

Wolfgang von Schweinitz

# Plainsound Etudes

FOR VIOLA SOLO

## Three Just Intonation Studies

based on a flexible non-tempered 11-limit 31-tone scale

op. 58 b

2015

*for Andrew McIntosh  
and all violists with an interest in  
the sound and performance practice  
of microtonal just intonation*

PLAINSOUND MUSIC EDITION

This score is licensed under a Creative Commons  
Attribution-NonCommercial-NoDerivs 3.0 Unported License

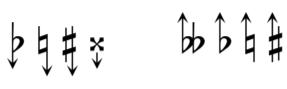
# ACCIDENTALS

for microtonal just intonation

## EXTENDED HELMHOLTZ-ELLIS JI PITCH NOTATION

The exact intonation of each pitch is written out by means of the following harmonically defined accidentals:

 Pythagorean series of perfect fifths, based on the open strings  
(... c g d a e ...)

 lowers / raises the pitch by a syntonic comma  
 $81:80 = \text{circa } 21.5 \text{ cents}$

 lowers / raises the pitch by two syntonic commas  
 $64:63 = \text{circa } 43 \text{ cents}$

 lowers / raises the pitch by a septimal comma  
 $64:63 = \text{circa } 27.3 \text{ cents}$

 lowers / raises the pitch by two septimal commas  
 $54:53 = \text{circa } 54.5 \text{ cents}$  (not used in this score)

 raises / lowers the pitch by an 11-limit undecimal quarter-tone  
 $33:32 = \text{circa } 53.3 \text{ cents}$

These 'Helmholtz-Ellis' accidentals for just intonation were designed in collaboration with Marc Sabat.

The attached arrows for pitch alterations by a syntonic comma are transcriptions of the notation used by Hermann von Helmholtz in his book "Die Lehre von den Tonempfindungen als physiologische Grundlage für die Theorie der Musik" (1863). – The annotated English translation "On the Sensations of Tone as a Physiological Basis for the Theory of Music" (published 1875/1885) was made by Alexander J. Ellis, who refined the definition of pitch within the 12-tone system of Equal Temperament by introducing a division of the octave into 1200 cents. – The accidental sign denoting an alteration by a septimal comma was devised by Giuseppe Tartini (1692-1770), the composer, violinist and researcher who investigated the difference tones created by double-stops.

### Pitch-bend information

In addition to the harmonic definition of a pitch by means of its accidentals, it is also possible to specify its absolute pitch-height as a cents-deviation from the respectively indicated chromatic pitch in the standard 12-tone System of Equal Temperament. – Such additional pitch-bend numbers are not included in this score, as every pitch can be tuned by ear. There is no need for rehearsals with the aid of a tuning device.

### Frequency ratios

The score also denotes the mathematical frequency ratios of the various just intervals performed as double stops or melodic steps. The numbers of these ratios contain a lot of information, which is extremely valuable for tuning the intervals by ear. The frequency ratio serves as the stenographic "code name" of the interval, specifying not only its size, but also the partial-unisons and difference tones relevant for its timbre, as well as the fundamental pitch or root of the interval (its periodicity pitch) and the relative degree of consonance or harmonic complexity of the tone relationship.

## DYNAMICS

The piece should be performed without any frequency vibrato and with a soft, but confident and embracing sound that includes both strongly emphasized accents and the magic of a sudden pianissimo. Every tuned double-stop sonority may be interpreted at the dynamic level that seems most adequate for expressing its specific timbre, identity and feeling within the harmonic, melodic and rhythmical context.

## TEMPO

The piece should be performed with a lot of rubato (always counting dotted half notes) within a gradually accelerated melodic forward movement that accommodates the liberty to prolong a sound whenever needed or desired.

## PERFORMANCE DURATION circa 27 minutes

Etude 1: ca. 6 ½ minutes, Etude 2: ca. 5 ½ minutes, Etude 3: ca. 13 minutes.  
Each piece may also be performed separately.

# Plainsound Etudes

**for viola solo**

## Three Just Intonation Studies

based on a flexible non-tempered 11-limit 31-tone scale

## *Etude 1*

*James Tenney & Marc Sabat*

Wolfgang von Schweinitz  
op. 58 b (2015)

### *Cantando con tempo rubato (o. ca. 48)*

16 : 15

44:45  
*11-limit sixth-tone*

*\* i.e. no frequency vibrato, please! But the occasional use of amplitude vibrato (once the intonation has been established) is recommended: periodic or aperiodic changes of bow pressure, bowing speed, or bow position (distance from the bridge and angle of the bow, controlling the amount of hair on the strings) produced by the right hand, or by shaking the instrument with the left hand, arm and shoulder, and/or with the chin.*

**\*\*) To secure the intonation, it may sometimes be helpful to sing or hum the root or fundamental of the sonority while playing, e.g. in case of this 11-limit neutral seventh:**

*the pitch tuned a perfect fifth or twelfth below the stopped note.*

5

*Small chromatic semitone (+71c)*

*125 : 128 Lesser Diesis (+41c)*

13

80 : 81  
Syntonic comma

63 : 64  
Septimal comma

48 : 49  
Septimal sixth-tone

224 : 225

13      14      15      16



**7** *a tempo (o. ca. 58)*

46      14:15 (+119c) 224:225 (+71c) Lesser Diesis 125:128 Septimal schisma 224:225 (+31c) 55:56 (+31c)

28:27 (-63c) 7/4 4/3 9/7 6/5 5/4 6/5 5/4 8/5 15/8 7/5 28/15 11/6

2- 1 0 3- ↑1 (+8c only) 0 ↑1- (+41c) 0 ↑1- (+8c) 0 ↑1- (+8c) 0 ↑1- (+8c) 0 ↑1- (+8c)

ritenuto      32:33 (+53c) 54:55 (+32c) 80:81 (+22c) 63:64 (+27c) avanti (o. ca. 60)

11/6 11/2 11/8 5/3 9/5 4/3 7/4 7/3

11/6 11/2 11/8 5/3 9/5 4/3 7/4 7/3

ritenuto      48:49 (+36c) 63:64 (+27c) 25:24 (-71c) 80:81 (+22c) a tempo (o. ca. 60)

54 7/3 7/4 7/3 2/1 3/2 4/3 5/3 8/5 4/3 8/5 03- 5/3 5/4 5/3

7/3 7/4 7/3 2/1 3/2 4/3 5/3 8/5 4/3 8/5 03- 5/3 5/4 5/3

ritenuto      54:55 (+32c) 242:243 (+7c only) 54:55 (+32c) 125:128 (+41c) Minor whole tone 9:10 (+182c) a tempo (o. ca. 60) 1215:1232 (+24c)

58 9/5 11/6 18/11 02 03- 11/3 11/9 6/5 8/5 04 03- 02- 5/4

9/5 11/6 18/11 02 03- 11/3 11/9 6/5 8/5 04 03- 02- 5/4

ritenuto      62 125:128 (+41c) 25:24 (-71c) 224:225 (+8c) 4/3 6/5 4/3 7/6 7/3 7/2 4/3 243/112 11/5 4/3

125:128 (+41c) 25:24 (-71c) 224:225 (+8c) 4/3 6/5 4/3 7/6 7/3 7/2 4/3 243/112 11/5 4/3

ritenuto      44:45 (+39c) ritenuto a tempo ritenuto 8va. 8va. 11/5 9/4 4/3 9/4 4/3 3/2 03- 104 9/4 8/3 5/2

11/5 9/4 4/3 9/4 4/3 3/2 03- 104 9/4 8/3 5/2

## *Etude 2*

*Cantando con tempo rubato (o. ca. 60)*



46      35:72 (+1249c)      24:25      35:36      48:49      225:224 (-8c)      7

50      25:24      Lesser Diesis 128:125 (-41c)      8va

8va      avanti (o. ca. 72)

54      55:54      ritenuto      a tempo

9/5      11/6      11/8 amp. vibr.      33/8      11/2      11/6      11/6

58      25:24      24:25      45:44      9

11/6      6/5      5/4      6/5      2/1      6/5      8/5      11/6      4/3

ritenuto      Minor whole tone      Septimal whole tone a tempo

62      21:20      9:10 (+182c)      8:7 (-231c)      49:48 (-36c)      48:49

4/3      9/5      8/5      8/7      6/5      4/3      6/5      4/3      2/1      7/6      8/7

ritenuto      80:77      55:54 (-32c)

66      7:8      21:20      44:45 (+39c)      8va 8va

7/6 amp. vibr. 4/3      2/1 4/3      7/5      40/21 11/6      5/4 amp. vibr.      6/5      8/5      6/5

*Etude 3*  
György Ligeti & Gérard Grisey

*Cantando con tempo rubato (o. ca. 60)*

1

Minor  
whole tone  
9:10  
(+182c)

5

Lesser Diesis  
128:125  
(-41c)

9

Lesser Diesis = 128 : 125 (-41c)

ritenuto

1 a tempo

9:10  
(+182c)

13

16:15  
(-112c)

2

9:10  
(+182c)

17

Diminished Fourth

32:25  
(-427c)

32:33

44:45

Musical score for piano, page 8, measures 21-22. The score consists of two staves. The top staff uses a treble clef and has a key signature of one sharp. The bottom staff uses a bass clef. Measure 21 starts with a dynamic of *ritenuto*. The tempo is indicated as  $20:21 (+84c)$ . The time signature changes frequently between 4/3, 5/4, 6/5, 8/7, 4/3, 6/5, 5/3, 6/5, 4/3, 8/5, and 5/3. Measure 22 begins with a dynamic of  $9:10$  and a tempo of  $267c$ . The time signature changes to 3. The tempo then shifts to  $182c$  with a dynamic of *a tempo*. The score includes various performance markings such as slurs, grace notes, and dynamic accents.

Musical score page 33, measures 6:7, 21:20, and 10:9. The score includes two staves: treble and bass. Measure 6:7 starts with a key signature of one flat, indicated by a 'b' over three vertical lines. Measure 21:20 starts with a key signature of one sharp, indicated by a 'sharp' over three vertical lines. Measure 10:9 starts with a key signature of one sharp, indicated by a 'sharp' over three vertical lines. Various performance instructions are present, such as 'amp. vibr.' with a downward arrow and '(+22c)', '↑o3 (+22c)' with an upward arrow, and 'slide page' with a slide symbol.

**5** *lo stesso tempo (o. ca. 72)*

*avanti (o. ca. 76)*

**6**

43       $\text{9/4}$        $2/1$  *amp. vibr.*       $9/4$  *amp. vibr.*       $9/8$        $6/5$

$16:15$   $(-112c)$   $\# \infty$   $25:24$   $(-71c)$

47       $5/4$   $\downarrow 3 (-71c)$        $4/3$        $7/5$   $\downarrow 2 (-84c)$        $7/6$        $8/7$   $\uparrow 4 (+36c)$        $7:6$        $4/3$        $2/1$        $9/4$   $\downarrow 2 (-204c)$        $4/3 \uparrow 2 (+204c)$

*ritenuto*

$16:15 (-112c) \infty$   $21:20 (-84c) \# \infty$   $5:6 (+316c) \infty$   $48:49 (+36c) \infty$

51       $4/3$        $5/4$        $7/4$   $\uparrow 2 (+27c)$        $4/3$        $6/5$        $4/3$        $9:10 (+182c) \# \infty$        $\uparrow 1- (+27c)$

**7** *a tempo (o. ca. 76)*

**8**       $48:49 (+36c)$       *ritenuto*

55       $4/3$        $7/4$  *amp. vibr.*       $8/7$        $8/7$        $7/6$   $\uparrow 1- (+36c)$        $7/3$        $27/14$        $3/2$

$64:63 (-27c)$   $\# \infty$

**9**

59      *a tempo*       $28:27 (-63c)$        $21:20 \# \infty$        $15:16 \# \infty$

$7/6$  *amp. vibr.*       $3/2$        $7/6$        $4/3$        $7/5$   $\downarrow 2- (-84c)$        $5/2$        $8/3$   $\uparrow 2- (+112c)$        $4/3$        $\uparrow 1- (+27c)$

**ritenuto**

63       $4/3$        $8/3$        $4/3$        $5/4$        $3/2$        $3/2$        $16:15 (-112c)$       *slide 2 pages*

*amp. vibr.*

10

**10** *a tempo* ( $\sigma$ . ca. 76)

68

16:15

$\text{3/2}$   $\text{5/4}$   $\text{8/5}$   $\text{6/5}$   $\text{6/5}$   $\text{6/5}$   $\text{12/5}$   $\text{5/3}$

$\downarrow \text{3-} (-112c)$   $\circ \text{4-}$   $\uparrow \text{1-} (+22c)$   $\text{amp. vibr.}$   $\text{0}$

ritenuto

72

20:21 (+84c) 9:10 (+182c) 21:22 11/6 44:45 15/8 6:7 (+267c) 21:20 (-84c)

$\text{5/3}$   $\text{12/5}$   $\text{7/4}$   $\text{4/3}$   $\text{6/5}$   $\uparrow \text{3} (+81c)$   $\uparrow \text{3} (+39c)$   $\text{4/3}$   $\text{8/7}$   $\text{amp. vibr.} \circ \text{3-}$

76

25:24 (-71c) 16:15 (-112c) 21:20 (-84c) 20:21 (+84c)

$\text{6/5}$   $\text{5/4}$   $\text{4/3}$   $\text{7/5}$   $\text{7/4}$   $\text{amp. vibr.} \uparrow \text{2-} \text{5/3}$

$\downarrow \text{3-} (-71c)$

**11** *avanti* ( $\sigma$ . ca. 80)

80

54:55

$\text{5/3}$   $\text{6/5}$   $\text{27/10}$   $\text{11/4}$   $\text{4/3}$   $\text{7/4}$   $\text{4/3}$   $\text{7/4}$   $\text{6/5}$

$\text{amp. vibr.}$   $\uparrow \text{2-} (+32c)$   $\uparrow \text{1-} (+32c)$   $\text{3-}$   $\uparrow \text{3-} (+119c)$

77:81 (+88c)

242:243 (+7c)

11/6

d $\sharp$  84

$\text{7/4}$   $\text{4/3}$   $\text{11/4}$   $\text{7/4}$   $\text{4/3}$   $\text{11/4}$   $\text{1-} (+7c \text{ only})$   $\text{4/3}$   $\text{1-} (-119c)$

$\text{amp. vibr.}$   $\text{2-}$   $\text{dolcissimo}$   $\text{2-} (+7c)$

12

92

$45:44$   
(-39c)

$54:55$   
(+32c)

$\text{16:15}$   
(-112c)

$7/4$

$6/5$

$5/4$

$10/9$

$5/4$

$4/3$

$\downarrow 3 - (-49c)$

*ritenuto*

97      *Lesser Diesis*

21 : 20 (-84c)    25 : 24 (-71c)    8/5    125 : 128 (+41c)

4/3    7/4    5/3    4/3    5/4    25 : 24    6/5    8/5    6/5    8/5

*amp. vibr.*    *slide page*

**13**      *a tempo (o. ca. 80)*

*avanti (o ca. 84)*

12

**14**

110       $\frac{8}{va}$        $\frac{7}{4}$        $\frac{5}{3}$        $\frac{4}{3}$        $\frac{5}{4}$       2nd time:  $\frac{20:21}{(+84c)}$        $\frac{7}{6}$        $\frac{5}{4}$        $\frac{7}{6}$        $\frac{7}{6}$   
 $\downarrow 1 (-36c)$        $\uparrow 1 (+71c)$        $\uparrow 1 (+35c)$       *amp.*       $\downarrow 1 (-35c)$        $\uparrow 1 (+35c)$        $\downarrow 1 (-35c)$        $\uparrow 1 (-35c)$

*vibr.*

$\frac{50:49}{(-35c)}$

$\frac{8}{va}$  higher than C

*ritenuto*

114       $\frac{7}{6}$        $\frac{5}{4}$        $\frac{10}{9}$        $\frac{7}{6}$        $\frac{5}{4}$        $\frac{8}{5}$        $\frac{5}{4}$       *slide page*  
 $\downarrow 1 (-84c)$        $\downarrow 1 (+84c)$       1st time:  $\downarrow 1 (-84c)$       *amp.*      *vibr.*

**15** *a tempo* ( $\sigma$ . ca. 84)

119       $\frac{5}{4}$        $\frac{8}{5}$       *amp.*       $\frac{5}{3}$        $\frac{6}{5}$        $\frac{5}{3}$        $\frac{8}{3}$        $\frac{3}{1}$   
 $\circ 3 - 1$        $\downarrow 1 (-71c)$

**16** *avanti* ( $\sigma$ . ca. 88)

123       $\frac{10:9}{(-182c)}$        $\frac{4}{3}$        $\frac{6}{5}$        $\frac{6}{5}$       *amp.*       $\frac{4}{3}$        $\frac{5}{3}$        $\frac{3}{2}$        $\frac{4}{3}$   
 $\uparrow 2 (+22c)$       *vibr.*

*flautando*

**127**

127       $\frac{6}{5}$        $\frac{6}{5}$        $\frac{12}{5}$        $\frac{4}{3}$        $\frac{6}{5}$        $\frac{4}{3}$        $\frac{5}{3}$        $\frac{3}{2}$        $\frac{4}{3}$   
 $\uparrow 2 (+22c)$        $\uparrow 3 (+22c)$       *amp.*       $\downarrow 3 (-22c)$   
 $\frac{9:8}{(-204c)}$        $\frac{10:9}{(-182c)}$

**131**

131       $\frac{6}{5}$        $\frac{6}{5}$        $\frac{5}{3}$        $\frac{4}{3}$        $\frac{3}{2}$        $\frac{4}{3}$        $\frac{6}{5}$        $\frac{4}{3}$   
 $\frac{16:15}{(-112c)}$        $\frac{10:9}{(-182c)}$        $\frac{10:9}{(-182c)}$

$\uparrow 3 (+22c)$

ritenuto

135       $\frac{9}{10}$  (+182c)       $\frac{\infty}{\infty}$        $\frac{\infty}{\infty}$        $\frac{\infty}{\infty}$        $\frac{\infty}{\infty}$        $\frac{\infty}{\infty}$        $\frac{10}{9}$  (-182c)       $\frac{8}{8}$

17      *a tempo* ( $\sigma \cdot ca. 88$ )

139       $\frac{8}{8}$        $\frac{54:55}{\infty}$        $\frac{11:8}{(-551c)}$        $\frac{32:33}{\infty}$

*più sonore*

143       $\frac{32:33}{\infty}$        $\frac{15:16}{(+112c)}$        $\frac{16:15}{\infty}$        $\frac{33:32}{\infty}$        $\frac{55:56}{\infty}$

18      *avanti* ( $\sigma \cdot ca. 92$ )

147       $\frac{224:225}{\infty}$        $\frac{224:225}{\infty}$

19      *ritenuto*      *a tempo*

151       $\frac{25:24}{\infty}$        $\frac{32:25}{(-427c)}$

155      *ritenuto*

155       $\frac{15:16}{(+112c)}$        $\frac{16:15}{\infty}$        $\frac{21:20}{\infty}$        $\frac{\infty}{\infty}$        $\frac{\infty}{\infty}$

*crescendo*

*slide page*

14

**20** *a tempo (o. ca. 92)*

160      8va      27:28 (+63c)      36:35 (-49c)      55:54      45:44

7/4      4/3      amp. vibr.      5/4      9/5      11/6  
 $\circ_4$ -      3-      vibr.      1-      04-      1- (-32c)  
 $\downarrow$        $\uparrow$        $\uparrow$        $\downarrow$        $\uparrow$        $\downarrow$   
 $\circ_3$ -      0-      0-      0-      0-      0-

*avanti (o. ca. 96)*

164      45:44

6/5      15/8      11/6      6/5      11/6      6/5      11/6  
 $\downarrow$  1- (-39c)      04-      11/6      03-      -1-      03-      11/6  
 $\uparrow$        $\uparrow$        $\downarrow$  4- (-39c)       $\uparrow$        $\uparrow$        $\uparrow$        $\uparrow$   
 $\circ_3$ -      0-      0-      0-      0-      0-      0-

cresc.

168      54:55 (+32c)      35:36      20:21 (+84c)      24:25      44:45 (+39c)      44:45 #8va  
11/6      9/5      7/4      5/3      8/5      11/4      18/11      8/5  
 $\downarrow$  2 (close to 1)       $\uparrow$  2 (+49c)      3       $\uparrow$  3- (+71c)      04-      -3      03- (+39c)  
 $\uparrow$        $\uparrow$        $\uparrow$        $\uparrow$        $\uparrow$        $\uparrow$        $\uparrow$   
 $\circ_3$ -      0-      0-      0-      0-      0-      0-

**21** *poco a poco allargando*

172      55:56      21:22 (+81c)

5/4      8/5      amp. vibr.      11/7  
 $\circ_3$ -      0-      vibr.      04-  
 $\uparrow$  3- (+31c)      0-      0-      0-  
 $\downarrow$        $\uparrow$        $\uparrow$        $\uparrow$   
dolcissimo

176      54:55 (+32c)      35:36 (+49c)      20:21 (+84c)

11/6      11/6      amp. vibr.      11/6      3/2      9/5      7/4      5/3      5/3      8/5  
-1-      3-      vibr.      03-      03-      03-      1-      1-      02-      1-      2-  
 $\uparrow$        $\uparrow$        $\uparrow$        $\uparrow$        $\uparrow$        $\uparrow$        $\uparrow$        $\uparrow$        $\uparrow$        $\uparrow$   
 $\circ_3$ -      0-      0-      0-      0-      0-      0-      0-      0-      0-  
cresc.

*adagio (o. ca. 48)*

180      forte      piano      pianissimo      più vicino al ponticello

5/3      3/2      4/3      5/3      4/3      3/1      6/5      3/1      3/2      amp. vibr. ad lib.  
 $\downarrow$  03-      2-      amp. vibr.      0-      0-      1-      0-      0-      0-      0-  
 $\uparrow$  0      0-      vibr.      0-      0-      0-      0-      0-      0-      0-  
 $\uparrow$        $\uparrow$        $\uparrow$        $\uparrow$        $\uparrow$        $\uparrow$        $\uparrow$        $\uparrow$        $\uparrow$        $\uparrow$   
 $\circ_3$ -      0-      0-      0-      0-      0-      0-      0-      0-      0-