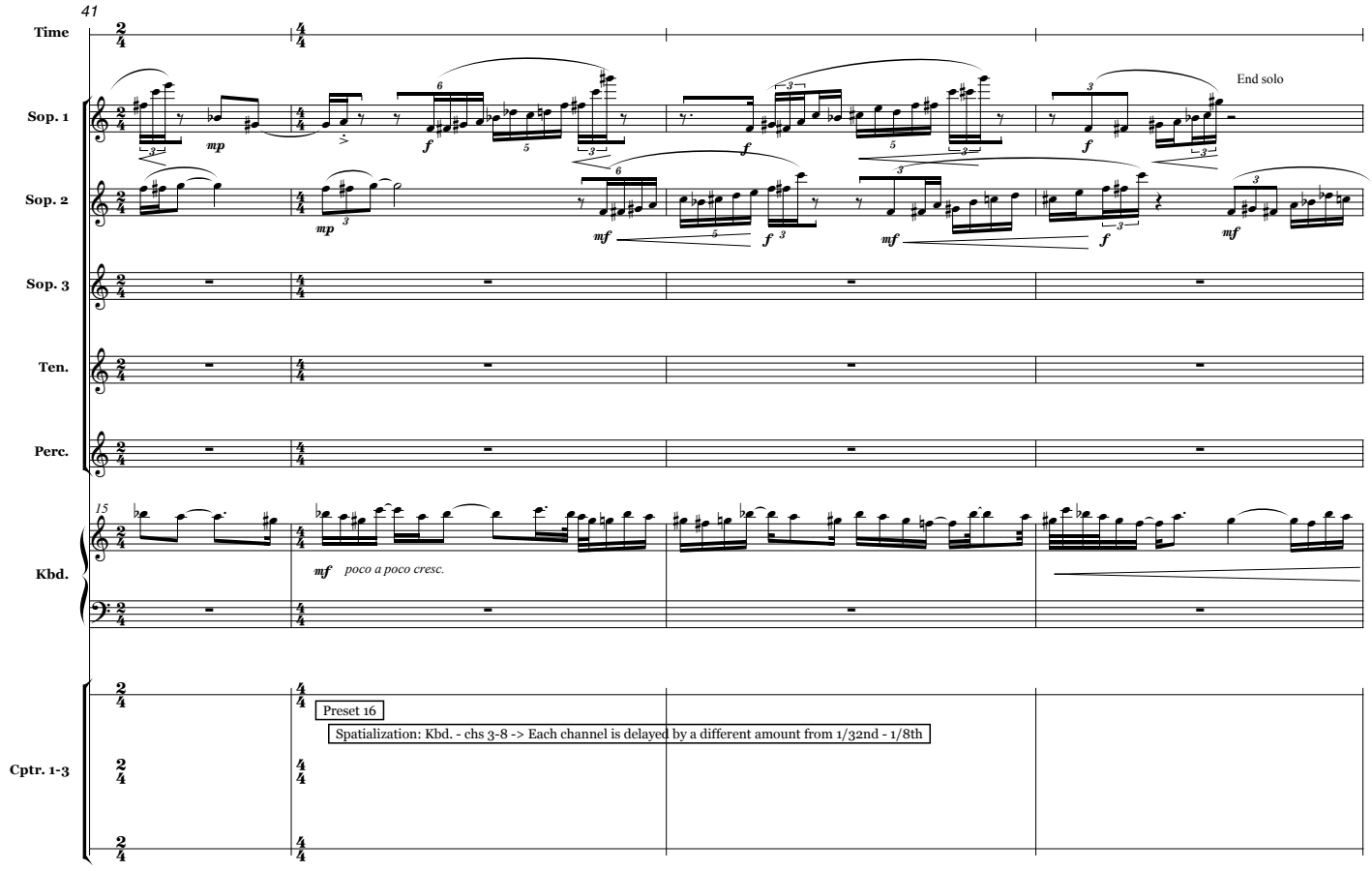

18
Time
End anchor
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
End solo,
end anchor
Cptr. 1-3
G#5 triggers sample -> speedlim 2000ms

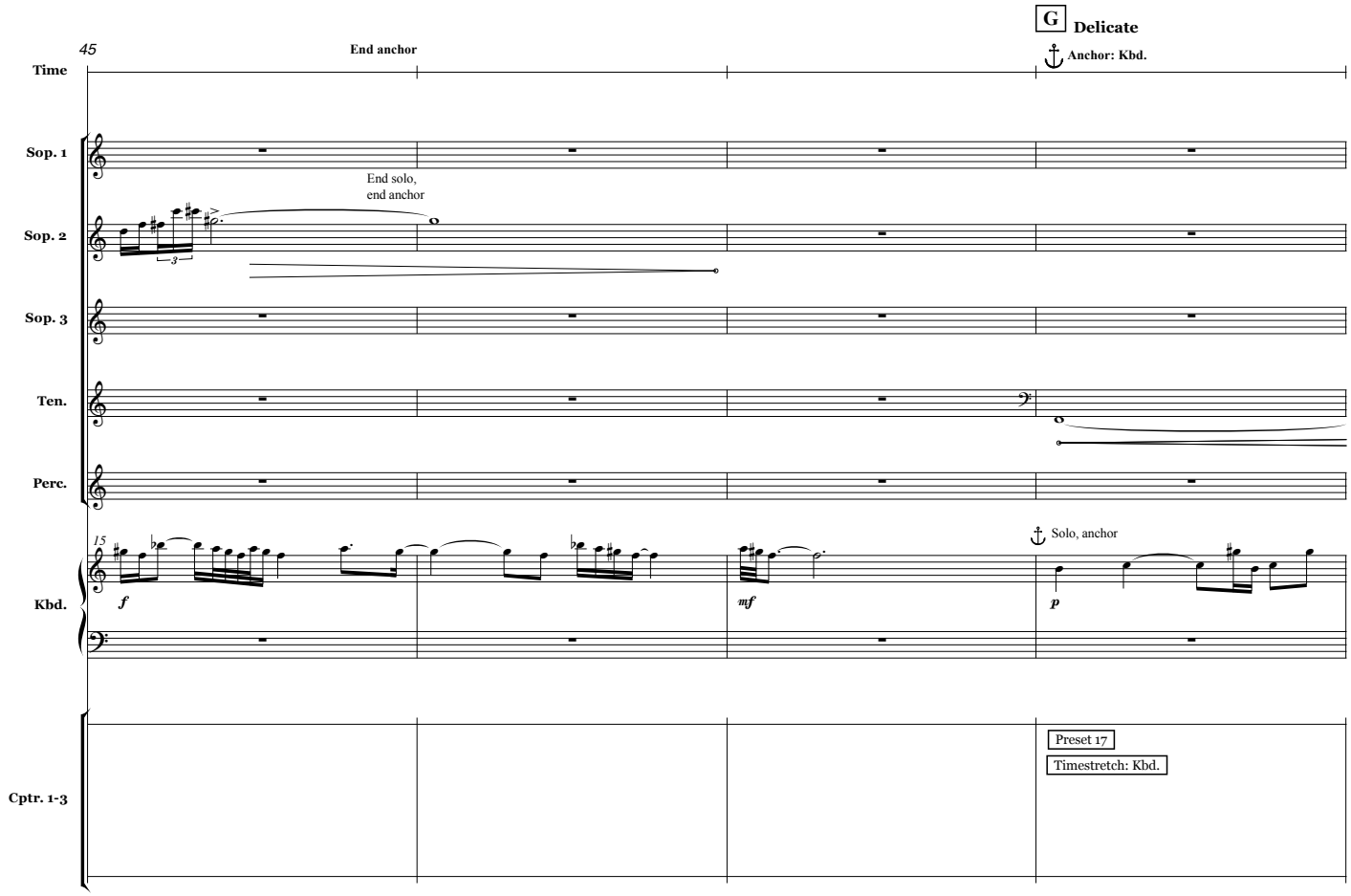

F
♩= 96
22
Time
Anchor: Ten.
Soli
Sop. 1
Sop. 2
Sop. 3
Soli, anchor
gently swaying, as if floating amidst waves
Ten.
Medium hard mallets
Perc.
Kbd.
Preset 14
Fade out processing
(Ramp: 20 seconds)
Cptr. 1-3

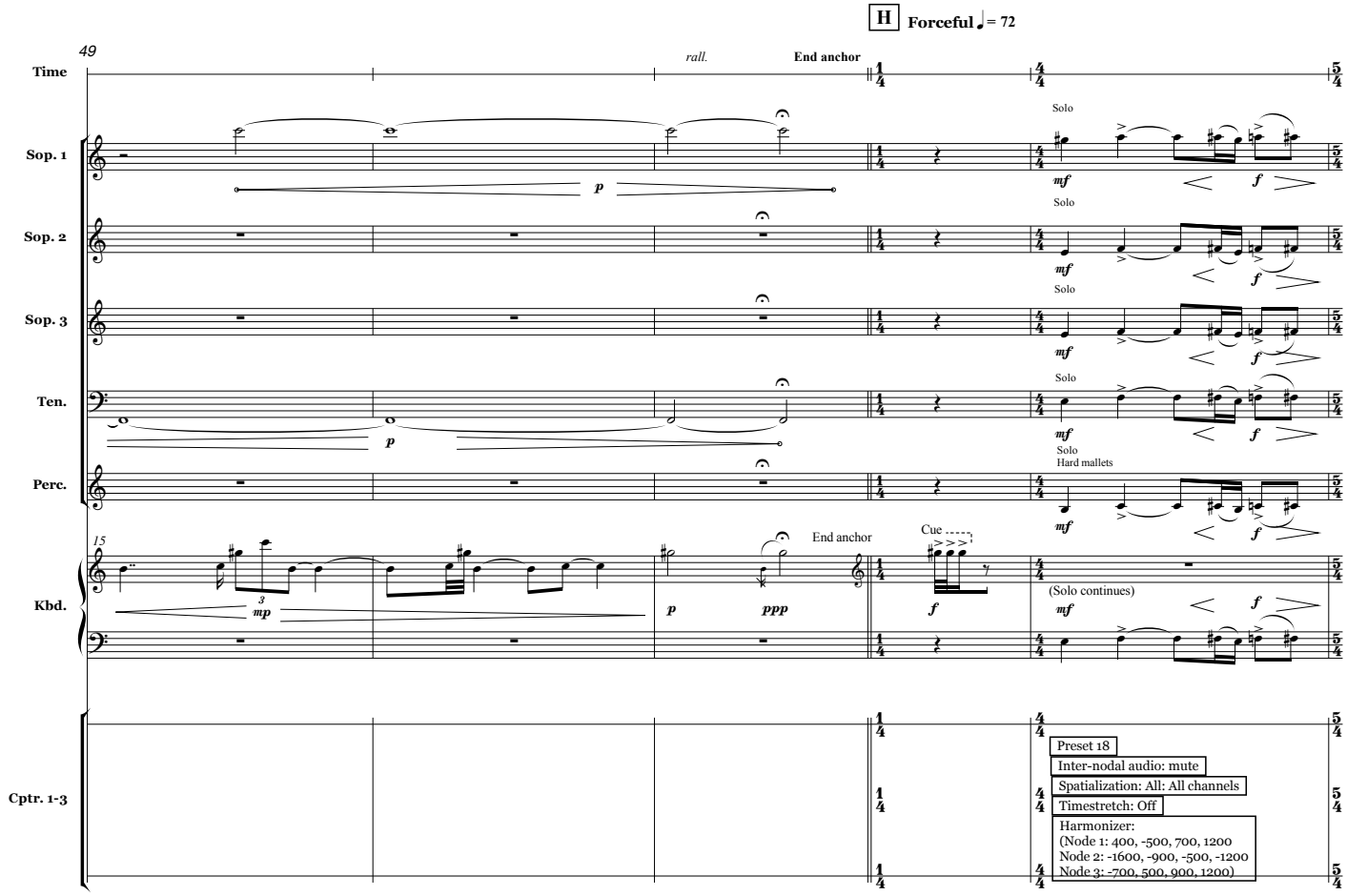

27
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
port.

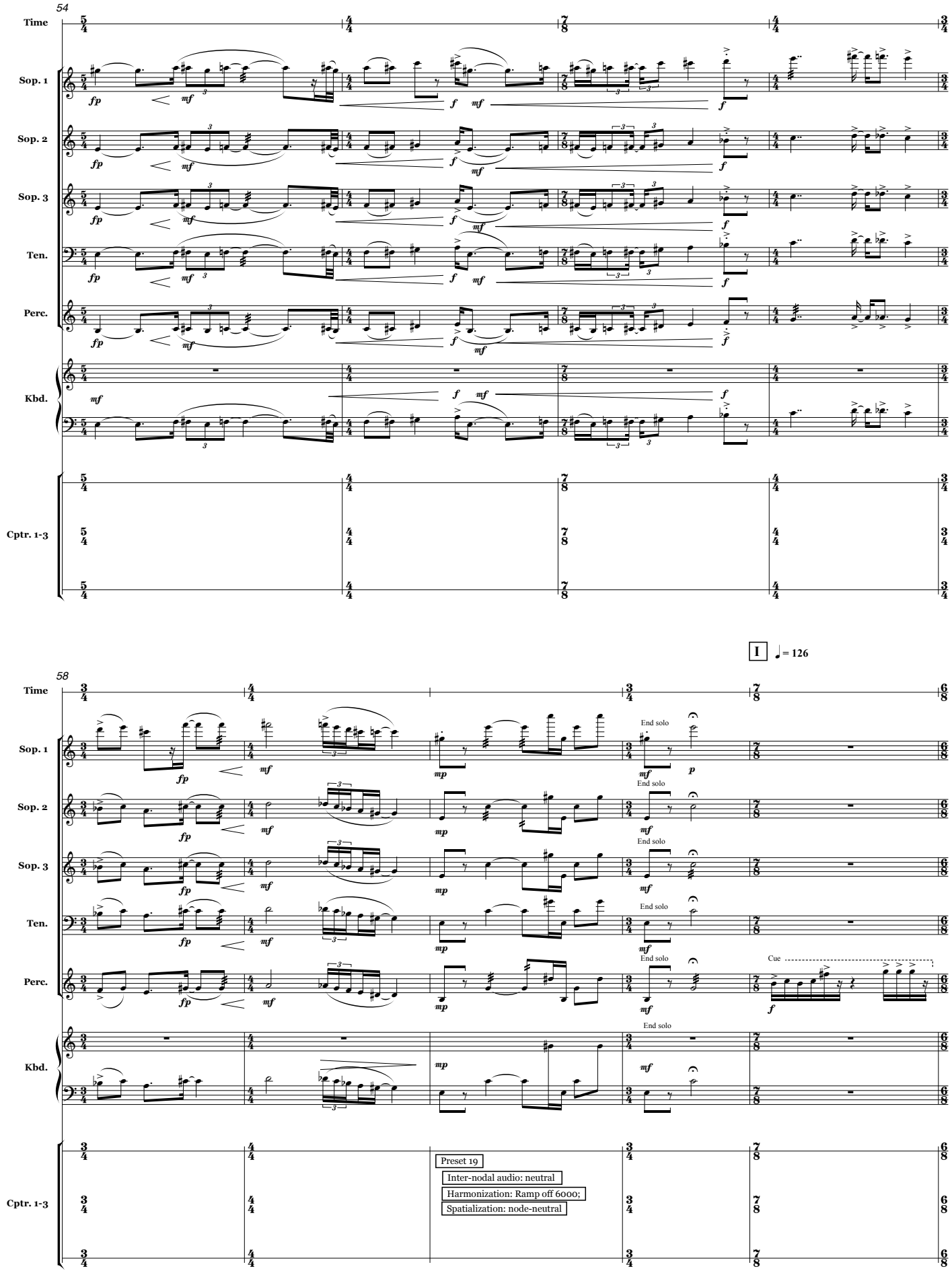

32
Time
End anchor
Anchor: Sop. 2
Sop. 1
Sop. 2
Soli, anchor
Sop. 3
End solo,
end anchor
Ten.
Perc.
Kbd.
Cptr. 1-3
Preset 15
Spatialization: S1 - 1,3,5, S2 - 2,4,6

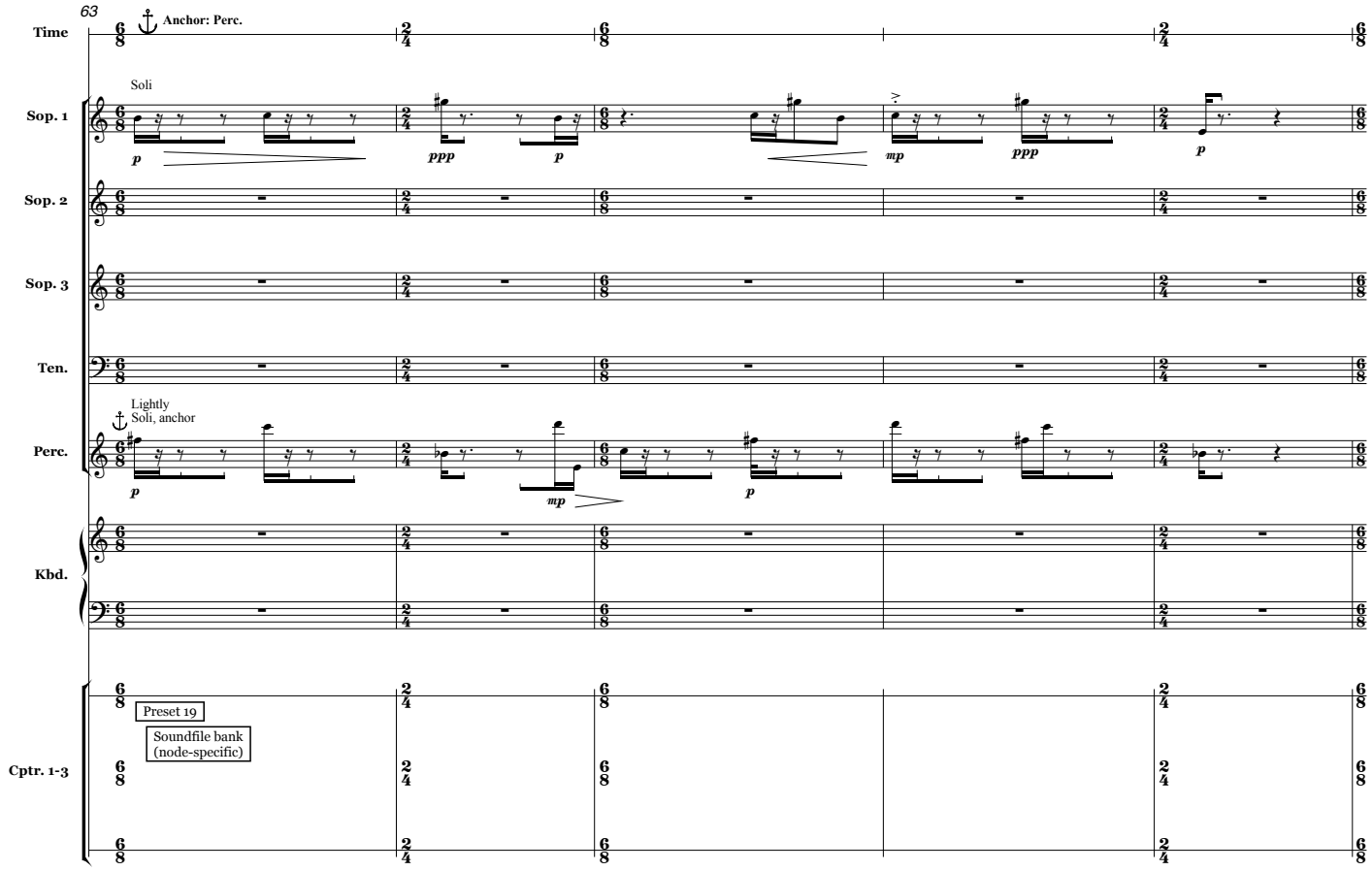

37
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
15
Kbd.
poco a poco cresc.
Cptr. 1-3

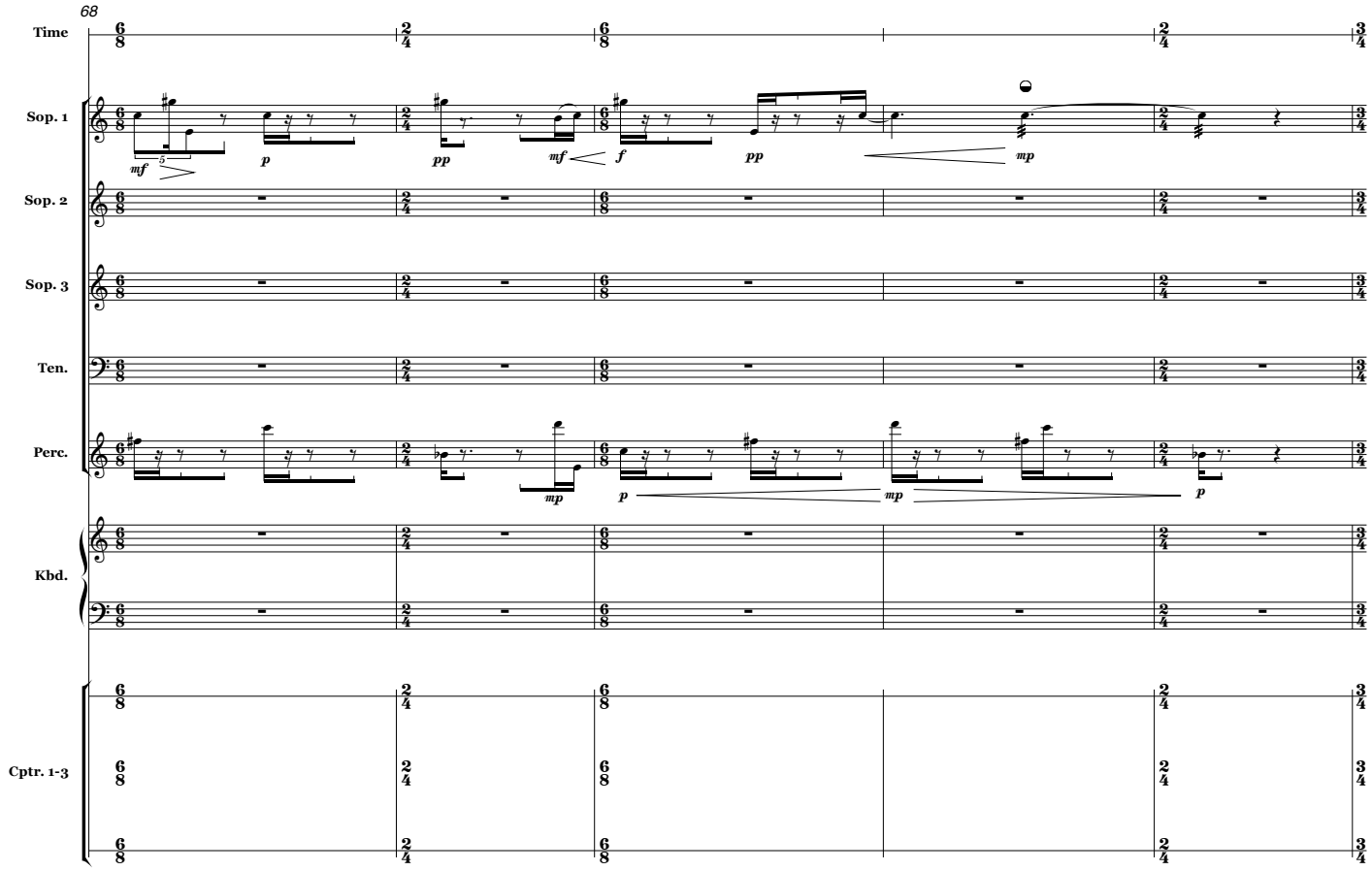

41
Time
Sop. 1
End solo
Sop. 2
Sop. 3
Ten.
Perc.
15
Kbd.
poco a poco cresc.
Cptr. 1-3
Preset 16
Spatialization: Kbd. - chs 3-8 -> Each channel is delayed by a different amount from 1/32nd - 1/8th

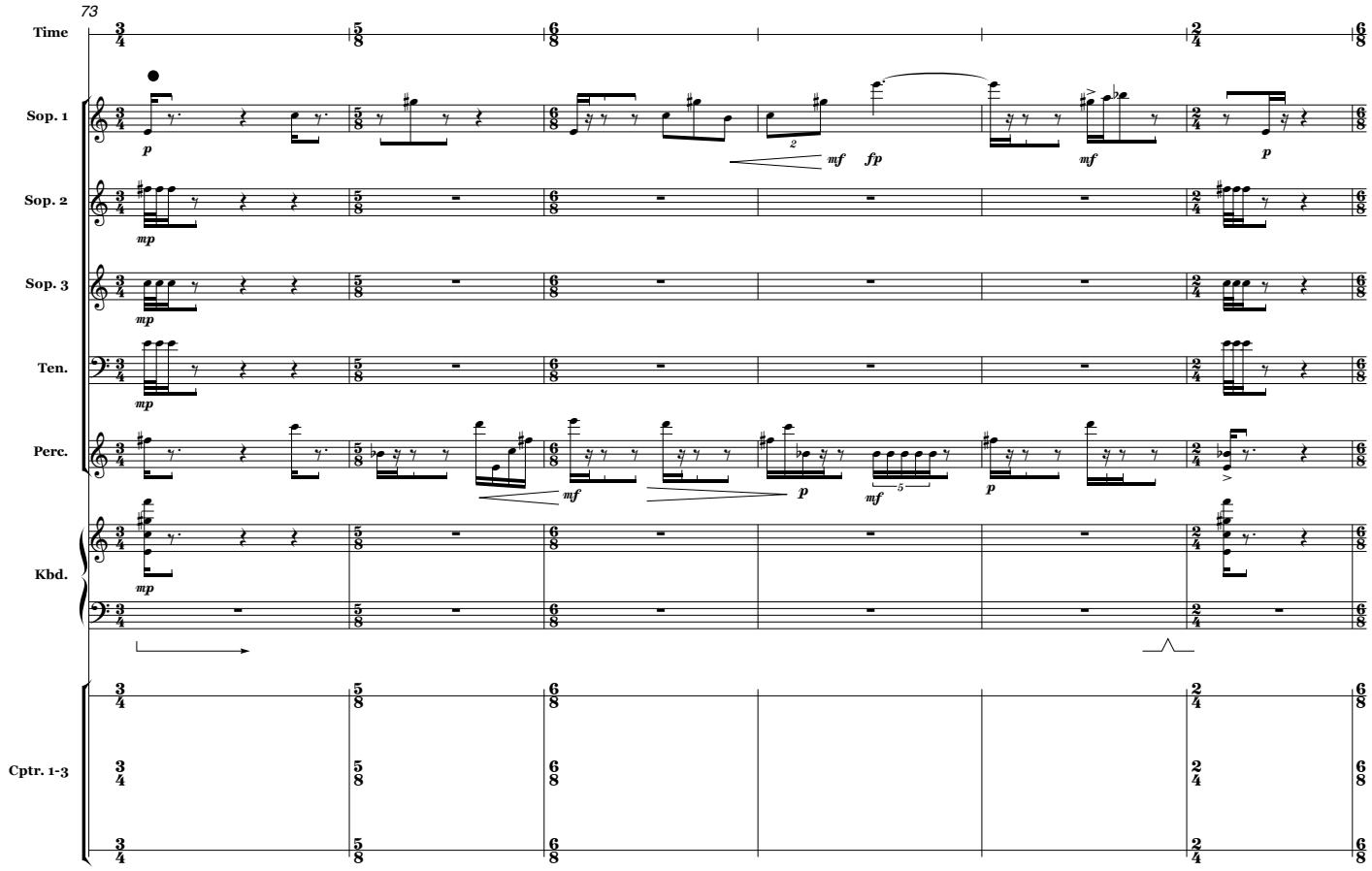

G Delicate
45
End anchor
Anchor: Kbd.
Time
Sop. 1
Sop. 2
End solo,
end anchor
Sop. 3
Ten.
Perc.
15
Kbd.
f
mf
Solo, anchor
p
Cptr. 1-3
Preset 17
Timestretch: Kbd.

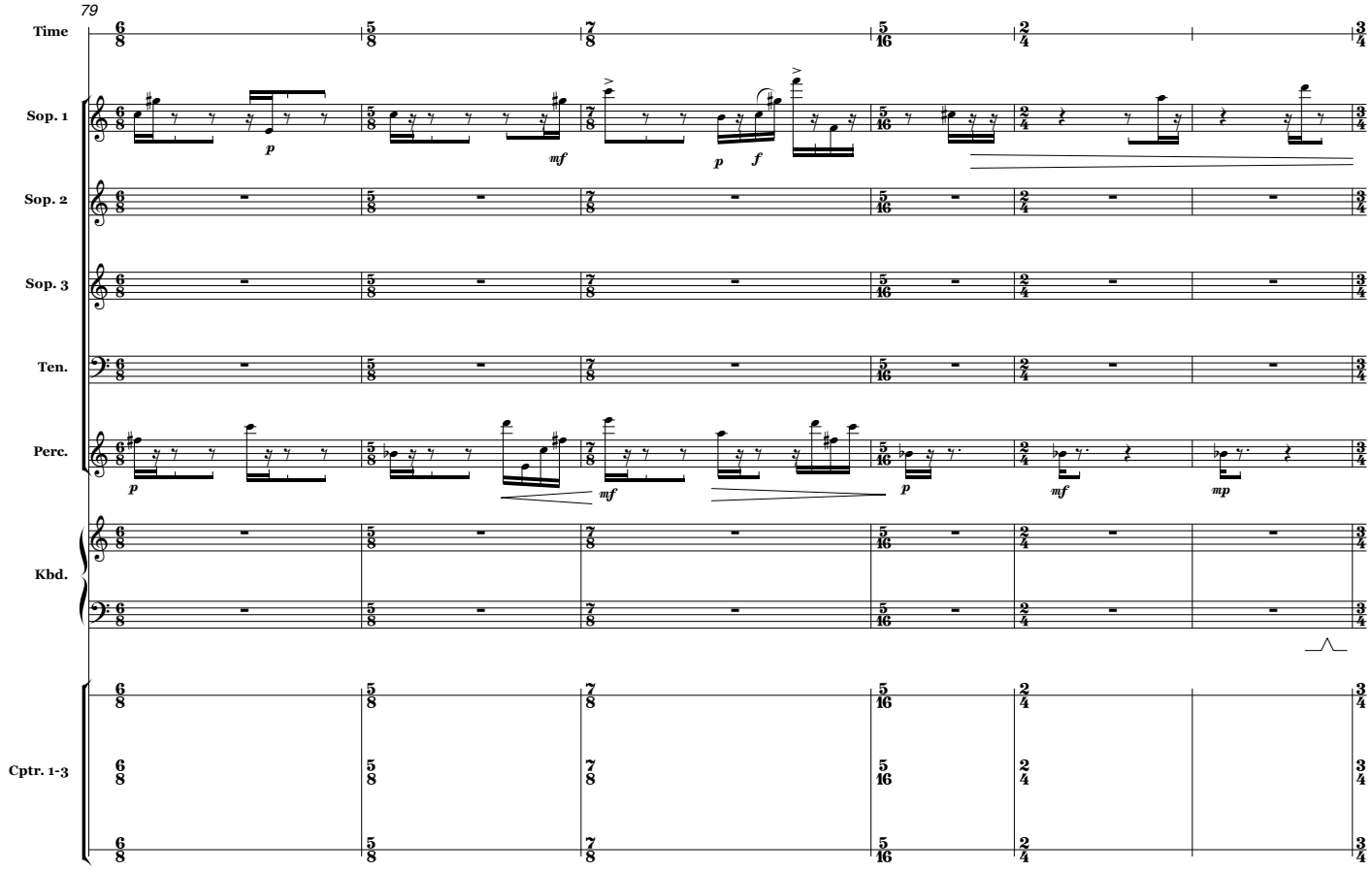

H Forceful ♩= 72
49
rall.
End anchor
Time
Sop. 1
Solo
Sop. 2
Sop. 3
Ten.
Perc.
Solo
Hard mallets
15
Kbd.
mp
p
ppp
End anchor
Cue
(Solo continues)
Cptr. 1-3
Preset 18
Inter-nodal audio: mute
Spatialization: All: All channels
Timestretch: Off
Harmonizer:
(Node 1: 400, -500, 700, 1200
Node 2: -1600, -900, -500, -1200
Node 3: -700, 500, 900, 1200)

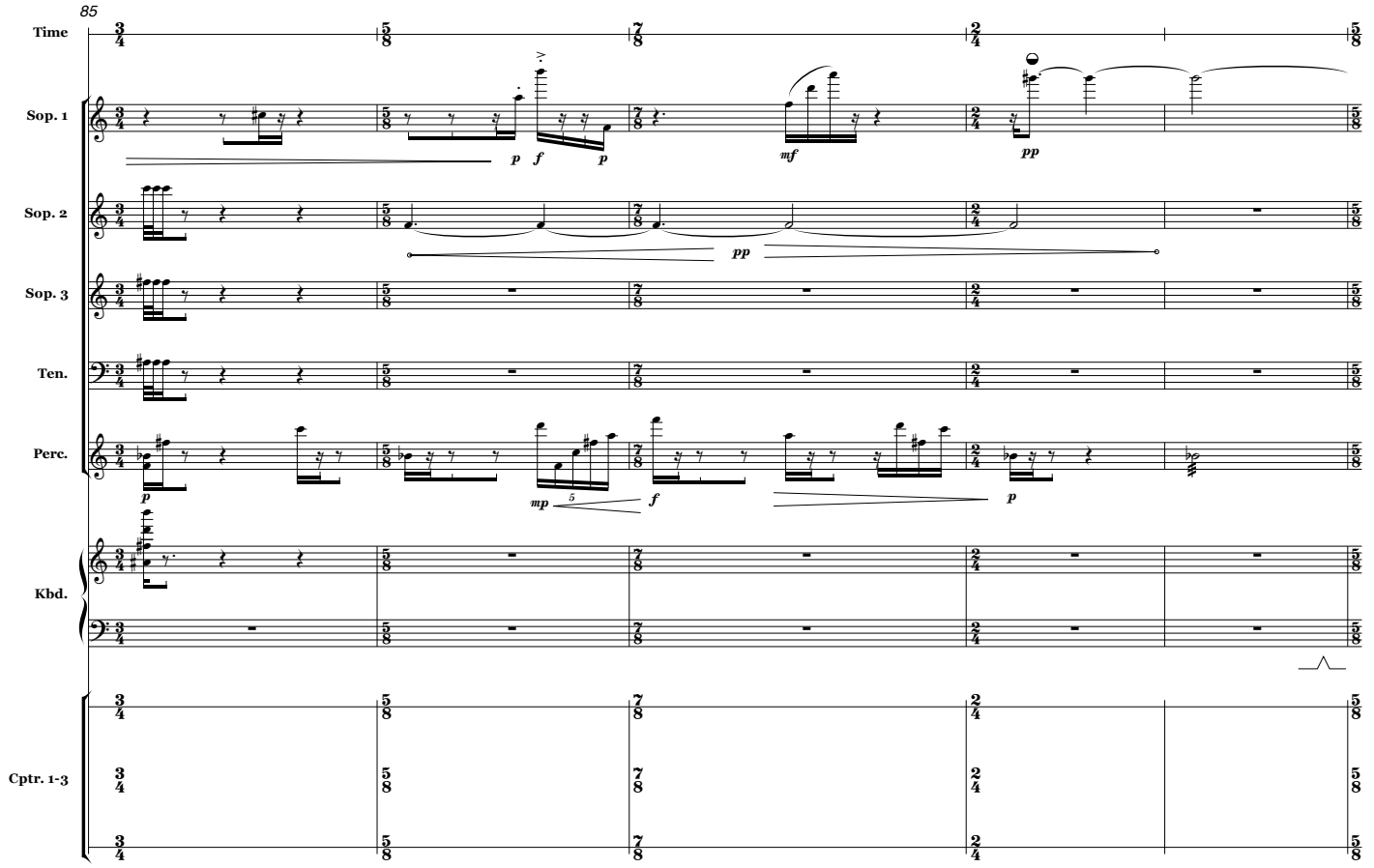

54
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
I
♩ = 126
58
End solo
Cue
Preset 19
Inter-nodal audio: neutral
Harmonization: Ramp off 6000;
Spatialization: node-neutral

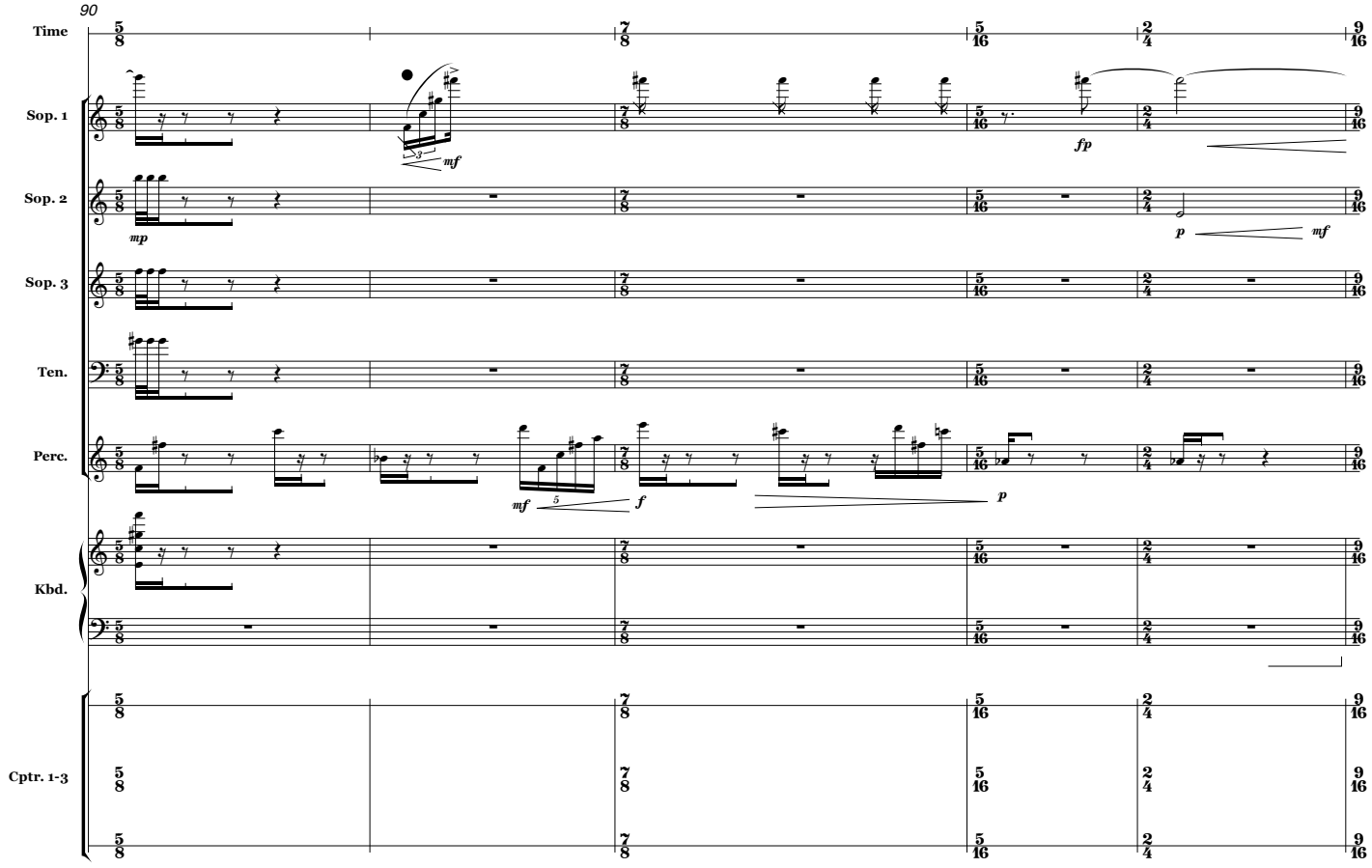

63
Time
Anchor: Perc.
Soli
Sop. 1
Sop. 2
Sop. 3
Ten.
Lightly
Soli, anchor
Perc.
Kbd.
Preset 19
Soundfile bank
(node-specific)
Cptr. 1-3

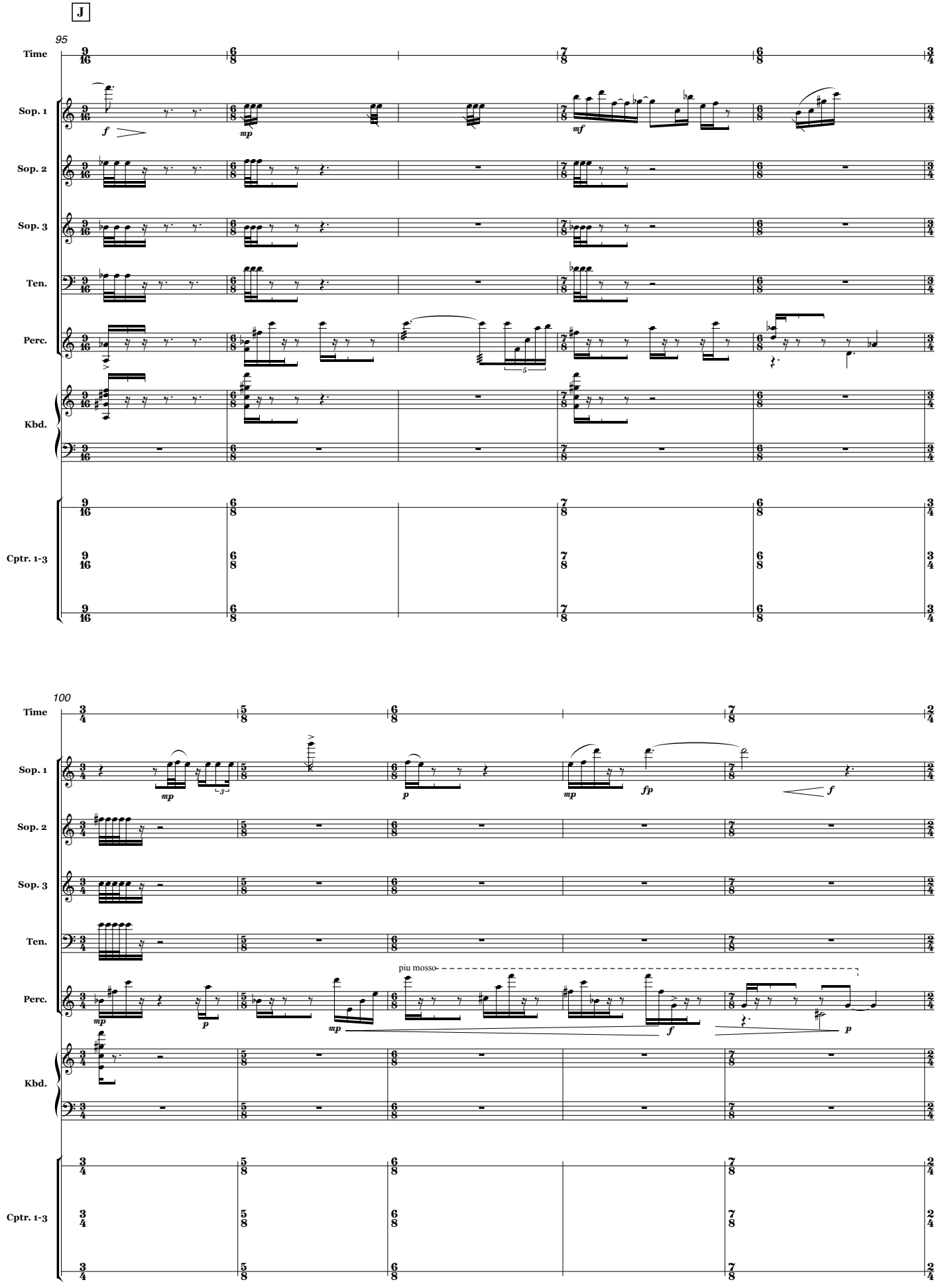

68
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

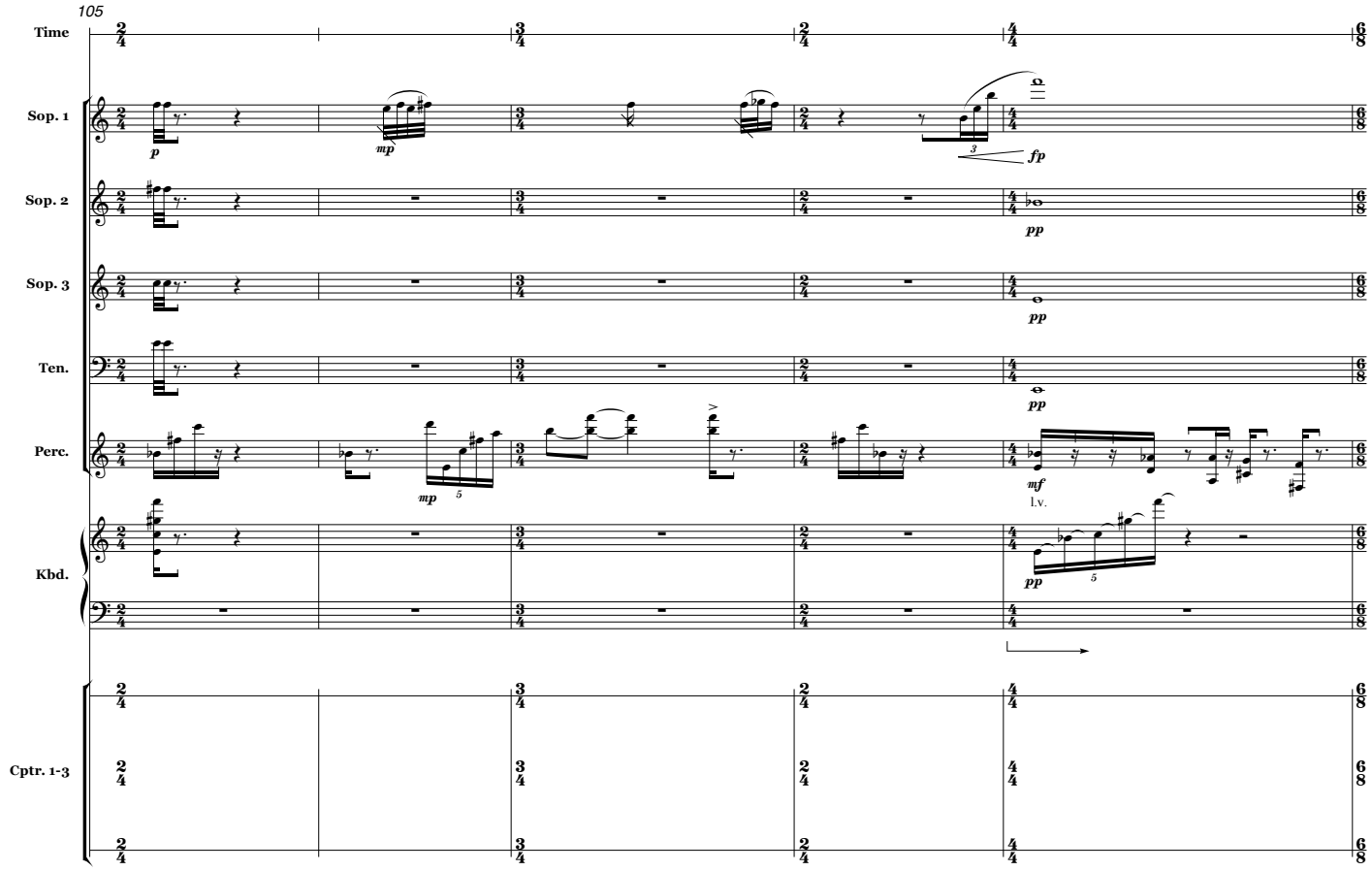

73
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

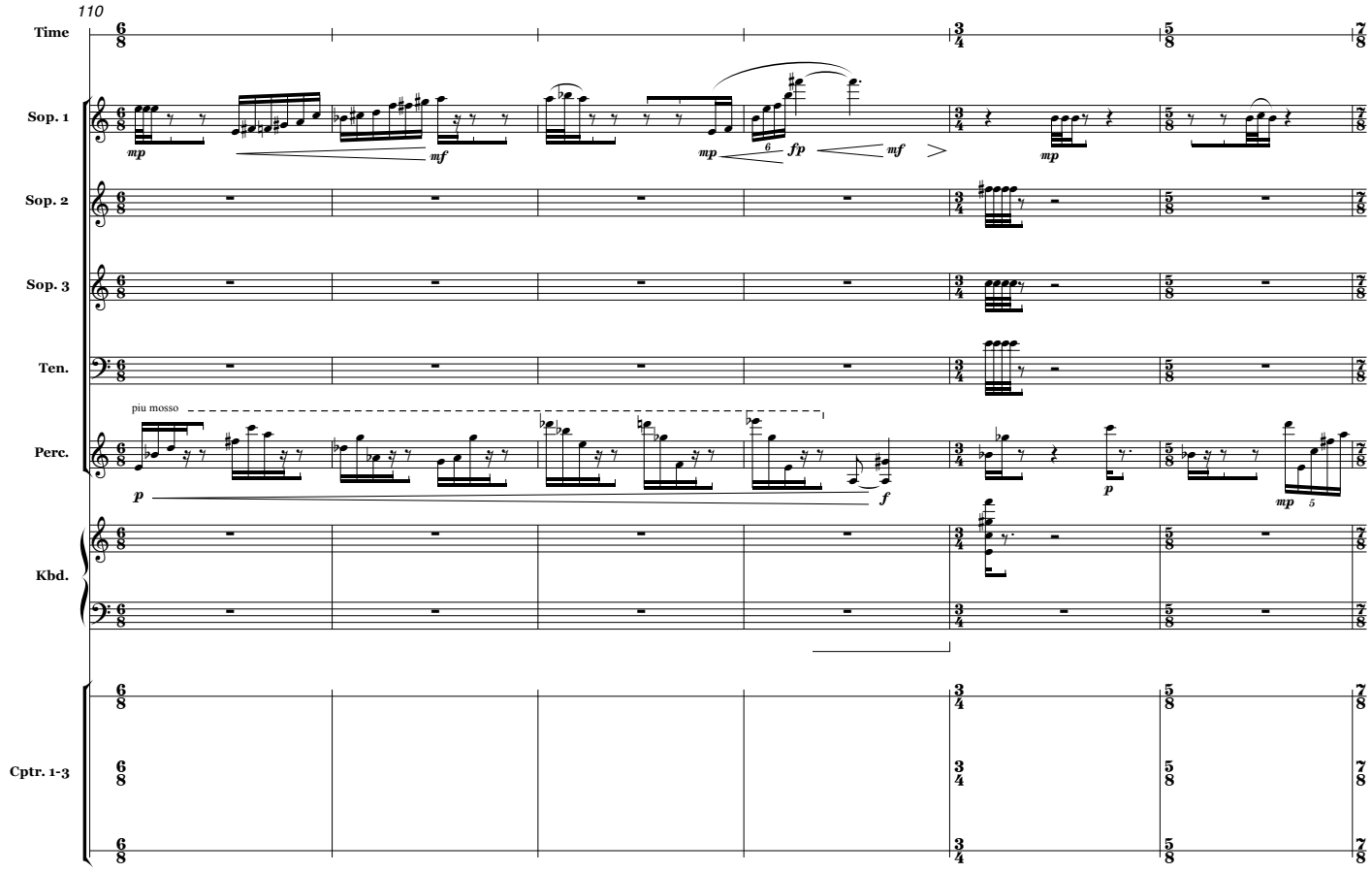

79
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

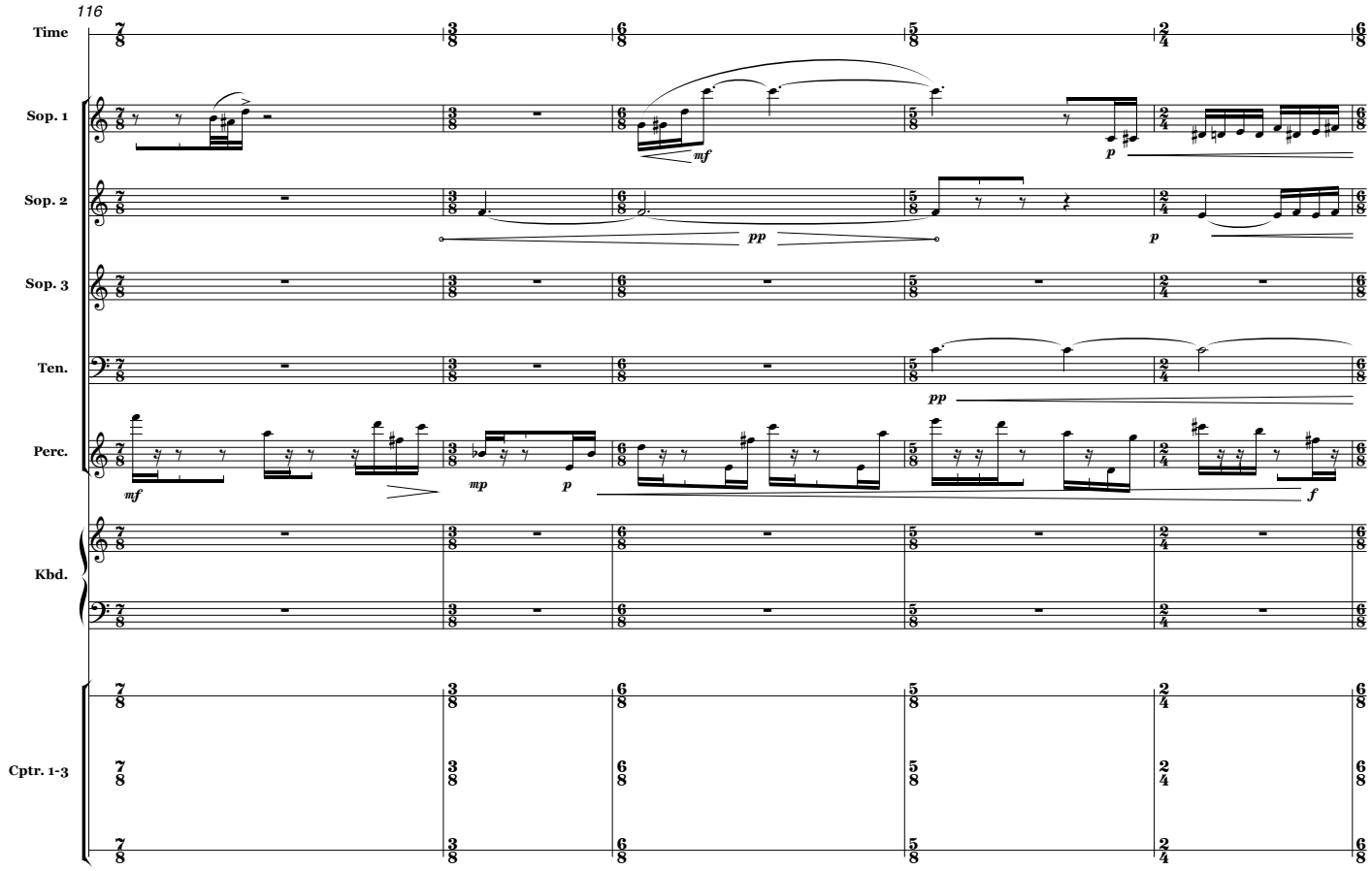

85
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

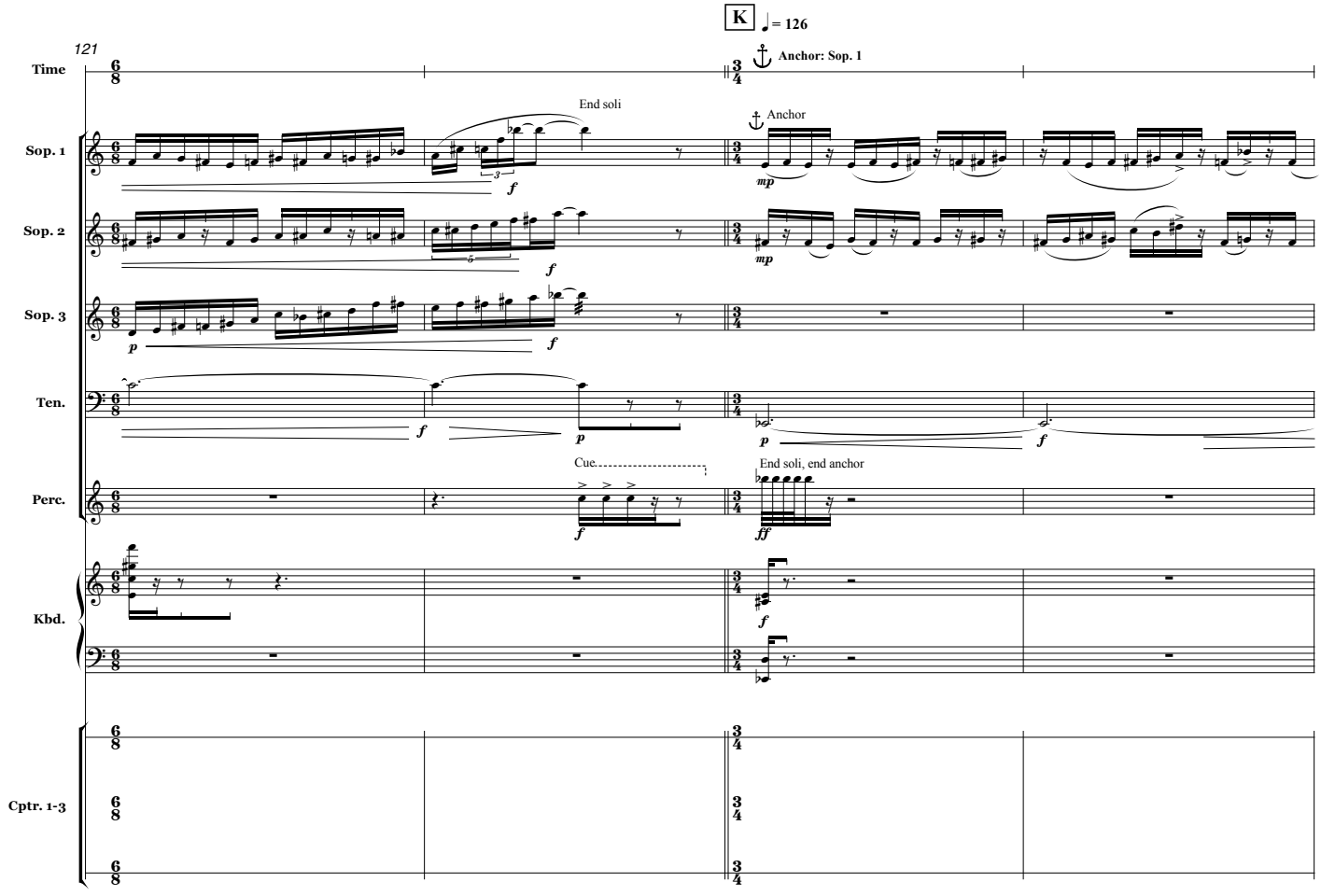

90
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

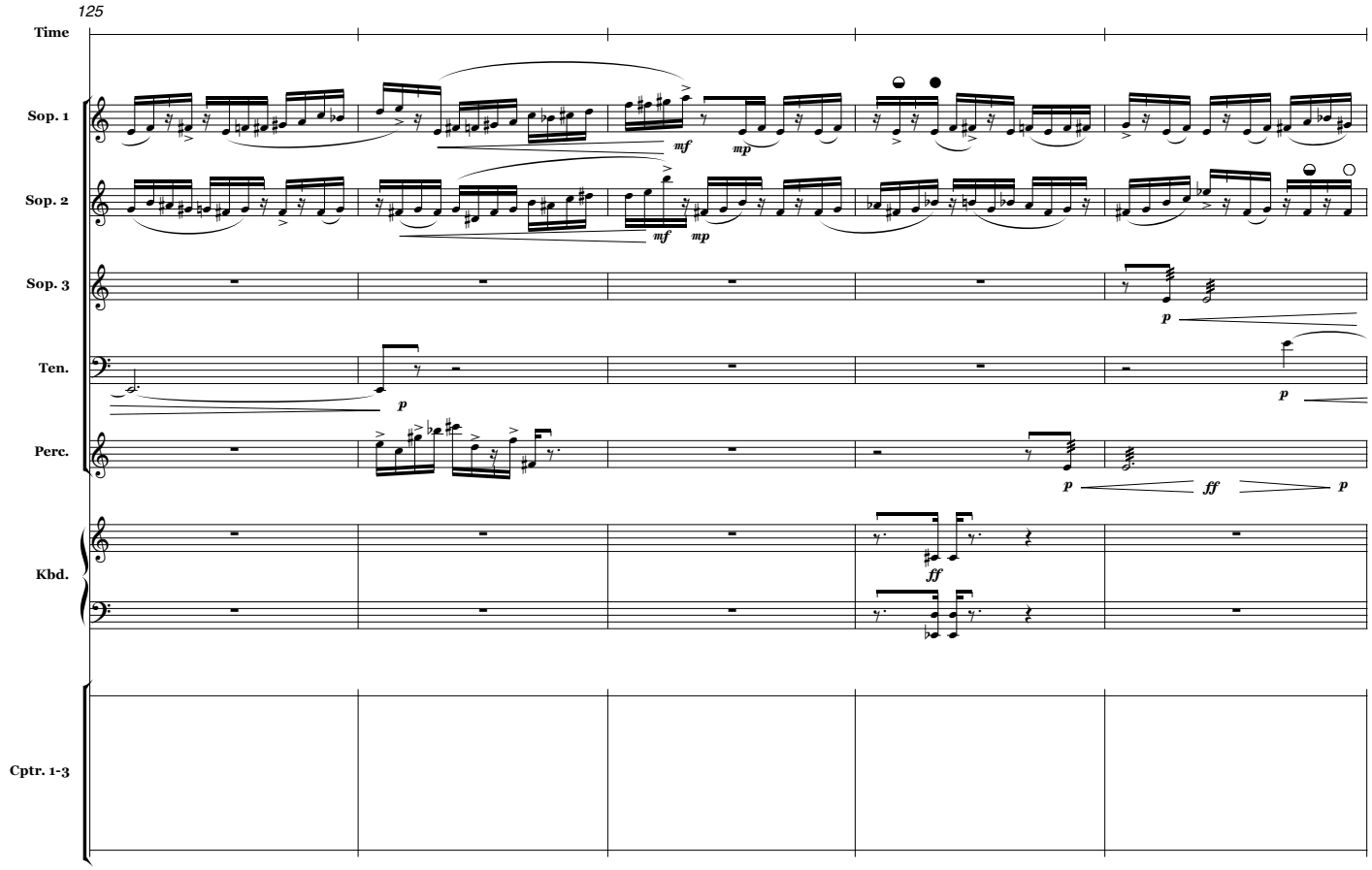

J
95
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
f
mp
mf
100
mp
p
fp
f
piu mosso

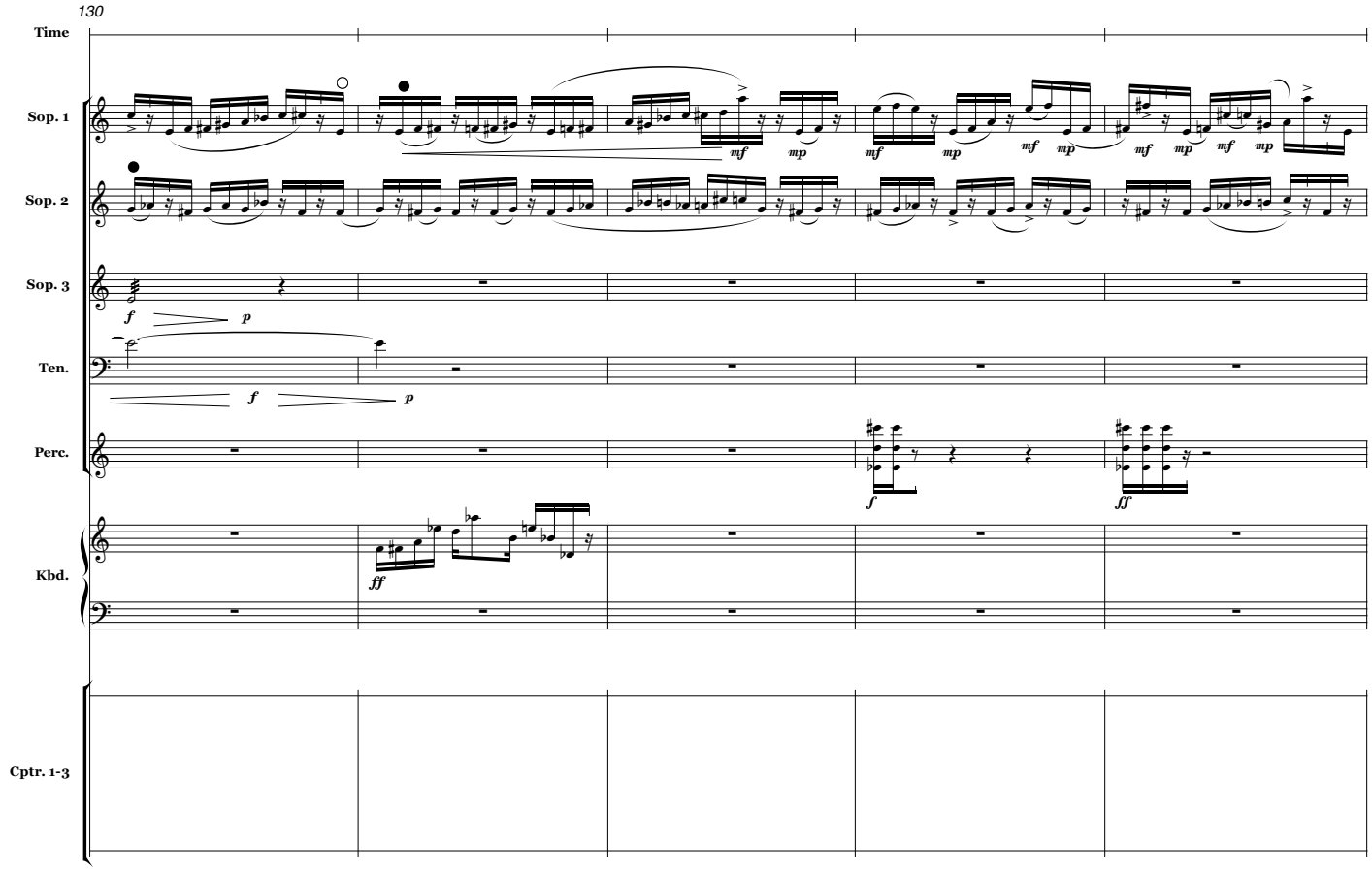

105
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
l.v.

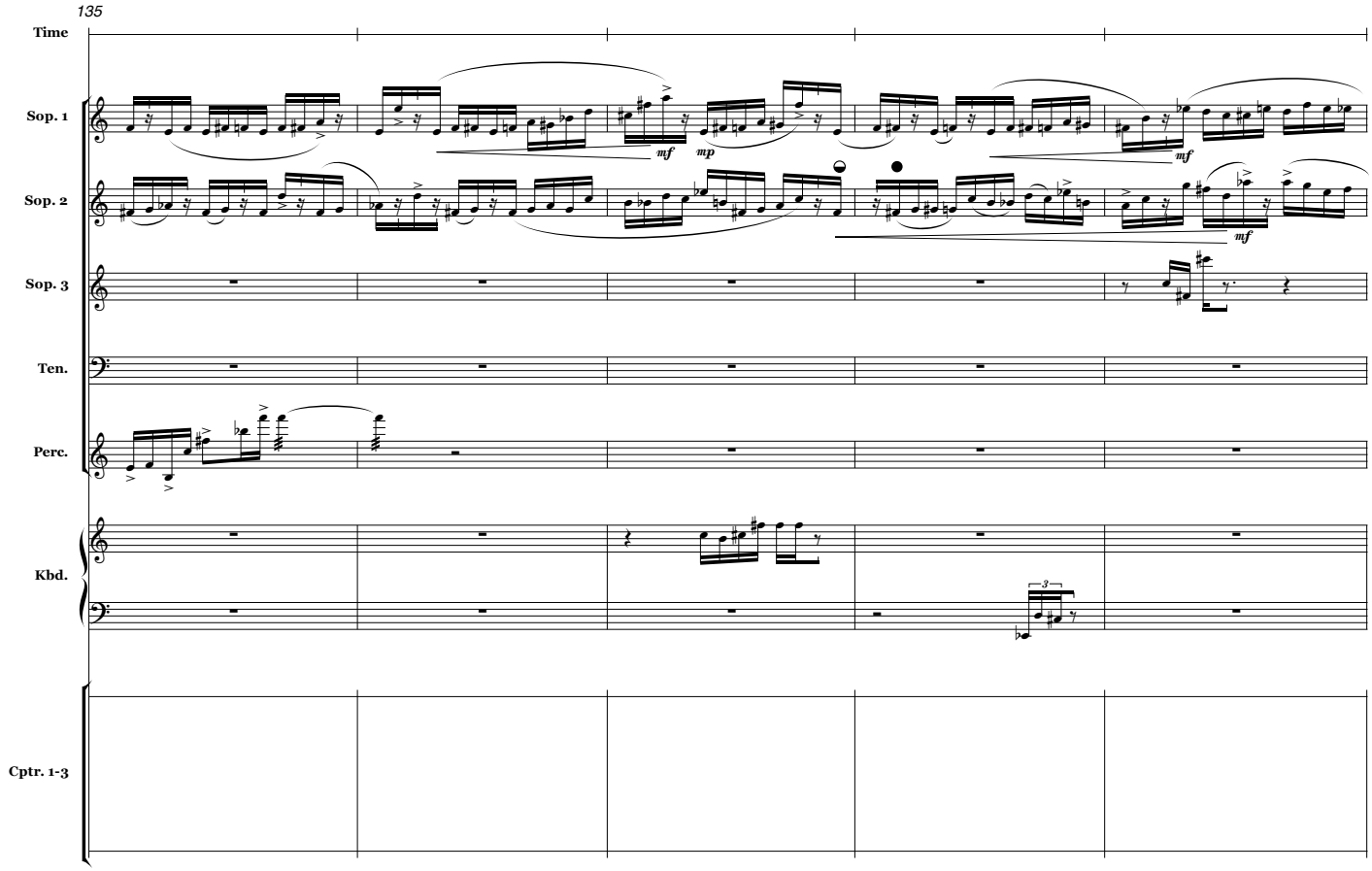

110
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
piu mosso

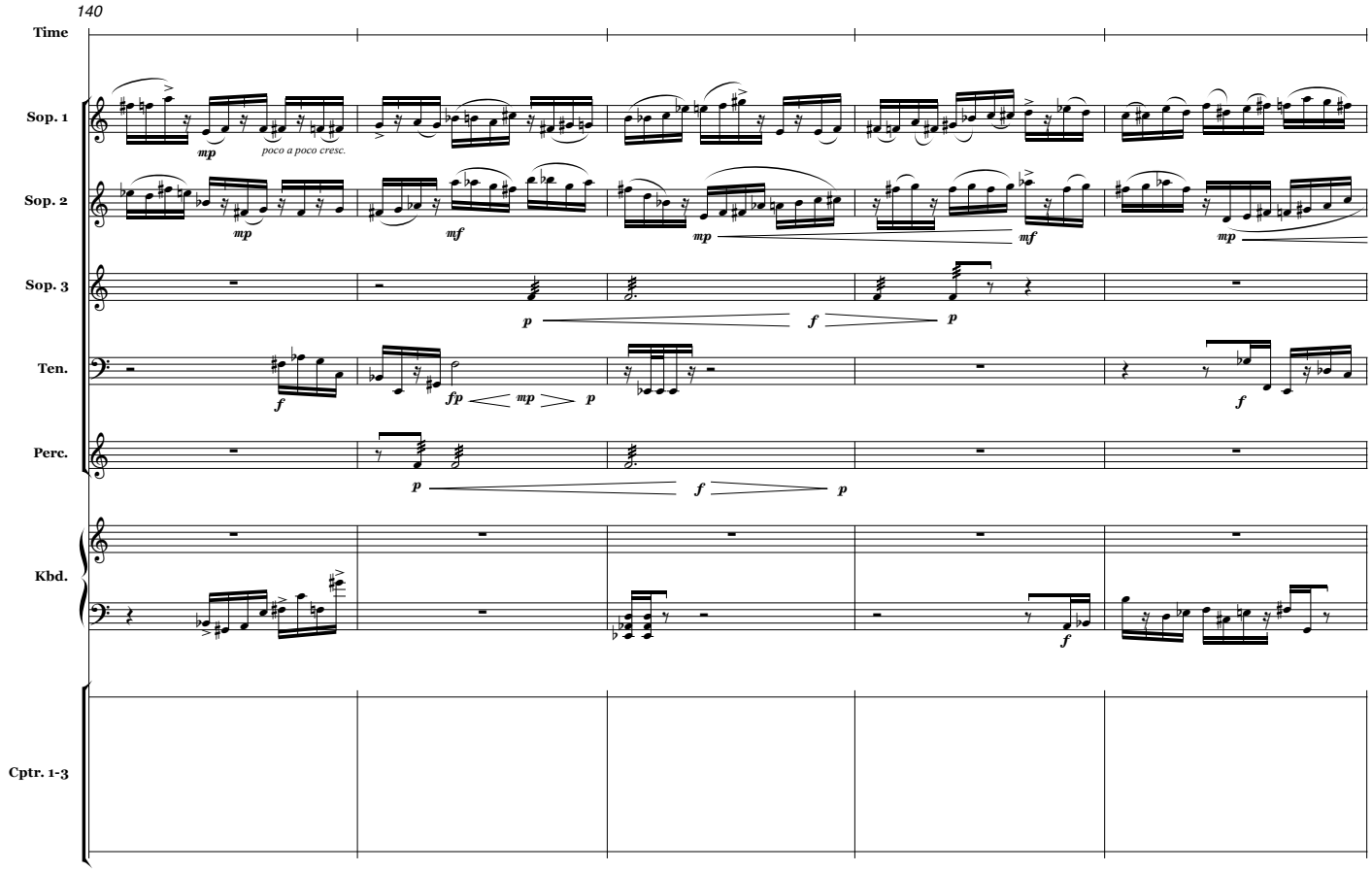

116
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

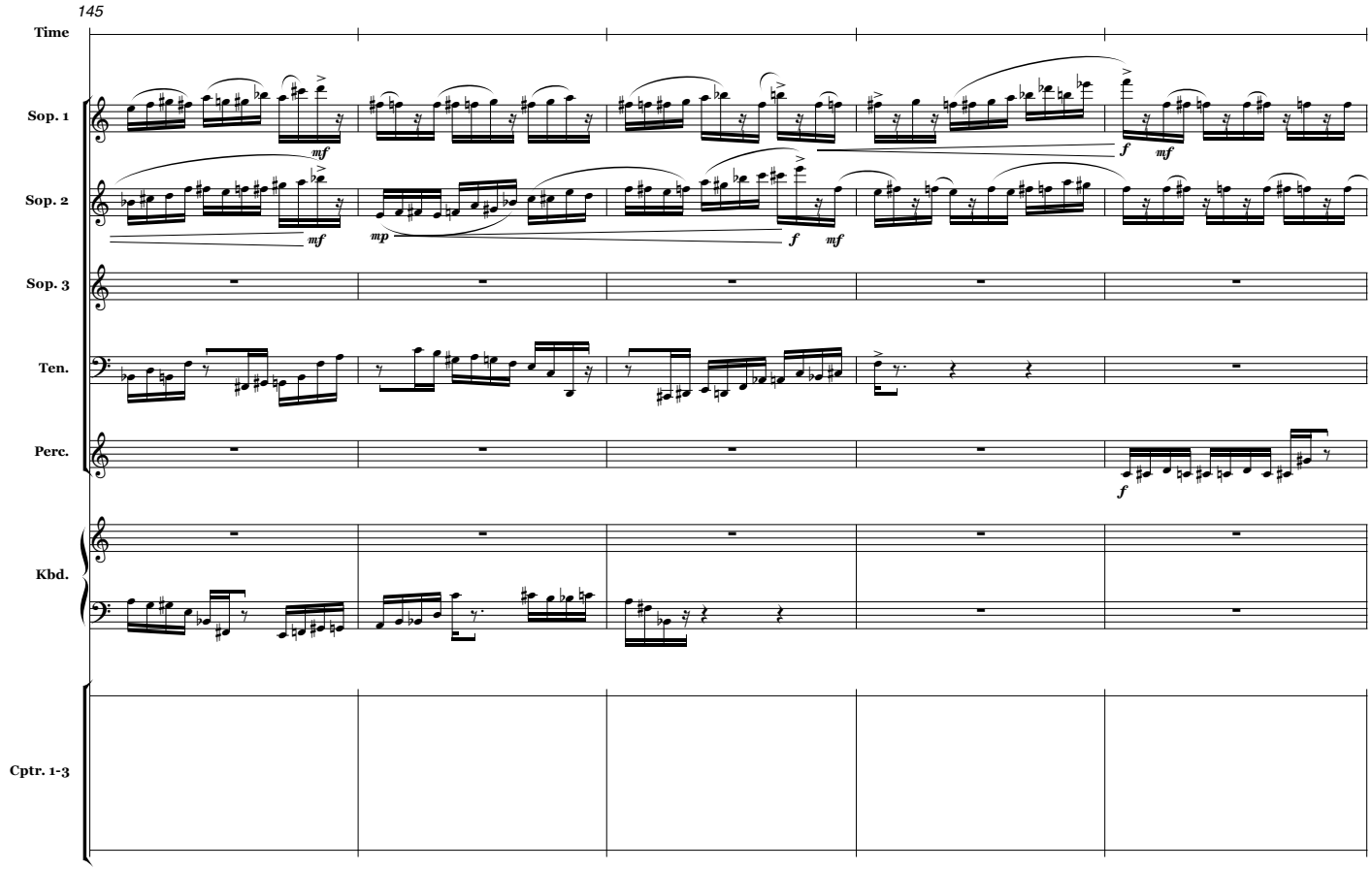

K
♩ = 126
121
Time
Anchor: Sop. 1
End soli
Anchor
Sop. 1
Sop. 2
Sop. 3
Ten.
Cue
End soli, end anchor
Perc.
Kbd.
Cptr. 1-3

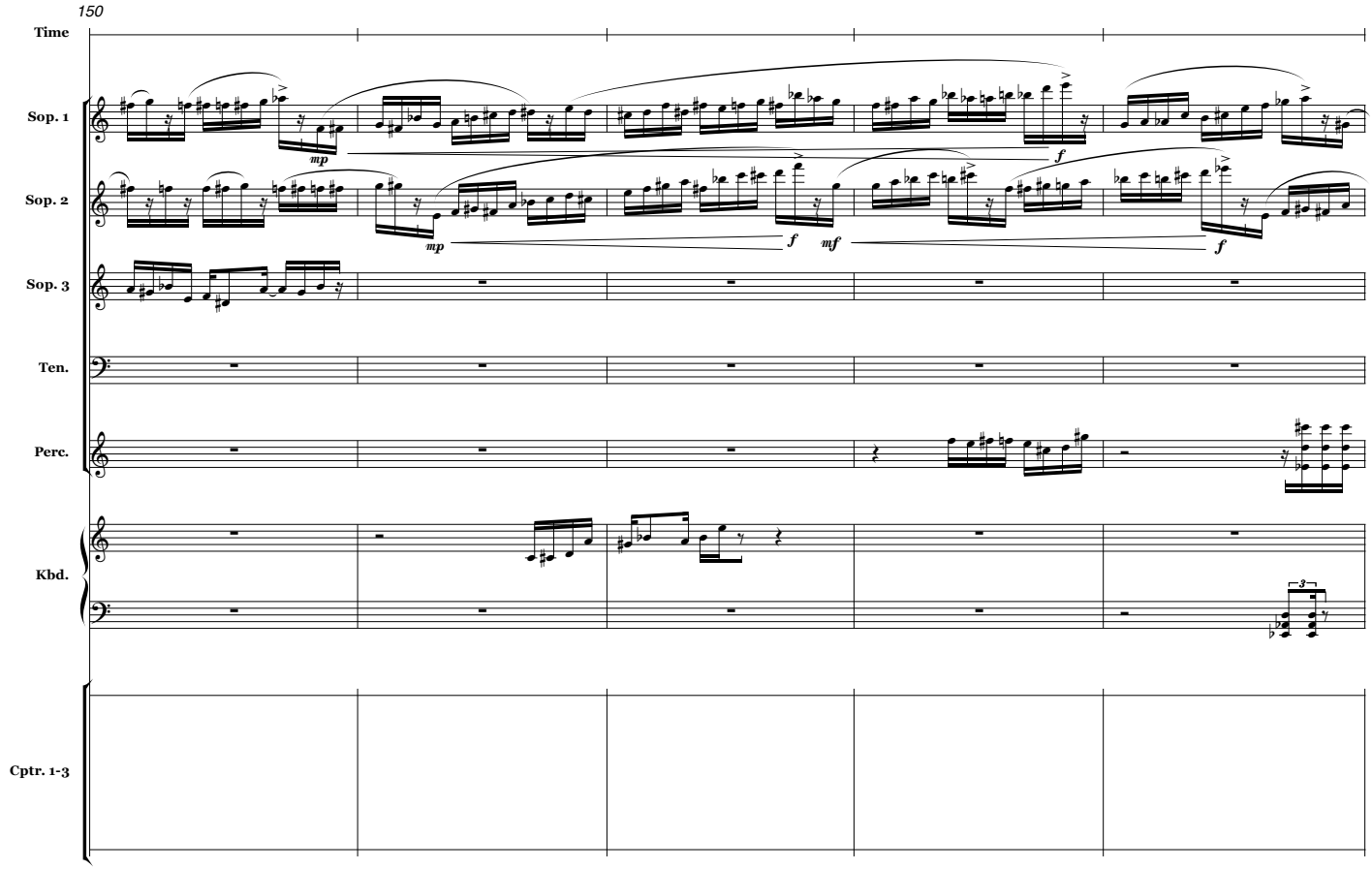

125
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

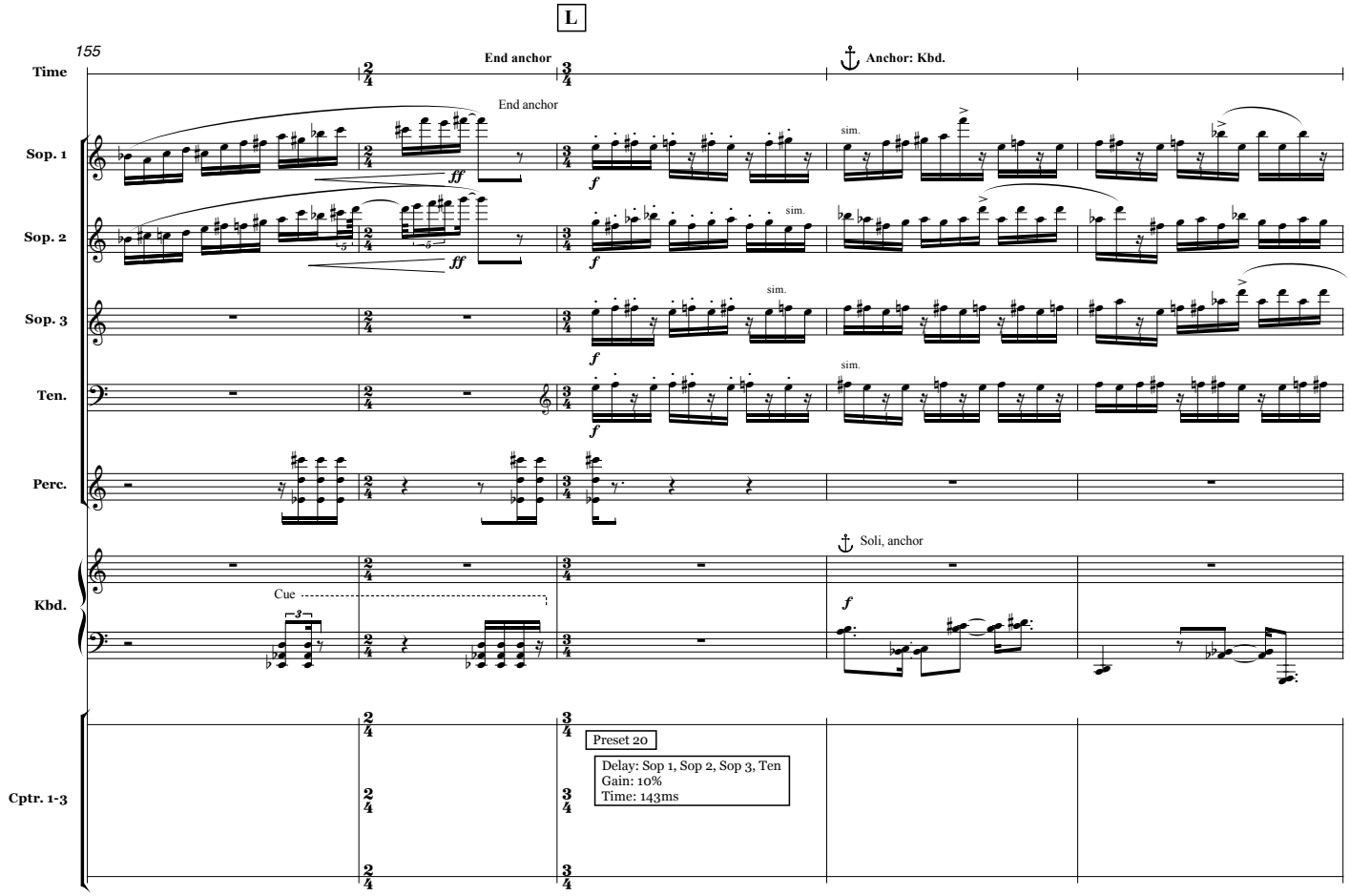

130
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

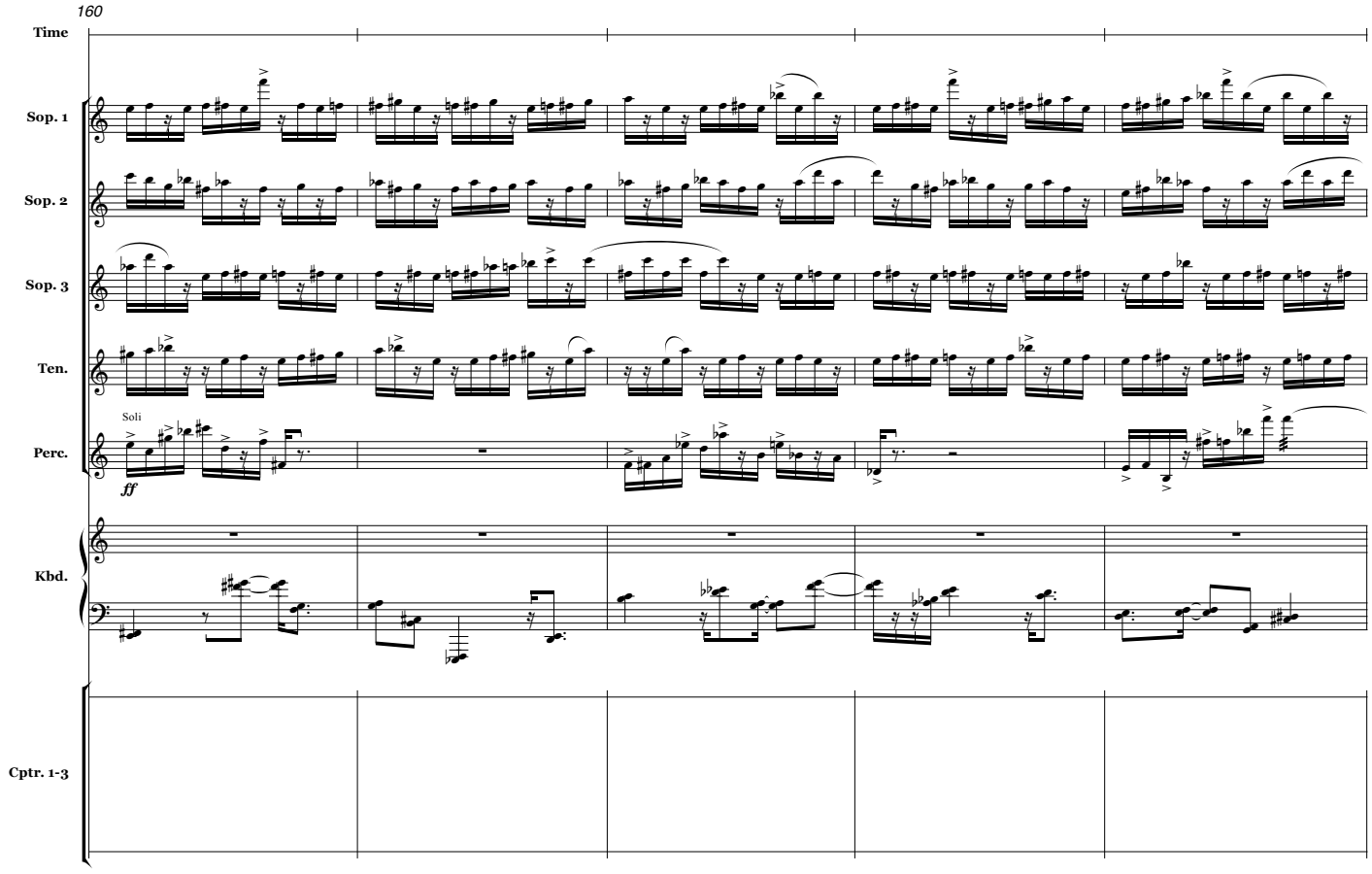

135
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
mf
mp
mf
mf
3

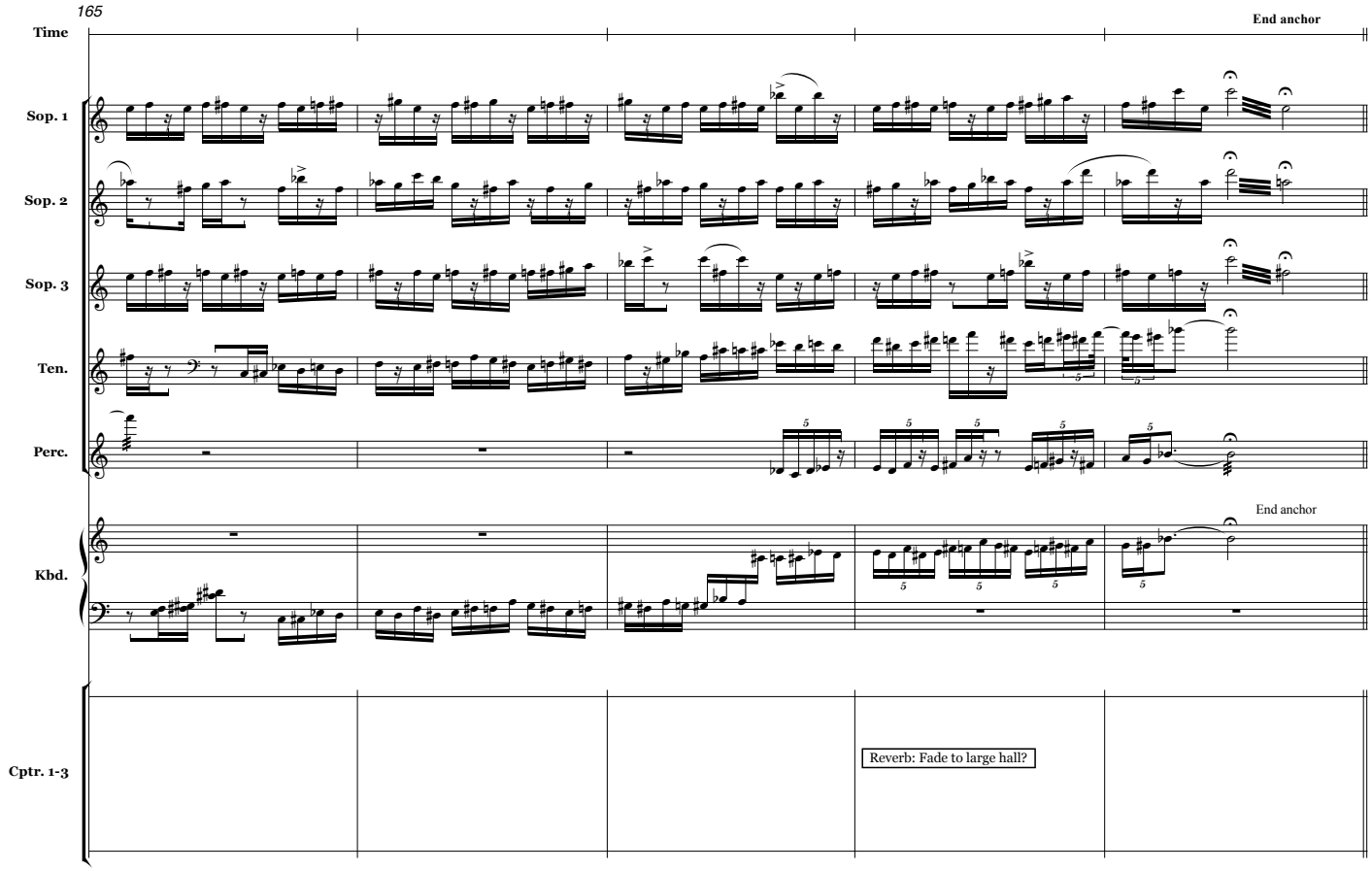

140
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
mp
poco a poco cresc.
mp
mf
mp
mf
mp
p
f
p
f
fp
mp
p
f
p
f
p
f

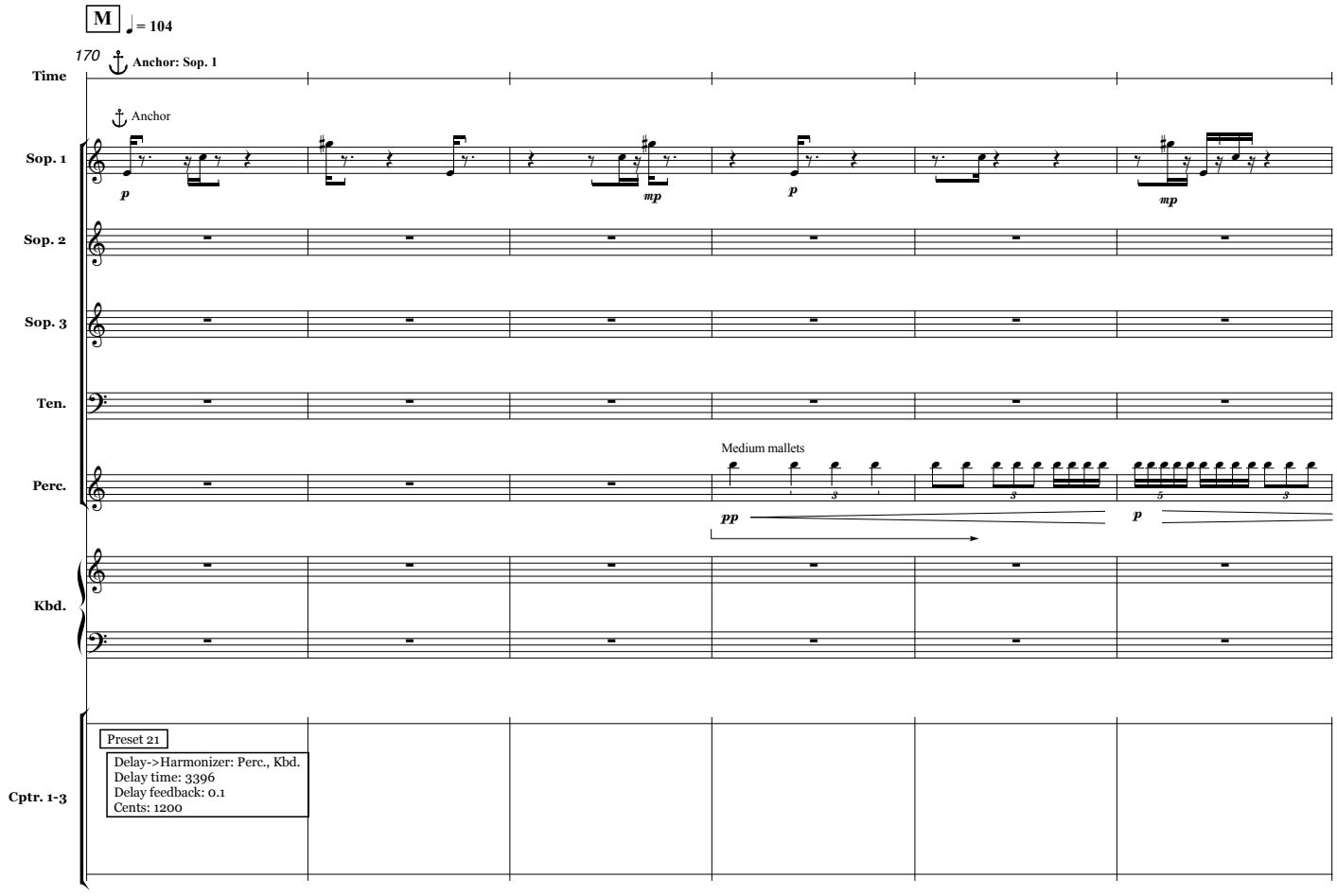

145
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

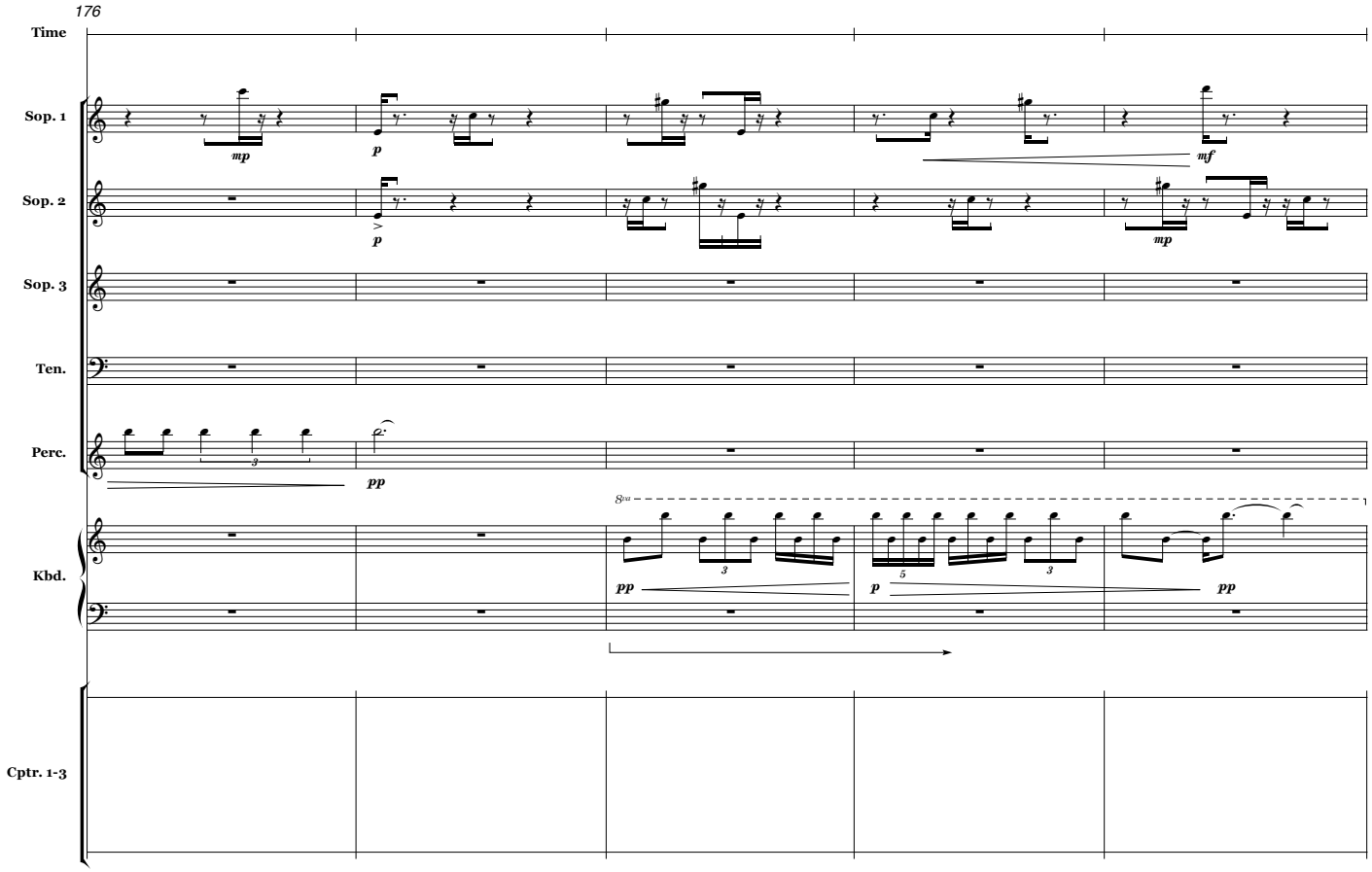

150
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

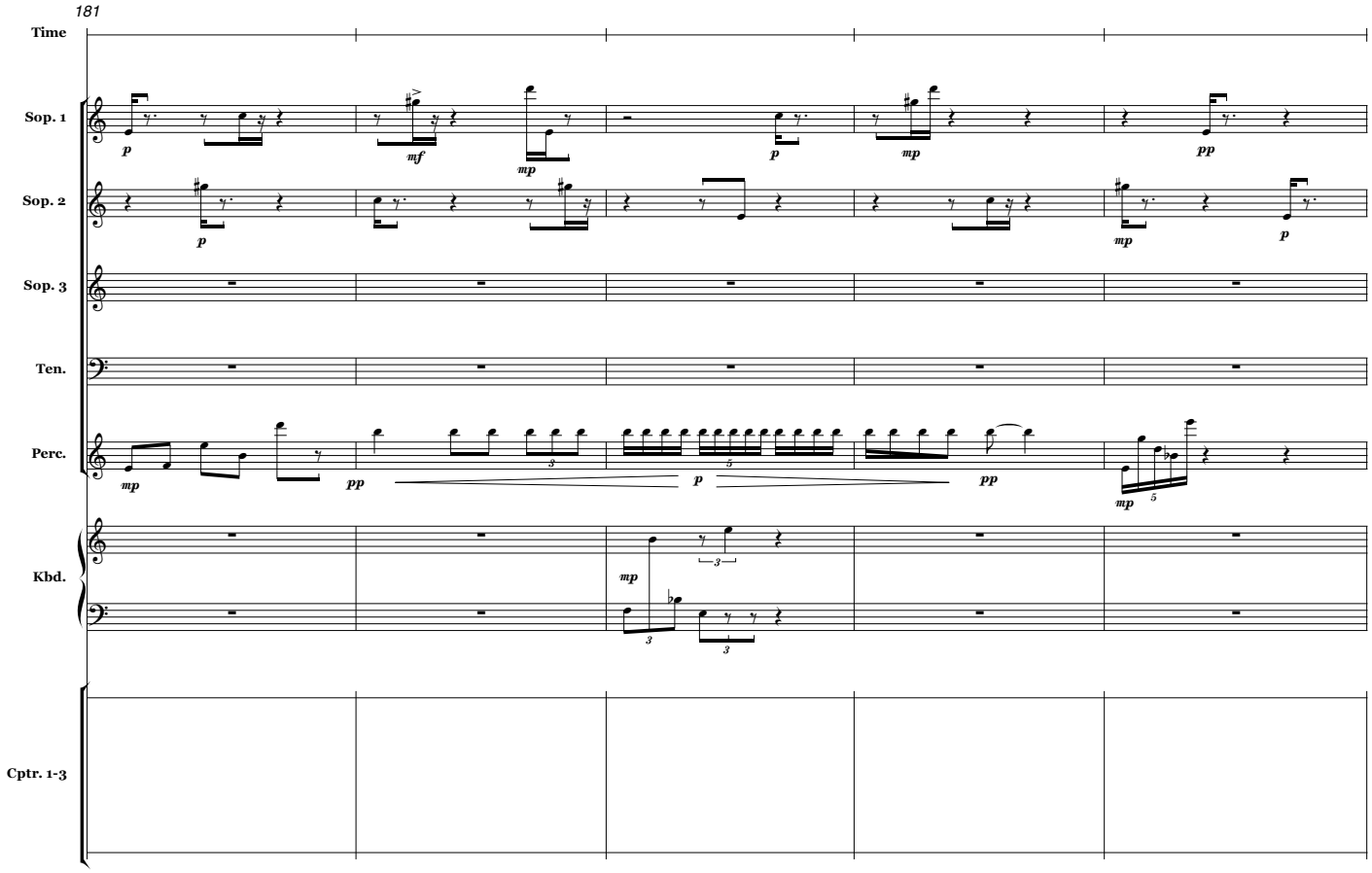

L
155
Time
End anchor
Anchor: Kbd.
End anchor
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cue
Soli, anchor
Cptr. 1-3
Preset 20
Delay: Sop 1, Sop 2, Sop 3, Ten
Gain: 10%
Time: 143ms
sim.

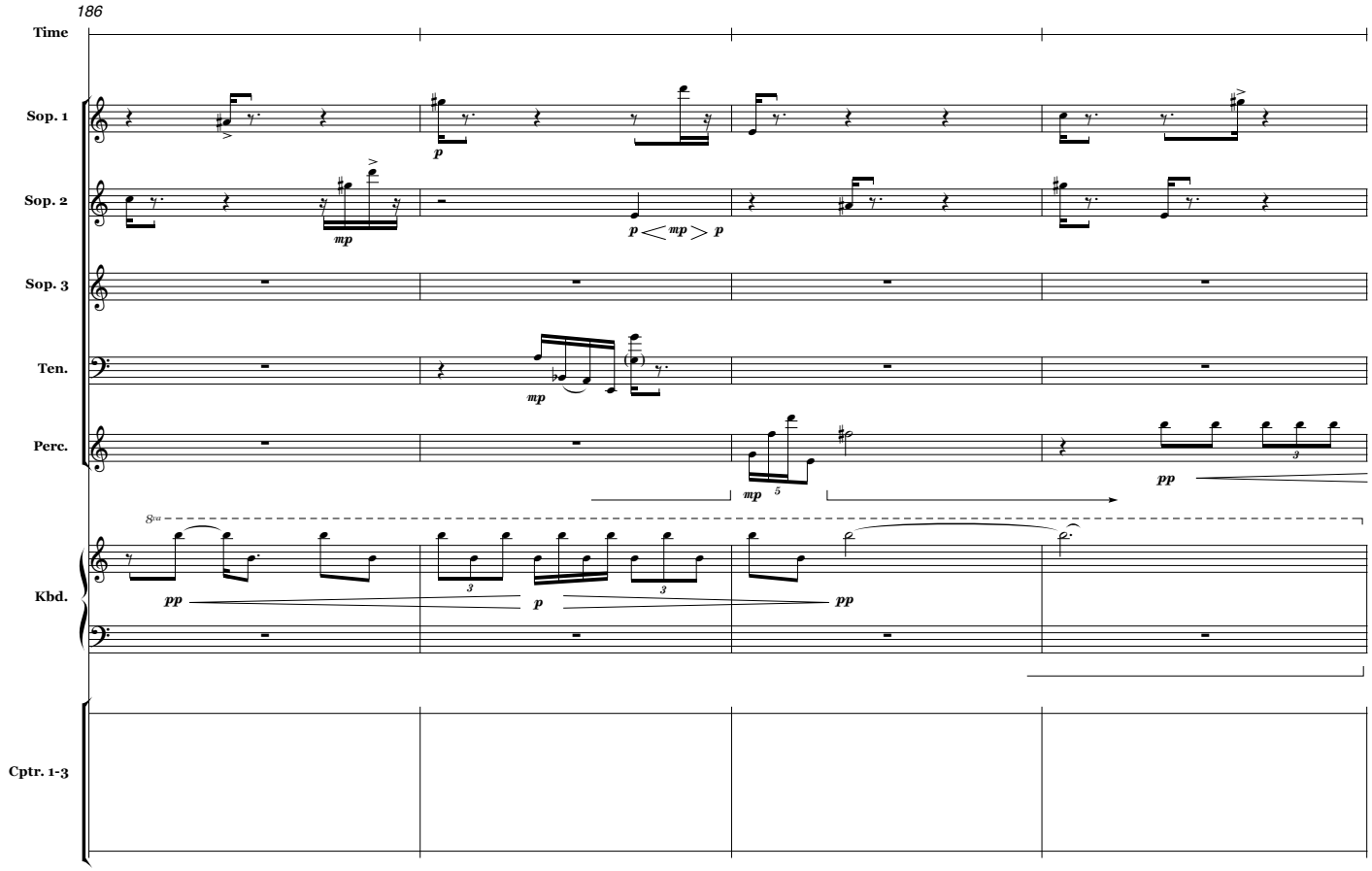

160
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Soli
Kbd.
Cptr. 1-3

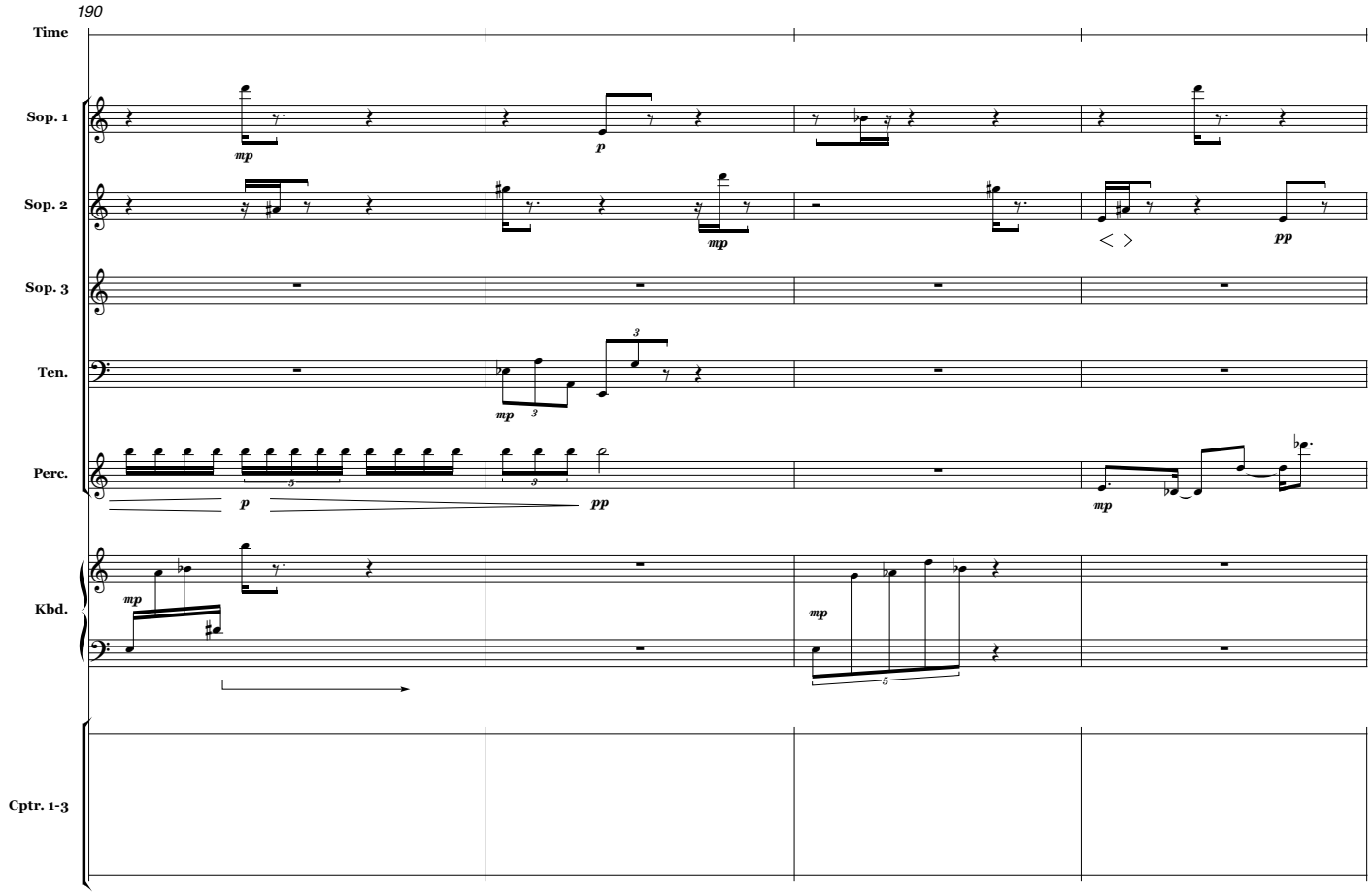

165
Time
End anchor
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
End anchor
Kbd.
Cptr. 1-3
Reverb: Fade to large hall?

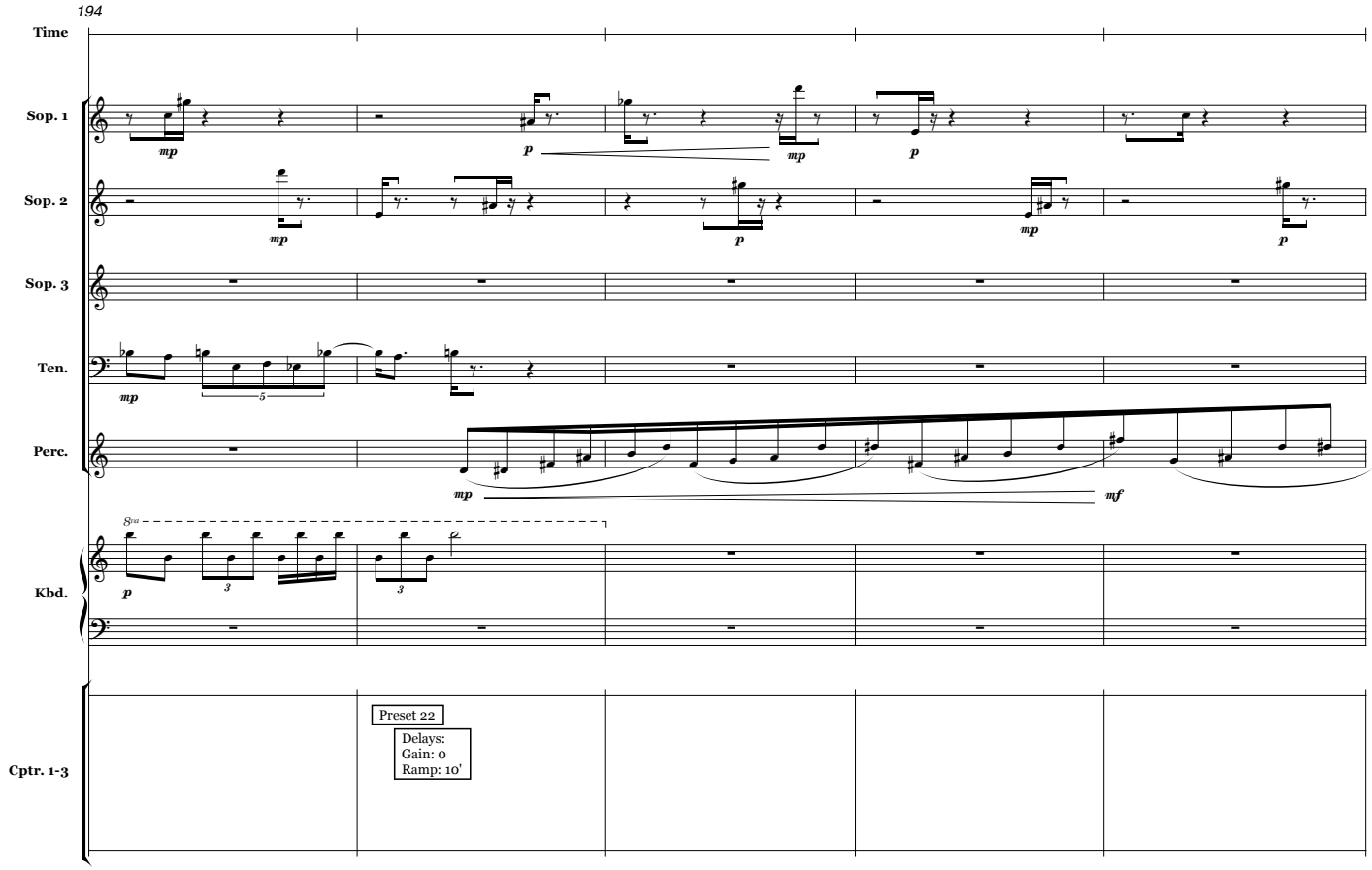

M
♩ = 104
170
Anchor: Sop. 1
Time
Anchor
Sop. 1
Sop. 2
Sop. 3
Ten.
Medium mallets
Perc.
Kbd.
Preset 21
Delay->Harmonizer: Perc., Kbd.
Delay time: 3396
Delay feedback: 0.1
Cents: 1200
Cptr. 1-3

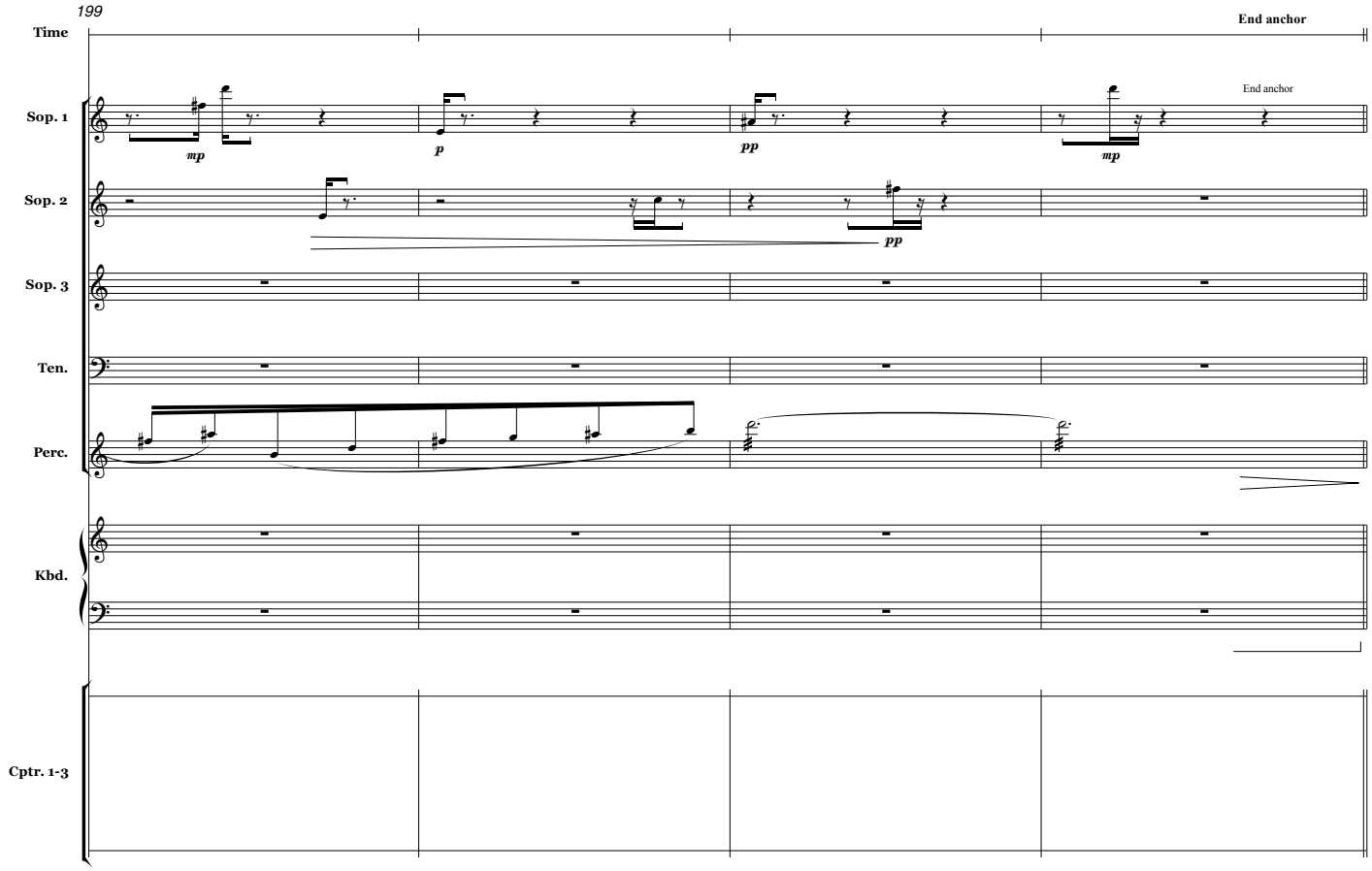

176
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
8va

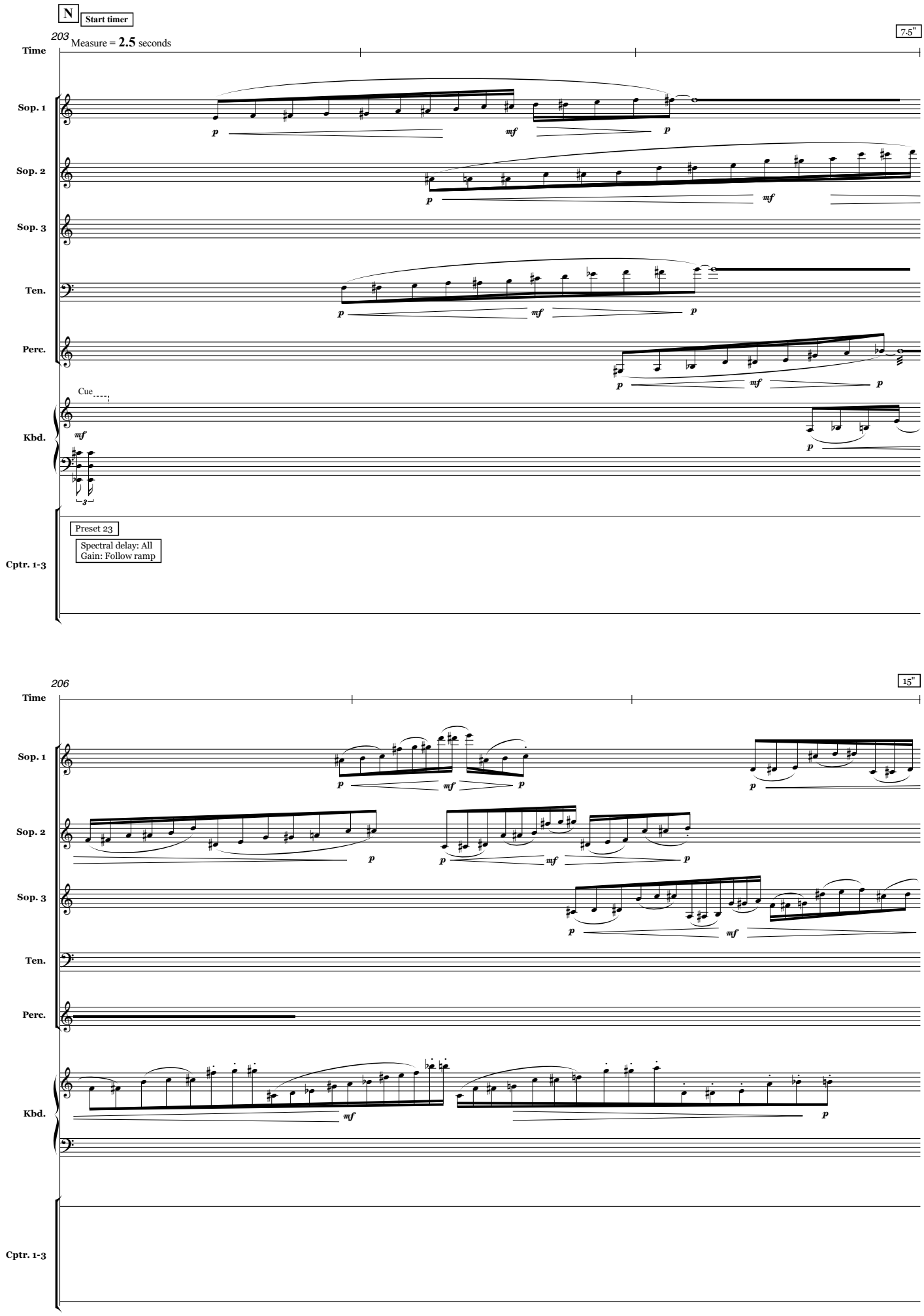

181
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

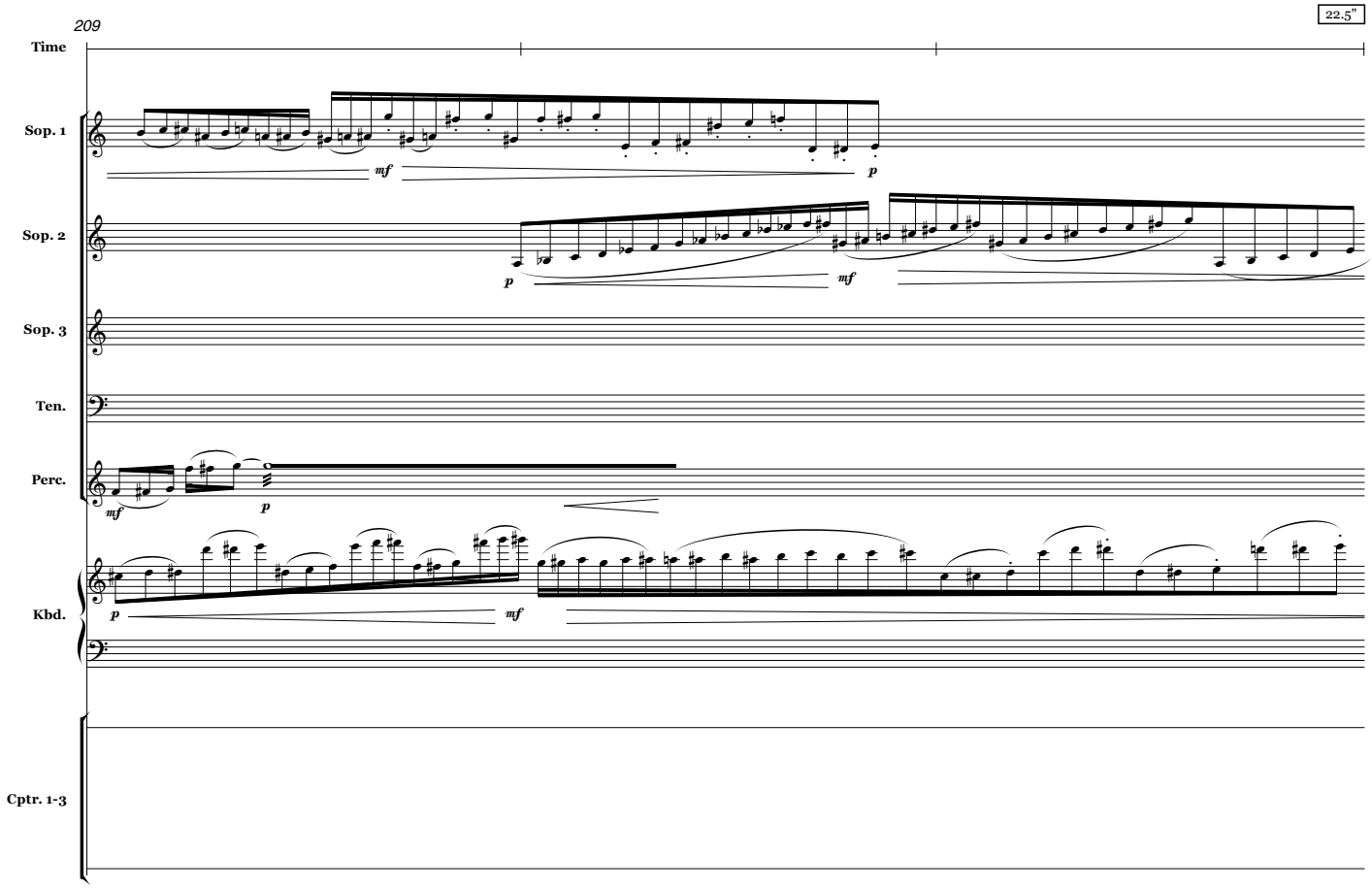

186
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

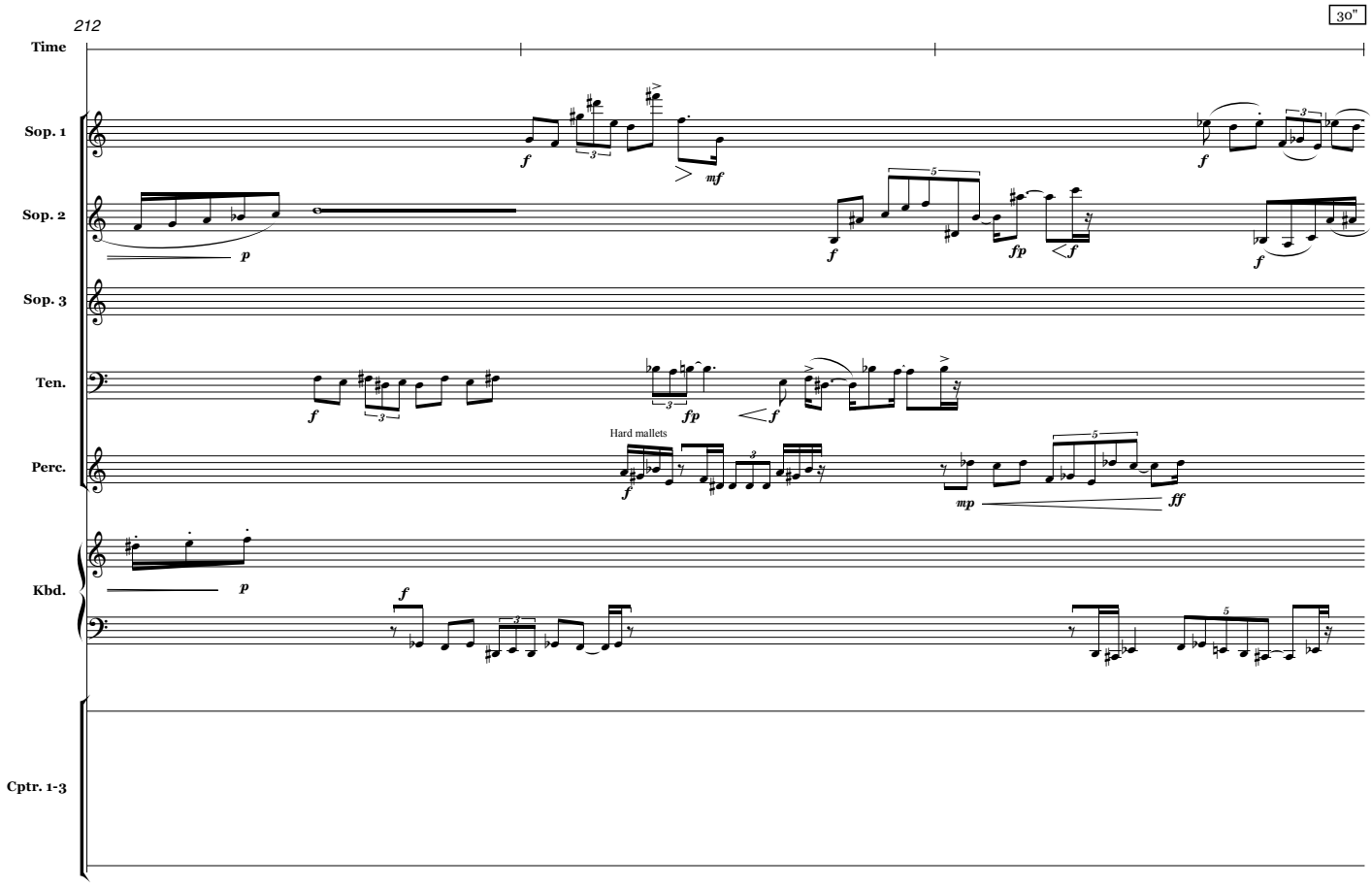

190
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

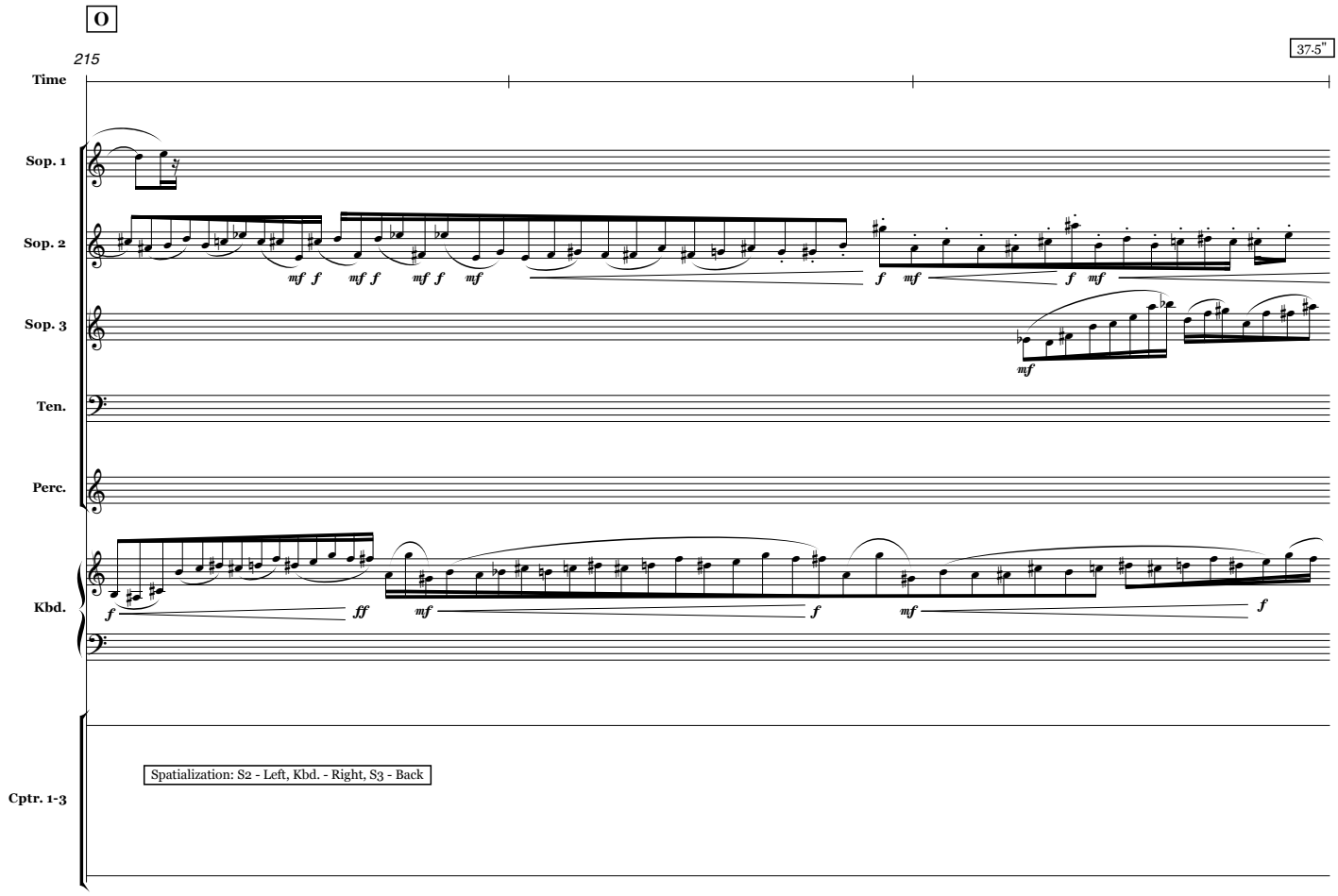

194
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
8va
Preset 22
Delays:
Gain: 0
Ramp: 10'

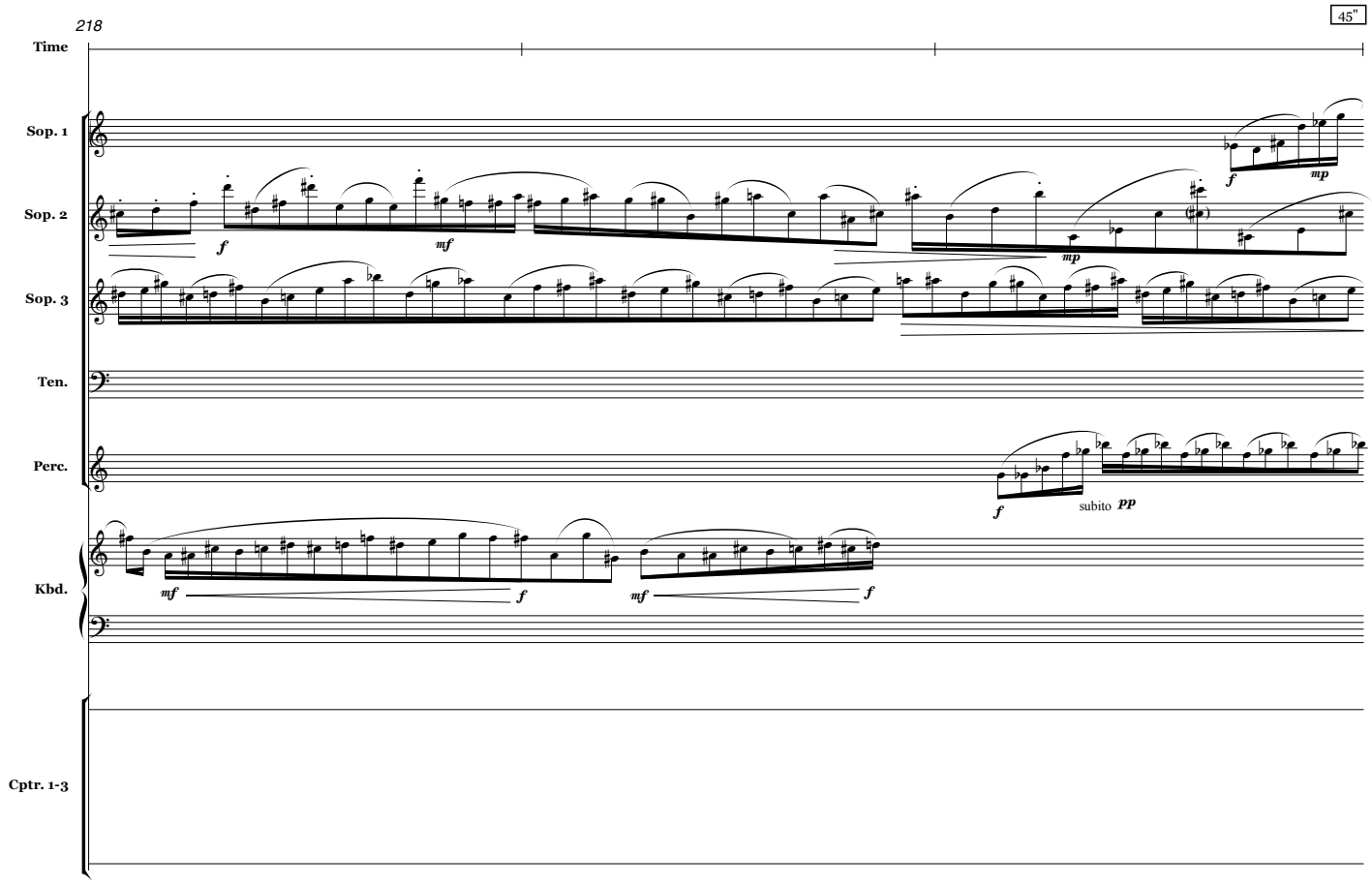

199
Time
End anchor
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

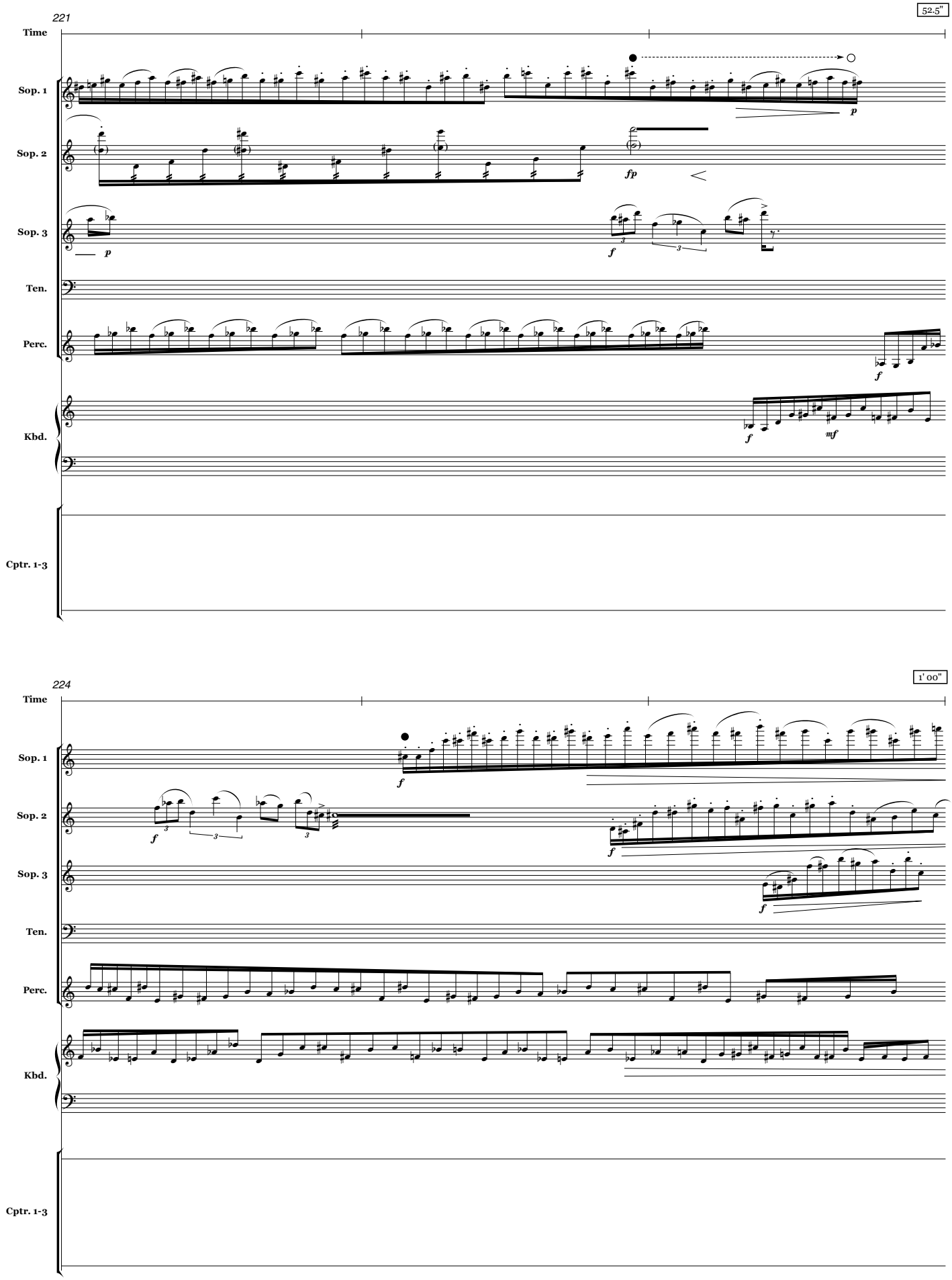

N
Start timer
203
Measure = 2.5 seconds
7.5"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Cue
Kbd.
Preset 23
Spectral delay: All
Gain: Follow ramp
Cptr. 1-3
206
15"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

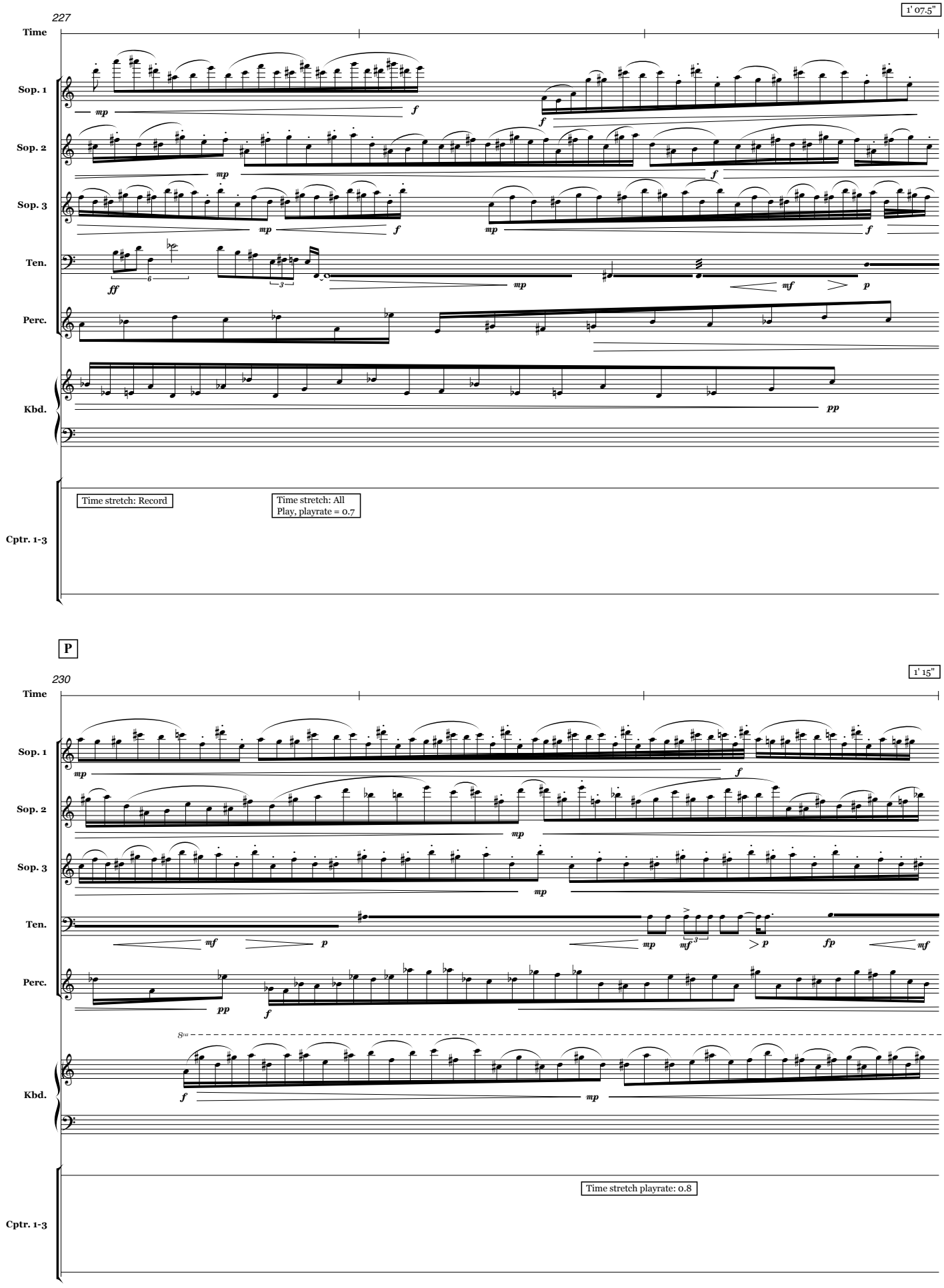

209
22.5"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

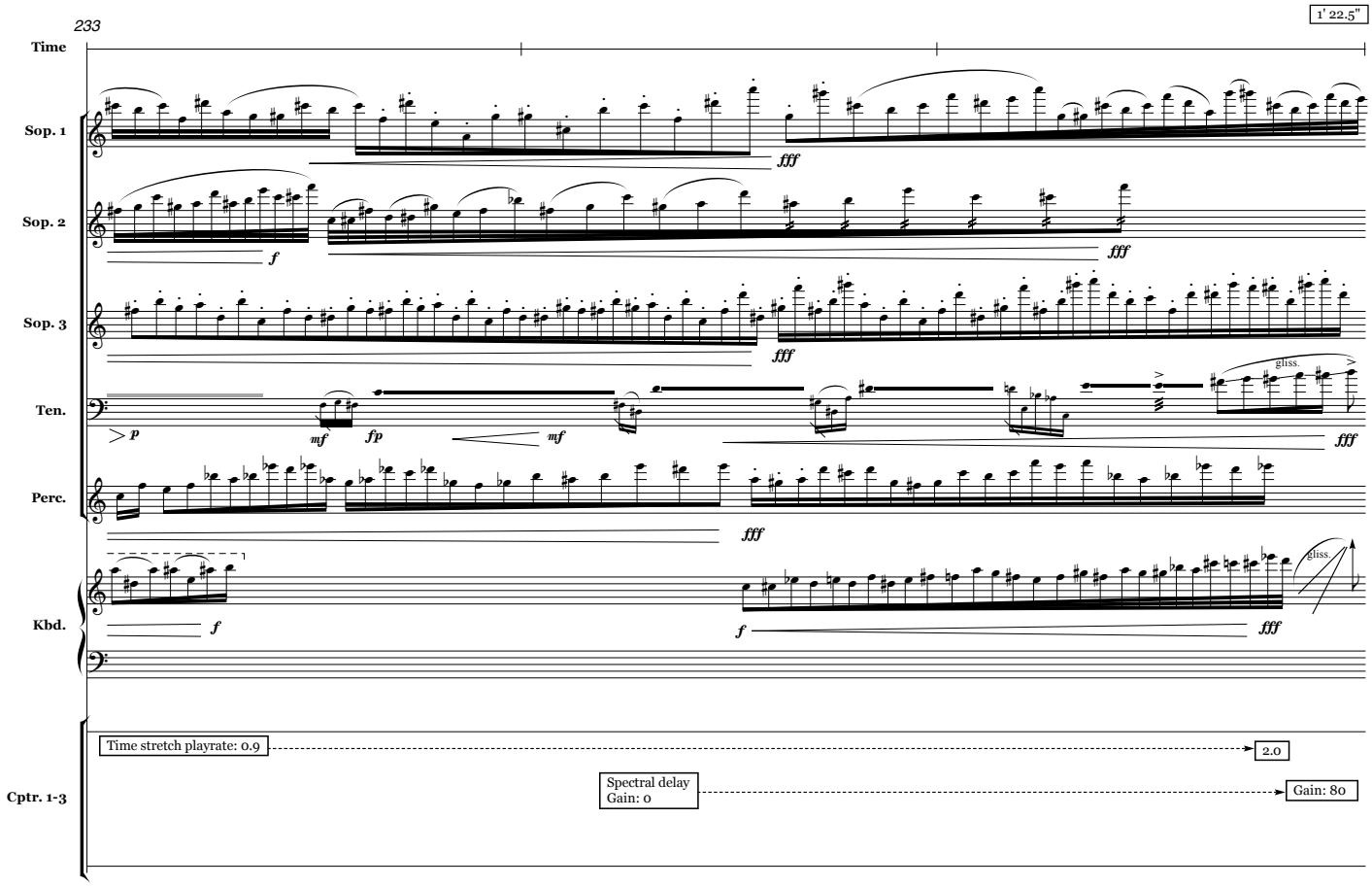

212
30"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Hard mallets
Kbd.
Cptr. 1-3

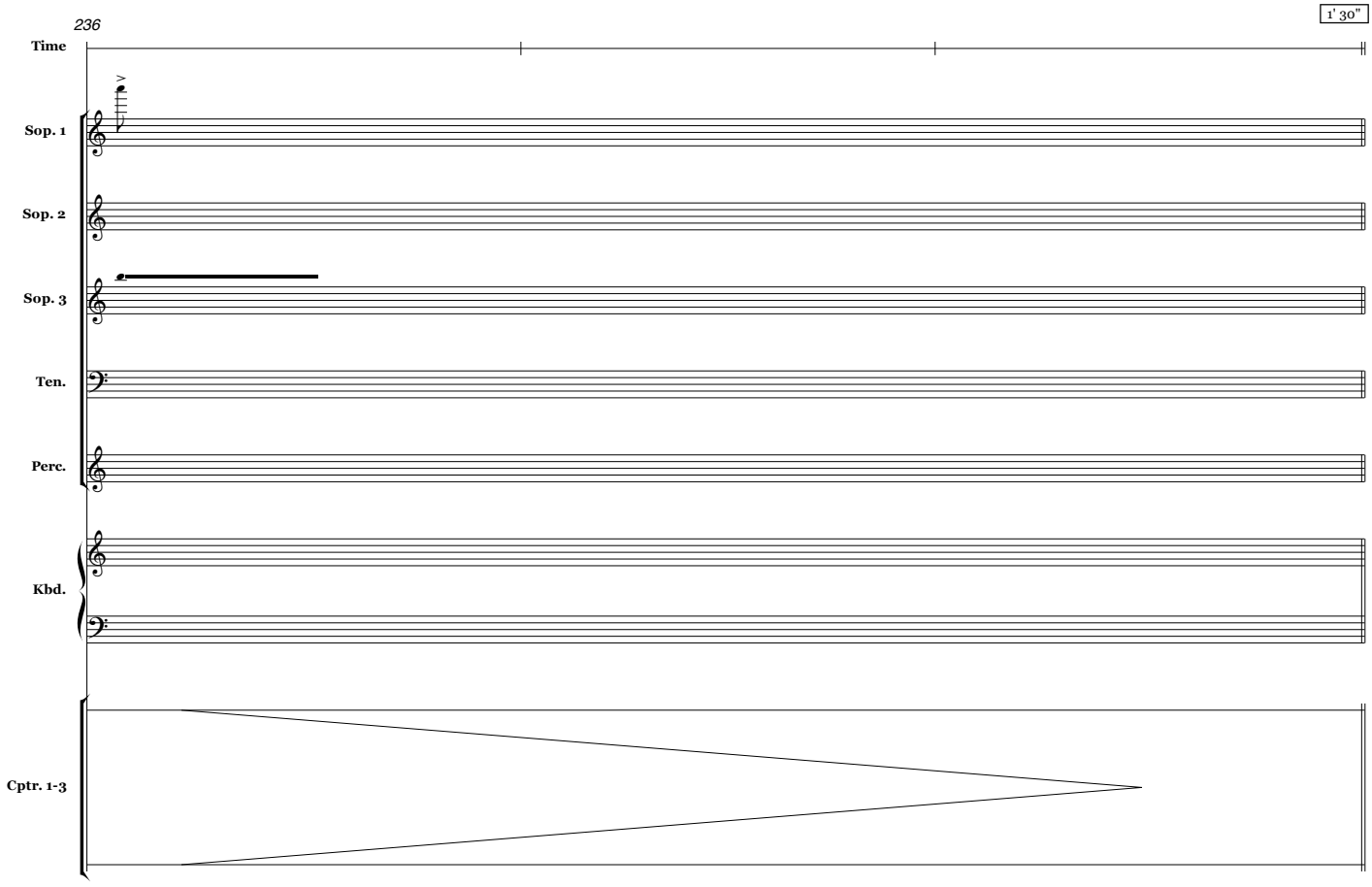

O
215
37-5"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
Spatialization: S2 - Left, Kbd. - Right, S3 - Back

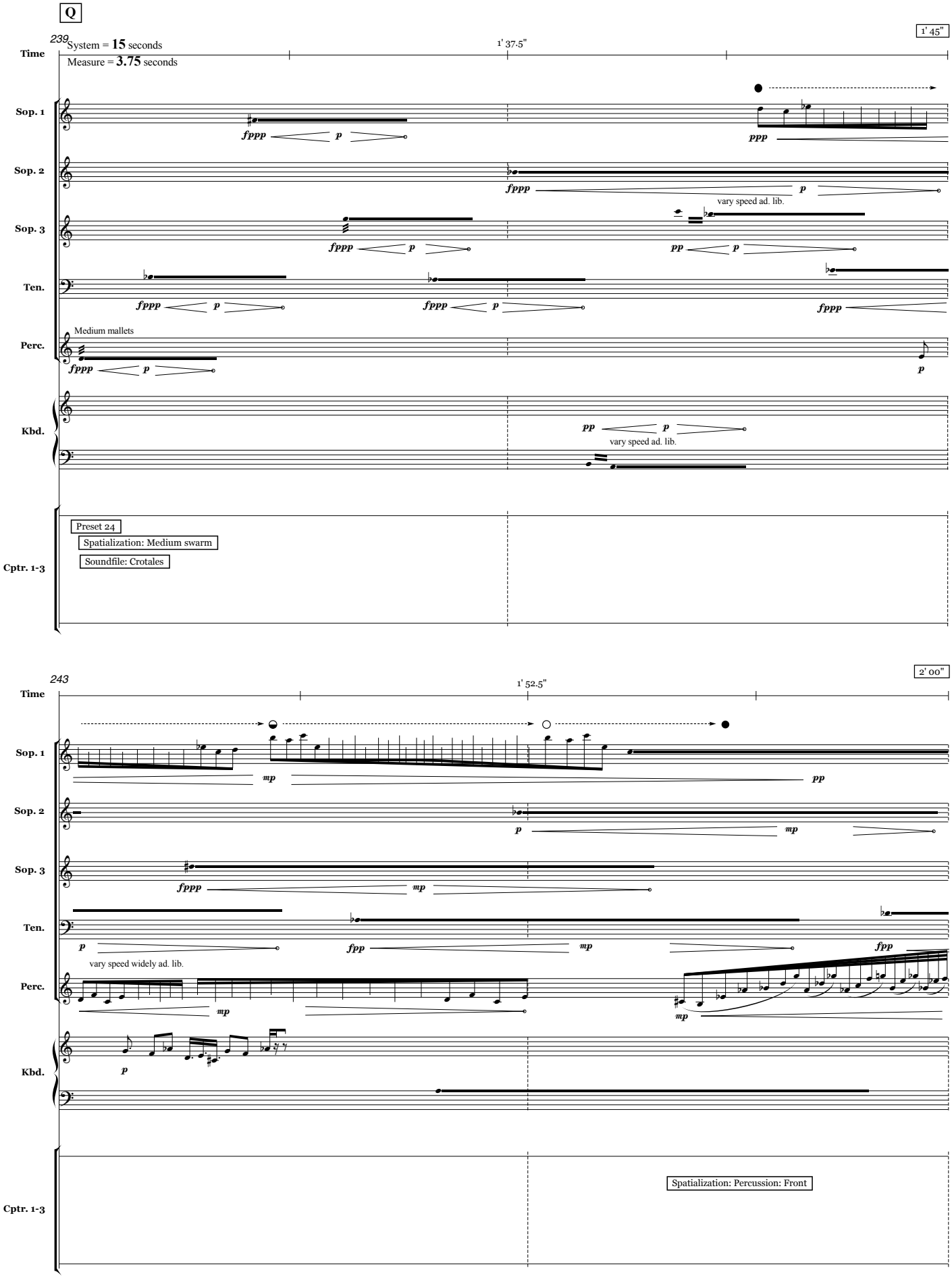

218
45"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
subito pp

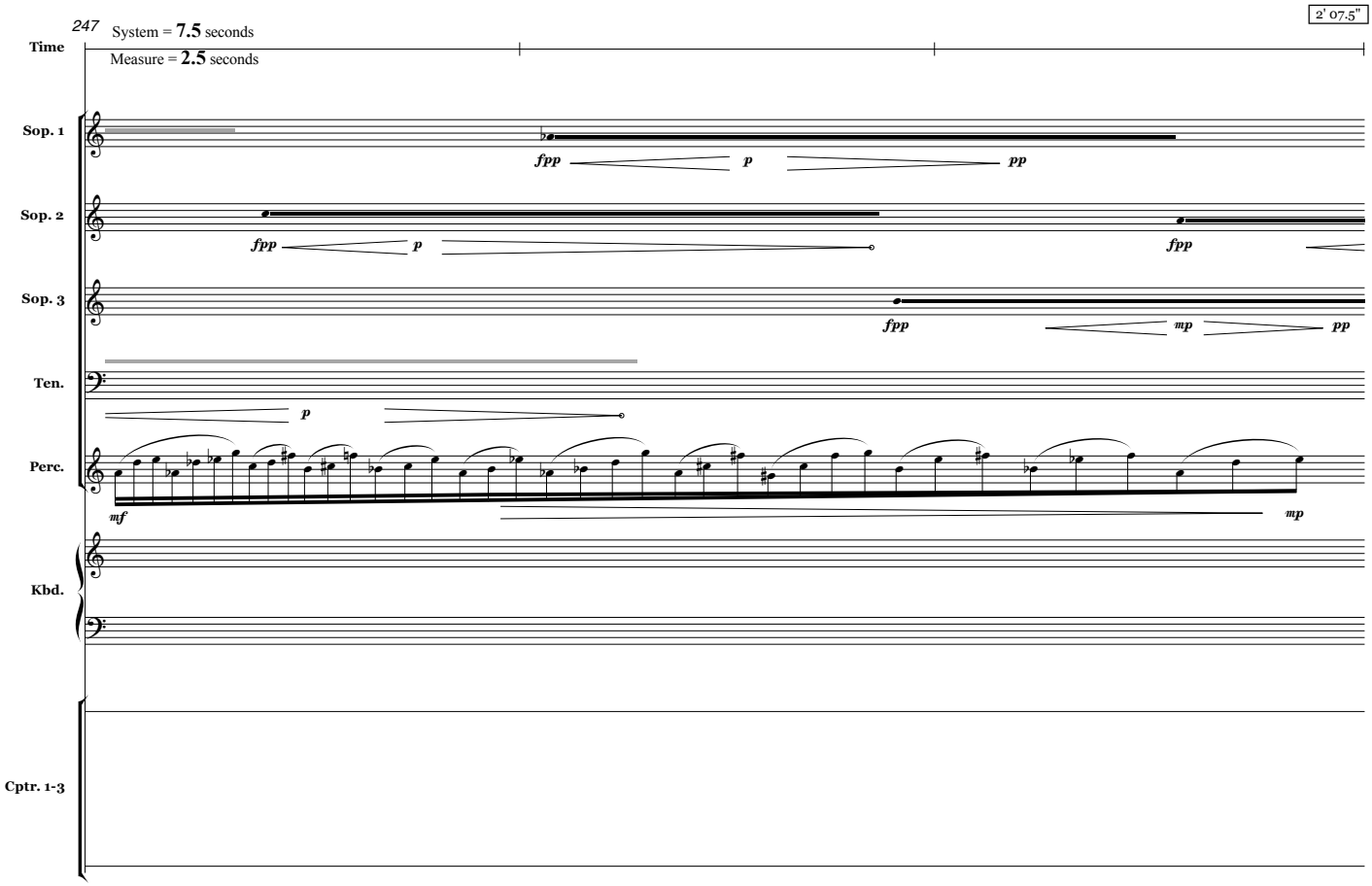

221
52.5"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
p
fp
f
mf
224
1' 00"

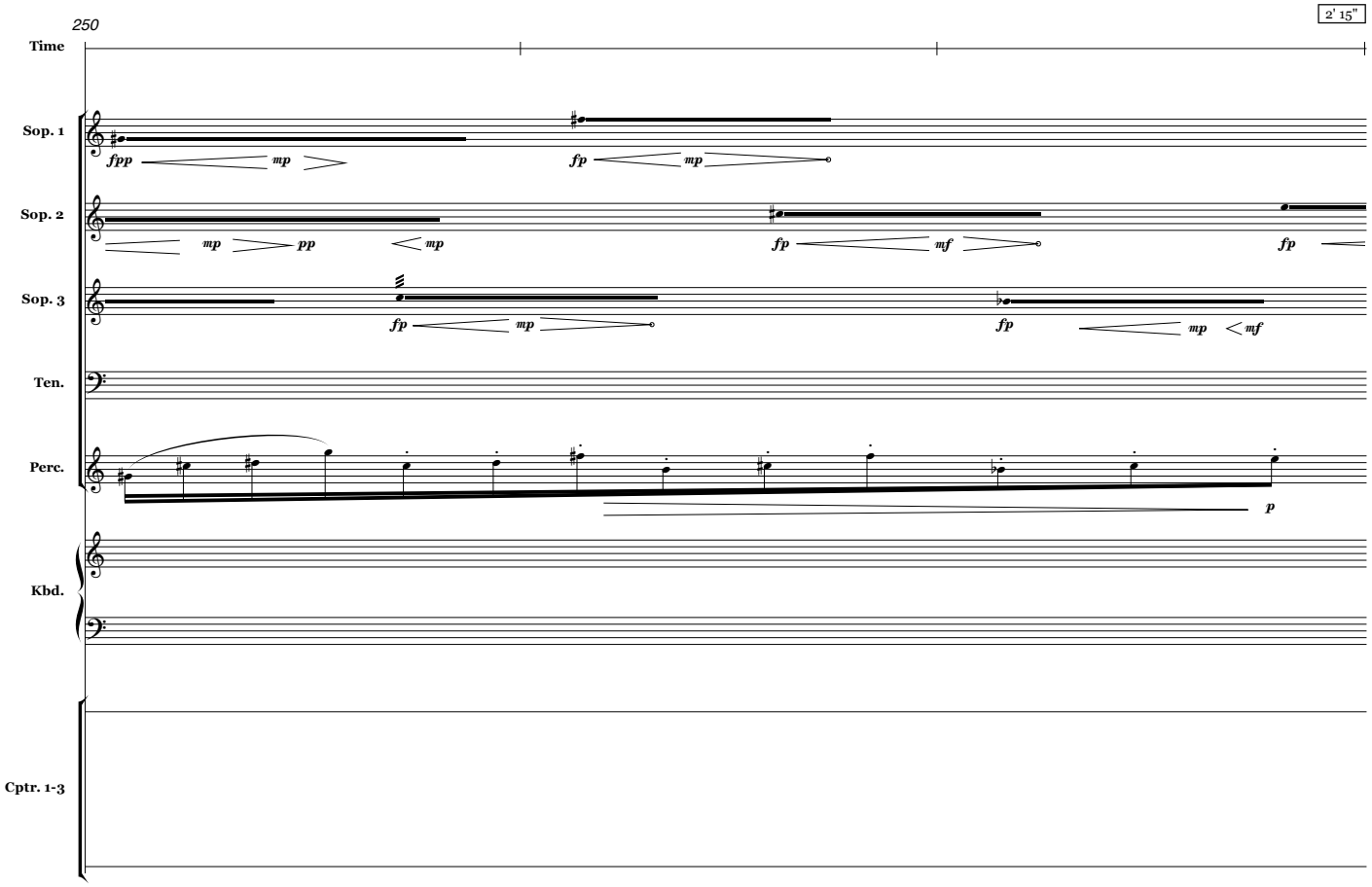

227
1' 07.5"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Time stretch: Record
Time stretch: All
Play, playrate = 0.7
Cptr. 1-3
P
230
1' 15"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Time stretch playrate: 0.8
Cptr. 1-3

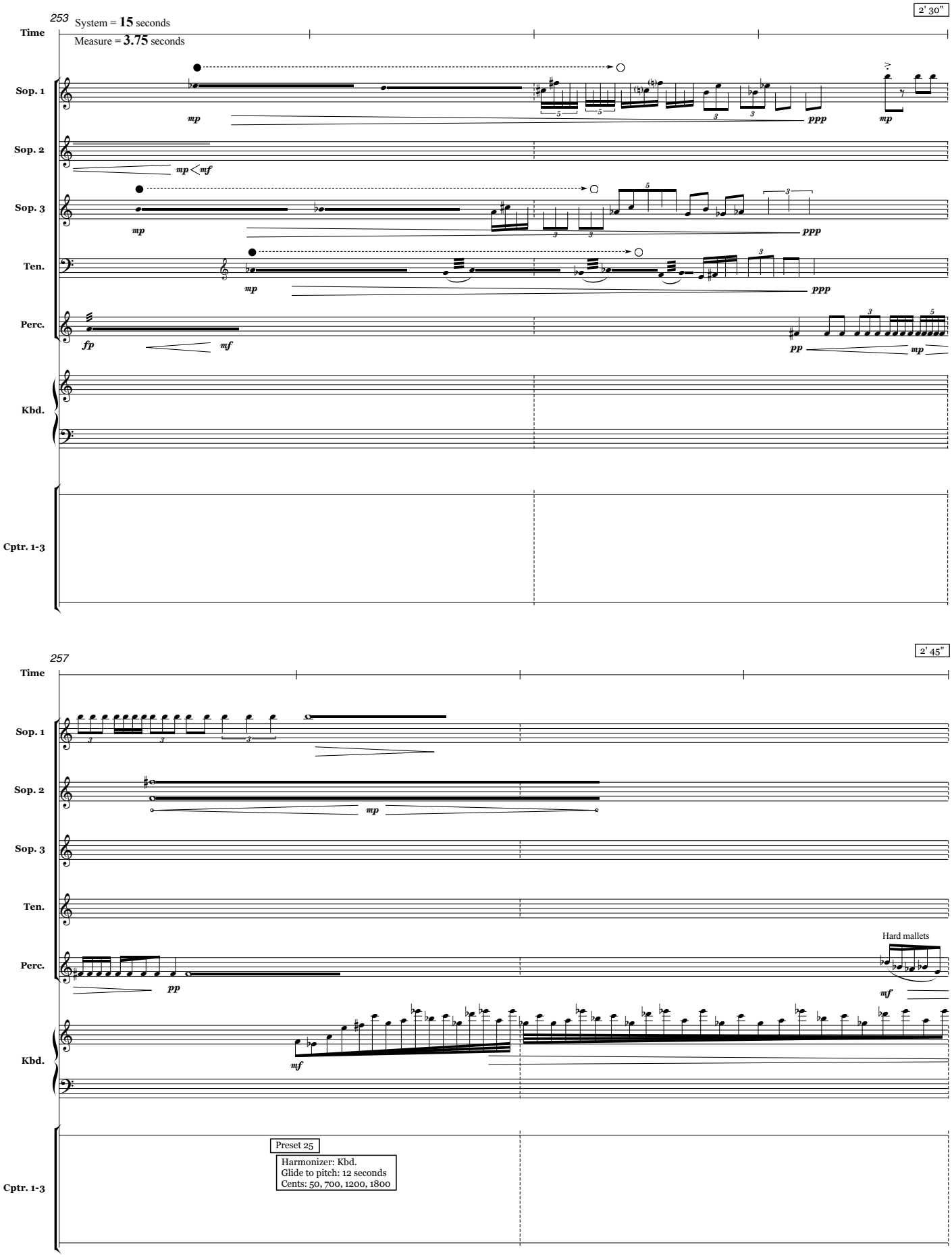

233
1' 22.5"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
fff
f
p
mf
fp
gliss.
Time stretch playrate: 0.9
2.0
Spectral delay
Gain: 0
Gain: 80


236
1' 30"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3


Q
239
System = 15 seconds
Measure = 3.75 seconds
1' 37.5"
1' 45"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
fppp
p
ppp
pp
vary speed ad. lib.
Medium mallets
Preset 24
Spatialization: Medium swarm
Soundfile: Crotales
243
1' 52.5"
2' 00"
mp
vary speed widely ad. lib.
Spatialization: Percussion: Front


247
System = 7.5 seconds
Measure = 2.5 seconds
2' 07.5"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
fpp
p
pp
mp
mf


250
2' 15"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
fpp
fp
mp
pp
mf


253
System = 15 seconds
Measure = 3.75 seconds
2' 30"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
mp
ppp
mp
mp < mf
mp
ppp
mp
ppp
fp
mf
pp
mp
257
2' 45"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
mp
pp
Hard mallets
mf
mf
Preset 25
Harmonizer: Kbd.
Glide to pitch: 12 seconds
Cents: 50, 700, 1200, 1800

R

261 System = **7.5** seconds

2' 52.5"

Time

Sop. 1

Sop. 2

Sop. 3

Ten.

Perc.

Kbd.

Cptr. 1-3

f *f* *mp* *p* *f*

264

3' 00"

Time

Sop. 1

Sop. 2

Sop. 3

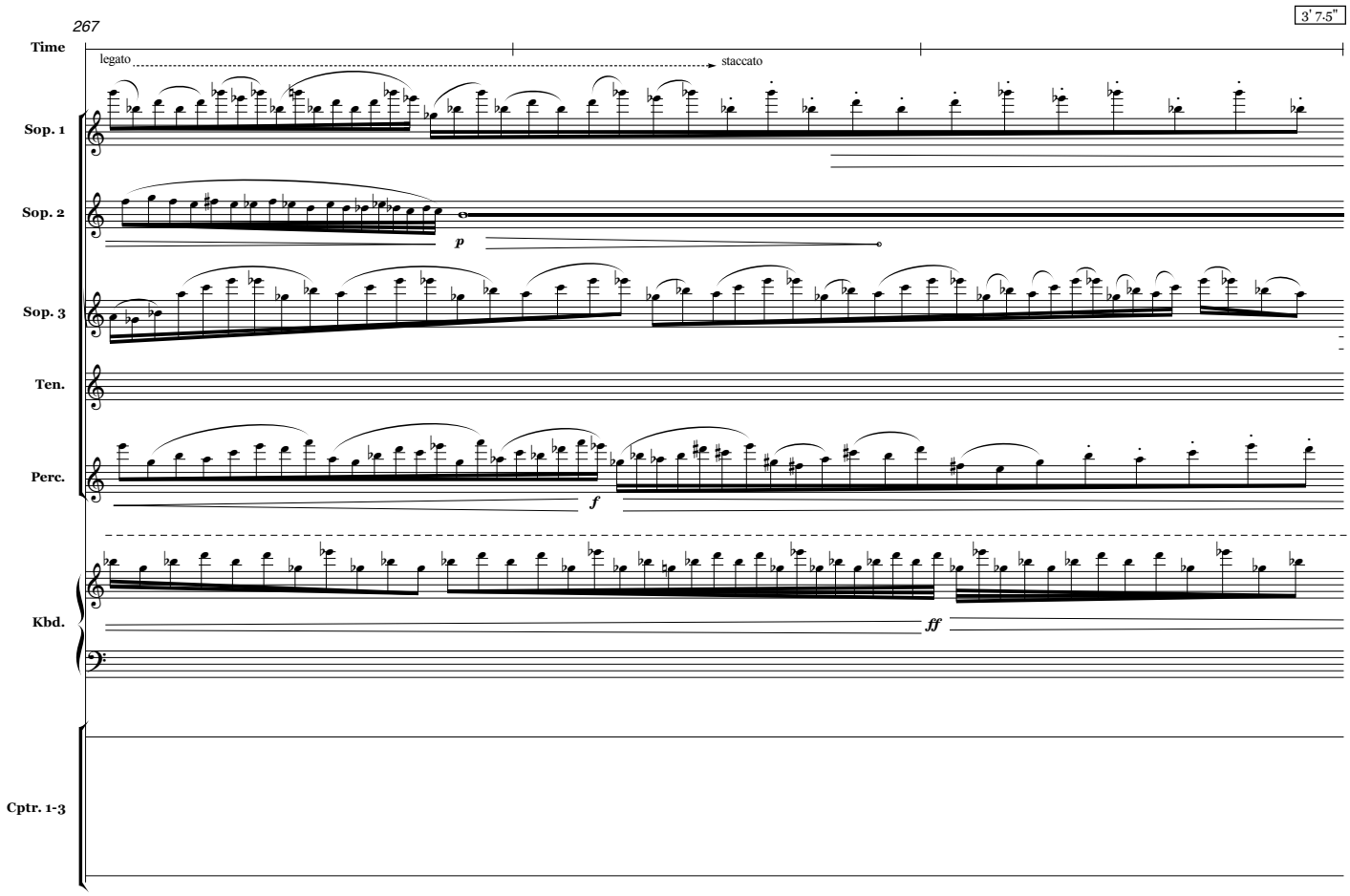
Ten.

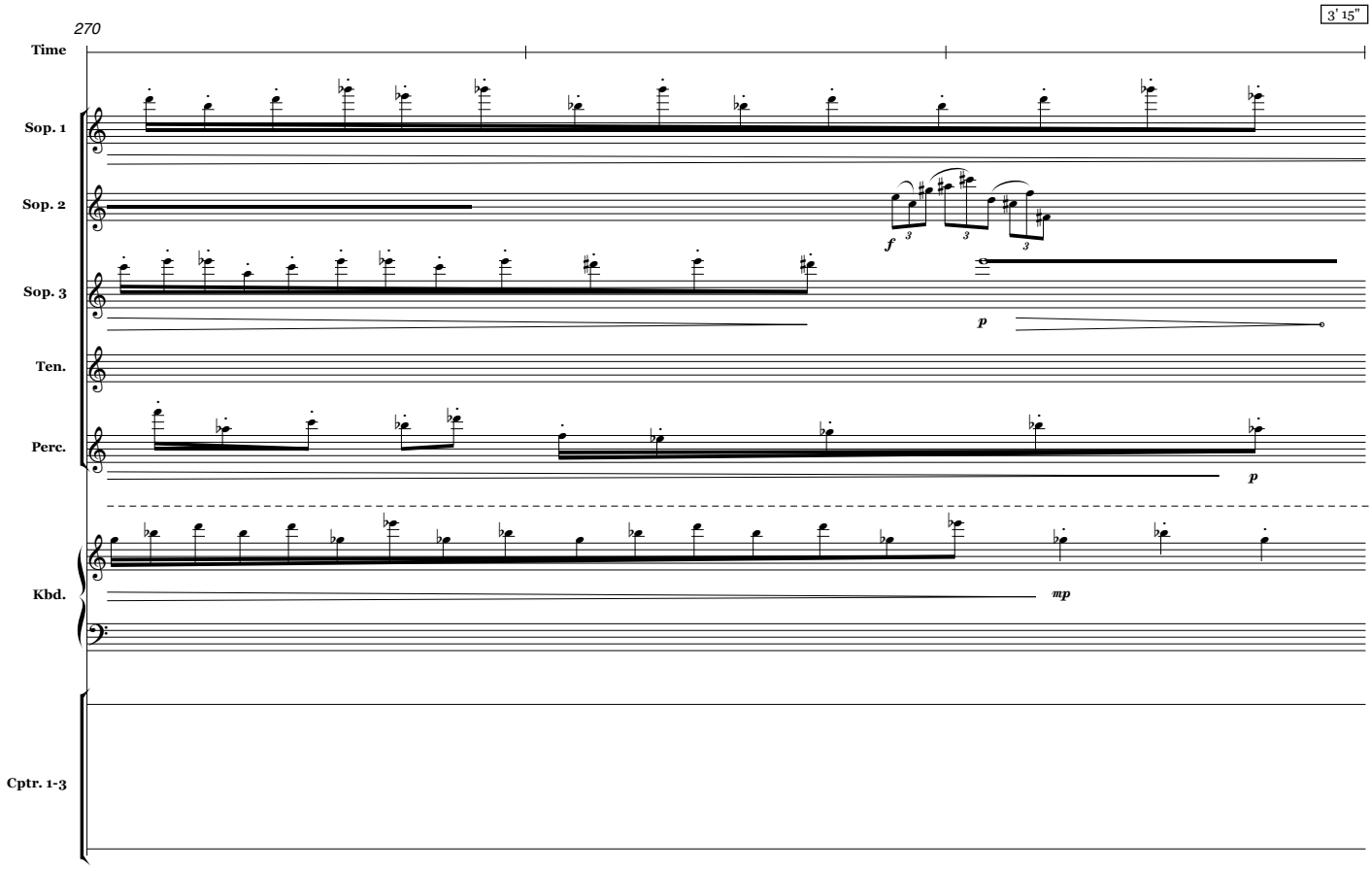
Perc.

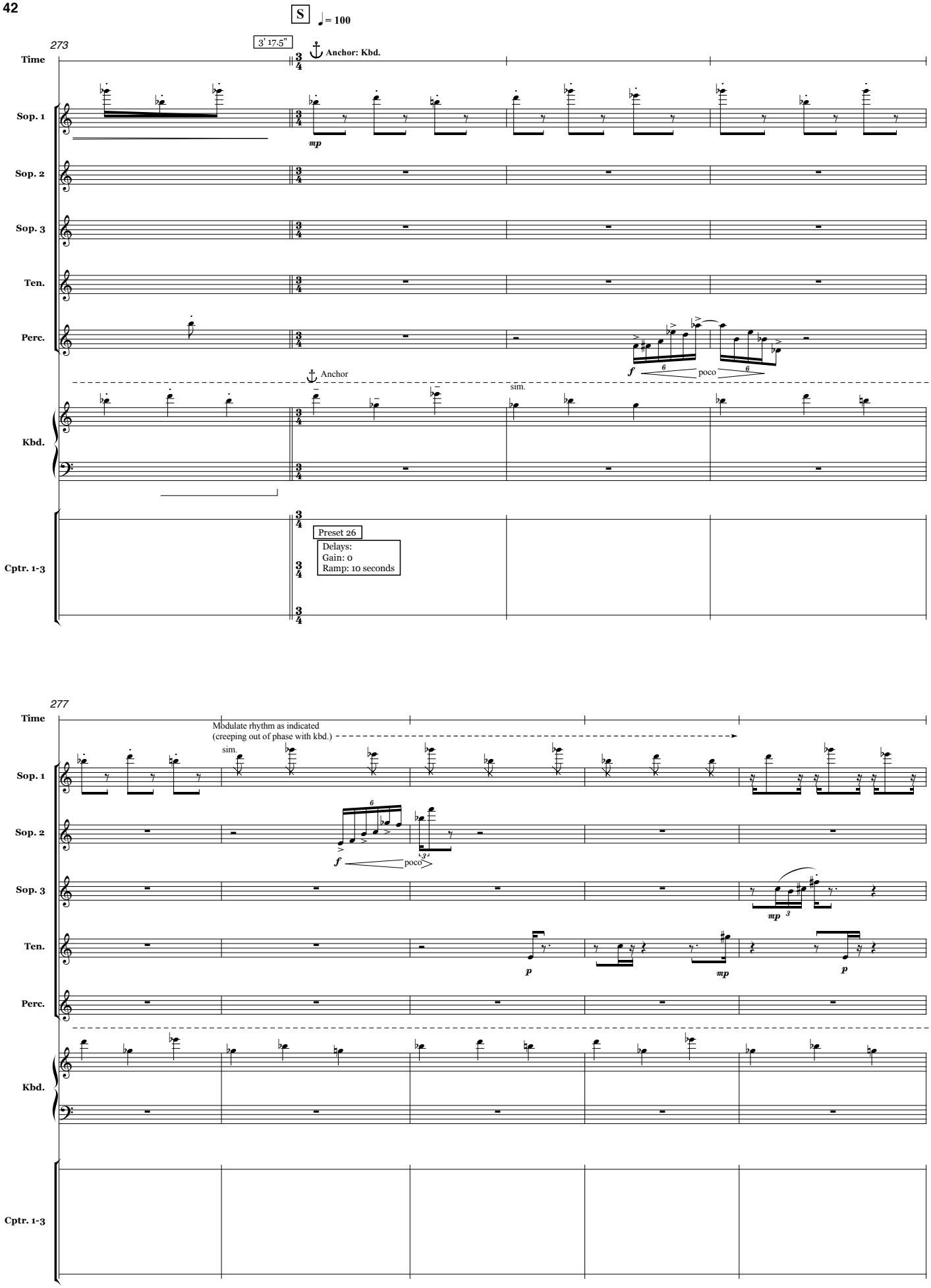
Kbd.

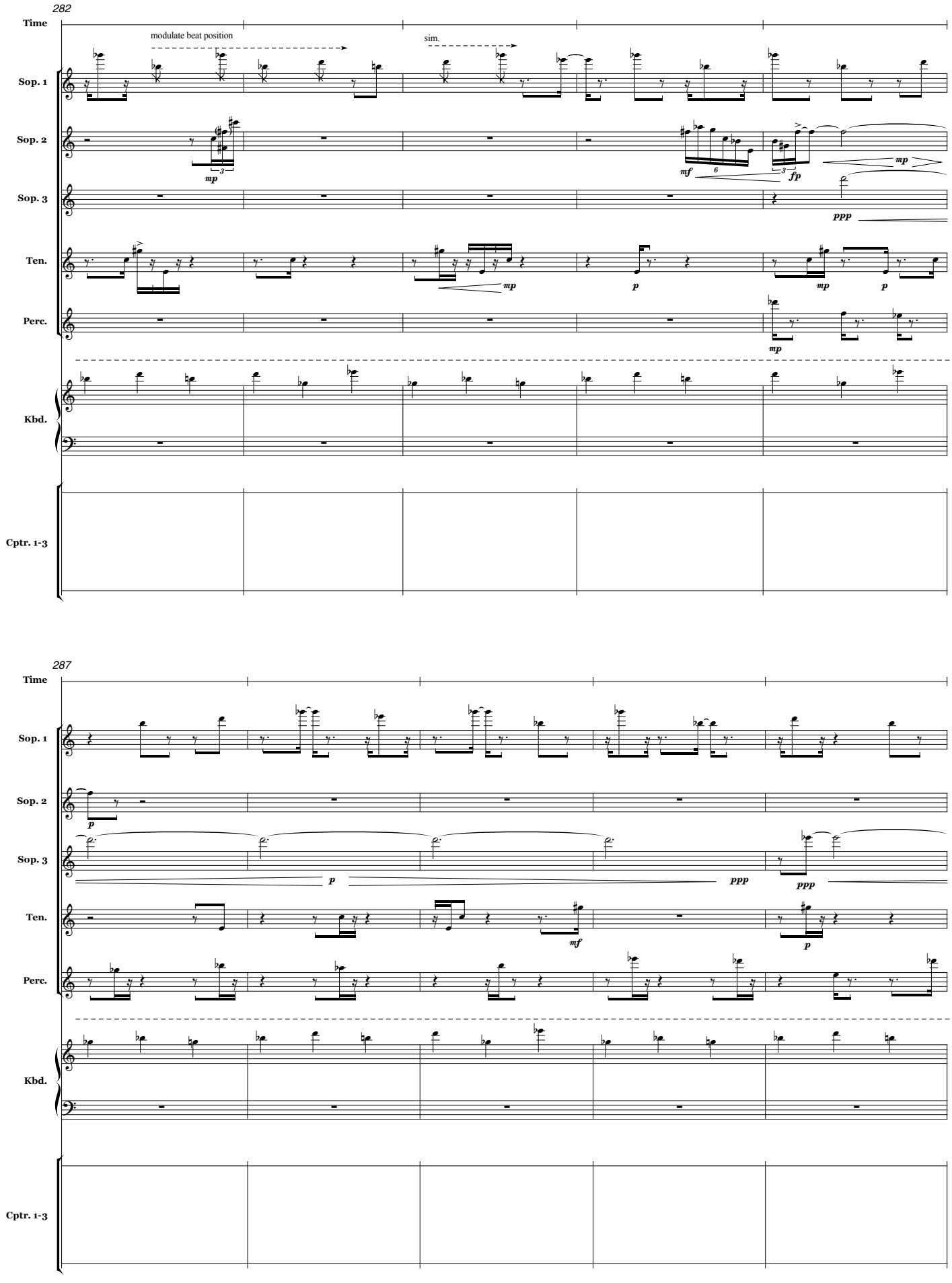
Cptr. 1-3

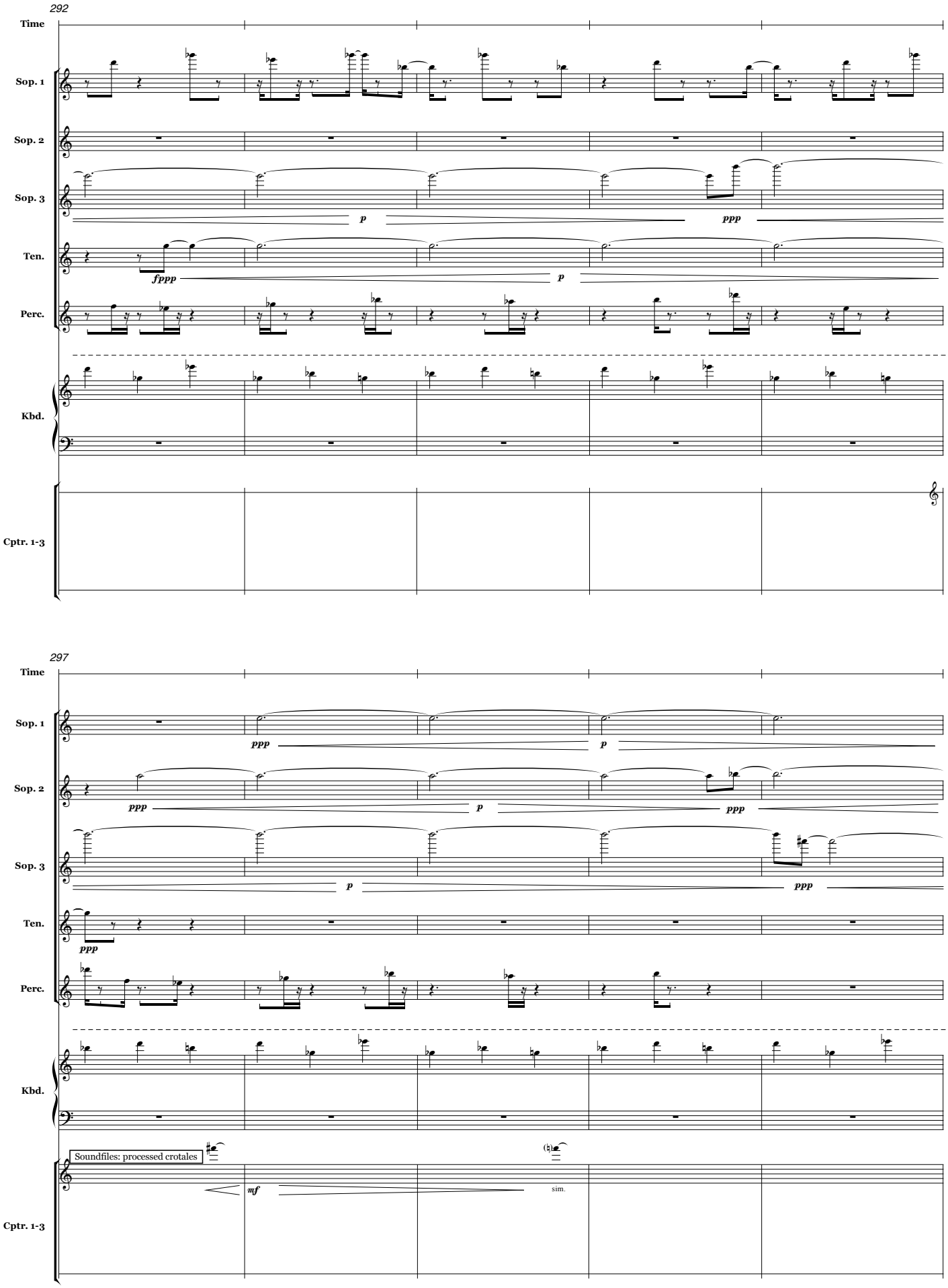
f *f* *f* *mp* *mp* 8va


267
3' 7·5"
Time
legato
staccato
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
p
f
ff


270
3' 15"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
f
p
mp


S
♩= 100
273
3' 17.5"
Anchor: Kbd.
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Anchor
sim.
Kbd.
Cptr. 1-3
Preset 26
Delays:
Gain: 0
Ramp: 10 seconds
277
Modulate rhythm as indicated
(creeping out of phase with kbd.)
sim.
poco


282
Time
modulate beat position
sim.
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
mp
mf
fp
ppp
p
287
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3


292
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
p
ppp
fppp
p
297
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
ppp
p
ppp
ppp
p
ppp
ppp
p
ppp
Soundfiles: processed crotales
mf
sim.

T

302

Time

Sop. 1

Sop. 2

Sop. 3

Ten.

Perc.

Kbd.

Cptr. 1-3

307

Time

Sop. 1

Sop. 2

Sop. 3

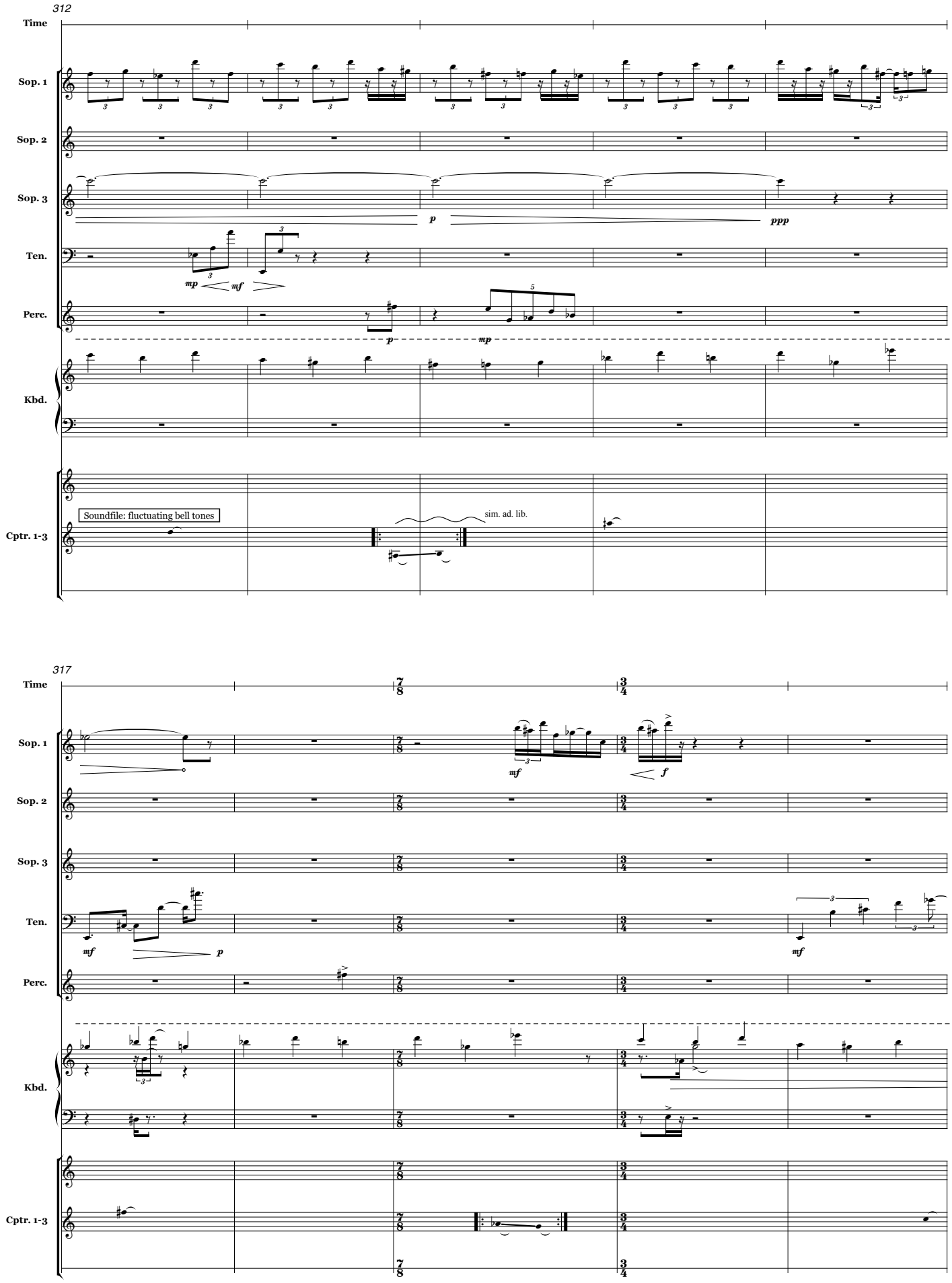
Ten.

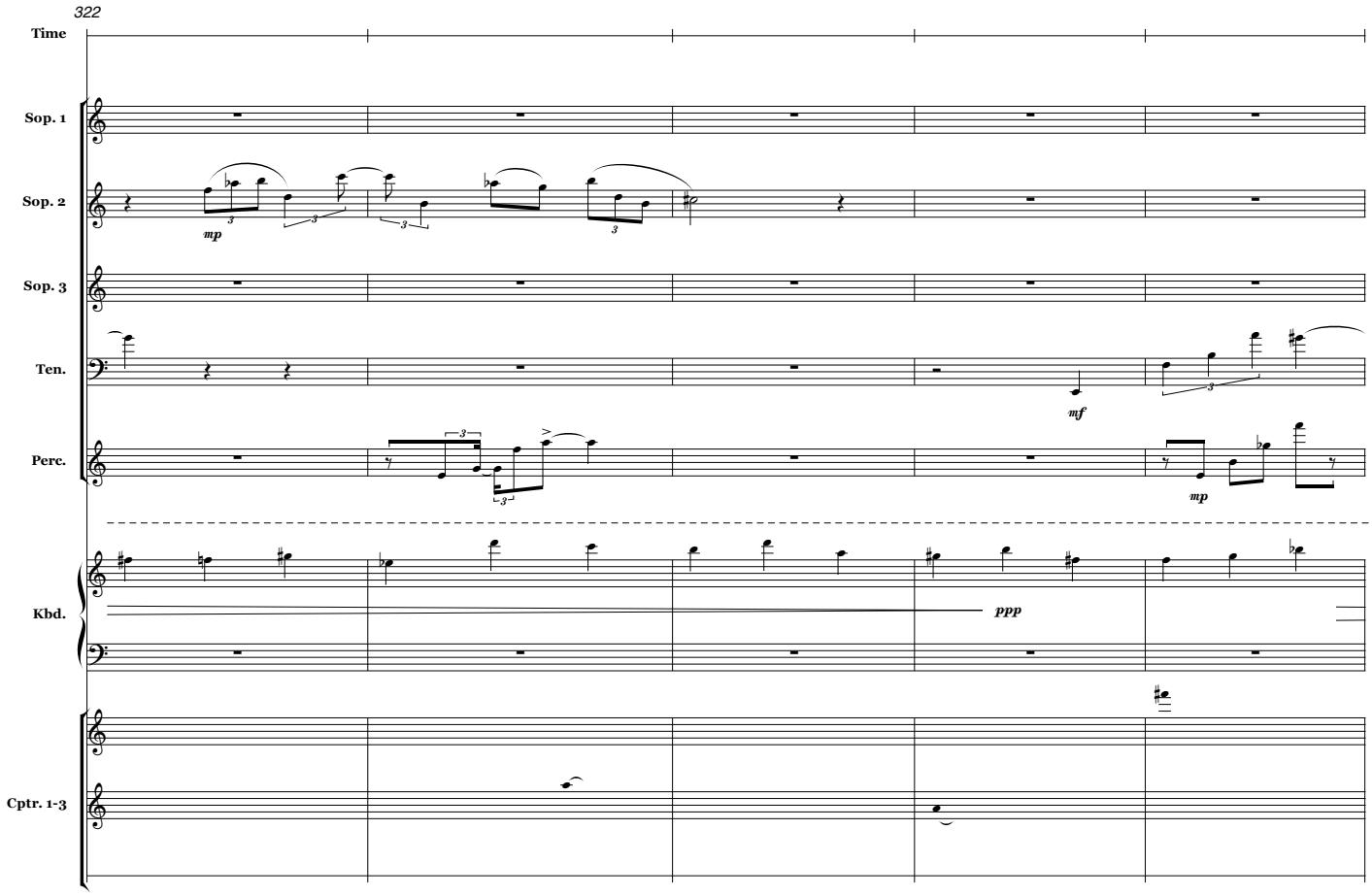
Perc.

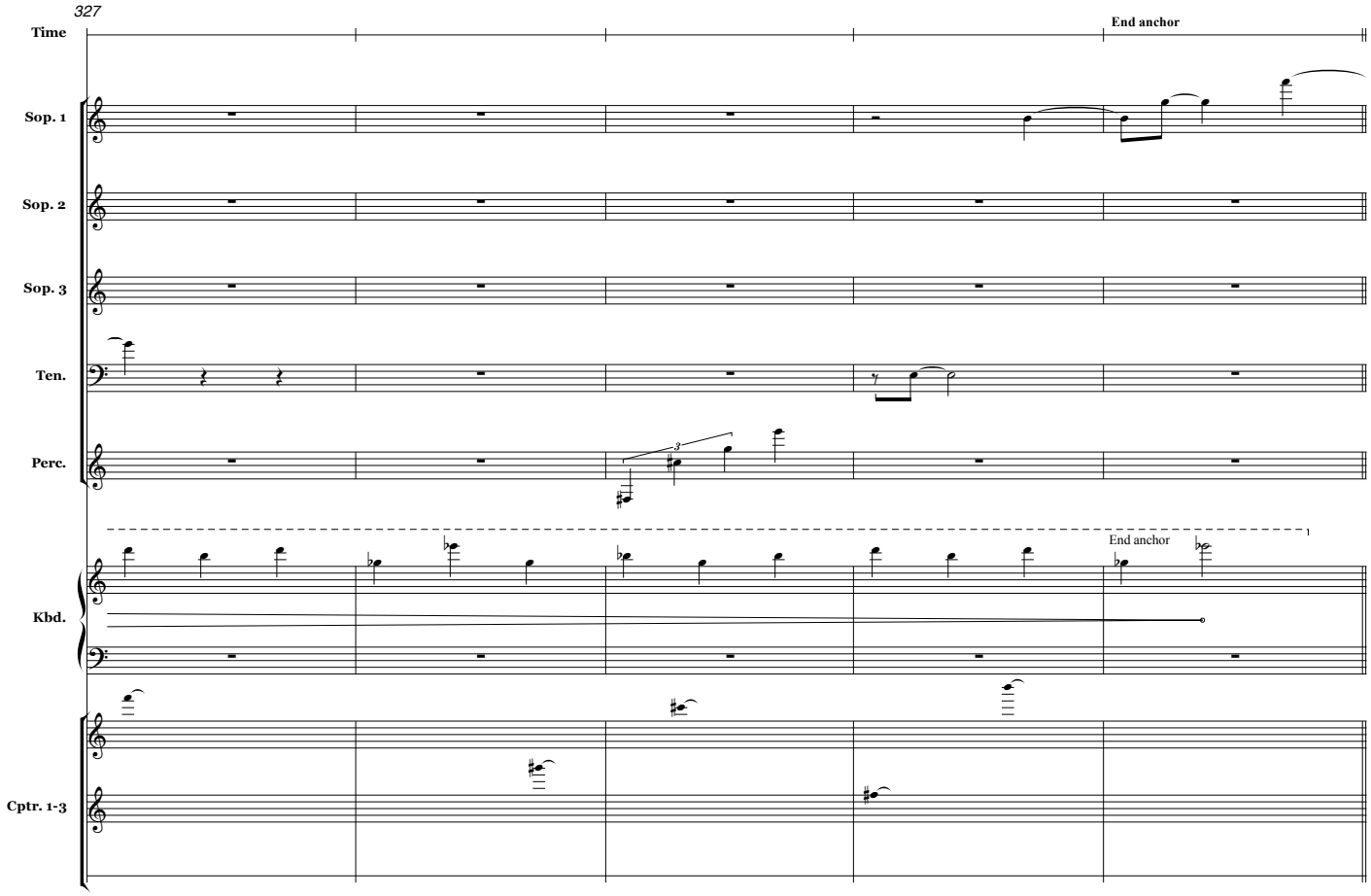
Kbd.

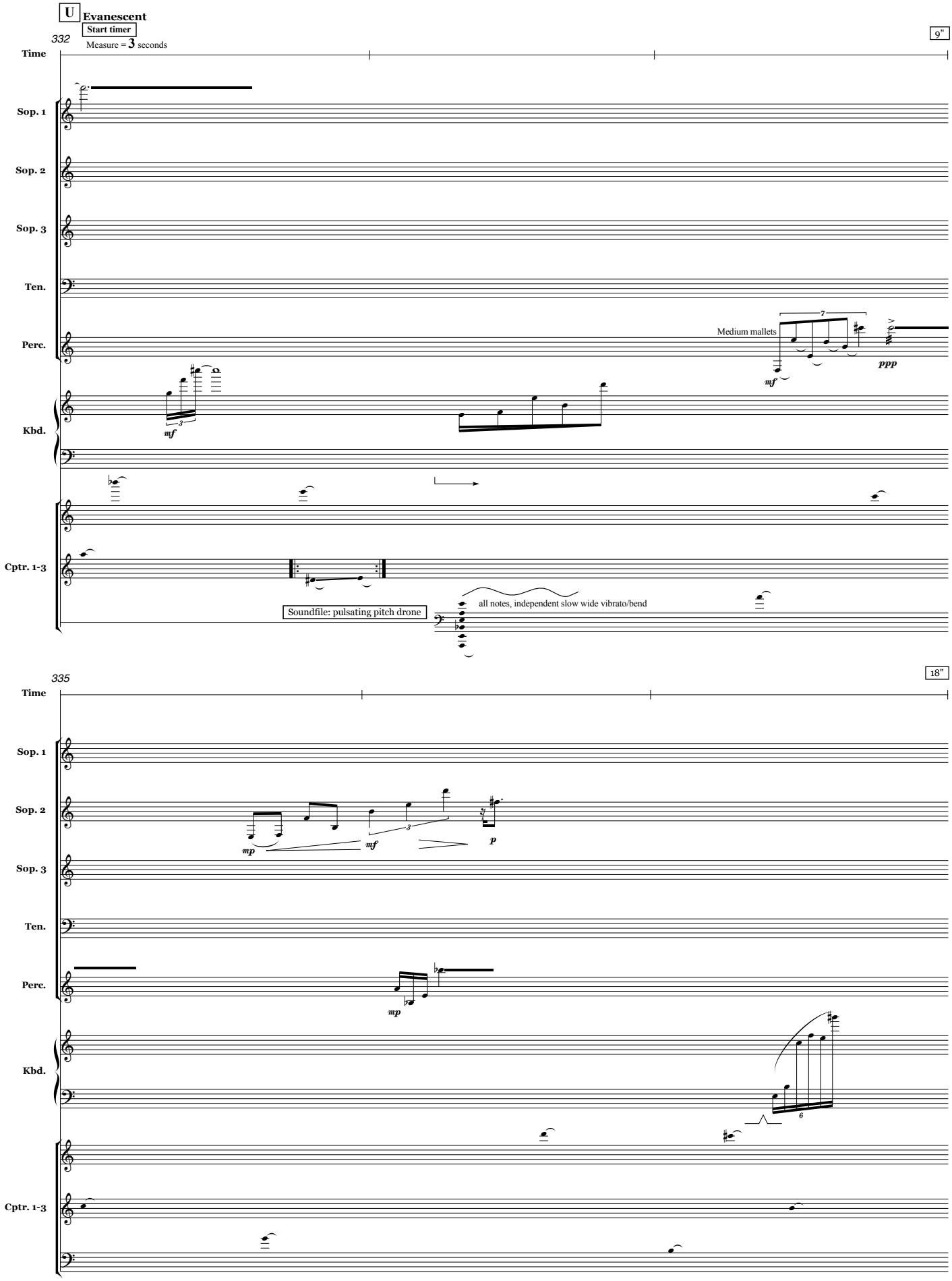
Cptr. 1-3

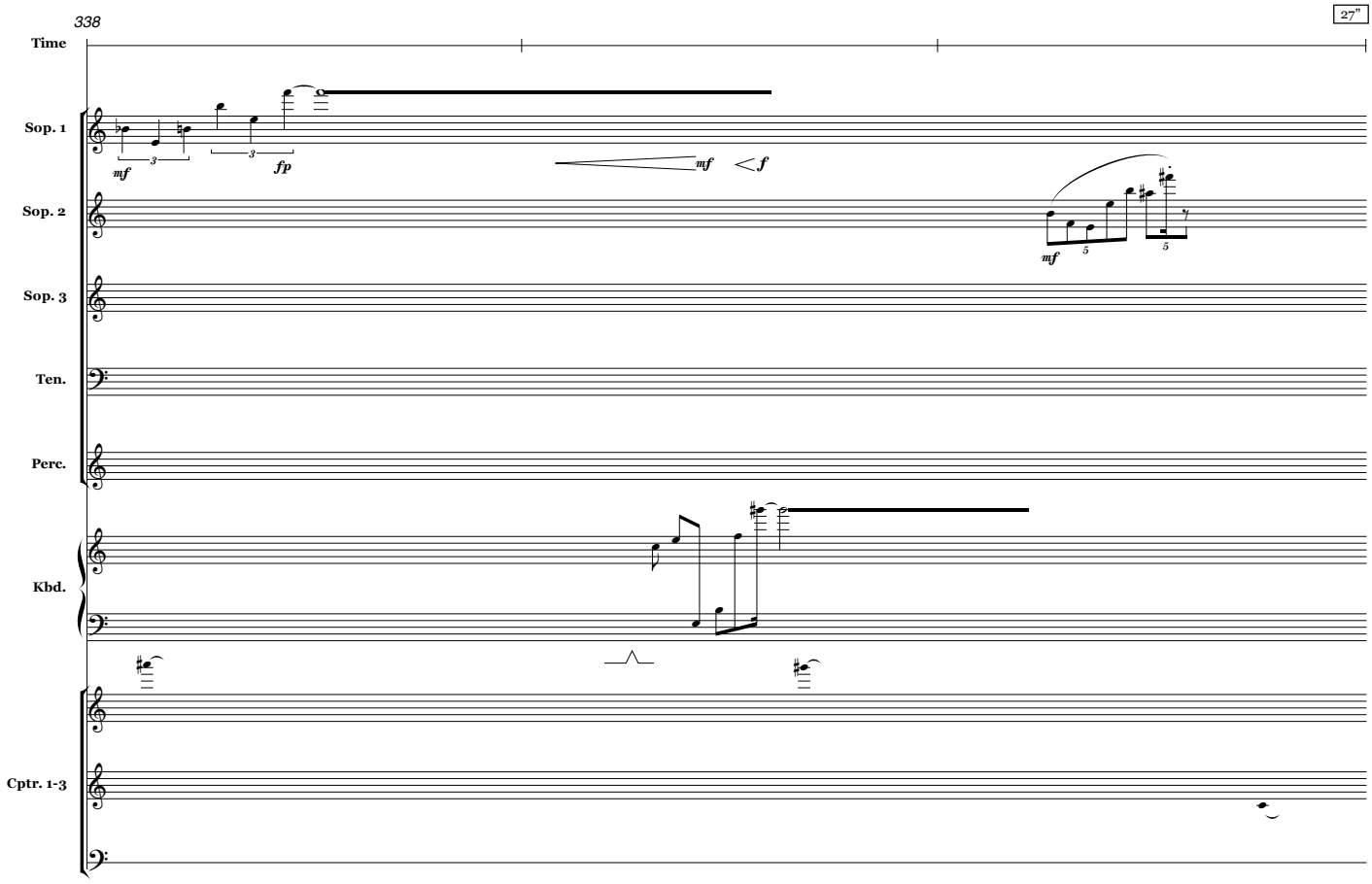
Cue

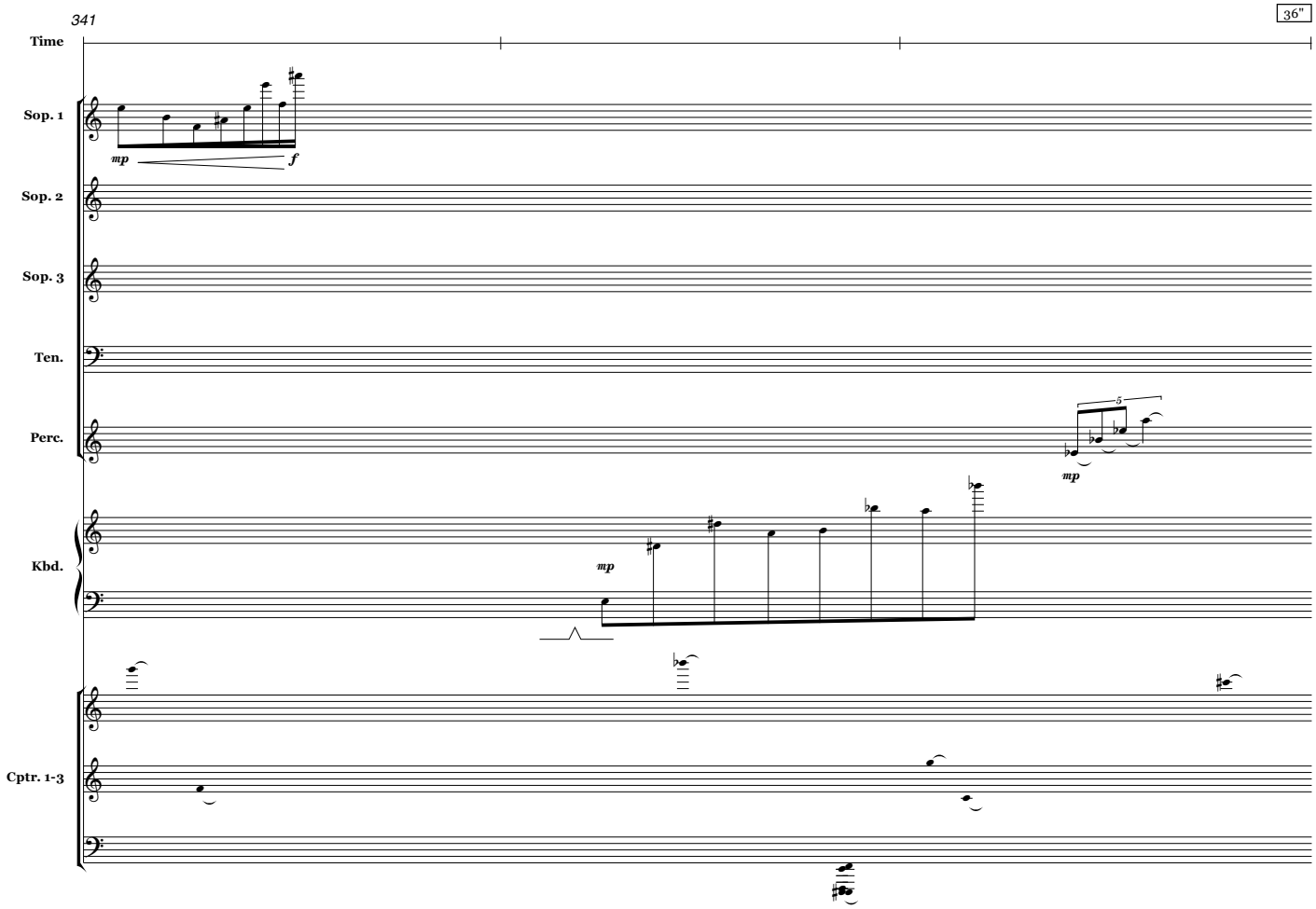

312
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
p
ppp
mp
mf
p
mp
Soundfile: fluctuating bell tones
sim. ad. lib.
317
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
mf
f
mf
p
mf

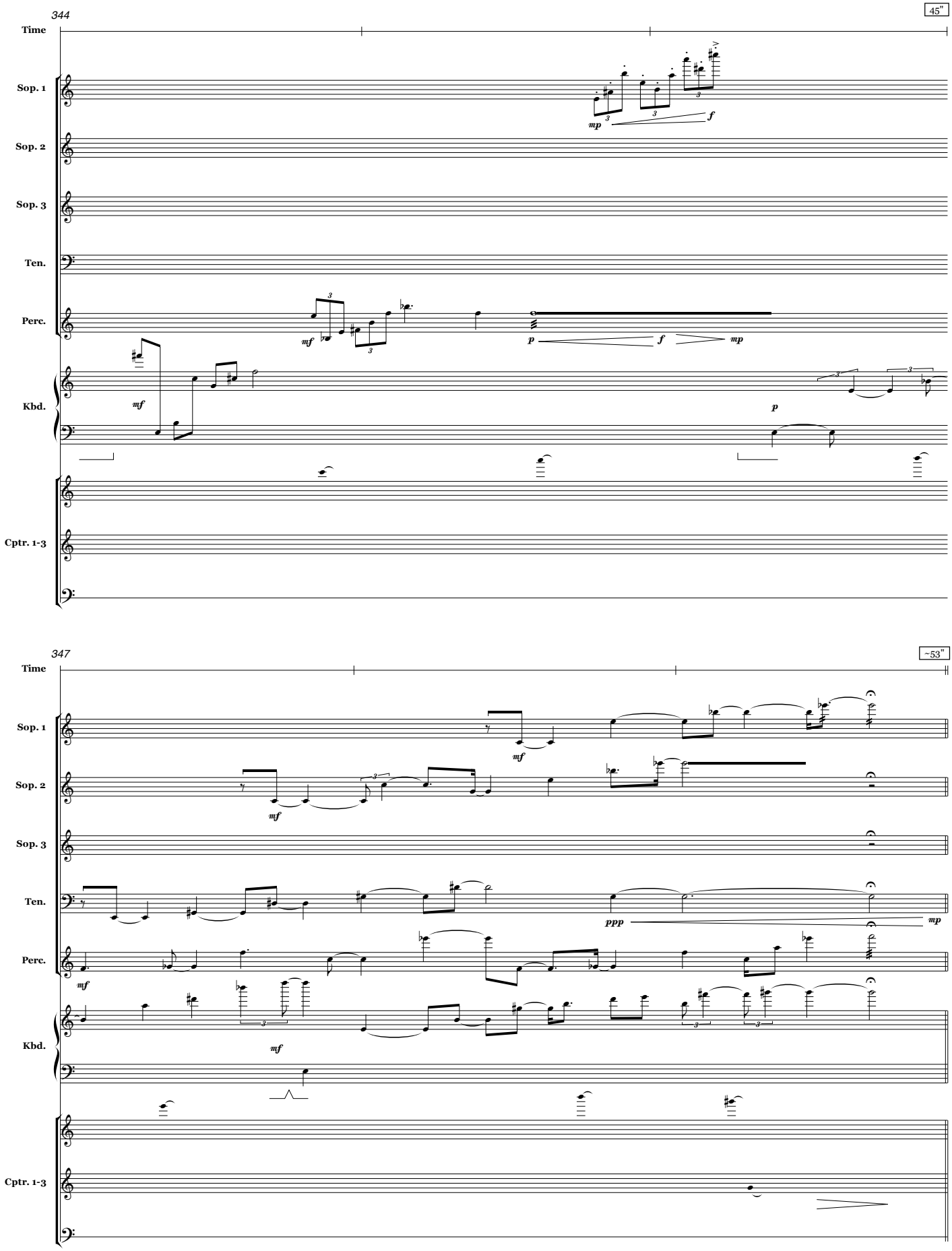

322
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
mp
mf
mp
ppp

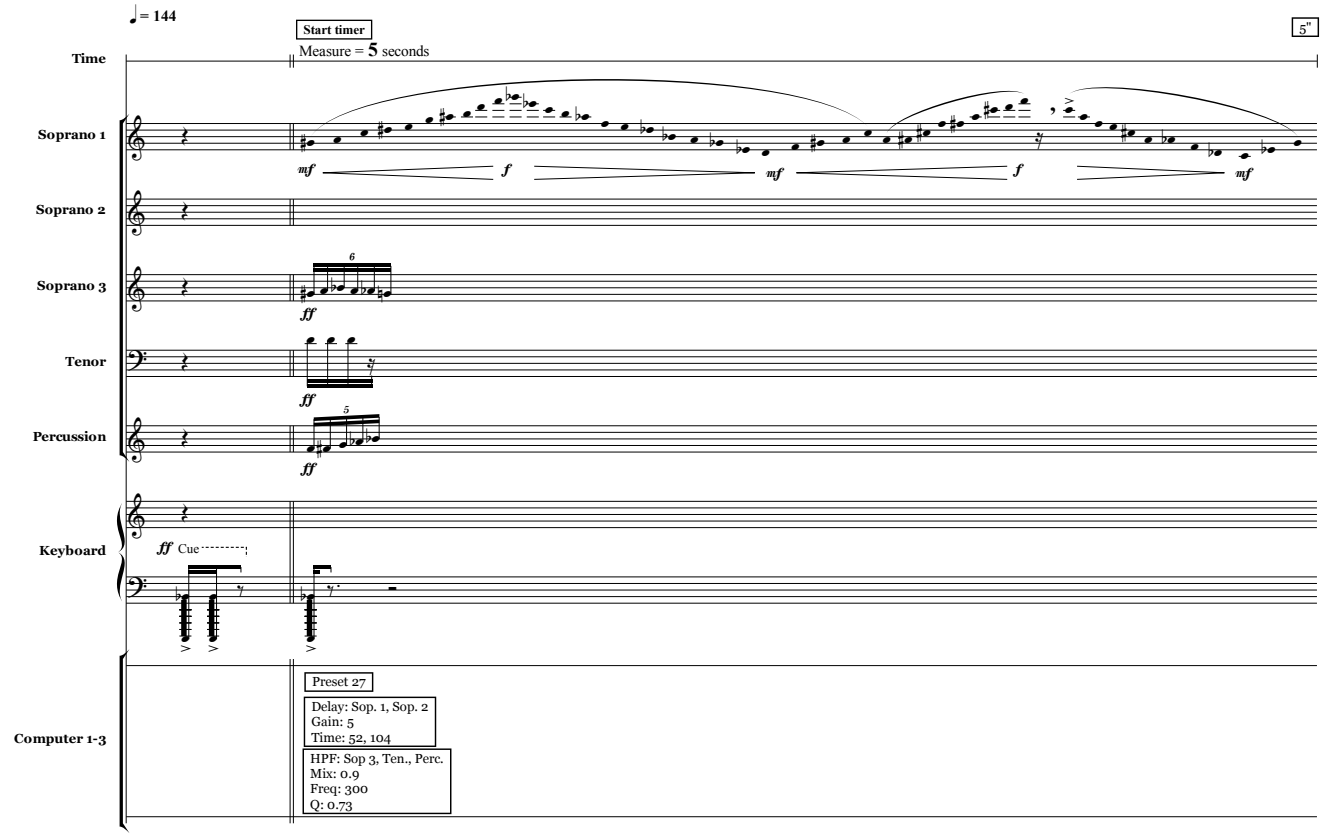

327
Time
End anchor
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
End anchor

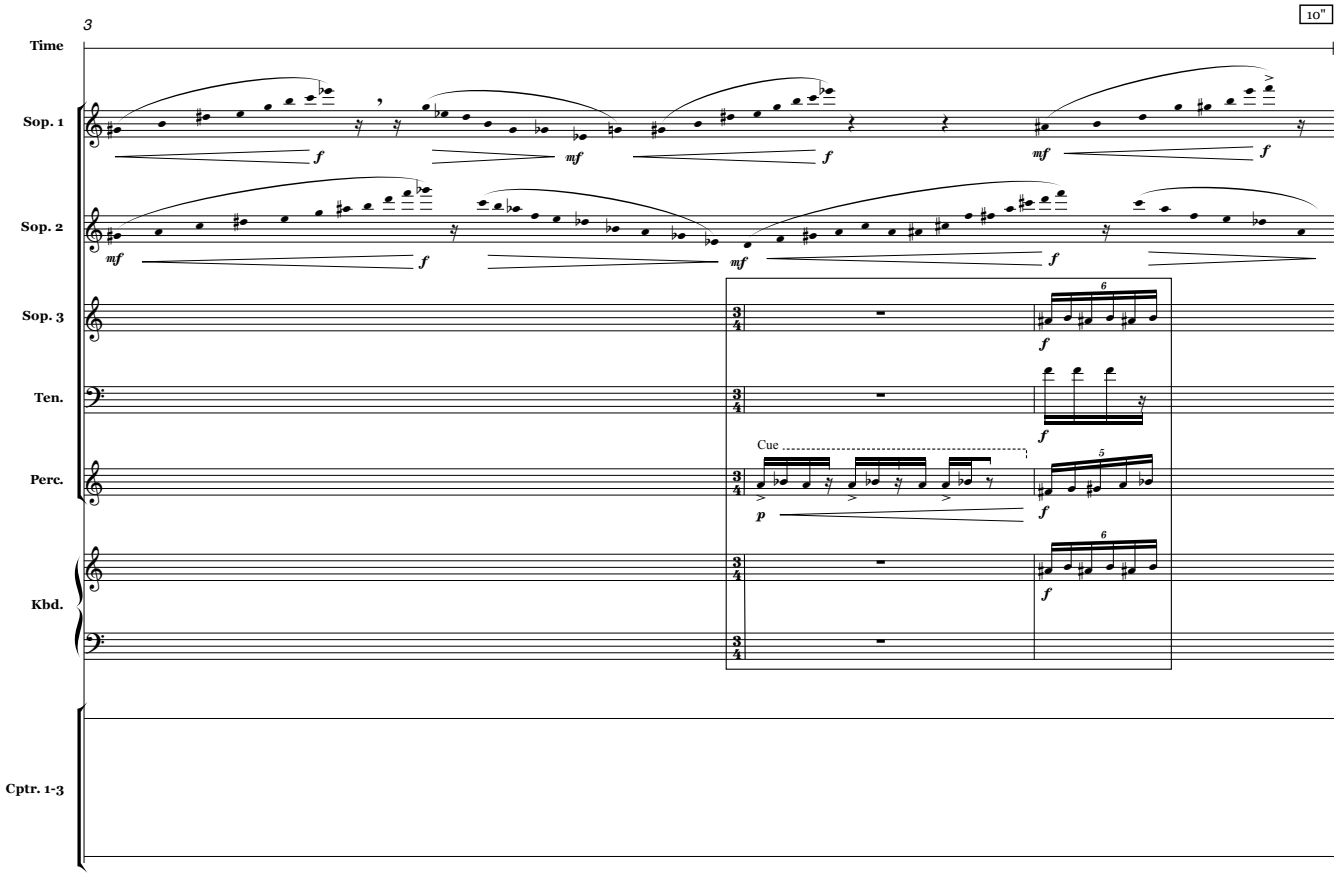

U
Evanescent
Start timer
Measure = 3 seconds
332
9"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
Medium mallets
mf
ppp
Soundfile: pulsating pitch drone
all notes, independent slow wide vibrato/bend
335
18"
mp
mf
p

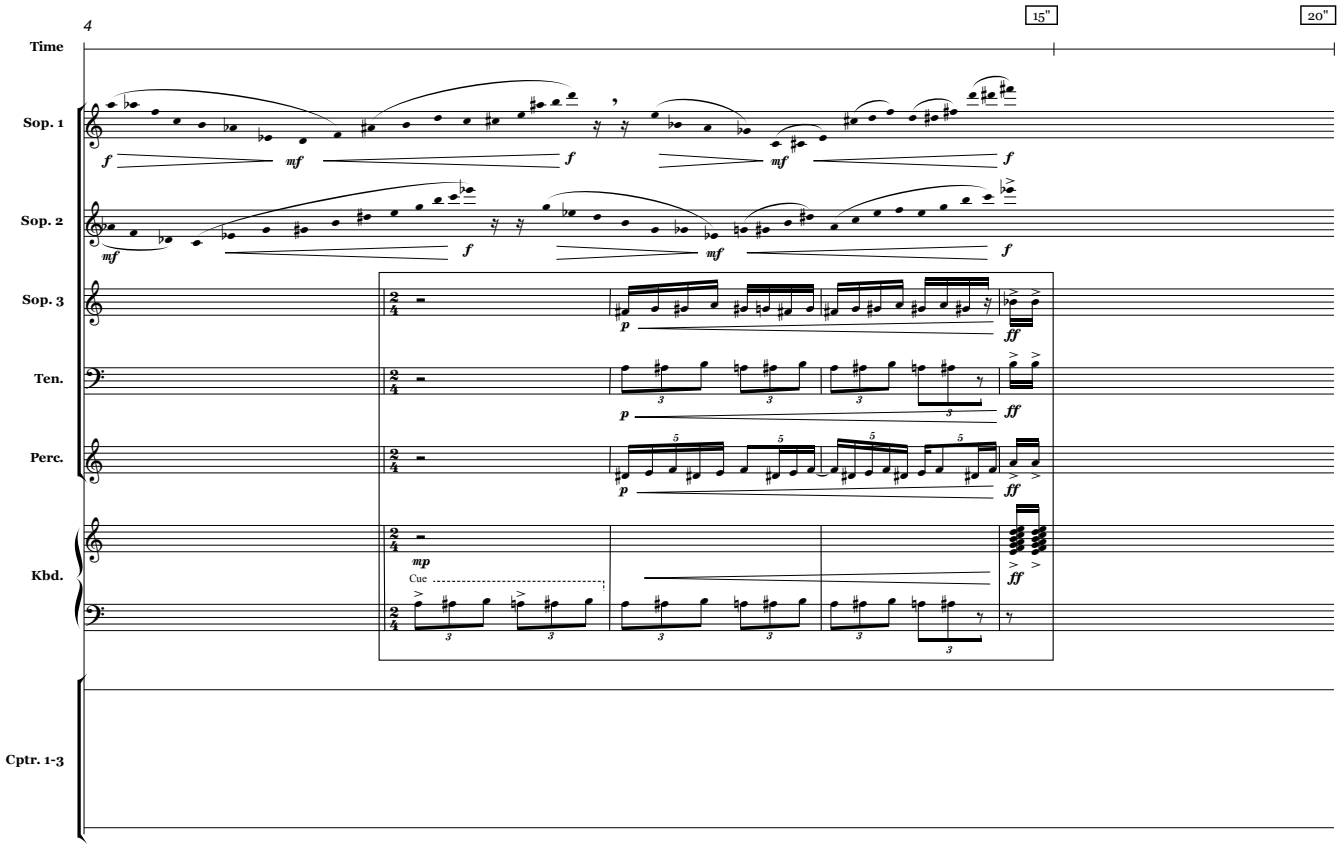

338
27"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
mf
fp
mf
f
mf

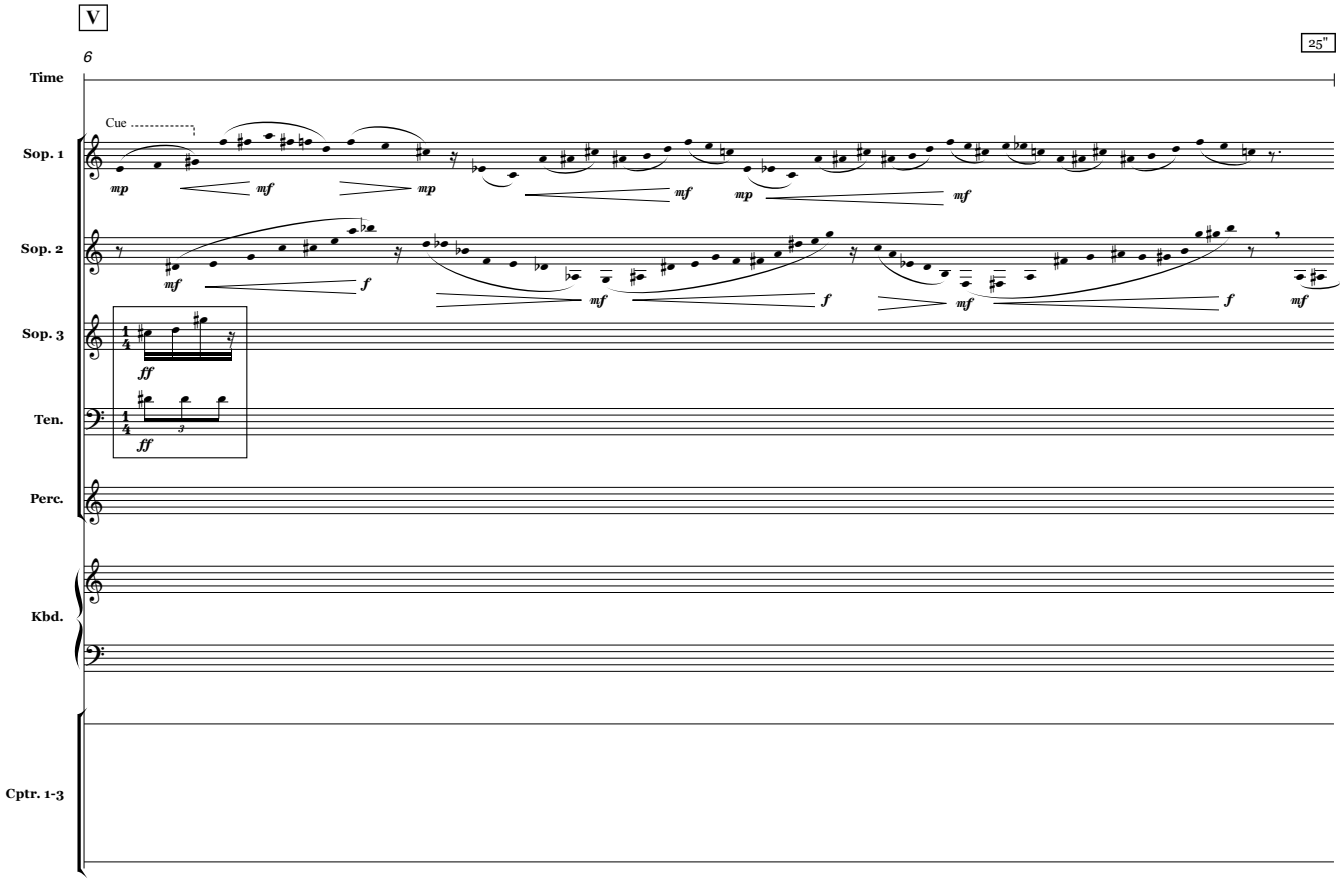

341
36"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
mp
f
mp
mp

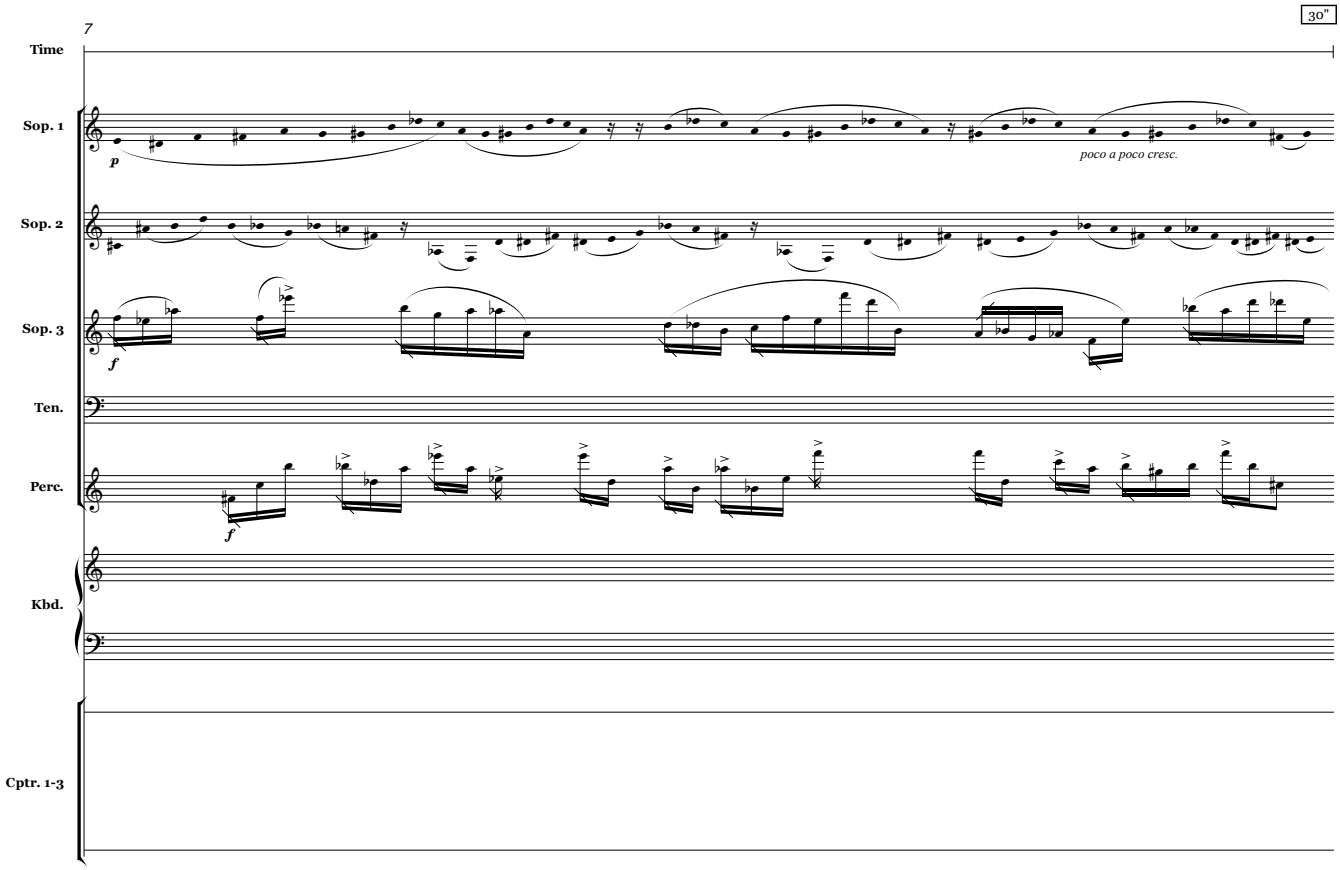

344
45"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
mp
f
mf
p
f
mp
mf
p
347
~53"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
mf
mf
ppp
mp
mf
mf

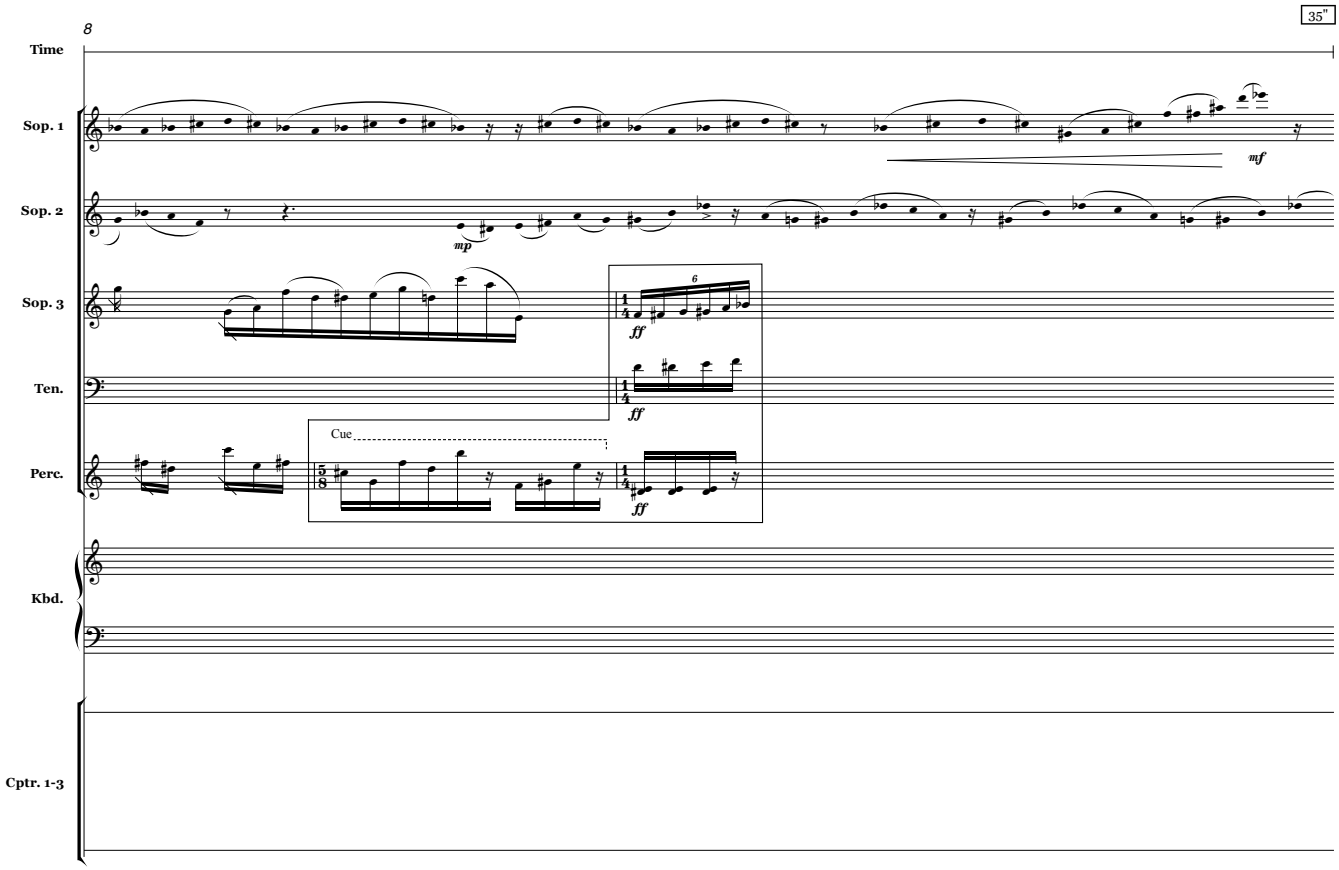

♩ = 144
Start timer
Measure = 5 seconds
5"
Time
Soprano 1
Soprano 2
Soprano 3
Tenor
Percussion
Keyboard
Cue
Computer 1-3
Preset 27
Delay: Sop. 1, Sop. 2
Gain: 5
Time: 52, 104
HPF: Sop 3, Ten., Perc.
Mix: 0.9
Freq: 300
Q: 0.73

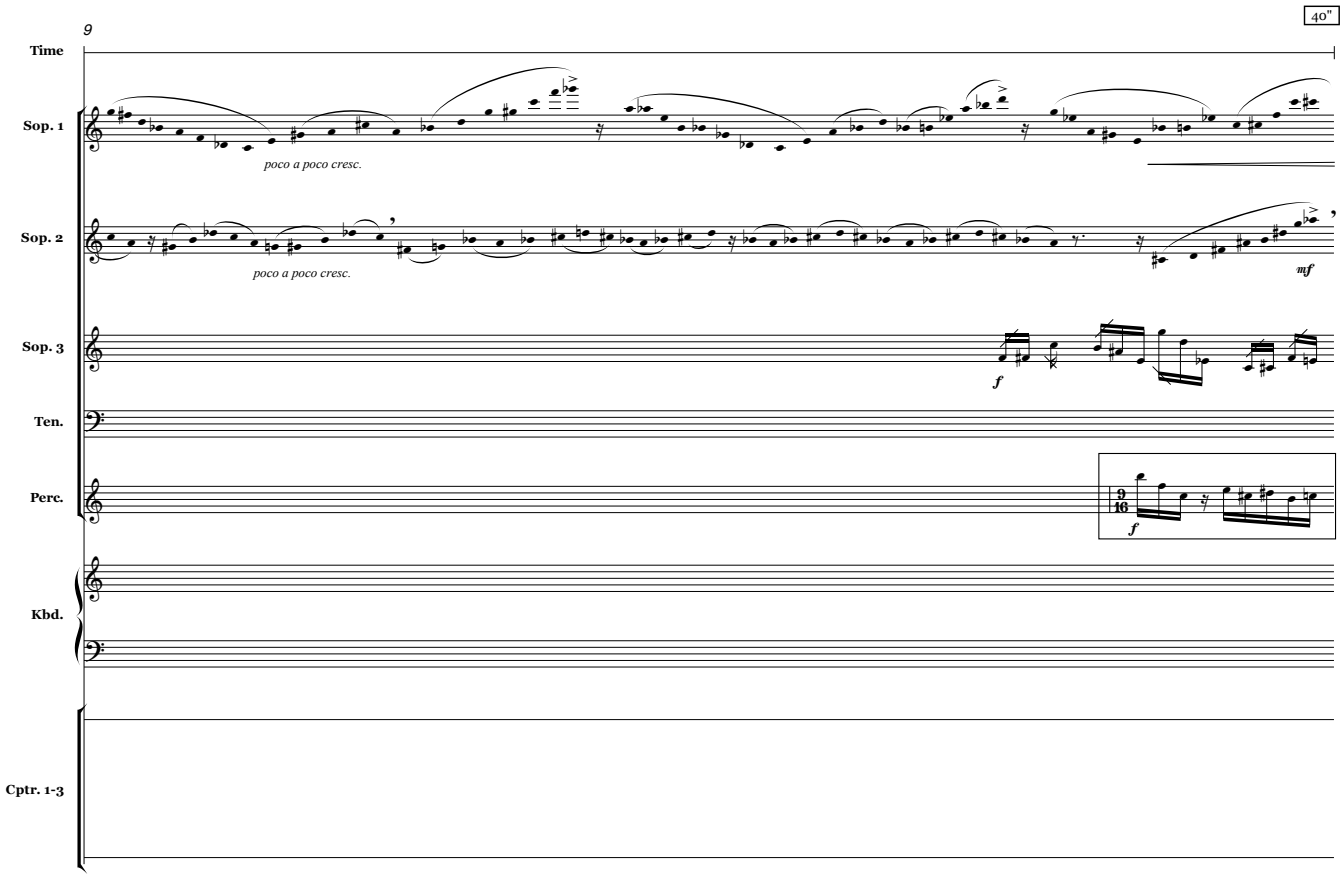

3
10"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cue
Cptr. 1-3

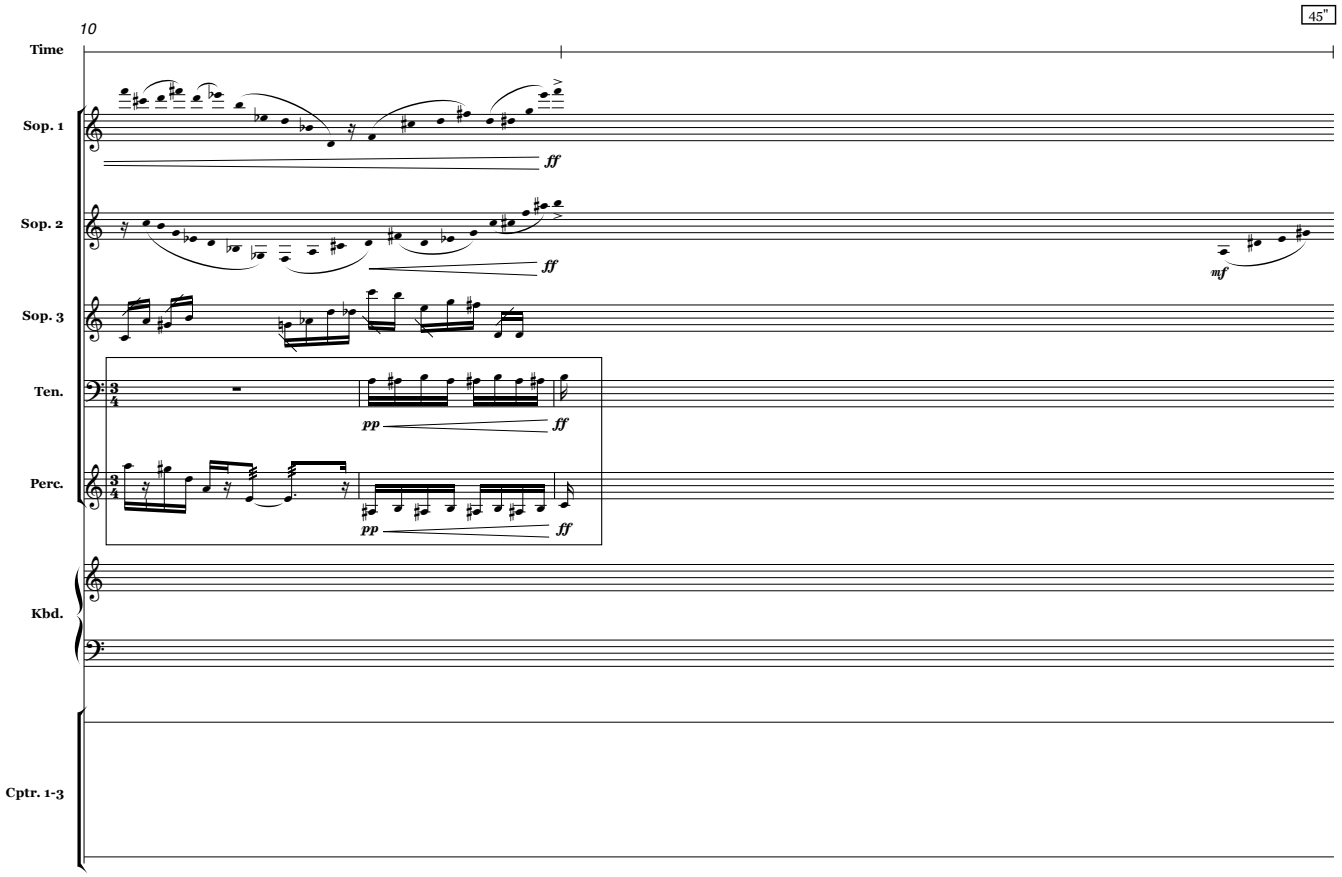

4
15"
20"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cue
Cptr. 1-3

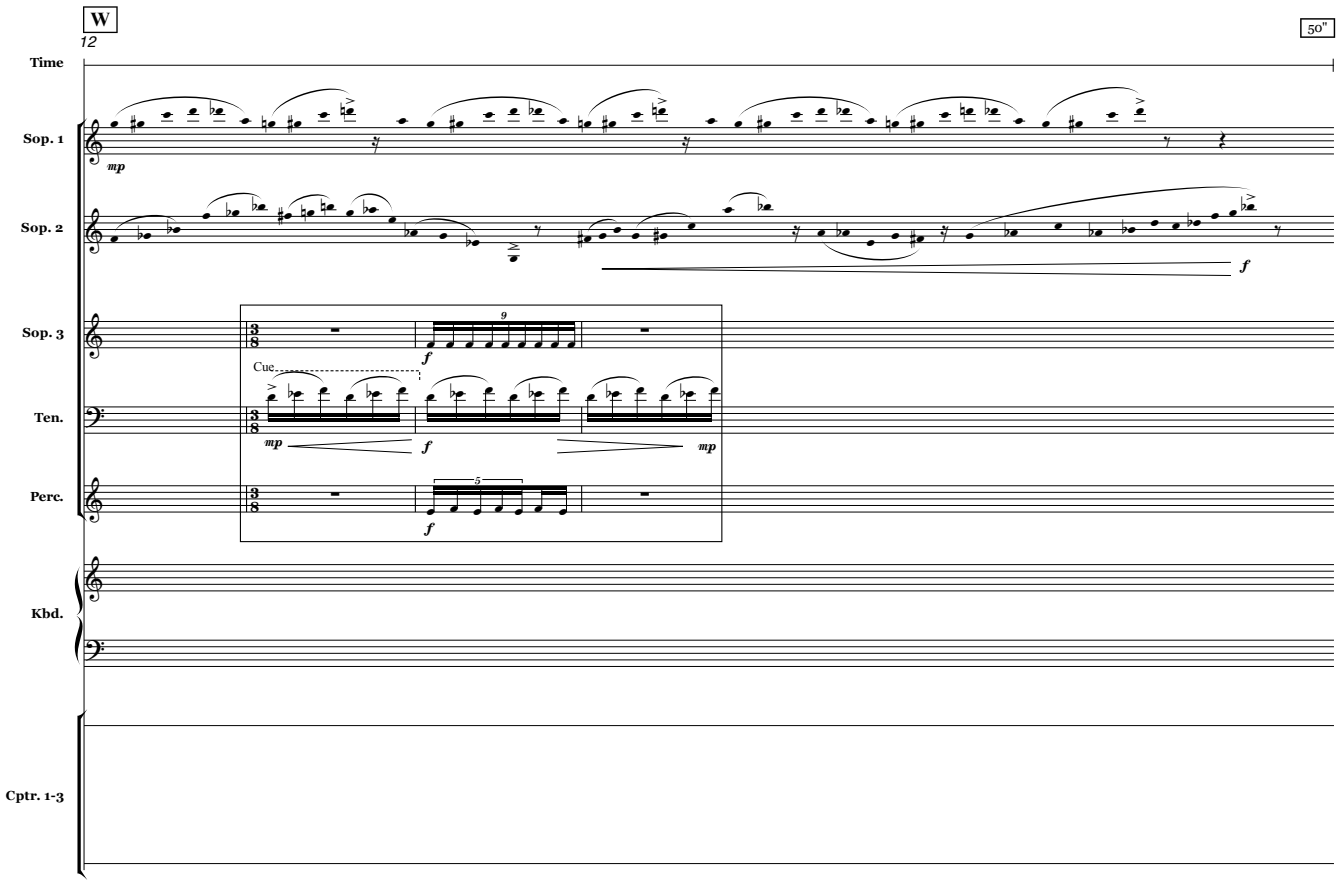

V
6
25"
Time
Cue
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

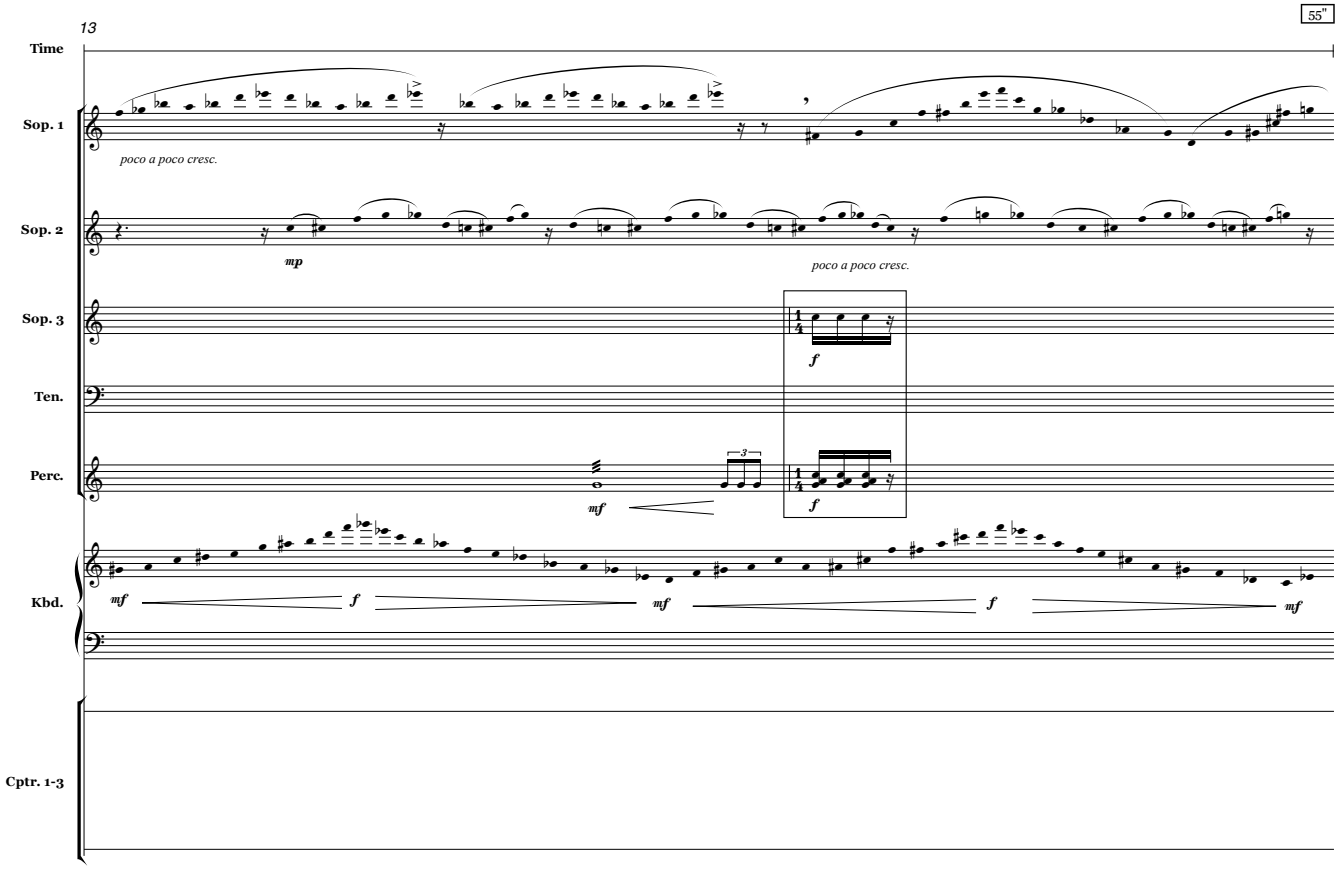

7
30"
Time
Sop. 1
p
poco a poco cresc.
Sop. 2
Sop. 3
f
Ten.
Perc.
f
Kbd.
Cptr. 1-3

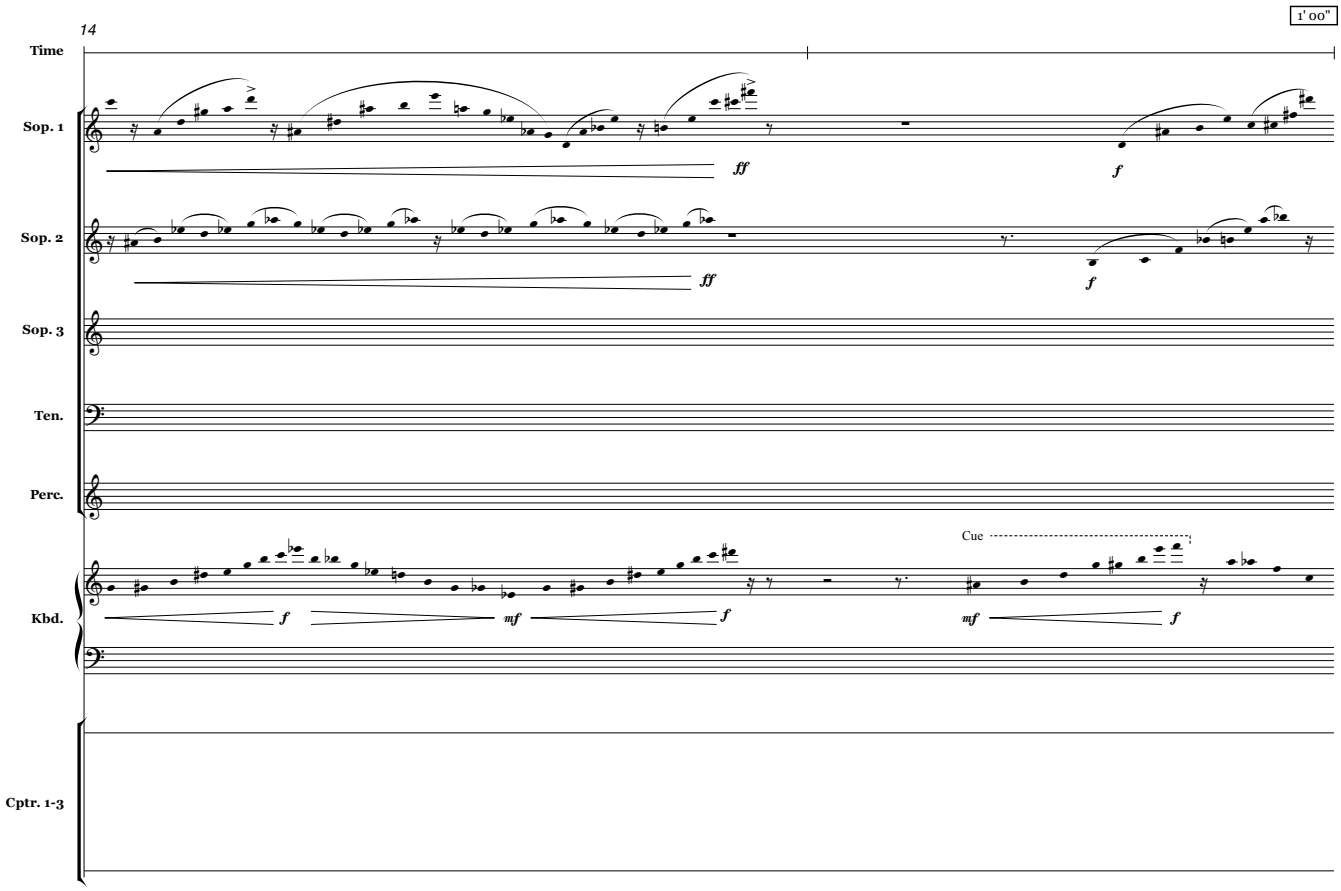

8
35"
Time
Sop. 1
mf
Sop. 2
mp
Sop. 3
6
ff
Ten.
ff
Cue
Perc.
ff
Kbd.
Cptr. 1-3

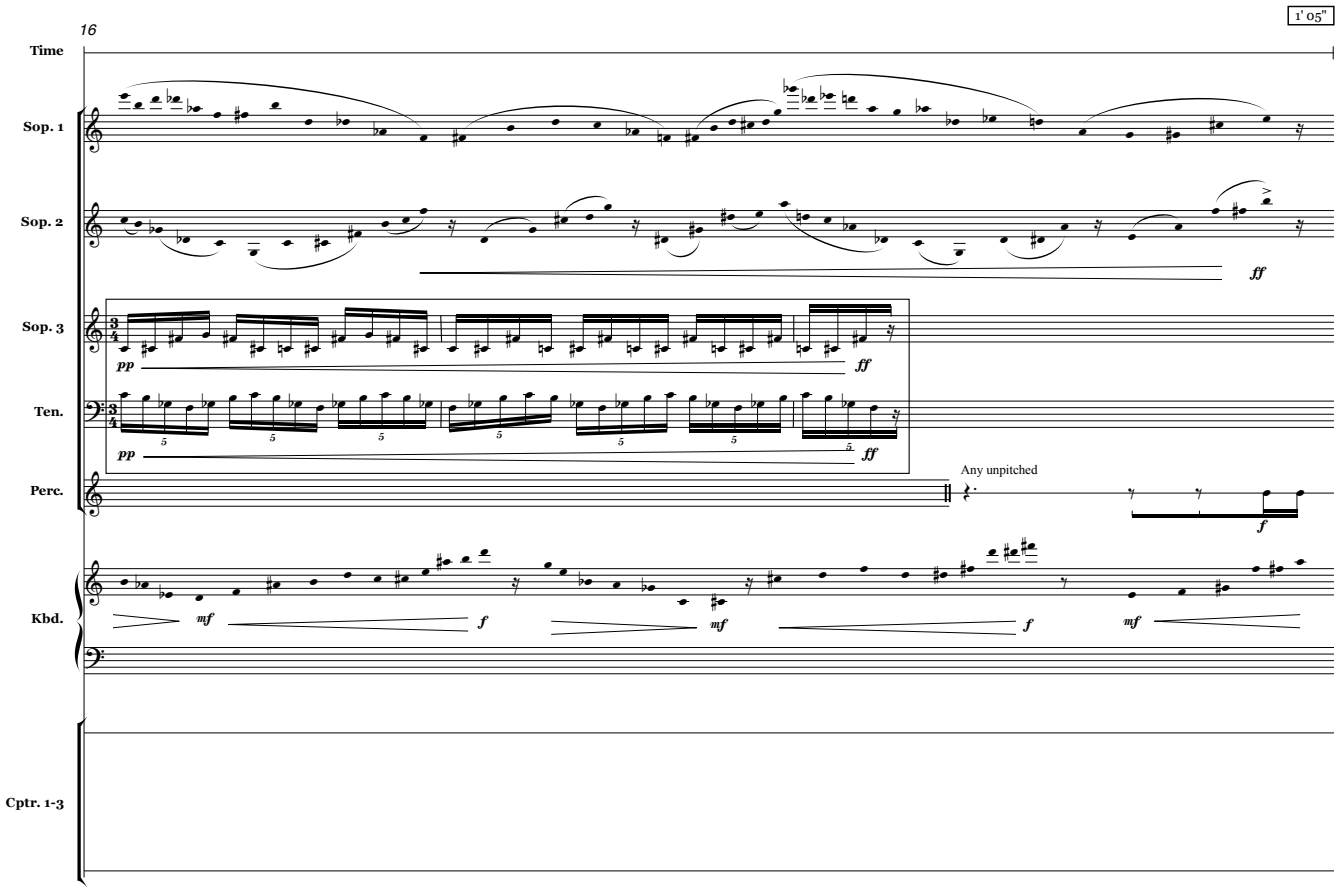

40"
9
Time
Sop. 1
poco a poco cresc.
Sop. 2
poco a poco cresc.
mf
Sop. 3
f
Ten.
Perc.
9/16
f
Kbd.
Cptr. 1-3

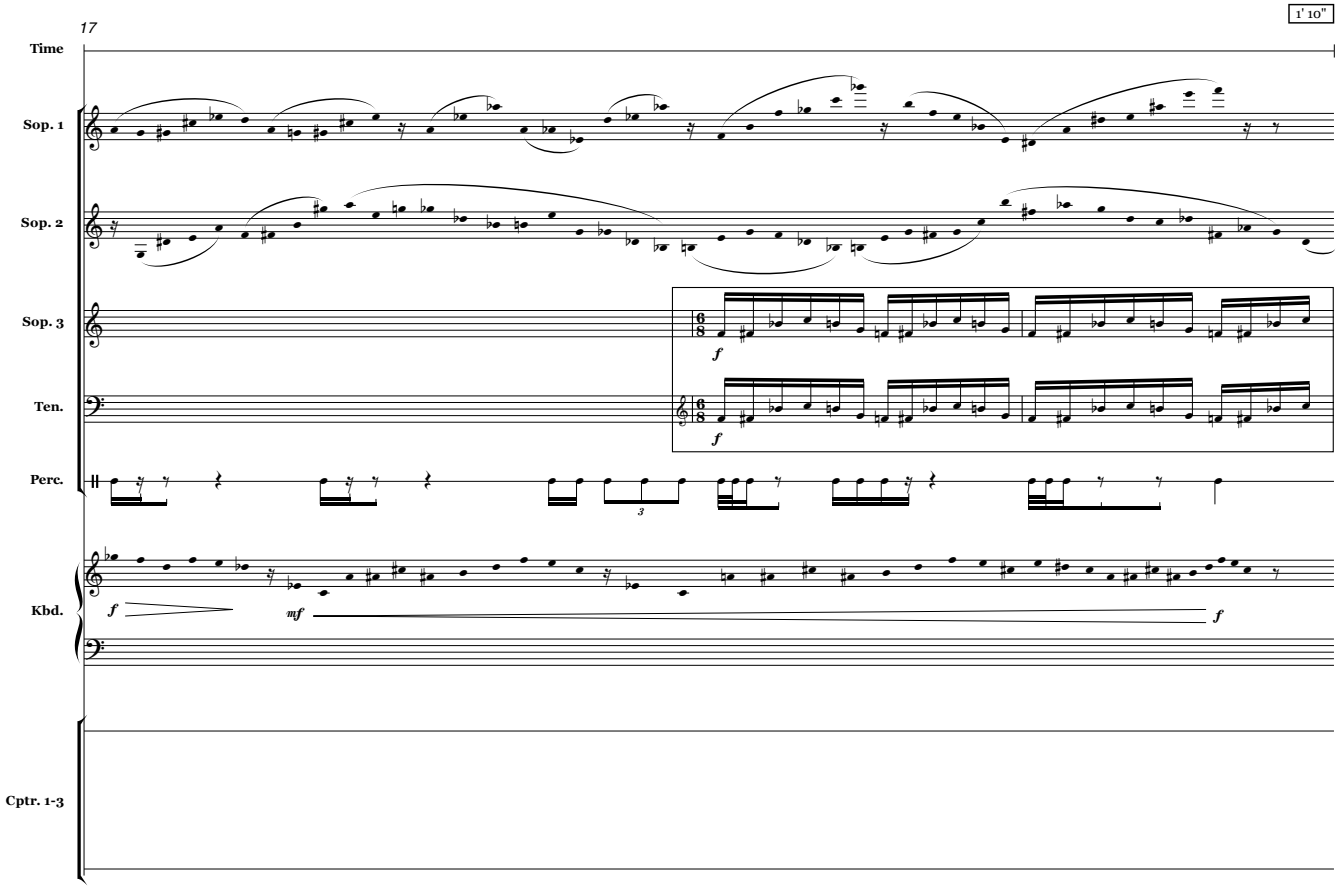

45"
10
Time
Sop. 1
ff
Sop. 2
ff
mf
Sop. 3
Ten.
3/4
pp
ff
Perc.
3/4
pp
ff
Kbd.
Cptr. 1-3

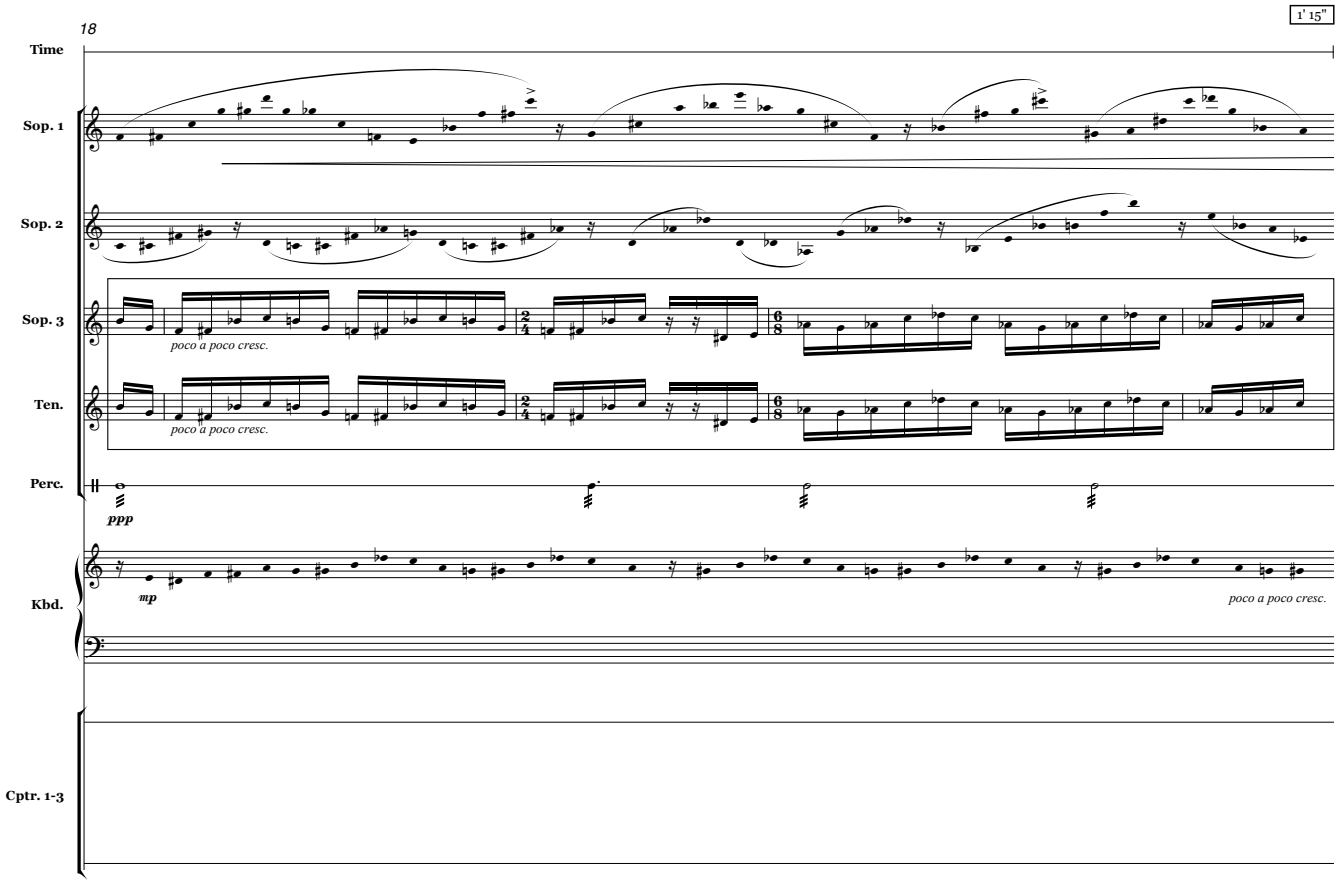

W
12
50"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
Cue
mp
f
mp

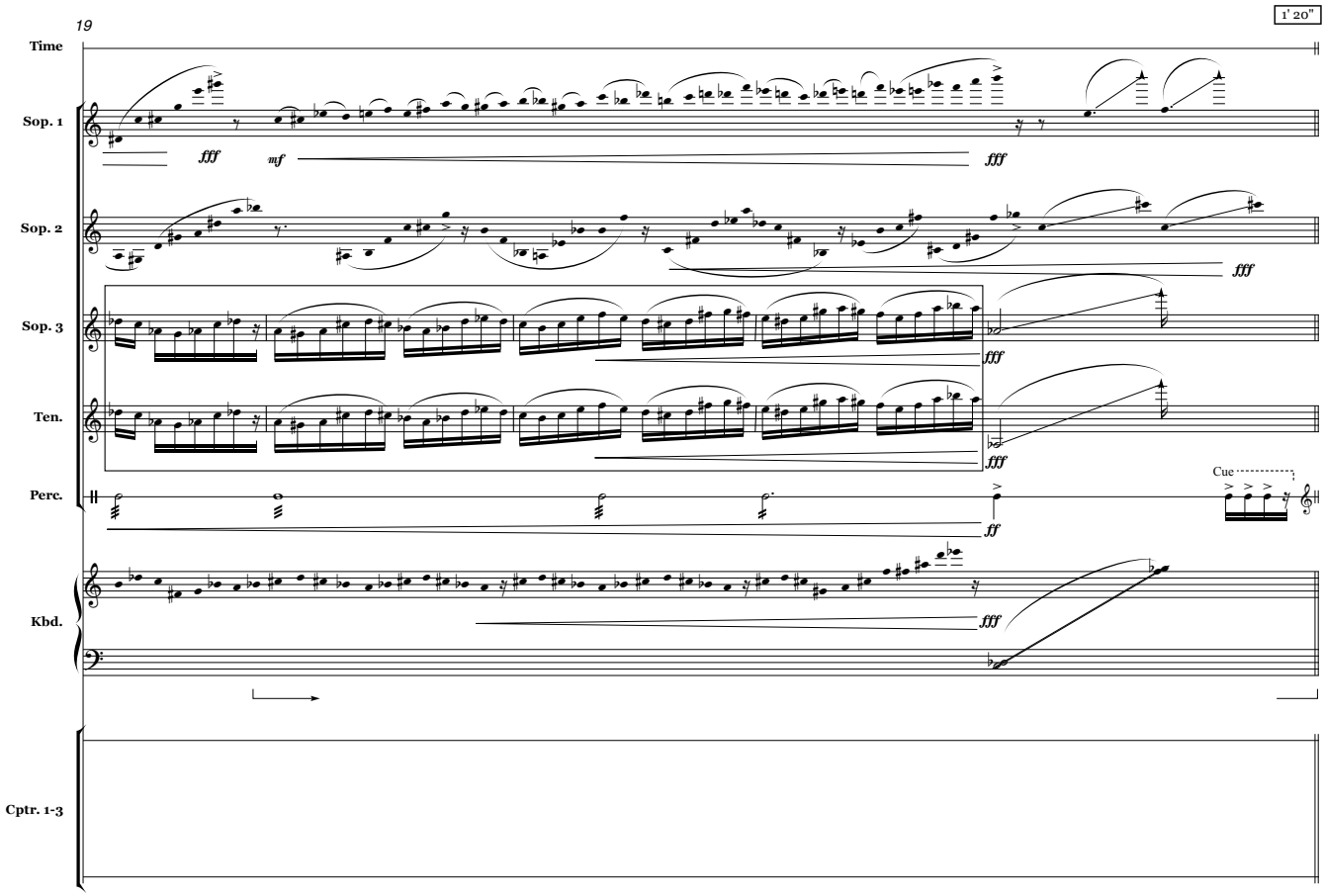

13
55"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
poco a poco cresc.
mp
poco a poco cresc.
f
mf
f
mf
f
mf

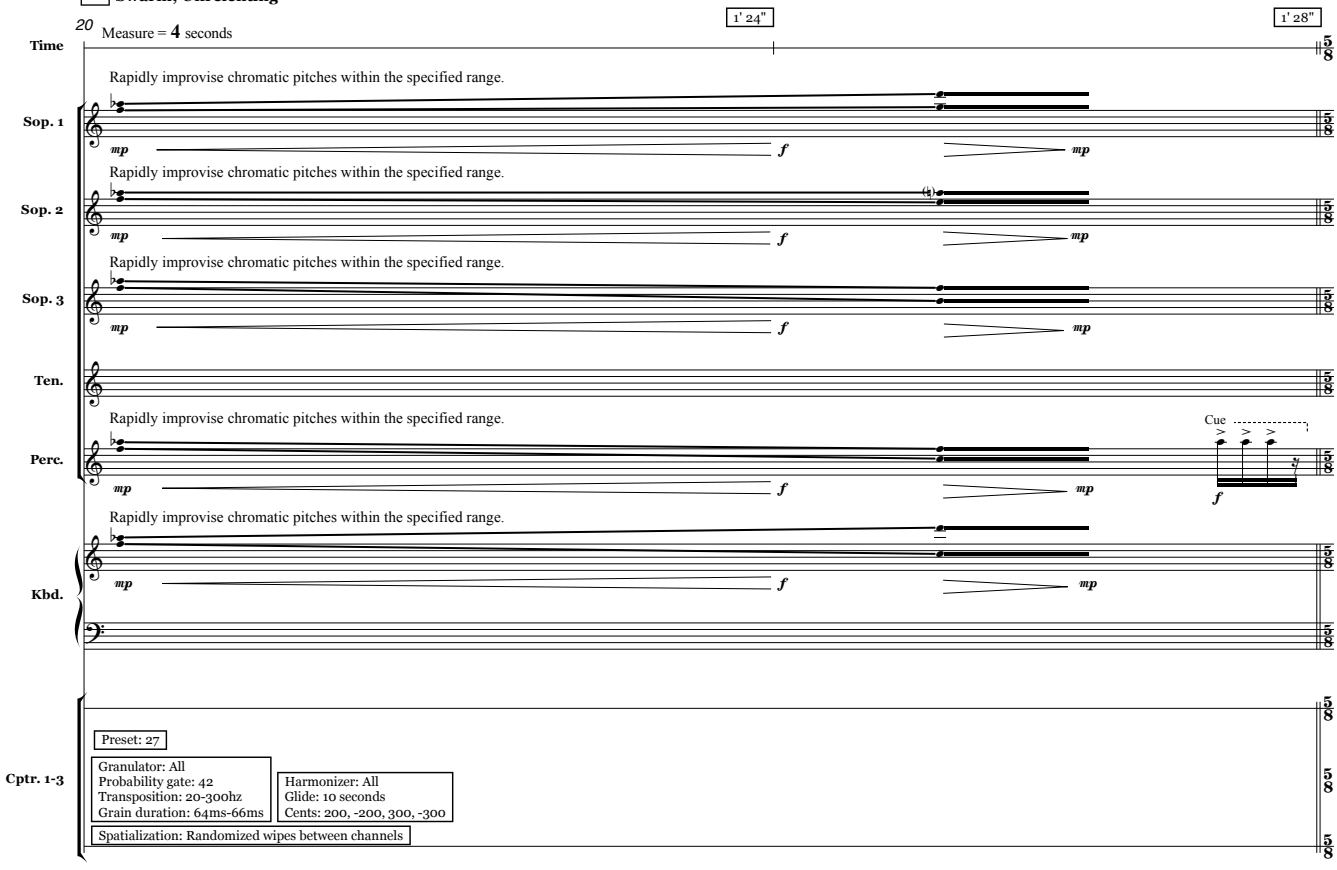

1' 00"
14
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
ff
f
Cue
mf

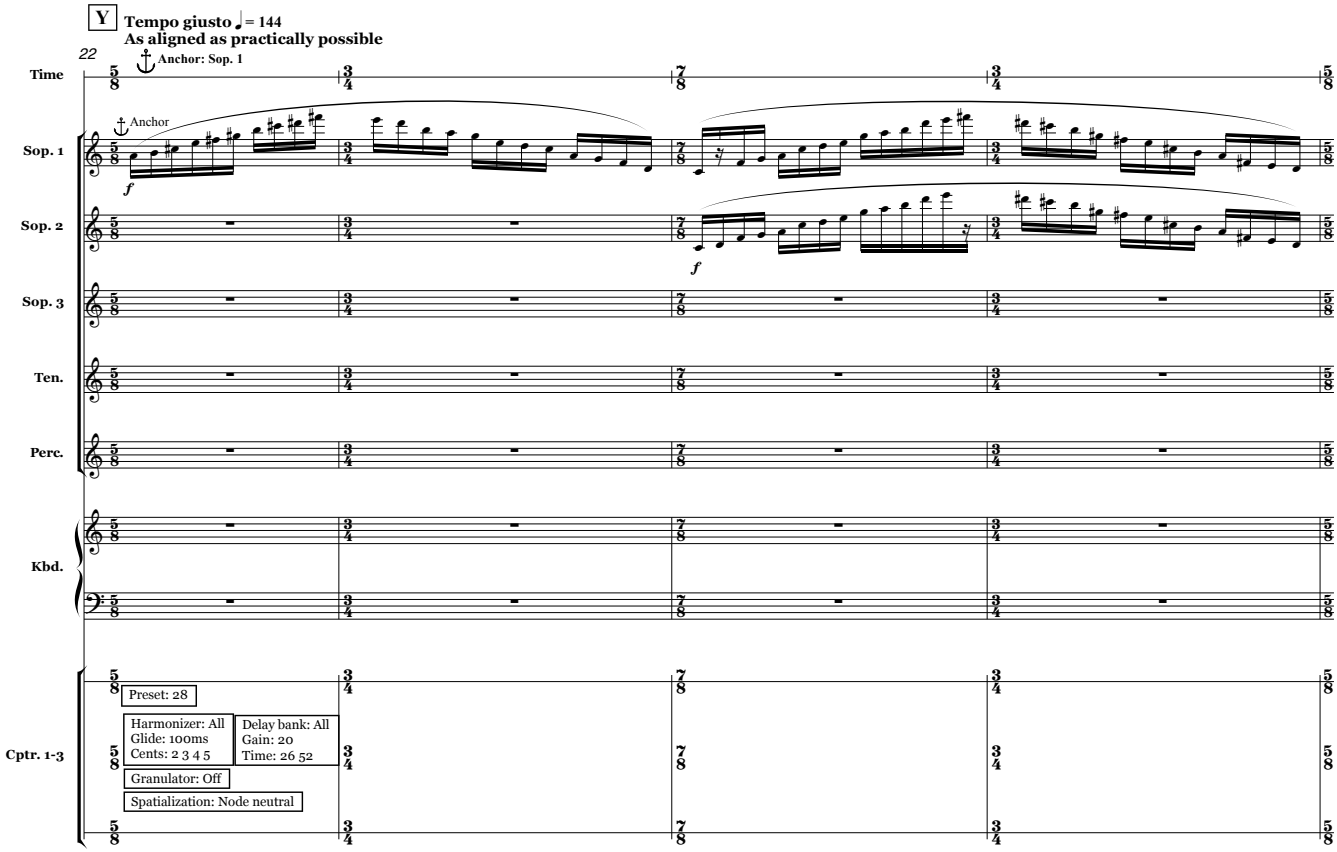

1' 05"
16
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
pp
ff
Any unpitched
mf
f

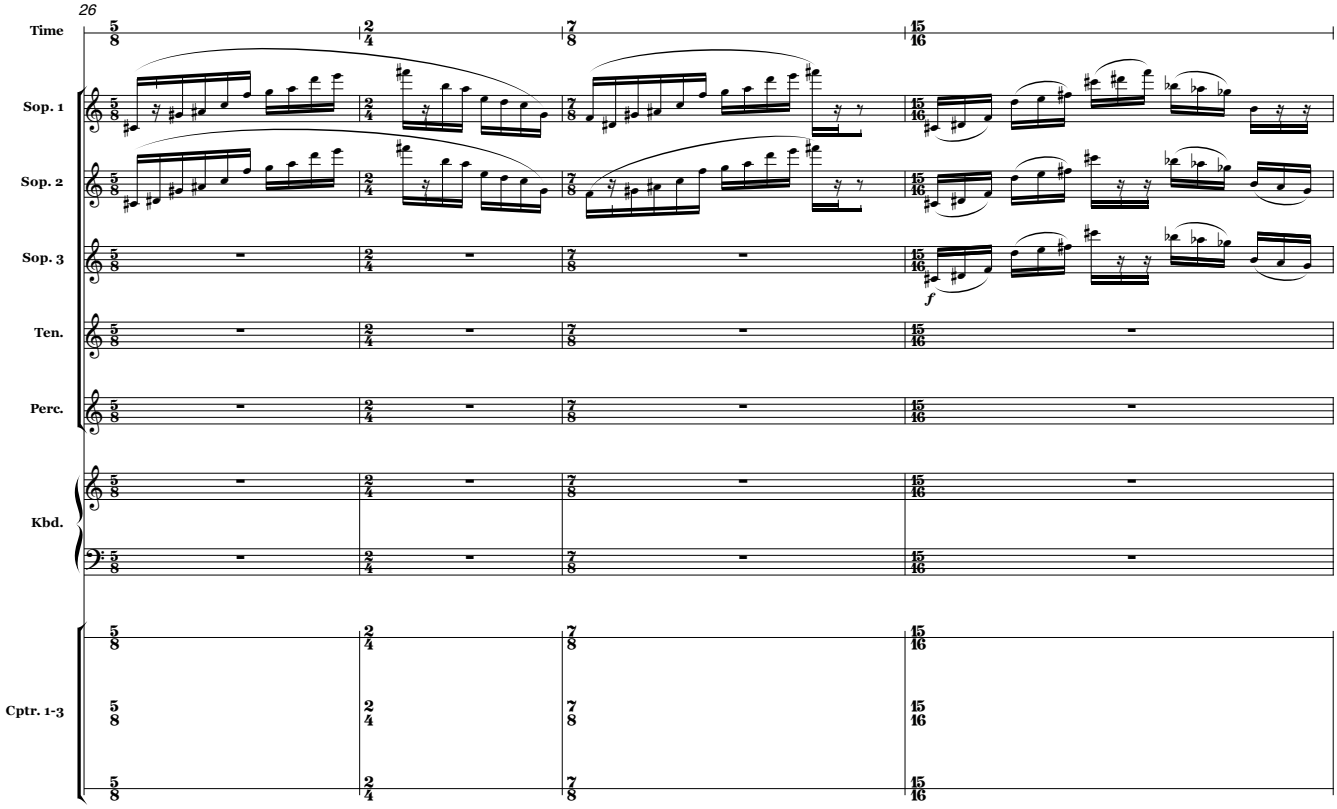

17
1' 10"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
f
f
f
mf
f

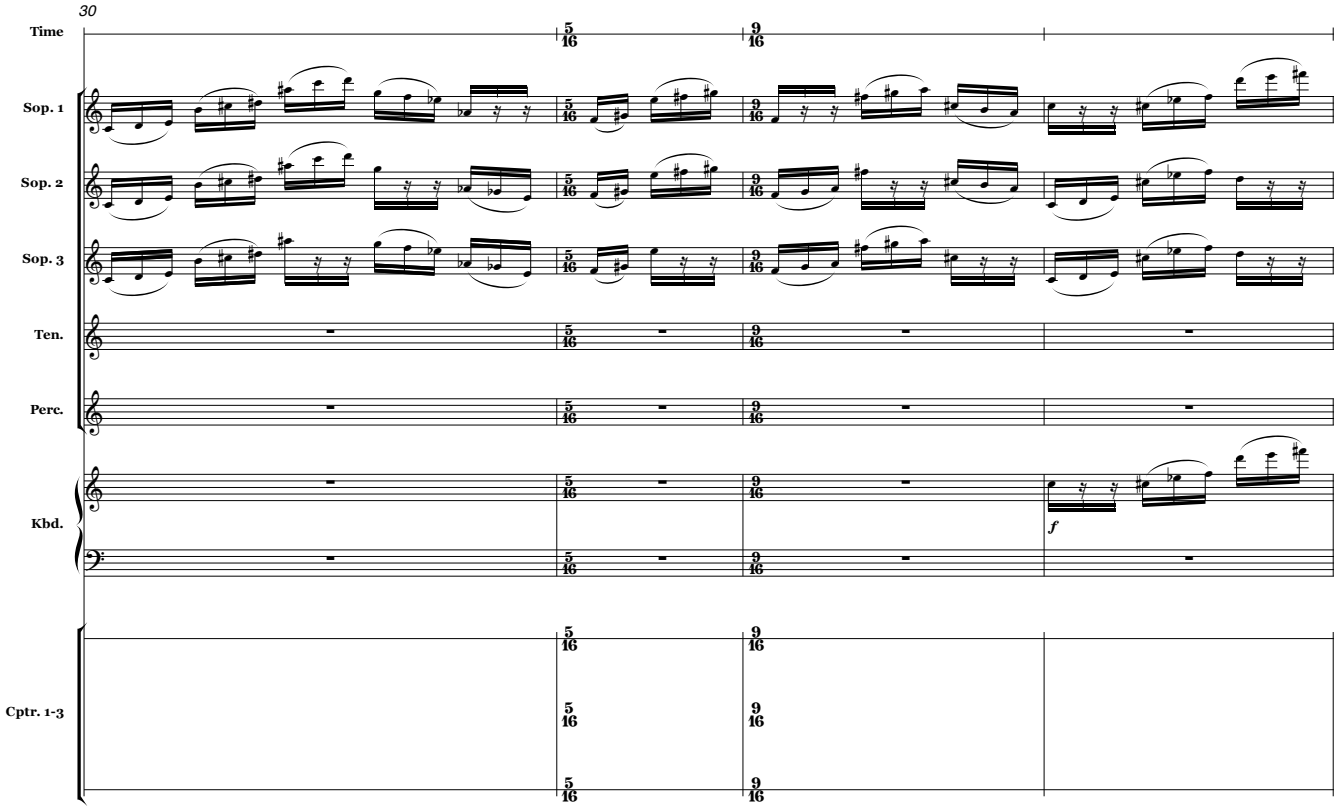

18
1' 15"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
poco a poco cresc.
poco a poco cresc.
ppp
mp
poco a poco cresc.

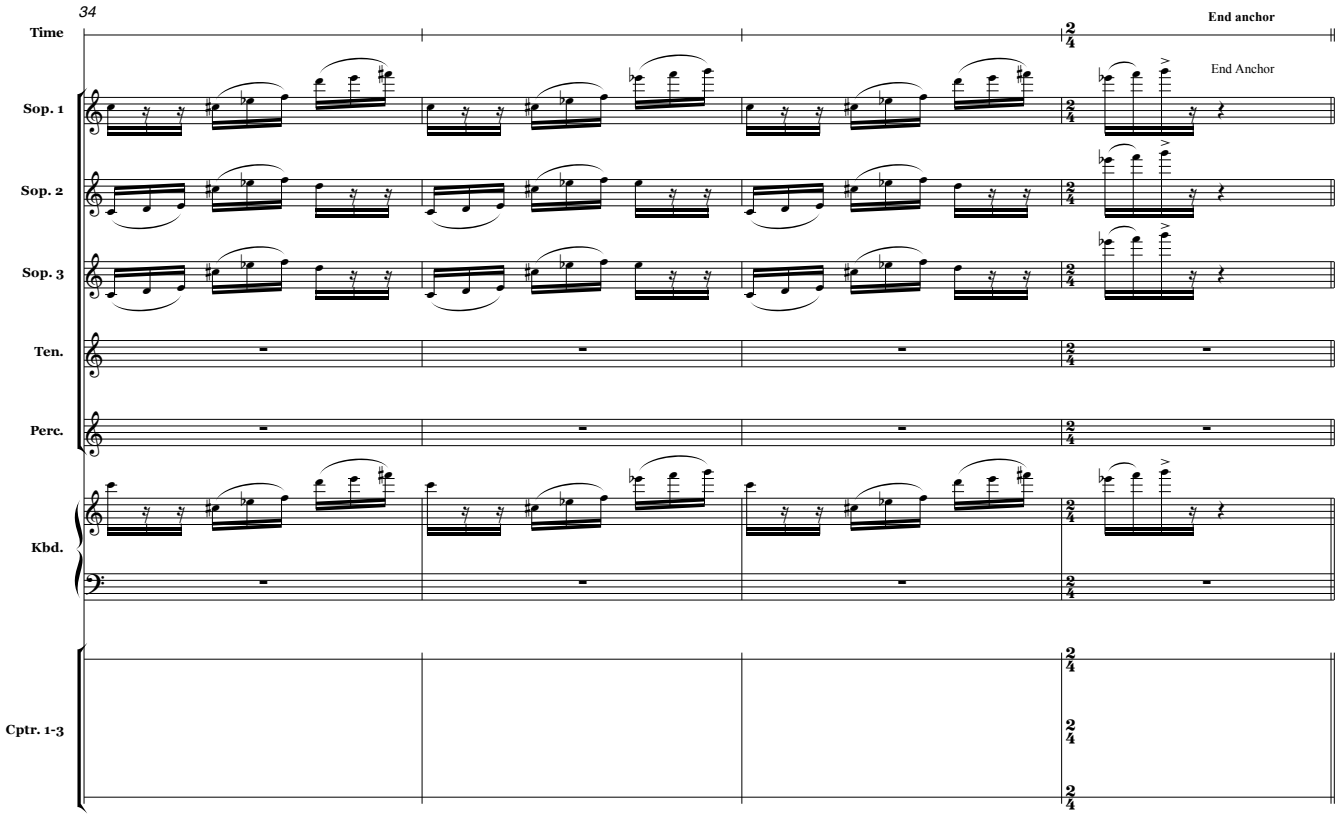

19
1' 20"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
fff
mf
ff
Cue


X Swarm; Unrelenting
20
Measure = 4 seconds
1' 24"
1' 28"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
Rapidly improvise chromatic pitches within the specified range.
mp
f
Cue
Preset: 27
Granulator: All
Probability gate: 42
Transposition: 20-300hz
Grain duration: 64ms-66ms
Harmonizer: All
Glide: 10 seconds
Cents: 200, -200, 300, -300
Spatialization: Randomized wipes between channels


Y
Tempo giusto ♩= 144
As aligned as practically possible
22
Anchor: Sop. 1
Anchor
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
Preset: 28
Harmonizer: All
Glide: 100ms
Cents: 2 3 4 5
Delay bank: All
Gain: 20
Time: 26 52
Granulator: Off
Spatialization: Node neutral


26
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3


30
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
f


34
Time
End anchor
End Anchor
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

Z **Swarm**

Start timer

38

All instruments

Improvise. Distribute pitches evenly within indicated range. → Gravitate towards the outer edges of the indicated range

Rapid and unrelenting; Like a river of notes. — *poco a poco rit.* → Sparse

Legato — (legato) → staccato → Change articulation every note.

Smooth dynamic fluctuations. → accent random notes infrequently → Change dynamic every note.

30"

Time

Measure = **10** seconds

Sop. 1

Sop. 2

Sop. 3

Ten.

Perc.

Kbd.

mp - mf *f - fff* *p - mp* *p - fff*

Cptr. 1-3

Preset: 29

Granulator: All
Prob: 26
Grain size: 100-700
Trasposition: 48-72

Harmonizer: All
Glide: 10'
Cents: -10,-20,-30,-40

Timestretch: All
Record: On
Playrate: 10-0.5 over 30'

Preset: 30

Harmonizer: All
Glide: 10'
Cents: 1200, -1200, 700, -700

Granulator: All
Prob: 15
Grain size: 100-700
Trasposition: 48-72

Generation 1

S.T.

S.P.

Seed

AA **Playful, sparse**

41

Restart timer

0' 18"

Time

Measure = **6** seconds

In your own time

All

Perform 'seed' once at any point within the timeframe.

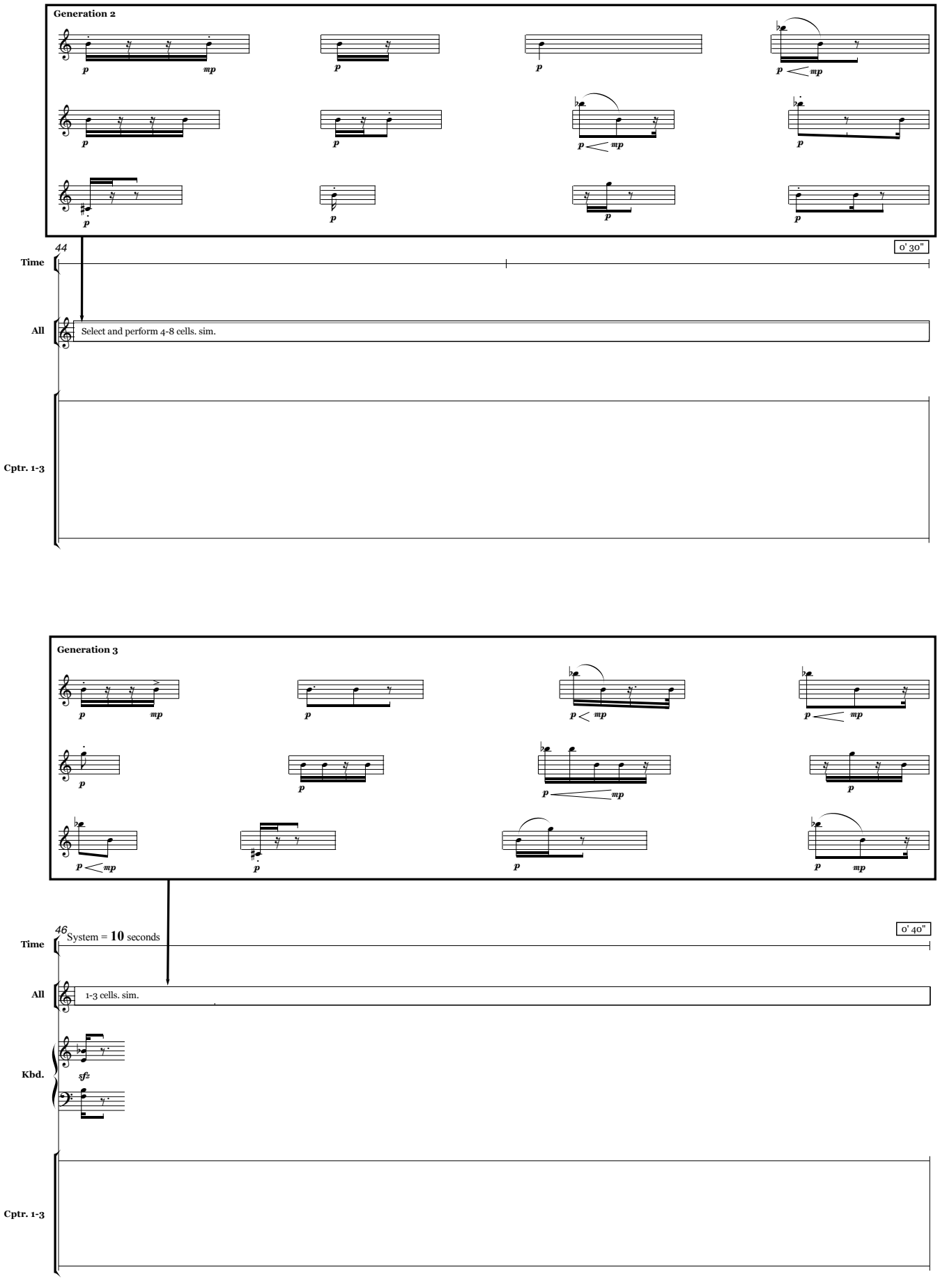
Select and perform 2-6 cells at any point within the timeframe.
Establish a dialogue-like texture with the remote nodes.

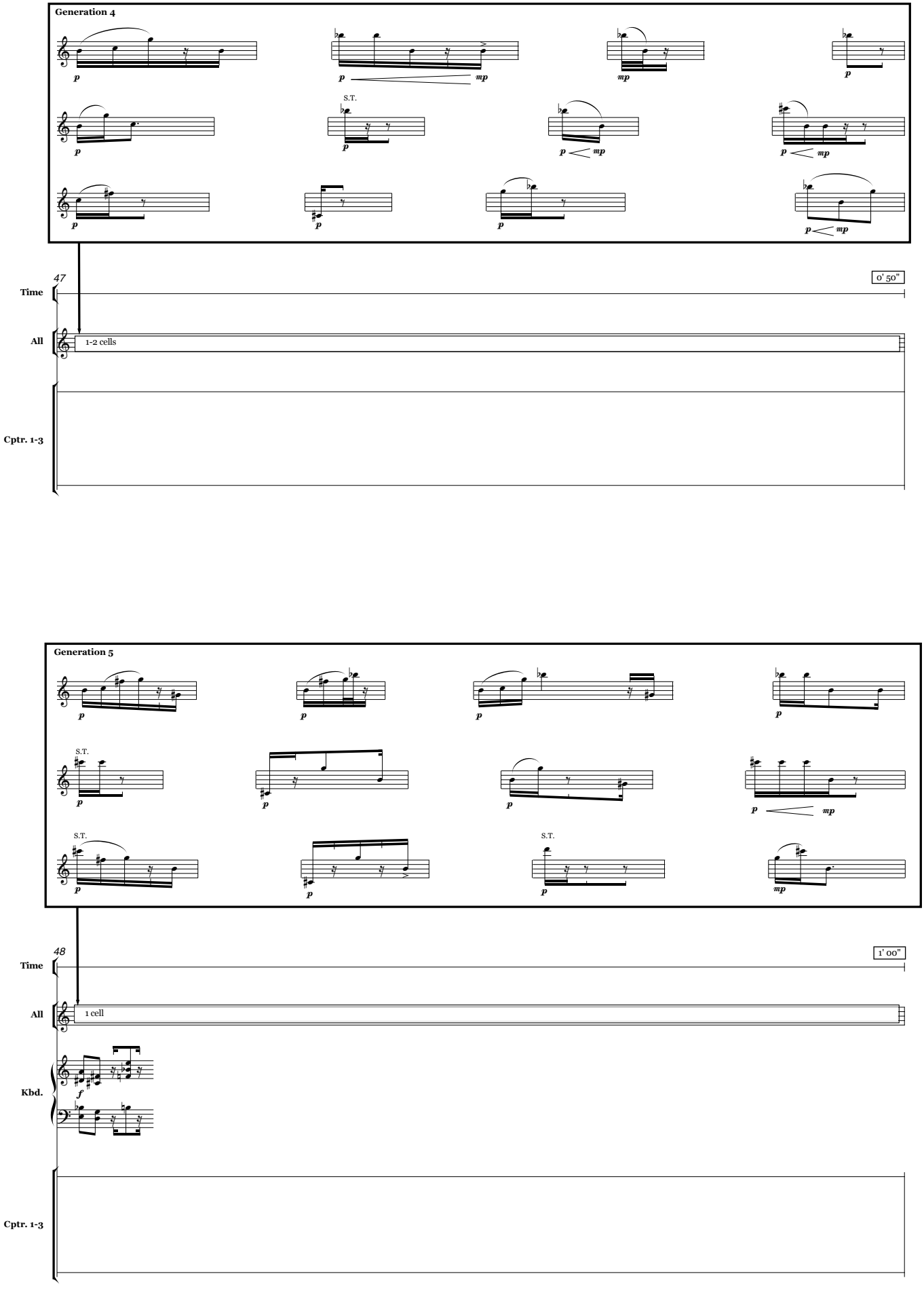
Cptr. 1-3

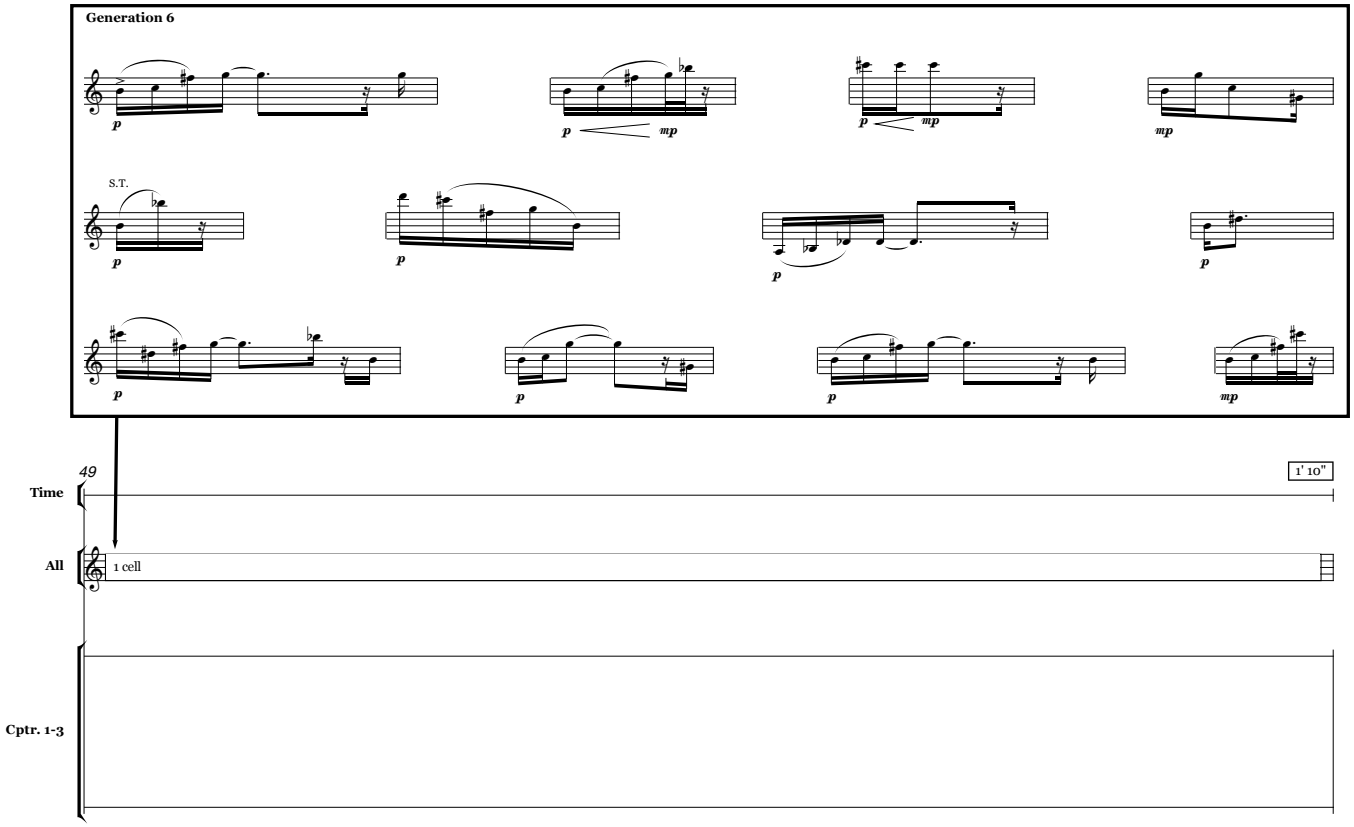
Preset: 31

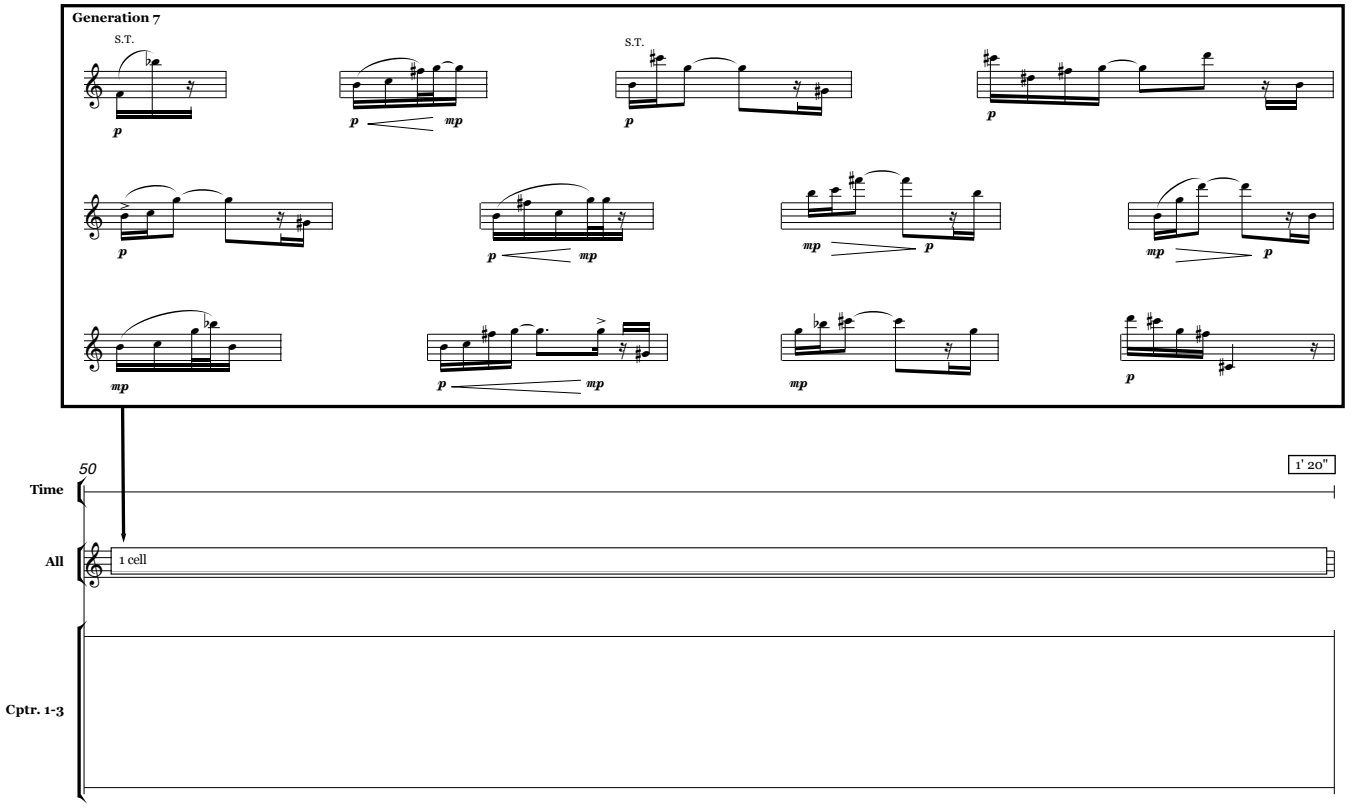
Computer sf improvisation:
Any pitch played by a performer in the local node will influence a local computer improvisation.
The computer will mimic the performer's input, remapping the input pitches to a soundfile bank.
The incoming pitches are fed into a feedback line and repeatedly remapped to soundfiles.

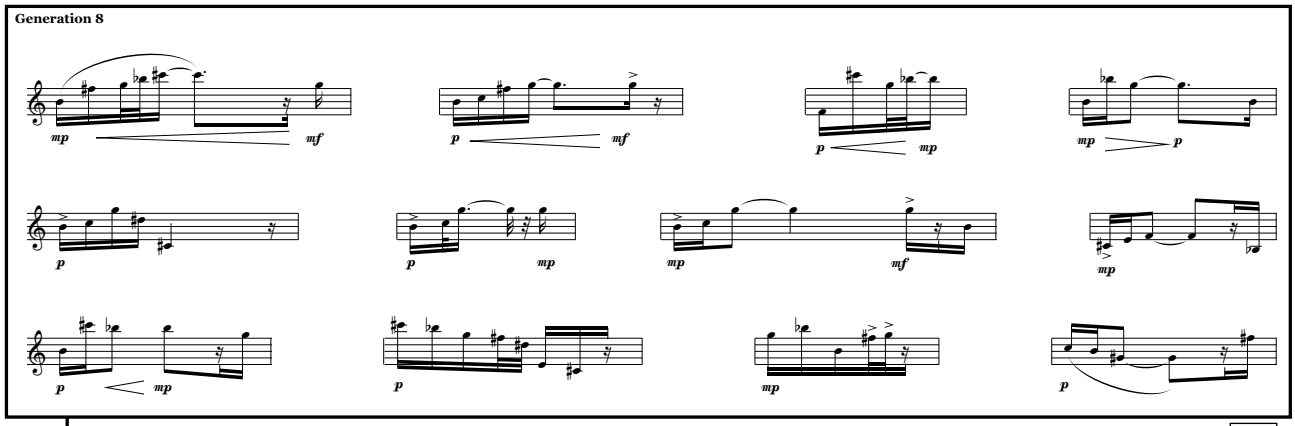
Effects: off with 20' ramp


Generation 2
44
Time
0' 30"
All
Select and perform 4-8 cells. sim.
Cptr. 1-3
Generation 3
46
System = 10 seconds
Time
0' 40"
All
1-3 cells. sim.
Kbd.
Cptr. 1-3


Generation 4
47
Time
0' 50"
All
1-2 cells
Cptr. 1-3
Generation 5
48
Time
1' 00"
All
1 cell
Kbd.
Cptr. 1-3


Generation 6
S.T.
S.T.
49
1' 10"
Time
All
1 cell
Cptr. 1-3


Generation 7
S.T.
S.T.
50
1' 20"
Time
All
1 cell
Cptr. 1-3



51

1' 30"

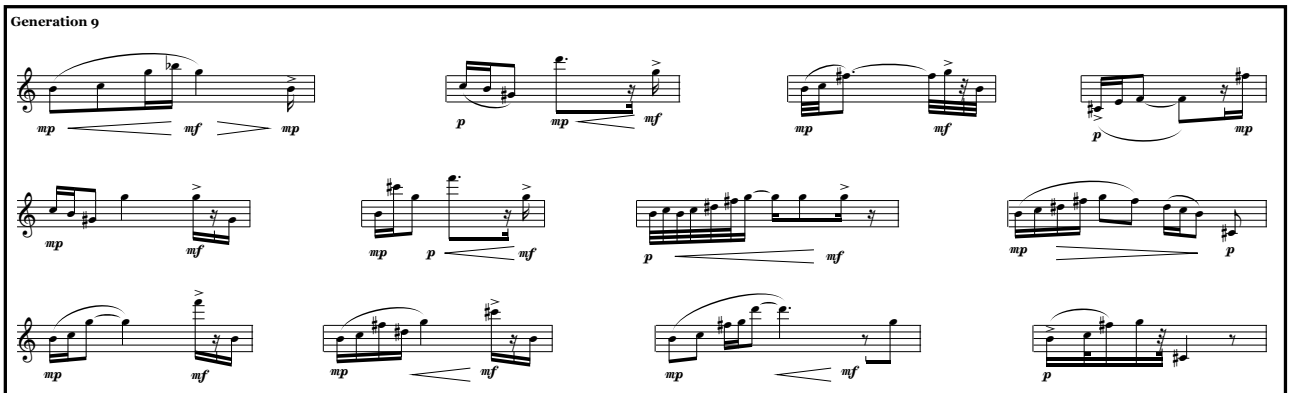
Time

All

1 cell

Kbd.

Cptr. 1-3



52

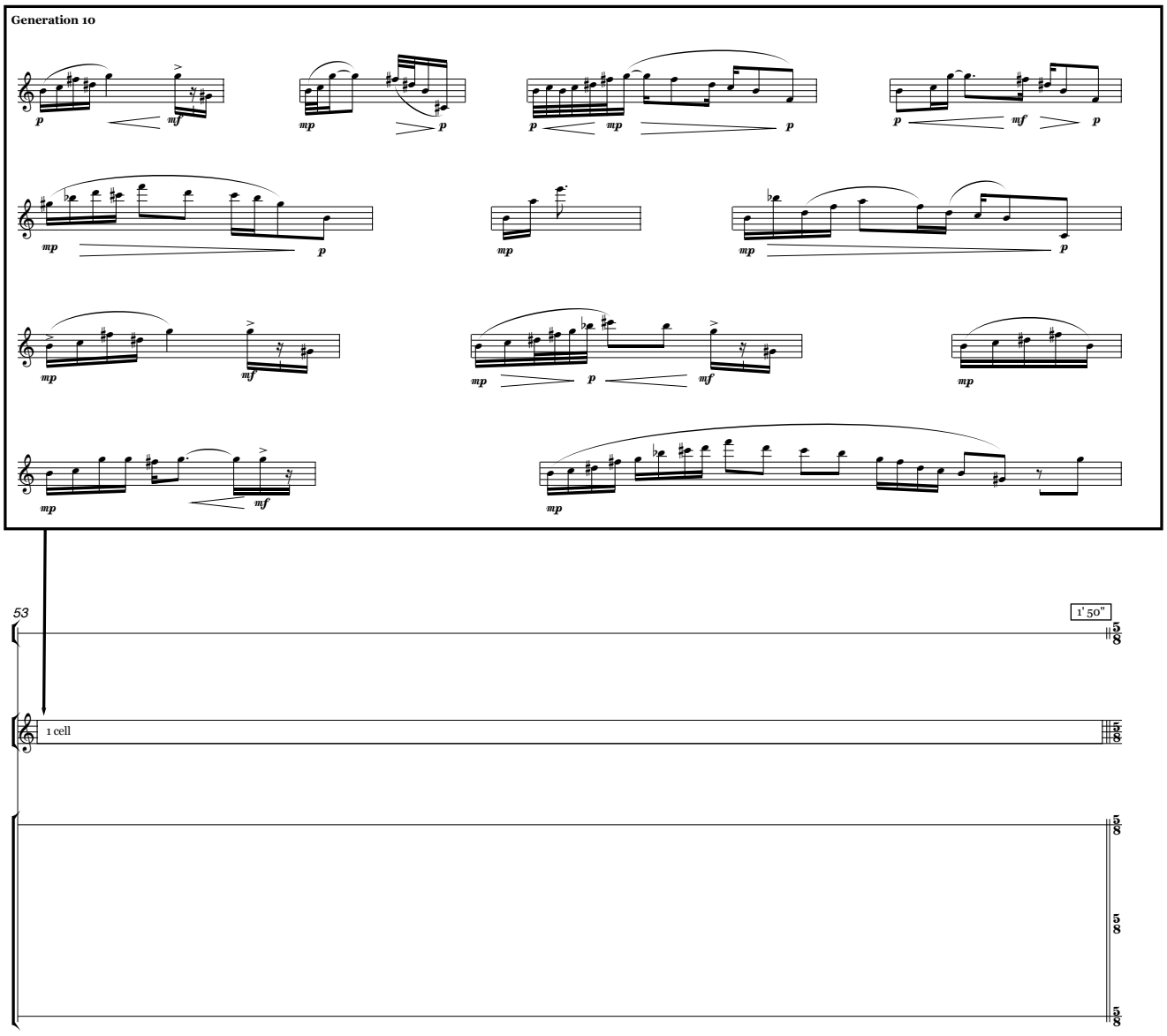
1' 40"

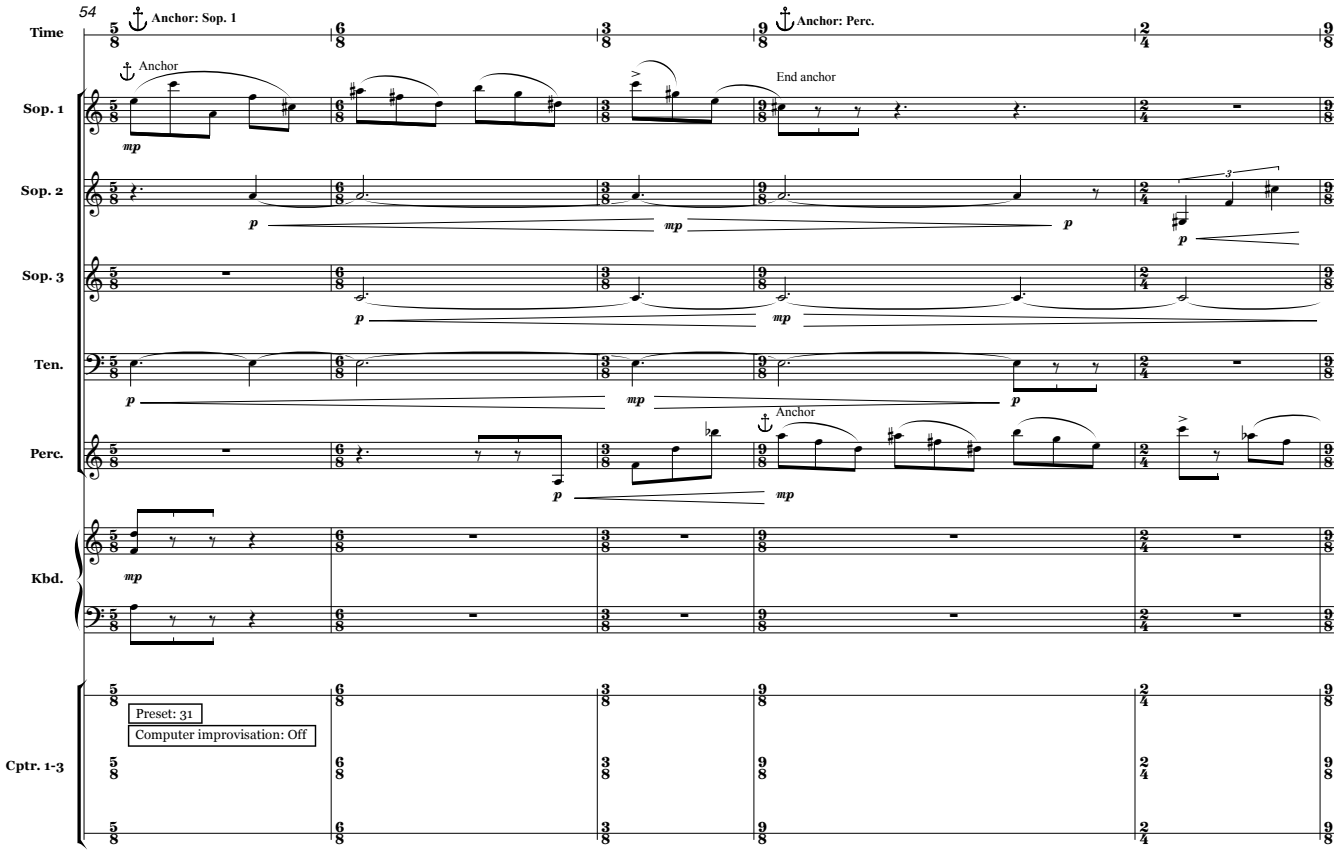
Time

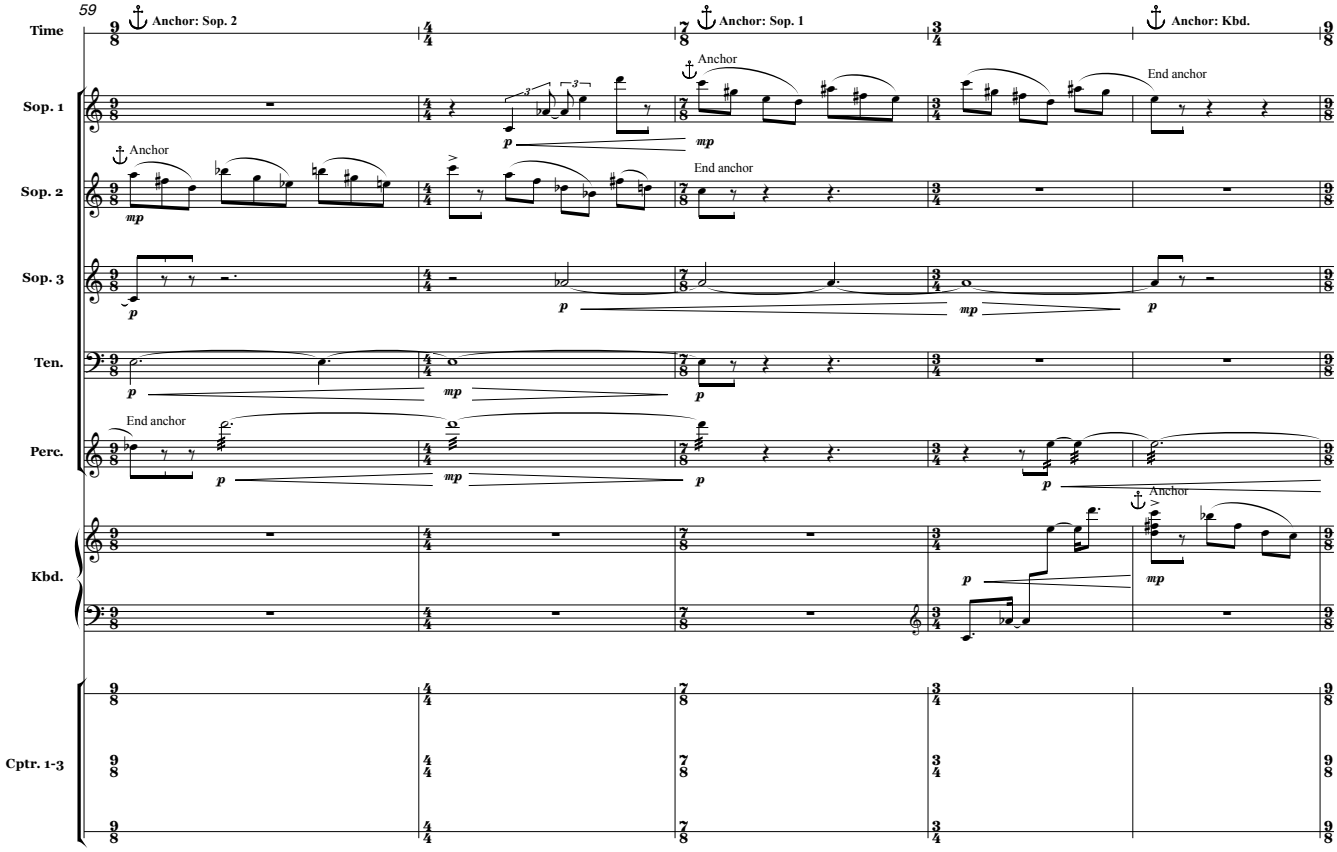
All

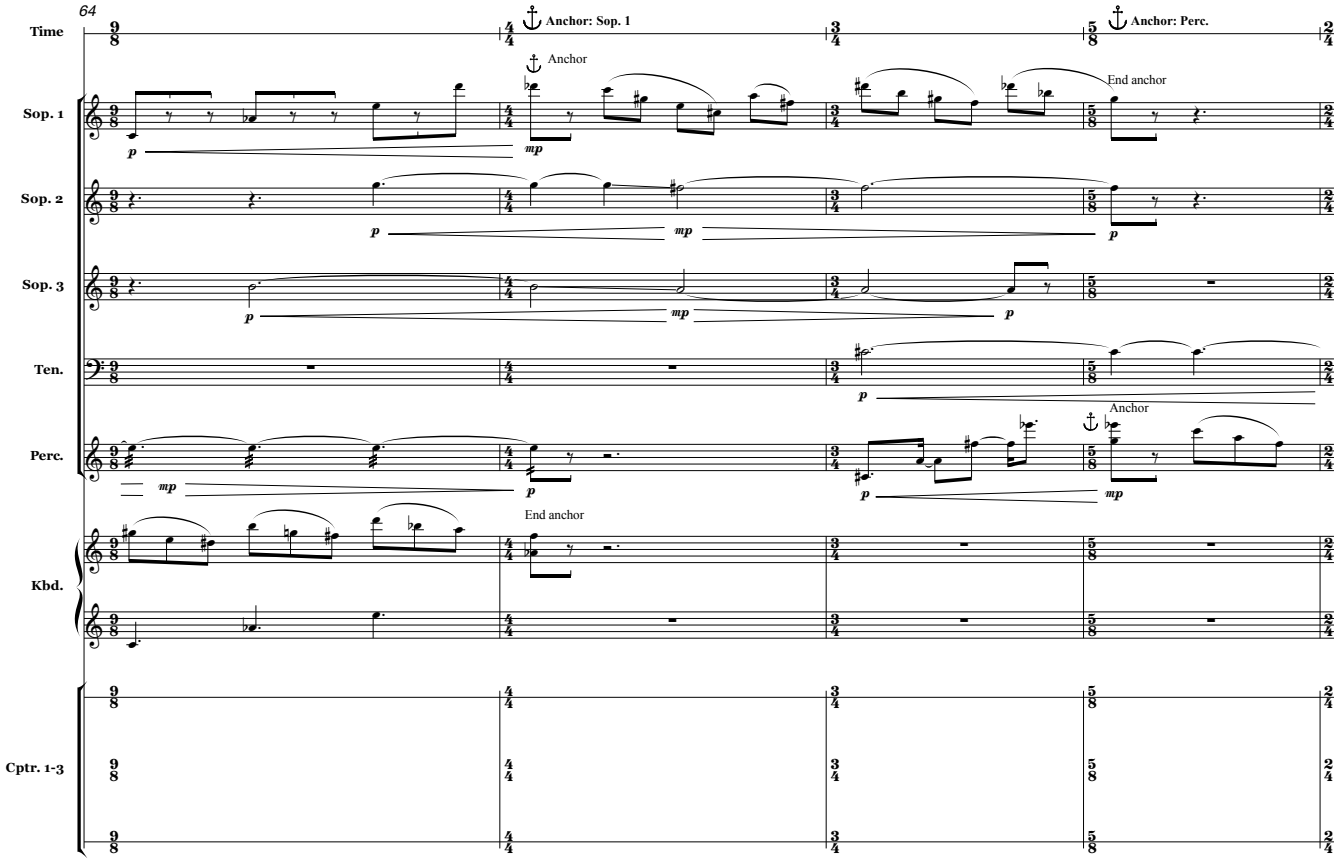
1 cell

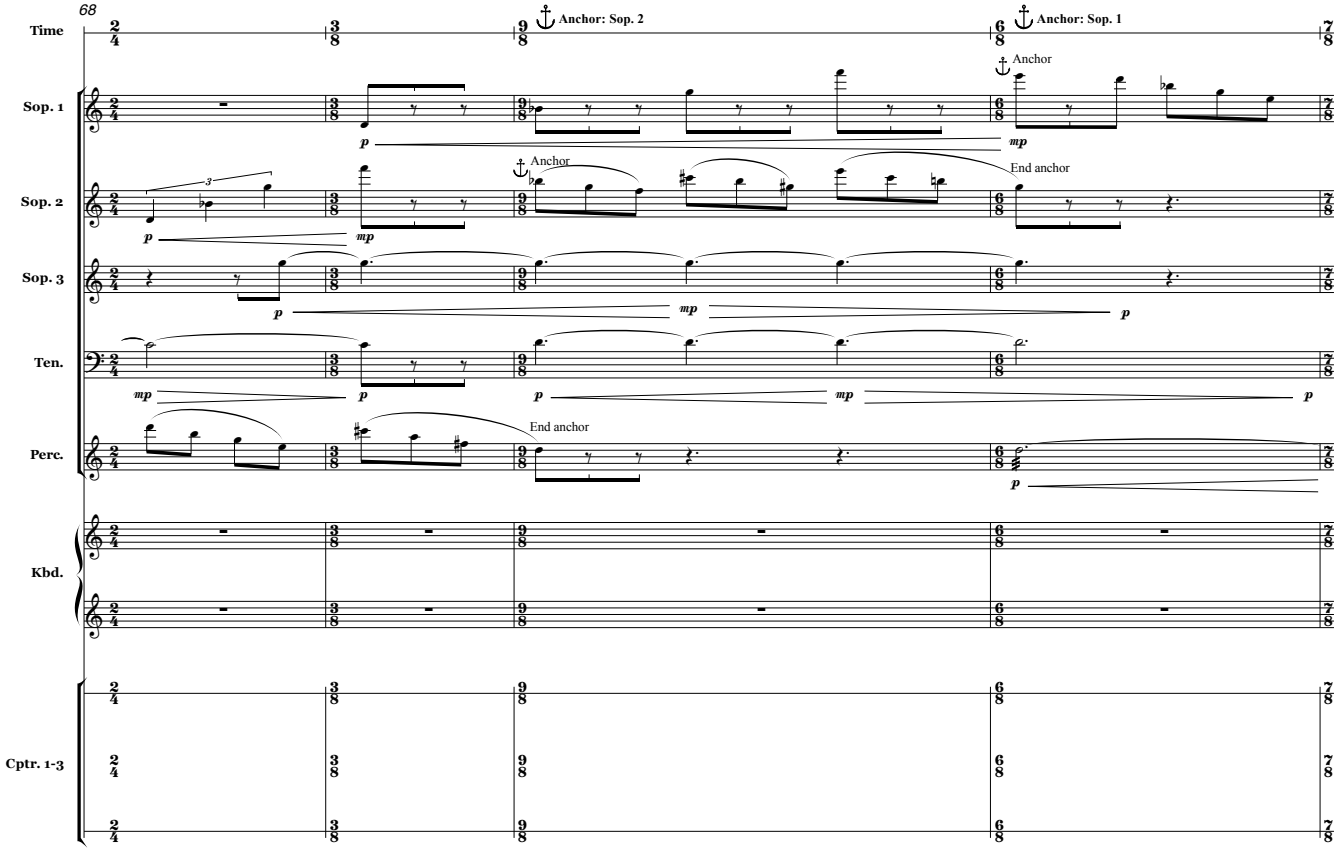
Cptr. 1-3

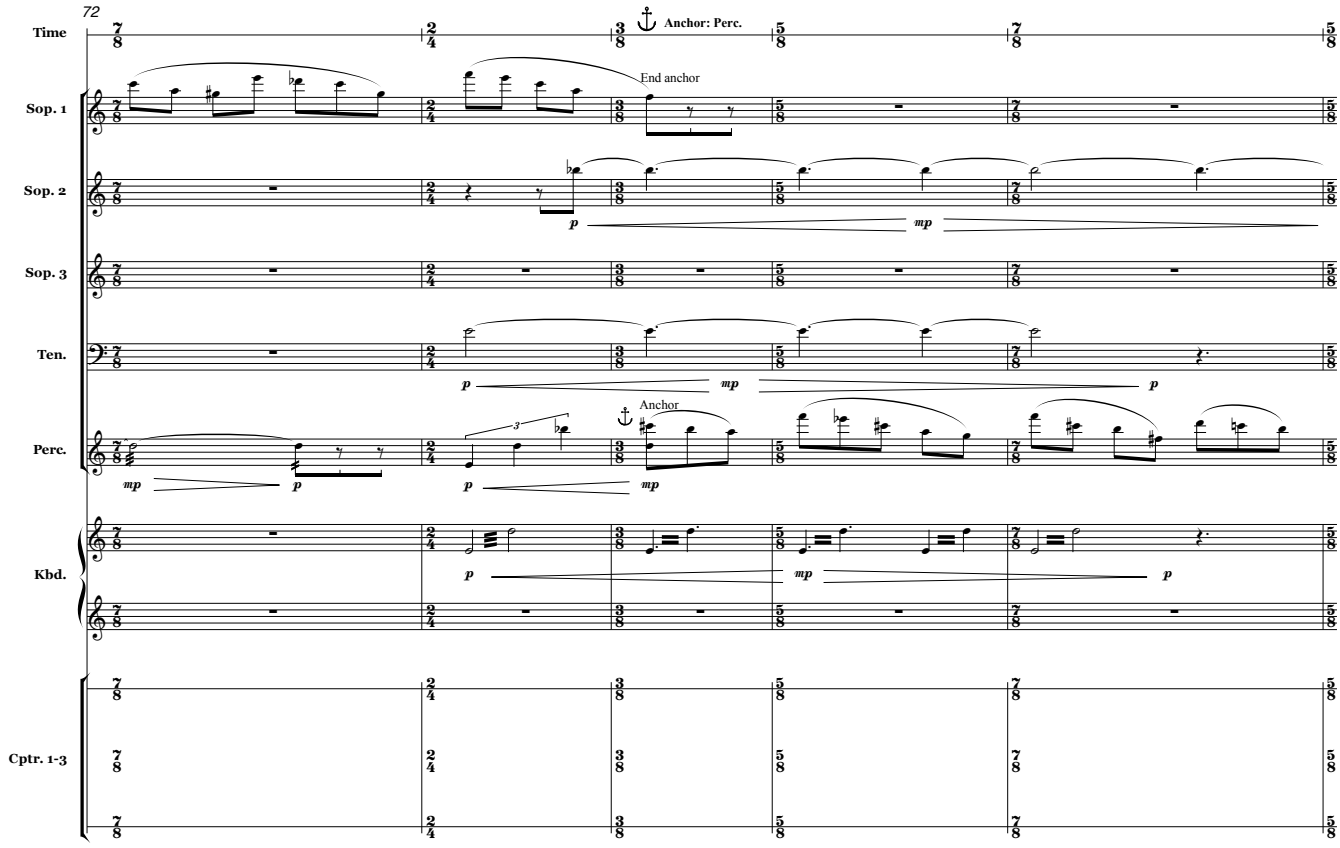

Generation 10
53
1' 50"
Time
All
1 cell
Cptr. 1-3

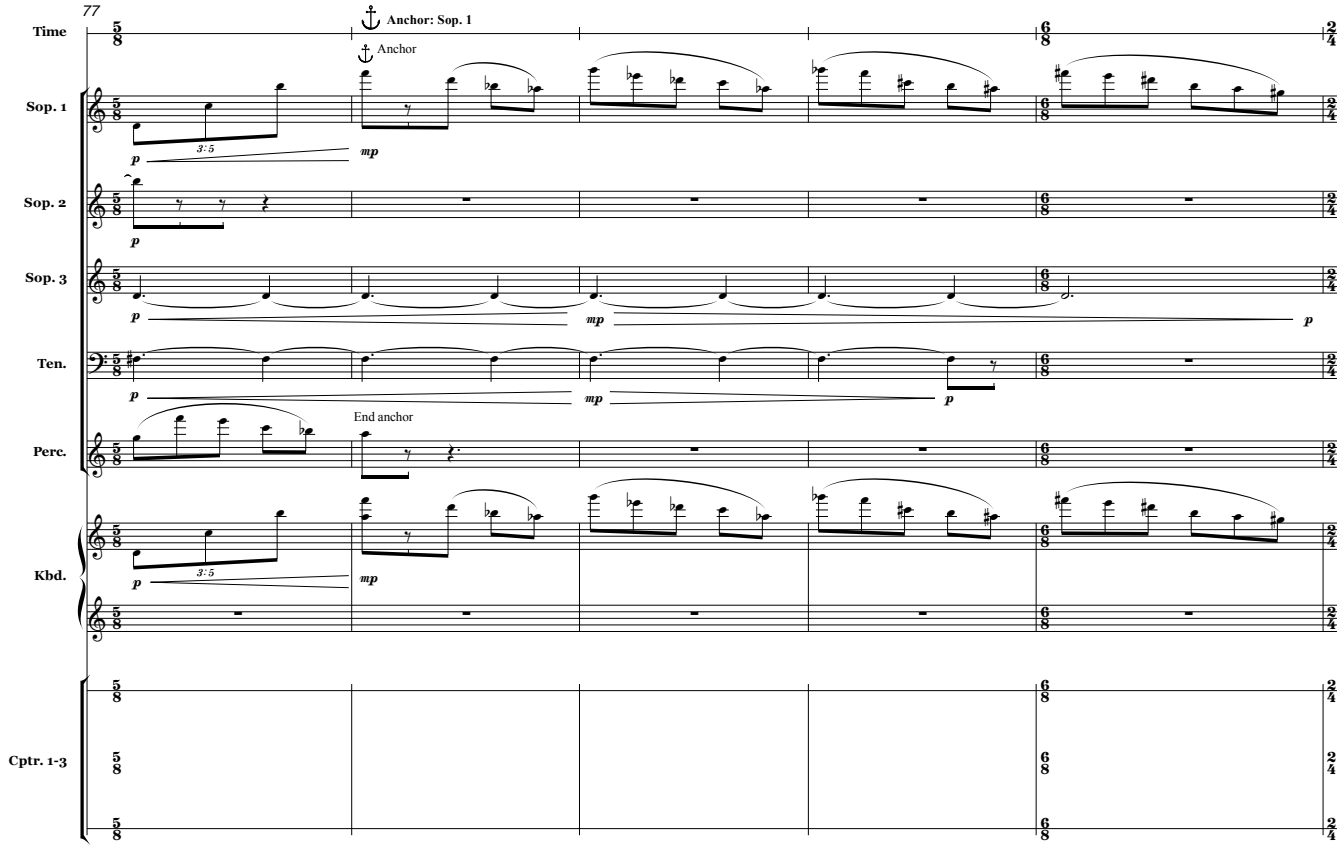

BB
Chainfall ♩= 168
54
Time
Anchor: Sop. 1
Anchor: Perc.
Sop. 1
Anchor
End anchor
Sop. 2
Sop. 3
Ten.
Perc.
Anchor
Kbd.
Cptr. 1-3
Preset: 31
Computer improvisation: Off

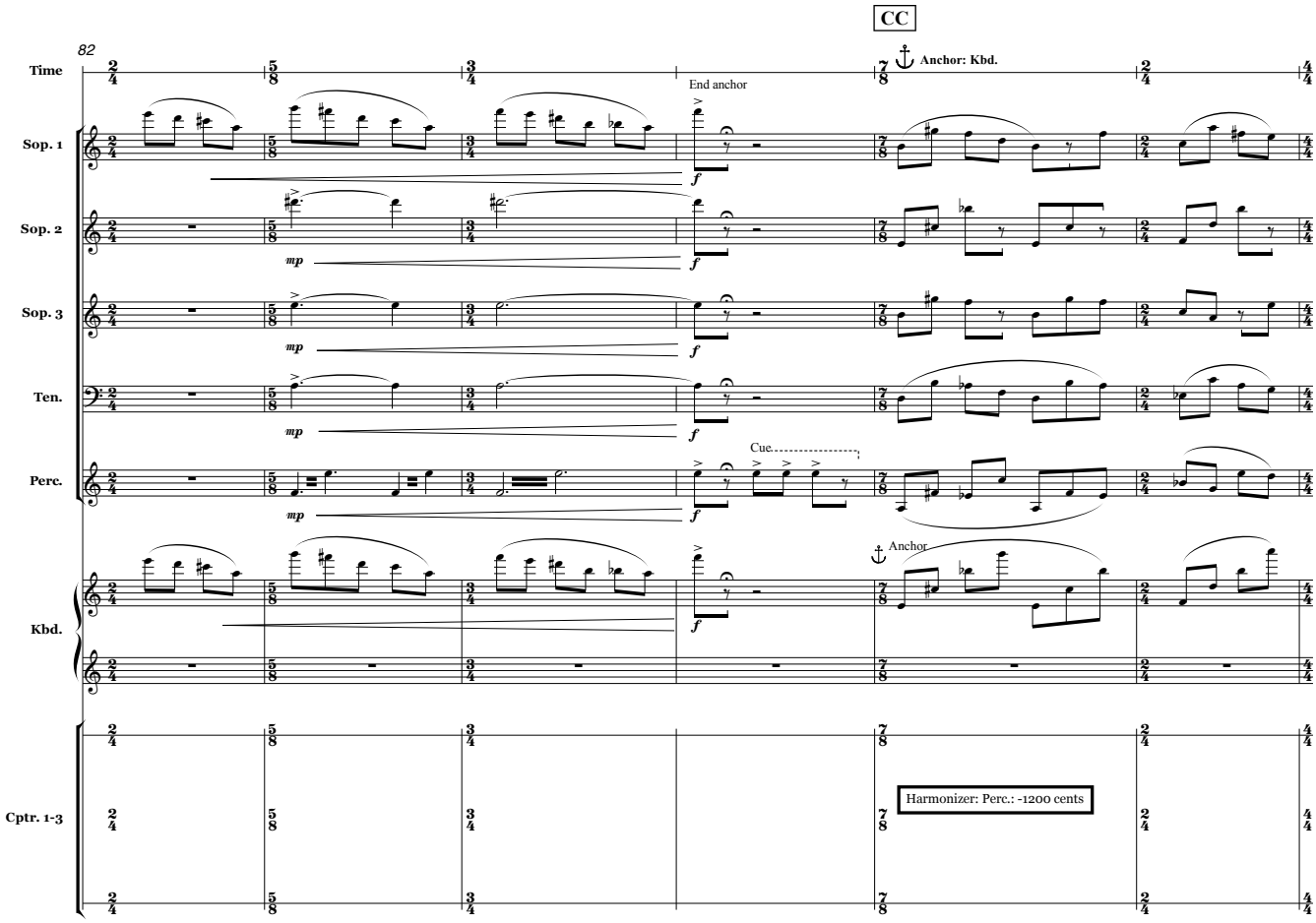

59
Time
Anchor: Sop. 2
Anchor: Sop. 1
Anchor: Kbd.
Sop. 1
Anchor
End anchor
Sop. 2
Anchor
End anchor
Sop. 3
Ten.
Perc.
End anchor
Anchor
Kbd.
Cptr. 1-3

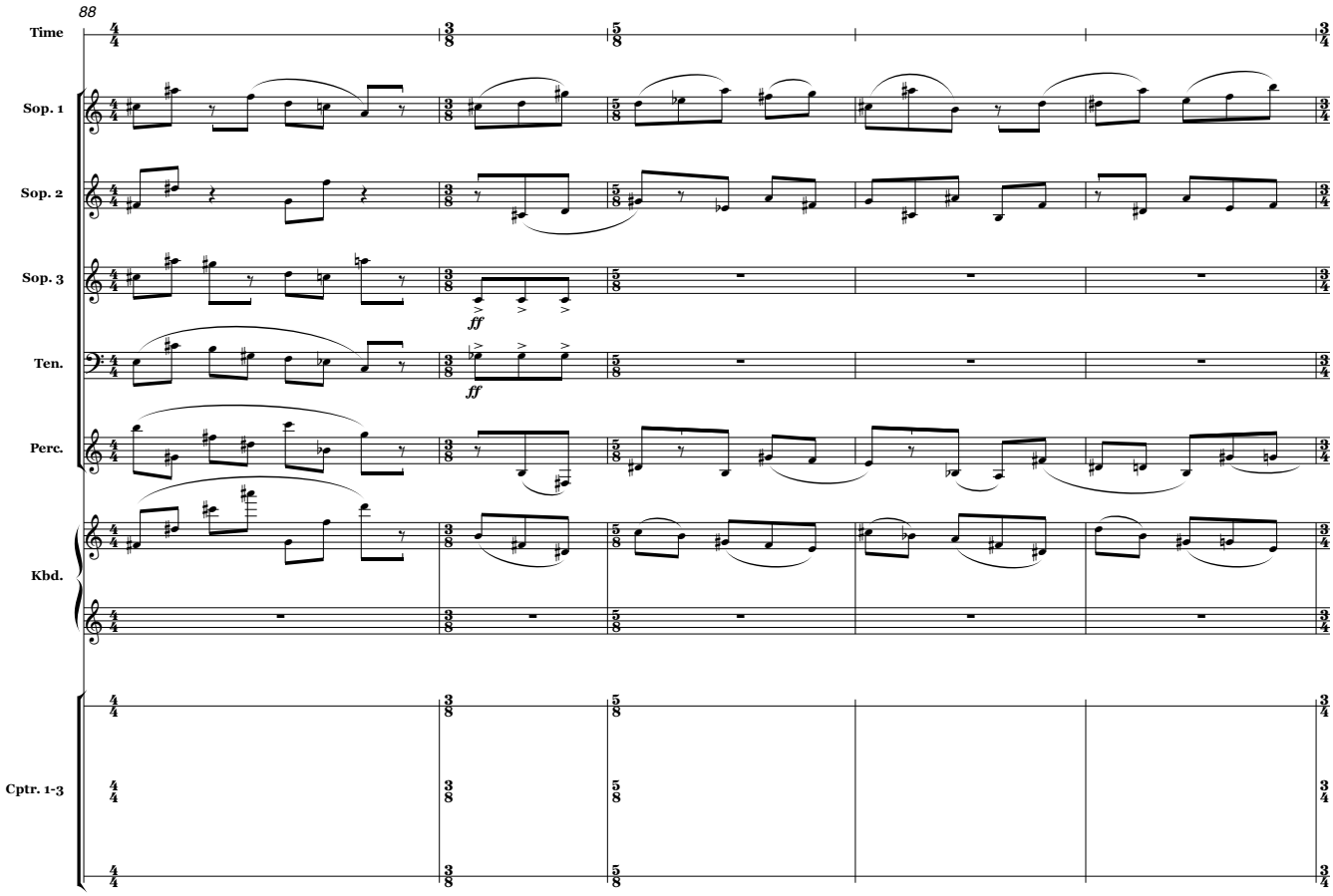

64
Time
Anchor: Sop. 1
Anchor: Perc.
Anchor
End anchor
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Anchor
End anchor
Kbd.
Cptr. 1-3

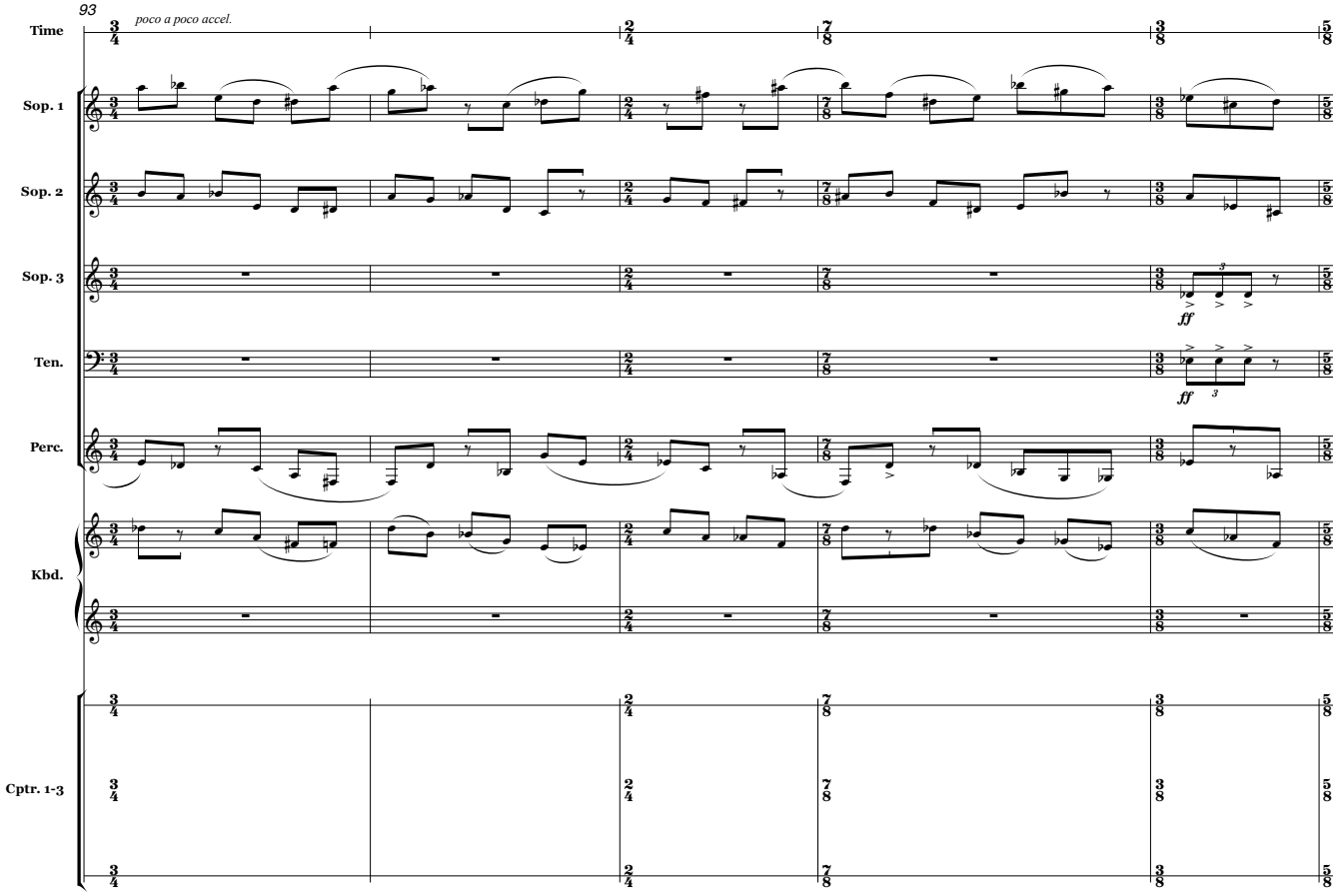

68
Time
Anchor: Sop. 2
Anchor: Sop. 1
Anchor
Anchor
End anchor
Sop. 1
Sop. 2
Sop. 3
Ten.
End anchor
Perc.
Kbd.
Cptr. 1-3

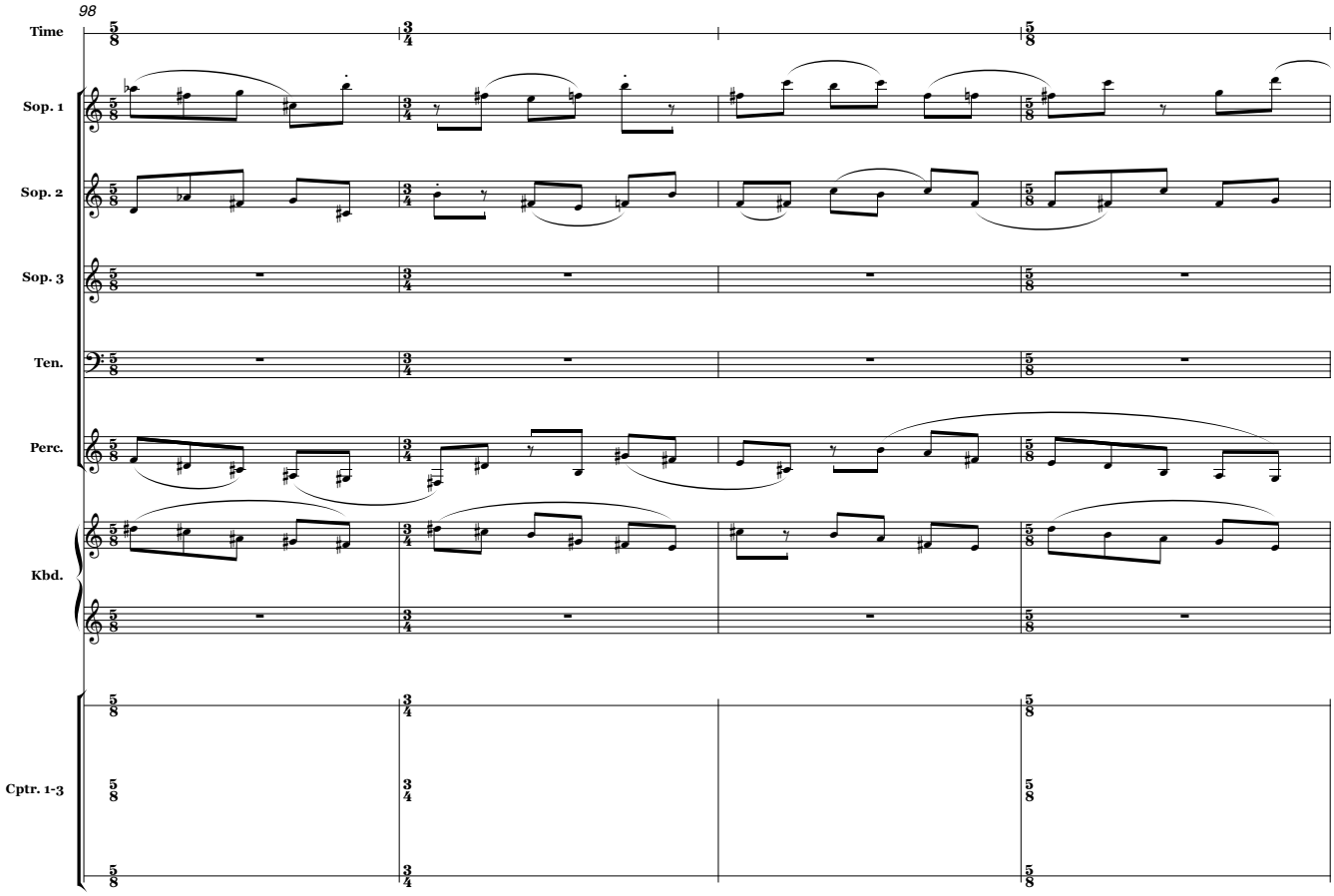

72
Time
Anchor: Perc.
End anchor
Sop. 1
Sop. 2
Sop. 3
Ten.
Anchor
Perc.
Kbd.
Cptr. 1-3

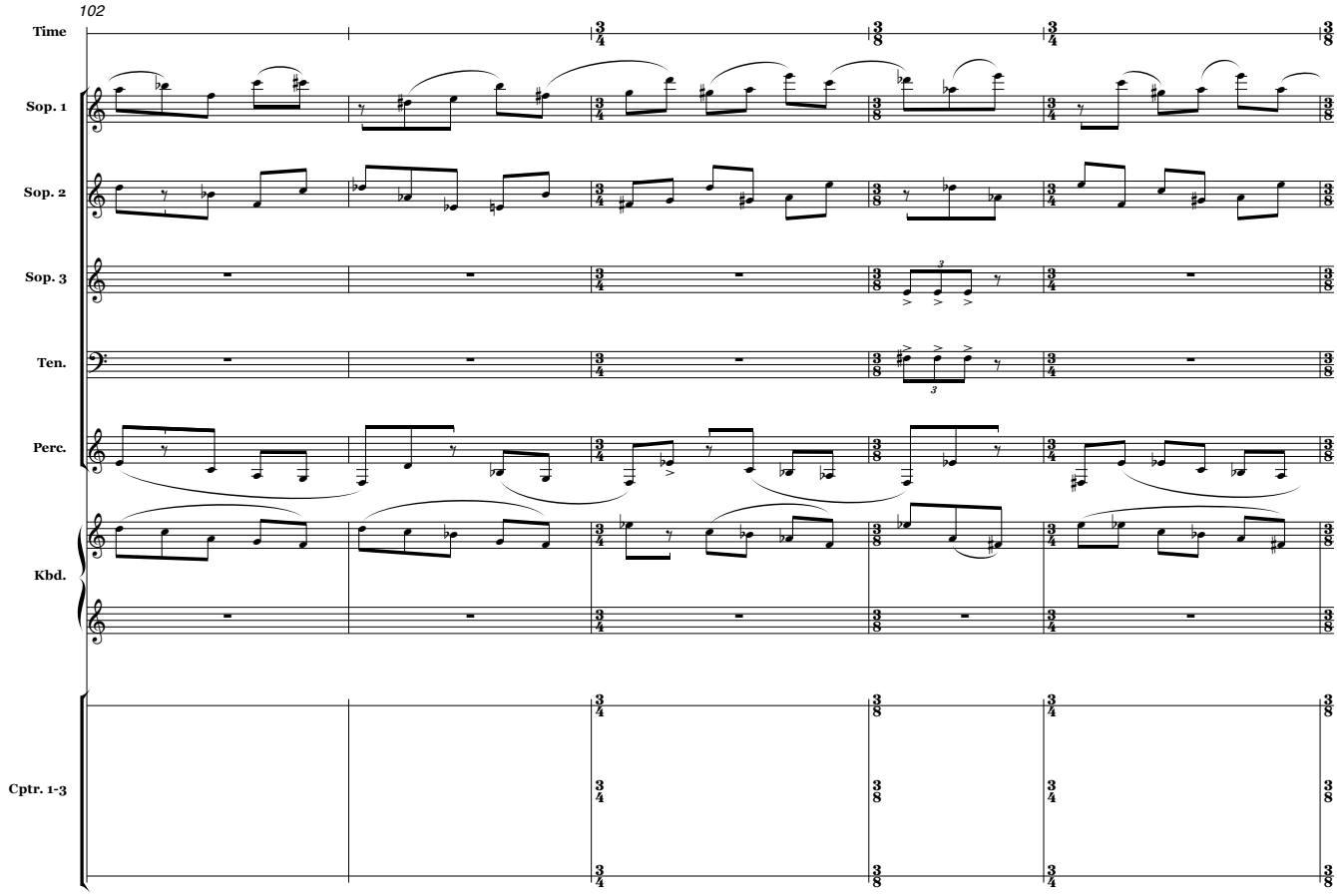

77
Time
Anchor: Sop. 1
Anchor
Sop. 1
Sop. 2
Sop. 3
Ten.
End anchor
Perc.
Kbd.
Cptr. 1-3

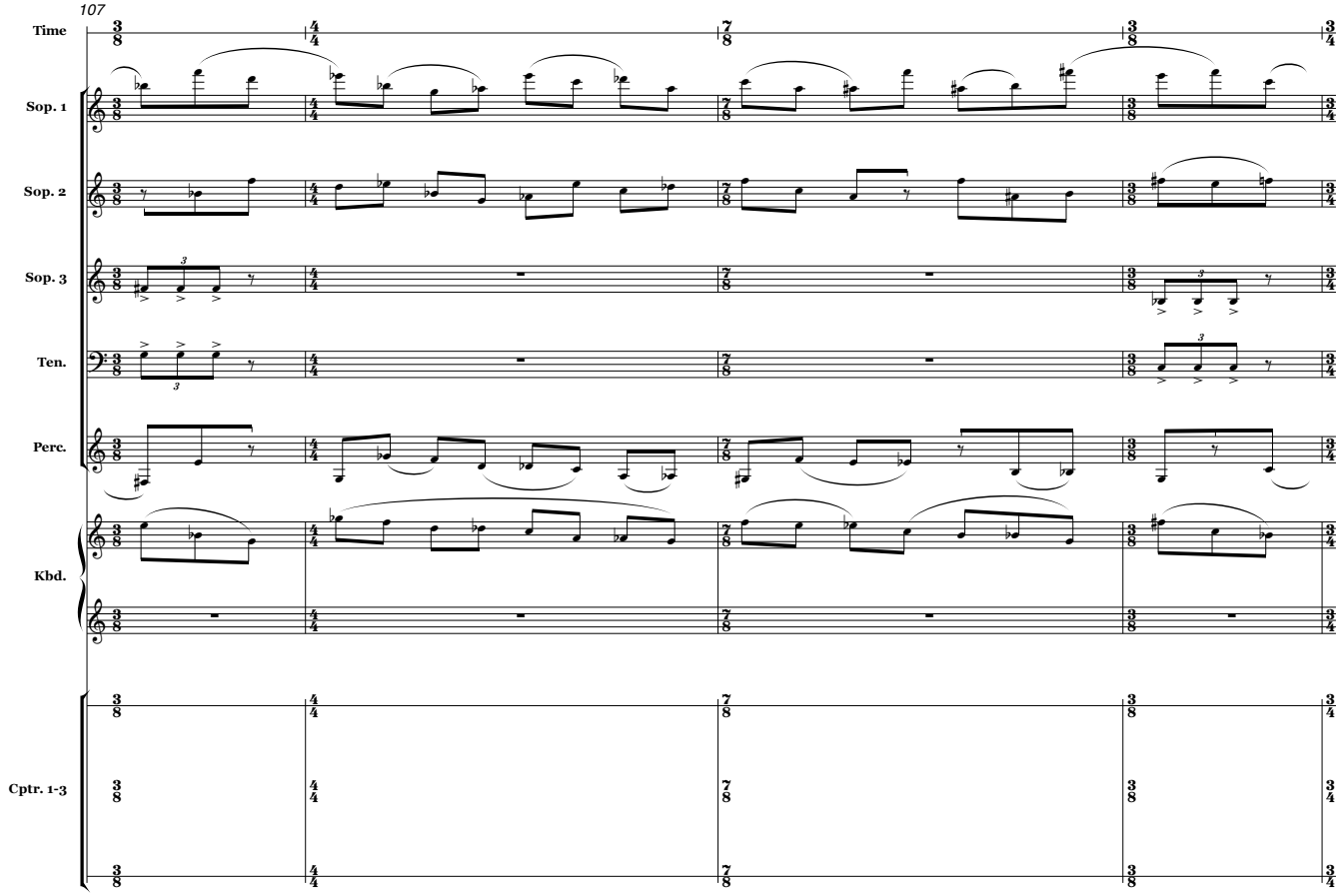

CC
82
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
End anchor
Anchor: Kbd.
Cue
Anchor
Harmonizer: Perc.: -1200 cents

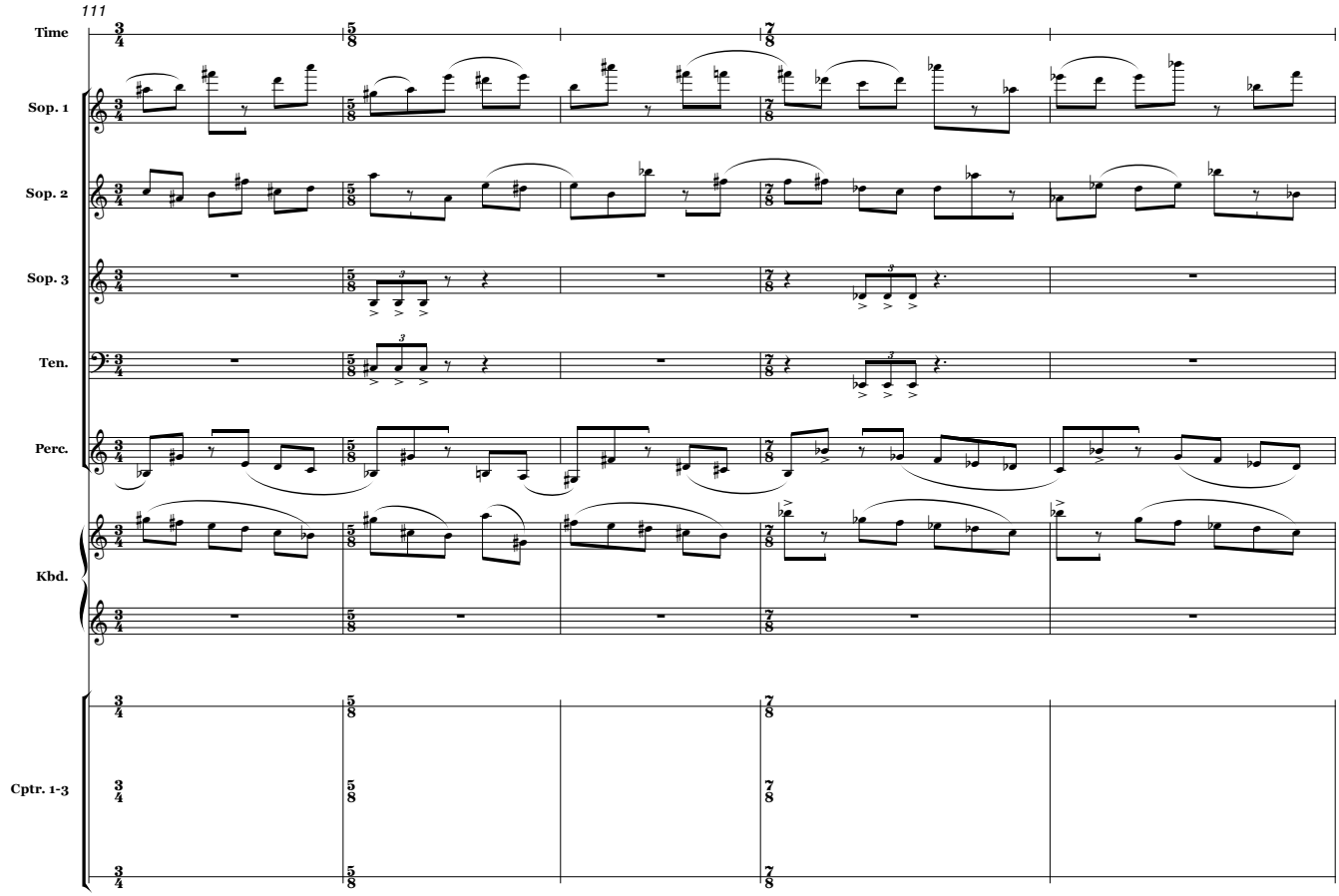

88
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

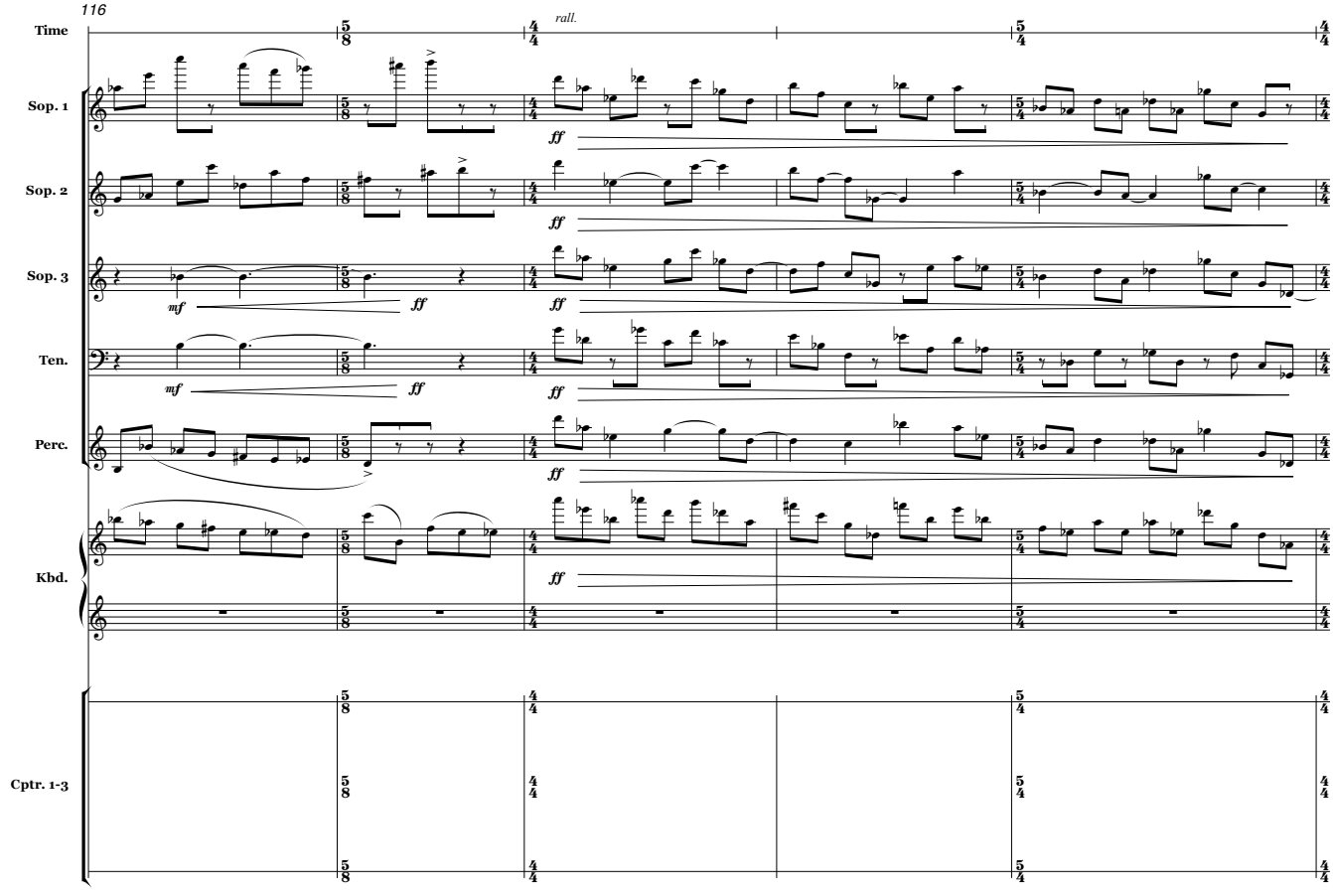

93
poco a poco accel.
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
ff
ff

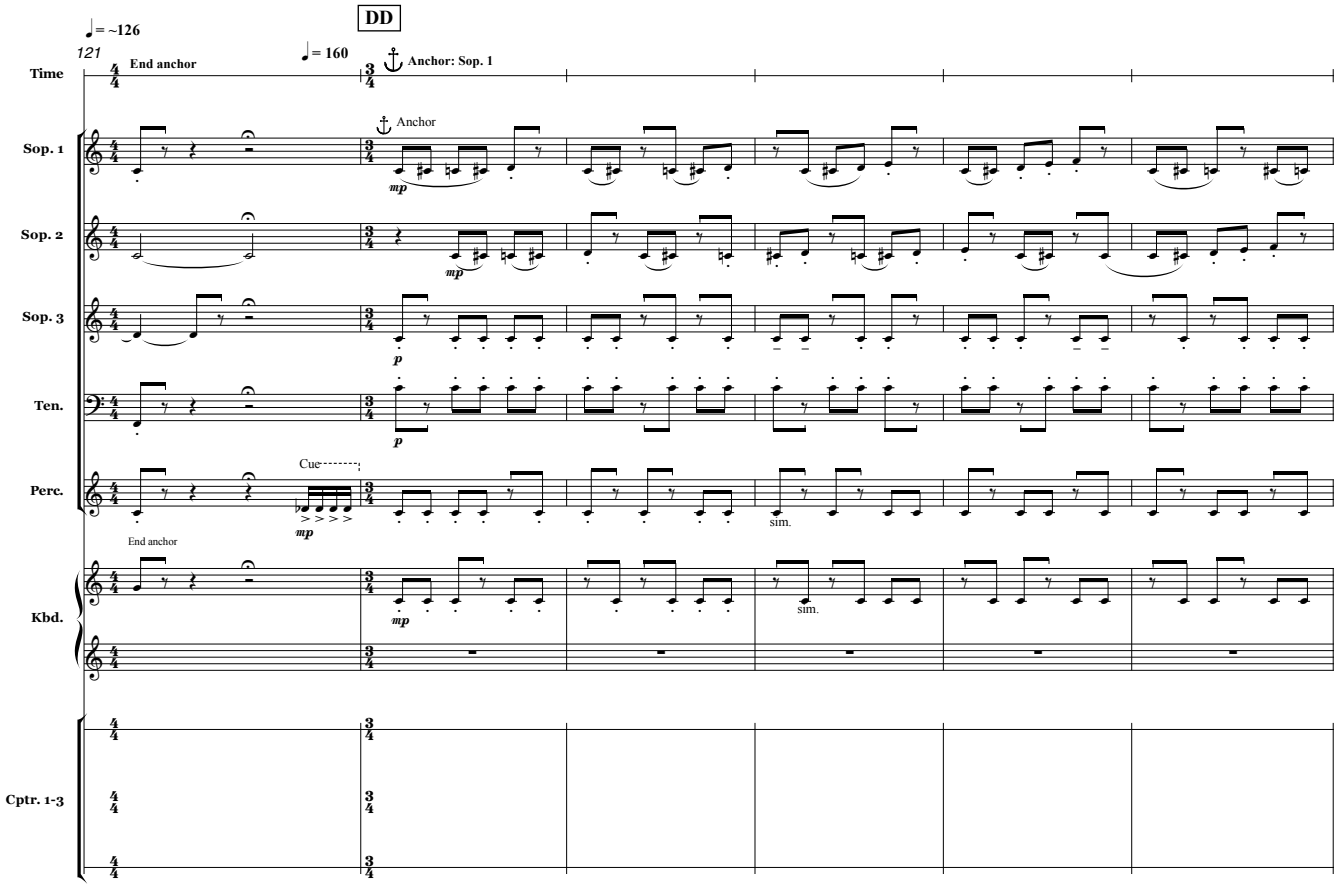

98
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

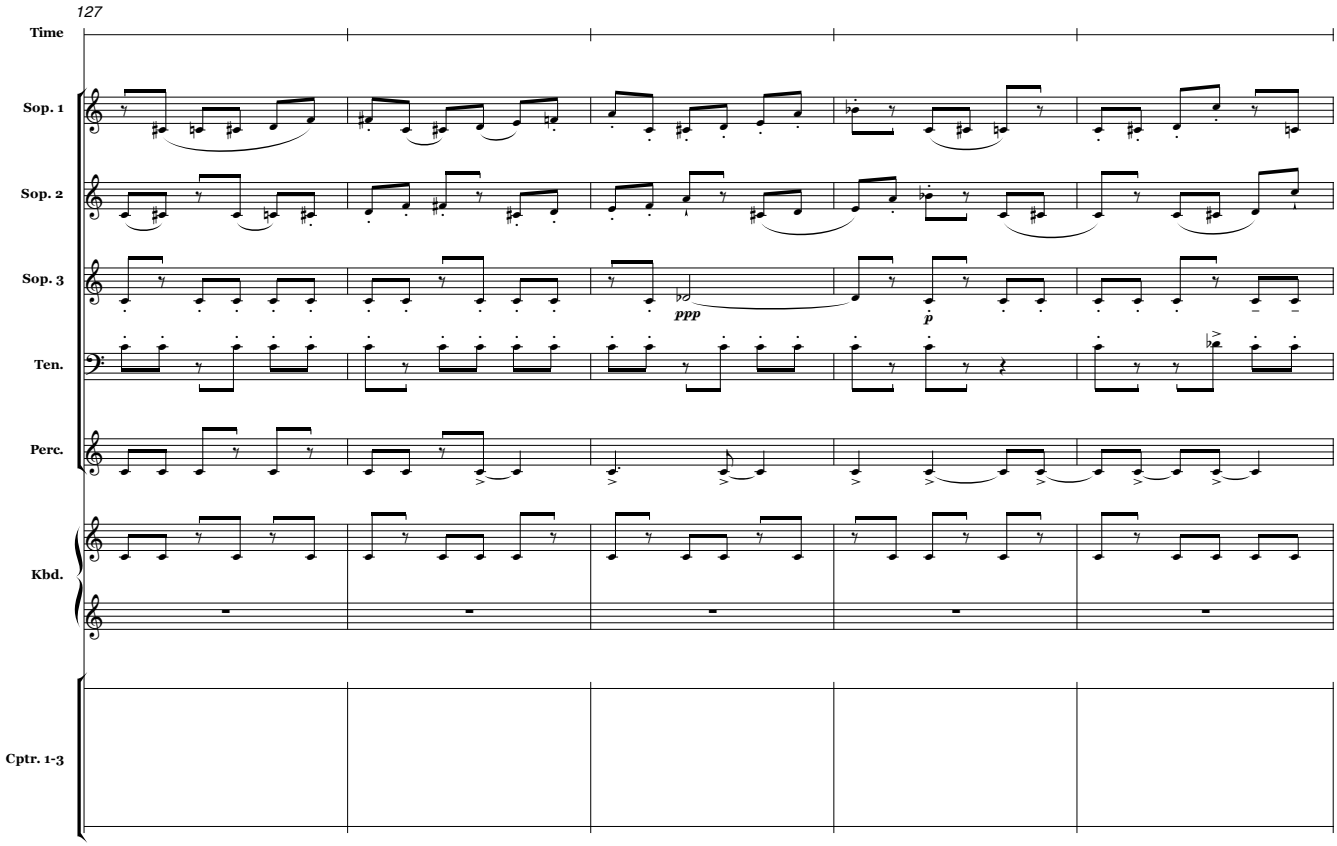

102
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

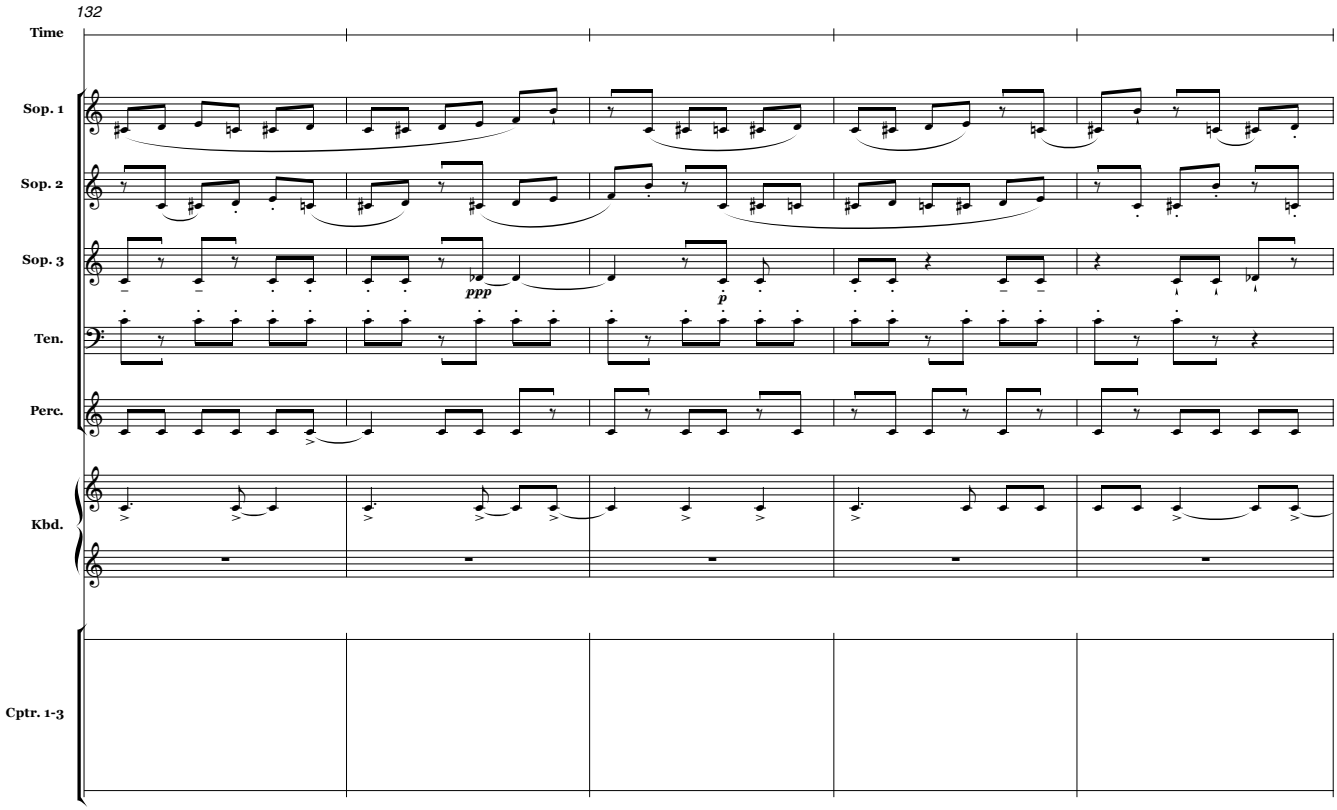

107
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

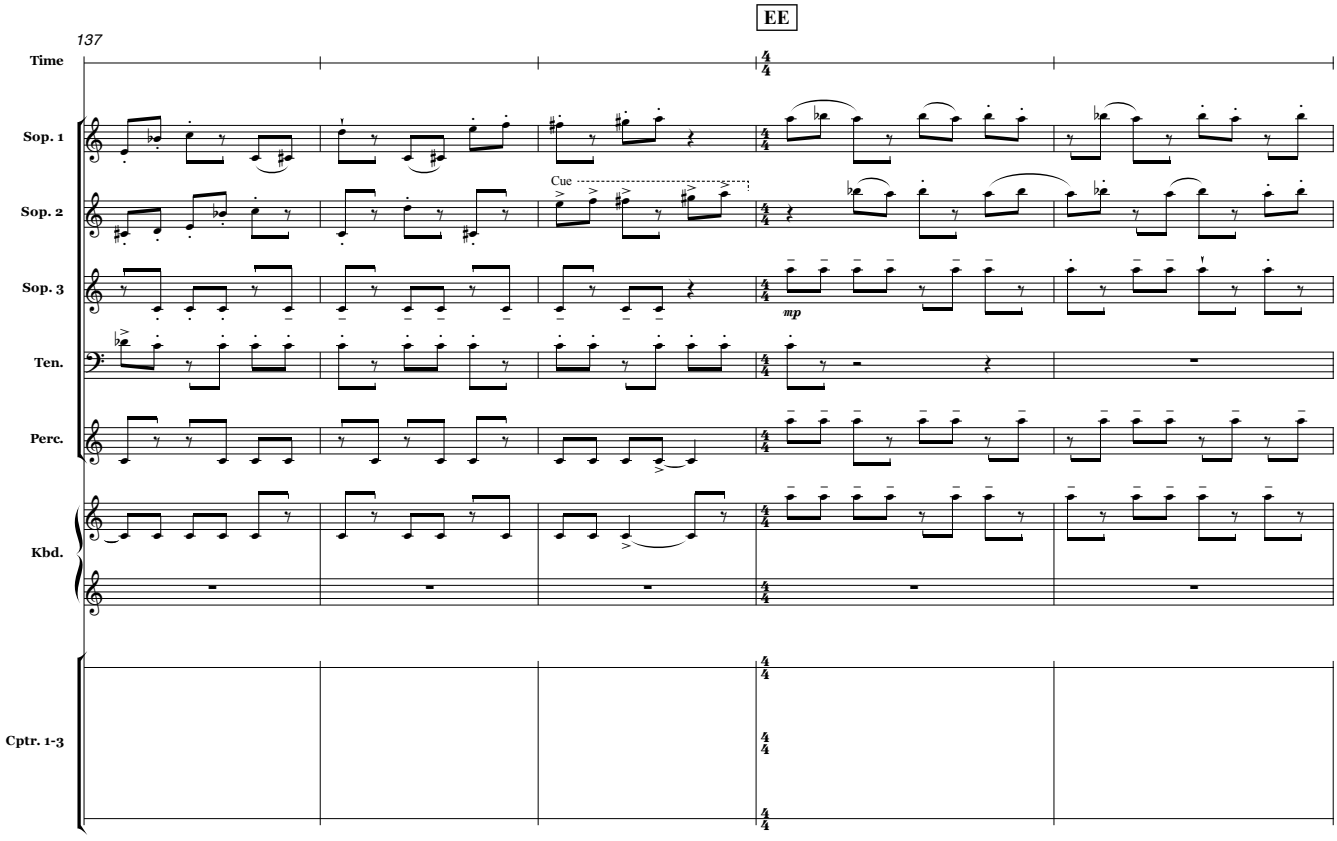

111
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

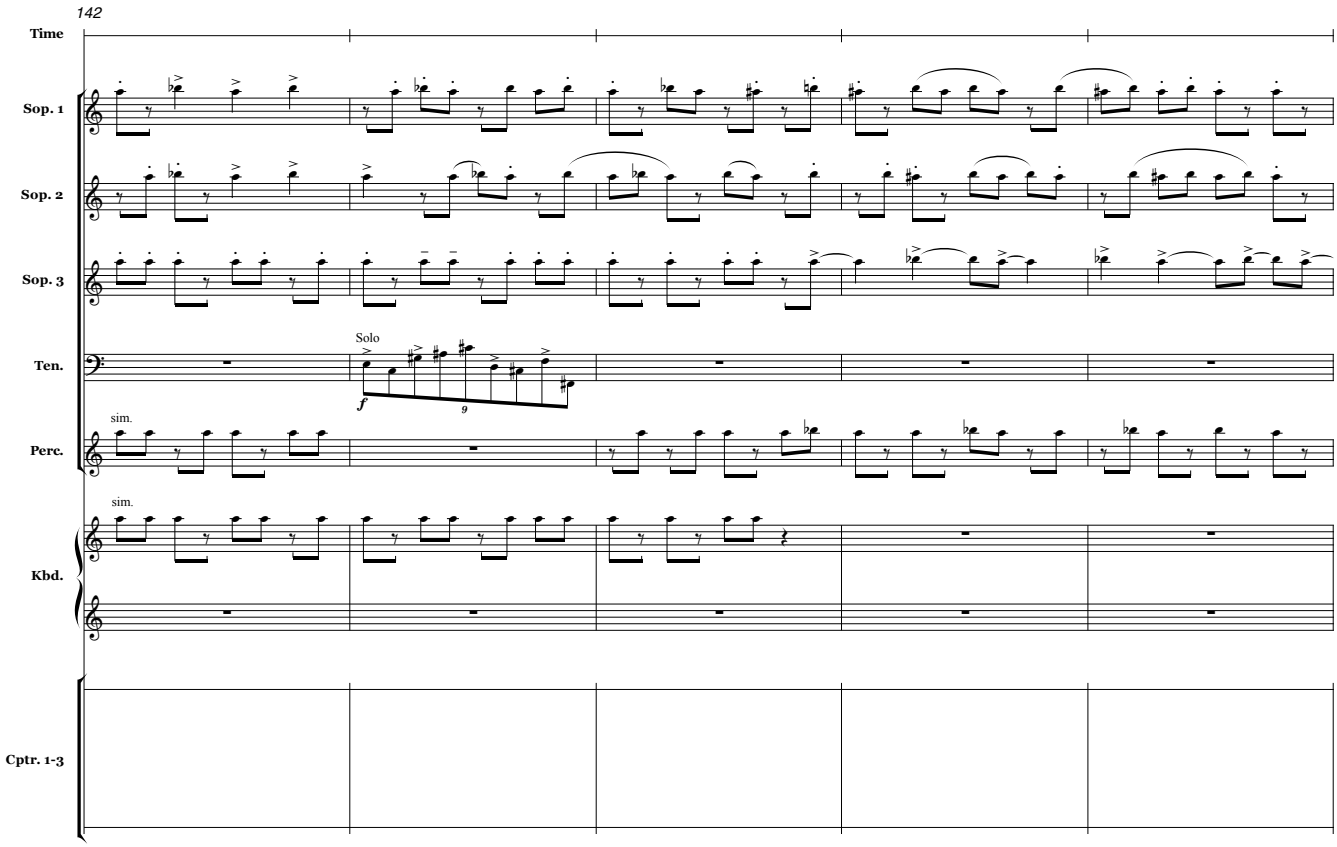

116
rall.
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
mf
ff

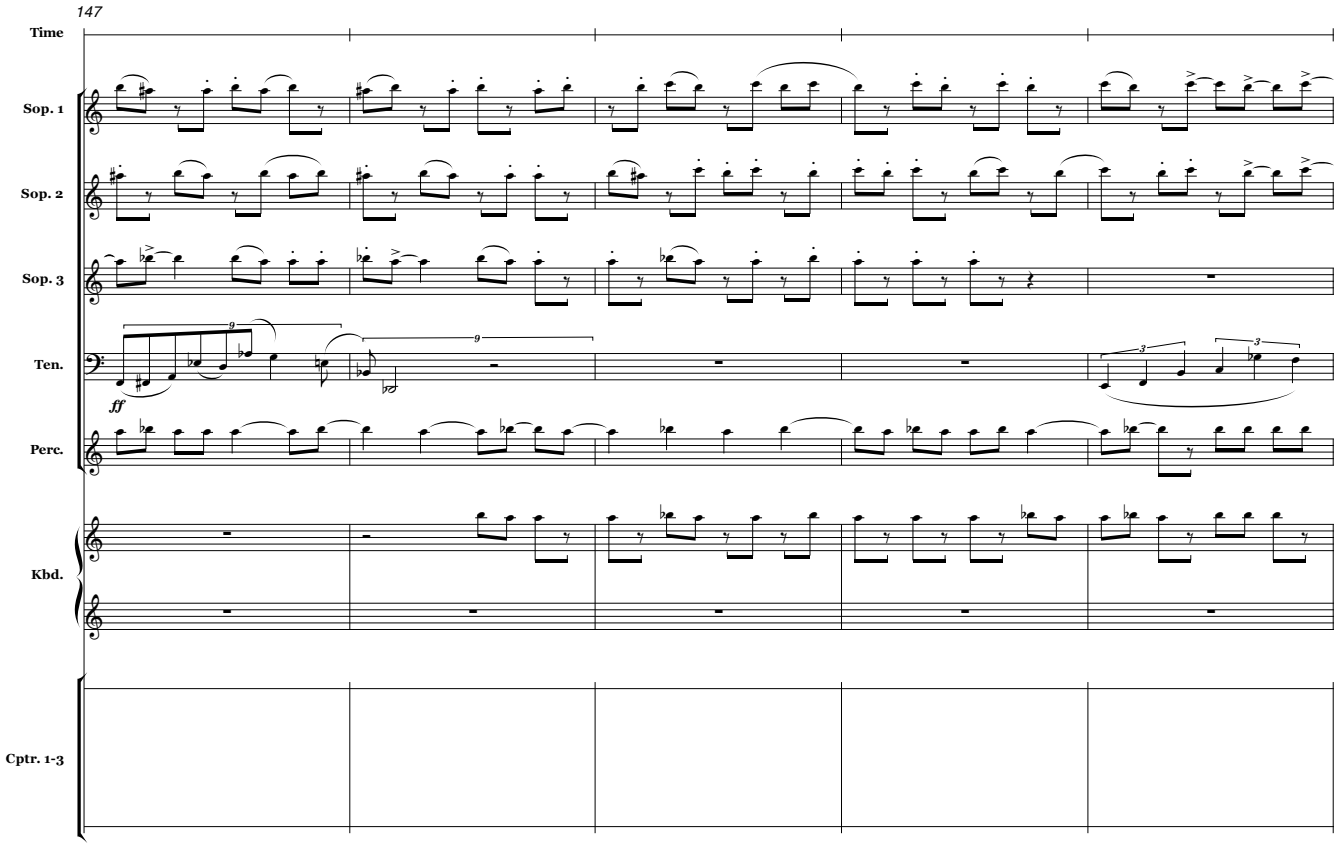

DD
♩= ~126
121
End anchor
♩= 160
Anchor: Sop. 1
Time
Anchor
Sop. 1
Sop. 2
Sop. 3
Ten.
Cue
Perc.
End anchor
Kbd.
Cptr. 1-3
mp
p
sim.

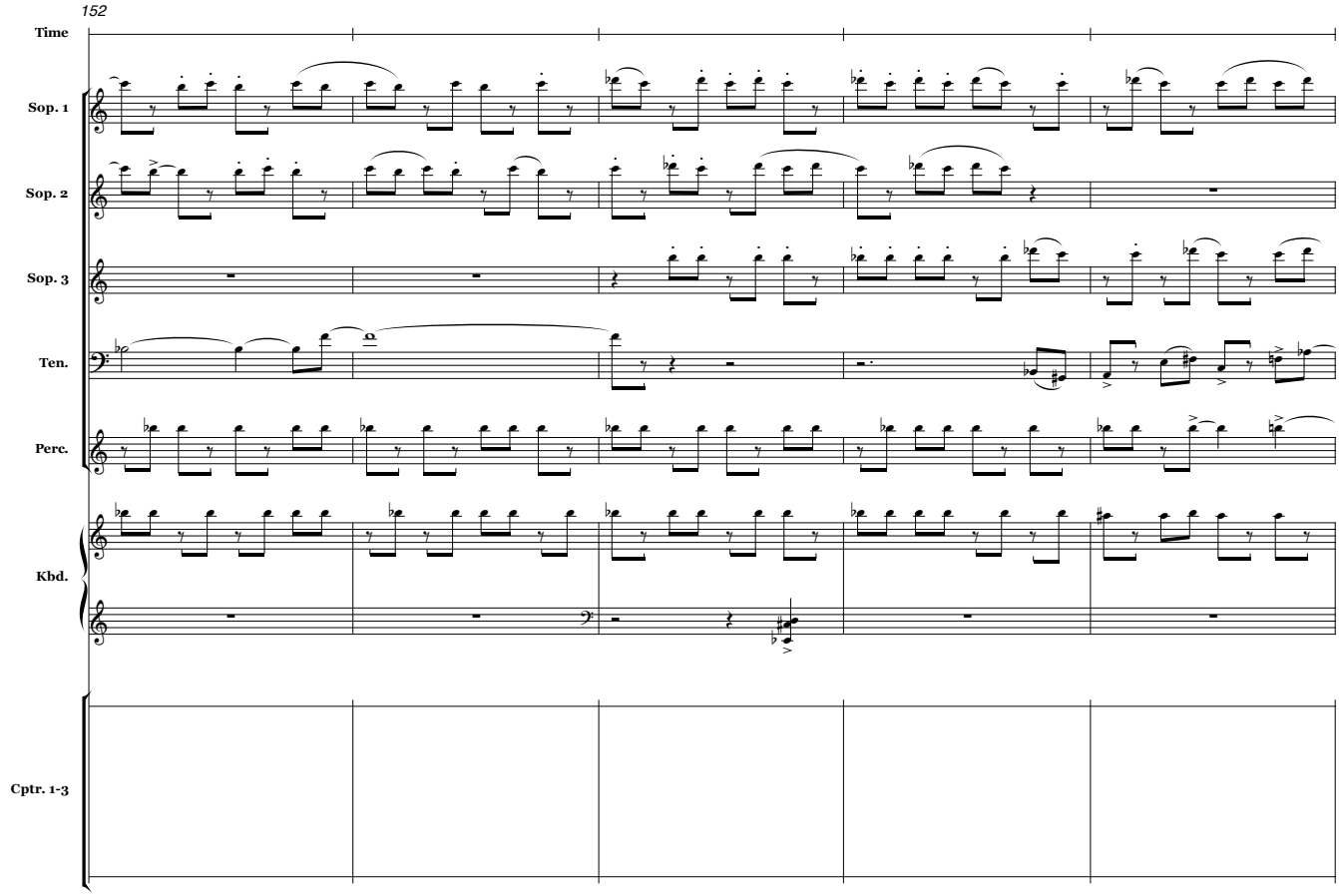

127
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
ppp
p

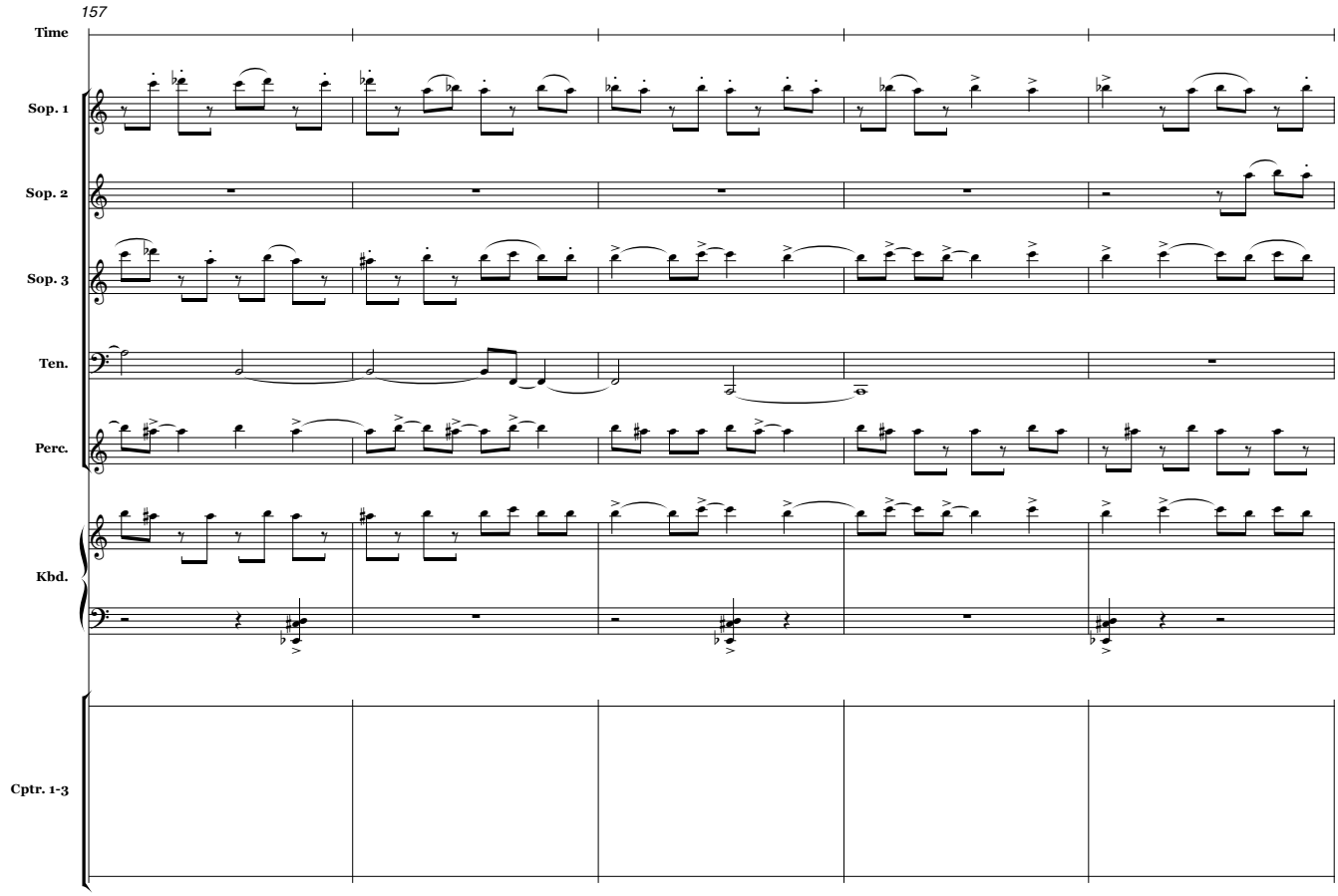

132
Time
Sop. 1
Sop. 2
Sop. 3
ppp
p
Ten.
Perc.
Kbd.
Cptr. 1-3

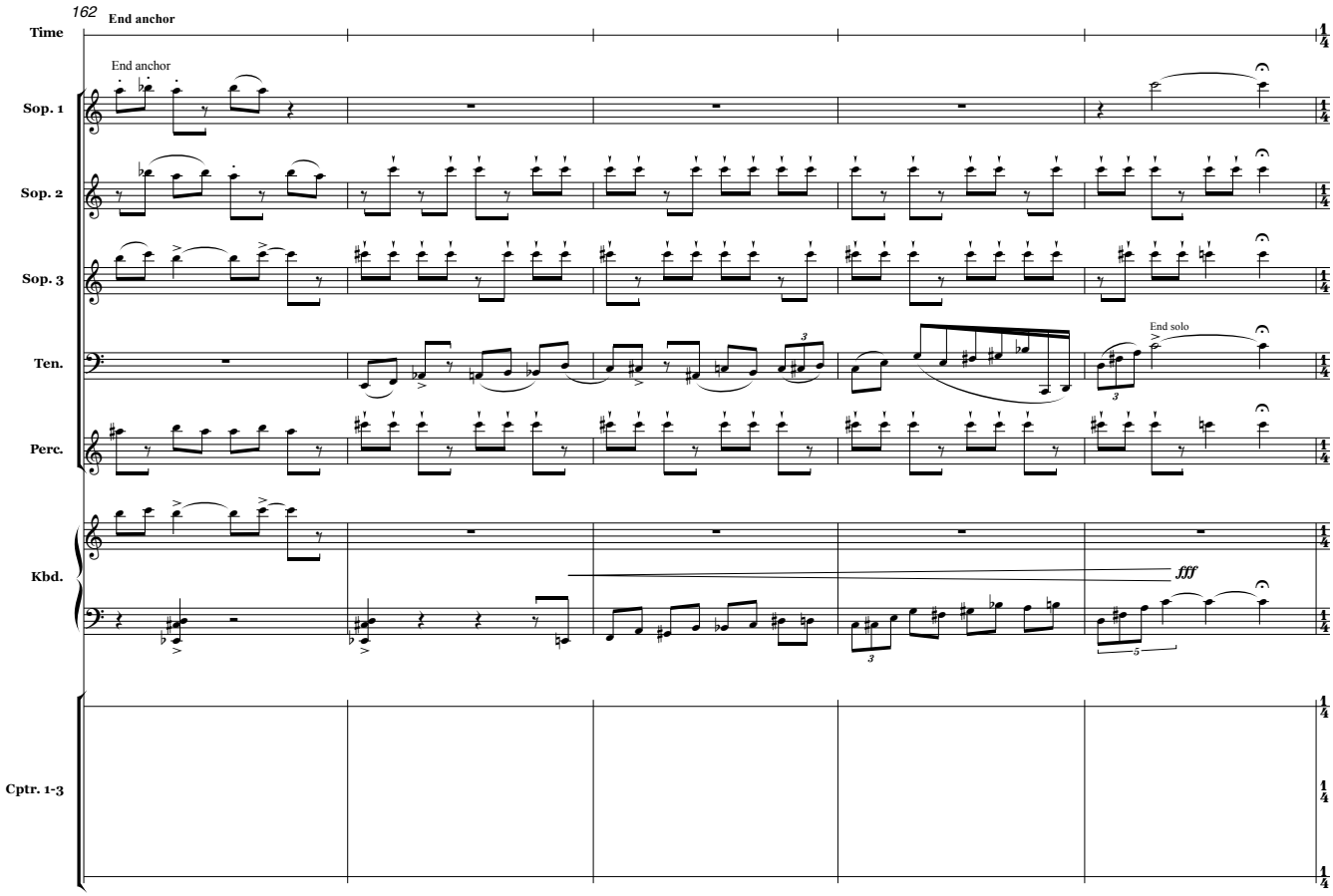

EE
137
Time
Sop. 1
Sop. 2
Cue
Sop. 3
mp
Ten.
Perc.
Kbd.
Cptr. 1-3

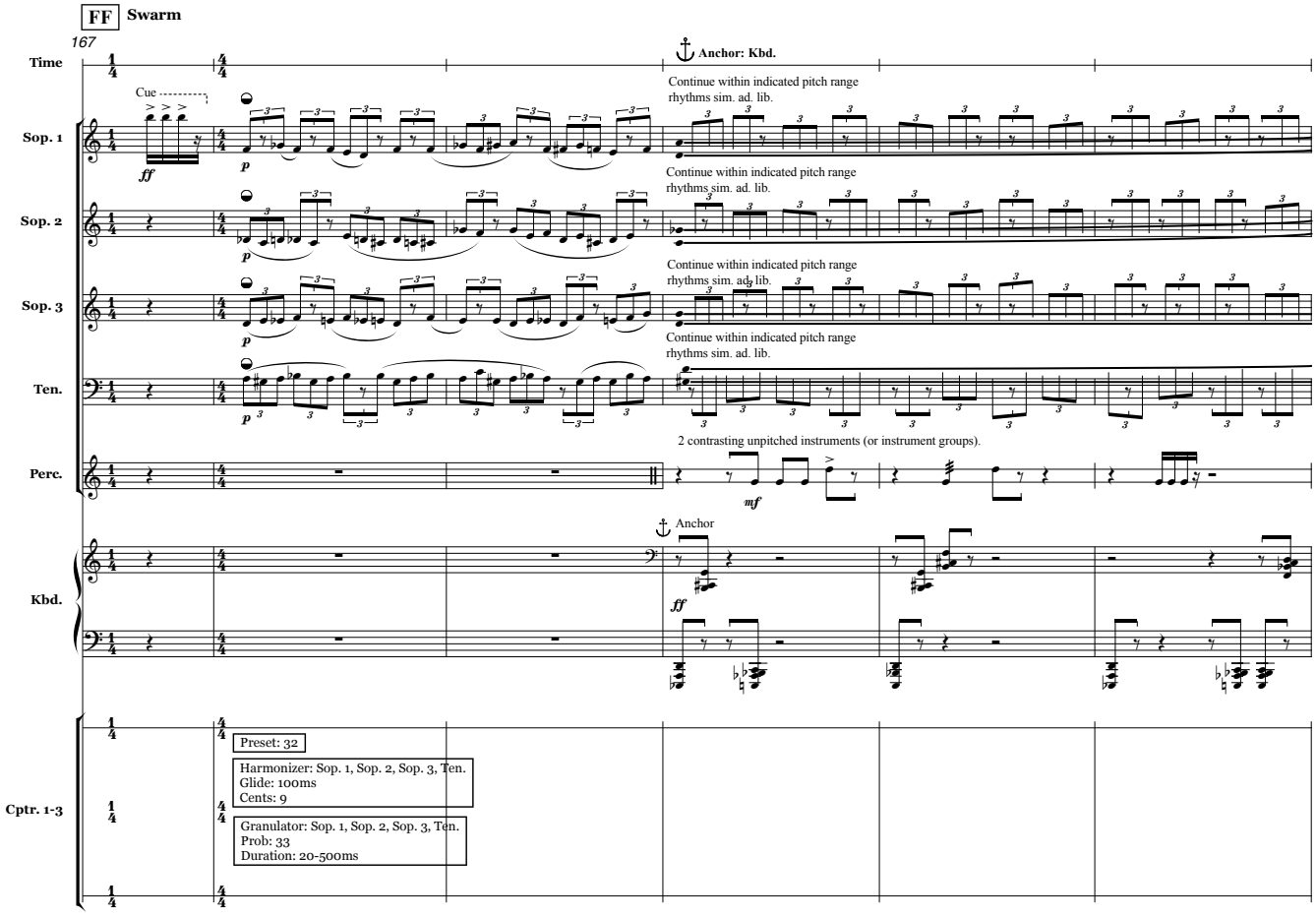

142
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Solo
f
Perc.
sim.
Kbd.
sim.
Cptr. 1-3

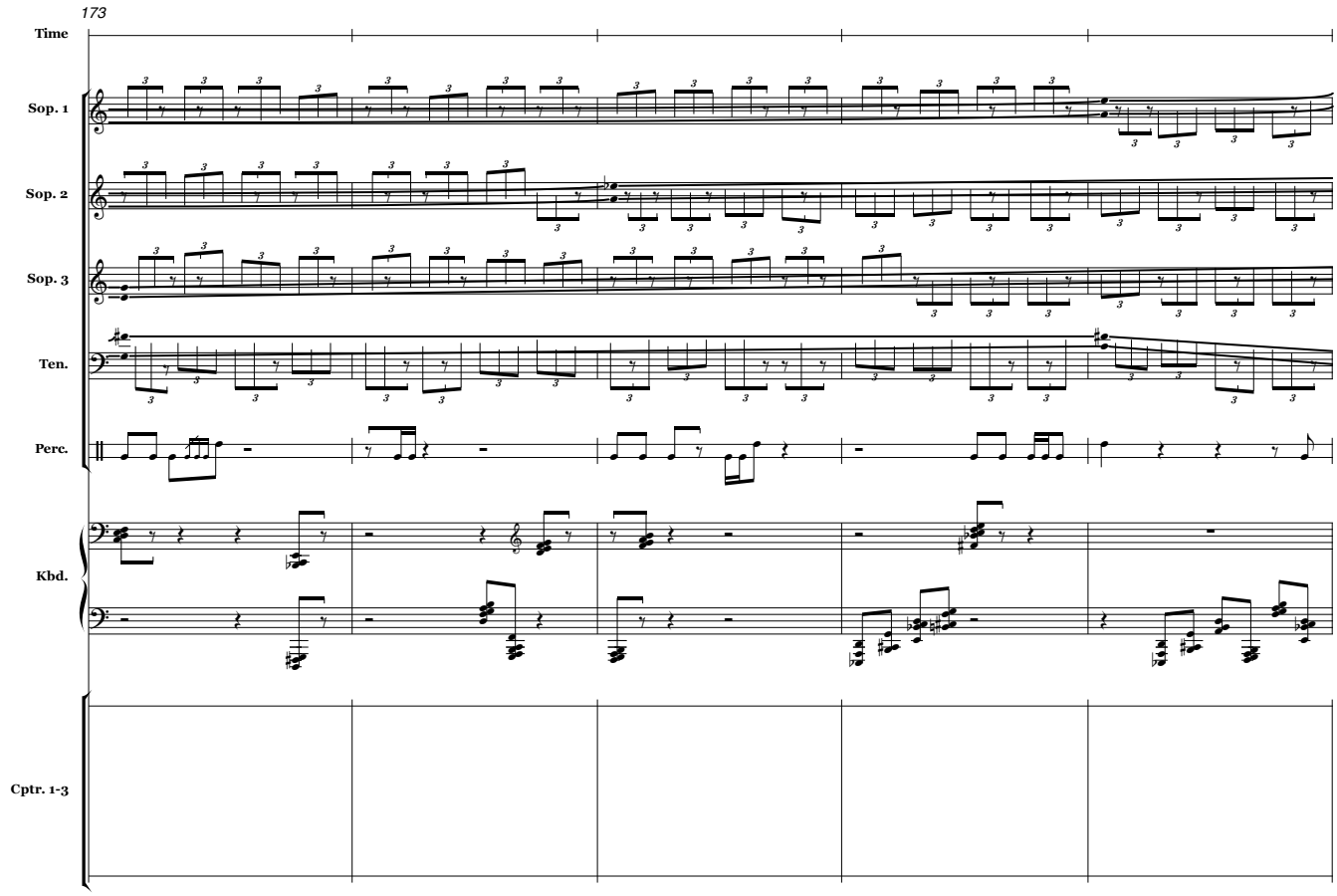

147
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
ff
Perc.
Kbd.
Cptr. 1-3

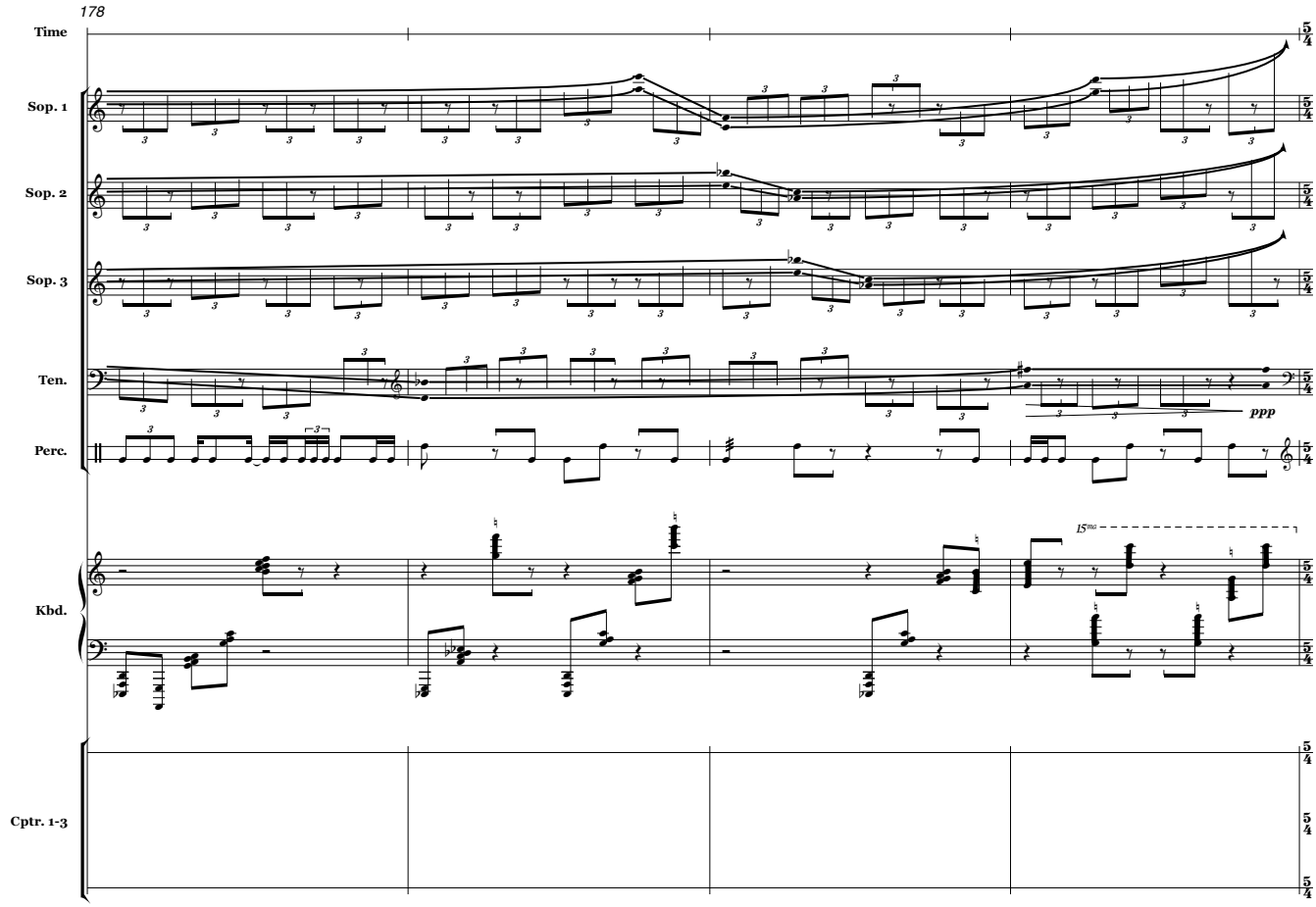

152
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

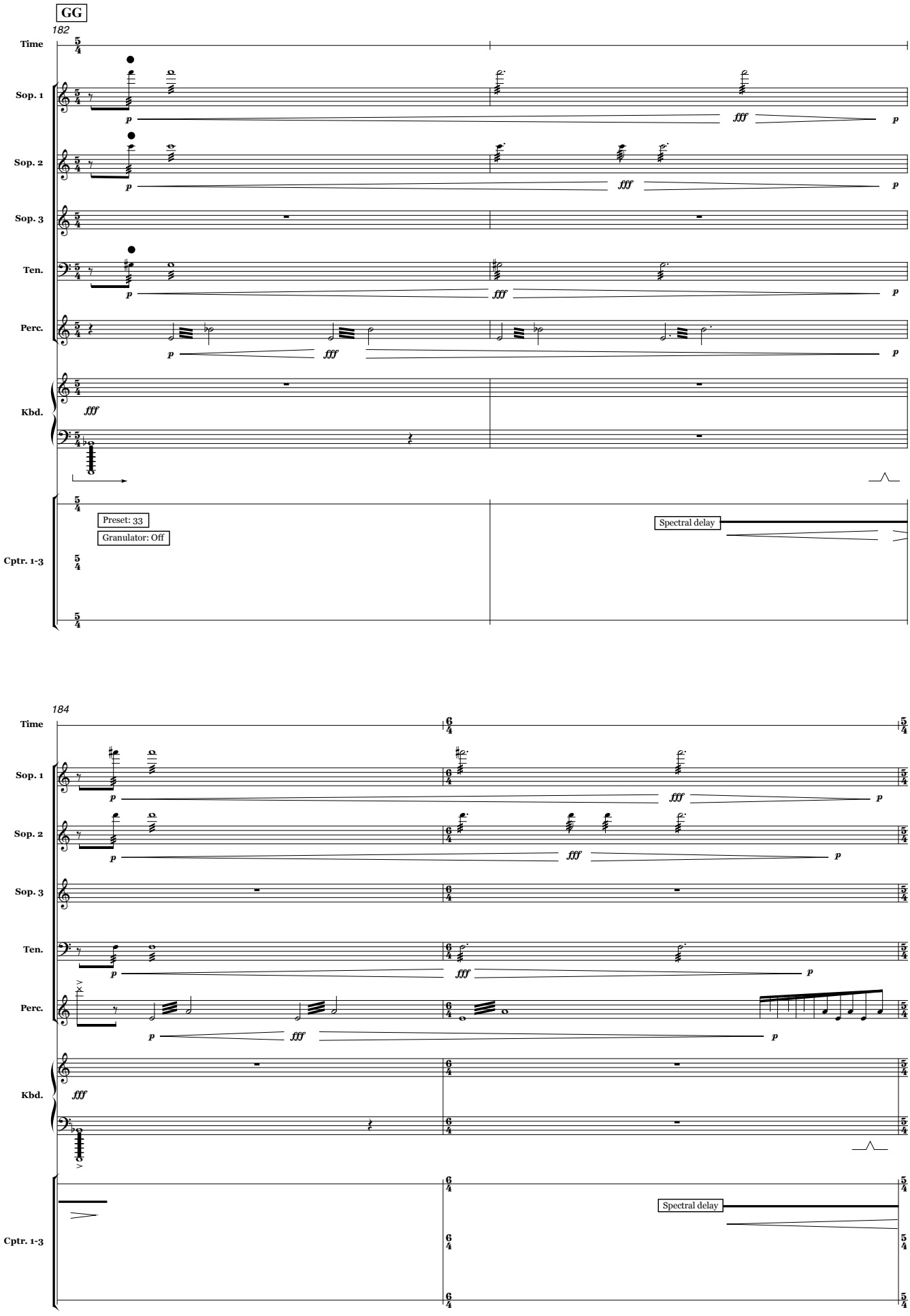

157
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3

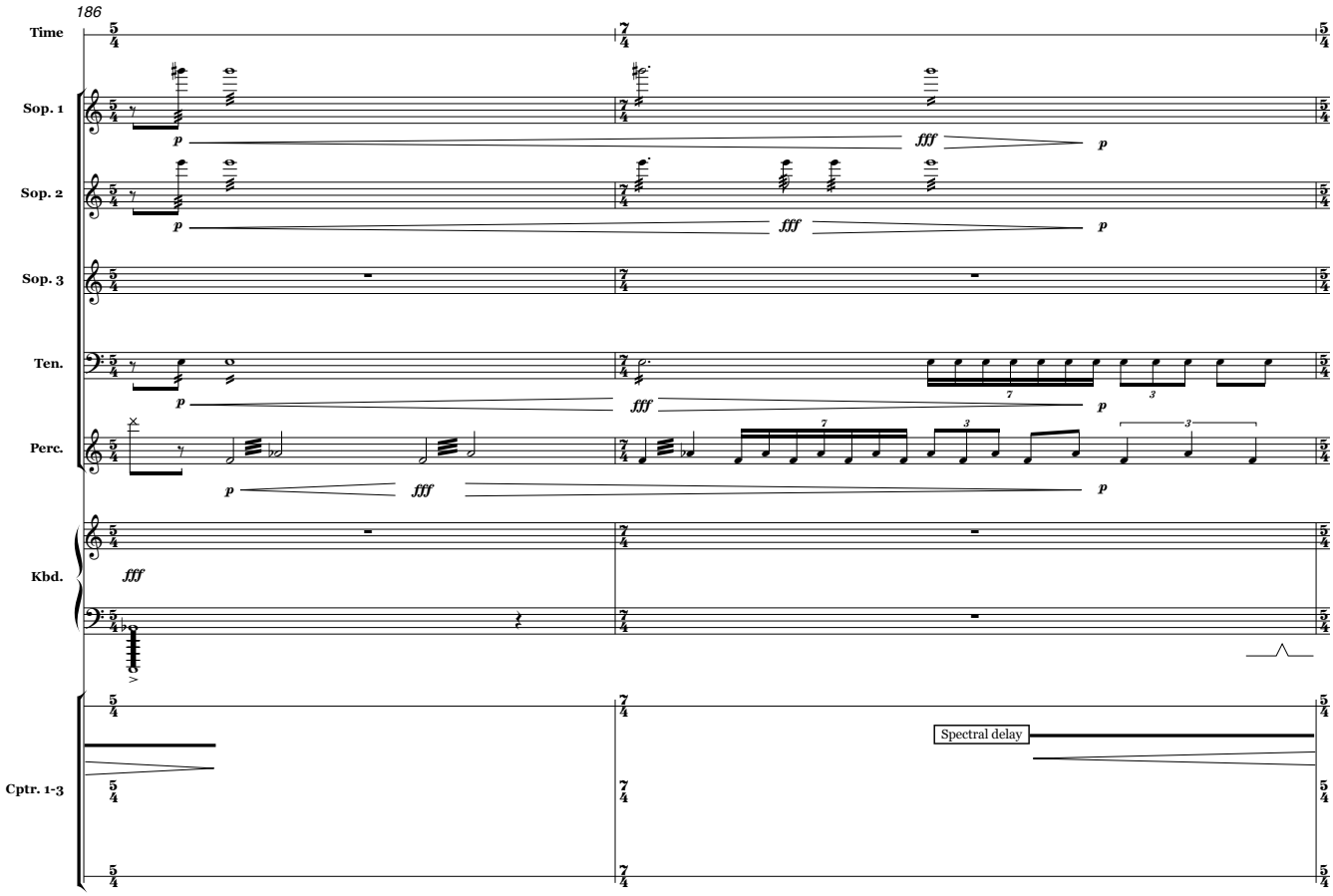

162
End anchor
Time
End anchor
Sop. 1
Sop. 2
Sop. 3
Ten.
End solo
Perc.
Kbd.
fff
Cptr. 1-3

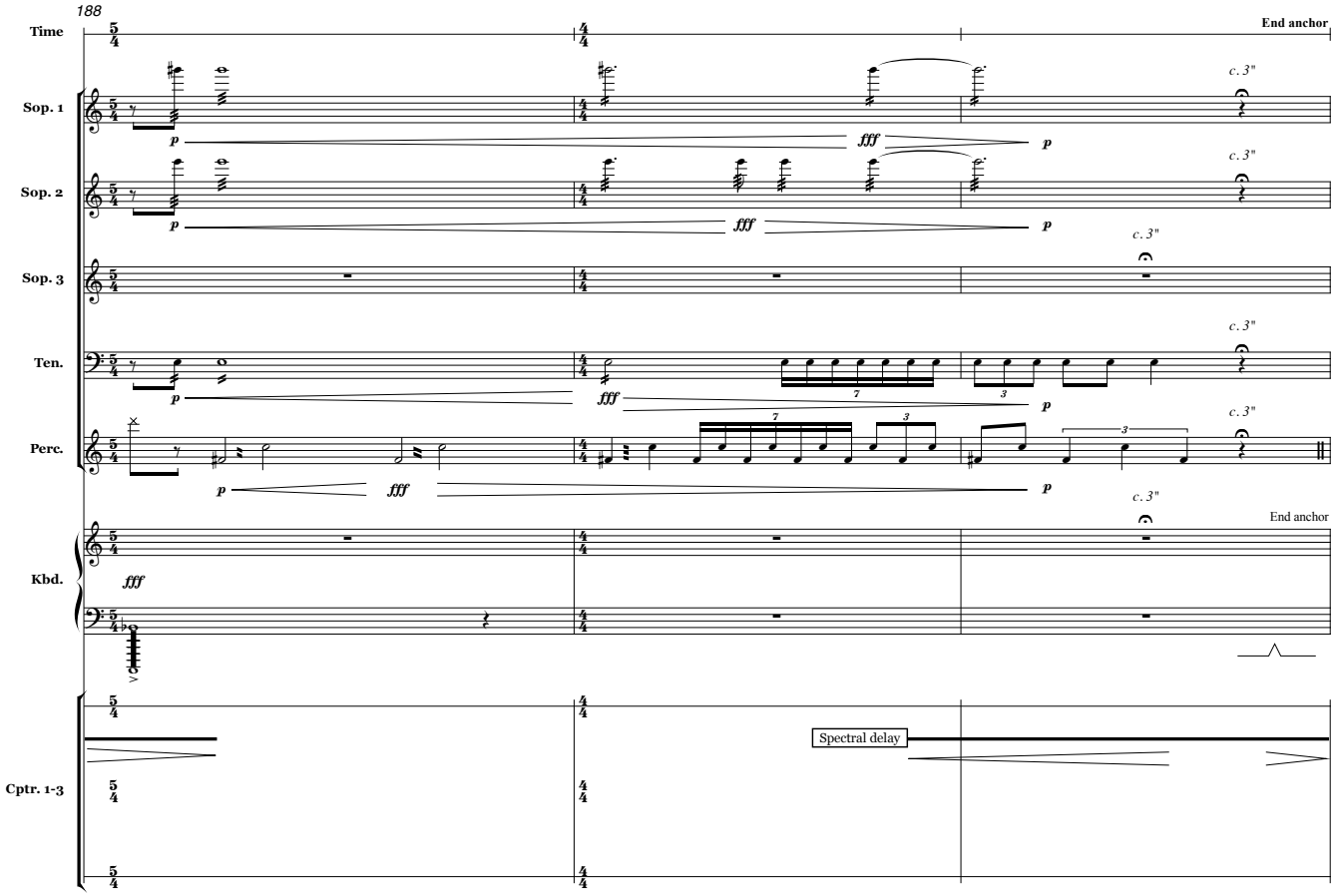

FF
Swarm
167
Time
Anchor: Kbd.
Cue
Sop. 1
Continue within indicated pitch range
rhythms sim. ad. lib.
Sop. 2
Continue within indicated pitch range
rhythms sim. ad. lib.
Sop. 3
Continue within indicated pitch range
rhythms sim. ad. lib.
Ten.
Continue within indicated pitch range
rhythms sim. ad. lib.
2 contrasting unpitched instruments (or instrument groups).
Perc.
Anchor
Kbd.
Cptr. 1-3
Preset: 32
Harmonizer: Sop. 1, Sop. 2, Sop. 3, Ten.
Glide: 100ms
Cents: 9
Granulator: Sop. 1, Sop. 2, Sop. 3, Ten.
Prob: 33
Duration: 20-500ms

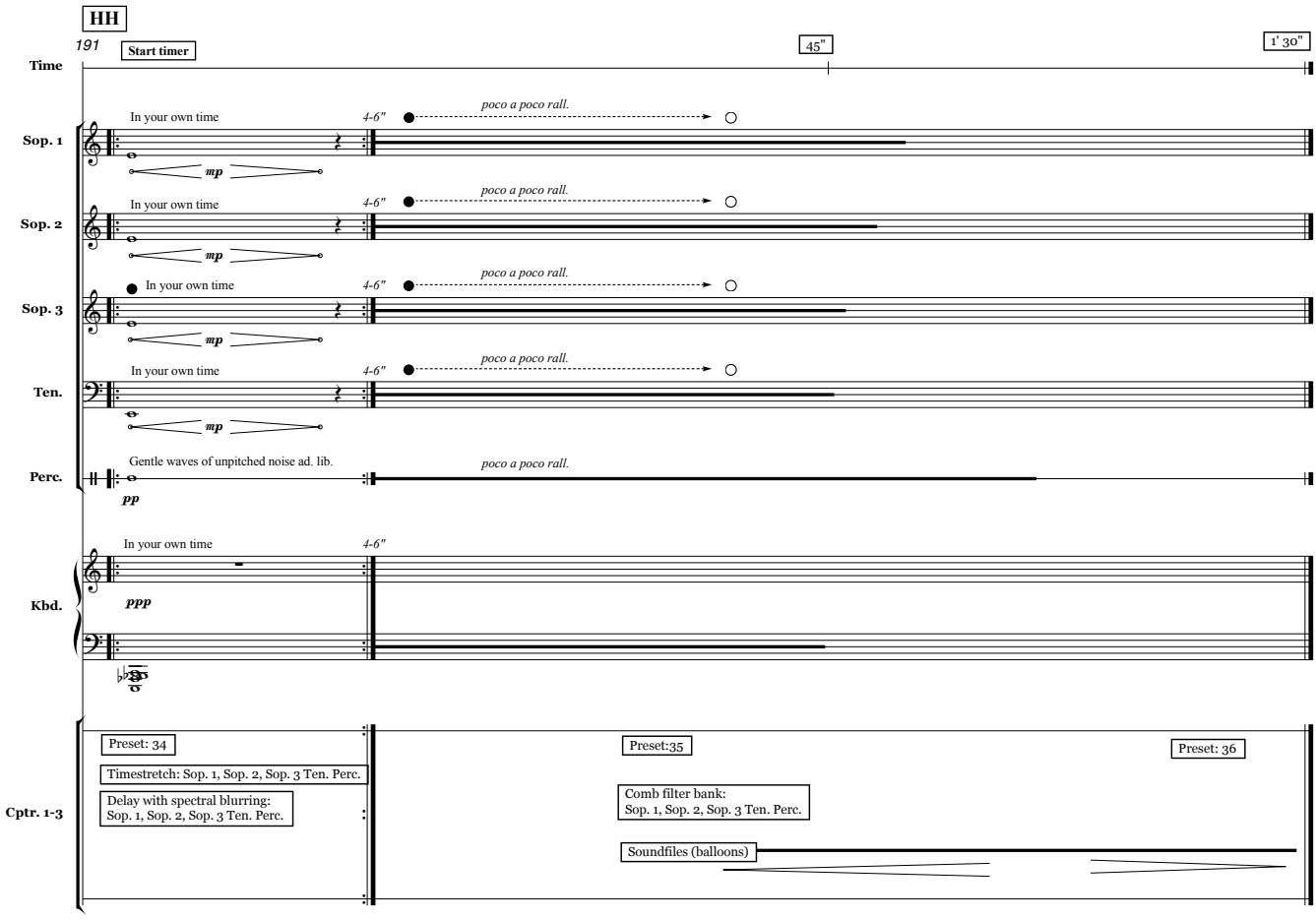

173
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3


178
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
ppp
Perc.
Kbd.
15ma
Cptr. 1-3


GG
182
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
Preset: 33
Granulator: Off
Spectral delay
184
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
Spectral delay


186
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
Spectral delay


188
Time
End anchor
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
Spectral delay
End anchor


HH
191
Start timer
45"
1' 30"
Time
Sop. 1
Sop. 2
Sop. 3
Ten.
Perc.
Kbd.
Cptr. 1-3
In your own time
4-6"
poco a poco rall.
mp
Gentle waves of unpitched noise ad. lib.
pp
ppp
Preset: 34
Timestretch: Sop. 1, Sop. 2, Sop. 3 Ten. Perc.
Delay with spectral blurring:
Sop. 1, Sop. 2, Sop. 3 Ten. Perc.
Preset:35
Comb filter bank:
Sop. 1, Sop. 2, Sop. 3 Ten. Perc.
Soundfiles (balloons)
Preset: 36