Raising Pitch Consciousness

No wind instrument has been manufactured that is absolutely in tune, but any instrument can be played in tune, if the player has a good embouchure allowing for proper tone production. Good intonation can come only from an appreciation of its importance and from a determination of the student to play in tune.

Conditions that can cause poor intonation

Condition and Quality of the Instrument and Accessories
- Instrument adjustment
- Dents
- Corrosion or junk inside mouthpiece and instrument
- Incorrect reed strength or adjustment/worn out or cracked reeds
- Poor quality mouthpiece

Basic Playing Procedures
- Poor posture and position
- Poor embouchure formation
- Insufficient air support

Variation in Loudness
- The effect on most reed instruments is opposite to that on brass instruments.
  - Tones from single reed instruments flatten as loudness is increased and sharpen as loudness is decreased.
  - Tones on flute and brass instruments sharpen when played louder.
  - Tones of the flute and piccolo sharpen more than those of any other group of instruments.

Variation in Temperature
- A problem much more likely to occur at public concerts than during the rehearsal period. The temperature of the atmosphere in an auditorium, when crowded, tends to increase from the multiple effects of warmth radiating from the audience and the performing ensemble and from heat generated by lights.

  An increase in room temperature sharps large wind instruments much more than small instruments. This is crucial knowledge given that the bass tones are most crucial to the intonation of the ensemble.
  Should the temperature of the atmosphere in the room increase during a rehearsal or concert the tuning slides, especially of the larger bass instruments, should be adjusted further outward.

  When players of small instruments sense the feeling of being comparatively flat, they react in three ways:
  1. They increase embouchure tension which impairs tone quality.
  2. They develop fatigue of lips and oral cavity aggravating a condition
already uncomfortable.
3. They use all available tuning leeway to the sharp side of their instruments which disturbs the internal tuning of all wind instruments, woodwinds in particular.

Insufficient Warm Up of Wind Instruments

Wind instruments are manufactured to play in tune at an external temperature of 72 degrees Fahrenheit, after proper warm up. Because the temperature of the human breath is approximately 98.6 degrees Fahrenheit, it gradually increases the temperature of the air inside of a cold instrument, thus raising its pitch. Sound travels faster in warm air than in cold air because the molecules are less densely packed together. The faster the sound vibrations, the higher the pitch. This explains why wind instruments sound flat when cold and sharp when warm.

Room and breath temperatures affect the pitch of wind instruments differently, depending on the size and materials from which they are made. Metal instruments – flute, piccolo, saxophone and brass – warm up and cool off faster than instruments made of wood or plastic. Large instruments take longer to warm up than small instruments.

Psychological and Musical Phenomena

People tend to hear low tones played loudly as being flat and high tones played loudly as being sharp.
People tend to be more tolerant of sharpness than flatness.
People tend to hear two widely different tone timbres with the same frequency as being out of tune.
People tend to play high notes sharp and low notes flat.

Learn to listen to the sound that is coming out of your instrument as well as the sounds around you.
Good intonation in ensemble playing is a tone-by-tone adjustment that takes place automatically to the extent to which you achieve physical control over your instrument and train your ear.
The Tuning Process

Two sequential steps are involved in the process of playing in tune on a musical instrument.

Tuning the Instrument

Warm up thoroughly before tuning.
Tune at a mezzo-forte dynamic level and do not use vibrato.
Tune to a reliable frequency using the basic tuning note(s) recommended for your instrument.
Do not humor the tuning note; play it straight. Adjust the main tuning mechanism if the pitch is sharp or flat. Valve brass players should also tune the valve slides.

Every player must understand that, with the exceptions of the oboe and bassoon, all woodwind and brass instruments are manufactured to play sharp when the tuning joints or slides are closed or pushed all the way in. Consequently, most wind players will have to lengthen their instruments initially by pulling out the main tuning mechanism.

Tuning Faulty Pitches While Playing

Woodwind techniques for Adjusting Pitches While Playing:
1. Alternate fingerings.
2. Embouchure adjustment – lipping. Increasing lip tension raises a pitch, decreasing lip tension lowers a pitch.
3. Amount of reed in the mouth (Double Reeds) Moving the reed into the mouth raises a pitch; moving the reed out of the mouth lowers a pitch.
4. Rolling the tone hole (Flute/Piccolo). Rolling the tone hole outward, raising the head and pushing the lower jaw forward raises a pitch; reversing these motions lowers a pitch.
5. Finger shading. Lowering the fingers part way over the open tone holes of the instrument lowers a pitch.
6. Combinations of the above.

Brass techniques for Adjusting Pitches While Playing:
Most three-valved brass wind instruments sound flat on single valve tones and sharp on plural valve tones.
Pitches produced by combining valves gradually become sharper as one plays lower. The 1-3 combination is noticeably sharp and the 1-2-3 combination is extremely sharp on all valve brass instruments. Manufacturers have designed several mechanical devices to compensate for this progressive sharpening of pitch when valves are combined.

Brass Techniques for Adjusting Pitches While Playing:
1. Alternate fingerings (including use of the fourth or compensating valve).
2. Third valve slide ring.
3. First valve slide thumb trigger.
4. Slide adjustment or alternate slide positions (trombone).
5. Use of the right hand in the bell (Horn). Moving the hand into the bell lowers the pitch; moving the hand out of the bell raises the pitch.
6. Adjusting the main tuning slide (tuba).
7. Embouchure adjusting-lipping. Increasing lip tension raises a pitch; decreasing lip tension lowers a pitch.
8. Combinations of the above.

Brass Instruments’ Valve Combination Pitch Tendencies

1. 1 – 2 Moderately sharp
2. 1 – 3 Very sharp
3. 1 – 2 – 3 Extremely sharp
4. 2 – 3 Moderately flat