

Fredrik Rasten

Concord

for sixth-tone harmonium

and two e-bowed fretless electric guitars

(2021)

Concord was initiated by a commission from Prague Quiet Music Collective for me to compose music for a sixth-tone harmonium developed by Alois Hába and built by August Förster in 1937.

As my musical practice has harmony in just intonation as a centre, I wished to compose a piece where the harmonium is used to approximate some just intervals in interplay with my e-bowed electric guitars which I have worked with for my series of pieces called 'Murmurations' and for Chiyoko Szlavnic's piece Partial Response. **Concord** features an harmonium part that approximates Pythagorean tuning with its 12-TET subset, as well as septimal and 11-limit harmony with its various sixth-tones, while the electric guitar part, unbound by the sixth-tone temperament, has 5-limit tuning as a centre while occasionally branching out to the 7-, 11, 13, and 17-limit harmonic fields.

Guitar tuning and technique:

Guitar 1 (upper 3 lines of the guitar system) is tuned:

1 B - 30 (down from standard E)	for the start of the piece stopped on G# - 12
2 B (string not played, e-bow sits on it)	
3 G - 4	for the start of the piece stopped on F + 40
4 D (string not played, e-bow sits on it)	
5 A (string not played, e-bow sits on it)	
6 E - 2	for the start of the piece stopped on C# - 14

Guitar 2 (lower 3 lines of the guitar system) is tuned:

1 B - 30 (down from standard E)	for the start of the piece stopped on C + 16
2 B (string not played, e-bow sits on it)	
3 G + 18	for the start of the piece stopped on A +/- 0
4 D (string not played, e-bow sits on it)	
5 A (string not played, e-bow sits on it)	
6 E - 2	for the start of the piece stopped on F + 14

The guitars are played with e-bows connected to an electricity outlet with 9V adapters, instead of batteries. Movable pegs made of wood or plastic are placed under the sounding strings to stop the string, except for the 3rd string on 'guitar 2', that is played with a round massive tonebar (usually used for pedal steel guitars) lying horizontally between the 3rd and 4th string, stopping the string while still being easily moved to change the pitch. Further details on the setup can be provided on request.

Interpretational notes:

There are no note values in the score, but for any of the voices, a note or pause lasts until it is succeeded by a new note or pause in the given voice (see 'Symbols and signs' for details on how the harmonium part is notated).

Note durations are free / flexible, and the graphic spacing between notes is generally not a guide to the pace of the music, but merely showing the succession of the note or pause entries.

The music should unfold with a focus on stability of tuning, combined with a sense of melodic movement.

When a sonority is difficult to tune, take your time to adjust - the searching and fine tuning is an intrinsic musical and human part of this music.

When the tuning is stabilized, take some seconds to dwell in the tuned sonority. As a general rule - more time should be spent *in* the tuned sonority than in the searching / tuning process, but chords should not be extended for the sake of it, when a note and the overall harmony is in tune, the music should generally proceed in a relaxed manner to the next change.

When a change occurs within one part, the movement *can generally* be a little bit faster, like a melodic phrase.

The transition between two notes in one line can either be direct, or comprise a short silence between the notes.

For the guitars - when a note is succeeded by another on the same string, the transition can either happen directly or as a glissandi (although, some glissandi are written out explicitly).

Keep in mind that for a direct transition, the string needs to be dampened while moving the peg that stops the string.

The accidentals for the harmonium part is a 6th-tone system, omitting flats and using normal 12-tet natural and sharps and special sharps for the other 6th-notes:

4° 7° \sharp° $\#^{\circ}$
 $1/6 \uparrow$ $2/6 \uparrow$ $3/6 \uparrow$

$\sharp\sharp^{\circ}$ $\#\sharp^{\circ}$
 $4/6 \uparrow$ $5/6 \uparrow$

The accidentals for the guitar part 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>

Symbols and signs:

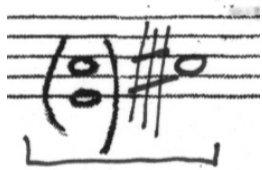
The **parentheses** in the harmonium part is a way of showing which notes are sounding at any given time - the notes that are already sounding and will continue are notated in parentheses, while new added notes are notated without parentheses. Each chord or note lasts until taken over by either a pause or a new chord / note.

Bidirectional arrows between notes signify one note taking over via an overlap with the preceding note. This process of going back and forth between the two notes via an overlap is repeated a few times (2 to 4) *ad lib.*

Legato bows show which of the two notes proceed into the continuation of the music.

Other occasional connecting lines / arrows merely show the succession of the notes where the narrowness of the graphical spacing makes it potentially hard to read (note that the short or long vertical distances on the chronological timeline of the piece is generally not a guideline to the musical pace, which is free)

In the harmonium part, a closed line like shown under here, means that all the notes within the closed line are played simultaneously as a chord, and not in a succession.



Vertical dotted lines show that two events happen simultaneously (note that not every simultaneous event have these dotted lines, only those where the accuracy of the simultaneousness is more important)

CONCORD

FREDRIK RASTEN (2021)

Handwritten musical score for "CONCORD" by Fredrik Rasten (2021). The score consists of ten staves. The first two staves are grouped by a brace on the left. The first staff has a whole rest. The second staff has a whole note with a sharp sign, followed by a bracketed pair of notes: a sharp note and a natural note. The remaining staves are mostly empty, with some markings including a sharp sign and a note with "+16" on the fifth staff, and a sharp sign and a note with "+18" on the seventh staff.

A handwritten musical score consisting of eight staves. The top two staves are grouped by a brace on the left. The first staff is a treble clef with a key signature of one flat (Bb) and contains notes: a whole note on the first line (F4), a whole note on the second space (C5), and a whole note on the second space (C5) with a flat sign. The second staff is a guitar staff with a 7/8 time signature and a key signature of one sharp (F#). It contains chord diagrams: a whole note chord (F#4, C5), a whole note chord (F#4, C5, G4), a whole note chord (F#4, C5, G4), a whole note chord (F#4), and a whole note chord (F#4). Brackets are drawn under the second and third chords, with arrows pointing to the second and fourth staves. The third staff is a treble clef with a key signature of one flat (Bb) and contains a whole rest. The fourth staff is a treble clef with a key signature of one flat (Bb) and contains a whole rest. The fifth staff is a guitar staff with a 7/8 time signature and a key signature of one flat (Bb) and contains a whole rest. The sixth staff is a treble clef with a key signature of one flat (Bb) and contains a whole rest. The seventh staff is a guitar staff with a 7/8 time signature and a key signature of one flat (Bb) and contains a whole rest. The eighth staff is a guitar staff with a 7/8 time signature and a key signature of one flat (Bb) and contains a whole rest. Fret numbers are indicated by arrows: +14 on the eighth staff at the first measure, +14 on the eighth staff at the fifth measure, and +18 on the seventh staff at the eighth measure.

The image shows a handwritten musical score for guitar, consisting of two systems of staves. The first system has two staves: the top staff is in treble clef with a key signature of one sharp (F#) and contains a pair of chords in parentheses, the first with two notes and the second with one note; the bottom staff is in bass clef with a key signature of one sharp and contains two notes with a slur and a double-headed arrow above them. The second system has six staves: the top two are treble clef, and the bottom four are bass clef. The top treble staff contains a sharp sign with a downward arrow and the number -12. The second treble staff contains a sharp sign with a downward arrow and the number F + 40, followed by two more sharp signs with downward arrows and the numbers F - 27 and -16. The first bass staff contains a sharp sign with a downward arrow and the number -14. The remaining four bass staves are empty.

Handwritten musical score for guitar, consisting of six staves. The notation includes chord diagrams and fret numbers.

- Staff 1:** Shows two chord diagrams. The first is for F#m (F# on the 1st string, 2nd fret; A on the 2nd string, 2nd fret; C# on the 3rd string, 2nd fret; E on the 4th string, 2nd fret). The second is for C#m (C# on the 1st string, 2nd fret; E on the 2nd string, 2nd fret; G# on the 3rd string, 2nd fret; B on the 4th string, 2nd fret). Brackets indicate the fret range for each chord.
- Staff 2:** Shows a barre at the 12th fret, indicated by a downward arrow and the number "- 12".
- Staff 3:** Shows a chord diagram for F#m with a barre at the 40th fret, indicated by a downward arrow and the number "F + 40".
- Staff 4:** Shows a chord diagram for C#m with a barre at the 40th fret, indicated by a downward arrow and the number "F + 40".
- Staff 5:** Shows a barre at the 14th fret, indicated by a downward arrow and the number "- 14".
- Staff 6:** Shows a barre at the 14th fret, indicated by a downward arrow and the number "- 14".

The image shows a handwritten musical score for guitar, consisting of two systems of staves. The first system has two staves (treble and bass clef) with notes and chords. The second system has six staves (treble and bass clef) with fret numbers and some notes. An arrow points from a note on the third staff of the second system to a note on the second staff of the first system.

System 1:

- Staff 1 (Treble): Notes with accidentals: (F#), (F#), (F#), (), (), (F#).
- Staff 2 (Bass): Notes with accidentals: (), (F#), (F#), (), (), ().

System 2:

- Staff 3 (Treble): (-), (F#), (F#).
- Staff 4 (Treble): (-), (F#), (F#).
- Staff 5 (Bass): (-), (F#), (-).
- Staff 6 (Treble): (-), (-), (-).
- Staff 7 (Bass): (-), (-), (-).

Fret Numbers and Labels:

- Staff 3: -14
- Staff 4: F + 40, -16
- Staff 5: -12, G + 49

Handwritten musical notation for a piano accompaniment, showing two staves. The first staff is in treble clef and the second in bass clef. The first measure contains a shaded chord with notes G4, A4, and B4 in the treble, and G3 and B2 in the bass. The second measure contains a single note G4 in the treble and a chord (G3, B2) in the bass. The third measure contains a single note A4 in the treble and a chord (G3, B2) in the bass. The fourth measure contains a single note B4 in the treble and a chord (G3, B2) in the bass. The fifth measure contains a chord (G4, A4, B4) in the treble and a chord (G3, B2) in the bass. The sixth measure contains a chord (G4, A4, B4) in the treble and a whole rest in the bass.

Handwritten musical notation for a single staff in treble clef. It starts with a whole rest, followed by a note G4, then a note A4, and finally a note B4. Below the staff, the labels "G + 49" and "Bb + 39" are written under the G4 and A4 notes respectively. There are also some handwritten marks above the staff, including a horizontal line and a vertical line.

Two empty musical staves. The top staff has a treble clef and the bottom staff has a bass clef. Both staves contain a horizontal line, indicating they are empty.

Handwritten musical notation for a single staff in treble clef. It contains a note G4. Below the staff, the label "C + 14" is written.

Handwritten musical notation for a single staff in treble clef. It contains a note G4. Below the staff, the label "G + 16" is written.

Handwritten musical score consisting of nine staves. The top two staves are grouped by a brace on the left and contain guitar fretboard diagrams. The top staff shows a G major chord (G-B-D) and a G# major chord (G#-B-D). The second staff shows a 7: (-) chord. The middle three staves are also grouped by a brace on the left and contain empty staves with a treble clef and a 7: (-) chord. The bottom two staves are grouped by a brace on the left and contain guitar fretboard diagrams with fret numbers: G# - 14, G + 16, A - 46, and a double bar line. The bottom staff also shows a 7: (-) chord. A large arrow points from the G# chord diagram in the bottom staff to the G# chord diagram in the top staff. Another arrow points from the G# chord diagram in the bottom staff to the 7: (-) chord diagram in the second staff. A third arrow points from the G# chord diagram in the bottom staff to the 7: (-) chord diagram in the fifth staff. A fourth arrow points from the G# chord diagram in the bottom staff to the 7: (-) chord diagram in the eighth staff. A fifth arrow points from the G# chord diagram in the bottom staff to the 7: (-) chord diagram in the ninth staff. The fret numbers are: G# - 14, G + 16, A - 46, -33, +16, +14.

Handwritten musical notation on a grand staff. The top staff (treble clef) contains several chords and notes, including a whole note chord with a sharp sign. The bottom staff (bass clef) contains a whole note chord with a sharp sign.

Handwritten musical notation on a grand staff. The top staff (treble clef) contains a whole note chord with a sharp sign. The bottom staff (bass clef) contains a whole note chord with a sharp sign. The text "Bb + 39" is written below the top staff, and "- 16" and "- 14" are written below the bottom staff.

Handwritten musical notation on a grand staff. The top staff (treble clef) contains a whole note chord with a sharp sign. The bottom staff (bass clef) contains a whole note chord with a sharp sign. The text "+ 29", "- 19", and "+ 18" are written below the bottom staff.

A handwritten musical score consisting of several staves. The top two staves are grouped by a brace on the left and contain a melody with notes and chords. The third staff has a few notes, with an arrow pointing from the second staff to a note on this staff. The fourth and fifth staves are also grouped by a brace on the left and contain notes and rests. The sixth, seventh, and eighth staves are empty, each with a treble clef and a minus sign. The page number '- 14' is written below the fifth staff, and '- 16' is written below the fifth staff on the right side.

A handwritten musical score consisting of several staves. The top two staves are grouped by a brace on the left and contain notes in parentheses. The first staff has notes (o), (o), (o), # (o), (o), (o). The second staff has notes (o), (o), o#o, (o), (o), #o, (o). A bracket is under the first three notes of the first staff. An arrow points from a note on the third staff to a note on the second staff. The fourth staff has a note #o. The fifth staff has a note -14. The sixth and seventh staves have notes +16. The eighth staff has a note +16. The ninth staff has a note +16.

Handwritten musical score consisting of ten staves. The top two staves are grouped by a brace on the left. The first staff contains notes with parentheses: (o), (o), (o). The second staff contains notes with accidentals: (#o), (o), #o, o, #o, o. The bottom two staves are also grouped by a brace on the left. The bottom staff contains notes with measure numbers: +14, +16, +16, +18. A long arrow points from a note on the bottom staff to a note on the second staff. The right side of the score is mostly empty, with some vertical lines and a curved line at the top right.

Handwritten musical score for guitar, consisting of ten staves. The score includes various notes, accidentals, and fret numbers. A large bracket on the left groups the first six staves. A large bracket at the bottom groups the last three staves. A 'gliss.' marking with a slur is present at the bottom right. Fret numbers include +12, +14, -18, F# - 35, F# + 17, and -19.

Staff 1: Treble clef, notes (o) and (o).

Staff 2: Treble clef, notes (o) #, o.

Staff 3: Treble clef, rests.

Staff 4: Treble clef, rests, notes with fret numbers -18 and F# - 35.

Staff 5: Treble clef, rests, note with fret number F# + 17.

Staff 6: Treble clef, notes with fret numbers +14 and +14.

Staff 7: Treble clef, note with fret number +14.

Staff 8: Treble clef, note with fret number +14.

Staff 9: Treble clef, note with fret number +12.

Staff 10: Treble clef, notes with fret numbers +14, -19, and +12, marked with 'gliss.' and a slur.

A handwritten musical score consisting of two systems of staves. The first system has two staves: a treble clef staff with a whole rest, and a bass clef staff with a sequence of notes: a whole rest, a half note G (circled), a half note A (circled), a half note B (circled), a half note C# (circled), a half note D# (circled), a half note E (circled), and a whole note F# (circled). A bracket is drawn under the last three notes (C#, D#, E). A long arrow points from the circled F# note down to a short horizontal line on the second staff of the second system. The second system has five staves: a treble clef staff with a whole rest, a treble clef staff with a key signature change to two sharps (F# and C#), a bass clef staff with a whole rest, a treble clef staff with a whole note G (circled), and a bass clef staff with a whole note G (circled). A key signature change to one sharp (F#) is written on the second staff of the second system, with the text "F# - 16" below it. The entire score is enclosed in a large hand-drawn bracket on the left side.

Handwritten musical score for guitar, consisting of two systems of staves. The first system has two staves, and the second system has six staves. The notation includes notes, chords, and guitar-specific instructions.

System 1:

- Staff 1 (Treble clef): Contains notes and chords. The first measure has a treble clef and a whole note chord. The second measure has a sharp sign and a whole note. The third measure has a whole note. The fourth measure has a sharp sign and a whole note chord. The fifth measure has a whole note chord.
- Staff 2 (Bass clef): Contains chords. The first measure has a bass clef and a whole note chord. The second measure has a whole note chord. The third measure has a whole note chord. The fourth measure has a whole note chord. The fifth measure has a whole note chord. The sixth measure has a whole note chord.

System 2:

- Staff 1 (Treble clef): Contains a whole note chord.
- Staff 2 (Treble clef): Contains a whole note chord with a sharp sign. Below the staff are the annotations: **-31**, **G + 49**, **F# - 16**, **+2**, and **-2**.
- Staff 3 (Bass clef): Contains a whole note chord.
- Staff 4 (Treble clef): Contains a whole note chord.
- Staff 5 (Treble clef): Contains a whole note chord.
- Staff 6 (Bass clef): Contains a whole note chord.

- 14

Handwritten musical score for guitar and voice. The score consists of several staves:

- Staff 1 (Guitar):** Treble clef, key signature of one sharp (F#). Chords are written as (F#), (F#), (F#), (F#), (F#), (F#).
- Staff 2 (Guitar):** Bass clef, key signature of one sharp (F#). Chords are written as (F#), (F#), (F#), (F#), (F#), (F#).
- Staff 3 (Voice):** Treble clef, key signature of one sharp (F#). The vocal line is: # a h e d o o r e h e # o r e o # o # o.
- Staff 4 (Guitar):** Bass clef, key signature of one sharp (F#). Chords are written as (F#), (F#), (F#), (F#), (F#), (F#).
- Staff 5 (Guitar):** Bass clef, key signature of one sharp (F#). Chords are written as (F#), (F#), (F#), (F#), (F#), (F#).
- Staff 6 (Guitar):** Bass clef, key signature of one sharp (F#). Chords are written as (F#), (F#), (F#), (F#), (F#), (F#).
- Staff 7 (Guitar):** Bass clef, key signature of one sharp (F#). Chords are written as (F#), (F#), (F#), (F#), (F#), (F#).
- Staff 8 (Guitar):** Bass clef, key signature of one sharp (F#). Chords are written as (F#), (F#), (F#), (F#), (F#), (F#).

Chord progressions and fret numbers are indicated below the vocal line:

- 12
- 31
- Bb + 40
- Ab - 49
- G - 29
- 14
- F - 33
- +2
- +5
- 12

Handwritten musical score for guitar, consisting of two systems of staves.

System 1:

- Staff 1 (Treble clef): Notes (o), (o), o, (o), (o), (o)
- Staff 2 (Bass clef): Notes (o), (o), o, (o), (o), (o)

System 2:

- Staff 3 (Treble clef): Notes (o), o, +2
- Staff 4 (Treble clef): Notes (o), o
- Staff 5 (Bass clef): Notes (o), -12, -35, -16, +14, +2, -2
- Staff 6 (Treble clef): Notes (-), (-)
- Staff 7 (Bass clef): Notes (-), (-)

Annotations in System 2:

- An arrow points from the note on Staff 5 (fret -35) to the note on Staff 3 (fret +2).
- A double-headed arrow is positioned above the note on Staff 5 (fret +14).

Handwritten musical score for guitar, consisting of ten staves. The top two staves show chord diagrams with notes in parentheses. The bottom eight staves show fretting diagrams with arrows and numerical shifts.

Staff 1 (Treble Clef): Chord diagrams: (e), (e) (e), (e), (e)

Staff 2 (Bass Clef): Chord diagrams: (e), # (e) (e), # (e) (e), (e)

Staff 3 (Treble Clef): Fretting diagram: (e)

Staff 4 (Treble Clef): Fretting diagram: (e)

Staff 5 (Bass Clef): Fretting diagram: (e), +16, +16

Staff 6 (Treble Clef): Fretting diagram: (e)

Staff 7 (Treble Clef): Fretting diagram: (e)

Staff 8 (Bass Clef): Fretting diagram: +14, +2, -18, -18, -2

Staff 9 (Bass Clef): Fretting diagram: (e)

Staff 10 (Bass Clef): Fretting diagram: (e)

Arrows indicate fretting shifts between staves. A large arrow points from the bottom staff to the top staff, and another points from the bottom staff to the second staff.

+14

Handwritten musical score for guitar, consisting of ten staves. The score includes various chord diagrams and fret numbers. The first two staves are treble clef, and the last two are bass clef. The middle four staves are grouped by a brace on the left. Chord diagrams are shown as circles with lines and dots, often with fret numbers below them. Arrows indicate fingerings or transitions between chords. A double bar line is present at the end of the piece.

Chord diagrams and fret numbers shown in the score:

- Staff 1 (Treble): (0), (0), (0), (0) *
- Staff 2 (Treble): (0), #0, (0), (0) *
- Staff 3 (Treble): (-), +2 A-37, +14 *
- Staff 4 (Treble): (-), +12, +16
- Staff 5 (Bass): +16, +12
- Staff 6 (Bass): +18, -48
- Staff 7 (Bass): (1)
- Staff 8 (Bass): +14

* LAST CHORD IS HELD FOR A WHILE