Kenneth Bozeman

Remapping the Open Throat (Gola Aperta)

Richard Miller began a section in his The Structure of Singing entitled “The Open Throat (Gola Aperta)” with the following statement: “It would be hard to find a teacher who recommended singing with a closed throat.” While some voice teachers avoid addressing the issue directly, experience and reason suggest that most teachers advocate the proverbial “open throat.” At least two excellent articles addressing this topic have previously appeared in the Journal of Singing. The directive to have an open throat goes back at least to the writings of the early Italian pedagogues, all of whom recommended singing with una gola aperta. Specifically, the Italian school pedagogic literature maintained that “inhaling through a smile” or as if “inhaling the fragrance of a rose” opens the throat.

CONCERNS WITH OPEN THROAT DIRECTIVES

In contrast to general agreement about the value of having an open throat, concerns about directives and/or conscious attempts to open the throat also exist. The smile directive recommended above is thought by many teachers to be excessively lateral and to cause a “spread tone” and therefore, if used at all, has been supplanted by “inner smile” imagery. Richard Miller, an advocate of the international Italian school of singing, raised concern in the chapter cited above about the use of yawn imagery by some to open the throat.

In the literature of vocal pedagogy can be found sources that advocate as the ideal position for singing exactly the fully distended pharyngeal and buccal posture found in the yawn. Then later:

To breathe as though inhaling deeply the fragrance of a rose is to accomplish the buccopharyngeal position of gola aperta, in direct contrast to techniques of the open throat achieved through the yawn.

Others echo the concern that a throaty, swallowed tone can result from attempts to open the throat. Some speech language pathologists are leery of open throat directives as being contrary to the frontal vibratory feedback typically sought in resonant voice therapy.
ANATOMIC REALITIES

In pursuit of fact-based pedagogy, let us examine what the situation really is. First it must be noted that the muscles that open the throat are not in the throat; indeed, there are no muscles that can directly expand the pharynx. All pharyngeal muscles are termed constrictors for a reason: when activated, they narrow or constrict the pharynx. Since the spinal column is directly behind the back throat wall, unless the spine itself is contorted it is not possible to distend the pharynx posteriorly, perception to the contrary notwithstanding. The only muscle actions that in some sense actually open the throat are:

- relaxing the pharyngeal muscles.
- elevating the soft palate from above.
- lowering or settling the larynx from below.
- fronting the tongue.
- decompressing the thyrohyoid space.
- retracting or deconstricting the false vocal folds.

The Challenge: False Kinesthesia

The principal challenge to effective throat opening is this: our kinesthesia (sensory awareness) of throat space is misleading—in fact, it is exactly backward. If you ask a group of people which vowel feels the most open-throated, most will cite /ɑ/, or which vowel the most closed-throated, most cite /i/. This is indeed the way it feels. If asked to inhale through their most exaggeratedly open-throated sensation, most people will make a yawny /ɑ/, which upon inhalation will be accompanied by a moderately loud turbulent noise and cooling in the laryngopharynx (perceptual throat). Paradoxically the throat is rather narrow in the /ɑ/ and at its most open posture with the vowel /i/, primarily due to the difference in tongue shape and tongue fronting of those vowels (Figure 1).

Noiseless Inhalation

When the throat is in the instinctive but false open-throated feeling upon inhaling, the inhalation is noisy and there is a cooling sensation in the throat behind the tongue, precisely where the narrowing occurs. This results from the necessary increase in air speed at the narrowing and the resultant turbulence and cooling from both wind-chill effect and evaporation at that location. If the student reshapes the vocal tract to move the cooling to the front of the mouth, the tongue will have been fronted and the throat will be more open.

Resonator Convergence

Recent observation and hypothesis in vocal acoustic science suggest that classical singers prefer a resonator shaping that is as convergent as the vowel and pitch being sung will allow. This hypothesis proposes that resonator convergence assists in establishing the desired classical chiaroscuro timbre, which manifests in a depth-dependent singer’s formant cluster. Singer’s formant cluster—as modeled by Sundberg, and Titze and Story—requires a low larynx and a laryngopharynx that is six times larger than the opening of the epilaryngeal exit. This causes formants three through five to draw together, mutually boosting each other. Convergent shaping also contributes to vocal tract inertance, which can interactively assist the vibrator, all of which can boost the power of the entire signal (ring and depth) for less breath pressure. Resonator convergence is therefore dependent upon some openness of the laryngopharynx.

First Formant Location

Acoustically, an open throat has a lower first formant. The lower the first formant frequency is for any given vowel (within acceptable diction and comfort), the more open the throat, the deeper the timbre, and the more convergent the resonator shape. Therefore if the “pitch” of any perceived noise is lowered, throat space will have been increased. The approximate pitch of the first formant can be heard by means of the noise created by inhaling or exhaling with the vocal folds in near
adduction as in an /h/, as long as the larynx has not been raised, that is, in a modified whisper. Both formants one and two may be heard in a whisper; the more open the throat, the more the first formant will dominate the noise, the narrower and shallower the throat, the more the second formant will dominate the noise. Caution: whispering is typically done with a raised larynx and narrowed laryngopharynx in order to increase and highlight the noise of the second formant, which is perceptually more associated with vowel clarity.

Body Mapping
Accurate body mapping can also help. By way of review, body mapping—an offshoot of Alexander Technique—is the observation that each of us has an internalized conceptual “map” of how the body is put together: where things are, where joints are, how they articulate—in other words, of how the body works. Body mapping theory suggests that inaccurate mapping leads to awkward use, while accurate mapping facilitates better coordination. Because our kinesthesia is backward for throat space, it seems plausible that most people have inaccurately mapped the location of the back of the throat and the insertion and function of the tongue.

When experiencing the false open-throated sensation described above, the back wall of the throat seems to be located farther back than it actually is—as if it is behind the ears. In fact, the back throat wall is in front of the ears. (I suspect that what we are perceiving in this maneuver as the back of the throat is in fact activation of that lateral part of the tongue muscle group, the styloglossus, that retracts the back of the tongue.) If while inhaling we remap our concept of the back throat wall to its actual location in front of the ears, we will have fronted the tongue and opened the throat.

Furthermore, we also tend to incorrectly map the tongue as forming a somewhat rounded 90° angle that lies flat in the mouth and then courses down the throat vertically to attach to the larynx. While there are some lateral attachments to the hyoid bone below, the largest portion of the tongue muscle (the genioglossus) loops back to the front under the tongue blade and attaches to the inside back of the chin. Remapping the tongue from running down the throat to folding back under itself to the chin will allow the tongue to be more fronted and relaxed and the larynx to be more independent from the tongue (Figure 2). Try remapping the back throat wall and the tongue shape as just described and inhale through this new mapping. The jaw need only release and drop as far as TMJ rotation alone allows (i.e., without jaw translation), about a finger width. You should experience cooling in the front of the mouth rather than behind the tongue, and a noiseless inhalation, both of which indicate an actually opened throat.

Use of Affect to Open the Throat
Voice is almost exclusively played by expression. This is hard-wired from birth. The first thing a baby does is to take a breath. The next thing most babies do is to apply that breath to their vocal folds and let you know how they feel about what just happened. This communicative connection to vocal coordination seems to apply to the entire system, including the poise and posture of the vocal tract. We can use this. Moreover, an inhalation should simultaneously be an inspiration of the feeling one is about to express. If upon inhalation the student uses appropriate affects to stimulate a better pharyngeal posture, the throat can be opened in a more spontaneous manner. Affects that have proven effective in the studio for opening the throat include: suppressed laugh;9 mischief; being pleased with oneself; empathy; and sympathy (many more are possible). Combining the accurate remapping mentioned above with an inhalation inspired by an appropriate motivational affect should result in a noiseless inhalation, and an open throat poised for best resonance. In this regard, this author suspects that
the early Italian teachers’ directive to “inhale through a smile” has been misunderstood. A deep, genuine smile is perhaps more about its inner pharyngeal effect than its outer facial or lip effects. A “pharyngeal grin” can both open and stabilize the throat in a favorable poise.

**Articulation and “Placement” Sensations**

For the lower and middle voice ranges, at least, having a fairly close articulation from vowel to vowel assists in keeping the throat open (the first formant lower), the resonator convergent, and the timbre *chiaroscuro*. Though sound cannot actually be placed, there is a possible basis for variation in sensation of vibration along the vocal tract, due to the pressure nodes of the resonated sound waves. Awareness of a vibrational locus in the mouth, usually along the hard palate and above, according to the image in Figure 3 can assist with maintaining an open-throated, *chiaroscuro* timbre. These vibrational sensations are associated with the changing frequencies of the second formant. Paradoxically, the front vowels are felt further back and the back vowels further forward. There is also some sense of location relative to the vocal tract dividing tongue hump: front vowels, involving a fronted tongue hump, have a vibrational locus slightly behind the tongue bulge, while back vowels, with a bulge more to the rear, are perceived more in front of the tongue hump on the hard palate. *Nota bene*: all of these sensations are along and above the hard palate, and therefore relatively frontal.

**Maintaining an Open Throat Across Range**

The instinct to approach the upper range as in a yell is universal and strong. This behavior is an instinctive tracking of the second harmonic by the first formant by means of a shorter and increasingly divergent resonator. It is accomplished by activating swallowing muscles to raise the larynx and narrow the pharynx, and by frontal opening of the vowel. Overcoming this instinct is a major concern of Western classical vocal training. To avoid this behavior upon ascending the range, males should stay in fairly close vowel posture until the vowel being sung turns over—that is, until the second harmonic surpasses the first formant, achieving close timbre—and a bit beyond. Thereafter, in order to maintain robust timbre and avoid “whoop” timbre, vowel opening *within* close timbre can commence. If care is taken to stay in close timbre (to keep F1 below H2) and to avoid raising the larynx, some opening of the vowel shape at this point does not compromise an open throat. Treble voices desiring a headier quality (women and countertenors) should stay in close timbre until the pitch of the first formant (and whoop timbre) is attained. Above that pitch, vowel opening to track the fundamental frequency with the first formant (to maintain whoop timbre) is necessary for full classical head voice timbre, but care should still be taken not to raise the larynx except for extreme high range, at ca. B3 and above.

**CONCLUSION**

An open throat is a desirable pedagogic goal for free, resonant singing in Western classical timbre. Since kinesthesia for throat space is typically misleading, however, care must be taken in choosing the directives given to accomplish an actually opened throat. The use of noiseless inhalation that cools the front of the mouth, accurate mapping of the location of the back wall of the throat and of tongue insertion and function, appropriate inspirational affects, relatively close vowel articulations for resonator convergence, and awareness of second formant “placement” sensations can be effective strategies.
to accomplish and maintain an actually opened throat and *chiarosuro* classical timbre.

NOTES

4. Ibid., 60.
5. From a private conversation with Per-Åke Lindestad, Swedish laryngologist and specialist in laryngeal and pharyngeal anatomy.
11. Ibid., 61.

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Mr. Bozeman has a strong interest in the application of voice science to singing and received the 1994 Van L. Lawrence Fellowship Award from the Voice Foundation for “excellence in teaching and active interest in voice science and pedagogy.” He has been a member of the Editorial Board of the *Journal of Singing* for a number of years, serving as chair since 2000.

Mr. Bozeman was an active performer of recitals and of oratorio, including singing the tenor roles in the *St. Matthew* and *St. John Passions*, the *Christmas Oratorio*, the *B Minor Mass*, the *Magnificat*, and various cantatas of Bach, Handel’s *Messiah*, Haydn’s *Creation*, Mendelssohn’s *Elijah*, and Vaughan Williams’ *Hodie*. He has performed with the Milwaukee Symphony, the Wisconsin Chamber Orchestra, the Green Lake Music Festival, the Purgatory Music Festival of Colorado, the Louisville Bach Society, the Historical Keyboard Society of Wisconsin, and on Wisconsin Public Radio’s “Live from the Elvehjem.”

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