

Wolfgang von Schweinitz

Plainsound Forest Song

Trio in 47-limit just intonation
for Violin, customized French Horn, and 6-valve Tuba in F

op. 68
(2022-2023)

for Sara Cubarsi, Christine Chapman, and Maxime Morel

SCORE
and VIOLIN + TUBA iPad performance part

PLAINSOUND MUSIC EDITION

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PROGRAM NOTE

The 'Plainsound Forest Song' was composed in the summer weeks of 2022 and 2023 for Sara Cubarsi, Christine Chapman, and Maxime Morel. PART 1 features the microtonal potential of the 6-valve F-Tuba and of Christine Chapman's customized French Horn which is equipped with an additional quartertone valve. The violin part was inspired by Sara Cubarsi's extraordinary expertise in the field of microtonal just intonation, and in PART 2 the violin explores some novel melodies and harmonies associated with pitches that are tuned to the very high overtones °29, °31, °37, °41, °43, and °47.

PERFORMANCE DURATION

circa 43 minutes

PART 1 : circa 14 minutes

PART 2 : circa 28 ½ minutes

PART 2 may also be performed on its own.

TUNING INSTRUCTIONS

VIOLIN: The strings are tuned in non-tempered Pythagorean Fifths (frequency ratio $3/2$).

Customized FRENCH HORN with 4 valves:

Before carrying out the step-by-step tuning procedure, please make sure that you have a simple and efficient method to restore all the standard valve slide positions, either by marking them, by measuring them, or by retuning them by ear with a synthesizer or piano in Equal Temperament. – The open F horn is tuned with harmonics 5 & 10 to the pitch of the violin's A string. The open B-flat horn is tuned with harmonics 3 & 6 to the pitches of the harmonics 4 & 8 of the open F horn. The F horn's 3rd valve slide (D horn) is tuned with harmonics 6 & 12 to the harmonics 5 & 10 of the open F horn. The B-flat horn's 3rd valve slide (G horn) is tuned with harmonics 6 & 12 to harmonics 5 & 10 of the open B-flat horn. The B-flat horn's 2nd valve slide (A horn) is tuned with harmonic 8 to harmonic 10 of the open F horn (or to the pitch of the violin's A string). The F horn's 2nd valve slide (E horn) is tuned with harmonic 8 to harmonic 6 of the A horn or to harmonic 9 of the D horn. The F horn's 1st valve slide (for the 17-limit E-flat horn) is tuned with harmonics 6 & 12 by employing the valve combination 1+2 (to get another identical D horn) to harmonics 5 & 10 of the open F horn (or to the pitch of the violin's A string). The B-flat horn's 1st valve slide (for the 17-limit A-flat horn) is tuned with harmonics 6 & 12 by employing the valve combination 1+2 (to get another identical G horn) to harmonics 5 & 10 of the open B-flat horn (or to the pitch of the violin's D-string). The horn must be equipped with a 4th valve (stopping valve) with an extra-short custom-built slide to lower the pitch of the open B-flat horn by a 31-limit Quartertone ($31/30$, or 57 cents) by prolonging the B-flat horn's tube length by $1/30$ of the open horn's length (circa 10 cm). The quartertone valve slide is tuned with harmonic 11 by employing the valve combination 2+4 (on the B-flat side of the horn) to harmonic 10 of the open B-flat horn. – Please see next page!

6-valve TUBA in F:

Before carrying out the step-by-step tuning procedure, please make sure that you have a simple and efficient method to restore all the standard valve slide positions, either by marking them, by measuring them, or by retuning them by ear with a synthesizer or piano in Equal Temperament. – The open horn (5-limit F comma up) is tuned with harmonic 5 to the violin's A string. The 3rd valve slide (D) is tuned with harmonic 6 to harmonic 5 of the open horn. The 2nd valve slide (E) is tuned with harmonic 8 to harmonic 9 played with valve 3. The 1st valve slide (for the utonal 17-limit E-flat) is tuned by employing valve combination 1+2 (to get another identical D horn) with harmonic 6 to harmonic 5 of the open horn. The 4th valve slide (5-limit C comma up) is tuned with harmonic 8 to the open horn's harmonic 6. Then the 5th valve slide is tuned by employing valve combination 4+5 (5-limit B-flat comma up) with harmonics 6 & 9 to harmonics 4 & 6 of the open horn. The 6th valve slide is tuned with valve combination 4+6 (B) with harmonics 4 & 8 to harmonics 3 & 6 played with valve 2. – Please see next page!

TUNING PROCEDURE

Violin

Horn

Tuba

Notation at sounding pitch

The score consists of three staves: Violin (top), Horn (middle), and Tuba (bottom). The Violin staff is in treble clef and contains a sequence of notes: F#4, F#4, Bb4, Bb4, F#4, F#4, Bb4, Bb4, F#4, F#4, Bb4, Bb4, F#4, F#4, Bb4, Bb4. The Horn and Tuba staves are in bass clef and contain notes: F#3, F#3, Bb3, Bb3, F#3, F#3, Bb3, Bb3, F#3, F#3, Bb3, Bb3, F#3, F#3, Bb3, Bb3. Below the Tuba staff are 16 tuning diagrams, each consisting of three circles representing strings. The diagrams show the following configurations: 1. (0,0,0), 2. (0,0,1), 3. (0,0,0), 4. (0,0,1), 5. (0,0,0), 6. (0,0,1), 7. (0,0,0), 8. (0,1,0), 9. (0,1,0), 10. (0,1,0), 11. (0,1,0), 12. (0,1,0), 13. (0,1,0), 14. (0,1,0), 15. (0,1,0), 16. (0,1,0). The Horn and Tuba staves have a double bar line at the end of the 16th measure.

Prime Harmonic 17	≈	≉	Alteration by one 17-limit schisma (2187/2176)	8.7 cents
Prime Harmonic 19	↘	↙	Alteration by one 19-limit schisma (513/512)	3.4 cents
Prime Harmonic 23	↓	↑	Alteration by one 23-limit comma (736/729)	16.5 cents
Prime Harmonic 29	⇓	⇑	Alteration by one 29-limit sixtitone (261/256)	33.5 cents
Prime Harmonic 31	↵	↶	Alteration by one 31-limit quartertone (32/31)	55.0 cents
Prime Harmonic 37	↷	↸	Alteration by one 37-limit quartertone (37/36)	47.4 cents
Prime Harmonic 41	-	+	Alteration by one 41-limit comma (82/81)	21.2 cents
Prime Harmonic 43	▼	▲	Alteration by one 43-limit comma (129/128)	13.5 cents
Prime Harmonic 47	⌵	⌶	Alteration by one 47-limit quartertone (752/729)	53.8 cents

CENTS: The HEJI accidentals may be combined with an indication of their deviation in cents from Equal Temperament.

These accidentals for Just Intonation were devised in collaboration with Marc Sabat in the early 2000s and revised in 2020 by Marc Sabat and Thomas Nicholson in collaboration with Catherine Lamb and M.O. Abbott

The Helmholtz-Ellis JI Pitch Notation HEJI 2020

Harmonic / Subharmonic series $^{\circ}1\text{-}^{\circ}49$ notated by modifications of Pythagorean notes

atonal notation above Pythagorean A

8^{ba} \lrcorner

Staff 1 (Bass clef): +2, +2, +4, +51, +2, -14, -31, -14, -59, -31, -12

Staff 2 (Treble clef): +5, +4, +51, +28, +2, +6, +30, -2, -14, -29, -27, -59, -31, -12, -55

Staff 3 (Treble clef): +53, +5, +4, +51, +29, +12, +51, +28, +66, +2, -45, -2, -58, -14, -29, -10, -62

atonal notation below Pythagorean E

1 8^{va} \lrcorner

Staff 1 (Treble clef): +2, +2, +16, +33, +2, +16, +61, +33, +14, +2, -2, -49

Staff 2 (Bass clef): +4, +16, +31, +29, +61, +33, +14, +57, +2, -3, -2, -49, -26, -4, -28

Staff 3 (Bass clef): +47, +4, +59, +16, +31, +12, +64, -51, -3, -2, -49, -27, -10, -49, -26, -64

Microtonal Pitch Repertoire of the 4-Valve French Horn

with valve slides 1, 2, 3, and 4 tuned to the rational proportions $2/15 = 4/30$, $1/15 = 2/30$, $1/5 = 6/30$, and $1/30$ of the open B-flat horn's length

Notation at sounding pitch

B-flat Horn

The musical score displays the microtonal pitch repertoire for a 4-valve French Horn. It consists of eight staves, each representing a different valve slide. The notation is written at sounding pitch. Each staff includes musical notation with various accidentals and a numerical value indicating the pitch deviation from the standard B-flat horn. The values range from -64.4 to +106.3 cents. Some staves include annotations like "tuning pitch" and "tuning pitch (for 4th valve slide)".

Slide	Value 1	Value 2	Value 3	Value 4	Value 5	Value 6	Value 7	Value 8	Value 9	Value 10	Value 11	Value 12		
30/30	+11.7	+11.7	+13.7	+11.7	-2.0	+13.7	-19.4	+11.7	+15.6	-2.0	+63.0	+13.7		
31/30	+55.0	-41.5	-41.5	-39.6	-41.5	-55.2	-39.6	-72.7	-41.5	-37.6	-55.2	+9.8	-39.6	
31/30	+55.0	+55.0	+56.9	+55.0	+41.3	+56.9	+23.8	+55.0	+58.9	+41.3	+106.3	+56.9		
32/30	+0.0	+0.0	+2.0	+0.0	-13.7	+2.0	-31.2	+0.0	+3.9	-13.7	+51.3	+2.0		
33/30	-53.3	-53.3	-51.3	-53.3	-67.0	-51.3	-84.4	-53.3	-49.4	-67.0	+2.0	-51.3		
34/30	-5.0	-5.0	-3.0	-5.0	-18.6	-3.0	-36.1	-5.0	-1.0	-18.6	+46.4	-3.0	-64.4	
35/30	+44.9	+44.9	+46.8	+44.9	+31.2	+46.8	+13.7	+44.9	+48.8	+31.2	+96.2	+46.8	-14.6	+13.7
36/30	-3.9	-3.9	+2.0	-3.9	-17.6	+2.0	-35.1	-3.9	+0.0	-17.6	+47.4	+2.0	-63.4	-35.1

Microtonal Pitch Repertoire of the 4-Valve French Horn

with valve slides 1, 2, 3, and 4 tuned to the rational proportions $2/15 = 4/30$, $1/15 = 2/30$, $1/5 = 6/30$, and $1/40$ of the open F horn's length

Notation at sounding pitch

F Horn

The image displays a musical score for an F Horn, organized into 12 staves. Each staff is labeled with a number and a 120/120 time signature. The staves are numbered as follows: 120/120, 123/120, 123/120, 128/120, 131/120, 136/120, 139/120, and 144/120. The notation includes various musical symbols such as notes, rests, and accidentals. Above and below the notes are numerical values representing microtonal pitch adjustments. Some staves include diagrams of the horn's valve slides, showing the placement of the slide on the valve. The text 'tuning pitch' is written in several places, indicating the reference pitch for the microtonal adjustments. The overall layout is clean and professional, with a focus on the microtonal details of the instrument's repertoire.

120/120

123/120

123/120

128/120

131/120

136/120

139/120

144/120

tuning pitch

tuning pitch

tuning pitch (for the 3rd & 1st valve slide)

F#₄ ●●/●
F#₄ ○●/●

147/120

Diagram of a musical staff for the 147/120 ratio. It features a bass clef and a treble clef. The staff contains a sequence of notes with various accidentals (sharps, naturals, flats) and stems. Above the staff, numerical values are written: +62.3, +62.3, +64.3, +62.3, +48.7, +64.3, +31.2, +62.3, +66.3, +48.7, +113.7, +64.3, +2.9, +31.2, +50.6, +62.3. Above the first few notes, there are diagrams of F#4 chords: F#4 ●●/● and F#4 ○●/●.

tuning pitch (for 4th valve slide)

152/120

Diagram of a musical staff for the 152/120 ratio. It features a bass clef and a treble clef. The staff contains a sequence of notes with various accidentals and stems. Above the staff, numerical values are written: +4.4, +4.4, +6.4, +4.4, -9.2, +6.4, -26.7, +4.4, +8.4, -9.2, +55.8, +6.4, -55.0, -26.7, -7.3, +4.4. Above the first few notes, there is a diagram of F#4 ●●/●.

155/120

Diagram of a musical staff for the 155/120 ratio. It features a bass clef and a treble clef. The staff contains a sequence of notes with various accidentals and stems. Above the staff, numerical values are written: +70.6, +70.6, +72.6, +70.6, +56.9, +72.6, +39.4, +70.6, +74.5, +56.9, +121.9, +72.6, +11.1, +39.4, +58.9, +70.6. Above the first few notes, there is a diagram of F#4 ●●/●.

155/120

Diagram of a musical staff for the 155/120 ratio. It features a bass clef and a treble clef. The staff contains a sequence of notes with various accidentals and stems. Above the staff, numerical values are written: +70.6, -32.2, -30.2, -32.2, -45.9, -30.2, -63.4, -32.2, -28.3, -45.9, +19.1, -30.2, -91.7, -63.4, -43.9, -32.2. Above the first few notes, there are diagrams of F#4 ●●/● and F#4 ●●/●+3c.

160/120

Diagram of a musical staff for the 160/120 ratio. It features a bass clef and a treble clef. The staff contains a sequence of notes with various accidentals and stems. Above the staff, numerical values are written: +15.6, +15.6, +17.6, +15.6, +2.0, +17.6, -15.5, +15.6, +19.6, +2.0, +67.0, +17.6, -43.8, -15.5, +3.9, +15.6. Above the first few notes, there is a diagram of F#4 ●●/●.

163/120

Diagram of a musical staff for the 163/120 ratio. It features a bass clef and a treble clef. The staff contains a sequence of notes with various accidentals and stems. Above the staff, numerical values are written: -16.5, +84.4, -22.4, -20.5, -22.4, -36.1, -20.5, -53.6, -22.4, -18.5, -36.1, +28.9, -20.5, -81.9, -53.6, -34.1, -22.4. Above the first few notes, there are diagrams of F#4 ●●/●, F#4 ●●/●+1c, and F#4 ●●/●-6c.

'244/165'

168/120

Diagram of a musical staff for the 168/120 ratio. It features a bass clef and a treble clef. The staff contains a sequence of notes with various accidentals and stems. Above the staff, numerical values are written: +31.2, +31.2, +33.1, +31.2, +17.5, +33.1, +0.0, +31.2, +35.1, +17.5, +82.5, +33.1, -28.3, +0.0, +19.4, +31.2. Above the first few notes, there is a diagram of F#4 ●●/●.

171/120

Diagram of a musical staff for the 171/120 ratio. It features a bass clef and a treble clef. The staff contains a sequence of notes with various accidentals and stems. Above the staff, numerical values are written: +0.5, +0.5, +2.5, +0.5, -13.2, +2.5, -30.6, +0.5, +4.4, -13.2, +51.8, +2.5, -58.9, -30.6, -11.2, +0.5. Above the first few notes, there is a diagram of F#4 ●●/●.

Microtonal Pitch Repertoire of the 6-Valve F-Tuba

with valve slides 1, 2, 3, 4, 5, and 6 tuned to the rational proportions $2/15 = 12/90$, $1/15 = 6/90$, $1/5 = 18/90$, $1/3 = 30/90$, $1/6 = 15/90$, and $4/45 = 8/90$ of the open horn's length

The image displays a musical score for a 6-valve F-tuba, illustrating its microtonal pitch repertoire. The score is organized into 11 staves, each representing a different valve combination. The staves are labeled on the left with their respective valve numbers and the number of fingerings available for each note: 90/90 (8va), 96/90 (8va), 98/90 (8va), 102/90 (8va), 104/90 (8va), 105/90 (8va), 108/90 (8va), 110/90 (8va), and 111/90 (+1c, 8va). Each staff contains a sequence of notes, with microtonal adjustments indicated by numerical values above the notes. The notes are primarily half notes and quarter notes, with some beamed eighth notes. The microtonal adjustments range from -49.4 to +70.2 cents. The score is written in bass clef with a key signature of one flat (B-flat). The notation includes various accidentals (sharps, flats, naturals) and microtonal symbols (arrows pointing up or down from the notehead) to indicate the specific pitch adjustments. The 111/90 staff includes a common time signature (+1c) and a key signature change to one sharp (F#).

This musical score consists of nine staves, each representing a different instrument or voice part. Each staff is labeled with a measure number on the left and a numerical value above the staff. The values are: 113/90 (-2c, +19.7, -82.5, -82.5, -80.5, -82.5, -96.2, -80.5, -113.7, -82.5, -78.6, -96.2, -31.2); 114/90 (+4.4, +4.4, +6.4, +4.4, -9.2, +6.4, -26.7, +4.4, +8.4, -9.2); 116/90 (+4c, -25.7, -21.4, -21.4, -19.4, -21.4, -35.1, -19.4, -52.6, -21.4, -17.5, -35.1); 117/90 (+59.4, +59.4, +61.4, +59.4, +45.8, +61.4, +28.3, +59.4, +63.4, +45.8); 119/90 (+30.1, +30.1, +32.1, +30.1, +16.4, +32.1, -1.0, +30.1, +34.0, +16.4); 120/90 (+15.6, +15.6, +17.6, +15.6, +2.0, +17.6, -15.5, +15.6, +19.6, +2.0); 122/90 (-3c, -13.0, +84.4, +86.4, +84.4, +70.8, +86.4, +53.3, +84.4, +88.4, +70.8); 123/90 (+5c, -27.1, -22.4, -20.5, -22.4, -36.1, -20.5, -53.6, -22.4, -18.5, -36.1); 123/90 (-27.1, -27.1, -25.2, -27.1, -40.8, -25.2, -58.3, -27.1, -23.2, -40.8). The notation includes bass clefs, notes, rests, and dynamic markings such as *8va*. The numerical values are placed above the notes, and some are accompanied by small circles or arrows indicating pitch direction.

125/90 +45.0 +45.0 +46.9 +45.0 +31.3 +46.9 +13.8 +45.0 +48.9 +31.3

126/90 +31.2 +31.2 +33.1 +31.2 +17.5 +33.1 +0.0 +31.2 +35.1 +17.5 +82.5

128/90 +3.9 +3.9 +5.9 +3.9 -9.8 +5.9 -27.3 +3.9 +7.8 -9.8 +55.2

129/90 -1c -9.6 -10.8 -8.9 -10.8 -24.5 -8.9 -42.0 -10.8 -6.9 -24.5 +40.5

131/90 +1c -36.2 +65.0 +67.0 +65.0 +51.3 +67.0 +33.8 +65.0 +68.9 +51.3 +116.3

132/90 -49.4 -49.4 -47.4 -49.4 -63.0 -47.4 -80.5 -49.4 -45.5 -63.0 +2.0

134/90 -5c +24.6 +19.4 +21.4 +19.4 +5.8 +21.4 -11.7 +19.4 +23.4 +5.8 +70.8

135/90 +11.7 +11.7 +13.7 +11.7 -2.0 +13.7 -19.5 +11.7 +15.6 -2.0 +63.0 +13.7

137/90 +2c -13.7 -11.2 -9.2 -11.2 -24.9 -9.2 -42.4 -11.2 -7.3 -24.9 +40.1 -9.2

138/90

140/90

141/90

143/90

144/90

146/90

147/90

149/90

+40.9

-53.3

-26.3

-24.4

-26.3

-40.0

-24.4

-57.5

-26.3

-22.4

-40.0

+25.0

-24.4

+48.8

+48.8

+50.7

+48.8

+35.1

+50.7

+17.6

+48.8

+52.7

+35.1

+100.1

+50.7

-61.1

-59.1

-61.1

-74.8

-59.1

-92.3

-61.1

-57.2

-74.8

-9.8

-59.1

-63.6

+12.1

+12.1

+14.0

+12.1

-1.6

+14.0

-19.1

+12.1

+16.0

-1.6

+63.4

+14.0

-47.4

+0.0

+0.0

+2.0

+0.0

-13.7

+2.0

-31.2

+0.0

+3.9

-13.7

+51.3

+2.0

-23.9

+73.2

+75.1

+73.2

+59.5

+75.1

+42.0

+73.2

+77.1

+59.5

+124.5

+75.1

+13.7

+64.3

+64.3

+66.3

+64.3

+50.6

+66.3

+33.1

+64.3

+68.2

+50.6

+115.6

+66.3

-51.3

-53.3

-67.0

-51.3

-84.4

-53.3

-49.4

-67.0

-2.0

-51.3

150/90

152/90

153/90

155/90

155/90-3c

156/90

158/90-4c

159/90-1c

Staff	1	2	3	4	5	6	7	8	9	10	11	12	
150/90	+29.3	+29.3	+31.3	+29.3	+15.6	+31.3	-1.8	+29.3	+33.2	+15.6	+80.6	+31.3	-30.1
152/90	+6.4	+6.4	+8.4	+6.4	-7.3	+8.4	-24.8	+6.4	+10.3	-7.3	+57.7	+8.4	-53.1
153/90	-5.0	-5.0	-3.0	-5.0	-18.6	-3.0	-36.1	-5.0	-1.0	-18.6	+46.4	-3.0	-64.4
155/90	+72.6	+72.6	+74.5	+72.6	+58.9	+74.5	+72.6	+76.5	+72.6	+76.5	+123.9	+74.5	+13.1
155/90-3c	+72.6	-30.2	-28.3	-30.2	-43.9	-28.3	-61.4	-30.2	-26.3	-43.9	+21.1	-28.3	-89.7
156/90	+61.4	+61.4	+63.4	+61.4	+47.7	+63.4	+30.3	+61.4	+65.4	+47.7	+112.7	+63.4	+2.0
158/90-4c	+39.4	-65.0	-63.0	-65.0	-78.7	-63.0	-96.2	-65.0	-61.1	-78.7	-13.7	-63.0	-124.5
159/90-1c	+28.4	-72.7	-70.8	-72.7	-86.4	-70.8	-103.9	-72.7	-68.8	-86.4	-21.4	-70.8	-132.2

161/90 +6.8 +6.8 +8.8 +6.8 -6.9 +8.8 -24.4 +6.8 +10.7 -6.9 +58.1 +8.8 -52.7

164/90 -25.2 -25.2 -23.2 -25.2 -38.8 -23.2 -56.3 -25.2 -21.2 -38.8 +26.2 -23.2 -84.6

164/90 -6c -25.2 +69.2 +71.2 +69.2 +55.6 +71.2 +38.1 +69.2 +73.2 +55.6 +120.6 +71.2 +9.8

165/90 -35.7 -35.7 -33.7 -35.7 -49.4 -33.7 -66.9 -35.7 -31.8 -49.4 +15.6 -33.7 -95.1 -66.9

167/90 -1c -56.5 -57.2 -55.2 -57.2 -70.9 -55.2 -88.4 -57.2 -53.3 -70.9 -5.9 -55.2 -116.7 -88.4

171/90 +2.5 +2.5 +4.4 +2.5 -11.2 +4.4 -28.7 +2.5 +6.4 -11.2 +53.8 +4.4 -57.0 -28.7

173/90 +2c -17.6 -15.6 -13.7 -15.6 -29.3 -13.7 -46.8 -15.6 -11.7 -29.3 +35.7 -13.7 -75.1 -46.8

179/90 -2c +23.3 +21.4 +23.4 +21.4 +7.7 +23.4 +9.8 +21.4 +25.3 +7.7 +72.7 +23.4 -38.1 +9.8

Plainsound Forest Song

for Sara Cubarsi, Christine Chapman, and Maxime Morel

Wolfgang von Schweinitz
op. 68 (2022-2023)

PART 1

♩ = 120

Violin
Musical notation in 4/4 time, measures 1-2. Dynamics: *f* (measures 1-2), *p* (measure 1), *pp flautando* (measure 2). Fingering diagrams are provided for measures 1 and 2.

Horn in F
Musical notation in 4/4 time, measures 1-2. Dynamics: *f* (measure 1), *p* (measure 1), *pp* (measure 2). Fingering diagrams are provided for measures 1 and 2.

Tuba
Musical notation in 4/4 time, measures 1-2. Dynamics: *pp* (measure 2). Fingering diagrams are provided for measures 1 and 2.

Notation in C
Fingering diagrams for Horn in F and Tuba:
Horn in F: ○○○ / ●○○ ○○○ ○○○ ○○○ F♯
Tuba: ○○○ ○○○ ○○○ ○○○ ○○○ ○○○ ○○○ ○○○

Violin (Measures 3-4)
Musical notation in 4/4 time, measures 3-4. Dynamics: *p* (measure 3), *sempre non vibrato* (measure 4). Fingering diagrams are provided for measures 3 and 4.

Horn in F (Measures 3-4)
Musical notation in 4/4 time, measures 3-4. Dynamics: *p* (measure 3). Fingering diagrams are provided for measures 3 and 4.

Tuba (Measures 3-4)
Musical notation in 4/4 time, measures 3-4. Dynamics: *p* (measure 3). Fingering diagrams are provided for measures 3 and 4.

8/7

7/6

5

↑1 (+36 c)

sonore

pp

pp

○○○ ○○●
F# Bb

○○○ ○○○ ○○○ ●○○
F# Bb Bb Bb

○○○ ○○○
F# F#

○○○ ○○○ ○○○ ○○○ ○○○ ○○○
F# Bb Bb Bb Bb Bb

○○○ ○○○
F# F#

○○○ ○○○ ○○○ ○○○ ○○○ ○○○
F# Bb Bb Bb Bb Bb

↑0+4C

15:14
(-119 c)

7

↑1 (+36 c)

○○○
Bb

○○○ ○○○ ○○○ ○○○
F# Bb F# Bb

○○○ ○○○ ○○○ ○○○ ○○○ ○○○
F# Bb Bb Bb Bb Bb

○○○ ○○○ ○○○ ○○○ ○○○ ○○○
F# Bb Bb Bb Bb Bb

↑0+4C ○

○○○ ○○○ ○○○ ○○○ ○○○ ○○○
F# Bb Bb Bb Bb Bb

↑0+4C ○

○○○ ○○○ ○○○ ○○○ ○○○ ○○○
F# Bb Bb Bb Bb Bb

↑0+4C ○

9

Musical score for measures 9-10. The piano part (left) includes dynamic markings such as *pp* and *p*. The guitar part (right) includes fingering diagrams and a *v* marking.

11

Musical score for measures 11-12. The piano part (left) includes dynamic markings such as *p sonore* and *espr.*. The guitar part (right) includes fingering diagrams and a *v* marking.

7/4 56 : 55 11/6 7/4 7 : 6 22 : 21 23 : 24
 (-31 c) (-267 c) (-81 c) (74 c)

13

7/1 23/4

$\circ\circ\circ$ $\circ\circ\circ\circ$ $\circ\circ\circ$ $\circ\circ\circ$
 $F\sharp_4$ $F\sharp_4$ $F\sharp_4$ $F\sharp_4$

$\bullet\bullet\bullet/\bullet\uparrow$ $\circ\circ\circ$ $\bullet\bullet\bullet/\bullet\uparrow$ $\bullet\bullet\bullet/\bullet\uparrow(14)$
 $F\sharp_4 +3C$ $F\sharp_4$ $F\sharp_4 +3C$ $F\sharp_4 +1C$

$\circ\circ\circ$ $\circ\circ\circ/\bullet\uparrow$ $\bullet\bullet\bullet/\bullet\downarrow$ $\circ\circ\circ/\bullet\uparrow$
 $F\sharp_4$ $F\sharp_4$ $F\sharp_4 +5C$ $F\sharp_4 -6C$ $F\sharp_4 +5C$

p dolce

p dolce

+84

+84

-22

$\circ\circ\circ$ $\circ\circ\circ$ $\circ\circ\circ$ $\circ\circ\circ$ $\circ\circ\circ$ $\circ\circ\circ$ $\circ\circ\circ$ $\circ\circ\circ$

$\downarrow\circ-3C$ $\uparrow\circ+5C$

25 : 24 21 : 20
 (-71 c) (-22 c) (-81 c)

15

25 : 24 21 : 20
 (-71 c) (-22 c) (-81 c)

$\bullet\bullet\bullet/\bullet\downarrow$ $\circ\circ\circ/\bullet\uparrow$ $\circ\circ\circ$
 $F\sharp_4 -6C$ $F\sharp_4 +5C$ $F\sharp_4$

$\bullet\bullet\bullet$ $\circ\circ\circ$ $\bullet\bullet\bullet$
 $F\sharp_4$ $F\sharp_4$ $F\sharp_4$

mf marc.

mf marc.

p

p

p *pp*

$\uparrow\circ+5C$ $\uparrow\circ+5C$

8:9 (-204 c) 20 : 21 (81 c) **allarg.**

17

9/3/1 15/9/5/2

f *mp* *p* *pp*

mf *p* *pp*

mf *p* *pp*

F# F# F# F# F# Bb

-5C -5C

a tempo The 11-limit Harmonic Region 33 : 34 (52 c)

20

pp *p* *espr.*

17/11/6 17/10/7

Bb F# F# +1C Bb Bb Bb Bb Bb Bb Bb

pp *pp*

+6C

27

espr.

B \flat B \flat F \sharp 4 B \flat F \sharp 4 B \flat F \sharp 4 B \flat F \sharp 4 B \flat B \flat

↑ +6C ↓ -4C ↑ +6C ↓ -4C ↓ -4C ↑ +6C ↑ +6C

33 : 34 17 : 18
(52 c) (99 c)

29

vicino al pont. (+24c) *ord.* *portamento*

17/11/6 18/11/7 17/11/4 9/2

B \flat F \sharp 4 +3C B \flat B \flat F \sharp 4 B \flat F \sharp 4 B \flat F \sharp 4 F \sharp 4 +3C F \sharp 4 F \sharp 4 +3C F \sharp 4 F \sharp 4 +3C F \sharp 4 F \sharp 4 +3C

↓ -4C ↑ +2C ↓ -4C ↑ +6C ↓ -4C ↑ +6C ↑ +2C ↑ +2C ↑ +2C

14 : 13
(-128 c) (-139 c)

17 : 16
(-105 c)

39

7/4

port. *port.*

22 : 21 (-81 c) 21 : 20 (-84 c) 20 : 19 (-89 c) 19 : 17 (-193 c)

f

7/4

○○●↓ ○●○/●
B \flat -4C B \flat

○○○

○○○/●

○○○
B \flat

mf

mf

○○ ○○
○○ ●●
● ↑
+6C

○○ ○○
○○ ●●
● ↑
+6C

○○ ○○ ○○
○○ ●● ●●
● ↑ ●●
+6C

○○ ○○ ●●
○○ ●● ●●
● ↑ ●●
+6C

○○ ○○ ●●
○○ ●● ●●
● ↓
-2C

41

7/4

mf **mp** **mf** **f**

↑ 3 (+27 c)

6/5

○○○ F \sharp ○○● B \flat ○○○/●↓ B \flat -6C

p **pp** **pp**

p **pp**

○○ ○○ ○○ ○○
○○ ●● ●● ●●
● ↓ ●● ●● ●●
↑ ●● ●● ●●
+6C -2C -1C

48

18:17 (-99 c) 14:13 (-128 c) 11/6

17/8/3 *f* > 7/6/2 13/11/4 < < *f*

p *pp* *p* *mf* *f*

gliss.

mf *f*

50

13:14 (128 c) **poco ritenuto**

7/4

gliss. *mf* *gliss.* *p*

gliss. *mf* *gliss.* *p*

56

$\circ\circ\circ/\bullet\uparrow$ $\bullet\circ\circ/\bullet\uparrow$ $\circ\circ\circ/\bullet\downarrow$ $\circ\circ\circ/\bullet\uparrow$ $\bullet\circ\circ/\bullet\uparrow$ $\circ\circ\circ/\bullet$ $\bullet\circ\circ/\bullet\uparrow$ $\circ\circ\circ/\bullet\downarrow$ $\bullet\circ\circ/\bullet$
 $B\flat +1C$ $F\sharp +4C$ $F\sharp -4C$ $B\flat +1C$ $F\sharp +4C$ $B\flat$ $F\sharp +4C$ $B\flat$ $F\sharp -4C$ $B\flat$

$\circ\circ 7$ $\circ\circ$ $\bullet\circ$ $\circ\circ$ $\circ\circ 7$ $\bullet\circ$ $\circ\circ$ $\bullet\circ$ $\circ\circ$ $\bullet\circ$ $\circ\circ$ $\bullet\circ$ $\circ\circ$ $\bullet\circ$ $\circ\circ$
 $\uparrow\circ$ \circ $\uparrow\circ$ \circ $\uparrow\circ$ $\uparrow\circ$ \circ $\uparrow\circ$ \circ \circ \circ \circ \circ \circ \circ
 $+2C$ $+1C$ $+2C$ $+1C$ $+1C$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$

58

39:38 (-45 c)

$\bullet\circ\circ/\bullet\downarrow$ $\circ\circ\circ/\bullet$
 $F\sharp -4C$ $B\flat$ $B\flat$

$\bullet\circ$ $\circ\circ$ $\bullet\circ 7$ $\circ\circ 7$ $\bullet\circ$ $\circ\circ$ $\bullet\circ$ $\circ\circ$ $\bullet\circ$ $\circ\circ$ $\bullet\circ$ $\circ\circ$ $\bullet\circ$ $\circ\circ$
 $\uparrow\circ$ \circ $\uparrow\circ$ \circ $\uparrow\circ$ $\uparrow\circ$ \circ $\uparrow\circ$ \circ \circ \circ \circ \circ \circ \circ
 $+3C$ $+5C$ $-5C$

17:18
(99 c)

15:17
(217 c)

9:10
(182 c)

20:21
(84 c)

7:6
(-267 c)

21:19
(-173 c)

19:18
(-94 c)

74

17/7/3

7/3/1

21/11/3

19/10/3

15:17
(217 c)

17:18
(99 c)

9:10
(182 c)

20:21
(84 c)

7:6
(-267 c)

21:19
(-173 c)

76

17/8/6

17/12/5

7/4/3

19/8/3

21/12/5

●●●↓ 11
Bb -3C

●●●/●↓
Bb -1C

●●●↓
Bb -3C

●●●/●↓
Bb -1C

21:19 19:18
(-173 c) (-94 c)

78

19/10/6 17/9/4

••○ ○○
B \flat F# - 3C 11 B \flat - 1C F# - 3C B \flat B \flat - 3C 11 F# - 3C B \flat B \flat F# - 3C B \flat B \flat B \flat B \flat B \flat B \flat - 3C

○ ○
○ ○
● ●
↑ ● ↓ ○
+4C -1C

15:17
(217 c)

17:16
(-105 c)

80

15:17 32/17/6
(217 c)

••○ ••○ ○○ ••● ↓ 11 ••○ ○○ ••● ↓ ••○ ••○ ••● ↓ ••○ ••○ ••● ↓
B \flat B \flat B \flat F# - 3C B \flat F# - 3C B \flat B \flat B \flat B \flat F# - 3C B \flat B \flat F# - 3C B \flat B \flat F# - 3C

○ ○
○ ○
● ●
↑ ● ↓ ○
+4C

○ ○
○ ○
● ●
↑ ● ↓ ○
+4C

○ ○
○ ○
● ●
↑ ● ↓ ○
+4C

○ ○
○ ○
● ●
↑ ● ↓ ○
+4C

82

21:19 (-173 c)

Chords: B \flat , F \sharp , F \sharp , F \sharp , F \sharp , F \sharp , B \flat , F \sharp , B \flat + 3C, F \sharp , B \flat + 3C, F \sharp

84

17/9

allarg. 7/4

mf f

mf f

Chords: F \sharp , F \sharp , F \sharp , F \sharp , B \flat , F \sharp , B \flat , B \flat , B \flat , F \sharp , F \sharp , F \sharp

7 7

a tempo

allargando

21:20
(-84 c)

86

17/14/8 17/14/8 17/14/8 17/7/3

Chord diagrams:
 Measure 86: Bb, Bb, Bb, F#
 Measure 87: Bb, Bb, F#
 Measure 88: Bb, F#
 Measure 89: Bb, F#
 Measure 90: F#, F#
 Measure 91: F#, F#

♩ = 90

88

17/6/2 17/7/2

8va ad lib.

Chord diagrams:
 Measure 88: Bb, Bb, Bb, F#
 Measure 89: Bb, Bb, Bb, F#
 Measure 90: Bb, Bb, Bb, F#
 Measure 91: Bb, Bb, Bb, F#

22 PART 2 The 17-limit Harmonic Region, with all the high primes up to $^{\circ}47$

$\text{♩} = 90$

1

f *sfz* *mf* (*piano intenso*)

sempre non vibr.

17/4 3/2 9/7/3

Notation in C $\bullet \circ \circ / \circ$
F \sharp B \flat F \sharp

3

27:28 (63 c) 28:29 (61 c) 29:30 (59 c) 25:26 (68 c) 26:27 (65 c)

9/5/4 7/4/3 29/17/12 5/3/2 5/3/2 13/8/5 9/5/4

B \flat F \sharp F \sharp F \sharp B \flat F \sharp B \flat F \sharp

27:28 (63 c) 28:29 (61 c) 29:30 (59 c)

5

7/4/3 29/17/12 5/3/2

Chord diagrams: B \flat , F \sharp , B \flat , B \flat , B \flat , B \flat , F \sharp , B \flat , F \sharp

30:31 (57 c) 31:32 (55 c) 32:33 (53 c)

7

31/17/14 16/9/7 11/7/4

Chord diagrams: B \flat , B \flat , F \sharp , F \sharp , F \sharp , F \sharp , B \flat , F \sharp , B \flat

9

34:35 (50c) 35:36 (49c) 36:37 (47c)

5/3/2 12/7/5 37/20/17

F# Bb F# Bb F# Bb F#

11

37:38 (46c) 38:39 (45c) 39:40 (44c)

19/12/7 6/5/1 13/9/4 9/7/3 10/7/3

Bb F# Bb F# Bb F# Bb

40:41 (43 c) 41:42 (42 c) 42:43 (41 c) 43:44 (40 c)

41/24/17 12/9/4 7/4/3 43/27/16 11/9/2

F#4 Bb F#4 Bb Bb Bb F#4

44:45 (39 c) 45:46 (38 c) 46:47 (37 c) 47:48 (36 c) 48:49 (36 c)

9/7/4 5/3/2 23/14/9 47/33/14 12/7/5 7/4/3 16/11/5

Bb F#4 Bb F#4 Bb F#4 Bb F#4

18

48:47 (36 c)

p (con molto d'arco)

16/11/5 47/33/14 47/32/15 47/30/17

B \flat F \sharp B \flat F \sharp B \flat F \sharp B \flat F \sharp

pp

pp

21

48:49 (36 c)

47/28/19 47/27/20 7/4/3 49/27/22 49/32/17 49/33/16

B \flat F \sharp B \flat F \sharp B \flat F \sharp B \flat F \sharp

8

+3C

49:50 (+35c) 50:51 (34c)

5/3/2 25/16/9 25/17/8 25/18/7 17/12/5 17/11/6

F#4 Bb Bb F#4

The Pythagorean Mode in the 17-limit Harmonic Region

27

17/11/6 17/11/6

f *ff*

Bb F#4 Bb

f

29

●●● / ●↓
Bb - 1C

○●○ 9
○●● -1C
↓○ -1C

31

●●○ F# ●●○ Bb ●●○ F# ●●○ Bb ●●○ F# ●●○ Bb ●●○ F#

○●○ F#

The 19-limit Harmonic Region, with primes $^{\circ}13$, $^{\circ}19$, $^{\circ}29$, $^{\circ}31$, and $^{\circ}37$

33

p *espressivo*

19/6/2

short and slow trills (19:18)

35

9/5/4

37/22/15

19/11/8

41

18:19 (94 c) 32:31 (-55 c) 31:30 (-57 c) 10:9 (-182 c) portamento 32:31 (-55 c) 31:30 (-57 c)

31/19/12 5/3/2 16/11/5 31/19/12 5/3/2

F# F# Bb F# Bb F# F# F#

43

allargando **stringendo** **a tempo**

10:9 (-182 c) 30:31 (57 c) 31:32 (55 c) 38:37 (-46 c) 37:36 (-47 c)

3/1 31/19/12 5/3/2 19/12/4 37/27/10 12/7/5

F# F# F# F# Bb F# Bb F#

(85 c)

8va ad lib.

The Pythagorean Tetrachords in the 23-limit Harmonic Region, with primes $^{0}11$, $^{0}23$, $^{0}43$ and $^{0}47$

46

f sfz *caloroso*

$23:16/6$ $11/8/3$

$23:22$
(-77 c)

$F\sharp$ $B\flat$ *Adjust tuning to the tuba pitches!* $B\flat$ $+5C$ $F\sharp$ $-6C$ $F\sharp$ $+5C$

f $8/3$

The pitches played on the tuba with valve combination 3+4 should be centered. All others are lipped up or down a bit.

$\uparrow 0 + 5C$ (centered) $\uparrow 0 + 5C$

48

$22:23$ (77 c) $23:24$ (74 c) $24:23$ (-74 c)

$23/15/8$ $24/15/8$ $23/14/9$ $23/20/3$ $23/15/8$ $23/11/6$

$F\sharp$ $-6C$ $F\sharp$ $+5C$ $F\sharp$ $-6C$

$\uparrow 0 + 5C$ $\uparrow 0 + 5C$

50

23 : 22 (-77 c)

23 : 22 (-77 c)

23/8/3

11/8/3

11/8/3

○○○/●↑
F# +5C

○○●/●↓(9)
F# -3C

52

23 : 22 (-77 c)

23 : 22 (-77 c)

11 : 10 (-165 c)

15 : 16 (112 c)

23/8/3

11/8/3

23/8/3

11/8/3

8/5/3

○○●/●↓(8)
F# -3C

○○○/●↑
F# +5C

○○○/●↓
F# -6C

rfz

rfz

23 : 24 (74 c)

46 : 47 (37 c)

47 : 48 (36 c)

8 : 9 (204 c)

27 : 28 (63 c)

54

↑ 2 2 3 2 2 2 3 4

rfz *rfz* *rfz* *rfz*

11/7/4 23/18/10 12/7/5 23/14/9 12/9/4 23/20/3 47/32/15 12/7/5 3/2/1 12/7/5

48 : 47 (-36 c)

47 : 46 (-37 c)

23 : 22 (-77 c)

56

2 1 1 1 2 4 1

rfz *rfz*

9/5/4 47/32/15 23/15/8 23/14/9 9/5/2 23/8/3 11/8/3

○○○/●↑
F# +5C

●●/●↓
F# -6C

○○○/●↑
F# +5C

○○○/●↑
F# +5C

○○○/●↑
F# +5C

44:45 (39 c) 45:44 (-39 c) 44:43 (-40 c) 43:42 (-41 c) (-46 c) 28:27 (-63 c)

15/10/4 11/7/4 43/27/16 14/8/5 *espr. (molto d'arco)* 7/5/2 14/8/3

●○●/●↓ F# -6C ●○●/●↑ Bb +5C ●○●/●↓ F# -6C ○○○/●↑ F# +5C ○●●/●↓ F# -3C ●○●/●↓ F# -6C ○○○/●↑ F# +5C

○○
○
●
↑ +5C

○○
○
●
↑ +5C

○○
○
●
↑ +5C

27:46 (922 c) 18:23 (424 c) 24:23 (-74 c) 23:22 (-77 c)

18/8/3 23/8/3 9/6/1 *rfz* 23/16/6 23/11/6 *rfz* 23/15/8 11/6/5

○○○ ○○○/●↑ F# +5C ●○●/●↓ F# -6C ●○●/●↑ Bb +5C

○○
○
●
↑ +5C

○○
○
●
↑ +5C

○○
○
●

23 : 22 (-77 c) 23 : 22 (-77 c) 23 : 22 (-77 c)

62 *rfz* *rfz*

23/16/6 22/9/4 11/8/3 23/16/7 11/6/5 11/8/3 23/11/6

○○●/●↓ ○○○/●↑ ○●●/●↓
F# -3C F# +5C F# -3C

○○
○
○
↓ -3C

23 : 22 (-77 c) 9 : 8 (-204 c) 44 : 45 (39 c) 45 : 46 (38 c)

64 *rfz*

(-13 c) 23/8/3 23/11/6 22/12/5 11/3/2 22/8/3 22/12/5 11/8/3 5/3/2 23/12/11

○○●/●↓ ○○○/●↑ ○●●/●↓ ○○○/●↑ ○●●/●↓ ○○○/●↑ ○●●/●↓ ○○○/●↑ ○●●/●↓
F# -6C F# +5C F# -3C F# +5C F# -3C F# +5C F# -3C F# +5C F# -3C

○○
○
○
↑○+5C

○○
○
○

○○
○
○
↑○+5C

○○
○
○

○○
○
○
↓ -3C

66

23 : 22 (-77 c)

(-13 c)

23 : 22 (-77 c)

33 : 32 (-53 c)

1 4 1 0 1 1

23/16/6 23/11/6 23/16/7 11/8/3 23/16/6 23/11/6 23/15/8 11/6/5 16/9/7

●●●/●♯ F♯ -6C

○○○/♯ F♯ +5C

♯○+5C

68

23 : 22 (-77 c)

23 : 22 (-77 c)

44 : 45 (39 c)

45 : 46 (38 c)

allargando

23 : 22 (-77 c)

23 : 24 (74 c)

32 : 33 (53 c)

0 4 3 0 0

11/8/6 11/8/3 11/8/3 15/10/4 23/16/7 3/2 12/9/4 11/7/4

23/11/6 11/8/3 11/5/2

●●●/♯ B♭ +5C

●●●/●♯ 16 F♯ -6C

○○○/♯ F♯ +5C

●●●/●♯ F♯ -6C

+29

27/20

♯○+5C

The 41-limit Harmonic Region, with primes $^{\circ}7$, $^{\circ}11$, $^{\circ}13$, $^{\circ}19$, $^{\circ}41$, $^{\circ}43$, and $^{\circ}47$

a tempo

8:9 (204 c) 9:10 (182 c)

71

pp

22/8/3 11/8/3 11/8/3 11/8/3 33/22/9 22/16/7 22/13/6

ooo/•
F# +0C (centered)

f *pp* *pp*

8va
ad lib.
+0C *mp*

44:45 (39 c) 45:44 (-39 c) 44:45 (39 c) 45:44 (-39 c) 44:43 (-40 c) 43:42 (-41 c) 41:42 (42 c) 20:21 (84 c)

74

p *flautando con molto d'arco*

11/8/3 10/3 11/8/3 5/2 11/6/5 43/24/19 7/4/3 9/4/3 5/3/2

p *p*

(9)

48:47 (-36 c) 9:10 (182 c) 20:21 (84 c) 6:7 (267 c) 41:42 (42 c)

83

pp

9/7/3 47/41/6 7/6/4 5/3/2 7/4

ooo/•
F#4 ooo/o
F#4 ooo/•
F#4

••
••
••
•

41:42 (42 c) 9:10 (182 c) 24:23 (-73 c) 48:47 (-36 c)

86

0 1 3 4 2 ↑1(+81c) 2 3 2 2 3 2 2 3 2 2 3

pp

41/32/9 7/4/3 10/7/3 23/14/9 47/27/20 47/28/19 47/32/15 47/44/6

27/20 28/19

••
••
••
•

24:23 (74 c) 23:22 (-77 c) 9:11 (347 c) 22:23 (77 c) 23:24 (74 c) 16:15 (-112 c)

89 2 1 3 2 1 2 1 1 3 1 3 1 1 2 2 ↓ 1 (-38 c) 2 1 2

23/20/3 23/14/9 11/8/3 22/14/9 10/8/3

45:43 (-79 c) 48:43 (-190 c) 43:42 (-41 c) 8:7 (-231 c) 42:41 (-42 c) 10:9 (-182 c)

92 1 1 2 1 1 2 1 0 0 0 0 0 0 0 3 3

43/24/19 7/4/3 41/32/9 7/6/1 10/7/3 5/3/2 12/7/5 9/7/2

40:41 (43 c) 40:41 (43 c) 40:41 (43 c)

pp *pp*

The 5-limit and 31-limit Harmonic Regions

96

48:47 (-36 c) 9:10 (182 c) 20:21 (84 c) 6:7 (267 c) 40:41 (43 c)

3 3 3 3 0 4 1 4 2 3 1 4 0 ↓ 1 (-42 c)

pp

9/8/3 47/32/15 7/6/4 7/4 41/25/16

F# Bb

99

41:42 (42 c) 9:10 (182 c) 24:23 (-76 c) 48:47 (-36 c) 24:23 (-74 c)

1 1 3 4 2 ↑ 1 (+157c) 2 3 2 2 4 2 2 2 2 2 1 2 1

41/32/9 7/4/3 10/7/3 23/14/9 47/27/20 47/32/15 47/39/8 23/20/3 23/18/5

F# F# F# F# F#

pp

27/20

24:23 (-74 c) 16:15 (-112 c) 45:44 (-39 c) 44:43 (-40 c)

102

23/15/8 23/14/9 5/3/2 15/8/7 11/6/5 43/25/18 43/28/15

F# F# F# F# Bb 25:27 (133 c) F# F# F#

7/6/1 41/32/9 7/6/1 14/9/5 7/4/3

F# F# Bb Bb F# Bb F# Bb Bb F# Bb

cantando *pp*

43:42 (-41 c) 42:41 (-42 c) 41:42 (42 c)

105

43/39/4 7/6/1 41/32/9 7/6/1 14/9/5 7/4/3

F# F# Bb Bb F# Bb F# Bb Bb F# Bb

pp

40 : 39 (-44 c) 39 : 38 (-45 c) 18 : 19 (94 c)

108

p intenso (a bit softer than the horn)

26/9/2

26/7/3

19/5/2

19/14/5

19/13/6

ooo ooo ooo ●●●
 F# Bb F# F#

ooo
 F#

p espressivo dolce

p dolce

36 : 37 (47 c) 37 : 38 (46 c) 38 : 39 (45 c)

110

19/12/7 19/10/9 19/11/8

37/22/15 37/21/16 37/25/12

19/12/7

13/7/3

●●● ooo ooo ooo ●●●
 F# Bb Bb F# F#

ooo ooo ooo ooo ●●●
 ●●● ●●● ●●● ●●● ●●●
 ● ● ●●● ●●● ●

39:40 (44 c) 15:16 (112 c) 10:9 (-182 c) 9:8 (-204 c)

molto flautando (still a bit softer than the horn)

114

30:31 (57 c) 30:29 (-59 c) 30:31 (57 c) 31:29 (-115 c)

f

29:30
(59 c)

116

29/22/7 10/7/3

pp

Chord diagrams for measures 116-117:
Measure 116: F#4, Bb5
Measure 117: Bb5, Bb5, Bb5, F#4, F#4, Bb5, Bb5, F#4, Bb5, Bb5, F#4, F#4, F#4

118

Chord diagrams for measures 118-119:
Measure 118: F#4, Bb5, Bb5, F#4, F#4, F#4, F#4, F#4, F#4, Bb5, Bb5, F#4, F#4, Bb5, F#4, F#4, F#4, F#4, F#4, Bb5
Measure 119: F#4, F#4, F#4, Bb5, Bb5, F#4, F#4, Bb5, F#4, F#4, F#4, F#4, F#4, F#4, F#4, F#4, Bb5

120

sempre flautando
30/18/9/2

31:30 (-57 c)

mp

pp

122

31:30 (-57 c) 31:30 (-57 c) 31:30 (-57 c)

30/9/2 30/18/9/2 62/27/8 31/10/4 30/9/4 30/9/4

mp

pp

10

31:30
(-57 c)

125

p e sempre flautando

30/18/9/2

30/9/4

31:30 (-57 c)

pp

31:30
(-57 c)

10:9
(-182 c)

127

15/5/3

10/6/3/2

15/7/3

15/6/5

31/16/15

25:24 (71 c)

129

p *espressivo*

31:30 (-57 c)

31:30 (-57 c)

31/12/7

31/22/9

30/22/9

pp

pp

131

31:30 (-57 c)

30:29 (-59 c)

29:30 (59 c)

24:23 (-74 c)

15:16 (112 c)

16:17 (105 c)

15:17 (217 c)

17:18 (99 c)

15/10/6

29/20/9

23/14/9

15/11/6

17/11/6

3/2

○○○/●
B \flat

○○●/●
F \sharp

p

pp

24:23 (-74 c) 23:16 (-628 c) 18:19 (94 c) 57:58 (30 c) 29:30 (59 c)

133

23/16/7 1/1 19/13/6 29/20/9 10/7/3

○○○/● B \flat ○○○/● F \sharp

20:21 (84 c) 14:15 (119 c) 28:29 (61 c) 29:30 (59 c) 30:31 (57 c) 31:30 (-57 c) 30:29 (-59 c) 29:28 (-61 c) 7:6 (-267 c) portamento

135

7/5/2 15/10/4 29/20/9 5/3 31/22/9 5/4 29/20/9 7/4 5/3 10/7/3

○○○/● B \flat ○○○/● F \sharp ○○○/● B \flat ○○○/● F \sharp

mf *p* *pp* *mf*

8:9 (204 c) 30:31 (57 c) 15:16 (112 c) 8:9 (204 c) 24 : 25 (71 c) 15:16 (112 c)

f *ff* *mf* *f* *f* *f*

15/10/1

30:31 (57 c)

30:31 (57 c)

6:7 (267 c)

pp subito *pp subito* *pp subito* *pp subito*

6:7 (267 c)