

Score

Marc Sabat

String Quartet 2

(Cucumber Variation)

for 2 violins, viola, cello and electronic tones

PLAINSOUND MUSIC EDITION

String Quartet 2 (2010/11)

for 2 violins, viola, cello and electronic tones

*co-commissioned by The Formalist Quartet (Los Angeles) and The Penderecki Quartet (Kitchener)
with the assistance of the Canada Council*

‘String Quartet 2 (Cucumber Variation)’ acquired its rather unusual title because of how the piece initially came about. In a number of recent projects I have collaborated with the visual artist Lorenzo Pompa, and he has a series of sculptures in which a straight cucumber is sliced off at the bottom and then placed vertically, like a cactus, in a bed of pickling salt inside a glass vitrine. Over the course of several weeks, a gradual transformation takes place, as the cucumber slowly becomes dessicated, in the process releasing a small drip of fluid and a sweet delicate perfume. Lorenzo invited me to compose a piece of music as a counterpoint to his cucumber vitrine sculpture, a kind of ‘moaning serenade’.

Thinking about the action taking place between the two elements, salt and cucumber, I saw a possibility of creating a kind of music sculpture, a slow process of harmonic transformation mirroring that of the cucumber. The resulting piece, ‘Cucumber Serenades’ (2009) for violin, violin choir, and electronic tones, continues a series of Just Intonation works based on what I call the ‘Koan cantus firmus’, in hommage to James Tenney: a rising glissando rastered into a sequence of precisely tuned pitches.

In this case, the initial material arose by calculating the set of possible tuneable 23-limit JI intervals from the first seven natural harmonics of the open strings of the violins, viola and cello. The texture juxtaposes a changing element (the gradually rising microtonal line shared among the four musicians) and a relatively static element (the natural harmonics), creating a gradually shifting perception from a fixed set of harmonic intervals as the solo line shifts register. The material is presented as relatively steady and quick sequence of tones, grouped in shifting patterns of (up to) 3 pulses, delicately reminiscent of a dance, sometimes graceful, but with occasional missteps. The initial indication to the players: *Sweetly flowing along, well tuned but somewhat roughly articulated, folk.*

Berlin, 18 July 2010
Rome, 11 September 2011

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 1/9 of a wholenote 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 1/7 of a wholenote 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 thridtone 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:

 Pythagorean series of fifths – the open strings
(... c g d a e ...)

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

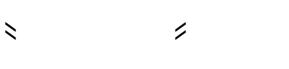
 lowers / raises by two syntonic commas
circa 43 cents

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

 lowers / raises by two septimal commas
circa 54.5 cents

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

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

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

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

 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

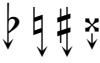
EXTENDED HELMHOLTZ-ELLIS JI PITCH NOTATION

für die natürliche Stimmung

konzipiert von Marc Sabat und Wolfgang von Schweinitz

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

bb b ♭ # ✕ Pythagoreische Quintenreihe der leeren Streicher-Saiten
(... c g d a e ...)

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

  Erniedrigung / Erhöhung um zwei Syntonische Terzkommas
circa 43 cents

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

  Erniedrigung / Erhöhung um zwei Septimenkommas
circa 54.5 cents

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

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

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

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

  Erhöhung / Erniedrigung um ein Dreißigstanner-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.

Score

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*co-commissioned by The Formalist Quartet (Los Angeles) and The Penderecki Quartet (Kitchener)
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Sweetly flowing along, well tuned but somewhat roughly articulated, folk

♩ ca. 96 : poco rubato

Marc Sabat

Harmonics

Violin 1

Violin 2

Viola

Cello

-6 mezza voce -6 -6 +16 +22 +17 +24 +2 +59 -43

15

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

-32 -32 -21 -17 7 +11 +4 +10 +11 +4 +1 +6 +8 +14

String Quartet 2 (Cucumber Variation)

32

Harm.

Vln. 1

Vln. 2

Vla.

Vc. +14 +22 +5 +27 -55 +17 +32 +22
 -23 -2 -2

50

Harm.

Vln. 1

Vln. 2

Vla.

Vc. +25 +25 +42 +19 +11
 -2 -39 -39 -28

66

Harm.

Vln. 1

Vln. 2

Vla.

Vc. +4 +11 +1 +9 +10 +10 +10 +17
 -28 -25 -13 -12 -3 +13 +10 +10 +10 +8 +31

String Quartet 2 (Cucumber Variation)

3

84

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

+54
+6
+20
+18

-51 -51 -40 -20 -20 -20 -1

102

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

+2
+10
+22
+8
+29
+29
+46
+8

-1 -88

120

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

+11
+11
+4
+13
+22
+14

-46 -35 -24 -21 -8 -8 -8 -8

String Quartet 2 (Cucumber Variation)

139

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

+14 +17 +45 +7 +5 +58 +58 +58 +8 +11

-69 -69 -47 -34

156

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

+8 +7 +2 +11 +2 +9 +12 +12 +4 +10

-23 -16 -9 -9 -9 -9 -9 -9 -84

175

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

+25 +25 +33 +8 +10 +15 +17 +22

-57 -42 -25 -4 -4

194

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

-4 -4 -4 +22 +6 +12 +5 +40 +19
-65 -41

212

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

+61 +2 +8 +11 +4 +10 +11
-41 -30 -30 -30 -19 -15 -5 -5

231

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

+6 +1 +8 +8 +8 +8 +16 +8 +16 +9 +24 +5 +17

String Quartet 2 (Cucumber Variation)

248

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

-53 -53 -53 +11 +20 -42 -22 -22 -22

265

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

+3 0 0 +27 +27 +27

-3

283

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

+27 +44 +17 +8 +11 +11 -48 -37 -37 -37 -26 -26 -23

302

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

+11 +1 -11 -10 -10 -2 -1 +12 +12 +12

321

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

+12 +19 +8 +10 -71 -63 -49 -49 +56 +56 +56 +6

339

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

-38 -25 -18 -18 -18 -11 +7 +11 +1 +1 +3

String Quartet 2 (Cucumber Variation)

358

Harm.

Vln. 1

Vln. 2

Vla.

Vc. $+4$ $+10$ -86 $+4$ $+10$ $+23$ -86 $+10$ $+23$ $+26$ $+31$ $+5$ $+31$

375

B

Harm.

Vln. 1

Vln. 2

Vla.

Vc. $+31$ $+31$ $+48$ $+17$ $+8$ -44 $+11$ $+14$ $+13$ -33 -19 -6 -6 -6 -6 *da niente poco a poco cresc.* *poco a poco dim. a niente*

393

Harm.

Vln. 1

Vln. 2

Vla. $+22$ $+16$ -6 $+17$ $+16$ -67 $+14$ $+47$ $+59$ $+59$

Vc. $+22$ $+16$ -6 $+17$ $+16$ -67 $+14$ $+47$ $+59$ $+59$

String Quartet 2 (Cucumber Variation)

9

410

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

427

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

Measure 427: Harm. plays eighth notes. Vln. 1 and Vln. 2 play eighth-note patterns with slurs and grace notes. Vla. and Vc. play eighth-note patterns with slurs and grace notes. Performance instructions for Vla. include +14, +14, +4, +10, +27, +27, +35, +10, +15, and +17. Performance instructions for Vc. include +14, +14, +4, +10, +27, +27, +35, +10, +15, and +17. Measures 428-429: Similar patterns continue. Measure 430: Vla. and Vc. play eighth-note patterns with slurs and grace notes. Performance instructions for Vla. include -82, +8, +10, and -55. Performance instructions for Vc. include -82, +8, +10, and -55. Measure 431: Similar patterns continue. Measure 432: Vla. and Vc. play eighth-note patterns with slurs and grace notes. Performance instructions for Vla. include -40. Performance instructions for Vc. include -40.

445

Harm.

Vln. 1

Vln. 2

Vla. +22 -2 -2 -2 -2 +17 -2 -2 -85 -77 +25 *mezza voce*

Vc. +22 -2 -2 -2 -2 -

C

String Quartet 2 (Cucumber Variation)

462

Harm. Vln. 1 Vln. 2 Vla. Vc.

479

Harm. Vln. 1 Vln. 2 Vla. Vc.

497

Harm. Vln. 1 Vln. 2 Vla. Vc.

This image contains three staves of musical notation for a string quartet. The instruments are labeled on the left: Harm. (Harp), Vln. 1 (First Violin), Vln. 2 (Second Violin), Vla. (Cello), and Vc. (Double Bass). The music is divided into three sections by measure numbers: 462, 479, and 497. Measure 462 starts with the Harp playing eighth notes. Measures 479 and 497 begin with the Double Bass playing eighth notes. Various dynamics like forte (f), piano (p), and accents are indicated throughout the score. Measure 479 includes performance instructions such as +12, +42, +51, +10, -63, and -39. Measure 497 includes +79, +4, +4, +5, -28, -17, -13, and -13. Measure 515 concludes with a dynamic instruction of +5.

514

Harm. Vln. 1 Vln. 2 Vla. Vc.

Harm. Vln. 1 Vln. 2 Vla. Vc.

Harm. Vln. 1 Vln. 2 Vla. Vc.

531

Harm. Vln. 1 Vln. 2 Vla. Vc.

Harm. Vln. 1 Vln. 2 Vla. Vc.

Harm. Vln. 1 Vln. 2 Vla. Vc.

549

Harm. Vln. 1 Vln. 2 Vla. Vc.

Harm. Vln. 1 Vln. 2 Vla. Vc.

Harm. Vln. 1 Vln. 2 Vla. Vc.

Detailed description: The musical score consists of three systems of four staves each, representing a string quartet. The instruments are labeled on the left: Harm. (Horn), Vln. 1 (Violin 1), Vln. 2 (Violin 2), Vla. (Viola), and Vc. (Cello). The score is divided into three systems by vertical bar lines. Measures 514, 531, and 549 are shown. In measure 514, the strings play eighth-note patterns. In measure 531, the strings play sixteenth-note patterns. In measure 549, the strings play eighth-note patterns again. Various musical elements are present: dynamic markings (e.g., f, ff, p), performance instructions (e.g., 'dashed line', 'solid line'), and note heads with stems pointing in different directions. Measure 514 includes numerical markings below the Vla. staff: -8, -3, -3, -100. Measure 531 includes numerical markings above the Vla. staff: +5, +3, +10, +10, +10, +10. Measure 549 includes numerical markings below the Vla. staff: +10, +10, +10, +17, +17, +17, +9, +26. Measure 531 includes numerical markings above the Vc. staff: +10, +10, +10, +17, +17, +17, +9, +26.

String Quartet 2 (Cucumber Variation)

564

Harm. Vln. 1 Vln. 2 Vla. Vc.

581

Harm. Vln. 1 Vln. 2 Vla. Vc.

599

Harm. Vln. 1 Vln. 2 Vla. Vc.

Detailed description: The musical score consists of five staves, each representing a different instrument: Harm. (Harp), Vln. 1 (First Violin), Vln. 2 (Second Violin), Vla. (Cello), and Vc. (Double Bass). The score is divided into three systems by measure numbers 564, 581, and 599. Measure 564 starts with a dynamic of 564. The Vln. 1 and Vln. 2 staves have dashed horizontal lines under them. The Vla. staff has a bass clef and a common time signature. Measure 581 starts with a dynamic of 581. The Vln. 1 and Vln. 2 staves have dashed horizontal lines under them. The Vla. staff has a bass clef and a common time signature. Measure 599 starts with a dynamic of 599. The Vln. 1 and Vln. 2 staves have dashed horizontal lines under them. The Vla. staff has a bass clef and a common time signature. Various performance markings are present, such as slurs, grace notes, and dynamic changes. Some measures contain numerical values (e.g., -51, +54, -20, +14) which likely represent specific performance techniques or tuning instructions.

615

Harm. Vln. 1 Vln. 2 Vla. Vc.

632

Harm. Vln. 1 Vln. 2 Vla. Vc.

String Quartet 2 (Cucumber Variation)

669

Harm. Vln. 1 Vln. 2 Vla. Vc.

687

Harm. Vln. 1 Vln. 2 Vla. Vc.

705

Harm. Vln. 1 Vln. 2 Vla. Vc.

Detailed description: The musical score consists of five staves, each representing a different instrument: Harm. (Harp), Vln. 1 (First Violin), Vln. 2 (Second Violin), Vla. (Cello), and Vc. (Double Bass). The score is divided into three systems of measures. System 1 (measures 669-687) features a rhythmic pattern where most instruments play eighth-note pairs, while the bassoon provides harmonic support. Measure 687 begins a new section with sustained notes and eighth-note patterns. System 2 (measures 687-705) introduces sustained notes and eighth-note patterns. System 3 (measures 705-713) concludes with sustained notes and eighth-note patterns. Various dynamics like forte (f), piano (p), and accents are used throughout the score.

723

Harm. Vln. 1 Vln. 2 Vla. Vc.

740

Harm. Vln. 1 Vln. 2 Vla. Vc.

757

Harm. Vln. 1 Vln. 2 Vla. Vc.

This block contains three staves of musical notation for a string quartet. The instruments are Harm. (Harp), Vln. 1 (Violin 1), Vln. 2 (Violin 2), Vla. (Viola), and Vc. (Cello). Measure 723 starts with Harm. playing eighth notes. Vln. 1 and Vln. 2 play eighth-note pairs with a dotted line. Vla. and Vc. play eighth-note pairs. Measures 740 and 757 show similar patterns with some changes in dynamics and note heads. Measure 757 includes performance instructions like +58, +58, +58, +5, +1, +4, +9, -37, -36, -32, -23, -23, -16, -16, -16, -16, -16, and +7, +6, +5, +2, +2, +12, +12, +12, -16, -9, -3, +14.

String Quartet 2 (Cucumber Variation)

774

Harm. Vln. 1 Vln. 2 Vla. Vc.

791

Harm. Vln. 1 Vln. 2 Vla. Vc.

807

Harm. Vln. 1 Vln. 2 Vla. Vc.

Detailed description: The musical score consists of five staves, each representing a different instrument: Harm. (Harp), Vln. 1 (Violin 1), Vln. 2 (Violin 2), Vla. (Viola), and Vc. (Cello). The score is divided into three sections by measure numbers: 774-791, 791-807, and 807. Measure 774 starts with Harm. playing a sustained note. Vln. 1, Vln. 2, and Vla. play eighth-note patterns with slurs. Vc. plays eighth notes with slurs. Measure 791 begins with a dynamic change. Vln. 1 and Vln. 2 play eighth-note patterns with slurs. Vla. and Vc. play eighth-note patterns with slurs. Measure 807 shows a continuation of the patterns from the previous section.

823

Harm. Vln. 1 Vln. 2 Vla. Vc.

840

Harm. Vln. 1 Vln. 2 Vla. Vc.

857

Harm. Vln. 1 Vln. 2 Vla. Vc.

String Quartet 2 (Cucumber Variation)

874

Harm. Vln. 1 Vln. 2 Vla. Vc.

892

Harm. Vln. 1 Vln. 2 Vla. Vc.

909

Harm. Vln. 1 Vln. 2 Vla. Vc.

926

Harm. Vln. 1 Vln. 2 Vla. Vc.

943

Harm. Vln. 1 Vln. 2 Vla. Vc.

961

Harm. Vln. 1 Vln. 2 Vla. Vc.

Detailed description: The musical score consists of five staves, each representing a different instrument: Harm. (Double Bass), Vln. 1 (Violin 1), Vln. 2 (Violin 2), Vla. (Viola), and Vc. (Cello). The score is divided into three systems of four measures each. Measure 926 starts with Harm. playing eighth notes. Vln. 1 and Vln. 2 play eighth-note pairs. Vla. and Vc. play eighth-note pairs. Measure 943 starts with Harm. playing eighth notes. Vln. 1 and Vln. 2 play eighth-note pairs. Vla. and Vc. play eighth-note pairs. Measure 961 starts with Harm. playing eighth notes. Vln. 1 and Vln. 2 play eighth-note pairs. Vla. and Vc. play eighth-note pairs. Measures 943 and 961 include dynamic markings such as +12, +5, +10, +51, -65, -53, -49, -34, -31, -22, 0, and +13. Measures 926 and 943 also include performance instructions like slurs and grace notes. Measures 961 includes a fermata over the Vln. 1 and Vln. 2 parts.

String Quartet 2 (Cucumber Variation)

980

Harm. Vln. 1 Vln. 2 Vla. Vc.

996

Harm. Vln. 1 Vln. 2 Vla. Vc.

1032

Harm.

Vln. 1

Vln. 2

Vla.

Vcl.

1051

Harm.

Vln. 1

Vln. 2

Vla.

Vcl.

1067

Harm.

Vln. 1

Vln. 2

Vla.

Vcl.

String Quartet 2 (Cucumber Variation)

1084

Harm. Vln. 1 Vln. 2 Vla. Vc.

1102

Harm. Vln. 1 Vln. 2 Vla. Vc.

1119

Harm. Vln. 1 Vln. 2 Vla. Vc.

1136

Harm. Vln. 1 Vln. 2 Vla. Vc.

1154

Harm. Vln. 1 Vln. 2 Vla. Vc.

1171

Harm. Vln. 1 Vln. 2 Vla. Vc.

String Quartet 2 (Cucumber Variation)

1187

Harm. Vln. 1 Vln. 2 Vla. Vc.

1204

Harm. Vln. 1 Vln. 2 Vla. Vc.

1221

Harm. Vln. 1 Vln. 2 Vla. Vc.

1238

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

Detailed description: This section shows five staves for a string quartet. Measure 1238 starts with Harm. playing eighth notes. Vln. 1 and Vln. 2 play eighth-note patterns with grace notes. Vla. and Vc. play sixteenth-note patterns. Measures 1239-1240 show similar patterns. Measures 1241-1255 show more complex sixteenth-note patterns with various dynamics and grace notes.

1255

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

Detailed description: This section shows five staves for a string quartet. Measures 1255-1258 show eighth-note patterns. Measures 1259-1262 show sixteenth-note patterns. Measures 1263-1272 show sixteenth-note patterns with grace notes and dynamic markings like +24, +30, +35, and +10.

1272

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

Detailed description: This section shows five staves for a string quartet. Measures 1272-1275 show eighth-note patterns. Measures 1276-1279 show sixteenth-note patterns. Measures 1280-1299 show sixteenth-note patterns with grace notes and dynamic markings like +59, +21, +18, and -2. The Vla. and Vc. parts end with a dynamic instruction: "poco a poco dim. a niente".

String Quartet 2 (Cucumber Variation)

1288

Harm. Vln. 1 Vln. 2 Vla. Vc.

1306 E

Vln. 1 Vln. 2 Vla. Vc.

mezza voce

1324

Harm. Vln. 1 Vln. 2 Vla. Vc.

1341

Harm. Vln. 1 Vln. 2 Vla. Vc.

Measure 1341: Harm. (Bass clef) plays eighth notes. Vln. 1 (Treble clef) has a sixteenth-note grace followed by eighth notes. Vln. 2 (Treble clef) has eighth notes with dynamics: -39, +2, +63, +63, +63, +5, +10, +79, +4. Vla. (Bass clef) has eighth notes. Vc. (Bass clef) has eighth notes with dynamics: -39, +31, +10, +4.

Measure 1350: Harm. (Bass clef) plays eighth notes. Vln. 1 (Treble clef) rests. Vln. 2 (Treble clef) has eighth notes with dynamics: -17, -17, -8, +9, +8, +10, +10, +10. Vla. (Bass clef) rests. Vc. (Bass clef) has eighth notes with dynamics: -100, +10, +10, +10.

1359

Harm. Vln. 1 Vln. 2 Vla. Vc.

Measure 1359: Harm. (Bass clef) plays eighth notes. Vln. 1 (Treble clef) rests. Vln. 2 (Treble clef) rests. Vla. (Bass clef) rests. Vc. (Bass clef) rests.

Measure 1360: Harm. (Bass clef) rests. Vln. 1 (Treble clef) rests. Vln. 2 (Treble clef) has eighth notes with dynamics: -17, -17, -8, +9, +8, +10, +10, +10. Vla. (Bass clef) rests. Vc. (Bass clef) has eighth notes with dynamics: -100, +10, +10, +10.

Measure 1376: Harm. (Bass clef) plays eighth notes. Vln. 1 (Treble clef) has eighth notes with dynamics: -10, +17, +17, +26, +26, +26. Vln. 2 (Treble clef) has eighth notes with dynamics: +10, +8, +17, +17, +26, +26, +26. Vla. (Bass clef) has eighth notes with dynamics: +10, +17, +17, +26, +26, +26. Vc. (Bass clef) has eighth notes with dynamics: +10, +17, +17, +26, +26, +26.

1376

Harm. Vln. 1 Vln. 2 Vla. Vc.

Measure 1376: Harm. (Bass clef) plays eighth notes. Vln. 1 (Treble clef) has eighth notes with dynamics: -10, +17, +17, +26, +26, +26. Vln. 2 (Treble clef) has eighth notes with dynamics: +10, +8, +17, +17, +26, +26, +26. Vla. (Bass clef) has eighth notes with dynamics: +10, +17, +17, +26, +26, +26. Vc. (Bass clef) has eighth notes with dynamics: +10, +17, +17, +26, +26, +26.

Measure 1384: Harm. (Bass clef) rests. Vln. 1 (Treble clef) rests. Vln. 2 (Treble clef) rests. Vla. (Bass clef) rests. Vc. (Bass clef) rests.

String Quartet 2 (Cucumber Variation)

1393

Harm. Vln. 1 Vln. 2 Vla. Vc.

1410

Harm. Vln. 1 Vln. 2 Vla. Vc.

1426

Harm. Vln. 1 Vln. 2 Vla. Vc.

String Quartet 2 (Cucumber Variation)

29

1443

Harm. Vln. 1 Vln. 2 Vla. Vc.

1461

Harm. Vln. 1 Vln. 2 Vla. Vc.

1479

Harm. Vln. 1 Vln. 2 Vla. Vc.

String Quartet 2 (Cucumber Variation)

1497

Harm. Vln. 1 Vln. 2 Vla. Vc.

1514

Harm. Vln. 1 Vln. 2 Vla. Vc.

1530

Harm. Vln. 1 Vln. 2 Vla. Vc.

1546

Harm. Vln. 1 Vln. 2 Vla. Vc.

1562

Harm. Vln. 1 Vln. 2 Vla. Vc.

1579

Harm. Vln. 1 Vln. 2 Vla. Vc.

String Quartet 2 (Cucumber Variation)

1595

Harm. Vln. 1 Vln. 2 Vla. Vc.

1611

Harm. Vln. 1 Vln. 2 Vla. Vc.

1628

Harm. Vln. 1 Vln. 2 Vla. Vc.

1644

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

1660

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

1676

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

String Quartet 2 (Cucumber Variation)

1693

Harm. Vln. 1 Vln. 2 Vla. Vc.

1711

Harm. Vln. 1 Vln. 2 Vla. Vc.

1728

Harm. Vln. 1 Vln. 2 Vla. Vc.

Detailed description: The image shows a musical score for a string quartet. It consists of five staves: Bassoon (Harm.), Violin 1 (Vln. 1), Violin 2 (Vln. 2), Cello (Vc.), and Double Bass (Vla.). The score is divided into three systems by measure numbers: 1693, 1711, and 1728. Measure 1693 starts with a bassoon solo. Measures 1711 and 1728 feature rhythmic patterns with various note heads and stems. Performance markings such as +1, +8, +16, -10, -65, -49, +61, -22, 0, and 22 are placed above or below the notes. Measure 1728 concludes with a forte dynamic.

String Quartet 2 (Cucumber Variation)

55

1745

Harm. Vln. 1 Vln. 2 Vla. Vc.

Detailed description: This section shows five staves for a string quartet. The first staff (Harm.) has a treble clef and a key signature of one sharp. The second staff (Vln. 1) has a treble clef and a key signature of one sharp. The third staff (Vln. 2) has a treble clef and a key signature of one sharp. The fourth staff (Vla.) has a bass clef and a key signature of one sharp. The fifth staff (Vc.) has a bass clef and a key signature of one sharp. Measure 1745 starts with eighth-note patterns in the upper voices and sixteenth-note patterns in the lower voices. Measures 1746-1747 show sustained notes with grace notes. Measures 1748-1750 continue the eighth-note patterns. Measures 1751-1752 show sustained notes with grace notes. Measures 1753-1755 continue the eighth-note patterns. Measures 1756-1758 show sustained notes with grace notes. Measures 1759-1760 continue the eighth-note patterns. Measures 1761-1762 show sustained notes with grace notes.

1763

Harm. Vln. 1 Vln. 2 Vla. Vc.

Detailed description: This section shows five staves for a string quartet. The first staff (Harm.) has a treble clef and a key signature of one sharp. The second staff (Vln. 1) has a treble clef and a key signature of one sharp. The third staff (Vln. 2) has a treble clef and a key signature of one sharp. The fourth staff (Vla.) has a bass clef and a key signature of one sharp. The fifth staff (Vc.) has a bass clef and a key signature of one sharp. Measure 1763 starts with eighth-note patterns in the upper voices and sixteenth-note patterns in the lower voices. Measures 1764-1765 show sustained notes with grace notes. Measures 1766-1767 continue the eighth-note patterns. Measures 1768-1769 show sustained notes with grace notes. Measures 1770-1771 continue the eighth-note patterns. Measures 1772-1773 show sustained notes with grace notes. Measures 1774-1775 continue the eighth-note patterns. Measures 1776-1777 show sustained notes with grace notes. Measures 1778-1779 continue the eighth-note patterns. Measures 1780 ends with sustained notes.

1781

Harm. Vln. 1 Vln. 2 Vla. Vc.

Detailed description: This section shows five staves for a string quartet. The first staff (Harm.) has a treble clef and a key signature of one sharp. The second staff (Vln. 1) has a treble clef and a key signature of one sharp. The third staff (Vln. 2) has a treble clef and a key signature of one sharp. The fourth staff (Vla.) has a bass clef and a key signature of one sharp. The fifth staff (Vc.) has a bass clef and a key signature of one sharp. Measure 1781 starts with eighth-note patterns in the upper voices and sixteenth-note patterns in the lower voices. Measures 1782-1783 show sustained notes with grace notes. Measures 1784-1785 continue the eighth-note patterns. Measures 1786-1787 show sustained notes with grace notes. Measures 1788-1789 continue the eighth-note patterns. Measures 1790-1791 show sustained notes with grace notes. Measures 1792-1793 continue the eighth-note patterns. Measures 1794-1795 show sustained notes with grace notes. Measures 1796-1797 continue the eighth-note patterns. Measures 1798 ends with sustained notes.

String Quartet 2 (Cucumber Variation)

1798

Harm. Vln. 1 Vln. 2 Vla. Vc.

+81 +13 -6 +4 -6 -2 +14 +12 +12 +12

1815

Harm. Vln. 1 Vln. 2 Vla. Vc.

+12 +12 +12 +19 +19 +13 +32 +6 -61 -61

1833

Harm. Vln. 1 Vln. 2 Vla. Vc.

+43 +22 +65 +1 +17 -34 -18 -18 -18 -18

1850

Harm. Vln. 1 Vln. 2 Vla. Vc.

1866

Harm. Vln. 1 Vln. 2 Vla. Vc.

1883

Harm. Vln. 1 Vln. 2 Vla. Vc.

String Quartet 2 (Cucumber Variation)

1900

Harm. Vln. 1 Vln. 2 Vla. Vc.

This section contains three staves of musical notation for a string quartet. The first staff (Harm.) shows eighth-note patterns with grace notes. The second staff (Vln. 1) features eighth-note patterns with a dashed line indicating a sustained note. The third staff (Vln. 2) has eighth-note patterns with dynamic markings like -33, +27, and -6. The fourth staff (Vla.) and fifth staff (Vc.) show eighth-note patterns with grace notes and sustained notes indicated by dashed lines.

1918

Harm. Vln. 1 Vln. 2 Vla. Vc.

This section continues the musical score. The first staff (Harm.) has eighth-note patterns. The second staff (Vln. 1) shows eighth-note patterns with grace notes and sustained notes. The third staff (Vln. 2) has eighth-note patterns with dynamic markings like -6, +3, +4, +2, +16, +16, +16, and +16. The fourth staff (Vla.) and fifth staff (Vc.) show eighth-note patterns with grace notes and sustained notes indicated by dashed lines.

1935

Harm. Vln. 1 Vln. 2 Vla. Vc.

This section concludes the musical score. The first staff (Harm.) has eighth-note patterns. The second staff (Vln. 1) shows eighth-note patterns with grace notes and sustained notes. The third staff (Vln. 2) has eighth-note patterns with dynamic markings like +16, +16, +14, +6, +36, +47, +47, +17, and +5. The fourth staff (Vla.) and fifth staff (Vc.) show eighth-note patterns with grace notes and sustained notes indicated by dashed lines.

1951

Harm. Vln. 1 Vln. 2 Vla. Vc.

1966

Harm. Vln. 1 Vln. 2 Vla. Vc.

1983

Harm. Vln. 1 Vln. 2 Vla. Vc.

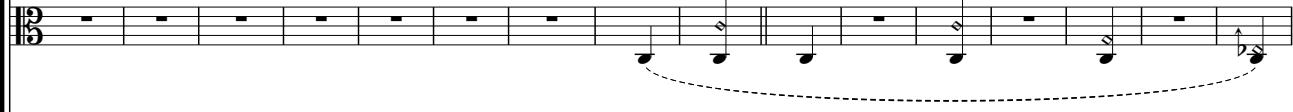
String Quartet 2 (Cucumber Variation)

2000 *8* **F**

Harm. 

Vln. 1 

Vln. 2 

Vla. 

Vc. 

2016

Harm. 

Vln. 1 

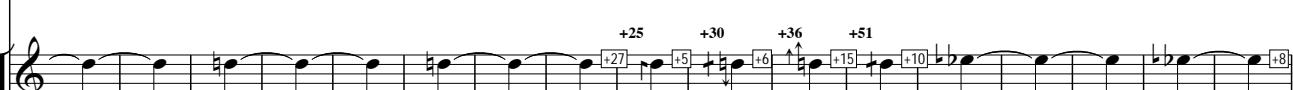
Vln. 2 

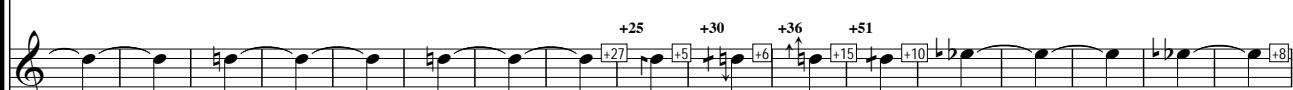
Vla. 

Vc. 

2034

Harm. 

Vln. 1 

Vln. 2 

Vla. 

Vc. 

String Quartet 2 (Cucumber Variation)

41

2051

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

2068

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

2085

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

String Quartet 2 (Cucumber Variation)

2103

Harm. Vln. 1 Vln. 2 Vla. Vc.

+2 +2 +2 +2 +15 +25 +8 -52
mezza voce

2119

Harm. Vln. 1 Vln. 2 Vla. Vc.

-35 -35 -35 -35 -35 -35 +27

2137

Harm. Vln. 1 Vln. 2 Vla. Vc.

-8 -4 +3 +18 +14 +14 +14 +14

The musical score consists of three systems of four staves each, representing a string quartet. The instruments are Harm. (Double Bass), Vln. 1 (First Violin), Vln. 2 (Second Violin), Vla. (Viola), and Vc. (Cello). Measure 2103 starts with Harm. playing eighth notes. Vln. 1 has sixteenth-note patterns with dynamics +2, +2, +2, +2, +15, +25, +8, and -52, with a performance instruction 'mezza voce'. Vln. 2, Vla., and Vc. have sustained notes or sustained patterns. Measure 2119 begins with Harm. playing eighth notes. Vln. 1 has sixteenth-note patterns with dynamics -35, -35, -35, -35, -35, -35, and +27. Vln. 2, Vla., and Vc. have sustained notes or sustained patterns. Measure 2137 begins with Harm. playing eighth notes. Vln. 1 has sixteenth-note patterns with dynamics -8, -4, +3, +18, +14, +14, +14, and +14. Vln. 2, Vla., and Vc. have sustained notes or sustained patterns. The score uses standard musical notation with stems, beams, and rests, along with specific performance instructions and dynamic markings.

2154

Harm. Vln. 1 Vln. 2 Vla. Vc.

+14 +14 +45 +45
-59 -23

2170

Harm. Vln. 1 Vln. 2 Vla. Vc.

-23 -16 -16 -16 -16 -16

2186

Harm. Vln. 1 Vln. 2 Vla. Vc.

-16 -3 +7 +19 +22 -53 -48 -31

String Quartet 2 (Cucumber Variation)

2202

Harm. Vln. 1 Vln. 2 Vla. Vc.

2219

Harm. Vln. 1 Vln. 2 Vla. Vc.

2236

Harm. Vln. 1 Vln. 2 Vla. Vc.

String Quartet 2 (Cucumber Variation)

45

2253

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

2270

Harm.

Vln. 1

Vln. 2

Vla.

Vc.

2286

Harm.

Vln. 1

Vln. 2

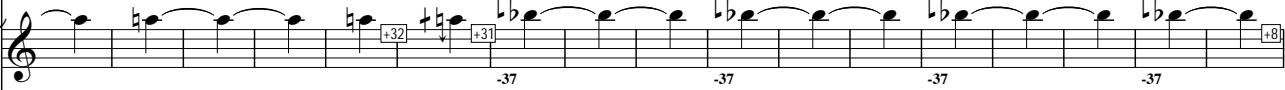
Vla.

Vc.

String Quartet 2 (Cucumber Variation)

2303

Harm. 

Vln. 1 

Vln. 2 

Vla. 

Vc. 

2320

Harm. 

Vln. 1 

Vln. 2 

Vla. 

Vc. 

2337

Harm. 

Vln. 1 

Vln. 2 

Vla. 

Vc. 

String Quartet 2 (Cucumber Variation)

47

2353

Harm. Vln. 1 Vln. 2 Vla. Vc.

2369

Harm. Vln. 1 Vln. 2 Vla. Vc.

2385

Harm. Vln. 1 Vln. 2 Vla. Vc.

String Quartet 2 (Cucumber Variation)

2400

Harm. Vln. 1 Vln. 2 Vla. Vc.

2413

Harm. Vln. 1 Vln. 2 Vla. Vc.

2426

Harm. Vln. 1 Vln. 2 Vla. Vc.

2438

Harm. Vln. 1 Vln. 2 Vla. Vc.

2450

Harm. Vln. 1 Vln. 2 Vla. Vc.

2462

Harm. Vln. 1 Vln. 2 Vla. Vc.