tuning the voice

Sam Longbottom

—

2020 (rev.2021)

introduction

The piece is in two sections, there is some freedom for how section 1 is performed, while section two is more strict in how it is performed.

Throughout the piece, most of the instrumentalists follow and match their pitch to a constant glissando, this is joined by occasional non-glissando pitches.

The speed of each glissando is generally very slow. They further slow down in speed as the pitch goes higher, while become faster as the pitch gets lower.

In section 1, it is free for the performers to determine when exactly they perform along the glissando, thus some portions of the glissando will be heard and others will not.

The glissandos never pause, thus the pitches given throughout the score are simply what pitch the glissandos are passing through at the given moment in time. In section 1, due to the performers having a level of freedom for when they play, the notated pitches may not even be sounded.

There is a high degree of precision notated in the score, yet the material is somewhat malleable, and the sounding result can be quite dense, messy, and clustered.

instrumentation

There are eight voices in the score, all can be performed live, or some can be pre-recorded, or rendered using electronics. All must be rendered at least once, though each part may also be doubled.

The piece may be performed by any instruments capable of producing the pitches in the score.

Parts I and II from both groups need to be able to perform a continuous glissando (using any method for which to do so, e.g., string glissandi, slides, re-tuning, etc.).

Parts III and IV do not need to be able to perform a glissando, instead, they only need to be able to perform the pitches as written in the score.

If necessary, parts may be redistributed to suit an instruments range better, e.g., the lower range of part IV from both groups may be played by one instrument, and the higher range of part IV from both groups may be played by another.

If capable, an instrument may play more than one part, e.g., parts I and III or III and IV.

It should be stressed that any instrumental type is welcome to perform the music: acoustic, electric, prepared, sustaining, plucked, ect., and any technique necessary to perform the music is welcome. Thus, a range of timbres and unforeseen byproducts (for example, noises and glitches) of the way in which the pitches are produced should be embraced.

general

The instrumentalists are divided into two groups, A and B. The two groups proceed separately through the material. They only synchronise for the start of sections 1 and 2, and for the final two bars of the piece.

If a sustaining instrument, in section 1, parts I, II, and III from group A should play together, and parts I, II, and III from group B should play together. This means that, within groups, the players perform the same portions of their respective glissando: entering at the same point; sustaining, while following the contour of the glissando; and then pausing together, before continually repeating this process.

No attempt should be made to synchronise playing between the two groups. Similarly, it should not be deliberately avoided. Let drifting and collisions occur naturally.

If a non-sustaining instrument, in section 1, proceed independently of all other instrumentalists, regardless of groups. Perform with a quasi-regular rhythm following the decay of your own instrument, longer decay = slower rhythm, shorter decay = faster rhythm, therefore, the speed of playing is likely to change across the instruments range.

Parts III from both groups act separately to the rest of the players for section 1, and only play at the points indicated in the score, sustaining for one bow/breath.

doubling (optional)

If desired, parts may be doubled. In this case, the doubling should remain well balanced across the whole instrumentation, e.g., one, two, or three, and so on, players for each line. When doubling occurs within a group, e.g., two instrumentalists for each of parts I, II, and III, they should form two separate groups that proceed through the first section independently of one another, with one player playing each part in a group, e.g., two independent groups playing material from group A and two independent groups playing material from group B.

For section 2, if there is doubling, rather than performing the written rhythm, some instruments may play sustained tones over the course of the phrases. If no doubling, perform as written.

accidentals

Pitch is notated in just intonation using HEJI, a full explanation of symbols can be obtained here: https://marsbat.space/pdfs/HEJI2_legend+series.pdf

Deviations away from equal temperament are written in cents throughout the score.

performance with electronics

There are two possibilities for performing the music, either with or without the use of electronics to guide pitch, timing, and tempi.

If using electronics to guide performance, the players can choose to use electronically generated glissandos to guide their pitch, (parts III and IV do not need an electronic guide track) and/or use a click track (separate for the two groups) to guide timing of entrances for part IIIa and IIIb, and tempi for the second section.

Players follow their own unique glissando throughout the piece. Attempt to tune in unison to the pitch of the audio track at all times, minimising beating as much as possible.

The click track may be used by either all the players, or by one player from each group who conducts the rest of their group, or by two conductors.

Audio files and/or a Max MSP patch for this method of performance can be obtained from the composer.

performance without electronics

For section one, if choosing not to use the electronically generated glissandos to perform the material, the performers must predetermine the lengths of phrases, independently for each group, and calculate what pitch their phrases will start and end on along their glissando. This may also be beneficial for plucked (or similar) instruments to do in order to locate further pitches than are written in the score to help orientate themselves better. Page 2 of the score is a place where the performers may write in their calculated pitches and timings.

To do this, the performers may either use a Max MSP patch, obtainable from the composer, that requires the performers to input either a specific time or pitch, after which, the patch will output either a given pitch or time, depending on the input, or the performers may do this themselves, using the following calculations.

For the first calculation, enter a desired time in seconds, this will output that instrument's pitch at the specified time in a frequency relationship with the instrument's starting pitch. The second calculation will determine this pitch's cents value, where *ans* is *pitch* from the first calculation. It is important that the ensemble tunes to A=440, A=+0 cents:

Part I : $\left(time + \frac{2184}{5}\right) \times \frac{5}{2184} = pitch$

Cents value in relation to A3: $1200 \times \log_2\left(ans \times \frac{3}{2}\right) = cents$

Part II : $\left(time - \frac{2184}{5}\right) \times -\frac{5}{2184} = pitch$

Cents value in relation to A2: $1200 \times \log_2\left(ans \times \frac{3}{1}\right) = cents$

Part Ib : $\left(time - 858\right) \times -\frac{1}{858} = pitch$

Cents value in relation to A3: $1200 \times \log_2\left(ans \times \frac{11}{7}\right) = cents$

Part IIb : $(time - 234) \times -\frac{1}{234} = pitch$

Cents value in relation to A2: $1200 \times \log_2\left(ans \times \frac{6}{7}\right) = cents$

Regularly repeating units of time (e.g., 15 seconds between each point) will output pitches within the same harmonic series, either ascending or descending. However, simple units of time, such as 10 or 15 seconds, and multiples of, may yield pitches that are very unfamiliar.

For this reason, the following calculations are given, whereby the performer can determine the time for a desired pitch, or series of pitches, e.g., equal temperament pitches, quarter tone pitches or just intonation pitches you are familiar with. $\frac{x}{y}$ is determined by the performer, x is the desired pitch and y is the pitch at the beginning of the piece, e.g., $\frac{3}{2}$ (a fifth above the starting pitch).

Part I : $\frac{312\left(\frac{x}{y} - 1\right)}{\frac{12}{7} - 1} = time$

Part II : $\frac{312\left(\frac{x}{y} - 1\right)}{\frac{2}{7} - 1} = time$

Part Ib : $\frac{312\left(\frac{x}{y} - 1\right)}{\frac{7}{11} - 1} = time$

Part IIb : $\frac{312\left(\frac{x}{y} - 1\right)}{\frac{7}{3} - 1} = time$

Section 1

performance instructions for parts I, II, and III

sustaining instrument

follow pitch contour of the glissando

while following the pitch contour of the glissando, play for one bow/breath or for a similar length of time, then pause, breath, and repeat, matching your pitch to the pitch of the glissando at all times

repeat until section 2

I, II, and III from group A synchronise their playing/resting

I, II, and III from group B synchronise their playing/resting

if there is more than one player to a part, further additional groups who follow the same material but play apart should be formed, e.g., two groups of A who are synchronous within their group but act as two independent groups of A

if not playing with electronics, the exact timings and durations for playing and resting will have to be predetermined, you may write in your calculated pitches and timings on page 2

optionally, instead of resting between phrases, play a quiet (at least a 1/3 of the prevailing dynamic), fractured, fragile, hollow (etc.) like sound while continuing to follow the contour of the glissando, you may continue in this manner throughout section 2 as well

non-sustaining instrument

follow pitch contour of the glissando

while following the contour of the glissando, pluck/strike your instrument with a quasi-regular rhythm following the decay of your own instrument

longer decay = slower rhythm

shorter decay = faster rhythm

thus, the speed of your playing is likely to change over the range of your instrument

do not synchronise with anyone else, play independently

tuning the voice

Section 1

Sam Longbottom

sempre senza vib.

attacca page 3

0" 27.3" 54.6" 1'21.9" 1'49.2" 2'16.5" 2'43.8" 3'11.1" 3'38.4" 4'05.7" 4'33" 5'00.3"

I: +2 +7 -6 +0 -12 -27 A♯-47 +30 +4 C-25 C+43 +9

II: +2 -10 -29 C+43 +4 A♯-47 -12 +6 +2 -29 +4 -12

Group A

III: +2

IV: hold for one breath/bow, l.v if plucked/struck

+2 +2 +4 +2 -12 +4 -29 +2 +6 -10 A♯-47

attacca page 3

0" 4.875" 8.6" 39" 56.0625" 1'09.3"" 1'24.5" 1'47.25" 2'10" 2'38.4375" 2'55.5" 3'10.6" 3'29.625" 3'41" 4'03.75" 4'11.3" 4'15.125" 4'20.8125"

I: F-18 F-27 -35 +2 E-35 E♭+37 +3 E♭-49 -2 +29 -14 +47 -3 E♭+37 +4 -18 -29 -45 [53]

II: +33 -31 -4 +0 +5 -18 -33 -14 -2 +23 +2 -35 F+41 -16 -31 -4 +10 +30

Group B

III: +0

IV: hold for one breath/bow, legato when notes in short succession

+4 -18 +0 -10 -4 -16 +2 -2 +4 +0 -4 +2 -2 +0 -4 -16 +2

like singing

Section 1 fill in your own pitches and timings using the procedure given in the performance notes

sempre senza vib.

0" *sempre gliss.* attacca

I +2 *p*

II *sempre gliss.* +2 *p*

Group A

III +2 *p*

IV 27.3" +2 54.6" +2 1'21.9" +4 1'49.2" +2 2'16.5" -12 2'43.8" +4 3'11.1" -29 3'38.4" +2 4'05.7" +6 4'33" -10 5'00.3" A♯-47

p

hold for one breath/bow, l.v if plucked/struck

0" attacca

I F-18 *sempre gliss.* *p*

II +33 *sempre gliss.* *p*

Group B

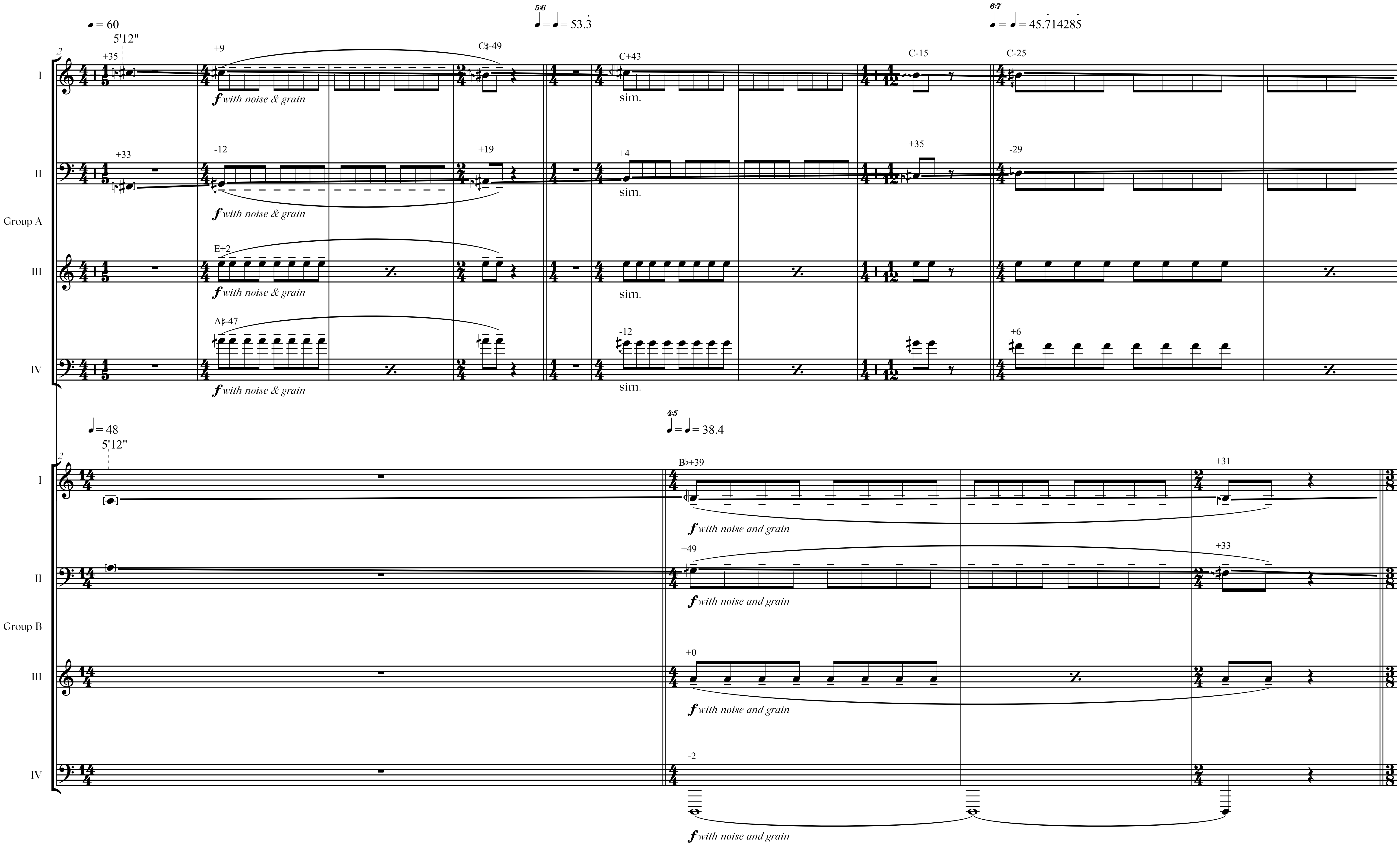
III +0 *p*

IV 4.875" +4 8.6" -18 39" +0 56.0625" -10 1'09.3"" -4 1'24.5" -16 1'47.25" +2 2'10" -2 2'38.4375" +4 2'55.5" +0 3'10.6" -4 3'29.625" +2 3'41" -2 4'03.75" +0 4'11.3" -4 4'15.125" -16 4'20.8125" +2

p like singing

hold for one breath/bow, legato when notes in short succession

Section 2 start together, proceed separately as two groups



7:8 ♩ = ♩ = 40

I
II
Group A
III
IV

/// +4 +30 +19 A♯-47 A+31

+2 +6 +33 -12 +37

+2 -29 +4

ppp sub. *f* *ppp sub.* *f* *ppp sub.*

5:4 ♩ = ♩ = 48

♪. = ♩ = 64

3:4 ♩ = ♩ = 48

6

I
II
Group B
III
IV

-33 C+36 -14 +35

sim.

-16 F-18 +2 +17

sim.

sim.

-2 +0

8:5
♩ = ♩ = 64

18

I
II
Group A
III
IV

-27 +37 -12 G+38 +33

+53 +19 +4 C-15 +0 C+43 +35

-12 +2 +4

f *ppp sub.* *f* *ppp sub.* *f*

14

I
II
Group B
III
IV

-2 +29 +3 +17

-2 +35 -33 +31

sim.

-2 +17 -14 +33

5:6 ♩ = ♩ = 53.3

6:7 ♩ = ♩ = 45.714285

21:16 ♩ = ♩ = 60

25

I

II

Group A

III

IV

+6

F+21

-29

D♯-26

F+7

-10

+2

+2

+2

+2

harm. gliss. on E (if possible)

5:4 ♩ = ♩ = 60

[18]

I

II

Group B

III

IV

+2

+0

+0

F-18

+33

+31