Classical Singer Resonance Article
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1. What is vocal resonance?

In very basic terms, vocal resonance is the relationship between two vibrating bodies, the vocal cords and the pharynx. The pharynx acts as a filter for the vibrations created by the vocal cords, creating either a pleasing or unpleasing vocal tone or sound. Optimal vocal resonance, which is the positive sympathetic and conductive vibration of the resonant cavities of the head and throat, is the goal of the classical singer. The singer works to encourage the best possible open throat/gola aperta to most beautifully enhance and amplify the fundamental pitch or frequency.

2. Why is vocal resonance important?

I believe it is the key to what makes a classical singing technique unique and highly valued. Also, without it, the small and unremarkable sound that is created by the vocal cords would not be heard or enjoyed. The singer's ability to project and enrich his or her own voice, without the aid of a microphone, is truly an amazing skill. The acoustical properties of the vocal tract, which give each singer their signature sound, are crucial to good classical vocal technique.

3. What creates resonance in the voice?

Resonance is created when all of the components of the vocal tract (laryngo, oral and nasal pharynx, the mouth and occasionally a contribution of the sinuses) "work" together to enhance the amplification of the voice. As a pitch or frequency is produced by the vocal bands by a combination of muscle length, thickness and contraction plus breath energy, the sound travels through a series of cavities which act as a filter either detracting from or enhancing the quality of the sound. The first cavity, called the laryngeal collar or tube, is comprised of the epiglottis and the aryepiglottic folds and is directly above the larynx. Through research in the last 40 years, this little resonator has been credited with the important function of creating the Singers Formant. The Singers Formant is the frequency range/high formant of the voice that allows it to cut over an orchestra. The frequency range varies for men and women, but is a constant, independent of the fundamental

frequency and lies around 3000 Hz or cps. The singer produces a fundamental frequency in the cords, an overtone series, and a constantly changing flow of formants or resonance clusters because, as singers, we are continually changing the vowels and consonants that shape the vocal tract. Each of the components of the vocal tract has reflective surfaces that have an effect upon the sound waves, either positively or negatively to the human ear.

The soft palate or velum, which is the soft tissue at the back part of the roof of the mouth, is of particular importance in contributing to the quality of the resonance. Its primary function is to arch and extend towards the rear wall of the throat to separate the oral and nasal pharynx during swallowing, so food and water do not exit the nose. In classical singing, we work to skillfully raise and lower the soft palate to control how much air travels through the nasal pharynx. The more air in the nasal pharynx, the more nasal the sound.

The major concept of Open Throat or Gola Aperta reflects not only the need for comfort, meaning a healthy, positive amount of muscle antagonism/ tension when singing, but also the optimal use of the throat as a resonating body. As a classical singer, we must have sufficient throat size and space (comfortable, lowered larynx position; positive use of the palate, and throat wall flexibility) so that the resonating surfaces can freely and sympathetically vibrate, enhancing the ever changing pitches and dampening undesirable qualities in the sound. In addition, we must also have sufficient throat muscle shaping and integrity to offer tonal consistency. We singers are forever "multi-tasking". Every change we make with our mouth, tongue, lips, jaw and breath support effects the height of the larynx, and the surface and shape of the throat, actively changing the way the resonator sculpts and grooms our sound. The throat and the mouth are tunable and we work to bring about their ultimate cooperation with the fundamental frequency to create the most pleasing sound.

4. Description of Sensation of Correct Resonance

Correct sensation involves an awareness of positive vertical and open space in the throat (like the sensation of breathing in the scent of a flower), and a feeling as though the sound being produced is gently yet energetically filling all of the available space. Depending upon the pitch, one can also feel the intensity of the vibration in different parts of the face. For lower pitches,

there is most often a sense of the vibration in the jaw, lips, bridge of the nose, and the lower cheek area. With chest voice present, one may also feel some subglottic and "chest" vibration. As the frequency increases (pitch ascends), there is a sense of awareness of the vibration rising to a higher part of the face, across the bridge of the nose, the cheek area, behind the eyes, between the eyebrows and sometimes in the forehead as well. Each person will feel these sensations in there own way, but it is generally described in this area. In women, from about high B natural and higher, there can be an additional sensation of the sound not just traveling up and forward through the pharynx, but also out of the back of their head. Resonance sensation also varies by the amount of head and chest voice mix being utilized, but is generally in the same area and may just vary in intensity.

Incorrect classical resonance can be felt in a variety of ways. The main component of incorrect resonance is throat tension that negatively effects the sound. This tension includes the larynx being either in an overly elevated or artificially depressed position, and the soft palate being either too low or too high and tight. Several combinations of these incorrect positions can occur. All of them effect the surface tension of the throat and therefore the sound. The raised larynx is inherently more unstable and has an adverse effect on the continuity and stability of the sound, and can make singing much less comfortable, and also unpleasant to the listener. The classical singer craves a sense of warmth and forward placement or forward awareness of the sound in the mask. However, in incorrect resonance, the singer feels as though the sound is "stuck" inside the head and/or throat, often missing the sensation of the sound "spinning" in the soft palate area. If there is too much throat tension and not enough space, the singer who desires that sense of forward placement may over-sing and try to "put" the sound in the mask by pushing the voice. This creates an unpleasant quality of sound (often brassy or nasal) and discomfort for the singer. Plus, the sound will not carry as far.

Optimal resonance gives the singer the sense that the majority of the vocal sound is "out in front" of them rather than only being loud and present inside their head. For the listener, the sound can be said to have the quality of *chiaroscuro*, a warm and "dark" sound combined with a present and "bright" quality.

5. What is the mask and what is meant by this term?

If one can envision the image of a Mardi Gras mask worn across the upper half of the face, this is area of the face is where teachers often talk about aiming the sound. This can be a good image for a student to use as a reference for where they may feel the predominant resonance sensation. However, it must be clear that we as singers do not put or place the sound there. When our resonance cavities are working in the most productive way, enhancing the sound, the sound will ARRIVE in the mask area. We don't want the student to shove, drive or push it there.

6. What is meant when a teacher describes a "bright" or "forward" placed vocal sound?

Again, when the teacher is describing a perception of the sound as forward, the teacher is aware of hearing the effects of healthy, desirable resonance in the student's sound. The teacher will articulate a sense that they "feel" and hear the sound present in the singers mask area, and perceives it as warm and present in the room. The term "bright" can mean different things to different teachers. The term can be used to describe a positive intensity of upper overtones that carries the voice well and has "ping". It can also be described as a sound created by an overdone smiling or spread position of the lips which makes a "bright" or "brassy" sound resulting from additional throat tension and some nasality, heavily favoring the upper overtones.

7. How can lack of resonance inhibit the singer?

When the singer does not have a good concept of their own resonance, they can feel frustrated and discouraged. Often, the singer will feel a lack of self -confidence because of the inconsistency of the sound and confusion about how to comfortably sing and project. They may try all different solutions that include over-singing, over-blowing the cords with too much breath pressure, or adding some nasality in search of their forward sensation. Problems can also arise when the singer is practicing in less than optimal acoustic spaces where the singer relies on what it sounds like rather than truly knowing what it is supposed to feel like. They may feel discouraged by the less than enthusiastic response they get from their listeners, too! It can really diminish their motivation!

8. How is vocal resonance related to other areas of vocal technique and musicality (breath support, tone, timbre, pitch, intonation etc.)?

Breath support has an immediate effect on the consistency of breath pressure, which can effect everything from the height of the larynx, the intensity of the contraction of the thyro-arytenoid muscles, and tension in the pharynx. All of these factors play a direct role in creating the quality of the tone entering the resonators.

The process of negotiating the passaggio involves the proper mix of the action of the thyro-arytenoid and cricothyroid muscles. If a singer uses too much chest voice as they ascend in pitch and enter the register shift, the throat will tighten and the larynx will rise. If they use too much head voice, without the proper balance of the chest voice, the voice can also encounter instability, insufficient cord closure, a weaker tone and breathiness. Singers also use good resonance sensation to feel whether the mix in that register is optimal. In addition, newer students will often attempt to make the shift to more headtone in their mix with the idea that they must "hold back" the sound and then they end up slightly closing their throat. All of these factors completely effect the quality of the resonance. It is so important that a student of classical singing understand that the throat must be consistently open regardless of the amount of mix or the volume level.

All of these issues effect the listener's perception of the quality of the tone, timbre, pitch and intonation. Improper throat tension creates inefficient phonation and less than optimal resonance. These factors effect the beauty, color and tone quality of the vocal sound. Inefficient resonance can also effect the balance of upper and lower overtones, which can produce a sound that can seem either flat or sharp to the listener. Singers are constantly working for the optimal balance in every aspect of their technique. Therefore, they should also be doing a lot of listening to develop an optimal tonal model by hearing how the professionals do it!

9. Are there instances, roles or different vocal styles where the resonance should change or be adjusted or should it remain the same regardless of genre or style?

I believe that good resonance technique should be the same for most classical singing. That being said, I do believe that we make color and tone choices for certain kinds of characters, such as the sound made by a character tenor, which sometimes has a more nasal resonance quality and will often add to the humorous nature of the role. In Baroque singing, with the predominant use of straight tone, there is more tension used in the vocal

cords. The lack of vibrato obviously changes the physical sense of the tone and it can be said that the singer feels much less spin and warmth in the vocal sound in the resonance cavities. It is a challenge for the Baroque singer to use straight tone as a stylistic tool without sacrificing the beauty of the tone or creating too much throat tension.

The use of the resonator varies more from classical to musical theater, jazz and pop technique. There are certain sound qualities associated with each genre and to use full classical resonance for these other styles would come across as odd or affected. Most of the other styles of music and singing mentioned are expected to be sung in English in this country, pronounced in a much more American speech manner, and that is a completely different resonance technique.

10. What are some exercises you recommend for students to achieve proper vocal resonance?

Whenever I am approaching a student about resonance, I always try to completely explain what it is we are trying to achieve. I believe it is crucial for the student to know what an open throat feels like. I have them practice breathing in through the nose, feeling the larynx relax downward and the surfaces of the pharynx gently expand. I also have them place their hand gently on the outside front part of the throat and have them swallow. They can feel how high the larynx ascends, how the tongue retracts and how the throat closes. Then I ask them to imagine singing with that kind of tension! I then ask them to leave their hand in place and breath in through the mouth, releasing the jaw and feeling the space that this creates in the throat. I want them to experience the difference between the two versions so that they know what feels comfortable versus what feels constricted.

I then use a variety of the following exercises:

1. I have them slide up and down an octave with a gentle siren sound or glissando on an [u], encouraging them to sustain a comfortable larynx position with a lifted soft palate while they sense the sound filling all the resonance cavities. As the pitch ascends, they continue to slide up and down the octave but begin on [u], slide to an [a] or [oe] and back to an

[u]. I say to them to be aware of making space in the pharynx to receive the sound rather than trying to put the sound in the nose.

2. I have them speak their song text with the sensation of a British, Shakespearean actor imitation and feel where they experience the arrival of the sound. One can also use the reference to speaking like Julia Child or the Monty Python actors portraying women. To imitate this sound correctly is to create a resonance sensation like that of a classical vocal technique. I then have them try to sing the text in the same way. It can be a lot of fun and students often discover a whole new concept of their sound. For younger students, it often seems that they sound too mature for their age, so you have to encourage them to believe it's ok to sound like that!

3. I also use a combination of nasal consonant clusters and vowels for sensory reference. When you use "words" like ming or hong or sing, you can have the student feel the sensation of the –ng and its nasal quality. The sense of the pressure of the sound, and the nasality created, is perceived in the mask in a similar location as the upper classical resonance is felt when vocalizing on a pure vowel with open throat. If the student goes back and forth between the nasal feeling of the -ng and the warm, full sound created by the open throat, lifted palate position on a sung vowel, the comparison of the sensations teaches them a lot. I have them sing ming-low, hong-oh, and sing-ah in different patterns.

4. I also have students practice an open throated position while singing with different amounts of headtone and chest voice on one pitch so they can feel the different sensations.

5. I work with them to achieve the ability to crescendo and decrescendo on one pitch while sustaining a consistent open throat position, with spin and vibrato in the sound. I have them notice where they consistently feel the sensations of the sound and where it "arrives" in the mask.