

Australian Voice





Australian Voice

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From the editor

Helen Mitchell

It is a pleasure to be able to introduce this volume of Australian Voice to you. It has been quite a journey to get AV back in circulation through the ANATS website. Its return ensures the journal will continue to play a key role in the global singing community. ANATS remains committed to publishing groundbreaking singing voice research and engaging in pedagogic discussions. AV will recommence this forum for pedagogues and researchers to share their ideas about the singing voice.

I would like to take this opportunity to thank the reviewers who so willingly gave their time and expertise to read these articles. I would also like to thank Dr Rowena Cowley and Dr Di Hughes who have worked tirelessly to ensure that AV continues as an important and viable entity as we move to this new format. All previous volumes are available on the ANATS website and for this, I would like to thank Megan Ogier at the ANATS Secretariat.

The current volume contains four articles by Australian researchers, and covers a range of topics, all of which are key concerns to AV readers.

Julia Nafisi outlines new ways in which singers can approach German lied, to imbue their renditions with meaning to more effectively colour and enhance performance.

Di Hughes' article takes a related but different approach to investigating contemporary singing and the way in which singers achieve individuality in their expressivity.

Perceptual interpretations are handled in a different way by Tom Millhouse, as he

investigates new ways of interpreting the singer's formant, using an auditory model for the analysis of the singing voice.

Inge Southcott and Helen Mitchell consider the way in which singers and their pedagogues can share the sound student singers' produce through recordings and playback to develop a mutual understanding of vocal quality during singing lessons.

Four astute book reviews on recent singing texts complete this volume. Sandra Basham, Nikki deBruyn, Marisa Lee and Liz Logan from the Queensland Conservatorium of Music provide insights into each text and the way in which they might complement and influence vocal production and pedagogy.

Vocal sound production and reception, through a variety of lenses, are areas of fundamental importance to the singing community. Advancing our understanding of singing sound remains a constantly relevant topic and AV is well positioned as the journal of ANATS to facilitate the discussion within the singing community. I would like to thank all the authors for their contributions and hope you enjoy reading this edition of Australian Voice.

The future of the journal depends on the input from experienced voice professionals and is an ideal place to share your research, teaching and clinical experiences. Australian Voice welcomes your submissions!

Helen Mitchell

Perceptually motivated auditory interpretation of the singer's formant

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ABSTRACT: This paper investigates the notion of a perceptual singer's formant described within the auditory-cognitive domain of human hearing. Seeking to more clearly define the relationship between the perception of an operatic singer's 'ring', 'ping' or 'twang' (Vennard, 1967), and the acoustical 3kHz spectral peak identified as the singer's formant (Bartholomew, 1934; Sundberg, 1974), this paper incorporates an auditory model for the analysis of the sung voice. Hermansky's (1990) Perceptual Linear Prediction (PLP) model utilises known psychoacoustical properties of human hearing to define a perceptually motivated auditory spectrum. The PLP model incorporates critical-band spectral resolution (Schroeder, 1977), equal-loudness approximation (Makhoul & Cosell, 1976) and intensity-loudness interpretations (Stevens, 1957), to derive a perceptually motivated auditory spectrum that closely resembles what is actually heard by the listener. This auditory spectrum provides the basis for our investigation into the difference between speech and singing in the perceptually motivated auditory domain. By taking a dataset of voice samples from a variety of different voice types and taxonomies, this paper identifies specific variability between speech and singing in the auditory domain. This auditory variability differs from current traditional acoustical interpretations. Specific findings include; An auditory description of the singer's formant that is more closely aligned with pedagogical perceptions of 'ring', 'ping' and 'twang' in the operatic voice. The presence of a singer's formant for soprano voice types in the auditory domain. Specific characterisation of the singer's formant in the auditory domain for a variety of vowel, voice types, and pitch frequencies, and a deeper insight into the perceptual interpretations of a singer's timbre as well as the specific vowel intelligibility as a function of the singer's pitch.

KEYWORDS: *Singer's formant, auditory models of singing, perception of singing*

INTRODUCTION

THE singer's formant is an acoustic feature identified in operatic singing that has long been associated with the observation of good voice quality since the seminal study of Bartholomew (1934). It is attributed to the perception of a singer's 'brilliance', 'ring', 'twang' or 'ping' (Vennard, 1967; Yanagisawa et al., 1989) and is

credited in part to the psychoacoustical rationale of why an operatic singer's voice can be heard over a much louder orchestra (Sundberg, 1972). Research conducted into the acoustic manifestation and physiological underpinnings of this phenomenon have indicated that the singer's formant is formed by the constriction of the epilaryngeal tube located between the vocal folds and the aryepiglottic folds. This constriction results in the clustering of the upper formant structure as a result of acoustic coupling which in turn increases the resultant voice spectrum at around 3 kHz in frequency (Sundberg, 1974), a region most sensitive to human hearing (Zemlin, 1968).

The specific description of the singer's formant is however not without criticism from both an acoustical and perceptual viewpoints. Acoustically, the singer's formant is actually not a specifically a vocal tract resonant formant at all, but rather a clustering of the upper formant structure of the human voice spectrum (Sundberg, 1974). This clustering has been identified for male operatic voice types but not in female singers despite the presence of a similar audible 'ring' and 'twang' in female operatic singers. Long term spectral analysis (LTAS) of operatic singing reveals not resonant vocal tract formants, but rather averaged spectral energy contributions within selected acoustic frequency bands. Comparisons of acoustic variability between speech and singing, has revealed an increase in spectral energy in the 2-4 kHz band in both male and female subjects (Barnes et al., 2004; Thorpe et al., 2001). This increase however, is not uniform between singer's and the specific correlation of LTAS results and interpretation of the perception of 'ring', 'ping' and 'twang' remains an open research question (Garnier et al., 2007). Unlike formant analysis LTAS removes much of the specific acoustical information required for physiological interpretation and thus a clearer interpretation of the physiological source that results in the acoustic and perceptual interpretation of the singer's formant remains unclear.

The current understanding of the singer's formant has relied strongly on the links between physiology and acoustics, but fails to account for many perceptually based observations of a specific 'ring' in the voice. Lacking from current interpretations is a model that combines acoustical, physiological and perceptual interpretations of the singer's formant. Whilst the acoustical and physiological contributions have been well established, their linkage to the perceptual interpretations and specifically the role of the auditory and cognitive system of human hearing remains unclear. Thus the inspiration behind this paper is to explore the notion of the singer's formant in the perceptual domain through the use of psychoacoustical auditory modelling (Hermansky, 1990). This paper presents the results from short and long term auditory analysis and modelling of operatic vowels focusing specifically on the singer's formant region and the interpretation of 'ring' and 'twang' in the operatic voice.

METHOD

To observe the nature of the singer's formant in both the acoustic & auditory domains a combination of short vowel segments and longer sung phrases from popular operatic arias were collected for analysis. A subset of data from the wider study of Millhouse (2009) has been used in this paper. Millhouse (2009) utilised fifteen subjects all of which were professional opera singers and native speakers of Australian English. In order to meet the requirement of a professional opera singer capable of producing a singer's formant, both subjects were chosen to satisfy a level of at least level four according to the Bunch & Chapman (2000) scale. All subjects were recruited through the State Opera of South Australia and were either resident in South Australia or touring through South Australia at the time of recording. In addition to a spoken and sung aria, collections of Australian English spoken and sung vowels were recorded for each subject. The analogue signals were recorded using a flat frequency response microphone, sampled at 44,100 Hz and then quantized to eight bits for analysis.

Auditory Modelling – Perceptual linear prediction

To observe the singer's formant in the perceptual domain an auditory estimation of the frequency

response of singing was obtained using Hermansky's (1990) perceptual linear prediction (PLP) spectral response. Hermansky's (1990) PLP process produces an interpretation of human perception of acoustics though modelling the known auditory, cognitive and psychoacoustic behaviours of human hearing. Once derived, the perceptually motivated auditory spectra for the spoken and sung material can be defined on a modified spectrographic scale. Instead of representing the spectra in the traditional frequency (measured in Hertz) versus time manner, the auditory spectra is measured on the psychoacoustical scale of Barks and its intensity is measured in relative Sones (Johnson, 2003). The Bark auditory scale (Zwicker, 1961) is based on the critical bands of human hearing which are logarithmically associated with acoustic frequency. The bark scale reflects the nature of the auditory system, which is more sensitive to frequency changes at the lower end of the audible frequency range than at the higher end.

The PLP process is achieved by band-pass filtering the acoustic signal through the critical auditory bands over the desired frequency range. These bands are then processed using Hermansky's (1990) equal-loudness pre-emphasis and cubic-root amplitude compression (see Figure 1). Once the auditory spectra are resolved then other traditional acoustic parameters such as autoregressive coefficients, cepstra coefficients or just relative spectral magnitudes, can be derived to represent the newly obtained auditory spectrum. This powerful technique provides spectral features that are more aligned with human perception, thus providing the basis to draw analogies between the specific acoustics of singing and the perception of these sounds.

PART ONE: GROSS SPECTRAL COMPARISON OF SPEECH AND SINGING

Bartholomew (1934) first identified what is now known as the singer's formant by looking at time frequency spectrographic representations of sung vowels and recognising the pronounced spectral band at approximately 2.8 kHz in male singers. This resonant band was present throughout the sung phrase and its centre frequency remained reasonably stable for all vowels and pitches sung. Subsequent investigations indicated however that this pronounced spectral band was not easily observable in female voices due to the wide separation of harmonics that occurs during high

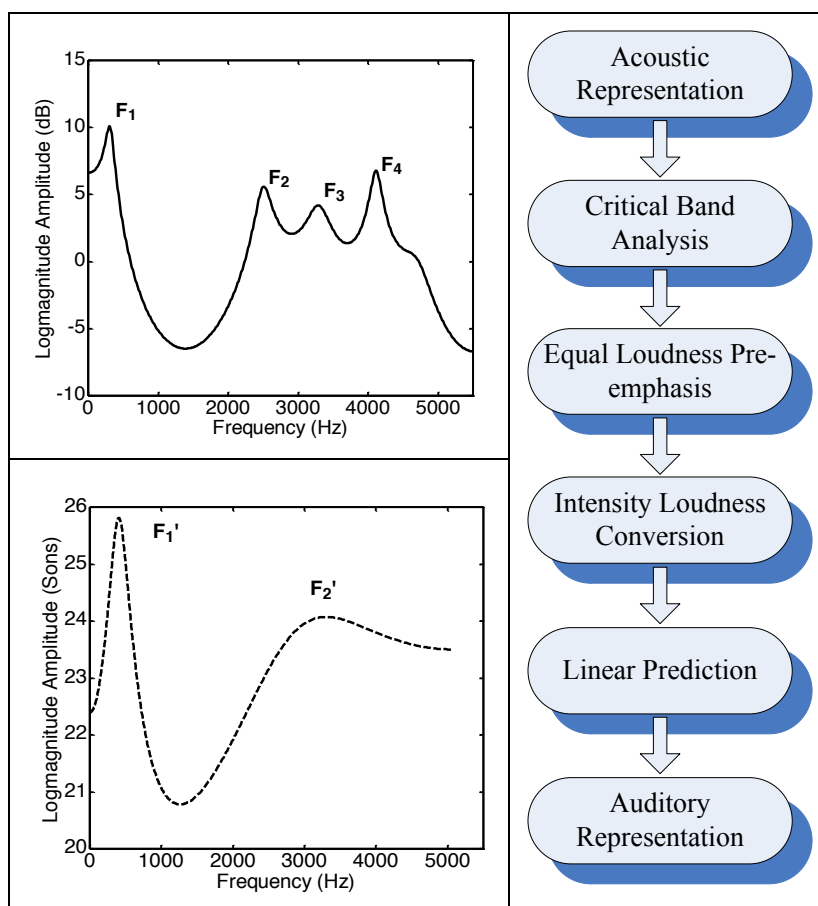


Figure 1. Procedural flowchart of Perceptual Linear Prediction (PLP) according to Hermansky (1990).

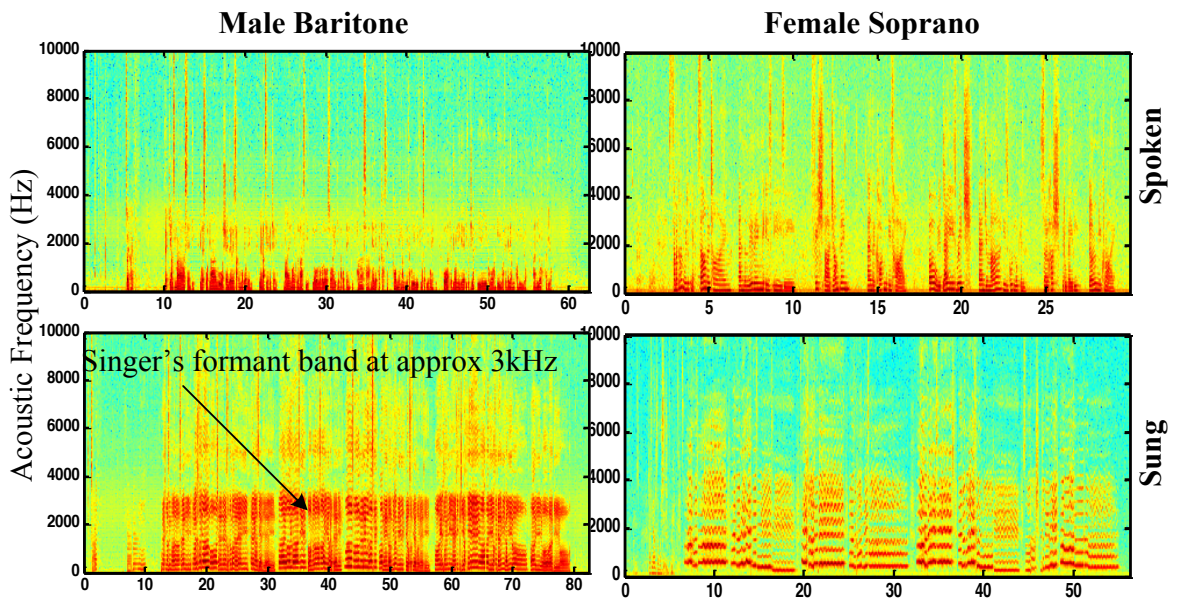
pitched singing. This led to further studies that concluded that the female operatic voices did not produce a singer's formant despite the clear perception of 'ring' and 'twang' in the trained female voice (Sundberg, 1974; Weiss *et al.*, 2004).

The first component of this paper was to repeat Bartholomew's (1934) experiment using the auditory modelling technique of PLP to determine if a perceptually inspired auditory model of sound might reveal additional information regarding the singer's formant and the current perceptual ambiguities of this vocal phenomenon. Figure 2 repeats Bartholomew's experiment for a baritone and a soprano taken from the data set of Millhouse (2009). Both subjects were recorded singing and speaking an aria appropriate to their repertoire and voice type. Initially acoustic spectrograms, similar to Bartholomew (1934) were derived for the spoken and sung arias for both subjects. The upper graphs of Figure 2 describe these traditional acoustic spectrograms and indicate the clear presence of a singer's formant at approximately 2.8 kHz in the male baritone's singing only, however the singer's formant is not present in the male subject's speech nor is it present in either the female soprano's singing or speech.

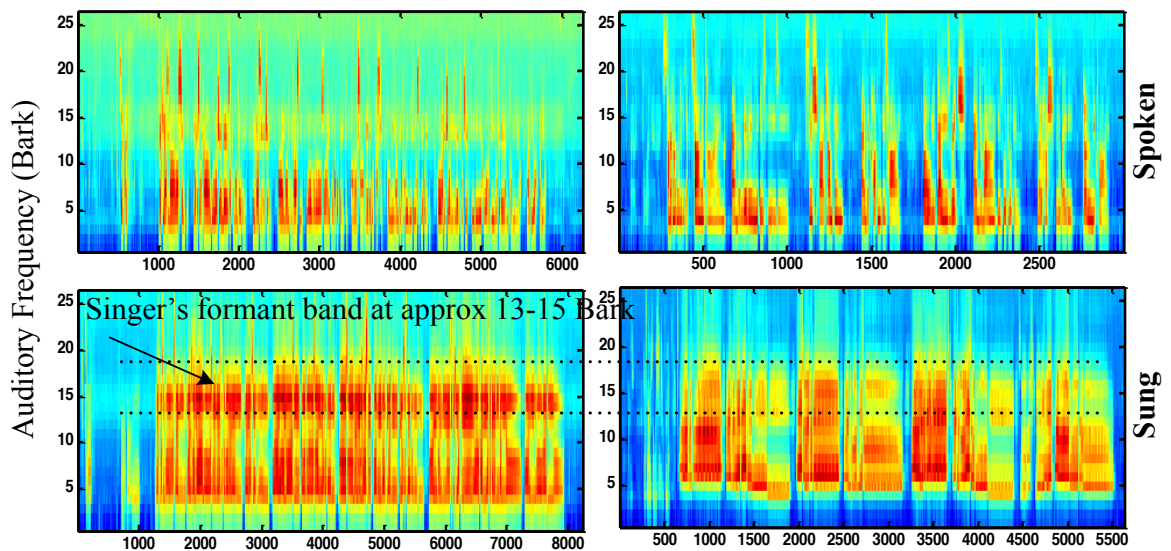
The experiment is then repeated again using the PLP procedure to derive an auditory spectrogram and the results are somewhat contrast. In both subjects there is the presence of a continual band of spectral energy at approximately 13-15 Bark for the singing auditory spectrograms that is not as pronounced in the speech equivalent. Interestingly the spectral band at 13-15 Bark equates to approximately 2.58 – 3.63 kHz when converted from the auditory bark scale to the traditional frequency hertz scale. This 13-15 Bark spectral band is approximately in the same region as Sundberg's (1974; 2001) predictions for the centre frequency of the singer's formant and appears to be present for both male and female singer's regardless of voice type.

In comparing other singer's from this study this perceptual manifestation of a resonant band of energy in the singer's formant region was apparent in all singers though the degree of its amplitude and apparent bandwidth varied between singers as a function of voice type as can be noted from Figure 2. Additionally the intensity of this spectral band within the same singer's aria phrase varies throughout as a function of time and pitch. Interestingly to note from Figure 2 is that the wide

Spectrogram of acoustic sound



Spectrogram representation of auditory sound



Baritone's aria: 'Vecchia zimara senti' from Puccini's *La Boheme*

Soprano's aria: 'Summer time' from Gershwin's *Porgy and Bess*

Figure 2. Spectrographic representations of spoken and sung arias for male and female trained operatic voices. The upper four graphs describe traditional acoustic spectrograms measured in Hertz whereas the bottom four displays the auditory derived PLP spectrogram measured on the auditory Bark scale.

separation of harmonics clearly visible for the soprano subject's acoustic spectrogram are merged into regional bands in the auditory derived spectrum. This would indicate that specific harmonics are merged together in the auditory bands to appear as single band of energy in the auditory process. It is reasonable to assume that this resonant band identified in the auditory

spectra is most likely responsible for the perception of an audible 'ring', or 'ping' in the voice.

The important point to note at this stage is how this resonant band in the perceptual domain varies throughout the aria as a function of pitch and time. It could be inferred that the perceptual manifestation of this resonant band does in fact

vary as a function of the pitch and the vowel content. Thus the next part of this study was to look specifically at how this 13-15 Bark auditory resonant band varies as a function of pitch and vowel type.

PART TWO: SHORT TIME VOWEL SPECIFIC ANALYSIS

Auditory studies of the spoken vowels has indicated that the vowel type is governed in the auditory and perceptual domains by dominate formant like spectral features similar to those in the acoustic structure. These dominate features are called perceptual formants and use the notation F'_1 and F'_2 similarly to the traditional acoustic formant notation (F_1, F_2, F_3 , etc.). Early perceptual studies of vowels by Chiba & Kajiyarna (1941) and Delattre *et al.*, (1952), observed that two spectral peaks are all that are needed for simulating the phonetic quality of front vowels and that only a

single peak is required so simulate back vowels. Auditory studies of vowel spectra such as PLP derive spectral representations of vowels whose auditory formant structure align strongly with known perceptually derived spectral peaks (Hermansky, 1990). Thus the PLP procedure provides us with a powerful tool for the investigation of the singer's formant region in the perceptually inspired auditory domain.

Figure 3 details spectrographic representations of a limited number of spoken and sung vowels for three subjects. The overall dominate feature for all singer's is the increase spectral resonance at 14-15 Bark between the spoken and sung vowels. The spoken vowels are categorised by the dual peaks for the front vowel /i/ and the single peak for the back vowels /a/ and /u/. But the sung vowels have a distinct secondary peak for the back vowels and an increase in amplitude of the second peak for the front vowel /i/.

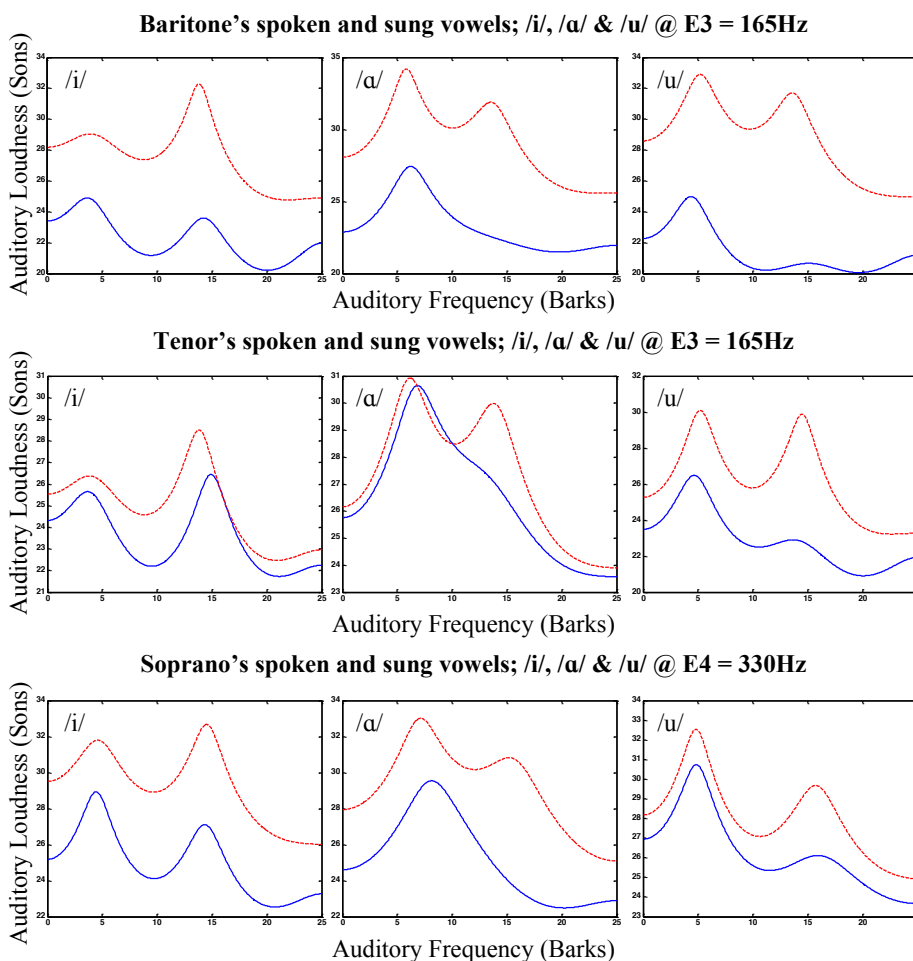


Figure 3. Short time perceptually inspired auditory representation of vowels over the bark range 0-25 Bark which equates to 0-22 kHz in frequency. Each cardinal vowel /i/, /a/, /u/ is represented. Spoken vowels are plot in blue fixed line and sung vowels in red dotted line.

These results agree with the companion studies of (Millhouse & Clermont 2004; Millhouse & Clermont 2006; Millhouse & Clermont 2007) that investigated the interpretation of sung vowels within the PLP perceptually inspired auditory model. Their conclusions were that the singer's formant manifests itself within the second perceptual formant in the auditory spectrum. Millhouse & Clermont (2004) identified that within the auditory spectra of a baritone subject, a clearly noticeable second perceptual formant F'_2 was visible in all sung vowels, but F'_2 was only visible within the front vowels for the spoken vowels. This initial observation implied that the acoustical singer's formant was manifesting itself as F'_2 within the perceptual domain. Millhouse & Clermont (2006) undertook a preliminary study of the auditory nature of the singer's formant. Their findings indicated that the singer's formant manifests itself within the second perceptual formant F'_2 and that the traditional formant clustering noted within male voices plays an important role in the increase in amplitude of F'_2 . Millhouse & Clermont (2007) investigated the auditory spectra of a soprano subject as a function of rising pitch. The soprano's vowel charts for three cardinal vowels, spoken and then sung at pitches varying from A3 220Hz to A5 880Hz and are reproduced here in Figure 4 and Figure 5. This study also demonstrated the ability of the PLP process to investigate the auditory nature of isolated vowels sung at any pitch of the soprano's range, a limitation that has prevented traditional

Linear Predictive techniques from investigating the formant structure of sung vowels above A3 220Hz (Vallabha & Tuller, 2002).

Figure 4 provided a waterfall plot of increasing pitch for a single vowel /u/. This identified that in the lower region of the soprano's range only a single spectral peak was noticed, but that as the soprano increased in pitch a second spectral peak became observable. This occurred particularly for frequencies above approximately 500 Hz and is most likely due to the alignment of the auditory spectra and the underlying harmonic structure. Investigating the cardinal vowels, Figure 5 displays a sequence of auditory derived $F'_1 - F'_2$ planes, which highlight the transformation of the sung-vowel triangle from lower to higher pitch values. The sung vowels are bounded by the increasing fundamental frequency as well as the $F'_1 = F'_2$ line, which forms the lower base of the spoken triangular space. Initially, the sung vowels migrate towards the lower F'_1 side of the triangle bounded by the vowels /i/ and /u/. The sung-vowel triangle is continually compressed towards the vowel /a/ as pitch rises. As the soprano transcends into the higher register the auditory vowel space becomes homogenous and dominated by the underlying harmonic structure. This result matches closely the reported intelligibility perception of high pitched vowels when sung by opera singer's (Benolken & Swanson, 1990) and the principal-component results obtained in the studies of Bloomploft & Plomp (1985).

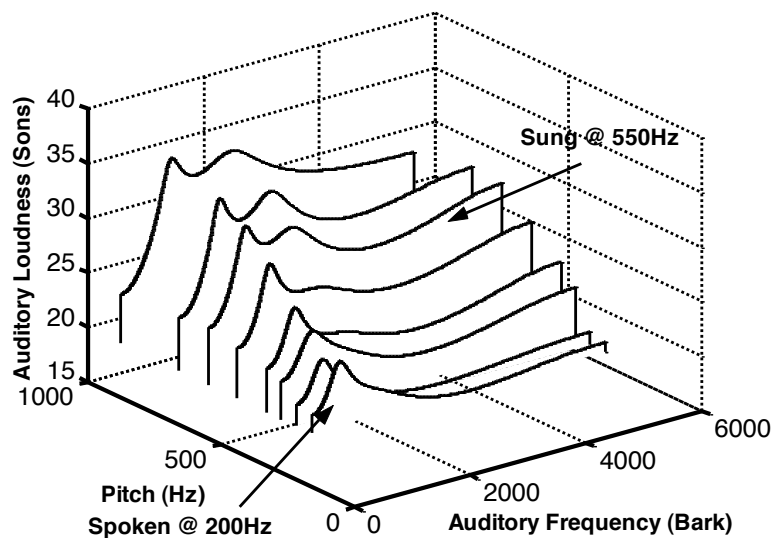


Figure 4. From Millhouse and Clermont (2007). Auditory derived spectra for the vowel /u/ spoken and then sung as a function of rising pitch. Resolution of F'_1 and F'_2 occurs beyond a pitch value of 550 Hz.

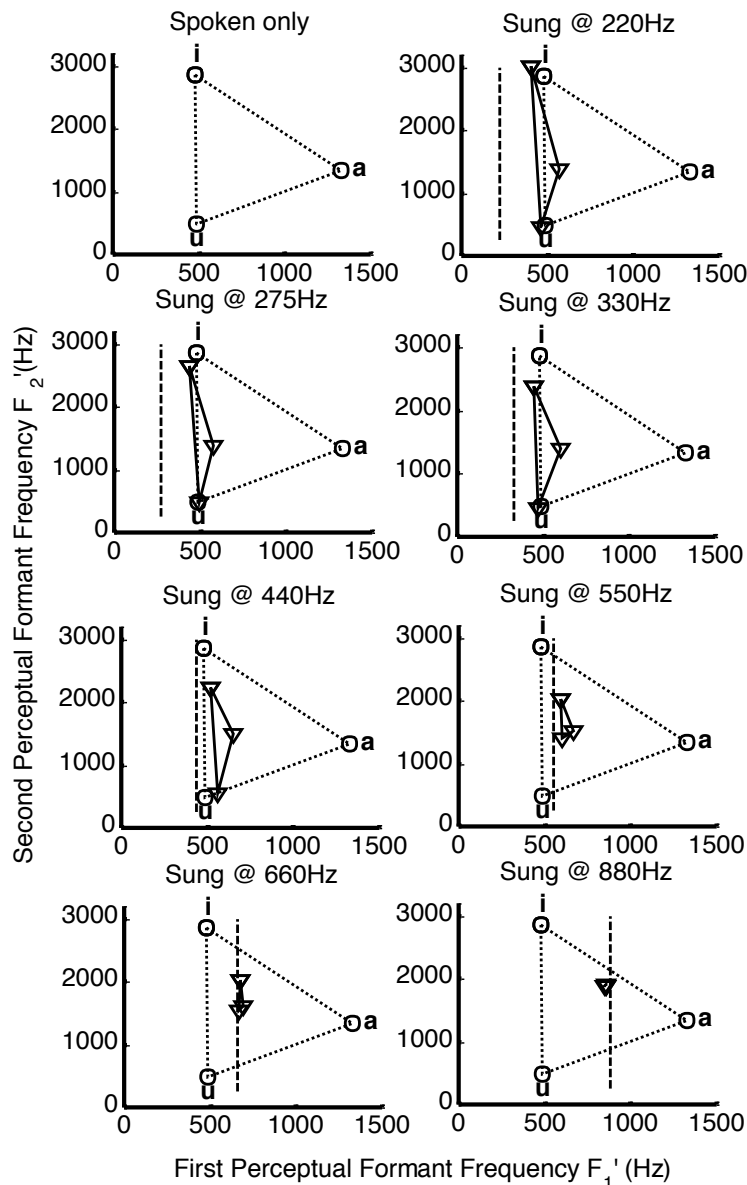


Figure 5. From Millhouse & Clermont (2007) F₁-F₂ planes showing the spoken-vowel space represented by circles, and the superimposed sung-vowel space (triangles). The pitch frequency is drawn vertically as a dotted black line.

PART THREE: LONG TERM SPECTRAL AVERAGING

Due to the difficulties in determining accurate short time spectra for high pitched singing, the use of Long Term Spectral Averaging or LTAS has become quite prolific in singing research for the observations of musical timbre and vocal features. Its preference for use over the short time analysis techniques is its ability to average spectral changes associated with phonetic structures and musical stimuli to give a profile of the voice quality (Löfqvist & Mandersson, 1987). The benefits of

this averaging effect come at a cost, in the inability to extract specific resonant formant information to enable derivation of articulatory behaviours of the voice. Additionally with the averaging effects also comes a need for strict control of the variables (phonation type, vowel, pitch, vibrato, mood, time recorded, etc) contained within in the recorded sample, to maintain consistency between recordings.

One of the primary advantages of the LTAS technique is its ability to observe the singer's formant in the 2 - 4kHz region of the acoustic spectra (Sundberg, 1974; Jansson & Sundberg, 1975; Baken & Orlikoff, 2000; Vurma & Ross, 2000; Weiss *et al.*, 2001). Methods used to

generate LTAS curves follow rigorous time and musical stimuli criteria in order to reduce the effect of these variables on the final spectra. So whilst traditional spectrogram observations and short time analysis of the vowels can't conclusively identify a singer's formant like feature in female singers, the LTAS analysis has confirmed increased spectral energy in the 2–4 kHz region in professional female operatic singers (Barnes *et al.*, 2004; Thorpe *et al.*, 2001).

It would now be appropriate to undertake a spectral averaging of our PLP derived auditory spectra to determine if this provides additional information on the singer's formant. Three results for a soprano, tenor and baritone are presented in Figure 6. This figure represents the LTAS analysis for auditory spectra (left graphs) and traditional

acoustic spectra (right graphs). The traditional acoustic spectra are covered over the frequency range of 0-10kHz whilst the auditory spectra covers the range 0-25 Barks. Both amplitudes are log magnitude representations of sons for the auditory scale and decibels for the acoustic scale. Each of the LTAS graphs indicate the presence of a spectral peak at around 14-15 Barks with the soprano's peak being slightly higher in bark frequency than the baritone and tenor. The specific peak amplitudes and widths also vary between singer's voice types but given the differences in the arias sung it would not be appropriate to compare these features. What is important to note however is the presence of a specific resonance peak for all three represented voices in the auditory spectra averaged LTAS graphs.

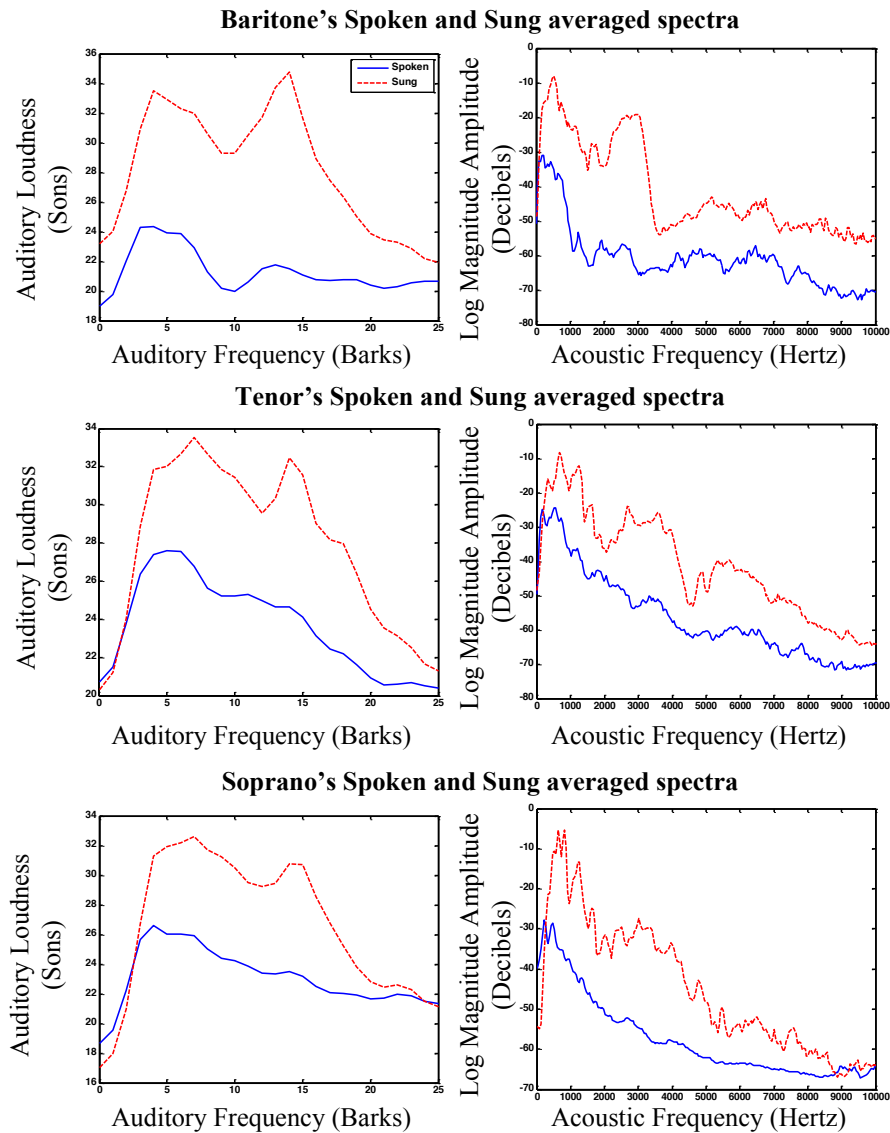


Figure 6. Long Term Average Acoustic and Auditory Spectra representations of the spoken and sung arias for male and female trained operatic voices. The left hand graphs represent the averaged auditory spectra and the right hand graphs represent the traditional averaged acoustic spectra. The blue unbroken lines indicate the spoken aria spectral magnitudes whilst the red broken lines indicate the sung aria spectral magnitudes.

DISCUSSION

Perceptually motivated auditory nature of the singer's formant

From our results above the singer's formant has been investigated within the auditory domain of human hearing. It has been shown to be a continuous band of resonant energy in the 13-15 Bark region of human hearing. This auditory spectral band is reasonably stable and identifiable for all singers however its specific width and amplitude does vary throughout a singer's phrasing most likely as a function of vowel, pitch and specific sound pressure level used in the phrase. It is important to note that this region of spectral energy is observable for all voice types and that the auditory and cognitive modelling does particularly highlight this region of spectral energy as the most sensitive in the human hearing range. Another way to consider this spectral interpretation is that the perception of a singer's 'ring' or 'ping' is specifically influenced not only by the singer themselves but also by the ear that perceives them.

The auditory modelling has a significant advantage over traditional methods in that it is less susceptible to the modelling issues introduced by the wide separation of harmonics in high pitched singing. This means that short time analysis of sung vowels at all pitches can be undertaken and that the behaviour of these vowels matches very closely the perceptual experiments have been undertaken on the intelligibility and timbre of the spoken and sung vowels. These results provide the necessary confidence in the PLP procedure to provide realistic interpretations of the auditory nature of spoken and sung vowels.

On the Soprano's Singer's Formant

A long held disparity between the acoustical definitions of the singer's formant and its perceptual interpretation is the question of the singer's formant in the soprano. Considerable research has been spent on the investigation of this ambiguity (Weiss, 2001; Joliveau *et al.*, 2004; Barnes *et al.*, 2004). The primary issue being that whilst the soprano has a similar perceptual 'brilliant resonance' or 'ring' to any other operatically trained voice the specific resonance cannot be easily identified from traditional acoustical metrics. The PLP technique does

however identify a specific spectral peak for singing that is not identifiable in speaking.

The singer's formant is however not just identified as a specific spectral increase in a LTAS spectrogram of a band of continuous spectral energy at 2.4-3.2 kHz. The singer's formant has also been defined as a clustering of the upper formant structure (F_3 , F_4 , and F_5) at this frequency. This specific clustering has been identified in male singers (Sundberg, 1968; 1970; 1974; Cleveland, 1977; Titze *et al.*, 1994; Joliveau *et al.*, 2004; Clermont 2002; 2003) however a specific formant clustering has not been identified in female singers. Traditionally this has been due to the inherent difficulties in measuring high pitched phonation, however Joliveau *et al.*, (2004) overcome this problem and was able to investigate the specific vocal tract resonances of high pitched singing. This study did not note a specific clustering of the formant structure for their female subjects. Inference of the specific formant graphs identified that the upper vocal tract resonances did not match specific harmonics nor did they undertake a specific clustering.

So from this it could be inferred that soprano's do not undertake the clustering of specific upper formants as per their male counterparts. However do they specifically need to? There is no doubt that the perception of 'ring' and 'brilliance' is clearly observable in the soprano voice and can be quantified through auditory analysis of the second perceptual formant (F'_2). The question remains however, what are the acoustic parameters that specifically contribute to this perceptual formant? Millhouse & Clermont (2006) have indicated that the underlying upper acoustic formant structure influences the second perceptual formant (F'_2) for a baritone subject ; however Millhouse & Clermont (2007) also indicated that in the soprano subject the role of the underlying harmonic structure strongly influences the second perceptual formant (F'_2). It could be inferred then that the production of the specific 'ring' is strongly dependant on the specific pitch of the voice, which has been understood by pedagogues for many years (see Miller, 1996 as a single example of this). As the voice transcends through the region around 500Hz just above A4, the singer's formant production mechanism switches from one of clustering formants to aligning vocal tract resonances with specific harmonics as demonstrated in Joliveau *et al.*, (2004). However this hypothesis requires significant investigation and further analysis across multiple voices to quantify.

On the source of the singer's formant

The same hypothesis may also account for the inconsistencies noted in the physiological description of the source of the singer's formant. The source of the singer's formant has been defined by Sundberg (1974) as a narrowing of the larynx tube (the space enclosed by the vocal folds, epiglottis, arytenoid cartilages and ary-epiglottic folds) combined with a widening of the pharynx such that the ratio of the larynx tube and pharynx cross sectional areas is 1:6. This 1:6 ratio is essential for the creation of a Helmholtz resonator necessary to produce the clustering of upper formants. Magnetic Resonance Imaging (MRI) studies of Detweiller (1994) were inconclusive that singer's who do produce a 3kHz spectral increase actually do obtain the 1:6 ratio require for the laryngeal coupling. Sophisticated acoustical modelling by Titze & Story (1997) went on to confirm the role of the epilarynx tube in the clustering of the upper formant structure however Story (2006) indicated that the clustering of the upper formants can actually be achieved without changes to the length of the vocal tract or the area of the epilaryngeal opening. It would be reasonable to assume then that the specific role of the epilaryngeal tube may not be the only articulatory artefact used to produce the spectral increase around 3kHz required for the perception of 'ring' and 'ping' in the voice. Interestingly Broad & Hermansky (1989) have aligned the perceptual second formant (F'_2) with the front cavity resonance theorem, whereby the position and shape of the F'_2 is governed strongly by the shape of the front cavity of the pharynx. This also aligns with much pedagogical literature on placement of sound and concepts such as 'singing into the front cavity' (see Miller, 1996). Given that this work and the companion studies have indicated the association of the singer's formant with F'_2 a clear question for future research is whether or not the singer's formant can be aligned with the front cavity resonance theorem in so far as its influence on F'_2 is concerned.

CONCLUSION

This paper has explored the notion of the singer's formant in the perceptual domain through the use of psychoacoustical auditory modelling (Hermansky, 1990). This paper has presented auditory spectrograms, as well as short and long term spectral analysis of spoken and sung data. The singer's formant has been seen to manifest

itself in the second perceptual formant (F'_2) located between 13-15 Bark. F'_2 has been shown to be reasonably frequency stable however its amplitude and width has been demonstrated to be variable as a function of pitch and vowel type throughout a sung phrase. Evidence supporting a more unified acoustic auditory interpretation of the singer's formant has also been discussed and presented in this paper.

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An encultured identity: individuality, expressivity and the singing-self

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ABSTRACT: The human voice is able to engender experiences, traditions, emotions, ethnicity and human existence. Such enculturation can be heard when music and voice combine in singing. Sung vocal sound is therefore a representation of 'self' and, typically, the contemporary singer in popular culture musics (PCM) is highly individualistic. In the digital age, consideration of how contemporary singers develop their individual identity is crucial to understanding how best to nurture the singing voice in the complex and evolving milieu that is PCM. This is particularly relevant when considering the methods and applications of vocal processing that are now readily accessible and implemented. This article examines the ways in which a contemporary singer's vocal identity is developed, maintained, compromised or, at times, negated. The results of the qualitative research discussed in this article form part of a comprehensive study on contemporary vocal artistry. Through an analysis of participant reflections and experiences, the findings provide insight into the multiplicity of concepts that underpin vocal identity in PCM and recognise the ways in which the encultured voice leads to individuality in expressivity.

KEYWORDS: *enculturation, vocal identity, individuality, expressivity, vocal processing*

INTRODUCTION

THE contemporary singing voice in popular culture musics (PCM) is not defined by voice type, vocal range or vocal timbre. Neither is it restricted to replicating a musical score. Rather, the singing voice in PCM explores, improvises, emotes and communicates in ways that are characteristic of the individual singer. Each singer phrases lyrics so that words are emphasised or extended. Singers may choose to accent or vary particular vowels and may include melismas within a word or they may include melismatic ornamentation as an extension to a particular word or phrase. Contemporary singers may display a range of expressive techniques including dynamic contrast, a palette of tonal colours (e.g. breathy to clear), a range of onsets and releases (hard to soft), and distinct register transitions (Hughes, 2010). At times, even non-verbal sounds are heard as idiosyncratic responses or "inarticulate articulacy"

(Frith, 1996, p.192) as singers 'feel' or connect their embodied emotion with music.

An encultured identity is shaped by several factors including socio-cultural contexts and may also include "appearance, performative style, lyrics and the acoustic sound" (Valentine, 1995, p.476). The connection between a singer's vocal identity and the sense of self is also identified in the complex relationship between the voice and self-image (Monks, 2003). Other factors that contribute to a singer's vocal identity are external to the singer such as the resultant production aesthetic (Hughes, 2012b) heard in live and recorded formats where sound reinforcement and technologies are used for audibility or for sound capture. Pedagogical strategies may be developed to assist contemporary singers to discern their unique vocal sound while also exhibiting a level of control over a technologically processed resultant sound (e.g. Hughes, 2010).

The following discussion provides insight into how vocal identity may be encultured, maintained, compromised or, at times, negated. Such insight is significant in vocal pedagogy that respects the individuality of each singer and the uniqueness of every voice.

The encultured voice

Demonstrated in the social and cultural sciences (Sökefeld, 2001, p.527), the concept of identity has specific contexts and yet, more simply, identity refers to "the individual characteristics by which a person can be identified" (identity, 1996). If the self is "an entity tied to context" (McCallister, 2004, p.459), then the individual characteristics heard in the contemporary singing voice must also reflect a connection to musical style/s and an enculturation of being. In many social and cultural contexts, the singing voice is a response or an action that is reliant on a number of factors including the performance moment, the performance context or intent, and/or the inherent emotion. Green (2011) discusses the encultured self through the development of musical identity

that typically occurs over time. In this context, the concept of self is “forged from a combination of personal, individual musical experiences... and membership in various social groups” (Green, 2011, p.1). This highlights the socio-cultural relevance to identity development.

The encultured voice (Neumark, 2010, p.97) is, in essence, an embodiment of self. Just as each personality displays individual idiosyncrasies, every singing voice has its own unique sound or vocal signature. Audiences become familiar with the vocal timbre and nuances of a particular singing voice, so much so, that the “unique qualities of a singer’s voice make it relatively easy for us to identify a song as belonging to that particular artist” (Kim and Whitman, 2002, p.164). As vocal expressivity heavily features in lyrical, musical and emotive intent, it is perhaps not surprising that singing in PCM is highly reflective of individuality and enculturation. It is the ways in which contemporary singers perceive, maintain and convey their own vocal identity that are not so clearly evident. Vocal identity is even more complex given that any singer, irrespective of age, gender or ethnicity, may also purposefully manipulate or mimic vocal sound. However of all the contributing factors, the “neuropsychobiological” self (Thurman and Welch, 2000, p.xxiii) is crucial as Thurman and Welch (2000) explain:

Without considering how bodyminds “work” [sic], we run the risk of asking the impossible of ourselves and others, of bruising or crushing self-identity ... of denying ourselves and others an optimum fulfillment of our potential for self-expressive speaking and singing (p.xv).

The auditory process

The neuropsychobiological self is evident in the coordination of the anatomical, physiological and psychological components that produce sound. Within the neuropsychobiological self, it is the auditory process that enables the singer to ‘hear’ and identify vocal sound. The auditory process used to discern and analyse vocal sound is multidimensional and involves the singer critically listening to his or her own sound. Sundberg (1987) suggests that auditory feedback can be developed to become a “timbral translator” (Sundberg, 1987, p.160). For any singer, auditory feedback and analysis is intrapersonal (Welch, 2005) and includes “musical features, vocal quality, vocal ‘accuracy’ and ‘authenticity’, emotional state, and personal identity” (Welch, 2005, pp.254-255). It is a complicated process particularly given that the

singer internally hears differently to how the embodied or disembodied sound may be perceived by others, or when listening to recorded playback, external monitored sound or reflected sound. Rather than relying on the sound perceived internally, and particularly in relation to vocal processing or technological applications on the singing voice (Hughes, 2012a; Hughes, 2012b, Hughes, in press), some contemporary singers learn to hear the voice in various contexts and to recognise resultant vocal sound in a variety of formats (Hughes, 2010, pp.252-254). This requires complex auditory processing as the singer simultaneously predictively and comparatively listens while drawing on the audiation process to “translate the sounds ... to give them context” (Gordon, 1999, p.42).

RESEARCH CONTEXT AND METHOD

The qualitative research findings discussed in this article are in response to the research question of “How do singers in PCM identify vocal sound?”. This was a primary research question in a comprehensive study on contemporary vocal artistry that investigated vocal artistry in PCM and identified parameters, contributory factors, influences and influencers. The research was conducted over two years (2010 – 2012). Ethics approval to conduct the study was obtained from the Macquarie University Human Research Ethics Committee prior to seeking participant consent. One of the conditions to conduct the research was to protect the anonymity of the participants. In the following discussion, participants are de-identified and their role in PCM is used to contextualise their responses. Participation in the study was voluntary. Participants were not obliged to participate and could withdraw from the study at any time.

The purposively sampled participants were predominantly involved in PCM as performers or industry professionals. There were a total of eighteen participants included in the study and these participants were representative of a diverse range of musical genres. While most participants were Australian, international participants and international touring participants were also included. The investigation encompassed in-depth, semi-structured interviews with participants including professional singers with at least three years professional experience, early career singers with some professional experience, contemporary singing teachers and singers, record producers,

sound technicians and recording engineers, professional musicians and other industry professionals. A constant comparative method of data analysis (Merriam, 1998) was utilised to identify emergent concepts and themes. These concepts and themes provide a level of understanding of identity construction from both singer and potential influencer perspectives.

FINDINGS

The findings identified main themes in the context of contemporary singer identification of vocal sound: enculturation, the singing-self, individuality, vocal processing, kinaesthetic awareness and integrity. While enculturation is discussed as a distinct theme, the concept of enculturation underpins the subsequent themes particularly in relation to the singing-self, the development of individuality and the desire for integrity.

Enculturation

An encultured identity begins in infancy. As children develop, they are influenced by their environment. This was particularly evident in the findings in the contexts of familial, social and musical influences. While the motivation for singing into adulthood varied amongst participants, most singers reflected that they had sung and enjoyed singing from an early age. In some reflections, the enculturation of self was identified as beginning during childhood and singing was an activity they just 'did':

I have been singing from a really young age, and I think it was just, it was something I did in my childhood that my parents urged me to do as a youngster. And from there a love for it developed (Contemporary Singing Teacher).

Singing was something I always wanted to do. So I...I guess that's just something I always did from a little child, I can't actually remember, but I just knew I always wanted to sing (Contemporary Singing Teacher).

When considering that the encultured self encompasses social and cultural contexts and influences, it is understandable that life experiences are closely linked to expression in singing. Communicating encultured or lived emotion in singing was a recurring concept in participant reflections:

Because the whole idea of singing, to me, as an artist, is to communicate the things that are the

deepest in you (Professional Singer and Vocal Arranger/Producer).

Affirmation of effectively communicating the encultured self in performance was viewed as being a gratifying experience:

... actually very rewarding for you as an artist, if you do show yourself and people respond to it, and it does well, it's awesome (Professional Singer).

The singing-self

The broad concept of the singing-self was identified as developing over time with one participant, an early career singer and songwriter, expressing that the concept of self was a developmental process of various "stages". Another early career singer reflected on the individuality and multifaceted nature of the singing-self, and the relevance of establishing artistic direction and individual strengths:

The singer's identity...I think it's a bit of everything, but I think it's different for everyone depending on what their forte is (Early Career Singer).

Perhaps understandably, professional singers were more resolute in their expressions of self with a mainstream singer expressing a level of determinedness in defining contemporary artistry in relation to the singing-self:

It's having an understanding and appreciation for ... yourself. And knowing what you're about, what you want to do, where you want to go.

Other professional singers related the concept of self to confidence and/or to performance presence and, at times, these were seen to have a symbiotic relationship:

It's the combination of self-confidence, and the energy and the ability to be connected and in touch and engaged with what it is that you're doing (Professional Singer).

The strength of that presence will often be informed by the level of the artist's confidence (Contemporary Singing Teacher/Singer).

The influence of others on self-confidence was noted when one participant reflected that he had "never backed" himself as an individual artist until fellow musicians and friends had urged him to do so. This lack of confidence was despite working as a professional singer-songwriter for several years.

As the previous example highlights, participants noted that the singing-self was not a finite concept and they discussed the ways in which the concept of self, or aspects related to it,

changed. Opportunity, that either aided or detracted from the concept of self, was seen to provide stimulus for change. For example, a professional singer noted that in relation to songwriting she had not had the “chance to develop myself or my identity in that respect”. For a musical theatre singer, the singing self was positively viewed as having been “moulded by opportunity”. Similarly, a cabaret singer revealed the opportunistic self in her versatility and exploration of musical styles that had not stereotyped her to one particular genre.

Singing teachers who provided instruction in neuropsychobiological function were viewed as aiding expressive techniques and options for vocal colour. In this type of pedagogical focus, the singer typically explored his or her own voice usage, stylistic preferences and performative choices while being contemporaneously guided in ‘healthy’ singing. Similarly, consultations with Ear, Nose and Throat practitioners and the visual imaging afforded through laryngoscopy, were also viewed as aiding understanding or voice function and the concept of the singing-self. Where practices ‘interfered’ with the singing-self, vocal identity was compromised or even negated. This was evident in such aspects as finding the ‘right’ singing teacher and one that did not impose a particular sound or repertoire on the contemporary singer. It was also evident in the level of control a contemporary singer is able to have over the singing-self in their professional work:

...anything in a contemporary sense...it should be in an ideal world completely controlled by the singer...If you went into a pub and there was an original singer, just sitting there, you know, playing and singing, and...their original music, I would say they are in many ways completely controlling in that sense. I think when you start getting into corporate environments and other areas...I think that's where you lose some of that control at times...I do think it's probably where you start to lose a bit...you start to lose a bit of individuality (Contemporary Singing Teacher/Singer).

Individuality

Understanding the individuality and uniqueness of the voice (Hughes, in press) was identified as the foundation to developing the singing-self. It was also identified as providing the impetus for ongoing development:

I think you really need to be aware of your capabilities, and your limits...knowing your voice, knowing what you're capable of, and also knowing what you want to be capable

of...because then that gives you something to work towards (Professional Singer).

The ability to critically reflect or being “self-critical” through active listening was a strategy utilised by a singer-songwriter to aid the process of individual identity. Other participants revealed a connection between conveying emotion and vocal identity, with one participant noting that critical listening enabled emotive aspects to become more paramount:

'Cause [previously] it was more about the sound than it was about the emotion. I think probably what I've learned from listening to myself is [that singing] really needs to be about emotion (Contemporary Singing Teacher).

Only one participant, a singer-songwriter, talked about vocal individuality as the “personality” of the singing voice.

Participant responses were consistent in that recognition of individual vocal sound was progressive and the use of recordings, both in audio and visual formats, was typically how participants reported discovering and understanding their vocal identity. In addition to studio and home recordings, the recording of singing lessons and performances were also identified:

She [singing teacher] recorded every lesson. And I would listen to every lesson, and if I have performances recorded, I always listen back to those (Professional Singer).

Several participants noted the confronting aspect of initially hearing his or her own voice through recorded playback and a professional musician believed that no one “is over the moon” when hearing their voice for the first time. When reflecting on hearing her own singing voice via recorded playback, a professional singer commented, “that's not how I think I sound”. The intrapersonal nature of auditory perception, noted by several participants, was found to be challenging particularly in the early stages of acquisition:

I used to listen back to it [the voice] and I, I could never listen to my voice, I hated ... listening back to myself singing or talking or anything, 'cause it just sounded so foreign. And I know that just from experience, that what I hear is not what everyone out there hears (Early Career Singer).

Vocal processing

In PCM, where technologies applied to the singing voice occur through vocal processing (Hughes and Keith, 2103) in amplified and recorded formats,

some technologies were viewed by participants as increasing accessibility, aiding audibility, and fostering creative and artistic intents. It was when technological applications corrected or distorted the voice so that the resultant sound was not representative of its embodied, acoustic or unprocessed properties nor the singer's intent, that participants viewed vocal processing as diminishing artistry and vocal identity.

Several participants reported their own strategies for optimising the realisation of the singing-self when sound technicians or recording engineers applied technology to the singing voice (Hughes, 2012a). These included critically analysing vocal sound through auditory feedback in sound-checks and developing a vocabulary to enable effective communication with technicians and engineers. However, technological vocal processing was also viewed as having the potential to compromise or negate the singing-self (Hughes, 2012a; Hughes 2012b, Hughes, in press). This was particularly evident when there were time constraints in recording processes or when a resultant aesthetic did not match the artistic vision of the singing-self. A singer-songwriter lamented that after seizing the opportunity to record and release an album in a short time-frame so as to maximise media exposure and related marketing prospects, the resultant aesthetic was far from ideal. This participant reflected on how the singing-self had been negated during the recording processes that resulted in there being no inherent "identity":

I listen to it and I don't know who I am, I don't know what that person is, I hate it. I can't even bear listening to it because I don't, I don't hear any real connection to any of the songs. I just hear someone that was being rushed to do a decent take so that it could get recorded.

Kinaesthetic awareness

When amplification is ineffective or when there is insufficient on-stage foldback level, then contemporary singers will have difficulty in hearing their own voices. Several participants expressed being reliant at times on kinaesthetic awareness of how their voices should feel in situations where they could not adequately perceive or hear their vocal sound:

I think I just rely on the feel (Professional Singer).

Being able to sing and not hear yourself is, like, amazing technique that people need to know how to do... and you need to know how to deal with that without making it look like you're dealing with [it] (Professional Singer).

You know, if you're at the mercy of equipment all around you, and you can't hear yourself, it's really, really hard. I mean, I've done gigs where I've had to just rely on the sensation of singing (Professional Singer).

In addition to providing a constructive solution to ineffective vocal processing and amplification, kinaesthetic awareness was also seen to provide a greater level of vocal control of the singing-self:

I think singing is both audible and kinaesthetic. I think a singer, I mean, I encourage all my students to develop the ability to feel what they sing, physically, and be able to also hear what they sing (Contemporary Singing Teacher).

... in terms of trying to control it would be...working on the technique for me – the feel. The feel of things, the feel of it ... the feel of the voice (Contemporary Singing Teacher).

Integrity

Given the diversity of the professional and early career singers who participated in the study, ranging from singers in contemporary folk to musical theatre to mainstream pop, it is possibly surprising that the desire to be 'authentically' represented when vocally processed was expressed repeatedly (Hughes, in press). While different singing intents were also evident, across the participant genres was the desire to represent the singing-self with integrity and honesty:

I think it's about singing as honestly as possible, so like, you really want your voice to sound like you ...I mean, 'cause it's all about credibility in the indie world, right ... You just want it to sound like you (Professional Singer).

So when a person is in touch with the deepest core of themselves, because when we sing, we become exposed, if we truly — if we truly allow someone to see what's beneath, it will come out in the singing (Professional Singer and Vocal Arranger/Producer).

Like, there are some people that will go onstage and become this completely different thing, which is entertaining and fantastic but, I still think that through your vocal artistry there will always be an element of that truth of who you are, so I guess yeah, artistry...is how you portray yourself, your message, whatever it is that you're there to portray through your vocalisation (Professional Singer).

This final reflection summarises the encultured identity of the singing-self. The primary intent of both professional and early career singers was to be heard in ways that truly represented each individual singer ("yourself, your message"). The truthfulness of "who you are" extended to "how

you portray yourself” in associated images, lyrical content and musical style. Simulated ‘truthfulness’ or the ‘artistic crafting’ that sometimes occurs particularly in mainstream pop was at odds with participant sentiments on truth.

CONCLUSION

The encultured voice begins in infancy and develops over time (Welch, 2000). It is influenced by both intrapersonal and interpersonal factors and is heard in a myriad of contexts, styles and media. While singing styles and intent vary, the application of technology on the singing voice essentially focuses on how the contemporary singing voice is conceptualised sonically. For contemporary singers in PCM, the encultured voice is no longer just the acoustic instrument. Vocal processing makes the concept of ‘authenticity’ complex as once the embodied acoustic instrument is transformed into electrical signal and subsequently processed, the singing voice becomes a representation, replication and/or reproduction of the original vocal sound. Because a resultant aesthetic in vocal processing is a representation, the term ‘integrity’ has been used in this discussion and is viewed as being more appropriate in relation to the artistic intention of portraying truth in vocal sound. The findings identified that if singers understand the concept of integrity in relation to vocal identity and technological processing, then they are able to exert greater control in and of the resultant aesthetic that represents the singing-self.

The concept of an encultured identity for singers in PCM supports Green’s perception of musical identity (Green, 2011) and highlights that singers learn and develop musical ability in a multiplicity of ways. The interpersonal factors identified in the findings also reveal that socio-cultural influences are significant in how an encultured identity is conceptualised. This extended beyond the positive and negative influences of relatives and peers to include the influences of musicians, audiences, singing teachers, voice practitioners and sound technicians. Critical listening and analysis of vocal sound in the auditory process was viewed as aiding the ways in which the individual singing-self may be perceived, developed and maintained in PCM. Pedagogical strategies to facilitate development of the singing-self were seen to underpin an encultured identity provided the pedagogical aim is not to mould the voice in a particular way or to suit specific repertoire. While

the findings identified that singers may be able to rely on kinaesthetic awareness when vocal processing is either inaudible or flawed, the relevance of contemporary singing pedagogy that assists understanding of the neuropsychobiological singing-self should not be underestimated.

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BIOGRAPHY

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How singers hear themselves: using recordings in the singing studio

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ABSTRACT: Singers are unable to hear their own voices the way their listeners do, yet teacher and singing student must communicate about vocal quality and work to improve the student's basic sound. This study examined the efficacy of using recordings in this feedback loop by testing singers' perceptions of hearing themselves on playback and their perceived ability to improve their singing performance after listening. Fifteen singing students, aged between 18 and 70, were recorded on a portable Zoom H4 digital recorder. They then listened to the playback through quality headphones. Following both the live performance and the recorded playback, they rated their singing for overall quality, intonation, diction, ease of production and breathiness. The process was then repeated. Singers reported that hearing themselves on the recordings was helpful, empowering, and confidence-building although singers' self-ratings of their first and second performances did not show significant differences in scores. A sub-group analysis comparing experienced and novice singers showed that lack of experience was a key factor in the inability of the novice singers to make rapid desired improvements in their repeat performance. In a blind perceptual evaluation, four expert listeners independently rated the singers' two performances on the same parameters, and they also did not score the second performance as significantly improved. Singers found it difficult to improve their performance after a single playback. This preliminary study suggests that aural feedback from high fidelity digital recordings is a powerful new pedagogic tool and that further studies are recommended to explore its potential in the singing studio.

KEYWORDS: singing pedagogy, singing training, audio recordings, aural feedback, recorded playback

INTRODUCTION

IN the singing studio, vocal teachers face the challenge of communicating with their students about sound quality. Singers are unable to hear their own voices the way their listeners do, because they are hearing a different ratio of harmonics in the sound (Zemlin, 1998). Thus teacher and student must communicate about vocal quality, and work to improve the student's 'sound', without necessarily understanding what the other hears. To date, there is little information

about aural feedback from high fidelity digital recordings used as a pedagogic tool in the singing studio. This preliminary study will examine singers' responses to this type of aural feedback. Specifically, it will investigate if singers who hear themselves on such recordings are subsequently able to improve their performances.

Singers do not hear the same ratio of harmonics in the sound as their auditors (Laitala, 2004; Miller, 2002, 2004; Zemlin, 1998). Lower harmonics are transmitted more effectively to the singer's ears than higher harmonics, directly from their vocal folds to their ears via the skull bones and tissues, and indirectly from the mouth, travelling sideways around their head via air conduction (Zemlin, 1998). Indeed, the higher harmonics travel also more quickly directly forwards from the singer's mouth to the teacher's ears than lower ones (Zemlin, 1998). In terms of vocal quality, this suggests that the singer hears a higher ratio of lower to higher harmonics than the teacher does, and thus untrained singers are led to believe their tone is rounder and darker than it sounds to their listeners. This has profound implications for singers' learning.

Celebrated pedagogues such as Vennard (1967) and Lindquest (Jones, 2001) have suggested that singing students should rely more on sensation- how a good tone *feels* - rather than on how it *sounds* - because certain vibratory sensations are associated with optimum phonation. In an article entitled "Voice Pedagogy: To listen or not to listen" Zielinski (quoted in Miller, 2002, p.134.) commented: "Through training, the singer can monitor and identify how the sounds produced relate to the sounds heard by the listeners".

Learning what a good tone feels *and* sounds like involves a long trial and error process in the master/apprentice model of teaching which has dominated classical voice pedagogy in Australia (Callaghan, 1998). The student apprentice sings, then the master teacher offers advice in a variety of ways (based on their own experiences, imagination and craft), before the student tries to

incorporate these suggestions in their next trial. However the apprentice may not understand the feedback and it may not always be appropriate (Howard et al., 2007). Teachers often employ metaphor, gestures, and modelling (Barten, 1992, 1998; Callaghan, 1998; Dunbar-Wells, 1999; Garnier, 2007; Schippers, 2006), but the apprentice may not have an understanding of the type of tone the teacher wants because they have not yet developed that particular internalised tonal image. Thus repeated trials may be needed to achieve the desired outcome.

A major problem in the traditional method is the delay involved between the student's singing and the teacher's feedback. The student has to interpret what the teacher says whilst still remembering *back* to what they did, before having another go. Thorpe concluded that this time lag *delays* learning the new motor skills (Thorpe, 2002). Also, students are often confused by the teacher's extensive use of metaphor to describe something as elusive as sound (Persson, 1996; Schippers, 2006).

Though experienced teachers may be able to make accurate diagnoses of vocal problems based on timbre alone (McCoy, 2008), communicating effectively about sound and correcting faults remains a challenge. Newer methods of feedback in the form of real time visual displays on computer screens in the studio provide immediate and objective feedback (Hoppe, 2006; Thorpe, 2002; Welch, 2005). Since they avoid a time delay, they are theoretically preferable to teacher feedback given after the student has sung (Thorpe, 2002). The advantages of visual feedback are that it is consistent, and that it bypasses the perceptual difficulties students may have (because if they cannot always initially *hear* the qualities the teacher is talking about, *seeing* helps by using another learning pathway whilst they learn the desirable sound). It also provides an indication of the magnitude of the error and the direction in which the student must change to correct it (Thorpe, 2002). However, while studies have confirmed the efficiency of real-time visual feedback (Hoppe, 2006; Welch, 2005), there have been problems with cognitive overloading of singers trying to watch and interpret the visual displays whilst they are singing (Thorpe, 2002).

Aural feedback, using high fidelity recording equipment, either in real-time (listening through headphones whilst singing), or delayed (via recording/playback), has been the subject of limited research. Miller has suggested using headphones for feedback when working on timbre (Miller, 2004, p.71). Wearing headphones

enhances the hearing as the sound is travelling primarily through air conduction down the external ear canal, and external noises are damped (Boone, 2004). Hearing aids inserted in the external auditory canal work on this principle. Headphones are used regularly in recording studios, with the artist singing and listening simultaneously (Boone, 2004).

Hearphones (HF) have been used to redirect the sound to the singer's ears via strategically placed ellipsoid reflectors. In a preliminary study (Laitala et al, 2004) a comparison was made between the effects on perception, voice quality and production in speaking and singing with, and without, HF on. With HF, the sound was perceived as louder, brighter and breathier with high frequency turbulence more audible as singers/speakers were then hearing more of the higher frequencies. Both speaking and singing was assessed as less strained in 65% of cases when HF were worn, and the subjects lowered their volume when wearing HFs. Singing pedagogues such as Carrie Cole, have reported them to be a beneficial pedagogic tool in the singing studio (Cole, 2006).

A review of the pedagogic literature found few investigations of recorded audio playback used in music lessons. Gaunt (2008) surveyed pedagogical methods used by British conservatorium music teachers and found only three of 20 used audio recordings with their students during lessons. For the majority of the 20 teachers, skills were transmitted largely through teacher-led discussions, but the teachers who recorded their students were then able to reflect on the student's performances in a more collaborative way. Teachers have used model recordings of performances of the current repertoire of their students as a learning aid (Hewitt, 2001, 2002). Junior high school instrumentalists who listened to a model recording during self-evaluation reported more improvements in melodic and rhythmic accuracy, interpretation, and overall performance (but not intonation, technique/articulation, or tempo) than those who did not (Hewitt, 2001). Previous studies mentioned by Hewitt (2001, p.319) had shown that students' ability to detect errors was more accurate when they listened to audiotapes of themselves than during their live performance but this ability did not necessarily lead to improvement in performance. As the junior players were relatively inexperienced performers, they may have lacked the technical skills to fix the errors that they could identify from listening to recordings of their own performances (Hewitt 2001, 2002).

A portable Zoom H4 digital recorder and high quality headphones allowed both real-time and delayed auditory feedback to singing students in a private teaching studio (Southcott, 2008). The Zoom delivered high fidelity aural feedback that was far superior to taped cassette audio recordings previously employed. Some common reactions from the singers were surprise at how different they sounded overall compared to how they had imagined they sounded. They reported a shriller, thinner tone, diction not as clear as they had imagined, and more breathiness and variable intonation on the recording. Many also remarked that they sounded *better* than they had believed, and this gave them confidence.

Nowadays portable inexpensive digital recorders are readily available and many singing students do record their lessons for later review at home (Southcott, 2008). A high fidelity recording provides objective feedback which could be the basis for collaborative reflection. This study aims to examine the effects on singers of hearing themselves via high quality recordings and to test the efficacy of recording and playback as a pedagogic tool for the singing studio.

METHOD

The University of Sydney's Human Research Ethics Committee approved the project.

Study 1: Recording, listening and self ratings by singers

Fifteen singers, 12 females and three males volunteered to take part. Prior to the study, singers completed a general questionnaire about their age, sex, musical/singing qualifications, and the length of time they had taken singing lessons. Singer participants were aged between 18.5 to 70 years with a mean age of 37 years. Two had tertiary qualifications in singing, one had LMus, five had AMEB (Australian Music Examinations Board) Grades of six or higher, and seven had no formal singing qualifications. (The AMEB grading system is from Grade 2 to Grade 8, followed by AMusA and LMus. For LMus a professional level of performance is expected.) Singers were asked to prepare a simple unaccompanied piece in English of approximately 30 seconds' duration and invited to take part in a study investigating the Zoom digital recorder as a pedagogic tool in the singing studio.

Recording and playback

On arrival in the studio they were invited to warm-up prior to recording their first performance. The singers were recorded standing one metre from a Zoom H4 Digital Recorder (which has inbuilt microphones) mounted on a tripod set to the height of their mouth. Stereo audio was captured in wav format at a sampling rate of 44.1 kHz, transferred from the Zoom secure digital memory card to a PC where files were coded by subject number. Singers listened to their recordings of the two performances via AKG K240 studio quality headphones.

Table 1 outlines the time points of the recording, listening and self-rating sessions. Singers recorded their chosen excerpt, rated their live performance on Questionnaire 1 then listened back to the recording and completed Questionnaire 2 to rate their perception of their recorded singing. Singers then recorded their chosen excerpt again, aiming to improve the sound qualities they had heard in the recording and self rated on Questionnaire 3 before listening back and rating their second recording in Questionnaire 4.

Finally, singers rated the helpfulness of listening to the recording on another nine point scale (rated 1 = "not at all helpful" to 9 = "very helpful") and were invited to add further written comments about their experience of hearing the recordings of their singing.

On each feedback questionnaire, singers rated five vocal parameters: "overall quality", "ease of production", "intonation", "diction", and "breathiness in the tone" (a measure of focus). They were asked to circle a number between one and nine on scales where one represented least satisfactory (eg. "breathy" or "very out of tune") and nine most satisfactory (eg. "focussed" or "very in tune") for each parameter.

It was hypothesized that singers would alter their vocal parameter scores between their live performance and after hearing themselves on a high quality recording at Q2, and subsequently may have improved their second performance, with higher scores at both Q3 and Q4.

Study 2: Perceptual evaluation by expert listeners

Listeners were four expert pedagogues who had at least 10 years of experience teaching singing and held a Masters or higher tertiary degree in Vocal Pedagogy.

Table 1. Key to time points of the questionnaires.

Recording	Questionnaire	Listening	Time point
R1	Q1	L1	recording of first live performance
			rating of first live performance
R2	Q2	L2	listening to first live performance
			rating of first recording
	Q3	L2	recording of second live performance
			rating of second live performance
Q4		listening to second live performance	
		rating of second recording	

Perceptual Stimuli

Singers' song samples were edited to a length of approximately 30 seconds per sample using Creative Wave Studio and CDs with separate tracks for each sample were prepared using iTunes. The first track was a 30 second recording made by the researcher to be used as a practice run for the expert listeners to familiarise themselves with the rating scales. The remaining tracks were a randomised ordering of the original paired recordings made of the singers. Five pairs were repeated to test listener reliability. The presentation order of paired samples and the order of all singers' samples was randomized (www.randomizer.com) before being burnt onto the CDs.

Perceptual Evaluation

Listeners were mailed a copy of the CD and a questionnaire. Listeners were asked to rate each track using the same five parameters as the singers in Questionnaire 1 (ie. overall vocal quality, intonation, ease in production, clarity of diction, and breathiness/focus of the tone).

RESULTS

Study 1: Singers' perceptions of recordings

All 15 singers were very positive about listening to the recordings as a learning tool. Figure 1 shows that on the scale of helpfulness (1 = "not at all helpful" to 9 = "very helpful"), eight singers rated the process of recording/listening to their singing as "very helpful". The mean score was high at 8.21, with a range of six to nine (SD= 0.97).

Three singers had never heard themselves on good quality recordings and reported it as

informative, encouraging, and a positive learning tool. One thought further use would be helpful. No singers reported feeling discouraged by the process. One experienced singer in an Advanced Diploma Opera course at a leading tertiary institution regularly used a Zoom recorder because:

"It is important to hear for ourselves what our teachers and coaches are hearing, then use it as a learning tool to improve our singing."

Singers perceived the process as empowering and confidence-building and made comments such as:

"Listening to myself made me more responsible for improving rather than relying on another set of ears" (S04)

"the process has restricted the power of the little voice in my head that tells me I sound horrible!" (S13)

"it gives me encouragement on quality of voice that can be achieved" (S06)

"it gives me confidence that it doesn't sound too bad" (S01)

Singers found the process to be a way of learning what needed to be changed. For example:

"[it] helps to hear exactly what I am doing and how it changes the sound." (S03)

"[listening to recordings] gives me a clear indication of what I'm doing so that when you try various modifications to remedy faults you can hear what works or not" (S01)

After the first recording, 12 singers wanted to improve diction and intonation, maintain more consistent breath support, and obtain a rounder or warmer tone. Only three of the 15 singers did not want to change anything after they heard themselves on the recording of their first performance.

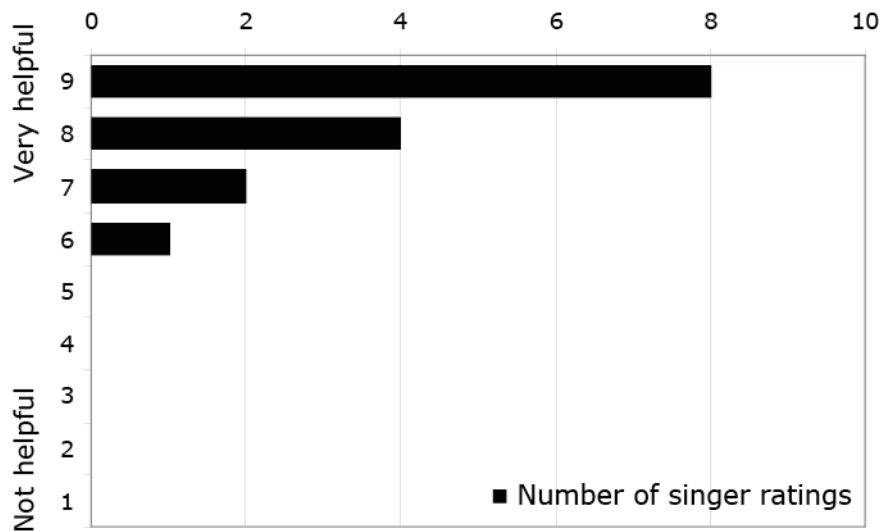


Figure 1. Singers' ratings of helpfulness of hearing recording of themselves on Lickert scale.

One singer, who was an experienced high school music teacher with limited formal singing training, commented that it was too difficult to make all the changes she desired so quickly.

“Good to be obliged to critically assess the performance but very challenging to make even small improvements. Probably can only be one or two things at a time and an ongoing process of development“ (S02)

Singers' self ratings of sound quality

Singers' ratings for each parameter were assessed at each time point. A multivariate analysis of covariance (MANCOVA) was performed on the singers' ratings at the four time points, (with the five vocal parameters as independent variables) to assess if the changes to any of their ratings were statistically significant. The MANCOVA showed only one significant change and this was for diction (mean difference -0.8, p=.009).

Paired t tests compared the scores of the five vocal parameters at the different time points and revealed that diction was the only parameter where the singers' change in score reached statistical significance, between Q1 and Q2: $t=-3.06(14)$, $p=.009$.

Figure 2 shows singers' mean scores for each rating parameter at Q2 (listening to first performance) and Q4 (listening to second performance). Singers scores demonstrated minimal or no changes after listening to each recording. Several singers commented verbally that they thought they sang worse the second time and this was reflected in their self-rating scores.

Experienced and novice singers

The mean scores on each parameter by the three most experienced and three least experienced (novice) singers are presented in Figure 3. Figure 3a shows the comparisons between the experienced singers' scores at Q2 and Q4 and Figure 3b shows novice singers' scores. For experienced singers, as expected, the mean scores at Q2 for all vocal parameters were high – none being below seven - while inexperienced singers self-rated their singing much lower - under 5.5 for three parameters. Following listening to the second recording, experienced singers perceived improvements to their performance, with consistently higher scores at Q4. Novice singers' perceptions improved for three parameters (quality, intonation and ease) but showed no difference between diction and breathiness when listening to the second performance. The figures for experienced and novice were analysed using paired t tests, and none reached significance (possibly due to the small sample size). For both groups, singers' self-ratings improved after listening to the second performance.

Study 2: Perceptual analysis by expert listeners

Listeners rated singers' paired performances (R1 and R2) for 14 of the singers. (One singer was excluded due to errors in recording). Listeners completed the same rating scales on the same five vocal parameters as used by the singers. Figure 4 shows the mean scores of these judges on each rating scale for all singers at the two recordings.

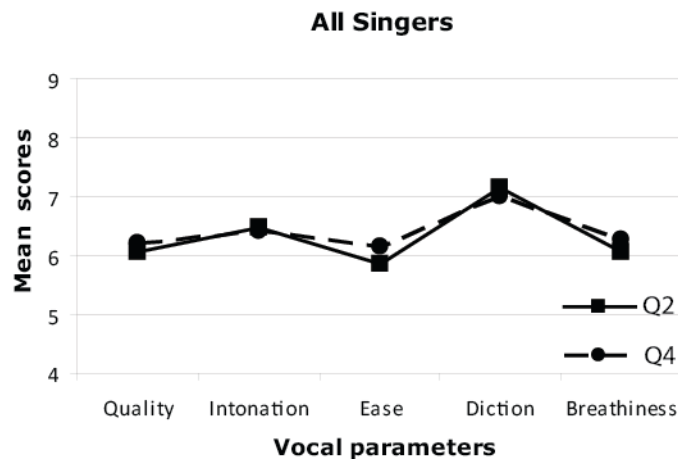


Figure 2. Singers' mean rating scores for 5 vocal parameters after listening to the first recording (Q2) and after listening to the second recording (Q4).

All vocal parameters scored slightly lower for the second recording. Statistical analysis using a paired t test showed that ease of production was scored very significantly lower at Q4. The mean dropped from 6.3 to 5.75, and $t=3.613$, (59), $p=.001$.

Perceptual evaluation of experienced and novice singers

Figure 5a shows the comparison of the two recordings by the expert listeners for the experienced group and Figure 5b shows listeners' ratings for the novice group for R1 and R2. For the experienced group, listeners rated breathiness and ease higher on the second recording but showed lower scores for both intonation and diction for R2. Scores for overall quality did not change between R1 and R2. For the novice group, the expert listeners rated R2 performances higher than

R1 for overall quality, ease and diction. They rated lower for intonation and breathiness. None of the above changes reached statistical significance.

DISCUSSION

All 15 singers rated the recording/playback process as "helpful" to "very helpful", and valued its immediacy and high fidelity. They made positive comments on the use and further use of the Zoom recorder, and reported that it was beneficial hearing their voices objectively, and as listeners would hear them. This concurs with previous studies using recording/feedback (Hewitt, 2001, 2002), where junior high school instrumentalists could detect their own errors better on audiotapes than in their live performances.

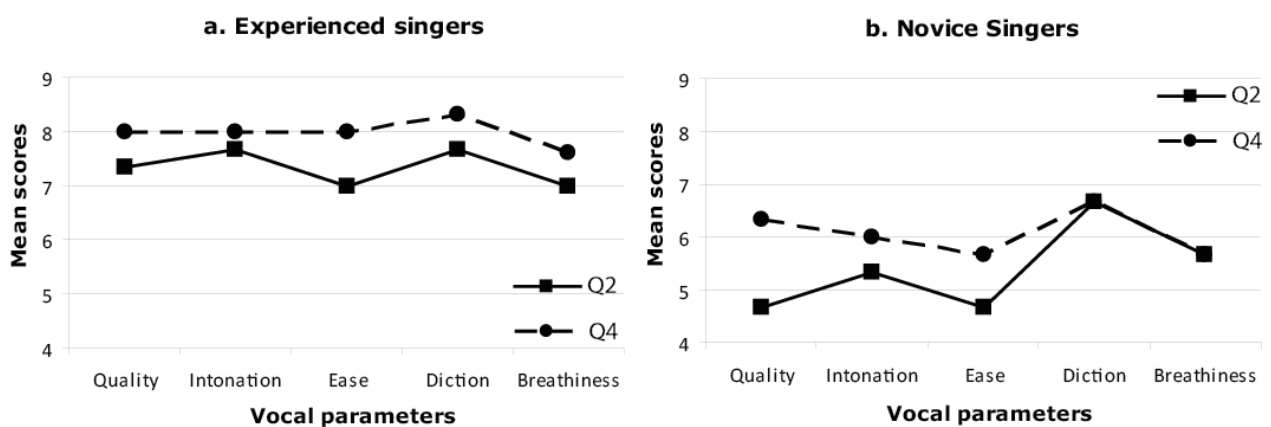


Figure 3. Singers' mean rating scores for 5 vocal parameters after first recording (Q2) and after second recording (Q4) for a) experienced singers and b) novice singers.

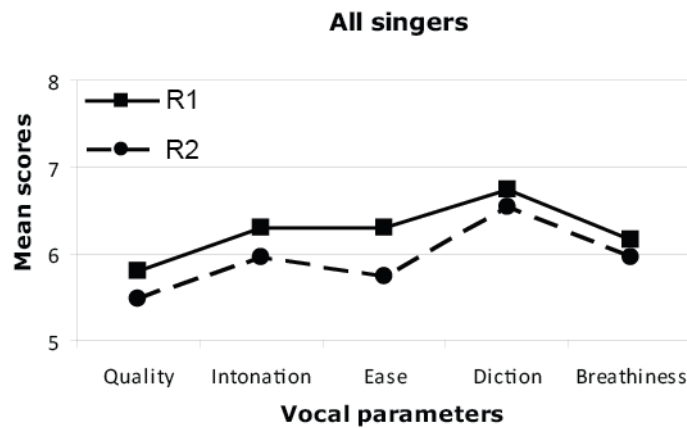


Figure 4. Expert listeners' mean scores for 5 vocal parameters for the two recordings made by the singers.

Overall, singers reported that listening to the playback improved their confidence knowing how they sounded to others, and knowing what they had to work on technically. The playback was clearly motivating for the singers who sought to improve diction and intonation, to maintain more consistent breath support, and a rounder or warmer tone. Only three did not want to change anything after hearing themselves the first time. These comments from students are similar to those in the author's previous studio experience (Southcott, 2008). Many had also remarked that they sounded better than they had thought and this gave them confidence. Overall, singers were not discouraged by their lack of improvement in the repeat performance - they still found the process helpful. The most experienced singer in the sample described her own Zoom H4 recorder as an indispensable tool for her learning over the previous 18 months. She regularly used previous stored files to check her progress over time, and found the combination of teachers' feedback plus the objectivity of the recording feedback a very helpful, empowering and efficient way of learning.

Statistical analysis showed that diction was the only vocal parameter which significantly improved between the singers' self-ratings of their first live performance (Q1) and its recorded playback (Q2). Singers did not rate their second recording (Q4) as improved on any parameters compared to their first recording (Q2). It may be that singers could not make the desired changes rapidly in their second performance, due to inexperience and lack of technical expertise. One singer articulated this in her written comments and several complained verbally that they sang worse the second time, having tried unsuccessfully to make changes. Hewitt (2002) also noted that junior instrumentalists did not improve their performances after listening to a model recording unless they also evaluated their own performances. In fact, junior students only improved their ability to self-evaluate their performances with teacher's input. It may be that inexperienced musicians are less able to assess or diagnose problems and quickly devise solutions to improve the sound they hear on playback.

Comparisons between the experienced and novice groups showed that the most experienced

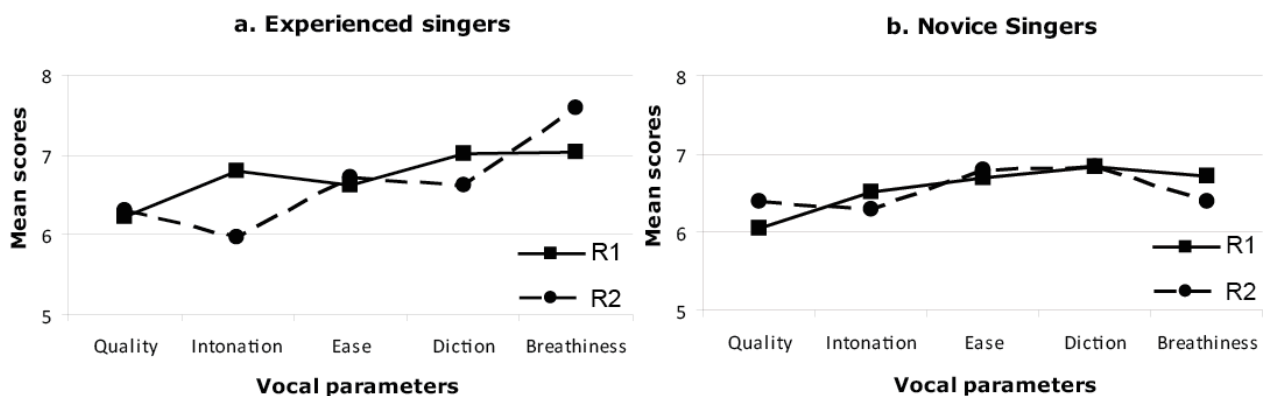


Figure 5. Expert listeners' mean scores for 5 vocal parameters for the two recordings made by a) experienced singers and b) novice singers.

group of 3 singers improved all their scores fairly uniformly whilst the 3 novices improved only their diction scores on hearing their second performance (Q4) compared to hearing their first performance (Q2). This suggests that singing experience affected the self-rating results, although the differences between the results at Q2 and Q4 did not reach statistical significance. Further research will examine if more trials and collaboration with their teachers would enable singers to make the desired changes to improve their performance.

However, singers in this study were able to identify vocal problems through listening to their singing on the recordings and found the process empowering. Gaunt (2008) also suggested that teacher collaboration with students in using recordings as a pedagogic tool was more helpful than the student listening alone. The potential benefits were succinctly put by a singer in this study, who said how useful it was to hear what the teacher is hearing. Using recordings as a collaborative tool facilitates understanding of a common language of terms to describe vocal qualities (based on actual sounds on the recordings) and may lead to better communication between teacher and student and more efficient learning by singers.

Expert listeners in this study did not conclusively rate the singers' second recordings as better than their first recordings and this confirms the singers' own interpretations of their first recording/playback experience: that it was difficult to make immediate improvements to their sound after listening to the first recording.

At the Guildhall, Gaunt (2008) found that few conservatoire vocal and instrumental pedagogues used recordings, 5 were interested and the remainder thought it was too time consuming and complicated to use. However, recent discussions with pedagogue colleagues who have started using the Zoom recorder regularly revealed that it is well received by their students. In this study, the vast majority of singers top rated the helpfulness of the tool. The objectivity now possible via recordings means their use could significantly alter teaching and learning styles. Being able to relate particular sensations to the actual sound heard on the high fidelity Zoom recording is a way of addressing that fundamental difficulty that singers cannot hear themselves the way the listener does.

Conclusions and future directions

This initial investigation revealed that a sample of 15 singers of varied experience found listening to

their singing on a high quality digital recording helpful and empowering as a learning tool. The technology is uncomplicated, portable, inexpensive and not distracting to use (in comparison to interventions such as visual feedback [Thorpe, 2002]). Singing students can easily map progress by downloading and filing their recordings on the home computer and perceptually identify the stages of improvement in their sound (Mitchell et al, 2010).

Future studies will investigate the use of aural feedback via digital recordings in the studio over a longer period. It will test whether extended exposure to recorded playback can improve the singers' manipulation of his or her own sound quality, and indeed whether singers are more successful in making changes to their singing over several trials. The results of such a study will also reveal whether students' self-evaluation skills improve from listening to recordings over time as they compare their later recordings with earlier recordings. Such high fidelity recorded feedback offers a powerful new tool in the singing studio, allowing more effective communication between singing pedagogues and their students through a shared experience of vocal quality.

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BIOGRAPHY

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Music Immanent in Words - Hugo Wolf's Mörike Lieder

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ABSTRACT: The intricacies of German poetic language and its reflection in music are both charm and challenge in the study, performance and teaching of Lieder - particularly for Non-German speakers. The Lieder of Hugo Wolf arguably represent an afore unreachd level of interconnection between word and music as here, in the words of the great Lieder-singer and scholar Dietrich Fischer-Dieskau 'every single declamatory device arises from the spirit of the language'. This paper gives a brief overview of Wolf's Lieder after words by Eduard Mörike and illustrates the composer's 'musical re-inventions of poetry' by analysing text and music of the well known song "Das verlassene Mägdelein" (The forsaken maiden). The paper further suggests pathways to approach this song so as to realise its depth and to achieve a high level of uncontrived expressiveness in its rendition.

KEYWORDS: Wolf, Mörike, Das verlassene Mägdelein, The forsaken maiden, song interpretation

INTRODUCTION

THE intricacies of German poetic language arguably constitute a challenge in the study, performance and teaching of Lieder particularly for non-native German speakers. In the Lieder of Hugo Wolf we see a previously unheard-of dimension of interconnection between word and music as here "every single declamatory device arises from the spirit of the language" (Fischer-Dieskau, 1985, p. 131). Wolf was extremely sensitive to the nuances of language and craved poetry with a "musical foundation" that offers the intrinsic possibility of having the word-sound inform the composition process. He sought, found and emphasised the concept of "music immanent in words" (Fischer-Dieskau, 1985, p. 130).

This paper starts out with some background information about Wolf and introduces the poet with whom Wolf is probably most closely associated - Eduard Mörike. It then focuses on one Mörike-Lied in particular, illuminating its background, text and musical structure, discusses a singer's approach and gives some interpretation guidelines.

Hugo Wolf was born on the 13th of March 1860 at Windischgrätz in Styria, (now Slovenj

Gradec, Slovenia), then a part of the Austrian Empire. His father was a music-loving leather tradesman who taught him the rudiments of piano and violin.



Figure 1. shows the 35 years old Hugo Wolf in a photograph of 1895 (Wikimedia, 2010)

Without having finished high school, he went in 1875 to the Conservatoire in Vienna where he appears to have learned very little and was dismissed in 1877 partly because of a practical joke which backfired, partly because of financial difficulties. From the age of seventeen Wolf endeavoured to be independent with regard to his musical training as well as for his living expenses, although his father and a few good friends were always on hand to help him out. He survived by giving piano lessons and taking on small scale conducting positions. In 1884 he became musical critic for the *Salonblatt*, a Viennese society paper, where his uncompromisingly trenchant and sarcastic style won him a notoriety not helpful to his future prospects. His ardent admiration for Wagner was linked with a bitter opposition to Brahms, for whose works he held an ineradicable dislike (Fischer-Dieskau, 2003).

Wolf composed in periods of feverish creative activity, which alternated with barren periods of deepest depression during which, plagued by the fear that his creative well had dried up forever, he was often unable even to bear the

sound of music (Fischer-Dieskau, 2003). By the end of 1891 he had composed the bulk of his works on which his fame chiefly rests: 53 Morike Lieder, 20 Eichendorff Lieder, 51 Goethe Lieder, 44 Lieder from Geibel and Heyse's *Spanisches Liederbuch*, 22 from Heyse's *Italienisches Liederbuch*, (a second part consisting of 24 songs being added in 1896) and six Keller Lieder.

In September 1897, the malady (syphilis) which had long lain dormant descended upon him; he was placed in an asylum, released in the following January, only to be voluntarily readmitted some months later after an attempt to drown himself in the Traunsee-lake. Four painful years elapsed before his death on the 22nd of February 1903.

Wolf's legacy has been called a "radical regeneration of the Lied-genre" (Oehlmann, 2000, p. 494). He intensified the expressive vocabulary of the Lied by extending the harmonic language within the musical tonality while retaining the defining elements of the song tradition he had inherited from Schubert and Schumann. He introduced the "Wagnerian *Sprachmelodie*" (melody of the spoken word) into the Lied, "replacing the structured song stanza with a freely reciting word-melody" (Oehlmann, 2000, p. 494). Although indebted to Wagner, Wolf used his musical means very differently, avoiding "grand dramatic gestures – which would have been inappropriate in the Lied's miniature-form" and "refining melodic and harmonic means to a previously unheard-of extent" (Oehlmann, 2000, p. 495).

Although an extreme modernist as a musician, he felt little connection to contemporary poetry and found the quality he looked for primarily in the "poets of the past", (Oehlmann, 2000, p.498). With the exception of Heyse's and Geibel's translations of the Italian and Spanish Songbooks, Wolf only set poetry from writers already dead, showing supreme taste by choosing in particular Goethe, Eichendorff, Heine, Mörike and Keller. Wolf's habit was to repeatedly read a poem out loud before beginning to compose the setting. He also liked to include recitations of poems in recitals so that the audience could appreciate the close relationship between the text and its musical setting.

Wolf found wonderful inspiration in the poetry of the Swabianⁱ writer, translator and reluctant Lutheran pastor Eduard Mörike (1804 – 1875). Though sometimes regarded as a typical *Biedermeier*ⁱⁱ poet there is a cryptic and quirky

quality in many of Mörike's works that seems to defy categorisation (Bergold, 2005). The association between Mörike and Wolf has been called that of an 'odd couple' (Youens, 2000) and we know that Wolf himself suspected that the two may have disliked each other had they actually met (Fischer-Dieskau, 2003). It appears that Wolf was attracted to the somewhat restrained, softly spoken and suggestive quality of Mörike's lyric poetry (Oehlmann, 2000) and Fischer-Dieskau (2003, p.403) suggests "a kind of *Wahlverwandschaft*" (elective affinity) between the two, born from a shared feeling of the "presence of the eternal within the transitory".



Figure 2. shows the 20 years old Eduard Mörike in a drawing by J. G. Schreiner of 1824 (Wikimedia, 2010). We know that Wolf explicitly wanted to include a picture of the young Mörike (presumably the above) in the first volume of his *Mörike Lieder* when it was first published in 1889 but, unable to find one, had to be content with an image of the middle aged poet (Fischer-Dieskau, 2003, p. 196).

A phase of frenzied creativity began with the Lied *Der Tambour* written on Feb 16th 1888, and, feeling blessed and tortured at the same time, Wolf wrote all 53 Mörike Lieder between February and November of that year. These songs encompass all spheres of Mörike's lyric oeuvre: folk-like naivety, personal confession, religious fervour, fantasy, eerie mythology, merriment and humour. The Mörike Lieder, each a gem in its own right, abound in originality and boldness unsurpassed in Wolf's later songs (Oehlmann, 2000). The extent to which Wolf saw himself primarily as the translator and interpreter of Mörike's poems is evidenced by his insistence on having the poet's portrait on the front page of the Lieder volumes when they were published. This being a well

documented fact, it remains “incomprehensible that in later editions Wolf’s wish was ignored and his own image was inserted instead” (Fischer Dieskau, 2003, p.196).

I am now going to take a closer look at “one of the most celebrated examples of the late Lied” (Bottge, 2009, p. 183) *Das verlassene Mägdlein* (The Forsaken Maiden). The poem is “among the great lyrics of the world” (Sams, 1983, p. 73) and inspired a host of composers to musical settings. Fischer Dieskau (2003) claims there to be 96 and Bottge (2009) 130, with the settings of Schumann and Wolf the most renowned ones. Wolf usually followed the general rule not to set texts that had already, in his judgment, been successfully set by another composer and he admired Schumann’s setting of the “*Mägdlein*” greatly. In this case however, he appeared unable not resist. Wolf writes in a letter to his friend Eckstein on March 27th 1888:

On Saturday I wrote, without having intended to do so, a setting of Das verlassene Mägdlein, already set to heavenly music by Schumann. If, despite that, I too composed the same poem, it happened almost against my will; but perhaps for the very reason that I let myself be suddenly taken captive by the magic of this poem, something outstandingly good has resulted, and I think that my composition can stand comparison with Schumann’s (Sams, 1983, p.73).

In Wolf’s setting of *Das verlassene Mägdlein* his indebtedness to his predecessor setting can be seen in the fact that he kept Schumann’s minor alterations of the original text (“schwinden” for “verschwinden” and “darein” for “drein”). The poem that became known as *Das verlassene Mägdlein* was inserted, without a title, in Mörike’s novel *Maler Nolten* (Nolten the Painter), a meticulously crafted *Künstlerroman* (artist-novel) mired in profound sadness, loss, madness, and death (Bottge, 2009). It is sung in the early morning hours by an unnamed girl and inadvertently heard by the protagonist Theobald Nolten who, at the time, is imprisoned, sick and thoroughly miserable. The girl in the novel remains anonymous, thereby allowing both Nolten and the reader to sympathise with her plight, her voice lending expression to every forsaken maiden. The song evokes memories of Nolten’s own lost love and culpable behaviour and he is deeply touched by the experience (Weismann, 1969).

The song’s content, though not directed at him, struck him in his innermost soul, and the melody

stirred incredibly movingly through the silence of the dark morning... For the first time in immemorial times, Theobald (Nolten) felt the relief of unstoppable tears. The voice fell silent, nothing interrupted the stillness of the breaking dawn. The sick man hid his face in the cushions blissfully succumbing to the sweetness of a – yet so bitter – pain (Mörike, 1967, (1832), p. 182-83).

The poem is presented here translated by the author, with reference to Bottge (2009) and some lines have an additional, more literal translation in brackets. Below each translated line is given the transcription into English (in *italics*) used in Edition Peters, one of the most commonly used editions of these songs (Gerhardt (ed.), 1932).

Although presenting outward elements of typical idyllic poetry, the poem progresses in a way that is actually “contrary to the idyllic type” (Heydebrand, 1972, p.233). The poem is masterfully crafted to appear as a young girl’s first-person narration and immediately engages the listener with its intimate and subjective tone. It first resembles a simple *Tagelied* (dawn song)ⁱⁱⁱ as the poem opens with the invocation of the familiar surrounds of a common life (the early morning, the rooster’s crow, the fire within the hearth), setting the scene in simple and direct terms. The term *Sternlein*^{iv} (little stars) suggests the language of fairy tales and fables and creates the impression that the girl is only young. Each stanza follows a cross-rhymed *a-b-a-b* pattern giving an air of dispirited regularity to her daily routine. Both rhymes of the first stanza are imperfect rhymes, “*krähn*” – “*stehn*” and “*verschwinden*” – “*zünden*” creating a somewhat spontaneous, folksong like character. The parallelism in the sentence structure of lines 3 and 4 “*Muß ich am Herde stehn, Muß Feuer zünden*” (Must I stand at the hearth, Must kindle the fire) serves to express the girl’s resignation towards her inescapable duties and hints that she may have more important thoughts occupying her mind. Tacitly, we can immediately sense that this is indeed the voice of a young servant girl (Heydenbrand, 1972; Bottge, 2009).

However in the next verse, the poem leaves the typical “idyllic” pattern as the girl watches the beautiful flames and leaping sparks (lines 5 and 6) but remains strangely untouched by the scene, hinting again that she is really preoccupied with some inner drama. Turning her (and our) eyes inwards she utters, matter-of-factly (line 8) that she is “*in Leid versunken*” (drowned in sorrow).

The reason for her distress seems to come flooding back to her as she “*plötzlich*” (suddenly)

1 Früh, wann die Hähne krähn,	Early, when the roosters crow, <i>When stars are shining yet,</i>
2 Eh' die Sternlein verschwinden ^v ,	Before the little stars disappear, <i>Must I rise and fire make,</i>
3 Muß ich am Herde stehn,	I must stand at the hearth, (Must I stand at the hearth) <i>Out of my bed I get,</i>
4 Muß Feuer zünden.	Must kindle the fire. (Must fire kindle) <i>long before day-break.</i>
5 Schön ist der Flammen Schein,	Beautiful is the glow of the flames, (Beautiful is the flames' glow) <i>Often I sit and stare</i>
6 Es springen die Funken,	The sparks leap about, (There leap the sparks) <i>at sparks gaily shining;</i>
7 Ich schaue so drein ^{vi} ,	I gaze therein, (I gaze thus therein) <i>Heavy my heart with care,</i>
8 In Leid versunken.	Lost in sorrow. (In sorrow drowned) <i>Filled with repining.</i>
9 Plötzlich, da kommt es mir,	Suddenly, it comes to me, (Suddenly there comes it to me) <i>Ah then, it comes to me,</i>
10 Treuloser Knabe,	Unfaithful boy, <i>Thou faithless lover,</i>
11 Daß ich die Nacht von dir	That this night (That I this night of you) <i>that I did dream of thee,</i>
12 Geträumet habe.	I dreamed of you. (Dreamed have) <i>the dream is over.</i>
13 Thräne auf Thräne ^{vii} dann	Tear upon tear then <i>Then do my tears fall fast,</i>
14 Stürzt hernieder,	Streams down, <i>my eyes are blinded;</i>
15 So kommt der Tag heran	Thus the day approaches (Thus approaches the day) <i>the day has dawned at last</i>
16 O ging' er wieder!	Oh would it go away again! <i>would it were ended!</i>

Figure 3. *Das verlassene Mägdelein*, poem by Eduard Mörike. *Hugo Wolf Ausgewählte Lieder*, C.F Peters, Leipzig, Germany, pp. 6, 7

English version by J.v. Bose. *Hugo Wolf Ausgewählte Lieder*, C.F Peters, Leipzig, Germany, pp. 6, 7

Literal translation by the author

remembers that she had been dreaming of her “*treuloser Knabe*” (unfaithful boy) that night (line 9 and 10). The word “unfaithful” explains not only the bitterness of this memory but also the sorrowful reality of the girl’s current situation with her sweetheart having abandoned her. The sudden recollection of this dream brings the sad reality to the surface culminating in a stream of tears – tears however that do not bring relief and the girl’s plea that the dawning day might just go away is a touching expression of her utter helplessness.

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The reason for her distress seems to come flooding back to her as she “*plötzlich*” (suddenly) remembers that she had been dreaming of her “*treuloser Knabe*” (unfaithful boy) that night (line 9 and 10). The word “unfaithful” explains not only

the bitterness of this memory but also the sorrowful reality of the girl’s current situation with her sweetheart having abandoned her. The sudden recollection of this dream brings the sad reality to the surface culminating in a stream of tears – tears however that do not bring relief and the girl’s plea that the dawning day might just go away is a touching expression of her utter helplessness.

Just as Nolten overhears her voice coming from the kitchen below his room, we too eavesdrop on an intensely personal and solitary moment (Bottge, 2009). It is the kind of situation in which one would seek to remain undetected for fear that one’s presence would cause great embarrassment if it was noticed.

In the typical “idyllic romantic lyric”, the girl’s inner drama would have been linked to objects or phenomena of nature (like a tree or the storm) or everyday life which would have appeared altered by this connection (Heydebrand, 1972). In this poem however, there is no adorning or romanticising of the connection between the girl and her surrounds. There is no inner connection between the girl and her surrounds and the picture presented is a raw and direct psychograph of deepest depression and utter helplessness.

It is up to us as readers to judge if her grief is as a result of an ended love affair in which case the depth of her pain might appear somewhat exaggerated and due to the inability of an adolescent to put an experience into perspective. On the other hand we must also consider another scenario. Life as a servant in the 19th century was neither easy nor cheerful with an average of 16 to 18 hour of labour per day (Bottge, 2009). Opportunities to form honourable romantic relationships were very limited. Also the possibility that the girl is actually pregnant would not be an uncommon situation and be very dire for this girl indeed. Young female servants were particularly vulnerable to sexual predation by the men of the household because they were expected to obey every whim and demand of their employers. It is known that boys of privileged families often began their sexual experiences with the family’s maid. However, once pregnant the servant would almost certainly be fired and options for unmarried pregnant working-class girls were few and grim. Once the child was born a servant had limited options: either pay another woman to nurse and raise the child, abandon the infant, take it to a foundling home, let it die or kill it (Bottge, 2009). Both Mörike and Wolf would have been familiar with these harsh realities.

Wolf
Das verlassene Mägdlein
(Mörrike)

1 **Langsam** **pp**

Früh, wann die Häh-ne krähn,
[fry: van di: 'hɛ:ne kre:n]

7 eh' die Sternlein schwinden, muss ich am Her-de stehn, muss Feu-er zün-den.
[ʔe: di: 'stɛrn.lɛ:en 'ʃvɪn.dən [mus 'iç am 'hɛr.da 'ʃte:n] [mus 'fo:y.ɐg 'zʏn.dən]

13 **3** Schön ist der FlammenSchein, es springen die Fun-ken; ich schaue
[ʃɔ:n 'ɪst de:g 'fla.mən 'ʃa:en] [es 'sprɪŋən di: 'fʊŋ.kən] [ɪç 'ʃa:u.ə]

20 so da-rein, in Leid ver-sun-ken.
[zo: 'dra:en] ['ɪn la:et fɛg.zʊŋ.kən]

pp **ppp**

Wolf — Mörike Songs

5 *etwas lebhafter* *etwas ruhiger*

27 Plötz-lich, da kommt es mir, treu-lo-ser Kna-be, dass ich die
 [ˈplɔts.lɪç, da: komt ʔes mi:ç] [ˈtro:v.lo: .zəç ˈkna:bə] [das ʔɪç di:]

6

32 Nacht von dir ge-träu-met ha-be.
 [naxt fɔn di:ç] [gəˈtrɔ:v .met ˈha:bə].

pp *ritard.*

7 *(wie zu Anfang)*

38 Thrä-ne auf Thrä-ne dann stür-zet her-nie-der; so kommt der Tag her-an—
 [ˈtrɛ:nə ʔa:ɔf ˈtrɛ:nə dan] [ˈʃtʏr.ʒət hɛç. ˈni:.dɛç] [zo: komt de:ç ta:k herˈan]

pp

8

44 o ging'er wie-der!
 [ˈo: ɡɪŋ ʔe:ç ˈvi:.dɛç]

ppp

21

Figure 4. Hugo Wolf: Score of Das verlassene Mägdlein (Gerhardt, 1932) and author-inserted IPA transcription.

Although Wolf was unfamiliar with Mörike's traumatic emotional life and its fictionalisation in Maler Nolten, his musical realisation of "*Das verlassene Mägdlein*" connects uncannily with themes surrounding the poem's origins in that his tone is one of "stark darkness" (Bottge, 2009, p. 183). The original key of the song (see *Figure 3*) is A-minor, a key often associated in Wolf's music with an especially wistful mood (Sams, 1983). The rhythmical pattern of crotchet-quaver-quaver (quarter-eighth-eighth) is maintained throughout the whole song, except in the six bar postlude. The four bar introduction with its graphically dragging and drooping figure immediately evokes an atmosphere of "boundless emptiness and complete abandonment" (Lehmann, 1945, p.71), an atmosphere which is reinforced by the voice's pianissimo entry on E⁵ and the subsequent downward leaps of empty fifths.

At the second verse, beginning with "*Schön ist der Flammen Schein*" (Beautiful is the glow of the flames) the music turns perceptibly warmer and brighter with major chords, a rising melody and a more lively vocal rhythm suggesting sparks flying, underlined by a short crescendo. But the comfort is brief and does not really reach the girl who realises that warmth and beauty are not for her. This is underlined by the abrupt harmonic shift progressing to the distant region of A-flat major and the sudden pp (even ppp in the piano part) in bars 19 and 20. The chord progressions in bars 22 and 23 are parallel to those in bars 30 and 31 suggesting that the girl's dream is already starting to rise to the surface of her consciousness from bar 22. The wandering, ambiguous harmonies at this point have been called "vagrant chords" after a term coined by Schoenberg (1954).

The third verse, marked *etwas lebhafter* (a bit more lively) bursts out in the "*Plötzlich, da kommt es mir*" (suddenly it comes to me), with new harmonies and highlights the desperation with *crescendi-decrescendi* in bars 27/28 and 29/30, leading to the only moments of *forte* in the song. As the poetry moves to the reminiscence of the night's bittersweet dream, the tempo becomes immediately *etwas ruhiger* (a bit calmer), the voice lifts and lightens, lingering ever so slightly on the word "*geträumet*" (dreamed) and a "sudden tenderness invades the song" (Sams, 1983, p.74). The piano motif repeats the questioning and hopefulness but falters after just three bars.

The bleak music of dawn heard in the very beginning is repeated in bar 38 as the flood gates of her tears open "*Träne auf Träne dann*" (tear after

tear). As she pleads for the day to go away (bar 45) the piano stops its movement for the only time in the piece. The piano postlude reiterates the wistful atmosphere and, ending on a hollow fifth, leaves no doubt that the girl's sorrow is unresolved.

In order to do justice to the song, the singer needs to find a way to relate to the girl's persona so that the grief, sorrow and passion conveyed in the song may find expression in the singer's voice. The singer should begin by seeking out a good word by word translation which retains the word order as well as transcription which recreates an English equivalent of the poem in terms of grace, metre and possibly rhyme. Referring simply to the English text found in one's copy of the song does suffice is evident when the reader considers the rather striking discrepancies between the English rendition of the poem and the translation given above. Particular attention needs to be paid to the words (and word order) at key passages. For instance, an awareness that "*Schön*" in bar 15 means "beautiful", "*Leid*" in bar 21 means "pain" and "*Plötzlich*" in bar 27 means "suddenly" is indispensable if the singer endeavours to give her voice the right tone colour in these passages. The piano is a valuable guide to a good grasp of the song if the singer is willing to listen and capable of hearing and reacting to every harmonic, dynamic and rhythmic nuance. In this masterpiece, Wolf has found as close a "fusion of contrasting moods and scenes in Mörike's lyric" as are "simultaneously translatable into musical terms" (Sams, 1983, p.73).

The following annotation for performance of *Das verlassene Mägdlein* is offered for consideration. The respective passages have been marked by numbers in the score.

Listen to the opening piano figure and let it set the scene for you, a pale, grief-stricken girl. You are lonely and cold, starting yet another monotonous day.

The pianissimo entrance of the voice on the high E with the fricative "F" of "*Früh*" portrays great emotional strain. (Practise the phrase starting it first on the "ü" then placing the "F" and rolled "r" on pitch before it. Sing the "Fr" slightly before the beat so that the "ü" starts right on the downbeat in bar 5). The first four phrases should be sung in an empty pianissimo, lightly coloured, glassy, almost without expression until "*Feuer zünden*"

Feel how warmth and light come into the music. Sing the word "*Schön*" (using the lips to

form a good “ö” [ø]) in the next phrase *piano* but informed by its meaning (“beautiful”). See the beautiful flames before your inner eye (taking good care to make the double “m” in “Flammen” audible). Know that “*springen*” means “to leap” as you sing the word. (Practise the transition from the “s”[s] of “*Es*” to the “sh” [ʃ] of “*springen*”. Pushing your lips forward when moving from the “s” to “sh” helps and results almost automatically in “sh”). Observe the light crescendo – decrescendo of “*Es springen die Funken*” and sing the triplet distinctly. Be aware that the life that seems to awaken in the leaping flames is mainly in the painting of the music – your voice still keeps the quality of great emptiness.

Feel the shift in harmony and observe the sudden pianissimo of “*Ich schaue so darein*” as the realization of your deep sadness descends upon you and you recount this self-observation with the same detachment with which you beheld the flames. Be aware that the word on the high E-flat “*Leid*” means “pain, sorrow”. Retain a self-absorbed facial expression through the interlude until

Suddenly, as if awakening, you become animated. Sing with passion “*Plötzlich da kommt es mir, treuloser Knabe*”, making good use of the consonants, observing the surging *crescendi* – *decrescendi* and singing the syncopation on “*treuloser*” with poignancy. Become immediately calmer to sing in the softest *piano* “*dass ich die Nacht von dir geträumet habe*”. Sing this phrase with an expression of painful happiness, as if you relive the dream which brought back to you, so deceptively, the lost ecstasy of love. Sing this phrase in one breath if possible. (When singing “*geträumet*” (dreamed), take care that, after a clearly enunciated “t-r” you enter smoothly into the “äu” [ɔ:y]). Hold “*geträumet*” a little, with subtlety and the feeling that only a dream can bring you happiness.

Listen to the following three bars, as your dream fades into the cold, grey light of the dawn.

Sing now “*Träne auf Träne dann*” with the palest pianissimo (and as with the first phrase of the song, start the “T-r” of “*Träne*” a split second before the down beat). Be aware of the contrast of the strong and dramatic word “*stürzet*” and the quiet musical line at this passage which gives the greatest possibility for expression. (Sing crisp consonants and a darkly coloured “ü” [y]).

Sing the last “*O ging er wieder*” without sentimentality but in hopeless resignation. Watch motionless as the grey day closes around you like

the walls of a prison, from which there is no escape (Lehmann, 1945; Sams, 1883; Fischer-Dieskau, 1985; Bottge, 2009).

A convincing rendition of this Lied calls for more than considerable vocal ability, musical understanding, diligent pronunciation and thoughtful engagement with the translation of the German lyrics. The singer needs to fill each sound with meaning, to find a personal experience, an image or a feeling to colour each word as it is sung. As Walter Berry, the great Austrian baritone (and the author’s teacher and mentor) used to say “It is quite simple really - all you have to do is see each word as you sing it” (personal communication, 1996).

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BIOGRAPHY

Julia began her voice training in her hometown Munich/Germany under Kammersänger Friedrich Lenz and continued her studies in Vienna/Austria with, amongst others, Prof KS Hilde Rössel-Majdan, Prof Müller-Preis and Prof KS Walter Berry, finishing with the Bühnenreifepfung Oper (Final Stage Examination Opera) and has appeared in Opera, Oratorio and Lieder-Recitals across Europe and Australia. Upon moving to Australia, Julia has completed a MMusStud (Vocal Pedagogy) at the Sydney Conservatorium of Music and a PhD at Monash University, researching “Gesture and Body-Movement as Teaching and Learning Tools in Western Classical Singing”. Julia is a board member of the Australian National Association of Teachers of Singing (ANATS), a committee member of ANATS Victoria and a committee member the Lieder Society of Victoria. She has published in high ranking journals and regularly presents at national and international conferences. Julia currently teaches voice and vocal pedagogy at the Melbourne Conservatorium of Music (The University of Melbourne) as well as in her private studio. www.julianafisi.com.

ENDNOTES

ⁱ Swabia is a region in South East Germany and was at the time part of the Kingdom of Württemberg (1806 – 1918)

ⁱⁱ The term refers to works in the fields of literature, music, the visual arts and interior design in the parts of Europe which belonged to the “German Confederation” (*Deutscher Bund*). The *Biedermeier* period encompasses the time between the years 1815, the year in which the “Congress of Vienna” (*Wiener Kongress*) marked the end of the Napoleonic Wars and 1848, the year of the European Revolutions and was fraught with political tension and rigid censorship. The lack of outward freedom produced an art characterized by an idealization of the idyllic and a somewhat forced ignorance of the outside world. Although the term *Biedermeier* was originally used ironically (*bieder* meaning upright, petty bourgeois) it has come to symbolize a kind of “typical German” Romanticism (Bernhard, 1983).

ⁱⁱⁱ A particular form of medieval German language lyric song named after the first light of day announcing the separation of two lovers.

^{iv} In German, the diminutive syllables “-lein” or “-chen” express that something is small in size and/or well loved

^v Schumann as well as Wolf changed this to “schwinden”

^{vi} Schumann as well as Wolf changed this to “darein”

^{vii} Many words with aspirated “T” were spelled with “Th” in the 19th century but were changed to simple “T” after 1901 (II Orthographic Conference in Berlin); we can see in the music score that “Thräne” has become Träne”

^{viii} A particular form of medieval German language lyric song named after the first light of day announcing the separation of two lovers

^{ix} In German, the diminutive syllables “-lein” or “-chen” express that something is small in size and/or well loved

YOUR VOICE AT ITS BEST: enhancement of the healthy voice, help for the troubled voice. By David Blair McClosky with members of the McClosky Institute of Voice. Long Grove, Illinois: Waveland Press, Inc., 2011. 104pp. US\$ \$16.95 (pbk.). ISBN-13: 978-1577667056

David Blair McClosky (1902 – 1988) was born in Oswego, New York. He graduated from the New England Conservatory of Music in 1925 and later studied in Berlin and Milan. McClosky had a career in opera and oratorio performance and dedicated over 50 years to studying the treatment of voice disorders in singers and speakers. The McClosky approach to the treatment of laryngeal disorders led to the publication of his first book, *Your Voice At Its Best* (1959). With his wife, Barbara Hennerger, he published a second book *Voice in Song and Speech* (1984). The current, and 5th edition of *Your Voice at its Best* is the combination of these books which have been updated and re-issued.

The focus and purpose of this book is to give the singer tangible ways to improve his or her vocal production. It explains that McClosky's approach to training voices is the careful building of the voice "from the foundation up". In writing his books, McClosky's intention was to provide a simple and clear explanation of the processes he believed were integral to the teaching of efficient and reliable vocal technique which would result in long lasting, healthy vocal sound production; he claims that this method can be applied by teachers, students, professional speakers and singers alike.

McClosky opens the book by discussing the importance of relaxation, breath management and posture. All of the information in the book in regard to alignment and breath management merges comfortably with other foundational work such as Alexander Technique and Feldenkrais. The book goes on to cover the subjects such as vocal health and vocal disorders. To help readers understand voice production and the fundamentals of the McClosky Method, particular attention is paid to anatomy and physiology of the vocal mechanism. This includes an appendix of simple, clearly labelled diagrams.

In *Your Voice at its Best*, McClosky suggests that the key to the success of the method is based on six exercises of relaxation. The phrase "keep your hands busy" (KYHB). KYHB is also prominent throughout the book. KYHB is a hands-on approach to recognise and release muscle tension. All six exercises are accompanied by labelled illustrations to assist the reader to learn the massage techniques. They are to be done progressively, one through to six and are to be

performed repetitively, gently and deliberately without forcing. The six areas of relaxation are:

1. The Muscles of the Face
2. The Tongue
3. The Swallowing (Suprahyoid) Muscles
4. The Mandible (jaw)
5. The Larynx
6. The Neck and Head

Chapter 3 discusses phonation and includes simple exercises suitable for the beginning student. Chapter 4 addresses turning speech into song and offers exercises to add to the teacher's tool kit for those students who need work in this area. As the McClosky Method is a 'gradual' building of the voice, all exercises must be accomplished before continuing with the program in order to develop the full potential of the voice.

Once competent, the vocalist is instructed to move on to Chapter 5 which covers articulation of consonants in detail. I found the exercises in this chapter most interesting. For example -

"A coward weeps and wails with woe when his wiles are thwarted" designed to:

- help those slurring over consonants and failing to utilise important articulation which assists in vocal communication and expression
- assist singers who can communicate through emotion but cannot be understood because of careless enunciation.

The chapter covers the position of the articulators, vibration of the vocal folds and duration of the consonants.

McClosky's work continues through discussion of resonance and colour, expressiveness and the relationship of these to emotion. The exercises gradually increase in difficulty and all exercises consistently relate back to the six relaxation points which form the foundation of the program.

The McClosky Technique requires the singer to develop an awareness of his or her entire body, particularly the condition of the muscles which directly affect the voice with an emphasis on developing awareness of the quality of phonation. This is a hands-on approach to singing, which helps the vocalist to recognise and release muscle tension. The exercises are short, simple and easy to apply within each lesson and can be expanded and developed from week to week.

B a s h a m

I found this book extremely useful. Although many exercises and ideas are similar to those vocal teachers already know and love, this book offers different approaches that may appeal to teachers with the student who doesn't respond

well to the old tried and true methods. It is a very structured and thorough program.

Sandra Basham

Queensland Conservatorium of Music

The Ultimate Vocal Voyage: The definitive method for unleashing the rock, pop or soul singer within you. By Daniel Zangger-Borch. Hal Leonard Publishing Corporation. 165pp. US\$ 19.99 (pbk.) ISBN-13: 978-9185575190

Daniel Zangger-Borch is the first Swedish voice specialist to scientifically study the functioning of the rock, pop and soul voice. In the introduction, it is claimed that the author not only draws on his own vast experience as a professional singer and educator but has collaborated with prominent vocal scientists to develop a “deceptively simple series of exercises” that he guarantees will help you achieve your full vocal potential.

One of the inspirations for the book, is based on the results of the author’s own research and his realisation of how little we know about the intricate details of the voice. Zangger-Borch takes a holistic approach to voice; that is he takes the view that the body and soul are intertwined. When the soul is healthy the body is free of tension and every emotional state is reflected by the voice (e.g., loud voice often represent anger).

The book discusses a range of interesting topics from the technical and fundamental aspects of voice, voice training, vocal health to artistry and performance. A CD containing exercises sung by a female voice and by Zangger-Borch accompanies the book. I believe some of the exercises are not for the faint hearted and require a certain degree of skill level, coordination and balancing to achieve the required sound or result. The work is difficult for a beginner student especially the complex intervals and progressions. I believe that it is fair to say there could be a real vocal health threat for the student in doing these exercises without the supervision or guidance of a teacher (particularly for a beginner student). Some of the voice modelling sounds problematic and could lead to vocal abuse for a student trying to mimic specific effects used in the demonstrations; this is especially so with the examples of growling and distortion.

This book has no shortage of ideas however, much of the information regarding voice function,

voice science, and vocal health has been written about previously in many other books. I did however, find it refreshing to read the information presented in a more basic, less scientific language, making it an easy read. From a critical point of view, there were many instances in the book where the use of technical terminologies such as the descriptions of registers as only chest and falsetto in both men and women and the term “equalizing” when discussing balancing registers, would be questioned by other pedagogues.

The book does contain good advice to the emerging performer. There are many great ideas for a student making the transition to the professional world as the book deals with topics such as performance anxiety, stage performance and connecting emotionally in a performance etc. Other useful suggestions and information include the need to develop technique, strengthen muscles, ligaments and reflexes in exact the same way a professional athlete would, and advice that technique should be practised at rehearsal so it is consolidated by the time of performance allowing the singer to focus on expression and audience engagement.

However, whilst reading, I was questioning the target market and considering who I would recommend this book to - was this a suitable book for a singing voice teacher, an emerging performer or a voice student in the genres of pop, rock or soul? My own personal expectation of this book was quite high, and I read it anticipating I would take ideas from it directly to my studio. I do not believe it delivered the guarantee “to assist the singer reach their full potential” nor were the methods “deceptively simple”.

Marisa Lee

Queensland Conservatorium of Music

Singing With Your Whole Self. By Samuel H. Nelson & Elizabeth Blades-Zeller. Scarecrow Press, 2001. 200pp. US \$38.70 (pbk.). ISBN-13: 978-0810840492

The Feldenkrais Method is an advanced sensory motor learning system which develops kinaesthetic awareness in the human body and helps to provide options, and therefore, choice of movements which are effortless. This text is co-authored by a Feldenkrais practitioner with 13 years of teaching Feldenkrais Method in a music school, and an experienced voice teacher with a Doctor of Musical Arts and appointed as associate professor of voice, coordinator of the voice area and director of opera at a Heidelberg College in Ohio.

The book is well written and accessible for the new comer to the Feldenkrais Method. The concept of free movement is clearly explained and the process of discovery is assisted with explanations of practical movements to try for oneself. An added bonus of the text is that there are some surprise moments of humour! Since singing involves the whole body it is refreshing to have explanation as to the response of the whole body to tension and control, and then to have this extrapolated to singing. Most chapters contain detailed instructions for the teacher/student to experience the specific exercises that each topic has to offer. Explanation of the connection to and influence on the voice is included.

Each chapter is introduced with compelling reasons for the occurrence of voice issues and offer explanations such as: how muscles work, description of the base of support, what intentionality and effort mean and more. The book's chapters reveal what we take for granted in the way that we move our bodies, and points out that we would truly consider the 'how' of the way

we move and coordinate the body. As the book progresses it is quite shocking to discover the importance of understanding our physiology in order to function optimally as speakers and singers.

Historical beliefs and assumptions are given a thorough shake up as many myths are debunked by the principles and discoveries of the Feldenkrais Method, (e.g., standing with feet a shoulder width apart is a myth for a more stabilised stance). The reader may discover more efficient options in the Awareness Through Movement lessons which are incorporated throughout the book.

Singing With Your Whole Self is well thought-out and clearly presented. The book is written in a logical progression from dealing with muscle tension, control, skeletal set up and stability to breathing and significant upper body functionality.

It is an excellent tool for singing voice teachers who are seeking help for themselves or their students to find ease, efficiency and freedom in singing. In trialling the Awareness Through Movement lessons for myself I was very pleased with the resulting freedom and increase in kinaesthetic awareness I discovered. I confidently recommend this book for use in the singing voice studio.

Liz Logan

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Voice Work: Art and Science in Changing Voices. By Christina Shewell, Wiley-Blackwell, forewords by Dawn French, Lesley Mathison, Mark Meylan and Patsy Rodenburg. 538pp. West Sussex, UK: Wiley-Blackwell, 2009. AUD \$94.95 (pbk.). ISBN: 978-0-470-01992-4

Singing teachers are always looking for inspirational information that will resonate with their students. We constantly create, mould and shape old pedagogical ideas and merge them with new research in an effort to unravel the mysteries of singing. Christina Shewell offers such inspiration.

Voice Work: Art and Science in Changing Voices is a comprehensive reference guide focusing our thinking about speech therapy/pathology alongside singing and spoken voice training practice. Shewell's multidisciplinary approach successfully merges voice science and singing voice pedagogy in this comprehensive guide making this text worthy of the international acclaim it has received.

Shewell's extensive career includes practice as a registered voice teacher and a registered speech and language therapist specializing in training for professional singers and actors. She invites the reader to tap into the wealth of knowledge she has gleaned from her years of study in neuroscience, linguistics, and clinical speech therapy and pathology. Shewell describes the book as "written along the lines of *Voice Work Continuum* for voice healing to voice extension" – that is, the continuum of voice work needed to address the broad spectrum of singers from "normal voice to abnormal voice". She uses many case studies to support her 'Voice Work Continuum' pedagogy suggesting a 'how to', strategic approach voice work from alignment through to sound production.

Voice Work: Art and Science of Changing Voices includes diagrams and explanations of the vocal 'instrument' offering a foundation of knowledge for the reader. Shewell develops a comprehensive guidance for the singing voice teacher with topics such as, 'Hearing Voices' and 'Seeing Voices', referring to these as 'foundational' to successful voice building.

The book is divided into two sections; the first half of the book is theory based, with the second half based in extremely practical exercises that address general vocal health while offering remediation for voice abnormalities. Her simple and methodical explanations of voice building, informed by the latest voice science, encourages the reader to develop and expand their thinking about vocal pedagogy.

Of particular interest to singing teachers is the order in which Shewell believes the voice should be built. She suggests starting with 'Body work foundation' moving on to 'Breath Work', 'Channel Work' and 'Phonation Work'. I have found this methodology extremely effective in my private studio teaching practice.

Although Shewell has a voice science and speech pathology background, the science-based terminology is explained and the content easily accessible. Every chapter is supported with case studies, diagrams and useful vocal exercises. Her inclusion of case studies brings a broad perspective to the text and in so doing she successfully merges art and science.

Voice Work: Art and Science in changing voices explores the science of voice but also challenges the heart of the singing teacher and voice practitioner to nurture curiosity and imagination within their students. With over 170 pages of exercises and techniques, Shewell offers very clear and direct steps to the singing teacher or voice practitioner with experience in vocal pedagogy. This book is written for singing teachers, and I would not recommend it as reading for singing students unless under the guidance of the teacher.

Nikki deBruyn

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Australian Voice

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