

Guiding students to intonation independence:



*Integrating the Yamaha Harmony Director,
Tonal Energy app for iPad and the
Korg TM-50 Tuner + microphone
into your band rehearsal.*



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8:30 AM to 9:30 AM*

First Things First:

Before you begin... establish your students' routine. Clearly define your expectations for:

1. How students tune their instruments
2. How students bend individual pitches

These expectations will often differ from instrument to instrument.

Here's what I found works for me:

- All intonation training occurs in a small group setting (usually sectionals in summer band) and continues in band sectionals throughout the year.
- Before you can tune, every student must make a characteristic sound.
Students should also be able to "audiate" a free, resonant sound.
- Each rehearsal begins with a 3-4 minute individual warm-up (concluding with the students tuning on their own)
Band instruments are built to play in tune at body temperature (I call it operating temperature). They are all manufactured to be pulled out slightly (with the exception of double reeds)

WARNING!

Never allow a student to tune their instrument while watching a tuner!



Students should always play tuning notes down the center of the horn.

1. While looking away from the tuner, the student holds the note until they locate the core, resonant note.
2. NOW.... the student may glance at the tuner. They will adjust the length of the instrument to bring the instrument in tune with their core set-up.

Watch a band rehearsal begin. Take note of the following:

- Individual warm-up / tuning at the beginning of class
- Student engagement in the warm-up
- Set-up of music technology
- Continuous prompts encouraging students to make intonation changes on their own

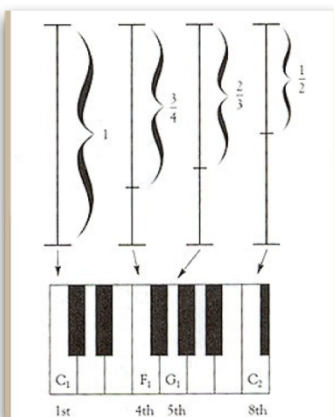
Watch a marching band brass warm-up. Take note of the following:

- Use of Tonal Energy drone and student “tuning crew” to reinforce listening skills

What is Equal Temperament and Pure Temperament?

Pythagorean tuning:

Pythagoras in the sixth century BC tuned intervals based on the pure fifth.

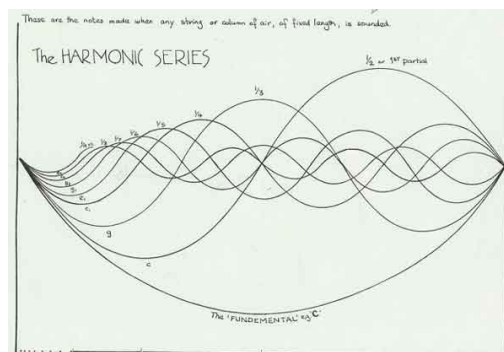
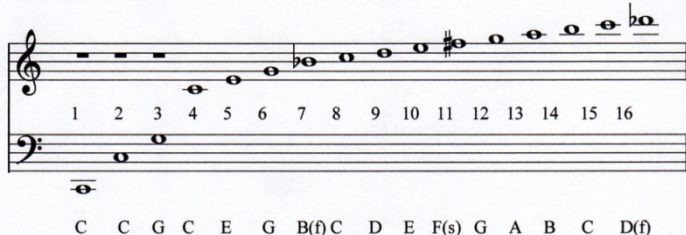


Pure Temperament:

Our version of pure tuning is much like Pythagorean tuning, however all intervals are built from the same overtone series. Overtones are already sounding each time you play a note. Pure tuning adjusts to match the interval already sounding in the overtone series for that particular key.

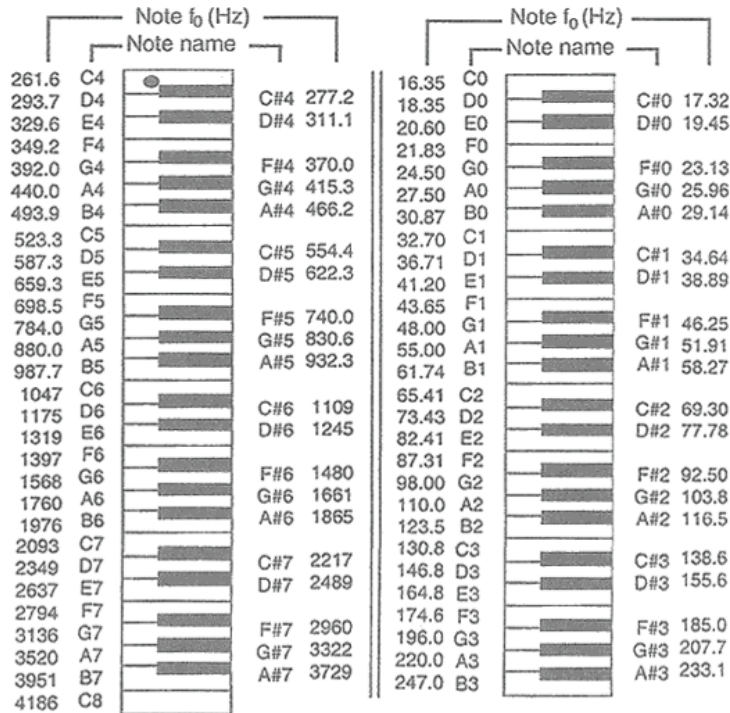
The Harmonic Series

Fundamental = C
Series through the sixteenth harmonic



Equal Temperament:

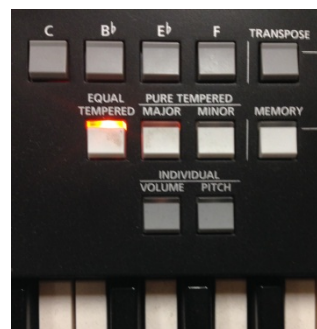
Not found in nature. This man-made compromise called “Equal Temperament” divides the octave into 12 equal parts where each half step is equal. The piano, organ, harp, harpsichord and all percussion mallet instruments are equal temperament. These instruments are inherently out of tune with themselves.



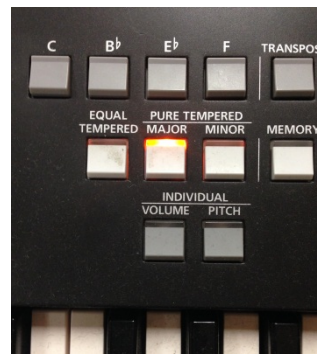
Overview of the Harmony Director:

How to demonstrate “Pure” moments for the students utilizing:

Equal Tempered chord tuning:



Pure Tempered chord tuning:



How Pure & Equal tempered tuning applies to the rehearsal:

Score study to determine "horizontal" tuning vs. "vertical tuning"

This is my personal score from the Persichetti Symphony for Band

- Ms. 118-121 is an example of "vertical tuning" where the trombone choir passes an F# minor chord to the clarinet choir entrance on a B minor chord.
- Ms. 122-124 is good example of "horizontal tuning" where Persichetti introduces an equal temperament sequence from the tenor sax/bassoon 1 to the alto 2/oboe 2 to the alto 1/oboe 1.

Handwritten musical score for Persichetti's Symphony for Band, measures 118-124. The score includes staves for Piccolo, Flute, Oboe, E♭ Clarinet, B♭ Clarinet, Alto Clarinet, Bass Clarinet, Baritone Saxophone, Tenor Saxophone, Bassoon, Trombone 1, Trombone 2, Trombone 3, Trombone 4, Trombone 5, Trombone 6, Trombone 7, Trombone 8, Trombone 9, Trombone 10, Trombone 11, Trombone 12, Trombone 13, Trombone 14, Trombone 15, Trombone 16, Trombone 17, Trombone 18, Trombone 19, Trombone 20, Trombone 21, Trombone 22, Trombone 23, Trombone 24, Trombone 25, Trombone 26, Trombone 27, Trombone 28, Trombone 29, Trombone 30, Trombone 31, Trombone 32, Trombone 33, Trombone 34, Trombone 35, Trombone 36, Trombone 37, Trombone 38, Trombone 39, Trombone 40, Trombone 41, Trombone 42, Trombone 43, Trombone 44, Trombone 45, Trombone 46, Trombone 47, Trombone 48, Trombone 49, Trombone 50, Trombone 51, Trombone 52, Trombone 53, Trombone 54, Trombone 55, Trombone 56, Trombone 57, Trombone 58, Trombone 59, Trombone 60, Trombone 61, Trombone 62, Trombone 63, Trombone 64, Trombone 65, Trombone 66, Trombone 67, Trombone 68, Trombone 69, Trombone 70, Trombone 71, Trombone 72, Trombone 73, Trombone 74, Trombone 75, Trombone 76, Trombone 77, Trombone 78, Trombone 79, Trombone 80, Trombone 81, Trombone 82, Trombone 83, Trombone 84, Trombone 85, Trombone 86, Trombone 87, Trombone 88, Trombone 89, Trombone 90, Trombone 91, Trombone 92, Trombone 93, Trombone 94, Trombone 95, Trombone 96, Trombone 97, Trombone 98, Trombone 99, Trombone 100. The score is annotated with 'EXPO' and 'DEVEL.' above measures 119 and 120 respectively. A 'SEQUENCE' is marked above measures 122-124. Handwritten notes include 'B min', 'A min', 'D min', 'F# min', 'A min', 'B min', 'TS', 'AS', 'OB', 'TPT', 'UP 134 4/135', 'T. am WW', '120', '121', '122', '123', '124', '118', '119', '120', '121', '122', '123', '124'. The score is written in a handwritten style with various musical notations and annotations.

Watch Vertical Tuning in the band rehearsal:

Wataru Hokoyama's 'Animas Luminis'

Notes:

Overview of the Tonal Energy App

1. Basic tuner page
2. Tone Generator page
 - Instrument selection – generates very characteristic tones!
 - Recording button (bottom left hand corner) – great for young students learning to match pitch
3. Spectral analysis/ Waveform page
 - Can be used to watch spacing of lifted notes.
 - Blossoming or tapering of long tones is shown.
 - Recording button is very useful in playing back performances for students. The waveform and intonation is all available to them in one place.

Watch the Tonal Energy App used in sectionals:

Notes:

Watch the final step in student intonation independence:

“Taking off the training wheels”:

Stephen Bryant's 'Dusk' in rehearsal - with and without tuners.

Notes:

Questions? Feel free to email me! jason.schayot@risd.org