

Solo Class Lecture #29
MASTER CLASS PRESENTATION
ELEMENTS OF BRASS PERFORMANCE - INTONATION
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There are a number of factors which impact on brass intonation. The following characteristics are listed in increasing specificity:

Posture
Breath Support
Air Speed and Volume
Principles of Harmonics (Partials)
Chordal Tuning Tendencies

Posture

Our anatomical structure has a tremendous effect on all aspects of our life and function. A basic principle of the musculature is that "any single muscle has only one function; to contract". It is the balance of opposing muscle groups that provide us the ability to move. Once a muscle is involved in contracting, it is not possible for that same muscle to expand at the same time. It is the over load of opposition that creates much of the tension that we experience when we are nervous or under stress. In relation to posture, it is important that the player sit erect so that the body mass is suspended by the backbone. Sitting in a posture "as if you are being held from the ceiling by a string" lines up the musculature so that the abdominal and back muscles are not required to support/balance the body weight, therefore allowing these muscles to be free to inhale and exhale air correctly. Leaning back requires the abdominal muscles to contract while leaning forward involves the lower back. Again, since muscles can only function in one capacity, poor posture eliminates correct muscle expansion and support of the breathing mechanism.

Breath Support

The truest measure of proper breathing is the fullness of sound and complete ease by which a player can function. It is possible to expand the abdominal cavity without the intake of air, due to the elasticity of the region of the body. It is the abdominal area and not the "diaphragm" that impacts on the intake and exhale of the air stream. The diaphragm is an inanimate muscle that is engaged by the abdominal musculature. A player should do breathing exercises daily in order to control and apply the aspects of expansion and compression to Brass Performance (please refer to the breathing exercises at the end of this handout). The best way to evaluate this process is by using devices that require air motion and speed to create a visual response. Breathing tools are an important part the equipment necessary for the proper development of all elements of brass playing (sound, range, endurance, articulation, etc.).

An imbalance if in the area of Breath Support will cause a profound effect on the intonation. Generally, young players have not developed a proper understanding of air support and compression as it relates to the range and volume requirements of brass instruments. This imbalance also causes some general pitch problems;

- from low C down is usually flat due to inadequate embouchure firmness and lack of support
- from the 6th partial up is generally sharp due to excessive mouthpiece pressure. This will change to a flat and spread sound as soon as the embouchure begins to fatigue.

Speed and Amount of Air

There is a balanced coefficient between the amount and speed of the air. The low register requires a large amount of air without much speed while the upper register requires greater speed and less volume of air. Again, in a general view, players use too much speed and not enough air in the low register. The sound is un-focused, flat and usually articulated poorly. The aperture is often blown apart by the speed. This causes players to use even less support in order to compensate and this makes the problem worse. The upper register is usually approached with too much air and not enough speed. The sound is un-focused and often the embouchure will spread and collapse because of the imbalance and too much embouchure pressure.

Principles of Harmonics (Partials)

Brass instruments are constructed on the principle of partials or harmonics. As the speed of vibration increases, the resultant sound will jump from one common fingering to the next. In order play chromatically, adding tube length (valve combinations) is necessary and effected by the tuning characteristic of each partial. Therefore any valve combination based on a flat partial will also be flat. Understanding each of the partial tendencies will greatly add to the refinement of pitch. Combining two or three ensemble parts, drawing from different partials with different tendencies complicates intonation.

Due to the close part writing in most wind literature, the trumpets are usually scored in opposing partials to each other, this is most obvious in the music of Mozart, Haydn and Beethoven with the seemingly simple octave scoring.

Crossing partials opens up the possibility of drawing many fingering possibilities for most notes while it does make many trill patterns more difficult.

Chordal Tuning

The tendencies of major and minor chord members are critical to tuning. The third of a major chord must be lowered 15 cents while the fifth should be raised 3-4 cents (a cent is one hundredth of a half step). In the minor chord the third must be raised 8 cents. The major seventh must be lowered 6 cents. Starting with this information will provide the player with an outline of the pitch center. Understanding and attending to these pitch tendencies will eliminate 80% of the pitches of any work and provide a basis to fit in the remaining notes of the line. Combining the knowledge of the Partial and chordal tendencies is what separates the finest brass players and adds an ease and sparkle to their playing.