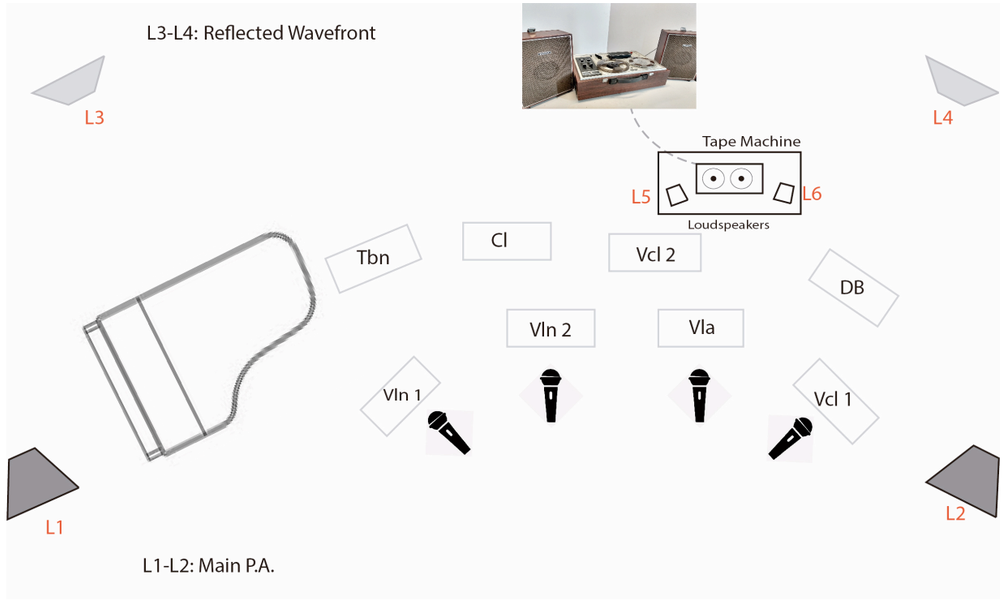
Gabriel Paiuk

The construction of an imaginary acoustic space

for 2 violins, viola, 2 violoncelli, double bass, clarinet, trombone, piano and tape-machine operator

2018 (rev.2021)

Stage Plan and soundtrack operation



Soundtrack in two layers

- In "The Construction of an Imaginary Acoustic Space", the live ensemble is superimposed to a soundtrack comprised of two pre-recorded layers. One of them exists in a digital form and is played uninterruptedly from the beginning to the end of the piece from a computer. The other one exists in the form of a 1/4 inch tape and is operated by a musician specifically devoted to this task and located on stage. Both the soundtrack files and the tape will be provided by the composer.

- The computer used to reproduce the digital layer requires a sound card with at least 5 output channels. The 4-channel soundtrack will be played on this computer using a multichannel DAW software (*Reaper* is recommended for its ease-of-use and routing. A Reaper session can also be provided https://www.reaper.fm/download.php). The 4 tracks will be routed to 4 loudspeakers placed on stage (*see routing instructions below*) and a fifth track containing a click-track will be routed to an earphone used by the first violin which will act as a conductor. The computer will ideally be placed at the FOH so that the volume of the output can be operated from a main FOH mixer.

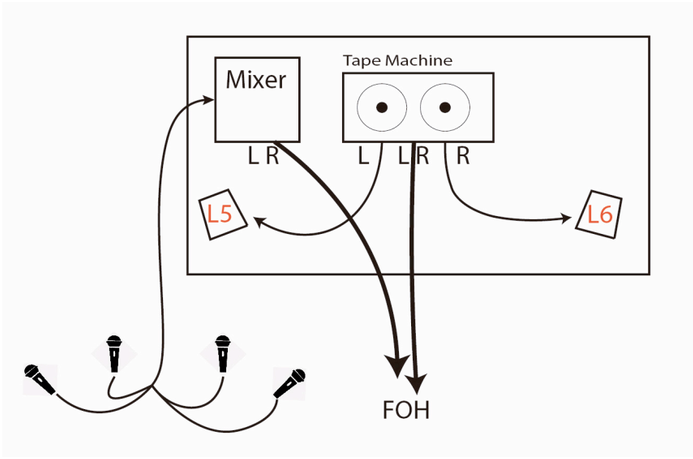
- The *tape-machine operator* controls two devices: an open-reel 1/4 inch tape player and a small mixing desk with 4 microphones inputs which amplifies the four string instruments on the front row of the ensemble. These two devices will be placed on a table on stage (see diagram). The soundtrack operator will follow a score with instructions on how to operate the tape machine.

Routing of the soundtrack and loudspeaker placement

- The computer playing the digital layer of the soundtrack will output its sound (via the FOH mixer) to output channels 1 to 4 on stage (*see diagram on the left*). The session and files provided will indicate the channels accordingly. It will also output a click-track as a 5th channel for the first violinist.

- As shown in the diagram, L1 and L2 are two regular P.A. loudspeakers on stands, placed at the sides of the audience at regular height. L3 and L4, conversely, are meant to create a non-direct, reflected wave-front with a diffused and significantly diverse sound quality than L1 and L2. Depending on the venue, they could be placed in balconies facing backwards or sideways, or on the rear of the stage (on the floor) with the same direction. In the case it is not possible to count with a set of channels+loudspeakers L3 and L4 *(for example on a rehearsal space)* the 4 signals from the soundtrack will be sent only to channels L1 and L2.

- The stereo output of the tape machine will be played through two loudspeaker monitors placed on the sides of the table on stage: L5 and L6. The same output will also be routed to the FOH for a slight reinforcement (if necessary), on channels L1 and L2. Depending on the outputs of the tape machine this might need routing through the small mixer.



Temporary Amplification

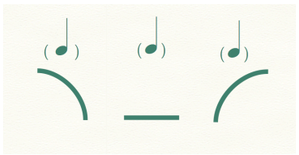
- For the most part of the duration of the piece, the whole ensemble is unamplified.

- Only the string quartet at the front line of the ensemble will be amplified during a small segment of the piece, near the end. The signal from the 4 microphones used to amplify these instruments is sent to the small mixer on the table of the tape-machine operator and kept on "mute" until the operator has the indication to alternatively "unmute" and "mute" again the signal. This signal, in the form of a stereo mix, will be sent to the FOH and from there routed to L1 and L2 (see diagrams). The aim of this temporary amplification is to abruptly change the level and sound difusion quality of a very soft signal produced by these four string instruments. Dynamic microphones such as SM57/58 or clip-on microphones are advised for this purpose.

Operation of the soundtrack and mixer

- The tape should be set to start playing at the beginning of its playable surface (just immediately after the blue "lead tape"). It will be triggered to start playing coincidentally with the beginning of the piece by the soundtrack operator.

- Throughout the performance the *soundtrack operator* will manually alter the movement of the rolling tape, either by stopping its rotation or by slowing it down. The series of actions required from the operator are indicated in the score using the following graphic signs:



This sign indicates three consecutive steps to be carried out in a seamless way: 1) the operator applies a gradual force into the left reel until the reel stops rotating. 2) The operator keeps the reel stopped for a brief moment 3) the operator lifts off the pressure of the hand gradually so as to let the reel to rotate freely again. Each of these three steps lasts approximately one beat.

The operator interferes briefly on the left reel by applying moderate pressure, slowing down for a moment its rotating movement and creating a pitch ondulation. The reel should not come to a complete halt.

The operator should stop the reel from rotating. Depending on the functionality of the machine, the *pause* or *stop* button can be used. Eventually the tape can also be prevented from rotating with the left hand.

The following video provides an impression of the kind of action intended
https://www.dropbox.com/s/rdtnwazae0oqsj6/GPaiuk_OENM_TapeOperationSample_SHORT.m4v?dl=0

- The string instruments at the front line of the ensemble will be amplified only on certain brief segments in the piece. To activate and de-activate this amplification, the tape-machine operator will alternatively "unmute" and "mute" the signal as indicated in the score.

References and Playing techniques

For All

¼ tone higher or lower

Microtonal variation, slightly higher or lower, always smaller than a quarter tone

Note: Except on those occasions where *crescendos* and *decrescendos* are applied to the beginning and ending of the sounds, all attacks and endings should be played tenuto.

For Strings

Mute symbol. Lay the left hand on all four strings so that they are prevented from vibrating. The result should be a noise-like sound. This could be asked for in conventional *Arco* playing, where the hair of the bow is applied with reduced pressure so as to achieve a seemingly “white noise” sound. Or, it could be asked for in *C.L.T. (Col Legno Tratto)* playing, in which very few and unstable pitch content is produced in a mixture with the noise of the friction of the wood of the bow.

Scratch

“Scratch” sound. Achieved by added bow pressure. This should result in a dry, controlled, rattling sound. The bow is to be drawn slowly but not haltingly.

Bow actions

C.L.T. Col Legno Tratto: Draw the wood of the bow across the strings (horizontally).

½ C.L.T. ½ Col Legno Tratto: Draw the bow across the strings holding it at an angle which allows an equal proportion of wood and hair to remain in contact with the string.

Very slow Bowing. Still within conventional “arco” playing, draw the bow at an extremely slow speed, The result should be a fragile, slightly noisier and unstable sound.

For Clarinet and Trombone

Air sounds

The square notes indicate a toneless sound of breath noise with no pitch at all. The prescribed pitches indicate fingerings resulting in varying degrees of brightness, spectrum, and projection of the “air” sound.
“Air sounds” should by no means be considered as amplifications or representations of the action of breathing. There should not be any additional crescendos or decrescendos at the beginning and ending of these sounds. In this kind of sound production, focus on using a rather small (compressed) oral cavity to be able to generate a considerable amount of air pressure without big wastes of air.

For the clarinet: the letters shown above the beginning of the air sounds indicate the type of oral cavity to be used in each occasion. They do not imply an imitation of the sound of the letter but serve mainly to indicate a variation in tongue position.

Transposition: Clarinet sounds a major second lower than written and Double-Bass sounds an octave lower than written

Total Duration: 19 minutes

Commissioned by *Österreichisches Ensemble für Neue Musik*

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Gabriel Paiuk, 2018

The Construction of an Imaginary Acoustic Space

♩ = 60

A

Clarinet in B♭

Trombone

Piano

Violin 1

Violin 2 — sul tasto — *mp*

Viola — sul tasto — *mp*

Violoncello 1 — sul tasto — *mp*

Violoncello 2 — *mp*

Double Bass

[Piano sounds]

Tape Player

START

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc.2

D.B.

Tape

17

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc.2

D.B.

Tape

sul tasto

sul pont

mp

[Piano sounds]

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc.2

D.B.

Tape

25

1/2 C.L.T.

arco

[Piano sound]

[Continuous Tape Chord]

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc.2

D.B.

Tape

33

sul pont

sul tasto

[Piano sound]

B♭ Cl.

Tbn.

Pno.

mp

Vln. 1

gliss.

3

Vln. 2

Vla.

3

Vc. 1

gliss.

gliss.

3

Vc.2

D.B.

Tape

STOP

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc.2

D.B.

Tape

57

B♭ Cl.

p mp mp

Tbn.

pp 3 p mp

Pno.

Vln. 1

mp Poco Vibrato mf Senza Vibrato mp

Vln. 2

mp Poco Vibrato mf Senza Vibrato mp

Vla.

p Poco Vibrato mp Senza Vibrato mp

Vc. 1

p Poco Vibrato mp Senza Vibrato mf

Vc.2

p Poco Vibrato mp Senza Vibrato 3 mf

D.B.

pp Poco Vibrato p Senza Vibrato mf

START

[Piano sound]

Tape

C

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc.2

D.B.

Tape

65

sul pont

sul pont

p

p

p

p

p

mp

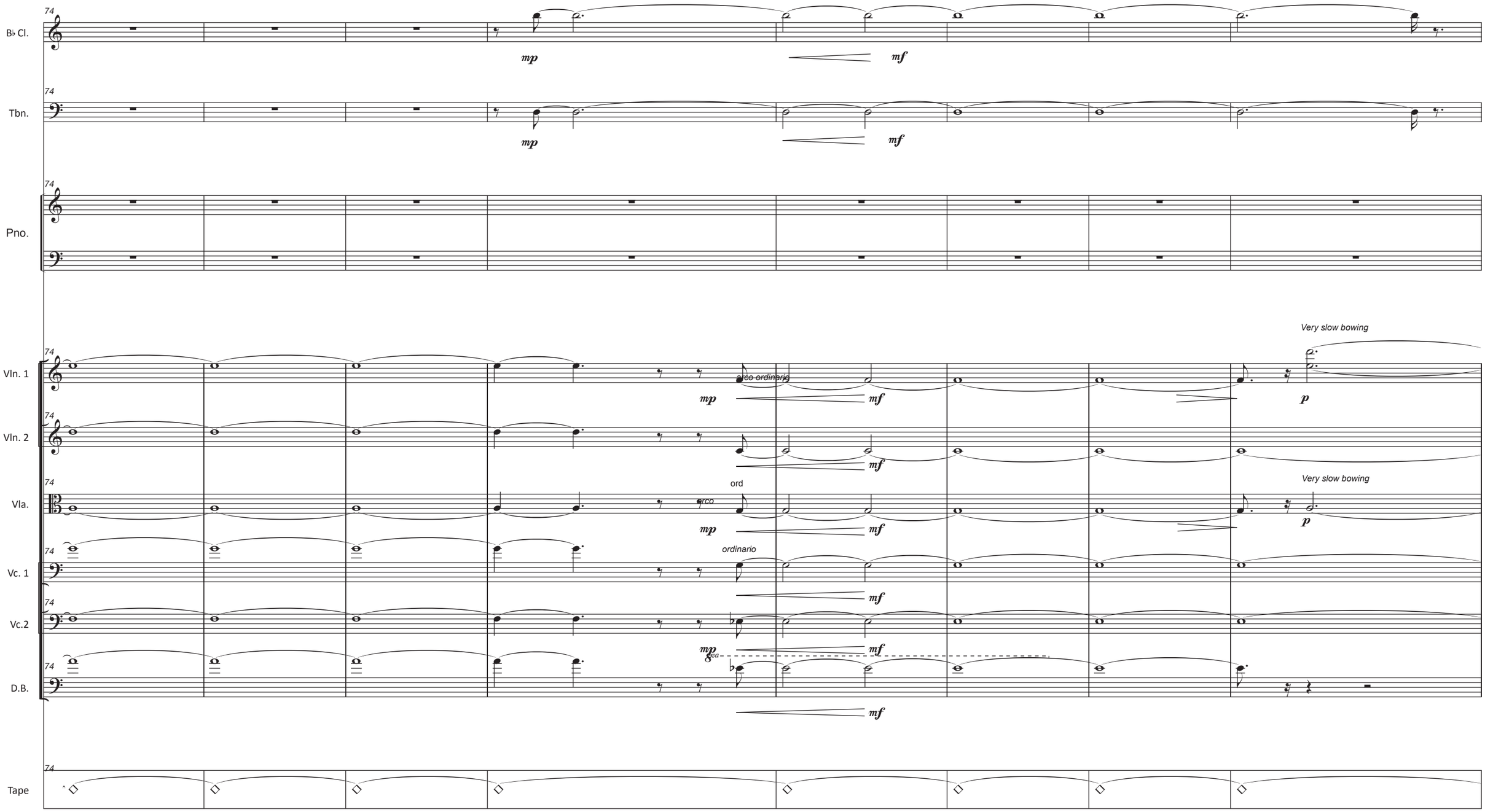
flautato
Light bowing

pp

mp

[Static Noise]

[Recorded Strings]


74
B♭ Cl.
Tbn.
Pno.
Vln. 1
Vln. 2
Vla.
Vc. 1
Vc.2
D.B.
Tape
mp
mf
p
Very slow bowing
arco ordinario
ord
arco
ordinario
8va

B♭ Cl.

82

mp

Tbn.

82

mp

Pno.

82

mf

mf

Vln. 1

82

Vln. 2

82

Vla.

82

Vc. 1

82

sul tasto

p

Vc.2

82

mf

D.B.

82

mf

[Piano Resonances]

Tape

82

D

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc.2

D.B.

Tape

90

ppp

p

arco ordinario

n.

ppp

ordinario

pp

Small Vibrato

[Tape Noises]

[Piano sound]

[Piano sound]

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc.2

D.B.

Tape

101

pp

P 9(Ab)

3(F)

mp

p

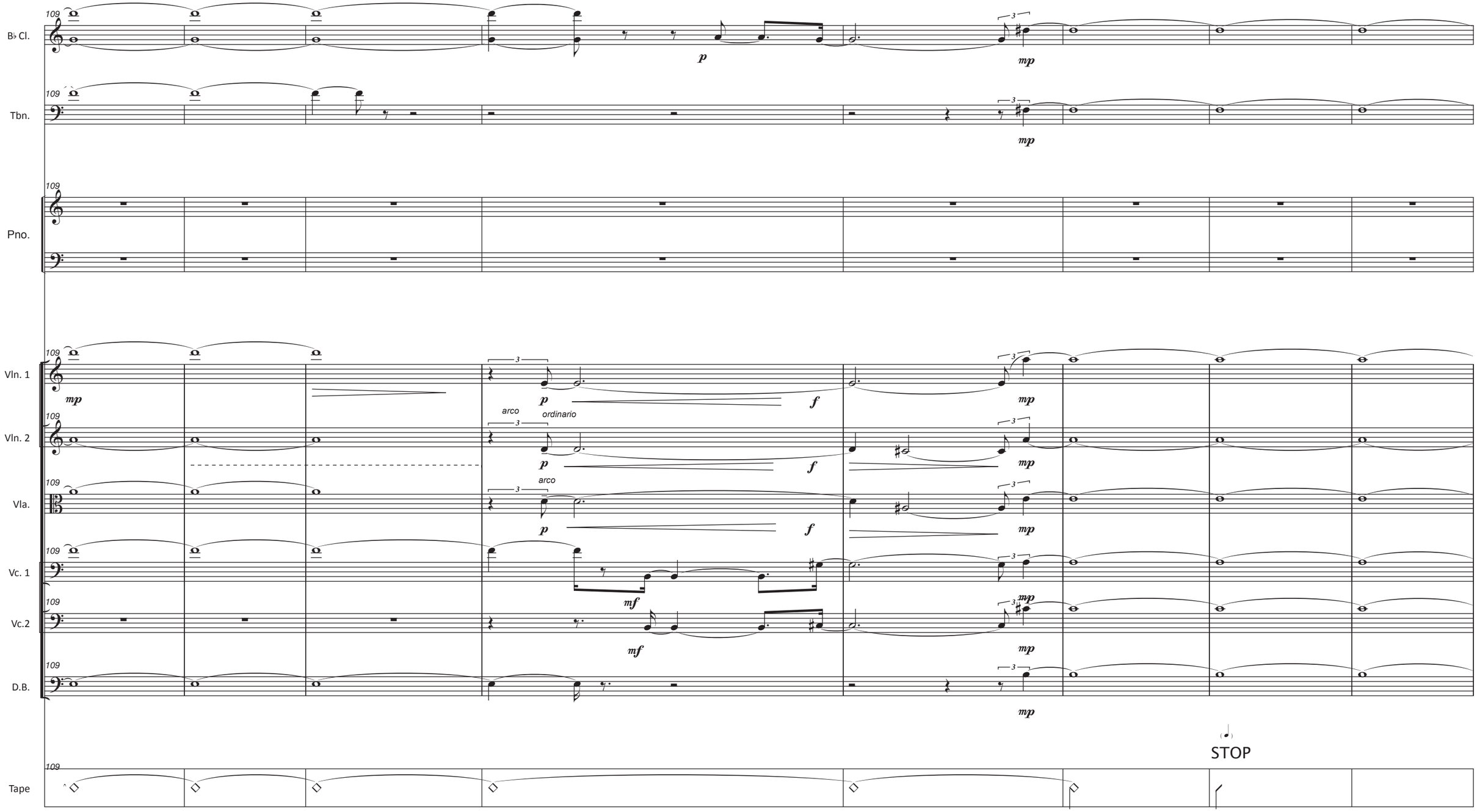
C.L.T.

Damped

sul pont

Senza Vibrato

[Static Noise]


109
B♭ Cl.
Tbn.
Pno.
Vln. 1
Vln. 2
Vla.
Vc. 1
Vc.2
D.B.
Tape
p
mp
f
mf
arco
ordinario
STOP

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc.2

D.B.

Tape

117

3

mp

mf

III

sul tasto

ordinario

B♭ Cl.
Tbn.
Pno.
Vln. 1
Vln. 2
Vla.
Vc. 1
Vc.2
D.B.
Tape

125

p

mf

3

p

pp

pppp

8va

START

[Filtered Loop Noise]

[Filtered Loop Noise]

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc.2

D.B.

Tape

133

3

[SH]

p

C.L.T.

E

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc.2

D.B.

Tape

139

mf

mp

pp

3

5

Poco Vibrato

Senza Vibrato

Slow Vibrato

arco

[Piano Chords Far...]

147

B♭ Cl.

[RR]

"mf"

147

Tbn.

"mf"

147

Pno.

3

3

mp

147

Vln. 1

Vibrato

mf

Very slow bowing

Senza Vibrato

p

147

Vln. 2

Vibrato

mf

Senza Vibrato

Very slow bowing

n.

Senza Vibrato

p

147

Vla.

p

Senza Vibrato

147

Vc. 1

n.

147

Vc.2

Senza Vibrato

n.

mf

147

D.B.

Senza Vibrato

n.

147

Tape

B♭ Cl.

155

3

"mf"

Tbn.

155

3

"mf"

Pno.

155

Vln. 1

155

very slow bowing

3

p

Vln. 2

155

3

p

Vla.

155

very slow bowing

3

p

Vc. 1

155

Vc.2

155

3

p

D.B.

155

Tape

155

[Static Noise]

[MIDI Strings]

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc.2

D.B.

Tape

163

p

very slow bowing

sul tasto

"*mf*"

[Far Pitch Noise]

F

B♭ Cl.

Tbn.

Hold "Pixie" Mute

Pno.

mp p pp mf

Vln. 1

sul tasto

mp

Vln. 2

Vla.

sul tasto

mp

Vc. 1

sul tasto

mp

Vc.2

D.B.

Tape

B♭ Cl.

179

p *mp*

Tbn.

179

PIXIE mute

p *mp*

Pno.

179

Vln. 1

179

mf

molto pont

p *mp*

Vln. 2

179

molto pont

p *mp*

Vla.

179

mf

molto pont

p *mp*

Vc. 1

179

mf

molto pont

p *mp*

Vc.2

179

molto pont

p *mp*

D.B.

179

molto pont

p *mp*

Tape

179

[Static Noise]

[Static Noise]

B♭ Cl.

186

Tbn.

186

Hold straight Mute

Pno.

186

Vln. 1

186

arco

mp

Vln. 2

186

C.L.T.

mp

Vla.

186

p

Vc. 1

186

ordinario

arco

C.L.T.

mp

Vc.2

186

p

C.L.T.

D.B.

186

p

Tape

186

[Piano sound]

[MIDI Strings]

B♭ Cl.

Tbn.

Pno.

mp

Vln. 1

C.L.T.

Vln. 2

C.L.T.

Vla.

Vc. 1

C.L.T.

Vc.2

D.B.

Tape

[Static Noise]

B♭ Cl.

202

p

Tbn.

202

Straight Mute

p

Pno.

202

Vln. 1

202

arco

3

molto pont

p

Vln. 2

202

arco

3

molto pont

p

Vla.

202

molto pont

arco

p

Vc. 1

202

arco

3

molto pont

arco

p

Vc.2

202

arco molto pont

p

D.B.

202

arco molto pont

p

Tape

202

G

B♭ Cl.

Tbn. — No Mute

Pno. — *mf* — *p*

Vln. 1 — very slow bowing — *mp* — 3

Vln. 2

Vla. — very slow bowing — ordinario — *mp* — 3 — ordinario

Vc. 1

Vc.2

D.B.

STOP

Tape

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc.2

D.B.

Tape

218

[SH]

[E]

"mf"

"f"

"mf"

p

Vibrato

Senza Vibrato

Vibrato

Senza Vibrato

ordinario

Vibrato

Senza Vibrato

mf

sul pont

C.L.T.

ppp

C.L.T.

sul pont

^ mic ON

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc.2

D.B.

Tape

226

ppp

ppp

v mic OFF

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc.2

D.B.

Tape

234

ppp

ppp

p

arco

p

START

[Static Noise]

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc.2

D.B.

Tape

241

very slow bowing

arco

mp

C.L.T.

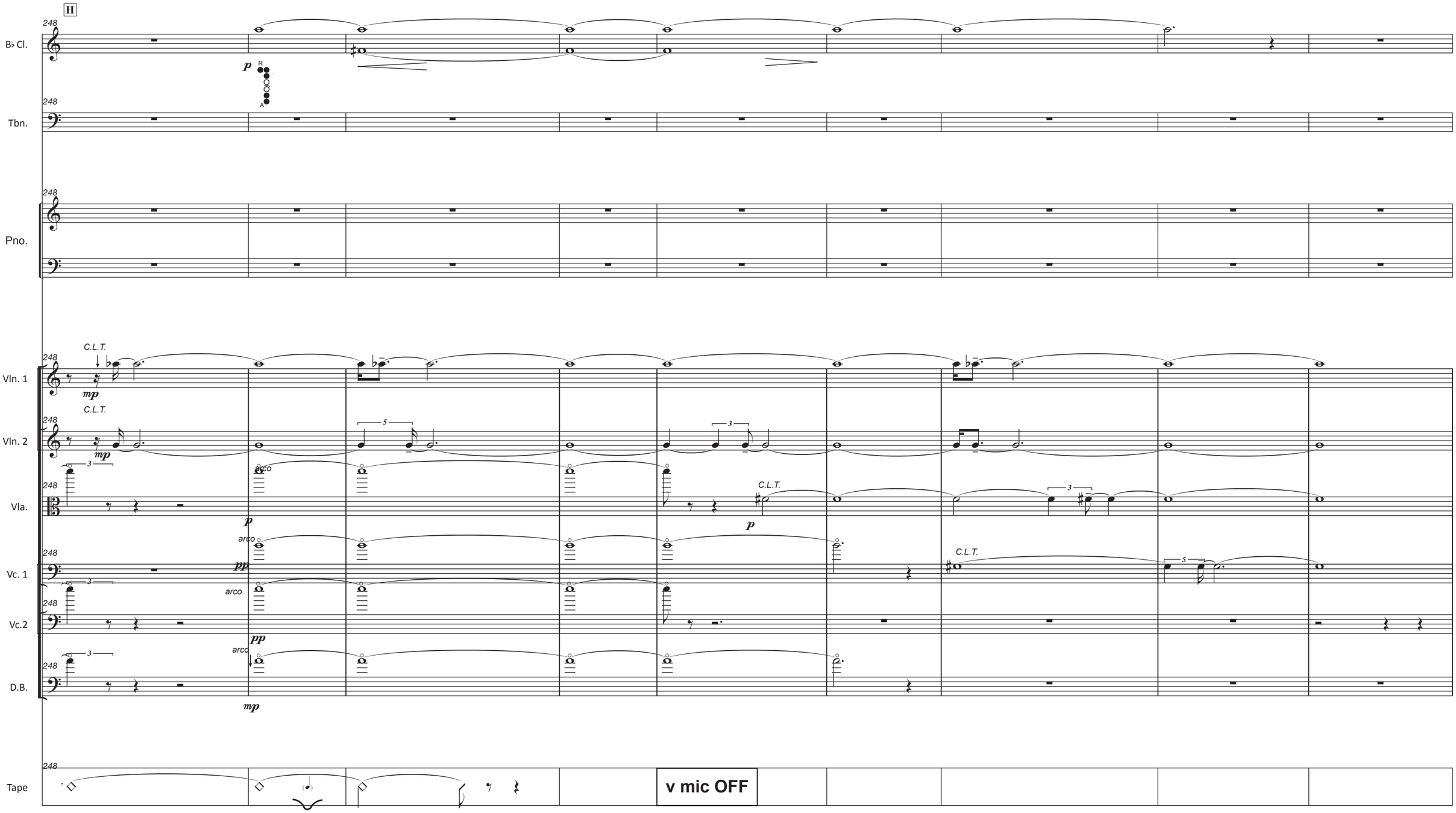
mf

Regular bow speed

3

p

^ mic ON


H
248
B♭ Cl.
Tbn.
Pno.
Vln. 1
Vln. 2
Vla.
Vc. 1
Vc.2
D.B.
Tape
C.L.T.
arco
v mic OFF

B♭ Cl.

257

mf

p

Tbn.

257

mf

p

Pno.

257

mp

Vln. 1

257

arco

mf

mp

1/2 C.L.T.

3

mf

Vln. 2

257

arco

mf

mp

C.L.T.

mp

1/2 C.L.T.

3

mf

Vla.

257

mf

mp

C.L.T.

mp

Vc. 1

257

arco

mf

mp

Vc.2

257

mf

mp

D.B.

257

mf

mp

Tape

257

[SH]

B♭ Cl.

Tbn.

Pno.

Vln. 1

Vln. 2

Vla.

Vc. 1

Vc.2

D.B.

Tape

266

3

"mf"

p

arco

mp

B♭ Cl.

274

pp

Tbn.

274

pp

Pno.

274

Vln. 1

274

C.L.T. extremely slow bow speed

1/2 C.L.T. Regular bow speed

ppp

p

Vln. 2

274

Vla.

274

C.L.T. extremely slow bow speed

1/2 C.L.T. Regular bow speed

ppp

p

Vc. 1

274

Vc.2

274

C.L.T. extremely slow bow speed

1/2 C.L.T. Regular bow speed

ppp

p

D.B.

274

Tape

274

Let the tape run and Stop after the piece has finished (preferably during applause)