CHAPTER FOUR

VOICE TRAINING IN WESTERN MUSIC

1.1 INTRODUCTION

Western singing is distinguished above all by its volume. Singers of other cultures may have a wider range, particularly a greater upward extension; but it is doubtful that they have sung louder. Western singing is also distinguished by its concern with pure sound, with the tone quality, or timbre, and with color, with what is felt to be the sheer beauty of the voice itself. Both singers and their listeners, in Western music more than any other, have tended to lose sight of song’s roots in language and to think of singing as a purely instrumental production.

Modern Western styles of singing largely derive from the Italian Bel Canto, which had its origin in a style associated with the polyphonic music of the 16th century. Because this music expressed the significance or the moods of the text, a great range of expression was required from the singers, who, in these polyphonic works, assumed something of the function of a vocal orchestra. The art of singing accordingly evolved, to allow the singers maximum power and variety of expression.

In its physical aspect, singing has a well-defined technique that depends on the use of the lungs, which act as an air supply, or Bellows; on the larynx, which acts as a reed (instrument) or vibrator; on the chest and head cavities, which have the function of an amplifier, as the tube in a wind instrument; and on the tongue, which together with the palate, teeth, and lips articulate and impose consonants and vowels on the amplified sound. Though these four mechanisms function independently, they are nevertheless coordinated in the establishment of a vocal technique and are made to interact upon one another. During passive breathing, air is inhaled with the diaphragm while exhalation occurs without any effort. Exhalation may be aided by the abdominal, internal intercostals and lower pelvis/pelvic muscles. Inhalation is aided by
use of external intercostals, scalene and Sterno cleido mastoid muscles. The pitch is altered with the vocal cords. With the lips closed, this is called *humming*.

The sound of each individual's singing voice is entirely unique not only because of the actual shape and size of an individual's vocal cords but also due to the size and shape of the rest of that person's body. Humans have vocal folds which can loosen, tighten, or change their thickness, and over which breath can be transferred at varying pressures. The shape of the chest and neck, the position of the tongue, and the tightness of otherwise unrelated muscles can be altered. Any one of these actions results in a change in pitch, volume (loudness), timbre, or tone of the sound produced. Sound also resonates within different parts of the body and an individual's size and bone structure can affect the sound produced by an individual.

Singers can also learn to project sound in certain ways so that it resonates better within their vocal tract. This is known as *vocal resonation*. Another major influence on vocal sound and production is the function of the larynx which people can manipulate in different ways to produce different sounds. These different kinds of laryngeal function are described as different kinds of vocal registers. The primary method for singers to accomplish this is through the use of the Singer's Formant; which has been shown to match particularly well to the most sensitive part of the ear's frequency range \(^3\).

**Vocal Registration**

 *Vocal registration* refers to the system of vocal registers within the voice. A register in the voice is a particular series of tones, produced in the same vibratory pattern of the vocal folds, and possessing the same quality. Registers originate in laryngeal function. They occur because the vocal folds are capable of producing several different vibratory patterns. Each of these vibratory patterns appears within a particular range of pitches and produces certain characteristic sounds. The term "register" can be somewhat confusing as it encompasses several aspects of the voice. The term register can be used to refer to any of the following:

- A particular part of the vocal range such as the upper, middle, or lower registers.
- A resonance area such as chest voice or head voice.
• A phonatory process (phonation is the process of producing vocal sound by the vibration of the vocal folds that is in turn modified by the resonance of the vocal tract)

• A certain vocal timbre or vocal "color"

• A region of the voice which is defined or delimited by vocal breaks.

In linguistics, a register language is a language which combines tone and vowel phonation into a single phonological system. Within speech pathology the term vocal register has three constituent elements: a certain vibratory pattern of the vocal folds, a certain series of pitches, and a certain type of sound. Speech pathologists identify four vocal registers based on the physiology of laryngeal function:

1. The vocal fry register,
2. The modal register,
3. The falsetto register,
4. The whistle register.

This view is also adopted by many vocal pedagogues.

1. The Vocal Fry register

The vocal fry register (also known as pulse register, laryngealization, pulse phonation, creak, pop corning, glottal fry, glottal rattle, glottal scrape, or stroh bass) is the lowest vocal register and is produced through a loose glottal closure which will permit air to bubble through slowly with a popping or rattling sound of a very low frequency. During this phonation, the Arytenoid cartilages in the larynx are drawn together which causes the vocal folds to compress rather tightly and become relatively slack and compact. This process forms a large and irregularly vibrating mass within the vocal folds that produces the characteristic low popping or rattling sound when air passes through the glottal closure. The very lowest part of the register can extend in rare cases to 20–50 pulses per second, or about two octaves below the lower part of the modal voice register (the normal voice).
The vocal fry register has been a recognized and identifiable register only within the past few decades, although its characteristic sound was recognized much earlier. Discussion of the vocal fry or pulse register began first within the field of phonetics and speech therapy and did not enter the vocabulary of vocal music pedagogists until the early 1970s, when it was initially controversial. However, the controversy surrounding this term within vocal music has subsided as more research into the use of the vocal fry register within the context of singing ensued. In particular, vocal pedagogist Margaret Greene's videotaping of the physiological processes occurring in the body while singers were phonating in the vocal fry register offered solid evidence that this type of vocal phonation should be considered a vocal register within both a speech pathology and vocal music perspective. As with any vocal register, the vocal fry register has a unique vibratory pattern of the vocal folds, a certain series of pitches, and a certain type of sound that distinguishes it from the other vocal registers.

The vocal fry register is more widely used in singing than might at first seem apparent. Within the bass part of gospel quartet singing the practice is quite common. The croaking sound produced by male singers at the start of phrases in American country music is produced by moving from this mode to the normal voice. Additionally some Russian Anthems contain bass lines within the vocal-fry register. Within choral music, when true basses are not available, choirs often rely on singers who can "fry" the low bass notes. Singers like Tim Storms, J.D. Sumner, Mike Holcomb and various other gospel basses use this technique to sing very low tones. The current record at G-7, or 0.189 Hz is held by Tim Storms which he achieved by amplified vocal fry. Women are not usually required to sing in the vocal fry register, but are capable of doing so. Some styles of folk singing, however, do utilize the vocal fry register in the female voice. Vocal fry is also used in metal music, usually in combination with air from the diaphragm, in order to create a "growl" or "scream" which sounds aggressive and harsh.

The chief use of the vocal fry register in singing, then, is to obtain pitches of very low frequency which are not available to the singer in the modal register. Although the physiological production of the vocal fry register may be extended up into the modal register, most vocal pedagogues discourage such practices, as it may cause damage to the vocal cords. Also, many voice teachers discourage singers from using the vocal fry register frequently, as it may cause the singer to lose some of the upper notes in the modal register. In some cases, vocal pedagogues have found the
use of vocal fry therapeutically helpful to students who have trouble producing lower notes. Singers often lose their low notes or never learn to produce them because of the excessive tension of the laryngeal muscles and of the support mechanism that leads to too much breath pressure. Some overtone singing styles such as *kargyraa* use vocal techniques similar to vocal fry.

2. The Modal Register

*Modal voice* is the vocal register used most frequently in speech and singing in most languages. It is also the term used in linguistics for the most common phonation of vowels. The term "modal" refers to the resonant mode of vocal cords; that is, the optimal combination of airflow and glottal tension that yields maximum vibration.

In linguistics, modal voice is the only phonation found in the vowels and other sonorant (consonants such as *m, n, l, and r*) of most of the languages of the world, though significant minorities contrast modal voice with other phonations. Among obstruent’s (consonants such as *k, g, ch, j, s, and z*), it is very common for languages to contrast modal voice with voicelessness, though in English many supposedly voiced obstruent’s do not have modal voice in most environments.

In speech pathology, the modal register is one of the four identifiable registers within the human voice, lying above the vocal fry register and overlapping the lower part of the falsetto register. This view is also adopted by many vocal pedagogists, although some vocal pedagogists may view vocal registration differently. In singing, the modal register may also overlap part of the whistle register. A well trained singer or speaker can phonate two octaves or more within the modal register with consistent production, beauty of tone, dynamic variation, and vocal freedom. The modal register begins and ends in different places within the human voice. The placement of the modal register within the individual human voice is one of the key determining factors in identifying vocal type.
In the modal register the length, tension, and mass of the vocal folds are in a state of flux which causes the frequency of vibration of the vocal folds to vary. As pitch rises, the vocal folds increase in length and in tension and their edges become thinner. If a speaker or singer holds any of these three factors constant and interferes with their progressive state of change the laryngeal function of the voice becomes static and eventually breaks occur resulting in obvious changes in vocal quality. While some vocal pedagogists identify these breaks as register boundaries or transition areas between registers, other vocal pedagogists maintain that these breaks are a result of vocal problems caused by a static laryngeal adjustment that does not permit the necessary changes to take place within the modal register.

On the lower pitches in the modal register the vocal cords are thick and wedge-shaped. Because of this thickness, large portions of the opposing surfaces of the vocal cords are brought into contact, and the glottis remains closed for a considerable time in each cycle. The glottis opens from the bottom first before it opens at the top; this imparts a fluid, wavelike motion to the cords. The modal voice has a broad harmonic spectrum, rich in overtones, because of this rolling motion of the cords. It is comparatively loud to the other vocal registers because of the vibratory energy present, but is capable of dynamic variation.

For the lowest tones, only the thyro arytenoid muscles are active, but as the pitch rises, the crico thyroids enter the action, thus beginning to lengthen the folds. As longitudinal tension increases, the glottis tends to develop a gap in the middle. To counteract this tendency, the lateral crico arytenoids are brought into action, pulling forward on the muscular process of the arytenoids. This process is sometimes referred to as medial compression.

In addition to the stretching of the vocal folds and the increasing tension on them as the pitch rises, the opposing surfaces of the folds which may be brought into contact becomes smaller and smaller as the edges of the folds become thinner. The basic vibratory or phonatory pattern remains the same, with the whole vocal fold still involved in the action, but the vertical excursions are not as large and the rolling motion is not as apparent as it was on the lower pitches of the modal register. The physical limits of muscular strength of the internal thyro arytenoids or vocalis muscle are being approached. In order to sing or speak above this pitch level the voice must adopt a new phonatory pattern-to change registers.
3. The Falsetto Register

*Falsetto* (Italian diminutive of *falso*, "false") is the vocal register occupying the frequency range just above the modal voice register and overlapping with it by approximately one octave.

It is produced by the vibration of the ligamentous edges of the vocal cords, in whole or in part. Commonly cited in the context of singing, falsetto, a characteristic of phonation by both men and women, is also one of four main spoken vocal registers recognized by speech pathology.

The term *falsetto* is most often used in the context of singing to refer to a type of vocal phonation that enables the singer to sing notes beyond the vocal range of the normal or modal voice. The falsetto voice with its characteristic breathy flute-like sound relatively free of overtones is more limited than its modal counterpart in both dynamic variation and tone quality. However, William points out that while most people sound comparatively "breathy" or "hooty" when using falsetto production, there are in rare cases individuals who have a much stronger falsetto sound production which has more "ring" to it 10.

The modal voice, or modal register, and falsetto register differ primarily in the action of the vocal cords. Production of the normal voice involves vibration of the entire vocal cord, with the glottis opening first at the bottom and then at the top. Production of falsetto, on the other hand, vibrates only the ligamentous edges of the vocal folds while leaving each fold's body relatively relaxed. Transition from modal voice to falsetto occurs when each vocal cords main body, or vocalis muscle, relaxes, enabling the crico thyroid muscles to stretch the vocal ligaments 11. William Vennard describes this process as follows:

With the vocalis muscles relaxed it is possible for the crico thyroids to place great longitudinal tension upon the vocal ligaments. The tension can be increased in order to raise the pitch even after the maximum length of the cords has been reached. This makes the vocal folds thin so that there is negligible vertical phase difference. The vocalis muscles fall to the sides of the larynx and the vibration take place almost entirely in the ligaments.

In the modal register, the vocal folds (when viewed with a stroboscope) are seen to contact with each other completely during each vibration, closing the gap between them fully, if just for a
very short time. This closure cuts off the escaping air. When the air pressure in the trachea rises as a result of this closure, the folds are blown apart, while the vocal processes of the arytenoid cartilages remain in opposition. This creates an oval-shaped gap between the folds and some air escapes, lowering the pressure inside the trachea. Rhythmic repetition of this movement creates the note.

In falsetto, however, the vocal folds are seen to be blown apart and in untrained falsetto singers a permanent oval orifice is left in the middle between the edges of the two folds through which a certain volume of air escapes continuously as long as the register is engaged (the singer is singing using the voice). In skilled countertenors, however, the mucous membrane of the vocal folds contact with each other completely during each vibration cycle. The arytenoid cartilages are held in firm apposition in this voice register also. The length or size of the oval orifice or separation between the folds can vary, but it is known to get bigger in size as the pressure of air pushed out is increased.

The folds are made up of elastic and fatty tissue. The folds are covered on the surface by laryngeal mucous membrane which is supported deeper down underneath by the innermost fibers’ of the thyro arytenoid muscle. In falsetto the extreme membranous edges, i.e. the edges furthest away from the middle of the gap between the folds, appear to be the only parts vibrating. The mass corresponding to the innermost part of the thyro-arytenoid muscle remains still and motionless.

Some singers feel a sense of muscular relief when they change from the modal register to the falsetto register.

Research has revealed that not all speakers and singers produce falsetto in exactly the same way. Some speakers and singers leave the cartilaginous portion of the glottis open (sometimes called ‘mutational chink’), and only the front two-thirds of the vocal ligaments enter the vibration. The resulting sound, which is typical of many adolescents, may be pure and flutelike, but is usually soft and anemic in quality. In others, the full length of the glottis opens and closes in each cycle. In still others, a phenomenon known as damping appears, with the amount of glottal opening becoming less and less as the pitch rises, until only a tiny slit appears on the highest pitches. The
mutational chink type of falsetto is considered inefficient and weak, but there is little information available about the relative strengths and weaknesses of the other two types.

4. The Whistle Register

The whistle register (also called the flageolet or flute register or whistle tone) is the highest register of the human voice, lying above the modal register and falsetto register. This register has a specific physiological production that is different from the other registers, and is so called because the timbres of the notes that are produced from this register are similar to that of a whistle.

In some sopranos, the modal register vocal production may extend into what is usually thought of as the whistle register. With proper vocal training, it is possible for women within all voice types to develop this part of the voice. However, some women are unable to phonate or comfortably produce sound in this register. Children can also phonate in the whistle register and rarely, some baritones and tenors. The whistle register is the highest phonational register, that in most singers begins above the soprano "high C" (\(C_6\) or 1,046.5 Hz) and usually extends to about two Ds above (\(D_7\) or 2349.3 Hz). The lower part of the whistle register may overlap the upper parts of the modal and falsetto registers, making it possible for singers to phonate these notes in different ways. However, fundamentally the whistle register is most commonly used to produce pitches above C6. As with the other vocal registers, the whistle register does not begin at the same point within every voice, and there are rare voices which can extend the whistle register much higher or lower than the range listed above. For example, most operatic sopranos can sing up to the "high" F above "high" C without entering into the whistle register. Mado Robin is one example of a soprano who often sings F above "high" C (F6) to B above "high" C (B6) without entering into the whistle register.

The physiology of the whistle register is the least understood of the vocal registers. Unlike other types of vocal production, it is difficult to film the vocal cords while they are operating in this manner as the epiglottis closes down over the larynx and the resonating chamber assumes its smallest dimensions. It is known that when producing pitches in this register, vibration occurs
only in some anterior portion of the vocal folds. This shorter vibrating length naturally allows for easier production of high pitches.

Although the whole physiological production of whistle tone is not understood, it is known that when the laterals are active but the transverses inactive, a triangular opening is seen between the arytenoids, the vocal processes contact each other, but the posterior parts at the apex do not contact each other\textsuperscript{15}. The exception to this would be if the vocal folds are not stretched, as stretching of the vocal ligaments abducts (moves away from) the vocal processes.

In European classical music, the whistle register is used primarily by \textit{coloratura sopranos}. Many parts in the coloratura soprano repertoire extend beyond "high C" and often extend up to high F (F6). Although many coloratura sopranos use whistle tone vocal production to sing these notes, some operatic sopranos are capable of singing up to "high F" (F6) without utilizing the vocal production associated with the whistle register but remaining in the modal register. That being said, most coloratura sopranos do utilize the whistle register, particularly when singing staccato notes in rapid succession, during high trills, or other elaborate coloratura ornamentation in the upper \textit{tessitura}. Rarely will coloraturas use whistle tone when doing high extended notes. However, singers like \textit{Mado Robin} were noted for doing so. Probably the best-known example of the whistle register in European classical music is in the "\textit{Queen of the Night}" aria (properly titled "\textit{Der Hölle Rache kocht in meinem Herzen}") from the Mozart opera \textit{Die Zauberflöte}; it calls for pitches up to F6.

In Western popular music, the whistle register is used with more variety and to produce much higher pitches than are called for in classical music. While it is mostly used by female singers, such as \textit{Minnie Riperton, Mariah Carey, DeBelah Morgan, Tamar Braxton,} and Ariana \textit{Grande}, there are a few males who use it. \textit{Francis Xavier Serdoncillo} holds the Guinness Book of Records title for the highest vocal note produced by a male (D#8) by making extensive use of the whistle register. Female singer \textit{Georgia Brown} was listed in the 2005 Guinness World Records for highest note (G10) ever reached, but this claim was removed when the 2007 edition was issued\textsuperscript{16}.

\textbf{Chest voice and Head voice}
Chest voice and head voice are terms used within vocal music. The use of these terms varies widely within vocal pedagogical circles and there is currently no one consistent opinion among vocal music professionals in regards to these terms. Chest voice can be used in relation to a particular part of the vocal range or type of vocal register; a vocal resonance area; or a specific vocal timbre. Head voice can be used in relation to a particular part of the vocal range or type of vocal register or a vocal resonance area.\(^{17}\)

The first recorded mention of the terms chest voice and head voice was around the 13th century, when it was distinguished from the "throat voice" (pectoris, guttoris, capitis—at this time it is likely that head voice referred to the falsetto register) by the writers Johannes de Garlandia and Jerome of Moravia. The terms were later adopted within Bel canto, the Italian opera singing method, where chest voice was identified as the lowest and head voice the highest of three vocal registers: the chest, passagio and head registers. This approach is still taught by some vocal pedagogists today. Another current popular approach that is based on the Bel canto model is to divide both men and women's voices into three registers. Men's voices are divided into "chest register", "head register", and "falsetto register" and woman's voices into "chest register", "middle register", and "head register". Such pedagogists teach that the head register is a vocal technique used in singing to describe the resonance felt in the singer's head.\(^{18}\)

However as knowledge of physiology has increased over the past two hundred years, so has the understanding of the physical process of singing and vocal production. As a result, many vocal pedagogists, such as Ralph Appelman at Indiana University and William Vennard at the University of Southern California, have redefined or even abandoned the use of the terms chest voice and head voice. In particular, the use of the terms chest register and head register have become controversial since vocal registration is more commonly seen today as a product of laryngeal function that is unrelated to the physiology of the chest, lungs, and head. For this reason, many vocal pedagogists argue that it is meaningless to speak of registers being produced in the chest or head. They argue that the vibratory sensations which are felt in these areas are resonance phenomena and should be described in terms related to vocal resonance, not to registers. These vocal pedagogists prefer the terms chest voice and head voice over the term register. This view believes that the problems which people identify as register problems are
really problems of resonance adjustment. This view is also in alignment with the views of other academic fields that study vocal registration including: speech pathology, phonetics, and linguistics. Although both methods are still in use, current vocal pedagogical practice tends to adopt the newer more scientific view. Also, some vocal pedagogists take ideas from both viewpoints.

The contemporary use of the term chest voice often refers to a specific kind of vocal coloration or vocal timbre \(^{(19)}\). In classical singing, its use is limited entirely to the lower part of the modal register or normal voice. Within other forms of singing, chest voice is often applied throughout the modal register. Chest timbre can add a wonderful array of sounds to a singer's vocal interpretive palette. However, the use of overly strong chest voice in the higher registers in an attempt to hit higher notes in the chest can lead to forcing. Forcing can lead consequently to vocal deterioration.

**Voice classification**

In European classical music and opera, voices are treated like musical instruments. Composers who write vocal music must have an understanding of the skills, talents, and vocal properties of singers. Voice classification is the process by which human singing voices are evaluated and are thereby designated into voice types. These qualities include but are not limited to: vocal range, vocal weight, vocal tessitura, vocal timbre, and vocal transition points such as breaks and lifts within the voice. Other considerations are physical characteristics, speech level, scientific testing, and vocal registration. The science behind voice classification developed within European classical music has been slow in adapting to more modern forms of singing. Voice classification is often used within *opera* to associate possible roles with potential voices. There are currently several different systems in use within classical music including: the German *Fach* system and the choral music system among many others. No system is universally applied or accepted.

However, most classical music systems acknowledge seven different major voice categories. Women are typically divided into three groups: *soprano*, *mezzo-soprano*, and *contralto*. Men are usually divided into four groups: *countertenor*, *tenor*, *baritone*, and *bass*. When considering
voices of pre-pubescent children an eighth term, treble, can be applied. Within each of these major categories there are several sub-categories that identify specific vocal qualities like coloratura facility and vocal weight to differentiate between voices 20.

It should be noted that within choral music, singer’s voices are divided solely on the basis of vocal range. Choral music most commonly divides vocal parts into high and low voices within each sex (SATB, or soprano, alto, tenor, and bass). As a result, the typical choral situation affords many opportunities for misclassification to occur. Since most people have medium voices, they must be assigned to a part that is either too high or too low for them; the mezzo-soprano must sing soprano or alto and the baritone must sing tenor or bass. Either option can present problems for the singer, but for most singers there are fewer dangers in singing too low than in singing too high.

Within contemporary forms of music (sometimes referred to as contemporary commercial music), singers are classified by the style of music they sing, such as jazz, pop, blues, soul, country, folk, and rock styles. There is currently no authoritative voice classification system within non-classical music. Attempts have been made to adopt classical voice type terms to other forms of singing but such attempts have been met with controversy. The development of voice categorizations were made with the understanding that the singer would be using classical vocal technique within a specified range using unamplified (no microphones) vocal production. Since contemporary musicians use different vocal techniques, microphones are not forced to fit into a specific vocal role, applying such terms as soprano, tenor, baritone, etc. can be misleading or even inaccurate 21.

**Female voice types;**

- a. Soprano
- b. Mezzo-soprano
- c. Contralto

**Male voice types;**

- a. Countertenor
- b. Tenor
- c. Baritone
Soprano

A soprano is a type of classical female singing voice and has the highest vocal range of all voice types. The soprano's vocal range (using scientific pitch notation where middle C is written as "C₄") is from approximately middle C (C₄) = 261 Hz to "high A" (A₅) = 880 Hz in choral music, or to "soprano C" (C₆, two octaves above middle C) = 1046 Hz or higher in operatic music. In four-part chorale style harmony, the soprano takes the highest part, which usually encompasses the melody.

Typically, the term "soprano" refers to female singers but at times the term "male soprano" has been used by men who sing in the soprano vocal range using falsetto vocal production instead of the modal voice. This practice is most commonly found in the context of choral music in England. However, these men are more commonly referred to as countertenors or sopranists. The practice of referring to countertenors as "male sopranos" is somewhat controversial within vocal pedagogical circles as these men do not produce sound in the same physiological way that female sopranos do. Michael Maniaci is able sing the modal voice like a woman because his larynx did not fully develop during puberty. Radu Marian is also able to sing in the modal voice because he never went through puberty, and is considered to be a "natural" castrato. In choral music, the term soprano refers to a vocal part or line and not a voice type. Male singers whose voices have not yet changed and are singing the soprano line are technically known as "trebles". The term "boy soprano" is often used as well, but this is just a colloquialism and not the correct term.

Historically, women were not allowed to sing in the Church so the soprano roles were given to young boys and later to castrati men whose larynges had been fixed in a pre-adolescent state through the process of castration.

The term soprano may also be used to refer to a member of an instrumental family with the highest range such as the soprano saxophone.

Two types of soprano especially dear to the French are the Dugazon and the Falcon, which are intermediate voice types between the soprano and the mezzo-soprano: a Dugazon is a darker-colored soubrette, a Falcon a darker-colored soprano drammatico.
Mezzo-soprano

A *mezzosoprano* or mezzo (English pronunciation: /ˈmɛtsərən/, /ˈmezərən/; Italian: ['medzo] meaning "half soprano") is a type of classical female singing voice whose vocal range lies between the soprano and the contralto voice types. The mezzo-soprano's vocal range usually extends from the A Below middle C to the A two octaves above (i.e. A₃–A₅ in scientific pitch notation, where middle C = C₄). In the lower and upper extremes, some mezzo-sopranos may extend down to the F Below middle C (F₃) and as high as "high C" (C₆).

Mezzo-sopranos generally have a heavier, darker tone than sopranos. The mezzo-soprano voice resonates in a higher range than that of a contralto. The terms *Dugazon* and *Galli-Marié* are sometimes used to refer to light mezzo-sopranos, after the names of famous singers. A castrato with a vocal range equivalent to a mezzo-soprano's range is referred to as a *mezzo-soprano castrato* or *mezzista*. Today, however, only women should be referred to as mezzo-sopranos; men singing within the female range are called counter tenors. In current operatic practice, female singers with very low tessitura are often included among mezzo-sopranos, because singers in both ranges are able to cover the other, and true operatic contraltos are very rare.

While mezzo-sopranos typically sing secondary roles in operas, notable exceptions include the title role in Bizet's *Carmen*, Angelina (Cinderella) in Rossini's *La Cenerentola*, and Rosina in Rossini's *Barber of Seville* (all of which are also sung by sopranos). Many 19th-century French-language operas give the leading female role to mezzos, including *Béatrice et Bénédict*, *La damnation de Faust*, *Don Quichotte*, *La favorite*, *Mignon*, *Samson et Dalila*, *Les Troyens*, and *Werther*, as well as *Carmen*.

Typical roles for mezzo-sopranos include the stereotypical triad associated with contraltos of "witches, bitches, and britches": witches, nurses, and wise women, such as Azucena in Verdi's *Il trovatore*; villains and seductresses such as Amneris in Verdi's *Aida*; and "breeches roles" (male characters played by female singers) such as Cherubino in Mozart's *Le nozze di Figaro*.

Mezzo-sopranos are well represented in baroque music, early music, and baroque opera. Some roles designated for lighter soubrette sopranos are sung by mezzo sopranos, who often provide a fuller, more dramatic quality. Such roles include Despina in Mozart's *Così fan tutte* and Zerlina in his *Don Giovanni*. Mezzos sometimes play dramatic soprano roles such as Santuzza in

**Contralto**

A *contralto*, or sometimes *alto*, is a type of classical female singing voice whose vocal range is the lowest female voice type, with the lowest tessitura. The contralto's vocal range falls between tenor and mezzo-soprano; typically between the F Below middle C (F₃ in scientific pitch notation) to the second F above middle C (F₅), although at the extremes some voices can reach the E Below middle C (E₃) or the second B♭ above middle C (B♭₅).26

"Contralto" is meaningful only in reference to classical and operatic singing, as other genres lack a system of vocal categorization comparable to that generally accepted in the classical context. Even within current operatic practice, contraltos are often classed as mezzo-sopranos, because singers in each range can cover for those in the other. When appearing separately, the term "contralto" applies only to female singers; men whose voices fall in the same range or higher are known as "countertenors." The Italian terms "contralto" and "alto" are not synonymous, the latter technically denoting a specific vocal range in choral singing without regard to factors like tessitura, vocal timbre, vocal facility, and vocal weight.

Within the category of contraltos are three generally recognized subcategories—*coloratura contralto*, *lyric contralto*, and *dramatic contralto*—that usefully describe the voice type in general terms. Note, however, that they do not always apply with precision to individual singers; some exceptional dramatic contraltos, such as Ernestine Schumann-Heink and Sigrid Onegin, were technically equipped to perform not only heavy, dramatic music by the likes of Wagner but also florid compositions by Donizetti.27

**Coloratura contralto**

*Coloratura contraltos*—who have light, agile voices ranging very high for the classification and a typically extensive coloratura and high sustaining notes—specialize in florid passages and leaps. Given its deviations from the classification's norms, this voice type is quite rare.

**Lyric contralto**
A *lyric contralto* voice is lighter than a dramatic contralto but not capable of the ornamentation and leaps of a coloratura contralto. This class of contralto, lighter in timbre than the others, is the most common today and usually ranges from the E Below middle C (E₃) to the second G above middle C (G₅).

**Dramatic contralto**

The *dramatic contralto* is the deepest, darkest, and heaviest contralto voice, usually having a heavier tone and more power than the others. Singers in this class are rare.

### 1.2 VOCAL PEDAGOGY

*Vocal pedagogy* is the study of the teaching of singing. The art and science of vocal pedagogy has a long history that began in Ancient Greece and continues to develop and change today. Professions that practice the art and science of vocal pedagogy include coaches, choral, vocal music educators, opera directors, and other teachers of singing.

Vocal pedagogy concepts are a part of developing proper vocal technique. Typical areas of study include the following:

- Anatomy and physiology as it relates to the physical process of singing
- Vocal health and voice disorders related to singing
- Breathing and air support for singing phonation
- Vocal resonation or Voice projection
- Vocal registration: a particular series of tones, produced in the same vibratory pattern of the vocal folds, and possessing the same quality, which originate in laryngeal function, because each of these vibratory patterns appears within a particular range of pitches and produces certain characteristic sounds.
- Voice classification
• Vocal styles: for classical singers, this includes styles ranging from Lieder to opera; for pop singers, styles can include "Belted out" a blues ballads; for jazz singers, styles can include Swing ballads and scatting.

• Techniques used in styles such as sostenuto and legato, range extension, tone quality, vibrato, and coloratura.

Within Western culture, the study of vocal pedagogy began in Ancient Greece. Scholars such as Alypius and Pythagoras studied and made observations on the art of singing. It is unclear, however, whether the Greeks ever developed a systematic approach to teaching singing as little writing on the subject survives today.

The first surviving record of a systematized approach to teaching singing was developed in the medieval monasteries of the Roman Catholic Church sometime near the beginning of the 13th century. As with other fields of study, the monasteries were the center of musical intellectual life during the medieval period and many men within the monasteries devoted their time to the study of music and the art of singing. Highly influential in the development of a vocal pedagogical system were monks Johannes de Garlandia and Jerome of Moravia who were the first to develop a concept of vocal registers. These men identified three registers: chest voice, throat voice, and head voice (pectoris, guttoris, and capitis). Their concept of head voice, however, is much more similar to the modern pedagogists understanding of the falsetto register. Other concepts discussed in the monastic system included vocal resonance, voice classification, breath support, diction, and tone quality to name a few. The ideas developed within the monastic system highly influenced the development of vocal pedagogy over the next several centuries including the Bel Canto style of singing.

With the onset of the Renaissance in the 15th century, the study of singing began to move outside of the church. The courts of rich patrons, such as the Dukes of Burgundy who supported the Burgundian School and the Franco-Flemish School, became secular centers of study for singing and all other areas of musical study. The vocal pedagogical methods taught in these schools, however, were based on the concepts developed within the monastic system. Many of the teachers within these schools had their initial musical training from singing in church choirs.
as children. The church also remained at the forefront of musical composition at this time and remained highly influential in shaping musical tastes and practices both in and outside the church. It was the Catholic Church that first popularized the use of castrato singers in the 16th century, which ultimately led to the popularity of castrato voices in Baroque and Classical operas.  

It was not until the development of opera in the 17th century that vocal pedagogy began to break away from some of the established thinking of the monastic writers and develop deeper understandings of the physical process of singing and its relation to key concepts like vocal registration and vocal resonation. It was also during this time that noted voice teachers began to emerge. Giulio Caccini is an example of an important early Italian voice teacher. In the late 17th century, the Bel method of singing began to develop in Italy. This style of singing had a huge impact on the development of opera and the development of vocal pedagogy during the Classical and Romantic periods. It was during this time, that teachers and composers first began to identify singers by and write roles for more specific voice types. However, it wasn't until the 19th century that more clearly defined voice classification systems like the German Fach system emerged. Within these systems, more descriptive terms were used in classifying voices such as coloratura soprano and lyric soprano.

Voice teachers in the 19th century continued to train singers for careers in opera. Manuel is often considered one of the most important voice teachers of the 19th century, and is credited with the development of the laryngoscope and the beginning of modern voice pedagogy.  

The field of voice pedagogy became more fully developed in the middle of the 20th century. A few American voice teachers began to study the science, anatomy, and physiology of singing, especially Ralph Appelman at University, Oren at the Washington University School of Medicine and later the Juilliard School, and William Vennard at the University of Southern California. This shift in approach to the study of singing led to the rejection of many of the assertions of the Bel canto singing method, most particularly in the areas of vocal registration and vocal resonation. As a result, there are currently two predominating schools of thought among voice teachers today, those who maintain the historical positions of the Bel method and those who choose to embrace more contemporary understandings based in
current knowledge of human anatomy and physiology. There are also those teachers who borrow ideas from both perspectives, creating a hybrid of the two.

Appelman and Vennard were also part of a group of voice instructors who developed courses of study for beginning voice teachers, adding these scientific ideas to the standard exercises and empirical ways to improve vocal technique, and by 1980 the subject of voice pedagogy was beginning to be included in many college music degree programs for singers and vocal music educators.  

More recent works by authors such as Richard Miller and Johan Sundberg have increased the general knowledge of voice teachers, and scientific and practical aspects of voice pedagogy continue to be studied and discussed by professionals. In addition, the creation of organizations such as the National Association of Teachers of Singing or NATS (now an international organization of Vocal Instructors) has enabled voice teachers to establish more of a consensus about their work, and has expanded the understanding of what singing teachers do.

1.3 BREATHE CONTROL

Body Alignment

The singing process functions best when certain physical conditions of the body exist. The ability to move air in and out of the body freely and to obtain the needed quantity of air can be seriously affected by the body alignment of the various parts of the breathing mechanism. A sunken chest position will limit the capacity of the lungs, and a tense abdominal wall will inhibit the downward travel of the diaphragm. Good body alignment allows the breathing mechanism to fulfill its basic function efficiently without any undue expenditure of energy. Good body alignment also makes it easier to initiate phonation and to tune the resonators as proper alignment prevents unnecessary tension in the body. Voice Instructors have also noted that when singers assume good body alignment it often provides them with a greater sense of self-assurance and poise while performing. Audiences also tend to respond better to singers with good body
alignment. Habitual good body alignment also ultimately improves the overall health of the body by enabling better blood circulation and preventing fatigue and stress on the body.\textsuperscript{33}

\textbf{Breathing and Breath support}

In the words of Robert C. White, who paraphrased a "Credo" for singing;

“In the Beginning there was Breath, and Singing was with Breath, and Singing was Breath. And all singing was made by the Breath, and without Breath was not any singing made that was made”.

All singing begins with breath. All vocal sounds are created by vibrations in the larynx caused by air from the lungs. Breathing in everyday life is a subconscious bodily function which occurs naturally, however the singer must have control of the intake and exhalation of breath to achieve maximum results from their voice.

Natural breathing has three stages: breathing-in period, a breathing-out period, and a resting or recovery period; these stages are not usually consciously controlled. Within singing there are four stages of breathing:\textsuperscript{34}

1. a breathing-in period (\textit{inhalation})
2. a setting up controls period (\textit{suspension})
3. a controlled exhalation period (\textit{phonation})
4. a recovery period

These stages must be under conscious control by the singer until they become conditioned reflexes. Many singers abandon conscious controls before their reflexes are fully conditioned which ultimately leads to chronic vocal problems.

Goal: To understand the fundamental principles basic to diaphragmatic-costal breath control and how to apply them efficiently to the singing process.
Objective: Technical skill in singing is largely dependent on the singer’s ability to achieve consistently, the coordination of airflow and phonation. This coordination is determined by cooperation among the muscles of the larynx, chest wall, diaphragm, abdominal muscles, and the lumbar muscles of the back. When all these muscles coordinate, a dynamic, balanced equilibrium between sub-glottic pressure and vocal fold resistance is created. This equilibrium, or balanced antagonistic pull, must exist both within and between all the muscles during phonation.

Breath Control is basically holding back the breath and regulating its release. The breath cycle begins with an outward expansion of the chest and waist line on inspiration. To sustain a note during exhalation, the aspiratory muscles continue their outward expansion and oppose the inward contraction of the expiratory muscles (the abdominals). Together with vocal fold resistance, the system creates steady breath pressure (breath support) over extended periods of time.

The objective in singing is to control this cycle by creating balanced internal/external muscular antagonism to support phonation.

**Three Types of Breathing:**

*Diaphragmatic Breathing: Deep Breathing*

The diaphragm is a dome-shaped muscular plate that separates the chest cavity from the abdominal cavity. In normal breathing, the subconscious mind instructs the brain to lower the diaphragm when air pressure outside the body becomes equal to the pressure inside the body. On inspiration, the diaphragm contracts and forces the Belly outward; the expiratory muscles are in relaxed position. When inspiration is complete, the diaphragm relaxes and the expiratory muscles begin to contract, expelling air. As the air is released, the diaphragm rises and the pressure weakens until the whole process begins again.

*Inter-costal Breathing:*

The intercostals are three sets of muscles between the ribs. Inter costal muscles are both internal and external to the rib cage area. The external intercostals are active during inspiration; they contract, expanding the ribs as the diaphragm lowers. The internal intercostals are active during expiration; they contract, drawing the ribs together. The action of the intercostals is similar to
that of the leverage of a Bellows expanding and contracting. A deep diaphragmatic breath usually involves some inter costal breathing, although inter costal breathing can be done independently. Singers who primarily use inter costal breathing don’t experience the benefits of deep support that diaphragmatic breathers do.\(^{35}\)

**Clavicular Breathing:**

*Clavicular* breathing, also called shallow breathing, shoulder breathing and chest breathing, is inhaling by fixing the shoulders and pulling up the ribs by means of muscles which normally move the shoulders. The shoulders rise and lower as a small amount of air enters the upper lungs. Chest breathing provides no control over exhalation because with such a shallow breath practically no expansion has occurred in the lower rib cage or abdominals. Sometimes you will observe singers lift their shoulders as they take a very deep breath. This is because clavicular breathing is the last step in the process of taking a very deep breath – the diaphragm lowers, the rib cage expands and the upper lungs fill with air as the shoulders rise during the last moment of inhalation. Most singing does not require this large a breath but it does require a deep breath.\(^{36}\)

**Breathe support technique** (*Appoggio*: the establishment of dynamic balance between the inspiritory, phonatory, and resonatory systems in singing). In appoggio technique, the *sternum* is held in a moderately high position; this position is maintained throughout the inspiration-expiration cycle. Shoulders are relaxed, but the sternum never slumps. Sternal posture in part determines diaphragmatic position. If the sternum lowers, the ribs cannot maintain an expanded position and the diaphragm must ascend more rapidly. On inspiration, the region between the sternum and the umbilicus moves outward, but the main outward movement is in the lateral planes. The diaphragm contracts and lowers. This action does not include pushing out the lower abdomen (pubic area). Doing so retards the rib cage’s ability to expand. Although the lower abdomen (pubic region) does not distend, there is a feeling of muscular connection from sternum to pelvis. By reflexive action, the muscles of the pelvic outlet must tighten in order that the pressure created by the abdominal muscles is directed upward for exhalation. They form a ‘floor’ of support for the internal-external balance of the abdominal musculature above them. Training
these muscles consists of conditioning these reflexes into patterns which are more efficient for singing.37

Following expansion, a nearly imperceptible inward motion begins unless consciously resisted internally by counter balancing pressure experienced in the navel region, lateral planes, and lower rib cage and in the lower back region. This creates sub-glottis pressure (in conjunction with the glottal closure), which controls the rate of ascent of the diaphragm.

A common mistake is to draw in the stomach after lowering the diaphragm. This forces air out of the lungs in much the same way you can force air out of a balloon by squeezing it. Drawing in the stomach works against the “dynamic equilibrium” created by the coordinated action of all the muscles involved in breathing. It creates a tension in the costal and abdominal regions that causes unwanted glottal closure.

**Exercises**

*Inter costal Rib and Back Expansion Exercise:*

Purpose: to induce a high, lifted chest and rib cage expansion and the associate muscular feeling sensations which must be present for controlled singing.

1. Raise arms to the count of four while inhaling. The epigastria, the umbilical region and the rib cage move outward on inspiration. While inhaling, alternate taking in breath through the nose and through the mouth.

2. Hold chest and lower ribs steadily high as the arms are lowered during exhalation while hissing “ss” to count of four. At commencement, there is a slight inward movement in the umbilical area with the sternum and ribs remaining high. Maintain the feeling of spinal stretch and outward push or expansion around the waistline to the very end of the count. Variations: Sing *Oh* or *Ah* on an easy pitch while arms are being lowered. Increase count to eight or twelve beats.
**Panting Exercise:**

Purpose: to produce a sensation of active diaphragmatic action and quick inhalation. It has high value to induce the feeling for tonal attack. The outward impulse and firming sensation of the diaphragm, when vigorously executed, is the basis for the staccato attack.

1. Place fingertips on the stomach wall in the “V” of the ribs (epigastria), just below the breastbone. Make sure the chest is comfortably high before inhalation.

2. Quickly inhale a strong breath as if gasping and release suddenly with an aspirate “Huh” sound. The mouth should be open and the tongue loosely forward with the tip against the gum line of the lower teeth.

3. Pant audibly but gently. Supple, flexible, agile motion of the abdominal musculature is felt by the hand placed on the umbilical-epigastria region. The surface movement indicates rapid inhalation-exhalation patterns. Practice panting on quarter, eight, triplet, and sixteenth beats.

**Rapid Execution of the Fricative F Exercise:**

Epigastric-Umbilical Action

Purpose: This exercise is based on the epigastric impulse necessary for passing air through the narrow jaw/lip aperture created by the fricative F sound. The release of breath is controlled by the abdominal muscles and the narrowed teeth-lip opening of the F sound. During the staccato execution of the phoneme F, no part of the antero lateral wall should be drawn inward; an internal-external balance of the abdominal musculature should be the aim (i.e. expansive resistance).

1. Place one hand on the umbilical-epigastria area, the other just below the ribs and above the pelvis at the side of the body.

2. Take in a quiet breath over several seconds

3. Exhale on a series of rapid staccato “f’s”

Sufficient impulses should be given at each “f” so that abdominal motion is distinct. Release of the breath is controlled so that a series of short “f” expulsions can occur on one breath.

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Variation: Slow execution of the fricative F: blow out 6-8 candles with one breath, but with separate abdominal impulses. ♪♩♩♩♩, ♪♩♩♩♩, ♪♩♩♩♩, ♪♩♩♩♩. 39

_Inhalation-Suspension-Phonation-Recovery Exercise:_

Purpose: to add the factors of suspension and recovery to the feelings sensations for controlled singing. Keep precise rhythm. Lips should be parted throughout the exercise. Check posture.

1. Inhale easily and deeply, through the nose and mouth, to the count of four. Place hands on the epi gastric-umbilical region and on flanks below the rib cage to monitor maintenance of expansion. Complete, but unforced expansion of the ribs, the muscles of the umbilical-epi gastric area and of the lumbar region should be realized. The lower abdominal muscles “tuck-in” naturally at the end of the inhalation phase.

2. Suspend to the count of four. Suspension is that moment when breath is stopped in balance, neither moving in nor out. The throat (vocal cords/glottis) remains open preceding the attack (the feeling is almost as if more breath were being inhaled). There is no feeling of rigid tension in either the vocal tract or the torso.

3. Exhale slowly on the count of four on a hissing “ss”. (Sibilant “s” provides increased resistance to releasing the breath, highlighting the sensation of muscular action around the waistline.) The attack occurs the moment of expiration begins. The attack does not start from the throat but from a breath impulse: the muscles around the waistline and the diaphragm” firm” suddenly with an expansive feeling around the lower ribs accompanied by spinal stretch. A slight impulse from the abdominals, as is felt with the phonation of the aspirate H, initiates the breath movement. Maintain expansive resistance around the waistline and a high quiet chest with postural stretch and firmness in the abdominal wall until the end of the count. At the close of expiration, the abdominal wall must move inward as the diaphragm expels the last bit of air before the next inhalation.

4. Recover on the count of four and repeat. Recovery is a moment of relaxation and rest that occurs between phrases. There is a feeling of brief “letting go” of all the muscles around the lower rib line. The chest remains high and quiet. 40

_Variations:_

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A. Suspend the breath for four counts, then one count, before exhalation

B. Inhale on one count, suspend for two counts, and exhale on four counts on “ss”.

C. Inhale on one count, suspend for two counts, and exhale on 8-12 counts.

D. Repeat the above using Oh or Ah instead of hissing “ss”. Transpose up and down on easy pitches.

1.4 VOICE PROJECTION

Voice projection is the strength of speaking or singing whereby the voice is used loudly and clearly. It is a technique employed to command respect and attention, as when a teacher talks to a class, or simply to be heard clearly, as used by an actor in a theatre.

Breath technique is essential for proper voice projection. Whereas in normal talking one may use air from the top of the lungs, a properly projected voice uses air properly flowing from the expansion of the diaphragm. In good vocal technique, well-balanced respiration is especially important to maintaining vocal projection. The goal is to isolate and relax the muscles controlling the vocal folds, so that they are unimpaired by tension. The external inter costal muscles are used only to enlarge the chest cavity, whilst the counter play between the diaphragm and abdominal muscles is trained to control airflow.

Stance is also important. Actors are taught to stand erect with the feet shoulder width apart and the upstage foot (foot farther from the audience, when not facing the audience) slightly forward. This improves balance and breathing.

In singing, voice projection is often equated with resonance, the concentrated pressure through which one produces a focused sound. True resonance will produce the greatest amount of projection available to a voice by utilizing all the key resonators found in the vocal cavity. As the sound being produced and these resonators find the same overtones, the sound will begin to spin as it reaches the ideal singer's formant at about 2800 Hz. The size, shape, and hardness
of the resonators all factor into the production of these overtones and ultimately determine the projective capacities of the voice.

**Exercises:**

*Reading Out Loud*

- Select a book or article (recommended a topic you actually speak on), open it and begin reading
- Speak slowly. If you rush, you are much more likely to slur your words.
- Open your mouth. Do not be afraid to show your teeth (literally). Be sure to take care of your teeth so you won’t be afraid to open your mouth wide.
- Keep your tongue down. Unless you are using your tongue to articulate a certain sound, keep it ‘glued’ to the inside edge of your lower front teeth. This lets more sound escape your mouth.
- Lift up your soft platelet. That is the soft part in the back of the roof of your mouth. You will let more sound escape your mouth by doing so.
- Stand up straight. This allows you to breathe better. Sound is created by the air being forced out of your lungs, so the clearer your breathing, the clearer your speech.
- Record yourself reading. Listen to it after each reading. Continue to move the recorder away from you for subsequent readings to see how far away you can project your voice while ensuring it remains strong and clear.

This is developed through a series of factors. For now, let's just talk about breathing and control of the diaphragm.

Briefly, the untrained singer tends to sing from the throat. That person is operating on the theory that since the chest and throat is what an untrained vocalist feels the most; the tendency is to think that in order to obtain good projection one must push harder in the throat area.
Wrong! That person could not be further from the truth. It is for that exact reason that countless performers and speakers have lost their voice, many permanently.

Have you ever noticed how loud a baby can cry? That is because they are crying from the diaphragm. Watch the baby's stomach. Is it raising and lowering when the baby breathes? That is because when we are born we are breathing naturally from the correct place. What a trained vocalist must endeavor to do is to relearn and maintain usage of the diaphragm, while breathing, singing and, yes, even speaking. This opens up a person's lung cavities tremendously. The improvement can be quite dramatic (a 60% in lung capacity is not uncommon).

The irony of diaphragmatic breathing is that once it is learned (or "relearned" if you are counting the time you were born), it actually requires a great deal less energy expansion on the part of the vocalist. The person who thought that they were a great singer because they were able to push harder on their throat may suddenly realize that, in fact, they have been wasting valuable energy on their throat that could have been used for more creative purposes. Upon that realization, the vocalist is immediately "freed" and has the feeling of a new found power that will enable them to transmit their feelings to the audience in a more confident, relaxed way.

Listed Below are the comparative differences between the body areas used by an untrained vocalist and a trained one:

**Untrained vocalist**: Tends to breathe into upper chest cavity, only. Sound emanating is 40% potential capacity in volume.

**Trained vocalist**: Breathes all the way into the lower lungs, in an easy, effortless way; eventually filling upper lungs (both front & back areas of lungs), as well.

Vocalist gets near 100% sound capacity.

**Untrained vocalist**: Will feel lots of pressure in front of throat; particularly when singing at the top of the chest range. Sound emanating is harsh and constricted.

**Trained vocalist**: Will use diaphragm in order to get power, instead of throat, feeling essentially nothing in the front of the throat, since the sound is projected upward, via the back of the body (hence, although the vocal folds are being utilized, they are relaxed and "flappy"). Sound emanating is open, full, relaxed.
Untrained vocalist: Tends to think up & down throat, respectively to high & low notes. Posture is poor; head moves up to get upper pitches; down to get lower pitches. Both intonation & tone suffer, under these circumstances. High notes can take on a "pinched sound", as due to the rubbing of the vocal folds. Pitch tends to be under, on high notes. Low notes take on a "forced" & also "pinched". Low pitches tend to be above actual desired pitch.

Trained vocalist: Tends to think from "behind" the body, using diaphragmatic area projecting sound from behind, combined with relaxed throat & facial areas. Head will not move in any way (staying in line with the base of spine, and erect on shoulders).

Vocalist thinks of "landing upon" pre-imagined upper pitches; instead of physically reaching up to them. This takes the guess work out of the pitches, while creating a more relaxing, pleasing tone. Lower pitches are sung "up to", by pre-imagining the low pitch in the chest area, and then singing "up" to it from the diaphragm area. Resulting pitches are "open" (not "pinched"), and will seldom be sharp, or unsupported sounding. Throat remains relaxed and open on lower pitches.

There seems to be an endless variety of schools of thought as to which areas of muscle should be developed first in the process of increasing one's projection capabilities. One such school says that concentrating on strengthening the abdominal cavity should come first. Another says that squeezing the buttocks is a good way to increase projection. There are even more varied viewpoints on this, which need not be considered at this time, since none relate to my concept.

In the particular method I have learned, the diaphragm muscles will receive the most intense amount of concentration during the first few weeks of training. These muscles have usually gone "dormant" (or virtually unused - for the most part) in untrained vocalists. Extreme efforts must be made to open up one's breathing and connect it to the diaphragm area.

Simultaneous concentration on other areas of vocal technique in the very beginning could lead to unnecessary confusion; resulting in an even longer period before there is any noticeable improvement in the voice. And so we come to another rule: Take it one area of concentration at a time. (Don't try to do everything at once - or nothing will get done)
You must realize that for the first three or four weeks of vocal training you will need to concentrate continually on posture, breathing, and relaxation. After that, providing you have been faithful in daily practice, you will begin to experience the wonderful realization that you are finally breathing correctly; the way you were meant to (as in infancy). When that moment arrives you will be free to sing and experiment with other possibilities in developing your voice.

1.5 DICTION, VOWELS AND ARTICULATION

Diction is the single most important aspect of singing.

The Old Italian voice teachers used to say, "A good vowel sound is a good tone, and a good tone is a good vowel sound." The vowel sounds may be classified as the enunciators and the consonant sounds may be said to be the articulators (Ross). With the vowel sounds we sustain. With the consonant sounds we separate.

This brings us to the definition of words. Most of the time the answer you receive is something that pertains to a meaning. In fact, the dictionary definition is: "a sound or sounds that express meaning" (Oxford). However, before the meaning of a word can be understood, the sounds of that word must be sounded in a reasonably accurate way. So, from the standpoint of sound, the definition of words is: vowels sounds broken up into long and short segments by the use of consonant sounds. It means that the sounds used in some words have different stresses and lengths than when used in other words. This is true in all languages.

The above explanations pertain principally to speech because when speaking the speaker controls the tempo, the stress, and the length of the sounds. Pitch is not important except in inflection. There is a big difference, however, between speaking and singing. When singing songs you are at the mercy of the composer who has set the words of a poem to the tempo, rhythm, and pitch of the melody. The sounds of the words must be emitted within the rhythmic framework of the melody. Hence the term Rhythmic Diction, the idea that all sounds in the words have a rhythmic designation within the measure.
Let us now review the sounds of the English language. The principles, however, are the same regardless of the language. The best way to learn the sounds of a language is to learn the *International Phonetic Alphabet*. This is a collection of symbols (not letters) that represents every sound of any language. It is very easy to memorize these symbols because they are so logical.

### THE INTERNATIONAL PHONETIC ALPHABET (IPA)

#### Vowels

#### Diphthongs

<table>
<thead>
<tr>
<th>Pure</th>
<th>Primary</th>
<th>Secondary</th>
<th>Triphongs</th>
</tr>
</thead>
<tbody>
<tr>
<td>[A] - father</td>
<td>[AI]- night</td>
<td>[E]- air</td>
<td>[AI]- ire</td>
</tr>
<tr>
<td>[E] - wed</td>
<td>[EI]- day</td>
<td>[I]- ear</td>
<td>[AU]- our</td>
</tr>
<tr>
<td>[I] - it</td>
<td>[çI]- boy</td>
<td>[ç]- ore</td>
<td></td>
</tr>
<tr>
<td>[i] - me</td>
<td>[AU]- now</td>
<td>[U]- sure</td>
<td></td>
</tr>
<tr>
<td>[Q] - cat</td>
<td>[oU]- no</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[u] - too</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[U] - full</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[o] - obey (unstressed)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ç]- warm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Œ] - learn</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ fh] - up</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[ ˘] - sofa (unstressed)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
[a] - ask

[Å] - hot

_Diphthong_: Two vowels sound adjacent to each other, one receiving more stress than the other (English).

_Dissyllable_: Two vowels sound adjacent to each other, both receiving equal stress (Italian).

**Consonants**

<table>
<thead>
<tr>
<th>Voiced</th>
<th>Unvoiced</th>
<th>Liquids</th>
<th>Semi-vowels</th>
</tr>
</thead>
<tbody>
<tr>
<td>[d] d</td>
<td>[t] t</td>
<td>[m] m</td>
<td>[j] you</td>
</tr>
<tr>
<td>[g] g</td>
<td>[k] c</td>
<td>[n] n</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[k] k</td>
<td></td>
<td>[N] sing</td>
</tr>
<tr>
<td></td>
<td>[k] q</td>
<td></td>
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</tr>
<tr>
<td>[z] z</td>
<td>[s] s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[v] v</td>
<td>[f] f</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[r] r</td>
<td></td>
<td></td>
<td>No counterpart</td>
</tr>
</tbody>
</table>

Voiced Unvoiced Semi-vowels
A *voiced* consonant is a consonant that uses the vocal cords as part of the sound.

A *liquid* consonant is a consonant on which you can sustain a pitch.

An *unvoiced* consonant is a consonant that does not use the vocal cords as part of the sound.

A *glottal* attack is used only at the onset of vowel sounds.

An *aspirate* consonant is always unvoiced.

A *semi-vowel* is a vowel sound used as a consonant or a consonant used as a vowel sound, also known as a half vowel or half consonant. Both are voiced consonants.

An *exploded* consonant is one that uses infra-glottal pressure to achieve the plosive (English).

An *imploded* consonant is one that uses only supra-glottal pressure to achieve the plosive (Italian and French).

A *principal vowel sound* is a vowel sound that you choose to sustain.

A *subordinate vowel sound* is a vowel sound that you use as an articulator and is sustained only momentarily.¹⁴⁷

*Shadow Vowels and Glottal Stroke*
A few special approaches can help to make your words much more clear.

1. **Shadow vowels**: When a word beginning with a consonant follows a word ending with a consonant, they need a neutral vowel in between them (the schwa sound) to make them understood. That neutral vowel is called a shadow vowel.

2. **Glottal Stroke**: When a word beginning with a vowel follows a word ending with a consonant or vowel, the word beginning with the vowel often needs what is called a glottal stroke. This is a gentle coming together of the vocal folds, which produces a light separation in sound. Care must be taken with this, as too harsh a glottal stroke can cause vocal damage. However, without it, text can be very difficult to understand. Find a healthy balance.  

**Diction and Rhythm**

1. Every consonant must be placed in a rhythmic context. This helps to clarify the rhythm.
   a. Consonant attacks should generally come before the beat. When accenting a consonant, take care not to also accent the vowel, unless requested.
   b. Singers need to make rhythmic choices as to where they will release the consonant. It is helpful to write these choices directly into your score as rests or breath marks.

When singing:

1. Attack the sound the way you want it, Sustain the sound the way you attacked it, Release the sound the way you sustained it. (Jones)

In other words do not change the "set" of the articulators from the onset (Miller) to the release. If you do you will change the vowel sound, and what is called a "chewing" (Sundberg) of the vowel sound will result.

2. Find the first principal vowel sound. Put it rhythmically on the note above it. Whatever comes before the first principal vowel sound (a consonant) place it in a desired rhythmic position in the previous measure.

Now find the second principal vowel sound. Put it rhythmically on the note above. Place every sound between the first principal vowel sound and the second principal vowel sound "in the
twinkling of an eye” just before the second principal vowel sound. Continue in this manner throughout the song.

**Articulators**

A vowel sound articulator is any change in musculature that causes a change in shape of the laryngeal, pharyngeal or bucal cavities, therefore causing a change in the overtone spectrum.

A consonant sound articulator is any change in position of the "mover" of primarily the bucal cavity. These include the tip of the tongue, back of the tongue, palate, lips, and vocal cords. Also, what and how they touch each other and other parts of the bucal anatomy used in the process of making the desired consonant sounds. The vocal cords are approximated on both implosive and voiced consonants.

The consonant can actually be identified by naming the articulations. For example, the letter p is a bilabial-stop-plosive. A b is a bilabial-sub vocal-stop-plosive. The only difference in the two being the sub vocal sound, refer to the definition section and to Chart #1 (IPA). All the consonants may be broken down in this manner. You must insist that your singer sound all the articulations of the consonants, because without one or more of these articulations the consonant will not be heard clearly.

Every consonant has its voiced and unvoiced counter designation except the [r] (It is either flipped or rolled), the [x], and the liquids.

Make sure to put the proper sounds of the words in their assigned rhythmic positions and you will be able to sing good, clear, and understandable diction.

**Diction and Expression**

1. To sing with expressive diction, it is crucial to understand the meaning of the text.
2. The vocal line will be greatly improved if you inform the line with the natural accents of the spoken language. In other words, don't accent unaccented syllables, even if they fall on a downbeat or a high note.

3. Use this same musical idea with sentences as a whole – stress the important words and put less stress on the less important words.

4. Sing each phrase with the verbal thought behind it. Not only will this help communicate text, it will help improve the phrasing.

5. Don't just sing sounds, sing words.

_Singing in Languages other than your own_

1. Use _International Phonetic Alphabet_ (IPA) or some other system to write pronunciations directly into your music.

2. If there are recordings of the pieces or the texts that you can access, take the time to listen to them and practice with them.

3. Pronounce the text over and over, in rhythm, but without singing, to get comfortable with the text. Begin by speaking slowly, and then speed up as you get more comfortable.

**1.6 RESONANCE**

The voice, like all acoustic instruments such as the guitar, trumpet, piano, or violin, has its own special chambers for resonating the tone. Once the tone is produced by the vibrating vocal cords, it vibrates in and through the open resonating chambers, activating the four primary colors (resonances):

1) _Chest_,

2) _Mouth_,

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3) Nasal (or mask)

4) Head.

Think of the various resonances as vocal colors in a continuous spectrum, from dark or chest resonance to bright or head/nasal resonance. We may call this spectrum a resonance track. In the lower range, the chest resonance or dark color predominates; in the middle range, the mouth-nasal resonance is dominant; in the higher range, the head-nasal resonance (bright color) predominates.

The objective is to have command of all the colors of the spectrum, which allows you, the artist, and greater scope of emotional expression. The emotional content of the lyric or phrase suggests the color and volume of the tone and is the personal choice of the artist.

**HEAD RESONANCE** should not be confused with head register or falsetto. It is used primarily for softer singing in either register throughout the range.

**MOUTH RESONANCE** is used for a conversational vocal color in singing and, in combination with nasal resonance; it creates forward placement or mask resonance.

**CHEST RESONANCE** adds richer, darker, deeper tone coloring for a sense of power, warmth and sensuality. It creates a feeling of depth and drama in the voice.

**NASAL or MASK RESONANCE** is present at all times in a well-produced tone, except, perhaps, in the instance of the pure head tone or at very soft volume. Nasal resonance is bright and edgy and is used in combination with mouth resonance to create forward placement (mask resonance). In an over-all sense, it adds overtones that give clarity and projection to the voice.\(^\text{52}\)

There are some singers who are recognized by their pronounced nasal quality and others noted for a deep, dark and chesty sound and still others for their breathy or heady sound ... and so on. In part, such individuality depends on the structure of the singer's vocal instrument, that is, the inherent shape and size of the vocal cords and resonating chambers.

The quality or color of your voice also depends on your ability to develop and use various resonances by controlling the shape and size of the chambers through which the sound flows. It has been demonstrated electrographically in the form of "voice-print"s that, like fingerprints, no
two voices are exactly alike.

**Exercises**

**Head Resonance**

Yawn and feel the open sensation in your throat as the soft palate lifts and the space widens between the back of your tongue and the roof of your mouth. Don't pull your tongue back or lift the back of your tongue. The tip of the tongue should rest behind the lower teeth except to move away momentarily to articulate consonants like "t", "d", "l", "n", "sh", etc…. The yawning feeling assists in relaxing the focusing strength of the cords for softer tones.

1. Feel as though you are aiming the tone straight up behind an arched soft palate. Keep your tongue relaxed and forward and with the yawn sensation. Listen for a sound that is light, heady and clearly focused (not breathy). Use a firm, steady, out and down support but very little air pressure. Feel the cords vibrate and call out gently:

   a) "hey!" (Like a far-away calling-out sound)

   b) "ooooo" (like an owl in the distance)

   c) "eeeee" (with the same quality)

2. In lower chest voice using head resonance, very softly,

3. In the upper chest voice for men and medium range chest voice for women, using head resonance,

4. Use your head voice or soprano (falsetto for men).

5. On a comfortable pitch in head voice and using the delayed vibrato, after you establish these head tones, try other vowel sounds, then words. When a word starts with a vowel, begin the tone with a silent H to avoid a glottal attack
6. Match the heady quality of the "oo" and "ee" in the vowel of the word that follows.

"ah" vowel sound (as in far)

oo...oo...fa - a - a - a - a - a - a - ar

ee...ee...fa - a - a - a - a - a - a - ar

7. Now use the word "Hello".

oo...oo...hello - o - o - o - o - o - o - oh

ee...ee...hello - o - o - o - o - o - o - oh

Nasal and Mask Resonance

"Singing in the mask" and "forward placement" are (synonyms) vocal terms that have been used for years by countless vocal specialists, both singers and teachers alike. Mask resonance includes the bony structure around the nose, eyes and cheekbones. Since nasal resonance is vitally important in achieving mask resonance, we must isolate the nasal resonance at first.

The pure nasal tone is very rarely used except for character voices or special effects. Even when emphasizing another resonance, such as chest resonance, the mask resonance must still be present to bring out the overtones that help to enrich and project the voice. It is interesting to note here that a singer or speaker with a cold is often said to sound "nasal" when in fact the sound is “de-nasal”. The air is not flowing through the blocked nasal passage.

To assist in accomplishing the forward placement (mask resonance), place your fingertips gently alongside your nose and aim the vocal tone as if to vibrate against your fingers. It is also helpful to aim the tone as if to push outward against the top front teeth.
The "aa" vowel sound (as in at) is the vowel sound most conducive to opening the nasal resonance and achieving forward placement. The consonants "N", "M" and "NG" assist the process since they require nasal opening.54

1. Think the sound "ng" (as in angle) and say:

"aaaaa, aaaaa, aaaaaa"

2. Now an octave higher in head voice / soprano / falsetto

Notice that thinking "ng" brings the tongue closer than necessary to the soft palate, but this allows the nasal resonance to be felt more easily since the tone is partly channeled through the nasal passage.

3. On a comfortable pitch using pure nasal resonance with 9 pulses of vibrato, sing aa - (as in hat):

nya - a - a - a - a - a - a - a

na - a - a - a - a - a - a - a

4. Using "aa" to establish the mask resonance, sing various words containing the "aa" vowel. Use 9 pulses of vibrato.55

Sing: la - a - a - a - a - a - a - a - and

gra - a - a - a - a - a - a - ass

5. Using "aa...aa..." as a set-up for the placement, change the vowel to "eh" (as in end) and keep the placement the same.

6. Continue with other vowel sounds

7. Use your head resonance followed by head and nasal resonance combined.

8. An octave higher.

9. And in the head voice / falsetto.
10. Continue with the list of practice phrases, maintaining mask resonance.

**Mouth Resonance**

1. With a natural, hearty speech-like quality, say "Hi!" through a smiling mouth. Feel the open vowel sound vibrating against the upper front teeth. An open mouth, as if you are about to bite an apple, slightly baring the upper teeth, facilitates a clear vowel and forward placement. This mouth position prevents "covering" or trapping the sound.

2. Say: "Hey!" aiming the sound against the teeth.

3. In mouth resonance,

4. An octave higher.

5. And in head voice.

6. Move on to other vowel sounds using the practice phrase. Speak these sounds at first with a natural, hearty quality and then go on to sustain a tone on a single pitch. When emphasizing the mouth resonance, you should feel the presence of the other resonances, particularly nasal and chest.

**Chest Resonance**

The chest resonance, not to be confused with chest register or chest voice, is the darkest of the vocal colors and can be used throughout the entire vocal range.

When one emphasizes the chest resonance, it adds depth and richness to the tone. To increase chest resonance, open your throat wide as in a yawn. A yawn-like feeling widens the throat resonating space, lowering the larynx and lifting the soft palate. Do not press the tongue down or pull it back in your throat as sometimes happens in a real yawn. Be careful not to relax focusing strength when increasing the resonating space. Maintain a good balance of air pressure and focusing strength to keep the buzz of mask resonance in the sound.
Feel the vibrations in the chest area while the tone projects out through and mixes with the mask resonance. You will feel the back of your tongue lower if you think an "uh" (as in love) sound but don't let it pull back into the throat. It may take some time, patience and practice to learn to focus well and not de-nasalize the very dark tones. In chest resonance, the higher overtones of the forward placement wonderfully balance the richness of the chest color to keep brightness and clarity in the tone.

1. Using a dark, angry calling-out-like tone think the sound "uh" (as in under)

And call out:

Hey!

Now repeat in your head voice.

Hey!

3. Now add the chest resonance to the head, nasal and mouth colors. When bringing the chest resonance into the higher range, you create the "legit" or Classical sound. For most other singing, allow the resonance to shift along the resonance track to the brighter resonances.57

4. Using chest resonance, an octave higher,

5. Now with a shift to the brighter resonances at the top of the scale emphasizing the nasal and head colors.

6. Using head voice (falsetto), emphasize the chest color.

7. Here's an exercise that begins with the head resonance, then adds nasal, then mouth, then chest.

8. And an octave higher

9. And in head voice

10. In the following exercise, use medium volume. Beginning on a comfortable, low pitch, sing the sound "nyaah" ("aa" as in hat) and glide your voice on a siren-like tone, beginning in the chest resonance and moving upward in pitch along the resonance track. Gradually allow each
resonance to predominate by changing to mouth resonance, then nasal resonance, then head resonance and back down. Keep forward placement and a pure "aa" vowel throughout.\textsuperscript{58}

Even when only one color is being emphasized, it is natural and appropriate for all the resonances to be present. A skillful singer emphasizes and blends the vocal colors to suit the emotional expression of the song.

\textit{Helpful Hints:}

1. When emphasizing the chest resonance on higher and louder notes, be careful not to push the air pressure beyond the limits of good balance.

2. When emphasizing chest color in the higher range, there is a tendency to sing under the pitch, so take extra care to stay on top of the pitch.

3. When practicing volume control in each resonance, keep the vocal color constant. For example, there is a tendency to add chest color when singing louder and a tendency to go to pure head color when singing softer. You can sing from soft to loud in any of the resonances except for the pure head resonance which is always soft. Volume and resonance are actually independent variables.

4. Adding chest resonance can help you create a "larger sound".

5. Don't confuse resonances with registers. Resonance refers to the tone-colors of the voice; while register refers to the distinct vocal qualities and sensations of the upper versus lower ranges of the voice.

\textbf{1.7 VOCAL RANGE}

An important goal of vocal development is to learn to sing to the natural limits of one's vocal range without any obvious or distracting changes of quality or technique. Voice instructors teach that a singer can only achieve this goal when all of the physical processes involved in singing
(such as laryngeal action, breath support, resonance adjustment, and articulatory movement) are effectively working together. Most voice teachers believe that the first step in coordinating these processes is by establishing good vocal habits in the most comfortable tessitura of the voice first before slowly expanding the range beyond that.

There are three factors which significantly affect the ability to sing higher or lower:

1. The **Energy** Factor- In this usage the word energy has several connotations. It refers to the total response of the body to the making of sound. It refers to a dynamic relationship between the breathing-in muscles and the breathing-out muscles known as the breath support mechanism. It also refers to the amount of breath pressure delivered to the vocal folds and their resistance that pressure, and it refers to the dynamic level of the sound.

2. The **Space** Factor- Space refers to the amount of space created by the moving of the mouth and the position of the palate and larynx. Generally speaking, a singer's mouth should be opened wider the higher they sing. The internal space or position of the soft palate and larynx can be widened by the relaxing of the throat. Voice teachers often describe this as feeling like the "beginning of a yawn".

3. The **Depth** Factor- In this usage the word depth has two connotations. It refers to the actual physical sensations of depth in the body and vocal mechanism and it refers to mental concepts of depth as related to tone quality. McKinney says, "These three factors can be expressed in three basic rules: (1) as you sing higher, you must use more energy; as you sing lower, you must use less. (2) As you sing higher, you must use more space; as you sing lower, you must use less. (3) As you sing higher, you must use more depth; as you sing lower, you must use less".

Your vocal range is the total number of notes you can sing. The average untrained singer has a range of about one-and-a-half octaves--twelve notes. With some training, most singers can achieve two or perhaps two-and-a-half octaves.

_Tessitura_ is your comfortable range, in which you can sing the notes consistently, on pitch, discover how to boost your vocal range by more than 8 notes with the world best selling and
most effective Vocal training and without strain. The term is also used to describe the average pitch range of a song or choral part.

Many mezzo-sopranos, for example, can sing an occasional high C at the top extreme of their range, but their tessitura is probably an octave to half an octave Below that: perhaps from the A above middle C to the second A above middle C. If they attempt to sing a piece in which the tessitura is from high G to high C, they will experience vocal strain and fatigue.

The key is locating your own tessitura and choosing songs with the same tessitura. If you try to sing higher than your natural tessitura, you run the risk of straining your voice. To get an idea of your existing range and tessitura, try singing some arpeggios and scales. See how high and how low you can go on a piano, and notice the points where you begin to feel strain or hear a reduction in tone quality.

Remember, this is only the starting point from which you will measure your forward progress. So if your range isn't very large right now, don't let that worry you.

For breathing, the folds are relaxed open. Air passes freely between them as you inhale and exhale. To demonstrate, put your feet flat on the floor. Put them together side by side. Now keep your toes together and open your heels. You'll see a wedge-like space between them. This is somewhat how your vocal folds are positioned during breathing. Your toes together represent your Adam's apple. Looking down at your feet is like looking down through your head and throat and seeing the tops of your vocal folds inside your larynx.

Now keep your toes together and close your heels. Your feet should be touching side by side. For singing or speaking, the back ends (your heels) automatically close and the rims of the folds lie next to each other. This is so the air can make them vibrate. The air stream must come under the m, support their particular position, and stimulate their vibration. For different pitches, the folds stretch and thin. Different lengths of the folds vibrate appropriately. This is similar to how you would fret a string on a guitar, shortening it, in order to make different pitches.

The muscles of the vocal folds are able to do this automatically, as long as they are conditioned properly and nothing hinders them, such as too forceful an air stream or throat muscle tension. But who wants to have to think about breathing while singing? The best breath support would be one
which automatically provided just the right
amount of air for each pitch you sing without causing tension.

FIVE PRIMARY CAUSES OF THROAT MUSCLE TENSION

Here they are:

1) Lack of adequate vocal warm-up

2) Air over-blow

3) Over articulation (emphasizing mouth, lip movements when singing or talking)

4) Using force rather than resonance for volume

5) Trying to compensate for under-developed vocal muscles

1) *Lack of Adequate Vocal Warm-Up* - to understand why vocal warm-up is important; let's take a look at certain realities of muscles. The more active your muscles, the more blood flow they need to supply oxygen and nutrients. As well, the muscle tissues need to have elasticity, which is, in part, furnished by having a certain fluid level. In other words, they need to be hydrated. If you were an athlete or dance and attempted your workout or performance without preparing your muscles, you would overexert your body and suffer the consequences. Gentle stretching of the muscles increases the fluid, blood and oxygen into the muscles. Once stretched, the muscles are awake and ready to "deliver the goods" without stress or tension. Just as an athlete would not expect to perform without a warm-up, neither should you.

It is so much easier to sing after a correct warm-up. If you've never experienced this, you'll be surprised once you try it. As well, tonal qualities automatically get better, as does ease of range.
The reason: Your muscles are awake and better able to do what they're designed to do, naturally. Of course, it is helpful to know what to do. Singing songs does not properly warm-up your voice you need a program of correct warm-ups.

To fully expand your range, it is necessary to eliminate throat muscle tension. When spoken of expanding range, it means having a wide "playing field" of many notes high and low within which you are able to create varied volumes, colors, textures and emotions.

2. Air Over-blow - Air vibrates the vocal folds. Too much air pushing under the vocal folds can push them out of position. They will either tense in resistance or blow apart. If they tense, you will sound strained or off pitch, and will reach what could feel like a "ceiling" in your range. The muscles of your vocal instrument will lock up preventing them from vibrating faster to give you higher pitches. Excess air passing through the folds also produces the quality of voice often referred to as "head voice."

Here are a couple reasons for air over-blow:

If you think you need to push up to "hit" the pitch, your body will respond by pushing out too much air. If you push-in your stomach you will force your body to push out too much air in relation to the needs of your vocal folds. In fact, if anything happens to cause your lungs to compress as you sing, you will have air over-blow.

3. Over-Articulation - If you manipulate the movement of your lips and/or jaw while singing, it can tighten your tongue and the muscles in the back of your throat. This is called hypertension. (Hyper = too much) In turn, your larynx, which houses your vocal folds, is stiffened and made inflexible.

The best way to sing includes the relaxation of the lips and jaw. Let your inner instrument do its job. Tightening your lips and wide stretches of your jaw promote hypertension. This prevents your inner vocal apparatus from moving easily. This gives the appearance that it's harder to sing or reach higher notes. This is a
self-imposed difficulty. Yes, you have to move your lips and tongue to form your consonants. However, you do not need to exaggerate the positions of lips and tongue in order to be understood. The vowels, not the consonants, should be the art of your sound.

4) Using Tension Rather than Resonance for Volume - Singers try to use force or "push" to achieve an increase in volume. "Pushing" tightens muscles, reduces flexibility and is counter productive. A big sound needs big space. Volume is achieved in part, by letting your sound resonant in the air cavities of your body such as the lungs, mouth, throat and sinuses. Tension reduces the size of these cavities.

Try this: As you sing, put the palm of your hand on the back of your neck. Imagine the vowels of each word you are singing gently going into the palm of your hand. Don't push them there, just think it. You may notice a relaxation of the inner muscles of your throat, and find your sound becoming at least a bit bigger with less effort. This is an example of allowing your sound to resonant into a relaxed body space to achieve more volume.

5) Trying to Compensate for Underdeveloped Vocal Muscles - If you tried to pick up an object that was heavier than your body's ability to lift, you'd probably use extra effort causing strain. If you try to sing notes that your vocal muscles are not capable of producing, you might use extra effort which causes tension. As you now know, muscular tension reduces your voice's range, resonance, volume and emotional freedom.

Conclusion

Melody and rhythm are the common grounds for music, be it Western or Indian. Indian music is essentially monophonic (single melody format or homophonic) while Western music can be polyphonic (multiple notes played or sung in harmonized unison), monophonic or a combination of both.
Western classical music is based upon the equal tempered scale, and rests upon melody, harmony and counterpart while Swara and Tala are the two basic components of Indian classical music. Swaras are the twelve notes and the intervening semitones, while a Tala is a cycle of beats, starting with a stress point called the Sam and ending with a release point called the Khali. It is this (sam & khali) that brings life to a Tala.

Vocals are used in both Indian Classical Music & Western Classical Music, but the way they’re treated in relation to other instruments is different. When vocals are used in Indian Classical Music, all the rest of the instruments are mere accompaniments, there are Tanpuras that act like drones, Harmonium or Sarangi that follows the tonality of the voice by providing chords, etc.

In other words, Voice forms the basis of the structure surrounding an Indian Classical Music recital, whereas it is an addition to the instrumentally-generated structure of a Western Classical Music composition. The term Voice is hence used in a generic way in Western Classical Music and doesn’t always means human voice. A voice can be any theme played by an instrument.

Thus, one can have a four-voice fugue being played on the piano using two hands, where each hand is playing one of four voices at any given time.

As the concept of an Ideal Voice differs according to the Systems of Music, the methods of training also vary with the systems of music. But we should not forget that the principles of any science in any country are the same. Same like that, all the Music systems notes are only 7 (seven) $Sa \ Re \ Ga \ Ma \ Pa \ Da \ Ni \ Sa$ or $Do \ Re \ Mi \ Pha \ So \ La \ Ti$, only the voice training methods and treatments of these musical notes or swaras are different.

The next chapter shall discuss various scientific principles governing the voice and its projection. They are based on natural and correct method of voice production and cultivation, regardless of any form or style of singing.

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