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Operatic singing – Implications of Technical Means in Changing Vocal Range

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Abstract: *This study focuses on one of the most spectacular aspects opera singer's evolution – the change of vocal subrange, or even of vocal range. We identified the most frequent reasons prompting artists to such changes, the prerequisites, the most frequent types of specific evolutions, the advantages and risks inherent to such choices. Besides physiological particularities, opera singers have available certain technical parameters which, when carefully adapted and fine-tuned, may lead to spectacular results. We presented several case studies reflecting the performance of famous artists, whose vocal technique illustrates the solutions and adjustments mentioned above.*

Key-words: *vocal technique, vocal range shift, depth/affondo, compression, column widening*

I. Introduction

"Migration" between different vocal ranges is a current, fascinating, but also highly risky temptation for opera singers. Human voice lifetime evolution is a natural, sometimes spectacular process. No one can provide an exhaustive explanation to encompass all reasons leading to this reality. Undoubtedly, we have the artist's individual medical conditions (hormonal status, first and foremost, then neurological command quality, muscle memory etc.), physiological peculiarities, temper, technical skills, their career options. All these highly complex equations shape the voice evolution curve.

Just like all people, singers are sometimes troubled by dissatisfaction with certain native traits. Similar to people with curly hair who want straight hair or to others who wish they were taller or stronger or slight, many singers yearn for a different voice: lyric sopranos aspire to become spintos or even mezzo-sopranos,

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mezzo-sopranos dream of soprano voices, baritones hope to become tenors. Basses and tenors seem to embrace their status more readily; most frequently they perform within their vocal range, though they often tend to aim to a fuller, possibly dramatic range. Besides human aspirations (quite legitimate, up to a point), there are solid professional arguments which, in certain cases, may fully legitimate such mutations.

Efficient control of vocal technique may enable spectacular evolutions. We may witness unlikely cases where the listener is confronted with serious difficulties when trying to pinpoint the identity of the singer, such can be the transformation from the previous vocal timbre. This evolution-transformation process can be very different in scope. Some maintain the same voice range, as soprano Joan Sutherland did, her voice enriching with extra expressiveness over time, according to some important music critics, such as Richard Dyer: *"Vocea își păstrează claritatea tinereții, avântul înălțător spre un acut triumfător. Dar acum aduce piesei acel "chiaroscuro", amestec de lumini și umbre, culori mai calde care vin odată cu maturitatea fizică.* (The voice keeps the clarity of youth, the uplifting rush to a triumphant high register. But now it brings that «chiaroscuro» to the piece, mixture of light and shadow, warm colours that come with physical maturity.)*"* (Major 1993, 162). Others go further and, following their transformation, they undergo a radical change of voice range. The most frequent turns are:

1. From upper range subcategories to the lowest and most massive, without leaving that vocal range

This is the most frequent vocal evolution process. Thus, a lyric tenor may become a spinto tenor (Gregory Kunde), a lyric soprano may evolve to a dramatic soprano (Anna Netrebko) etc. Most opera singers follow this path. Paradoxically, such cases also accommodate utterly radical vocal transformations – see tenors Giuseppe Giacomini and Jonas Kaufmann, whose vocal timbres became almost unrecognizable when their transformation process completed.

2. From lower to higher pitches

We have here baritones who become tenors (the spectacular case of Renato Zanelli), basses who reinvent themselves as baritones (Ettore Bastianini), mezzo-sopranos who successfully turn into sopranos (Violeta Urmana) etc. We should mention here some extreme cases, who turned tenors from basses (the famous Wagnerian tenor Johan Botha – but this was a process which took years, while he never sang in public).

We see here a very interesting and rather rare vocal subcategory, that of "long voices". We speak of singers who have a specific timbre for a rather grave voice, but who demonstrate special abilities in the extremes of the register, which enables them to perform in different ranges during the same period of their lives (Grace Bumbry, Ghena Dimitrova, Samuel Ramey, Christa Ludwig or the very special case of Michael Spyres).

3. From higher to lower pitches

This is a much more unusual evolution and it is noted especially towards the end of a singer's career, when full-voiced artists (spinto, dramatic singers) can no longer perform in their range go "lower" (for example, tenor Ramon Vinay, who transitioned to a baritone). We should mention here the Romanian bass Leonard Bernard, who turned to a lower range in his youth, due to a radical correction of a less happy vocal emission.

Human voice is alive, just like the entire human body. It changes, it evolves, as we train it, but also independently of our wishes or capabilities. A professional singer should permanently monitor his/her voice, and observe it with utmost care. Depending on such findings, singers should adapt their technique and repertoire. Failing this will cause unfortunate, even dramatic consequences on the quality of singing. The romanian opera director Anghel Ionescu Arbore notes the importance of integrating the voice into the sound flow of an opera score: *"Orice creație lirică pornește de la armonizarea sunetului cu cuvântul. Iar vocea, aparținând ființei care acționează în fața spectatorului și care se servește de ea, integrată fiind trupului și posibilităților acestuia de întrupare, formează un tot al personajului.* (Any lyrical creation starts from the harmonization of the sound with the word. And the voice, belonging to the person who acts in front of the audience and who is managing it «the voice», being integrated in the body and embodying possibilities, forms a whole of a character.)*"* (Arbore Ionescu 1992, 107). When singers accurately note certain evolutions in their voices, they may decide to assume the transition to another subrange or even to a different vocal range. However, this journey is teeming with perils, some quite unforeseeable. Just like not any research project would reveal unquestionably valuable discoveries, the pursuit of significant reconfiguration of vocal coordinates may have unpredictable results. But in some cases, the results are worth the risks.

II. Advantages and Disadvantages of the Transition to another Range

Advantages in assuming the transition to another vocal range/subrange:

1. Accommodation to a tessitura which better reflects the vocal-temperamental resources of the singer at a given time in his/her career.
2. Fulfilment of aspirations underpinning the decision to move in a certain direction.
3. A wider repertoire range – in the best case scenario, singers may tackle more roles. What happens more often is that the repertoire is simply replaced gradually by the new one.
4. Better career prospects – it is well-known that the important roles in lyric masterpieces are often very difficult. Besides the joy of performing interesting and highly complex characters, there are some demands of music market which cannot be ignored. Performers who assume difficult roles are in high demand and better paid.

Disadvantages:

1. Risk of failure after changing the emission – the artist cannot perform in the new range, and the return is difficult, even unsure.
2. Danger of shortening professional career (faster deterioration) - the attempt to transition was successful but, due to various reasons (from organic to new repertoire policy), the singer cannot last long, and the voice loses value.
3. Possible decline in nervous strength due to professional stress – psychological stability and especially self-confidence are absolutely vital, just like in the case of top athletes. Once weakened, it is very difficult, often impossible for the artist to recover.

III. Technical Parameters

Vocal technique is a fascinating topic, first and foremost for vocal performers. There is no singer who is not intensely concerned with this aspect (that would be quite impossible). Since the medical elements and the physiological peculiarities do not fall within the scope of our study, we will now turn to technical means and their contribution to the configuration and evolution of the singing voice. By and large, there are three most important technical parameters:

1. Depth, or *"l'affondo"* (Boccia 2007)[2], as the great tenor Giuseppe Giacomini defined this phenomenon (or, according to another description, we speak of the "voice placed in the body"). It involves significant larynx lowering and increased resonance due to this technique: *"Affondare, l'affondo is the accelerator of the engine. If you push your foot and put a block on the pedal, the pedal remains there and the engine will keep the power."*

Even when they do not intend to perform within this range (not to mention change their range), professional singers implement this technical method. What makes a difference is the amplitude of larynx lowering and the throat opening. The wider such interventions, the graver, stronger, "heavier" the voice. Timbre alterations may be radical, as we will see in the case studies described in this article. The risks posed by such a technique mean that, in case of significant deepening/widening, it becomes rather difficult to access high resonance areas, which are absolutely necessary for the head or whistle registers. Due to massification, which is difficult to avoid, the vibrato can also be changed, even somewhat degraded: increased amplitude and more time necessary for a full sinusoid (from the lowest to the highest frequency until the initiation of the following similar vibratto cycle). This has an impact on the voice – the larynx moves too slow, and it becomes somewhat rigid.

2. Compression

Compression means resistance to the flow of air. The phenomenon was described by the great Russian bass singer Feodor Chaliapin, who recommended his younger colleagues to imagine they are lifting a piano, when they attempt the head register. Or, to extrapolate, it's like fixed bar pull-ups. Such experiences help us note, beyond the overall effort, a narrowing or even closure of the throat. The same mechanism applies to facilitate access to the extreme registers of the vocal range (obviously, we exclude the extreme case of full closure). In the practice of vocal emission, this parameter is related, to a variable extent, with a reduction in column width, as well as with good control of the air expulsion speed. Depending on vocal range, on individual particularities and the context of the score, compression should be taken very seriously – any inadequacy may cause significant failures.

[2] *"Every sound in general must be considered in a vertical dimension, never in a horizontal dimension…"* For an optimal effect, the depth also must be connected with the high resonance: *"That's the way you get the <affondo> (he imitates a piston with his hands) (…). The higher part of the head is only responsible for the projection and the brightness of the sound."* (Boccia 2007: http://www.iitaly.org/magazine/focus/art-culture/article/giuseppe-giacomini-youtube-iii-part-beautiful-sound-one-deep)

3. Column width control

The width of the vocal emission column would differ from one range to another (it varies even in the case of subranges). In principle, the graver the voice, the wider the column and vice versa – the higher the vocal range, the more it narrows.

Actually, such parameters do not operate schematically, in isolation, but they are part of a whole whose technical components operate simultaneously, in variable doses, depending on the context and on the artist's approach. A singer in good technical control knows how to work with these coordinates, and adapts them according to needs, but also to their own capabilities. However, almost no performer may escape the times when vocal control becomes less effective. Then the emission can go amiss – sometimes for good.

IV. Case Studies

Anyone interested in the opera singer migration from one vocal range to another will easily notice that, in general, male voices show much more spectacular transformations than female ones. The limited space of an article does not allow for extensive case studies. To better illustrate the topic, we will detail three cases of some particularly representative artists.

The first case is the Italian-Chilean singer Renato Zanelli (1892-1935). During the first part of his career, he performed as a baritone, and tackled top leading roles. At 31, he embarked on a radical change and continued as a dramatic tenor. Fortunately, his voice was preserved for posterity due to relevant recordings in both vocal ranges, so today we can enjoy the art of a great performer who managed to be both convincing and diverse in both categories. We note especially the substantially different timbre imprints of his "voices": without research, it is difficult to guess/accept that the baritone voice we can hear on youtube at https://www.youtube.com/watch?v=uxjl-3hOZJQ ("I Pagliacci" Prologue, by R. Leoncavallo) and the tenor voice at https://www.youtube.com/watch?v=1Ji_yDGLfHY (*Un di, all'azzurro spazio,* from Andrea Chenier by U. Giordano), belong to the same person – Renato Zanelli.

From the very first sounds of the Prologue (*Si può, Si può, Signore, Signori?*), we may hear a wide, robust column, with ample resonance (including chest resonance), and the generous baritone colour, very rich in overtones, shaping the "trademark" of a world class voice. Tonio's role requires a full voice, so it is most often attempted by Verdi baritones, who possess broad voices, with high density of overtones, far from the lyric area of the range, where one may still find tenor

"touches". We note the excellent confidence of the low register. Zanelli operates efficiently with the technical parameters of interest for us: the column is adapted according to the register, but also according to expressive needs, the baritone passage between middle and upper registers is treated efficiently – E-flat 4 and E 4 sounds. In the upper register, the sound is noble, beaming, "floating" magnificently (Americans use this phrase: "the voice is floating"). Even if when singing the climax sounds G 4 and A-flat 4 the baritone and tenor registers intertwine in an area more favourable to the latter, Renato Zanelli's baritone emission maintains homogeneity: the sonority may fully place in the vocal range chosen then by the soloist.

On the other hand, from the first sentence in the aria *Un di all'azzurro spazio* we can hear a less wide column, with much more reduced depth and chest resonance. The compression of the sounds from the first octave is also reduced, to become stronger in the second octave of the range. Any reminiscences from his previous performance as a baritone are well controlled, so they do not jeopardize his new journey. If we compare the sounds of the same frequency in this aria and those in the Prologue, we find that the note G 4, repeated on the syllables of the text *il fir-ma-men-to,* has the ideal profile of a dramatic tenor sound, unrelated to the same G 4 from the end of the Prologue, which had a baritone configuration. It is with great finesse and efficiency that the artist masters the sound F 4 (*amor),* which precedes the shift to the upper range, on B-flat 4. This sound is a real touchstone for tenors, because it is an essential stepping stone to the upper range, brought about by a perfect fourth. Zanelli ideally positions this sound – rounded and narrowed just enough – so that the B-flat 4 sound launches into grand climax, free of any technical failures or difficulties. The compression increases optimally, the column is wonderfully calibrated, and the generous high resonance allows top quality sound to emerge. The predictable pitfall of old, baritone reflexes forced Renato Zanelli to calculate all his technical options pharmaceutically, which enabled him to achieve exceptional results as a tenor as well. Unfortunately, his life ended far too early, depriving the cultural world of highly valuable creative performances.

From the great female artists who performed in different vocal ranges during their career, I chose Grace Bumbry as a most telling example. She enjoyed the same great success performing both soprano and mezzo-soprano roles, and managed not only to find brilliant solutions for those scores, but also to shape her timbre according to the expressive requirements. Gifted with a very generous and ample voice, rich in overtones, she understood that she could expand and explore wider territories. Of course, she was conditioned by the dramatic nature of her voice, which enabled her to tackle such roles as a soprano/mezzo-soprano. She found Falcon roles particularly suitable (Amneris, for example), more specifically those roles at the sensitive border between ranges. We chose two arias to illustrate

the technical adaptations: *Pace, pace mio Dio* (La Forza del Destino by G. Verdi) – https://www.youtube.com/watch?v=_TMpQ9JNKxY and *Mon coeur s'ouvre a ta voix* (Dalila, from Samson et Dalila by C. Saint Saens) – https://www.youtube.com/watch?v=nFZzyVHZyBg.

In both cases, we note from the very beginning the warm and velvety color of the voice. In Leonora's aria, the direct attack on the F 5 sound (Pace), the *diminuendo* along its last part, and the repetition of the word in the chromatic melody from the same register highlight a significantly narrowed and controlled emission column with moderate depth (larynx lowering), appropriate for the register and expressive context (prayer). When we compare these sounds with sounds of the same frequencies in the Delilah aria, we notice an important timbre difference, achieved using the technical means described above. Such options are not driven solely by performance reasons, but also by the need to ensure a vital technical comfort. A wide column and a greater depth would have quickly led, in that tessitura, to rapid fatigue and, implicitly, would have jeopardized the performance of the entire aria. The artist carefully watches the homogeneity of the emission, so that she does not allow any significant widening or massification of the column in the final part of the first sentence, placed mainly in the 4th octave – *pace oh, mio Dio, pace oh, mio Dio.* The performer is crossing a rather narrow bridge. The aria abounds in dramatic passages which are tackled with increased depth and generous column width. Perhaps the most obvious moment of change in these parameters (reducing the width and the depth of the column, with a moderate decrease in compression) is the pianissimo performance of the high B-flat 5 sound (on the text *in van la pace).* This celestial floating would have been utterly impossible without the technical conditions we explained above. Conversely, the other high-pitched sounds in the aria require upper touches, hence some necessary changes. We easily notice the increased compression for the benefit of the last high-pitched sound in the area (B-flat 5), and the focus on the head resonance – which requires a significantly less wide column than what was used for previous sounds in the upper middle register (E 5 and F 5, on the *maledizion* text). Without such adaptations, she would have faced the impending risk of failing the climax.

On the contrary, in the Delilah aria we hear Grace Bumbry's voice in full column, unfolding at will, without the changes imposed by the text of *Pace, pace.* However, she does not deepen too much the position of the larynx. We notice the different, more massive, more covered sonority (mezzo-soprano), more emphatic with the sounds E-flat 5 *dis moi qu'à Dalila)* and G-flat 5 (*ah).* When she wants to diminish the intensity, or to express more lyricism, the artist adjusts again technical parameters, as she had demonstrated in the upper middle register of *Pace, pace.*

Obviously, when changing vocal registers, a singer must skilfully handle very subtle technical resources. Even then, one cannot fully rule out risks. Existing reflexes cannot be eliminated abruptly, no matter the level of self-control. There are many cases when the brain "rebels", refuses to obey commands and makes wrong decisions. Therefore, the choice of roles and of appropriate technical solutions requires a great deal of professionalism and wisdom.

V. Conclusions – Current vocal range shift trends

Today, opera singers' temptation to explore the limits of their vocalization is greater than in the past. We note that more and more artists choose to expand their "coverage area" within a vocal range, some shift and move on to another range, and others simultaneously approach roles belonging to different ranges. The intrinsic motivations are none other than those already described. Such increased magnitude of the phenomenon probably reflects some general traits of our epoch: dynamism, non-conformism, ephemeral stability. Adaptability is a much appreciated quality nowadays, and rigid attitudes are no longer relevant. However, such realities generate benefits, as well as disadvantages. One advantage is that the opera singer no longer faces reluctant responses when attempting a radical change in vocal emission and when tackling previously inaccessible roles. The ideal emission remains a goal pursued throughout a singer's career. We also notice an important increase in the interest shown by opera stars for other genres of vocal music (cross over, pop, ethno, etc.). The most versatile radically adapt their emission, becoming difficult to recognise in the new vocal range. We mention here, as an example, the album Pasiòn, by the great tenor Roberto Alagna, released on Deutsche Grammophon.

Perhaps the most spectacular contemporary example of vocal emission adaptability in opera is provided by the American performer Michael Spyres. During the same period of his life, he manages to "slalom" around the most different vocal ranges, and remain outstanding in each and every one of them – from bass, baritone to Rossi tenor. Listening to YouTube records, we note that his range covers at least from F-sharp 2 (sound available at https://www.youtube.com/watch?v=8jBJqgz96z8) to E 5, as we may heat at https://www.youtube.com/watch?v=l3Hp_e5Wb-s. Obviously, the artist benefits from an exceptional vocal apparatus, but it is equally clear that he masters and applies perfectly the technical procedures which enable him to get the full benefit from his native gifts. The way he juggles with his voice is of unprecedented, defying all rules of prudence in terms of technical conduct. Given the very wide spectrum he covers, the technical solutions he employs are very clear. Most important are those which control the coordinates of the emission column (width and depth),

compression, efficient access to high head resonance and maintain the bright core of the voice. He moves easily between the middle and the upper register, adapting to his range of choice. We chose one sample for each vocal range: as a bass singer, in *If I loved you,* homage to Cesare Siepi (https://www.youtube.com/watch?v=gZw9M32azCk), as a baritone, in the duet Figaro – Almaviva from "Il Barbiere din Siviglia" by G. Rossini (https://www.youtube.com/watch?v=8jBJqgz96z8) and as a tenor, in the Rodolfo aria, *Che gelida manina* from "La Bohème" by G. Puccini (https://www.youtube.com/watch?v=Ls_9d5-Cflw).

We will not render here a detailed analysis of each vocal range mastered by Michael Spyres. We explained the principles he uses to achieve such timbre diversity – they are easy to note in the examples we proposed. The evolution of this artist is like an indirect invitation to his peers to overcome their limits and discover their latent potential. In the future of art, uncertain as it might be, the victors will come from the ranks of those who prove most adaptable to the requirements/realities of their time. Truly great will be those who succeed in producing novelty, who capture the interest of a society increasingly less inclined to matters of the spirit.

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