



*“Pondering the Plight Produced
by the Presence of
Pesky Problems of Pitch”*

Clinician:

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Sponsor: Texas Bandmasters Association

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Pondering the Plight Presented by the Presence of Pesky Problems of Pitch

a clinic presented for TBA, 2007 by Gary Garner

The Basics

- Sound is vibration; the faster the vibration, the higher the pitch and vice-versa.
- Students must be able to recognize "in tune."
- Instrument must be warmed up before tuning.
- Dependent on sound tone production — proper embouchure & correct use of air
- Good equipment in good condition.

Adjusting the Pitch on Woodwinds

- Alternate fingerings (if it involves a different mechanism), e.g. forked F# and middle finger F# on clarinet.
- Altered fingerings — try opening or closing a key to alter the pitch; sometimes, if closing a key lowers the pitch too much, also opening another may bring it to the desired pitch. The ideal: in tune with a centered tone (no lipping).

Tuners

- Great for learning the intonation pattern of the instrument and for making comparisons, BUT... not the last word
- Training the eye, not the ear? Not at all.
- Tuner hookups can be a great help.

Choice of a Tuning Note

- No one note is best for all but concert F comes closest, alto sax being a notable exception.
- If tuning with a tuner, establish the pitch before looking at the tuner.

Flute

- Be sure the end plug is properly set.
- Pull out no more than 1/8-1/4" and align the head joint with the embouchure hole slightly to the left when viewed from the bottom end of the flute.
- If habitually sharp, bring the head joint down, open the oral cavity, and direct the air more into the hole.
- If habitually flat, blow harder, more across the hole, and don't press.
- Overall, the flute is flat in the first octave, sharp in the third; fingering alterations can

help correct for some of the sharp third-octave notes. These are special fingerings, however. Don't try to get ahead of the game by teaching them as standard fingerings.

- Louder = sharper, softer = flatter.

Oboe

- The reed can be pulled only a limited amount.
- The reed alone should produce a pitch of C.
- Reed strength, embouchure, and breath are all-important.
- In general, the oboe is flat in the low register, sharp in the upper.
- Louder = sharper, softer = flatter
- Humor the pitch by a change in voicing, embouchure pressure, amount of reed in the mouth (the lower lip moves with the reed). As with all woodwinds, there are several possible fingering alterations to improve out-of-tune notes.

Clarinet

- The pitch on the mouthpiece alone should be a flat concert C#; on the mouthpiece and barrel, F#. The bass clarinet mouthpiece should produce a pitch of concert F#.
- Tune open G first and adjust the barrel, then check 3rd-space C (and possibly low C) and if sharp, pull at the middle.
- The angle of the instrument to the body should be approximately 45 degrees.
- Louder = flatter, softer = sharper.
- Watch out for worn corks; otherwise, tuning is wasted motion. Tuning rings will ensure a consistent pull.

Bassoon

- The bocal can't be pulled more than permits the whisper key pad to cover the vent in the bocal.
- String can be wrapped around the bass joint cork to keep it from going all the way into the boot joint. (According to Hugh Cooper, the bassoon is 1/32nd too short to produce the lowest tones in tune.)

- Bocal length: #2 is standard. Don't change unless everything else (reed, embouchure, etc.) are all right.
- The reed alone should produce a pitch of F#.
- Overall, the bassoon is sharp in the low register (very) and flat in the upper. As with the oboe, reed, embouchure, and breath are critical.
- Louder = flatter, softer = sharper

Saxophone

- The best tuning notes are C in the staff and top-line F (F is the middle of the seven notes served by the first octave key).
- Most players bite too hard; the mouthpiece alone should produce concert A on alto, G on tenor, and D on bari.
- Overall, flat in low register, sharp in upper.
- Louder = flatter, softer = sharper

Brass: The Cumulative Pitch Error (CPE)

- Approximately 6% needs to be added to the tube length in order to lower the pitch one semitone.
- The greater the tube length created by combining valves, the greater the error. Manufacturers normally increase the length of the individual valve slides (especially third) to help spread the error.

Dealing with the CPE

- Kick slides
- Saddles
- Substituting 3 for 1&2 (e.g., high A on trumpet, low D on tuba)
- 4th valves (using 4 for 1&3, 4&2 for 1,2,3)
- Hand pulling 1 and sometimes 3 on tuba
- Opening/closing the right hand on horn.
- Compensating systems

The Disparity Between the Harmonic Series and the Tempered Scale

- Only the octaves above the fundamental (2nd, 4th, 8th harmonics) are perfectly in tune with the tempered scale.
- The 3rd harmonic is slightly sharp, 5th flat, sixth sharp, and seventh extremely flat.

The Harmonic Series

- Substitute the 6th harmonic for the 5th.
- Substitute the 7th for the 6th harmonic (both substitutions work best on euphonium but can work in a pinch on trumpet).
- Trumpet saddle can be used to bring down any note using first valve (most often top-

line F).

- Trumpet might play G as 8th harmonic (1&3/ kickslide).
- A euphonium with a compensating system can use 8th harmonics to substitute for 6ths (just add 4th valve to the regular fingerings for F, E, Eb).
- TASP (Tune as you play). See *Inside John Haynie's Studio*, pub. UNT Press.

Brass Tuning Notes

- Should be a note the student can play comfortably.
- Concert Bb works well for all but horn.
- Even though a sharp 3rd harmonic, the 2nd-line G is often more reliable for trumpet.

Tuning the Horn

- Tune the Bb side first to a written C and adjust with the main tuning slide (first slide off the mouthpiece).
- Tune the F side to a written C and adjust with the F tuning slide. (Be sure you have all the slides properly identified.)
- Tune the individual 1st- and 2nd-valve slides on each side and mark with a pencil. Then check 1&2 together on each side, again marking the position with a pencil, then split the difference.
- Tune the third-valve slides in combination with the second.
- Take care to see that the right hand is properly positioned.

Trombone

- Don't touch the bell. No position is always in the same place. (Check out episode 18 on the Yamaha Wind Instrument Podcasts).
- Pay special attention to 5th position and to G and F# above the staff (they are 7th harmonics and need to be played in sharp 2nd and 3rd positions).
- Tune the F trombone to 4th-line F. Positions are farther apart on the F trombone (there are only six).

Intonation in Ensemble — Three Concerns

- Unisons/Octaves
- Melodic (every note in tune with the preceding note)
- Harmonic (correct intervallic relationships)
- Sometimes — often, in fact — these come into direct conflict.

The Three-Note Chorale

- Students are not confined to playing the same few notes day after day (they can cover the entire range of the instrument).
- Their complete attention can be devoted to matters of tone & pitch without concerns of rhythm and technique, and without the need to look at the music.
- Parts can be arranged as the director wishes.
- Students can easily “hear” the pitch before playing it.

Developing Aural Acuity

- Singing
- Promoting individual accountability.
- Keep everyone engaged in making judgments about pitch.
- Tuning CD or TuneUp Systems, possibly along with a tuner and hookup.
- There are many software programs designed for ear training. The “Play by Ear” exercises in SmartMusic™ are excellent.

Rehearsal Strategies

- Recognition, diagnosis, and cure.
- Play each line separately and identify problems.
- Correct the problem note, then start at the beginning of the phrase and hold the note when you come to it.
- Put back in context.
- Never assume that a correction is permanent.
- Record the rehearsal; try to pick out each part and make notes on problem areas.
- When tuning two players, exchange short notes and ask them (or other members of the ensemble) who is higher and who is lower.
- Have one player hold a steady tone while the other lips the pitch down, then gradually brings it up until a unison is achieved.
- Play a problem passage in a series of wind ensembles, one on a part (eliminate anonymity), or every other player (odds and evens).
- In tuning chords, start with the root, then add the 5th, then the third.
- In the upper woodwinds, the responsibility of the clarinets should be to match one another. The responsibility of the flutes and oboes is to match the clarinets. Likewise, the bassoon and baritone sax should match the bass clarinets.

Miscellany

- It is important that the director continue a lifelong effort to become ever more aware of intonation.
- Especially important are the director’s transposition skills. Practice singing every line in your scores in the correct transposition.
- Lip-bending exercises (Don Hanna).
- Don’t overlook timpani tuning — what could be worse than a beautifully tuned Bb chord with the timpanist rolling away on a B-natural?
- Mutes generally change the pitch. Straight mutes generally raise the pitch, cups always lower it, and harmons always raise it. It may be necessary to reset the tuning slide for muted sections.
- No vibrato when tuning.

Just or Equal?

- David Doty in *The Just Intonation Primer*: “Equal temperament was not adopted because it sounded better (it didn’t then and it still doesn’t), despite two hundred years of cultural conditioning . . .”
- Harvard Dictionary*, first edition: “In equal temperament no interval other than the octave is acoustically correct or pure. The deviation of the fifth (2 cents) is too small to be noticed at all. With the thirds, the difference is considerably greater, the well-tempered third (400 cents) being 14 cents (one-eighth of a semitone) larger than the pure third (386 cents). However, our ear has become completely accustomed to this ‘error,’ and the advantage of the system far outweigh its flaws.”

•Equal/Just Comparisons (in cents)

	Equal	Just	
M3	400	386	(A=436)
P5	700	702	(A=441)
m3	300	316	(A=444)
dom7	1000	929	(A=433)

Intonation Aids

- Yamaha Harmony Director HD-100 (Harmony Training DVD)
- Yamaha WX-5 Wind Controller (with VL70M sound module)
- Tuning CD (Richard A. Schwartz)
- Tuneup Systems (Stephen Colley)

Three-Note Chorale

C instruments

F instruments

Bb instruments

Eb instruments

Bass clef instruments

The first system of the musical score consists of five staves. From top to bottom, they are labeled: C instruments, F instruments, Bb instruments, Eb instruments, and Bass clef instruments. Each staff contains a series of notes and rests, primarily consisting of quarter notes and quarter rests, with some eighth notes in the Eb instruments staff. The notes are arranged in a way that creates a three-note chordal texture across the instruments.

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5

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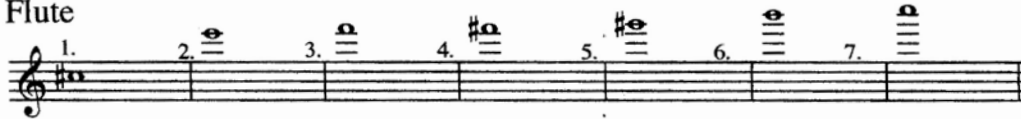
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The second system of the musical score consists of five staves, continuing from the first system. Each staff begins with a measure number '5'. The notation continues with quarter notes and quarter rests, maintaining the three-note chordal texture. The Eb instruments staff includes some eighth notes and rests. The system concludes with a double bar line.

Woodwind Fingering Alterations

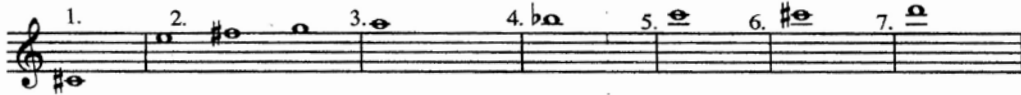
(Left-hand fingers are 1,2,3; Right-hand are 4,5,6)

Flute



1. + 3,5,6 to lower; 2. -Eb to lower; 3. +6 to lower; 4. sub. 5 for 6 to lower; 5. +5,6, possibly -Eb to lower
6. Special fingering: T,1,3, both trill keys to lower; 7. Half-hole 5 and/or +thumb to lower OR 1,3, tr 2 (can be flat but good for ff).

Oboe



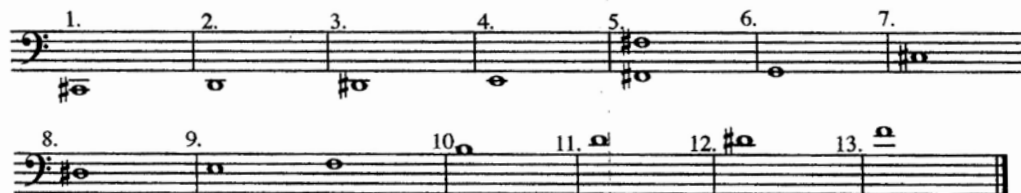
1. Remove bell to raise; 2. +low B to lower; 3. +6 to lower; 4. +low C to lower; 5. +6 & low C to lower;
6. +6 to lower; 7. +5(6) to lower.

Clarinet



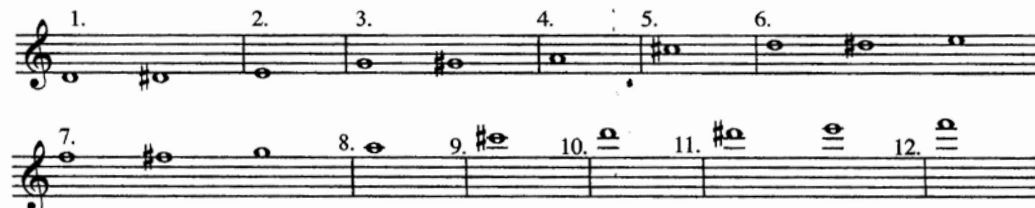
1. +F/C to lower (esp. in pp); 2. +Eb/Bb or C#/G# to raise; 3. +3,4,5, & F/C/ key to lower; 4. +2,3 & some comb. of RH fingers to lower (can also add thumb ring on A to lower); 5. +RH sliver key to raise (can also overblow Bb for higher pitch, on F#); 6. many possible fingerings (try TR & 1).

Bassoon



1. +low B to lower; 2. +low Bb or low C# to lower; 3. +low Bb to lower; 4. +low C# to lower; 5. use both F#s & E-plate to lower (also for pp); 6. +E-plate to lower (also for pp); 7. +E-plate to lower (+F# if still too low);
8. +5 or 4 & Bb to lower; 9. +6 or E-plate to stabilize & raise; 10. +Ab to lower 11. +5,6 & F to raise;
12. -4 to raise; 13. -3 to raise.

Saxophone



1. +C# to raise; 2. +C# or Eb to raise; 3. +side F# to raise; 4. +Ab to raise; 5. finger 3 & octave, poss. w/one or more R.H. fingers to raise OR +side C; 6. +low B key (poss. Bb) to lower; 7. +low C to lower (+C# if too low); 8. +5 or 4 or 6 to lower; 9. +4 OR 4&5 to lower; 10. +4 to lower OR +2 & side Bb or C; 11. -palm 1 OR +2 to lower; 12. -palm 1 or palm 1&2 to lower OR -palm 3.