

*untitled (tuning series)* (Johnson Art Museum loading dock)  
for Josh Modney and Mariel Roberts, Wet Ink Ensemble  
-John Eagle, Winter/Spring 2021

**Instrument setup:**

With A4=441 Hz, tune strings in Pythagorean tuning (perfect 5ths).

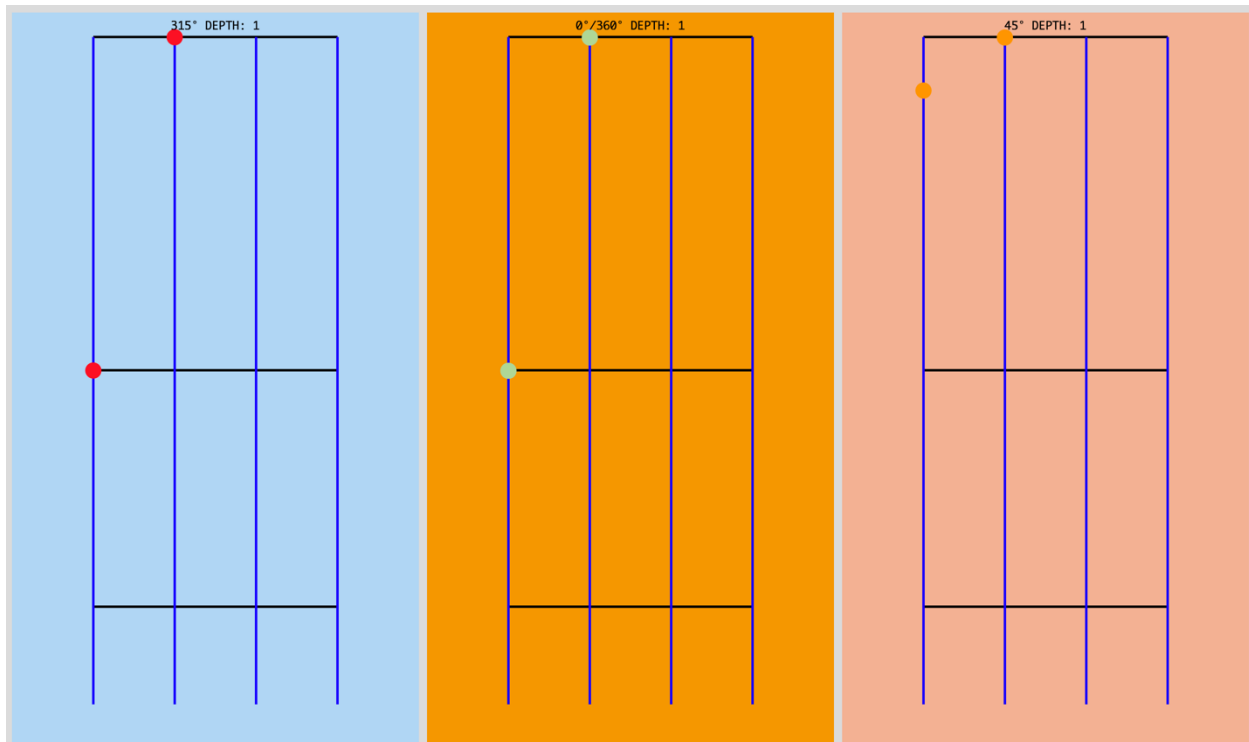
**Tech. setup:**

A live score and electronic sound is generated by running the provided supercollider script for each instrument (version as of 4/25/21: "VIOLINjohnsonPerformance1.3.scd" and "CELLOjohnsonPerformance1.3.scd"). Files are accompanied by two folders ("analysesPERF" and "audio" which must remain in the same folder as the .scd files. A "setAudioOutput.scd" file is included which can be run to customize SuperCollider audio input/output if using something different than your system setting. A Bluetooth page turn pedal is required to operate the program while performing. Connect the pedal using your system's Bluetooth controls before running the SuperCollider program. The program is set to accept keycodes 123 or 125 for left turn and 124 or 126 for right turn. If your pedal uses different keycodes, you can change line 49 of your instrument's .scd file to the correct number.

A screen resolution of 1680 x 1050 is best for running the program.

Once the instrument script is open, place your cursor within lines 2-8 and evaluate (command-Enter on Macs) to start the server. Once the server boots (check the post window or for green numbers below it—check your audio settings if it fails), place your cursor below line 11 and evaluate (command-Enter) to start the program.

A window like this should appear and a bank of sine tones should start sounding.



Each of these three diagrams will be called a 'card' and corresponds to a little more than one octave on your instrument's fingerboard. String numbers go left to right, IV to I. The top line represents the nut, middle line the 5<sup>th</sup>, and the third line the octave. Any dots that appear show the finger location for a pitch that is available to be played while on that card. A dot on the nut represents an open string. Any of the available pitches may be played at any time in any order. Double stops, when available, are encouraged at least some of the time. By pressing the left or right pedal, the center card will shift accordingly (the card on the left/right will move to the center) and new cards will appear on the left/right.

### Concept:

All the material is generated from recordings at one location in a narrow loading dock with steep concrete walls outside the Johnson Art Museum at Cornell University. From this one location, 8 recordings were made, rotating the mic 45 degrees each time in a circle. This results in 8 recordings with a similar, but not identical frequency spectrum. Each of the cards corresponds to one of the 8 directions: 0°/360°, 45°, 90°, 135°, 180°, 225°, 270°, 315°. Moving right or left moves to the next direction (looping back to the beginning eventually). Additionally, 4 frequency depths are present for each direction. Depth 1, is the smallest with only the 8 loudest frequencies present from the original recording. Depth 2 contains the loudest 64 frequencies and Depth 3 contains the loudest 512 frequencies. Depth 4 is the original, unaltered recording. The pitches available to be played by each instrument are selected from the available pitches at each depth.

All directions begin at Depth 1. Once a card has been used, its depth increases by 1, until all directions have reached Depth 4 when the piece ends.

**Performance guidance:**

The overall form of the piece is a move from a thin texture (8 frequencies) to a full spectrum of noise. The pitches available to each instrument are harmonic groups selected from the available spectrum at each depth. A harmonic group is here defined as a group of notes with at least one strong harmonic connection between each note. This means that in a group of 3 or more notes, a note might have a strong connection to one note and a weak connection to another but they can all be connected in a kind of chain. All “strong” harmonies are here defined as being some kind of pitch ratio where both integers are a power of 3, 5, 7, 11, or 13 (within a 4-octave range). When playing each card, the performers may explore these groups looking for the harmonic relations and adjusting the intonation by ear. The notation of finger location on the fingerboard is meant to be imperfect, giving the performer a starting place to discover harmonic relations aurally, adjusting the intonation up or down ad lib. The process should be one of constant listening and tuning. Accordingly, a constant dynamic should be strived for (mp/mf) with long sustained notes (no vibrato) being the norm. Durations should vary and should be a function of the exploration of each pitch group. Silences for listening are encouraged. Listening and adjusting to the other performer is encouraged, knowing that some of the harmonic relations might be very strong or very weak. The time spent on each card should be felt and, again, a function of the harmonic exploration of the harmonies, but should probably be at least 15 seconds long (and could be much longer). When all directions have advanced to Depth 4, each performer selects one card to be their last. After stopping playing, let the electronic sound continue playing for a period and then hit “x” on the keyboard to stop the sound. Continue listening until the other performer has finished.