

“Something to ‘Crow’ About: The Sounds of the Bassoon!”

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What are the Foundations of a Characteristic Bassoon Sound?

- A properly formed embouchure that has the flexibility to adapt to all registers of the bassoon
- The use of different articulation styles to meet the demands of the music
- The use of voicing to address general intonation tendencies across the multiple registers of the bassoon, as well as individual pitches specific to a given instrument
- The judicious application of vibrato as a vehicle of musical expression
- A knowledge of the abdominal muscles responsible for generating airstream velocity
- A bassoon reed that is properly adjusted for intonation and response

What are the Variables Associated with Tone Production on the Bassoon?

- Instrument
 - Fox / Heckel / Puchner / Moosmann / Schreiber, etc.
 - Materials Used in Construction (Wood Species)
 - Finish (Different types of stain, varnish, acrylic)
 - Bore design (long, short, thick wall, thin wall)
- Bocal (bore design, length, wall thickness, materials used in construction)
- Reed Shape
- Reed Scrape (wedge, parallel scrape, modified parallel scrape, etc.)
- Thickness of a Performer’s Lips
- Size of Oral Cavity of a Given Performer
- Personal Concept of Sound (different teachers, ensemble sounds, etc.)

The purpose of this clinic is not to give preference to one sound concept over another (bright vs. dark, light vs. heavy, dampened vs. vibrant, etc.), but rather to present the fundamentals of tone production, so that the individual performer can find their specific concept of sound by adjusting and adapting each foundational component.

Embouchure Formation

- Having students whistle, or attempt to whistle, is an excellent way of forming the basic embouchure for the bassoon.
- Hooded sweatshirt/drawstring purse example also works well.
- Pull the corners of the mouth towards the center of the face, making the opening as round/oval as possible. The jaw will be slightly dropped.
- The goal of the bassoon embouchure is to gently hold the reed with equal pressure from all sides of the mouth, not just “north and south” (see *Example 1*).

- Equal pressure from all sides of the mouth allows the reed opening to be at its maximum, which is the ideal for the majority of bassoon playing.

Crowing the Reed

- To prepare a bassoon reed, immerse the entire reed in water, remove, and place on a surface for 1-2 minutes. This method is more effective than soaking the entire reed in water for several minutes, and actually prepares the reed for performance in a shorter amount of time.
- Insert the soaked reed so that the red part of the lips almost touches the first wire.
- Place the tip of the tongue on the tip of the reed, then, release the tongue letting air into the reed.
- If the reed is properly soaked and adjusted, a mix of three frequencies will occur producing a single pitch (see *Example 2 - Tonal Spectrum Diagram*). Most of these single pitches range from an Eb to an F.
- These frequencies can be isolated by first blowing a slow air stream and then slowing increasing it. The longer that these three frequencies last with a fast air stream, the more balanced the reed is.
- For the vast majority of bassoon playing, all three frequencies are desired. The exceptions are the extreme low and high registers of the instrument.
- Example – *Symphony No. 4* (Tchaikovsky) will use an embouchure that is slightly firmer. This closes the aperture of the reed, focusing the vibrations down the center of the blade.
- Example – *Symphony No. 6* (Tchaikovsky) will use an embouchure that is very relaxed, allowing the entire reed to vibrate, particularly the very sides of the reed where the low register is controlled.
- If one frequency dominates the reed's crow, that can lead to specific methods of adjustment, or, using that reed for specific types of repertoire (ex. *Symphony No. 4 vs. No. 6 - Tchaikovsky*).
- Almost all embouchure issues are due to reeds that are poorly made/adjusted, which means that the facial muscles must compensate for any deficiencies in the reed. In most cases, this happens where bassoon reeds are too thick and/or the aperture is too open.
- If the student can only produce a high pitch on the bassoon reed, then either the bassoon reed is poorly adjusted, or the embouchure is too linear in design.
- Once the student can produce a crow with all three partials, have them sustain that crow for several seconds.
- Once they can sustain the crow, have them move the reed back and forth in the mouth but still sustain the crow. This will show them how relaxed their embouchure needs to be.

Articulation

- For the vast majority of tonguing on the bassoon, articulation is done on the tip of the reed just behind the tip of the tongue.

- “One taste bud on the reed!” Many beginning bassoonists use too much tongue tissue to articulate, which will eventually compromise their tonguing speed and variety of articulation styles.
- Excessive jaw movement should be eliminated as it will rapidly change the aperture of the reed, as well as limit the velocity of single tonguing.
- Take care that the student is not “breath” tonguing or anchor tonguing.
- Legato tonguing
 - “Dah” syllable
 - 99% air / 1% tongue
 - Can also tongue the bottom blade of the reed for a seamless legato stroke, as well as the corner of the reed.
- Staccato tonguing
 - “Tah” syllable
 - When introducing staccato to a student (or any other style), be sure that they are not ending the note by placing their tongue on the reed. The tone should be stop by stopping the air with proper breath support.
 - Most students get into trouble with staccato (or other styles) when they use a “Tut – Tut” syllable, rather than a “Tah – Tah” syllable. A “Tut” syllable will create a loss of resonance, whereas a “Tah” syllable will leave more sound in the hall. Also, using multiple “Tah” syllables minimizes the amount of time spent on the tip of the reed.
 - The bassoon is capable of producing the shortest staccato of almost any wind instrument (think *Sorcerer’s Apprentice* - Dukas), so care must be taken when playing a detached sound that contains more tongue than tone.
 - In specific situations, stopping the tongue is permissible if it fits the character of the music (ex. Stravinsky *Octet*)
- Marcato/Pesante/Weighted tonguing
 - “Tah” syllable utilizing more tissue of the tongue
 - Start the tone a bit further back from the tip
- Increasing Single Tongue Speed
 - Elements of a fast single tongue: fast air, straight tongue, using the tip of the tongue
 - “Dah” syllable – think of it as fast tenuto tonguing
 - Increase velocity on one note – then introduce the fingers
 - Alfred Rose method (principal clarinet – Vienna Symphony)
 - Take open F / metronome at 40
 - Quarter / Eighths / Triplets / Sixteenths / Quintuplets / Sextuplets

Voicing / Intonation

- Assuming that the embouchure, reed, bocal, and bassoon are all in working order, playing in tune on the bassoon is accomplished by the following:
 - Each register of the bassoon has very predictable intonation tendencies that can be addressed by changing the vowel shape inside of the mouth which in turn changes the size of the oral cavity. This procedure is known as voicing.
 - Voicing will slightly change the aperture of the reed, which will either dampen some parts of the reed (playing in the high register for example), or maximize the vibrational capacity of the entire reed (playing in the lowest register). Therefore, a properly made and adjusted reed is critical to playing in tune.

- There will be individual pitches in each register of the bassoon that will have slightly different tendencies than notes that are even one half step apart. In any case, changing the size of the oral cavity is the primary vehicle for adjusting intonation.
- Moving the bocal does nothing for the intonation of the instrument. However, if the instrument is significantly sharp, or flat overall, a change in bocal is warranted to correct this issue.
- Heckel/Puchner/Moosman/Leitzinger 2 bocal and a Fox 3 bocal: A=440
- Heckel /Puchner /Moosmann/Leitzinger 1 bocal and a Fox 2 bocal: A=442
- Intonation Tendencies on the Bassoon
 - Pedal Bb to G below the bass clef: Sharp (“Ah” vowel) – very open reed aperture (see *Example 3*)
 - Taking in less reed can help with intonation as well as extremes in volume and rapid articulation. Since the very sides of the reed are exposed, the sound will be more “reedy” but much easier to manipulate
 - Low Ab to A on top of bass clef: reasonably stable with a few exceptions: (“Eh” vowel”) (see *Example 4*)
 - Second space C# - can be flat if the reed is too long
 - Third space E – can be flat if the reed is too long or the tip too thin
 - Fourth Line F (open) – tends to be bright and sharp
 - F#, G and Ab – all ½ hole notes that tend to be sharp
 - A on top of bass clef to second ledger line F: flat (“Ee vowel) (See *Example 5*)
 - This register of the bassoon is the most resonant – the vast majority of the major orchestral excerpts for bassoon are found here.
 - The bassoon becomes more resistant beginning with A on top of the bass clef. Therefore, when playing a passage that utilizes multiple registers of the bassoon, you will need to produce a subtle crescendo for an even sonority (F major scale example)
 - The C# just above the bass clef is sharp when using the proper fingering. The player will need to switch to an “Eh” or “Ah” vowel to voice this pitch a bit lower.
 - E and F above the bass clef are very resistant, and in some cases a harmonic can occur if there is not enough support for these notes. In those cases, slightly closing the aperture of the reed will most often fix this problem.
 - Second ledger line F# to third space C#(treble clef): Sharp (“Oh” vowel) (see *Example 6*)
 - The upper register of the bassoon is notorious for having student close the aperture of the reed to facilitate playing these notes. While closing the aperture does make these upper notes speak easier, tone and intonation are vastly compromised. Finding a balance between abdominal support and embouchure support is key here.
 - High D and above: Flat (can close the aperture of the reed a bit) (see *Example 7*)

Vibrato

- Development of a quality “straight” tone is fundamental to producing vibrato on the bassoon. Once a student can play in tune across all registers with no vibrato, they are ready to begin this technique.
- Three possible methods to produce vibrato on the bassoon: 1) jaw, 2) vocal folds, 3) abdominal muscles (intercostal muscles).

- Most professional bassoonists use either their vocal folds or their abdominal muscles to produce vibrato.
- I introduce vibrato through a series of progressive exercises created by the abdominal muscles (see *Example 8*).
 - Some students master this technique and produce vibrato solely using these muscles.
 - Other students find that once they begin to work on vibrato with their abdominal muscles, it “travels” up to their vocal folds and they eventually initiate vibrato there.
 - Lastly, some students will produce a very natural vibrato without any of the above exercises or experiences. If that happens, don’t mess with it!!!!

Abdominal Support

- As teachers, we often advise our students to “support their sound”, but this information can often be confusing, and sometimes misleading.
- The following concepts are taken from *Sound In Motion* – David McGill
 - Before we inhale (when our lungs are “empty”) our lungs are very much like rolled up tubes of toothpaste.
 - The muscles that move air through wind instruments are found right in front of our lungs in the lower portion of our abdomen.
 - If we do not inflate our lungs all the way to the bottom, these muscles will not have nothing to push against, and as a result, our ability to produce sound will be compromised.
 - During the inhalation process, it is very important to let our abdomen expand so that we can inflate our lungs all the way to the bottom.
 - The only variation to this concept is if only a moderate amount of air is needed to play a phrase.
 - Oboists and bassoonists can sometimes take in too much air, and then not be able to let it out! This is sometimes called “stacking”, and produces excess carbon dioxide which is detrimental to the performer (brain fog, etc.)

Basic Bassoon Reed Adjustments

- When making reeds for myself or my private students, my primary goal is to make reeds that play in tune and that respond easily in all registers.
- Most often, that begs the question: what about tone????
- Norman Herzberg/Ben Kamins/William Short philosophy: response and intonation are qualities of a reed that can be objectively measured. While a bassoon tone can be analyzed as a wave form, there is no true way to objectively evaluate a bassoon sound.
- This does not mean that sound is not important! It is! However, to some extent, the sound of a particular bassoon reed is already built into the piece of cane before it is even made into a reed blank. If a particular piece of cane plays in tune, and has an easy response in all registers, it also has a sound that will work with my setup of bocal and bassoon.
- Therefore, the following adjustments listed below will adjust intonation and response on any bassoon reed simply by using a pair of pliers.
- Intonation
 - If the reed overall is flat in pitch, gently squeezing the second wire from side to side (making it more rounded in shape) will raise the pitch. This will also “darken” the sound somewhat. Squeezing the second wire will also close the aperture of the reed

a bit, so if it is too closed you may have to squeeze the first wire from side to side a bit to return the reed to a playing position.

- If the reed overall is sharp in pitch, gently squeezing the second wire from top to bottom (making it more oval in shape) will not only lower the pitch, but it will also increase response as well. This is particularly true in the low register. Making the second wire more oval will also increase the reed aperture. If it is too open, you may have to squeeze the top wire from top to bottom to find a comfortable playing position.
 - Of these two adjustments, I find that most commercial reeds that I encounter require the second adjustment much more than the first.
- Response
 - If the reed does not respond well, particularly in the low register where most bassoonists spend much time, squeezing the second wire from top to bottom (oval shape) is the best solution. The response of every bassoon reed is controlled by the very back of the blade, so flattening the second wire slightly weakens the reed and lessens the pressure between the very sides of the reed. This adjustment will greatly enhance the lower register as well as drop the pitch. As mentioned above, the aperture will open when the second wire is flattened, so the first wire may have to be flattened as well to facilitate tonguing.
 - If the response is too easy, squeezing the second wire from side to side will help, but in most cases this is an adjustment I rarely use unless the cane is very soft. Should you encounter a bassoon reed that is soft, pulpy, or cannot play just above the bass clef, this adjustment may be needed.