

*Fredrik Rasten*

# *Harmony for six voices*

*(2017, reworked 2019 and 2021)*

## On this piece and its development:

This piece is one of my first compositions in just intonation written in 2017 for a quartet of friends, Torstein Lavik Larsen on trumpet, Vilde Alnæs on violin, Inga Aas on viola da gamba and myself on e-bowed acoustic guitar.

The first iteration of the piece was just the 5-limit harmony and the modulation between the G and the E fundamental, with the note B constantly working with the syntonic comma, to pivot this modulation. In 2019 I made a sextet arrangement, adding 7-, 11- and 13-limit notes to the 5-limit “base” of the piece.

Now, in 2021, I have made this new arrangement of the piece after fruitful e-mail correspondence with Jeff Gavett about an arrangement for the vocal group *Ekmeles*.

One of the elements I usually rely on in my composing and in my praxis within harmonic space / just intonation, is the concept of tunability, and as this early piece of mine lacked a “reliable” common note to bridge the modulations of the two harmonic levels, I added the note A to bridge the gap between the G and the E levels. I use the term *level* here as opposed to *fundamental* because the addition of the pythagorean A to the E fundamental chords in itself modulates the harmony one fifth down to A fundamental. Therefore, the A has to leave at some points, to let the E-fundamental pitches enter the spotlight, before entering again to bridge the harmony safely back to the G-fundamental via A again.

This arrangement also utilizes rhythmic notation for the first time, although the tempo and meter can be quite flexible.

I am very grateful for Jeff Gavett’s collaboration, and this opportunity for me to develop the piece further.

Fredrik Rasten,  
September 2021

## Interpretational notes:

The dynamic of the piece is generally free and open to experimentation, depending on the performance space etc. However, tunability, clarity and resonance are all important keywords to this music.

Each bar should last the length of a deep breath (a breath, either close to as slow as possible or slightly faster). I would also suggest that each bar has a very slight and slow crescendo up until near the end of the bar before easing down. This crescendo should not be dramatic, but rather subtle. It is also just a suggestion, and the music can very well be realized superbly without it, it is more something to keep as a mindset, to let each bar have its own subtle evolution.

The instrumental or vocal timbre should be full throughout, with the possibility of subtle changes. Vocalists should sing on a 'Oooo' or 'Aaaa' vowel.

If notes fall outside of the register of a voice or instrument, feel free to experiment with octave transpositions for the notes in question. However, beware that this might affect the tunability of the harmony. A more viable solution might be to simply transpose the whole score to a different key.

Each note (except A) deviates from 12-TET, with the cent deviation given under each note.

Apostrophes (') are shown for vocalists, meaning that despite no pause given in the staff notation, one can take a short pause and breathe here (breaths can of course also occur, if needed, within a held note).

The accidentals belong to the Extended Helmholtz-Ellis JI pitch notation by Marc Sabat and Wolfgang von Schweinitz.

More information about the accidentals: <http://www.marcsabat.com/pdfs/notation.pdf>

# Harmony for six voices

Fredrik Rasten  
(2017, reworked 2019 and 2021)

very slow or slow ♩ = freely (but consistently) between 22 and 40 bpm

The musical score consists of six staves, each representing a different voice part. The notation is handwritten and includes various musical symbols and performance instructions:

- Staff 1 (Soprano):** Contains a whole note with a sharp sign and a downward-pointing arrow labeled "-18".
- Staff 2 (Alto):** Contains a whole note with a sharp sign and an upward-pointing arrow labeled "+4".
- Staff 3 (Tenor 1):** Contains a whole note with a sharp sign and a downward-pointing arrow labeled "-4".
- Staff 4 (Tenor 2):** Contains a whole note with a sharp sign and an upward-pointing arrow labeled "+6".
- Staff 5 (Bass 1):** Contains a whole note with a sharp sign and a downward-pointing arrow labeled "-4".
- Staff 6 (Bass 2):** Contains a whole note with a sharp sign and an upward-pointing arrow labeled "+6".

Additional features include curly braces grouping notes in the second and fourth measures, and a double bar line with repeat dots at the end of each staff. The bottom of the page features four numerical markers: -1, +2, -2, and +2, positioned below the first, second, third, and fourth measures respectively.

-1

+2

-2

+2

A handwritten musical score consisting of six staves. The notation includes notes, rests, and various annotations. The first staff has a treble clef and a double bar line with a repeat sign, followed by a whole note with a dot and a '-4' annotation. The second staff has a treble clef and a whole note with a dot and a '+4' annotation. The third staff has a treble clef and a whole note with a dot and a '-2' annotation. The fourth staff has a treble clef and a whole note with a dot and a '+2' annotation. The fifth staff has a treble clef and a whole note with a dot and a '+4' annotation. The sixth staff has a bass clef and a whole note with a dot and a '-2' annotation. There are also several other annotations, including '-18' with a downward arrow, '+6' with a sharp sign, and '1' with a vertical line. The score is divided into four measures by vertical bar lines.

Handwritten musical score consisting of six staves and four measures. The notation includes notes, rests, and accidentals, with various fret numbers written below the notes. The bottom staff has fret numbers -2, +2, -2, +2. A large number 3 is written at the bottom right.

Staff	Measure 1	Measure 2	Measure 3	Measure 4
Staff 1	♯0. ↓ -16	♯0. ( ) +6	0 -4	♯0. ↓ -12
Staff 2	0. ↓ -18	0. +4	0. ↓ -18	0. +4
Staff 3	Notes with various fret numbers and accidentals	Notes with various fret numbers and accidentals	Notes with various fret numbers and accidentals	Notes with various fret numbers and accidentals
Staff 4	Rest	Rest	Rest	Rest
Staff 5	Rest	Rest	Rest	Rest
Staff 6	0 -2	0 +2	0 -2	0 +2

A handwritten musical score consisting of six staves. The top two staves are in treble clef, and the bottom two are in bass clef. The middle two staves are empty. The score is divided into four measures by vertical bar lines. The first measure has a treble clef with a whole note and a '-4' annotation below it. The second measure has a treble clef with a whole note, a sharp sign, and a '+6' annotation below it. The third measure has a treble clef with a whole note, a sharp sign, and a '-16' annotation below it. The fourth measure has a treble clef with a whole note and a '+2' annotation below it. The first staff also has a '-18' annotation below a note in the first measure. The second staff has a '+4' annotation below a note in the second measure and a '-18' annotation below a note in the third measure. The third staff has a '-4' annotation below a note in the third measure and a '+6' annotation below a note in the fourth measure. The bottom staff has a '1' annotation below a note in each of the four measures. At the bottom left, there are '-2' and '+2' annotations. At the bottom right, there is a '4' annotation.

Handwritten musical score consisting of six staves. The notation includes notes, rests, and various numerical annotations. The score is divided into four measures by vertical bar lines.

- Staff 1 (Top):** Treble clef. Measure 1: Quarter note with annotation  $-2$ . Measure 2: Quarter note with annotation  $+4$ . Measure 3: Quarter note with annotation  $-4$ . Measure 4: Quarter note with annotation  $+4$ .
- Staff 2:** Treble clef. Measure 1: Quarter note with annotation  $-18$  and a downward arrow. Measure 2: Quarter note with annotation  $+4$  and a circled note. Measure 3: Quarter note with annotation  $-18$  and a downward arrow. Measure 4: Quarter note with annotation  $+4$  and a circled note.
- Staff 3:** Treble clef. Contains a sequence of notes with slurs across measures.
- Staff 4:** Treble clef. Measure 1: Rest. Measure 2: Rest. Measure 3: Quarter note with annotation  $+47$ . Measure 4: Quarter note with annotation  $-29$ , followed by a slur over two notes, and a quarter note with annotation  $D\sharp-49$ .
- Staff 5:** Bass clef. Measure 1: Rest. Measure 2: Rest. Measure 3: Quarter note with annotation  $-4$ . Measure 4: Quarter note with annotation  $+4$ , followed by a slur over two notes.
- Staff 6 (Bottom):** Bass clef. Measure 1: Quarter note with annotation  $-2$ . Measure 2: Quarter note with annotation  $+2$ . Measure 3: Quarter note with annotation  $-2$ . Measure 4: Quarter note with annotation  $+2$ .



Handwritten musical score for guitar, consisting of six staves. The score is divided into four measures, each marked with a '1' above the staff. The notation includes notes, rests, and various fret numbers (e.g., -2, +2, -16, +6, -18, +4, +6, C+47, C+42, -2, -29, D#-49, -4, +4, -4, +4, +2, -2, +2). The score is written in treble and bass clefs.

Measure 1: Treble clef, notes on strings 1, 2, 3, 4, 5, 6 with fret numbers -2, +2, -16, +6, -18, +4. Bass clef, notes on strings 1, 2, 3, 4, 5, 6 with fret numbers -4, +4. Bottom staff, note on string 6 with fret number -2.

Measure 2: Treble clef, notes on strings 1, 2, 3, 4, 5, 6 with fret numbers +4, +6, +6, +6, +6, +6. Bass clef, notes on strings 1, 2, 3, 4, 5, 6 with fret numbers +4, +4. Bottom staff, note on string 6 with fret number +2.

Measure 3: Treble clef, notes on strings 1, 2, 3, 4, 5, 6 with fret numbers -2, -29, D#-49, -4, +4. Bass clef, notes on strings 1, 2, 3, 4, 5, 6 with fret numbers -4, +4. Bottom staff, note on string 6 with fret number -2.

Measure 4: Treble clef, notes on strings 1, 2, 3, 4, 5, 6 with fret numbers +6, +6, +6, +6, +6, +6. Bass clef, notes on strings 1, 2, 3, 4, 5, 6 with fret numbers +4, +2. Bottom staff, note on string 6 with fret number +2.

Handwritten musical score consisting of six staves and four measures. The notation includes notes, rests, and accidentals, with various numerical annotations.

**Measure 1:**

- Staff 1: Note with  $-4$  below it.
- Staff 2: Rest.
- Staff 3: Note with  $-18$  below it.
- Staff 4: Note with  $C+47$  below it.
- Staff 5: Note with  $-4$  below it.
- Staff 6: Note with  $-2$  below it.

**Measure 2:**

- Staff 1: Note with  $-12$  below it.
- Staff 2: Note with  $+4$  below it.
- Staff 3: Note with  $+4$  below it.
- Staff 4: Notes with  $DH-49$ ,  $\sharp$ ,  $-10$ , and  $+2$  below them.
- Staff 5: Note with  $+4$  below it.
- Staff 6: Note with  $+2$  below it.

**Measure 3:**

- Staff 1: Note with  $-4$  below it.
- Staff 2: Note with  $-18$  below it.
- Staff 3: Note with  $-18$  below it.
- Staff 4: Note with  $C+47$  below it.
- Staff 5: Note with  $-18$  below it.
- Staff 6: Note with  $-2$  below it.

**Measure 4:**

- Staff 1: Note with  $+6$  below it.
- Staff 2: Note with  $+4$  below it.
- Staff 3: Note with  $+4$  below it.
- Staff 4: Note with  $C+42$  below it.
- Staff 5: Note with  $+4$  below it.
- Staff 6: Note with  $+2$  below it.

Handwritten musical score consisting of six staves. The notation includes notes, rests, and various annotations such as fret numbers and accidentals. The score is organized into four measures across the staves.

Staff 1 (Top): Treble clef. Measure 1: Note with sharp sign and downward arrow, annotation  $-16$ . Measure 2: Rest, annotation  $+2$ . Measure 3: Note with downward arrow, annotation  $-2$ . Measure 4: Note with upward arrow, annotation  $+4$ .

Staff 2: Treble clef. Measure 1: Notes with downward arrow, annotation  $-18$ . Measure 2: Note with upward arrow, annotation  $+4$ . Measure 3: Rest, then note with downward arrow, annotation  $-18$ . Measure 4: Note with upward arrow, annotation  $+4$ .

Staff 3: Treble clef. Measure 1: Notes with upward arrows, annotation  $+6$ . Measure 2: Notes with upward arrows, annotation  $+6$ . Measure 3: Notes with upward arrows, annotation  $+6$ . Measure 4: Notes with upward arrows, annotation  $+6$ .

Staff 4: Treble clef. Measure 1: Rest. Measure 2: Notes with upward arrows, annotations  $-29$  and  $D\sharp-49$ . Measure 3: Note with upward arrow, annotation  $(+47)$ . Measure 4: Notes with upward arrows, annotation  $(+42)$ .

Staff 5: Bass clef. Measure 1: Note with downward arrow, annotation  $-4$ . Measure 2: Note with upward arrow, annotation  $+4$ . Measure 3: Note with downward arrow, annotation  $-18$ , then note with downward arrow, annotation  $-4$ . Measure 4: Note with upward arrow, annotation  $+4$ .

Staff 6 (Bottom): Bass clef. Measure 1: Rest. Measure 2: Rest. Measure 3: Rest. Measure 4: Rest.

Measure numbers:  $-2$  (under Staff 1),  $+2$  (under Staff 2),  $-2$  (under Staff 3),  $+2$  (under Staff 4).

This image shows a handwritten musical score on six staves. The notation includes notes, rests, and various annotations such as fingerings and accidentals. The score is organized into three measures by vertical bar lines. The annotations include:

- Staff 1: A sharp sign ( $\sharp$ ) and a dot ( $\cdot$ ) with a vertical line below it, labeled  $-5$ .
- Staff 2: A sharp sign ( $\sharp$ ) and a dot ( $\cdot$ ) with a vertical line below it, labeled  $-12$ .
- Staff 3: A sharp sign ( $\sharp$ ) and a dot ( $\cdot$ ) with a vertical line below it, labeled  $-18$ .
- Staff 4: A sharp sign ( $\sharp$ ) and a dot ( $\cdot$ ) with a vertical line below it, labeled  $+4$ .
- Staff 5: A sharp sign ( $\sharp$ ) and a dot ( $\cdot$ ) with a vertical line below it, labeled  $+47$ .
- Staff 6: A sharp sign ( $\sharp$ ) and a dot ( $\cdot$ ) with a vertical line below it, labeled  $-4$ .
- Staff 7: A sharp sign ( $\sharp$ ) and a dot ( $\cdot$ ) with a vertical line below it, labeled  $+4$ .
- Staff 8: A sharp sign ( $\sharp$ ) and a dot ( $\cdot$ ) with a vertical line below it, labeled  $-49$ .
- Staff 9: A sharp sign ( $\sharp$ ) and a dot ( $\cdot$ ) with a vertical line below it, labeled  $+6$ .
- Staff 10: A sharp sign ( $\sharp$ ) and a dot ( $\cdot$ ) with a vertical line below it, labeled  $+2$ .
- Staff 11: A sharp sign ( $\sharp$ ) and a dot ( $\cdot$ ) with a vertical line below it, labeled  $+4$ .
- Staff 12: A sharp sign ( $\sharp$ ) and a dot ( $\cdot$ ) with a vertical line below it, labeled  $+2$ .
- Staff 13: A sharp sign ( $\sharp$ ) and a dot ( $\cdot$ ) with a vertical line below it, labeled  $-2$ .
- Staff 14: A sharp sign ( $\sharp$ ) and a dot ( $\cdot$ ) with a vertical line below it, labeled  $+2$ .