

Intonation Tendencies of Wind Instruments

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General Points to Consider:

- All wind instruments are affected the same regarding temperature (cold=flat, hot=sharp).
- All have the same tendency regarding embouchure (tight=sharp, loose=flat).
- All wind instruments have the same tendency regarding air intensity (weak air=flat).
- All wind instruments are pulled out to flatten and pushed in to sharpen (see concern in this area under oboe and bassoon).
- All wind instruments can lip down (flatten) pitch to a greater degree than they can lip up (sharpen).
- Venting (opening closed keys or holes) and damping (closing open keys or holes) are available on all woodwinds. The possibilities are almost infinite, though some "pet" fingerings seem to be widely known and used.

Flute:

- Head joint pulled out=flatter, pushed in=sharper
- Temperature: cold=flat, hot=sharp
- Extreme range: GENERALLY high=sharp, low=flat
- Dynamic level: loud=sharp, soft=flat (big danger on releases)
- More than any other factor, air direction affects intonation. A raised air stream will raise pitch, and a lowered air stream will lower pitch. Jaw movement (embouchure manipulation) should be used to control pitch, but it can be done by raising or lowering the head.

Never teach "roll in/roll out." The contact point of the flute to the lip should not be disturbed, nor should the hands be encumbered with unnecessary movement. The crown assembly in the head joint of the flute must be set at the proper place for good intonation. Cleaning/tuning rods have a mark on them which should appear in the center of the blow hole when the rod is inserted into the head joint. Students should be warned against moving the crown of the flute.

Oboe:

- The reed is extremely influential on oboe intonation.
- Reed pulled out=flatter, pushed in=sharper
- Good oboists make their own reeds to play at A=440 with the reed pushed all the way in. It harms response to pull the reed out because of the "bubble" created in the receiving tube.
- Temperature: cold=flat, hot=sharp
- Reed strength: hard reed=sharp, soft reed= flat
- Embouchure: (sometimes directly related to reed strength) loose embouchure=sharp, pinched embouchure=flat
- Range: Generally lower register tends toward flatness, but the upper register can go either way depending on the reed and player. An experienced player tends toward sharpness in the upper register.
- Dynamic level: Loud=flat, soft=sharp but not as predictable in this factor as clarinet/sax. It depends so much on the reed.

Bassoon:

- Bocals come in three common lengths, with 2 being standard, 1 being shorter (sharper) and 3 being longer (flatter). There are also the rarer sizes of the longer 4 and the shorter 0 and 00. It harms response to pull the bocal out because of the "bubble" created in the receiving tube.
- Temperature: cold=flat, hot=sharp
- Reed strength: hard reed=sharp, soft reed=flat
- Embouchure: (usually directly related to reed strength) loose
- Embouchure=flat, pinched embouchure=sharp
- Range: lower notes are sharp on many bassoons, but the bass joint can be pulled a little from the boot, because there is not bridge key between those two joints. High range depends on too many factors too generalize.
- Dynamic range: Hard to answer this one! Experienced players flatten in extremely loud dynamics. Softer dynamics are harder to generalize. Young players usually do not have a wide dynamic range, and the problem of flattening in a diminuendo is really caused by reed, air and embouchure

Clarinet:

- Pulling barrel (then middle joint)=flatter, pushing in=sharper
- Barrel length: Shorter and longer barrels are available
- Range: Throat tones are sharp on almost every instrument, especially the A and B-flat. Altissimo register=sharp in more experienced players, though young players will often be a little flat when learning these notes.
- Embouchure: biting or pinching=sharp, loose=flat
- Temperature: cold=flat, hot=sharp
- Dynamic level: loud=flat, soft=sharp
- Reed strength: soft reed=flat, hard reed=sharp
- Angle of entry: held too far out=flat, held too close=sharp
- Lay of the mouthpiece: closed=sharp, open=flat

Low Clarinets:

- Pulled out between neck and upper joint=flat, pushed in= sharp
- All other factors are the same as the clarinet (except barrel length)

Saxophone:

- Mouthpiece pulled out from neck=flat, pushed in= sharp
- Temperature: cold=flat, hot=sharpDynamic level: loud=flat, soft=sharp (unless air is weak)
- Reed strength: soft reed=flat, hard reed=sharp
- Embouchure: biting or pinching=sharp, loose=flat
- Angle of entry: held too far out=flat, held too close=sharp
- Lay of the mouthpiece: closed=sharp, open=flat
- Range: Low range is usually flat, high register is usually sharp, unless air or embouchure is weak

Brass & Percussion:

- Slides pulled out=flatter, pushed in=sharper
- Temperature: cold=flat, hot=sharp
- Extreme range: high twister=sharp, low can go either way depending on player's experience level.
- Dynamic level: loud=sharp, soft=flat
- Mutes: straight and harmon = sharp, cup=flat
- Embouchure and voicing: pinching=sharp, loose=flat. The voicing that takes place inside the oral cavity (tongue position) can also move the pitch up or down.
- Mouthpiece design: shallow cup=sharp, deep cup=flat

Valve combination series:

- open in tune
- 2nd in tune
- 1st in tune
- 1st, 2nd little sharp (3rd valve as substitute=little flat)
- 2nd, 3rd little flat
- 1st, 3rd sharp (trumpets MUST "kick" 3rd valve slide)
- 1st, 2nd, 3rd very sharp (trumpets must kick 3rd valve slide)

Overtone series (tendencies of the harmonics compared to equal temperament):

- 1 in tune (1 not available on trumpet)
- 2 in tune
- 3 slightly sharp (2 vibrations per second)
- 4 in tune
- 5 slightly flat (some can be lipped, many players use alternate fingerings)6 sharp
- 7 very flat
- 8 in tune

Percussion

- Mallet instruments play sharp in cold weather — beware of this at those cold football games!

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