Spectral Breathing Apparatus

for solo wind instrument (w/o mouthpiece)
& electronics

Stephen de Filippo | 2022

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Duration: 12’45”

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for Niamh Dell

Performance Notes

General

- This work can be performed on any six-holed woodwind instrument, without mouthpiece.
- Measures are proportional to their respective system. Each system has a different duration. For instance, m.53 and m.58 are both 13” in duration, but the visual length of each measure is different, only proportional to the measures that are in its system.
- The box above each measure displays the length of the measure in seconds. The electronics display the progression of each measure on-screen as to guide the performance. The durations of the measures often synchronise with an aspect of the electronics, so precision in the length, timings, and placement of musical gestures are paramount as to occur alongside the electronic component.
- Internal markers, second durations in bubbles, give proportion to gestures within a measure. These internal markers are less strict than the measure durations, and are used as a general guide of a particular measure.

Staves

Material is notated on two rhythmically independent staves, connoting the mouth and fingers. For the “mouth” staff, noteheads that appear on the line should be performed in a typical manner, with notes above and below the line referring to raising or lowering the pitch through changing embouchure. Lines exstend from noteheads as to depict the continuation of a gesture, these lines represent movement in pitch and the general quality of the gesture unfolding – lines may become fragmented and dotty, or smooth and continuous.

Symbols


Tap instrument on lips

With vibrato.


Re-articulate.


Ingressive or inhaled.

Noteheads


Alla tromba. The notehead on the line represents tromba embouchure resulting in the ‘most natural’ tone (as close as possible to the fingering). Anything above or below the line represents a glissandi above or below.


Unpitched percussive vocalisations.
Sometimes, the term ‘palate click’ accompanies the note head, which indicates create a percussive sound by clicking your tongue on the roof of your mouth.


Whistle tone.


Breath sound, sometimes accompanied by a syllable to suggest mouth shapes.

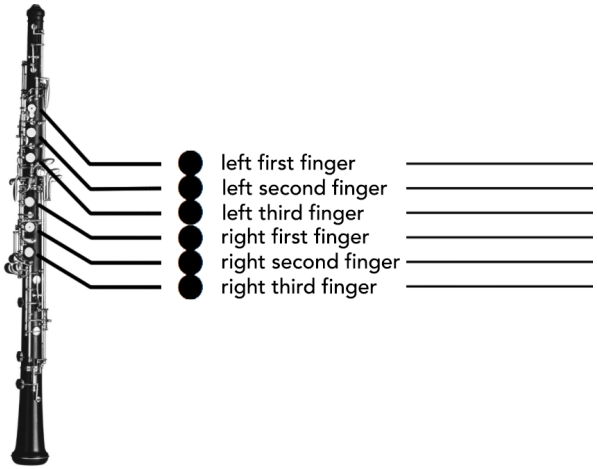

Kissing sound.


Extremely liminal tromba, creating very light squeaks in the instrument.

Fingering

The second staff refers to fingerings, depicted as a kind of tablature. Black noteheads represent depressed keys, and white noteheads depict lifted keys. Often, fingerings are represented with all keys displayed, but sometimes white or black keys will be depicted as part of a gesture, signifying the compression/release of a single finger.

A key chart can be seen below (displayed on an oboe):




Suck through teeth, inhale.

le tchip - This squeak sound can be achieved by placing your front teeth on your bottom lip and attempting to suck air through your teeth. There is little resonance from the instrument, the sound primarily comes from the squeak of air passing through the teeth to the mouth. Difference in pitch can generally be achieved through pouting — pushing your lips out to lower the pitch, and receding them to raise and lower the pitch.

tromba – a more traditional tromba sound, but inhaled and less stable.

Electronics Setup/Technical Requirements

- This work is written for solo instrument, live electronics, and stereo fixed media. The work can be performed with a single input, and a stereo speaker set-up.

Spectral_Breathing.pd instructions

To run this patch, the user must have a working version of Pure Data. The PD application functions on both MacOS and Windows, and can be downloaded for free at: https://puredata.info/downloads/

A link to this composition's PD patch can be found at www.stephendefilippo.com, on the Spectral Breathing Apparatus page. This patch was created by Rand Steiger, with edits and additions by myself.

1. Open Spectral_Breathing.pd
   this will open the patch. You will then be presented with 4 windows: Spectral_Breathing.pd, band, mixer, and player. Connection to hardware can be configured in PD's "audio" settings.
2. Press "open_FM", then load Fixed_media.wav. This will load the fixed media component.
3. Enable "cues".
4. Press "play" in the player window to begin the piece.

Note:

- Pressing "stop" or "reset" in the patch will require you to reload the fixed media (step 2).
- You can use the "next" button or "jump" box in the Spectral_Breathing.pd window to jump through the electronics cues of this piece. This will allow you to hear the electronic processing of a particular measure. However, the timer will not work.
- The timer can only play from the beginning to the end of the piece, you cannot start the timer from a particular measure. However, you can use the timer.mp4 file, which is a video version of the timer window included in the electronics, to support your practise.

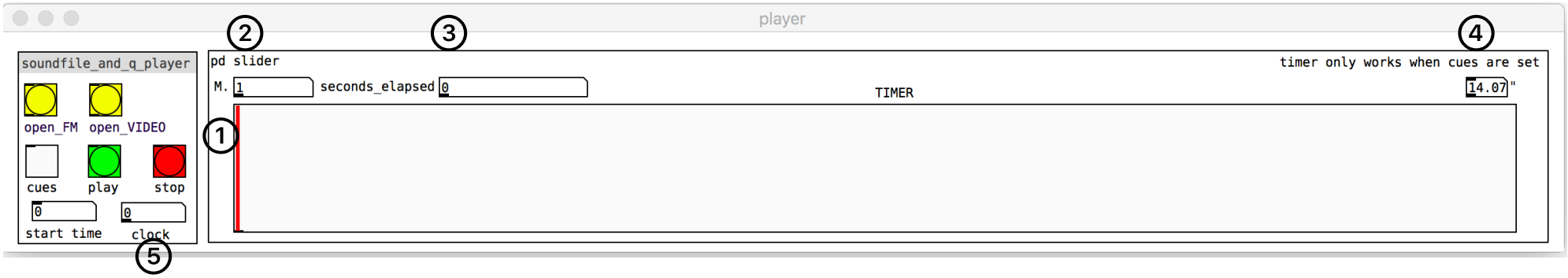
Microphone placement

Because of the prominence of ingressive musical gestures and key sounds in this piece, it is suggested that the microphone input is positioned as to capture the liminal sounds of the mouth. So, it may be more appropriate to position the microphone closer to where the mouthpiece of your instrument should be, as opposed to the bell.

Electronics in performance

The player window helps synchronise performed events with the fixed media. Below highlights the components of the player box:

1. The scrollbar will move from left to right, giving a visual cue of the length of each measure.
2. This box will depict the current measure #.
3. This box depicts in milliseconds the time that has elapsed so far in your current measure
4. This box depicts the duration of the current measure.
5. This clock counts the length of the performance in seconds.



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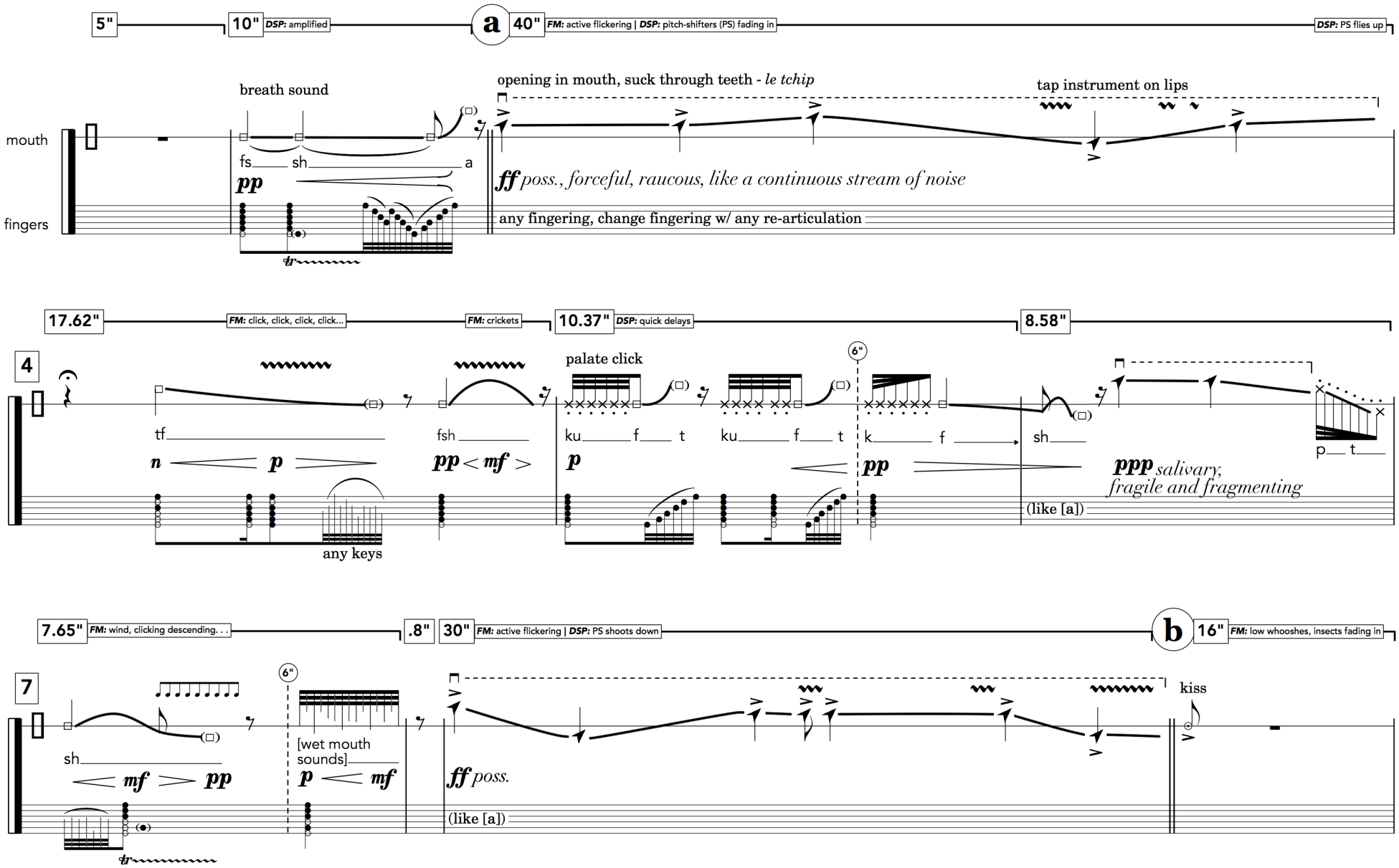
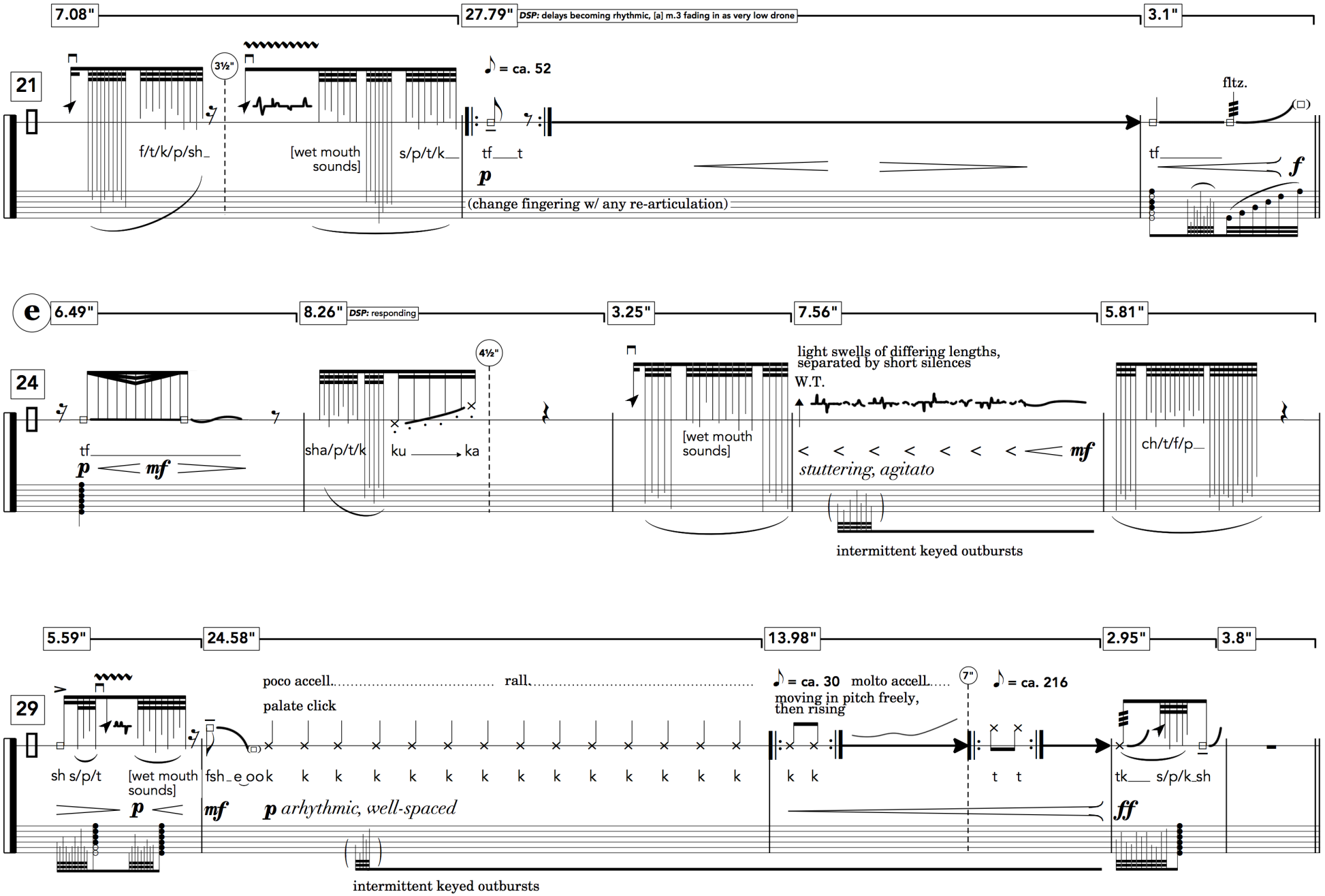
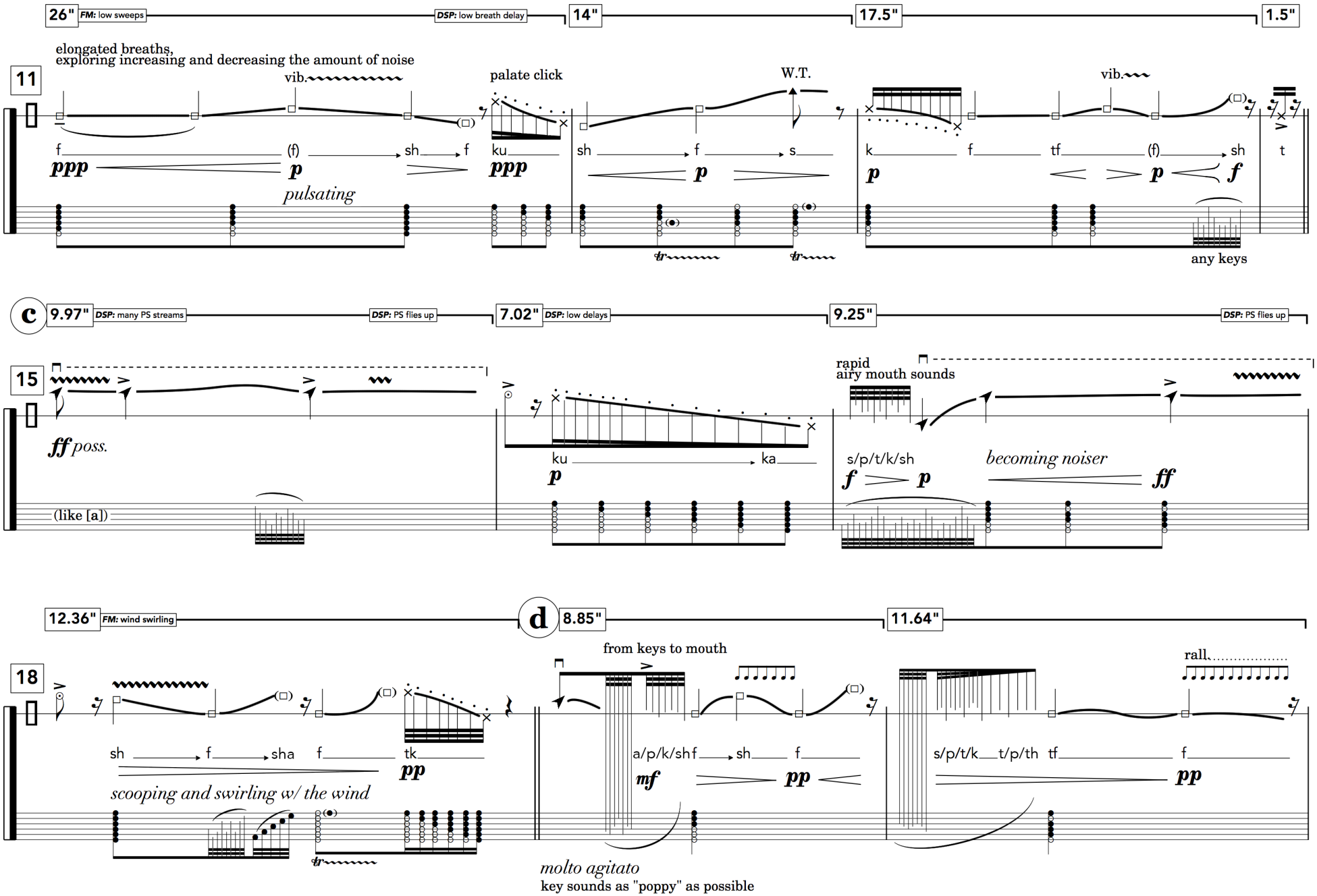
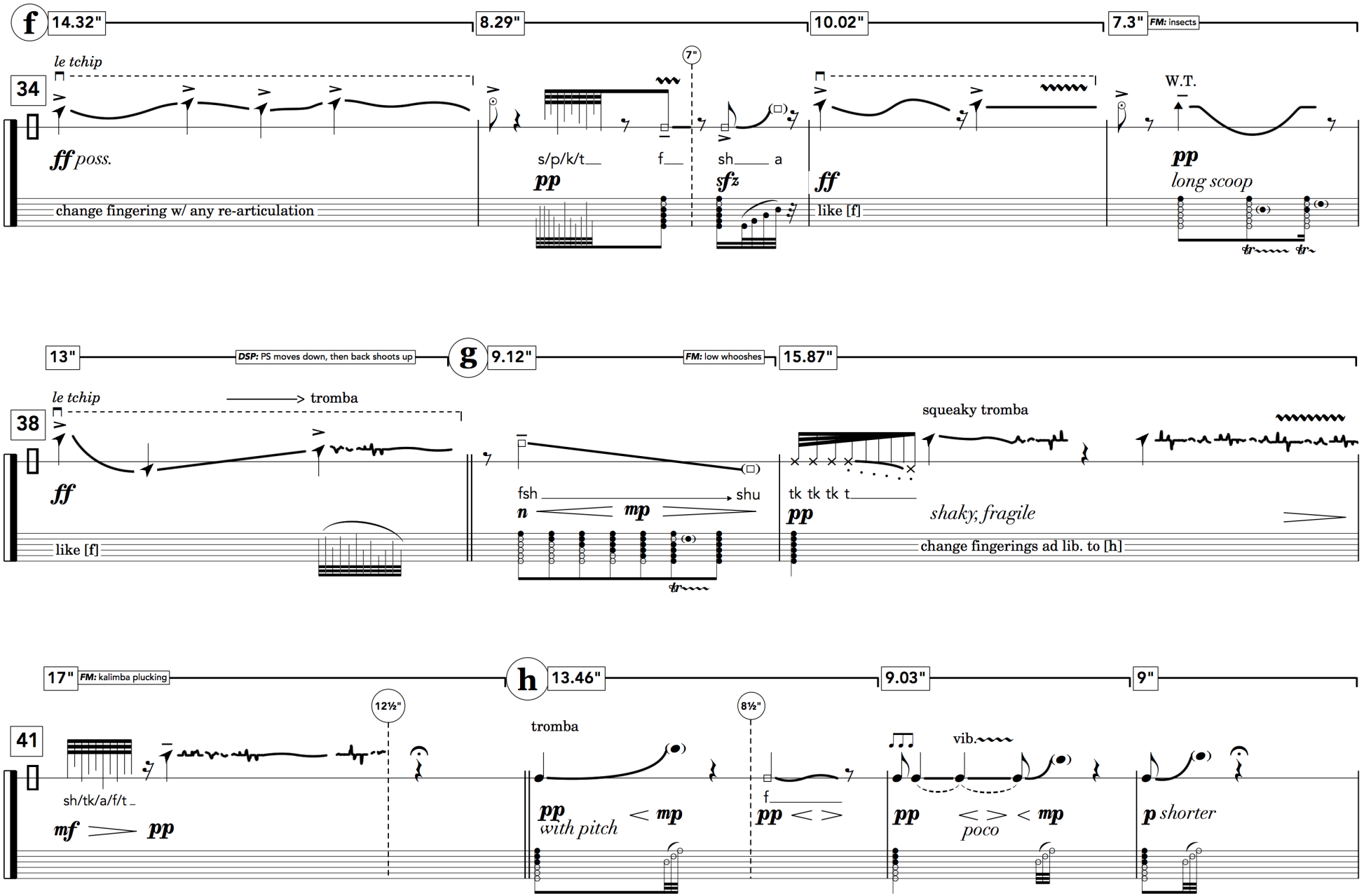
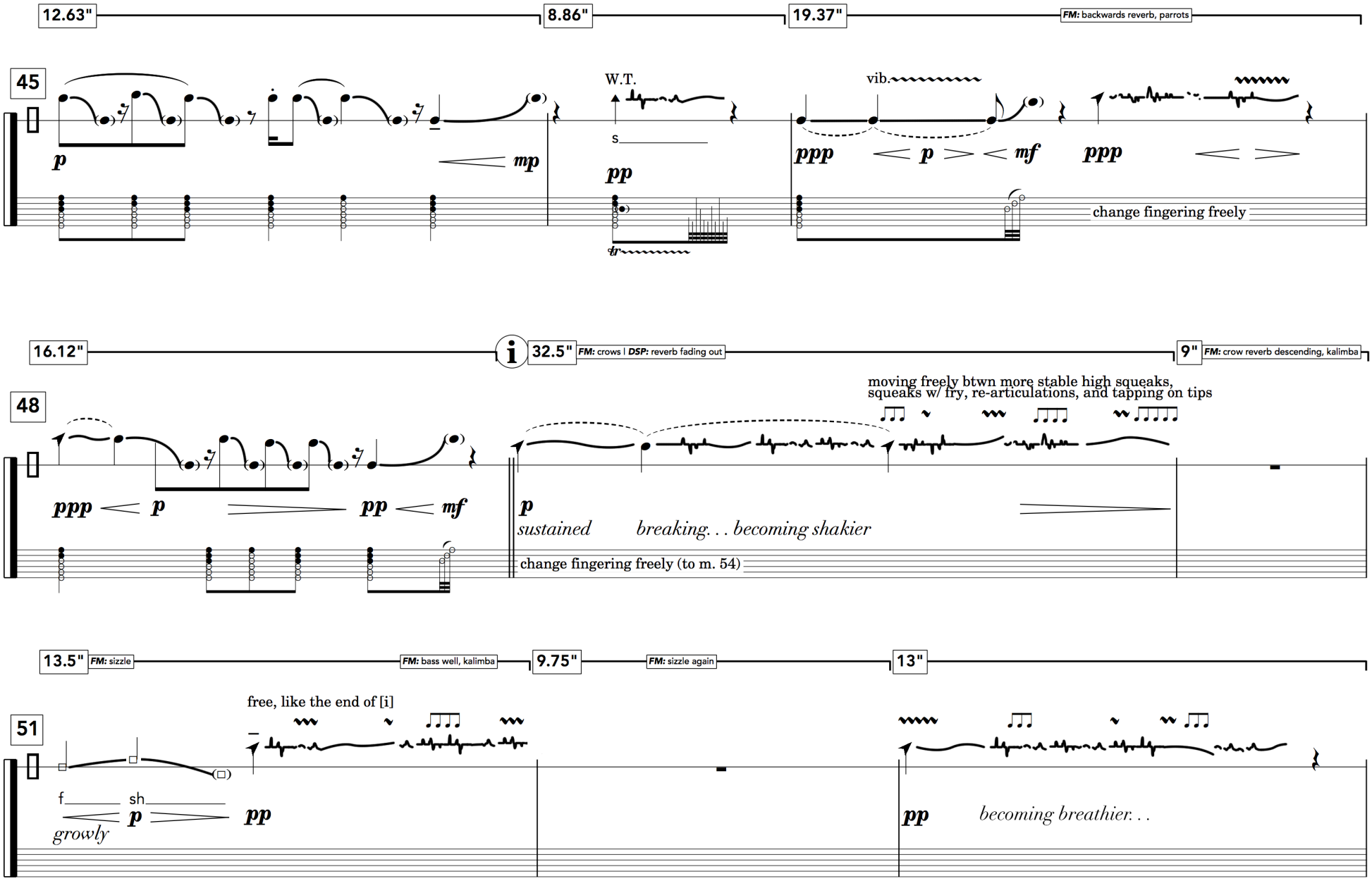
Measures are proportional to their respective system. Each system has a different duration.
Each measure [boxed duration] is guided by the scrolling displayed in the patch.
Circled numbers can be synced to the milisecond clock, these are not strict

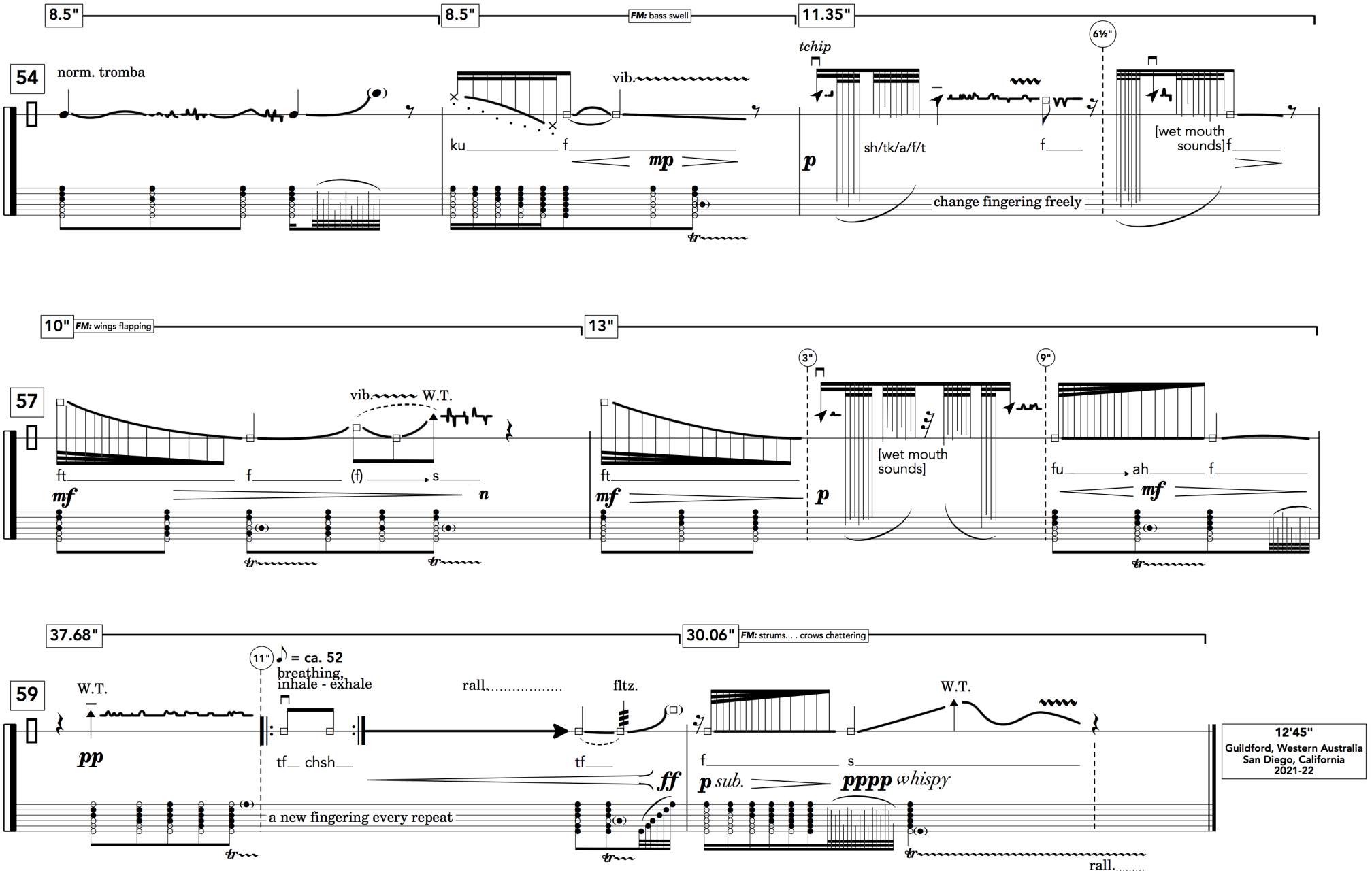



7.08"
27.79"
DSP: delays becoming rhythmic, [a] m.3 fading in as very low drone
3.1"
21
3½"
♪ = ca. 52
f/t/k/p/sh_
[wet mouth sounds]
s/p/t/k_
tf___t
p
(change fingering w/ any re-articulation)
fltz.
tf_____
f
e
6.49"
8.26"
DSP: responding
3.25"
7.56"
5.81"
24
4½"
light swells of differing lengths, separated by short silences
W.T.
tf_____
p
mf
sha/p/t/k
ku → ka
[wet mouth sounds]
< < < < < < < mf
stuttering, agitato
ch/t/f/p_
intermittent keyed outbursts
5.59"
24.58"
13.98"
2.95"
3.8"
29
poco accell.....
rall.....
palate click
♪ = ca. 30
molto accell.....
7"
♪ = ca. 216
moving in pitch freely, then rising
sh s/p/t
[wet mouth sounds]
fsh_e ook
k k k k k k k k k k k k k
k k
t t
tk___ s/p/k_sh
p
mf
p arhythmic, well-spaced
ff
intermittent keyed outbursts


26"
FM: low sweeps
DSP: low breath delay
14"
17.5"
1.5"
11
elongated breaths,
exploring increasing and decreasing the amount of noise
vib.
palate click
W.T.
vib.
f
(f)
sh
f
ku
sh
f
s
k
f
tf
(f)
sh
t
ppp
p
ppp
p
p
p
f
pulsating
any keys
c
9.97"
DSP: many PS streams
DSP: PS flies up
7.02"
DSP: low delays
9.25"
DSP: PS flies up
15
rapid
airy mouth sounds
ff poss.
ku
ka
s/p/t/k/sh
becoming noiser
p
f
p
ff
(like [a])
12.36"
FM: wind swirling
d
8.85"
11.64"
18
from keys to mouth
rall.
sh
f
sha
f
tk
a/p/k/shf
sh
f
s/p/t/k
t/p/th
tf
f
pp
mf
pp
pp
scooping and swirling w/ the wind
molto agitato
key sounds as "poppy" as possible


f
14.32"
8.29"
10.02"
7.3"
FM: insects
le tchip
34
ff poss.
change fingering w/ any re-articulation
7"
s/p/k/t
f
pp
sh
a
sfz
ff
like [f]
W.T.
pp
long scoop
13"
DSP: PS moves down, then back shoots up
g
9.12"
FM: low whooshes
15.87"
le tchip
tromba
38
ff
like [f]
fsh
shu
n
mp
tk tk tk t
pp
squeaky tromba
shaky, fragile
change fingerings ad lib. to [h]
17"
FM: kalimba plucking
h
13.46"
9.03"
9"
41
12½"
8½"
sh/tk/a/f/t
mf
pp
tromba
pp
with pitch
mp
f
pp
vib.
pp
poco
mp
p shorter


12.63"
8.86"
19.37"
FM: backwards reverb, parrots
45
p
mp
W.T.
s
pp
tr
vib.
ppp
p
mf
ppp
change fingering freely
16.12"
32.5"
FM: crows | DSP: reverb fading out
9"
FM: crow reverb descending, kalimba
48
moving freely btwn more stable high squeaks,
squeaks w/ fry, re-articulations, and tapping on tips
ppp
p
pp
mf
p
sustained
breaking. . . becoming shakier
change fingering freely (to m. 54)
13.5"
FM: sizzle
FM: bass well, kalimba
9.75"
FM: sizzle again
13"
51
free, like the end of [i]
f
sh
p
growly
pp
pp
becoming breathier. . .


8.5"
8.5"
FM: bass swell
11.35"
54
norm. tromba
vib.
tchip
6½"
ku
f
mp
p
sh/tk/a/f/t
f
[wet mouth sounds]f
change fingering freely
10"
FM: wings flapping
13"
57
vib.
W.T.
ft
f
(f)
s
mf
n
ft
mf
3"
9"
p
[wet mouth sounds]
fu
ah
f
mf
37.68"
30.06"
FM: strums. . . crows chattering
59
11"
= ca. 52
breathing, inhale - exhale
W.T.
rall.
fltz.
W.T.
pp
tf
chsh
tf
ff
f
s
p sub.
pppp whispy
a new fingering every repeat
rall.
12'45"
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www.stephendefilippo.com