

BREATHING IN RELATION TO THE PROPER
INITIATION OF A SOUND

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The proper initiation of a sound on the trumpet or any brass instrument is generally associated with the action of the tongue. While this is a vital consideration, an effective “attack” is a result of a combination of factors including inhalation, flow of the breath during exhalation, and air speed, as well as tongue placement and action. In addition, the timing of all these elements into a synchronized process is necessary for the proper initiation of a characteristic sound.

When considered as a whole, many problems associated with poor tonguing may be attributed to inefficient and incorrect use of the air stream. This, as well as poor timing of the breath and tongue action, may lead to an inadequate initiation of the sound.

In an effort to correct tonguing problems (attacks), one pedagogical approach centers on the mechanics of tongue placement rather than these other related areas. However, when addressed in relation to proper breathing techniques, tonguing errors will usually be eliminated or improved upon, resulting in the clear, clean initiation of a sound.

Correct breathing technique is probably the single most important skill necessary in achieving a proper sound on the trumpet. Many positive (as well as negative) aspects of a performance may be attributed to good breath control skills (or lack thereof). Proper muscular development of the embouchure is dependent on the proper utilization of the breathing mechanism.

Inhalation is the first step needed to begin the process. The “act” of breathing should be a natural one without tenseness or constriction of the muscles in the chest and upper torso. Beginning from a relaxed position will help to allow the lungs to expand completely and take in the maximum amount of air possible. As the lungs expand downward and outward, the rib cage will also enlarge.

Much is often made about avoiding “chest breathing”, “raising the shoulders”, and even “breathing through the stomach”. All of these visualizations can be removed from consideration simply by concentrating

on the expansion of the lung area below the ribs. This is the natural position for the involuntary breathing process and when applied to playing a wind instrument is magnified in degree but not altered into any of the above misconceptions. By exhaling fully, the lungs will be able to take in their full capacity of “fresh air” during inhalation. This will allow the performer to begin from a truly relaxed starting point.

If the lungs are partially filled with air left over from a previous breath, the effect is that of “stagnant” or “stale” air. This air cannot be utilized effectively as it is not dynamic or in motion, and the effort needed to move the air column at a high velocity will result in a harsh or uncontrolled attack.

Performers should exhale fully in preparation for a good full breath. Inhaling a full capacity of “fresh” air will help in obtaining the proper air speed needed for the initiation of a tone. To practice this, one should exhale fully and slowly, keeping in mind that breathing is a natural action that we do at all times unconsciously. The exhalation needs to be relaxed and yet complete.

When inhaling, the muscular action should also be relaxed yet still taking in a full complement of air just as it was in exhaling. As Dale states, “The average person normally uses only about half his lung capacity in regular activity. Brass players must use their total lung capacity.”¹ This process of exhaling and inhaling completely is the basis for a controlled air stream. The necessity of this is reflected in the statement “Correct breathing means correct phrasing.”²

Many teachers dwell on the physiological aspects of the breathing process. While an understanding of the mechanics of respiration may be somewhat helpful, this writer feels that by becoming consumed with the specific acts of breathing, one can become too focused on independent physical motions, leading to confusion and frustration. This relates to the catch phrase “paralysis by analysis”. As Dale stated, “Breathing is a quite unconscious function of the body.”³ We do it all day every day. One should not make it a difficult thing.

A systematic study of the actions of the diaphragm, chest muscles, and other related areas used during the breathing process seem more appropriate for an anatomy lecture rather than for preparing to perform a musical passage. After all, the diaphragm is an involuntary muscle, and since we are unable to control its actions there is really no reason to dwell on it. One’s

effort should be on breathing in a relaxed and complete manner. The mechanics will take care of themselves.

Key phrases or visualizations may help a student grasp the concepts of proper breathing techniques. Raphael Mendez had a formula for breathing of “Down...Out...Up!”⁴ This concept is to breathe in slowly and quietly without gasping as one feels the air filling the lungs from the bottom (down). The waist and rib cage will expand outwards in all directions (out), and then finally fill the upper sections of the lungs (up). This simple formula dwells on one’s feeling the process of filling the lungs and not on the physiological complexities of the muscles and the multitude of interactions necessary to perform the act. As Arnold Jacobs puts it: “The human body is the most complex machine on this planet. We have physicians who study for much of their lives to understand the workings of the human body because we are enormously complex. The one thing we cannot do is work with our human body as though we were a mechanic.”⁵ Concentrate on the process and the feelings and not the mechanics. “The taking of the breath must be very natural and without distortions.”⁶

Terms such as “Breathe from way down”, “Breathe deeply”, and “Breathe fully”, all may help a student conceptualize the feeling without getting caught up in the physics. Phillip Farkas has about as simple an analogy as could be possible. “Inhale a basketball.”⁷ David Hickman also states it well when dealing with over analysis. “The player should not be concerned with the process (physical or mental) but through conscious repetition and practice have this step be second nature and natural rather than a step in between the conceptualization and actual initiation of a tone.”⁸

When a performer has learned to inhale correctly (relaxed and fully), attention must be directed to expelling the air in such a manner that a good characteristic tone will result from the vibrations of the lips. “The breath is to brass playing what the bow is to string playing. They both are sustained motivators of the tone. Air is the motivating power behind all brass playing.”⁹ The key words here are sustained motivators of the tone. To achieve this dynamic force something more than a natural exhalation of the breath must take place. A natural exhalation takes no effort. Just let go and all the muscles return to a neutral position after taking a full breath. Projection of the air column into a brass instrument cannot be passive. Resistance is the missing factor in obtaining this motivating force.

Resistance occurs when the natural flow of the air stream is constricted as it leaves the lungs. Many factors come into play during this part of the breathing process. As the air moves out of the lungs, it flows through the throat, over the tongue, past the teeth, through the lips, into the mouthpiece, and eventually into the instrument. As Bush puts it, “Some dynamic force must drive the air through these barriers.”¹⁰ This dynamic force is commonly known as breath support. The air stream must be even and continuous and at the correct velocity. The abdominal muscles and muscles around the rib cage provide this support. During the performance of a tone, these muscles must remain contracted as the air is blown or the velocity will decrease, resulting in pitch and tone quality problems. These muscles support the diaphragm during the exhalation. A good conceptualization of this is the feeling obtained during a cough or a sneeze. These are natural examples of breath support. When playing a brass instrument, one simply wants a more controlled and sustained version of this support.

“Breath support should not be confused with tension. Tension has no place in good tone production.”¹¹ This warning by Roger Sherman calls attention to the necessity of playing in a relaxed physical manner. A steady contraction of the abdominal muscles will result in an even flow of air along its pathway. Air speed is also controlled by these muscles as the player pushes the air through the horn at various levels of exertion. The air column must be pushed with an even and uninterrupted flow with no disturbances caused by unnecessary muscle tightness.

A constricted throat, a tongue that is tense and placed too high in the mouth, or a combination of both, along with the lips, teeth, mouthpiece and instrument, can cause excessive resistance, resulting in a strained tone quality. Striking a good balance is the key to coordinating all of these factors. What Roger Sherman is referring to is the use of too much tension in the throat, tongue or lips.

The proper balance is easily identifiable in his balloon representation. When a balloon is inflated fully and then released, three patterns of flight are noticed. At first, it flies in a haphazard and uncontrolled manner as it jumps across the room. Then there is a short period of time where it flies in a controlled manner in a singular direction. Finally, as the air supply is depleted, the balloon can no longer be supported, and it falls to the floor in the last few moments. This third stage is not pertinent to brass playing, as

the final stages of the breath exhalation are not suitable for maintaining a tone.¹²

Uncontrolled exhalation compares with the first stage of the balloon's flight. A high volume of air without the proper control (resistance) results in a forced, strained sound. The second stage is reached when the balance between air flow and resistance is achieved and a controlled flight (tone) is obtained. As performers with the muscular control available to us, the ability to sustain a controlled tone is much greater than the simple balloon. Keeping this balance is the key to good performance practices in any given musical application. Constriction of the throat, tongue, teeth, and lips can have detrimental effects on the resulting tone quality and thereby the musical goal.

A relaxed throat is a goal at all times. Degrees of control will vary for the tongue and aperture (lips) depending on the register and volume necessary for a particular musical passage. It must be kept in mind at all times to have balance between air flow and undue tension. Each performer should work to obtain a satisfactory balance of air and resistance unique to his/her physical characteristics, instrument qualities, and the musical requirements of the piece.

This entire process of inhaling properly and the controlled expelling of the air stream with the proper resistance is the single most important aspect of producing an acceptable tone on a brass instrument. Statements like "project the air through the instrument"¹³ sound great but are rather vague. This writer much prefers Phillip Farkas's analogy of "Inhale a basketball. Exhale a rope."¹⁴ This gives a good visualization of the proper balance between breathing in and good breath support for a full, strong sound. For soft playing, this can be modified in degree to "Inhale a tennis ball. Exhale a rope."¹⁵ Again, it is the balance between air flow and resistance that is important.

Up to now, the emphasis on the proper initiation of a tone has been on the acts of inhaling and exhaling (breathing). While this is of primary importance, another key factor is also involved. This factor is the tongue and its actions during the beginning of a sound on a brass instrument. When utilized properly, the tongue should not be noticed. Due to tonguing problems, poor attacks (initiation of tones) result, which cause very frustrating problems for the performer.

The action of the tongue in and of itself is very simple. It acts as a single valve which allows air to pass through the oral cavity and through the teeth, causing the lips to vibrate and thus producing a tone on a brass instrument. The action of the tongue should be a quick stroke in which the tongue touches some portion of the back of the upper teeth. This stroke must be of short duration (instantaneous) or problems will result. Just as balanced air flow and resistance is critical, so is balance in tonguing. Non-use of the tongue results in an air attack, usually of very indistinct clarity. Too slow of a stroke interrupts the air flow which stops the vibrations of the lips. A quick-striking tongue allows for the momentary interruption of the tone but does not disrupt the continuous flow of the air stream.

The tongue pressure against the teeth during a performance can also play a role. Heavy pressure of the tongue against the teeth results in a sluggish and slow initiation of the sound. A light tongue pressure allows for minimal distortion of the tone. Obtaining a good balance of all of these extremes is crucial to achieving a good attack.

According to David Hickman, “The tongue should help start the note, not be part of it.”¹⁶ A quick, light touch is the best action for the tongue. The rebound of the tongue to its original position after the brief touching of the teeth allows for a good stroke of the next note and should happen naturally, much like the rebound stroke or bounce a percussionist uses when performing a roll (stroke/bounce). “The initial stroke is quick and conscious, while the rebound is not.”¹⁷ Keeping the tongue light and quick is the crucial element. Physical tenseness, anxiety, and nervousness can all affect the quality of the tongue action.

It is important not to dwell on the mechanics too much when trying to solve tonguing problems. The action is actually not too different from everyday speaking and should come fairly naturally. “The tongue should be used unconsciously as in speech and should never be stiff or tense.”¹⁸ Unfortunately, the tongue does not function independently from all of the other physical actions needed to produce a tone. As stated earlier, the tongue is simply a valve and does not actually start the sound. Deye puts it nicely: “It is only when good tongue action is combined with correct breathing, and a well formed embouchure, that we obtain the desired results.”¹⁹

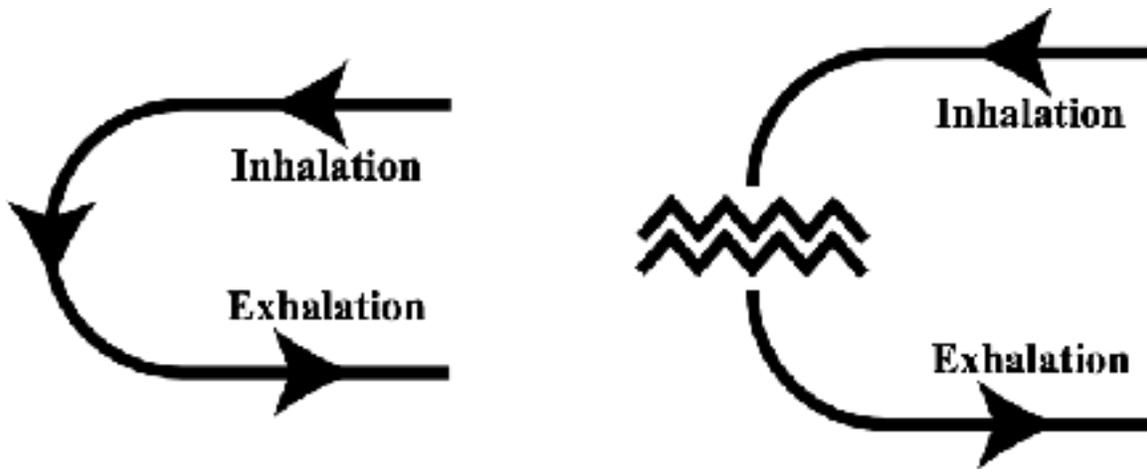
The inhalation, the breath support during exhalation, and the tongue action all must work together with the embouchure to produce a

characteristic tone. If any aberrations occur in any of these areas, the result will be an inferior tone quality. Timing, or synchronization between these elements, seems to be a critical aspect to solving problem attacks. When examined too closely, these elements become separate and distinct from each other when in reality they are very closely related and dependent on each other to obtain the desired results. The situation actually is an “all or nothing” one, in which all aspects must work together or the end results are unsatisfactory. It is here that this writer feels not enough has been written or taught concerning the relationship between proper breathing and proper tonguing and the initiation of a tone.

When put together, the actions of inhaling, exhaling with good breath support, and the striking of the tongue must occur with a continuous, non-stop cycle of motion. The actions must develop with an uninterrupted sequence of events timed correctly to reach the desired goal of a good attack. Only then will the lips vibrate properly with a distinct, controlled sound. The lips have no part in attacks. They are wholly dependent on the air stream and the valve action of the tongue to initiate the sound. As Whybrew states, “Playing is a complex series of actions coordinated together. The basis of all is the breath.”²⁰

The timing and sequence of the breathing and tonguing process is critical. Many students breathe quite deeply and fill the lungs to capacity with air. However, they will often hesitate at the top of the breath before exhaling. The result is that they are actually holding their breath for just a moment. This destroys the dynamic motion of the air column, as it is actually shut down. The effort it takes to get the air moving again is extreme and usually out of control, much as in Farkas’s first stage of his balloon analogy. The resulting physical tension will be manifested in a heavy attack with too much tongue pressure, causing a poor attack with an out-of-control sound.

The progression from inhaling to exhaling should be smooth, and the transition should be imperceptible.



If no disturbance occurs at the top of the breath, as illustrated in the left figure, then the air flow stays in motion and is dynamic and alive. If there is a break, as in the right figure, then the effect is stagnant, stale air that can only be put into motion again with a tense, violent, physical response, as in a sneeze or a cough. It is very difficult to focus this type of action into an acceptable sound on a brass instrument. “Breathing should not be two separate actions, but one continuous motion.”²¹

To practice this, one needs no instrument. Simply inhale and exhale slowly and fully concentrating on the continuous flow of air with no stops at the transition point. Some prefer to do this in a counting pattern as in a four-beat inhalation and a four-beat exhalation. This should be fine if done slowly and the continuous flow is kept intact. As mastery of this is developed, the speed and amount of air taken in and pushed out can be increased. Care should be taken to keep the air moving no matter how fast the inhaling and exhaling actions occur. Many performers breathe in rhythm to the musical phrase about to be played. This will often develop a sense of timing which will benefit the non-stop flow of the air column.

Several students over the years have complained that his/her band directors have commented on their “bad” sound, and wanted to improve this area of their playing. After listening to them play and observing the physical actions accompanying their performance during the first lesson, it became obvious that their fundamental tone quality was actually quite satisfactory and appealing. They usually had a nice, clear, semi-dark quality to their tone with good centering of the pitch. The problem was in the initiation of each tone. When told to disregard any poor beginnings of long tones and to just

listen to the pure, sustained note, they started to realize that the basic sound was just fine. After a poor beginning first note, extended slurred phrases sounded fine until a breath was taken and the poor attacks returned. Some breakdown had taken place in the breathing cycle which was interrupting the air flow, resulting in an uncontrolled attack. Usually this was a result of developing the habit of inhaling fully, hesitating at the top of the breath, and then blasting the air through the horn completely out of control, with the associated heavy pressure of the tongue against the teeth compounding the problem. The sound this causes, needless to say, is not very appealing. Each time this takes place the same result is present. When the breath is taken in, the beginning of the next phrase is blasted and not under control.

Many times this is considered to be a tonguing problem when actually the fault lies in the breathing pattern that the student is using. The tension in the embouchure and tongue muscles resulting from this hesitation at the transition point between the inhalation and the exhalation (actually holding the breath) causes an airstream that cannot be focused for a controlled vibration of the lips. The tongue is tense and in a forward starting position, and with this undue pressure the aural effect is that of a “splatty” or poor attack. When the breathing process is brought under control and the proper sequence of relaxed, well-coordinated actions is achieved, the tension in the tongue muscles is lessened, and a more characteristic, clean beginning of the note results. By getting rid of the hesitation at the top of the breath, the air is allowed to flow in a smooth and uninterrupted stream, and the tongue can be used as lightly as needed for articulating the beginning of the tone desired.

The assumption that the cause of a poor attack is the tongue alone can lead to an in-depth analysis of the tongue and its role in beginning a note. Focusing attention on the tongue alone without keeping in mind the concept of proper timing between the breathing process and actions of the tongue can lead to frustration in the performer. Julius Erlenbach, in his article on tonguing, gives good advice on the proper mechanics of tonguing on a brass instrument, delving into the concepts of an open, relaxed throat and various articulation syllables that may be used to initiate a tone.²² He never once mentions, however, the importance of breathing properly and how it relates to a good attack.

This writer feels that it is a major misconception to assume that a poor attack is totally the result of poor tongue action. The classic tongue motions

may be performed to perfection and still result in a poor attack if not accompanied by a constant, dynamic air stream that is timed well. The air stream (or breath) must be of good velocity and sufficient for the volume of sound required, as well as appropriate for the register of the passage to be performed. Tone is initiated by the breath, not the tongue. Louder playing requires the same tongue action as soft playing. To play fortissimo requires more air, not more tongue. The whole process of breathing in and out coordinated with the action of the tongue must be considered together and well balanced in order to yield a proper attack.

Robert Grocock emphasizes breath support in relation to tone placement and uses concepts such as “thinking forward with the breath”, “projecting each ascending note farther away”, and “blowing towards the mouthpiece rather than into it”²³. While all of these are good ideas, again the proper timing of a light, quick stroke of the tongue is not really considered.

Many instructors have written articles dealing with breath support and its importance in tone production. Many such as Whybrew and Bush dwell on aspects of the tongue and its related actions. Few seem to blend all of these various aspects together into one cohesive process, even though each area affects the others in a positive or negative manner. Breathing, tonguing, embouchure formation, and response are all interrelated and a deficiency in any one area can and will affect the others to the detriment of the sound. Variations in the amount of air as well as the speed of the air stream will have positive or negative effects on the tongue pressure and speed of the tongue action. Control of the air column is directly related to the way a performer prepares the breath and the manner in which the transition between inhalation and exhalation is approached.

A good, relaxed inhalation, with a smooth, nonstop transition to the exhalation will result in a more constant flow of the air stream, and when timed correctly with a light, quick stroke of the tongue will result in the satisfactory initiation of a tone. Any breakdown in this smooth, relaxed, continuous process in any one area will cause problems in the others as well as the resulting sound. All of the areas rely on each other, and everything goes back to the initial breath and the manner in which the air is set into motion. William Whybrew’s statement in an article on a singing approach to the brasses seems to say it all: “The basis of all is the breath.”²⁴ In another later article he also attributes most problems in performance to “failure to

prepare the breath.”²⁵ While he is referring to tone production in general he also is one of the few to consider the breathing process in relation to poor attacks as in his statement, “Breath determines the weight of an attack... Not the tongue. The air must be dynamic and in motion with the release of the tongue.”²⁶

Louis Davidson also presents the concept of the necessity of coordinating breathing with tongue action to achieve a good characteristic attack. “In a good attack the note starts freely, without hesitation, force, or hint of a hiss. Synchronizing the lips, breath and tongue produces a pure sound with immediacy and presence. Should the timing of any one of these basic elements be off, the result will be a bad attack.”²⁷

The proper initiation of a sound on a trumpet or any brass instrument is dependent on the coordinated efforts of many areas of instrumental pedagogy. Focusing on only one area such as the tongue placement and the associated actions of the tongue will not yield the desired improvements in attacks. Paying attention to proper placement of the tongue is important, and irregularities in this area must be addressed. Taking a larger look at the entire respiratory process and looking for deficiencies in aspects of breathing will lead to an understanding of the dependent relationship between tonguing and breathing. Inhalation, exhalation (and the transition between the two), air flow, timing, and the pressure of the tongue stroke all affect the resulting initiation of a sound. When aberrations in one area affect the other in such a dramatic way as to produce poor attacks, performers would do well to look to the breathing process for solutions. Usually they will find that thinking of the entire coordinated effort as one continuous motion rather than as a series of step-by-step actions, will enhance the level of improvement one may achieve in producing an acceptable initiation of a tone.

ENDNOTES

- 1 Delbert Dale, *Trumpet Technique*. (Oxford OX2 6DP: Oxford University Press, 1985) p.34.
- 2 Joseph Bellamah, *A Trumpeter's Treasury of Information*. (San Antonio, Texas: Southern Music Company, 1969) p. 27.
- 3 Delbert Dale, *Trumpet Technique*. (Oxford OX2 6DP: Oxford University Press, 1985) p.33.
- 4 Ibid. p.34
- 5 M. Dee Stewart, Ed. *Arnold Jacobs: The Legacy of a Master*. (Northfield, Illinois: Instrumentalist Publishing Company, 1987) p.135.
- 6 Joseph Bellamah, *A Trumpeter's Treasury of Information*. (San Antonio, Texas: Southern Music Company, 1969) p.27.
- 7 Phillip Farkas, *The Art of Brass Playing*. (Bloomington, Indiana: Brass Publications, 1962) p.60.
- 8 David Hickman, "A Natural Approach to Trumpet Playing," *The Instrumentalist – Brass Anthology*. (August 1979) p.840.
- 9 Phillip Farkas, *The Art of Brass Playing*. (Bloomington, Indiana: Brass Publications, 1962) p.57.
- 10 Irving Bush, *Artistic Trumpet Technique and Study*. (Hollywood, California: Highland Music Company, 1962) p.16.
- 11 Robert Sherman, *The Trumpeter's Handbook*. (Athens, Ohio: Accura Music, 1979) p.20.
- 12 Ibid. p.9.
- 13 Phillip Farkas, *The Art of Brass Playing*. (Bloomington, Indiana: Brass Publications, 1962) p.60.
- 14 Ibid.
- 15 Ibid.

- 16 David Hickman, "A Natural Approach to Trumpet Playing," *The Instrumentalist – Brass Anthology*. (August 1979) p.840.
- 17 Ibid.
- 18 Howard W. Deye, "The Use of the Tongue in Brass Instruments," *The Instrumentalist - Brass Anthology*. (March/April 1947) p.16.
- 19 Ibid.
- 20 William Whybrew, "Singing Approach to the Brasses," *The Instrumentalist - Brass Anthology*. (October 1956) p.197.
- 21 David Hickman, "A Natural Approach to Trumpet Playing," *The Instrumentalist – Brass Anthology*. (August 1979) p.840.
- 22 Julius Erlenbach, "Tonguing," *The Instrumentalist – Brass Anthology*. (October 1971) p.583.
- 23 Robert Grocock, "Breath Support and Tone Placement," The Instrumentalist – Brass Anthology. (September 1957) p.45.
- 24 William Whybrew, "Singing Approach to the Brasses," *The Instrumentalist - Brass Anthology*. (October 1956) p.197.
- 25 William Whybrew, "Concerning Attack and Release," *The Instrumentalist – Brass Anthology*. (September 1957) p.216.
- 26 Ibid.
- 27 Louis Davidson, "Trumpet Articulation," *The Instrumentalist*. (August 1992) p.62.

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