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Vocal Onset: Understanding its Importance and Finding Techniques that Help Achieve  
the Excellent Onset

From personal experience, the author has found that appreciation of the study of vocal onset is lacking in many studios, often due more to an incomplete understanding of the consequences of excellent or poor onset rather than carelessness. Often, attention is briefly given to onset, and then immediate study of registers, vowels, repertoire, etc. begin. However, this is not how revered pedagogues and voice scientists see the issue. The study and practice of vocal onset is fundamental for beautiful singing and must be attended to with diligence. There are a number of approaches to achieving this end that follow similar lines of thought, and any one could be useful depending on the situation.

This paper's goal is to provide reason for a renewed appreciation for the challenges of vocal onset while elucidating the myriad approaches toward mastering it. This paper will explore opinions on vocal onset from a number of published pedagogues as well as voice scientists and arrive at a definition of excellent onset. There will also be a discussion of techniques that help establish excellent onset. The author cannot claim that every area is covered, but rather key areas that are mentioned repeatedly in the literature will be discussed often with an emphasis on its scientific merit.

It is important that some definition of excellent onset be provided from which to work, and to achieve this it will be briefly looked at through the lens of pedagogues who see that vocal onset is the primary practice for achieving beautiful singing. This can be seen throughout several generations. Giovanni Battista Lamperti, the revered 19<sup>th</sup> Century singing teacher, is quoted as saying, “When beginning a tone depends on releasing coordinated energy to start vibration of the vocal-cords instead of pushing breath to make a glottal stroke, you can sing” (Brown 82). This statement is listed before all other requirements in Brown’s section *The Making of a Singing Artist*. The argument then is that singing cannot even truly begin until masterful onset is achieved. Richard Miller feels the same:

In this regulated onset lies the germ of all good vocalism...Nothing in technical accomplishment in singing is more beneficial to the vocal instrument than the proper positioning of the vocal folds for the clean onset. Such prephonatory tuning of the laryngeal muscles in combination with the exact degree of subglottic pressure and airflow provides the basis for good singing (7).

From these statements, we begin to glean the importance of onset but not a clear reason why.

There is another aspect to excellent onset: Voice onset has consequences with the phrase that follows. Consider these thoughts about onset, the first being by William Vennard, “Proper adjustment should be achieved at once, since readjustment while the tone is being produced is both difficult and unbeautiful. A singer who has solved this problem is said to have a good attack” (38). The second comes from Clayne Robison,

voice teacher from BYU, who writes on Ingo Titze's efforts at creating the "Pavarobotti", a machine that can very closely imitate Pavarotti's voice when fed a variety of properties:

The idea that any interactive system must by the laws of physics be *completely* interactive has profound implications in understanding the beautiful voice.

Among other things, it would imply the following, all of which Dr. Titze had to account for in creating the "Pavarobotti" sound: VOCAL ONSET IS CRITICAL.

If the singer does not interactivate, *at the very start of the sound*, all of the major oscillating factors needed for ultimate beauty in a future phrase, the singer, at some point, will have to "realign" everything again at the point the performer desires to include the missing factor. This would suggest that even vocal warm-ups should be designed to simultaneously engage all of the component beauty factors that a singer wishes to maintain in the interactive vocal network for approaching phrases of actual singing (10-11).

This leads to the definition of excellent onset: Excellent onset is the complete coordination of all singing qualities that are aimed towards beauty and freedom at the beginning of phonation. According to the pedagogues before, the consequence of careless onset is a lack of beauty regardless of what happens afterwards. To regain footing once onset has been passed, a singer will have to readjust, and this can be seen perhaps as a cough or jerk in a phrase to reestablish better phonation. Or perhaps, the readjustment will not be taken at all, and the voice will tire out or perhaps crack on a poorly prepared high note or just not contain all the brilliance or warmth it otherwise might. What are some of the factors that lead to excellent onset?

Before each tone, there must be a harnessing of mental energy since so much coordination is involved in the act of onset. Vennard speaks on this:

Before leaving our consideration of the attack, we should note that of course the ear monitors the entire process. This means that the correct attack should be conceived in the ear before the act. Many teachers quite rightly lay great emphasis on the mental concept as a prerequisite of all technique...the entire musical phrase should be conceived in advance. With gifted students one may take for granted the mental preset will take place, but with others perhaps the most important responsibility of the teacher is to insist that they look before they leap, or rather, think before they sing (49).

A similar view is provided by Lamperti, who speaks with imagery to help a student visualize how onset should proceed:

Sing exercises with 'la' starting the tone without a 'shock' or violent attack. If you throw a stone into the water, the water will splash into the air-but if you let it fall gently, it will not disturb the water-it will create only the regular undulations. When a train starts, it does not leave with a jerk-no, so gently that one does not feel the movement. When playing the violin the bow starts to descend before making the tone, and in finishing the tone the bow continues the same movement. It is similar in singing. The expiration starts before the tone (as if you have already sung) and continues after finishing the tone (Brown 129-30).

He also stresses, "Virtuosity consists in seeing, hearing in advance everything that we perform with ease" (Brown 97). These statements point to the foundation of onset with the mind.

There are a number of physical prerequisites to the properly executed onset. The first is the concept of the “noble” position. This paper will not get into all of the specifics of proper singing posture because of the myriad ways of achieving excellent posture, but rather emphasize the importance of maintaining excellent singing posture. Robison, in his paper describing the effects of interactivity on singing says:

Particularly as the singer moves into extreme pitch and dynamic ranges, it is important that flexibly extended posture and stress-free low breath intake are carefully maintained. It is in those extremes that interactivity is most likely to falter because of the high demands placed on the breath-making musculature and, therefore, the tendency to pull the structures attached to those muscles out of alignment...Sundberg has demonstrated that this kind of breath/postural interrelationship allows the center of a flexible diaphragm to continue its descending, "inhaling" gesture, thus exerting an easy downward stabilizing "tug" on the lung sac and thence upon the tracheal tube imbedded in it. The tracheal tube in turn tugs down on and stabilizes the larynx which is attached above it (Robison 18).

Along with the lowered larynx, Robison states further that this posture also allows for an easy inhalation and silent breath. Both of these will be discussed further.

According to pedagogues and scientists, taking a silent breath whereby the vocal folds are completely abducted is a prerequisite to clean onset. Richard Miller is insistent on this point:

In singing, the coordinated onset occurs only when the glottis has been fully opened with the preceding inhalation. This full abduction of the vocal folds is followed by clean and precise closure. A *partially* opened glottis, as in normal as opposed to deep breathing, does not produce the subsequent clean onset demanded for skillful singing (5).

He does not, however, explain clearly why such a position is required. There are several reasons. The first is that it provides the best starting place physically for the vocal folds to approximate cleanly. Consider this statement by Titze:

There are a number of reasons why slightly abducted vocal folds may produce an optimal vibration pattern. An important factor is the interference with the normal modes of vibration. The normal modes depend on well established boundary conditions. If the boundaries are ill defined the normal modes are likewise ill defined...From the point of view of establishing stable vibration pattern, then, any interference in the region of the vocal processes is likely to cause a mode disturbance. Pressing the arytenoid cartilages together, for example, is likely to interfere with the dominant mode...A slightly abducted (spread) pair of arytenoids, however, could help establish this mode. This is again related to vibrating string phenomena, where it is known that onset, offset, and transitions between vibratory states are more susceptible to mode disturbances than the steady states...From a therapeutic or pedagogical standpoint, then, it would make sense to leave the vocal folds as free as possible from contact, collision, or other interferences during voice onset. As the mode is established by gradually

increasing the lung pressure and glottal airflow, a little more adduction is possible (“Voice Production” 108).

The abducted folds then establish the best position during the silent inhalation from which to start vibration. The other argument for silent breathing is related to the actual health of the vocal folds due to hydration. Titze states:

Diagnostically, emphasis is on the presence of a mucosal wave on the superior surface of the folds as a sign of healthy tissue ... When this mucosal wave disappears in certain dysphonias, vocal fold vibration is either impeded or requires considerably greater pulmonary effort...A general hypothesis is that the ease with which vocal fold vibration can be initiated and maintained depends on the mobility and deformability of the vocal fold cover, which in turn depends on how well this tissue is irrigated (hydrated) with body fluids (“Voice Production” 105).

Therefore, it is important that breathing not dry out the vocal folds at all. Sundberg comments on the relationship between inhalation and vocal fold dryness:

The vocal folds need maximally moist air in order to work without problems... During inhalation the air velocity in the glottis depends on two factors: 1) How forcefully one takes the breath and 2) the size of the glottis area. If the vocal folds are not fully abducted during inhalation the velocity of the airstream through the glottis is increased, and this would raise the risk of drying the vocal folds (“Science of” 184).

Hence, the silent breath achieved through fully abducted vocal folds would be the best technique to ensure proper vibration.

During the silent inhalation, the degree of depth that the diaphragm descends should be monitored because the effect of an actively well lowered diaphragm that co-contracts with the abdominals at vocal onset may cause a series of reactions that help singers to phonate with a less pressed and effortful production. Clayne Robison says this about the lowered diaphragm and its relationship to vocal beauty:

In finding confirmation for this lower breathing pattern when I find my own singing to be the freest and most beautiful, I have come to understand a characteristic physical maneuver of my former singing/teaching colleague, Ray Arbizu, when he sang into his upper range (A<sub>3</sub> to C<sub>4</sub>). In preparation for those climaxes, he would almost invariably dip his arms and body into a flexible and sometimes not too subtle balletic *plié* motion, apparently to remind the central bed of his diaphragm that it needed to remain in flexible descending mode in spite of the increased breath energy from the lower abdominal muscles which the coming high notes would demand. That maneuver may have been frustrating to his stage directors, but Ray seemed always to employ it--albeit at times more subtly than at others. On the other hand it seems to have helped him maintain the capacity for consistent, thrilling high "Cs," even after advancing age, quintuple heart bypass surgery, and years of struggle with diabetes had substantially weakened his body. I encourage developing students to deliberately employ this *plié* motion just before they move into the upper voice so that they gain initial confidence that these continuing flexible "dropping" feelings in the central bed of the diaphragm are necessary to confirm really ringing and consistently interactive high notes. As soon as the internal diaphragmatic manifestations of the *plié* are habituated, it is

then possible to drop the external manifestations in the arms and legs (Robison 20).

Robison is himself a baritone and in this case his former colleague was a tenor, so some general positive correlation might exist between all voice types and the actively lowered diaphragm. But what happens with the deeply lowered diaphragm?

Sundberg has found that the lowered diaphragm creates a phenomenon known as the tracheal pull. This is caused by a diaphragmatic co-contraction with the exhalatory abdominal muscles, and this has a noticeable effect on phonation itself (Sundberg web 60). He says:

Rolf Leanderson, Curt von Euler, and I examined this effect in an experiment. The hypothesis was that the tracheal pull affects the anterior gap between the cricoid and thyroid cartilages. This gap is crucial to pitch: the higher the pitch, the smaller this gap. It is narrowed by contraction of the cricothyroid muscles, the major agents for pitch control. Therefore, under conditions of constant pitch, we expected the CT muscle to contract to different degrees depending on the position of the diaphragm... The results suggested that the co-contracting diaphragm reduced glottal adduction, i.e., the degree to which the vocal folds are pressing against each other... The benefit of phonating with reduced glottal adduction is not hard to realize. An exaggerated glottal adduction implies pressed phonation, the type of phonation that speakers generally resort to under conditions of high pitch and loudness: the voice sounds strained. If the vocal folds are firmly adducted, subglottal pressure needs to be high, otherwise the airflow will be arrested by the glottis. A typical example is the voice quality we produce when

we phonate while lifting an extremely heavy burden. This is clearly not the type of voice quality that music listeners want to pay for (Sundberg “Breathing Behavior” 1).

Therefore, for students whose onset is pressed, work with the tracheal pull may have positive benefits.

Once it is time for a student to actually begin to sing, there are a number of strategies that can prove useful to the development of onset. One oft cited strategy is to “sing on the gesture of inhalation”. This is referred to in a number of ways by different pedagogues and is purely an aid to the imagination that simultaneously has positive effects on the breathing apparatus at onset. Joan Patenaude-Yarnell says:

Often a sense of "attacking" the first tone can cause too much air to be exhaled and pushed against the folds. To help coordinate the inhalation, suspension, and phonation phases, taking an imaginary catch breath just before phonating will help the singer resist the need to clutch in the throat. Starting the phrase on the "gesture of inhalation" also helps keep the proper balance between inhalation and exhalation muscles and avoids any awkward diaphragmatic or lower abdominal "kick" to begin the first tone. The balance between vocal fold tension and released breath pressure will be accurate and balanced (426-7).

Here we can see how much impact the imagination has on onset. Lamperti stated, “In starting a tone, do not push. The sensation is rather that of inhaling (or drinking)” (Brown 136). Richard Miller states, in more objective sounding language, how onset should be perceived, “Strive for the subjective feeling that with the beginning of the phrase the

process of inhalation has not been altered” (5). As we can see, there are a number of ways to explain this concept.

Another common strategy is to sing the onset with a silent “h”. William Vennard states:

I believe in deliberately using an exaggerated [h] in many cases. It makes sure of a relaxed valve. In contrast then it is followed by a sudden, firm, loud vowel. In staccato work the valve is then immediately loosened again before the tenseness has time to develop. Of course, an audible [h] is only a crutch for learning the correct attack. Once there is a clear, crisp initiating of the vowel, the amount of time and breath that is wasted in the [h] should be reduced until finally there is only an ‘imaginary h’” (44).

He does not explain why such a technique of a silent “h” ought to be employed, but the answer lies in the same explanation for why a silent breath should be used: the vocal folds begin slightly abducted and begin to phonate from a distance so that clear boundaries are defined and phonation occurs cleanly (Titze “Voice Production” 107-8).

In an opposing and confusing view, Garcia advocates a stroke of the glottis, which sounds suspiciously similar to a glottal plosive, which is potentially damaging to a voice and does not follow any of the physical criteria for healthy phonation set above. Consider his words:

*The Stroke of the Glottis*...After adequate preparation one will attack the tone accurately, incisively, purely, and sonorously, with the stroke of the glottis and on the vowel [a]...one must guard against confusing the stroke of the glottis with the stroke of the chest, which resembles a cough, or the effort of expelling something

which is obstructing the throat...It is necessary to prepare the stroke of the glottis by closing it, which stops and momentarily accumulates some air in the passage; then, much as a rupture operates as a means of relaxation, one opens it with an incisive and vigorous stroke, similar to the action of the lips in energetically pronouncing the consonant [p] (Garcia 41-2).

Vennard, years later, comes to the defense of Garcia:

I am convinced that Garcia did not mean the *glottal plosive* when he coined the expression *coup de glotte*. The term has since been corrupted, and would best not be used. It is probably impossible to restore the original meaning. The best we can do is absolve Garcia from the responsibility for its present usage (45).

From reading Garcia's own statements, it is difficult to agree with Vennard on this point. The technique of exploding an "energetically" pronounced [p] sounds dangerously similar to a glottal plosive. Regardless, the glottal plosive is a dangerous tool, and does not meet the requirement of initially abducted vocal folds set above.

From the preceding paragraphs, it is hoped that a clearer understanding of the challenges of vocal onset have been gleaned. One can see how much more can take place immediately before and during onset that was not mentioned here such as pre-positioning the vowel shape and creating space in the resonance chambers. However, any one of the preceding techniques and requirements for establishing onset mentioned above can take a great deal of time to master and generally must be mastered alongside all of the others, thus requiring a good deal of time away from literature and facing oneself mentally and physically as one repeatedly practices onset. And it seems simple but can quickly become frustrating: Try setting a metronome to a slow rate and re-attacking a vowel with a silent

breath in between while completely preparing the entire phonatory apparatus within that breath and not allowing a glottal stroke or aspirate onset to occur at onset. Then subdivide and do the same within each smaller unit or gradually raise the metronome setting. This will build accuracy and efficiency while establishing good onset habits that will be hard to break while studying repertoire. However, as argued, this onset practice will require dedication and concentration to master but the rewards of such mastery will be great.

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