# Six pitches on which to focus the attention while listening to 138 chords and breathing as many breaths

a string quartet composed for the Hot Air Music Festival by Alex Ness, on the occasion of the festival's <u>call for submissions</u>

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# Temperament

I wrote this piece in 19-tone equal temperament (19-TET). I follow the notation developed by Easley Blackwood and Wesley Woolhouse, <u>as described on Wikipedia</u>:



Fig.	1: an	octave	of	19-TET,	from	C4 to	C5
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For more information on the tuning system, please see the appendix.

# Scordatura

The instruments are tuned as follows:



Fig. 2: scordatura, with open-string frequencies in Hz

Note that each instrument is tuned in perfect fifths (including the viola:  $B \ddagger = C \flat$ ), but that a P5 in 19-TET is about 7 cents flatter than a P5 in just intonation.

Scores are notated at sounding pitch, while instrumental parts are notated with the appropriate transpositions.

# Performance directions

• One of the performers introduces the piece with a speech describing the structure of the composition, along the lines of the following:

*This piece is made up of six sections, each section containing 23 chords, each chord made up of 8 pitches.* 

At the beginning of each section, one of us will announce and play a certain pitch. We invite you to focus your attention on that pitch while we play through the chords. If your mind or ear wanders from the focal pitch, we invite you to try to find your way back to it, or, alternatively, to enjoy being lost in a thicket of dense sound.

We also invite you to breathe with the quartet while we play: exhaling during each chord, and inhaling during each silence.

• Then, that same performer invites the audience to ask questions about the composition: *Does the audience have any questions?* If there are questions, the members of the quartet do their best to answer them. Once there are no more questions, the piece begins: *If there are no [more] questions, let's begin.*  Six pitches on which to focus the attention... notes Page 3/7

• As stated in the introductory speech, before each section of the piece, a member of the quartet announces and plays that section's focal pitch:

Section 1: A # below Middle C; Section 2: F # above Middle C;

... and so on.

• At the conclusion of the piece, a member of the quartet thanks the audience for listening.

# Technical and expressive recommendations

- Play each chord with a downbow, non vibrato.
- Exhale on each chord, and inhale on each rest between chords. Let the natural pace of the breath establish the tempo.
- The dynamic should be loud without abrasiveness or discomfort.

# Duration

Approximately 12 minutes, including the introductory speech. It may be longer if the audience asks a lot of questions.

# Appendices

# 19-tone equal temperament

### History

19-tone equal temperament (19-TET) is a tuning system invented in the 16th century. The Renaissance composer Guillaume Costeley used it in his chanson <u>Seigneur Dieu ta pitié</u>; more recently, it's been used by <u>Easley Blackwood</u> and <u>Ivor Darreg</u>, among others.

### Structure

Just like conventional 12-TET, 19-TET breaks the octave into five whole steps and two half steps:



Fig. 3

In 19-TET, however, each "whole step" is divided into **three** equal parts, and each "half step" into **two** equal parts, for 19 parts total:



Thus, a 19-TET diatonic half step is somewhat larger than one in 12-TET (respectively 2/19 and 1/12 of an octave), and a 19-TET diatonic whole step is relatively smaller than one in 12-TET (resp. 3/19 and 2/12 of an octave).

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### Features

The 19-tone system has three features that appeal to me:

- First, the tuning of thirds in 19-TET is more accurate than in 12-TET.
  - Whereas a 12-TET M3 is sharp by roughly 14 cents, the same interval in 19-TET is flat by roughly 7 cents.
  - More to the point, the 19-TET m3 is essentially pure (0.15 cents sharp), while the 12-TET m3 is almost 16 cents flat.
- Second, 19-TET preserves familiar diatonic and chromatic relationships, while also distinguishing between certain intervals that are enharmonically equivalent in 12-TET.
  - For example, in 19-TET, A1 ≠ m2; A2 ≠ m3; M3 ≠ d4; A4 ≠ d5; etc.
  - Meanwhile, there are new enharmonic relationships at play: A1 = d2; A2 = d3; A3 = d4; etc.
- Third and finally, because the number 19 is prime, 19-TET has **no** symmetrical divisions of the octave.
  - For example, in 19-TET, three M3s don't add up to an octave: M3 + M3 + M3 = A7 ≠ P8.
  - Nor do four m3s add up to an octave: m3 + m3 + m3 + m3 = d9 = A8  $\neq$  P8.

# Construction of the piece

Each of the six sections of this piece is based on a particular 19-EDO chord, made up of a single stacked interval:



Fig. 6: each section's underlying chord in root position, labeled by generating interval

Each chord is transposed, inverted, voiced, and distributed among the instruments using chance operations, 23 times per section. As stated in the introductory speech, all chords within a section share a particular pitch (an "internal pedal point").

# Practice materials

In addition to the performance score and parts, I've generated the following materials to aid with the tuning:

- a mockup mp3 of the performance score, available on Google Drive;
- scores and parts for 14 harmonic reductions, leaving out various notes of each chord:
  - 5 reductions with 4 notes per chord;
  - 4 reductions with 5 notes per chord;
  - 3 reductions with 6 notes per chord;
  - 2 reductions with 7 notes per chord;
- mockup mp3s of each reduction (just the chords—no focal pitches or spoken text), likewise available on Google Drive.

Stems for the individual parts are available upon request, as are the Reaper files I used for the mockups.

The reductions systematically build up each chord based on its underlying (root-position) interval structure. This way, the performers can get used to the sounds of four-note chords made up of some particular 19-TET interval, then gradually work their way up to the complete chords used in the performance. The following figure illustrates the process for the very first chord in the piece:



Fig. 7: all reductions of the first chord, with each corresponding root-position chord voicing

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### Program notes

I wrote this piece to explore expanded states of consciousness in two different ways. First, motivated by Buddhist meditation practices in general and by *vipassanā* exercises in particular, I wanted to experiment with sustained, relaxed concentration on simple musical phenomena: in this case, on the synchronized breathing of the musicians and the audience, and on certain recurring pitches in the musical texture. Second, inspired by the work of a large and diverse group of composers (among whom La Monte Young and Eliane Radigue may be the most familiar names), I wanted to experiment with the mental resonances of extended harmonic systems. I hope that this piece demonstrates that we've barely scratched the surface of harmonic experience, and of the experience of our own perception.

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# "Six pitches...": score





























"Six pitches...": reduction 1



















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## "Six pitches...": reduction 13



























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