

The Impact of *Bel Canto* Principles on Vocal Beauty, Energy and Health

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Bel canto vocal principles have been defining and creating beautiful singing for centuries. Although their use has generally been reserved for the solo singing voice, it cannot be denied that we all possess the same vocal equipment whether singing in a solo or choral setting. Since beautiful sound and expressive singing are, or should be, as important in choral as in solo singing, these time-proven gems of vocal wisdom may have something to offer the art of choral singing when applied appropriately. The successful application of the principles outlined below is a cumulative process, i.e. each builds upon the implementation of all those which precede it. One cannot begin half-way down the list and expect to enjoy effective vocal technique and artistic singing.

Il Respiro (The breath)

There can be no doubt that breathing, i.e. the act of inhalation, plays a crucial role in fine singing. We need breath to sing – the vocal folds cannot and will not vibrate without the help of the breath. However, inhaling represents much more than the act of taking in the proper amount of breath to sing a phrase. The objective of the *respiro* is rather to establish an environment in the body which will be conducive to fine singing. One could even go so far as to say that during the act of inhalation *we create the vocal instrument*. In other words, rather than filling the throat and chest with muscular tension and excessive breath pressure by taking a high, gasping breath, one should think of a blossoming of emptiness and openness in these cavities as the breath drops into the lower part of the lungs. This ensures that the available space and composition of these cavities are effectively prepared to foster optimum vibration and resonance, whether directly or sympathetically.

Rather than being preoccupied with taking in large amounts of breath as we attempt to gasp in the contents of the entire room, we should acquire the ability to *breathe from within*. Too often in choral singing we witness forty chests and ribcages heaving up and subsequently collapsing as choristers collectively move through the inhalation/phonation cycle. However, Lamperti assures us that air does not need to be coerced or packed into the lungs; it prefers to calmly and ‘pressurelessly’ drop into our body as a result of the empty, open space that has been prepared for it by the natural descent of the diaphragm and the lateral opening of the ribs. Francesco Lamperti assures us that “*Silent renewal of the breath takes place within postural quietude;*” and his son, G.B Lamperti continues the theme: “Satisfying the lungs without dissipating the hollow feeling is the secret of song.”¹ This passive, releasing action - which happens of its own accord when we are asleep, or seemingly when we are doing *anything but* singing – opens up the bottom portion of the lungs, thereby creating a vacuum within this space. Because Nature hates vacuums and pressure imbalances, breath naturally and effortlessly drops into this empty space (the bottom of the lungs) to equalize the inward-outward pressure and we are automatically filled with the right amount of un-pressured air to power our voice. Because this breath is now housed low in the body and far from the larynx, it is far easier to control and turn into resonant tone (see below).

An effective breath should also be *silent*. The noise we hear when we take a poor breath is that of the friction that exists between the air that is attempting to enter the lungs and the throat and vocal folds which are half closed, attempting to ‘suck in’ the breath. This friction tends to dry out the folds and compromises their ability to produce beautiful tone and to sing for long periods of time. As the diaphragm and ribs release and stimulate the intake of breath, the throat and vocal folds must simultaneously release open to become a completely open conduit for the breath to drop quickly and silently into the bottom of the lungs. The throat therefore plays no role in fine breathing.

¹ Giovanni Battista Lamperti. *Vocal Wisdom; Maxims of G.B. Lamperti*, (New York: W.E. Brown, 1931), 42.

Great breathing is at the root of all great singing. Breath inhaled in the proper manner into the bottom of the lungs will be much less likely to exert unnecessary pressure on the vocal folds during singing.

La lotta vocale (The Vocal Struggle)

We must understand that when we sing, there is an ongoing struggle in our body between two opposing forces: the breath, which has replenished our bodies with oxygen is attempting to leave the body (through the vocal folds) to rid it of the carbon dioxide it has collected, while at the same time, the voice is attempting to lean into the body (*appoggiare la voce*) and exploit all of its resonance potential. Two opposing forces in two opposite directions, so to speak.

We do not need to supply much breath to the voice if it is to be powered in the proper manner. Vocal power in fine artistic singing comes from the acoustic-physiological pillars of concentrated core vibration and complete, bright-dark (*chiaroscuro*) balanced resonance, both of which are intimately linked to the ability of the body to intuitively apportion the right amount of breath, and not a molecule more, to feed and sustain this focused vibration and complete resonance. There is indeed somewhat of a love-hate relationship between the voice and the breath. As mentioned above, we do in fact need breath to set the vocal folds into vibration – they will absolutely not work without it, but neither will they work efficiently with superfluous breath flowing through them while they are trying to vibrate.

This position in no way advocates damming or squeezing the air and having a tone that sounds starved of breath. On the contrary, it simply recognizes that any superfluous breath exiting the body as breath rather than tone must make its way through the vibrating vocal folds. This reality brings about a contradiction in the folds' function as they cannot come together completely if excess breath is making its way 'through' them. The outgoing breath also tends to dry and tire the folds. To counteract the body's possible rigidity in holding back the breath with too much effort, *bel canto* masters encouraged the concept of *inalare la voce* or 'inhale the voice'. This notion had the singer concentrating on maintaining the beauty and energy of the voice's tone while keeping the ribs and sternum in the position that existed at the end of the open *respiro* while also preserving the feeling of emptiness undergirding the voice. They recognized that singers' bodies and vocal systems were highly intuitive and that if they concentrated on the beauty and energy of the tone, the body would automatically feed the voice the right amount of breath necessary to maintain the beautiful tone on which the singer was passionately focused.

To sustain a given note [or phrase] the air should be expelled slowly; to attain this end, the respiratory muscles, by continuing their [inhalatory] action, strive to retain the air in the lungs, and oppose their action to that of the expiratory muscles, which is called the *lutta vocale*, or vocal struggle. On the retention of this equilibrium depends the just emission of the voice and by means of it alone, can true expression be given to the sound produced²... In fact, all bad habits of the throat are merely efforts of protection against clumsy management of the breath."

Image: Just as a car needs a key to be turned in its ignition to ignite the internal combustion process on which its motor depends to power it if one is to get from point A to point B, so the voice needs breath to 'ignite' the tone by setting the folds into vibration. However, just as it would be injurious to a car's health to continue turning the key in the ignition after the car's motor had been started, it is also injurious to the voice to continue to feed it superfluous breath after the folds have been set into vibration. The voice needs only the amount of breath required to set the folds into beautiful, concentrated vibration and not a molecule more. There is enough breath at the larynx at the end of a

² Francesco Lamperti, *A Treatise on the Art of Singing*, Revised edition (New York: Edward Schuberth, 1890), 4, 25.

proper inhalation to begin the tone and one need not think of tucking in the abdomen and assaulting the vocal folds with excess breath to begin or sustain a tone. Rather than constantly thinking of providing breath for the voice and letting the voice ‘flow on the breath’, one should be listening intently to the quality of his/her voice and the balance of concentrated vibration and bright-warm resonance in the tone. *The voice should flow on the vibration and not on the breath.* Although it is an important component in the source of the sound the breath should not play a role in the acoustics of the voice – i.e. it should not be heard. This is true of all fine classical singing, whether in choral or solo mode.

Chiaroscuro (bright-warm) resonance balancing:

The *chiaroscuro* principle is the acoustic yin-yang of singing. The actual term finds its origins in Renaissance Italy where great artists such as Leonardo da Vinci and Raphael used bold combinations of light and shadow to convey a more realistic, three-dimensional ambience to their scenes. In the same way, the *bel canto* masters combined opposite poles of bright and dark resonance qualities to instil in voices a more complete, three-dimensional tone that was at once more pleasing to the ear and more emotionally absorbing.

These great pedagogues recognized that certain vowels were incontestably more *chiaro* (‘bright’ or ‘clear’; e.g. [i] and [e]) by nature, while others were more *oscuro* (‘dark’ or ‘warm’; e.g. [o] and [u]). The *chiaroscuro* principle seeks to mitigate these inherent variances by establishing an even proportion of brightness and darkness to a singer’s voice quality across the entire vowel spectrum regardless of individual vowel characteristics, thereby affording the singer a more homogeneous tone as well as a more consistent balance of upper and lower spectral energy (overtones). The aim was not to achieve a happy-medium tone lying somewhere between bright and dark but rather to have the tone reveal at once complete clarity and brightness as well as complete warmth or darkness. This approach has several advantages for vocal ensembles, notably in improvements to tone, ensemble blend and intonation.

It is typical that when singing brighter vowels, certain choristers’ voices will lack in roundness and stick out of a choir’s envelope of sound because of the imbalance in upper overtones. Other vowels such as [o] and [u] are at the other end of the spectrum and can tend to sound swallowed and flat. Contrary to the brighter vowels, when poorly sung these vowels will not carry and also tend to drag down a group’s intonation. In order to offset these natural resonance tendencies, it is necessary to add some of the brightness inherent in the *chiaro* vowels to the darker ones, while also adding some of the roundness and warmth of the *oscuro* vowels to the brighter ones. The aim is that although there are many different vowel sounds and resonance possibilities, there is to be one homogeneous *chiaroscuro* vocal quality throughout the entire vowel spectrum – *many vowels, yet one consistent vocal quality.* We are not talking about an approach where all vowels sound strangely similar with text intelligibility becoming compromised - in fact, quite the opposite is true. Each vowel is to sound absolutely like that vowel is supposed to sound, only in a very-bright-very-warm version of that vowel. Articulators should be free to move into whatever position is necessary to form that vowel. It is not the vowels themselves that are to sound alike but the voice’s resonance quality.

By consistently striving to maintain a bright-warm vocal quality in their voices, singers learn to naturally tune their resonators to amplify the proper overtones to which a particular vowel and sung pitch are sympathetic. By turning the attention to the tone quality as well as to the vowel purity, the resonators naturally move into the ideal position to attain maximum resonance with limited effort, thereby greatly decreasing undesirable effects of harsh or ‘edgy’ tones which can easily stick out of a choir’s sound when a more muscular approach is employed. This brings us to another adage of fine singing: do not push muscular buttons when you sing! *Muscle should always respond to sound and conception of vocal tone and not the opposite.* A conductor’s comments on singing should always be directed at the ensemble’s *sound* rather than exhorting their muscles into action. Rather than ask choristers to sing with open throats and lifted palates, ask them (and demonstrate if possible) to sing a beautifully resonant, *chiaroscuro* vowel. In order to accomplish this, their throats will naturally open, their palates lift and their larynges descend, but their attention will be drawn to the sound rather than to the muscle and this shift in approach will be reflected in the beauty and musicality of the sound.

It is the author's experience that voices that do not blend often lack the *oscuro* or dark/warm element in their sound (there can be other reasons, of course, such as excessive vibrato, breath pressure, etc.). With a balanced *chiaroscuro* approach to resonance, voices tend to blend into the ensemble's sound as they all have a similar auditory model of sound on which to build their ideal tone and are thus able to contribute more uniformly and musically to the whole. Many conductors, for fear of having a few trained voices stick out, tend to remove too much energy from a choir's sound in order to have all voices sound equal with the result of having all sound equally colourless. It is the lowest-common-denominator approach to choral sound. "There is no reason to have a Stradivarius sound like a cigar-box violin so that both will sound the same. Instead of removing the singer's formant from voices that have it, one should try to establish the formant in all voices of the choir in which it is lacking."³ As Coffin so aptly states, with focused vibration and the *chiaroscuro* balanced resonance approach (both of which bring about this increase in upper harmonic energy called the singer's formant), *blend does not have to mean bland* and colour and expressivity need not be sacrificed for uniformity.

Another area in which *chiaroscuro* resonance can be of tremendous help is group intonation. In any sung tone, there are two kinds of pitch that are sounding: the pitch of the note being sung (fundamental frequency) and the pitch of the vowel. As with fingerprints, each vowel has its own 'harmonic print' with different harmonics or overtones being amplified and dampened depending on what vowel is being sung. Two voices singing slightly different vowels will sound out of tune even if the same fundamental frequency is being sung because of the fact that different harmonics, at different frequencies, are being amplified or filtered out to produce these vowels. Imagine what can happen when forty or more voices sing different versions of the 'same' vowel. The principle here is that *singing out of TONE* is analogous to *singing out of TUNE*. It is not surprising that the base of the word intonation is *tone*. When choristers draw their attention simultaneously to their ability to remain loyal to pitch as well as to the *chiaroscuro* character of the precise vowel being sung, the harmonics of all voices sync up and the ensemble's sound is at once perfectly in tune and full of colour.

Along with elements of breath control, chiaroscuro resonance is the voice's best defense against one of its greatest enemies: muscular tension, for the throat cannot tighten its muscles around a fully resonant tone.

Core-centered, focused vibration: the life of the voice:

In any discussion of vibration in choral singing, two important observations must be made from the outset. In *bel canto* pedagogy, all muscular actions are brought about by the vocal tone and singer's inner conception of sound. It is therefore not a direct muscular action of the folds that is sought to bring about core, focused vibration. Rather, all coordinated muscular processes are inspired by the singer's well-trained inner ear that has listened to fine, focused, vibrant singing and stored it in his/her imagination and practised its application. If one can hear and imagine a tone, one can, with practice, produce it. Secondly, *vibration* is not to be confused with *vibrato*. Just as a violinist works for years on the contact and flow of the properly adjusted bow with the string to create the most beautiful focused sound (without necessarily making the left hand vibrate to create vibrato), so too must the singer work on the optimal coordination of focused breath to focused tone.

Many choirs and choral conductors operate under the false assumption that everything must be relaxed when singing properly, including the vocal folds. Choristers are also often admonished to 'let the breath flow' or to sing 'on the breath'. This conviction can lead to vocal production lacking in energy, carrying power, colour and fine intonation. It is akin to asking the violinist to loosen the bowhairs until they are mostly flaccid and then expect her

3 Berton Coffin, *The Sounds of Singing* (Metuchen N.J.: Scarecrow Press, 1976), quoted in Stephen C. Bolster, "The Fixed Formant Theory and Its Implications for Choral Blend and Choral Diction," *The Choral Journal* 23, 6 (1983): 30-31.

to make a beautiful tone. Choral singing is often devoid of the focused vibratory energy that was the foundation of all fine singing in the *bel canto* school. Do we shy away from focused vibration in choral singing?

This principle builds on the previous notions of breath control to bring about the most effective vocal fold vibration possible in order to produce a tone that is devoid of excess breath pressure yet filled with acoustic energy. All of the voice's acoustic potential depends on the quality of its initial vibration. *Vibration excites resonance and true resonance is not possible without it.* Efficient vibration also has the advantages of affording the voice greater carrying power while enabling the singer to sustain longer phrases on one breath.

The vocal folds were not meant to whistle but to vibrate. They essentially act as a vibratory valve which can either let superfluous breath escape through them while they attempt to vibrate, or alternatively they can resist the passage of breath by coming more completely into contact on each vibratory cycle and transforming every molecule of breath into focused, ringing sound. This process creates a tone that is more concentrated as well as more easily produced and sustained. It is more efficient and will have less difficulty in carrying in a large hall or over an orchestra.

In beginning a tone therefore, a singer must imagine that the tone will be devoid of audible breath and immediately enjoy a focused, core centre of vibration exactly in the middle of the pitch. Because it is the most naturally concentrated, it is perhaps easiest to begin on an [i] vowel ('ee'). Ask choristers to sing an exaggerated tight (too focused) [i] and to slowly relax the throat muscles around this concentrated centre by gradually opening up more warm resonance (*oscuero*) around the overly-focused core but *without* opening or spreading the core itself.

This brings us to one of the great paradoxes of vocal technique: *vibration* must be concentrated (focused, collected) while *resonance* must be generously open and ample (but not spread). Vibration and resonance are the bride and groom of vocal technique. Although they are completely interdependent, they are in many ways opposite in nature. If the focused core of vibration opens, excess breath seeps through the cords and compromises the tone which becomes spread and unfocused, goes nowhere while singers run out of breath more quickly and usually sing out of tune as upper harmonics are compromised. This can be compared to a garden hose being set either to 'jet' (which travels far with its concentrated energy) or to 'spray' (which falls dead a few feet away). On the other hand, if the resonance becomes concentrated like the vibration, throat muscles tighten and the tone becomes harsh and shrill and voices have difficulty blending into an ensemble sound. The full potential and beauty of concentrated vibration will only be heard and felt if it is surrounded by the complete, bright-warm resonance which should always accompany it. It is the omnipresence of these two factors that forms the '**tonus**' of the voice and creates a truly free and beautiful vocal tone which rides its own self-sustaining energy.

Power either builds or destroys. The energy in regular vibration is constructive. The violence in irregular vibration is destructive. Regular vibration causes the voice to be true to pitch, ringing in quality, and rich in character. When it appears in the voice it re-educates the entire process of singing because it becomes master. It is this that makes the voice feel like one register, one mechanism from top to bottom and memory of how it feels makes your only method... The weird feeling that focus of vibration commandeers everything beneath it comes to the expert singer⁴

Vibration is the lifeblood of the voice; without it resonance, vocal power and expressivity are not possible. One must seek to 'ride on' the self-sustaining energy of the focused core or sweet spot of the voice. Developing a sense for the ever-present core of vibration will effectively teach your voice how it should sing.

⁴ G.B. Lamperti, Vocal Wisdom 39, 49-50.

Appoggiare la voce (Vocal support)

Undoubtedly the least understood and most maligned term in the entire vocal pedagogy lexicon is that of support. This term is often misunderstood to mean a phantom muscular partner to the voice, mystically enabling it to accomplish its goal of producing a fine tone. Voice teachers and conductors are often heard exhorting their students and choristers to use 'more support' – what does this mean?

The *bel canto* model of support is, as can be expected, one that is directly linked to the tone itself. *Appoggiare la voce* signifies 'leaning the voice into the body' and builds upon the three pillars learnt to date: focused core vibration, complete *chiaroscuro* resonance and breath control. It is here that the feeling of open emptiness which is prepared by *respiro* becomes vital. Whereas the concepts of support and vocal projection (another awful term) encourage singers to have 'out-of-body experiences' where the body effectively rejects the voice with pressure and excessive breath flow, *appoggiare la voce* encourages them to lean the voice into the body and use all of its potential for reversal of breath pressure and optimization of resonance. In this manner, the singer's body accepts the voice rather than rejecting it – it is akin to projecting the voice *into* rather than *out of* the body. Consequently, when the voice leaves the body, it is devoid of breath pressure and muscular tension yet replete with colour and the true vocal power inherent in focused vibration and balanced resonance. Taking this concept to a very sensual level, Maria Callas exclaimed that 'when you sing well, the voice makes love to the body'. The *bel canto* masters referred to this feeling of intimate partnership between control of the breath, vibration and resonance as the *appoggio* and one was never to lose this sensation while singing. Just as one would never see a cellist remove the strings from his instrument and play the strings alone with his bow, so too should singers not only play their vocal cords and throats, but should rather allow the vibration of their strings to exploit the resonance of their entire instrument. In so doing, the body becomes the vessel of the voice, whose true colour and character are revealed and singing becomes an act of indescribable pleasure.

Do not support or project the voice out of the body for these two concepts have ruined countless voices. Rather, constantly listen to and expect the beauty of focused vibration and chiaroscuro resonance to lean into the body and counteract the feeling of breath pressure and muscular tension wanting to assault the voice. It is in this sensation of constantly leaning the entire vocal tonus into the feeling of resistance from below that the phrase 'sing on the breath' reveals its true meaning (as opposed to singing on the breath 'flow' which is an entirely different and unhealthy concept).

Messa di voce (The swell of the voice)

We come to one of the great hallmarks of *bel canto* exercises and principles: the *messa di voce*. In Italian historical vocal pedagogy, it has always been assumed that a voice which is freely produced and has mastery over the breath, will be capable of effecting a smooth crescendo from the softest to the loudest dynamic, and return gradually once again to *pianissimo* in one sustained, seamless tone and on one pitch without any loss in vocal quality (vibrancy and resonance) or any deviation in pitch. This is the *messa di voce*.

Aside from being one of the most important techniques in the *bel canto* artist's interpretive arsenal, this ability to skilfully swell and diminish a tone at will was the true test of a singer's overall vocal skill as it demanded mastery over many previously studied technical facets of vocal training. This principle requires that changes in dynamics be performed while maintaining: 1) a focused, self-sustaining core of vibration so that increases or decreases in intensity need not require any pushing or extra vocal effort; 2) a consistent vocal quality and vowel energy as manifested through continual *chiaroscuro* resonance; 3) adequate breath control so as never to push too much or too little breath through the cords but rather supply only the proper amount of controlled breath to feed the vibration within the context of changing dynamics. The vocal artist needed to possess refined skill in these three areas before any earnest work on the *messa di voce* could begin.

Most singers, whether soloists or choristers, find it much more difficult to sing well when singing softly, an act which definitely requires more finesse and control of technical abilities than when singing loudly. It is paramount in performing a diminuendo that singers learn to maintain and rely on the feeling of vocal tonus without allowing the tone or the breath to become flaccid and lifeless. They are to stay on the 'sweet spot' or 'central hum' (core) of the voice and listen to ensure that all vowel colours are maintained in the tone. When this ability is mastered after much practice, singers will find they are able to sing much more softly with greater control and that their softer sounds will carry much more easily. This is especially important for choirs singing with orchestra if their tone is to carry over that of the instruments and their text to be understood at softer levels. Singing *forte* is 100% volume and 100% tone. Singing *piano* is 20% volume and 100% tone. Only quantity, and not quality, is to diminish when singing softly.

The *mesa di voce* exercise is also extremely useful when working on register transitions and trying to develop that beautiful vocal ability of incorporating *la voix mixte* or mixed voice into one's technique or a choir's sound. If practised just below one's *passaggio* (register transition area), the act of singing a very gradual diminuendo as seamlessly as possible will actually bring the voice through the register transition as the load on the vocal folds modifies throughout the transition in intensity. Mancini and others used this exercise to accomplish most of the register transition training for his students.

In advanced stages of training the performance of the *mesa di voce* must be practiced continually until there is an exact matching of both quality and intensity at the point of transition. After this technique has been mastered the 'break' disappears, and the singer is able to pass freely from one register to the other, from soft to loud and from loud to soft, without difficulty. This is the kind of technique that the early masters described as the 'art of producing the voice.' This is the singing style known as 'Bel Canto'.⁵

Singing softly while applying the principle of mesa di voce ensures that the voice will not only sound more complete and in tune, but that it will not tire. Singing poorly at softer dynamics can indeed be very injurious to the voice if complete resonance, focused vibration and adequate appoggio are not maintained.

Sostenuto

Another cornerstone of *bel canto* to which lip service is often paid is that of *legato* or *sostenuto*. Although not of *bel canto* lineage, Claude Debussy gave possibly the best description of this concept when he told a student that *the most beautiful music happens in between the notes*. It is not enough to sing beautiful vowels and syllables; in fact, having a syllabic approach to singing, whether or not it is intended or even recognized by the singer, is one of the greatest enemies of fine singing. When one becomes accustomed to the self-sustaining energy of focused vibration and *chiaroscuro* resonance, as well as to the feeling of emptiness and acceptance in the body which undergirds this energy, the voice never wants to sing otherwise. Moving from syllable to syllable and from note to note seems to happen independently of this current of vocal tonus. Words and notes can then melt effortlessly one into another. Likewise, the emission of consonants should not disturb this current as *consonants act on vowels as blinking does to the eye*. This is not to say that articulation becomes lax and indiscernible as we concentrate on sustained tone quality - quite the contrary in fact. Articulation can and should be very energized once one realizes that the necessary movements need not disturb the beauty and energy of the tone.

Be careful not to encourage 'diction singing' where the energy of consonants is sought over that of vowels and leads to a 'syllabified' production. Articulation and breath seepage should in no way disturb a beautifully energized tone. If the voice sings in a sostenuto fashion, crisp consonants can be added without compromising musicality or beauty of tone, if not, they can act like scissors on the voice.

⁵ Cornelius Reid, *Bel Canto: Principles and Practices* (New York: J. Patelson Music, 1978), 98.

Aggiustamento (Vowel Modification for higher pitches)

Generally speaking, the higher a singer ascends in his or her range, the more strident and spread the tone becomes, causing vocal fatigue and intonation problems with particular voices tending to stick out of an ensemble's sound. An important factor which aided *bel canto* masters in the transition to the upper register was the principle of *aggiustamento*. This technique is based on a gradual modification of vowels and greater control of breath within lines of ascending pitch. Vowels should be slightly rounded as pitch rises, thereby lengthening the vocal tract and encouraging a more open throat, which tends to want to close in the upper voice. This process provides a more balanced resonance environment for higher pitches and reduces muscular strain, thereby allowing register transitions to happen more effortlessly. Aside from helping the larynx to maintain a stable position, the slight alterations in vowel colour actually help the listener to perceive a more even quality of vowel and text intelligibility is actually improved.

Amateur singers often resort to the 'bullhorn' approach to high notes where the front of the mouth spreads wide open, the jaw locks up half closed, breath flow increases and the tone becomes spread and 'screamy'. As an alternative, one should adopt the 'reverse bullhorn' approach where the front of the mouth opens only slightly more as pitch ascends (especially for men) and the back of the mouth experiences an increased 'beginning-of-a-yawn' feeling accompanied by a vertical stretch (adding slightly more richness to the tone). The aim is that the tone should sound *even* from top to bottom, yet for this to happen, gradual alterations must be made in ascending to higher pitches.

Another element that is important in maintaining beauty of tone and intonation in the upper voice is control of the breath. In ascending the scale, the breath should take the opposite direction of the pitch. Do not assault the vocal cords with superfluous breath pressure which will spread them open and compromise their ability to vibrate more quickly (which they must do to sing a higher note). The vocal folds don't want to experience changes in altitude – have singers think of singing 'faster notes' rather than 'higher notes'. Also, continue to concentrate on 'inhaling the voice' rather than exploding it.

Dr. Fagnan is currently producing a DVD on vocal technique for choirs incorporating these *bel canto* principles as well as state of the art acoustical analysis. It should be released in the autumn of 2010. For more information or to be put on a list of interested people, please email him at Lfagnan@ualberta.ca.