Solving the Woodwind Puzzle: Five Instruments, Three Big Ideas

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1. **The "Whats" and the "Whys" of Fingering**
2. **Tone Placement and Voicing on the Woodwinds**
3. **Tuning**

References drawn from:
Charles West, *WOODWIND METHODS: An Essential Resource for Educators, Conductors and Students*, 2015, Meredith Music Publications, distributed by Hal Leonard: www.halleonard.com/meredithmusic.

Idea 1. The "Whats" and "Whys" of Fingerings

Woodwind Fingering Principles

From Section 3: Director's Guide

Similarity—*The First Cardinal Rule of Woodwind Fingering*: **When there is more than one key that produces a particular note, *the one which is under the hand is the principal fingering*.** This is especially useful information when dealing with certain harmony instruments—bass clarinets, for example—for which there is no standardized low note fingering system, and is especially critical information for solving technical problems on clarinet and bassoon, the instruments which have the widest choices of fingerings.

Similarity—*The Second Cardinal Rule of Woodwind Fingering*: **We use alternate fingerings to *avoid lateral motion*.** This means that, (unless there is a major tuning consideration involved) we do not play two adjacent notes by sliding the same finger up or down the instrument from one key to the other unless there is no alternative.

Cases do occasionally exist on all woodwinds where sliding laterally is necessary. Whenever you see a “roller” key (as on bassoon, saxophone and sometimes on flute), you will know that the rollers are there to facilitate lateral motion between those keys. Also, touchpieces are sometimes mounted in the same plane or some other accommodation is made for sliding, such as on low C-C# or low B-Bb on oboe.

When lateral motion is absolutely unavoidable, slide down the instrument (toward the bell or toward the palm of the hand) rather than up the instrument (toward the mouthpiece or by straightening the finger).

Similarities and Differences

Similarity: On the double reed instruments, *only one form of venting is used at a time* in the second register—never two. One uses either the half hole or one opens the vent hole (octave key or whisper key) but not both at once.

Similarity: There are THREE half-hole notes immediately above the break on all double reed instruments—oboe, English horn and bassoon.
Difference: But remember--there are only TWO notes on flute above the break with the first finger of the left hand up.

Similarity: Oboe, English Horn, all modern saxophones, alto and bass clarinet and most other low clarinets have an "articulated G# key." This means that the touchpiece and key cup for the G# key are on separate axels, with a point where the motion is transferred from the touchpiece to the key cup. When 4L is depressed to open the G# key and left down, putting certain fingers down in the right hand closes that pad on any instrument with an "articulated G#," facilitating F#-G# trills.
Difference: The middle finger of the right hand works well for F# on the single reeds but it is too flat for F# on the flute.

Major Fingering Issues

Generally

On flute and oboe, a wrong fingering can *almost* make the right note. On clarinet and saxophone, the wrong fingering generally makes the wrong note.
On bassoon, the line between "right" and "wrong" fingerings is more blurry, but to a large degree the wrong (but close to right) fingering can *almost* make the right note.

Flute

The common mistake that students make in the third octave is simply overblowing the fingerings one and two octaves lower. The technique may come more easily this way, but the pitch, response and tone are poor. It only takes one flutist (or worse yet, piccolo player) in a flute section playing the overblown fingerings to cause a very annoying pitch problem in the upper register of an ensemble.

Not lifting the left index finger for middle D and E-flat, or less often, leaving it up for E-natural. You will hear a shadow of the lower octave in D and E-flat notes if the first finger is down, and the E natural will be sharp and unfocused if the first finger is up.

Overuse of "Thumb B-flat" fingering, resulting in accidentally playing B-flat where there should be a B-natural. Teach Fingering no. 12 (with both index fingers) first so that becomes the default fingering, and add Thumb B-flat to simplify technical passages in flat keys. *Do not use Thumb B-flat when it is adjacent to a B-natural as to do so requires moving the thumb laterally.* (A similar problem exists with the Bis key on saxophone).

Hand position on flute can affect tuning as well as technique. It may be necessary to position the blowhole at 12:30 or 1:00 to achieve a comfortable balance using only three points of balance (lip, right thumb and side of left index finger, but not the E-flat key with R4).

Oboe

The oboe has the narrowest convenient range of all of the woodwinds, and thus has the fewest fingerings. The complications that come into play are (1) there are three mechanisms of overblowing—the half-hole and two (sometimes three) octave keys—which must be used in the correct ranges and, (2) the oboist absolutely must learn to use both regular and forked F from the outset. Because most oboists' early years are spent in a band class playing in flat keys, without vigilant teaching, it is not uncommon to find a young player using forked F in every situation, and depriving himself or herself of the best-sounding F on the instrument.

"Regular" F (fingerings 9 and 24) gives the best sound and pitch, but must be avoided if the result requires 3R to slide laterally. In the absence of a left-hand F key, "Forked" F provides a solution for this problem, but the sound is inferior and the pitch is not as reliable. If flat, it may be brought up by opening the E-flat key with 4R, though this is likely to overcorrect the problem, especially in the presence of an "F Resonance" key which opens automatically when Forked F is being played. On more expensive oboes, there is a third option, which is a left-hand F key, played by 4L, with the touchpiece sitting just above and beyond the B and B-flat keys. Most professional oboists use the side F to the virtual exclusion of the forked fingering.

The oboe is designed for more lateral motion than the clarinet, and thus the keys for the right and left little (4th) fingers are designed for sliding. Some of the logic behind this design is that the added weight and mechanical complication of additional keywork is not justified by the very small amount of technical passage work involving the lowest five notes of the range. Only the C# and D# fingerings repeat in the second octave, so only D# is provided with an alternate (on the left) to remove the necessity of sliding laterally from C# to D#, most often in the second octave. In the lowest range where lateral motion is absolutely necessary, oboists learn to use a little facial grease from beside the nose or forehead to facilitate the lateral motion.

Wrong fingerings. One of the great challenges of teaching double reeds is that wrong fingerings almost produce the right notes, though often with a sound that does not match that of the notes around it. Unless one knows *how each fingering should look*, the instructor can easily assume that the tone or pitch is not ideal because of student inexperience or reed. Using the wrong octave keys or half hole to overblow is especially prevalent. If a student has switched from clarinet or saxophone, their habit may well be to use only one octave key for the entire register—which almost works on oboe. *Remember: Oboe and Bassoon have three half-hole notes each—the first three in the second register, and the oboe is the only woodwind that has no open note!*

<u>Clarinet</u>

Not understanding "Principal" vs. "Alternate" fingerings.

Because the clarinet and the bassoon have such a large number of fingerings for any one note in comparison to the oboe, flute and especially saxophone, the following comments are provided to foster a clear understanding of exactly *why* we use a specific fingering in any one context. Some notes on the clarinet—especially in the *altissimo* range—have twenty or more fingerings. For an exhaustive list, consult Thomas Ridenour's book, *"Clarinet Fingerings: A Guide for the Performer and Educator."*

As with all woodwinds, *the Principal fingering is the one which falls under the hand* without shifting the hand's position, and the alternate is the one for which the hand shifts out of position. In the chalumeau register (and also a twelfth above in the clarion register) for example, the principal fingering for E is on the left, F is on the right, F# is on the right and G# is on the

right. Obviously then, with so many principal fingerings on the right, the alternate F# (on the left) is used frequently. To give an idea of how common the alternates are, an approximation of frequency of usage might be:

E/B on the right (Fingering no. 3)—10%
F/C on the left (Fingering no. 5)—5%
F#/C# on the left (Fingering no. 7)—40%

Clearly, *F#/C# on the right is the default or principal fingering, because it sits right under the hand, but the key on the left is absolutely essential, and is the standard chromatic fingering*. Thus, it is built close to the E/B lever and requires the hand to shift out of position only slightly, as compared to the F/C lever on the left, for example. Both of these F# fingerings must be understood early in the learning process. To complicate matters, when F# is played adjacent to a G# (as in an E major scale), the left-hand F# is played without the F/C key in the right, so that 4R can go to the G# key without sliding laterally. While it is possible to play E/B and F#/C# without the F/C key for 4R, teaching the fingering with 4R down as the default prevents the development of an unwanted extra note between the these notes and the F or C adjacent to them. Remember: Unless absolutely unavoidable. alternate between left and right, using the greatest number of principal fingerings possible to avoid shifting the hand out of position.

Bassoon

Fingerings for bassoon are the most numerous and the least standardized of all of the woodwinds. Even the number and locations of keys can vary from bassoon to bassoon, and often a fingering which works well on one bassoon does not necessarily work well on another—especially true on student bassoons. Thus to a certain extent, each bassoonist eventually develops his or her own fingering vocabulary.

The serious bassoonist should consult fingering charts available the internet or (better) Cooper and Toplansky's monumental *Essentials of Bassoon Technique* (Union, NJ: Howard Toplansky, 1968).

As with all woodwinds, *the Principal fingering is the one which falls under the hand* without shifting the hand's position, and the alternate is the one for which the hand shifts out of position. Most of these alternate fingerings fall within the right hand, or over the butt joint, with the principle of alternation between the front and back of the bassoon, similar to the that of alternation between the right and left on clarinet and oboe. Thus, the principal F# is on the back (thumb), the principal G# is on the front (4R), and the principal A# is on the back (thumb) again, facilitating diatonic movement. The exception is F# in the staff--the fron F# is lower than the back one in this register, and thus easier to play in tune.

Remember to use the half-hole on the first three notes above the break and release the whisper key above that, and also, remember that above E-flat above the staff, the second register fingerings are not simply overblown lower register fingerings.

Saxophone

The basic range of the saxophone is almost identical to that of the oboe, and the fingering patterns are the least complicated of all the woodwinds. Thus, a glance at the fingering chart reveals that there tends to be only one fingering for most notes from low B-flat to high F (or F# if an F# key is present). This can lead to the mindset that there only needs to be one fingering for *all* notes, resulting in some annoying technical handicaps. The most

limiting common mistake is the use of only one fingering for the middle and upper B-flats, where the student uses “one-and-one” (fingering 15) or the “bis” key (fingering 16) to the exclusion of others. (A similar problem exists with Thumb Bb on flute).

The other problem, almost as pervasive, is the use of middle-finger F# to the exclusion of the chromatic F#. Otherwise, there are very few complications in comparison to the other woodwinds until one crosses into the altissimo register (above high F or F#)

Idea 2. Tone Placement and Voicing on the Woodwinds

General Principles:

Generally: The instrument does not make the pitch or the sound!! It needs to be formed before the air ever hits the narrow end of the instrument! This is why overtone or "squeak" studies are so valuable on the woodwinds, as is playing in the upper register without the register or octave key on the single reeds.

Generally: The air SPEED is controlled by an aperture. On the flute, this is the hole in the lips, and on a reed instrument, this is what the back of the tongue does.

Similarity: All reed embouchures require the engagement of the facial muscles—especially the lips. The lips are dynamic, supported by their own musculature and functioning as a spring, rather than merely as a pad being pushed by the teeth.

Similarity: To articulate, the tongue touches the reed on all reed instruments.

Similarity: Lower notes become difficult if not impossible to produce if there are leaks in pads anywhere on the instrument.

Similarity: All embouchures need to be “set” before the player attacks the first note of a phrase. Adjusting an embouchure “on the fly” never works as well as having all factors under complete control prior to making a sound.

On all reed instruments, tonguing against the roof of the mouth is a problem. When a student does this, one hears a small explosion inside the mouth considerably before the note speaks. To solve the problem, have the student place the tongue directly on the reed and blow, and then release the tongue after the air stream has begun.

Flute

Pitch on headjoint alone--a slightly sharp concert Ab.

Covering too much of the blowhole with the lower lip (rolling in too far), causing the sound to be small and the pitch to be flat. At the root of this problem can be (1) the position of the right arm—perhaps over the back of the chair, or in any case the right elbow being too low or (2) a mindset which defines a “good sound” as being “not airy.” If “airiness” is the sole benchmark of a quality sound, students will roll inward to eliminate the undesired sound.

Changing octaves is the result of manipulating the direction and size of the air reed and the airspeed.

Exercises page 111

Oboe

The oboe is played in the "center" of the pitch. If the reed has "lows" in the crow but the student cannot play low notes, perhaps the student is pinching the reed. Have them lower the pitch by creating more space between the teeth and then blow the tone back up to pitch.

The vowel sound (tongue position) changes from low to high, moving from "ah" to "ee" as the reed drags the lips into the mouth for higher notes.

Exercises page 112

Clarinet

Pitch on mouthpiece alone--between concert B and C.
Flexibility--almost an octave is possible, but a minor third is desirable.
Placement of tone--high and forward.

Problems:

Biting, pinching, especially in the upper register. Remember—the jaw moves forward, not upward for higher notes. (It's about leverage--not pressure).

Student is taking the wrong amount of mouthpiece. With too much, the sound is open, hollow and bright. Tone is unstable and squeaks are frequent. With too little, the sound is muffled and the upper register may not work at all.

Dropping the back of the tongue down in an “ahhh” position. The back of the tongue needs to be arched, in an “eee” or “ehh” position. Tongue positions (i.e. vowel sounds) that work for brass and flute do not work on a reed instrument. *This problem is the great danger of suggesting that the student to “keep an open throat.”*

Upper clarion (especially B-natural) “grunts” before the correct pitch comes out. The jaw is too far back or the tongue is in an “ah” position. Think of the reed as a ladder and the lower teeth as someone climbing the ladder. The higher notes are closer to the ligature than the lower notes. (This "grunt" can also happen if there is more than a nickel's thickness clearance between the register pad and the tone hole.)

Exercises page 113

Bassoon

The oboe is played in the "center" of the pitch. If a student is pinching, have them lower the pitch by creating more space between the teeth and then blow the tone back up to pitch.

The vowel sound (tongue position) changes from low to high, moving from "ah" to "ee" as on oboe.

Saxophone

Pitch on Alto mouthpiece alone A natural (though almost an octave from C to C is possible.

Pitch on Tenor mouthpiece alone E (though almost an octave from Ab to Ab is possible.
Pitch on Baritone mouthpiece alone Bb or slightly above (though almost an octave is possble from F to F.
Flexibility--up to an octave, but a minor third is desirable, and is approximately the flexibility that is needed for a vibrato. (Vibrato can start earlier on saxophone than any other woodwind).

Problems:

Complete lack of embouchure. Since it is so easy to make a noise on the saxophone by simply blowing, this may allow the student to accept not only any sound that emits, but also any pitch that comes out, and without the lower lip being actively engaged, eventually developing a vibrato is out of the question.

The lower lip must stand up by itself. Not doing so is the most common embouchure mistake. "Blasting" lower notes is a strong indicator of this problem. Always have a classical saxophone sound in the "mind's ear."

Exercises page 116

Idea 3. Tuning

Flute

The flute tends to go flatter than any other instrument at soft dynamics. The flutist must learn to keep the airspeed up and blow more across when playing softly***. Learn to sacrifice sound for pitch, and not pitch for sound!!***

Problems:

Using the middle or lower register fingerings in the highest register. While the "wrong" fingerings almost work, the notes produced will sound odd and will likely be out of tune. *This mistake is incredibly common.*

Playing low or middle F# with the R2 (like clarinet and saxophone) and not R3.

Oboe

Oboe pitch is largely controlled by the reed, which is generally 70mm. long on a 47mm staple. A longer scrape makes a lower pitch, all other factors remaining equal. If the problem is flatness, try a reed made on a 45mm. staple.

Problems:
The oboe tends to go flat at soft dynamics, so the oboist must push the reed into the mouth a little farther and increase the pressure on the reed.

Taking too much reed into the mouth. The overall pitch will be sharp, and C-natural in the staff will be extremely bright and out of control. Taking too much is far more common than taking too little reed. (Remember to "muffle" the lower reed).

Incorrect exit angle from mouth. The oboe must be held up and blown more directly into than clarinet—more like a brass instrument, saxophone or bassoon. Holding the instrument more up allows the lower lip to participate in the control of the lower reed and thus the sound will be markedly better than if the instrument exits in a clarinet-like angle.

Clarinet

The clarinet tends to go sharp at soft dynamics, so the clarinetist must maintain air support, decrease pressure on the reed and sometimes alter fingerings (for example, put the hand close to the holes to bring the pitch down).

Problems:
An individual note sounds with a stuffy “wheeze.” If the note is also flat to the notes around it, the pad is either too close to the tone hole or there is dirt in the hole itself. Correct by adjusting the key so that the pad lifts higher. The C#/G# key and the register key for throat B-flat naturally “wheeze” slightly because of the way the clarinet is designed. Using a cork or other solid pad instead of a pad with skin over felt may minimize this problem.

Inappropriate barrel or mouthpiece. Mouthpieces can be built at a lower or higher pitch, for example, Vandoren Series 13 mouthpieces are built for "American" (A440) pitch. Barrels vary in length which affects the overall pitch, but also the interior dimension affects the scale within itself. A barrel with a very small bore will cause the twelfths to be narrow and thus the clarion register becomes flat. One with a large bore will make the twelfths wide and the clarion register sharp.

Bassoon

The bassoon tends to go flat at soft dynamics, so the player must push the reed into the mouth slightly and increase pressure on the reed.

Bassoon pitch is controlled by the reed. A longer reed makes a lower pitch, all other factors remaining equal. Most bassoonists use a no. 2 bocal--a no. 1 is shorter (sharper) and no. 3 is longer (flatter). Remember, Fox bocals are shorter than many others, so a no. 2 Fox may be sharper than a no. 2 of another brand, for example Schreiber or Heckel.

One learns the best set of fingering for any particular instrument, to a greater degree than for any other woodwind.

Saxophone

The saxophone tends to go sharp at soft dynamics. As long as the lip is working independently of the jaw, tuning is controlled by embouchure.

Overall, saxophone pitch is controlled generally by the location of the mouthpiece on the neck. Remember that long overblown fingerings (D, D#, E) are usually sharp for acoustic reasons. Place the pitch in the center of the tone.