Title
vellichor

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Krzysztof Kicior

vellichor

for piano and live electronics (2020)

PREFACE

"vellichor" - the strange wistfulness of used bookstores, which are somehow infused with the passage of time — filled with thousands of old books you'll never have time to read, each of which is itself locked in its own era, bound and dated and papered over like an old room the author abandoned years ago, a hidden annex littered with thoughts left just as they were on the day they were captured.

- John Koenig, The Dictionary of Obscure Sorrows

What happens when thousands of stories converge in the same place and time?

TECHNICAL RIDER

necessary equipment	*recommended devices*
HARDWARE	
SCENE	
grand piano	*Steinway SN91*
condenser microphones* (one pair)	*Neumann U87*
computer	*any device capable of running the software*
audio interface w/ 4 inputs, 4/6 outputs	*Focusrite Scarlett 18i20*
audio processor**	*Korg Kaoss Pad KP3*
Apple iPad (optional, for convenience)	*A2197*
AUDIENCE	
four speakers (quadraphonic version) or	
two speakers (stereo version)	

SOFTWARE

COMPUTER
Cycling '74 Max 8
PSP PianoVerb

MaxForLive Devices:
ShephardTones.axmd
MaxCompressor.axmd
Swirl.axmd
Pitch&Echo.axmd

TABLET
Cycling '74 Mira Controller

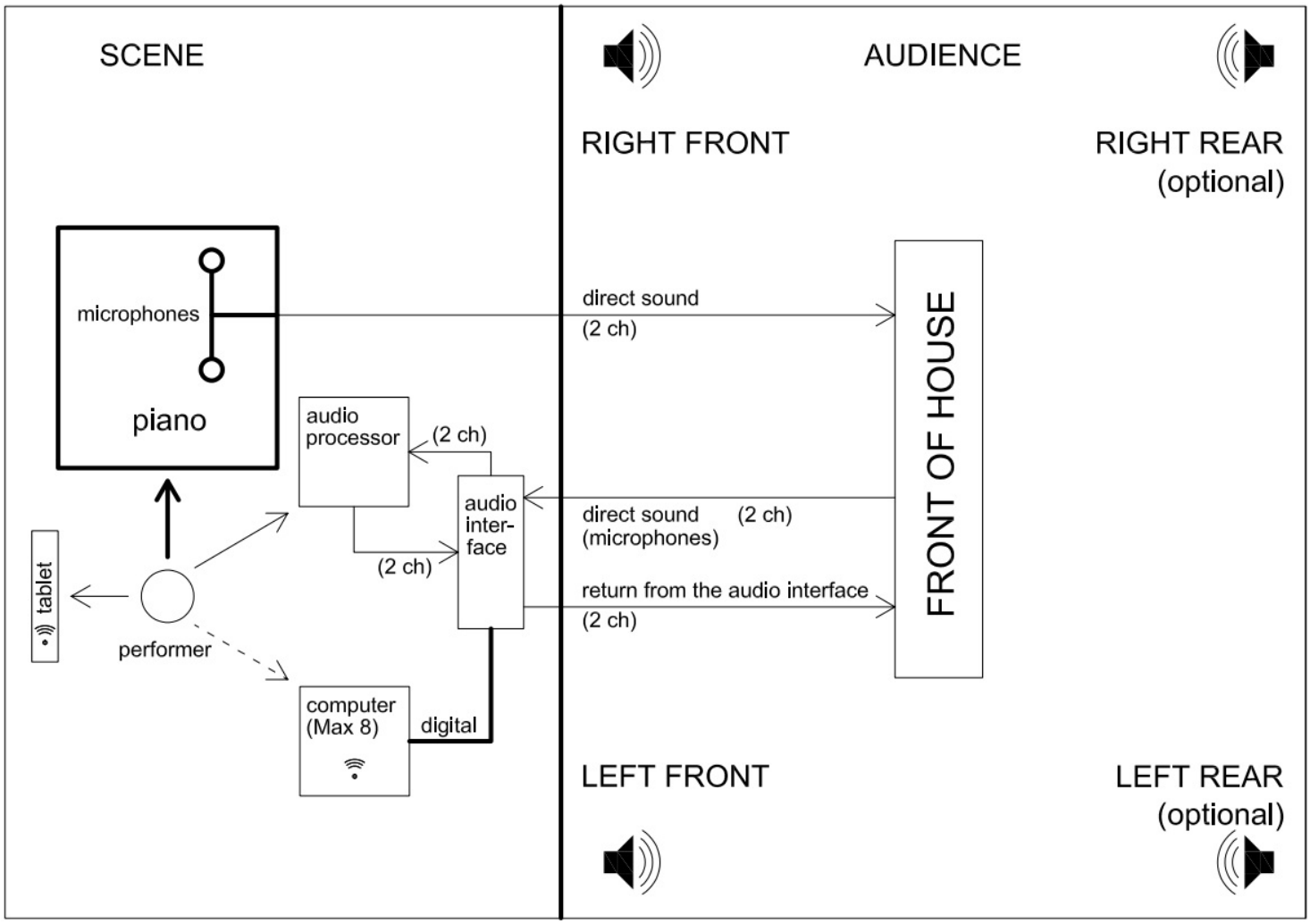
* it is absolutely essential to use the condenser microphones specifically, so that the performer's voice seems to come from afar;
** the digital audio processor must be capable of playing the samples forwards and backwards, with a changeable speed and delay time;

AUDIO INTERFACE I/O

input 1	return from FOH (left microphone)
input 2	return from FOH (right microphone)
input 3	return from audio processor (left channel)
input 4	return from audio processor (right channel)

output 1	send to FOH (left front/rear speaker)
output 2	send to FOH (right front/rear speaker)
output 3	send the return from audio processor to FOH (left front/rear speaker)
output 4	send the return from audio processor to FOH (right front/rear speaker)
output 5	send to audio processor (left channel)
output 6	send to audio processor (right channel)

CONNECTION DIAGRAM



DESCRIPTION OF THE LIVE ELECTRONICS SYSTEM

The system begins with a "glitchulator".
The device can be described as a granulator with the glitchy controls of the grain position and length: manipulating the controls results in the audible clicks. The goal was emulating an old, perhaps slightly damaged appliance with dirty circuits. Sound from the microphones can be recorded and stretched, resulting in a dark texture.

Glitchulator has an option of being modulated by the Shephard tones, ie. the continuous, never-ending glissando. The resulting signal is put through a compressor in order to mitigate the level differences.

After the compressor, both signals (direct and the granulated) are put through a number of transformations: each of those can be turned on and off easily. The "swirl" effect is used for spatialization while "echo" is simply a delay, however entwined with the pitch transposition.

Changing the transposition of both piano sound and the glitchulator is absolutely crucial for the final shape of the performance and, therefore, it is programmed to give the performer full control over the microtonal changes. Resolution of the transposer is one cent - less than pitch discrimination value, yet as much as possible in terms of a simple design.

All the computer transformations are put through the PianoVerb. The purpose is morphing the sounds back to their instrumental characteristics, even after they have been taken out of context and disassembled. Convoluting those results with an impulse response of the actual grand piano assures that every aspect of the sound becomes hypermusical, thus reinventing the instrument.

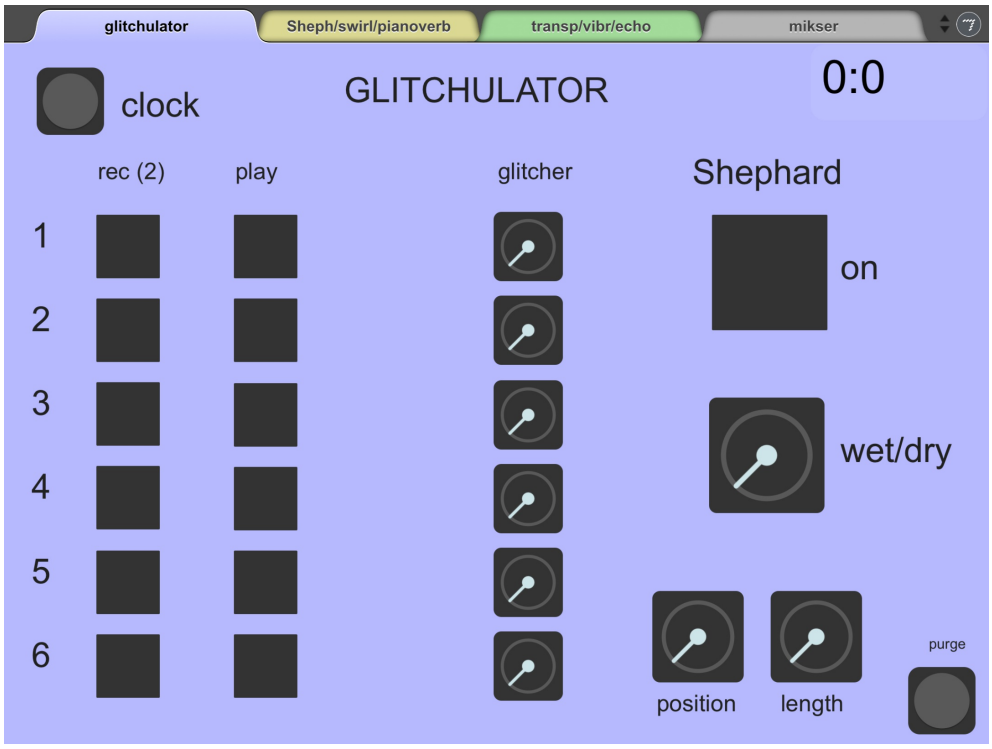
The second and independent part of the system consists of the hardware audio processor. Moving the sound forwards and backwards in different speed with an extra delay adds an element of doubt for the audience. It might appear that some elements of the piece have been prerecorded.
However, everything is created live.

Latency of the transposing system should equal 120 ms (±5), which is equal to a sixteenth note in tempo ♩ = 125 (±5).

The quadraphonic version uses the same audio for the front and rear speakers. It is a compromise between immersing the audience completely in the sound and including the possibility to perform the piece using less equipment.

INTERFACE MANUAL

tab 1: Glitchulator



clock - starts the performance clock, which can be seen in every tab in the upper right corner (bang)
rec - records two seconds of the microphone input for the granular synthesis (toggle on/off)
play - starts the glitchulator, based on the recorded grains (toggle on/off)
glitcher - lowers the density of the played grains (50-20 per second)
position - changes the starting position of the grain playback (0-1500 ms)
length - changes the length of the grain playback (20-500 ms)
Shephard on - turns on the Shephard tones modulating the glitchulator (toggle on/off)
wet/dry - sets the level of the Shephard tones in the modulation

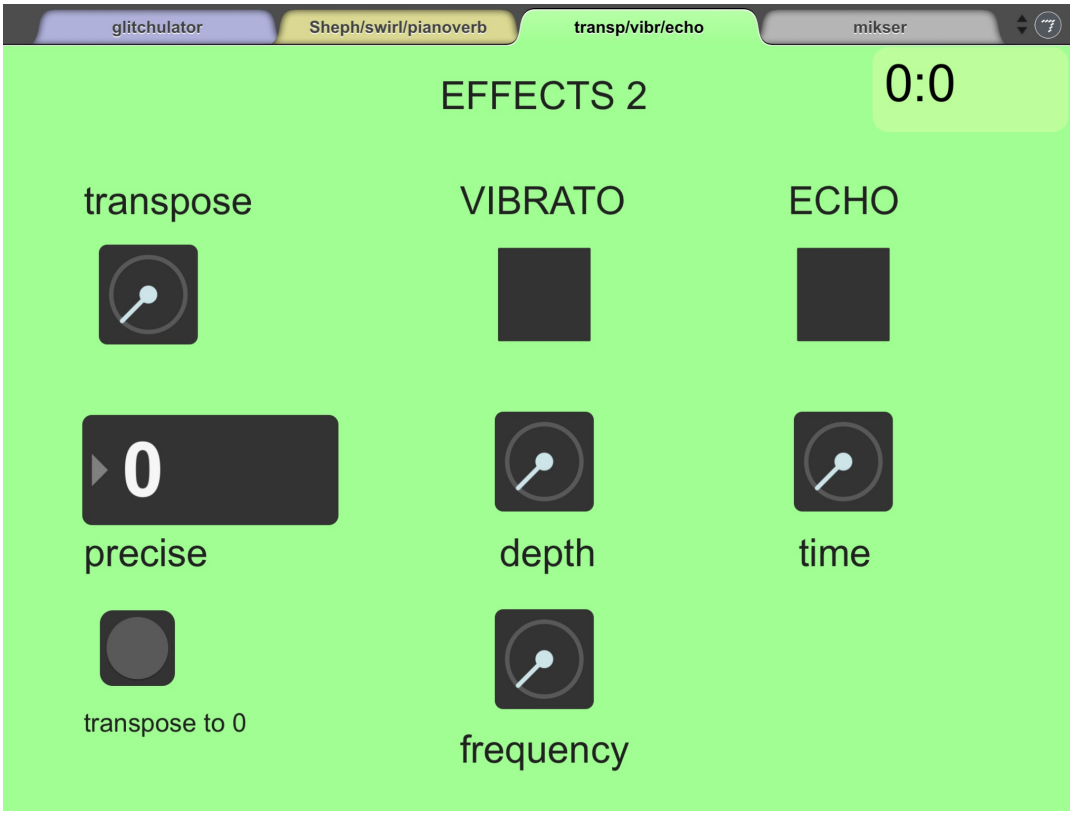
purge - clears the recordings, resets and stops the clock (bang)

tab 2: Effects

Shephard - control over the Shephard glissando, turned on in the Glitchulator tab:
down, slow: 3 semitones down per second (bang)
down, fast: 15 semitones down per second (bang)
up, slow: 3 semitones up per second (bang)
up, fast: 15 semitones up per second (bang)
low: sets the F# contra as the center tone of the glissando (bang)
mid: sets the middle C as the center tone of the glissando (bang)

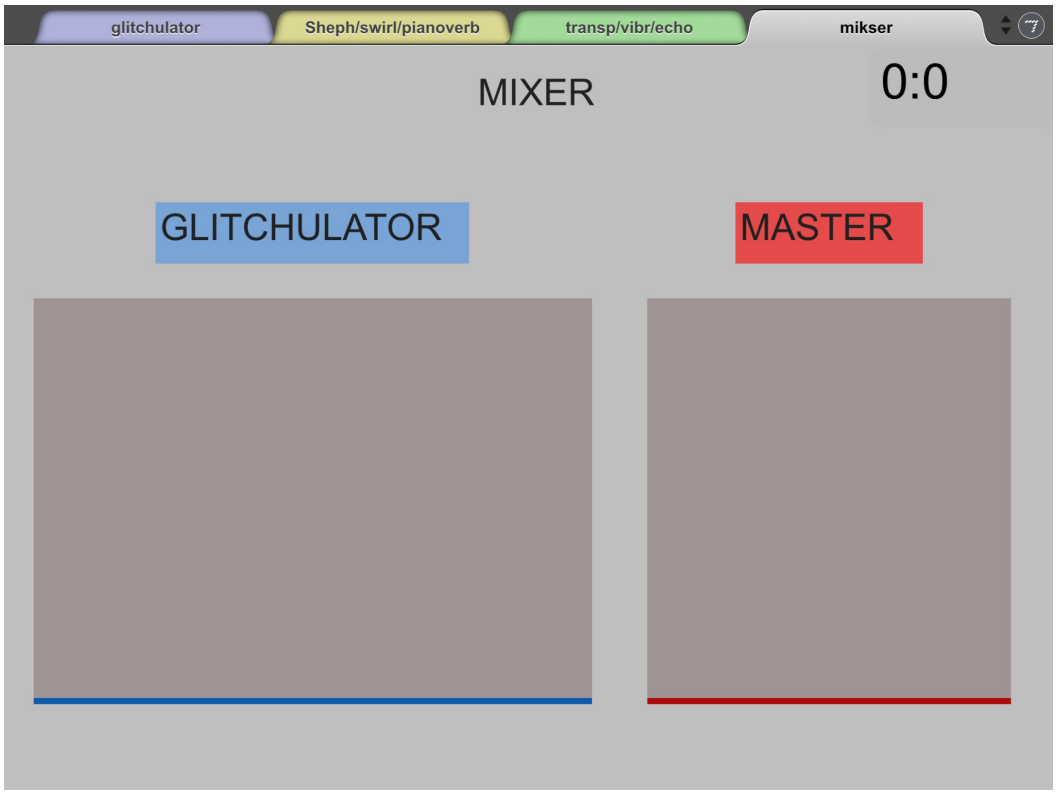
Swirl, PSP Pianoverb - the parameters are controlled as described

tab 3: Effects 2



transpose - controls the transposition (-2400 to 2400 cents)
precise - allows the more controlled transposition within a small scale
transpose to 0 - immediately resets the transposition
vibrato depth - controls the depth of vibrato (0 to 1200 cents)
vibrato frequency - controls the frequency of vibrato (0 to 100 Hz)
echo time - controls the delay time (0 to 5000 ms)
additional notes
vibrato on/off - be careful both with the depth and the frequency, as it is very easy to overuse
echo on/off - be wary that the first response happens almost immediately, resulting in an amplification of the piano (delayed by the system latency, which is used as a stylistical mean throughout the piece)

tab 4: Mixer



The faders control the level of the audio sent back to Front Of House.

PERFORMANCE NOTES

Using an iPad in order to control the system is optional. However, since the mira.frame objects were coded in the project, it definitely helps in performing the piece. Keep in mind that the tablets with the Android system cannot run the necessary software (Cycling '74 Mira Controller).

Sampling with the glitchulator is described by the numbers (eg. "rec 1", "play 2", "stop 3"), while sampling with the digital audio processor is described by the letters (eg. "rec A", "manipulate B").

All the techniques are described in the score itself; keep in mind that the parameters' values apply only within the frame where they are located. Time in italics indicates the approximate box/subsection length within the *senza misura* sections (separated by dashed lines). The clock, programmed into the interface, will help to maintain the right divisions.

If start of a live electronics action is not described in terms of time, let its position within the *senza misura* section guide the performance.

Within the aforementioned sections:
eighth pause/quarter-note pause - a short/long pause, the exact length varying between the sections;
square/circle/triangle fermata - a long/medium/short hold (applies also to the metered sections);

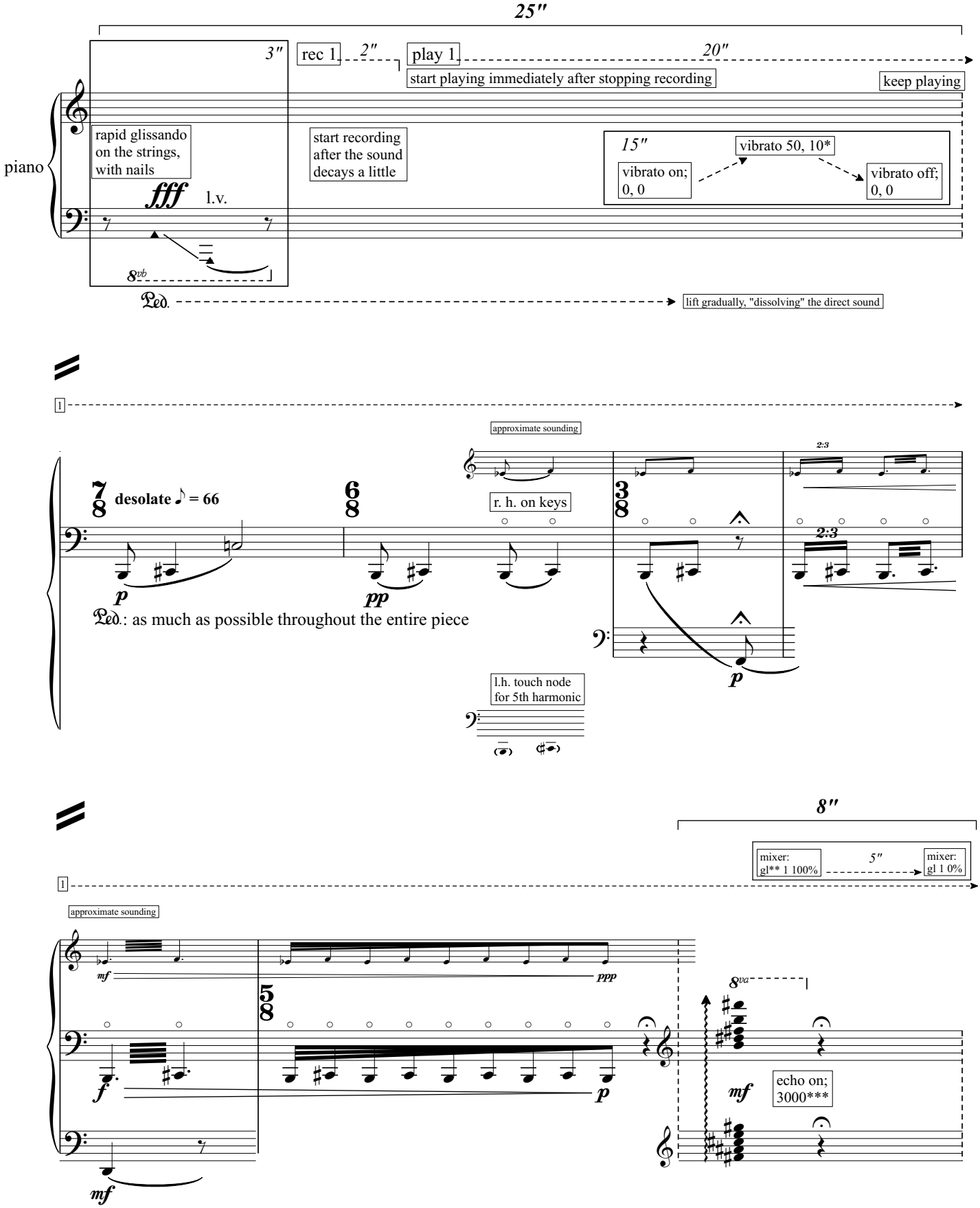
Listen closely to the transposing system latency, as it determines the tempo in the further part of the piece.

First performance:
13.01.2020, Uniwersytet Muzyczny Fryderyka Chopina, Warszawa, Poland
Krzysztof Kicior - piano, live electronics

ca. 8'30"

Krzysztof Kicior

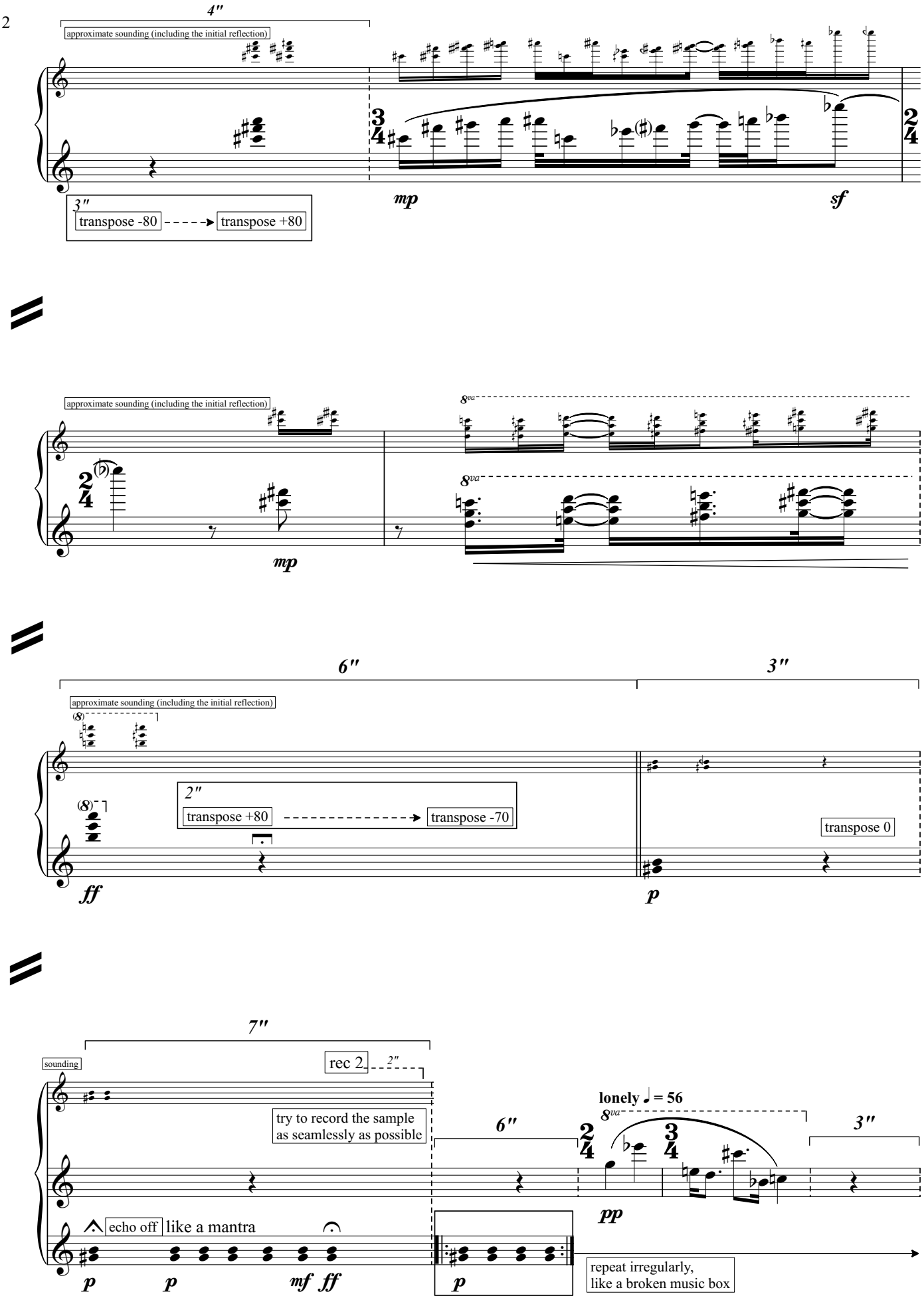
vellichor

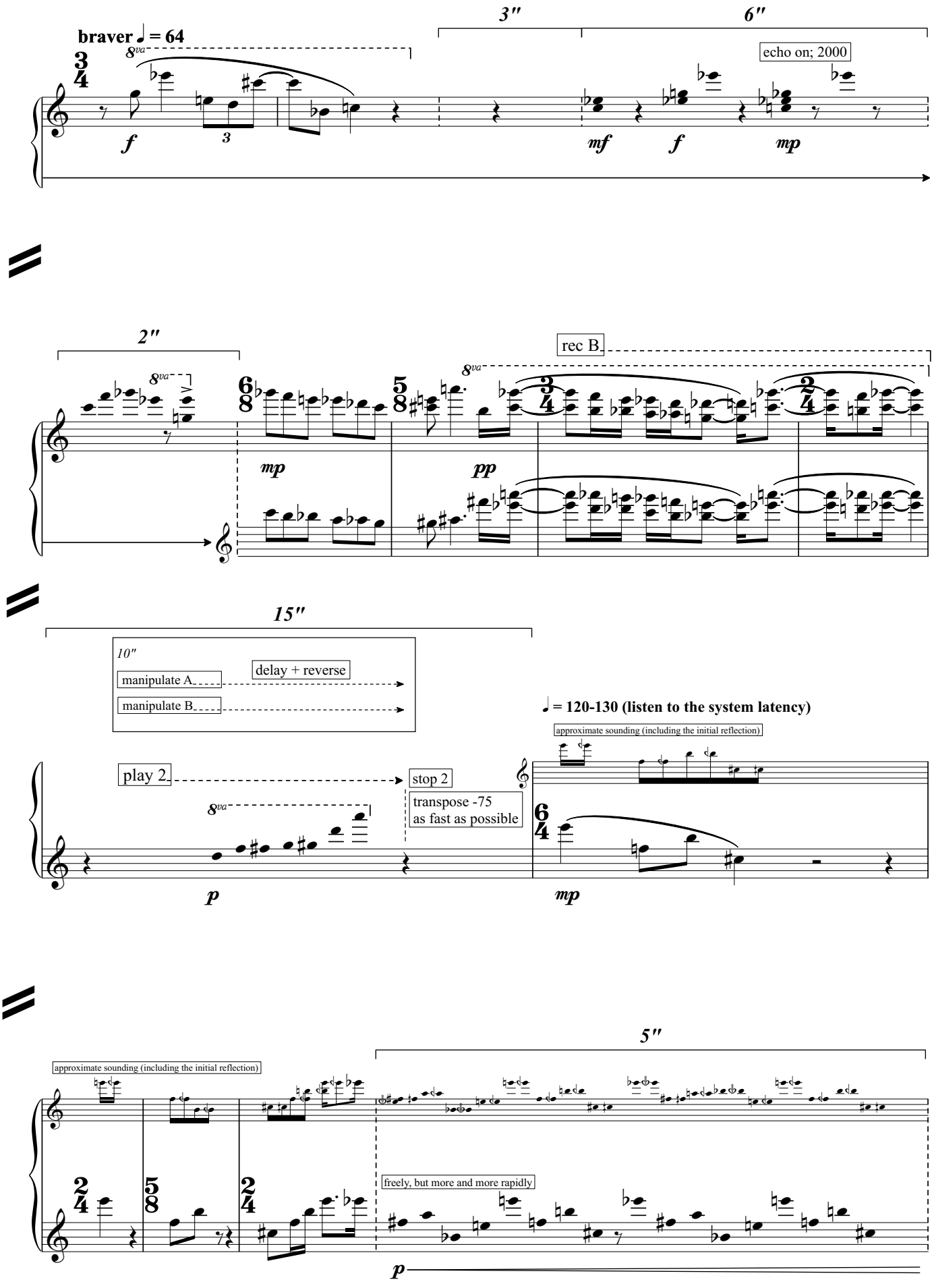


* vibrato depth, frequency
** glitchulator
*** miliseconds

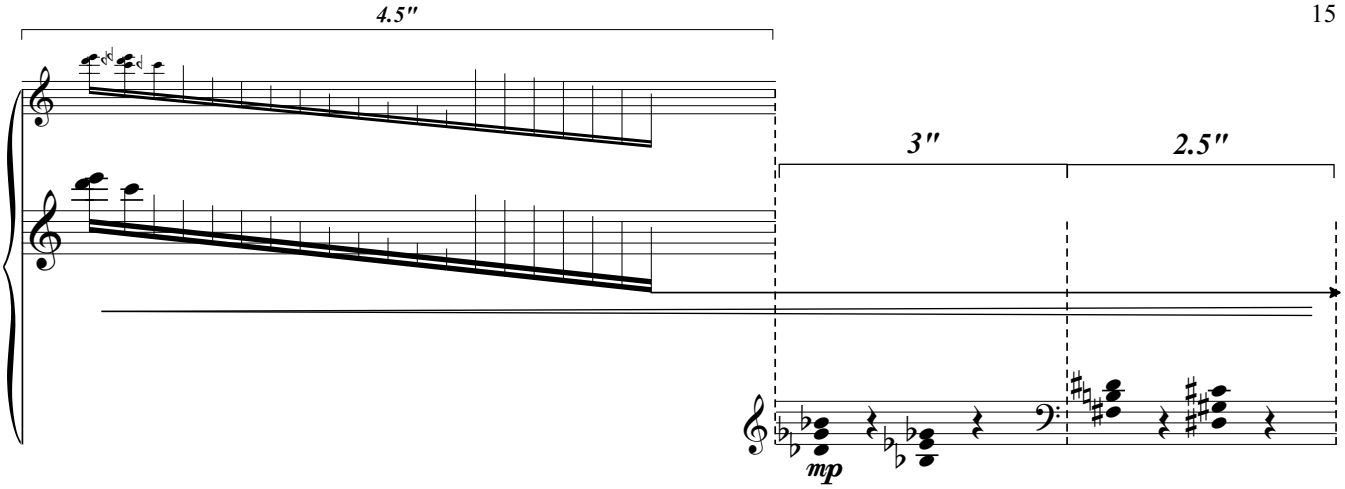

stop 1
p
echo off
5:6
8va
4"
10"
(8)
pp
echo on; 1200
transpose -20*
vibrato on; 10, 10
transpose -80
vibrato off
♩ = 120-130 (listen to the system latency)
approximate sounding (including the initial reflection)
rec A
pp
p
mp
2"
3"
1"
manipulate A
sample pitch down
approximate sounding (including the initial reflection)

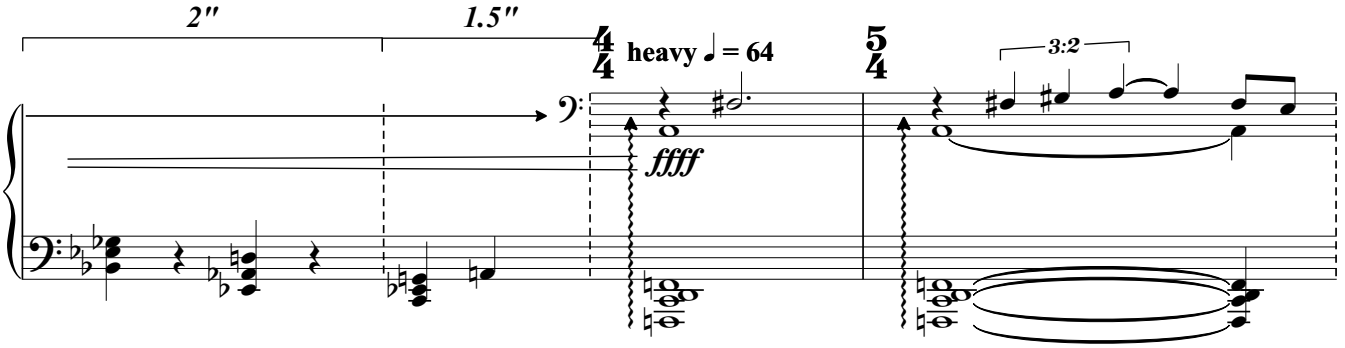
* cents

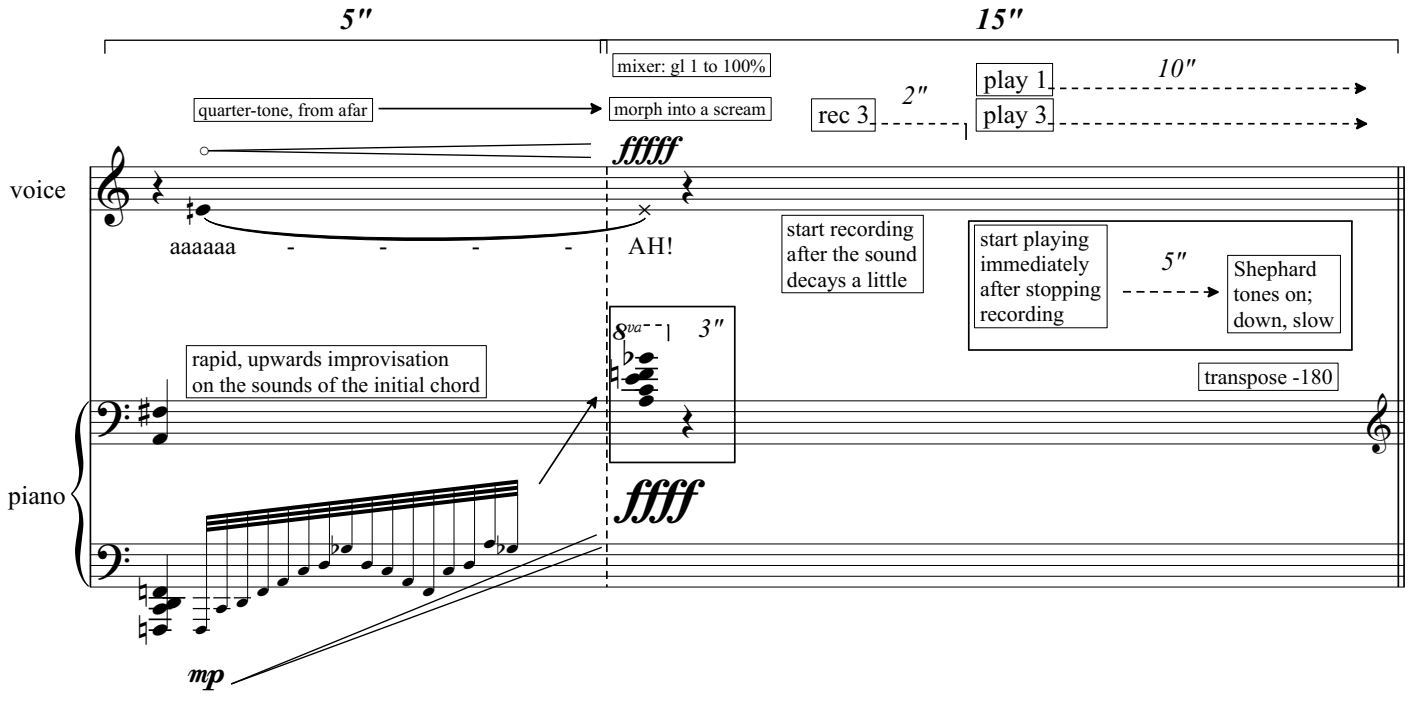

4"
approximate sounding (including the initial reflection)
mp
sf
3"
transpose -80
transpose +80
approximate sounding (including the initial reflection)
8va
mp
6"
3"
approximate sounding (including the initial reflection)
2"
transpose +80
transpose -70
transpose 0
ff
p
7"
sounding
rec 2
2"
try to record the sample as seamlessly as possible
lonely ♩ = 56
6"
3"
pp
echo off
like a mantra
p
p
mf
ff
p
repeat irregularly, like a broken music box


braver ♩ = 64
3"
6"
8va
echo on; 2000
f
3
mf
f
mp
2"
rec B
8va
mp
8va
pp
15"
10"
manipulate A
delay + reverse
manipulate B
♩ = 120-130 (listen to the system latency)
approximate sounding (including the initial reflection)
play 2
stop 2
transpose -75
as fast as possible
8va
p
mp
5"
approximate sounding (including the initial reflection)
freely, but more and more rapidly
p

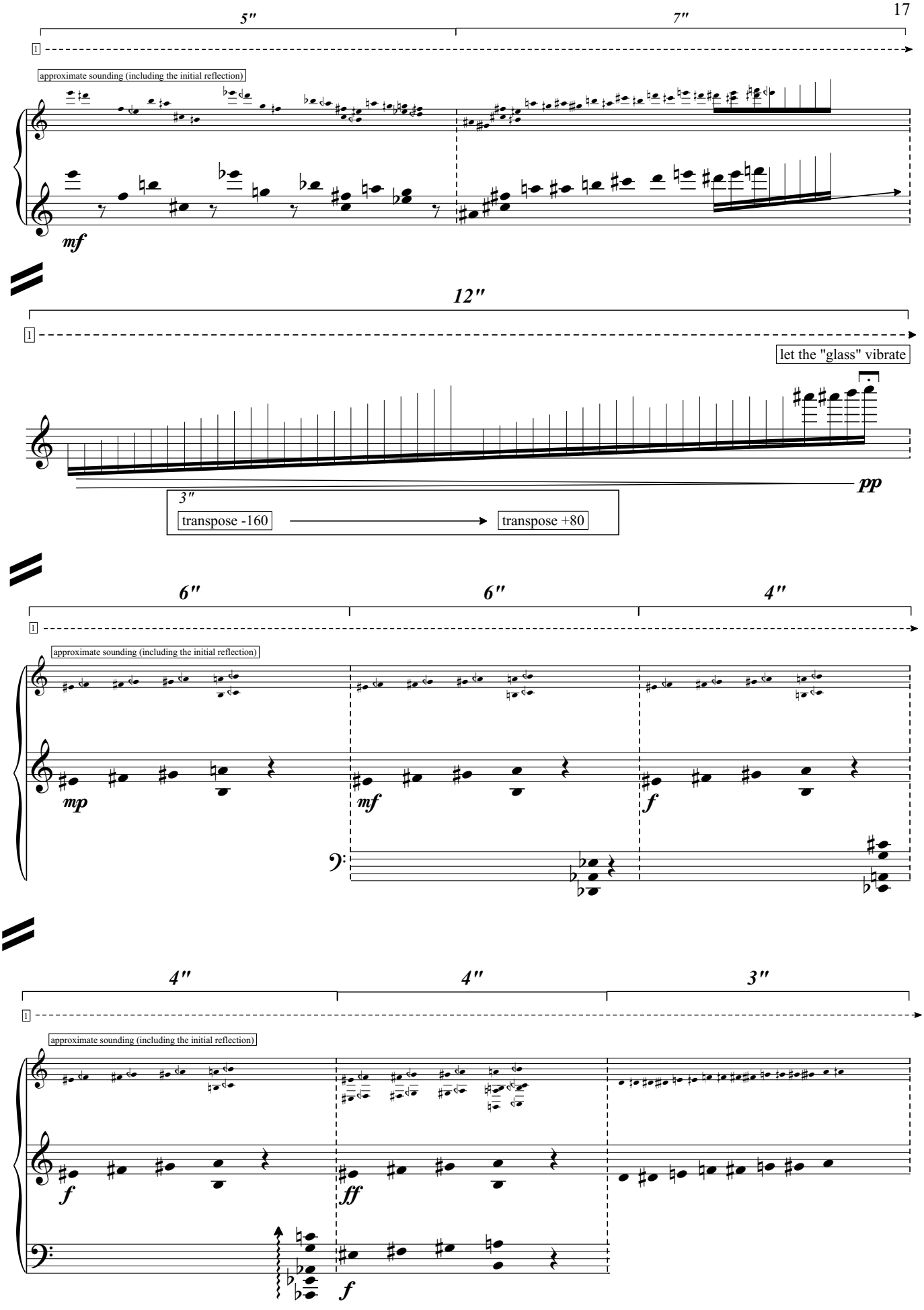

3"
3"
2"
approximate sounding (including the initial reflection)
let the echo decay a little
f
pp
3"
3.5"
approximate sounding (including the initial reflection)
2.5"
1.5"
2"
approximate sounding (including the initial reflection)
8va
ff
2.5"
3"
2.5"
♩ = 120-130 (listen to the system latency)
a falling improvisation


4.5"
3"
2.5"
mp

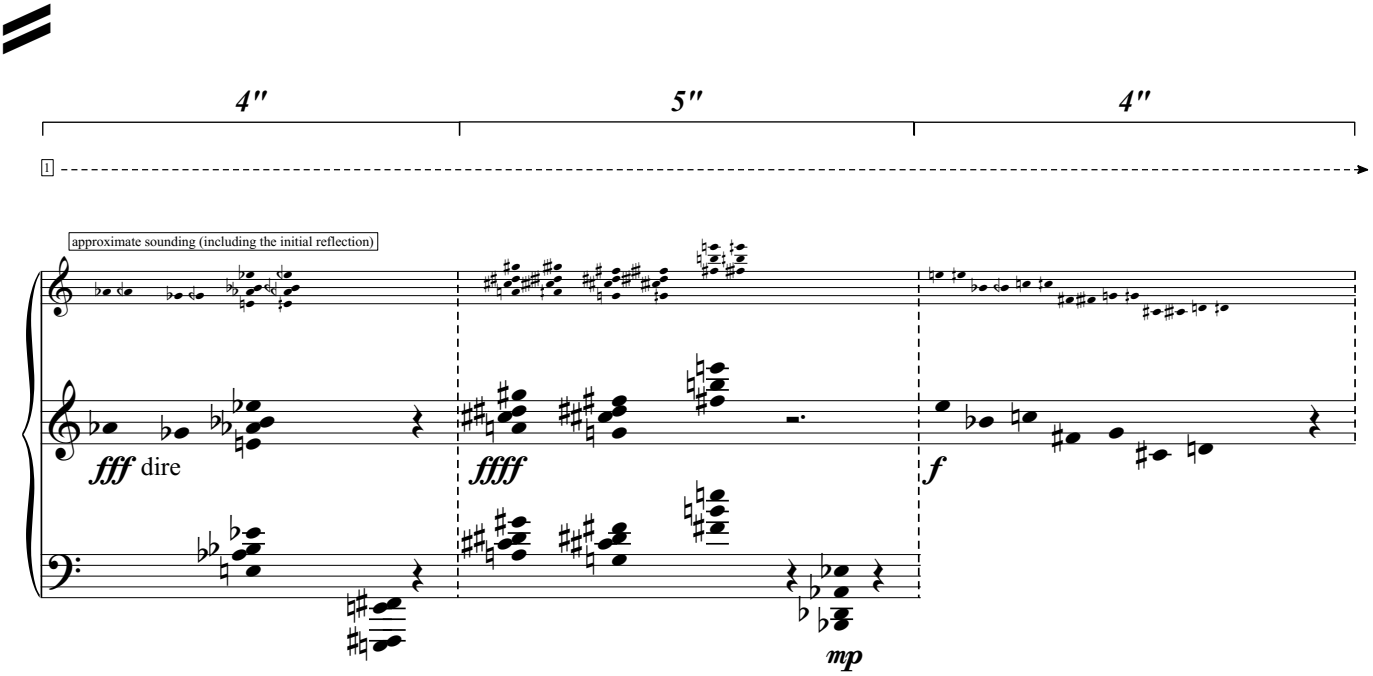

2"
1.5"
heavy ♩ = 64
ffff
3:2


5"
15"
mixer: gl 1 to 100%
quarter-tone, from afar
morph into a scream
rec 3
2"
play 1
play 3
10"
fffff
voice
aaaaaa - - - -
AH!
start recording after the sound decays a little
start playing immediately after stopping recording
5"
Shephard tones on; down, slow
transpose -180
8va
3"
rapid, upwards improvisation on the sounds of the initial chord
piano
ffff
mp

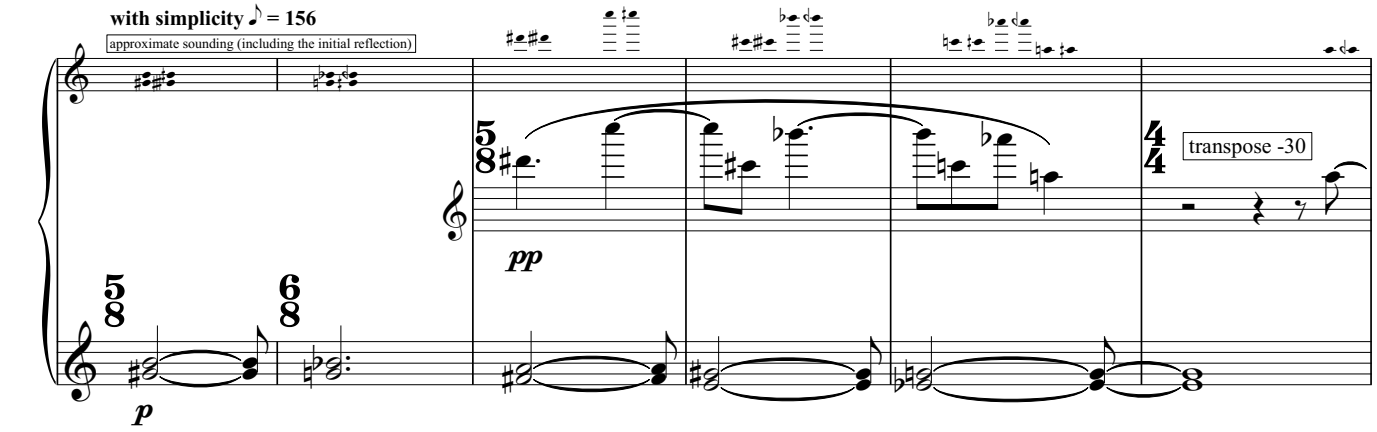

6"
6"
6"
3"
1+3
approximate sounding of the upper voice (including the initial reflection)
piano
p
transpose
-160
mp
15"
1+3
stop 3
pp
p
10"
p
f
p
manipulate B
♩ = 120-130
1
approximate sounding (including the initial reflection)
p
r.h. on keys
mf
8vb
l.h. touch node
for 5th harmonic
12:8
3
r.h.
8vb
8vb
2"
15"
10"
1
10"
manipulate A
glitch!
7"
move the glitchulator's
grain position and grain
length controls rapidly
(8)
f
l.v.!
ff

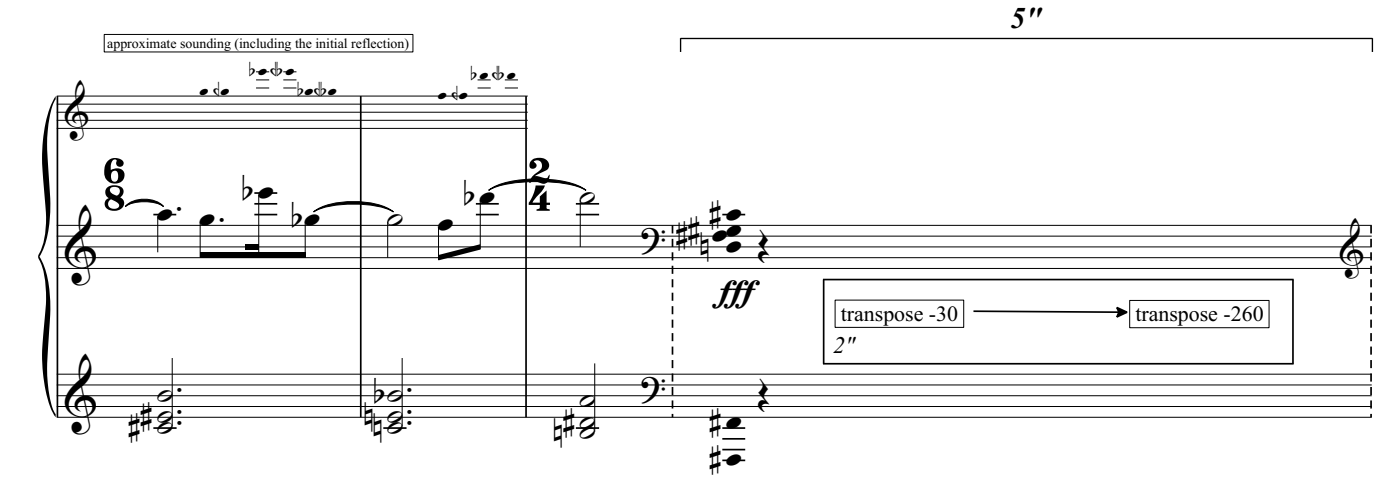

5"
7"
approximate sounding (including the initial reflection)
mf
12"
let the "glass" vibrate
pp
3"
transpose -160
transpose +80
6"
6"
4"
approximate sounding (including the initial reflection)
mp
mf
f
4"
4"
3"
approximate sounding (including the initial reflection)
f
ff
f

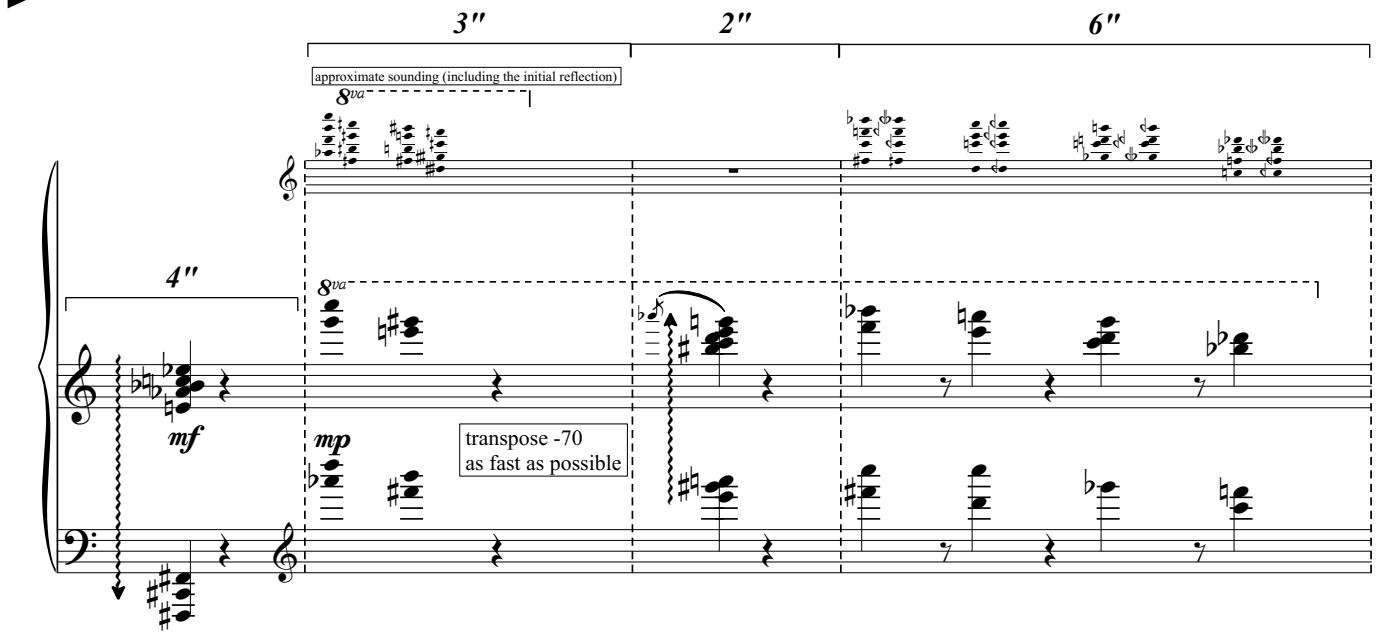

4"
4"
4"
1
approximate sounding (including the initial reflection)
f
mp delicate

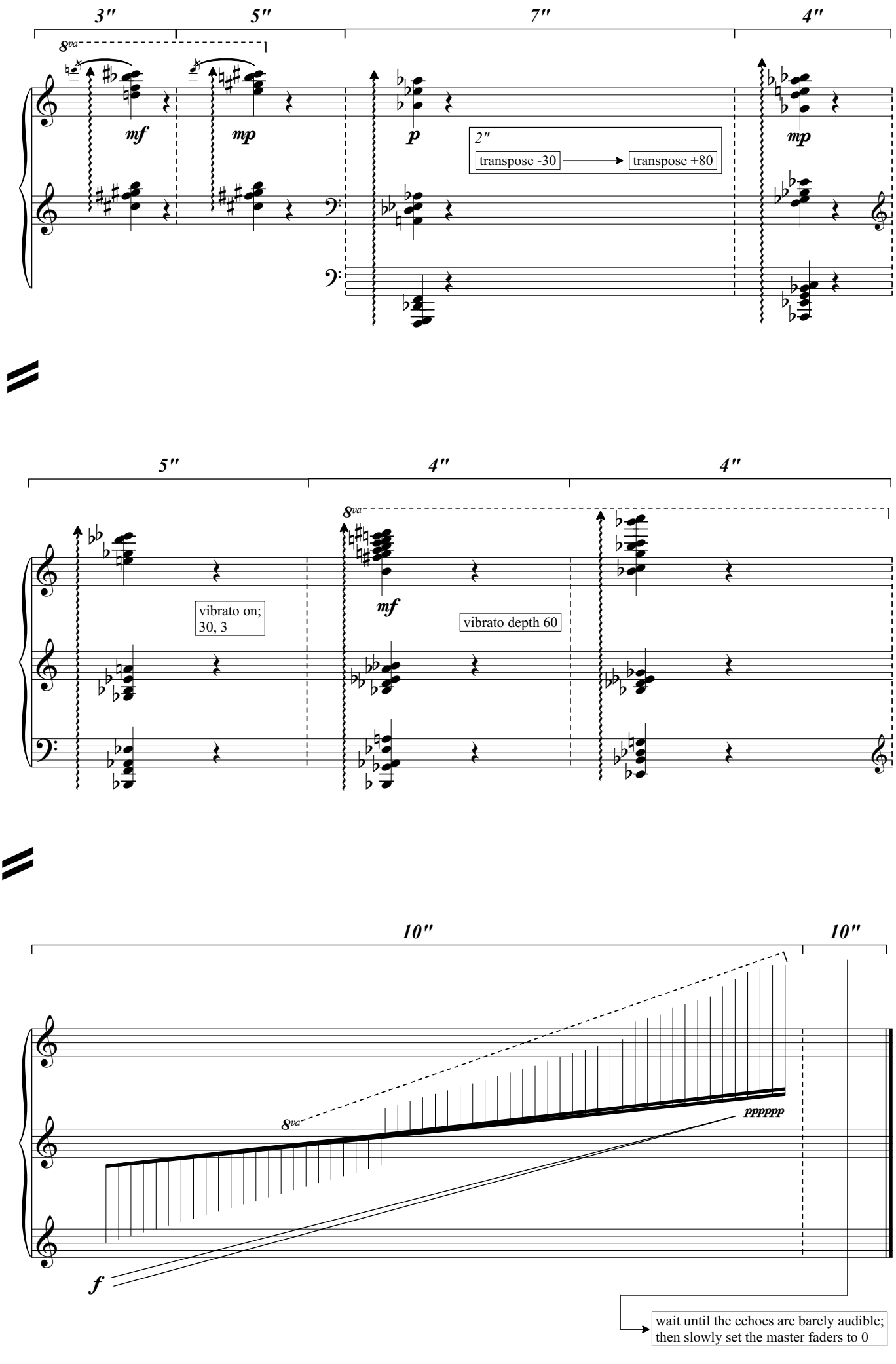

4"
5"
4"
1
approximate sounding (including the initial reflection)
fff dire
ffff
f
mp


15"
1
stop 1
8"
mixer:
gl 1 100%
mixer:
gl 1 0%
approximate sounding (including the initial reflection)
Shephard tones off
echo 2300
f
pp


with simplicity ♪ = 156
approximate sounding (including the initial reflection)
pp
p
transpose -30


5"
approximate sounding (including the initial reflection)
fff
transpose -30
transpose -260
2"


3"
2"
6"
approximate sounding (including the initial reflection)
8va
4"
mf
mp
transpose -70
as fast as possible


3"
5"
7"
4"
8va
mf
mp
p
2"
transpose -30
transpose +80
mp
5"
4"
4"
8va
vibrato on;
30, 3
mf
vibrato depth 60
10"
10"
8va
pppppp
f
wait until the echoes are barely audible;
then slowly set the master faders to 0