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I, Michael C Fuchs , hereby submit this original work as part of the requirements for the degree of Doctor of Musical Arts in Conducting, Choral Emphasis.

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A Conductor's Guide to the Incorporation of Bel Canto Methodology in the Choral Rehearsal

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A Conductor's Guide to the Incorporation of *Bel Canto* Methodology in the Choral Rehearsal

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Abstract

This document is a choral conductor's guide for the incorporation of *bel canto* vocal techniques, specifically *coup de la glotte*, *chiaroscuro*, and *appoggio*, into the choral setting. Research has shown that the use of these vocal techniques can improve the singing of choral ensembles in areas of intonation, resonance, flexibility, and tone quality. Choral ensembles that incorporate *bel canto* techniques can also benefit from faster and more effective rehearsals as well as the flexibility to sing a wide range of repertoire.

This guide draws upon the writings and teachings of historical *bel canto* vocal pedagogues, contemporary vocal pedagogues, choral pedagogues, and vocal science research to develop a choral *bel canto* methodology. For each specific *bel canto* technique, this guide includes a discussion about the use of appropriate terminology, warm-up exercises and vocalises, and an exploration of rehearsal strategies and techniques.

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Introduction

> What happiness, what delight to sing well!... And then all those people who hang on your lips, who listen to your songs as if it were divine, who are electrified and enchanted… You sway them all!
>
> —Marie Bashkirtseff, *The Journal of Marie Bashkirtseff*

Choral sound is an expressive tool by which choral conductors and their ensembles communicate with audiences and give life to music. The development and refinement of choral sound is thus an important component of musical success and a primary responsibility of the choral conductor. The sound of any particular choral ensemble is unique and directly related to its conductor and his or her aesthetic, philosophical, pedagogical, and musical decisions. It is also affected by the unique combination of voices that constitute the ensemble. Each choral ensemble is capable of producing a wide range of colors and sound. This diversity and uniqueness of sound is responsible for the enormous variety of expression and artistry possible in choral music. Choral conductors can take advantage of this expression and artistry of choral sound through interpretive musical decisions and the teaching of vocal technique.[1]

The art of choral conducting has evolved throughout the twentieth century to include the teaching of vocal techniques and the development of choral sound. Prior to this evolution, choral conducting was often approached from an orchestral perspective, which assumed that choral singers, like orchestral musicians, are responsible for their own technique. However, most choral singers are amateur musicians and lack the years

[1] Howard Swan, "The Development of a Choral Instrument," in *Choral Conducting Symposium*, ed. Harold A. Decker and Julius Herford, 2nd ed. (Upper Saddle River, NJ: Prentice Hall, 1988), 8.

of individual training and experience enjoyed by their orchestral counterparts.[2] They are therefore in need of proper vocal instruction to perform at a high standard. In addition, as choral performances became more common and popular during the mid-twentieth century, choral conductors began to view sound as a powerful and important expressive element of choral music. The sound of the chorus itself became something to be cultivated and marketed. This resulted in the development of various schools of thought regarding choral sound.[3] Choral conductors, for both artistic and pedagogical purposes, assumed more responsibility for the vocal training of their choruses as the twentieth century progressed.

Today, most choral conductors, and the institutions that train them, acknowledge the importance of vocal pedagogy within the choral environment. Numerous books and resources are available regarding choral singing and pedagogy.[4] This guide will add to the current literature by providing the choral conductor with a tool through which he or she might incorporate *bel canto* vocal methodology into the choral rehearsal. The first step in this process is an understanding and definition of the term itself.

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[2] Brenda Smith and Robert Thayer Sataloff, *Choral Pedagogy* (San Diego: Singular Publishing Group, 2000), 105.

[3] Swan, 11–55.

[4] For resources on vocal pedagogy in the choral setting, see Shirlee Emmons and Constance Chase, *Prescriptions for Choral Excellence: Tone, Text Dynamic Leadership* (Oxford: Oxford University Press, 2006); Frauke Hassemann and James M. Jordan, *Group Vocal Technique* (Chapel Hill, NC: Hinshaw Music, 1991); James Jordan, *The Choral Warm-Up: Method, Procedures, Planning, and Core Exercises* (Chicago: GIA Publications, 2005); Paul Nesheim, *Building Beautiful Voices: A Concise, yet Comprehensive Study of Vocal Technique for the Choral Rehearsal or Private Instruction* (Dayton, OH: Roger Dean Publishing, 1995); Smith and Sataloff.

History and Definition of *Bel Canto*

Bel canto literally means "beautiful singing". Beyond its literal meaning, the term *bel canto* has often "been used without specific meaning and with widely varying subjective interpretations."[5] *Bel canto* has been associated with styles of singing, vocal techniques, compositional styles, and specific composers from the late sixteenth through the mid-nineteenth century.[6] It has been adopted by voice teachers to validate individual pedagogy that may have little foundation in the teaching of the historic *bel canto* pedagogues.[7] *Bel canto* has also been used pejoratively and positively to add authority to subjective opinions regarding differing musical and vocal styles.[8] Prior to defining how *bel canto* will be specifically used within this guide, a brief understanding of its history is worthwhile.

The term *bel canto*, as a unique expression with meaning beyond its literal definition, first came into use in the late nineteenth century. The term was always applied retrospectively and never used "as such during the period with which it is most associated, i.e., the seventeenth and eighteenth centuries."[9] *Bel canto* began to take on a

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[5] Owen Jander and Ellen T. Harris, "Bel canto" *Grove Music Online*, *Oxford Music Online*, Oxford University Press, http://www.oxfordmusiconline.com/subscriber/article/grove/music/02551 (accessed July 24, 2013).

[6] James Stark, *Bel Canto: A History of Vocal Pedagogy*, (Toronto: University of Toronto Press, 1999), xix–xx.

[7] Ibid., xx.

[8] Jander.

[9] Philip A. Duey, *Bel Canto in Its Golden Age* (Columbia University, NY: King's Crown Press, 1951), 11.

special meaning in Italy in the 1860s and in other countries by the 1880s.[10] This special meaning was often related to the debate between the Italian singing style of the early nineteenth century and the heavier, darker vocal style required of some late nineteenth century operatic composers, especially Richard Wagner (1813–1883).[11] The term thus took on a nationalistic tint in the debate between Italian and German music, at a time when both were becoming modern nations. "*Bel canto*" would not enter into music dictionaries until the first decade of the twentieth century.[12]

As a retrospective term, *bel canto* would be used in reference to compositional styles, specific composers, vocal styles, and vocal techniques. Regarding compositional styles, it would be applied to several different repertoires. German musicologists associated *bel canto* with the *cantabile* style of the Venetian Operas and Roman Cantatas of the 1630s and 40s.[13] Other writers would connect *bel canto* to Baroque and Classical opera from Claudio Monteverdi (1567–1643) to Wolfgang Amadeus Mozart (1756–1791) and Gioachino Rossini (1792–1868).[14] It is also used more exclusively to refer to the specific compositional styles of Rossini, Vincenzo Bellini (1801–1835), and Gaetano Donizetti (1797–1848).[15]

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[10] Duey, 11.

[11] Stark, xviii; Duey, 7–10; Martha Elliott, *Singing in Style: A Guide to Vocal Performance Practices* (New Haven, CT: Yale University Press, 2006), 126.

[12] Duey, 4.

[13] Jander; Stark, xix.

[14] Stark, xix.

[15] Elliott, 126; Jander.

The vocal style associated with *bel canto* is directly connected to the stylistic and aesthetic requirements of the repertoire being composed and performed. The opera industry during the seventeenth and eighteenth centuries was primarily focused on the singer and the art of singing. "Good singing was its own objective."[16] This created a vocal style characterized by an emphasis on beauty of tone, smoothly flowing melodies, the practice of vocal ornamentation, and the virtuosic delivery of highly florid music.[17] *Bel canto* is also strongly linked to the *castrati* and their astonishing vocal abilities, which included "phenomenal range, flexibility, fantastic control of the breath, and ability to dazzle auditors with vocal feats."[18]

Finally, and most importantly for this guide, the term *bel canto* refers to specific vocal techniques that "set it apart from other kinds of singing."[19] These vocal techniques were prevalent throughout Italy in the 18th and 19th centuries and require "a highly refined use of the laryngeal, respiratory, and articulatory muscles in order to produce special qualities of timbre, evenness of scale and register, breath control, flexibility, tremulousness, and expressiveness."[20] Some specific *bel canto* techniques include *coup de la glotte* (stroke of the glottis)*, chiaroscuro* (light/dark tone quality)*, appoggio* (to lean

[16] Dan H. Marek, *Singing: The First Art* (Lanham, MD: The Scarecrow Press, 2007), 10.

[17] Elliott, 127; Jander; Stark, xix.

[18] Stark, 197–8; Marek, 11.

[19] Elliott, 127; Stark, xxv.

[20] Stark, xxi.

on the breath), *aggiustamento* (vowel modification), and *messa di voce* (measuring the voice).

The development of *bel canto* technique began in the late sixteenth and early seventeenth centuries when late Renaissance polyphonic music began to be replaced with monody.[21] The technique required for this monodic solo singing led to the rise of the professional singer, particularly the virtuosic *concerto delle donna* of Ferrara and Mantua. The singing of these professional virtuosos would directly influence Guilio Caccini (1551–1618) and his *Le nuove musiche* (1602). It was through Caccini that this new virtuosic style of singing would be introduced to the rest of Italy. Many pedagogues and composers would later refer to the Florentines as the first to establish good singing and the era of Caccini as the first golden age of singing.[22]

The distinction between vocal style and technique is important. Style is determined by repertoire and historical time periods. Vocal technique, however, is defined as the procedures and means by which vocal styles are achieved. *Bel canto* style may be described as lyrical and florid, but the techniques "can be adapted to a wide variety of musical styles from several historical epochs without losing their integrity as fundamental vocal principles."[23] *Bel canto* style may refer to one type of music, but *bel canto* technique is the means to sing all music.[24]

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[21] Stark, 190.

[22] Ibid., 191–7.

[23] Ibid., xxv.

[24] Bloem-Hubatka, 5.

Many historical Italian vocal pedagogues, including Pier Francesco Tosi (1647–1732), Giambattista Mancini (1714–1800), and Francesco Lamperti (1813–1892) along with the composers Johann Joachim Quantz (1697–1773), Johann Adolph Hasse (1699–1783), and Rossini felt that, during their respective lifetimes, the art of good singing was in decline.[25] These assertions often have their origins in the confusion between technique and style. For example, during the late nineteenth century, the expanded size and color of the orchestra along with the use of dramatic tones and covered high notes led to a heavier and darker tone quality that was foreign to the style of seventeenth through early nineteenth century Italian opera. This stylistic development represented a considerable musical loss to those who preferred a specific type of singing. However, the same technical grounding that was required for florid singing was also needed for the newer romantic operas.[26] Giovanni Battista Lamperti (1839–1910), Francesco's son, attributed the perceived negative vocal characteristics of dramatic opera not to the style of the music, but rather with a lack of vocal training by many singers:

> This period is swayed by a prejudice: everyone says the music of Verdi and Wagner spoils the voice. That is not true of perfected voices. And here we have the one cause of the deterioration of singing, which no one will grasp and which nevertheless is so simple. The insufficiently cultivated voice, which possesses neither the flexibility nor the art of the breath-supported legato, naturally quickly wears itself out.[27]

The new and dramatic vocal style demanded an increased technical and pedagogical understanding of the voice. In this way, the compositional requirements that

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[25] Stark, 216–21; Elliott, 127; Jander.

[26] Stark, 221–5.

[27] William Earl Brown, *Vocal Wisdom: Maxims of Giovanni Battista Lamperti* (New York: William Earl Brown, 1931), 3–4.

were often blamed for the decline of singing may actually be credited with its longevity. Technique and art cannot stand still, but must continually move forward to maintain relevance. "Many of the comments regarding the decline of good singing are related to a time lag between a stylistic change brought about by composers and the ability of singers and singing teachers to adjust to this change."[28]

For the purpose of this guide, *bel canto* will refer to the vocal techniques and pedagogy developed by the Italian vocal pedagogues of the seventeenth through nineteenth centuries. These vocal techniques and pedagogies are sometimes referred to as the Old Italian School of Singing. Some preference exists in the literature for the designation Old (or Historic) Italian School instead of *bel canto*.[29] The designation Old Italian School, however, is misleading because the technique it represents is neither old nor Italian. *Bel canto* techniques, while they developed in the seventeenth through nineteenth centuries, are modern and universal.[30] They continue to be verified, updated, and refined through practical application and scientific research. Although these techniques developed in Italy, they have become nearly universal in their international appeal when compared to other national schools of singing.[31] Some of this international appeal can be connected to the Italian language. *Bel canto* vocal techniques were "developed on the pure vowels of the Italian language and these principles can be applied

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[28] Stark, 216.

[29] Bloem-Hubatka, 5, 12.

[30] Ibid., 162.

[31] Richard Miller, *National Schools of Singing: English, French, German, and Italian Techniques Revisited* (Lanham, MD: The Scarecrow Press, 1997), xiv–xv.

to other languages."[32] Because of the misleading nature of Old Italian School, the term *bel canto* will be used in this guide.

Purpose and Use of this Guide

The goal of this guide is to provide choral conductors with a pedagogical framework with which to incorporate *bel canto* vocal methodology and techniques, specifically *appoggio, coup de la glotte,* and *chiaroscuro*, into the choral setting. The techniques, terminology, exercises, and methodology of the historical *bel canto* pedagogues Manuel Garcia II (1805–1906), Mathilde Marchesi (1826–1913), Francesco Lamperti, Giovanni Battista Lamperti, William Shakespeare (1849–1931), and others are analyzed, discussed, and adapted in order to be applicable to the choral environment. The writings of contemporary vocal pedagogues such as Richard Miller, James Stark, Daniela Bloem-Hubatka, and Scott McCoy provide a scientific and/or modern perspective on the historic *bel canto* treatises.

This guide is designed to be a tool for choral conductors to improve the vocal ability of their choruses. The specific benefits of *bel canto* in the choral setting are numerous and will be discussed in chapters two through five. The exact incorporation of the techniques and methodologies presented herein will be unique for each conductor and ensemble. This guide is meant to be neither exhaustive nor comprehensive. Rather, it provides a basic foundation and framework from which choral conductors can incorporate, adapt, and expand upon *bel canto* methodology to meet the needs of their ensembles.

[32] Bloem-Hubatka, 5.

Chapter 2

Bel Canto in the Choral Setting

> Choral conductors, even more so than teachers of singing, are divided in their opinions concerning vocal technique. Some refuse to employ any means to build voices. Either they consider such procedures to be unimportant, or they are afraid to use an exercise that is related to the singing process. Sometimes choral directors cloak their own ignorance of the singing mechanism by dealing directly with the interpretive elements in a score and thus avoid any approach to the vocal problems of the individuals in a chorus. There are also those conductors who insist upon using only the techniques learned from a favorite teacher. These are applied regardless of the nature of a problem or its desired solution. Finally, there are some who, without an orderly plan of procedure, utilize a great number of vocalises, devices, and methods taken from many sources with the desperate hope that the tone of their chorus somehow will show a marked improvement.
>
> —Howard Swan, *The Development of a Choral Instrument*

Voice Lessons and Choral Rehearsals

The application of *bel canto* methodology to the choral setting is neither as simple nor as straightforward as it may first seem. The major difficulty is that most of the historical and contemporary writing and teaching in the *bel canto* tradition is focused upon the solo singer in a studio situation. The choral setting is a much different environment. As *bel canto* methodology developed in a solo context, it is important to comprehend the unique nature of the choral environment to which these solo vocal techniques, terminology, exercises, and methodology are being adapted.

One important difference between the choral rehearsal and studio voice lesson is the student-to-teacher ratio. Within a private voice studio, one student is paired with one master-teacher. This environment allows the teacher to individualize his or her teaching toward one student at a time. The studio voice teacher is able to develop a detailed knowledge of the student's vocal mechanism, their musical strengths and weaknesses,

and their individual character. With this knowledge, the teacher can identify faults and prescribe solutions that are unique for each individual.

In contrast to the studio voice teacher, the choral conductor is tasked with teaching multiple singers, sometimes hundreds, simultaneously. Although most choral ensembles are comprised of similar types of singers (children, professionals, college music majors, etc…), the diversity within a choral ensemble is great. Each individual brings to the rehearsal his or her own unique background, training, learning styles, and character. The diversity of a choral ensemble may be manifest vocally, emotionally, physically, intellectually, and socially. Effective conductors continually monitor and assess the progress of each individual and differentiate his or her instructions to facilitate individual learning. However, it is impossible to match the level of individual monitoring, assessment, and teaching possible within the voice studio.

The amount of time allotted for studio voice lessons and choral rehearsals is also different. Today, studio voice lessons are usually thirty to sixty minutes once per week. When *bel canto* methodology was developed during the seventeenth through nineteenth centuries, students would often work with their teacher on a much more continual basis.[1] Most choral ensembles will rehearse anywhere from one to five hours per week, over the course of one or more rehearsals. This comparison gives the impression that choral conductors possess a considerable amount of instructional time, especially when compared to studio voice teachers. However, there are two factors that limit the effectiveness of this rehearsal time as it relates to the incorporation of *bel canto* methodology.

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[1] Giambattista Mancini, *Practical Reflections on the Figurative Art of Singing*, trans. by Pietro Buzzi (Boston: The Gorham Press, 1912), 188; Marek, 12–3.

First, many choral ensembles, especially academic choruses, feature a high rate of membership turnover. Choral conductors are thus often unable to develop long-term relationships with singers in their ensembles over the course of several years. Conductors may only have a few months or a year in which to teach and develop a vocal methodology with individual students. This presents a challenge for long-term pedagogical incorporation. In addition, even in choruses where the percentage of new members is low, those new singers must be taught methodology and technique from the beginning.

There are circumstances when singers and conductors have the opportunity to work with one another for several years or longer. These circumstances should be sought out, developed, and appreciated by both conductors and singers because it provides the framework for successful incorporation of *bel canto* vocal methodology. Such situations include church ensembles, professional choruses, community choruses, or choral programs featuring multiple ensembles and/or conductors who share a consistent vocal pedagogy.

In contrast to the often short-term conductor-singer relationship, students will usually study with the same private voice teacher for two or more years. When *bel canto* developed, it was acknowledged that the development of the voice took several years and that this time was ideally spent with a single master teacher.[2] When told by a student that he had studied with ten different teachers, Giovanni Lamperti replied, "That is nine too

[2] Brown, 16; G. B. Lamperti, *The Technics of Bel Canto*, trans. Th. Baker (New York: G. Schirmer, 1905), 35; Marek, 12–3; Mathilde Marchesi, *Ten Singing Lessons* (New York: Harper & Brothers Publishers, 1901), 10–2.

many."[3] An extended period of time with one teacher allows for the development of a long-term student-teacher relationship and enhances the positive benefits of studio teaching already described.

The differing objectives of the choral rehearsal, as compared to the private voice lesson, is the second factor that limits the effectiveness of choral rehearsal time as it relates to the incorporation of *bel canto* methodology. Within a studio voice context, both now and in the seventeenth through nineteenth centuries, the development and teaching of technique is often considered paramount. The learning and perfection of repertoire is, ideally, primarily accomplished outside of the lesson time. Students are expected and equipped to spend significant amounts of time practicing and preparing for their private lessons to make efficient use of limited instructional minutes.

The primary goal of most choral rehearsals, however, is not to teach technique but to prepare the chorus for performance. This preparation involves both learning of repertoire as well as the development of vocal technique and choral sound. Successful choral performances depend on both. The teaching of repertoire and sound are not mutually exclusive. Efficient rehearsal technique will teach both at the same time. However, the majority of the choral rehearsal will be spent rehearsing repertoire, rather than on exercises solely focused on vocal technique. The repertoire learning process will vary depending on the nature of the ensemble and philosophy of the conductor. It may include basic musical mechanics such as notes and rhythms, or a conductor may expect that chorus members learn these elements individually, allowing rehearsals to be focused on artistic, interpretive, or ensemble elements.

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[3] Brown, 22.

Regardless of these different approaches, choral repertoire must be learned in the choral rehearsal. Unlike a voice student, a choral ensemble is unable to rehearse outside of the actual choral rehearsal. Individual choral members may, if required or motivated, learn and practice their part but this is wholly different from choral rehearsing. Even assuming that every chorus member practiced and learned their individual part perfectly with regards to notes, rhythms, and expressive markings, the majority of choral rehearsal time would still be spent learning repertoire. Ensemble, interpretation, intonation, and choral sound can only be developed and practiced within the rehearsal. While the studio environment features the development of technique for application to repertoire outside of the lesson, the choral environment requires the learning and preparation of repertoire within the time constraints of the rehearsal.

Beyond repertoire, vocal technique must be taught throughout the rehearsal process if the chorus is to perform at the highest standard. Due to limited rehearsal time, the group nature of the choral rehearsal, and the necessity for repertoire to be prepared in rehearsal, the teaching of vocal technique must be done in an efficient and effective manner. The methodology used must be quickly learnable by singers in a large group setting and have the ability to be incorporated within the teaching of repertoire. Much of the writing, descriptions, and exercises provided by the historical pedagogues of *bel canto* are inappropriate for the choral setting. They are often too difficult, complex, unproductive, and perhaps unhealthy outside of the studio setting and must be adapted to fit the needs of the choral rehearsal.

Methods of Incorporating *Bel Canto* into the Choral Rehearsal

Five primary teaching methods exist by which choral conductors can affect the vocal technique of their ensemble: (1) verbal instructions and terminology, (2) warm-up exercises and vocalises, (3) rehearsal strategies and techniques, (4) conducting gesture, and (5) repertoire choices. Each teaching method is important and interdependent upon the others. Experienced and knowledgeable conductors use all the teaching methods and tools at their disposal in a seamless manner to facilitate learning, build choral sound, and encourage a positive musical experience. The scope of this guide is limited to an investigation and discussion of how conductors can incorporate *bel canto* techniques using the first three of the five teaching methods listed above.

Verbal Instructions and Terminology

Efficient and effective choral rehearsals will feature the chorus utilizing *bel canto* techniques as much as possible and the conductor speaking very little. However, verbal instruction is often necessary within a choral rehearsal. When verbal instruction does occur, it must be accurate, efficient, and concise. To be successful, communication in a choral rehearsal involves not only the appropriate transmission of knowledge by the conductor, but also the accurate reception of this knowledge by the singers.

Friedrich S. Brodnitz, in his article "Semantics of the Voice,"[4] provides an excellent description regarding the importance of accurate verbal communication in vocal instruction:

[4] Friedrich S. Brodnitz, "Semantics of the Voice," *Journal of Speech and Hearing Disorders* 32, no. 4 (1967): 325–30.

> With some simplification it may be said that the semanticists have taught us the importance of word choice and of the language that we use in all situations that require successful communication. When we try to express our thoughts, to explain certain concepts, to give directions or instructions, we use words that seem to us most appropriate. We assume that these words will always evoke in the listener the same thoughts that led us to choose these words. This is a naïve illusion, as every self-critical teacher learns to his sorrow.
>
> If we look a little deeper into the process of verbal communication we may discover that the pathway from thought to words is actually a two-way road. In addition to the use of words as vehicles of thoughts, the process often is reversed. The words, the terms, the definitions that we use, the language that is put into our mouth by convention, education, and our place in society – all influence our thinking, and thereby our acting, more deeply than we usually know. Thus language may become a source of misunderstanding in human communication and may lead to inappropriate behavior. For this reason the search for a precise and meaningful language becomes a prerequisite for successful communication.[5]

Semantic problems are abundant when teaching vocal technique, whether in a choral rehearsal or studio setting. The language we use to describe vocal technique is often "full of misconceptions, ambiguous expressions, and incorrect definitions."[6] The use of appropriate terminology by conductors, and its use in the correct context, is imperative for successful communication of *bel canto* methodology. Miscommunication resulting from semantic confusion or incorrect terminology will, at best, result in an inability to correct the vocal fault; at worst, the miscommunication will lead to inappropriate vocal behavior and exacerbate the problem.

This guide will discuss the use of terminology related to *bel canto* methodology. Terms will be defined in a manner that can be successfully explained and comprehended by most choral ensembles. In addition, the proper and effective usage of these terms in the choral situation will be discussed. The appropriate use of *bel canto* terminology

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[5] Brodnitz, 325–6.

[6] Ibid., 326.

provides the foundation for efficient and effective verbal communication between the conductor and singer. While the initial introduction, definition, and instruction regarding the terminology requires time, ensuring successful communication through the creation of a shared canon of specific pedagogical terms makes the initial time investment worthwhile. It is not necessary that conductors use the complete body of terminology presented in this guide with their choruses or that each conductor use or define the terminology in exactly the same manner. This guide is meant to be a resource that conductors can use and adapt to meet the unique needs of their own ensembles. *Bel canto* terminology will be used differently with a children's chorus than a church choir or a collegiate ensemble. The critical element is that conductors are conscious and deliberate about their choice of terminology and its use. Equally important is ensuring the ensemble shares the same understanding and definitions as the conductor.

Warm-up Exercises and Vocalises

Many choral rehearsals begin with a period commonly called a "warm-up." The warm-up features a variety of exercises separated from the repertoire to be rehearsed. Exercises may include stretching, physical kinesthesia, mental imagination, intellectual stimulation, breathing, and vocalises.

The warm-up period may serve a variety of purposes depending on the ensemble and its conductor. It can be an opportunity for the chorus to prepare their bodies and muscles for the physical demands of singing.[7] It can also be a time to teach, establish,

[7] Emmons and Chace, 184; Lloyd Pfautsch, "The Choral Conductor and the Rehearsal," in *Choral Conducting Symposium*, ed. Harold A. Decker and Julius Herford, 2nd ed. (Upper Saddle River, NJ: Prentice Hall, 1988), 78; Smith and Sataloff, 110.

and reinforce proper vocal technique.[8] The warm-up period can help singers effectively transition from vocal usage that primarily involves speaking to singing.[9] The exercises and vocalises done during warm-ups can and should prepare the chorus mentally and musically for the music about to be rehearsed. This preparation can be done through exercises that address technical issues or provide aural instruction and orientation related to the repertoire.[10] Finally, as different repertoire may require differing choral sounds, the sound of the chorus can be molded and shaped in the warm-up period to meet the demands of the repertoire and the aesthetics of the conductor. The numerous purposes of the warm-up are neither mutually exclusive nor independent from each other. Experienced and efficient choral conductors use warm-up exercises and vocalises that accomplish multiple goals at the same time.

The warm-up period provides the conductor with an excellent opportunity to develop *bel canto* vocal technique with his or her chorus. In this setting, *bel canto* methodology can be introduced, taught, experienced, and explained separately from the rehearsal of repertoire. This allows the chorus to focus primarily on vocal technique, and not become distracted or overwhelmed by technical or musical demands of the repertoire.

The exercises presented in this guide are appropriate for, or have been adapted for, choral pedagogical use. They are intentionally simple and easy to comprehend and remember. These are necessary characteristics for quickly and successfully presenting exercises and vocalises in a diverse group setting. The pedagogical goal of the exercise

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[8] Emmons, 186; Jordan, 20–1; Pfautsch, 78.

[9] Emmons, 186; Jordan, 20–1; Smith and Sataloff, 109.

[10] Jordan, 20.

may not be simple or easy, but the musical material is. Ease and simplicity of musical material provides singers the mental space to focus upon the vocal technique, rather than remembering or negotiating a difficult exercise. While it is important that every warm-up has a pedagogical purpose, it is not necessary that this purpose always be obvious to the chorus.[11] Chorus members will, however, be more likely to achieve successful results if they are aware of the specific goals of the exercises and vocalises. Since time restraints prohibit the explanation of every warm-up exercise, conductors may desire to develop a repertoire of warm-up exercises that chorus members are pedagogically familiar with. Conductors can also incorporate key words and terminology to quickly remind and focus the singers on pedagogical goals.

Care should be taken that vocalises are sung in a middle and comfortable range. Vocal exercises that extend into range extremes will cause chorus members to abandon the goal of the exercise in order to negotiate range and register difficulties. Unless the goal of an exercise is range extension, range extremes should be avoided. While range extension is important for a choral ensemble, the majority of pitches sung in a chorus, as in solo repertoire, are in the middle voice. The cultivation of the middle voice was advocated by Francesco Lamperti, and is important in the development of a beautiful, resonant, and flexible vocal sound.[12]

The vocalises presented in this guide can be done either accompanied or *a cappella*, depending on the needs of the chorus or preference of the conductor. The piano

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[11] Pfautsch, 78.

[12] Francesco Lamperti, *The Art of Singing* (ca. 1890; repr., Miami, FL: Belwin Mills Publishing Corp., ca.1990), 18, 30.

can serve to illustrate harmonic context as well as provide musical interest and energy to the vocalise.[13] However, *a cappella* vocalises ultimately require the chorus members to assume responsibility for aural accuracy, intonation and rhythm. The elimination of accompaniment sound may also allow both the conductor and singer to focus upon the pedagogical goal of the exercise and the vocal sound being produced. Although no piano accompaniment is given with the vocalises presented in this guide, conductors and accompanists can easily provide effective accompanying parts when necessary or desired.

Rehearsal Strategies and Techniques

Rehearsal strategies and techniques are tools to be used while the chorus is rehearsing repertoire. As discussed previously, choral ensembles spend the majority of their rehearsal time preparing repertoire for performance. Consequently, choruses will have difficulty incorporating *bel canto* vocal methodology if it is only applied during the rehearsal warm-up and then forgotten. Simply talking about *bel canto*, using *bel canto* terminology, and incorporating *bel canto* into warm-up exercises is insufficient to successfully incorporate this methodology within the chorus and reap its benefits. *Bel canto* methodology must be present in all aspects of the rehearsal if it is to be successful and habitual. Conductors, through continual monitoring and assessment of their ensemble's vocal production, must demand and expect that *bel canto* methodology be consistently used when rehearsing repertoire.

When a conductor identifies a vocal or musical problem that may have a *bel canto* solution, he or she has options to address the issue without resorting to either warm-up exercises or giving extended verbal directions. Both of these solutions can disrupt the

[13] Jordan, xxi.

rhythm and flow of the rehearsal. Beyond maintaining momentum in the learning process, rehearsal strategies and techniques that incorporate *bel canto* methodology save time because both vocal technique and repertoire are learned simultaneously. These strategies and techniques are also effective teaching tools because they connect vocal technique directly to the choral repertoire being rehearsed. They establish an understanding of how *bel canto* methodology, as learned through warm-up exercises and terminology, is applied to actual music.

The use of these strategies and techniques can be either proactive or reactive. As mentioned previously, conductors can apply them when they assess a vocal or musical fault that needs correcting. However, they can also be used proactively to either avoid potential problems or to consciously encourage and continue the incorporation of *bel canto* methodology into the vocal technique of the chorus.

Benefits of *Bel Canto* Incorporation in the Choral Setting

Choral Benefits

Bel canto methodology provides numerous musical and vocal benefits to the choral ensemble. Broadly speaking, choruses that utilize *bel canto* methodology will reap the rewards of good singing. It is the contention of this author that the underlying elements of good singing are constant regardless of the specific context in which singing might occur. While there are certainly differences between singing in a solo and group setting, the basic principles are the same. Just as an orchestra will sound better when each individual improves upon their technique, so will choral ensembles sound better

when each singer improves his or her vocal technique and develops his or her own unique voice.[14] The vocal benefits of *bel canto* incorporation for the choral ensemble include:

1. improved intonation[15]
2. increased dynamic range[16]
3. improved vocal efficiency[17]
4. reduction of vocal fatigue[18]
5. improved balance and ability to be heard over an orchestra[19]
6. improved unification of sound[20]
7. improved legato[21]
8. improved register transitions[22]

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[14] Nicole Lamartine, "A Curriculum of Voice Pedagogy for Choral Conductors: The Effect of Solo Voice Exercises on Individual Singer Technique, Choral Tone, and Choral Literature" (DMA doc., University of Arizona, 2003), 15.

[15] Laurier Fagnan, "The Acoustical Effects of the Core Principles of the Bel Canto Method on Choral Singing" (DM thesis, University of Alberta, 2005), 114–5; Lamperti, 14; Amanda Renee Quist, "Choral Resonance: Re-Examining Concepts of Tone and Unification" (DMA diss., University of North Texas, 2008), 35.

[16] Fagnan, *Acoustical Effects*, 114–5; Quist, 35; William Shakespeare, *The Art of Singing* (London: Cramer), 25; Stark, 120.

[17] Fagnan, *Acoustical Effects*, 114.

[18] Quist, 35.

[19] Ibid.

[20] Ibid.

[21] Stark, 120.

[22] Stark, 120; Luisa Tetrazzini and Enrico Caruso, *The Art of Singing* (New York: Da Capo Press, 1975), 28.

9. increased artistry, expressiveness, and diversity of choral sound[23]

Improved singing in one area will often overlap and encourage improvement in another area. Specifically, Nicole Lamartine finds that improvements in intonation and legato will lead to other vocal and musical benefits. Improved intonation will lead to an improvement in the areas of diction, resonance, vowel modification, legato, and unification of sound. Improved legato, defined by Lamartine as "the ability to link sound production from one note to the next with consistent phonation, resonance, and airflow," leads to improved diction, resonance, vowel modification, intonation, flexibility, and unification of sound.[24]

Improved vocal ability directly benefits choral ensembles in two ways. First, ensembles will experience faster, more effective, and more enjoyable rehearsals. Conductors and choruses will spend less time addressing vocal difficulties, allowing more time for expressive and artistic elements of the music. The increased artistic and expressive capabilities of individual voices allows for the creation of a unique choral sound for each piece or musical style. This vocal flexibility and musical creativity, along with the ability to negotiate vocal difficulties, allows for the incorporation of musicality and artistry early in the rehearsal process. This incorporation often has the side effect that the basic mechanics of music, notes and rhythms, are more quickly and easily learned. It has been this author's experience that when music is taught holistically, rather than broken into its component parts, the learning process is both more efficient and enjoyable.

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[23] Francesco Lamperti, 14; Quist, 35; Stark, 120.

[24] Lamartine, 37, 39, 121–2.

The second benefit of improved vocal ability is the capability of choral ensembles to sing a wider and more diverse range of repertoire. This occurs in three ways. First, the increased ability to be heard over an orchestra provides ensembles with the technique to perform choral-orchestral repertoire effectively. Second, improved vocal technique allows the chorus to successfully perform technically challenging repertoire. Finally, diverse styles of music often require specific vocal colors and artistry. *Bel canto* technique provides a tool by which the diversity and artistry of sound required by choral repertoire can be attained.

The specific benefits of *appoggio*, *le coup de la glotte*, and *chiaroscuro* will be discussed in depth in chapters three, four, and five respectively. There is some disagreement whether or not some aspects of *bel canto* methodology are suitable or desired in many choral situations.[25] These views will also be discussed in chapters three, four, and five.

Individual Benefits

Individual singers also profit from the incorporation of *bel canto* methodology in the choral rehearsal. In assessing these individual benefits, it is necessary to distinguish between different types of individual singers. Lloyd Pfautsch explains, "In most choral ensembles, there is a mixture of singers who have had little or no vocal training and others who have had varying amounts of private instruction. While this is normal, the

[25] Brian Barker Carter, "An Acoustic Comparison of Voice use in Solo and Choral Singing in Undergraduate and Graduate Student Singers" (DMA treatise, The University of Texas at Austin, 2007), 1–3; Joseph Kevin Ford, "The Preference for Strong Or Weak Singer's Formant Resonance in Choral Tone Quality" (PhD diss., The Florida State University, 1999), 112–3; Stark, xxi, 34.

procedures of vocal pedagogy in a choral rehearsal are complex, since the two groups require different guidance, instruction, and paradigms."[26]

For the purposes of this guide, singers will be classified using the terms "trained" or "untrained." Singers in the trained category, as defined by voice scientists, display a consistent use of singer's formant, a resonant peak between 2300-3200 Hz.[27] The use of singer's formant is considered an "essential characteristic of classically trained solo voices."[28] In general, trained singers refer to those who have had significant vocal training and experience as a classical and operatic soloist. Although the definition of a trained singer is limited to the consistent use of singer's formant, the development of this ability will often require understanding and mastery of other areas of vocal technique including breathing, phonation, registration, vibrato, and tone quality.

Untrained singers refer to those who do not consistently make use of singer's formant.[29] The majority of singers in choral ensembles would be classified as untrained. It is important to note that the designation untrained refers only to the solo production of singer's formant. It does not refer to other areas of proficiency including vocal flexibility, beauty of tone, musicianship, or musicality. It also does not refer to the distinction between amateur and professional choral singers. There are certainly

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[26] Pfautsch, 93.

[27] Carter, 13–4; 55–6.

[28] Gwen Coleman Detwiler, "Solo Singing Technique & Choral Singing Technique in Undergraduate Vocal Performance Majors: A Pedagogical Discussion" (DMA doc., University of Cincinnati, 2009), 4.

[29] Tomasz Letowski, Lidia Zimak, and Halina Ciolkosz-Lupinowa, "Timbre differences of an individual voice in solo and in choral singing" *Archives of Acoustics* 13, no.1–2 (1988): 56.

experienced and successful professional choral singers who do not consistently make use of singer's formant. There are also amateur choral singers who may have strong upper partial energy in their vocal production, although they may have received little training.

The distinction between trained and untrained singers is not a clear line. Each individual singer is unique. In between the trained and untrained categories lie those singers who are being trained as solo artists. They are in the process of developing their solo quality voice and the consistent use of singer's formant that accompanies it. These singers are often undergraduate voice performance students at a college or university.[30] While categories such as trained and untrained are helpful and necessary in this area of choral pedagogy, a conductor using *bel canto* methodology must never forget that each voice in his or her chorus is unique.

Untrained Singers

For many untrained singers, choral rehearsals will be their only formal instruction in the art of singing, and the conductor their only voice teacher. Each choral rehearsal is, in part, a group voice lesson for untrained singers. In this situation, singers are best served when the vocal pedagogy taught in the choral rehearsal is pedagogically and scientifically sound. *Bel canto* vocal techniques meet these criteria. Untrained singers benefit from the use of *bel canto* methodology in choral rehearsal through the development of their individual vocal technique including singer's formant, *chiaroscuro, aggiustamento,* and *appoggio*. Untrained singers will leave a choral rehearsal in which

[30] Detwiler, 50–1.

bel canto methodology is applied as better singers. This is especially advantageous for those singers that may be in their early years of training and development.

Trained Singers

Trained singers in a choral setting also benefit from the incorporation of *bel canto* methodology, but in a different way. For the trained singer, singing in an ensemble that utilizes some of the core principles of *bel canto* will allow them to sing in a manner more consistent with their solo technique. Some attenuation of their solo qualities, specifically the use of upper-partial resonance, may be required in certain choral situations.[31] However, less attenuation is better than more for trained singers in a choral context. Singing in a *bel canto* choral context where some of their solo qualities can be successfully used may help trained singers avoid bad vocal habits, reduce vocal fatigue, and more successfully negotiate the varied demands of solo and choral singing. This can be especially true for undergraduate voice performance majors who are in the process of being trained as solo artists and other trained singers who rehearse in choral situations for several hours or more per week.

[31] Carter, 1–3.

Chapter 3

Appoggio

> It is by singing with the voice well *appoggiata*, that the pupil, under careful supervision, will learn what is the true character and the capabilities of his own voice; he will know what music to sing, how to render his singing elegant, and remedy defects of intonation. In this, in my idea, lies the great secret of the art of singing.
>
> —Francesco Lamperti, *The Art of Singing*

Quality breathing is important to both choral ensembles and solo artists. Whether an individual is singing in an ensemble or solo situation, the mechanics and techniques of breathing are the same. In a similar manner, the concept and execution of "support" are identical in both a choral and solo situation. These two elements, breath mechanics and support, are combined in the *bel canto* methodology known as *appoggio*.

History and Definition

Appoggio is a term derived from the Italian word *appoggiare*, which means, "to lean."[1] The term *appoggio* did not appear in the pedagogical literature until the nineteenth century when Francesco Lamperti used the term in his treatise *The Art of Singing*.[2] The term has remained in pedagogical use ever since. Prior to Lamperti, voice teachers and pedagogues provided primarily practical breathing advice regarding the importance of posture, quiet inhalation, breathing in rhythm, and breath management. In the eighteenth century, the connection between *messa di voce* and breath control became

[1] Stark, 92; *The Concise Cambridge Italian Dictionary* (London: Penguin Books, 1975), s.v. "appoggiare."

[2] Francesco Lamperti, *The Art of Singing* (ca. 1890; repr., Miami, FL: Belwin Mills Publishing Corp., ca.1990).

codified. Giambattista Mancini and Manuel Garcia II both recommended the *messa di voce* as an exercise that demanded advanced breath management.[3] According to Garcia, sustained tone required effective breathing and *tenue de la voix* (sustaining of the voice).[4] A lack of *tenue de la voix* was due to either frequent timbre variations or the "irregular expenditure of the air during the emission of the voice."[5] Garcia's conceptions of the connection between breath management and "sustaining the voice" are important precursors to *appoggio*.

In *The Art of Singing*, Lamperti's discussion of *appoggio* is focused upon aspects of support and subglottal air pressure. He directly connects support or *appoggio* to correct posture, breath control, and the capacity for musical expression.[6] Lamperti describes *appoggio* singing as the production of all notes over "a column of air over which the singer has perfect command, by holding back the breath, and not permitting more air than is absolutely necessary for the formation of the note to escape from the lungs."[7]

For Lamperti, *appoggio* and breath mechanics are separate topics that share some commonalities. *Appoggio* relies upon a controlled function of the breath muscles, but the discussion of how these muscles control the air are discussed separately. *Appoggio* is never mentioned in connection with respiration or breath mechanics. Like Garcia,

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[3] Manuel Garcia II, *A Complete Treatise on the Art of Singing: Part One,* trans. and ed. Donald V. Paschke (New York: Da Capo Press, 1984), 132; Mancini, 119–21.

[4] Garcia, *Complete Treatise: Part One,* 131–2.

[5] Ibid.

[6] Francesco Lamperti, 14.

[7] Ibid., 22.

Francesco Lamperti hints at the relationship between the two, but the explicit connection would come from his son, Giovanni.

For the discussion of breath mechanics, Francesco Lamperti incorporates the work of Dr. Louis Mandl, a Parisian physiologist. Mandl uses the term *lutte vocale* (vocal struggle) to describe the balance of power or muscular antagonism between the respiratory muscles of inhalation and exhalation. For Mandl, this antagonism primarily existed between the diaphragm and the abdominal muscles.[8] In modern vocal pedagogy, *lutte vocale* between the external and internal intercostals, the primary muscles used in thoracic breathing, is also considered important. The vocal struggle between these sets of muscles allows air to be expelled slowly and creates equilibrium between the muscles of inhalation and exhalation. This equilibrium leads to the "just emission of the voice, and by means of it alone can true expression be given to the sound produced."[9]

In addition to the concept of *lutte vocale*, Mandl also provides descriptions of three different types of breathing: abdominal, lateral, and clavicular.[10] Clavicular breathing occurs in the upper chest region and is characterized by the lifting of the shoulders. Lateral, or thoracic breathing, is focused on the lower chest. It is the result of the contraction of the diaphragm and external intercostals muscles during inhalation. These contractions create lateral movement that increases the circumference of the thorax. Abdominal breathing, also referred to as diaphragmatic breathing, is the sole result of the contraction of the diaphragm. When the diaphragm contracts, the abdominal

[8] Stark, 100.

[9] Francesco Lamperti, 25.

[10] Ibid., 24.

viscera is displaced resulting in an outward motion of the abdominal wall.[11] These three types of respiration will be consistently referenced throughout the pedagogical texts of the twentieth and twenty-first centuries, although little agreement exists regarding the labeling and naming of these methods.[12]

Francesco Lamperti's son, Giovanni Battista Lamperti added to the discourse surrounding *appoggio* by explicitly describing the need for elevated subglottic breath pressure. "With insufficient pressure, the tone lacks in steadiness (*appoggio*; that is, the steady air-pressure on the vocal cords during tone production). Higher breath-pressure supposes deeper inspiration. Each and every tone must have steady support!"[13] This elevated subglottic pressure must be controlled and steady. William Earl Brown quotes Lamperti as saying that "Loose, pushed out breath is useless even injurious, though you have lungs full, for it causes local efforts, irregular vibration and disrupted energies. Compressed breath comes through co-ordination. It has only to be guided, and restrained. Its inherent power feeds all the effects made by the vocal-cords."[14] The coordination that creates, guides, and controls compressed breath is *lutte vocale*. The need for a steady and controlled air supply with elevated breath pressure necessitated the inclusion of breathing mechanics in *appoggio*. Giovanni Lamperti thus combines

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[11] Scott McCoy, *Your Voice: An Inside View: Multimedia Voice Science and Pedagogy* (Princeton, NJ: Inside View Press, 2004), 93–5.

[12] James C. McKinney, *The Diagnosis and Correction of Vocal Faults: A Manual for Teachers of Singing and for Choir Directors* (Long Grove, IL: Waveland Press, 1994), 56.

[13] G. B. Lamperti, 9.

[14] Brown, 64.

physiological breath mechanics, *lutte vocale*, and elevated subglottic breath pressure into a more comprehensive *appoggio* methodology.

Francesco Lamperti's student, William Shakespeare also contributed to the description and understanding of *appoggio*. Shakespeare described the sensation of the voice floating on the breath that is "regulated by the muscles under the larynx."[15] He goes on to describe two factors in voice production: laryngeal freedom and control of breath pressure.[16] Regarding breath pressure, Shakespeare writes,

> In Italian the control of the breath has been termed the *appoggio* or *support* of the voice, and the voice, when fully responding to this, is said to be "*appoggiata*" or *leaning* on the breath – the voice is "*ben appoggiata*" or *well supported*. It seems to the good singer as if the breath, though vigorously pressed out, *still remains inside the body*. This is a sign which should never be lost sight of, as proving that the breath is being regulated. On the contrary, in bad notes, the breath rushes outwards, only restrained by the rigidly held throat.[17]

Appoggio continued to evolve and change throughout the twentieth and twenty-first centuries. While the term *appoggio* was not always specifically used, virtually every vocal pedagogue, including William Vennard, Ralph Appelman, Richard Miller, Barbara Doscher, James McKinney, James Stark, and Scott McCoy, dealt with issues of breath, breath management, and subglottic air pressure. However, the central tenants of *appoggio* as described by Francesco Lamperti, Giovanni Lamperti, and William Shakespeare would remain.

Appoggio is best described as a methodology that incorporates the physiological mechanics of breathing along with support of phonation. Breath is inhaled using

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[15] Shakespeare, 19.

[16] Ibid., 25.

[17] Ibid., 26.

abdominal and thoracic breathing. The breath is then controlled through the *lutte vocale*, providing a steady and controlled air supply to the larynx. This exhalation is coordinated with glottal resistance resulting in slightly elevated subglottal pressure that is then used for efficient phonation and resonance. James Stark refers to *appoggio* as a "total system of physical adjustments that leads to a very special kind of singing. It is a form of vocal coordination that can be both felt and heard by the singer in an unmistakable way."[18] These sensations would be most recognized by singers, conductors, and listeners as "support."

Benefits of *Appoggio* in the Choral Setting

Support

Appoggio methodology provides abundant benefits for choral ensembles and conductors. Choruses that incorporate appoggio will first benefit by singing with a sound that is "supported". Richard Miller and Francesco Lamperti both assert that *appoggio* can be translated as "support."[19] While *appoggio* and "support" are similar, and interchangeable to an extent, *appoggio* is more specific and useful. Perhaps the best method of understanding the relationship between *appoggio* and support is that *appoggio* is a successful method to achieve a supported sound.

There is no difference between supported vocal production in a solo or choral setting. A supported sound will "provide an unwavering sound, an ample supply of

[18] Stark, 119.

[19] Francesco Lamperti, 14; Richard Miller, *The Structure of Singing: System and Art in Vocal Technique* (Boston: Schirmer Cengage Learning, 1996), 23.

breath, and relief from any unnecessary and obstructive tensions in the throat."[20] It will improve intonation and provide the means for achieving a seamless legato as well as variation in voice quality.[21]Additionally, support is a means of achieving increased intensity.[22] The benefits of support contribute to increased expressiveness in singing. Francesco Lamperti writes,

> He who does not support his voice in the manner here indicated does not sing; he may be able to emit loud, resonant sounds, but they will be without expression, they will never be living sounds, by which he can convey the emotions of the soul or express the various feelings of the human passions. Expression is wholly wanting in a voice not *appoggiata*. Love, hate, or revenge produces a sound of one and the same character; the singing is monotonous, and though loud notes may surprise, they can never convey pleasure to the lover of good singing.[23]

Register Transition

Appoggio is also an important component for successful register blending.[24] The ability to produce differing levels of subglottic air pressure in a controlled and steady manner is necessary when negotiating register transitions. Louis Tetrazzini writes, "This blending of registers is obtained by the intelligence of the singer in mixing the different tone qualities of the registers, using as aids the various formations of the lips, mouth and throat and ever present appoggio without which no perfect scale can be sung." [25]

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[20] Barbara M. Doscher, *The Functional Unity of the Singing Voice*, 2nd ed. (Lanham, MD: The Scarecrow Press, 1994), 22–3.

[21] Francesco Lamperti, 14; Stark, 120.

[22] Shakespeare, 25; Stark, 120.

[23] Francesco Lamperti, 14.

[24] Stark, 120.

[25] Tetrazzini and Caruso, 28.

Vibrato

Appoggio provides the conductor with tools and insights regarding the use of vibrato in the choral setting. There is arguably no greater area of confusion, disagreement, and possible conflict between singers, conductors, voice teachers, and pedagogues than in the function, origin, and use of vibrato, especially in a choral setting. While a full discussion of vibrato and its use in the choral setting is beyond the scope of this paper, there are important elements of *appoggio* methodology that directly relate to vibrato.

There is a clear distinction within vocal pedagogy literature between correctly produced and incorrectly produced vibrato. While the definitions, terminology, and descriptions of correct and incorrect vibrato differ, the idea that vibrato is a malleable aspect of vocal production which can and should be taught is consistent.[26] Methodologies and terminologies vary, but the principle remains.

Vibrato is measured in terms of oscillations per second, variations in amplitude, and variations in pitch. It is generally agreed that the normal rate of oscillations in well trained singing voices is five to eight per second in trained singing voices.[27] A slow vibrato rate (less than five oscillations per second) is often described as a wobble, or *oscillazione*, while a fast rate (greater than eight) is often described as a tremolo.[28] Pitch variation in correctly produced vibrato is usually less than a semitone. This variation is

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[26] Doscher, 198–201; Francesco Lamperti, 19; McCoy, 57; McKinney, 196–201; Miller, *Structure of Singing*, 182–93; William Vennard, *Singing: The Mechanism and the Technic*, rev. ed. (New York: Carl Fischer, 1967), 192–9.

[27] Stark, 140–1.

[28] Miller, *Structure of Singing,*186, 191.

perceived as an aspect of tonal quality, rather than as a change in pitch.[29] Intensity within each oscillation will often vary from two to eight decibels.[30] Vennard asserts, "When the vibrato becomes irregular, or when it covers too great a range of pitch or intensity, or when its frequency is too slow or too fast, it becomes objectionable."[31]

While the cure for all "objectionable" vibratos cannot be found in the concept of *appoggio*, there exists within the vocal pedagogy literature a connection between properly produced vibrato and *appoggio*. Richard Miller specifically views *appoggio* as a solution to correcting a vibrato that oscillates either too much or too little. He contends, "The *appoggio* technique can provide the structural support for the larynx that will permit desirable vibrato to be present."[32] Wobble is the result of insufficient subglottic pressure while tremolo involves too much subglottic pressure.[33] In both cases, *appoggio* can help solve the problem by providing appropriate subglottic pressure to the larynx.

James McKinney connects almost all vibrato faults to one of two causes: excessive laryngeal tension and unbalanced breath support.[34] His admonition to the voice teacher when dealing with issues of vibrato is "whatever you do, check the support."[35]

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[29] Miller, *Structure of Singing*, 183.

[30] Doscher, 200.

[31] Vennard, 194.

[32] Miller, *Structure of Singing,* 187.

[33] Lamperti, 19; Miller, 187, 191.

[34] McKinney, 199.

[35] Ibid.

Ralph Appelman directly connects correctly produced vibrato to breath support and subglottic air pressure.[36] Marchesi, although not specifically dealing with issues of vibrato, also upheld the importance of support when she wrote that "equal and continuous pressure of the air against the vibrating body produces *isochronous* (equal) vibrations, and maintains equality of sound throughout its entire duration."[37] Without this equal and continuous pressure, vibrations will not be equal and a regular vibrato inhibited.

It is this author's experience that the vibrato that emanates from singing lacking in *appoggio* is most likely to result in a disruption of ensemble sound, intonation problems, or bring unwanted attention to an individual voice. One approach to the issue of vibrato in the choral setting is to utilize the techniques of *appoggio* to help ensure that all vibrato is correctly produced and within acceptable norms. After all "objectionable" vibrato is corrected, other choices regarding vibrato usage in the choral rehearsal can be made from the perspective of correct, rather than incorrect, vibrato production.

Within the choral rehearsal, issues of vibrato are not simply an aesthetic choice between straight-tone and vibrant singing. The decision to use vibrato, or not, is the result of competing pedagogical, aesthetic, musicological, social, and practical considerations. Some choral conductors will often ignore vibrato issues altogether or simply choose to use "straight-tone" singing. Ideally, vibrato usage in a choral situation should more closely resemble a painter's color palette, rather than an electrical switch that is either "on" or "off." An understanding of *appoggio* and its relationship to vibrato

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[36] D. Ralph Appelman, *The Science of Vocal Pedagogy*: *Theory and Application* (Bloomington, IN: Indiana University Press, 1967), 23–5.

[37] Mathilde Marchesi, *Bel Canto: A Theoretical and Practical Method* (New York: Dover Publications, 1970), xii.

can help a choral ensemble and conductor use vibrato without sacrificing ensemble, intonation, and a unified choral sound. This will allow conductors to make informed, artistic, and pedagogically sound decisions regarding vibrato usage.

Application to the Choral Setting

The incorporation of *appoggio* technique in the choral setting first requires the understanding by chorus members that breathing for singing is different from breathing for life. The majority of choristers are untrained amateurs who, like most members of the general public, may not fully understand the physical or breath requirements of singing. Adult amateurs may have an especially difficult time incorporating *appoggio* as they may have spent years or decades singing in choral ensembles using the same breathing techniques as they use in everyday life.

Singing is an activity that places unique and strenuous demands upon the body. Not only does the body have an increased demand for air and oxygen, but also the breath supply must be carefully controlled and regulated, something not required of many other physical tasks.[38] Normal breathing features three stages: inhalation, expiration, and recovery. Breathing for singing requires two distinct and important changes to this process. After the inhalation phrase, there is a period of suspension where no breath moves in or out of the body and the muscles of exhalation and inhalation are in perfect balance. This suspension period allows for the preparation of breath support or *appoggio*. The second change is the expiration phase. Rather than a quick and uncontrolled release of air, the expiration phase for singing features the *lutte vocale,* which allows for a controlled exhalation and the production of steady subglottal

[38] Doscher, 1.

pressure.[39] An understanding of the difference between normal breathing and breathing for singing is the first step in developing *appoggio* in amateur singers.

Verbal Instructions and Terminology

The use of the term *appoggio* avoids many of the semantic and pedagogical errors of "support" terminology. Support is a term that is often associated with abdominal muscular rigidity and hyper-functional voice disorders.[40] Singers may interpret support as a sensation of gripping, tightening, or clenching the abdominal musculature.[41]

The biggest drawback of support terminology is the tendency by both voice teachers and conductors to instruct singers to use "more support." Richard Miller claims that this statement often appears to be a "catchall nostrum that automatically surfaces when the teacher's ingenuity fails."[42] Miller goes on to state that the term "more support" is not only a catchall phrase, but can also be counterproductive:

> Unless the singer, either student or professional, understands the delicate balances appropriate to the shifting demands of breath management, to call for "more support" only complicates the task of balancing subglottic pressure, airflow rate, and vocal-fold approximation. In fact, it may well be that too much muscle activity is present in the torso; requesting "more support" may only exacerbate problems of dynamic muscle equilibrium.[43]

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[39] McKinney, 48, 50.

[40] Brodnitz, 327.

[41] Margaret Olson, *The Solo Singer in the Choral Setting: A Handbook for Achieving Vocal Health* (Lanham, MD: The Scarecrow Press, 2010), 8.

[42] Miller, *Structure of Singing*, 37.

[43] Ibid.

The rigid imagery of support also allows for a misunderstanding of the dynamic and flexible nature of singing. If support is thought of as a structure that holds-up the voice, "more support" is always helpful. Additional support simply ensures that the structure will not fail, much like additional support of a building only enhances the integrity of that structure. Proper support, however, is not a rigid structure, but rather a delicate balance between the muscles of inhalation and exhalation, and glottal resistance to subglottal air pressure. It is a dynamic and flexible condition, rather than a rigid structural system.

James McKinney designates both hypo- and hyperfunctional breath support as vocal faults in need of correction. Hypofunctional breath support, not requiring enough activity in the support mechanism, is most common in beginning and amateur singers. On the other hand, trained and experienced singers are much more likely to make the mistake of hyperfunctional breath support. Hyperfunction occurs when the larynx is unable to function freely due to excessive subglottal air pressure. This is one of the most common vocal faults, and is often difficult to detect.[44] Hyperfunctional breath support is particularly dangerous for young singers whose extrinsic laryngeal muscles have not yet developed to a point to be able to resist high subglottic air pressure.[45]

The issues surrounding the instruction to use "more support" are exacerbated within the choral setting. In a studio situation, the teacher has only one student to monitor and assess. Hyperfunctional breath support is thus easier to detect. In a choral setting, the difficulty of successfully monitoring multiple singers simultaneously

[44] McKinney, 62–3.

[45] Doscher, 25.

increases the likelihood that "more support" will be ineffective and potentially harmful to balanced vocal production.

Appoggio terminology avoids many of the semantic problems and misunderstanding of "support." The idea of balance, flexibility, and dynamic muscle coordination is inherent in the concept of *appoggio*. *Appoggio* presents a mental image more closely related to walking on a balance beam, rather than building a rigid structure on which the voice can be placed.

An additional advantage of *appoggio* is that it is a foreign and relatively unknown term for many singers. The primary advantage of using relatively unused and foreign terminology is the ability to define that word or concept anew for a particular ensemble. Almost every singer has heard the word "support" from either a voice teacher or choral director. As a result, almost every member of a choral ensemble will have a different experience or understanding of "support" and "more support." The use of the term "support" thus requires that the conductor re-define and correct various misunderstandings rather than simply start the learning process at the beginning with new terminology. The use of the term *appoggio* avoids these problems.

Unfortunately, the use of the term *appoggio* on a regular basis may be awkward for some choral conductors. As a foreign term and broad singing concept, it doesn't lend itself well to English grammar. While "support" can be easily used as a noun, verb, adjective, adverb, and other grammatical parts of speech, *appoggio* is not so easily adapted. The phrase *ben appoggiata* or the instruction "maintain *appoggio*" may be useful and a partial solution. The English translation, "leaning on the breath" can also be effectively used if *appoggio* feels awkward or for variety.

It is possible to carefully use "support" terminology as long as both the chorus and conductor understand the basic concepts of *appoggio.* The tendency to misinterpret support terminology along with the pre-existing conception of the choristers may create communication difficulties, but these are not insurmountable. While terminology is important, it is ultimately the underlying methodology that is most important. Barbara Doscher writes, "Any practical methodology which uses the concept of freedom combined with balanced control is desirable, regardless of what terminology is used."[46]

One basic consideration when using support terminology is the elimination of the phrase "more support." If the conductor identifies hypofunctional support as the vocal problem in the choral rehearsal, instructions such as "maintain support," "engage the breath," or "lean on the breath" may be more helpful. Richard Miller suggests using "breath pacing" terminology as opposed to "more support."[47] By defining and using the term "over-support" or "hyperfunctional breath support," conductors can reinforce the idea of balance and flexibility within the support mechanism. Choosing to address the issue through the exercises and rehearsal techniques presented in the following sections can engage support and *appoggio* without resulting to verbal instruction and possible miscommunication.

The term *lutte vocale* is also beneficial for choral ensembles in two ways. First, the term reinforces that singing is a strenuous activity and requires active engagement

[46] Doscher, 24.

[47] Miller, *Structure of Singing*, 38.

from the singer. Singing is not passive or relaxed.[48] It requires a great deal of physical energy and engagement. *Lutte vocale* reminds the singer of the need for continual engagement and provides appropriate focus for their physical effort. The English translation, "vocal struggle" is not recommended as it could result in too much muscular engagement and tension.

The second benefit of *lutte vocale* is the type of breathing it demands. Of the three types of breathing described by Mandl, abdominal and thoracic breathing have been identified as the most important for singers and *appoggio*.[49] Clavicular breathing is to be avoided because of its inability to control air pressure during exhalation.[50] As the vocal struggle primarily occurs between abdominal muscles and the diaphragm, it is necessary that the singer engage the abdominal muscles to maintain the *lutte vocale*.[51] This has the added benefit of encouraging thoracic breathing because a "continued abdominal respiration will become also lateral [thoracic]."[52] Understanding of *lutte vocale* has the additional side-effect that singers correctly understand the role of the diaphragm and the abdominal muscles in the breathing process.

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[48] Thomas Hemsley, *Singing and Imagination: A Human Approach to a Great Musical Tradition* (Oxford: Oxford University Press, 1998), 5–6.

[49] McCoy, 96.

[50] Ibid., 94.

[51] Stark, 100.

[52] Francesco Lamperti, 24.

Warm-up Exercises and Vocalises

Posture

Proper posture is a pre-requisite for *appoggio* and allows for efficiency of the breathing mechanism.[53] Although there are examples of successful singers who demonstrate poor posture, these singers have at some point learned proper posture and their singing involves "compensations to make up for their unorthodoxy."[54] For singers in a choral situation, proper posture is non-negotiable and is necessary for singing that is *ben appoggiata*. A choral director should be vigilant in his or her expectation that the chorus maintain a posture that is buoyant, energized, erect, and free from excess tension. Proper singing posture is possible standing or sitting, although it is easier to maintain an engaged and proper singing posture while standing. A quick and easy exercise to help achieve proper posture is to have chorus members raise their arms above their heads, and then return their arms to the sides while retaining the moderately high posture of the sternum and rib cage.[55]

Abdominal Breathing

- This exercise will help members of the chorus experience the sensation of abdominal movement while breathing. Place one hand on the abdominal region. Breathe through the nose, easily and silently, allowing the abdominal muscles to move the hand in and out with each breath. Care should be taken to make certain

[53] Francesco Lamperti, 14; McKinney, 33.

[54] Vennard, 19.

[55] Miller, *Structure of Singing*, 29.

that the sternum does not fall and that the rib cage does not collapse. This exercise should also be done breathing through the mouth.[56]

    - A variation on the above exercise would be to place hands on the lower back to feel back expansion upon inhalation. Care must be taken that expansion of the back does not prohibit or limit expansion in other areas.[57]

- Panting is a good choral exercise that will engage the abdominal muscles involved with breathing while avoiding clavicular breathing.[58] Panting exercises should be done in both rhythm and tempo. After a slow quarter note pulse is established, the chorus should inhale abdominally on one beat and exhale on the next. At a slow tempo, there is an added benefit of the breath being suspended in between inhalation and exhalation. Once this step has been mastered, panting can be done on eighth notes, effectively doubling the tempo. If this tempo poses no problems, the rhythm can be doubled again with the chorus panting on sixteenth notes. Choral ensembles of advanced musical and technical ability may be able to pant on eighth note triplets, but the challenge is that the strong beat alternates between inhalation and exhalation. Regardless of tempo, it is important that the musculature always be kept under control and that the exercise does not "run away with the exerciser."[59]

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[56] Adapted from Miller, *Structure of Singing*, 29–30.

[57] McKinney, 59.

[58] Shakespeare, 16.

[59] Vennard, 32.

- A variation, or addendum, to the panting exercise would be to immediately transition to a full controlled breath when the panting breath is felt "at the soft place underneath the breastbone and under the shoulder blades."[60] In this manner, panting is used to help the singer experience the sensation of a full breath that emanates from the release and engagement of the abdominal muscles.

Thoracic Breathing

- This exercise will help members of the chorus engage the intercostal muscles and experience the sensation of thoracic breathing.

> Extend your thumb and forefinger around the sides of your ribcage at about the level of the end of the sternum. Now, take a deep breath, deliberately expanding your ribcage outward into your hands. Strongly exhale on a sustained hiss while consciously maintaining the outward expansion of the ribcage. It might take a few tries, but eventually you should begin to feel the resistance offered by the external intercostals, which are helping to prolong the flow of air and preventing it from all whooshing out at the onset of exhalation.[61]

Suspension of Breath and *Lutte Vocale*

The feeling of suspension is an important element in *appoggio*. The sensation of equilibrium felt between the muscles of inhalation and expiration while the breath is suspended is the same sensation that must be maintained throughout the controlled exhalation. The suspension stage of breathing is of critical importance for preparing and engaging the *lutte vocale* that occurs during exhalation.

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[60] Shakespeare, 16.

[61] McCoy, 95.

- This exercise will teach breath suspension. Inhale for five counts. Following inhalation, suspend the breath without any sensation of holding it and without any tension in either the vocal tract or the torso. The throat should remain open. The position of the rib cage and abdominal wall is retained. A sensation of equilibrium between the muscles of inhalation and exhalation should be achieved. Suspend the breath for five counts. Exhale silently for five counts, maintaining posture. There should be rhythmic continuity between the three phases of the exercise. This exercise may be repeated with the amount of time spent on each phase of the exercise increased incrementally.[62]
    - When suspension has become more habitual, a variation of the above exercise would be to gradually decrease the amount of time spent on the suspension phase until it is virtually instantaneous. The inhalation and exhalation phase can either remain at five counts or increase as above.[63] This will help train choral ensembles to quickly engage and prepare for *lutte vocale*.
- This exercise will help engage *lutte vocale*. Following silent inhalation, breath is exhaled for while sustaining an [s] sound. The sound should be barely audible. The amount of time for exhalation is variable depending on ability of the group and availability of rehearsal time. One hand should be placed on the abdominal region to monitor inward movement of the abdominal wall. The abdominal wall should not move inward until the last few seconds of the exercise. It is important

[62] Adapted from Miller, *Structure of Singing*, 31; G. B. Lamperti, 9.

[63] Adapted from McKinney, 51, 53.

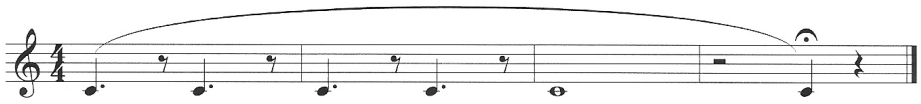
that the chest does not collapse and that posture is maintained throughout the exercise.[64]

- A variation of the above exercise would be to stop and suspend the hiss at various points during exhalation. The conductor can indicate with a gesture when the air is to be hissed and when it is to be suspended.[65]

Suspension of Breath with Vocalization

- The exercise in figure 3.1 adds the element of vocal production to the suspension of breath. The glottis should remain open during the rests and no inhalation should occur until the end of the slur after the fermata. The exercise should be done only on vowel sounds with no initial or final consonants, as that could disrupt the open throat and breath suspension. Shakespeare recommends [a], but the exercise can be sung on any vowel.

  Figure 3.1. Exercise for suspension of breath with vocalization.[66]



Engaging *Appoggio*

- The following exercise is the only instruction provided by Francesco Lamperti in *The Art of Singing* designed for attaining *appoggio*. Although the mechanics of

[64] Adapted from Miller, *Structure of Singing*, 32.

[65] Hassemann and Jordan, 54.

[66] *Source*: Adapted from Shakespeare, 60.

the exercise are simple, the technical goal of producing a full, clear, and resonant tone is not easily or quickly accomplished. The vowel "A" that Lamperti refers to is [a] in the International Phonetic Alphabet. According to Lamperti, *Appoggio* is obtained

> …by observing the rules in Article III, with regards to position, and then opening the lower part of the throat with the vowel A. The sound thus produced will be clear and sympathetic; but if the pupil is not able to pronounce the vowel A with a full tone, let him first begin with LA, which will render its emission more easy and secure. This is a most important point for an artist to observe, as on it will depend, in the majority of cases, the success of his future career.[67]

- The lip trill, or vibration of the lips, is an effective method for helping the chorus experience *appoggio*.[68] The lip trill can be done on a variety of pitch and rhythmic patterns.

Renewal of Breath

- The exercises in figures 3.2, 3.3, and 3.5 help to train breath management and control when singers are faced with varying demands of phrase length and breath needs within the musical repertoire. These exercises only have value if phrase and breath markings are strictly observed. They require that singers use both full and half breaths and avoid overcrowding the lungs.[69] Singers should only take in as much air as they need to make it to the next breath. The limited amount of time

[67] Francesco Lamperti, 14.

[68] Hassemann and Jordan, 54.

[69] Miller, *Structure of Singing*, 35–6.

for the renewal of breath requires coordination of the breath mechanism and a virtually instantaneous preparation for *appoggio*.

Figure 3.2. Exercise for renewal of breath.

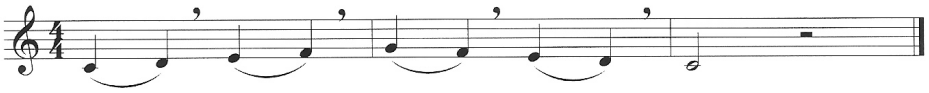
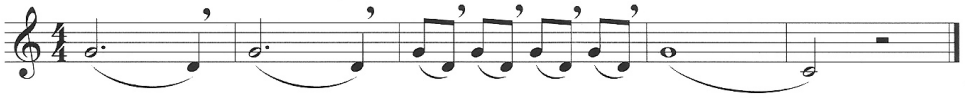


Figure 3.3. Exercise for renewal of breath.[70]

Figure 3.4. Exercise for renewal of breath.[71]

Figure 3.5. Exercise for renewal of breath.[72]



Messa di voce

- *Messa di voce* has long been associated with breath control and support.[73] Dynamic and registration demands of *messa di voce* require continual adjustment of subglottal air pressure. This necessitates excellent control and coordination of the muscles of inhalation and exhalation. *Messa di voce* may be too difficult for

[70] *Source:* Adapted from Miller, *Structure of Singing*, exercise 2.12.

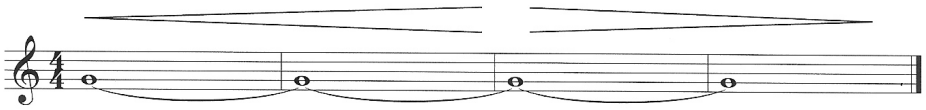
[71] *Source:* Ibid.

[72] *Source:* Ibid., exercise 2.15.

[73] Mancini, 117–121; Garcia, *Complete Treatise: Part One,* 132.

many choral ensembles to experience immediate success. However, the exercise can be introduced in halves, making it easier to coordinate. The crescendo and decrescendo can be mastered independently prior to combining the elements into a comprehensive exercise.[74] Exercise can be done for varying durations.

Figure 3.6. Example of *messa di voce*.



Rehearsal Strategies and Techniques

If a chorus is not singing *ben appoggiata* while rehearsing repertoire, a conductor has several options to correct the problem without resorting to a pedagogical exercise or verbal direction. Seamless legato requires singing with *appoggio*.[75] Therefore, singing repertoire in a legato manner on a vowel may help to bring support back into balance. It may also be helpful for the chorus to rehearsing the rhythm of the piece on an [s] or [ʃ] sound.[76] This will connect the sensation of *appoggio* to the specific rhythm and character of the music.

Kinesthesia can also be an effective rehearsal technique to create *appoggio* within the rehearsal process. Kinesthesia can be used in isolation or with a vocalise, but it is often more effective when connected to the specific repertoire being rehearsed. Specific kinesthetics for *appoggio* that have proven to be successful include stretching a giant

[74] Garcia, *Complete Treatise: Part One*, 133.

[75] G.B. Lamperti, 6; Stark, 120.

[76] Hassemann and Jordan, 54.

rubber band vertically in front of one's body, holding a volleyball underwater, and playing tug-of-war with an imaginary partner. The creation of other successful kinesthetic techniques is limited only by the imagination and pedagogical understanding of the conductor.

Conclusion

At the end of the introduction to his treatise, Francesco Lamperti implores the reader to "bear in mind this important truth, 'He who has the best command over his breath is the best singer.'"[77] This important truth is as relevant for choral ensembles as it is for the solo singer. *Appoggio* provides a successful methodology by which choral ensembles can achieve control over their breathing process. The control of subglottal pressure is a critical element in vocal production. This control is necessary for the transformation of air pressure into an efficient and resonant vocal tone by means of the vocal onset. This process will be discussed in the next chapter.

[77] Francesco Lamperti, 28.

Chapter 4

Coup de la Glotte

> If there was a single point in music history when the tradition and science of singing met, it was in the life and work of Manuel Garcia II (1805–1906). Perhaps it would be more correct to say that with Garcia, tradition and science not only met, but collided with a force that is still felt today….
>
> …Garcia recognized that the first step in vocal training is strong glottal closure. His *coup de la glotte* was the key to achieving firm phonation, and was arguably the single most important pedagogical concept in the history of singing.
>
> —James Stark, *Bel Canto*

Appoggio supplies the glottis with the appropriate subglottal air pressure necessary for efficient and resonant phonation. The process of transforming this air pressure into a beautiful, resonant, and flexible vocal sound was described by *bel canto* pedagogues as the technique of *coup de la glotte*.

History and Definition

The initiation of vocal tone, or onset, is critically important to the art of singing. Beyond the aesthetic and artistic attributes of the onset itself, the quality with which a vocal phrase is initiated will have a direct impact on the remainder of the sung tone.[1] After the vocal onset, singers have limited control over vocal folds. During phonation, direct neurological and conscious control of the vocal folds is replaced by a sensory, kinesthetic, and auditory feedback system. This system uses information from nerve receptors found in the larynx combined with aural information from the ear to make

[1] Miller, *Structure of Singing*, 1.

continuous adjustments to the laryngeal muscles.[2] Singers only have direct and conscious control over the onset and the prephonatory set, or 'setting up' action, of the laryngeal mechanism.[3] Due to the importance of onsets to vocal tone quality and because singers have direct control of the vocal folds only during the prephonatory set, mastery of the vocal onset is a critical component of good singing for both choruses and solo artists.

Two requirements exist for a vocal onset: (1) adducted vocal folds and (2) an increase of breath pressure that exceeds phonatory threshold pressure (PTP).[4] According to McCoy, "phonatory threshold pressure is the pressure required to overcome the resistance of glottal adduction and initiate vocal fold oscillation."[5] Different types of vocal onsets exist. The primary distinction between the different types of onset is the sequencing of vocal fold adduction and breath pressure exceeding PTP. The quality of onset is also influenced by the manner in which the folds are adducted, the amount of subglottal breath pressure, and the glottal resistance to that breath pressure.

Coup de la glotte is a specific type of onset first advocated by Manuel Garcia II. Garcia was the first vocal pedagogue to discuss the vocal onset in detail and emphasize its importance.[6] Prior to exploring what Garcia and his contemporaries have to say about *coup de la glotte*, a review of the current understanding of vocal onsets is helpful.

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[2] Stark, 29–30.

[3] Ibid., 14.

[4] McCoy, 119.

[5] Ibid.

[6] Stark, 14.

Modern Three-Onset Perspective

Modern vocal pedagogy identifies three distinct types of vocal onset: aspirate, glottal, and balanced. The difference between each onset is the order in which vocal fold adduction and the increase of breath pressure beyond PTP occur.[7] It is important to remember that although there are clear distinctions between onset types, a wide variety of degree and intensity is possible within the different categories. For example, a specific onset may be labeled as aspirate, but it may also be considered more or less aspirate.

The first type of onset is the aspirate, breathy, or soft onset. It is primarily recognizable by excessive breathiness or an [h] preceding the vocal sound. The aspirate onset occurs when the breath begins flowing past the larynx prior to adduction of the vocal folds. It is the movement of air, as described in the Bernoulli Principle,[8] which sucks the vocal folds together to create oscillation and phonation.[9] The result is an inefficient mode of vocal production that is considered to be aesthetically inappropriate and unpleasing for classical, operatic, and, for some, choral singing. Prolonged use of an aspirate onset can lead to vocal problems such as incomplete glottal closure, hypofunction of participating laryngeal muscles, and muscular tension dysphonia.[10]

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[7] McCoy, 119.

[8] McCoy, 110–3; Miller, *Structure of Singing*, 22–3; Vennard, 58–9. The Bernoulli Principle describes the energy of fluids (or air) in motion. Applied to phonation, it states that the velocity and pressure of the air moving through the glottis are inversely proportional to one another. As air moves faster through the opening between the vocal folds, the air pressure decreases. This decrease in air pressure sucks the cords together and phonation begins.

[9] McCoy, 119–20; Miller, 3; Vennard, 42.

[10] McCoy, 119–20; Miller, 3.

The opposite of the aspirate onset is the glottal or hard onset. The glottal onset occurs when the vocal folds are adducted prior to air pressure exceeding PTP. There is a build-up of subglottal air pressure until the PTP is surpassed. At that point, the breath explodes out of the vocal folds, often producing an audible catch or glottal plosive. The hard onset, when used excessively and strongly, can lead to vocal problems, including vocal nodules and hyperfunction of the participating laryngeal muscles.[11] "Gentle glottal onsets, however, should have no negative impact on the voice."[12] Whether or not a glottal onset is vocally damaging is a matter of degree, not kind.

The third type is a balanced or simultaneous onset. This onset features the simultaneous occurrence of vocal fold adduction and airflow.[13] It has neither the glottal plosive of a hard onset nor the [h] sound of an aspirate onset.[14] It is vocally healthy and considered by many to be the most appropriate vocal onset.

Garcia's *Coup de la Glotte*

Coup de la glotte is a technique beset by semantic misunderstandings, conflicting descriptions, and differing individual interpretations. Garcia's own descriptions and explanations of *coup de la glotte* are easily misunderstood. Garcia first described *coup de la glotte* in his 1841 publication *Traité complet sur l'Art du Chant* as follows:

> … inhale *slowly and for a long time*. After you are thus prepared, and when the lungs are full of air, without stiffening either the phonator or any part of the body,

[11] Doscher, 61; McCoy, 119; Miller, *Structure of Singing*, 2–3; Vennard, 42.

[12] McCoy, 119.

[13] Miller, *Structure of Singing*, 4; Vennard, 42.

[14] McCoy, 120.

> but calmly and easily, attack the tones very distinctly with a light stroke of the glottis on a very clear [a] vowel. That [a] will be taken well at the bottom of the throat in order that no obstacle may be opposed to the emission of the sound.
>
> After an adequate preparation one will attack the tone accurately, incisively, purely, and sonorously, with the stroke of the glottis and on the vowel [a].
>
> 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]. This stroke of the throat also resembles the action of the palatal arch performing the movement necessary for the articulation of the consonant [k].[15]

The opportunities for misunderstanding and confusion within Garcia's writing are apparent. In the first two sections he explains that the tone will be attacked purely, lightly, and accurately. It is also described as "calm and easy." In the final paragraph, he then compared the *coup de la glotte* to the rupturing of air that occurs with the consonants [p] and [k]. While these two descriptions are not necessarily mutually exclusive, they do give differing and inconsistent impressions to the reader, especially for non-French speakers.[16]

When Garcia published his revision, *Nouveau Traité sur l'Art du Chant*, in 1856, he had already made some changes. He omits the instruction that begins, "After an adequate preparation…" and the final sentence comparing the stroke of the glottis to the articulation of a [k] phoneme. He also added an important clarification:

> One must guard against confusing the stroke of the glottis with the stroke of the chest [*coup de poitrine*], which resembles a cough, or the effort of expelling something which is obstructing the throat. The stroke of the chest causes the loss of a large portion of the breath, and it makes the voice sound aspirated, stifled, and uncertain in intonation. The chest has no other functions that to nourish the

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[15] Garcia, *Complete Treatise: Part One*, 42.

[16] The [p] and [k] consonants in French are much gentler than their English and German counterparts.

tones with air, and it should not push them or shock [*heurter*] them.[17]

This suggests that *coup de la glotte* does not involve a glottal plosive, which results in the loss of a large portion of breath and an aspirated tone. While the 1856 revision removed the comparison to the consonant [k], the comparison to [p] remains, as well as the language "incisive and vigorous stroke."

Garcia would attempt once more to clarify his methodology and respond to criticisms of *coup de la glotte* in his 1894 treatise *Hints on Singing*.[18] *Coup de la glotte* is here described as "the neat articulation of the glottis that gives a precise and clean start to the sound."[19] In a footnote, Garcia both acknowledges the confusion regarding *coup de la glotte* and provides some of his most instructive statements:

> It is of the utmost importance that these observations should be carefully studied and correctly understood. The meaning of the term, which was invented by the author (French: *coup de la glotte*), has been seriously misrepresented, and its misuse has done a great deal of harm. To the student it is meant to describe a physical act of which there should be merely a mental cognizance, not an actual physical sensation. The "articulation" which gives the "precise and clean start to a sound" is not *felt* in the throat (*i.e.* the larynx) of the singer. It is the sound itself, the attack of the note, beginning clean, clear, and true upon the middle of that note, without preliminary movement or action of any sort beyond the natural act of singing.[20]

However, as in his previous publications, Garcia then further elaborates, creating more confusion. He uses the cough as a tool by which a singer can become aware of the

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[17] Garcia, *Complete Treatise: Part One*, 42.

[18] Ibid., ix.

[19] Manuel Garcia II, Manuel, *Hints On Singing,* ed. Hermann Klein, trans. Beata Garcia (London: E. Ascherberg & Co., 1894), 13.

[20] Ibid.

position of the glottis and as a model for how the stroke of the glottis occurs.[21] He continues to describe the lightness of this glottal touch, but the initial confusion relating *coup de la glotte* persists and causes the editor, Herman Klein, to add an explanatory footnote of his own:

> The suggestion of an analogy between the stroke of the glottis and the act of coughing is intended simply to aid the student in locating the position and realizing the functions of the glottis lips. There is no need to even think of its application, when articulating or attacking a vocal sound.[22]

Mathilde Marchesi was a student of Garcia and thoroughly trained in *coup de la glotte* technique. Like Garcia, she considered *coup de la glotte* a critical element of good singing. In her publication, *Bel Canto: A Theoretical & Practical Vocal Method*, she provides the following description of *coup de la glotte*:

> After the lungs are filled, it is necessary, for the production of a sound, that the pupil should hermetically close the glottis so that its extreme edges, called the *Vocal Cords,* may be set vibrating by the air which bursts through at the moment of *Expiration*. The *Coup de Glotte* requires, then, a sudden and energetic approximation of the lips of the *glottis*, an instant before *Expiration* commences.[23]

Marchesi continues her explanation by emphasizing the natural movement of *coup de la glotte* and reinforces the idea that firm and complete glottal closure is key to a full and efficient tone with equality of sound.[24]

There are written descriptions of *coup de la glotte* onsets as practiced by historical singers trained in the *bel canto* tradition. In her book, *The Old Italian School of Singing*,

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[21] Garcia, *Hints on Singing*, 13–4.

[22] Ibid., 13.

[23] Marchesi, *Bel Canto*, xii.

[24] Ibid.

Daniela Bloem-Hubatka discusses the onset of Nellie Melba, a student of Marchesi. Nellie Melba's onset, or attack, was described as non-existent. The American music critic William James Henderson wrote, "Melba indeed had no attack. She opened her mouth and a tone was in existence. It began without any betrayal of breathing; it simply was there."[25] Bloem-Hubatka suggests that the biggest misconception of *coup de la glotte* is that the listener cannot hear it as a distinct audible event (i.e., there is no glottal plosive).[26] The listener only "hears the perfect singing tone emerge from the singer's throat."[27]

Coup de la glotte goes beyond the vocal onset and describes the type of phonation that follows. Garcia recognized that glottal closure had a direct affect on the quality of the voice:

> It is necessary to know that the lips of the glottis can vibrate equally, either when the posterior extremities are put into contact (by the bringing together of the internal processes of the arytenoids), or when these extremities remain separated. In the first case, the sounds are emitted with all the brilliance possible; in the second, the voice takes on a dull character.[28]

Phonation with firm glottal adduction (firm phonation) features a large closed quotient.[29] Closed quotient is the ratio or percentage of time that the glottis is closed. Phonation with a large closed quotient results in a brilliant, full, and vibrant sound that uses air

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[25] Bloem-Hubatka, 15.

[26] Ibid., 18.

[27] Ibid.,

[28] Manuel Garcia II, *A Complete Treatise on the Art of Singing: Part Two,* trans. and ed. Donald V. Paschke (New York: Da Capo Press, 1975), 152.

[29] Stark, 28.

efficiently and is rich in high-energy partials.[30] Loose glottal adduction with a small closed quotient results in a vocal sound that is breathy, dull, and weak (loose phonation).[31] As previously described, once phonation begins, singers have no direct neurological control over the vocal folds; they are only able to control the prephonatory set.[32] By closing the glottis during the prephonatory set, singers are able to ensure that the first and subsequent sounds emitted feature firm phonation with a brilliant, ringing, and efficient tone.

Determining how Garcia's *coup de la glotte* fits within the modern three-onset orthodoxy is important for modern singers, conductors, and pedagogues. There is little agreement within the pedagogical literature. The confusion and controversy surrounding *coup de la glotte* has led to its equation with all three modern onset types as well as its identity as a unique onset technique.[33]

Coup de la glotte is not an aspirate onset. Garcia and Marchesi are clear that the glottis is closed when phonation begins. In addition, the vocal quality created by an aspirate onset is the antithesis of what *bel canto* pedagogues were seeking to achieve.

The evidence is also against *coup de la glotte* being a glottal onset that results in a strong glottal plosive. Despite the violent nature of its name and the descriptions of air exploding from the larynx, Garcia continues to describe an onset that is pure, neat, and avoids the glottal plosive of the *coup de la poitrine*. *Coup de la glotte* was not meant to

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[30] Garcia, *Complete Treatise: Part Two*, 152–3; McCoy, 65; Stark, 28.

[31] Garcia, *Complete Treatise: Part Two*, 152–3; Stark, 28.

[32] Stark, 14.

[33]Doscher, 62; Miller, *Structure of Singing*, 2; Stark, 21–4; Vennard, 44–5.

be physically felt, but rather sensed mentally. In addition, a strong glottal onset, like an aspirate onset, will actually result in loose phonation because the folds are blown apart by the initial burst of air, weakening glottal closure.[34] The resulting tone would be neither firm phonation nor the *bel canto* ideal.

Finally, *coup de la glotte* does not fit easily into the description of a balanced onset. Marchesi and Garcia are explicit when they say that the glottis is closed prior to the expiration of air.[35] It is not adducted simultaneously with the beginning of exhalation. In addition, the modern balanced onset does not address the type of phonation that follows, whereas *coup de la glotte* is important because it does specifically call for firm phonation.[36]

Coup de la glotte is therefore a type of onset that does not fit easily within the modern three-onset view. It features glottal adduction prior to phonation, but avoids the glottal plosive of a hard or glottal onset.[37] Garcia, in his first writing on *coup de la glotte* specifically instructs the singer to use a "light stroke of the glottis."[38] This is achieved by lightly adducting the vocal folds prior to phonation, rather than clamping them shut.[39] The glottis does not need to be closed with a large degree of muscular tension and effort.

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[34] Stark, 14, 21.

[35] Garcia, *Complete Treatise: Part One,* 42; Marchesi, *Bel Canto*, xii.

[36] Stark, 22.

[37] Ibid.

[38] Garcia, *Complete Treatise: Part One*, 41.

[39] Fagnan, *Acoustical Effects*, 38.

Rather, the glottis only needs to be closed hermetically (air tight).[40] It is possible to achieve glottal adduction that is hermetic without using an inappropriate amount of muscle tension.

The amount of time that the glottis is adducted prior to phonation is very short. Marchesi states that the glottis closes an "instant before *Expiration* commences."[41] With training, the amount of time between the closing of the glottis and phonation can be as little as fifty milliseconds. "Perhaps this is as close as one need get to a true simultaneous attack."[42] This glottal adduction leads to firm phonation. *Coup de la glotte* can best be defined as an onset featuring light glottal adduction the moment before exhalation. The result is a clean onset of tone without either a glottal plosive or aspirate [h] followed by firm phonation.

Benefits of *Coup de la Glotte* in the Choral Setting

Onset

The first benefit of *coup de la glotte* is a proper onset. Onset, according to Bloem-Hubatka, was the most important aspect of phonation for *bel canto* pedagogues.[43] The ability to start phonation in a clear, pure, and precise manner is of enormous expressive importance for both solo and choral singing. Miller acknowledges the importance of the vocal onset when he exhorts singers to begin each practice session with

[40] Marchesi, *Bel Canto*, xii.

[41] Ibid.

[42] Stark, 22.

[43] Bloem-Hubatka, 13.

onset exercises.[44] Choral ensembles, like solo artists, must have the ability to begin phonation efficiently without either an aspirate or glottal plosive.

Singer's Formant

Coup de la glotte allows for firm phonation featuring strong glottal closure, high closed quotient, and upper-harmonic energy. The use of upper harmonics during singing allows for a full range of vocal color and tone. Louis Fagnan, who uses the phrase "core of focused vocal vibration" to describe firm phonation, provides the following description:

> Just as a diffuse source of light will not excite a full colour spectrum when it passes through a prism, a relaxed phonation caused by a superfluous quantity of breath flowing through the glottis will not excite the full resonance possibilities of the voice. It is rather in providing a very economical and compressed column of breath that pure vibration can be fed rather than spread. Just as a beam of concentrated light excites a full colour spectrum when shone through a prism, *a concentrated core of focused vocal vibration* is able to excite all of the colouristic capabilities of the vocal tract and provide a more complete harmonic spectrum.[45]

One specific upper harmonic excited by firm phonation is the singer's formant. The singer's formant is a resonant peak found between 2300-3200 Hz.[46] It is created when the third, fourth, and fifth vowel tract formants are clustered together to create one combined formant.[47] There is uncertainty regarding the exact physiological production of singer's formant. It may be related to the ratio of the size between the "oropharynx and

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[44] Miller, *Structure of Singing*, 1.

[45] Fagnan, *Acoustical Effects*, 32.

[46] Carter, 13-14; 55-56.

[47] McCoy, 47.

the laryngeal outlet."[48] A lowered larynx may also be a requirement for the production of singer's formant.[49] One certainty, however, is that initial source sound created by the larynx during phonation must contain strong harmonics in the singer's formant frequencies that the vocal tract can then cluster and amplify.[50] Firm phonation featuring efficient glottal closure will create the necessary harmonic foundation for singer's formant.

Not all types of singers, however, use singer's formant. Due to their higher range, the use of singer's formant is less important for sopranos than other classically trained voice fachs.[51] Styles of singing that feature electronic amplification, such as commercial, popular, and jazz music, rarely use singer's formant because there is little need to project the voice naturally. In addition, untrained singers do not normally use singer's formant.[52] The use of singer's formant in the choral environment is inconsistent and not completely understood. Studies on the difference between choral and solo singing suggest that singer's formant in the choral setting is often undesired, inappropriate, and detrimental to choral blend.

Allen Goodwin conducted "An Acoustical Study of Individual Voices in Choral

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[48] McCoy, 47.

[49] Letowski, Zimak, and Ciolkosz-Lupinowa, 56; McCoy, 48. Scott McCoy does not believe that a lowered larynx is a prerequisite for the production of singer's formant

[50] McCoy, 48.

[51] Letowski, Zimak, and Ciolkosz-Lupinowa, 56; McCoy, 49.

[52] Letowski, Zimak, and Ciolkosz-Lupinowa, 56.

Blend"[53] involving thirty sopranos selected randomly from the choral ensembles at North Texas State University.[54] He found that the singers in his study sang with reduced upper harmonic partials and with stronger fundamental and first formant frequencies when singing in a choral setting. This use of strong fundamental and first formant combined with weak upper harmonic frequencies was postulated to be an important component of choral blend.

Brian Barker Carter's "An acoustic comparison of voice use in solo and choral singing in undergraduate and graduate student singers,"[55] added to the research by studying the use of singer's formant by nine basses and bass-baritones (three underclassmen undergraduate, three upperclassmen undergraduate, and three graduate students). Each singer was asked to sing several exercises in both choral and solo mode. Carter found that there was a large amount of change between solo and choral singing modes in the relative strength of the singer's formant for untrained undergraduate singers. The more experienced upperclass undergraduate and graduate students used singer's formant more consistently in both modes of singing.

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[53] Allen W. Goodwin, "An Acoustical Study of Individual Voices in Choral Blend," *Journal of Research in Music Education* 28, no. 2. (Summer 1980): 119–28.

[54] No identifying information regarding the education, age, or vocal experience of the participants is provided.

[55] Brian Barker Carter, "An Acoustic Comparison of Voice Use in Solo and Choral Singing in Undergraduate and Graduate Student Singers" (DMA treatise, The University of Texas at Austin, 2007).

Rossing, Sundberg, and Ternström studied the singing of eight bass/baritones in both their choral and solo modes.[56] The eight participants were professional and amateur singers who were all "highly skilled both as solo and as choir singers."[57] The study found that during choral singing, the fundamental frequency was stronger and the singer's formant less prominent than in solo singing.

Finally, Letowski, Zimak, and Ciolkosz-Lupinowa studied the difference between solo and choral singing modes in both trained and untrained voices.[58] They found that not only was there a difference in the use of singer's formant between choral and solo modes of singing, but that trained and untrained voices also used upper harmonics differently. Untrained voices tended to sing with strengthened singer's formant in choral versus solo singing. Trained singers would do just the opposite; they attenuated their solo attributes and sang without singer's formant in the choral setting.

These studies all suggest that solo and choral singing differ in the use of singer's formant. These studies do not comment, however, on how singers in a choral environment *should* or *could* sing, only *how* they sang in the specific study. The singers' preconceived ideas of how one phonates within a choral ensemble were almost assuredly based on the training and preferred aesthetics of the choral directors they had worked with. Many choral conductors, pedagogues, and listeners do not feel that singer's

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[56] Thomas D. Rossing, Johan Sundberg, and Sten Ternström, "Acoustic Comparison of Voice Use in Solo and Choir Singing," *The Journal of the Acoustical Society of America* 79, no. 6 (June 1986): 1975–81.

[57] Rossing, Sundberg, and Terström, 1978.

[58] Tomasz Letowski, Lidia Zimak, and Halina Ciolkosz-Lupinowa, "Timbre differences of an individual voice in solo and in choral singing" *Archives of Acoustics* 13, no.1–2 (1988): 55–65.

formant and upper harmonic energy are appropriate for choral singing.[59] However, it must be remembered that there is not one correct or desirable choral sound any more than there is one correct or desirable solo sound. Singer's formant can play an important and beneficial role in choral singing.

Choral ensembles benefit from singer's formant in multiple ways. Singer's formant allows choral ensembles to increase their vocal carrying power and be heard over an orchestra.[60] Orchestral sound spectrums are lacking in acoustic energy in the range of the singer's formant (2300Hz–3200Hz).[61] Solo singers and choruses that utilize singer's formant will be using "a spectral region that has little orchestral competition. The effect is much like stepping from darkness into a spotlight."[62]

The presence of singer's formant also improves intonation.[63] Individual intonation problems often result from the lack of strong third and fourth formants, the clustering of which create singer's formant.[64] Vocal fatigue is lessened because the utilization of singer's formant requires efficient phonation.[65] Finally, the use of singer's formant creates a ringing and resonant tone quality associated with professional choral

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[59] Carter, 2; Fagnan, *Acoustical Effects*, 50; Ford, 112–3; Stark, 31.

[60] Fagnan, 50; McCoy, 48–9.

[61] McCoy, 48–9.

[62] Ibid., 49.

[63] Lamartine, 38; Quist, 35.

[64] Lamartine, 38; Letowski, Zimak, and Ciolkosz-Lupinowa, 56.

[65] Fagnan, *Acoustical Effects*, 50.

ensembles.[66]

The approach of each chorus to singer's formant is dependent not only on the aesthetic and sound ideal of an ensemble's conductor, but also on the unique membership of the chorus. In choruses consisting of all untrained singers, conductors are generally able to fully encourage and teach the use of singer's formant. As untrained singers do not consistently use singer's formant on their own, this encouragement will allow the chorus to take advantage of the singer's formant benefits listed above while maintaining unity within the choral sound.

For choral ensembles that contain almost all trained singers, conductors will be able to use singer's formant to varying degrees depending upon repertoire, aesthetic preference, and desired choral sound. If a chorus is comprised of both trained and untrained singers, conductors will need to negotiate a balance between the two distinct types of singers in order to achieve a unified choral sound. An individual who uses a great deal of upper harmonic energy will "stick out" if he or she sings primarily with untrained singers. There are two possible solutions. Conductors can either teach the untrained voices to sing with more resonance and singer's formant or they can require that the trained voices attenuate their resonant and solo quality to better unify their sound with the rest of the ensemble.[67]

In practice, both solutions have serious problems. The first approach, teaching untrained voices to develop a singer's formant that will match trained voices is not

[66] Fagnan, *Acoustical Effects*, 50; Quist, 16.

[67] Emmons and Chase, 151.

realistically achievable in a choral setting.[68] Untrained singers can begin to access singer's formant in the choral setting, but they will not be able to attain the vocal expertise of trained singers through choral study alone. Solo artists work intentionally for years to develop consistent singer's formant. That level and intensity of training cannot be duplicated within a choral setting. Asking trained singers to attenuate their soloistic qualities to match untrained singers is also an imperfect solution because it not only reduces the acoustical energy of the ensemble, but it creates an unsatisfying and potentially vocally detrimental situation for trained singers.

While there is no easy solution, perhaps a combination of the two is the best approach. Conductors can encourage and teach resonant singing and the use of singer's formant within the ensemble. The presence of trained singers within the ensemble may even be a mobilizing factor for untrained singers, helping them sing with more resonance.[69] Trained singers may still have to attenuate in order to achieve a unified choral sound, but they will not need to attenuate as much if the ensemble as a whole is using singer's formant. As mentioned in chapter two, less attenuation is better than more for trained singers in a choral context.

Application to the Choral Setting

Verbal Instructions and Terminology

Terminology and vocal instructions surrounding vocal onsets and phonation types are of limited use in a choral rehearsal. Complex physiological descriptions regarding

[68] Fagnan, *Acoustical Effects*, 44.

[69] Letowski, Zimak, and Ciolkosz-Lupinowa, 65.

glottal closure, types of phonation, and their related acoustical principals are time consuming and may lead to misunderstanding within a chorus. Garcia himself never used confusing anatomical, physiological, or acoustical terms in his teaching as it would only result in confusion and was of limited use.[70] In this area, terminology can be most useful as a label for a previously experienced kinesthetic sensation. Once a chorus experiences *coup de la glotte* or firm phonation, appropriate terminology may then be successfully applied, allowing for efficient and effective communication between the conductor and the ensemble.

Semantics and terminology have been an important and controversial component of the historical conversation surrounding vocal onsets and *coup de la glotte*. Much of the misunderstanding surrounding *coup de la glotte* is not pedagogical, but semantic and rooted in Garcia's poor choice of terminology. The word *coup* (stroke) implies a type of hard onset resulting in a glottal plosive that is both unpleasing aesthetically and vocally unhealthy. If Garcia had only chosen a different label, much of the controversy may have been avoided.[71] It is ironic that despite its controversial history as a term, *coup de la glotte* may actually be useful and appropriate for an English language chorus. The foreign nature neutralizes the negative connotation that *coup* might have for a French speaker. In addition, the term will almost assuredly be new to most chorus members. Conductors thus have the ability to define the term and kinesthetic sensation away from preconceived ideas and semantic confusion.

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[70] Berton Coffin, *Historical Vocal Pedagogy Classics* (Lanham, MD: The Scarecrow Press, 1989), 30.

[71] Stark, 14.

One term that should be avoided in both the choral and solo setting is "attack," an expression used be many *bel canto* pedagogues to describe the initiation of phonation. There are certainly negative preconceptions surrounding the term "attack." Vocal "onset" is more appropriate for pedagogical use and has replaced "attack" in modern vocal pedagogy. An additional advantage to vocal "onset" is that it refers not only to the initiation of phonation, but also to the prephonatory set.[72]

Although *coup de la glotte* is not technically a simultaneous or balanced onset, it may be useful for a choral director to adapt some of the terminology and exercises related to balanced onsets. In a *coup de la glotte* onset, the glottis is only closed the "instant before *Expiration* commences."[73] The exact amount time needed for this "instant," as stated earlier, may be as little as fifty milliseconds.[74] This extremely short amount of time between glottal adduction and the expiration of air might be considered and experienced as virtually simultaneous. Thus, conductors may find the terms "balanced" or "simultaneous" useful and may choose to approach *coup de la glotte* from a balanced perspective. Terms that describe the feel and sound of the onset such as "clean," "neat," or "precise" are also appropriate. Regardless of whether a conductor chooses to approach *coup de la glotte* from a balanced or lightly adducted view, the goal of beginning phonation cleanly with firm phonation is the same.

As *coup de la glotte* describes not only the vocal onset but also a type of phonation, terminology that describes phonation must also be considered. As with

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[72] Stark, 14.

[73] Marchesi, *Bel Canto*, xii.

[74] Stark, 22.

onsets, phonation terminology is best applied to previously experienced kinesthesia. This chapter has used "firm" to describe phonation that features firm glottal closure leading to high closed quotient and the production of a harmonically rich vocal source. Other terms in the pedagogical literature include "flow" and "pressed" phonation, but these terms may have negative sematic connotations. As a label, "high closed quotient" may be useful and has the advantage of accurately and scientifically describing the desired vocal fold movement. Finally, *appoggio* terminology, especially "leaning" on the breath and *appoggio* itself are useful for the encouragement of efficient and firm phonation.

Warm-up Exercises and Vocalises

There are two types of exercises to help choruses develop *coup de la glotte*: (1) firm phonation exercises, and (2) onset exercises. It is recommended that choruses first experience success at firm phonation before moving to onsets. Once singers understand the type of sound that they are to create, they will be more likely to achieve firm phonation through a *coup de la glotte* onset.

Firm Phonation

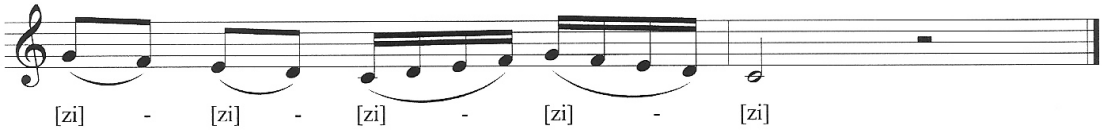
- Vocalises that use the [i] vowel will encourage firm phonation with a high closed quotient.[75]
- Alternation between a focused [i] vowel with a more breathy [a] will allow choristers to kinesthetically identify and experience firm phonation.[76]

[75] Fagnan, *Acoustical Effects*, 37; Garcia, *Complete Treatise: Part One*, 25; Quist, 23.

[76] Fagnan, *Acoustical Effects*, 37.

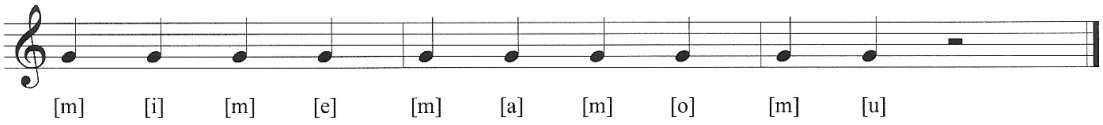
- Alternation between voiced and unvoiced consonants will also allow choristers to kinesthetically identify and experience firm phonation.[77]
- The exercise in figure 4.1 combines the use of an initial voiced consonant [z] with the vowel [i]. The exercise can eventually be done without an initial consonant, but the consonant can help the singer find resonance and firm phonation. Other vowels may be substituted after a clear, resonant, and firm [i] has been achieved.

Figure 4.1. Firm phonation exercise.[78]



- In the exercises in figures 4.2 and 4.3, the voiced consonant [m] will help focus the voice and encourage strong resonance. These exercises can also eventually be done without an initial consonant, but the consonant can help the singer find resonance and firm phonation.

Figure 4.2. Firm phonation exercise.[79]

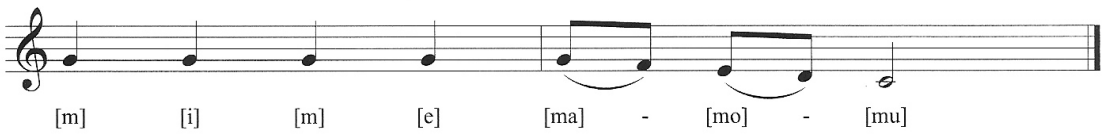


[77] Fagnan, *Acoustical Effects*, 37.

[78] *Source:* Quist, 24.

[79] *Source:* Ibid.

Figure 4.3. Firm phonation exercise.



Onset Exercises

- The following description can be useful for helping singers experience appropriate glottal closure prior to phonation. It details an appropriate prephonatory set for a *coup de la glotte* onset and is applicable to all of the following exercises.
    - Singers should take a low and silent breath with an open glottis, and immediately *allow* the folds to lightly adduct prior to phonation. The folds should not be clamped or forced closed with muscular tension. The singers should then begin the tone with the vibrancy and firm phonation experienced in the exercises above. Singers should not think about "supplying breath to produce the tone, but rather about awakening an energetic, focused tone from this closed position."[80]
- *Coup de la glotte* onset exercises should begin on vowels. While initial consonants may appear to aid onsets, they actually conceal "the poor articulation of the glottis and can do nothing to rectify it."[81]
- The staccato exercises in figures 4.4–7 require a quick prephonatory set and are useful in helping to coordinate the nearly simultaneous actions of glottal

[80] Fagnan, *Acoustical Effects*, 38.

[81] Garcia, *Complete Treatise: Part One*, 43.

adduction and breath expiration. The sound produced during staccato should not contain excess airflow or glottal plosives.[82] In addition, each tone, no matter how short, should have the resonance, vibrancy, and tone quality associated with firm phonation. Exercises can be sung on different vowels, although [i] will be helpful in achieving firm phonation. Varying the pitch and rhythmic patterns of the following exercises is encouraged.

Figure 4.4. Staccato onset exercise.[83]

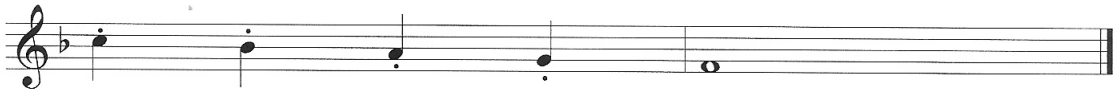


Figure 4.5. Staccato onset exercise.[84]

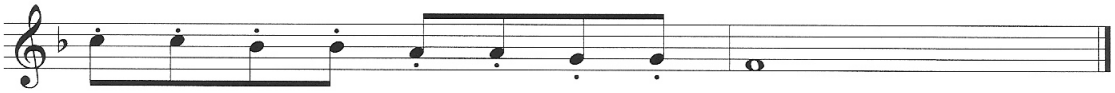
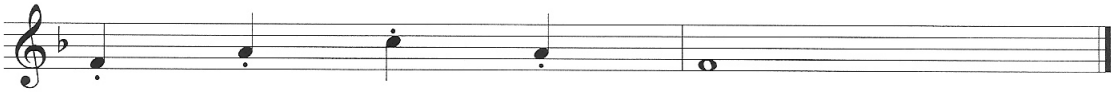


Figure 4.6. Staccato onset exercise.[85]



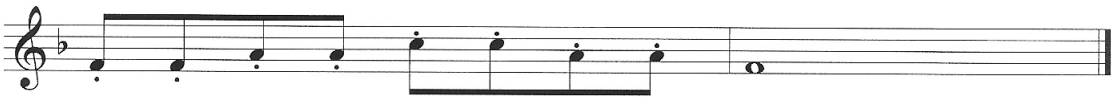
[82] Miller, *Structure of Singing*, 13.

[83] *Source:* Ibid., exercise 1.10.

[84] *Source:* Ibid., exercise 1.11.

[85] *Source:* Ibid., exercise 1.15.

Figure 4.7. Staccato onset exercise.[86]



- The exercises in figures 4.8–12 are designed to provide multiple onset opportunities. They also require the singer to use firm phonation throughout the duration of the note. The final three vocalises of this series require the carrying of firm phonation to different pitches. Exercises can be sung on different vowels, although [i] will be helpful in achieving firm phonation.

Figure 4.8. Onset exercise with firm phonation.[87]

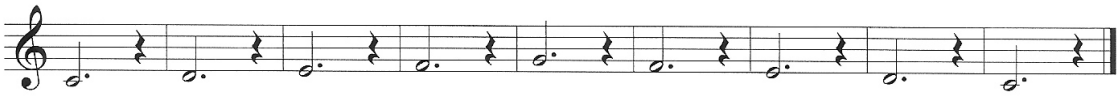
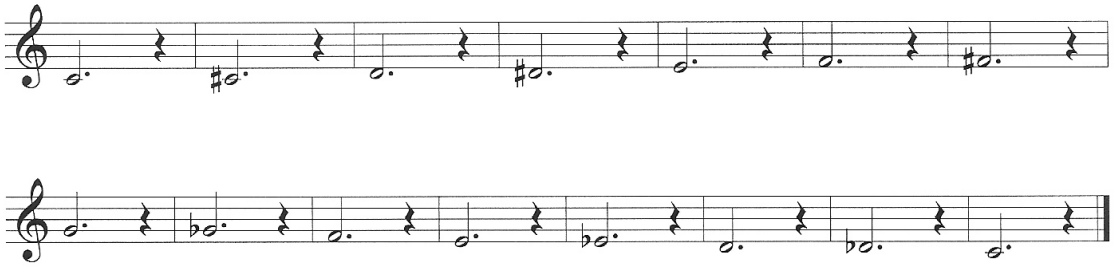


Figure 4.9. Onset exercise with firm phonation.[88]



[86] *Source:* Miller, *Structure of Singing*, exercise 1.16.

[87] *Source:* Adapted from Marchesi, *Bel Canto*, 1.

[88] *Source:* Ibid.

Figure 4.10. Onset exercise with firm phonation on multiple pitches.[89]

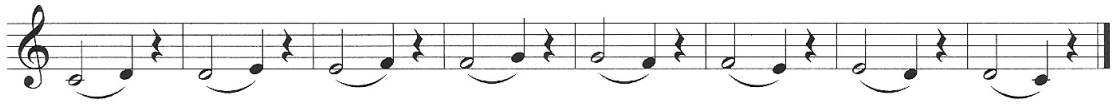


Figure 4.11. Onset exercise with firm phonation on multiple pitches.[90]

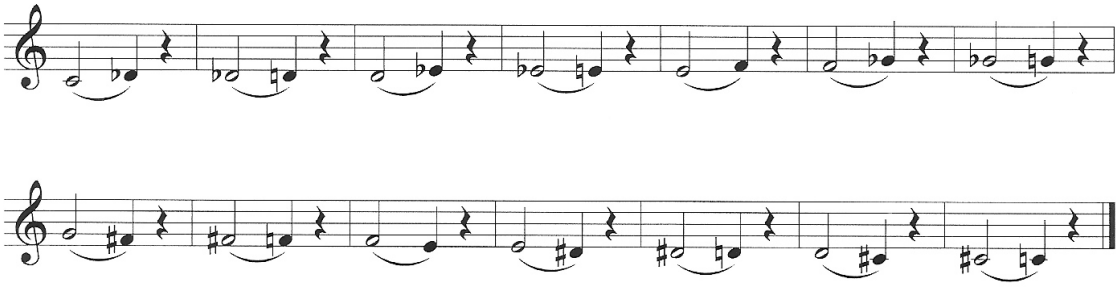
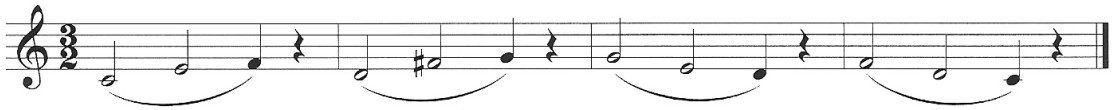


Figure 4.12. Onset exercise with firm phonation on multiple pitches.[91]



Rehearsal Strategies and Techniques

The most important function of the conductor for the encouragement *coup de la glotte* and firm phonation in the choral rehearsal is consistent vigilance. The conductor must continually monitor the chorus to ensure that appropriate onsets and phonation occur during the rehearsal of repertoire. Conductors can refer to warm-up exercises as well as remind the chorus of proper onsets and firm phonation using appropriate

[89] *Source:* Adapted from Marchesi, *Bel Canto*, 3.

[90] *Source:* Ibid., 2.

[91] *Source:* Ibid., 4.

terminology discussed above.

If firm phonation is lacking, conductors can instruct the chorus to do a vocal sigh. Untrained singers will often allow the larynx to rise during the course of the rehearsal, which could have a negative impact on the production of singer's formant.[92] Even trained singers will occasionally allow the larynx to raise inappropriately, especially during a strenuous or long choral rehearsal. The sigh can help all singers reset to a more efficient and effective vocal position.

Removing words and singing repertoire on a vowel, [i] in particular, can encourage a high closed quotient. Firm phonation and onsets can also be practiced through the removal of consonants, having chorus members sing only the specific vowels called for in the text. This trains not only *coup de la glotte* onsets and firm phonation, but also efficient and resonant vowel transitions.

Conclusion

Manuel Garcia II's *coup de la glotte* may arguably be "the single most important pedagogical concept in the history of singing."[93] It is the means by which subglottal air pressure is transformed into an energetic, efficient, and resonant vocal sound. The guidance and manipulation of that sound through the vocal tract to create a tone quality that is simultaneously bright and dark (*chiaroscuro*) will be explored next.

[92] Letowski, Zimak, and Ciolkosz-Lupinowa, 56.

[93] Stark, 32.

Chapter 5

Chiaroscuro

> The quality of the voice, we could not affirm too much, is the most precious element in singing.
>
> —Manuel Garcia II, *A Complete Treatise on the Art of Singing*

The idea of combining and balancing "bright and dark" aesthetics, *chiaroscuro*, has roots in Italian Renaissance art, where it was used to add depth and dimension to painting.[1] During the eighteenth and nineteenth centuries, vocal pedagogues adopted this concept to describe the ideal tone quality for solo singers.[2] The aesthetic preference for a vocal tone quality that combines roundness and depth with brightness and ring has continued to the present day and has enormous value for choral ensembles.

History and Definition

The vocal concept of *chiaroscuro* did not appear at one specific time or from one individual. Instead, it developed over the course of several generations as various singers and pedagogues contributed their own individual perspective on the ideal tone quality.[3] The term does not appear often in historical *bel canto* treatises. Rather, writers would often use subjective descriptions and differing terminology to describe vocal tone.[4] The term *chiaroscuro* is most commonly used as a retrospective term applied to describe the ideal vocal quality taught by *bel canto* pedagogues.

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[1] Fagnan, *Acoustical Effects*, 51.

[2] Stark, 33.

[3] Ibid., 34.

[4] Ibid.

One pedagogue that did use the term *chiaroscuro* was Giovanni Battista Lamperti. In a book of maxims recorded by his student William Earl Brown, Lamperti says,

> Although you may acquire a wide range of voice, you cannot modulate the sounds until the resonance of your tones becomes round and rich, *chiaroscuro*.
>
> The pitch (vibration) of your voice seems to emanate from the back of the mouth (pharynx) spontaneously.
>
> The resonance of your voice seems to originate in the front of your mouth (lips) voluntarily.
>
> These two together seem to make the "dark-light" tone.
>
> …The "dark-light" tone should be always present.[5]

In addition to referencing the "dark-light" tone quality, Lamperti also guides readers toward the physiological basis of *chiaroscuro*.

Source-Filter Theory

Lamperti suggests that *chiaroscuro* is derived from the vibration of the voice at the back of the mouth and the resonance of the voice at the lips. While the labels and exact location of these phenomena are inaccurate and misleading, Lamperti's general description is similar to the modern source-filter theory of tone production.

In the source-filter theory, the vocal source is the periodic sound produced from vocal fold oscillation. Sound emanating directly from the vocal folds is complex and contains both the fundamental frequency and harmonic overtones. The amplitude of the harmonic overtones decreases as the frequency increases. This shape is called the spectral slope.[6]

The sound created by this spectral slope is rough and has no distinguishing vowel characteristics. The resonators and articulators of the vocal tract act as an acoustical filter

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[5] Brown, 38–9.

[6] McCoy, 38.

and modify this periodic source sound.[7] Some harmonics are amplified while others are attenuated, depending on the exact shape of the vocal tract. This filtering provides vowel definition, tonal color, intensity of sound, and amplifies singer's formant.[8]

The source (vocal folds) and filter (vocal tract) interact with each other to create a *chiaroscuro* tone. Manuel Garcia II was the first pedagogue to make the distinction between the source of the sound and the filtering that occurs along the vocal tract.[9] Garcia writes,

> …The timbre depends not only upon the modifications which the tube imparts to the sonorous waves, but also upon the place where these vibrations are born; that is to say that the voice receives its first character in the glottis, then from the numerous modifications of the pharyngeal and buccal cavities. One can summarize what proceeds in this principle: *that each modification in the mode of production of the vibrations develops a different timbre, and each modification which the tube through which it passes undergoes modifies the original timbre.*[10]

By combining the sound quality of both firm and loose phonation with the filtering process of the vocal tract ("tube" for Garcia), an infinite possibility of vocal colors, or tints, were possible:

> … It is necessary to begin [*partir*] with this essential fact: that every modification produced in the timbre of a tone has its origin in an analogous variation in the interior position of the tube by which the voice is emitted. Each tint [*nuance*] of the tone which is emitted then represents to the ear the position in which one has held the tube. Since the differences in the tone correspond to the differences in that position, and since a flexible tube can gradually undergo an infinite number of modifications, it follows that the differences in tone are multiplied to infinity.[11]

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[7] McCoy, 38; Miller, *Structure of Singing*, 48.

[8] McKinney, 120, 124–7.

[9] Miller, *Structure of Singing*, 56.

[10] Garcia, *Complete Treatise: Part Two*, 153.

[11] Garcia, *Complete Treatise: Part One*, 36–7.

While Garcia acknowledges the possibility for an infinite number of vocal sounds, there is also a clear preference for a specific *chiaroscuro* tone that combined the brightness and ring of firm phonation with a balancing darkness and roundness.[12] Garcia continues,

> It is from among all these tints that the student will choose that one which is most appropriate for each point in his voice. The tone which he should seek to adopt as preferable from the standpoint of instrumental beauty is that which is round, vibrant, and mellow: that is the important result which the teacher and student should seek together.
>
> The other qualities of tone, useful in their place, will serve to express the emotions, and we will treat them in the article on expression.[13]

Garcia's *chiaroscuro*, although he never used the term, attained ring and vibrancy through firm phonation and the amplification of singer's formant.[14] Both source and filter are necessary for singer's formant. As described in chapter four, firm phonation is necessary if upper harmonics in the singer's formant range of 2300–3200 Hz are to be produced. The vocal tract, possibly the larynx itself, then clusters and amplifies those harmonics to add ring and brightness to the tone.[15]

The round and mellow, or *oscuro*, element of Garcia's ideal tone quality was "created by the low larynx and expanded pharynx."[16] A lowered larynx increases the length of the vocal tract and thus significantly affects the tone quality of the voice. An expanded pharynx, also known as *gola aperta* or open throat, is an important element in *bel canto* singing. The pharynx is the largest and most important resonator in the vocal

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[12] Stark, 40.

[13] Garcia, *Complete Treatise: Part One*, 37.

[14] Stark, 36.

[15] McKinney, 124–5.

[16] Stark, 38.

tract. It can amplify the lower partials and provide a tone with "fullness, roundness, warmth, richness, or mellowness."[17]

Vowel Formants and *Aggiustamento*

Scott McCoy defines *chiaroscuro* as a tone that balances amplitudes of the first vowel formant and the singer's formant.[18] As discussed previously, singer's formant is the result of the amplification and clustering of the upper-harmonic partials in the range of 2300–3200 Hz created during firm phonation. The first vowel formant (F1) falls within the range of 270–850 Hz. The exact frequency of F1 combined with the second vowel formant (F2) in the range of 840–2800 Hz determines the production of specific vowels sounds. For example, the vowel [i] for a female will have F1 around 310 Hz and F2 around 2790 Hz. The vowel [a], in contrast, would have F1 around 850 Hz and F2 around 1200 Hz. Each vowel has its own unique formant pattern and approximate frequency.[19]

When the harmonic overtones of the fundamental frequency of a sung pitch are in harmonic relation to the formant frequencies of the vowel being sung, the tone is amplified and made more resonant. In composed music, pitch is predetermined. It is thus impossible to change pitch to match vowel formant frequencies when singing repertoire. However, the infinite flexibility of the vocal tract allows for the manipulation of vowel formants to align harmonically with the sung pitch. Changing the shape of the

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[17] McKinney, 125–6.

[18] McCoy, 58.

[19] McCoy, 44–5. A complete listing of formant frequencies for the cardinal vowels if found on pages 44–5 in *Your Voice: An Inside View* by Scott McCoy.

vocal tract to align the "partials of the pitch we are producing to a potential formant" is known as formant tuning.[20] Singers will often use formant tuning subconsciously and are often unaware of what they are doing.[21] "The singer might think of this as colouring the voice, modifying the vowels, finding the resonance, placing the voice, or even projecting the voice."[22]

Specific vocal tract adjustments have specific effects on vowel formants. McCoy identifies six formant rules:

1. A constriction in the front of the vocal tract lowers F1 and raises F2
2. A constriction in the back of the vocal tract raises F1 and lowers F2
3. All formant frequencies lower uniformly when the vocal tract is lengthened
4. All formant frequencies rise uniformly when the vocal tract is shortened
5. All formant frequencies lower uniformly with lip rounding and increase with spreading
6. An increased mouth opening (dropping the jaw) raises F1[23]

Another approach to formant tuning is vowel modification, or *aggiustamento*. Adjusting the shape of the vocal tract is essentially a vowel change.[24] Thus, slight modifications to vowels can help align formants to the sung pitch. The process of formant tuning, whether through specific vocal tract adjustments or vowel modification can assist in the creation of a consistent resonant *chiaroscuro* sound by increasing the intensity of the first vowel formant, providing an acoustical balance to singer's formant.

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[20] Quist, 8.

[21] McCoy, 46; Stark, 48.

[22] Stark, 48.

[23] McCoy, 43.

[24] Quist, 8.

Chiaroscuro Vowels

Another approach to *chiaroscuro* can be found in the specific formant frequencies of different vowels. F2, as mentioned above, has a frequency range of approximately 840–2800 Hz depending on the specific vowel and gender of the singer.[25] F2 is at it's highest with the vowel [i] and lowers throughout the vowel sequence from forward to back [i – e – a – o – u]. Specifically for females, F2 for the cardinal vowels is as follows:

- [i] ~ 2790 Hz
- [e] ~ 2330 Hz
- [a] ~ 1200 Hz
- [o] ~ 920 Hz
- [u] ~ 950 Hz[26]

Front vowels, such as [i] and [e] will have much higher formants (possibly approaching singer's formant) and thus a brighter and more *chiaro* tone than their back counterparts [o] and [u], which have a darker and more *oscuro* sound.[27]

Chiaroscuro can best be defined as a tone that combines the bright and ringing quality of the upper-frequency harmonics of singer's formant and the F2's of front vowels with the dark and mellow sound associated with a strong first vowel formant, lowered larynx, and *gola aperta.*

Benefits of *Chiaroscuro* in the Choral Setting

The development and use of *chiaroscuro* in the choral setting has many benefits. The first benefit is the tone quality itself. *Chiaroscuro* provides a means for achieving a

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[25] McCoy, 44–5.

[26] Ibid. The slightly lower F2 for an [o] vowel is an important characteristic. It can be used advantageously by conductors and ensembles and will be discussed in the application section.

[27] Miller, *Structure of Singing*, 150.

complex vocal tone with the simultaneous characteristics of light and dark. As with solo artists, this tone will provide depth, interest, and beauty to the sound of an ensemble. Because *chiaroscuro* is the expected tone quality for professional classical and operatic singers, the choral ensemble that develops a light-dark tone may be described as having a more professional sound.

Chiaroscuro will also create a more flexible choral sound. Maintaining a consistent light-dark resonance throughout the entire vocal range requires continual vocal tract adjustments. Singers must learn to quickly, and often subconsciously, manipulate resonance chambers and articulators to constantly sing with *chiaroscuro*. Choral ensembles will be able to use this ability to create different vocal colors for various genres and pieces of music or even phrases and specific moments within a single composition. The infinite number of vocal tract modifications and corresponding tints of the voice described by Garcia can be used by choral ensembles to serve the expressive needs of the choral repertoire.

Diction may also improve when consistent *chiaroscuro* tone is used on all the vowels. As *chiaroscuro* often involves vowel modification, clarity of diction would, at first glance, seem to suffer from this type of resonance. However, Fagnan suggests that the coloring of all vowels in the same manner allows the ear to become accustomed to the acoustical energy present in the sound. "The ear need not constantly adjust itself to the endless variations in quality of tone in order to surmise the vowel sounds being sung."[28] In addition, although each vowel and pitch will be modified to some degree to maintain resonance, proper modification should never result in a loss of intelligibility, except for

[28] Fagnan, *Acoustical Effects*, 52–3.

sopranos singing in a high register.[29] "Language sounds should always be maintained in artistic singing…. Never should any form of vowel modification draw attention to itself."[30]

Chiaroscuro will also lead to increased unification of choral sound. If every singer is utilizing a complete light-dark tone quality, the sound of the ensemble will be more homogenous and unified. Fagnan explains,

> The flexibility of *chiaroscuro* resonance tracking *is* the *bel canto* vehicle for tuning the resonators to the vibration of the cords on any given pitch. An incomplete vowel will typically yield a muscularly tense setting of the resonators which will in turn amplify harmonics that are not complimentary to the note and vowel being sung, resulting in acoustical noise and voices that penetrate the ensemble's tonal envelope. On the other hand, a beautifully pure, bright-warm vowel will set up the resonators to amplify only those overtones that are naturally part of the harmonic series of the vowel and note being sung with voices harmoniously blending together.[31]

Chiaroscuro allows for the unification of ensemble sound coupled with efficient and resonant singing. Intonation problems, along with a lack of dynamic interest, often result when unification or blend is achieved through the reduction of a resonant *chiaroscuro* tone.[32]

Ensemble intonation can be improved through *chiaroscuro* resonance. As discussed above, every vowel is unique in terms of acoustic energy and pitch. Vowel changes are brought about by adjustments to the vocal tract, which can have a negative

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[29] McKinney, 160. When high in their range, sopranos are often singing a fundamental frequency that is higher than the first formant frequency of the vowel being sung. The result is a loss of vowel integrity that cannot be avoided.

[30] Miller, *Structure of Singing*, 153, 158.

[31] Fagnan, *Acoustical Effects*, 55–6.

[32] Quist, 27.

impact on intonation.[33] Amateur singers will often exaggerate vocal tract adjustments, exacerbating the problem.[34] By approaching intonation problems from a resonance *chiaroscuro* perspective, rather than as a pitch problem, intonation problems are reduced. Choruses that sing with *chiaroscuro* tend to have less exaggerated and more efficient vocal tract adjustments as well as more consistent resonance throughout different vowels. Both of these *chiaroscuro* characteristics contribute to improved intonation.[35]

Finally, the use of *aggiustamento* plays an important role in register unification. While an in-depth study of register blending and unification is beyond the scope of this guide, it is important to recognize that vowel modification is often a necessary component in navigating the *passaggio* areas of the voice with consistent tone quality and resonance.[36]

Application to the Choral Setting

Verbal Instructions and Terminology

Chiaroscuro, along with the plethora of possible translations and descriptions, is an excellent term to use in the choral setting. The general concept is easily grasped by choristers and can be successfully demonstrated vocally by many choral conductors. *Chiaroscuro* can be effectively used as a complete term or by breaking the word up into its composite part: *chiaro* and *oscuro*. This allows the conductor to quickly instruct the

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[33] Fagnan, *Acoustical Effects*, 57.

[34] Ibid., 59.

[35] Ibid., 57–88.

[36] McCoy, 47; Miller, *Structure of Singing*, 150, 155.

chorus regarding what aspects of tone and resonance are out of balance. Useful translations for *chiaro* include "bright," "light," and "ring." Useful *oscuro* translations include "dark," "mellow," "round," and "warm."

Resonance Imagery

Voice teachers and choral conductors often utilize an indirect method of teaching tone quality and resonance known as "resonance imagery." Such imagery relies on localized resonance sensations coupled with imaginative descriptions of airflow and breath. Common resonance imagery phrases and expressions include "placing the voice," "focusing the voice," instructions to direct air or tone to a particular part of the vocal tract, and "singing in the mask."[37] Resonance imagery, including the elements of imagination and sensation that accompany it, is an important tool for conductors when teaching vocal tract manipulation and *chiaroscuro* resonance.

The problem with resonance imagery is that localized sensation of resonance, such as "singing in the mask," can be misunderstood as the source of the resonance.[38] The mask is not the resonance source; rather the sensation of resonance in the mask results from a properly aligned vocal tract and glottal source working together to create a resonant tone. Such a misunderstanding may hinder the development of a resonant and *chiaroscuro* tone quality. In addition, there is always the possibility, especially in a choral setting, that students will not be able to feel some localized sensations of

[37] Stark, 51.

[38] Miller, *Structure of Singing*, 56–7.

resonance.[39] This can lead to frustration and confusion. Garcia recognized these problems of the resonant imagery approach. In his teaching, Garcia would abandon resonance imagery in favor of explanations and instructions rooted in scientific fact.[40]

However, providing too much technical or scientific information can also be problematic. Attempting to directly control and manipulate resonance in the vocal tract may cause unwanted muscular involvement and tension.[41] In addition, proper understanding of resonance requires complex anatomical, acoustical, and scientific information that may be difficult to effectively teach in a choral setting. While he did not use resonance imagery, Garcia was also careful not to burden students with too much anatomy and science.[42]

The ideal approach to describing appropriate resonance is a combination of resonance imagery and scientific explanation.[43] Choruses should have a basic scientific understanding of resonance to ensure that resonance imagery is correctly understood as imagery. Much can be gained by instructing a chorus to "sing in the mask" as long as singers understand that resonance sensations in the mask are achieved by proper vocal tract alignment combined with firm phonation. It should also be communicated that every singer will feel specific resonance sensations differently. The use of multiple images and sensations of resonance, especially in a choral setting, is helpful. Francesco

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[39] Miller, *Structure of Singing*, 61.

[40] Stark, 51–2.

[41] Quist, 13.

[42] Coffin, 30.

[43] Quist, 13.

and Giovanni Battista Lamperti both recognized the benefits and disadvantages of resonance imagery. They used resonance imagery, but were careful to make sure that this imagery was identified as illusory and not based in anatomical or acoustical reality.[44] "Always remember that what 'goes on' above the throat are illusions no matter how real they may feel and sound. At the same time, observe that these illusions of the senses of touch and hearing are the only proofs that the throat is functioning normally and efficiently."[45]

Gola Aperta (Open Throat)

The phrase "open the throat" is commonly used in the voice studio and choral rehearsal. Singers must have an accurate understanding and appropriate experience of an "open throat" if the concept is to have pedagogical success. As terms, both *gola aperta* and "open throat" are useful and appropriate for choral ensembles.

There are several methods of achieving *gola aperta*. Miller advocates a sense of openness that can be achieved by breathing as if one were inhaling a pleasant fragrance or smelling flowers.[46] McKinney suggests using the "beginning-of-a-yawn position" because it will place the larynx in comfortable low position, increase pharyngeal space, lift the soft palate, and relaxes the muscles of the articulators.[47] Miller, however, finds that the use of a yawn to achieve *gola aperta* may lead to unwanted tension and

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[44] Stark, 53.

[45] Brown, 39.

[46] Miller, *Structure of Singing*, 59–60.

[47] McKinney, 131.

inappropriate pharyngeal distention.[48] The difficulty of monitoring the yawn with multiple singers simultaneously makes the yawn technique questionable in a choral situation.

Another verbal instruction for *gola aperta* that may be useful for choral ensembles is taking all breaths through the vowel [a]. This will open the throat and lower the larynx. Breathing through [a] is also easy to accomplish and practice during repertoire rehearsal. The disadvantage to this approach is that it may lead to vowel distortion in amateur singers. Choral ensembles are often taught to breathe in the shape of the vowel that they are about to sing. This helps ensure that the vocal tract is set up for the proper vowel prior to phonation, and is not adjusted during phonation. Breathing through the vowel [a] is contrary to this approach and requires the development of deliberate and quick vocal tract alignments toward the sung vowel during the prephonatory set immediately prior to phonation.

Formant Tuning and *Aggiustamento*

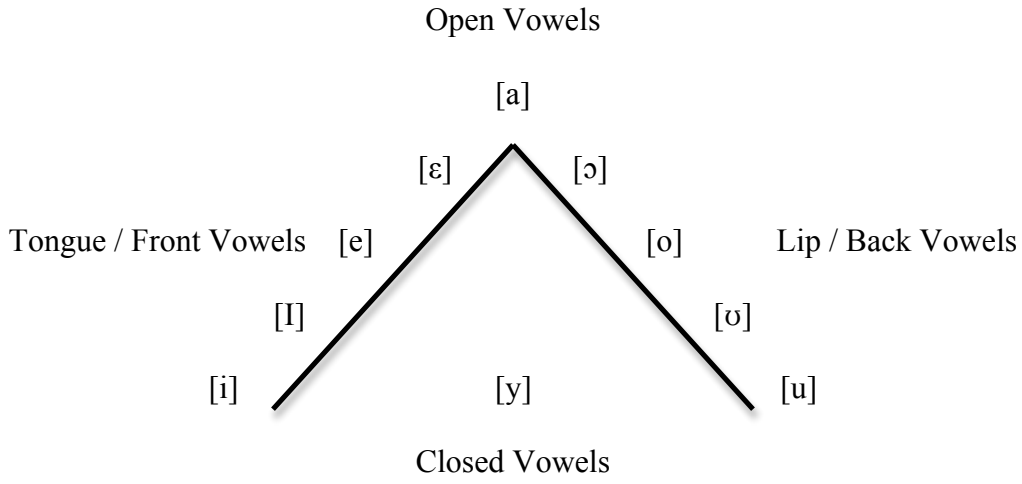
As discussed above, there are two methods of formant tuning. The first involves specific vocal tract modifications that have a direct influence on formant location. The use of this approach is questionable in a choral situation because it requires a comprehensive and thorough understanding of vowel formants and the vocal tract. Such an understanding is difficult to teach in a choral setting. In addition, because every individual's vocal tract is unique, each singer within a chorus will need to use different vocal tract modifications to achieve formant tuning and *chiaroscuro.* There is no one modification choral conductors can prescribe that will be appropriate and effective for all.

[48] Miller, *Structure of Singing*, 58–60.

Vowel modification, or *aggiustamento*, is the second method of formant tuning. This approach can be applied to the choral setting with success. A proper understanding and experience of *chiaroscuro* resonance by the chorus is a prerequisite for successful vowel modification. Chorus members must know what type of sound they are ultimately trying to create.

In addition, singers must have an accurate knowledge of vowels, vowel formation, and especially the relationship of one vowel to another. The use of a vowel chart, such as the one included in figure 5.1, can be of enormous help for singers and should be referenced throughout the rehearsal process. Ideally, it should be posted in the rehearsal space and visible for all members of the choral ensemble. This information will help students understand what vowels to modify to or borrow from. In general, vowels can be modified "one or two positions more closed or open without significantly impacting intelligibility."[49]

Figure 5.1. Sample vowel chart.



[49] McCoy, 47.

Finally, the successful and efficient use of *aggiustamento* in a choral ensemble requires conductors that empower the chorus to make vowel adjustments on their own in the search for consistent *chiaroscuro* resonance. *Aggiustamento* is different for every singer because each singer's vocal tract is unique. There is no one answer to vowel modification. Each singer and/or section will need to modify vowels differently to achieve the same tonal result. Repertoire issues such as range, tessitura, registration, text, and desired choral aesthetic also makes each instance of vowel modification unique. As such, it is impossible for the conductor to attend to each necessary vowel modification. Conductors should teach the basic concept of *aggiustamento* and then create an atmosphere of freedom, experimentation, and safety within a choral rehearsal. Individual singers should be given the personal freedom to try different solutions in their own voice without fear of failure. Conductors can and should provide feedback so singers will know if their modifications are or are not successful.

Vowel modification is neither exact nor easy. It is different from the vowel unification approach often encouraged by choral conductors. *Aggiustamento* seeks consistent tone quality and color instead of a unified vowel. Vowels will be different throughout the ensemble as *chiaroscuro* is developed and utilized. Conductors can choose between vowel modification and vowel unification depending on the specifics of repertoire, preferred aesthetic, or performance venue. There is also an important balance that must always be maintained between modification and unification. Overly or improperly modified vowels may cut through the choral texture inappropriately, disrupt diction, or sound affected. Too much emphasis on vowel unification will hinder the development of a resonant *chiaroscuro* tone.

Blend and Unification

The creation of a homogenous sound is of primary importance for most choral ensembles. This homogenous sound is often described as "blend." Many conductors achieve blend by asking everyone in the ensemble to create the same sound in terms of vowel formation, tone color, and resonance. Blend often has a pejorative connotation, as it may require that singers remove individuality from the sound they are producing. As a consequence, individual singers, especially trained singers, may find choral singing to be unfulfilling and the overall vocal color and tone of the ensemble will be diminished.[50]

The term "unification" avoids many of the pejorative aspects of blend. The concept of unification is not only semantically different from blend, but also conceptually and tonally different. By asking choral members to create a unified sound, the conductor allows them to sing in a resonant manner with a balanced *chiaroscuro* tone. Unification achieves homogeneity through the creation of consistent ensemble resonance and *chiaroscuro* tone.[51] Seating formation and voice matching are of critical importance for ensembles that adopt both the terminology and philosophy of unification. The creation of a unified choral tone while singing with resonance requires that singers be placed next to acoustically compatible voices.

[50] Fagnan, *Acoustical Effects*, 54.

[51] Ibid., 56.

Resonance Balancing Exercises

Resonance balancing, or resonance coupling, combines resonance in both the pharyngeal and oral cavities to achieve a balanced *chiaroscuro* tone.[52] The use of nasal consonants, [m], [n], and [ŋ], during vocalization can useful in achieving efficient and balanced resonance.[53]

- The exercises in figures 5.2, 5.3, and 5.4 combine the nasal consonant [m] with various vowels. Each exercise should begin with a breath that achieves *gola aperta.* The hum [m] should be produced without tension throughout the vocal tract. The other nasal consonants, [n] and [ŋ], can be substituted for [m]. Other vowels may also be substituted in figures 5.3 and 5.4.

  Figure 5.2. Resonance balancing exercise.[54]

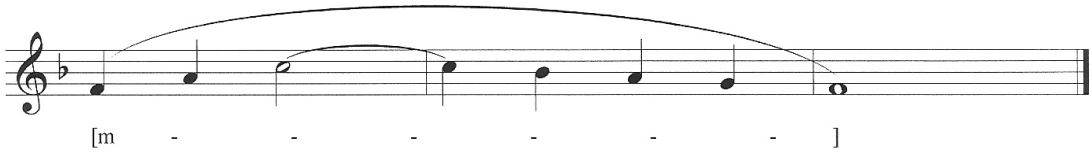
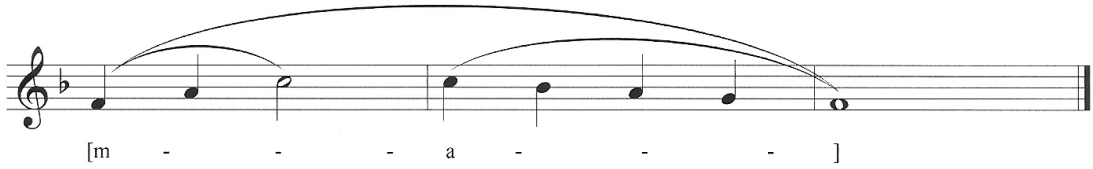


  Figure 5.3. Resonance balancing exercise.[55]



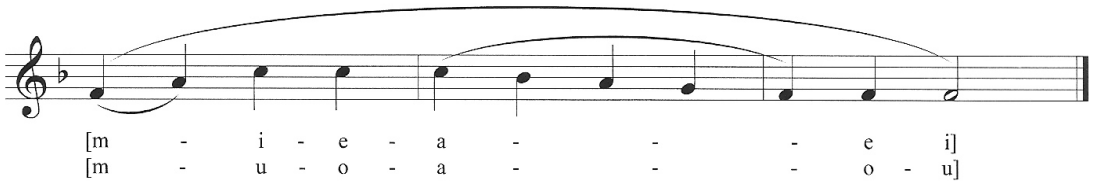
[52] Miller, *Structure of Singing*, 61.

[53] Nesheim, 14.

[54] *Source:* Miller, *Structure of Singing*, exercise 4.2.

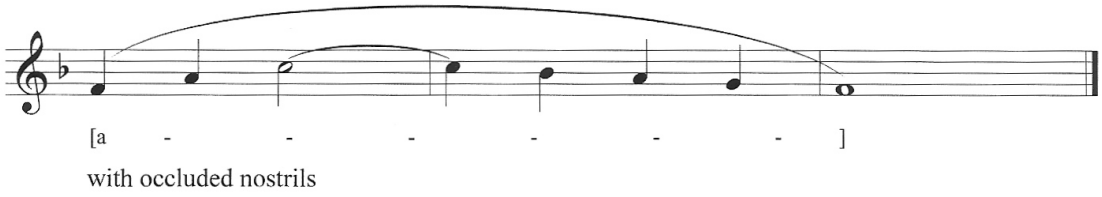
[55] *Source:* Ibid., exercise 4.3.

Figure 5.4. Resonance balancing exercise.[56]



- The use of nasal consonants can lead to unwanted nasality in the tone. By occluding the nostrils, lightly pinching the nostrils closed, during phonation singers will immediately identify whether or not they are producing a nasal tone quality. In addition, the exercise in figure 5.5 is "an excellent device for achieving proper resonance balance between the mouth and the pharynx."[57]

Figure 5.5. Resonance balancing exercise with occluded nostrils.[58]



Chiaroscuro Vowel Exercises

Conductors can take advantage of the inherent characteristics of different vowels to build *chiaroscuro* resonance. The [i] vowel, for example, has a high frequency F2 and can be labeled a bright or *chiaro* vowel.[59] The vowels [u] and [o] have low frequency F2's and can be labeled as *oscuro* vowels. While [u] is the most closed of the back

[56] *Source:* Adapted from Ibid., exercise 4.4.

[57] Ibid., 63.

[58] *Source:* Miller, *Structure of Singing*, exercise 4.5.

[59] McCoy, 44; Fagnan, *Acoustical Effects*, 59–60.

vowels, [o] has a lower F2 and has been identified by some singers as the darkest of the cardinal vowels.[60] Both are useful for developing *chiaroscuro*.

- Exercises using the vowel [i] can develop a *chiaro* tone.
- Exercises using the vowels [u] and [o] can develop an *oscuro* tone.
- Exercises can alternate between the vowels [i] and [u] or [o]. Singers should be encouraged to borrow characteristics from each vowel into the overall tone. For example the bright character of [i] should be applied to the darkness of [u] and [o]. The exercises in figures 5.6, 5.7, and 5.8 are examples of possible alternations between [i] and [u].

Figure 5.6. *Chiaroscuro* vowel exercise.

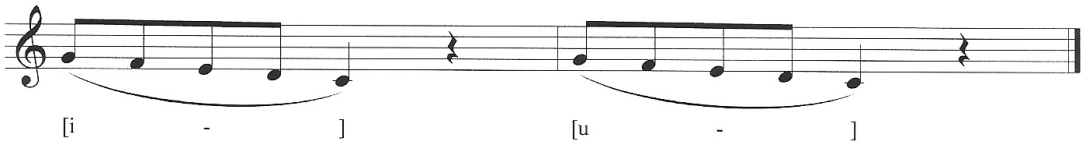


Figure 5.7. *Chiaroscuro* vowel exercise.

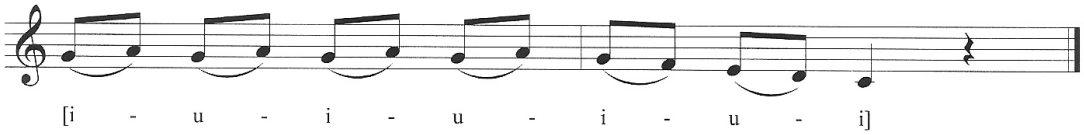
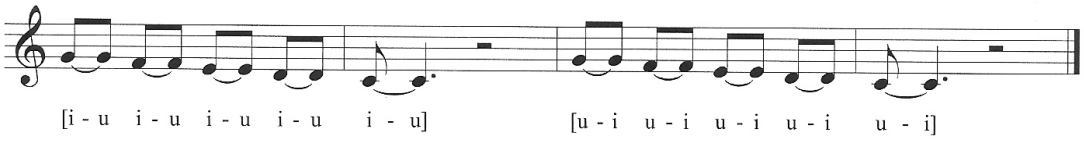


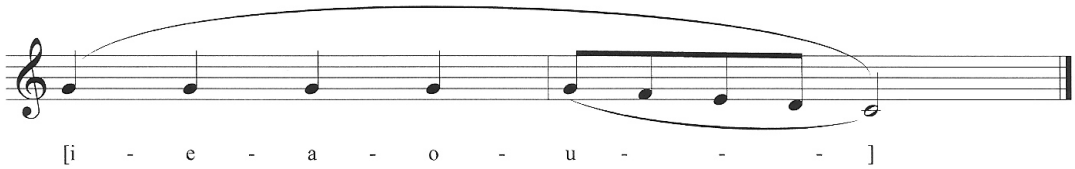
Figure 5.8. *Chiaroscuro* vowel exercise.



[60] McCoy, 44; Fagnan, *Acoustical Effects*, 59–60.

- Exercises using the mixed vowel [y] can be especially useful as it contains elements of both *chiaro* [i] and *oscuro* [u].
- Exercises that use vowels in sequence, beginning and ending with [i] can help develop *chiaro* tone in all the vowels. Garcia recognized the benefits of such exercises, "The Italian [i] being the most ringing vowel… Passing from a ringing vowel to a dull vowel on the same note may also be recommended to improve the latter."[61] An example of a particular vowel sequence is [i]-[e]-[a]-[o]-[a]-[e]-[i].[62]
- Exercises that use vowels in sequence, beginning and ending with [o] or [u] can help develop *oscuro* tone in all the vowels. An example of a particular vowel sequence is [o]-[a]-[e]-[i]-[e]-[a]-[o].[63]
- Exercises that begin on a *chiaro* vowel and end on an *oscuro* vowel can help bring *chiaroscuro* resonance to all vowels.

  Figure 5.9. *Chiaroscuro* vowel exercise.



***Aggiustamento* Exercises**

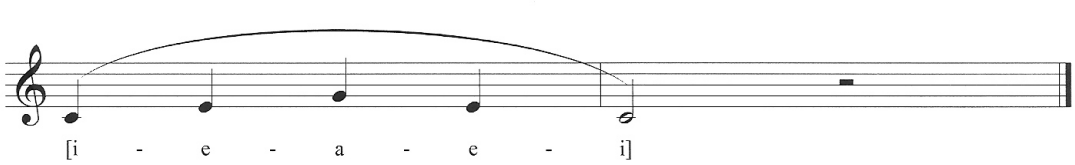
- The exercise in figure 5.10 helps teach appropriate vowel adjustment for *aggiustamento*; as pitch rises, the vowel opens.

[61] Garcia, *Hints on Singing*, 15.

[62] Fagnan, *Chiaroscuro Resonance Balancing*, 60.

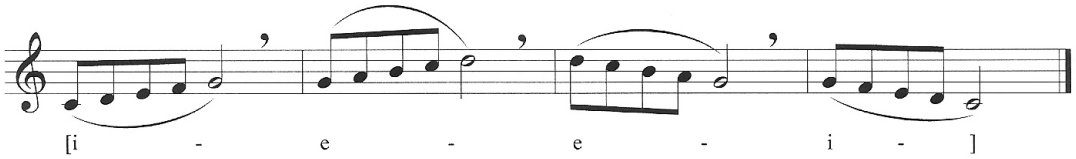
[63] Ibid.

Figure 5.10. *Aggiustamento* Exercise.



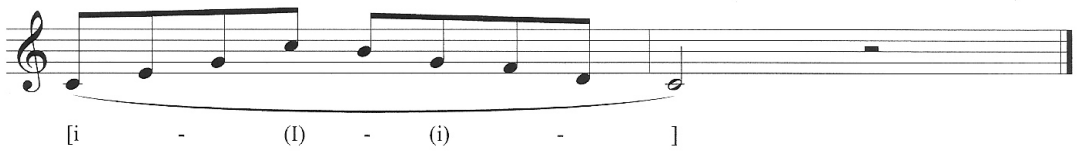
- The exercise in figure 5.11 also helps teach appropriate vowel adjustment for *aggiustamento*. Unlike the previous exercise, the vowel is only modified one position more open, requiring the singer to maintain a more consistent vowel shape.

Figure 5.11. *Aggiustamento* exercise.



- The exercise in figure 5.12 requires the singer to adjust vowels slightly in order to maintain resonance. There should be no definite or abrupt change in the vowel, merely a slight adjustment to a more open position as pitch ascends.

Figure 5.12. *Aggiustamento* exercise.



Rehearsal Strategies and Techniques

As with *coup de la glotte* and firm phonation, the most important function of the conductor in the development of *chiaroscuro* resonance in the choral rehearsal is consistent vigilance. The conductor must continually monitor and assess the sound of the

ensemble to ensure that proper tone and resonance are used during the rehearsal of repertoire. Conductors can refer to warm-up exercises as well as remind the chorus of *chiaroscuro* using appropriate terminology previously discussed.

The vowels [i], [u], [o], and [y] are not only beneficial in warm-up exercises, they can also be used effectively to rehearse repertoire. The substitution of text with a vowel allows for the application of consistent *chiaroscuro* resonance to the repertoire. Once the piece can be sung on a vowel with good tone, the text can be added back while minimizing loss of resonance. Choral directors can also instruct their ensemble to remove all consonants from the text and sing repertoire only on the printed vowel. This will require that singers quickly and efficiently transition from one vowel to the next, while maintaining the desired *chiaroscuro* tone.

In the pursuit of good diction, amateur singers may exaggerate vowel tract movements when changing from one vowel to another or when pronouncing consonants.[64] Unnecessary or exaggerated vocal tract changes hinder consistent *chiaroscuro* resonance. Specifically, untrained singers often engage the jaw inappropriately. Conductors can ask chorus members to gently place one finger horizontally across the lower jaw to monitor this movement while singing. The goal is not to prohibit necessary jaw movement, but rather to call attention to any excess motion. This will help singers make efficient vocal tract changes and will result in more consistent resonance.

[64] Fagnan, *Acoustical Effects*, 59.

A lowered larynx is an important part of *oscuro* tone quality.[65] As mentioned in chapter four, both trained and untrained singers often allow the larynx to rise inappropriately during choral rehearsals. The vocal sigh can be an effective tool to lower the larynx into an efficient and resonant position.

Conclusion

Chiaroscuro tone quality is the result of vocal tract amplification and attenuation of glottal source sound to create a tone quality that features both bright and dark characteristics simultaneously. Singers can modify the vocal tract in various ways to assist in proper harmonic filtering and the production of a resonant *chiaroscuro* tone. The result is a high quality, flexible, and resonant tone that improves ensemble diction, intonation, and choral unification of sound.

[65] Stark, 36.

Chapter 6

Conclusion

Appoggio, coup de la glotte, and *chiaroscuro* are *bel canto* techniques by which choral ensembles can improve their singing on a technical and expressive level. *Appoggio* is the means by which an appropriate amount of subglottal air pressure for efficient phonation is supplied to the larynx. This air pressure is then transformed into sound through *coup de la glotte* and firm phonation. The vocal tract manipulates this sound, amplifying some harmonics and attenuating others, to create *chiaroscuro* resonance.

Appoggio, coup de la glotte, and *chiaroscuro* are not the only *bel canto* techniques that may have choral application and benefits. Future studies should look into the application of *bel canto* teaching as it relates to register blending and unification. While issues of *aggiustamento* and *chiaroscuro* are closely related to register blending, the historic *bel canto* pedagogues and their contemporary counterparts have a great deal to teach choruses about negotiating register transitions and using the different characteristics of each register to maximize vocal potential and musical expressiveness.

Solfeggio use is common in many choral ensembles as a tool for teaching musical notation and literacy. However, the use of *solfeggio* by *bel canto* pedagogues went beyond literacy to vocal technique. *Solfeggio* was used to unite articulation of consonants with vowel sounds.[1] The possibility of effectively and simultaneously teaching vocal technique and musical literacy in the choral rehearsal through *solfeggio* deserves further study.

[1] Coffin, 2; Francesco Lamperti, 20.

Finally, the *bel canto* emphasis on agility can have great benefits for choral ensembles. The process of developing a flexible and responsive vocal mechanism can greatly increase the technical ability and vocal sound of the chorus. It addition, agility training provides additional expressive tools for the singing of repertoire, such as ornamentation and effective coloratura.

It is hoped that this guide will be an effective tool that will assist choral conductors and ensembles in using *bel canto* methodology to achieve their musical, vocal, and expressive goals. Ensembles that use *bel canto* methodology, specifically the techniques of *appoggio, coup de la glotte*, and *chiaroscuro*, will benefit from improved intonation, resonance, tone quality, and unification of sound. This allows for a more flexible sound capable of increased diversity, artistry, and expressiveness of choral tone. These benefits will result in faster and more effective rehearsals as well as the ability to sing a wide range of repertoire.

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