On the Voice

Duane Cottrell, editor

Developing Bass Sections through Extended Techniques and Auxiliary Registers

by Everett Wade

Editor's note: The following article will be greatly enhanced by hearing the corresponding performance examples, referenced throughout the text and listed in the sidebar on page 63. Those viewing the electronic version of this issue (available at www.acda.org/choraljournal) can click on the link and be taken directly to the URL.

American choirs have recently shown an interest in the depths of the bass voice. In the past few years, two Grammy Awards for Best Choral Performance have been conferred upon American recordings of Russian works that include some of the lowest notes in vocal literature. The 2016 recipient was the Phoenix Chorale and the Kansas City Chorale's recording of Rachmaninov's *All-Night Vigil,* which requires the basses to descend to B♭1.[1] Conspirare's recording of sacred Russian music, which received the award in 2015, features Chesnokov's sacred concerto for octavist soloist, which drops even lower than Rachmaninov's work—to G1.[2] Such low bass, however, is not confined to Russian works of past centuries. In just the last few decades, composers have written choral works with unusually low bass parts.[3] Despite this recent attention, remarkably few authors have written about how the lowest registers of the male voice might be cultivated so as to access such tones. Most choir directors would conclude that unless they are so fortunate as to happen upon the deepest of basses, such works are best left alone. It is my contention that such challenging repertoire would be in reach for many ensembles if the choral community were ready to encourage bass voices and explore the use of extended techniques and auxiliary registers.

Encouraging Bass Voices

The first step in strengthening the bass sections of American choirs is simply to value and encourage singers with low voices. While strong basses seem more common in Eastern Europe, there is no data to suggest that genetics account for this discrepancy. Frederick Swanson, former director of the Moline Boys Choir, made the following observation:

> Next to Warsaw, Chicago has the largest concentration of Poles in the world. There are communities where Yugoslavian, Czechoslovakian, and Russian immigrants settled, and these communities still claim many descendants of those Slavic pioneers. We do not find men from these communities displaying these deep contrabass voices.[4]

Swanson's insight suggests that cultural attitudes and not genetics are to blame for the rarity of strong basses in Western choirs. Swanson found ample evidence to confirm this suggestion: basses were often discouraged from developing the low tones of their voices, especially during adolescence. Western vocal pedagogy tends to focus on extending the range upward. Swanson also

noted that generally composers "do not write solos exploiting the deepest tones of the vocal register," likely "because singers would not choose to sing them if such songs were written; nor would the public be likely to applaud them with the same enthusiasm as if they were producing tones of high pitch and intensity."[5] It is, then, no wonder that teachers and vocal coaches focus heavily on developing the higher tones of the voice, and applaud those who excel in this. Swanson further observed that because basses had more difficulty singing higher, they often became convinced that they were unmusical and could not sing.[6]

In contrast, the religious choral literature of Eastern Europe inspires a tradition of developing and encouraging low basses, as the Orthodox Church does not permit the organ in worship. As one Yugoslavian bass explained to Swanson, "In the Eastern Orthodox Church we do not have instruments, neither organ nor orchestra to accompany our choirs. If we want the rich deep tones of the bass viols or 16' organ pipes, we have to use our singers. So we look for men who can produce them, and we develop and train them."[7] In his article "Growlers, Fryers and Other Rejects," Swanson describes the process of discovering many adolescent basses capable of producing tones in the contra octave.

In summary, the first step in strengthening the bass sections of American choirs would be to transform our attitudes about unusually low voices. Once the demand and appreciation for such singers increases, it is likely we will see an uptake in the supply. It would seem that the recent interest in Russian repertoire indicates this appreciation for low choral basses is already on the rise. Indeed, many online discussion groups and YouTube channels indicate the increasing popularity of low basses in choral music. For example, a YouTube video titled "The Power of the Russian Oktavist," which features a compilation of astoundingly low choral basses, has garnered over one million views.[8] While it might seem that low choral basses are a niche interest, these sorts of online trends indicate that the general public has an appreciation for such voices.

Auxiliary Registers and Extended Techniques

When a choir lacks enough strong basses to perform a demanding work convincingly, it may be helpful to explore extended techniques and alternate registers. Unfortunately, Western literature of vocal pedagogy has not devoted much energy to exploring the lower regions of the human voice. To complicate matters further, the terminology used to describe lower vocal registers is of-

ten fraught with conflation and confusion. Only recently have voice science and vocal pedagogy provided a clearer understanding of the various vocal phenomena only vaguely described in the literature of the past century. While many pedagogical texts have dismissed such registers as unusable or dangerous, these recent discoveries encourage a reassessment of such views. In corresponding with choral directors and choristers around the world, I have found several techniques and registers that may prove useful in expanding the lower range of a choir.

Vocal Fry

The first of these registers is vocal fry, an auxiliary register at the extreme lower end of the voice.[9] The singer relaxes his vocal folds until they flap loosely, producing a rattling, creaky sound. Vocal scientists have observed that this register is often characterized by a long closed phase and a low glottal airflow.[10] In other words, the vocal folds are so relaxed that they vibrate irregularly, in pulses. Because the airflow is low, vocal fry generally has less volume than the chest register. The register produces a low fundamental, but because the upper harmonics are absent, it lacks the resonance of chest voice.

Vocal fry is a useful choral tool if used judiciously.[11] As James Stark has noted, it "is often heard in Russian choral music."[12] Though most texts describe fry as a powerless, creaking register, if it is tuned well and supplemented by other voices, it can be quite effective in producing low notes. Because of its low volume, however, vocal fry is generally only useful when the choir is singing softly, for example, the final descent to B♭1 in the fifth movement of Rachmaninoff's *All-Night Vigil*. Indeed, many Russian recordings of

Rachmaninov's masterpiece feature one or two octavists capable of descending to the lowest notes without strain. A good example is a performance of the Vigil by the Choir of the Academy of Choral Art with octavists Yuri Wichniakov and Vladimir Miller (see Performance Link 1).

While these two basses are likely the only two in the choir capable of using chest voice to produce the B♭1 required in the final descent (found after 18 minutes 50 second mark in the clip), the discerning listener will notice that the weaker basses do not cease singing, but rather shift into an auxiliary register such as vocal fry.

Strohbass

Most contemporary works that mention strohbass equate it with the terms "pulse register" and "vocal fry." Indeed, it seems that in Western vocal literature, "strohbass" has often been used as a catch-all term for any register that falls at the low end of the male voice. More recently, however, Richard Miller has defined strohbass in a way that has little in common with earlier usage. Miller is emphatic that strohbass "should not be confused with vocal fry, which lacks the fullness of timbre characteristic of Strohbass."[13] Departing from earlier German usage, he does not categorize strohbass as a discrete register, but rather as a "pitch-related timbre" produced by a subtle depression of the larynx.[14] In the same vein, by highlighting strohbass's "fullness of timbre" he also differs significantly from early German writers, who describe it as "empty."[15] Furthermore, his reference to a lowered larynx distinguishes his strohbass from the contrabass register, which was often conflated with strohbass in previous pedagogical texts.[16]

Unlike early authors who saw little value in the strohbass register for solo singing, Miller's technique of depressing the larynx is useful for those who can authoritatively perform a work with the exception of a few notes on the lower edge of their range. Miller confesses that though he has "repeatedly campaigned against holding the larynx in a depressed position," an occasional use of strohbass is not detrimental to the voice and may open up repertoire to the performer that would not otherwise be accessible.[17] Although Miller's definition of strohbass differs from that of previous writers, it provides a useful description of an extended technique that may be occasionally used to reach low notes on the edge of a singer's range. Bass-baritone Christopher Purves uses such an approach with great facility to reach notes well below C2 in his performances of baroque music (see Performance Link 2).

The octavists I have spoken with have explained that strohbass as described by Miller is preferable to vocal fry in a choral setting, due to its fuller sound and greater resonance.[18] Because of these qualities, strohbass is easier to blend with other voices than vocal fry. In addition, strohbass exceeds vocal fry in volume, so that, depending on the vocalist's skill, it may even be used when the choir is singing *mezzo forte*.

False-fold Undertones

Another way to achieve especially low tones is to use the undertone register produced by the false-folds. This register is most commonly used in the Tuvan throat singing

of Eastern Asia where it is called "kargyraa."[19] This register has a rough, throaty sound that is often compared to that of the Australian didgeridoo. In recent decades, Fuks, et al. and Lindestad, et al. have demonstrated that kargyraa produces an undertone by means of the false folds—thick paired folds lying superior to the true vocal folds and not generally used for phonation.[20] By grunting as when clearing the throat, the singer may produce a low growling sound that produces a note an octave below that of the true vocal folds.[21]

As used in Tuvan throat singing, false-fold undertones may not be aesthetically pleasing to Western ears, and might clash with other voices in a choral context. Nevertheless, false-fold phonation may be softened and blended aesthetically with the other voices in a choir performing Western repertoire. I have corresponded with basses doing just this in America, France, Romania, and Russia. Furthermore, when strong low basses are added alongside those using false-fold phonation, the result can be both powerful and aesthetically pleasing. French choral director Marcel Pérès used exactly this approach in Ensemble Organum's 2012 recording of the Fevin/Divitis *Requiem*. This recording featured notes well into the contra octave from the bass section, composed of Antoine Sicot and Jerome Casalonga.

Jerome Casalonga explained to me that Sicot sang the bass part in his chest voice, while he himself used false-fold phonation.[22] The result on the *Requiem* recording is dramatic, as Sicot and Casalonga create organ-like pedal tones that stay below low C2 for long stretches (see Performance Link 3).

After learning to sing in this register during an apprenticeship with Sardinian singers, Casalonga continued to practice this technique for two decades and "adapted it to the classical and traditional reper-

toire."[23] He noted that most throat singers use this register to drone one note, or cover a relatively small range, but with practice he has been able to expand this range over an octave so that there is overlap with his chest voice.

The use of false-fold undertones in the choral world is rare, but Ensemble Organum is not alone in this. I have also corresponded with Stefan Voicu, a formidable octavist and the director of the Sfantul Antim Ivireanul Chorale in Romania. He notes that false-fold undertones, along with other extended techniques used to reach low notes, are called *tehnic* in Romanian choirs. Voicu can be heard with the Voces Bizantinae choir singing as low as F1 with false-fold undertones (see Performance Link 4).

The listener can hear that both Voicu and Casalonga are able to smooth sufficiently the rough timbre of the register so that it blends with the other voices in the choir and produces an aesthetically pleasing sound.

This register has its strengths and weaknesses. As bass Jerome Casalonga explained to me, most singers have difficulty developing a wide range with false-fold undertones. Transition between this register and the chest voice can be difficult for some, since there is often a gap between the two registers. Furthermore, the color and the timbre of false-fold undertones often differ significantly from the singer's chest voice, since it is produced by a different set of vocal folds. For sustained low notes, however, this false-fold register is a powerful tool in an ensemble. Stefan Voicu noted that he has taught this register to many basses in his Romanian Orthodox choirs, because these false-fold undertones are so effective in producing an *ison*, a low bass drone note often used in Byzantine-style orthodox chants.

Undertones produced by the false-folds result in lows much louder than those of vocal fry and strohbass. Stefan Voicu explained to me that false-fold undertones are "powerful sound, so you cannot finish in an overall *piano*. You have to make the choir sing at least *mezzo forte*, as round and noble as they can get it."[24] But this disadvantage is also the strength of the register: since basses often struggle with volume in the lower octaves, false-fold undertones can prove invaluable when trying to balance out higher voices when louder dynamics are called for.

True-fold Undertones

Another vocal technique especially useful in a choral setting is the true-fold undertone register. Like the false-fold undertones used in throat singing, this vocal phenomenon produces an octave undertone, but uses the true vocal folds instead of the false folds. Singers may access this register by singing a note and slowly relaxing the throat without lowering the larynx until the voice abruptly cracks down an entire octave (see Performance Link 5).

While Deheleanu sustains an F♯2 after the 46-second mark, this note suddenly drops to F♯1. Vocal scientists Švec, Schutte, and Miller have determined that this phenomenon is the result of uneven detuning of the vocal folds in such a way that causes them to vibrate at an interval of a perfect fifth.[25] (Some small

organs actually produce their lowest tones in this manner, sounding two pipes a perfect fifth apart to produce a resultant tone an octave lower.)[26] Thus, when singing bass low C (C2) using a true-fold subharmonic undertone, the vocal folds are actually vibrating at C3 and G3, and the larynx position remains essentially the same as it would at C3, only slightly more relaxed.

The true-fold undertone register is usually strongest in the octave from E2 down to E1. Once singers have mastered this register, the transition from chest voice is generally smoother than with false-fold undertones. This is not only because there is more overlap between the chest register and these undertones, but also because the timbre of the register more closely resembles the singer's chest voice (see Performance Link 6). This demonstration shows how the transition between the two registers is scarcely detectable when handled properly.

Though its use is still rare, I have similarly corresponded with basses in America,[27] Norway,[28] and Romania[29] who have employed this register in a choral context with success. For example, bass Thou Yang informed me that, although he can reach the notes required by Rachmaninov's *All-Night Vigil* in his chest voice, he found it useful to transition to true-fold undertones for those below E♭2 in order to maintain a good volume (see Performance Link 7). Especially when used in a choral context, this register produces a sound that is hardly distinguishable from chest voice.

While this register is less well-known than vocal fry and the false-fold undertones of throat singing, it has several advantages over these registers. True-fold undertones retain much more of the sound of the singer's chest voice. As a result, there is less need to cover the low tones of this register with other voices. Another advantage is that the true-fold undertones have a wider dynamic range than other approaches: vocal fry generally lacks volume, and false-fold undertones cannot easily be sung quietly. Choral basses I have spoken with generally agree that this is one of the most difficult registers to master, but perhaps the most rewarding for its versatility and natural sound.

Ingressive Fry

In addition to these registers, we may also note "ingressive fry"—an unusually low register produced by singing on an inhale of breath.[30] University of Alberta Professor Laurier Fagnan notes that this register "has the potential of helping basses particularly in choir singing to sing an octave or more below what they would normally be able to sing… which could be very helpful for Russian music and certain types of repertoire." Fagnan's demonstration shows how this register produces a remarkably powerful sound in these lower octaves (see Performance Link 8).

Although ingressive fry produces notes with good volume, it may also be used to produce softer dynamics. Romanian director Stefan Voicu advises, "You can use inhale on softer sounds, so if you have a beautiful inhale sound with your low basses you have to make the rest of the choir to sing round and soft, as soft as they can, so the effect is just right."[31] The ingressive tends to be strongest in the C2 to F1 range. Because this register sits so low, and the singer must switch from exhaling to inhaling, the transition from chest voice is not as easily managed as with true-fold undertones. Another difficulty is that since the register is produced by inhaling, the singer cannot articulate certain consonants. These concerns, however, apply to using the register in a solo context. Ensembles can still profit from basses employing this register.

Attitudes toward Auxiliary Registers

While researching this subject, I found that although many choir directors and choristers were eager to discuss their experiences using extended techniques and auxiliary registers, others were not willing to speak on the record. Despite recordings and performances of their choirs being well-received, some were concerned that their reputations would be tarnished by association with methods of singing seen as having no place in Western vocal performance. Many pedagogical texts of past centuries warn against exploring these lower registers, claiming that to do so would damage or even destroy the voice.[32] This tendency is still seen in some more recent texts that perpetuate a generally negative attitude toward any register below the chest voice. Indeed, some writers discourage sing-

ers from any exploration of such registers, or ignore them entirely.[33]

Fortunately, the idea that such lower registers are harmful has not been borne out by case studies or scientific analysis. In fact, quite the opposite is true: such studies have found benefits in exploring forms of phonation such as vocal fry, and choral singers have used such techniques throughout their career without damage to their voices. In their research, John Nix, Kate Emerich, and Ingo Titze found that "fry is another means to achieve a free, healthy production that can be applied to artistic singing," and state unequivocally that "a careful, judicious use of fry as a tool is not harmful."[34] In his work on vocal fry, Frederick Swanson pointed to a Czechoslovakian bass who used vocal fry throughout a twenty-year career without any impairment to his voice.[35] In his many years as a voice teacher and director of the Moline Boys Choir, Swanson was able to develop the fry register in his basses without any ill effect, compiling over 150 tapes and accompanying graphs to chart his students' progress.[36] Improper technique can certainly cause harm, but it appears the notion of lower registers as inherently dangerous is based more on tradition than evidence.

Conclusion

Given the recent interest in repertoire that features low bass, these extended techniques and auxiliary registers represent an exciting world of possibilities for choral directors. Western pedagogical literature has only scratched the surface when it comes to the voice's lowest registers. Though techniques such as those

outlined here are occasionally implemented by vocal ensembles, there is a general paucity of work describing in concrete terms how these registers may be accessed and developed for use in a choral context. Hopefully, this essay will encourage teachers and choral directors to examine how these methods may be better taught and implemented in choral singing.

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NOTES

[1] Sergei Rachmaninov, *Rachmaninoff: All-Night Vigil*, Phoenix Chorale and the Kansas City Chorale directed by Charles Bruffy, Chandos B00RPNPAU0, 2015, CD.

[2] *The Sacred Spirit of Russia*, Conspirare directed by Craig Hella Johnson, Harmonia Mundi, B00GS601CM, 2014, CD.

[3] Composers such as Einojuhani Rautavaara, Paul Mealor, and Eric Whitacre come to mind. Whitacre's *Lux Aurumque* features C♯2, while Rautavaara's *Vigilia* requires B♭1. Such notes are common in much of Mealor's work, with his *De Profundis* descending to E1.

[4] Frederick Swanson, "The Vanishing Basso Profundo and Fry Tones" *Choral Journal* 17 no. 5 (1977), 5.

[5] Ibid.

[6] Frederick Swanson, "Growlers, Fryers

PERFORMANCE LINKS

Performance Link 1

This performance features famous Russian octavists Yuri Wichniakov and Vladimir Miller: https://www.youtube.com/watch?v=d-cG0N94LPw

Performance Link 2

Purves can be heard down to B♭1 at the end of this performance of Handel: "Christopher Purves - Why do the Nations so Furiously Rage Together" The Oktavism Channel. December 9, 2014, https://www.youtube.com/watch?v=-Sk-ehYFayY

Performance Link 3

See the following track after 3:30 for an example: https://www.youtube.com/watch?v=9mED0NYy1gI

Performance Link 4

Voicu can be heard with the Voces Bizantinae choir singing an F♯1 with false-fold undertones in the final moments of the performance: https://www.youtube.com/watch?v=VNBlEx3YfI4&feature=youtu.be&t=5m09s

Performance Link 5

This abrupt drop can be heard in the following religious chant by the Romanian Orthodox basso profondo Cristian Deheleanu: https://www.youtube.com/watch?v=DB4F5Z78lQI

Performance Link 6

Bass Thou Yang demonstrates a descent from A♭2 to A♭1, transitioning from chest voice after D♭2: https://www.youtube.com/watch?v=2ACP0NmeE3Y

Performance Link 7

He can be heard using this register at the end of this rehearsal of Rachmaninov's "Praise the Lord O My Soul," the second movement of the Vigil: https://www.youtube.com/watch?v=m72_CYjLyAA

Performance Link 8

University of Alberta. "Prof. Laurier Fagnan." Youtube video, 2:33. Posted June 2010. https://youtu.be/O4rqwLJOR5g

and Other Rejects," *Choral Journal* 23, no. 3 (1982).

[7] Ibid.

[8] "The Power of the Russian Oktavist," The Oktavism Channel, September 30, 2013, https://www.youtube.com/watch?v=o8qu4OOQ_Dc.

[9] James Stark, *Bel Canto: A History of Vocal Pedagogy* (Toronto: University of Toronto Press, 1999), 89.

[10] Patricia Keating, Marc Garellek, and Jody Kreiman, "Acoustic Properties of Different Kinds of Creaky Voice," (paper presented at 18th International Congress of Phonetic Sciences, Glasgow, Scotland, August 2015).

[11] For a discussion of vocal fry's application in the choral setting, see Frederick Swanson, "The Vanishing Basso Profundo and Fry Tones" *Choral Journal* 17, no. 5 (1977): 5-10; and "Growlers, Fryers and Other Rejects" *Choral Journal* 23, no. 3 (1982): 5-7, 9-10.

[12] Stark, *Bel Canto,* 89.

[13] Richard Miller, *Securing Baritone, Bass-Baritone, and Bass Voices* (Oxford: Oxford University Press, 2008), 141. Miller's earlier work contains similar comments on strohbass. See Richard Miller, *Solutions for Singers: Tools for Performers and Teachers* (Oxford: Oxford University Press, 2004), 156-57, 164.

[14] Ibid.

[15] Michael Joseph Rossbach, *Physiologie und Pathologie der menschlichen Stimme; auf Grundlage der neuesten akustischen Leistungen* (Wurzburg: A. Stuber's Buchhandlung, 1869), 112. Translation my own.

[16] Manuel Garcia writes of the contrabass register, "In order to form this range, it is necessary to raise the larynx." Excerpts from *A Complete Treatise on the Art of Singing,* trans. and ed. Donald V. Paschke (1841. Reprint Meinz, Germany: B. Schott's Sons, 1970), xxxiii.

[17] Miller, *Securing,* 141.

[18] Kelly Cossey, e-mail message to author, July 26, 2017. Cossey has sung under Russian conductor Vladimir Gorbik.

[19] Thomas Kopfermann, ed., *Das Phänomen Stimme: Imitation und Identität* (St. Ingbert: Röhrig Universitätsverlag, 2006), 248.

[20] Lucille Nicolosi, et al., *Terminology of Communication Disorders: Speech-Language-Hearing* (Philadelphia: Lippincott, Williams, & Wilkins, 2004), 333; J. Anthony Seikel et al., *Anatomy & Physiology for Speech, Language, and Hearing* (Boston: Cengage Learning, 2016), 197.

[21] Theodore C. Levin and Michael E. Edgerton, "The Throat Singers of Tuva," *Scientific American* September 1999, 86.

[22] Jerome Casalonga, e-mail message to author, August 27, 2017.

[23] Ibid.

[24] Ibid.

[25] Leonardo Fuks, "From Air to Music: Acoustical, Physiological and Perceptual Aspects of Reed Wind Instrument Playing and Vocal-Ventricular Fold Phonation" (Ph.D. thesis, KTH Royal Institute of Technology, 1998), http://www.speech.kth.se/music/publications/leofuks/thesis/contents.html.

[26] John Shannon, *Understanding the Pipe Organ: A Guide for Students, Teachers and Lovers of the Instrument* (London: McFarland & Company, 2009), 115-116.

[27] Thou Yang, e-mail message to author, January 9, 2018.

[28] Martin Koren, e-mail message to author, July 24, 2017.

[29] Stefan Voicu, e-mail message to author, February 5, 2017.

[30] Manuel Garcia also discussed singing on the ingress of air, but suggested it be used to reach higher notes rather than lower ones. See Stark, *Bel Canto,* 76.

[31] Stefan Voicu, e-mail message to author, February 5, 2017.

[32] See Agricola, *Introduction to the Art of Singing,* 77; Garcia, *A Complete Treatise,* xxxiii; Morell Mackenzie, *The Hygiene of the Vocal Organs: A Practical Handbook for Singers and Speakers* (New York: MacMillan and Co., 1888), 75.

[33] See Miller, *Securing,* 141.

[34] John Nix et al., "Application of Vocal Fry to the Training of Singers" *Journal of Singing: The Official Journal of The National Association of Teachers of Singing* 62, no. 1 (2005), 57.

[35] Frederick Swanson, "The Vanishing Basso Profundo and Fry Tones" *Choral Journal* 17, no. 5 (1977), 7.

[36] Ibid, 9-10; Swanson, "Growlers, Fryers and Other Rejects," 10.