

"Of Vocal Registers" - by Gilles Denizot

Singers and teachers constantly refer themselves to certain technical terms in order to describe the various registers of the singing voice. The basic concepts are accepted by some and refuted by others. A very natural confusion settles down among students (who do not understand what their professor means) and amongst vocal tutors (who do not use the same vocabulary). The reason is essentially due to the complexity of vocal mechanisms. Solid notions in anatomy and in vocal physiology are indispensable to understand and teach singing. We would like to enumerate and attempt to define here the most common terms.

One must establish at once that if one divides the voice into several parts or registers, one implies the necessity of a *passage* from one register to another. Is the voice effectively divided into several registers or not? Vocal homogeneity nevertheless is indispensable in high-level classical singing. It is thus necessary to learn to sing on our individual complete tessitura by preserving the same timbre. This can be obtained by accommodating one's voice according to the pitch of notes. It is what differentiates classical singing from popular singing for example. One should not be afraid of the notion of registers, nor to imagine that one sings certain notes in *chest*, the others in *head*, but to view beautiful singing as the demonstration of balance and harmony of registers.

Registration

Registration is the complete positions of the larynx that can produce various types of sounds, even before their modification by the resonators.

In *Hints on Singing* (p.7-8 and following), Manuel Garcia mentions the existence of three vocal registers respectively named *chest*, *medium*, and *head*. He recognizes that these terms are inaccurate but acceptable. Still according to Garcia, a register is a *series of consecutive homogeneous sounds produced by one mechanism, differing essentially from another series of sounds equally homogeneous produced by another mechanism*. Each of the three registers has its own extent and sonority, which varies according to the gender of the individual, and the nature of the vocal organ. The mechanism of registers is explained by the posture of vocal cords and its use by the singer: the chest voice causes a light tension of the complete length and width of vocal cords. The higher the note, the more the tension of the cords increases whereas the thickness decreases. At the same time arytenoids reduce the vibratory length of the cords until head voice is involved. Garcia explains that the resistance to the breath opposed by the thick sides of the vocal folds would invite the chest voice or the *falsetto* with thin edges. One can thus sing on the thin edges of the cords rather than using their whole mass. It considerably affects the vocal health, the vocal resistance, and the musicality of the singer. Let us note that, according to Garcia, the *chest* and the *falsetto* are the same register. This confusing notion is not used nowadays.

Vocal Mechanisms

The student will often read the terms *heavy mechanism* and *light mechanism*: they are in fact two different ways to use the vocal cords. In this widely documented domain, the study of William Vennard is a reference. In *Singing - The Mechanism and the Technic* (par. 238, ed. 1967), Vennard exactly points out that because the heavy mechanism covers 2/3 of the lower tessitura, and because the light mechanism covers 2/3 of the high range, either mechanism can be employed for the middle third. It is a fundamental notion: the middle range of the singer can, by an appropriate training, reach a balance between low and high notes, and set the quality of

the complete instrument. This is why the study of singing first starts with the medium, then addresses the extremes of the voice.

Heavy Mechanism

The heavy mechanism is sometimes called *chest voice* which creates a first misunderstanding: we believe that the chest voice is the product of the heavy mechanism, not its cause. One of the characteristics of the heavy mechanism is the dominant action of the thyroarytenoid muscle (commonly called *vocalis muscle* in English). The thickness of the cords creates an intense and long closure of the glottis during phonation. The accumulated pressure then opens the glottis almost like an explosion. The distance between both vocal cords is then rather important. The mechanism repeats itself then throughout the phonation in chest voice. The heavy mechanism is convenient for low notes, precisely because of the wide vibration amplitude of the cords.

Light Mechanism

The first remark concerning the heavy mechanism applies to the term *light mechanism*. The characteristic function in *light* mode is the dominant action of the thyroarytenoid ligament. Vocal cords offer a tiny resistance to the breath and the closure of the glottis is brief. The edges of vocal cords are thin.

Breath and Its Influence on Vocal Registers

One cannot avoid the subject of breath and its management when one evokes the vocal registers (C.f. our article on [Posture and Breath](#)). Indeed, according to the Masters of *Bel Canto*, *il canto è fiato* (singing is breath). The optimization of vocal registers is impossible if the breath is not disciplined. This is the main obstacle at the beginning of vocal studies. The student does not succeed in correctly holding the breath back. By reaction, he/she sings mostly in heavy mechanism. The larynx cannot pivot and the pharynx is not expanded enough to allow the light mechanism to occur. Extreme notes are missing, or of a mediocre quality. They gradually appear when the singer manages his/her breath.

Chest Voice (voix de poitrine, voce di petto, Bruststimme, long register)

Term used to describe the vocal timbre produced by the vocalis muscle compared to the vocal ligament. Some people speak about vibratory sensations localized in the chest rather than in the head. As Garcia said, this term is inaccurate but usually accepted notably in reference to the dark timbre, to the heavy mechanism, and to the low register or voice. One could speak of the pre-eminence of low overtones because of the low laryngeal posture. The chest voice can only be a part, the lowest, of the singer's voice. Indeed, it is physiologically impossible to sing *in chest voice* in the high extreme of one's tessitura. The tenor Adolphe Nourit, after whom one spoke of the *C di petto*, meant to describe a different kind of vocal production compared to the style of singing in fashion at the time which favored a strengthened *falsestto*. The permanent use of the chest voice has consequences on:

- a) vocal health: *to sing in chest voice* on all the tessitura simply indicates that the singer did not discover or does not use any other vocal mechanism and pushes his chest voice as far as possible, often risking damages;
- b) musicality and style: *to sing in chest voice* is spread in *belting*, but also among most beginners in classical singing as well as with singers of mediocre quality. These individuals often have no other means to reach high notes than to push the voice and to horizontally open the mouth. The great operatic repertoire is inaccessible, and the musicality is diminished. The study and the mastery of the *passaggio* are indispensable. The question of musicality will be addressed below.

Head Voice (voix de tête, voce di testa, Kopfstimme, short register)

Term used to describe the vibratory sensations localized in the head rather than in the chest. Some call it the high register. One can speak about the dominance of high overtones. For some professors, who often confuse *head voice* and *falsestto*, the head voice would be weaker in projection, in timbre, in power. They prefer the terms *mixed* or *well-supported mixed voice* to indicate the *medium* of the voice, or even the flexible singing.

Mixed Voice (voix mixte, mixte appuyée, mezza voce)

Combination of the *chest* and *head voice*, or low and high overtones. The notion of *mixed voice* implies a balance of its components. The larynx is lowered, the pharynx is open, allowing the intervention of low overtones. High overtones are obtained by working with the soft palate or *velum*. Some people add the term *supported* when there is enough body implication. The term *mixed voice* is often used in classical vocal interpretation, notably the art songs, and particularly as regards the French repertoire. The term *mezza voce* does not thus indicate the head voice register. It is related to a style, a way of singing. To accomplish *mezza voce*, it is not necessary to modify the full voice mechanism, but simply to reduce the intensity of the singing. One could also say that *mezza voce* allows to speak rather than to sing the words.

Falsetto (voix de fausset)

The treble range notably produced by counter-tenors, also called *falsestists*. In *falsetto* mode, only the thin edges seem to be used during the vibration; the internal mass of the vocalis muscles remains motionless. Singers who train their voices with the *Cuperto* (see below) use *falsetto* downwards to the lowest notes of their tessitura. In time, the typically pale and fragile *falsetto* strengthens itself. Some then call it *reinforced or strengthened falsetto*. In the case of light lyric tenors, this *reinforced falsetto* presents a characteristic tone and a consistency ideally adapted to the Rossini repertoire.

Low Register

The lowest notes of the human voice. Series of consecutive low notes produced by the same vocal mechanism.

Middle Register

The notes on the treble staff. Series of consecutive medium notes that combine the best qualities of the low and high registers.

High Register

The notes from the top of the treble staff to the highest pitch of human voice. Series of consecutive high notes produced by the same vocal mechanism.

Passaggio (passage or Upper Middle Register)

On an ascending scale on an open vowel, a singer clearly feels that from a certain note (which varies according to individuals) the colour of the voice changes and the laryngeal sensation becomes less comfortable. These changes occur while passing between two areas of the voice, even between two notes. If one accepts the concept of vocal differences between every tone, or the notion of registers (series of similar tones), then one should speak about pivots between the various types of tones. Each of these transitions is a passage. The purpose of the high-level classical singing is not to ignore these transitions, but to make them as imperceptible as possible for the listener. Vocal homogeneity is the result of this indispensable work.

Whistle Register (flageolet ou sifflet)

A register of the female voice extending beyond the upper fifth. Its use is not frequent. The term results from the description of the sound in this very high vocal area. Light lyric sopranos or dramatic coloraturas who practice the *Cuperto* may reach the upper fifth without tightening the throat or using the false cords.

Vocal Fry (Stroh bass, Schnarr bass, friture)

A register of the low male voice which extends below the normal notes used in the singing or speaking voice. Like the whistle, its use is extremely rare and it is not indispensable to go further into details.

Feigned Voice (Voce Finta, voix feinte)

Translation of the Italian *voce finta*, sometimes used to describe *falsetto*, describes the timbre of the unsupported voice. The sound is too clear and inconsistent. It is often the result of a horizontal mouth posture

and of the absence of physical support. Some singers unfortunately use this feigned voice as an attempt to be expressive.

Belting

A style of singing, and by extension a vocal technique, spread in the musical theater. The larynx is in a particularly high posture and the closure of vocal folds is held or even forced for a longer duration. The sound becomes extremely nasal. Some consider *belting* the result of the chest voice pushed beyond the upper *passaggio*. Classical singers who do not accommodate their larynx for the high range and/or those who open their mouth horizontally involuntarily almost produce a *belting* sound.

Open Voice (voce aperta, voix ouverte)

The use of the chest voice in the highest possible register. Another way of describing *belting*. The mouth is more and more opened on the ascending scale.

Clear or White Voice (voce chiara o bianca, voix claire ou blanche)

A clear or white timbre produced by the low posture of the soft palate and the high posture of the larynx. The mouth is often opened horizontally. The tongue retracts itself and blocks the pharynx. *Vibrato* is missing.

Closed Voice (voce chiusa, voix fermée)

A voice which modifies itself in the upper middle register. The singer feels the pivot of the larynx and the gradual opening of the pharynx. The mouth is rounded and not too open.

Covered Voice (voce coperta, voix couverte)

A balanced voice in the high register. The timbre is dark and shiny. The larynx has pivoted and remains stable; the pharynx is open.

Full Voice (voce piena, voix pleine)

A voice which advantageously combines the qualities of the chest and the head voice. An intense voice, well-supported by the body. Caruso considered his full voice to be his natural vocal capacity.

Cuperto and Vocal Health

In the treatise *Pensieri e riflessioni pratiche sopra il canto figurato* published in 1774, the singer and professor Giambattista Mancini explains: *In vocal training, one should divide the voice between its two natural elements - pure chest voice and small head voice. Exercise and strengthen each part separately, then join them in mixing the head voice with the chest voice.* The exercise of the *Cuperto* is an effective educational tool. It is difficult for voice students, especially at the beginning of this specific training, to understand the utility and the benefits of the *Cuperto*. Our time favours rapid production rather than slow artistic maturation. Those who mould their instrument by using the *Cuperto* gradually notice its value. The vocal health and the performances of the singers are quite naturally improved.

Caruso Scales and Vocal Balance

Vocal balance implies that neither of the mechanisms occupies a dominant place. In order for the registration to be flexible, it is necessary to train not only the *pivotal notes* but also the complete range of the voice. The Caruso scales are particularly effective in this matter. Students gently understand the concepts of the rounding of vowels and the pivot of the larynx. They also work from note to note and on a long vocal distance. Singers who train with the Caruso scales gradually discover gradually tonal precision, stability in breath management, supported legato singing, and evenness of vowels. In here is an example for tenor:



The singer begins on E natural, preferably in head voice in order to facilitate the first passage on B. Should the singer start in chest voice, the access to head voice is still possible by rounding the vowel *a* to *o* on the B natural. The *o* that modifies itself to *u* in the upper middle register, right in *passaggio*, allows the pivot of the larynx and the opening of the pharynx. The singer smoothly reaches the characteristic second *passaggio* note on F#. The open throat of the singer would then allow him any higher notes, should the vocal line go further. On the descending scale, vowels alter again and the pharyngeal space reduces. This reverse accommodation of the oral cavity is critical for the tonal quality, particularly for female singers.

Musicality

Singers of inferior quality reveal considerable differences in registers and sounds. Good singers produce a balanced sound on all their tessitura. As William Vennard quite exactly wrote (quoted work, p.66): *If the singer is well trained, the middle range of his voice will be produced with a dynamic balance whereby it will be difficult to call it either chest or head. He will be able to make it heavy or light, smoothly and at will, and the compass in which this is possible will expand with the maturing of his voice until it includes most of the notes that he feels free to use in public.* Besides the scientifically proven fact that an open voice does not carry, few singers understand the necessity of reliable vocal tools for a high quality singing. An unbalanced instrument can not be musically reliable.

Conclusion

Vocal registers and all the corresponding definitions are subject to controversies. It is therefore wise to define the vocabulary used in the voice studio. One must also understand the various vocal mechanisms. It is the balance of the various registers - and thus the mastery of the passages - that incites to speak about a unique vocal register. Vocal evenness remains the distinctive feature of a high-quality instrument.

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Articles

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