Contemporary Perspectives on the Countertenor: Interviews with Kai Wessel, Corinna Herr, Arnold Jacobshagen, and Matthias Echternach

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INTRODUCTION

This article reveals contemporary thought on the topic of countertenor by Prof. Kai Wessel, Dr. Corinna Herr, Dr. Arnold Jacobshagen, and Dr. Matthias Echternach. Specific topics investigated include pedagogic application, the voice type historically, and the vocal mechanism.

Countertenor Kai Wessel is Professor of Voice and Historical Performance Practice at the Hochschule für Musik und Tanz in Köln. Corinna Herr and Arnold Jacobshagen are Professors of Historical Musicology at the Hochschule für Musik und Tanz in Köln. Matthias Echternach is an otolaryngologist and phoniatrician, specializing in voice diagnostics and phonomicrosurgery in professional voice users, and practices at the Freiburger Institut für Musikermedizin.

Through interviewing each scholar, a further understanding of the voice type was obtained. The interviews, conducted at the Köln Hochschule für Musik und Tanz and the Freiburger Institut für Musikermedizin in June of 2016, are summarized below.

PEDAGOGY

Jerod Reetz: What repertoire do you begin with when teaching countertenors interested in performing in male church choirs or as a soloist?

Kai Wessel: I work primarily with countertenors interested in solo work, many of whom initially sang in male church choirs. I've noticed that many choral singers who come to me interested in solo work tend to sing without body. For those interested in solo work, German lied and song are always a good place to begin—Schumann and Brahms—not yet Schubert, which is quite naked and difficult. Of course, the lied is very good for any voice. I wouldn't start with Bach either. Handel continuo arias would be a good place to start as well. Also, Mozart song. Song would be most important.

It must be noted that there are very few, if any, male church choirs in Germany, so any choral singers would most likely need to find such work

abroad. However, there is much work in Germany for professional countertenors interested primarily in solo work. Of course, there are specialized ensembles who do choral work in Germany, but these are few—for example, Renaissance music ensembles.

Reetz: What individualized repertoire should one give to select students and for what reasons?

Wessel: Well, I never encourage students to explore singing in only one style or from only one specific music genre—for example, only Baroque, or only contemporary music. One should explore all music genres.

However, to give two examples of students I recently taught: 1) An alto who had sung with a Bavarian boys' choir when younger came to me later in life interested in becoming an opera singer. So, we began with Handel opera works and then castrato arias. He has a strong upper and lower register, and has a very good tenor voice and loved singing heroic roles. He has a very powerful countertenor voice with much vibrato, so opera repertoire suits him. 2) A mezzo soprano with a lighter lower register and light high voice who preferred traditional ensemble singing. Today, he has his own Renaissance vocal ensemble and they are very successful. He also has sung a lot of Baroque music, so we worked on Baroque oratorios and cantatas often in lesson. However, he didn't like opera as much—he performed some operatic roles well, and did some contemporary work too, but never pursued this work as much as the ensemble or Baroque work he did. His voice is lighter and very flexible so the repertoire he is interested in suits him.

Reetz: How do you determine vocal designations for countertenors: soprano, mezzo soprano, and alto, for example?

Wessel: I do not use any vocal registration model, but instead trust my ear. I designate countertenor voices based on their vocal range and tessitura. There are very few true male sopranos. Instead, I find that there are many more male mezzo sopranos and altos. Usually, when beginning countertenors come to work with me, they have developed their upper register, but then I usually have to help them work on developing their lower register, too.

Reetz: Multi-occupancy for vocal parts: Is all repertoire possible for countertenors to sing today? Are there certain contexts where countertenors should not sing repertoire originally written for, say, females?

Wessel: I had originally stated in my article in *Der Countertenor* that countertenors should perhaps not try to sing *Les Nuits d'été* by Hector Berlioz, because this was originally written for a female voice,[1] but there really are so many beautiful countertenor voices today. Recently I've heard some wonderful countertenors sing Mahler, and now I'm thinking, why not? If the singer is using good technique and is musical, why not?

Reetz: Historical performance practice: Is it okay for countertenors to wear costumes during performance and in what contexts? Should certain gestures be used when performing specific repertoire? Is there a way to validate use of specific ornamentation for specific time periods today?

Wessel: Costumes are not necessary, but if they help with a student's technique by relieving stress and helping the performer "get into character" during performance, this is okay. We know today that gestures were used when performing specific works, and throughout Europe recently, performers have been incorporating accurate gesture into performance. Sigrid T'Hooft will be visiting the Hochschule in two weeks or so to give a lecture on Baroque gesture. She is the leading expert in this research today and I recommend investigating her work. As for seventeenth and eighteenth century vocal ornamentation, voice students certainly must learn this. For light, highly agile and flexible voices, early Baroque music fits this voice and students of this type tend to specialize in this genre, while others who do not have this more specialized voice may gravitate more towards alternative repertoire.

Reetz: The countertenor voice has historically been defined as queer or odd, abnormal, atypical, unnatural, false. If a student is concerned about such definitions, how does one approach such discussion in lesson?

Wessel: When I was young, the countertenor still had problems with these definitions circulating, but I think that today this isn't much of a problem anymore. We know today that male falsetto traditions have developed in cultures all over the world; there is nothing to be ashamed of about being a countertenor or using falsetto as a male.

We have understood the historical context of such terms for some time now. Overall, society is generally more open and accepting today of the countertenor voice.

Reetz: The countertenor, in comparison to other voice types, arguably has a greater amount of cross-dressing operatic roles. How does one approach discussion of such topics in lesson?

Wessel: In terms of drag, I always have to tell students, the costume makes the role, and not you. As a performer you must separate your public and personal life. As a performer, you also must not limit yourself to only exploring certain roles and today, most performers cannot afford to pick and choose so selectively what they will perform, because this is impractical for obtaining work. One should be open minded about castings for shows, too. Historically, the countertenor does have the most cross-dressing roles for repertoire, much like the castrati had, but this is not something to be ashamed of and I've never had a student who expressed concern over this.

Reetz: How do you determine vocal timbral qualities for select students? Can male soprano timbral quality be compared to female soprano timbral quality? Can students be trained to use different timbral qualities when singing various works in specific contexts? If so, to what extent?

Wessel: My teacher, Ute von Garczynski, felt that countertenors should be taught like light sopranos, always from above and light, practicing exercises every day in vocal flexibility. Flexibility is very important and many countertenors lose this because they force the voice too much by trying to take on too many big parts in big rooms/opera houses, which can be very dangerous. I can hear the strained voice. While a countertenor is studying, I search for the natural sound of his voice. As René Jacobs suggests, the first half of the year in lesson, we work with the countertenor's modal voice, and then work with the natural timbre of the head voice. The head voice changes after a year of practicing with the modal voice; it becomes clearer and there is more direction/focus of tone. Next, an investigation of the register and tessitura takes place, along with the singer's individual timbral qualities, to help determine what type of voice they have.

I have been singing for thirty-two years and receive different reviews. Some say, "Oh, this is quite a female voice," and others say, "Mr. Wessel has quite a male timbre." The tradition of listening to the voice and how it sounds is so individual, but for me, I just look for the young male's natural sound as it develops. The student shouldn't simply attempt to imitate other countertenors, but find the beauty within their own voice. Furthermore, they should not withhold or strain their voice, but take care of it. One should not be focused on sounding more male or female. Additionally, forcing the larynx down is dangerous and should not be practiced in an attempt to sound more male. I want to hear the natural sound of a singer's voice and see where it develops.

Reetz: Observing the historical context surrounding the voice type, has it had a large impact on the voice's reception today? For example, the timbral quality, sex and gender constructs in roles, Alfred Deller's legacy, and/or the castrati?

Wessel: Certainly, the last decades have influenced how the countertenor voice is perceived, and so we have a new type of voice different from the countertenor voice pre-Deller. Next to the castrati, countertenors existed but shared no real importance. Oberlin and Deller were looking at past literature to see what they could sing. They had to find their repertoire. Today, the young generation has everything available at their fingertips with the Internet. For me in the 1980s, I was always in libraries, handwriting out of the originals for my repertoire. At home, I have mountains of handwriting. It was a wonderful time, but now everyone has access to most repertoire. But yes, the development in technique from Deller/Oberlin onwards is certainly different from the technique practiced by countertenors pre-Deller.

I get phone calls from colleagues all over the world who tell me, "Kai, I have a countertenor, but I don't know if I trust myself enough to teach him." I respond, "Countertenor is almost the same as every other voice—don't force the voice." Of course, you will have to work on the student's break, mixing head and chest voice. I myself worked very hard on my vocal break and still have a big one, because I'm a bass. My vocal cords are also different—I met with a doctor who told me that, with my particular vocal cords, I could not get rid of my break. My teacher, Ute von Garczynski, tried to help me, but at a certain point I just learned how to manage my break with certain repertoire. You can notice a difference in

timbre between my head and chest voice, but it is very common for many countertenors to have a contrasting lower register—this is okay! I mean, why not? Falling into modal voice can be a stylistic moment. Today, we know a lot about the possibilities for how far a countertenor can go with varying timbral possibilities through vocal management. In terms of volume and timbre, our research into varying stylistic qualities continues as different voice types emerge to learn new repertoire.

Reetz: Do issues of accessibility, versatility, nuance, and legacies of performance practice effect professional countertenors?

Wessel: There are so many kinds of countertenors today, each with individual timbre and style. I tell my students to listen to many other countertenors with different vocal qualities, and to then look for their own style. With the material available to young students today, with videos on YouTube to watch and with varying repertoire readily accessible, they can study what other people do, which can then inform them how they develop their own taste as a performer. Each singer even has their own style for ornamenting, and while some singers are indistinguishable, many possess slight variation in how they ornament. When I teach ornamentation, I give singers several possibilities for how to ornament. I ask, "Which way suits better to your voice?" or "What do you like the most?" "Would you like to go up or down?" So, singers realize they can form their own style. Yes, people may be influenced by each other, but each singer should develop their own taste.

Reetz: What are some career opportunities professional countertenors should consider when looking for work today?

Wessel: Every countertenor should know what work he wants to pursue, and focus on only a few specific directions. Today, the problem is that there are many good countertenors and the market is quite full. Many of my former students realize it is difficult to get jobs. Of course, there are niche markets one can get into—for example, specializing in contemporary music, or in ensemble music. I currently am not teaching any countertenors, but usually only take in ones who can be marketable, with a certain color/timbre, very good coloratura, and who possess a beautiful lyrical voice, or can be a good ensemble singer. Europe really has a great market for countertenors, and many from all over the world flock to Europe for work. One must take note that theaters/performance halls are closing all over the world. Although Germany has a considerable number of theaters, looking into the future, things will continue to become more difficult as arts funding decreases all over and we lose more performance spaces/venues. This, in addition to the market becoming more flooded with great singers.

Reetz: With many definitions of what "head voice" is for countertenors, what is your view?

Wessel: I use this term for any type of voice when I instruct them to sing "more heady," which means to think more "from above." I was taught that I use head voice or a supported falsetto when singing as a countertenor. Often, when countertenors sing into their lower register, they tend to mix head voice with modal voice, but for me, when I sing as a countertenor, I am primarily using my head voice. I teach countertenors to extend the head voice into their lower register and to not mix head and modal voice as much as possible.

Reetz: Do you use the vocal *Fach* system to categorize countertenor voice types for operatic role placement?

Wessel: Yes, I categorize countertenor voice types in the same way female sopranos, mezzo sopranos, and contraltos are categorized—for example, light, lyric, dramatic, and so forth.

Reetz: The countertenor voice is commonly defined as "androgynous sounding." What is your viewpoint on this definition?

Wessel: I think some countertenor voices do have asexual sonic qualities, but most of the time I think I am hearing a man's voice. I don't like hearing that the voice is androgynous sounding, because the word androgynous often has negative connotations and really isn't the proper word to use.

Reetz: What are appropriate methods for countertenors to extend their head voice into their lower register, mixing head with modal voice?

Wessel: In the first year, the countertenor should work on developing their chest or modal voice as much as

possible, extending it up. Then, the countertenor should work on extending their head voice down. By doing this, the falsetto timbre changes and the singer gets more connection to their body. Isolating the falsetto, the voice has less body. By working on extending chest and head voice, the head and chest resonances become clearer and the tone more focused. After this, I observe each individual student's more specific needs—removing the break, mixing the lower register or extending the head voice down. When the student extends their falsetto down, they should think wider in the back of their throat, and when ascending in register, they should think about slimming the back of their throat—this develops more focused tone throughout the whole range and may take years of practice.

Reetz: Is *appoggio* the correct form of inspiration for all singers?

Wessel: *Appoggio* means to lean on the streaming breath—the diaphragm goes down and the stomach out and you have to keep this position extended. This is one possibility for proper inspiration for some singers. For me, I need the chest to go up, the stomach in, and the diaphragm down, while widening my ribs, to properly inspirate. I need to use my stomach muscles quite a lot, in fact. There are certainly many ways for individual singers to inspirate properly to meet their own needs—there is no one correct way. Even distended belly support [*Bauchaussenstütze*], developed by the German National School of Singing, is okay for some singers to use. Everything depends on context and what "works" for each singer.

THE COUNTERTENOR VOICE

Reetz: What are your opinions concerning multi-occupancy with vocal parts? Can all repertoire be sung by males or females? Often, countertenors sing roles that were originally written for women or castrati, and with women, roles written for countertenors or castrati.

Corinna Herr: It depends on the specific role that one is singing before one can make any generalized conclusion. One should analyze each specific role in context. One must also consider, as part of the methodology, to what degree ideas or expectations of gender are differentiated according to specific roles. There is a certain level of expectation bound up with every role. As a historian, I would be very cautious as to making generalizations, because it really depends on the time period between now and the early twentieth century—the voice levels between countertenors were somewhat different, and one must also consider whether or not some of these roles were being sung by castrati, which would make a difference when making conclusions. Since Jochen Kowalski in the 1980s, things have taken a change, because there is a much broader repertoire now for countertenors—and even more so since about 2000, a time from which we began to see more countertenors identifying themselves as male sopranos, further broadening the range of repertoire. To elaborate, the range of roles has certainly broadened for the voice type, because of the large number of individuals singing, but also the vocal ranges that they now encompass and what they have taken into their repertoire.

Another consideration that one has to think about is: Who is the casting director for a particular concert or production, and whether associations with male versus female sounds are going to have some effect or some consideration for whomever the casting director cast?

Arnold Jacobshagen: I agree with Dr. Herr. I would like to pick up where she left off and mention that although there are broader possibilities now for casting, it still is a question of what kind of impression the casting director wants to give, because that's become a consideration also as to whether you can cast a countertenor in a role that has had mostly female expectations as far as the vocal quality is concerned. To elaborate, every production must be thought of differently; that is, with the casting, it may be particularly effective to have a countertenor sing such a role in one production, whereas in another one it wouldn't be feasible. So, the decision cannot be made on a generalized basis, saying, for instance, that all Cherubinos can be sung by countertenors. One must make the decision production by production. It's not just a question of "anything goes," and we've been relatively free in our choice/possibility of acceptance until now and there is nothing wrong with that, but this should be thought of as a question of one production being possibly different from another.

Reetz: Is there today a way to validate use of vocal ornamentation for works written by composers such as Handel, Purcell, Haydn, Bach, Monteverdi, or Vivaldi?

Herr: What we do have are written out free ornamentations provided by many singers from the time periods in which works for voice were written by these composers, which helps a lot—and shows each historical singer's individual approach and individual vocal capabilities. So, one must consider the singer's individuality, and, of course, the common knowledge of the time, which has not been written down in most cases, as well as instructions and hints provided by Tosi or Mancini, or other singing treatises written during the time period from the Seicento to the Settecento.

One must look at every composer differently. To give two examples: Bach was known not to tolerate free ornamentation in his sacred works, but it would probably have been appropriate for the singers to add free ornamentations, for example in his secular cantatas; for Monteverdi, we have Francesco Rasi's written out ornamentation of "Possente spirto" in *L'Orfeo* from 1607, which provides quite a valuable hint of how ornamentation was being done at that time, though this is very much a show piece.

I would always try to get some historical validation of any sort for historically informed performance practice. What I have tried to demonstrate in my book, *Gesang gegen die "Ordnung der Natur"?*, is that you can also, from the written out or printed composition, get many hints as to where ornaments would have been opportune.[2] It is quite another question as to what kind of ornamentation that would have been, but I think you can get quite a good idea of what could have been possible by studying those who had written or copied out of a singer's verse. Many of these documents are available for viewing online and at libraries—not from the beginning of the seventeenth century, but from the end of the seventeenth and the beginning of the eighteenth century.

With some investigation, I think there is a lot of good material that one could study, and I would always try, as a singer, to look at what they had done. Of course, one must also consider the artistic freedom for each singer today, but I always think a performance should at first be thought out, and that after that, of course, you can be free in interpretation.

Reetz: Each countertenor has distinct vocal timbral qualities. Do these qualities impact historical performance? If so, could you give a specific example?

Herr: Historically, there were roles that really corresponded to specific types of voices, not only register but what a voice sounds like, its timbral qualities, and that is something that should be respected.

Jacobshagen: Countertenors often sing roles that were originally written for castrati, but to do so, they should have the arsenal to produce the same sorts of techniques the castrati executed, to a certain degree, and so forth. However, because the modern countertenor voice is different from its historical counterparts (a more recent musical phenomenon), it would be impossible to know if a castrato could produce the same kind of sound a countertenor can now accomplish.

Herr: What you can't do is reconstruct the audience of the period, and even though we have drawings of costumes and staging of that time, all you are doing is putting singers of today into costumes of then, but that does not necessarily mean that the production will be identical. The whole idea of the production, concerning its reception and so forth, is not just the voice, but rather the impression of what the voice gives within a larger context.

Jacobshagen: In the eighteenth century, what very often happened was that if a countertenor was not available, then a female voice would have been substituted to sing a specific role. Today, the countertenor is used to substitute roles once written for castrati. However, one must realize that in the eighteenth century, the female voice would have been substituted during the age of the castrati because countertenors of that era were different from the countertenors of today in terms of volume and vocal flexibility.

Interestingly, it's become so accepted today to use a countertenor instead of a woman to sing the castrati roles, yet we still can't get around the whole issue of gender expectations or gender associations, because you still know it's a man singing, even if the person dresses differently or is very good at assuming a part. In the eighteenth century, with a lack of countertenors, we know that they substituted women for castrati parts. Women should be able to continue to sing such parts now if we are considering historical performance practice. Vocal timbral quality does not have much to do with historical performance practice, because historical

practice dictated something else before the time of the modern countertenor.

Reetz: Should the vocal *Fach* system be used to categorize countertenors for operatic role placement?

Jacobshagen: Yes, the countertenor became a *Stimmfach* in contemporary opera from really the 1960s onwards, since Benjamin Britten's *A Midsummer Night's Dream* from 1958. In that work specifically, there is the use of this voice with a very specific concept concerning vocal timbre and voice type, so I would say the role of Oberon is a type of *Stimmfach*. It is a *Stimmfach* from the 1960s onwards, but not before. And, of course, one could even argue that in the 1960s, the countertenor voice was still not really a *Stimmfach*, because there we only have isolated examples of the voice being written for during that time period. With the gradual increase in repertoire, it more so became a *Stimmfach* in the 1980s.

Herr: I agree. However, I have argued that the countertenor voice is much more differentiated and individual than a tenor voice, for example, and so it might be much more difficult to categorize *Stimmfachs* for it. As an aside, I know many singers who still use the system found in Rudolf Kloiber's *Handbuch der Oper*,[3] which in my opinion, is alternatively ahistorical and highly problematic.

The role of Oberon in Benjamin Britten's *A Midsummer Night's Dream*, originally written for Alfred Deller, is very difficult for many countertenors to sing today, because the range required for the part is quite low. Deller worked very specifically on his lower register, to strengthen it. Today, most countertenors try to strengthen their higher registers and to extend their vocal range upwards. There are very few true male altos like Kai Wessel, for example, who really have that strength in the middle voice. To elaborate, I would not say that the modern countertenor voice developed from a "Deller tradition," but more so a vocal movement that began in the 1980s post-Kowalski, which formed the falsetto voice more commonly heard today—which is quite different, actually.

Many countertenors have today tried to lighten their voices to be more like women's voices. There has always been a sort of general reception to the male high voice as sounding female. In consequence, falsetto singers like to stress the inherent maleness of their voice.

Interestingly, some female altos have tried to cultivate a more male sounding voice, for example, Caroline Watkinson, in a recording of Bach's *St. Matthew Passion*.

Reetz: The countertenor voice is commonly defined as "sounding androgynous." What are your viewpoints on such definitions and their implications?

Herr: In *Gesang gegen die "Ordnung Der Natur"?*, I have argued vehemently against the use of the term androgynous. [4] In gender research, the term androgynous is highly debated as to whether or not one should be using it. Feminist attitudes about the use of the term androgynous are that the terms are highly problematic for research, because so often the idea is that masculinity is thought of as being something more complete, whereas femininity is considered something more fragmented or incomplete. In classical scholarship, if you consider Plato's *Symposium*, there is Aristophanes's tale of the spherical creatures (all male, all female, and "androgynous")—the debate if this is satire or comic relief is ongoing. It's certainly problematic to use the term androgynous in reference to the historical castrati, and even more so now, because there has been a fair amount of leveling of role expectations. It's even more problematic, I would argue, to use it for countertenors today.

Jacobshagen: Concerning role expectation and use of the term "androgynous," one must think not only of the voice level with countertenors, but also the expectations of what one associates with the character in question. It's not just a question of what something sounds like, that is an androgynous sound, but rather whether the audience's expectations for a role would clash with the idea of using the term androgynous in a character description. This is not just a question of the voice, but about body language, movement, and what you as the audience member know about the text already, and whether that means something as far as you're assigning the term.

THE VOCAL MECHANISM

Reetz: Scott McCoy divides the term falsetto into two categories: normal falsetto and reinforced falsetto.[5] Normal falsetto designates the type of singing demonstrated when a male singer assumes a portion of the traditional female ranges and implicated registers. Alternatively, reinforced

falsetto is different acoustically and physiologically from normal falsetto as demonstrated by electroglottographic experimentation, which to him demonstrates that the reinforced variant more closely resembles the full voice through higher closed quotients and increased intensity in high frequency sound components. McCoy further asserts that in reinforced falsetto singing, the vocal folds more closely resemble the oscillatory pattern found in full voice singing, and supports Richard Miller's position that increased breath reinforcement of the falsetto can bring about a quite full sound.[6] What is your opinion on this topic?

Matthias Echternach: As a first assumption, I have to agree with McCoy and Miller. When you compare what I would call a naïve falsetto with a stage or reinforced falsetto, there are differences between the two types. I'm not sure if "reinforced" is the right term; perhaps "stage" is more appropriate, because this is the falsetto countertenors use on stage.

There are the perceptual differences between the stage falsetto and the naïve falsetto. On the vocal fold level, the intensities of partials in the voice source spectrum (the sound created at the vocal fold level) are different. Our research group has observed that the intensities of higher partials in the voice source are stronger for the stage falsetto. I would suggest that—according to studies by Christian Herbst—a part of the difference between the two types of falsetto is caused by different degrees of adduction of the vocal folds, how much the arytenoid cartilages are brought together; the vocal folds are more adductive for the stage falsetto and that might be considered a "reinforcement." Also, greater pressures below the vocal folds, such as the subglottic pressures, might contribute here.

On the other hand, our research group has conducted studies concerning vocal tract shape in countertenors. We also noticed in the resonatory part of the voice production system, the vocal tract, that there were some strong differences between both the stage falsetto and the naïve falsetto. For the stage falsetto, the pharynx tube was more narrowed in contrast to that of the naïve falsetto and modal register. The turn position and the shape of the tongue during stage falsetto singing was quite different, too. In fact, the turn position was quite high in the back of the tongue for the stage voice and this might be related to different resonatory strategies applied to the stage falsetto for countertenors, and this, of course, is introducing another filter property of the vocal tract. Furthermore, it seems possible that an interaction of vocal tract resonances with vocal fold oscillations and/or the voice source might be occurring. Therefore, different vocal tract shapes might also contribute to a "reinforcement." Both the sound source and the resonatory properties are different for the stage falsetto, when comparing it to the naïve falsetto and modal register.

Reetz: The practice of belly breathing is closely related to the tenets of the German school of singing, as examined by Richard Miller. Miller concludes that *Atemstütze* [breath support] is to be achieved by retarding the inward movement of the epigastrium [abdominal wall] and the upward motion of the diaphragm by exerting outward pressure upon the abdominal muscles, an action termed *Bauchaussenstütze* [distended belly support].[7] Miller states that the kind of abdominal pressure implicated here serves to inhibit sternal elevation. Miller further explains that the process of breathing cannot be controlled by the belly and that many people in the German school of singing who identify as belly breathers and employ *Bauchaussenstütze* are actually employing an outward belly position. He concludes that the elements of the *Bauchaussenstütze* technique do not equate with the technique of *appoggio* [as characterized by the historic international school].[8] He further states that the technique of *appoggio* cannot be properly executed when the sternum and the pectoral muscles are inhibited. What is your opinion on this topic?

Echternach: This is difficult to answer because breathing during phonation is not yet clarified in detail in voice science. There are many observations and expectations by persons dealing with the voice internationally on this topic: voice pedagogues, voice therapists, fellow surgeons, and researchers. All in all, there is no justification for one proper method of breathing during phonation.

If we assume that the voice source production is mainly caused by fragmentation of the airflow by the oscillating vocal folds, the (transglottic) airflow is then related to Ohm's Law, where I is U divided by R. This would mean that the transglottic airflow (I) is dependent on the difference between the sub- and supraglottic pressure (U) in relation to vocal fold resistance, which is

the degree of vocal fold adduction (R). The consequence would be that the breathing pattern for singers would be important for the control of the subglottic pressure.

It is known that there are different muscle activities which contribute to in- or exhalation. If you go away from the rest-expiratory lung volume, it is in every term an active procedure, which needs muscle activation, while coming back to the rest-expiratory lung volume is primarily a passive procedure. When you inhale or exhale, you have to expand or tighten the lungs. Here, there are more grades of freedom for these activities by using the lower or abdominal muscles of the human body rather than the neck muscles. Thus, for singers, it is much more effective to use the diaphragm, a lower muscle in the body that divides the thorax from the abdomen, for inhalation, rather than the external intercostal muscles near the ribs, or the strep or neck muscles located in the neck. For exhalation, usually there are passive recoil forces of the lungs at play.

The forces are proportional to the subglottic pressure and thus are correlated with both loudness and the sound pressure level. If one has great recoil forces after a deep inhalation, one might produce a *fortissimo* tone by the passive recoil forces alone. But if you want to produce a *piano* tone directly after deep inhalation, one may not want this *fortissimo*. So, they may have to diminish the force which is built up by the recoil forces. Thus, one has to contract inhalatory muscles, such as the diaphragm for instance, to reduce these forces, just in order to reduce the loudness. That means that all which is *appoggiarsi*, a very flexible system, is dependent on the lung volume and the recoil forces.

Since the lung volume is decreasing from the beginning to the end of a phonation, the passive recoil forces are different. Therefore, the strategy of muscle activation to achieve a constant subglottic pressure for a *mezzo forte* tone differs from the beginning and the end of a phonation. At the beginning, you have to diminish the passive recoil forces by activation of the inhalatory muscles, but at the end you have to apply expiratory forces. If you want to produce a constant *fortissimo* tone, the amount of expiratory forces produced by muscle activation is increasing gradually during the phonation. However, the force is just a *netto* force and this *netto* force could be, beside the recoil forces, produced by different muscle activation patterns. Here, a single muscle could produce the same *netto* force as a combination of many expiratory and inhalatory muscles activated at the same time. The *brutto* force of the single muscle strategy would be much lower than for the multiple muscle strategy for the given *netto* force. If you want to apply more coloratura or more sustained phonation, you may want to use one strategy over the other.

Reetz: Do countertenors possess three vocal registers? Raymond Chenez argues against Manuel Garcia II's table of registers[9] and Peter Giles's system of registration[10] for countertenors. In Chenez's registration model for the countertenor voice, he concludes that countertenors actually possess three distinct vocal registers, as opposed to previous claims.[11] To corroborate his findings, Chenez places his research alongside Richard Miller's similar female mezzo soprano case study [which concluded that there are similarly three vocal registers for female mezzo sopranos]. The voices of eleven North American countertenors were recorded and analyzed using Voce Vista Pro software, which was developed and designed by Donald Miller. Through spectrographic and electroglottographic analysis, the registers of the countertenor voice were identified and outlined. In conclusion of the case study, three vocal registers were identified for countertenors. The primary purpose of Chenez's treatise is to define the registers of the countertenor voice, and is intended as a resource for singers and teachers. What is your opinion on this case study?

Echternach: Well, the problem with determining registration for any voice type is that it is very difficult to do and we are recently again discussing all matters related to this topic with many scientists. The problem of identifying vocal registers is first the definition of register itself. There are many definitions used in vocal pedagogy and voice science, but no agreement on one term to be used has been made. A quite frequently used definition is based on perceptual aspects, for example, that you could distinguish between different sound characteristics associated with registers. However, maybe you also have a laryngeal mechanism that should be outlined, as some French scholars suppose, or maybe you have a very complex system.

Overall, it is not very easy to say what really constitutes a register. If you have a voice source which is modified by the vocal tract, you will get the sound with its spectrum radiated at the mouth. Therefore, this

sound, which is the base for a perceptual identification of registers, is a combination of the voice source, the vocal tract, and interactions of both. However, you don't know what the voice source is doing, what the resonatory part is doing, nor what the interaction is doing. Thusly, only analyzing the sound spectrum of the radiated sound may be a shortcoming. While Voce Vista is a very reliable software program, the problem of analyzing spectra of the radiated sound is that you observe peaks in the spectrum. For quite low fundamental frequencies, the peaks are quite good when related to the resonance peaks of the vocal tract; however, if you increase the fundamental frequencies, there is a greater disagreement.

In other words, one should distinguish between these production mechanisms in order to estimate: Is there really a middle register? Is there really a register shift? Is there a *passaggio*? Then, one would know what the bridging would be between registers. Again, it must be understood that many scientists have also been analyzing registers in further detail using different methods and have not yet come to an agreement on specific definitions, nor the amount and/or reason for vocal registers.

Concerning countertenors, I have the following assumption: There is a register shift between what many singers could denote as modal/chest register and the falsetto register at 300–350 Hz. This shift is primarily a laryngeal event. However, I would assume that there is also a register shift around 700 Hz, comparable to female voices between the falsetto register to, let's say, the upper register. For this reason, I would assume that a resonatory phenomenon with possible interaction with the voice source is more than primarily a laryngeal mechanism at play. This should be investigated in future studies.

However, yes, there may be even more registers than Chenez has outlined, and even if some male singers could maybe sing the pitches D_6 or E_6, maybe there would be a fourth register identified for countertenors, but there are not too many people on Earth who get to sing that high after puberty.

CONCLUSION

These interviews have demonstrated that while there is much agreement over the voice type in recent scholarship, a further investigation into various topics concerning the countertenor, and other voice types, too, is essential. Some questions that remain include: Is *appoggio* really the correct form of inspiration for all singers? Should the countertenor voice be categorized into separate *Stimmfachs,* and if so, how? What are the exact vocal registers that could be outlined and identified for the countertenor voice?

NOTES

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2. Corinna Herr, *Gesang gegen die "Ordnung der Natur"? Kastraten und Falsettisten in der Musikgeschichte*, 2nd ed., Foreword by Kai Wessel (Kassel: Bärenreiter, 2013).
3. Rudolf Kloiber, Wulf Konold, and Robert Maschka, *Handbuch der Oper* (München: Dt. Taschenbuch-Verl., 2011), 897–929.
4. Herr.
5. Scott McCoy, "Falsetto and the Male High Voice," *Journal of Singing* 59, no. 5 (May/June 2003): 405–408.
6. Richard Miller, "Countertenoring," *Journal of Singing* 57, no. 2 (November/December 2000): 20.
7. Richard Miller, *National Schools of Singing: English, French, German, and Italian Techniques of Singing Revisited*, 2nd ed. (Lanham, MD: Scarecrow Press, Inc., 1997), 21.
8. Richard Miller, *Solutions for Singers: Tools for Performers and Teachers* (New York: Oxford University Press, 2004), 1–2.
9. Manuel Garcia II, *A Complete Treatise on the Art of Singing: Part One* (New York: Da Capo Press, 1984), 21–22.
10. Peter Giles, *A Basic Countertenor Method* (London: Thames Publishing, 1987), 176.
11. Raymond Chenez, "Vocal Registers of the Countertenor Voice: Based on Signals Recorded and Analyzed in Voce-Vista" (DM dissertation, Florida State University, 2011), 63–64.

Dr. Jerod Reetz is a composer, educator and musician living in Milwaukee, Wisconsin. He received his D.M.A. in music composition from the University of Wisconsin at Madison, with a minor in music theory in 2017. He is a countertenor and bass/baritone, plays the pedal harp, piano and harpsichord. He is the founder and artistic director of Sacra Nova Cathedrale, Inc. He is a countertenor (alto) in the Cathedral Choir at the Cathedral of St. John the Evangelist.