

Marc Sabat

Air–Spit–Tune

for soprano with optional viola

PLAINSOUND MUSIC EDITION

Air-Spit-Tune (1997/2013)

for soprano with optional viola

solo voice part written for and premiered by Beth Griffith

composed during a one-year residency in Stuttgart at the Akademie Schloss Solitude

This work revises a piece originally composed for solo voice and so titled. In a solo version, the just intonation of the final section, 'Tune.', which is based on harmonic partials of a single fundamental, is to be realized as accurately as melodic perception permits. Slight deviations of the virtual fundamental over the course of the melody may be considered acceptable, and in fact the entire piece may be transposed to most comfortably lie in the singer's range.

When performed with viola:

The first section, 'Air.', is to be simultaneously vocalised by both musicians. Synchronization should be visually imperceptible to the audience, accomplished without gesture.

The final section may be performed in F, as written, accompanied by a conventional viola, or in C, with the viola restrung and tuned to the pitches G-d-a-e', one octave below the usual violin tuning (Partch adapted viola). Alternately, the melody in C might be accompanied by a violin transposing the written pitches ad lib.

The music was written in the spring of 1997 at the invitation of Matteo Fargion, who had asked Beth Griffith to perform some of his own music at the Akademie Schloss Solitude in Stuttgart. I had only recently arrived in Germany, and at the time I was absorbed with learning the sound and structure of a new language. Rather than taking formal courses, I had decided to take in the language by listening to it.

I spent an afternoon with violinist Clemens Merkel, translating the performer's instructions for an earlier piece of mine. I began analyzing the German text in an attempt to understand it, separating the phonetic components into lists of consonants and vowels, speaking the unfamiliar sounds. Out of this activity, a series of studies for solo voice began to emerge.

The text itself refers to patterns of numbers occurring in various registers, and as this meaning dissolved in the deconstructed text, it found its way in various forms into the music.

Stuttgart, May 1997 / Berlin, 20 January 2013 / Köln, 10 February 2013 / Banff, 26 January 2014

An informal introduction to the Helmholtz-Ellis Accidentals

by Marc Sabat

Berlin, April 2009

In learning to read HE accidentals, without having to rely on an electronic tuning device, it is important to be familiar with three things:

First, to keep in mind the natural tuning of intervals in a harmonic series, which deviate from the tempered system.

Second, to get to know how the accidentals refer to these overtone relationships.

Third, to observe that each written pitch may be related to many other pitches by natural intervals, and to tune it accordingly.

In most cases, this approach will allow the player to quickly and intuitively play just intonation (JI) pitches quite accurately. Any remaining adjustments can be made by ear, based on the specific sound of JI intervals.

Just intervals are readily learned because they are built up from simple, tuneable harmonic relationships. These are generally based on eliminating beating between common partials, finding common fundamentals and audible combination tones, and establishing a resonant, stable sonority which maximizes clarity: both of consonance and of dissonance.

A well-focussed JI sound is completely distinct from the irregular, fuzzy beating of tempered sounds. Just consonances, when marginally out of tune, beat slowly and sweetly and may be corrected with the most subtle adjustments of bowing or breath. Just dissonances produce a sharply pulsing regular rhythm and have very clear, distinct colors.

To become familiar with the notation and sounds of JI, the fundamental building blocks are prime number overtones 3, 5, 7, 11 and 13, each of which is associated with a specific pair of accidentals and a basic musical interval.

3 is associated with the signs flat, natural, sharp and refers to the series of untempered perfect fifths (Pythagorean intonation). Generally, A is taken as the tuning reference, and the central pitches C-G-D-A-E can be imagined as the normal tuning of the orchestral string instruments. The just C is rather lower than tempered tuning because of the pure fifths. The further this series is extended, the greater the deviation from tempered tuning: the flats are lower, the sharps higher.

5 is associated with arrows attached to the flat, natural, sharp signs and refers to the pure major third. These arrows correct the Pythagorean intervals by a Syntonic Comma, which is approximately $\frac{1}{9}$ of a whole tone or 22 cents. So, for example, the note E-flat arrow-up is a just major third below G, and the note F-sharp arrow-down is a major third above D. In most music, flats are often raised by a comma and sharps are lowered. Because of the open string tuning, it is common to sometimes raise F and C (to match A and E) and to sometimes lower A and E (to match F and C). Corrections by one Syntonic Comma have been used throughout Western music history and are relatively familiar to the ear. However, traditionally these corrections have been hidden by players, for example in Meantone Temperament where fifths are mistuned narrow by $\frac{1}{4}$ comma so that the third C-E ends up sounding pure. More recently, the currently prevailing Equal Temperament has made us accustomed to beating thirds, so at first the pure intervals may seem unfamiliar. To play the arrows accurately, one must carefully learn the sound of the consonant major and minor thirds and sixths, and learn to articulate comma differences clearly.

7 is associated with a Tartini sign resembling the numeral. It corrects the Pythagorean intervals by a Septimal Comma, which is approximately $\frac{1}{7}$ of a whole tone or 27 cents. When the Pythagorean minor third is lowered by this amount, it becomes a noticeably low third often heard in Blues music.

11 is associated with the quartertone signs (cross and backwards flat). The accidental is used to raise the perfect fourth by 53 cents, producing the exact tuning of the 11th partial in a harmonic series. The sound is most easily learned by playing one octave plus one fourth and raising it by a quartertone.

13 is associated with the thirddtone signs (cross and backwards flat, each with 2 verticals). The accidental is used to lower the Pythagorean major sixth by 65 cents, producing the exact tuning of the 13th partial in a harmonic series. The sound is most easily learned as a neutral-sounding sixth, one-third of the way between the just minor and just major sixths (closer to minor than to major).

The following table presents the accidentals together with their associated ratios and cents deviations. To calculate the cents deviation from Equal Temperament of a specific written pitch (if desired) the following shortcut may be used:

- 1.) Find the cents deviation of the Pythagorean pitch, by calculating how many fifths it is away from A, multiplying by 2, and using a plus sign if it is on the sharp side and a minus if it is on the flat side.
- 2.) For each microtonal accidental, add or subtract its approximate cents value (as given above), keeping in mind whether the accidental is raising or lowering the pitch.

The resulting value should be a cents deviation within 1 or 2 cents accuracy, which is an acceptable starting point for fine-tuning by ear.

ACCIDENTALS

EXTENDED HELMHOLTZ-ELLIS JI PITCH NOTATION

for Just Intonation

designed by Marc Sabat and Wolfgang von Schweinitz

The exact intonation of each pitch may be written out by means of the following harmonically-defined signs:

$\flat\flat$ \flat \natural \sharp \times *Pythagorean series of fifths – the open strings*
(... c g d a e ...)

$\flat\downarrow$ $\natural\downarrow$ $\sharp\downarrow$ $\times\downarrow$ $\flat\uparrow$ $\natural\uparrow$ $\sharp\uparrow$ $\times\uparrow$ *lowers / raises by a syntonic comma*
 $81 : 80 = \text{circa } 21.5 \text{ cents}$

$\flat\downarrow\downarrow$ $\natural\downarrow\downarrow$ $\sharp\downarrow\downarrow$ $\times\downarrow\downarrow$ $\flat\uparrow\uparrow$ $\natural\uparrow\uparrow$ $\sharp\uparrow\uparrow$ $\times\uparrow\uparrow$ *lowers / raises by two syntonic commas*
 $\text{circa } 43 \text{ cents}$

$\flat\llcorner$ $\natural\lrcorner$ *lowers / raises by a septimal comma*
 $64 : 63 = \text{circa } 27.3 \text{ cents}$

$\flat\lll$ $\natural\lll$ *lowers / raises by two septimal commas*
 $\text{circa } 54.5 \text{ cents}$

$\flat\lrcorner$ $\natural\lrcorner$ *raises / lowers by an 11-limit undecimal quarter-tone*
 $33 : 32 = \text{circa } 53.3 \text{ cents}$

$\flat\lrcorner$ $\natural\lrcorner$ *lowers / raises by a 13-limit tridecimal third-tone*
 $27 : 26 = \text{circa } 65.3 \text{ cents}$

$\flat\approx$ $\natural\approx$ *lowers / raises by a 17-limit schisma*
 $256 : 255 = \text{circa } 6.8 \text{ cents}$

$\flat\smile$ $\natural\smile$ *raises / lowers by a 19-limit schisma*
 $513 : 512 = \text{circa } 3.4 \text{ cents}$

$\flat\uparrow$ $\natural\downarrow$ *raises / lowers by a 23-limit comma*
 $736 : 729 = \text{circa } 16.5 \text{ cents}$

In addition to the harmonic definition of a pitch by means of its accidentals, it is also possible to indicate its absolute pitch-height as a cents-deviation from the respectively indicated chromatic pitch in the 12-tone system of Equal Temperament.

The attached arrows for alteration by a syntonic comma are transcriptions of the notation that Hermann von Helmholtz used 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” (1875/1885) is 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 sign for a septimal comma was devised by Giuseppe Tartini (1692-1770) – the composer, violinist and researcher who first studied the production of difference tones by means of double stops.

VORZEICHEN

EXTENDED HELMHOLTZ-ELLIS JI PITCH NOTATION

für die natürliche Stimmung

konzipiert von Marc Sabat und Wolfgang von Schweinitz

Die Stimmung jedes Tons ist mit folgenden harmonisch definierten Vorzeichen ausnotiert:

$\flat\flat$ \flat \natural \sharp \times

Pythagoreische Quintenreihe der leeren Streicher-Saiten
(... c g d a e ...)

\flat \natural \sharp \times $\flat\flat$ \flat \natural \sharp

Erniedrigung / Erhöhung um ein Syntonisches Terzkomma
 $81 : 80 = \text{circa } 21.5 \text{ cents}$

\flat \natural \sharp \times $\flat\flat$ \flat \natural \sharp

Erniedrigung / Erhöhung um zwei Syntonische Terzkommas
 $\text{circa } 43 \text{ cents}$

\lrcorner \llcorner

Erniedrigung / Erhöhung um ein Septimenkomma
 $64 : 63 = \text{circa } 27.3 \text{ cents}$

\llcorner \lrcorner

Erniedrigung / Erhöhung um zwei Septimenkommas
 $\text{circa } 54.5 \text{ cents}$

\dagger \dagger

Erhöhung / Erniedrigung um den undezimalen Viertelton der 11er-Relation
 $33 : 32 = \text{circa } 53.3 \text{ cents}$

\mathbb{H} \mathbb{H}

Erniedrigung / Erhöhung um den tridezimalen Drittelton der 13er-Relation
 $27 : 26 = \text{circa } 65.3 \text{ cents}$

\approx \approx

Erniedrigung / Erhöhung um ein Siebzehner-Schisma
 $256 : 255 = \text{circa } 6.8 \text{ cents}$

\nearrow \searrow

Erhöhung / Erniedrigung um ein Neunzehner-Schisma
 $513 : 512 = \text{circa } 3.4 \text{ cents}$

\uparrow \downarrow

Erhöhung / Erniedrigung um ein Dreiundzwanziger-Komma
 $736 : 729 = \text{circa } 16.5 \text{ cents}$

Zusätzlich zu der harmonischen Definition der Tonhöhe durch das Vorzeichen für jeden Ton ist auch der Cents-Wert der Abweichung der gewünschten Stimmung von der Tonhöhe des jeweils bezeichneten chromatischen Tons der gleichstufig temperierten Zwölfton-Skala angegeben.

Die attachierten Pfeile für die Alteration um ein Syntonisches Terzkomma sind eine bloße Transkription der Notation, die Hermann von Helmholtz in seinem Buch "Die Lehre von den Tonempfindungen als physiologische Grundlage für die Theorie der Musik" (1863) verwendet hat. Die kommentierte englische Übersetzung "On the Sensations of Tone as a Physiological Basis for the Theory of Music" (1875/1885) stammt von Alexander J. Ellis, der auch eine enorme Verfeinerung der Tonhöhendefinition innerhalb des Zwölftonsystems der gleichstufig temperierten Stimmung durch die Unterteilung der Oktave in 1200 Cents eingeführt hat. – Das Vorzeichen für die Alteration um ein Septimenkomma wurde von Giuseppe Tartini (1692-1770) erfunden, der als Komponist, Geiger und Wissenschaftler die durch Doppelgriffe erzeugten Differenztöne untersucht hat.

Soprano, Violist

AIR.

Marc Sabat

pp *sempre, sostenuto, libero*

2 Voices | *sh* | *sh - s - f* | *sh - ch - f - s - f - sh - f* |

| *h* | *h* | *s* | *s* |

| *s* | *s - f* | *h* |

attacca

Notes on phrasing and pronunciation :

AIR.

both musicians perform this movement in unison (still, without gestures, equal dynamics, each bar one long breath)
slur = legato (connected changes of timbre, possibly gradual, in one very slow breath, like inflating a balloon)
barline = rearticulation / comma = pause of free duration

sh as in English 'shoot'

s as in English 'spit'

f as in English 'floor'

ch as in German 'ich'

h (ad lib.) as in English 'hot' or 'what'

SPIT.

very rhythmic and precise, as resonant as possible, energetic but strict

d as in English 'dry's

b as in English 'blow'

g as in English 'gut'

p as in English 'up'

t as in English 'tick'

ts as in English 'tsar'

k as in English 'clock'

TUNE.

itches are all harmonics of a low F (alternate: C) fundamental, to be sung in just intonation, in a folk manner, without vibrato and may be easily rehearsed with a piano by tuning to a sustained chord F-C-G and matching the overtones as purely as possible
Partch adapted viola version is an optional alternative —a normal viola may be restrung (Cello C, G; Viola G, D) and tuned to G-d-a-e one octave below the standard violin tuning

n as in English 'tune'

eh as in German 'mehr'

ü as in German 'üben'

ö as in German 'mögen'

y as in English 'buy'

ee as in German 'ich'

o as in German 'ob'

ah as in German 'jahr'

oo as in English 'woo'

v as in English 'leave'

z as in English 'jazz'

ih as in English 'in'

ng as in English 'ring'

m as in German 'mehr'

ll as in German 'hell'

oh as in German 'wohl'

l as in English 'hell'

ca. 88-92

ff possibile, energico ma molto precisoVoice 1
(Soprano)

d b d b d d g p b g d b

percussion-style staff notation of consonant sounds: to be voiced without definite pitches

Voice 2
(Violist)

5

h h b d b p g b g b d d d p d h

9

d d b b g p d d d d h g h b d

13

b h b d h d h d h b b g d d

18

d f - d b g d d d d h d b d

pp sempre (come prima)

V

f

23

g b d d g d b sh - d d d d d p d


V

sh

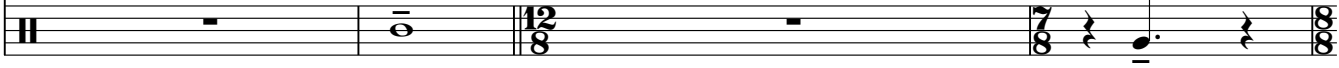
28

S 

d p d p d d t g g g t d g g t g d t d g

33 


t ts g t t p sh-t k p sh-t t p t ts f - p ch

V 


sh f

ca. 132-138

37


S 

p k t p t k p sh-t t t p sh-t f - p ch - t k p f - p t ts


V 

ch - sh - f - sh - f f ch - sh -

41


S 

p t t t p t f - t t p sh - p f - p t


V 

- f - sh - f - sh ch - sh - f - sh - f

44

S 

t t t k ts t t ch ch - p p ts ch ch

V 

ch ch

4

48

S

 V

50

S

 V

53

S

ca. 88-92

pp subito

58

S

 V

62

S

 V

TUNE. (F Fundamental)

ca. 72-84

mezza voce, semplice, poco rubato : folk

beating against Viola

Voice 1 (Soprano)

Viola

< colla voce* >

* always match the voice dynamic, optimising the tuned sonority of each just interval

4

come prima

8

11

15

sonore ma non **f**

match resonance from previous 'E'

18

S

eh - - n eh - ee - eh - m - ih

V

22

S

eh - m - eh - v ah - y - eh -

V

ignore Viola 'A' pizz., tune instead to preceding harmonic

poco sul pont.

25

S

- ll - ö - - o - z eh - ö

V

ord.

28

S

ih ah - y

V

31

S

ee - oo n - - ah - -

V

33

S

- eh - z l - ee - o

V

try to produce the common partial comma-lowered E (match voice)

sonore

36

S *m - oh - eh - ö - eh - ee - eh*

V *IV IV I II*

senza cresc.

40

S *ah - eh - l - ah - y - ah - y*

V *III I+*

dissonant to Viola

♩ = ♩ = 52

43

S *l ah m ah m ah l ah ah*

V *IV IV*

sotto voce (match low register voice)

48

S *ah l - v ah ah v ah m - l - n ah n ah ah*

V *(sempre sotto voce)*

52

S *n - m ah m ah ah ah ah l ah ah ah ah ah*

V *III III*

56

S *l ah ah m m ah ah m n*

V *III*

TUNE. (C Fundamental, alternate version with restrung viola)

ca. 72-84
mezza voce, semplice, poco rubato : folk beating against Viola

Voice 1 (Soprano)

Partch Adapted Viola

< colla voce >*

* always match the voice dynamic, optimising the tuned sonority of each just interval

4

S

V

- ee - n o - ah ee - o - n - ah - oo - ee - eh - n

8

S

V

come prima

oo v - - eh - oo - eh - oo

11

S

V

n - ah - z ih - eh - ih - ng

15

S

V

sonore ma non *f* match resonance from previous 'E'

eh - - m - - ö - o

18

S *eh - - n eh - ee - eh - m - ih*

ignore Viola 'E' pizz., tune instead to preceding harmonic

22

S *eh - - m - eh - v ah - y - eh -*

V *ord. III IV IV I III+*

poco sul pont.

25

S *- ll - ö - - o - z eh - ö*

V *ord. III IV III*

28

S *ih ah - y*

V *III*

31

S *ee - oo n - - ah - -*

V *IV IV III IV*

33

S *- eh - z l - ee - o*

V *sonore*

try to produce the common partial comma-lowered B (match voice)

36

S *m - oh - eh - ö - eh - ee - eh*

V *IV IV II*

senza cresc.

40

S *ah - eh - l - ah - y - ah - y*

V *III I*

dissonant to Viola

43

S *ah m ah m ah l ah ah*

V *IV IV*

♩ = ♩ = 52

sotto voce (match low register voice)

48

S *ah l - v ah ah v ah m - l - n ah n ah ah*

V *(sempre sotto voce)*

52

S *n - m ah m ah ah ah ah l ah ah ah ah ah*

V *III III*

56

S *l ah ah m m ah ah m n*

V *III*