

Aspects of vocal and choral harmony from the conductor's perspective

Ciprian PARA¹

Abstract: *In this communication we presented, as synthetically and originally as possible, just a part of the many aspects of vocal and choir harmony from the conductor's perspective. We will attempt to answer what is the voice in the following pages, answer which will, of course, be just one of the many given by music personalities, theoreticians, choir masters and composers. These wrote dissertations on singing and on conducting in which they tried to clarify some of the secrets of the "treasure" that is the human voice.*

Keywords: *conductor, choir, voice, ensemble*

1. What is the voice?

We will attempt to answer this question in the following pages, answer which will, of course, be just one of the many given by music personalities, theoreticians, choir masters and composers. These wrote dissertations on singing and on conducting in which they tried to clarify some of the secrets of the "treasure" that is the human voice.

The human voice (from the Latin word *vox*) is a natural trait which, no matter the existence level, reflects a certain perfection stage, hard to be attained by instrumental sound sources.

Regarded as an "instrument", it appears rather fragile and modest as ambitus, but also perfect and unparalleled in quality; on expression level it remains an ideal that other sound sources will never attain, as "the voice is an inner manifestation, while the music instrument is of outer nature".

The sound range of the human voice can be relatively small, the ambitus having approximately 2 octaves (human voice general ambitus).

The combination of the 2 terms "human" and "voice" may form a pleonasm, but we know that the voice can only be human, as all other living things do not possess the capacity to speak or sing in the way in which we understand the vocal phenomenon.

¹ PhD *Gheorghe Dima* Music Academy, Cluj-Napoca, ciprian_para@yahoo.com

Speaking and singing are two successive, but different instances of the same voice. Music completes and continues the meaning of words, just as singing completes and continues speech.

In this chapter we will deal exclusively with the singing human voice and its implication in putting a choir ensemble together.

Coming back to the notion of the natural trait that is the voice, we must emphasize that unavoidably there are three large voice categories:

- 1) children's voices
- 2) women's voices (feminine)
- 3) men's voices (masculine)

Putting the general ambitus of all human voices on the general musical scale, we notice a layout of all voices within the Do and do³ limits.

We mention that both men's and women's voices cover approximately 2 octaves + one fifth of the musical scale.

Viewed in relation to the objective acoustic reality encoded in the general musical scale of about four octaves, we objectively retain a large common overlapping area of the men's medium and high pitched registers with the women's low and medium pitched registers. This being of paramount importance for the composition of the ensemble, we will amplify it in detail in the following pages.

In comparison with this first observation, we notice, looking into the general ambitus of children's voices, that they are placed in the area of women's voices.

We point out that the difference between these primary categories is of timbre essence, to which we add a significant detail, namely that if women's voices form a specific ensemble with soprano, mezzo-soprano, alto, the ensemble of vocal children consists of a choir of equal voices (Voice 1, Voice 2, Voice 3).

From this brief remark we deduce that some pertinent observations should be written on children's voices that would take into account the facts outlined above.

Although many pages of reference were written about this category and, we are sure many, more will be in the future, we will no longer dwell on the subject, but focus instead on the base categories of the mixed choir type voice ensemble only. These two big categories are: women's voices and men's voices.

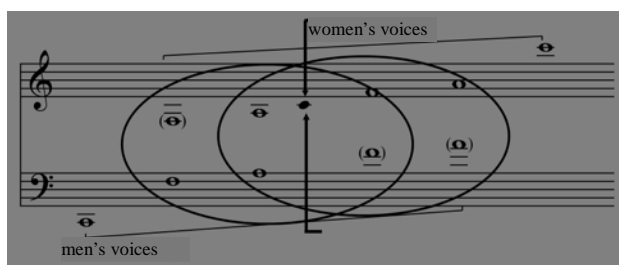


Fig. 1. *The range of voices on the general musical scale*

The buffer zone between men's and women's voices is the fa (la) – fa1 (la1), where the women's low pitched register overlaps the men's high pitched one.

The belonging to a high, medium or low-pitched objective register, in reference to the general musical scale, divides the voices into women's and men's, each of them having:

- 1) high voices (soprano, tenor)
- 2) medium voices (mezzo-soprano, baritone)
- 3) low voices (alto, contralto, bass)



Fig. 2. *Categories of voices*

These voice types are well recognized in musical practice through their timbre personality. In order to classify a voice one must take into account the most important elements (which are not the only ones): the tessitura (pitch) on one hand and timbre on the other.

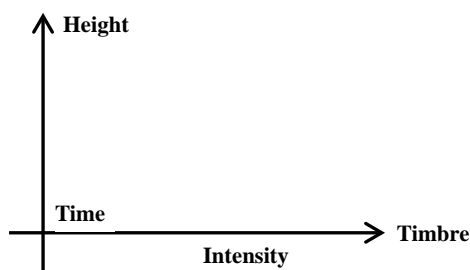


Fig. 3. *Voice and the qualities of sound*

The following question appears:

What does voice tessitura mean? The Italian word “tessitura” means fabric, therefore tessitura is the fabric of the voice”.

The tessitura is therefore the amount of sounds that a certain voice can emit with the least possible effort, within the most natural physiological limits.

The voice range is also very important, as it indicates the total amount of sounds a voice can emit. It depends solely on the excitability of the recurrent laryngeal nerve, on which the tessitura also depends.

The range of choir voices is somewhat more limited than that of the soloists.

R. Husson and C. Chenay produced, between the years 1953-1955, the following table showing the tessitura classification based on recurrent “chronaxie” (measured on the sternocleidomastoid muscle).

Men's voices	Chronaxie in milliseconds	Women's voices
	0,055	Ultra-high soprano
	0,060	Ultra-high soprano
Over-high tenor	0,065	Over-high soprano
High tenor	0,070	High soprano
Medium tenor	0,075	Medium soprano
Low tenor	0,080	Low soprano
<i>Intermediate voice</i>	0,085	<i>Intermediate voice</i>
<i>Intermediate voice</i>	0,090	High mezzo-soprano
High baritone	0,095	Medium mezzo-soprano
Medium baritone	0,100	Low mezzo-soprano
Low baritone	0,105	<i>Intermediate voice</i>
<i>Intermediate voice</i>	0,110	High mezzo-contralto
<i>Intermediate voice</i>	0,115	Medium mezzo-contralto
High cantabile bass	0,120	Low mezzo-contralto
Low cantabile bass	0,130	<i>Intermediate voice</i>
Medium bass	0,140	<i>Intermediate voice</i>
Medium bass	0,150	Contralto
Very low bass	0,160	Contralto
Very low bass	0,170	Contralto

“The resulting classification is only about the tone height (tessitura); it has nothing to do with the timbre, nor the voice intensity”.

The timbre of the voice is also thoroughly independent from the tessitura. For example: A voice with given tessitura, for instance high baritone, could have an extremely light timbre or an extremely dark and full timbre.

The timbre is a complex notion. The following qualities can be detected in the timbre of a voice: color, volume, thickness and penetrance → extra-vocal timbre.

- according to color → light voices – dark voices
- according to volume → small voices – grand voices
- according to thickness → thin voices – thick voices
- according to penetrance → non timbered voices – timbered voices

Timbre is the quality that confers personality to a voice; it helps us distinguish one voice from another, even if both have the same height and intensity.

While voice color, volume and thickness can be accounted based on the same reference system, penetrance needs, in our opinion, an additional remark: regardless of the voice appartenance to the first three categories, penetrance is a quality involved with all of those other three. Thus, we can distinguish timbre in all categories, by non-timbered and timbered voices.

The difficulty to classify a voice based on these criteria brings on almost insurmountable dilemmas; thus, we find ourselves faced with particular cases, in which not all of these criteria are clearly outlined. Because of this, voice pedagogy and dissertations diplomatically mask this problem, which is why we believe we are not the most apt ones to bring this matter into light in the course of this paper.

Based on the same criteria voices can be classified through specific nuances, especially soloist voices. In this case, the dissertations develop these characteristics in a natural way.

In the light of our research field, narrowed down to outlining a general notion, we focus on the essence of some classifications discussed in all dissertations on orchestra arrangement and choir conducting.

At this level there are often many differences, because the authors of these dissertations recorded their observations based on the practices they were familiar with at the time.

For instance, here is how Rimski-Korsakov classified voices:

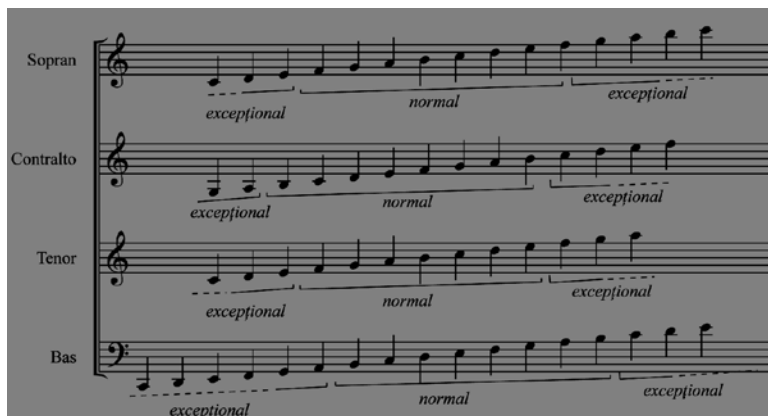


Fig. 4. *Classification of voices and vocal ambitus*

Small remark: these are the typical voices for Russian choirs, which have a distinct personality.

In the same context we quote an example from Augustin Bena, which is much closer to our professional and amateur choirs and much more common in European choir ensembles.

As a reference to this potential ambitus that we selected based on the bibliography, a first remark is needed:

- there is an overlapping area between women's and men's voices: "fa" is the same sound as the last potential sound of the contralto, while the over-high "la" is the same as the "la¹" of the soprano and mezzo-soprano; this is the very reason we outlined the voice common area (see figure on page 2).

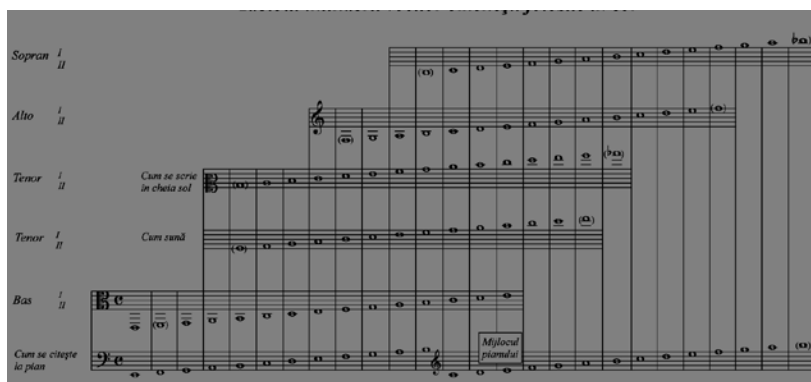


Fig. 5. *Table of extent of human voices used in chorus*

Opposed to this, there is a part of the ambitus that is naturally specific to the low bass, down to “Do” and, symmetrically opposite, there is also an area that is specific only to high sopranos, which is “do³”.

Having arrived at this point, we must mention that the bass voice, which in harmonic writing constitutes the state of the harmony, has its own specific register. Systematically, the soprano voice, which gives us the melodic position of the harmony, also has its own register.

In this context, the great common area corresponds to medium voices, which give us the consistency and harmonic distribution.



Fig. 6. *The relationship of voices with music clefs*

From the above we can concretely realize the importance of voices in the creation of the choral score.

It is interesting to submit to comparison the relationship between the neutral semeiography of a potential duodecimal ambitus and the main voice types expressed through characteristic keys.

Naturally, voices are placed in a high, medium or low register, independently of the fact that timbre divides them into women's or men's voice.

From human voice physiology point of view, we distinguish the chest voice and the head voice.

Generally, the most natural area of the voice is represented by the chest voice – chest register (single-phase) both in men and women.

Head voice – the two-phase register entails a certain strain, an additional effort expressed in the particular characteristic of the high and over-high voice registers. We must mention that there are also totally extraordinary cases of triple-phase or quadruple-phase registers: for instance, Mme Mado Robin - Paris Opera.

Men usually use the single-phase register (chest voice), while women use the two-phase register (head voice). The gap between the two is of one octave.

Naturally, the man could also use the two-phase register in high voice (falsetto), just as the woman could also use the single-phase register in the low voice.

There is a group of sounds, between the head and chest voices, called passage, that are the equivalent of a conventional medium register.

This passage arises the highest of problems in singing techniques: it causes loss of timbre, placement, tone and personality of the voice. This is a major issue not only for canto professors, but also for choir conductors, who need to elaborate special vocalizations, in order to harmonize the passage and the high register.

The ideal passing from one register to another should be unnoticeable, without those breaks that might appear in the case of an imperfect technique.

A low register tessitura, no matter where it is placed on the general music scale, is subjectively received as belonging to the low register, therefore sang low. Acute register tessitura is received as being sang high, no matter the objective acoustic relation.

The relation between subjective sensation (of certain physiological stress essence, implicitly involving globally timbered components) and the objective acoustic reality (neutral through set sound attributes “accounted” in order of frequency) creates in music one of the most spectacular timbre divisions.

A voice from the low register intoning the same sounds as a voice from the high register form the global octave effect, not that of unison.

The image shows a musical score for Alto and Tenor voices. The Alto part is written on a treble clef staff, and the Tenor part is written on a bass clef staff. The score is divided into three sections. The first section is labeled 'unison objective' and shows the two voices singing the same notes. The second section is labeled 'global effect' and shows the two voices singing notes that are an octave apart. The third section is labeled 'subjective octave' and shows the two voices singing notes that are an octave apart, but the Alto part is written on a higher staff than the Tenor part, making them appear to be in unison.

Fig. 7. *Unison between the alto and tenor voices*

A woman’s voice together with a man’s voice of the same tessitura, in an objective octave relationship, forms the overall effect of subjective unison.

The image shows a musical score for Soprano and Tenor voices. The Soprano part is written on a treble clef staff, and the Tenor part is written on a bass clef staff. The score is divided into three sections. The first section is labeled 'octavă obiectivă' and shows the two voices singing notes that are an octave apart. The second section is labeled 'efectul global' and shows the two voices singing notes that are an octave apart. The third section is labeled 'unison subiectiv' and shows the two voices singing notes that are an octave apart, but the Soprano part is written on a higher staff than the Tenor part, making them appear to be in unison.

Fig. 8. *Notation and effect of the octave between the soprano and bass voices*

Here is the basis of the tenor in modern spelling, just like the soprano (specifying the objective effect of inferior octave).



It is not by accident that the vocal ensemble has soprano, mezzo-soprano, alto, tenor, baritone and bass in its layouts, so it is structured on four or six, eight voices, etc.

It is the role of the conductor to decide which ensemble to target, which repertoire to take on; the mediating points in balancing the ensemble are the medium voices. In the case of the two feminine voices, if we only essentialize two voices, the soprano takes on a part of the mezzo-soprano, while the alto does so with the other side. The same thing goes for men's voices.

We will come back on these issues of vocal and choir harmony in the following pages.

2. Selection and distribution of voices

Moving over the well-known general aspects that we have presented in the opening of this communication, we are dealing with the specific problems that are faced by the conductor, namely: selecting and distributing voices in groups and compartments, there where they will be most effective. The action is not at all simple, but even difficult and delicate, so to say, because the choice and organization of the sound material depend on the work and the subsequent results.

“The fate of a choir lies almost entirely in the conductor's hand.”

The same Kurt Thomas said that: "There are no bad choirs, there are only weak conductors"; and so it is the conductor who, through diligent work, must prepare his choir to reach that "ideal" that he imagines.

Coming back on the issue of the selection and distribution of voices, we can say that this implies a natural manifestation of the voice, a rapid homogenization of the groups and a natural participation based on the appropriate physiological data.

We set off from the premise that each voice has a characteristic (single-phase) register of its own.

A long experience in the field of choir ensembles tells us that it is tinged in a multitude of categories that primarily serve a certain type of repertoire. Here, too,

we underline the idea that a quantitative mechanical criterion is not the most operative.

For Example: chamber choir, great choir, vocal-symphonic choir, opera choir, etc. ... to which the question arises immediately: chamber choir for which repertoire? etc.

It is very clear that in the case of a chamber choir, when the conductor chooses its members, he will seek to choose similar voices in terms of color, with a not too high ambitus; also a chamber choir will take on a repertoire that can be approached and achieved.

In the case of a big choir, we will have a great variety of voices, the big choir being put together as an orchestra. We can talk about some sort of orchestration inside the group. When choosing members for such a choir, the conductor intends to recruit the subjects with much higher native data and, to the other extreme, with low bass voices; the big choir's register is about a quarter higher than that of the chamber choir and the repertoire's ambitus is entirely different (in the case of the big choir).

The problem of group consistency can be viewed through two angles:

1) a highest potentially homogenized group, which follows the density on the quantitative criterion (10, 20, 30 voices per group)

2) timbre diversification, homogenized by a global effect of consistency; in close connection with this, there is the complex problem of the division of the group, which of course is accomplished in the spirit of the music to be interpreted.

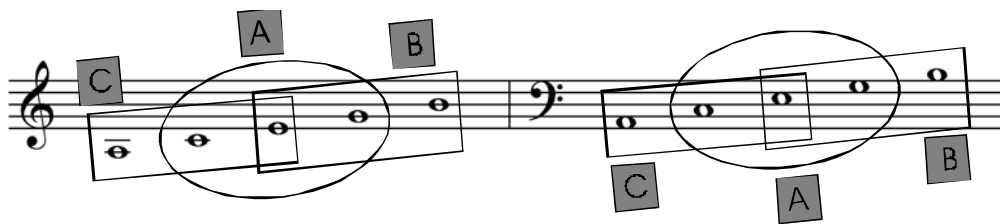


Fig. 9. Registers of women's and men's voices

In the voice selection and distribution process as a whole, we discern the following:

- the main distribution in the three slots against which, in the tested voice, we will observe its reaction with its low and high registers (we outline the problems in close connection with the women's voices, and we will conclude in analogy with the men's voices, the problems, in essence, being the same) .

A voice from the **B** slot, which has natural predispositions to the high and over-high registers, can be educated to become an impeccable soprano voice.

On the opposite side, the voice selected on the premise of the **C** slot shows natural predispositions for the low register - it becomes an impeccable contralto (in analogy with the soprano, in men it is the tenor's voice, and for the alto in is the bass voice).

We will notice that most of the uneducated women's voices are placed neutrally in slot **A** and forced education can cover either the soprano or the alto.

The voices selected after premise of slot **A** are potentially the most mutable and can be used both to supplement the high women's voice density, as well as to fill the density of the low woman's voice.

Through special education, their single-phase register can be manipulated as needed. In singing pedagogy, the biggest questions that always remain are the voices in this category, both men and women. In other words, the mezzo-sopranos and baritones are the great problems of singing pedagogy. Viewed from this platform, the voices are not characterized by a mechanical ambitus, they are characterized by natural relations between the two-phase and single-phase register.

Vocalizations - Automation exercises for a natural physiological complex that, in our opinion, must be applied in close connection with the potential of the natural mood of the voice. The logic of vocalizations - the role is to develop a natural vocal technique, not to force a theoretical ambitus.

The following question arises: what does the vocal group mean?

Vocal group - heterogeneous voices in terms of potential, uniting on a relatively uniform technique; particular timbre availability is the one that serves the idea of consistency of the vocal group on the one hand and expressive nuance on the other.

The ensemble unit can only be built around the medium voices, around which all the others are placed. At the level of a single vocal group, a potentially medium voice brings on group unity.

The ensemble is built on sub-ensembles, which are basically timbre subunits.

In closing, we would like to emphasize that in this communication we presented, as synthetically and originally as possible, just a part of the many aspects of vocal and choir harmony from the conductor's perspective.

3. References

- Bena, Augustin. 1958. *Curs practic de dirijat coral* [Practical choral conducting course]. București: Editura Muzicală.
- Chezan, Ioan. 2008. *Profesionalismul dirijorului de cor* [Choir conductor's professionalism]. Zalău: Editura Caiete Silvane.
- Golcea, Ioan, and Florin Badea. 2010. *Determinări teoretice ale cântului în ansamblu* [Theoretical determinations of ensemble singing]. Târgoviște: Editura Transversal.
- Husson, Raoul. 1968. *Vocea cântată* [The singing voice]. București: Editura Muzicală.
- Korsakov-Rimski, N.A. 1959. *Principii de orchestrație* [Principles of orchestration]. București: Editura Muzicală.

-
- Lupu, Jean. 1988. *Educarea auzului muzical dificil* [*Training of difficult musical hearing*]. București: Editura Muzicală.
- Timaru, Valentin. 1999. *Ansamblul muzical și arta scriiturii pentru diversele sale ipostaze* [*The musical ensemble and the art of writing for its various forms*]. Oradea: Editura Institutului Biblic “Emanuel”.
- Truculescu, Marin-Marius. 2011. *Cântul vocal profesionist* [*Professional singing*]. Cluj-Napoca: Editura Renașterea.
- Voiculescu, Dan. 2002. *Dirijorul de cor și cerintele contemporaneității. Jurnal Coral “A Cappella”* [*The choir conductor and the requirements of the contemporary world*]. București: Fundația Sound.