Transforming Your Choir: *It's All About the Voice*
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REVIEW NOTES
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BREATH MANAGEMENT

Choral directors have frequently found it troublesome to find an efficient method for training their amateur singers in breathing for singing. Science has studied breathing for running, for swimming, etc., but until 1983, no official study of breathing for singing was attempted. The ten-year study conducted in Vienna by voice scientist Johan Sundberg and several of his international colleagues was the first and the most definitive effort. Before the study results were published in 1993, some four or five breathing methods were accepted by the vocal community: pushing the abdominal muscles out, pulling them in, using the diaphragm as a piston that forces the air up and out, etc. These are now considered obsolete and of little use by voice scientists and teachers, the renowned (late) Richard Miller, for example.

The study results validated what the old masters referred to as the "appoggio." Lacking scientific proof for their theory, they relied on their observations of what worked and what did not. *Appoggio* is a noun taken from the Italian verb *appoggiare*, meaning to lean. Like the word appoggiatura—a grace note that leans against the following chord tone—an appoggio was thought to be an imagined leaning of the breath against the sternum, and indeed that is what it feels like.

The appoggio asks a singer to maintain a high-ish sternum, ribs expanded outwards, and shoulders that are not raised, but remain low. Why does this position ensure the best breath support for singing? The diaphragm is an involuntary muscle and cannot be consciously controlled by a singer, despite the usual many spoken invocations. To retard the rising of the diaphragm—a motion discovered to be of paramount importance for strength, stability, and longer duration of singing air—secondary means must be adopted. The best of these is the appoggio, which keeps the flowing air under pressure. That pressure gives stability to the vibrato, delivers equal support for all notes of the phrase and for upper as well as lower range pitches (thus better melisma singing), better control of both loud and soft dynamics, more control of intonation, easier maintenance of legato, and a more beautiful quality of tone.

Inhaling is an active process requiring muscular contraction, but exhaling is a passive one, during which the diaphragm slowly relaxes. This is why high notes at the end of the air are more difficult. This is why the tone is weakest at the end of the air. When the sternum is in a relatively

high position, the ribcage has its greatest expansion and the diaphragm remains longer at its lowest and strongest position (so that the singer seems to have more air). When the sternum falls, ribs collapse and the diaphragm ascends rapidly to its highest and weakest position, resulting in weak tone, less control of pitch, and unstable vibrato.

There are several ways to find the appoggio position:

- Raise the arms above the head. Lower them without lowering the chest.
- Put both arms behind the body, clasping hands together.
- Imagine that the shoulder blades have magnets on the inside; try to join them.

The easiest way to arrive at the appoggio position without tension is to inhale by vigorously and loudly sucking air in, as if pulling a too-thick milk shake through a too-small straw. The ribs will find their most expanded position, the sternum will rise to a reasonable height, and the shoulders will remain low. In this way, the singer feels precisely what the appoggio posture feels like. Naturally, the loud sucking noise must be modulated after the singers have learned to trust that the ribs will expand when they inhale with vigor. At that time, the sucking can be done with lips held loosely together and sucking done soundlessly, but with the same routine. Eventually the singers will internalize the physicality of the inhalation.

ACOUSTICAL VOWELS

The first question often asked when discussing this subject is: Why should we bother? The best answer is that the voice is a musical instrument, responsive to the laws of acoustics like any other instrument. The second question: Isn't this just another drain on singers' energy and concentration? Answer: No. Acoustical vowels deliver a tenfold advantage compared to the effort expended. Question 3: Does it really make a physical difference in the tone when the mouth is more or less open, the lips are shaped one way or the other, when the tongue moves slightly? Answer: Yes, yes, yes.

It is true that singers can sing any note on any vowel within their range. However, some vowel forms will have a constructive interaction with the vocal cords (vocal folds) on that pitch and other will have a destructive interaction. As voice scientists persist in their research, their answers increasingly point to overtone tracking as supremely useful in achieving:

beauty of tone	resonance	stability of vibrato
ease of production	better high and low notes	fewer intonation issues
control of loud and soft dynamics		

How can tracking the overtones influence all these things? Wooing the most appropriate overtones is what all good singers do, some more efficiently than others. Results are governed by the extent to which the tongue, lips, and jaw opening control (1) events of the vocal tract, and (2) efficiency of the larynx, both of which are the primary elements affecting tone quality.

Positions of the tongue are vowels. Most amateur singers pay no attention to the tongue tip's placement. Yet, keeping the tongue tip at the roots of the bottom teeth gives a dull sound; pulling the tongue up and back distorts all vowels; a tongue pulled into the back of the mouth forces the larynx into a rigid, low position, giving an unfocused, "woofy" sound; the tongue held up against the back teeth makes for a harsh and tinny timbre. Generally speaking, the tongue

kept higher and more forward will do the best for tone quality. Keeping the tongue tip on top of the bottom teeth will achieve this.

The presence of certain formants (overtones of the singing voice) makes for better tone quality, intonation, vibrato, and diction. They are directly dependent upon the tongue, lips, and jaw opening. For example, the tongue position vis-à-vis the teeth—that is, closer together—will deliver the third formant; the tongue shape delivers the second formant; the opening of the jaw delivers the first formant, etc. These movable parts are equivalent to the length and bore of instruments, changed during playing by frets, keys, valves, and embouchure. It is equally impossible for singers to maintain one vowel position on all pitches. To reconcile with higher frequencies and intensities of higher and louder tones, the resonating cavity must adapt. Strain results when it does not. Good singers search for an easy adjustment for pitch and dynamic level, whether consciously or not. As a basic rule, the louder, softer, high, or lower a vowel is sung the more adjustment to appropriate formants is needed.

What about the question of "pure vowels?" Acousticians consider a pure vowel to be that which delivers ease on a certain pitch and dynamic. Choral directors speaking of "pure" vowels often refer instead to speech vowels. Yet, it is not possible for singing to be just sustained speech except in simplistic and technically-limited vocal styles. The core of a vowel is its identifying quality, and it is also an acoustical phenomenon. When the vowel is identified precisely, the resonance chambers of the vocal instrument are immediately reshaped so that one hears

the optimum amplification of the basic sound,
greater volume,
the potential for dynamic variation,
therefore improved intonation
and greater ease of production, which produces more beauty.

Because sopranos and tenors are most at risk in choral situations, given the vocal writing for their parts, their need for acoustical vowels is greater than that of altos and basses. Sopranos sing in a range nearer to the resonance frequency of vowels. Therefore they need make a greater effort to track the overtones. It is literally impossible for them to sing well the vowels as written in their high ranges. If they actually succeed, (1) they suffer strain and (2) intonation, tone quality, diction, and vibrato suffer. Tenors sing much of the time in the tricky range above middle C (before which area they sing in chest voice.)

Most problems are caused by going through the upper passaggio ineptly. What then is required to do this well? Basically, a smaller mouth opening—despite the fact that misguided instinct urges them to open more—and a high, forward tongue position. Here are the notes of the upper passaggii (three half-steps) for SATB voices:

Sopranos	F#5, G5, G#5
Altos	E5, F5, F#5
Tenors	Eb4, E4, F4
Basses	B3, C4, C#4

Note that all voices should do the same vowels—[ʊ] and [e]—with the same openings (5,6, and 7) but on different notes. The numbers 5, 6, and 7 refer to jaw openings or mouth size. The number 5 is measured by the thumb held up and down between the teeth. 6 and 7 openings

add about 1/8 inch for each. Above the passaggio the mouths continue to open ever wider, using [ɛ] and [ʌ].

Here is an effective way to introduce your choir to the principles of the IPA (International Phonetic Alphabet) and the passaggio. Using a medium-range register, teach the group to sing a perfect fifth as a continuous ascending and descending slide on the vowel [ʌ] (*duh* or *up*). Next teach the same slide on the vowel [ʊ] (*foot, book*) with a smallish mouth opening and rounded lips. Teach the word "corners" as a shorter direction for "protruding lips." First, sing three big-mouth slides on [ʌ] or [ɛ] (*pet)*, ending on the last high note before the first note of the upper passaggio. Then, sing three small-mouth slides on [ʊ] or [ɵ] (*hook* or *cha-os*) in patterns where each high note is part of the upper passaggio.

CONSONANTS

Among the questions about diction asked by choral directors are these:

Why do singers so often lean toward softening or ignoring consonants?

Isn't good diction simply speaking on pitch?

The first principle behind good singing diction is this: It is very easy to have good diction and high musicality while singing poorly. The real trick is to manage good diction while not letting it interfere with good singing and musicianship.

One cannot sing as one speaks. This is a fact. For one reason, the consonants [b, d, f, h, s, t, v, m, and z] average .058 seconds in speech and .108 in song; the semi-vowels [l, m, n, and r] average .145 in speech and .354 in song; altogether, vowels average .280 in speech and .797 in song. Add to this the challenges in singing of very high and very low pitches and very soft singing, especially in high range, not to forget the breath support required by range and dynamic levels, and one can see the complications that diction problems bring to the mix.

Vocal discomfort arises from attempts to pronounce consonants just as if speaking, especially while singing notes in the high range or in very loud/very soft dynamics. As a result, tone suffers or singers get lax about their consonant duties. The answer is to make consonants efficient but singing-friendly. It can be done.

Rule 1: Keep the tongue tip on top of the bottom teeth. This gives the singer a tongue position that is ¼ inch higher and further front. The tone so achieved has then more carrying power without force as well as clearer consonants.

Rule 2: Short but energized! Wait until the last millisecond of the vowel and pronounce the consonant as fast and energetically as possible. Do not allow the vowel to creep toward the consonants, for it changes the tone quality and dilutes the consonant. Do not lengthen the consonant except for these two situations: (1) when more expression is wanted, or (2) when trying to defuse the consonant after a wide skip to a high note.

Rule 3: Learn which consonants do and do not require the jaw to close. Then learn to avoid moving the jaw unless absolutely necessary. This means learning to move the tongue without the jaw. On those that require closure, it must be swift. Most ubiquitous of all consonants are [t, d, n, l, r]/ All five should hit the palate at the alveolar arch on the palate just behind the upper front teeth. Of these five, [t] and the rolled [r] require a bit more closure. The English language has many [t]s. Do not use the stopped [t] which is

common in American English. It cannot be heard at all when other voices or instruments are playing. Make a [d] that has one beat in execution. Americans do this in speech, but consistently make it two beats when singing. One beat for putting the tongue up on the alveolar arch and one for taking it down. Learn to do it in one move. When the mouth opening for a note starting with a consonant must be large for some reason, move the tongue and the jaw together by flopping swiftly.

Rule 4: Consider the consonant position in the word when deciding how to execute.

Initial Consonants

Prepare the vowel, not the consonant, for the attack. At the last second, move the tongue to the consonant and sing the vowel. Try these words from Bach's *St. John Passion,* "Dein will gescheh." Prepare the [ɑ]; let only the tongue move for the [d]. Use no jaw closure.

Middle Consonants

Saxon languages (English, German) often begin and end with clusters of consonants. We often do not know where one word ends and the next begins. The short, energized schwa is the answer. It separates the two words and defines the final consonant of the first word. E.g., consonants that end a word followed by another word:

1. When the second word begins with a consonant or cluster, schwa is placed between the first and second word. and the boy Sung: **æ ndə thʌ bɔi**
2. When the first word ends with an unvoiced consonant, the schwa will be an air schwa, no pitch. took the bus Sung: **tʊ kəthʌ bʌs**
3. When the second word begins with a vowel, plaster the consonant over onto the vowel. stood easily Sung: **stʊ di zɪ li**

Watch that in the third case, the consonant from the first word now sung on the second word does not make another word. It happens only occasionally. If another word results, then separate the two words with a glottal.

Final Consonants

In English and German, words are defined and understood by their final consonants. The most efficient method of arriving at intelligibility is to pay attention to the final consonants. We do not understand the word until its final consonant is clear. We do not understand a phrase unless we understand the last word in the phrase. We do not understand the last word unless we understand the last consonant of that word. If the final consonant is voiced, then use a small schwa on pitch. If the final consonant is unvoiced, then make a "pow" effort of the abdominals (e.g. [t, k, s, p]).

The conditions that change the strategy of executing consonants are: high notes, phrases lying in the upper passaggio and above, position of the consonant within the word, consonant clusters, need for more expressivity, piano singing, German umlauts (i.e. certain French vowels), Italian double consonants.