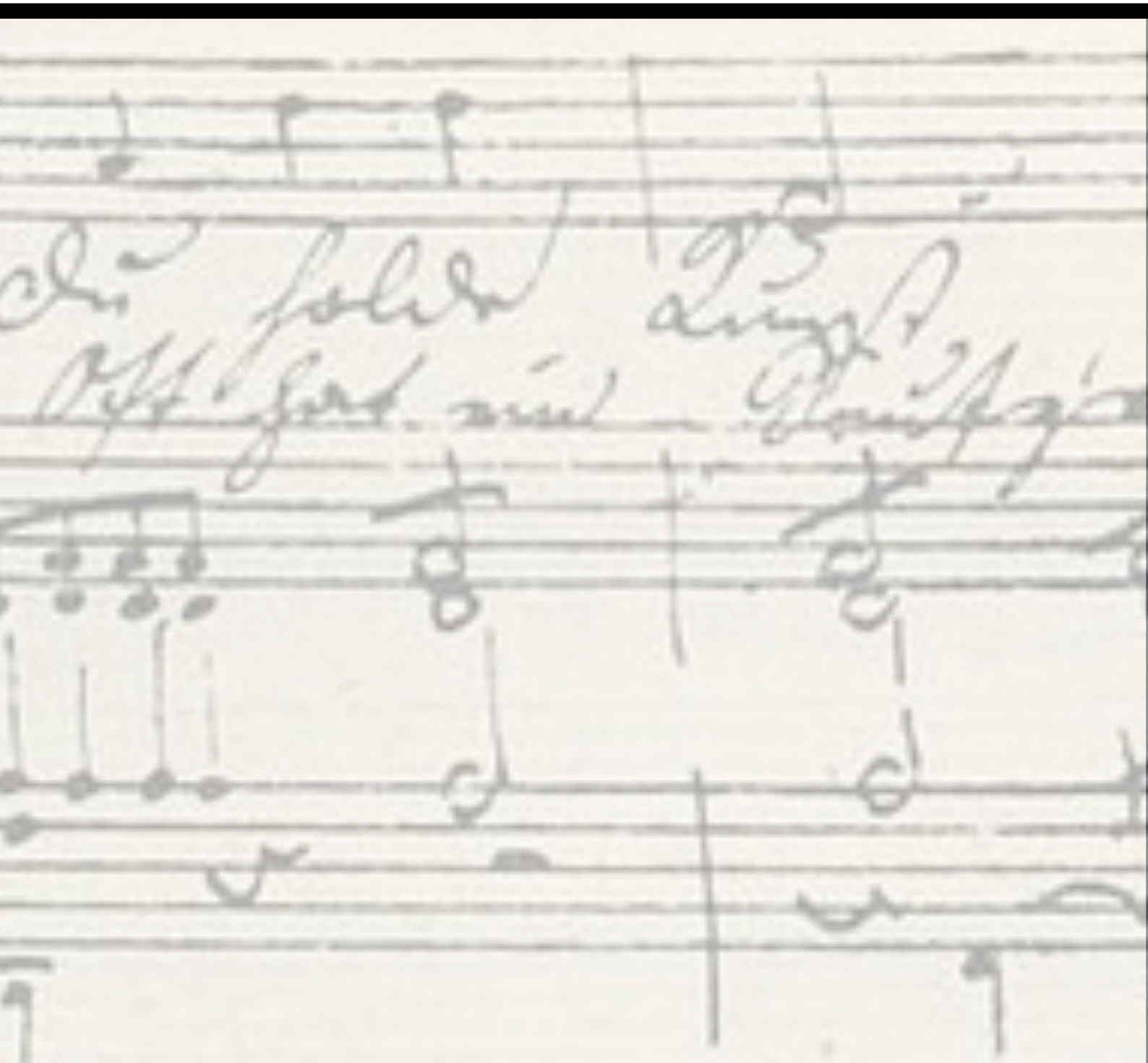
Australian VOICE



Volume 20, 2019

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Cover

The cover references Schubert's *An die Musik*, a song that, in a very personal way, gives thanks to music for its power to fill us with warmth and lift us out of the dreariness of everyday life. Image sourced from https://commons.wikimedia.org/wiki/File:An_die_Musik.jpg

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From the Editors

Julia Nafisi and Veronica Stewart

It is our great pleasure to introduce this latest volume of *Australian Voice*, after a year that feels like it zoomed past at breakneck speed.

We are proud to report that we were able to welcome Associate Professor David Meyer of Shenandoah University to our esteemed editorial board.

The fact that we had many more submissions than last year, including one from another continent, shows that we are heading in the right direction in our ambition to extend the scope and reach of *Australian Voice.*

This issue presents six articles and a book review.

Hybridity in the Music of Youn Sun Nah. Directions in Vocal Style by Leigh Carriage explores the role of internationally celebrated artist, Youn Sun Nah, as an exemplary exponent of 21st-century jazz vocal styles.

Balance and Tension: The Jaw and Tongue in Relation to the Whole by Amanda Cole addresses the link between postural balance and tension of the jaw and tongue in a bid to remind and enable teachers to address these issues before focussing on the peripheral symptoms.

Registration Terminology and Contemporary Commercial Music by Joanna Fabro discusses the terminology relating to voice registration used by Australian voice teachers specialising in teaching CCM styles.

Decolonizing Classical Singers' Minds: The Latin American and Iberian Art Song Repertoire by Patricia Caicedo debates the Euro-centrism of classical voice curricula around the world and invites singers and voice teachers to explore new repertoire like Iberian and Latin American art song, arguing also for a more embodied performance practice.

Adolescent female voice: Repertoire Selection Model by Christina Grønborg reports findings from a study into the criteria voice teachers may apply to meet the challenging and time-consuming task of choosing repertoire suited to the age and vocal abilities of their adolescent female students.

Are Voices in Community Singing Becoming Lower? by Jim Coyle investigates the notion that there has been a lowering in published keys of congregational hymns in the mainline Protestant tradition in the English-speaking world since 1880, concluding that this repertoire has indeed dropped a semitone approximately every 20 years.

An insightful book review on *Complete Vocal Fitness: A Singer's Guide to Physical Training, Anatomy, and Biomechanics By Claudia Friedlander* is offered by Emma Wilson.

We would like to thank all authors and reviewer for their outstanding work and hope this volume may serve to delight and inspire its readers.

Australian Voice welcomes submissions at any time. All information can be found on www.australianvoice.net.au.

Julia Nafisi and Veronica Stewart

Hybridity in the Music of Youn Sun Nah: Directions in Jazz Vocal Style

Leigh Carriage

Southern Cross University

ABSTRACT: This article explores the role of internationally celebrated jazz artist, Youn Sun Nah, as a key representative of 21st-century jazz vocal styles. An exploration of Nah's familial roots and early musical education reveals her early exposure to a variety of musical traditions, from Western popular music to classical, through to Korean folk and electronic experimental styles. These influences become evident through an analysis of a selection of her recordings that demonstrate the hybridity of her repertoire and vocal technique.

As an exemplary exponent of 21st-century jazz, Nah employs a broad range of skills and techniques that define and extend the boundaries of contemporary vocal jazz. This article also discusses the ways in which vocal educators can use cutting-edge role models such as Youn Sun Nah to demonstrate hybridity, improvisation, technology, repertoire, and collaboration as tools to encourage originality and creative exploration of new directions in jazz.

KEYWORDS: *vocal education*, *hybridity*, *jazz improvisation*

INTRODUCTION

Amongst the innovative vocal artists in present-day jazz, Korean-born, French-trained and classically influenced Youn Sun Nah (Na Yoon-sun) is often referred to by international media as a Korean chanteuse.

Despite the many elements that set her apart from both traditional and contemporary jazz vocalists, Nah has been unequivocally embraced by the jazz world as one of its finest. In 2009, she was voted Best International Female Singer in Germany's prestigious ECHO Jazz Awards. In 2011, Nah won the *Prix Mimi Perrin du Jazz* Vocal award from the L'Academie du Jazz in France. She has been invited to perform at jazz festivals all around the world, from North America to Europe and Asia, and is currently serving as jury president of the prestigious Shure Montreux Jazz Voice Competition**,** on the sidelines of the Montreux Jazz Festival in Switzerland. Moreover, Nah studied and then taught at Europe's oldest jazz school, Le Centre d'informations musicales (CIM) in France.

Although she is internationally recognised among, and marketed to, a global jazz audience, Nah is an accomplished *hybrid singer* (Chevassus, 2009) who traverses the classical and jazz genres, integrating Korean roots with a variety of Western and non-Western influences. These include traditional Korean folk music, African percussion instruments, improvisation, collaboration and digital technology. Despite her non-traditional approach to jazz, Nah remains a highly technically accomplished jazz vocalist. Her soprano voice features superb melismatic control and impressive pitch accuracy.

In 2009, Nah was signed as an exclusive artist with the German label ACT Records for a three–record deal. The second of these albums, *Same Girl* (2010*)*, launched Nah as an international jazz artist. Nah's embodiment of hybridity within the boundaries demarcating "jazz" is both unique and influential; so much so that it can be argued her work "widens the scope for audiences to imagine what sounds may be classified as jazz" (Schutte, 2010, p. 48) while pointing to new and exciting ways in which contemporary jazz vocals can be taught.

A contemporary hybrid jazz artist

Nah explains that while she is usually introduced as a jazz musician, she is aware that her music crosses genres:

> It is probably because I do a different kind of jazz unlike other musicians. I am basically a jazz musician but I am not much bounded (sic) by genres. Sometimes I need to go really wild, sometimes I do the opposite. (Limb, 2013, p. 2)

Youn Sun Nah is the bowerbird of contemporary jazz, integrating unconventional instruments such as the fourth-century African

kalimba with digital/electronic effects and traditional American jazz, Korean folk music, Western classical music, contemporary music theatre, and early *chansons* to create a unique, innovative style of contemporary jazz.

Korean influences

Nah's Korean ethnicity is of importance in any discussion of her musicality. Although an analysis of the complexities of Korean folk music is beyond the scope of this paper, it should be noted that Korean vocal music can range from highly refined to highly expressive, requiring the delivery of delicate intonation and timbres, exaggerated vibrato, long melismatic phrases, and embellished melodic lines, bringing the music alive with aspects of informed improvisations. Within Korean folk singing traditions, it is common for vocalists to self-accompany with a percussion instrument or perform in a duo of percussion and voice. Vocalists commonly improvise by adding vocalisations and embellishments to instrumental pieces (Utz & Lau, 2013).

All of these singing traditions are present in Nah's singing; moreover, her Korean ethnicity is affirmed by the inclusion in her repertoire of a continuously reinterpreted 600-year-old folk song called "Arirang" (translated to English as "long river"). However discordant some of Nah's Korean singing approaches may be with the jazz canon, the improvisational aspects of Korean folk harmonise easily with the genre. After all, the "privileging of improvisation" is one of the "dominant constructions of the jazz canon" (Schutte, 2010, p. 48). Together, all of her influences conspire to create a truly hybrid artist.

Western Classical influences

Aspects of Nah's technical hybridity can be seen when comparing her Western classical influences with those from her jazz education. Nah exhibits many features of classical technique: use of a clear tone, a three-octave soprano register with a fast vibrato, virtuosic agility in accurate pitching at fast tempos and seamless register connection. She combines these techniques with jazz-oriented techniques such as improvisation, occasional blues inflections like slurring and scooping (harking back to a 20th-century jazz aesthetic), expressive tone colour, and an extensive sound palate that includes growls, in-breath sounds and constricted sounds. These techniques are deployed a little or a lot, depending upon the demands of her repertoire.

Table 1 models the research by Oleson and Strong (2015, p. 1), and outlines the specific techniques used by Nah, according to genre. Although in many ways they are in some opposition to one another, Nah effectively combines them, demonstrating her stylistic hybridity. Although Nah does not often record or perform typical, long, 32-bar jazz vocal solos, she displays a large number of jazz characteristics. Of particular importance are her expressive embellishments of melody, spontaneous phrasing and her interaction with collaborators.

Table 1. Vocal technique comparison by genre (Oleson & Strong, 2015, p. 1)

	Jazz Style	Classical Style
Pitch	Fundamental in blues repertoire; enter or scoop from under pitch accurately.	Pitch focussed in middle of the note.
Rhythm	Fast runs in vocalese style, jazz-fusion, and metronomically accurate as possible. Highly skilled in improvisation and syncopation. Rubato common in ballads.	Precision is important. Runs done as metronomically accurate as possible. Rubato in specific places in music and according to era of music and composer.
Attack	Sometimes hard onset is used, other times soft dependent of sub-genre repertoire; strong blues influence. Sections in unison exhibit precise pitch.	The onset of the pitch is executed gently. Letting the breath lead. The pitch needs to be precisely in tune.
Accuracy	A key point in singing jazz is to be a co-creator with the composer in that particular moment in time. Next time it will be different.	Minimal deviation from composer's intent. Sing rhythm and pitches according to what is written in the score.
Improvisation	Scat syllables and improvisation sounds are innate to the performer influenced by current trends. Improvisation is the name of the game.	Improvisation is dictated according to current trends. Improvisation is allowed only in certain styles and periods of music.
Other features	Listening/responding to other participants while performing is key, where everything is new; cultivating awareness of what's going on around you is of primary importance. Being in the musical moment.	Acting and presentation skills are used. The quality of the sound, and communicating the text and music are prime considerations.

Repertoire

Nah's repertoire covers a wide spectrum of contemporary music and this alone sets her apart from most traditional and contemporary jazz vocalists. Her choice of repertoire include songs by Metallica, Nat King Cole, Johnny Cash, Korean folk songs, Nine Inch Nails, Tom Waits and

classical instrumental pieces. This reinforces her reputation as a hybrid virtuosic performer.

While there is already an established tradition of jazz singers taking repertoire from Tin Pan Alley, music theatre, and popular songs of the time, Nah goes a step further. By taking risks and incorporating songs into her repertoire such as the heavy metal cover "Enter Sandman" by Metallica, on the album Metallica *(Kirk Hammett, James Hetfield and Lars Ulrich) Electra,* 1991, she has achieved cross-genre appeal.

Nah's eclectic sensibilities increasingly resonate with jazz as it has evolved in the 21st century as an "internationally occurring interconnected genre" (Schutte, 2010, p. 46). As Schutte points out, in relation to the 2005 release *Nah Youn Sun with Refractory*, Nah makes manifest this globalised vision of jazz through a number of signifiers, including linguistic diversity, instrumental eclecticism and a repertoire that shows hybridity. This is evident in the following analyses of four of her performances.

1. "My Favorite Things", Rodgers and Hammerstein (1959)

Derived from the musical *The Sound of Music* (Rodgers & Hammerstein, 1965), this song has been reabsorbed within the jazz standards repertoire. Nah takes an unusual approach by accompanying herself on the kalimba, an African percussion instrument. While her use of the kalimba in itself is not innovative, it is certainly unique accompanied by the jazz vocal. This presents a clear example of musical hybridity, integrating jazz elements with the Korean tradition of self-accompaniment on percussion.

Nah radically alters the feel of the song and also alters the harmonic progression of the original version. Where Rodgers' version sits unmoving on the tonic minor for four bars, then VI (major) for four bars, before moving to the cyclic progression, Nah sets the whole verse to a one-measure ostinato, likewise with a tonic pedal, but also including the minor sixth. Its presence defines an Aeolian tonality, and is sufficient to give the ostinato a sense of harmonic movement, from I minor to IV minor, in every bar. Nah uses this to support the entire melody, with no hint of Rodgers' original harmony. In contrast, jazz icon John Coltrane's version plays on the chromatic line created by root and major and minor sevenths for four bars (giving a Dorian flavor at the outset), interchanges six and seven of the VI chord for the following four bars, then moves through a simplified, thinned-out perhaps, version of the cyclic progression, notably including a bII Maj7 chord not in Rodgers' original, and all of this over a tonic pedal. While the feeling of the song is radically altered, the harmonic structure of the Coda is tampered with but essentially works the same way.

2. "Lento", Alexander Scriabin (1895)

"Lento" features on Nah's eighth album and is her lyrical interpretation of Russian composer Alexander Scriabin's work Prelude op. 16 No. 4 in E minor for piano, drawing its name from the tempo marking. Nah's decision to incorporate this song in her repertoire reflects her classical roots. She demonstrates two clear approaches to hybridity; first in the writing of lyrics to a classical melody and second in the meter change from the original 3/4 to 4/4. The long-held notes at the end of each of her four three-bar phrases replace the original staccato crotchet chords. Both Nah and her collaborator, Swedish guitarist Ulf Wakenius, improvise throughout this piece, engaging in vocal and instrumental interplay.

3. "Calypso Blues", Don George and Nat King Cole (1950)

The third example, "Calypso Blues", demonstrates Nah's role as a key representative of 21st-century jazz vocal styling and highlights her virtuosity on many levels. In this solo live performance, Nah simultaneously uses vocal percussion with supported sound engineering techniques (adapted beat-boxing) and electronic looping techniques while humming a melodic line. She effectively establishes the rhythm bed to set the tempo and "groove" to create her own "jazz rhythm section". Nah goes on to layer the harmony, establishing the key centre and overall harmonic progression in sections. The result is a newly invented backing track, which provides a platform for Nah to perform. This approach can only be achieved with exceptional musicianship and aural skills as well a profound understanding of the role of every instrument in a jazz ensemble. The vocal sounds improvised by Nah also reflect less reliance on the traditional vocal jazz style of scat singing.

4: "Enter Sandman", Metallica - Kirk Hammett, James Hetfield and Lars Ulrich (*1991).*

"Enter Sandman" was written and performed by Californian heavy metal band Metallica in the 1990s. As an example of cross-genre repertoire, Nah's approach to the song exemplifies her hybrid style, interpretative talent and the unique creative outcomes of her collaboration with Wakenius. It

breaks all the boundaries of traditional jazz, crossing over into experimental music. Nah said she was scared to tackle "Enter Sandman", but was encouraged by her collaborator to perform the song in her own style. Nah avoids the traditional jazz solo approach, instead creating a soundscape. The result is a pure, highly expressive, quirky, beautifully pitched rendition, with moments of improvisation that demonstrate virtuosic technical proficiency. Two minutes and twenty three seconds into the track, Nah showcases her broad vocal stylings; these include high-register belting, constriction, bleating vibrato, glottal fry, growls, and in-breath sounds. The result is a multi-genre collaboration fusing together elements of jazz, rock, heavy metal and pop. Rather than constituting music that is "other than jazz", these examples reveal a singer who has, through jazz, liberated her musical being and in doing so, extended the boundaries of jazz.

Implications for contemporary jazz vocal education

Youn Sun Nah's time studying at the CIM in Paris was crucial to her development as a unique and successful jazz artist. Nah's experiences highlight the importance of the attitudes, philosophies and broad understandings of genre that vocal educators bring to their teaching. To support their affirmation of her unconventional approach, Nah's teachers exposed her to European jazz vocalists such as Norma Winstone, whose transition from jazz standards singer to avant-garde experimentalist may have been both reassuring and inspiring.

> And then they gave me a lot of albums of European jazz singers, and it was very interesting, because they don't sing at all like Ella Fitzgerald or Sarah Vaughan. So I asked my professors, 'We can call this jazz?' and they said, 'Yes, of course!' So I think I was encouraged by them, by listening to their music, to think that jazz can be multiple colors. (Nah as cited in Varty, 2013, p. 1)

Nah's learning experiences at CIM and her subsequent incorporation of them into a career that has met with great critical and popular acclaim, point the way toward a methodology for the education of 21st-century jazz vocalists. In the Contemporary Music program at Southern Cross University (SCU), it has been pedagogical policy to avoid tuition in specific genres in favour of providing broad-based foundational skills and knowledge applicable to a range of contemporary music styles. Given the program's charter of training contemporary musicians in performance, composition and theory across the broader spectrum of contemporary music styles—this is understandable. However, there has been a marked *aversion* to jazz study at SCU, a fact that may be linked to the dearth of opportunities to perform in this genre in the regional centre where SCU is based, even though "the quality and variety of jazz in Australia has probably never been greater" (Letts & Masso, 2010, p. 1).

Despite this aversion, jazz music has much to offer students in terms of skills that are highly applicable to non-jazz contemporary genres. Instrumentalists at SCU reap the benefits of a scaffolded learning process that exposes them to jazz repertoire in order to develop basic skills and knowledge in regard to melody, harmony and rhythm. However, for several years this exposure had been lacking for vocalists. In seeking to redress this imbalance, I have been motivated by a belief in the importance to vocalists of exposure to jazz—for the obvious functional harmonic aspects, and also, more importantly, for the genre's flexibility in terms of its breadth of repertoire and its multitude of improvisatory methods.

The ability to improvise gives vocalists confidence in a range of settings, regardless of the genre. It assists students in the awareness of other scales and the uses of dissonance. In particular, it encourages contemporary singers to understand harmony and rhythm through repertoire, leading to improvisation skills that are invaluable to vocalists' confidence in self-expression, and can also be effectively applied to the development of songwriting skills. The importance of confidence in musicianship should not be underestimated; it is something that when built, can readily transfer across genres.

To incorporate jazz education into the vocal stream of SCU's Contemporary Music program, the following steps were taken:

1. In consultation with other staff, a core repertoire that suited all studio areas was selected.
2. From this core repertoire, a vocal repertoire was collected, comprising a variety of examples scaled by differing degrees of difficulty.
3. These were then organised in a scaffolded schedule that advances in difficulty from week to week.

The practical implementation of this schedule goes as follows. Students enrolled in the Performance major begin one-to-one, 30-minute, fortnightly classes and a one-hour group class on alternative weeks in their second year of study.

Second-year vocalists begin by learning how to implement and use pentatonic and blues scales and melismas in the context of a song, as well as singing all modes. They are then introduced to improvised music and the benefits of learning this improvised art form. I then set a broad, introductory-level, repertoire of jazz standards and also introduce Brazilian music.

Each fortnight, students learn a new piece (developing sight-reading skills) and write out the guide tones of the harmonic progression. They are then asked to design a secondary melodic line that could function as an alternative melody over the harmony (reinforcing and connecting theory to its application). Students are then asked to improvise using the above methods, as well as derivatives from melody and scale options from Anne Peckham's *The Contemporary Singer: Elements of Vocal Technique* (2010) and Michele Weir's *Jazz Singer's Handbook: The Artistry and Mastery of Singing Jazz* (2005).

Throughout second year and into their third year, vocalists continue developing improvisation skills. In third year, students are introduced to 16 different world music scales. After sight-reading all scales, students are required to select three they wish to focus on for 12 weeks. They then choose to utilise the scales by embedding the scales within existing songs (e.g., "Desert Rose" by Sting, (1999) "Dhyana and Donalogue" by Sheila Chandra (1992), composing a new original song using the scales, or research to find repertoire employing the scales.

The curriculum demands that final-year students learn and demonstrate their ability to perform complex melodies, rhythms and meters, including 5/4 and 7/8. This is where Youn Sun Nah's repertoire is invaluable. For demonstration and analysis of complex, often non-lyrical melodic lines, I use Nah's performances of "Momento Magico" by Ulf Wakenius and "Frevo" by Egberto Gismonte.

Students learn skills in changing meter, vocal agility, and improvisation using "Momento Magico" as an etude. After demonstrating they have developed the technical proficiency to perform the head of the piece, they are encouraged to create their own improvisations over the harmonic changes. Students take a broad range of approaches to the "Momento Magico" improvisation and this process encourages them to express their own informed musical ideas and experiment with various vocal techniques.

"Frevo" demonstrates and presents significant vocal challenges. These include the F augmented broken chord at bar 11, a sequence of ascending major thirds and descending minor sixths, and the extended passages of large intervals.

Figure 1. The smallest of these is a minor sixth, through bars seven and eight.

Figure 2. Bars 13-16 of the bridge section contain large leaps that are all executed at a very lively tempo

Nah's improvisation in "Frevo" demonstrates a wide variety of vocal sounds and techniques. Her impressive technique, combined with her agility in transitions of pitch and timbre, provide students with examples that are often difficult to find for vocalists. Moreover, students can relate to her hybridity as they each bring to the program their own hybridity, by virtue of their broad range of backgrounds and influences.

Nah's contribution to jazz in the 21st century opens up additional skills and techniques that contemporary teachers can integrate into their programs. These include studies in diversity of repertoire, incorporation of other cultural influences, extensive collaboration, and vocal and electronic experimentation. With the adoption of such methods, Nah's repertoire may in time become part of the future jazz canon. With constant innovation, new "standards" may be born, reflecting the timeless, ever-changing face of jazz as it draws in ever more influences, pushing against established boundaries to constantly reinvent and reinvigorate itself.

Concluding remarks

This research has shone the spotlight on a contemporary jazz vocalist whose uniqueness and skill not only enthralls an existing global jazz audience, but also extends the boundaries that demarcate jazz itself. There are many elements to Youn Sun Nah's hybridity as a jazz artist; she blends stunning technique, unconventional repertoire, Korean ethnic heritage, eclectic influences, and a progressive musically adventurous spirit. As a truly compelling artist, she easily wears the mantle of a key representative of 21st century jazz vocal styles. As such, the pathways she has taken to get there should be carefully noted and integrated by educators as they point to new directions and possibilities in the training of contemporary jazz vocalists.

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BIOGRAPHY

Dr Leigh Carriage is a Senior Lecturer at Southern Cross University in the Contemporary Music Program. Leigh is an educator, performer, vocalist and award-winning songwriter. Since 1999, Leigh has been the coordinator of a Visiting Artists mentoring program for Women in Contemporary Music. For the past 15 years Leigh has also coordinated the APRA Songwriting Workshop Series. In 2009, Leigh was awarded a Citation for Outstanding Contribution to Student Learning by the Vice Chancellor. Leigh's Ph.D. in Composition at Sydney Conservatorium of Music broadly encompassed her research interests in composition, performance, improvisation, collaboration and recording. Leigh's most recent album *Mandarin Skyline* was nominated for a National Australian Jazz Bell Award and her recent award-winning album *Weave* won NCEIA Album of the Year.

Balance and Tension: The Jaw and Tongue in Relation to the Whole

Amanda Cole

Griffith University

ABSTRACT: This article addresses the link between postural balance and tension of the jaw and tongue. Integrated teaching and the benefits of the whole-person perspective are on the rise, but the compensatory action of jaw and tongue in attempting to right balance is generally unacknowledged. A brief review of the literature confirms this. The aim of this article is to remind teachers to address any central causes of jaw and tongue tension before focussing on the peripheral symptoms. Despite remedial or postural work students do, they may still retain the habit of slight posterior weight bearing when singing. A checklist – and discussion – of structural references is provided so that teachers can eliminate this cause of jaw and tongue tension before proceeding to part-specific exercises.

KEYWORDS: *jaw, tongue, posture, whole-person, parts*

INTRODUCTION

In this article I address the link between "postural balance" and tension of the jaw and tongue. My aim is to remind teachers to address any overall-balance causes of jaw and tongue tension before focussing on the peripheral parts (of jaw and tongue). While awareness of the whole-person perspective and a multi-disciplinary approach have both increased in recent decades (Chapman, 2006, p. 23), the compensatory action of jaw and tongue in attempting to right balance is generally unacknowledged. A brief review of the literature confirms this. Despite remedial or postural work students do, they may still retain a habit of posterior weight-bearing (that is, leaning backwards) when singing, however slight, which can be difficult for voice teachers, and others, to perceive[1]. A common, usually unconscious, way of compensating for this is by jutting the jaw forward, which creates accompanying tension in the tongue.

The compensatory mechanism of the jaw and tongue can be demonstrated by simply leaning backwards until you feel your jaw tightening. This is an extreme example, and more exaggerated than the average singer's posterior weight bearing (PWB). It is useful, however, to make the connection obvious. Since, in singing, we are dealing with very refined and small mechanical changes, the amount of posterior weight-bearing needs to be only slight to induce compensatory jaw (and accompanying tongue) action.

To help teachers eliminate this cause of jaw and tongue tension before proceeding to part-specific exercises, I provide some structural references and discuss their importance.

REVIEW OF THE LITERATURE

(1) "TENSION" OR A BALANCED WHOLE?

In this section, I survey the work of six pedagogues well-known in the literature and in practice: two singing teachers in what may be called the traditional mould, namely, Richard Miller (1996 and 2004) and Barbara Doscher (1988); two singing teachers whose emphasis is holistic, Jane Heirich (2005) and Janice Chapman (2006); and two voice teachers, Kristin Linklater and Michael McCallion (1988), who work more with spoken voice and who claim to have an "integrated approach" (Linklater, 1976, p. 211) or a whole person approach (McCallion, 1988, p. xxii). Heirich is also an Alexander Technique (AT) teacher, while the work of both Linklater and McCallion is strongly influenced by the Alexander Technique (Linklater, 1976, p. 4; McCallion, 1988, p. 32). Although all these authors address posture and whole-person function, they fail to address each of the following points:

a) Discussion of interpreting the jaw or tongue as being "on" (rather than tense) or of wondering about a deeper cause;
b) Mention of compensatory action of jaw/tongue in balance; or

c) Prescription of posture remedy as the *first response* when faced with a student whose tongue or jaw is obviously tight or stiff.

Some make a connection between jaw/tongue tension and posture. Heirich (AT teacher) observes that jaw tension can result from slumping (2005, p. 66), but not from PWB. Doscher (1988) notes that temporo-mandibular joint (TMJ) syndrome can *affect* posture, but makes no mention of the causal process moving in the opposite direction (from posture to jaw) (p. 102). I will now discuss these points in more detail.

a) The difference between *on* and stiff/tense

When we see tension, it is easy to label it simply as isolated tension, rather than the possibility that it is a co-ordinated response to something more central and fundamental, such as balance. When we label something as tension in singing, it is simultaneously labelled "wrong." Our tendency can be to focus on and "fix" it, by encouraging the student to "let it go" or "release" it. But tension is really just a muscle or group of muscles that is *on*, that is, in use. We only label it as tension when it appears to be inappropriate or not normally required for the activity in question. If we just see the part as *on*, we can open ourselves up to the possibility of considering the whole person and wondering why that part is *on*. What is it about the whole coordination of this singer that might make using that muscle a perfect choice, however unconsciously done?

b) The compensatory role of jaw and tongue

While researchers have described and investigated the role of body posture in relation to muscular tension in the neck and the laryngeal region (Kooijman et al., 2005, for example), this important finding seems to be absent in the pedagogical literature when addressing tension of the jaw and tongue. As Kooijman et al. (2005) show in their study of female classroom teachers with voice problems, posterior weight bearing (i.e. leaning backwards) is one of the most important predictors for a "high voice handicap" (p. 134). Further, what they call "deviant postures" (p. 135) such as posterior or anterior weight bearing, excessive lordosis, kyphosis and/or a deviant head position, have been shown *to be compensated for* in the neck and the laryngeal area. Such gross "deviations" as these researchers were observing were probably easier to recognize in classroom teachers who had no vocal or postural training than the highly refined adjustments required by singers. The study does, however, underline that adjustments of balance, posture and coordination can significantly alter muscular tension in the neck and larynx. Jaw and tongue are intimately connected with the anatomy and function of neck and larynx, which, as we know, depends on right function and relationship of the mechanisms that keep us upright. While we may know this already, or know it in theory, we may forget it when we see a student with a stiff jaw or excessive tongue tension and reach for the part-specific exercises we ourselves were taught. Even if we are constantly addressing and reviewing the posture of our students, we may forget to examine the whole person when specific problems show up. Most of us have been trained to think in parts, rather than the whole. It can require a conscious decision or intention to change this pattern.

A further consideration is that posterior weight bearing may be situational and therefore not constant, but part of a tendency to lean back. A cellist who participated in my doctoral research discovered, upon learning Alexander Technique integrated with performance, that her habit had always been to pull back on stage because she did not have a comprehensive and constructive plan for performing. Another participant, a singer, discovered that she habitually pulled back in the face of technical challenges, mostly high notes with difficult combinations of consonants. While these may seem to be psychological considerations rather than postural, they did have an effect on posture and on functioning. As Alexander discovered, the physical habit he identified as interfering with his voice was almost imperceptible to him under normal circumstances and became exaggerated and obvious only when on stage, but on close scrutiny he established that it was actually there at all time (Alexander, 1985, p. 26).

c) Posture remedy as a first response

In our parts-oriented world[2], it can be hard to remember to look for central causes of peripheral problems, and we may resist thinking about posture as a contributing factor in jaw or tongue tension if we think we have already "fixed" a student's posture. It can also take time to change our thinking about this, especially since the tradition has been, in vocal pedagogy, to address the part before the whole. By "whole" in this context I mean posture (or the way someone stands and moves)[3]. After a class that formed part of the data collection process for my doctoral research, the Alexander teacher, Cathy Madden, was asked by a voice teacher how

she recommended addressing the tongue tension of one her students. Madden had observed in the class that the student's habit was to lean backwards and suggested that the teacher work on that as a first step, to which the voice teacher responded, "Oh no, his posture's all right. He just needs to release his tongue."

d) Jaw/tongue tension and posture

Heirich (2005) does make connections between jaw function and posture, but does not recognise jaw tension as a compensation for PWB. She points out that TMJ function improves when singers stop slumping. She also observes that when the jaw is tightly held and the neck is stiff, singers often unconsciously lock the knees (p. 66). That is, she points to a postural compensation for (or result of) holding the jaw stiff, but does not go the other way and investigate what postural habits might make the jaw stiff. Doscher (1988) also makes a connection between jaw tension and posture, but describes the jaw tension as the cause and the posture as the effect, and makes no mention of the other way around (p. 102).

(2) JAW TENSION

There is a growing number of publications that attempt to integrate the various aspects of singing in order to get us to think whole. These include, and are not limited to, Chapman's *Singing and Teaching Singing: A Holistic Approach to Classical Voice* (2006), Ristad's classic, *A Soprano on her Head* (1982), Green and Gallwey's *The Inner Game of Music* (1986), Nelson and Blades-Zeller's *Singing With Your Whole Self* (2002) and Cathy Madden's *Integrative Alexander Technique Practice for Performing Artists: Onstage Synergy* (2014). Despite these, the very nature of the information age – its overwhelming volume of facts and the accompanying tendency for ever greater degrees of specialisation – can cause us to get caught up in details or become fixated on a problem at what seems to be the source, but sometimes is not. The following is a survey of jaw remedies from the seven texts mentioned above. These exercises are all valid and valuable. But they should be employed only after the cause of posterior weight bearing has been eliminated and the jaw is free to move as part of a correctly balanced whole.

Richard Miller, respected author of many books on vocal pedagogy gives, in *Solutions for Singers*, two reasons for jaw tension: (1) clenching the jaw and (2) hanging the jaw (2004, p. 88). He then proceeds to give jaw-specific exercises to counteract these. The exercises are what he calls "standard" for reducing either type of jaw tension, "based in part on the Froeschels/Brodnitz relaxation method." They include chewing, humming, wiggling and use of a mirror. He cautions against dropping the jaw or forcing it downward, and also against expecting every singer to look alike with regard to the extent of mouth opening. All this is sensible advice, provided that the singer is not trying to compensate for PWB.

Barbara Doscher, author of another frequently cited source of scientific vocal knowledge, *The Functional Unity of the Singing Voice* (1988), gives a number of reasons for jaw tension, including temporo-mandibular joint (TMJ) dysfunction, clavicular breathing, excessive breath pressure or 'support' on resonators in young singers, excessive mouth opening (pp. 102-103) and lack of vowel modification (p. 166). Doscher even mentions the effect of TMJ syndrome on posture (p. 102), but nowhere does she describe jaw tension as a compensation for faulty posture. She does not offer specific exercises to deal with jaw tension.

Janice Chapman's "holistic" approach goes a long way towards addressing the relationships between parts, and she frequently refers students and the reader to whole person techniques such as the Alexander Technique and Feldenkrais (Chapman, 2006, pp. 33, 35). She devotes a whole chapter to the central importance of "postural alignment" for *general* vocal freedom (pp. 23- 38). But she does not directly make the connection between jaw tension and posterior weight bearing. She describes "jaw jut" as an individual physical characteristic (giving Joan Sutherland as an example) but doesn't say that it can be a compensation for posterior weight bearing (p. 25).

Even works that appear to be strongly influenced by Alexander work (Linklater, 1976, for example) and terminology (such as McCallion, 1988) do the same. Linklater's exercises consist mainly of increasing awareness of how the jaw moves (1976, pp. 60-63)[4], while McCallion suggests simply opening the jaw to maximum to feel *where* you need to be free, and to allow the jaw opening to develop into a yawn (1988, p. 139).

Heirich, an Alexander Technique and voice teacher, does point out that issues with the temporo-mandibular joint respond to the systemic nature of Alexander lessons, observing that when a singer or a speaker's general condition improves and the lower jaw is more mobile, a previously imprisoned voice will have more freedom (2005, p. 9). As she explains, in a general manner, "any less-than-optimal function can negatively affect our structure

and performance; better functioning can enhance our performance and a healthy structure" (p. 9). She does not, however, explicitly point out the compensatory mechanism of the jaw for righting balance in posterior weight bearing. She does give several other causes for jaw tension from case studies: one (male) student was trying to look more masculine and so developed the habit of a strongly set jaw (p. 17) and another (female) realised that her jaw clenching represented twenty years of unshed tears (p. 17). A third cause listed by Heirich is the conscious setting or fixation of the larynx, or overworking of the neck and throat muscles, in an attempt to produce louder volume or greater emotional intensity (2005, p. 65). Her remedy for tight or restricted jaw movement is first a matter of "learning not to do the habit, of learning to undo the familiar over-contraction of three sets of jaw closing muscles" (p. 17). This is what she calls "the hard part," which is to be followed by gently stretching, over time, these pairs of muscles, "helping them regain their natural elasticity" (p. 17). Her exercises (pp. 18-20) include locating the TM joint and the jaw muscles (p. 18), "talking sloppy" (p. 19), jaw-dropping exercises (p. 19), and manual exercises with a rubber band while singing (p. 20).

All the exercises described above may contribute to loosening the jaw and freeing tension. But they can only be completely valuable if the way a singer stands is not creating the jaw tension. If a singer's habit is to lean backwards, then carrying out these exercises will not fully resolve the jaw tension, as the jaw is functioning perfectly according to a pattern of whole-person use. If the singer leans backwards, the jaw cooperates perfectly (by turning *on* and pushing forward) in an attempt to right the balance and will continue to do so no matter how well he/she relaxes the jaw as an independent limb.

(3) TONGUE TENSION

It is reasonably well recognised that there is often an interdependence between jaw and tongue. As Chapman (2006) observes, "in singers who are using these structures inefficiently or incorrectly an interdependence rather than an independence can develop" (p. 102). It follows that if the jaw is compensating unconsciously for a posterior lean, and has a reduced range of movement, the tongue is also likely to be involved. It is also widely recognised that the tongue can compensate for faulty vocal technique. Linklater, for example, describes the tongue as "a compensating 'helpful' muscle that assumes responsibility for sound when the breath is not free" (1976, p. 63). Given the recognition of the tongue's interdependence with the jaw and its ability to help and compensate, it is surprising that no one mentions its attempt to compensate for poor posture.

Doscher explains that "undue tension in the tongue often can be traced to tightness in the root" (1988, p. 96) but does not venture further than this into the tracing of origins. She has sound advice for long-term tongue tension sufferers, which I myself used as a remedy for my own tongue tension for many years. As she says, they are "not spectacular, or even different" and they do not get quick results, but "they are effective and do not substitute another problem for the one they are trying to solve" (p. 97). In my experience, the benefits gained were always very short-term. It was not until I changed my understanding and practice of balance that my tongue really began to cooperate. Doscher (1988) advocates:

1. Putting out your tongue as far as it will comfortably go then drawing it back quickly so the tip lies loosely against lower front teeth;
2. Pushing the tongue gently forward with the tip against lower front teeth, so that the tongue rolls forward and upward;
3. Preceding vowels in vocalises with unvoiced /th/ [θ], since it is difficult for the tongue to retract when it is continually asked to extend itself (p. 97).

Heirich advocates jaw mobility for appropriate tongue action, noting that a mobile lower jaw allows the tongue to drop appropriately on the [ɑ] vowel and for higher frequencies of all vowels (2005, p. 28), but she does not give any exercises for relieving tongue tension. Her description of Alexander's "Whispered Ah" exercise might be regarded as a remedy, since she mentions in its exposition that it may prevent sniffing and sucking in the air caused by a stiff-set position of the lips, cheeks, and tongue (p. 88). This reference is not recorded in the index under "tongue," however, so it would be difficult to locate as a remedy for tongue tension.

Miller suggests that allowing the lips, jaw and tongue to follow patterns of spoken enunciation will cure most problems of tongue tension (2004, p. 102) and his first remedy for tongue tension relies on the idea that *si canta come si parla* (one sings as one speaks). If singers speak (and live) with a habitual pattern of leaning back behind the midline (or with any other less-than-optimal use of whole self or vocal apparatus), then, following this edict, they will also sing with this pattern. The second

remedy Miller gives is to have the singer "sustain an affirmative spoken 'Hm!' at comfortable pitch and dynamic levels, drawing attention to the tongue apex with the inner surface of the lower front teeth. Then, having the student move the apex in small back-and-forth motions against the inner surface of the teeth, apply this "acoustic-at-rest" posture to vowel sequences and musical phrases (p. 102).

Chapman describes movement or use of the tongue as *causing* different effects on the hyoid bone and hence the larynx. She says, for example, that "tongue retraction or tongue root constriction can impinge on vocal fold vibration and most importantly vocal efficiency" (2006, p. 102). She does not mention what may *cause* the movement or use in the first place, other than that muscular interactions (and interdependence rather than independence) among the tongue, jaw and palate can also affect voice quality (p. 101). She mentions that in singers who have such an interdependence between jaw and tongue, the jaw can be seen to compensate for some tongue movements (p. 105). She gives an exercise for awareness of the two different opening positions (p. 105).

McCallion (1988) gives three exercises for releasing tongue tension. The first is to move the tongue back and forth between the [ɑ:] position and the [i:] position, while keeping a finger under the jaw to check that the tongue-root is not tightening, and gradually increase speed. The second is to stick out the tongue-tip so it touches neither teeth nor lips, and then to widen and narrow the tongue alternately. The third is to touch in turn, with the slightly extended tongue-tip, the centre of top lip, centre of bottom lip, centre of hard palate and both corners of the lips (pp. 140-141).

McCallion (1988) does give the proviso that during his exercises you should "pay great attention to keeping your good use functioning" (p. 139). *Good use* is an Alexander term, but simply telling the reader to maintain good use is not sufficient, especially if the reader has poor use and does not know it. This instruction ignores one of Alexander's other observations, which is that our perception of our own psychophysical habits and use is unreliable and often inaccurate. He believed that our sensory appreciation is unreliable because of our changing world and our inability to keep up purely through instinctive adaptation (2004, p. 180), and that his technique would make our senses reliable. More accurately, our senses will always be unreliable with respect to absolute information about ourselves, partly because our habits are so familiar and partly because our senses are mostly *relative* rather than absolute.

Linklater (1976) mentions that the tongue is a compensating "helpful" muscle that "assumes responsibility for sound when the breath is not free." She does not mention that it can also be "helpful" in trying to compensate for posterior weight bearings. She offers a series of exercises for tongue stretching (p. 64), tongue loosening (p. 65), and reprogramming the impulse note (p. 68).

None of these authors mentions the fine attention required for optimal balance and coordination of *the whole person* before attempting these remedies. This is a startling omission given the fact that most of us would readily acknowledge the relationship between posture and muscle tension.

WHOLE PERSON BALANCE – BODY-MAPPING AND DISCUSSION

Of course, it is possible that teachers and authors give part-specific advice assuming that all postural and structural questions have been taken care of as a primary consideration and therefore do not need re-addressing in the treatment of a jaw or tongue that is perpetually "on." As Chapman observes, "no matter how high up the performance ladder singers rise they need to pay constant attention to their general postural alignment" (2006, p. 35). She uses words like "long" and "noble" (p. 51). Richard Miller advises singers to assume the "noble" (1996, p. 30) and "axial" (2004, p. 36) posture." Renée Fleming (2005) mentions the importance of "alignment" (p. 205). Acknowledging this and ensuring it in students are two very different things. There is also the possibility that Garcia's method of achieving "noble" posture may actually *induce* tension in many singers (see point 4 below).

If singers are to cooperate with human design, the following four points can be checked before homing in on the jaw or tongue as the cause of all frustration.

1. The front of ribs is designed to be in front of the front of pelvis as Chapman has correctly drawn (2006, p. 24). Fashion frequently depicts the opposite, and we see models and actors (especially female) with the front of the ribcage posterior to the front of the pelvis. Chapman shows some inconsistency here. Her diagram of "excellent" posture (p. 24) includes a vertical midline overlaid on the human form to indicate the verticality of the posture. Several pages later, however (p. 37), there is a picture of two singers standing on a raked stage, one

"uncorrected" and one "corrected" for the incline. No midline is provided by Chapman here, but if the reader superimposes a midline over the illustration, the line indicates a tilt backwards. I suggest that this is because of the common – partly cultural – default people have of thinking that a slight backwards tilt is normal and therefore equals upright. If Chapman had superimposed the midline on this second diagram she may have noticed this herself and corrected the diagram.

2. Our spines are curved so that we can stand upright. Miller addresses the common mistake of trying to straighten the spine (2004, p. 37), quoting a teacher who had written to him complaining that a student's spine is "not straight." Attempts to over-straighten, or stand up tall or straight, often lead to leaning backwards. When the upward stretch reaches its limit, leaning back can provide a further stretch of abdominal muscles, giving the mistaken impression that we are standing taller, when we are really just leaning back.
3. Do knees, ankles or hips look stiff? This can be another sign of – and compensation for – posterior weight bearing, which may then also induce jaw and tongue tension. By addressing the whole balance of the singer, we reduce the number of individual problems to solve. Heirich reverses the cause and effect, blaming jaw tension for the habit of locking the knees (2005, p. 66).
4. Make sure students are not pulling back on their arms. Having heard the instruction "shoulders back" so many times, singers can come to believe that the natural place for their arms is posterior to the coronal midline. This posture is further affirmed constantly by models and advertising. Heirich describes this kind of posture as a misinterpretation of standing "straight" (similar to point 2 above), consisting of over-arched back, lifted sternum, shoulders thrown back and pelvis tilted forward (2005, p. 64). It can also come from the mistaken (or subconscious) idea that our arms are part of the axial skeleton, which keeps us upright. Holding or pulling the arms back tends to pull the entire upper torso backwards, tighten the front of the chest and limit movement at the sternoclavicular joint. This interferes with lung expansion, the elasticity of the ribs and breathing, as well as creating the possibility of compensatory jaw and tongue tension. Our arms and hands are designed to be used *in front of us*, not behind us, and they need to be free of upright/weight-bearing tasks so that the breathing apparatus can function fully.

Although it is contrary to almost two whole centuries of vocal pedagogy, here I will go out on a limb and say that Garcia's "noble posture" may have a lot to answer for in the field of tight shoulders and pulled back arms. Miller (2004, p. 40) describes Garcia's "noble posture" as "the main route of current international vocalism." It informs both Miller's and Marchesi's idea of ideal posture (Miller 1996, p. 40). The description Miller gives is that shoulders should relax down and back and to achieve this singers should cross hands palms outward at the lower dorsal (back) area, just below the twelfth rib.

Either we want to cooperate with human design in singing or we want to go against it entirely in an imitation of the nobility as depicted in 17th and 18th century painting. The description of noble posture given by Garcia and subscribed to by Miller and Marchesi suggests the latter. Chapman notes that when taken to extremes it can become counterproductive to singing well (2006, p. 27). The basic description, however, seems already extreme: how can maximal freedom of the torso and breathing apparatus occur when the torso and shoulders are aligned in such a way that the hands can be clasped behind the back?

CONCLUSION

As Chapman indicates, the interaction between postural alignment, breathing and support is not yet fully understood. There is clearly more research to be done in order to understand all the effects and mechanisms of compensating for poor posture. But by appreciating a singer as a whole balanced organism, by co-operating with the facts of human design and prioritising the whole over the parts, we can already make a difference to our students and ourselves. Even if, as voice specialists we can't expect to be masters of every aspect of human functioning, we can still look for some simple things in students to rule out the postural cause of tension in jaw and tongue. Once this is addressed,

there is a wealth of tongue and jaw exercises in the literature for gaining further freedom.

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NOTES

1. My own experience confirms that it is possible to study the Alexander Technique for ten years and continue to have jaw and tongue tension from remnant posterior weight bearing that had not been pointed out by my teachers. It was not until I studied with a teacher who observed and addressed my tendency to lean backwards and helped me change this habit with accurate and specific anatomical information that my tongue and jaw tension began to resolve. The differences between the two main international "schools" of Alexander teaching was the subject of my PhD.
2. I will discuss the dichotomy of thinking in parts versus thinking whole in another article. This was one of Alexander's revolutionary teachings, and becomes increasingly difficult in a world that is bombarded by information and tries to adapt by becoming increasingly specialised.
3. Both Feldenkrais (1985, p. 108) and Alexander (1949/1995, p. 185) avoided the use of the word "posture," (from the past participle of the Latin *ponere*, to put in position, to set) because it implies a lack of movement, as does the word "alignment". I use it here simply to speak the common language of vocal pedagogy (eg: Chapman's chapter called "Postural Alignment," Miller's and Garcia's "noble posture," etc.) (Miller 2004, p. 40). It is also why I introduced the term "balance".
4. Linklater uses many expressions taken from Alexander teaching, such as lengthening the back (p. 62) and the neck (p. 61), which is only helpful if singers are not already over-straightening the spine. Trying to lengthen a body part that is already being unnaturally stretched tends to lead to further tension.

BIOGRAPHY

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Registration Terminology and Contemporary Commercial Music

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ABSTRACT: Registration has been widely debated in vocal pedagogy with disagreement as to the number of registers, the most suitable labels for each register and how best to teach registration to students. Registration research has historically focused on the Western classical genre. To date very few resources have specifically studied registration within the Contemporary Commercial Music (CCM) context. This article discusses the terminology used by Australian voice teachers specialising in teaching CCM styles. Seventy-four teachers were surveyed. At the completion of the survey five respondents took part in semi-structured interviews, categorising their personal understanding of registration. These responses were analysed and compared to Henrich's Laryngeal Vibratory Mechanisms. The study found that disagreement existed as to the number of registers taught and the preferred labels for each register. The study determined that teachers used multiple terminologies for each register and that although teachers with the same training used similar terminologies, these terminologies did not always mean the same thing. Further study is needed to assess the specific impact of these discrepancies on the learning outcomes of students.

KEYWORDS: *CCM, registration, terminology, Australia*

INTRODUCTION

The sounds produced by an accomplished singer may appear to be simple and effortless. In reality, they are the result of complex interactions of the breath along with the muscular actions of the larynx and pharynx. Vocalists may train for many years to develop the fine motor skills required to produce a desired tone across their entire range.

Most commonly labelled chest, head and falsetto, a register is defined as "a phonation frequency range in which all tones are perceived as being produced in a similar way and which possess a similar voice timbre" (Sundberg, 1987, p. 49). The complexities of the muscular actions of registration have proven difficult to measure in their entirety. Each major advancement in voice literature has brought with it new classifications for registers, with researchers offering a multitude of opinions as to how many registers exist and how they should be labelled (Callaghan, 2014; Miller, 2006; Roubeau, Henrich, & Castellengo, 2009; Titze, 2000).

Research by Henrich, Roubeau and Castellengo (2009) has established the existence of four registers known as *laryngeal vibratory mechanisms*, each with a specific vibratory pattern of the vocal folds, and with consistent and measurable transition points between them. A review of available literature reveals that this research has not been consistently adopted in modern vocal pedagogy. How best to teach registration has been widely and frequently debated. Pedagogues continue to use multiple terminologies, creating a high level of confusion and making registration one of the most subjective and divisive topics in vocal pedagogy (Callaghan, 2014; Schutte & Miller, 1993; Sundberg, 1987; Titze, 2000). Anecdotally, this confusion has been observed by this researcher throughout a career as an Australian CCM teacher, as well as in discussions with many colleagues in the voice profession.

This debate holds even greater complexity within the Contemporary Commercial Music (CCM) community. The vast majority of registration research has been conducted within the Western classical vocal tradition only, with little or no acknowledgement of the stylistic demands and technical nuances of contemporary styles of music. Despite growing calls for the development of a specific CCM pedagogy, this genre has not yet attracted the same level of research or developed the same continuity as its classical counterpart (American Academy of Teachers of Singing, 2008; Bartlett & Tolmie, 2017; LoVetri, 2002). Nevertheless, we are today seeing a generation of trained CCM singers who have had little or no classical instruction and yet there are few resources available that shed light on what and how contemporary students are being taught, or that specifically examine the Australian population of

CCM teachers. In order to understand the functional outcomes of the instruction of registration we must first understand what is being taught. The focus of this research was to investigate how registration is being taught in CCM vocal pedagogy in Australia (Fabro, 2018).

RESEARCH AIMS AND METHODS

Voice scholars, researchers and teachers have acknowledged the need for the development of a pedagogy that is specific to the musical intricacies and technical demands of CCM styles (American Academy of Teachers of Singing, 2008; Bartlett, 2011; Hughes, Baker, Bartlett, Robinson, & Monro, 2015; Miller, 1986). Research by LoVetri and Weekly (2003) and DeSilva (2016) has provided a snapshot of the instruction of CCM pedagogy. This research, however, is general in nature, providing a broader set of information without looking in detail at the specific teaching methods being used. Furthermore, the populations studied consist predominantly of classical teachers who "also" teach contemporary styles as opposed to teachers specialising in CCM.

As such, the impetus of this research was to investigate the instruction of registration by CCM specialist teachers in Australia. The findings reported in this article are part of a larger research project that investigated multiple aspects of the instruction of registration, including teacher training, the teaching methods used and the perceived importance of registration (Fabro, 2018).

The first phase of the research consisted of an online survey designed to canvas a large body of quantitative information on the topic of registration. Questions generally required participants to select from a number of options, however some questions allowed room for participants to comment. Seventy-four teachers from across Australia participated in this phase of the research.

The survey was followed by five semi-structured qualitative interviews. This section of the research sought to serve a dual purpose. Firstly, to articulate and further investigate any interesting or significant survey results, allowing the interviewees to explain or expand on their responses. Secondly, as a means of investigating teacher understanding of registration in more depth by comparing individual interviewee responses with modern scientific registration research, specifically, laryngeal vibratory mechanisms as defined by Henrich (2006) and Roubeau et al. (2009). Interviewees have been labelled IA through IE and where necessary, all participants have been referred to as "he". This article will focus on teacher understanding of registration, including the use of terminology and the perceived number of registers. This study was approved by the Griffith University Research Ethics Committee.

CONTEXT

CCM: A Pedagogical Context

The style, language and aesthetics of the genre of music being performed will directly affect vocal expression in singing (Chapman, 2012; Sundberg, 1987; Titze, 2000). CCM vocal pedagogy and instruction in registration have traditionally been influenced by Western classical pedagogy, an art form with a long history of pedagogic instruction, strong pedagogic standards and expectations so that classical singers must and will undergo rigorous training (Bartlett, 2011; LoVetri, 2008).

In stark comparison CCM singing has developed in different geographical areas, within a range of diverse cultural groups. The music spoke of experiences that were relevant to the working-class communities in which an individual artist lived. Music and singing were commonly learnt by rote within each community and, subsequently, CCM singing has developed without strong pedagogic standards or traditions. Few CCM artists could afford voice training and those who could were often trained within the classical tradition. However, the inappropriateness of classical pedagogy for some CCM styles led many artists to avoid lessons altogether, often giving the impression that CCM vocalists were less committed to their art form (LoVetri, 2008). In reality, professional CCM singers avoided this kind of training as it left them poorly equipped for the demands of their chosen styles (American Academy of Teachers of Singing, 2008; Bartlett, 2011, 2014; Keskinen, 2013).

The classical tradition holds beauty of tone paramount and places an emphasis on training vocalists to present a tonally consistent sound across his or her entire range (Hollien, 1984; Keskinen, 2013; Miller, 1986). CCM vocalists prize the individuality of tone that stems from an emotional engagement specific to each individual performer (Bartlett, 2014; Hughes et al., 2015; LoVetri, 2008). A CCM artist may choose to emphasise aspects of his or her voice, such as registration breaks, in ways that would be classified as a fault in classical singing. Imperfections in the voice that are unique to an individual performers sound, or that result from the emotion of a performance, are tolerated. In many cases these

elements become the defining features of an individual singer's sound.

The CCM Vocal Tract

LoVetri (2002) notes that differences between classical and CCM singers are the direct result of changes in the set-up of the vocal tract, an element that directly impacts registration. Classical singers use a lowered larynx and wide pharynx in order to lengthen the vocal tract, allowing them to achieve a consistent tone across their entire range and encouraging vibrato from onset (Callaghan, 2014; Schutte & Miller, 1993; Sundberg, 1987).

The importance of natural or conversational articulation and phrasing makes the classical set-up inappropriate for CCM singing. CCM artists most commonly employ a neutral to high larynx along with a neutral pharynx (Bartlett, 2014; Keskinen, 2013). Furthermore, different combinations of vocal tract set-up are employed within different styles of CCM singing. Jazz singers often prefer a wide pharynx to assist with a darker vocal tone, whilst belters will narrow their pharynx, raise their larynx and rely on mouth widening to lengthen the vocal tract when belting higher in their range (American Academy of Teachers of Singing, 2008; DeSilva, 2016; LoVetri, 2002; Schutte & Miller, 1993).

Registration Terminology

Manuel Garcia (1911) used a laryngoscopic mirror to observe the vocal folds in motion; identifying three registers labelled chest, head and falsetto - in reference to sympathetic vibrations commonly experienced by the singer as he or she moved through each register. These terms remain the most commonly used registration terms in modern vocal pedagogy (Hollien, 1984). With the development of voice science, many theories have been put forward as to what specific muscular actions are responsible for creating registers, how many registers actually exist, how they should be labelled and how they are best taught. A 1963 study of known registration terminology found a staggering 107 different registration terms in use, which could be divided into five different register categories (Mörner et al., 1963). Since the 1970s there have been increasing calls for registration terminology to be based on science and not sensation ("NATS visits AATS ", 2014; Thurman, Welch, Theimer, & Klitzke, 2004; Titze, 2017). These calls have led in some cases to the development of new terminologies such as Estill's[1] "true vocal fold" conditions (labelled slack, thin, thick and stiff). Other researchers chose to re-define terminology that was already in use. Thurman, Welch, Theimer and Klitzke (2004) proposed a new science-based theory of registration, designating five register categories (labelled pulse, lower, upper, falsetto/flute and whistle). These terminologies remain popular today (Callaghan, 2014; Henrich, 2006; Kayes, 2017; Steinhauer, McDonald Klimek, & Estill, 2017).

Laryngeal Vibratory Mechanisms

Henrich (2006) and Roubeau et al. (2009) have clarified the physiology behind registers and their transition points. Using the process of electroglottography, spectrographic analysis and stroboscopy, the team measured the singing voices of male and female, trained and untrained singers, identifying four different mechanisms (labelled M0-M3), each with a distinctive vocal fold vibratory pattern and with measurable and consistent transition points between them. These patterns were present regardless of the training or sex of the test subjects, and transitions between registers were identifiable even when there was no audible register break present. Table 1 documents the mechanism categories into which the most commonly used registration terminology fits (Fabro, 2018; Roubeau et al., 2009).

It is important to note that mechanisms are not registers as usually described by singers and vocal pedagogues. Traditional definitions of registration have generally taken into account both the laryngeal actions of registration as well as the influence of resonance. The researchers chose to look solely at the laryngeal actions of registration separate from the effects of resonance and vocal tract set-up. Henrich (2006) notes that a singer's desire to achieve a particular voice quality will influence their decision to sing a particular note using M1 or M2, and that this choice may be voluntary or involuntary. It is in this way that registration choices become style specific, with each decision being directed by pitch, tone quality and emotional engagement (Henrich, 2006; Thurman & Welch, 2000; Titze, 2000).

Although classical and CCM vocalists share the same registration terminology, it must be noted that these terminologies do not always translate to mean the same thing (Callaghan, 2014; Henrich, 2006). The use of the term head voice clearly demonstrates this confusion. A female classical singer will use the term to refer to M2 whilst a female CCM singer will use the same term to refer

Table 1. Registration terminology as compared to Henrich's Laryngeal Vibratory Mechanisms.

M0	M1	M2	M3
Fry	Modal	Falsetto (M)	Whistle
Pulse	Chest	Head (F)	Flute
Strohbasse	Thick Fold	Thin Fold	Sifflet
Slack Fold	Voix Mixed (M)	Voix Mixed (F)	Stiff fold
	Mixed (M/F)	Mixed (F)	
	Head (Classical M)	Loft	

Note. M = Male; F = Female.

to either M2 or alternatively an M1 that has a light tone. The term falsetto is used with similar confusion, the male classical singer using it to refer to M2, whilst a male CCM singer will commonly use the term to refer to M1, sung with a light tone, with breathiness added for stylistic effect (Fabro, 2018; Henrich, 2006).

Belt and Mix

Traditionally these two terms have been a source of confusion amongst singing teachers, who have debated the nature of their creation and whether they are in fact a register or a voice quality (LoVetri & Weekly, 2003). Certainly in the last decade, belt has been widely acknowledged as being a voice quality or set-up of the vocal tract, sung in M1; created through a neutral to high larynx, narrowed pharynx, specific mouth shapes and twang; allowing vocalists to carry their M1 up higher than normal ranges at loud volumes (Schutte & Miller, 1993; Titze, 2007).

Current research has also affirmed that the mixed register is not a new register—a new laryngeal setting—but rather a modification of either M1 or M2, created by adjusting resonances in the vocal tract which provide a boost in volume and a fuller tone (Henrich, 2006). Singers using mix commonly experience a shift in vibratory sensations, giving the impression that they are singing in a new register.

FINDINGS

Use of Terminology

In order to establish a broader list of the registration terminologies used by CCM teachers, survey respondents were asked to identify any terminologies that they had encountered or used in the past. Respondents were given a range of terminologies to choose from and were able to select multiple options (see Figure 1) as well as provide their own responses. Sixty-five people answered this question revealing the popularity of the terms falsetto (84.62%), head (80.00%) and chest (80.00%). The terms upper (80.00%) and lower (78.46%) were almost equally popular. Eighteen teachers provided other terminologies, such as shortener- and lengthener-dominant; speaking voice; and CT and TA.

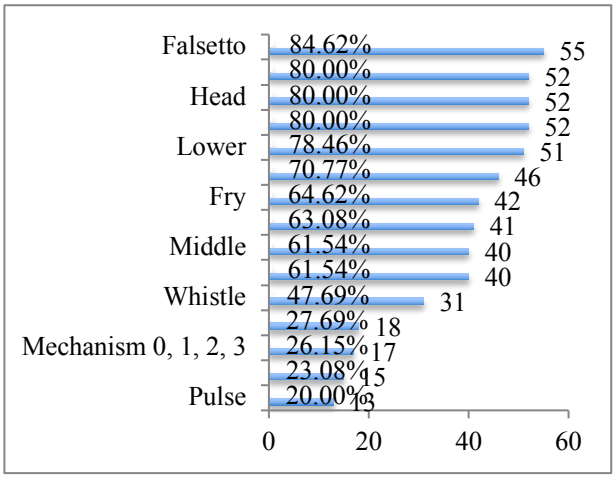

Figure 1. Registration Terminology used by survey participants.

Respondents were then asked to nominate their preferred terminology for both males and female singers (see Table 2). The majority of respondents selected multiple terminologies. Falsetto was more popular for males, head voice and mix for females. Chest was used equally for both sexes, and upper and lower again proved popular. Three of the survey respondents commented that their choice of terminology depended on the type of student that they were teaching. In direct response to this, interviewees were asked if they tailored their use of terminology to suit the needs of individual students. Responses were varied. IB noted that he makes the student aware that they will hear many different names for registers, before suggesting his own preferred terminology.

ID and IE were more concerned with helping the students to create the desired sounds in a healthy way, although IE also stated that he preferred to use industry terms such as head, chest and mix as that is what students will encounter when reading casting notices. In contrast to this viewpoint IC noted that he initially uses the student's preferred terminology, intending to convert them later to terminology that he deemed to be more appropriate.

> You can't stick with the terminology that the kids use because usually they mean about 127 different things. They will say "I hate my chest sound" and

you listen to it and think … that's nasal, so that problem is really nothing to do with the chest register. (IC, 2017).

Table 2. Preferred registration terminology used by survey participants

Terminology	Male	Female
Belt	1	3
Chest	22	23
Estill Voice Quality	1	1
Even/Blend	1	1
Falsetto	36	11
Flute	0	2
Fry/Pulse	4	5
Full Voice	1	0
Head	14	28
Heavy/Light	0	1
High/Low	1	2
Mechanism 0, 1, 2, 3	10	12
Mix	12	21
Modal	1	1
Primal Sound/Twang	4	4
Shortener/Lengthener	0	1
Siren	1	1
Speech Quality	9	9
Student's Choice	3	3
Thick/Thin/Stiff	11	13
Upper/Middle/Lower	13	14
Voice type i.e. Tenor/Soprano	3	3
Whistle	0	2

Finally, interviewees were asked to clarify why they preferred or avoided certain terminologies. IA and IC preferred the terminologies that they learnt through their Estill training and, in the case of IC, also terminology from his classical training. IB and IE did not like using Henrich's mechanisms as they felt that, although they were useful when talking to other voice professionals, students found them confusing.

Perceived Number of Registers

Teachers were asked to identify how many registers they considered there to be for both males and females. Respondents could select from one to five registers with an option of *I'm not Sure*. There were 64 responses for males and 62 for females. The most common number of registers selected was *four* with 21 (32.81%) and 22 (35.48%) responses for males and females respectively; followed by *three* with 15 responses for both sexes. Twelve participants listed a different number for males and females. Another 12 selected *I'm not sure*.

Survey participants were asked if they considered *mix* and *belt* to be registers. Sixty-five people responded to this question. The results of this survey suggest that much of the confusion surrounding the term belt has been alleviated with only 10 respondents (15.38%) considering it to be a register. Twenty-four respondents (36.92%) considered mix to be a register, suggesting that there remains some confusion about the use of this term. ID suggested that, within Speech Level Singing™ (SLS), this confusion partly stemmed from the lack of a scientific definition of the term.

> What [SLS] didn't have in place is what the actual definition of a mix was, and if you went from one SLS teacher to another…you would [find discrepancies]. Depending on whatever day they caught Seth on, what his explanation of [the mix] may change…They were reluctant to be scientifically scrutinised…so you had these hybrid kinds of versions. (ID, 2017)

Interviewee Understanding of Registers

Previous studies of CCM teaching methods have failed to investigate registration in a substantive way. As a first step in assessing teacher understanding of registration, the five interviewees were asked to explain their preferred registration terminologies, including the laryngeal mechanics for each perceived register. Responses were then compared to Henrich's laryngeal vibratory mechanisms (2006) as well as to individual teacher training. This comparison can be seen in Table 3. Responses have been placed with the mechanism that they best fit, however not all responses clearly align with each mechanism. This step in the research did not provide the expected data. Some interviewees were reluctant to answer the questions in detail. The discussions, though, provided an insight into the different methods of teaching registration and teacher choice of terminology.

Interview 1 – IA

IA is an CCM specialist Estill teacher who also works with classical students. When asked in the survey to identify the number of registers IA selected *I'm not sure*. In the interview phase he clarified this response stating that as he viewed things through the Estill model, he did not feel that he could accurately categorise traditional registers. He chose instead to describe Estill's four true vocal fold conditions: Slack, Thick, Thin and Stiff.

Interview 2 – IB

IB is a CCM specialist who has completed post-graduate study in vocal pedagogy. IB noted that in the five years it took him to complete his postgraduate studies, the terminology used changed from TA/CT to terminology defined by Thurman et al. (2004) and finally to Henrich's mechanisms. IB's preferred labels align with Thurman and Welch although, with the exception of Falsetto/Flute, the anatomy aligns more closely with Henrich's mechanisms. IB identified four registers for both males and females, labelled Fry, Lower, Upper and Falsetto/Flute.

Interview 3 – IC

IC was originally classically trained and later completed 2 levels of Estill training; and currently teaches both classical and CCM students. IC selected *I'm not sure* in the survey, stating that when teaching classical students, he tends to think of registration in terms of his classical training, focusing on developing consistency across the student's entire range. IC defined the different registers as follows:

> When I think register and registration events, I think of the stuff that I learnt as a classical trainee 20 years ago… things like the prima passaggio, second passaggio at C#/D, third probably between F and F#... If I am with a classical student [I tend to use] middle, lower middle, upper middle etc. (IC, 2017)

IC stated that with CCM students he is much less likely to talk about registers at all, but may refer to Estill's voice qualities, defining the vocal fold conditions as: Thin, Thick and Stiff.

Interview 4 – ID

ID is a Speech Level Singing (SLS) trained, CCM specialist teacher. ID was reluctant to define registers, stating that he frequently uses the terms chest, mix, head voice and falsetto, but that in his experience, few students were interested in registration. ID stated that although he could define registers anatomically, he did not tend to discuss it in any depth unless specifically asked by a student. ID did however provide a definition for the mixed register, stating that:

> The more of that research that I see, the more perplexing it becomes. I use perplexing on purpose, instead of confusing. I have seen first-hand prominent ENT specialists…stand on a stage and disagree with each other about that. What I tend to do is be a more hands-on person…[what] I have got is a very good series of skills and exercises that would trick somebody in to that condition, and then say to them: "What do you notice there?" and then say: "Well let's call that your mix". (ID, 2017)

Interview 5 – IE

IE is a CCM specialist teacher who has studied SLS and also with Jeanette LoVetri. He identified five registers for both males and females: Pulse, Chest, Mix, Head, Whistle.

CONCLUSION

Perhaps the most striking finding of this research was the number of different opinions as to how many registers exist. Given the historical literature on this topic it is not unexpected that four and three registers respectively were the most popular responses. The fact that the third highest response, however, was *I'm not sure* was surprising. Remaining consistent with the findings of Hollien (1984) and Callaghan (1998) the survey revealed the continuing popularity of the terms head, chest and falsetto; and the frequent use of the terms upper and lower. The research of Henrich (2006) identifies four laryngeal mechanisms and it is clear from these results that there are an enormous number of different labels currently being used to refer to this small number of registers. The inclusion of terminologies that are not traditionally used for registration such as tenor, soprano, twang and siren is notable (see Table 2). It is unclear if these inclusions demonstrate a misunderstanding of registration in general, or if teachers were simply nominating terminologies that they use in conjunction with the instruction of registration.

This report demonstrates that in many cases the same terminologies are used to mean different things. This is most clearly seen when looking at the terms thick and thin. Throughout this research it became apparent that these terms were being used in three main ways. The first group, consisting of

experienced Estill teachers, used the terms thick and thin to refer to two of Estill's four true vocal fold conditions. Estill intended her vocal fold conditions to replace traditional registration theory as a new and separate method of classifying registers (Kayes, 2017; Steinhauer et al., 2017). Survey respondents P36 and P48 were careful to separate traditional registers from Estill's thick and thin qualities. IA went on to reiterate this distinction in his interview.

Table 3. Comparison of interviewee's preferred terminology with teacher training and Henrich's laryngeal vibratory mechanisms.

Teacher	Training	Registers	Mechanism
IA	Estill	Slack	M0
		Thick	M1
		Thin	M2
		Stiff[a]	M2 or M3
IB	Masters of Vocal Pedagogy	Fry	M0
		Lower	M1
		Upper	M2
		Falsetto/Flute	M3
IC	Estill	Thick	M1
		Thin	M2
		Stiff[b]	M2 or M3
	Classical	Lower Middle	M2
		Middle	M2
		Upper Middle	M2
ID	SLS	Chest	-[c]
		Mix	M1 or M2
		Head	-
		Falsetto	-
IE	SLS	Pulse	M0
	LoVetri	Chest	M1
		Mix	M1 or M2
		Head	M2
		Whistle	M3

Note. a IA's description of the stiff fold condition shares some characteristics of both M2 and M3 as described in Chapter 2 of this paper. b IC's description of the stiff fold condition shares some characteristics of both M2 and M3 as described in Chapter 2 of this paper. IC stated that he considers almost all classical singing to be in the thin fold condition. c ID provided the terms that he uses most often but did not want to answer this question. However he did provide a definition of mix, which has been included.

A second group of Estill trained teachers failed to make any distinction at all between registers and Estill voice qualities. This failure may indicate that these teachers are not aware of the distinction themselves, or that they simply do not realise that this terminology could be a source of confusion. Finally, a third group of teachers used the terms thick and thin to refer to varying levels of thyro-arytenoid and crico-thyroid engagement across the spectrum of vocal fold mass. IB was one such teacher who used the terms in the following way: "I am more likely to talk about thick and thin so that they have got that as a visual representation" (IB, 2017).

Interestingly, eight of the 12 people who selected *I'm not sure*, when asked to identify the number of registers, listed themselves as being Estill trained. This group included two of the interviewees who were asked why they had selected this option. IA considered the Estill model as being separate from traditional registration and as such did not feel comfortable identifying the number of traditional registers. IC however did not make this distinction, selecting *I'm not sure* as he thinks about registration differently from classical to his CCM lessons.

The interview phase of this research revealed that teachers use a variety of terms, and that their choice of terminology aligns closely to their main source of voice training. It also revealed however, that whilst having the same training meant that teachers used similar terminologies it did not mean that teachers taught the same things. As previously mentioned, the two Estill-trained teachers used the Estill terminology in very different ways. This was further supported by the responses of ID and IE, both SLS-trained teachers who considered mix to be a register in its own right. Whilst IE felt strongly about the importance of the instruction of registration, ID felt that it was not important, preferring to teach registration in a much more demonstrative way.

Discrepancies in the use of terminology were not limited to the terms thick, thin and mix, but were seen across a large number of terminologies. Further study is needed to establish what impacts these discrepancies have on the student and their ability to functionally manage registration. It is possible that the confusion that exists amongst teachers is directly impacting student outcomes in a negative way. It is also possible that this impact is lessened or even eliminated by the fact that regardless of how many registers teachers consider there to be, in practice, the majority of teachers are primarily concerned with a lower/speech/M1 register; a higher/falsetto/head/M2 register; and the bridging of these two registers, often using a mix as a method of achieving this. This approach could account for the popularity of the terms upper and lower.

Across many years of performance, a single student will generally study with numerous teachers and in doing so will be exposed to multiple theories on registration, labelled with multiple terminologies, and instructed in a variety of ways. Further study may seek to clarify the impact upon students of the information being taught versus the impact of the methods being used to teach it.

NOTES

1. Referring to Estill Voice Training ®

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BIOGRAPHY

Joanna Fabro is a Sydney based vocalist who has performed across Australia and internationally. Jo began her teaching career as a CCM specialist teacher over 15 years ago after receiving a Bachelor of Music degree from The University of NSW. Jo has presented workshops, conducted choirs and taught at some of Sydney's most exclusive schools and universities, including ASCHAM girls school, Marcellin Catholic College, Jazz Workshop Australia, Newington College, Sydney Grammar, St Catherines Anglican school for girls and The Australian Institute of Music. In 2018 Jo graduated with distinction, receiving a Masters of Music (Vocal Pedagogy) from Brisbane Conservatorium of Music (Griffith University). Following this, Jo presented the results of her dissertation at the 2018 ANATS national conference. Jo currently operates a thriving private studio in Waterloo and teaches the Contemporary Singer and Contemporary Vocal Studio courses at the Sydney Conservatorium Open Academy. Jo currently serves on the NSW ANATS committee.

Decolonizing Classical Singers' Minds: The Latin American and Iberian Art Song Repertoire

Patricia Caicedo

Barcelona Festival of Song

ABSTRACT: Starting from the observation of the Latin American art song, the author questions the Eurocentric curriculum of the institutions that train Western classical singers across the world and invites classical singers and voice teachers to explore new repertoire. The article further proposes an embodied performance practice, to create performance that is informed by and embedded in the context of a work's genesis as well as standing in constant dialogue with its environment.

KEYWORDS: *Latin American Art Song, Spanish Art Song, Decolonial philosophy, Performance practice, Embodiment, Rethinking curriculum, Barcelona Festival of Song, 4E Cognition.*

INTRODUCTION

The curriculum of classical singers across the world is centered heavily on the German, French and Italian repertoire. Whilst on one hand a consequence of the providence of Western Classical Music, it may also be argued that this Eurocentric approach reveals a set of values that privilege cultural productions and ways of knowing and expressing characteristic of the countries considered central in the eighteenth and nineteenth centuries (Castro-Gómez, 2005, Mignolo, 2005), propagating a colonialist teaching model that only values the repertoire of the so-called centers and ignore that of the "peripheries".

Considering however that we are now in a multi-centric and globalised world, the question that comes to my mind is why we have not yet reformed the curriculum to reflect the diversity and values of the current historical moment?

One of the obstacles to overcome is the fact that most teachers, even outside of Europe, know little or no repertoire outside the European sphere. Having trained within colonialistic structures, it appears that their minds have become colonized (Dirks NB, ed. 1992) and they don't possess the necessary training and tools to break free of this situation.

For teachers, the first step to break the old structures of thought is to recognize the need to open their minds and be willing to learn new repertoire and languages.

It is a fascinating challenge because it introduces us to new universes with new forms of expression, new ways to embody emotions, new languages. And consequently, it requires us to develop new tools.

I was lucky to be confronted with this challenge very early in my training, and thus would like to share this experience as a form of auto-ethnography, in a bid to explain, not only my own relationship with the art song repertoire but also to try to understand the reasons why we continue to be anchored in Eurocentric teaching and performing models.

I hope that my personal journey will also contribute to envision possibilities to consciously start deconstructing the colonialist academic structure of center and peripheries.

CENTER- PERIPHERY: CURRICULUM

I was born in Colombia, where I started studying music at the Conservatory at the age of five. At home, I was immersed in the Western classical music repertoire, listening to composers like Chopin and Beethoven. Growing up in Colombia, however, I was also surrounded by Latin American folk music and when I started singing at age twelve, I decided to focus on Colombian and Latin American folk music.

However, as soon as I embarked in my studies at the Conservatory, Colombian and Latin American folk music seemed to disappear.

The curriculum for classical singers, as well as for instrumentalists, was centered almost entirely in Western Classical Music and more specifically the German, French and Italian repertoire. I have since found that this situation occurs consistently with current academia in Conservatories and

universities around the world, where Central-European repertoire continues to be the center of curricula.

During my training as a classical singer, my studies revolved around three major axes, namely Opera, Oratorio and Lied (German art song). I was most interested in the latter.

Thanks to a teacher who dared to venture beyond the curriculum, I was also exposed to Latin American and Iberian art songs from the beginning of my training. It appeared to me that Latin American repertoire represented a meeting point between classical and folk music and thus I developed a keen interest in that repertoire.

I dedicated several years to search for Latin American art songs, looking for them in archives and private collections. This aspect of my research was particularly challenging because, likely due to a lack of appreciation, the songs were not or rarely published, preserved, or recorded. And as a result, the songs were not performed, thereby perpetuating their neglect. For years, finding sheet music was a significant challenge.

Until very recently, the works of many Latin American composers were practically unknown even in their own countries of origin, arguably due to political and social factors that have led to a lack of appreciation of their production (Caicedo, 2018).

The poor development of the music publishing industry in Latin America has had the most significant impact on the lack of dissemination of that repertoire. This problem is still evident today, and it affects not only the song repertoire but all Latin American art music production. As a result, a large number of works have never been published and instead rest in family libraries or specialized archives in different Latin American countries. Various economic, political, and social factors have delayed the publication of songs, time and time again (Caicedo, 2018).

In Spain, the situation has been different, due precisely to the development of its publishing industry. The works of composers like De Falla, Granados, Turina, Obradors, Montsalvatge, among others, have been published and are now considered to be the best-known repertoire in Spanish. The publication of these Spanish songs has had a positive effect on the dissemination of the music, and today these songs are increasingly taught and interpreted across the globe – in contrast to the songs of of Latin America. However, compared to the prevalence of German, Italian, or French works, the Spanish art song still has a long way to go.

This situation of ignorance and oversight of an entire genre fueled my interest and led me to start a quasi-detective search for songs in different countries of Latin America and Spain.

While searching and cataloging the works, I stumbled upon the lack of editions and re-editions and the difficulty of locating and contacting the descendants of the composers to access any family archives. During the early years of my quest, finding a song was an immense achievement, each song retrieved was a treasure, even though many times it was only a photocopy of one of the old editions.

After a time, I began to find original works and manuscripts deposited in private archives and specialized libraries. Additionally, I obtained the collaboration of the relatives and heirs of several composers. I also developed relationships with a good number of contemporary composers who generously sent me their works. My collection of songs grew to approximately 2,500 songs. The sheer number of songs, as well as their quality, confirmed the importance and magnitude of the genre and motivated me to take action to promote it.

During all these years, I have dedicated myself to researching and bringing to light various composers and their works. I have done this by publishing several books, scores, recording numerous CDs with works that had not previously been recorded, and teaching in universities in the United States, Europe, and Latin America. (Caicedo, 2005, 2009, 2014, 2016, 2018).

In 2005, I created the Barcelona Festival of Song, a summer course dedicated to the study of the history and interpretation of the Iberian and Latin American vocal repertoire in Spanish, Catalan and Portuguese (Caicedo, 2014). [1]

However, as I entered the realm of the Latin American art song, I encountered difficulties in knowing when I was in the field of art song or folk song. In a certain sense, these songs were places of resistance, in that they refused to be classified and submitted to the center and periphery structure. In fact, my need for classifying them in one or another category revealed how much I had internalized the European classification system, in other words, how far my own mind had been colonized.

These songs were showing me how coloniality is not only a constitutive element of modernity and geopolitical divisions (Chatterjee, 1989, Mignolo, 2007), but also a definitive element in the compartmentalization of knowledge and ways of being, expressing, learning and even performing. (Castro-Gómez, 2005). In an attempt to solve my conundrum, I started studying the performance practice of song.

CENTER-PERIPHERY: EMBODIMENT

To try to answer my concerns alongside studying the history and context of the Latin American art song, I have studied its performance practice. I started by analyzing the different types of song: art, folk and popular. My study of performance practice resulted in a definition of song that only admits one type of song. My findings were published in my recent book, a book that ended with a chapter that opened the door to possible new ways of interpreting the Latin American art song based on the study of embodiment (Caicedo, 2018).

As a performer myself, I find that my approach to the study of song is not only intellectual. I have embodied the role of an interpreter of vocal music since I was a child. I was a Latin American folk song singer before starting my training as a classical singer. This immediate connection with folk songs aroused in me concerns about the style of interpretation and the use of the body when performing Latin American art songs.

In musical interpretation, performers experience music with all of their body and mind, *corporealizing* the music, its context, and its codes. Being a physical phenomenon, music is experienced within the whole body. Performers consciously and unconsciously incorporate cultural codes, conventions of style and social norms, influenced by their gender, social class, and age. As Peter Garland states: "all systems, musical or political, materialize in the individual. Our bodies are the field of expression of private and collective movements. It is absurd to believe that there is a 'reality' outside our own mental and physical processes" (Garland, 1982).

In the training of classical singers, the singers continue to be encouraged to interpret art song in a physically contained way, avoiding large movements and concentrating on their vocal and facial expressiveness. The philosophical dualism in vogue at the time when for instance, the Lied flourished likely influenced this specific use of the body, namely a philosophy that arguably considered the body as being corrupt and inferior. (Dewey, 1934, Rorty, 1979).

Descartes' famous saying, "I think therefore I am" (Descartes, 1637), accurately represents the idea that through the intellect one can achieve knowledge without needing the body.

Many educational systems validate this philosophy, which translates into a purely cognitive approach in the sciences and the arts. From a Euro-centric perspective, the experience of the body, primitive and unrefined, is not valued in the same way as the intellectual mentality. Thus, the body and its passions, movements, rhythms, and contractions, were expelled and demonized from the Eurocentric morality. The body without the commonly valued intellect was then designated to wild, uncontrollable, sinful places: the peripheries.

Educational institutions and performers have not yet recognised that the use of the body (and the voice as part of the body), associated with canonic European repertoire is linked to its context of creation – its norms, values, and social codes – and that it cannot be applied wholesale to other repertoires. Taking the European art music canon as the exclusive, ideal model, the one that should be imitated, the only desirable one, is arguably an expression of cultural colonialism. If Latin America, or for that matter any other non-European culture ignores its own culture, it devalues it and risks its demise.

The implicit message in this lack of enquiry and interest is that the European canon suffices and leaves nothing to be desired and we stumble once again upon the center-periphery mind-frame, an expression of cultural colonialism that ignores and devalues the culture products of the "peripheries".

DECONSTRUCTING THE CENTER-PERIPHERY APPROACH

Proposing new ways of performing Latin American Art Song

Music is an experience perceived through the whole body that involves the major senses and emotions (Juslin, 2001, 2003).

John Dewey (1859-1952) and later Maurice Merleau Ponty (1908-1961), have approached the subject of the body and dualism from a perspective that integrates body and mind, making them interdependent. According to Dewey, human events, where they are to be considered genuine experiences, require the participation of both body and mind. For him, no intellectual activity constitutes an integral event (experience), unless a practical task is completed (Dewey, 1934). On the other hand, Merleau-Ponty argues that our understanding of the world is subject to the perception of the body. He developed the idea of the *intentional motor*, implying that we learn through our bodies, not through our intellect. According to Merleau-Ponty, we experience, internalize, and become conscious, entirely from the body (Merleau-Ponty, 1962).

These ideas have been reinforced by studies in neuroscience suggesting that *corporealization* i.e. embodiment is a crucial step for learning (Chiel & Beer, 1997). Ideas and thoughts must pass through the body to be experienced, learned, and able to be communicated back (Gardner, 1993). It appears that the interaction of physical or sensorimotor experiences with cognitive ones has a decisive role in the formation of ideas and learning (Bainbridge Cohen, 1993, Egermann, Fernando, Chuen & McAdams, 2015). These insights contribute again to the deconstruction of the previously prevalent center (brain) periphery (body) model.

MUSIC COGNITION – FROM THE CENTER TO THE PERIPHERY

There is growing evidence that music is primarily an experience of the senses and emotions, an experience that is perceived through the whole body, a body that is embedded in a society, a body in continual adaptive biological conversation with the environment (Giordano, Egermann & Bresin, 2014). The way in which we perceive and incorporate music in our experience develops through an ongoing history of structural coupling with the environment. Our musicality extends from the body to the environment, interacting with it. It cannot be separated from our context (Seitz, 2000, Van der Schyff, 2013, Varela, 1993).

This multimodal, ecological view of musicality is rooted in is the so-called "4E of cognition", with the four *Es* referring to cognition that is *embodied*, *embedded*, *extended*, and *enacted*. Considering the mind as embodied means rethinking the boundaries between the neural and extra-neural. Our cognitive processes are embedded within the systems we inhabit (Gibson, 1966), an ecological process that is distributed across the entire body of a living system and its environment.

Clark and Chalmers (2008) proposed that cognition is extended to acknowledge that humans interact with external entities in a two-way interaction, creating a coupled system that can be seen as a cognitive system in its own right (Clark & Chalmers, 2008). Dynamical processes of co-determination occur between (musical) agents and their environments. This approach to cognition allows us to see music-making as a central aspect of how we communicate and organize our existence as highly complex bio-cultural creatures (Van der Schyff, 2013).

The cognitive approach to the musical experience defies the brain-body separation and the body-environment separation.

This approach to music performance presents itself as a good vehicle for the deconstruction of the paradigm of center and peripheries. And particularly the singer, who experiences music in his/her own body, should understand the limitations of a model that privileges the thought over the body.

PROPOSAL FOR THE INTERPRETATION OF THE LATIN AMERICAN ART SONG

Following the 4E cognition model, it appears that to achieve accurate interpretations of musical works one must start with meticulous observation of the a works' underlying culture, its uses and customs, and the role that the body plays in that culture's social interactions.

An interpretation that starts from this observation would likely be consistent with the music since the musical work, mirroring the culture in each historical moment, already reflects its original context. Therefore, it is necessary that the performer knows and values the context of any musical work.

This approach would arguably result in interpretations that may differ from interpretations commonly proposed today by music institutions but will stand a greater chance of being true to composers' original intentions. An interpretation that incorporates the 4E of cognition is one that transforms the body into a departing point of a conversation with the socio-cultural-biological environment.

This way of approaching the performance of song challenges the accepted divisions between folk, art, and popular song, giving birth to a fluid space in which song is only one.

The questions to ask ourselves before interpreting any song should be: Do I know the context of creation of this piece? Am I familiar with the folk music of the place of origin of this work? Do I know how is the body is used in social interactions in that particular culture? How do people express their emotions, dance and communicate in this culture? The answer to these questions should lead us to interpretations that are unique for each repertoire, culture, composer and period.

A culturally informed performance practice will result in unique approaches to different repertoire. As a consequence, the repertoire we call today *the canon* will not continue to be taken as the

sole standard for performance practice. In this scenario, the Central European repertoire and the conventions and norms associated with it will still be valued, but as but one of the many genres of the world.

The advent of the digital age presents new challenges for performers and scholars, not just in terms of the technologies and tools that we have to learn and incorporate in our everyday research and performance life. If we do not question the center-periphery mind frame, technology itself may be adopted as the new center in a still more compartmentalized and disembodied world.

NOTES

1. The Barcelona Festival of Song is a Summer program for classical singers, teachers and students dedicated to the study of the Latin American and Iberian art song repertory in Spanish, Portuguese and Catalan. For further information, please visit www.barcelonafestivalofsong.com

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BIOGRAPHY

A multifaceted artist, soprano Patricia Caicedo is one of the leading interpreters of the Iberian and Latin American Art Song Repertoire, having sung

in the United States, Canada, Europe, and Latin America to public and critical acclaim.

She is often invited as an artist-scholar in residence at universities in the US and Europe, teaching where she teaches the Latin American and Iberian repertoire. Caicedo has recorded nine CDs dedicated to the art song repertoire in Spanish, Catalan, Portuguese and Indigenous languages of the Americas. She has written eight books considered a reference in the area.

She is the founder and director of the Barcelona Festival of Song®, a 10-day Summer Course and performance series on the history and interpretation of the Latin American and Spanish Vocal repertoire that reaches its 16th edition in 2020. Patricia holds a Ph.D. in musicology from the Universidad Complutense de Madrid and a Medical Doctor´s degree from the Escuela Colombiana de Medicina.

Adolescent Female Voice: Repertoire Selection Model

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ABSTRACT: Selecting songs for students is an important part of teaching singing regardless of style and genre as students' repertoire essentially becomes their textbook. The vocal vulnerabilities most boys and girls experience during puberty must be taken into consideration when choosing songs to safeguard vocal health and ensure successful learning outcomes as well as an increase in confidence. Focussing on female adolescent students, this paper reports findings from a study into the criteria teachers may apply to meet the challenging and time-consuming task of choosing repertoire suited to the age and vocal abilities of their students. Responses to a survey received from 83 voice teachers strongly indicated several criteria teachers use when assigning songs, namely range, emotional connection with the context, melodic structure, student's preferred style, performance goals, student suitability, and age-appropriate context. Other common trends include flexibility in teaching and being aware of the student's mental health.

KEYWORDS: *adolescent female voice, repertoire selection*

INTRODUCTION

AFTER centuries of exclusion from public vocal performances, the adolescent female voice finally attracted attention late in the 19th century when there were heated discussions amongst voice experts on whether to continue singing during voice change or not (Blatt, 1983). Progress in both adult and paediatric voice science and singing voice pedagogy has since proven that singing during voice change can be done through proper vocal care and guidance (Denison, 2012; Trollinger, 2007). Edwin (2010); Gebhardt (2016) explained that trained pubertal singers are less likely to incur a voice related injury compared to untrained singers when guided through voice change with vocal technique and repertoire tailored to their particular developmental stages. Both researchers stressed that concerns regarding children singing during voice change should focus more on the pedagogic and scientific knowledge of the teacher.

Female voice change is different

Regarded as a pioneer in the field of female adolescent voice research, Gackle (1991) assessed female changing voices over a 10-year period using their mean speaking pitch, vocal range, register transition, and voice quality as criteria. Gackle (1991, 2011) proposed that most adolescent females will experience some symptoms of voice change and may have difficulty in phonation, insecurity of pitch, fluctuations and noticeable breaks in register transition, husky tonal quality, voice cracking and a decrease in their vocal range. Gackle's widely used model proposes four phases of female adolescent voice change:

1: Unchanged – pre-pubertal
- Mean range: B♭3 – F5
- Mean tessitura: D4 – D5

2a: Start of voice change – pre-menarcheal
- Mean range: A3 – G5
- Mean tessitura: D4 – D5

2b: Peak of voice change – post-menarcheal
- Mean range: A3 – F5
- Mean tessitura: B3 – C5

3: Young adult
- Mean range: A3 – A5
- Mean tessitura: A3 – G5

As a general rule, both boys and girls go through voice change during their early to mid-teens and everyone experiences voice change differently. Before puberty, boys' and girls' growth patterns are very similar (Thakur & Gautam, 2017). However, in puberty, males experience a larger growth in physique overall than do females. This growth in the body is mirrored by relative growth of the structures and musculature of the larynx, vocal tract, and the respiratory system. Males experience an increase in the laryngeal size of 3:2 compared to the female (Abitbol, 2018). This results in a more noticeable voice change in the male than exhibited by females in similar age groups where voice changes can often be difficult

to discern for both the female singing student and her teacher. Several papers (May & Williams, 1989; Monks, 2003; Sweet, 2015) stressed that teachers need to be aware of the propensity of young females to strongly identify with their voices. A conclusion could, therefore, be made that the greatest vulnerability during female voice change is of a psychological nature.

Denison (2012) found where pubertal growth predominantly occurs in the laryngeal cartilages in the male, the female experiences foremost growth in the length and thickness of the vocal folds. The increase in hormone levels alters the viscosity of the mucosa in the larynx at first during puberty and then monthly affecting phonation (Abitbol, 2018; see Table 1). Changes are also occurring within the vocal folds with the development of the five-layered structure of the mature vocal folds establishing the laryngeal vibratory mechanisms (vocal registers).

With the emergence of the vocal registers, young singers have to learn to transition especially between M1 (chest voice) and M2 (head voice). In a study of female adolescent singers, Van Gend, Mathias, Scott, and Allen (2017) found that the growth of the laryngeal ligaments, cartilages and muscles during puberty can affect coordination making register changes difficult and uneven. The researchers highlighted that this is likely to affect both the comfort and confidence of the singer when moving from one register into another especially from M1 to M2, (see Table 1).

Williams (2018) stressed that children are neither capable of singing as loudly nor maintaining high pitches for as long as adults. The researcher explained that it is much harder for children to sing quick interval changes due to the inflexibility of their softer and immature larynx.

Table 1. Developmental phonatory changes in the pubertal female and their effects on repertoire choices. Based on findings by Abitbol (2018); Denison (2012); Van Gend et al. (2017); Williams (2018).

Developmental changes	Related affects	Phonatory implications	Repertoire implications
Vocal folds increase in length and thickness	Irregular and unpredictable growth	Vocal instability	Difficulty singing quick runs, fast interval changes, and large intervals
Excess oestrogen in the lamina propria	Uneven surface of vocal folds	Huskiness due to loss of high harmonics	
Development of the distinct three-layered lamina propria	Emergence of the different laryngeal vibratory patterns – vocal registers	Register changes. This requires learning how to transition	Songs that transition less are easier
Growth of cartilage, muscles, ligaments and tissues	Coordination	Difficult and uneven register changes especially when going from M1 to M2.	Descending phrases are easier to sing than ascending
The larynx is relatively soft and unstable as the cartilage is not fully developed	Lack of ability to increase intrinsic muscle tension	Breathiness due to incomplete glottal closure	
		Lack of flexibility and agility	Difficulty executing fast vocal runs, quick interval changes and large intervals

REPERTOIRE

Doscher (2002) suggested that repertoire selection criteria can be classified into four broad categories as shown in Table 2. Underlining the challenges that neuromuscular coordination poses for young singers, the researcher suggested that teachers carefully consider the individual student's ability before introducing foreign languages, difficult rhythms and complex intervals. Table 1 shows the developmental phonatory changes in the pubertal female and their effects on repertoire choices.

Table 2. Four broad repertoire categories based on Doscher (2002).

Physical Restrictions	Classification	Expressive/Emotional Factors	Musicianship Skills
Student's developmental age	Register changes	Student's emotional age	Student appropriate level of predictability of melodic, harmonic and rhythmic structures enabling them to follow the composer's instructions and deliver clear articulation
Length of studying	Tessitura	Personality	
Individual technical issues	Vocal range	Student's preferred music style	
	Timbre		

Classification of female adolescent voice and repertoire.

Whilst there are several published repertoire-books they are primarily based on the non-age specific voice categories; soprano, mezzo-soprano, alto, tenor, baritone and bass. However, fitting prepubescent and adolescent voices into adult voice categories is not only unhelpful, it may potentially lead to inefficient vocal production and could prevent them from reaching their full vocal potential, or worse, manipulating their anatomy to such a degree they develop a voice disorder (Gackle, 2011). Regardless of singing style, it is imperative for teachers to ensure that young students do not try to sound like the adult singers they might listen to. Teachers must encourage appropriate style, vocal technique and repertoire tailored to the individual student's age and personality (Edwin, 2010).

It is necessary to appreciate that the term tessitura is used both to describe the mean pitch range of a song's melody line and the pitch range of a singer's voice where they are singing comfortably and with the greatest of ease. Although Gackle's model (1991, 2011) is a useful tool for assessing and understanding female adolescent voice change, it is important to acknowledge that the reported mean tessituras were based on a study of choir singers who mainly sang with a classical vocal technique. Different vocal styles have different pitch ranges where a student feels vocally comfortable. An adolescent female student may be able to sing a folksong, legit musical theatre song or classical song that sits around C4 – E5 for a whole phrase with the greatest of ease. However, if the same young student was assigned a contemporary musical theatre song or pop song which stylistically would require her to sing predominantly in M1 with a conversational vocal quality, it would be highly unlikely that she would be able to so around C4 – E5 for a whole phrase with the greatest of ease. Therefore, it is imperative teachers are aware of their individual student's vocal tessitura within the different vocal styles.

To match a song's tessitura with a student's vocal tessitura, songs may need modifications such as transposing and/or changing difficult notes. Convenient and timesaving ways for teachers to help students sing within their changing tessitura can be achieved by using online transposable sheet music, transposition mode on a digital piano, or by using transposable software for backing tracks.

SURVEY OF SINGING TEACHERS

This study identified a lack of specific repertoire criteria for female adolescent singers. As a result, a decision was made to survey teachers in the field to identify common themes that may help to develop a useful repertoire criterion for this particular group of singers.

METHOD

The study was based on a mixed method approach employing a combination of primary and secondary research. To gain insight into teachers' general knowledge and awareness of pubertal female voice change and related implications for repertoire choices, an online survey was conducted through SurveyMonkey Inc. (www.surveymonkey.com). This provided an accessible and efficient option for survey completion within the required timeframes.

As this study was conducted through Griffith University, ethics approval was applied for through Griffith University's Research Information Management System (RIMS) and granted prior to conducting the survey. The survey was administered during the period 8/11/2017 – 7/12/2017 and was conducted using the approved online questionnaire.

Participants

To find participants representative of voice teachers in general, potential survey participants were identified through the publicly available singing teacher directory on the Australian National Association of Teachers of Singing's web site, www.anats.org. Members of ANATS are located throughout Australia and include singing teachers who teach one or more singing styles such as CCM, classical, jazz and musical theatre. 264 singing teachers were identified through this source.

Materials

The online survey was comprised of questions based on the findings of the reviewed literature and designed with the target population in mind. The survey consisted of a combination of closed and open-ended questions. Closed questions were answered using a Likert-scale format. Survey participants were asked to identify the extent to which they agreed to particular statements using a five-point rating scale. The quantitative data generated from the survey was used to investigate and highlight the common themes and potential shortcomings in teachers' repertoire choices for female adolescent voices.

The open-ended questions returned individual qualitative responses. Through these, participants were able to identify other considerations in the selection of repertoire which were not identified in the closed questions or relevant literature.

Procedures

Prospective participants were emailed an invitation to participate in the online survey. Of the 264 survey invitations issued, four were returned due to email error and two potential participants opted out. A total of 83 surveys were completed, indicating a 32% participation rate. While not statistically significant, the number of participants suggests that the focus of this research is relevant to the broader community of singing teachers.

RESULTS

Findings from the survey indicated singing teachers are generally aware of phonatory difficulties in adolescent female voice and are treating each student not as belonging to a group, but as an individual. Many participants found subject suitability, flexibility, and awareness of the student's mental health to be of high importance when teaching adolescent female students (see Table 3).

Table 3. Identified themes for teaching adolescent females.

Subject suitability	Flexibility in teaching	Mental health
One size does not fit all	Constant reassessment	Awareness of the student 's emotional state
Student's needs	Adaptability	Encourage
Excite each individual	Accommodate vocal challenges	Build confidence

Results indicated that the 10 most common criteria teachers use when choosing songs for their adolescent female students were:

- Student's preferred style
- Subject suitability – no one size fits all
- Age-appropriate lyrics/emotions
- Songs from exam lists (such as AMEB, Trinity etc.)
- Performance goals
- Range
- Diversity of styles
- Developmental stage
- Melodic intervals
- Registration

Additional suggestions shared by participants involved modifying songs to better suit their student, include students when choosing songs, and the importance of song context (see Table 4).

Table 4. Identified themes on repertoire for the female changing voice from free responses.

Modifications	Student engagement	Lyrics
Changing the dynamics	Alternate between student and teacher repertoire choices	Age-appropriate context
Transposing the key	Allow students to discover for themselves if a song is suitable and make the necessary adjustments	The student has an emotional connection with the text
Changing the speed	Change between fun and challenging songs	The song engages their imagination
Adjusting notes outside the student's tessitura	Discuss repertoire choices and make compromises	

Other considerations highlighted by some participants were the importance of:

- Informing adolescent female students of the vocal change they are going through to normalise their experience.
- Educating parents as well as young singers to ensure they have more realistic expectations of repertoire and vocal abilities during puberty.

DISCUSSION AND CONCLUSION

This study investigated ways to identify criteria for selecting repertoire for female changing voice regardless of style and genre. Based on the findings

by Abitbol (2018); Denison (2012); Van Gend, Matthias, Scott, and Allen (2017); Williams (2018) a table was generated showing some of the implications female voice change may present when choosing repertoire, see Table 1.

As observed in the paper, the repertoire selection process can be assisted through the application of criteria. Results from the survey indicated important criteria teachers used when assigning songs. Common trends for teaching adolescent students include flexibility in teaching and the student's mental health (see Table 3).

Findings from the study suggested that the criteria shown in Table 5 can be useful as a guide for selecting repertoire for adolescent female students. Teachers should answer all questions with a specific student in mind. The more questions you can answer yes to the better suited the song is to the student. However, for these criteria to work effectively, teachers must be prepared to make a number of changes. These include:

- Transposing the song
- Changing difficult notes/intervals
- Disregarding dynamic markings
- Adopting English lyrics instead of foreign languages

When working with young singers, teachers may wish to consider the following points at the start of each lesson to help students achieve a positive learning outcome:

- The emotional state of the student
- The student's level of vocal instability
- Will the student benefit from the assigned song today (technically / emotionally)?

Table 5. Suggested criteria for selecting repertoire for female changing voice. Based on the findings in the study.

Song elements	Questions relating to repertoire
Lyrics	Is the story or can the story be made relevant to the student?
	Can the student understand and communicate the emotions?
Tessitura	Is the melody mainly within the student's tessitura?
	Does the melody avoid sitting in a high part of the student's tessitura for long?
	Are the intervals mainly small / can large intervals be modified if needed?
	Can difficult high or low notes be adapted to accommodate the singer?
Phrasing	Are the phrase lengths manageable?
	Do the phrases allow sufficient time to reset the instrument?
Articulation / Diction	Does the diction require suitable levels of speed and energy?
	If any, are register changes on words with helpful vowels?
	Are there helpful consonants on difficult pitches?
Melody	Is the melodic and harmonic language at a suitable level?
	Are the rhythmic patterns manageable?
Accompaniment	Does the accompaniment support the student adequately?
	Does the accompaniment promote the mood of the song?

Ideally, the model shown in Table 5 would have been tested by several singing teachers and modified if needed, however, given the small scope of the study, this was not possible. To demonstrate how to use the model, we will invent a student – Anna – and base her on Gackle's model (1991, 2011): Anna is in Phase 2a, at the beginning of voice change. Her voice range is A3 – A5 and tessitura is D4 – D5. Anna has started to experience sporadic register changes around F4 - A♯4. Anna has a sound understanding of breath management and has good aural skills.

As shown in table 6, the first example is 'Part of your world' by Howard Ashman and Alan Menken from Disney's *The Little Mermaid*. The edition used in Table 6 is in B♭ major. Although the repertoire selection model is meant to be efficient and YES or NO should normally suffice, considerations have also been noted. As indicated in Table 6, 'Part of your world' could be a good song choice for Anna. She should be able to safely sing it and have a good learning experience.

The second example shown in Table 7, is 'O mio babbino caro' from Puccini's opera *Gianni Schicchi*. Unsurprisingly, it quickly becomes clear that this aria is not a suitable match for Anna! Although the lyrics could be made relevant to her and she would be able to convey the emotions when speaking the words, it would be vocally unsafe for her to sing the aria. After comparing the aria's tessitura to Anna's vocal tessitura, the aria would have been dismissed entirely. However, criteria were addressed as an example. The study initially focused on how musical elements in the repertoire can help students have successful learning outcomes. However, research into the psychological implications of voice change for adolescent female singers highlighted the importance of recognising that a young female will identify strongly with her voice thereby impacting her mental health (May & Williams, 1989; Monks, 2003; Sweet, 2015).

While it is generally accepted that singing teachers should continue to instruct both male and female students through repertoire and technique throughout this period of anatomical and physiological transition, to minimise the emotional impact of voice change it is incumbent on teachers also to inform their students of the expected effects of puberty on their speech and singing voice. Through regular discussion, student singers will be empowered to recognise that the voice change occurrences they are experiencing are an expected part of 'growing up'. This knowledge should encourage a confidence that their voices will settle and strengthen into adulthood.

Table 6. Example 1: 'Part of your world' with Anna in mind.

Song elements	Questions relating to 'Part of your world'	Anna
Lyrics	Is the story or can the story be made relevant to the student?	YES – the mermaid Ariel wishes to be something she is not (human) – although Ariel is not human this is a very human emotion
	Can the student understand and communicate the emotions?	YES – after discussing who the character is and what the song is about
Tessitura	Is the melody mainly within the student's tessitura?	YES
	Does the melody avoid sitting in a high part of the student's tessitura for long?	YES – the melody moves around a lot in the higher parts of the song
	Are the intervals mainly small / can large intervals be modified if needed?	YES – the intervals are mainly small
	Can difficult high or low notes be adapted to accommodate the singer?	YES – but not necessary
Phrasing	Are the phrase lengths manageable?	YES – lots of short phrases
	Do the phrases allow sufficient time to reset the instrument?	YES– the lilting rhythm helps energise Anna's breath support. If needed, long end notes can be shortened to allow for sufficient time to reset her instrument
Articulation / Diction	Does the diction require suitable levels of speed and energy?	YES – the energy of the song makes the diction easier for Anna
	If any, are register changes on words with helpful vowels?	YES – the sporadic register changes Anna may experience will be helped by the American twangy accent used in the song
	Are there helpful consonants on difficult pitches?	YES – apart from '**st**ay' on C5
Melody	Is the melodic and harmonic language at a suitable level?	YES – this is an easy song for Anna to learn. However, she will need more challenging songs from time to time to ensure progress in this area
	Are the rhythmic patterns manageable?	YES – the rhythm of the melody fits the rhythm of the words well making this easy for Anna
Accompaniment	Does the accompaniment support the student adequately?	YES – the melody is in the right hand all the time. However, when Anna feels melodically secure, she will be given an accompaniment with less support
	Does the accompaniment promote the mood of the song?	YES - The accompaniment is energetic and helps promote the mood of the song

Table 7. Example 2: 'O mio babbino caro' with Anna in mind.

Song elements	Questions relating to 'O mio babbino caro'	Anna
Lyrics	Is the story or can the story be made relevant to the student?	YES – the story can be explained as wanting something so much that you are ready to do whatever it takes to get it
	Can the student understand and communicate the emotions?	YES – Anna feels she has sometimes wanted something that badly – like when she wanted a horse, but her parents were not keen
Tessitura	Is the melody mainly within the student's tessitura?	NO – it sits well above Anna's tessitura and she would not be able to sing the aria with the greatest of ease
	Does the melody avoid sitting in a high part of the student's tessitura for long?	NO – the aria has sustained phrases well above the student's tessitura
	Are the intervals mainly small / can large intervals be modified if needed?	NO
	Can difficult high or low notes be adapted to accommodate the singer?	NO – too many notes are outside of Anna's tessitura
Phrasing	Are the phrase lengths manageable?	NO – although Anna has good breath management, her respiratory system is not developed enough to deal with long sustained phrases
	Do the phrases allow sufficient time to reset the instrument?	NO – one phrase flows into the next leaving too little time
Articulation / Diction	Does the diction require suitable levels of speed and energy?	NO
	If any, are register changes on words with helpful vowels?	
	Are there helpful consonants on difficult pitches?	NO – the pitches are far outside of Anna's tessitura and no consonants would be helpful
Melody	Is the melodic and harmonic language at a suitable level?	NO – although in theory, Anna would be able to learn the melody, her instrument is too immature to produce the required timbre and resonance
	Are the rhythmic patterns manageable?	YES
Accompaniment	Does the accompaniment support the student adequately?	NO – although the melody line is doubled in the accompaniment, it is too rich. Anna would find it difficult hearing herself
	Does the accompaniment promote the mood of the song?	YES – the rich and sweeping accompaniment supports the mood of the aria

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BIOGRAPHY

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Are Voices in Community Singing Becoming Lower?

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ABSTRACT: Despite the commonly expressed observation that people's singing voices are becoming lower, no systematic, community-based research into this apparent phenomenon has been undertaken. This study examines a repertoire (congregational hymns in the Mainline Protestant tradition in the English-speaking world) to see if there has been a lowering of their published key between 1880 and the present time. This repertoire was chosen because it represents tunes that have been sung by non-musically trained gatherings of people throughout this period. Collections of these songs (hymnals) continue to be published regularly, and the key in which they are published and their year of publication represent the essential data set. The hymn tunes were chosen on the grounds of popularity, date of first publication and continuity of publication. The large, often facsimile, collection of hymnals from 1880 to the present to be found at www.hymnary.org was the source of data. The mean date of publication in every key was analysed for each hymn and it became apparent that this repertoire is dropping a semitone approximately every 20 years. These findings may have serious implications for vocal and choral pedagogy and for community and liturgical music making.

KEYWORDS: *Pitch, Hymnody, Community Singing, Vocal Pedagogy.*

INTRODUCTION

Rousseau records that when reports arrived of an infant born with a gold tooth in remote Silesia, the savants of Europe offered a variety of theories as to how this could be so. It was only when one of them thought to examine the baby that they discovered there never was a gold tooth (Rousseau, 1753). This analogy applies to the present question as much as it did to the state of French music in the Eighteenth Century. It seems well known among those who work with musically-untrained singers (for example, teachers, liturgical musicians, community choir directors) that voices are dropping in pitch over time. Indeed, many of these individuals accept this as fact and go on to have discussions about why this should be so. However, the present study is the first to examine the actual existence of this phenomenon and to establish, by systematic means, that average vocal pitch in community singing is becoming lower.

There is remarkably little literature available that examines this aspect of community singing. There is a great deal written about the professional voice, the choral voice and about hymns as a repertoire but not about their communal singing and the pitch at which they are sung. In seeking to break ground in establishing the measurable existence of the phenomenon of pitch drop, it is hoped this paper will open a way for further discussion on reasons for this and, possibly, what steps may be taken to remediate it.

Part of the difficulty in measuring community singing pitch over a long period (in the case of the present study, 140 years) is finding repertoire that has existed on a large scale throughout that time. The first approach taken to find a measure of pitch drop is to look at stated voice types of amateur choristers over time. In examining programs from 1880 to the present of the Huddersfield Choral Society, one of the world's oldest and largest community choirs (Jorgensen, 1986), it emerged that, at least for the men, singing voices do seem to have dropped. In the 1880s the choir had twice as many tenors as basses; today these proportions are reversed. Furthermore, male altos had disappeared by 1950 (although they have subsequently re-appeared, a phenomenon that is presumably linked to an increased interest in historically informed performance) and female tenors started singing with the group in the 2000s.[1]

However, a more detailed data set could be obtained by examining popular Mainline Protestant hymns. The best-known of them have been in print (and sung communally) by large numbers of people in the English-speaking world throughout the period in question. A corpus of these hymn tunes was selected (using criteria described in detail in the Methodology section below) and their dates and keys of publication were analysed and compared. The source of these data was www.hymnary.org, whose extensive database provided enough primary data to make this study statistically meaningful.

For each selected hymn tune, every year of its publication and the key in which it was published were recorded. The mean year of its publication in any given key was used as the primary instrument of measuring the drop in pitch in singing voices. For example, the hymn tune "Dix" was listed as being published in the key of A major 61 times, with a mean date of publication in that key of 1927. "Dix" was published in Ab major 55 times, with a mean date of 1956, in G major 138 times with a mean of 1989 and in F major just four times with a mean of 2007. It was not recorded in Gb Major. This example, strikingly similar to most of the other examples, shows very clearly the pattern that this study establishes: a drop of a semitone in published pitch every 20 years.

POSSIBLE DATA CONTAMINANTS

This study successfully establishes that pitch drop in community singing is real and is happening at a surprisingly rapid rate. However, it makes no claims that its numerical data are anything other than indicative of this trend and its approximate speed. There are too many potentially confusing factors in the performance of this repertoire that render any stronger claims about these numbers unreasonable.

Firstly, there is the question of what is meant by 'key'. These results are predicated on the assumption that A is 440 Hertz and was throughout the period in question. However, it may not be as simple as that. Even if we take the conventional ideas that a baroque A is 415, a classical A is 430 and a modern A is 440, the tuning of organs in nineteenth and early twentieth century churches is by no means tied to date (Haynes, 2002; Segerman, 2011). One factor that could have depressed these pitches is the natural conservatism that some churches tend to display which may have led to their organs being tuned to pitches lower than the contemporary norm. The contrary factor is that before the early twentieth century, pitch for some English choral concerts was set higher than 440 (Haynes, 2002). Whether these issues altered the tuning of parish church organs has not been determined. In either case, the difference from 440 pitch is a quarter tone at most.

There is also the question of liturgical musicians playing hymns in keys lower than the published ones. Some musicians who play electronic instruments have transposing technology at their disposal; others can transpose at the keyboard as part of their skill set as liturgical musicians. Evidence in the form of internet chat rooms (such as Pray Tell Blog, 2015) indicates that this transposition does take place, but there is no indication of the extent to which that is so. It is possible that this *ad hoc* transposition acts as a precursor to hymnal editors deciding to publish a hymn in a lower key in their next edition.

The final difficulty with these data is the clear reluctance of publishers to use remote keys. In all the data analysed, there was not a single instance of a hymn published in B major and very, very few in Gb major. This could create a barrier for editors in moving to publish in lower keys because the time comes when they are forced to drop a whole tone at one time. This is clearly a bigger decision than dropping a semitone.

Despite these difficulties, the numerical data achieve, by any reasonable criterion, what they set out to do; establish that the pitch drop phenomenon is real and is happening quite rapidly.

METHODOLOGY

Corpus Selection

To ensure the size and validity of the data set, the steps taken in corpus selection and exclusion were quite exacting. Nevertheless, a sizeable primary source data set remained at the end of this process: 7579 instances of publication of 46 hymns.

The first step in the process was to establish which tunes are popular with congregations in Mainline Protestant churches in the English speaking world. The first sources of this information were three lists based on surveys of congregational singers in the UK and the USA. The BBC's long-established worship program Songs of Praise (BBC, 2013) yielded a list of 100 favourite hymns and American website PD Music (Hymns, PD Music) listed 53 examples published as a hymn before 1900. Many of these hymns were common to both of these lists, so the total number was 107 individual hymns which could reasonably be defined as popular.

This number then was reduced to exclude tunes that did not meet all the criteria. Firstly, each tune had to be long-standing, to maintain the longitudinal integrity of the study. That excluded more recent compositions and also older tunes (for example "Judas Maccabaeus" by Handel and the Shaker tune "Simple Gifts") which had not been part of the body of Protestant hymns before this date. 24 tunes were thus excluded, leaving 83.

A check of each tune on www.hymnary.org then enabled the exclusion of those tunes with too few instances of publication recorded for significance in this study. This criterion was set at 30 instances of publication with no gap in

publication larger than 20 years. This excluded a further 35 hymns tunes, leaving 48. The hymns "O Jesus I Have Promised" and "Lord, Enthroned in Heavenly Splendour" were also excluded because there was no clear indication of which of the tunes used for these hymns was intended, leaving 46.
Even though more than half of the potential corpus was discarded on these grounds, there still remained a significant amount of material to analyse.

Analytical Method

Each hymn tune was assigned a zero key, the key in which it has been most frequently published. The mean was then taken of all of the years of publication instances of that hymn in that key. This was then done for all the other keys in which that hymn has been published, providing there were at least three instances of publication in that key. It then became possible to compare mean year of publication of the hymn tune in every published key and to calculate the mean length of time it took for its published key to descend a semitone.

RESULTS

Of the 46 hymn tunes analysed, 30 showed a drop in published pitch over time, six showed no change, one ("Mannheim") went up in pitch over time and nine showed no significant change of pitch, which is to say that instances in which they were published in a key other than their zero key were too few to be significant.

Tunes that did not drop in pitch

"Mannheim" remains an anomaly. The database records six instances in which it was published in E, with a mean year value of 1959.67 and 26 instances in which it was published in Eb, with a mean year value of 1958.5. The difference between the mean year values is unusually small and the number of recorded instances is only just enough to enable corpus qualification. For these reasons, this result does not add to the understanding of the results in general.

The 15 tunes whose key did not change significantly show certain features which go some way to explain why they do not follow the trend. Some of these hymns are associated with great public events and therefore become very familiar in their established keys. It is possible that to play them in other keys would jar on the public's aural sensibilities. These include tunes associated with national remembrance like "Battle Hymn", "Melita" and "Crimond". It also includes "Eventide" which has an association with the FA Cup final in England. This category also includes some Christmas hymns (e.g. "Noel", "Antioch") but not others like "Irby" and "Stille Nacht", for reasons which are not apparent.

One factor that does not seem to have an effect on whether or not a tune drops in pitch over time is its range. Intuitively, tunes with a small range would be less likely to be published in progressively lower keys, but the results demonstrate otherwise. Of the tunes with a total range smaller than an octave, four have been published in descending keys, with two, "Nun Danket" and "St Anne", dropping a minor third over time. Whereas, the list of tunes without significant pitch change overtime includes three with a range smaller than an octave. The tunes without significant pitch change have a wider mean range (12.94 semitones) than those with significant fall in pitch (12.39 semitones).

It could be argued that the large range is, in and of itself, a factor in published key remaining constant. After all, there has to be a lowest note that congregations can reasonably be expected to sing. However, "How Great Thou Art" (range of minor 9th, lowest note D), "Will Your Anchor Hold" (range of Major 9th, lowest note C) and "Assurance" (range of 11th, lowest note B) have all been very consistent in their published key despite there being no strong vocal range argument against them being published in lower keys.

The probable determining factor in leaving these tunes in their established keys is that they are atypical hymn tunes. They are more rhythmically lively than a typical chorale and have a slower harmonic pace. It seems, therefore, that their key is much more part of their musical identity than is the case of more chorale-type melodies. This seems to apply to other uncharacteristic melodies as well, for example, "Repton" (adapted from a larger choral work *Judith*), "Lux Benigna" (whose chromaticism makes it more like a Victorian parlour song than a hymn tune), revival marches like "Battle Hymn" and "Will Your Anchor Hold" and folk songs such as "How Great Thou Art" and "Bunessan" (Howells, 1969; Cory, 2016).

Another factor that may be disregarded in determining which tunes' published keys have dropped is pitch proximity. This measure, essentially the mean interval between melodic notes expressed in semitones, has an overall mean value of 2.24 for tunes which dropped in pitch and 2.21 for those which did not (Narmour, 1989).

There are, however, several tunes (such as "Crimond" and "Thornbury") whose keys have not changed significantly and this is not easily

attributable the the factors above, nor any other discernable influence. These remain as anomalous results.

Tunes that dropped in pitch

Table 1. The drop in pitch over time for selected hymn tunes

TUNE	Sample Size	Key 0	Lowest Note	Average Note	Highest Note	Range (semitones)	Average time taken for published key to drop one semitone (years)
Adeste Fidelis	262	G	D	A	D	12	15.99
Amazing Grace	128	G	D	G	D	12	20.78
Aurelia	310	D	C#	G	D	13	21.31
Bethany (Mason)	130	F	C	G#	D	14	24.90
Bilhorn	41	D	D	A#	D	12	16.94
Bryn Calfaria	55	Gm	D	A	D	12	12.21
Diademata	245	D	D	G	D	12	17.29
Dix	245	G	D	G	D	12	19.86
Finlandia	154	F	F	F	D	9	13.65
Hanover	139	G	D	G	D	12	27.16
Irby	101	G	D	G#	E	14	24.62
Judas Maccabeus	62	D	D	F#	D	12	9.37
Lasst Uns Erfreuen	261	D	D	G	D	12	10.10
Lauda Anima	137	D	C#	G#	D	13	18.06
Lobe Den Herren	155	F	C	F#	D	14	17.41
Lyngham	31	G	F#	A#	E	14	18.04
Lyons	155	G	D	G#	D	12	16.01
Mendelssohn	153	F	C	A#	D	14	21.72
Nicea	189	D	D	G#	D	12	29.69
Nun Danket	191	F	E	A	D	10	14.47
Old Hundredth	455	G	D	G#	D	12	16.59
Rockingham	170	D	D	G	D	12	42.68
Sagina	55	G	B	G	E	17	18.46
St Anne	247	C	E	A	D	10	23.15
St Clement	81	G	D	G	D	12	16.67
St Denio	132	G	C	G	D	14	20.99
St Margaret (Peace)	112	Ab	Eb	G#	Eb	12	36.73
Stille Nacht	150	Bb	Bb	F#	Eb	17	18.03
To God Be The Glory	76	Ab	Eb	A	Eb	12	16.67
Wellesley	64	Bb	C	G	D	14	15.44
Westminster Abbey	64	G	D	G	D	12	13.32
Woodworth	161	Eb	Eb	G#	Eb	12	20.98
MEAN VALUES	153					12.59	19.66
STANDARD DEVIATION							6.98

Analysis of very similar tunes

Because there are tunes which dropped in pitch that are similar in provenance and character to tunes that did not (for example "Repton" is taken from a larger work, "To God be the Glory" and "Battle Hymn" are revival tunes, and "Amazing Grace" and "Bunessan" are folk songs), further redaction has been undertaken. The purpose of this is to compare (as far as possible) like with like so that the drop in community singing pitch can be demonstrated in the clearest way possible.

The following criteria were applied to the existing corpus:

- The tune must have a range of one octave (D to D in its zero key).
- The tune must be in typical chorale style with a rapid harmonic pace, typically a new chord every note.
- The tune must be extremely simple rhythmically, rarely using values other than minims and crotchets (half and quarter notes).
- The tune must be in a major key.
- The tune must be from the Eighteenth or Nineteenth Centuries.
- The tune must have been composed as a hymn, not part of a larger work or a secular adaptation.

Application of these very exacting criteria produced a subset of seven tunes, as listed in table 2.

Table 2. Analysis of very similar tunes

TUNE	Sample Size	Zero Key	Lowest Note	Average Note	Highest Note	Range (semitones)	Average time taken for published key to drop one semitone (years)
Adeste Fidelis	262	G	D	A	D	12	15.99
Diademata	245	D	D	G	D	12	17.29
Dix	245	G	D	G	D	12	19.86
Hanover	139	G	D	G	D	12	27.16
Lyons	155	G	D	G#	D	12	16.01
Nicea	189	D	D	G#	D	12	29.69
St Clement	81	G	D	G	D	12	16.67
MEAN VALUES	188					12	20.38
STANDARD DEVIATION							5.69

The noteworthy result from this much redacted sample is that while the mean length of time taken for the published key to drop a semitone remains the same, its standard deviation is significantly lower. This points to an even clearer conclusion about the drop in pitch in community singing.

CONCLUSIONS

The general data set and redacted subset of very similar tunes tell the same story – the preferred singing pitch of English-speaking Protestant church-goers is dropping a semitone every twenty years. Not only is this trend clearly demonstrated by these data, its rate of change is remarkably rapid. After all, a semitone every twenty years could be projected to conclude that these tunes will drop a fourth in a century.

The implications for these findings extend beyond church congregations. Community choirs and schools may well appear to have singers whose voices are dropping in pitch at a rapid rate.

The reasons for this phenomenon may be anatomical, pedagogical or cultural or a combination of these and other factors. The next task is to investigate why this phenomenon is occurring. The true nature of Rouseau's Silesian child's gold tooth has now been established. The savants may now attempt to establish why.

NOTES

[1] I am grateful to Malcolm Hinchliffe, Archivist of The Huddersfield Choral Society for providing me with lists of members from 1883-1889, 1951-1960 and 2010-2016.

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BIOGRAPHY

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Complete Vocal Fitness: A Singer's Guide to Physical Training, Anatomy, and Biomechanics

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Friedlander, C. (2018). *Complete Vocal Fitness: A Singer's Guide to Physical Training, Anatomy, and Biomechanics.* Rowman & Littlefield.

Claudia Friedlander is a classical singer and voice teacher, and a certified fitness trainer. She has combined her knowledge and experience in these two fields to deliver the book *Complete Vocal Fitness: A Singer's Guide to Physical Training, Anatomy, and Biomechanics.* Although this is her first book, Friedlander is the author of a monthly column in "Musings on Mechanics" *(Classical Singer Magazine),* and an online blog "The Liberated Voice".

Complete Vocal Fitness fills the gap between the abundance of instructional singing training books, and those addressing physical fitness, by providing one comprehensive text addressing the two topics. It provides a summary of the anatomy and biomechanics of the structures of the human body as it relates to voice, and introduces the concept of Sport Specific Training for the Vocal Athlete. The term *Vocal Athlete* is gaining popularity in the fields of voice pedagogy and vocology, as a way to describe the intense demands that elite singers (and indeed many other professional voice users) place on their bodies and voices. This book's preface describes how singing has previously been thought of as an intellectual and creative art, and is only now beginning to be thought of as a physical and athletic endeavour. Friedlander's approach to voice training addresses the whole body as the singer's instrument, and outlines how a singer can take advantage of sport specific training tenets to set up the vocal instrument to achieve peak performance. As Friedlander points out, it is widely accepted that sporting athletes and coaches apply principles from sports science when designing training regimens, and as such, it makes sense that vocal athletes such as elite singers and professional voice users could benefit from the application of these sciences as well. Friedlander describes her own musical background in the preface, and this is an intriguing start to the book. She stated that she had always loved to sing, but never had a voice that others found beautiful. She studied as a clarinettist, and it was a desire to improve breathing and resolve chronic muscular tensions that were impeding her ability on this instrument that led to her seeking out bodywork. After this experience she noticed a profound improvement in her own singing voice, and began performing in public. It was this effect that inspired her to delve deeper into the topic of physical training and fitness for singers.

Chapters 1-4 *(Alignment; Breathing; Laryngeal Function; Articulation)* outline the biomechanics of the major structures and functions involved in voice production, and include custom illustrations by artist Sandy Escobar, and photographs by Daniel Welch. The addition of these images is a real strength of this book, making it particularly useful for both singers and voice teachers alike. These chapters are comprehensive, and include practical exercises as well as descriptions of the anatomy and physiology involved in these four fundamental areas of voice training. As Friedlander states, these chapters "combine an athletic training paradigm with an instrument-building paradigm to help you understand the biomechanics of the components of your instrument and assess their functions in order to optimize them individually and coordinate them together" (p. xix).

In her discussion of body alignment, Friedlander describes the importance of dynamic and efficient alignment for singers, and describes common postural distortions and muscle imbalances that are frequently observed in singers. This chapter introduces the concept of "corrective

exercise" as a way to remedy such issues, drawing on principles from sports medicine, providing a number of exercises to develop optimal coordination of the respiratory mechanism. The following chapter's discussion of breathing for singing is similarly practical, and provides some additional tools for applying principles of optimal breathing coordination to a singer's repertoire. As well as describing optimal function and training regarding laryngeal function and articulation, Firedlander offers recommendations of stretching and massage techniques for releasing residual tension in the articulators and muscles around the larynx that may be included in a singer's regimen.

The text goes deeper into training the singer's voice and body, beginning with Chapter 5 *(The Mind/Body Connection)*. In this chapter, the author discusses challenges that may be faced by singers due to the fact that they are simultaneously musician and instrument, and how the mind plays an inextricable role in their ability to perform.

Chapter 6 *(A Singer-Centered Workout Regimen)* is by far the longest chapter, and is where this book sets itself apart from existing publications, by providing a workout regimen tailored to the needs of the singer. The author begins with some important guidelines for completing the workout regimen, which act as an important warning for singers who may be over-zealous in the application of the exercises. The exercises are divided into four categories: Self-Myofascial Release, Static Stretching, Strength and Stabilisation Training and Cardiorespiratory Training. Each category has a large number of exercises which are supported by detailed instructions, and photographs.

Chapters 7-10 *(Warming Up; Fueling Your Art; Maintaining Your Health; Form Follows Function)* are relatively brief, but offer the reader some basic information regarding warming up the voice, nutrition for optimal physical and vocal health, maintaining physical and vocal health, and a statement regarding the important role that the physical instrument plays in voice function. While the chapter on maintaining vocal health could easily have been significantly longer considering all of the information available on the topic, I believe Friedlander has provided a succinct summary of some of the most important considerations for singers, including sound advice for avoiding and managing illness.

The intended audience of this book appears to be singers and students of singing, although the practical content and the inclusion of accurate anatomical diagrams would no doubt be appealing to many voice teachers as well. The language is clear, and presents some basic scientific concepts in a very intelligible manner. The book does not delve as deeply into the science of the voice as one would expect from a voice science or pedagogy text, but provides a good starting point for singers who wish to learn more about the biomechanics of the singing voice.

The primary strength of this book is its clarity, and the methodical approach which the author takes to voice training, makes its contents applicable to singing or voice teaching. While the comprehensive summary of biomechanics of the singing voice found in the early chapters is certainly not unique in singing training books, it is the addition of sample full body exercise routines designed to complement voice training which sets it apart from most existing publications in the field. Additionally, as the author suggests, the book can be used as a type of 'user-manual' to voice, and readers can jump directly to relevant chapters without necessarily needing to read the book in its entirety.

It should be noted that this publication does lack a reference list, and does not contain any in text references throughout. Again, if the book were intended to be a voice pedagogy text, this would be a concerning omission, however it is clear that the author is very knowledgeable on the topic, and the information appears to be based on current understandings and research within the field.

I found *Complete Vocal Fitness* to be an excellent introduction to the topic of fitness for singers, and an easy to read instructional text that will appeal to a large number of singers, singing students, and singing teachers. It is a great contribution to an important discussion about how the body, mind and voice interact for optimal performance, and how sport-specific training can be used to enhance performance voice training.

REFERENCES

Friedlander, C. (2018). *Complete Vocal Fitness: A Singer's Guide to Physical Training, Anatomy, and Biomechanics.* London: Rowman & Littlefield.

BIOGRAPHY

Emma Wilson is a voice teacher and performer, with experience in a variety of styles of contemporary commercial singing. Emma recently completed a course of study in Vocology (The Science and Practice of Voice Habilitation) under the instruction of Dr Ingo Titze at the

National Centre for Voice and Speech in the USA. She holds a Master of Music Studies in Vocal Pedagogy from the Queensland Conservatorium, as well as a Bachelor of Music (Voice Performance) from the Queensland University of Technology.

In addition to maintaining a busy private singing studio, Emma is a Voice Tutor and Music Lecturer in the Bachelor of Contemporary Music and Performance at JMC Academy, runs regular workshops for singers and singing teachers, and is the head of the vocal department at Browning Street Studios, South Brisbane.

Emma is heavily involved with the Australian National Association of Teachers of Singing (ANATS) as the National Membership Secretary, QLD Chapter Secretary and a member of the Board of Directors.

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