



Bridging the Gap: Musical and Pedagogical Terms for Voice Care Professionals

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Accepted: 30 June 2023 / Published online: 2 August 2023

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Abstract

Purpose of Review This paper outlines musical and pedagogical terms to improve communication between the voice team and singer during a medical evaluation.

Recent Findings Terms used in this paper are informed by known current principles of voice production.

Summary Voice science provides a pedagogical framework through five voice systems: respiration, phonation, registration, articulation, and resonance; this same framework creates a bridge between singers and medical voice professionals by providing shared common language and science-informed definitions.

Keywords Pedagogy · Musical terms · Voice · Classical · Contemporary · Genres

Introduction

A multidisciplinary approach to care for the performing voice has become the gold standard across the fields of medicine and music. In the field of voice, there has been a paradigm shift in recent years for teachers of singing to become educated on principles of voice production and medical terminology. This has enabled the field to move forward using functional knowledge of how the voice actually works rather than relying solely on empirical knowledge largely based on imagery and conjecture. This shift in approach to teaching singing has profoundly influenced voice pedagogy and has further advanced the ability of singing teachers and their students to communicate more effectively with a medical voice team when the need arises.

Medical voice teams less familiar with the language of singing musicians would benefit from a more in-depth understanding of terminology used by their performance-based clients. This paper presents two principal components for medical voice care professionals' awareness. The first is to highlight the terminology of functional language often used during voice pedagogy courses that filters down (often over-simplified) into the singing lesson. Since much

of the discourse is influenced by the field of voice science, it should adapt easily to the language of voice medicine with one caveat; within the voice teaching community, the terms used on this topic are currently fraught with semantic issues. There is no resolution to the semantic issues at this time, but reference to those challenges will be made in this paper when useful. The second component of this paper is musical terms used by singers, some of which are further divided into Western classical or contemporary genres. The author's intent is to provide the medical professional a bridge for better communication with their voice patients.

Twenty-first Century Voice Pedagogy

Voice science provides a pedagogical framework through five voice systems: respiration, phonation, registration, articulation, and resonance. For a highly trained teacher of singing, knowledge of these principles of voice production can become an organizational template from which to teach. The template provides an approach to understanding both the independence and interdependence of these systems enabling teachers of singing a foundation from which to devise strategies for training a functional singing technique [1•]. This same framework creates a bridge between singers and medical voice professionals by providing shared common language and science-informed definitions.

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Respiration

There is an extensive history of voice pedagogues debating the “correct” breathing technique for singing. The earliest singing treatises are traced back to Pier Francesco Tosi’s text *Opinioni d’ cantori antichi e moderni* (1723) and Giovanni Battista Mancini’s *Practical Reflections on the Figurative Art of Singing* (1776). Much of the early writings are nonscientific and based on the author’s methodology. It must be noted these early writings were based on the classical genre for obvious reasons pertinent to the historical time period. However, since deliberations still exist, a more science-informed approach found in modern pedagogy books has done less than one might hope to bring the teaching community to a concrete understanding and agreement.

Common terms used in discussions regarding breathing for singing are *appoggio*, breath support, breath management, and balanced breathing. Other phrases include “belly breathing,” “singing from your diaphragm,” or “breath from your diaphragm.” Most well-trained voice pedagogues have largely dispensed with the latter three; however, these concepts are still sometimes found in choral communities and teachers anchored in a traditional approach rather than a modern science-informed approach to singing.

In 1977, pedagogue Richard Miller wrote an important treatise examining different national schools of thought regarding breathing. Miller observed more than 700 voice lessons in conservatories in England, France, German, and Italy, to compare the nationalistic traditions found in each country. It was Miller’s observation that the *Appoggio* breathing technique, from the Italian School, is the most efficient [2].

What is *Appoggio* breathing technique? *Appoggio* comes from the Italian word *appoggiare*, which means “to lean on.” Historically, the term emanates from early pedagogical writings of the eighteenth century. There are numerous discussions about what exactly one is “leaning on” in a singer’s breathing technique. In modern times, it has largely meant balanced breathing. In singing terms, this translates to an approach to breath management that requires coordination between thoracic and abdominal breathing to manage subglottic pressure and airflow through muscle antagonism.

Although most teachers of singing agree that balanced breath management (*Appoggio*) is an important key to efficient singing, there remain a variety of approaches to teaching this without a unified understanding. Furthermore, there are critical differences to balanced breath management techniques between Western classical and contemporary singing genres.

Phonation

Important terminology related to the system of phonation is based on vocal onsets, extended vocal techniques, and vibrato.

Vocal onsets (patterns of vocal fold vibrations) are what we refer to as the beginning of the singing tone. More specifically, the sequencing of the breath and vocal fold adduction as they initiate sound. The three primary onsets traditionally discussed are glottal (strong vocal fold adduction precedes adequate airflow resulting in a hard onset), aspirate (airflow occurs prior to adductory muscle activity resulting in a breathy sound), and balanced (airflow and muscle activity occur simultaneously) [3]. In the case of a hard glottal onset, this might result in pressed phonation or what can become a strident or edgy timbre. This may become functionally or pathologically problematic or be considered an undesirable sound quality with some noted exceptions in contemporary music landscapes. An aspirate onset will often lead to breathy phonation (airiness in the sound). In contemporary genres, glottal or aspirate onsets might be preferred at times for a performative effect. Contemporary singers might also use other onsets such as vocal fry, grit, or growl. These qualities will be addressed later. The challenge for a teacher of singing working with contemporary genres is to monitor for potential vocal issues when their singers make certain extended, aesthetic choices. Western classical singers must essentially master a balanced onset.

Extended vocal techniques require singers to make non-traditional sounds for contemporary *avante-garde* vocal art music. Some prominent twentieth century composers who wrote this style of music are John Cage, Arnold Schoenberg, and Luciano Berio. A few examples of extended vocal techniques are buccal speech, inhaled singing, multiphonics, and ululation. Buccal speech is alaryngeal speech using the inner cheek and air stored there to make sound. This is often called “Donald Duck talk” having been made famous by the Disney character. Inhaled singing is singing while inhaling. Multiphonics refers to more than one pitch produced at the same time. Voice pathologists would call this diplophonia, only in this case it is intentionally produced. Ululation is a long, wavering high-pitched vocal sound resembling a howl with a trilling quality used to express grief or joy. Ululation is produced by a rapid back-and-forth of the tongue. While there are sometimes voice health concerns about producing sounds for extended vocal techniques, singers can train to produce them in a healthy and efficient manner.

Vibrato is a fluctuation of the sung pitch used for expressive and stylistic purposes. There are two aspects of vibrato: extent and rate. Extent refers to the amount of pitch variation, in other words, how far above and below

the central pitch the voice's frequency extends. Typically, the extent is a quarter tone above and below the mean frequency. Rate is the number of pitch oscillations that occur each second [4]. A typical value for what is considered an even vibrato rate is 4.5–6.5 Hz [5•].

Wobble, bleat, and flutter are terms used to describe vibrato that is perceived to be less than functionally ideal. Wobble is the term used to describe a problematic vibrato with a wider extent and a slower than desirable rate (2–4 Hz). This type of compromised vibrato can be the result of a flawed singing technique, a pathology, or an aging voice. Bleat and flutter are terms used synonymously to describe a vibrato with a narrower extent and rate that is faster than desired, generally up to 8 Hz [6].

Different genres have different aesthetic preferences regarding vibrato. Western Classical traditions of the Baroque and Renaissance genres tend to employ minimal vibrato, whereas operas from the late eighteenth century forward encourage an even, more robust vibrato. In contemporary genres such as jazz or music theater, a common style is to straight-tone (no perceptible extent or rate of pitch) or to delay the vibrato for expressive purposes.

In the context of this paper, it is important to note that a conversation about vibrato stimulates a great deal of debate in the singing community, especially between voice teachers and choral directors. Some of that discussion is centered around the vocal health concerns when singers are required to sing straight tone for an extended period of time and sustained in a higher tessitura (range of notes). This debate is outside the scope of this article but an important awareness when evaluating singers with a pathology or injury, especially when the singer comes from a choral background.

Registration

The accepted scientific definition of register is a series of adjacent pitches that are produced in the same physiological manner and that share the same essential timbre [7]. Choosing terminology to discuss the system of registration is a challenging endeavor in the world of voice pedagogy. McCoy aptly relates it to “a semantic minefield, requiring one to tiptoe through diverse, competing terminology...”[5•]. What is critical to the understanding of registration is that it is both a laryngeal source and an acoustic occurrence that cannot be easily separated [3].

The two primary registers in singing have traditionally been labeled the chest register (mode 1) and head register (mode 2). Physiologically, since the cricothyroid (CT) and thyroarytenoid (TA) muscles are the primary intrinsic muscles that determine vocal fold configuration, they are the key to laryngeal source registration. In fact, for a brief period in historical pedagogy, the chest register was

labeled TA-dominant and the head register was labeled CT-dominant [7]. Other labels for chest register might be modal voice, *voce di petto*, heavy mechanism, or thick folds. The head register might also be referred to as *falsetto*, *voce di testa*, light mechanism, or thin folds. It is essential to understand that voice registration is now considered to be both a laryngeal source and acoustic occurrence that reside on a continuum of adjustments. Within the vibrational mode (laryngeal source) of the vocal folds, the chest registration equals high closed quotient, increased vertical phase difference, and high amplitude of vibration. This is in contrast to head registration which is high open quotient, reduced vertical phase difference, and low amplitude of vibration [3].

In recent decades, teachers of singing have come to recognize that there are differences in technique used for Western classical genres versus the wide array of contemporary music. New terminology has come with this recognition. Labels such as belt or mix commonly used among contemporary singers can create much debate among voice pedagogues. However, if one accepts that these are labels used to describe an aesthetic choice within the chest register (mode 1) and not separate modes of vibration the issue is simplified. This author designed a slide rule (Fig. 1) to help simplify, within the context of a singing lesson, “an understanding of the continuum of laryngeal source and resonance strategy choices while singing. This visual representation demonstrates a multitude of aesthetic possibilities within a discussion of registration. The orientation of the slide rules represents the interdependence of the two components of registration: resonance strategy and laryngeal source [1•].”

It is helpful to understand the broad spectrum of vocal aesthetics that exist on the vocal registration continuum.

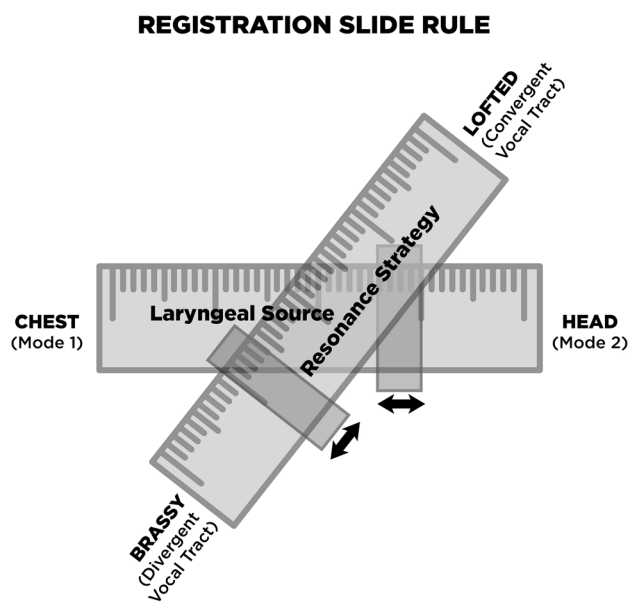


Fig. 1 Image of registration slide rule

An assigned male at birth (AMAB) who performs Western classical music predominantly sings in chest register (mode 1). The exception is being a countertenor who sings almost exclusively in head register (mode 2). An example of a countertenor is Andreas Scholl. An AMAB singing contemporary music, such as R&B or pop, will often sing in chest register (mode 1) while also frequently employing some head register (mode 2) for emotive effect. Chris Martin from Coldplay is an example of a singer who transitions between the two registers seamlessly and to significant effect. The Bee Gees, popular in the 1970s, are an example of a contemporary group who predominantly sang in head register (mode 2).

An assigned female at birth (AFAB) who performs Western classical music predominantly sings in head register (mode 2). However, there are moments in arias such as Mozart's famous *Come Scoglio* from the opera *Così fan Tutte* where the soprano might transition momentarily into chest register (mode 1) to great dramatic effect. In contrast, an AFAB in contemporary music singing jazz, R&B, or to music theater, sings mostly in chest register (mode 1). A contemporary singer such as Adele will switch momentarily to head register (mode 2). Many contemporary singers, though, sing primarily in chest register taken at a high intensity and high tessitura. This sound is labeled belt. Ethel Merman is an early example of belting on Broadway. Jennifer Hudson illustrates this aesthetic from the R&B genre. In the twenty-first century a new label super-belt came into fashion to describe a chest register sound sung at an even higher range such as Idina Menzel singing Elphaba in Stephen Schwartz's *Wicked*. Singers on Broadway who employ head register (mode 2) more frequently are Audra McDonald, Kristin Chenoweth, and Kelli O'Hara. This vocal timbre in music theatre is called legit (legitimate) and implies a singing quality in a traditional (some say classical) aesthetic.

The other two modes of vibration discussed in pedagogical circles are vocal fry (mode 0, glottal fry, pulse register) and flageolet (mode 3, whistle tone, flute register). Vocal fry is the lowest register, generally occurring 70 Hz or below, and is an extensive topic which is outside the scope of this paper. Although vocal fry is not an ideal mode of vibration for daily speech, it may be used effectively during therapeutic exercises, to reset the voice after a heavy vocal load, and for stylistic or emotive effect within a contemporary aesthetic. Flageolet is the highest register and begins in the AFAB around D6 (1174.6 Hz) extending in range upward from there. In contemporary music, Mariah Carey and Ariana Grande frequently employ such whistle tones when performing at the top of their range.

Passaggio is an Italian term associated with Western Classical vocal music and means "passage." This term is used to identify a transition between the head and chest registers. Sometimes these transition areas are called a break or register changes. It is generally agreed that all voices have

two *passaggi*, which are labeled *primo* (first) and *secondo* (second) *passaggio*. Historically, much has been written concerning the exact pitch or pitches on which these registration events occur; there is still no consensus. Register changes can happen voluntarily or involuntarily depending on the genre and desired aesthetic. It may take some time for those singers aspiring to achieve a seamless register change. This change is a complicated vocal process that includes adjustments between airflow, laryngeal source, and resonance strategy to achieve a smooth transition.

Articulation

Knowledge of the structural interconnections between the articulation system and the larynx is important in training singers. The challenge is to develop independence between the articulatory structures to achieve maximum vocal efficiency. Because it is easy to develop a singing technique with maladaptive behaviors, cognitive cueing of the active articulators is critical. Furthermore, muscles within the articulatory system contribute to vocal tract shaping and, therefore, the acoustic landscape [1•]. In this context, the terms vowel modification or vowel migration are important descriptors. To modify or migrate a vowel simply means to adjust or reshape the intended sung vowel. In essence, it is formant tuning; a strategy to enhance resonance for vocal efficiency. For example, a Western classical AFAB singer will modify vowels toward [a] as the pitch ascends to G5 (784 Hz) and above in order to have a unified tone quality. There are additional vocal terms used to guide singers toward efficient articulatory engagement which won't be addressed in this paper because they are not useful to an MD in this context.

Resonance

Resonance is generally defined as the enhancement or amplification of sound (specific frequencies) by supplementary vibration (something beyond the original sound source). Resonance is what creates the individuality of the human voice. Singers use specific words to describe the desired sounds; however, this can become complicated as we again enter a semantic minefield.

Even though there are a variety of differences between Western classical and contemporary styles of music, both in production and aesthetics, the quality of ring in the voice is a unifying concept. The goal of voice therapy is to help clients achieve resonant voice. Through qualitative research, it is known that the perception of resonance (vocal ring) means that one is achieving high vocal efficiency with low effort. In much of singing, vocal ring is

the goal as it indicates significant high frequency harmonic content; in other words, efficiency during high intensity singing. There is a broad spectrum when considering contemporary styles since genres such as jazz or pop music often have a desired aesthetic of airiness for expressive purposes while high intensity singing such as opera or belting requires high vocal efficiency with low effort. The presence of vocal ring can be a road map to achieving the desired vocal outcome.

Other words that reference vocal ring are *squillo* (an Italian term associated with Western classical singers), mask resonance/forward placement (referencing a sensation of sympathetic vibrations in the facial tissue), brass/brightness (subjective descriptors of the vocal quality), oral twang (common nomenclature to describe brassy resonance or belting in contemporary styles), and singer's formant cluster (a unique resonance strategy associated with vocal ring in Western classical singing with a harmonic peak created by a clustering of acoustic energy of the third, fourth, and fifth formants at a frequency range of 2500–3500 Hz that gives extra amplification of the voice) [1•].

Across generations, terminology has developed among the singing community to describe vocal sound. These subjective terms streamline discussions around vocal quality. Chiaroscuro, dating back to the Renaissance period of art, has come to denote the ideal of vocal sound in Western classical singing. Chiaroscuro literally means “bright-dark” and refers to the balance of bright and dark in a singer's vocal timbre. The idea for a Western classical singer is to have a balance of both warmth and ring in the voice.

Other words on the “oscuro” continuum of sound besides dark are back, warm, lofted, or wolfy (wolfy implies too much darkness and would be considered a vocal fault). There is an unfortunate tradition in Western classical singing of encouraging a depressed larynx to achieve oscuro or more warmth in the timbre. However, singers must learn how to add warmth in the voice without depressing the larynx too much or negatively engaging the tongue to achieve an extreme lowered laryngeal position. Some of this is subjective. On the “chiaro” or bright end of the continuum, singers might use words such as forward, brassy, or even nasal (hypernasal generally not being a desired quality). Much of the aesthetic outcome and nomenclature depends on the singer's preferred musical genre. Returning to the registration slide rule (Fig. 1), there is a visual representation of the resonance continuum from brassy resonance (shortened vocal tract, divergent mouth shape/megaphone, narrow pharynx, neutral-high laryngeal position) to a lofted resonance (lengthened vocal tract, convergent mouth shape/inverted-megaphone, wider

pharyngeal space, and neutral-low laryngeal position). Resonant outcomes reside on this continuum.

Other Terms from Western Classical Music

Any discussion of Western classical music will likely include the following terms.

Fach is a term in classical operatic singing used to classify one's voice type according to the color and range of the voice. The singer's *fach* determines which operatic roles would be sung. The *Fach* system has twenty-nine categories that are subcategories of the familiar soprano, tenor, baritone, and bass. A few examples are soubrette, dramatic coloratura soprano, heldentenor, and basso buffo.

Tessitura refers to the range of notes in which a song primarily lies or stays in. It can also refer to the range of notes a singer is most comfortable sustaining over a period of time. *Tessitura* is different than range, which refers to the notes from top to bottom of a song or the range of a singer's voice.

Marking the voice can be an important practice during the rehearsal period. It means to not sing “full voice.” The singer will “mark the voice” in an effort to avoid potential voice fatigue, especially when ill or when there are excessive rehearsals prior to an upcoming performance. There are mixed opinions about this practice. To properly mark the voice requires training so that it is achieved without maladaptive vocal behaviors. Some contend that with a consistent singing technique marking should not be necessary.

Other Terms from Contemporary Music

Back phrasing is a stylistic technique used in R&B, hip-hop, pop music, and other contemporary genres. It is an approach to phrasing that creates a musical tension by delaying the anticipated rhythmic structure. In other words, singing behind the beat.

Back beating is when the rhythm sound emphasizes beats 2 and 4 of the music phrase and is found in many contemporary styles of music.

Grit and *growl* are terms found in contemporary singing to define distortion or “noise” in the voice. They are examples of extended vocal technique and require careful training to reduce the potential for maladaptive vocal behaviors.

IEM refers to an in-ear monitor that is used by musicians to hear a personal mix of vocals and the accompanying

instrumentation while performing. Because they fit snugly in the ear, IEMs block out external noise creating a more immersive audio experience for the singer.

Auto-tune for better or worse, is a digital sound processing device that measures and alters pitch in music. It has become entrenched in contemporary commercial music.

Conclusion

Like most fields, the field of singing necessarily employs standard nomenclature which is essential for discussion within the industry and between singers and teachers of singing. It is also fraught with debate as the knowledge base expands and the associated terminology evolves over time.

When seeking medical support, singers will use a variety of descriptors to articulate their voice experience. It is the author's hope that this paper will help clarify key singing terminology for medical professionals, enhance conversations between patients and practitioners in a voice medical practice, and lead to improved patient outcomes.

Declarations

Conflict of Interest Kari Ragan receives royalties from her publication "A Systematic Approach to Voice: The Art of Studio Application" from Plural Publishing.

Human and Animal Rights This article does not contain any studies with human or animal subjects performed by any of the authors.

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