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Final MA Assignment BMPF7013

Project Title:

A study into how Fach, - and age-appropriate repertoire supports vocal longevity in classically trained female voices

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Background

Joan Sutherland spoke two decades ago about young aspiring opera singers, the lack of vocal technique and about the haste with which the young singers are rushing into professional engagements (Sutherland, 2002). McKinney explains that each singer's Fach and subclassification is determined by their vocal range, tessitura, timbre and transition points (or passaggi), that these indicate the repertoire direction the singer should seek in the course of her or his career. He also refers to Vennard's two rules of voice classification: "Do not be in a hurry" and "Assume that a voice is a medium classification until it proves otherwise".

His thoughts on singing students getting caught up in trends in order to secure better professional opportunities and forcing themselves to be something that they are not, are highly relevant in my investigation (McKinney, 2005, pp. 107-109). McKinney continues to highlight the dangers of misclassification because it "can rob a voice of tonal beauty and freedom of production, can cause endless frustration and disappointment, can shorten a singing career, and can cause vocal damage of varying degrees of performance" (McKinney, 2005, p. 110). McKinney goes on to refer to Morton Cooper who found "a strong correlation between the vocal image an individual adopts and the creation and continuation of most functional and organic voice disorders" (McKinney, 2005, p. 113). Also Doscher writes about vocal fatigue and the risks on the lifespan of a voice when singing with too much heavy mechanism in the early stages of vocal training (Doscher B. , 1993, p. 175).

Western classical music has historically held a position of dominance and even prestige in the educational realm (Bates, 2018 p.5). In some parts of the world the opera community seems especially stuck in the reverence of particular genres of opera and thus limited by its conspicuous view that certain operas of certain composers are of higher value or eminence for an opera singer. My many years spent working in the Balkan region has certainly demonstrated this to be the case and has led me to question whether this pushes singers to manipulate their voice because they think it more appealing and conducive for reaching such distinction, and at what cost to the health and longevity of their voice? My supposition, research and teaching strategy were considerably advanced following a research related workshop exploring resonance with classically trained young female singers from the region. It not only broadened my understanding and brought about new research questions but elicited immediate conversation and active responses among the participants as well as encouraged this particular group of singers toward seeking deeper knowledge about their instrument.

Why do we need improved understanding of Fach, - and age-appropriate repertoire in Western classical singing?

Despite existing comprehensive voice research, essentially based on the classically trained voice (Erickson, 2012 p.7) there continues to be a disconnect between the research and the object of the research; the young aspiring vocal professional does not seek first-hand knowledge in vocal pedagogy (Braun-Janzen and Zeine, 2009 p.470), presumably due to the dauntingly complex and vast subject matter, but naturally relies on third party instructors – us, the teachers. Furthermore, according to Schloneger et al. there is an abundance of research on the vibratory, acoustic, and perceived effects of vocal loading but next to no data pinpointing when particular voice in-efficiencies may first develop. They argued that both teachers and students would benefit from published, scientific standards of voice use for young singers with developing and stabilizing vocal instruments (Schloneger and Hunter, 2017) but, to the best of my knowledge, there is still a gap in published guidance about the importance of vocal Fach, - and age-appropriate repertoire for the aspiring vocal professional in the opera industry.

During the course of my studies to date I have come across several studies relating to my chosen subject, indicating strongly the need for further research. These include:

- The heavy vocal demands imposed on voice students during their college/university studies(Sapir, 1993; Schloneger, 2011; Schloneger and Hunter, 2017)
- Understanding voice classification and the timing of it (Berndtsson and Sundberg, 1995; McKinney, 2005; Frič and Pavlechová, 2020) (Vennard, 1967 Revised Edition)
- The impact of aging on the evolving singing voice (Sataloff, 2000a, 2000b; Brunssen, 2018c)

The intended impact

Over the course of my professional practice, I have summarised observations within the context and location of my work. To date these include:

- General lack of published guidance of age-, and Fach-appropriate repertoire
- Strong academic environment pressure of 'fitting into a Fach' as early as possible
- Cultural and academic reverence and predominant representation of dramatic repertoire typically regardless of voice Fach or age
- Incorrect or untimely work material
- Results in flawed vocal technique
- Often manipulated or "manufactured" vocal sound attempting to emulate an idol, to create a larger sound, or striving for a more pleasing timbre
- Early development vocal strain
- Resulting in possible long term vocal damage
- Mental performance pressure from superiors and peers

The following aims and objectives have been identified for this research project:

- To complete an investigation of the physiological aging of the female voice and what repertoire is optimal for the classically trained female voice with supporting evidence why
- To create a base of knowledge of repertoire paths which would be conducive to easing earlier the psychological pressure of “employability”
- To establish the foundation upon which such a guide of repertoire could be built

The outlined intension

One of my guiding reasonings while carrying out my research has been the idea by Pollard outlining the seven characteristics of reflective teaching (Pollard, 2005)¹. These characteristics reflect the responsibility and principals with which I must approach the research and the students in my ongoing work. Reflecting on the implications of my findings on my teaching practice will undoubtedly have a multilateral impact on how I can meet the needs of my student better.

In order to identify working solutions for the problem I must start by answering specific introductory questions. My study relates to classically trained female voices; therefore, I shall start my investigation with the following questions:

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1. “Reflective teaching implies and active concern with aims and consequences, as well as means and technical efficiency.”
2. “Reflective teaching is applied in a cyclical or spiralling process, in which teachers monitor, evaluate and revise their own practice continuously.”
3. “Reflective teaching requires competence in methods of evidence-based classroom enquiry, to support the progressive development of higher standards of teaching.”
4. “Reflective teaching requires attitudes of open-mindedness, responsibility and wholeheartedness.”
5. “Reflective teaching is based on teacher judgement, informed by evidence-based enquiry and insights from other research.”
6. “Reflective teaching, professional learning and personal fulfillment are enhanced by dialog with colleagues.”
7. “Reflective teaching enables teachers to creatively mediate externally developed frameworks for teaching and learning.”

- How does the female voice naturally age?
- How does the physiological aging of the voice impact Fach?
- How would long-term vocal over-exertion impact the aging of the voice?
- What are the physiological facts about voice classification? (Differences in vocal cords etc)
- How do the following impact the voice long-term?
 1. Singing in the wrong tessitura
 2. Singing the wrong “style Fach” (ex. dramatic instead of lyric)
- What does injury look like sustained from such long-term practice?
- Could such injury be irreversible?

In order to answer these questions, I will have to take the following actions:

- To consolidate the relevant available pedagogical literary information about how physiologically a voice ages
- To consult with an expert pedagogue colleague working with aspiring female opera singers to gain a view of how they utilise their skills/knowledge within their teaching
- To consult with an expert otolaryngologist and speech-language pathologist regarding their knowledge of voice disorders
- To gain insight from the perspective of a young aspiring female opera singer
- To gain insight from the perspective mature established professional female opera singer
- To use motor learning theory and other course models for proposing repertoire with supporting evidence that is accessible and useable for female singers in classical training

The methodology I have chosen is an action based and combined methods strategy of literary review exploring existing research together with interviews/questionnaires and consultations with four anticipated select sources of information:

- 1) an otolaryngologists and speech-language pathologist,
- 2) an expert pedagogue colleague,
- 3) a female classically trained singer in her 20s and early stages of vocal training
- 4) a female classically trained singer in her 40s or 50s with an established and mature vocal technique.

Considering these various approaches I find it of interest that Hart states that scholarship is acquired and a key element of good scholarship is integration. This entails making connections between ideas, theories and experiences; about applying a method or methodology from one area to another. He highlights that identifying various techniques available provide tools for systematic and rigorous analysis of subject literature (Hart, 2003, pp. 2-8).

As the purpose of research is to predict results, test a theory or find a strength of relationships between variables or a cause-and-effect relationship, my approach fits within the paradigm of constructivism. However, it is important to place emphasis on scientific objectivity and I will make conclusions based on expert opinions and focus group feedback as well as existing research. According to Crotty: *"No matter how faithfully the scientist adheres to scientific method research, research outcomes are neither totally objective, nor unquestionably certain"* (Crotty, 1998, pp. 40).

Methods of my research project:

1) Focus Group

The method of data collection for the 'experts' will be in the form of focus group that will be recorded and transcribed.

2) Semi-structured Interviews

The 'singers' data will either be in the form of semi-structured interviews, which will be recorded and transcribed, or questionnaires which will be emailed to the participants.

3) Literary review

My investigation will build on existing literature about voice aging, classification, vocal hygiene and health, as well as my existing knowledge of the opera repertoire and work within opera companies. I will also be using sources such as peer-reviewed journals and works by esteemed vocal pedagogues as well as interviews in publications with established industry professionals with relevant insight on the subject. This data will inform and complement the content and focus of the interviews and questionnaires of the investigation.

Time-plan

The time given for the completion of this independent study is approximately 7 months or 29 weeks, starting on the 18th of March 2022 and ending on the 7th of October 2022. Please see chart below for proposed timeline.

	March/April 2022	May/June 2022	July/Aug 2022	Sept/Oct 2022
Preparation				
Agree on research topic with tutor	■			
Determine aims and objectives		■		
Invite focus group participants				
Write project proposal				
Research				
Literature Review		■	■	
Determine common themes and code initial data		■	■	
Reflective journal and observations		■	■	
Find primary source material according to theme		■	■	
Draft curriculum			■	
Focus group sessions to take place			■	
Report				
Write introduction and methodology sections		■	■	
Analyse and code data from focus group sessions			■	■
Write results and report findings				■
Draft report deadline				■
Final report deadline				■

Ethical considerations

No significant risks to project participants are anticipated considering WIWBL or ESRC ethical guidelines. Although the benefits of being an insider-researcher are taken into consideration, I estimate that the fact that I will have no or minimum prior relationship to the mentioned industry professionals or otherwise participants, such potential issues can be avoided. All notes and observations will be recorded in the form of a Hermeneutic research journal, along with reflections of the focus group sessions. I will be recording some of the interviews and transcribing the data so there will be the risk of some personal data disclosed, however, I will mitigate this risk by ensuring I use a code for all the participants and having all data stored on my password secured computer of which only I have access. All data will be destroyed at the end of the project.

My situatedness and context lie firmly within my work-based research, as the purpose of vocal pedagogy is also to interpret and understand a singer's experiences. Obtaining vital information from the select focus groups will be paramount in forming my final conclusions. Costley et al. further summarize my view perfectly with the quotes *"As an insider, you are in a unique position to study a particular issue in depth and with special knowledge about that issue"* and *"the unique perspective of the researcher inevitably makes a difference to the research"* (Costley, Elliott, & Gibbs, 2010, p. 27).

Personal learning outcomes

- To increase my own proficiency in voice pedagogy for young aspiring female opera singers with a view to becoming 'expert' and able to deliver structured guidance toward a long-term career in opera
- To develop my own knowledge and skills not only as a pedagogue but also more broadly as proficient in the field of opera and able to provide guidance in programs of repertoire

The motivation for undertaking my studies was the fact that I was not sufficiently equipped in the knowledge of vocal pedagogy to help my students understand and address their actions which can have long-term harmful effects on their singing and careers. I am confident that this project and my research to date will lead me to even more specific topics of further research in my search to understand the young opera voice. It will directly impact my teaching as it will increase confidence in my work and allow me to develop my knowledge and skills for the benefit of my students.

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11th of May, 2022

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A study into how Fach, - and age-appropriate repertoire supports vocal longevity in classically trained female voices

Introduction

The aim of this study is to investigate and understand how Fach, - and age-appropriate repertoire supports vocal longevity in classically trained female voices. When working with young opera singers who are aspiring to make it their professional career, it is vital that the teacher is able to give the appropriate guidance and to explain what is happening in the student's instrument in order to find practical methods which the student will eventually be able to implement confidently independently (Chapman, 2017, p. 171; Brunssen, 2018c, p. 157). My work place is mainly situated in the Balkan region where vocal pedagogy is generally not offered as a course in higher education. Young opera singers are taught by more or less experienced opera singers. My many years spent working in this region have also demonstrated that there is a reverence of the heavier opera repertoire of the 19th century often causing young singers to push their immature voices to perform beyond their natural capabilities. In my studies to date I have sought to understand the workings of these young voices and in my professional view there is a lack in research which outlines why singing repertoire which is not vocally timely or suitable can be damaging to the natural development of a young classically trained voice.

In this research project I will seek expert opinions on the physiological development as well as training of the female voice, and insights from female singers in their 20s, 30s and 50s. I will then compare and corroborate this data with an identified extensive literary review.

My intention with my previous studies was to uncover and highlight key themes within the literature, critically analyse and compare the textual content of the themes around the development of the classically trained female voice and draw conclusions that would help form the basis of appropriate guidance relating to Fach, - and age-appropriate repertoire. This has been a productive exercise that has led to the beginnings of a draft for a repertoire guidance framework. My plan for this assignment is to consolidate my findings and expand upon them in order to provide clear and structured justification for the further development of the guide of repertoire aimed for the aspiring female opera singer complete with supporting pedagogical explanations and evidence. Whilst serving as a guide of repertoire, this additional compilation of pedagogical evidence will provide education about vocal physiology. Decades of research supports the consensus that education about vocal physiology is very much needed among singing students (Sapir, 1993, p. 69-74; Broaddus-Lawrence *et al.*, 2000, p. 59-60; Tepe *et al.*, 2002, p. 244-250; Braun-Janzen and Zeine, 2009, p. 470-471; Phyland *et al.*, 2013, p. 390.e31-32; Donahue *et al.*, 2014, p. 321; Kwak *et al.*, 2014, p. 195; Schloneger and Hunter, 2017, p. 21; Sielska-Badurek *et al.*, 2017, p. 122.e17).

The findings of this study will not only enable considerable advancement in my professional practice and be of benefit to my students, but I will also be able to share my knowledge with my peers in my work community. Most importantly from a personal perspective, I will have gained the knowledge to take my research to the next level of further higher education whilst working toward the complete guide of vocal repertoire and compendium of pedagogical data.

To summarise; my aims and objectives for this project are:

Aims:

- To take **three viewpoints** for the purposes of this research project as follow: **group of experts** (voice pedagogue colleagues working with classically trained female singers and an otolaryngologists/speech-language pathologists), **female singers** (young/early stage, mid-stage aspiring or professional and established mature professional), **investigative literary review** presenting physiological aspects of the aging process of the voice together with evidence about typical types of vocal trauma caused by vocal fatigue or misuse.
- To widen my knowledge further and to fill gaps in my previous literary reviews about the physiological development of the classically trained female voice.
- To draw upon the knowledge and experience of this international focus group consisting of relevant industry and education professionals and singing students.

Objectives:

- To process the data obtained from my triangulation method.
- To consolidate my findings in order to provide clear and structured justification for the further development of a guide of repertoire and compendium of pedagogical data.
- To analyse and reflect upon the feedback of my focus group and warrant this data into the underpinnings of a future research project linking opera repertoire with pedagogical data.

Literature Review

Literature Review Methodology

When considering literature review, the work by Pickering et al. (Pickering and Byrne, 2014) as well as the related webinar by Griffith University (Griffith University, 2013) on semi-systematic literature review, supported me with the concept and structure that I needed. In order to achieve a comprehensive literary review and to consolidate the relevant available pedagogical information about how physiologically a voice ages I outlined the following steps according to my study materials.

- a) Define topic
- b) Keep checking my research questions
- c) Keywords (based on the research questions)
- d) My database searches and sources
- e) Inclusion criteria
- f) Management of included sources and database

By having followed these steps, I hope to have mapped where there was available knowledge about my chosen theme and its subthemes and where there was not, what methods had been used to acquire the knowledge, what was relevant information and to have included it into this study, and finally, how to have implemented this knowledge in the analysis of my findings with the focus groups. It is the aspect of scientific literature, combined with the pedagogical, that proposes an opportunity for extension to application in my professional practice. I have found much recent research that will impact how I will approach my teaching practice from now on and, although challenging due to the sheer amount of information and lack of time due to other commitments, keeping abreast of developments in this field has become a prerequisite.

Denney and Tewksbury express my thoughts perfectly with the statement “*Scientific knowledge (about all topics) accumulates rapidly, and keeping up on any topic can be a challenge*” (Denney & Tewksbury, 2013, p. 219). At the time of writing, I increased considerably my list of relevant online articles and professional journals. The related material appears in Journal of Singing, Journal of Voice, Journal of Logopedics Phoniatrics Vocology, Journal of the Acoustical Society of America. Although I intended to assess the content and extent of the subject in published books, it is possible that they relate more to the historical overview and that journal articles formed the dominant source base of the literary review part of my investigation due to the faster turnover of current and updated information they offer.

Summary of previous research

My studies to date have allowed me to gain a deeper understanding of the pedagogical aspect of voice production required in classical singing. My studies have also provided me with confirmation that further research and additional guidance tools for complementing the scope of the academic educational system of vocal training are still needed for the support of aspiring opera singers.

This study, and the outlined rationale for further development of a combined repertoire, - and pedagogy-based guide, represent the culmination of a body of research I have undertaken during the past years. Based on my professional practice, my studies have solely been driven by finding ways to better support young aspiring opera singers. I initially set out to purely understand the physiological workings of the voice but as I progressed through the different subject matters, I uncovered pertinent links between the lack of knowledge about the voice instrument, the causality this ignorance has on the choice of repertoire and subsequent vocal problems. I decided to focus on the female voice categories.

The principal subjects were:

- **Voice classification** (Cleveland, 1977; Sundberg, 1977; Doscher, 1993; Detweiler, 1994; McKinney, 2005; Yan, Xue and Mok, 2011; Brunssen, 2018c; Frič and Pavlechová, 2020)
- **Singer's formant** (Jeans, 1937; Doscher, 1993; Sundberg, 1995; Sundberg and Romedahl, 2009; Yan, Xue and Mok, 2011; Bozeman, 2013; Titze, Maxfield and Walker, 2016; McCoy, 2017)
- **Resonance** (Doscher, 1993; Titze, 2001; Joliveau, Smith and Wolfe, 2004; McKinney, 2005; Nair, 2006; Chipman, 2008; Garnier *et al.*, 2010; Dromey, Heaton and Hopkin, 2011; Henrich Bernardoni *et al.*, 2011)
- **Ring and twang** (Yanagisawa *et al.*, 1989; Titze and Story, 1997; Story, Titze and Hoffman, 2001; Titze *et al.*, 2003; Lombard and Steinhauer, 2007; Sundberg and Thalén, 2010; Saldias *et al.*, 2019; Perta, Bae and Obert, 2021)

The subject of classification kept re-appearing and led me to its relation to age and repertoire as well as consequences on vocal health. Hence, in terms of thematic analysis, these are the three interlinked themes of my topic that will be explored in depth in this study;

1. **Voice classification** and the problems haste or misclassification can cause
2. **Vocal health** and the potential impact of inappropriate or untimely repertoire
3. **Age** and how it impacts the voice, its' classification and subsequently repertoire

Voice classification

In 1957 Zerffi et al. stated the existence of an “alto-larynx” and a “soprano-larynx”, and that one can distinguish these two via laryngoscopy. He found it an interesting fact that the only difference between the male and female larynx was supposedly one of size. From the physics of wind instruments, we had learned that the size, length, and form of the resonance space define the sound of the wind instrument. Therefore, these parameters of the resonance space in humans may also influence the singing voice classification (Zerffi, 1957; Benade, 1976; Rast *et al.*, 2021, p.1). By 1977 research had moved on and the study of Cleveland suggested the pitch of the fundamental frequency as the main factor for the differentiation of various singing voices. As formant frequencies are determined by the vocal tract configurations, the findings of Cleveland at the time suggested that the vocal tract characteristics might be a contributing factor of the differentiation of singing voices. However, as Yan et al. later pointed out, this study also lacked statistical significance, as only eight participants were included (Cleveland, 1977, p. 1622-1629; Yan, Xue and Mok, 2011, p. 1549).

Erickson et al. examined the interrelationship of pitch, tessitura, and timbre as predictors of voice classification in 2001. Referring to Vennard, traditionally, voice classification had been based on three perceptual parameters: range, timbre, and tessitura (Vennard, 1967 Revised Edition); however, at least the latter two parameters were in their opinion poorly defined and the interrelations between them were unknown. According to the American National Standards Institute the accepted definition of timbre is as follows: two tones are of different timbre if they are judged to be dissimilar and yet have the same loudness and pitch (American National Standards Institute. Committee on Bioacoustics, 1973). Erickson et al. point out that to define timbre for the vocal instrument, an additional restriction is required. Not only must the two sounds be of the same pitch and loudness, they must also be of the same vowel quality. Following Cleveland’s logic that an individual singer has a characteristic timbre that is a function of the laryngeal source and vocal tract resonances (Cleveland, 1977, p. 1622-1629), they argued that singers with similar timbres, then, constitute members of the same voice timbre type or voice category.

However, they also thought that it is possible that any two voices may be perceived as having similar timbre on one pitch-vowel-loudness combination and dissimilar timbre on another. In this case, each voice possesses a set of timbres. They therefore concluded that voices and voice categories may not be distinguished by a single invariant difference in timbre, but rather by consistent patterns of timbre transformation as a function of pitch and perhaps also loudness (Erickson, Perry and Handel, 2001, p. 492-493).

Herbst et al. maintained that vocal timbre is the central quality in singing, that singers must establish habitual motor control and behavioural patterns for voice production in order to be able to vary voice timbre on an ad hoc level, allowing for artistic expression. Here, agility and muscular fine control are the main features of a "good" voice (Herbst and Svec, 2014, p. 301). Doscher stated that the two lowest formants determine the vowel colour (vowel formants), while f3, f4 and f5 are "of greater significance to the personal voice timbre (quality formants)" (Doscher, 1993 p.134-140). This development and confirmation in research over the years, from Doscher to Herbst, bring my attention to the overuse of resonators, a topic that I investigated in my previous research. Young singers often seek to emulate an idol or they may already have been given a voice classification by a teacher, thus seeking to alter the form of the resonance tube for desired effect. "The supraglottic resonators, being in the main muscular and moveable structures, must be voluntarily controlled to produce conditions of optimal resonance either by varying degrees of tension in their walls, or by alterations in the size of their orifices and cavities during the articulatory movements" (McKinney, 2005, p. 126).

A study by Lamarche et al. in 2010 investigated the possible importance of recording two types of voice range profile (VRP) when addressing the singing voice of classically trained female voices. For the physiological VRP, the objective was the recording of minimum and maximum productions regardless of phonation mode, whereas the performance VRP aimed to capture the voice as it is used on stage (p.410-411). The study confirmed that physiological VRP was found to be different from the performance VRP but the hypothesis that a vocals task would yield more representative singing-voice VRPs than that obtained with a discrete pitch task was rejected.

It did however demonstrate that mezzo-sopranos had the largest range of frequency metrics with minimum frequency approaching that of contraltos and maximum frequency near to that of sopranos. This is not unexpected because mezzo-sopranos are often required to have the same high pitches as sopranos as well as access to lower pitches similarly to contraltos. Lamarche et al. corroborated the view that the distinction between those categories is usually a matter of tessitura and timbre (Lamarche, Ternström and Pabon, 2010, p. 417). Titze emphasised how a deeper knowledge of the VRP would be of benefit from both a voice training aspect understanding the acoustic interactions between fundamental frequency and intensity, as well as that of vocal health providing guiding strategies for diagnosis and treatment of voice disorders (Titze, 1992, p. 22). These hypothesis of drawing a parallel between an individual characteristic timbre transformation and a specific pattern of vocal tract configuration with the added benefit of performance VPR are especially pertinent to all three themes of my research question; voice classification, vocal development with age, as well as mindful voice management and vocal health.

Vocal health

A questionnaire, designed in part to survey symptoms of vocal attrition and possible factors contributing to it, was administered to university female voice students by Sapir et al. in 1994. Of the 74 students completing the questionnaire only 10 claimed to be free of symptoms. The symptoms he attributed to vocal attrition included hoarseness, reduced pitch range, vocal fatigue, sensations in the throat such as tightness, pressure, discomfort, dryness, or pain. Other reported vocal injuries among singers are strained phonatory quality, inadequate breath support, and loss of vocal flexibility or endurance. Sapir et al. also found that vocal attrition had a significant impact on performance and career goals, and on the singer's psychological wellbeing. Furthermore, 20% of the students in this survey had quit performing, forgone an audition, or failed to take part in shows or concerts because of chronic voice problems. Sapir et al. indicated a need for "intensive training in vocal hygiene as part of the (voice) student's formal education" (Sapir, 1993, p. 69-74).

Kitch et al. pointed out that few reliable guidelines were available to singers and actors that allow them to evaluate whether altered vocal functioning is a "normal" effect of performance or a change that signals vocal misuse and the onset of vocal dysfunction. According to them literature at the time proposed that high-pitched voices were more susceptible to change following performance they would research, using a portable laryngograph, whether the voices of 15 tenor singers changed after choral performance. The study showed a general deterioration in the voices including decreased pitch and amplitude ranges; decreased harmonic-to-noise ratios on comfortably pitched notes and high soft notes; increased shimmer on the bottom notes of scale singing; and increased jitter on comfortably pitched notes, high soft notes, and bottom notes of the scale singing (Kitch, Oates and Greenwood, 1996, p. 2018-223).

Welman et al. agreed with the assessment of Kitch et al. on the critical shortage of data concerning the nature of vocal function changes following singing or acting performance, and reviews the literature pertaining to the nature, underlying processes, and features of vocal fatigue. According to their findings variables of interest included age, gender, nature and degree of voice training, nature and degree of occupational voice demand, vocal hygiene, and history of voice problems. Welham et al. iterate that vocal fatigue is used to denote negative vocal adaptation that occurs as a consequence of prolonged voice use, and that while a link between vocal fatigue and other laryngeal pathologies is plausible, it is unclear whether vocal fatigue primarily contributes to, results from, or exists independently of other voice conditions. (Welham and Maclagan, 2003, p. 27-28) . Titze had suggested that the repeated application of mechanical stress to epithelia and the lamina propria during vocal fold elongation may contribute to vocal fatigue. The nature of this proposed fatigue mechanism (vocal fold elongation) indicated that it is most likely applicable to pro-longed phonation at high pitch (Titze, 1984; Welham and Maclagan, 2003, p. 24-27; Gates, Forrest and Obert, 2013, p. 15).

An article in 1999 by Cleveland gives a physiological description of a debilitating singing style known as "hyperfunctional breathy" or "hyperfunctional underclosure", or faulty combination of the two conditions above. Though easily heard as "pressed," it is produced with a high degree of airflow. Singers who create this, breathy and constricted at the same time, type of voice production, usually report voice fatigue, loss of upper range, and hoarseness. Cleveland iterated that the whiplash effect appears to occur as a result of greatly increased airflow and the singer's desire for the sound to be louder. However, the loudness of the sound is limited since only so much loudness can be derived from vocal folds that are not capable of complete closure. He concludes that these phonatory valvings may be associated with the development of vocal fold pathology (Cleveland, 1999, p. 33-34). On the other hand, although it would seem logical that while acquiring a refined vocal technique trained singers would gain increased knowledge of the anatomy and physiology and care of the vocal mechanism, studies have also demonstrated that a history of voice lessons does not ensure good vocal practice and does not appear to be associated with a decreased risk of vocal difficulties (Tepe *et al.*, 2002).

A questionnaire investigating the levels of interest in and knowledge of vocal function and dysfunction was completed in 2009 by 129 singers with exposure to classical training and repertoire in Canada and in the USA. The findings suggested that many singers perceive themselves to have an inadequate understanding of vocal function and dysfunction, and that some singers may be unknowingly and consistently engaging in behaviours that are harmful to their vocal mechanisms (Braun-Janzen and Zeine, 2009, p. 475). The need for education in vocal hygiene and basic vocal physiology as part of the voice student's formal education, as demonstrated by the evidence, forms an essential part in finding answers to how Fach, - and age-appropriate repertoire supports vocal longevity in classically trained female voices.

Age

Donahue regards the appropriate age for beginning formal vocal training as debatable considering the importance of maturation of the larynx and concerns regarding beginning intensive vocal training too early (Donahue *et al.*, 2014, p. 318). Brunssen maintains that vocal training should be initiated during adolescence as by the end of the young adult years the anatomy of the vocal instrument will have fully developed and the body is settling into three or four decades of hormonal stability (Brunssen, 2018b, p. 181). The vocal folds can be divided into five anatomical layers. Aging affects these layers and, consequently, changes the way the vocal folds vibrate (Titze, 2000). Younger elastic fibres in the superficial layers can stretch to about 150% of their original length, whilst older vocal folds the fibres decrease with much less stretching resilience. The superficial layer of the lamina propria of the vocal folds is the most important vibrating portion and its geriatric changes contribute partially to the aging of the voice.

Sato *et al.* carried out an investigation on 10 human adult larynges of men and women from autopsy cases of which half were of young adults (34-39 years of age) and the other half of old adults (74-87). They found that differences in the elastic fibres in the superficial layers of the vocal folds between the two age groups were especially pronounced whereby the older adult specimen showed fibres being branched, running in various directions and forming complicated networks, while the younger were aligned in essentially the same direction and parallel to that of the vocal fold edge (Fig.1) (Sato and Hirano, 1997, p. 44-46).

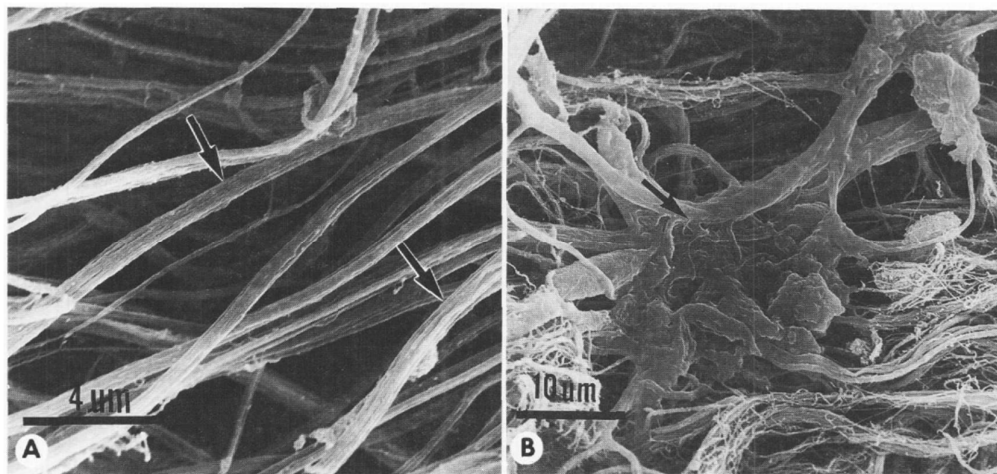


Figure 1: A) Younger adult, B) Older adult (Sato and Hirano, 1997, p. 45)

Sulter et al. used an analysis of variance (ANOVA) on videolaryngostroboscopic images of 214 subjects to determine the influence of the factors gender, vocal training, sound intensity, pitch, and aging on vocal function. They found that with increasing age vocal folds become narrower and slacker and that age had also a significant effect on vocal folds' width and elasticity. Age had an influence on pitch, most significantly in females and all subjects in their study on showed a more closed glottal configuration with age. Female subjects had thinner, wider, shorter, and slacker vocal folds and, in general, men had a more complete glottal closure than women do (Sulter, Schutte and Miller, 1996, p. 181-183).

Sataloff's research corroborated these findings and he went on to explain that the voice mutation occurs because of laryngeal growth. The angle of the male cartilage decreases to 90 degrees, while the female remains at 120 degrees. The epiglottis flattens, grows and elevates, and laryngeal mucosa becomes stronger and thicker. During puberty, the female voice usually drops about 2.5 semi-tones and averages at completion approximately 220-225 Hz (Sataloff, 2000, p. 30). Linville et al. found that women demonstrated more substantial lowering of spectral peaks with aging than men and suggested that women may undergo more pronounced age-related lengthening of the supraglottic vocal tract (Linville and Rens, 2001, p. 322).

In her book Brunsen lists all musical aspects of vocal function that age-related changes have an impact on:

- Timbre
- Range
- Volume
- Legato
- Staccato
- Messa di voce
- Diction
- Coloratura
- Vibrato
- Vowels
- Pitch clarity
- Endurance

Brunssen further describes the changes in the various body parts across the systems of the human body that contribute to the changes in singing:

- Size and shape of larynx
- Size and shape of airway
- Vocal fold tissue changes
- Cartilage firmness of the larynx
- Size and shape of the lungs
- Size, shape and compliance of the thoracic cage
- Tissue changes in the lungs
- Length and circumference of the neck
- Size, volume and shape of the resonators of the voice
- Hormones
- Amount of oxygen
- Breathing
- Brain development
- Skeletal system
- Innervation
- Musculature
- Hydration

(Brunssen, 2018, p.8-9)

As demonstrated in the above evidence, the multitude of changes that take place in the human body over the course of a lifetime have multiple effects on the voice. It also underlines the fact that understanding how aging impacts the singing voice is imperative for any singer striving for a career in opera. It encourages patience and allows for sensible repertoire choices which will result in excellence and support for further vocal development and longevity.

Methodology

Research methodology and paradigm

The research methodology I have chosen is an action based and combined methods strategy. Pursuing an action research approach is collaborative and participatory by its very nature and thus ontology. Action research has the epistemology of learning from other individuals' experiences embedded in its philosophy and has been described as "bridging the gap between theory and practice" (Rosaline Barbour, 2007, p. 230). My approach fits within the paradigm of Social Constructionism and my situatedness and context lie firmly within my work based research. Kolb's learning cycle allowed me to reflect on the obtained data, implement comparative analysis and make conclusions based on the action based research (Fig. 2) (Kolb, 2015). Furthermore, the seven characteristics of reflective teaching by Pollard (Pollard, 2005), as mentioned in my project proposal, have contributed significantly to the underlying reasons of my research and, therefore, also complemented my chosen paradigm of Social Constructionism.

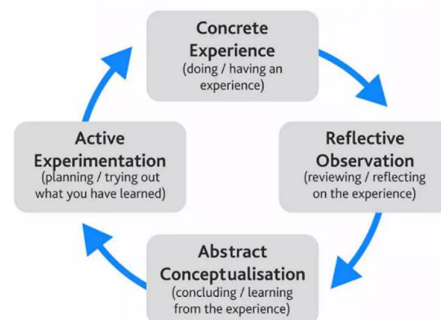


Figure 2: Kolb's Learning Cycle

In terms of coding, I have carried out a thematic analysis of the data obtained from the focus groups and the literary review in order to identify patterns corresponding to the three chosen themes of voice classification, age and vocal health. Braun et al. explain the phases of thematic analysis in six steps (Braun and Clarke, 2006, p. 16-23)

1. familiarising yourself with your data
2. generating initial codes
3. searching for themes
4. reviewing themes
5. defining and naming themes
6. producing the report

Methods

Over the course of my studies, I have gained great satisfaction of my position as an insider-researcher. In this final assignment I intended to develop a comprehensive understanding of a specific phenomenon in vocal development pertinent to my professional practice using a methodological triangulation design-based model of the outlined multiple methods and data sources in qualitative research. The process of triangulation added to the complexity of my research thus rendering it more time consuming and making me constantly re-evaluate the adequacy of my analytical skills as well as question whether the findings satisfactorily supported my investigation. The comparison of findings of two sources may be inconsistent or conflicting in which case triangulation does not always mitigate sufficiently the problems in a chosen research methodology (Noble and Heale, 2019, p. 67). My triangulation method consisted of a comprehensive literary review, as well as further viewpoints from two focus groups for the purposes of establishing guidance toward appropriate repertoire choices for optimal long-term development of female opera voices.

Focus group 1 (FG1) consisted of two experts; one UK based voice pedagogue with over 20 years professional singing experience working in particular with female singers (KS), and one highly accomplished otolaryngologist and speech-language pathologist and singing specialist from the Department of Otolaryngology at the Ohio State University, USA (KO).

Focus group 2 (FG2) consisted of four female singers in different age groups; one 24-year-old (S24) student soprano in early-stage development singing dramatic coloratura repertoire, one 32-year-old (S32) in mid-stage and professionally engaged mezzo soprano currently singing mainly dramatic repertoire, one 39-year-old (S39) in prime-stage and professionally engaged soprano singing mainly lyric repertoire, and one established mature professional soprano in her early 50s (KS) of dramatic Fach. Note: KS provided insights as both mature and established professional opera singer as well as voice pedagogue.

The method of collecting data from the focus group was done as follows:

Focus group 1 (FG1) were sent a list of questions together with a consent letter and an outline explaining the scope of the investigation, after which a Zoom interview of approximately 1 hour was carried out with each participant. The recorded conversations were transcribed using Rev.com and are attached as appendices.

Focus group 2 (FG 2) were sent a link to an online questionnaire, which included the consent form, and a letter explaining the scope of the investigation, attached as appendices. Note: KS did not participate in the online questionnaire as feedback by her was collected through interview only.

The questionnaire was open ended and divided into four parts:

Q1 – general information and relation to age

Q2 – vocal practice and its relation to vocal health

Q3 – voice classification and its relation to age

Q4 – vocal health and relation to education about vocal physiology

The focus group interviews provided an opportunity for reflection and formed an important source of data toward the research project. Hine refers to the importance of collaborative effort, discussion and the exchange of perception and experience among the participants in relation to action research with the framework of “Look, Think, Act”. By keeping a reflective diary, I was able to maintain a method of “planning, observing and reflecting” which led to a constant revisiting and development of the strategy (Hine, 2013, p. 151).

No significant risks to project participants were anticipated considering WIWBL or ESRC ethical guidelines. According to Smyth et al., in order to conduct credible insider research, insider-researchers must constitute an explicit awareness of the possible effects of perceived bias on data collection and analysis, respect the ethical issues related to the anonymity of the participants and consider and address the issues about the influencing researcher’s insider role on coercion, compliance and access to privileged information, at each and every stage of the research. Also, being an insider-researcher can lead to a loss of objectivity but, due to the fact that I had no or minimum prior relationship to the mentioned industry professionals or otherwise participants, such potential issues were avoided (Smyth and Holian, 2008, p. 33-47; Unluer, 2012, p. 2).

All notes and observations were recorded in the form of a Hermeneutic research journal, along with reflections of the focus group sessions. I recorded the two interviews and transcribed the data so there was the risk of some personal data being disclosed, however, I mitigated this risk by ensuring I used a code for all the participants and had all data stored on my password secured computer of which only I have access. All data will be destroyed at the end of this project.

Findings

As described in the previous sections, I identified three themes of investigation for this research project; **voice classification**, **vocal health** and **age**. The data I have gathered confirmed the close interconnectedness of these themes in relation to my research question.

Theme 1: Voice classification

When a young female singer starts her singing career, different factors influence the decision regarding the right singing voice classification, such as her own wishes, hopes, and expectations of the social environment (Rast *et al.*, 2021, p. 1). In the voice education process, the division into voice categories is based primarily on subjective assessment by a voice teacher who significantly influences the student's inclination toward a certain voice category (Frič and Pavlechová, 2020, p. 3). As demonstrated by the below Table 1 (Fig. 3), this statement was corroborated by all of the singers of FG2 by confirming that they had indeed been assessed into their respective voice classification by their teachers. Furthermore, S24, S32 and S39 indicated that this assessment had been made very early on at the start of their training which in the case of S24 was at the age of 13, S32 at 17 and S39 at 15. KS stated in her interview that she had “had quite a journey with her singing “. She explained that “at the conservatoire in Australia [she] had a really fractious relationship with her teacher” and that was first assigned a Fach “in her mid-to late 20s”. Out of all four singers, only S32's assigned Fach has remained unchanged since. S24, S32 and S39 listed highly Fach focused arias as their current repertoires indicating that exploring other genres for further vocal expansion were not part of their training.

FINDINGS SUMMARY TABLE 1: FOCUS GROUP 2 - SINGERS

FG2 - CLASSIFICATION	S24	S32	S39	KS
Age when started taking singing lessons	13	17	15	20
Given a Fach by a teacher	Yes	Yes	Yes	Yes
Age when given a Fach by a teacher	13	17	15	25-29
Change of Fach since	Yes	No	Yes	Yes
Number of teachers since start of studies	4	6	3	Many
Current repertoire Fach specific	Yes	Yes	Yes	N/A
Current repertoire chosen singer or teacher	Teacher	Singer	Singer	N/A

Figure 3: Findings summary table 1, FG2

From the point of view of the experts in FG1, KS found that allowing the student to explore a wide range of repertoire across Fachs was conducive to vocal development as well as eventually arriving at the best classification of that particular moment in time: “I like students to explore and stretch themselves. Because you learn something from every aria you sing, why don't we have a look at some of these things, build up this part of your voice and see where that goes”. When considering professional engagement KS also gave examples from her professional experiences regarding nuances within the Fach system between opera institutions around the world: “the timbre will be a personal taste of the music director you're singing or what country you're singing in”. KO maintained that classification should not be assumed until mid to late 20s “because the voice hasn't even settled into itself, until you're sort of in your mid 20s”. She also highlighted the trade-off between weight and agility of the voice when assessing Fach, reminding that “your teacher goes with the colour of the voice that you're making, or the size of the voice you're making. We reinforce that, and so, I think over time, we're reinforcing the muscles and the mechanism that are creating that timbre”. This raises the question of nurture versus nature, to which KO responds “I think it's probably 80% nurture” when it comes to classification.

Theme 2: Vocal health

Edgar et al recently stated on the topic of vocal health and what guidelines are available online: “It seems that the blogosphere has morphed into a space in which anyone can be an expert. The amount of disinformation is staggering” (Edgar and Michael, 2021, p. 205). Seeking information and remedies online can be understandable, as for singer athletes, a disruption to the physical functioning of the vocal instrument can be as distressing and debilitating as an orthopaedic injury is to an athlete. The personal, financial, vocational, and medicolegal consequences of poor singing performances, or, at worst, cancellations may be dire (Phyland *et al.*, 2013, p. 390.e31). Perceptual studies of voice use and health have not yet established a relationship between vocal health and vocal dose. A difficulty in establishing this relationship is that vocal dose has not been shown to correlate directly with vocal fatigue, which remains a subjective term (Schloneger, 2011, p. 265). As demonstrated in Table 2 below, all four singers in FG2 confirmed having experienced vocal trauma during their training to date and having sought help from a medical voice practitioner/laryngologist. The questionnaire also provided insight into the habits of vocal hygiene and vocal practice of S24, S32 and S39. The responses confirmed mindfulness and even regular check-up visits to medical practitioners but although they demonstrated regular independent practice habits, surprisingly, none of them carried out cooling down exercises. Stretching of muscles before activity has been documented as beneficial in that stiffness is decreased and thus less energy is required to move the muscle. Additional evidence has shown that regular stretching of muscles may reduce the incidence of injury. However, vocal cool-downs have been noted to improve accuracy of tone production and reduce perceived effort of phonation 12-24 hours after the cool-down has been performed (Donahue *et al.*, 2014, p. 320).

KS was very mindful of finding repertoire for her students which allowed them to “feel that satisfaction of singing something that they can really put their heart and soul into” whilst resisting “the tendency to push the voice”. She was the only singer in FG2 to indicate past vocal fatigue following series of performances and intense work period of especially heavy repertoire” I lost my voice and I had lost my voice for some time and I'd had vocal fatigue. I think that having reflux is a component of that. It was around the time I did my first Verdi requiem”.

Reflux has been identified as an etiologic factor for chronic throat clearing, contact ulcers, laryngitis, cancer, granulomas hoarseness and other disorders of the larynx (Olson, 1991). S32 interestingly indicated menopause as her vocal concern. Menopause will be discussed further in the following theme about age. However, as an expert in the field of voice disorders and vocal care, KO highlighted the importance for female singers to throughout their lifespan regularly keep checking testosterone levels with a gynaecologist because “if you've had years of too much testosterone, you can't un-grow your body [...] Once the vocal folds have increased in size or increased in length or increased in mass, you can't undo that. So that's why I say for singers, they really need a gynaecologist that they can trust, to stay with the same gynaecologist throughout their life span”. KO also pointed out that women have more injury than men because of the shape of their thyroid cartilage, making it harder for them to get complete closure: “the reason for that is because the thyroid cartilage is wider in women and flatter”. She went on to underlined the importance of vocal hygiene by explaining that swelling that doesn't resolve in sort of 24 hours, is more problematic because if you're then going into the next night's performance on chords that are already a little swollen to start with, then they're going to, over time, be the ones who develop some pathology.

FINDINGS SUMMARY TABLE 2: FOCUS GROUP 2 - SINGERS

FG2 – VOCAL HEALTH	S24	S32	S39	KS
Current lesson frequency	2/week	1-2/week	1/4-6months	N/A
Vocal fatigue after session	No	No	No	N/A
Independent work frequency	3-4h/5/week	2h/7/week	1-3h/5/week	N/A
Vocal fatigue after session	No	Not anymore	No	N/A
Vocal fatigue after performance or series of performances	No	No	No	Yes
Experience of vocal trauma	Yes	Yes	Yes	Yes
Help sought from medical voice practitioner	Yes	Yes	Yes	Yes
Concerns	N/A	Menopause	None	Reflux

Figure 4: Findings summary table 2, FG2

Theme 3: Age

On the topic of vocal aging Brunssen summarises rather adroitly “At every age, function is dependent on where the body is within progressive and constant changes.” (Brunssen, 2018, p.1). The ages of the four singers in FG2 spanned from 24 to mid-50s. As demonstrated in Table 3 below (Fig. 5), each of their vocal journeys to date were reflected upon in terms of when they started their vocal training, how often they had changed teachers, when voice classification had been assigned, and whether it had changed in the years since. In the questionnaires, S24 indicated that she started vocal training at the age of 13 and that to date she had had four teachers over 11 years of studies, of which four with current teacher. S39 started voice training at 15 and has studied with her current teacher for the past six years. In the 24 years of singing, she has had only two other teachers. Having started her singing studies at the age of 17, S32 has worked with six teachers. She began her studies with her current teacher only two months ago. The data also demonstrates the parallels between years spent studying and years spent working. This is an area of frustration among many singers, especially of dramatic Fach.

FINDINGS SUMMARY TABLE 3: FOCUS GROUP 2 - SINGERS

FG2 - AGE	S24	S32	S39	KS
Age when started taking singing lessons	13	17	15	20
Years of vocal training	11	15	24	+30
Years working as singing professional	0	5	8	+20
Number of teachers since start of studies	4	6	3	Many
Length of time studying with current teacher	4 years	2 months	6 years	N/A

Figure 5: Findings summary table 3, FG2

According to Brunssen adolescence is an excellent time to take voice lessons. Beginning vocal training at this age correlates to increased neuroplastic changes and increased amounts of grey matter in the regions of the brain associated with both auditory and somatosensory control of the voice. Lighter female voice types, such as soubrettes and coloraturas, may show competitive capabilities as early as 21 years of age. Larger voices tend to mature later both in male and female. The later the vocal maturation, the older the longevity (Brunssen, 2018c, p. 108, 140).

In the FG1 interviews KS discussed at length how navigating suitable repertoire at a younger age was difficult for her, because her voice was large and required time to mature which easily led to mis-classification: “it was just because I had no idea, I had this enormous range. I had a voice that could sing most things. I hadn't been given good advice because I didn't have the right vocal teacher at that time”. On the other hand, to the question *why* larger voices tend to mature later KO replied “I don't know that anybody knows the answer to that”. She explained that “our voices start to age from our mid 20s on, and we start having some ossification of cartilage, even in the 20s”. Once the female voice approaches menopause “we lose range, and you lose access to your top notes [and] it's because the cartilages have stiffened, and so the cartilages can no longer do this to the vocal folds. It's not the vocal folds themselves so much, as it is the cartilages that no longer have that flexibility that they once had. The vocal folds themselves actually get a little heavier as we get older, and they do become less pliable, less flexible. The elasticity of the vocal folds changes, the cellular levels change in them”. Furthermore, throughout a lifetime the female larynx is very sensitive to sex hormone fluctuations, menopause being one of the most critical decreasing not only frequency range but also fundamental frequency as well as raising frequency perturbation (D'haeseleer *et al.*, 2009, p. 27-31). KO also explained that additionally to the laryngeal changes, “also the rate at which our neuromuscular fibres are recruited, so in other words, the signal coming from the brain that tells the muscle fibres to contract, is slower. It also doesn't contract as many fibres. So, we have a tendency to get wobbly or vibratos, because we're actually not having enough effort at the vocal fold level, to maintain a healthier rapid vibrato”. According to Abitbol, singing for the female voice is at its hormonal best when estrogen levels are highest, and at its weakest when in turn progesterone is high. Estrogen results in a thickening of the mucosal membranes of the vocal folds, creating a higher vibratory amplitude (Abitbol, 2006; Brunssen, 2018c, p. 191).

In hindsight I regret not having included questions to FG2 in particular relating to the menstrual cycle or menopause if relevant. Although the topic in itself would have been outside of the scope of this investigation, some basic information could have provided interesting insight and comparison to the above topics. This would have been particularly pertinent to the previously mentioned comments made by KO regarding regularly checking testosterone levels with a gynaecologist and its relation to the voice.

Discussion and analysis

Schloneger et al. carried out an investigation in 2011 on the vocal impacts on two graduate opera singer students during a week-long period of intense opera rehearsals of a university production of Stravinsky's opera *The Rake's Progress*. One of the singers was cast as the leading soprano role of Anne Trulove, whose role is particularly demanding as the singer must negotiate Stravinsky's jagged vocal lines and high tessitura over the course of a full evening. The other singer was cast as Baba the Turk and, although it is a shorter supporting role, it is nonetheless vocally demanding with heavy orchestration during the character's signature aria. The data was collected through (1) acquired Ambulatory Phonation Monitor (APM) data, (2) daily surveys, (3) participant activity logs, (4) three administrations of the Singing Voice Handicap Index (SVHI), and (5) pre-and post-stroboscopic laryngeal examinations. Schloneger et al. concluded that although to date there appeared to be no consistent correlations between acoustic measures of vocal sound and physical measures of vocal fatigue or singer perceptions of vocal fatigue, this case study had begun to provide the field with a frame of reference for preprofessional voice use (Schloneger, 2011, p. 265-271). However, to the best of my knowledge, in the decade since such a frame of reference is yet to be realised. Phyland et al. also reiterated that to date, instruments that measure vocal health have adopted a disorder or disease-based framework. It is currently unclear whether vocal fatigue is an isolated phenomenon or whether, along with the associated compensatory behaviours, these symptoms may predispose one to phonotrauma and the subsequent development of laryngeal pathology (Phyland *et al.*, 2013, p. 390.e31).

Both these statements are highly pertinent to my investigation and strongly supported by the expert opinions provided by FG1 within this research project. KO emphasised the lack of research and data comparing the relation of vocal effort, in terms of vocal production intensity and tessitura, and the actual time spent singing between different opera roles and how these aspects impact the voice: "it's not so much the amount of singing, it's also how difficult it feels to you. And how fatigued does this particular repertoire make you feel? That would be a fascinating project to interview people who have done various roles, and to ask them how strenuous the role felt in terms of vocally".

I strongly agreed with this line of thought as it pertains very much to the repertoire guidance framework and the next level of further higher education that I would like to pursue. KS on the other hand explained that although by the time she was in her mind 40s and had acquired the necessary skills and stamina to perform a wide range of equally demanding roles such as Elsa, Butterfly or Tosca, some roles just felt vocally less effortful than others: “something like Tosca, I found that role and tessitura much easier to come to. Even that second act, which is pretty relentless”. Her description of such experiences sounded very much like the context of research that KO was proposing and which Schloneger et al. initiated with their study in 2011.

A 10-year retrospective study was carried out by Donahue et al. between the years of 2002-2011 on 188 collegiate-level musical theatre students between the ages of 18-24 years, of whom 90 were females and 98 were males. The purpose was to develop further understanding of vocal hygiene and practice patterns within the population of singing students through analysis of questionnaire results combined with a stroboscopic screening examination and to warrant the need for further education regarding vocal hygiene. Data for this study were obtained from annual vocal health screenings. The flexibility, agility, stamina, power, and the ability to effectively perform eight shows a week regardless of laryngeal findings was used to indicate a singer's baseline. The vast majority of students indicated that they regularly engaged in vocal warm-ups, yet few performed vocal cool-downs consistently (Donahue *et al.*, 2014, p. 317-320). As mentioned earlier this very practice or rather the lack of it was also demonstrated in FG2. Although the data from FG2 did not provide a comprehensive view into the programme of training and performance of the singers, it did indicate the frequency of independent training as highly regular and supervised training as weekly for the younger singers S24 and S32, and as every few months for the mature singers S39 and KS.

Brunssen highlights the importance of strategic planning, conditioning and good technique for a healthy voice of a professional singer. It can take a long time to untangle and replace well-meaning intentions that negatively impact vocal productions and such problems quickly become further amplified when trying to meet the demands of professional singing in “survival mode” whilst financially making ends meet (Brunssen, 2018b, p. 194-195).

This observation was endorsed by KS who, as a dramatic voice, and with a very unmethodical, outstretched and even injurious vocal training journey. KS also reflected if one could “consider having a 10-year plan for a dramatic voice”. Why these voices mature later, is still shrouded in mystery as KO pointed out. Both acknowledge that during their development such singers may struggle to find suitable repertoire and that poor choices or lack of guidance may well lead to vocal problems. Brunssen also states that coordination of the instrument can be helped, challenged or hindered by repertoire choices and that at times a piece may be geared for older singers with large voices and simply unattainable at their age. “Optimal vocal expectations should be complemented with a healthy sequence of selected repertoire that contributes to vocal development and builds musical integrity. It is important to have a balance of new and old, easy and complicated, with technique stretchers and vocal comforters”. Regarding Fach, Brunssen maintains that until the voice functions with a level of maturity it is not time to choose a label based on categories intended for professional singers. Due to the high demands of vocal technique in opera, repertoire should be chosen according to age, voice type and technical stability of the voice (Brunssen, 2018b, p. 157).

McCoy adds that repertoire must be selected because it suits the current needs and abilities of the students, while fostering their continued growth, not because it is the music a teacher loves or know best. Many singers who have been dissuaded from pursuing the art by situations in their formative years requiring them to perform too much, too big, too soon. Chosen wisely, repertoire encourages healthy vocal development but that inappropriate repertoire will inhibit development and easily can become injurious and reminds that a major consideration in the assignment of repertoire relates to the issue of Fach. In the professional world, casting choices are dominated by Fach and errors in judgement easily push younger singers into repertoire that is too heavy. According to McCoy, singers are in the long run generally better facilitated remaining true to their own Fach, even if they may want to test out or stretch trying multiple Fachs (McCoy, 2004, p. 8-14; Brunssen, 2018c, p. 196). Interestingly Gates, Forrest and Obert also advise singers to keep to repertoire and roles appropriate to their voice type or Fach in order to gain vocal endurance (Gates, Forrest and Obert, 2013, p. 38-39).

However, KO also indicated in the FG1 interviews that she encouraged singers to explore diverse genres in order to discover ways to strengthen particularly vulnerable areas in their voice: “I think we need to be teaching our students to access all different colours in their range, exploring their full range, exploring some things with flexibility. No, we’re too early to label people and we don’t let them develop all their muscular abilities. Because I think really good artists, they can do pencil drawings and they can do pen and ink, and they can do acrylics and they can do some pottery. And maybe ultimately, they end up going in one direction, but they still have abilities in all of those other things. I think we’re missing the boat, not doing that with people, and I think they end up with holes in their training”. KS also expressed very strongly her support of exploring both different genres as well as different Fachs and repertoire in the classroom. S24, S32 and S39 in FG2 provided each a list of their current repertoire which was solely opera and Fach focused.

S24:

Verdi - I Vespri Siciliani - Elena's Bolero
Rossini – Semiramide - Bel raggio lusinghier
Obradors- Con amores la mi madre

S32:

Donizetti – La Favorita - Leonora
Mascagni – La Cavalleria Rusticana - Santuzza
Verdi – Rigoletto – Maddalena

S39:

Puccini - Manon Lescaut - Manon
Tchaikovsky – Eugene Onegin - Tatyana
Mozart – Don Giovanni - Donna Elvira

For vocal pedagogues, the voice range and the voice timbre are considered as the two main factors in classifying a singer traditionally. Therefore, there are many classification methods for classifying different singing styles. As Yan et al. pointed out in their study of the vocal tract dimensional characteristics there seems to be some consensus that the classification of singing voice is dependent on both the 1) fundamental frequency, which is mainly affected by the length of the vocal folds, and 2) formant frequencies, which are suggested to be affected by the vocal tract.

However, the relationship between the formant frequencies and the vocal tract, and their interaction with singing voice classification is still uncertain. They invited 32 sopranos and 25 mezzo-sopranos for a study to investigate the relationship between the singing voice classification and vocal tract length, vocal tract volume, and formant frequencies in female singers using an acoustic pharyngometer (ART).

Dmitriev & Kiselev (Dmitriev and Kiselev, 1979) had already suggested back in 1979 that there was a correlation between the vocal tract length and the formant frequencies structure: the shorter the vocal tract, the higher the formant frequencies, which were correlated to higher singing voice types; whereas the longer the vocal tract, the lower the formant frequencies, which were correlated to lower singing voice types. Results of the study by Yan et al. corroborated the 1979 findings that soprano singers have indeed shorter vocal tract and higher formant frequencies than mezzo-sopranos and went further to show that they also have significantly smaller oral volume and total vocal tract volume than those of mezzo-sopranos. Furthermore, mezzo-sopranos were also found to have much lower formant frequencies. Therefore, it is suggested that, besides vocal tract length, the volume of vocal tract may also affect the formation of formant frequencies, which in turn create the difference in timbre among the singing voice types (Yan, Xue and Mok, 2011, p. 1549-1552).

MEANS AND STANDARD DEVIATIONS FOR SIX VOCAL TRACT PARAMETERS OF PARTICIPANTS IN FEMALE SINGERS

Vocal Tract Parameters	Sopranos		Mezzo-sopranos	
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
OL (cm) ^a	9.87	1.07	9.90	1.51
PL (cm)	8.64	1.55	8.11	1.53
TL (cm)	18.51	1.45	18.01	1.09
OV (ml)	51.78	12.23	56.03	17.78
PV (ml)	25.73	8.13	25.40	7.37
TV (ml)	77.51	15.67	81.43	16.20

a. OL: Oral Length, PL: Pharyngeal length, TL: Total Length,
OV: Oral Volume, PV: Pharyngeal Volume, TV: Total Volume

Figure 6: The sopranos were found to have significantly shorter oral length and total vocal tract length, smaller oral volume and total vocal tract volume than mezzo-sopranos (Yan, Xue and Mok, 2011, p. 1551)

MEANS AND STANDARD DEVIATIONS OF THE FIRST THREE FORMANT FREQUENCIES OF THE THREE VOWELS OF PARTICIPANTS IN FEMALE SINGERS

Formant frequencies (Hz)		Sopranos		Mezzo-sopranos	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
/a/	F1	698.82	90.69	698.93	74.52
	F2	1206.35	119.89	1208.37	101.76
	F3	2650.85	220.25	2669.62	189.42
	Average	1518.67	75.01	1525.64	63.07
/æ/	F1	585.80	109.54	598.65	79.27
	F2	1655.82	153.69	1658.17	121.03
	F3	2496.97	150.15	2458.69	110.69
	Average	1579.53	75.35	1571.84	66.59
/i/	F1	366.14	68.27	396.74	68.66
	F2	1962.86	179.36	1996.68	121.42
	F3	2578.17	171.29	2585.81	139.65
	Average	1635.72	98.55	1649.74	69.72

Figure 7: The results indicated that higher singing style (sopranos) generally had higher averaged first three vowel formant frequencies than those of lower singing style (mezzo-sopranos) (Yan, Xue and Mok, 2011, p. 1551)

Timbre is another reoccurring topic in my research to date as it is strongly linked to the perception of Fach. According to Erickson et al. timbre is the most studied perceptual dimension of the singing voice, and is generally believed to vary systematically between singing voice categories but often assumed to be invariant with an individual singer (Erickson, Perry and Handel, 2001). During a previous research project I found Doscher's summary very helpful when explaining resonance to a workshop group of young female singers: *"each singer can alter the form of the resonance tube, and that brighter or darker resonance timbres are obtained primarily by the relationship between the soft palate and the larynx, which always move in opposing directions. When the larynx rises, the soft palate descends, and vice versa. Thus, the high arch of the palate produces the darker timbre, and the lower arch the brighter one"* (Doscher, 1994, p. 128).

In the FG1 interviews KO stated that "the back of the tongue is the primary timbre shaper" and underlined the importance of appropriate use of the tongue root. She also expressed her firm view of the interconnectedness, an antagonist and agonist relationship, of the tongue and the larynx explaining that "these groups or organs work in relationship with each other. And so, what I find when people get a big wobbly vibrato is [that] they're under energized, particularly in their tongues".

This was a revelatory insight which I could strongly relate to and corroborate from my professional experiences. It also links directly to the manipulated or “manufactured” vocal sound among the young singers listed in my summarised observations.

Chapman’s statement confirms these conclusions: *“The singer who is using his or her own ears for feedback tends to develop vocal faults as a result (e.g., a depressed tongue root increases the sound of the lower harmonics within the singer’s ears by damping the high frequencies, and can act like a comfort blanket). This feeds the singer’s own ears but is experienced by the listeners as overly dark, muddy and restricted in auditory radiance (i.e., doesn’t carry through an orchestra). It can also have the effect of making all vowels sound homogenized and unclear. Added to this is the physiological effect of the less efficient function of the vocal folds themselves and the interference of the vocal constrictors and false vocal folds. Eventually this can present as a muscle tension dysphonia, vocal fatigue, loss of range and loss of vocal agility”* (Chapman, 2017, p. 9-10).

Chapman lists 18 symptoms she typically encounters among students who come to see her feeling that vocally “something is not right” (Chapman, 2012, pp. 299-300). For the purpose of this investigation, I have identified seven among them which are pertinent to my research question and which I have investigated in a previous assignment. I have also found them common among the young aspiring opera singers whom I encounter in my professional practice:

1. loss of dynamic range
2. unreliable voice; or pitch instability
3. high laryngeal position
4. hoarseness
5. loss of vocal stamina
6. stiffness/tension of the tongue and tongue base
7. increased and uncontrolled vibrato

Brunssen similarly outlines eight points of concern to identify any problems occurring in the vocal health in young voice students (Brunssen, 2018b, p. 151):

1. Breathiness
2. Delayed onset
3. Extreme nasality in place of ring
4. Funny cracks at the top of the voice
5. A consistent breaking point in the voice
6. Flattening or sharpening
7. Irregular vibrato
8. Limited range

Neither Brunssen or Chapman address these issues in the context of whether the chosen repertoire of the singer might contribute to these factors, but from a purely pedagogical and general point of view. However, Gates, Forrest and Obert provide detailed information about common pathologies and disorders in singers of which I have selected the following because of the parallels they have with the relevant symptoms I identified in the lists of Chapman and Brunssen in relation to the themes of my investigation.

1. **Vocal fold nodules:** most common type of lesion in singers, found on the cover and on the free edge of the vocal fold causing hardening of the tissue (in some cases reaching the superficial layer of lamina propria) and affecting vocal fold closure. Manifests as hoarseness caused by vocal abuse, poor technique, singing outside of your tessitura, dehydration and chemical substances (Gates, Forrest and Obert, 2013, p. 122-124).
2. **Muscle tension dysphonia:** a tight and pressed sound, vocal fatigue and anterior neck ache discomfort caused by compensating for lack in vocal fold vibratory pattern. The increased muscle activity causes a “squeezed” voice and the extra muscle effort leads to rapid vocal fatigue. This is typically seen in singers with poor technique, who “oversing” with a compromised or ill instrument and who “tweak” their voice in order to perform. (Gates, Forrest and Obert, 2013, p. 146-148).

3. **Severe vocal fatigue** or **aphonia**: the vocal folds become swollen due to vocal fatigue or other trauma, they are weighed down and become stiff. Vibration is therefore absent or severely decreased, irregular or slow (Gates, Forrest and Obert, 2013, p.204).

As previously mentioned, Kitch et al. pointed out already in 1996 that few reliable guidelines were available to singers and actors that allow them to evaluate whether altered vocal functioning is a "normal" effect of performance or a change that signals vocal misuse and the onset of vocal dysfunction (Kitch, Oates and Greenwood, 1996, p. 217). According to Kwak et al. classically trained singers were more than twice as likely as non-singer controls to consult their voice teacher for advice about a vocal problem before seeking medical advice from a doctor or other health care professional. This again illustrates the critical role that singing teachers play (Kwak *et al.*, 2014, p. 194).

A recent study by Frič et al. investigated the perceptual evaluation of voice categories and verified the ability to distinguish and define voice categories on real aria recordings. Seven voice teachers (experienced group) and seven musician non-teachers (laypeople group) evaluated the properties of the vocal category, timbre (dark-bright), resonance, vowel placement, suitability of vibrato, aesthetic impression, and voice flexibility. Reassuringly, the study confirmed that the experienced group's evaluation demonstrated a better ability to more accurately define a voice category. Frič et al. also concluded by asserting that classifying voices is a highly significant and crucial point in the vocal education process, especially of classical singers, as incorrect classification can cause voice problems later in their professional careers (Frič and Pavlechová, 2020, p. 1,4,12). As demonstrated in the data of FG2, classification for this particular group of singers was carried out by teachers too early and presumably thus giving an incorrect evaluation in three out of four cases.

Another recent study by Rast et al. sought to determine whether a laryngoscopy could predict the correct singing voice classification and, furthermore, if a multivariate analysis of anatomical parameters obtained by high-resolution computer tomography (HRCT) between 25 professional sopranos and 24 altos could predict the singing register. 31 expert opinions were divided into two groups; 15 with 15 or more years of experience, and 16 with less than 15 years of experience.

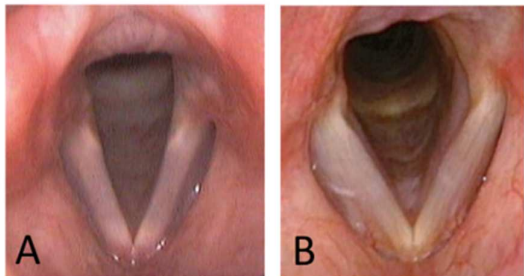


Figure 8: Laryngoscopy of a soprano (A) and alto (B) in respiration position (Rast et al., 2021, p. 2).

When assessing the video laryngostroboscopy the experts correctly identified a soprano in 48.1% of cases, with 51.9% misidentified as an alto. The experts were better at identifying the altos. They correctly identified an alto in 68.2% of cases and in 31.8% said it was a soprano. The non-experts had similar results and accurately identified a soprano in 54.2% of cases and an alto in 45.8% of the cases. The non-experts similarly identified accurately an alto in 56.3% of cases but in 43.8% as a soprano. The combined results identified accurately a soprano in 48.1% of cases and in 51.9% inaccurately as an alto. For the altos, results showed accurate identification in 59.1% of but in 40.9% as a soprano.

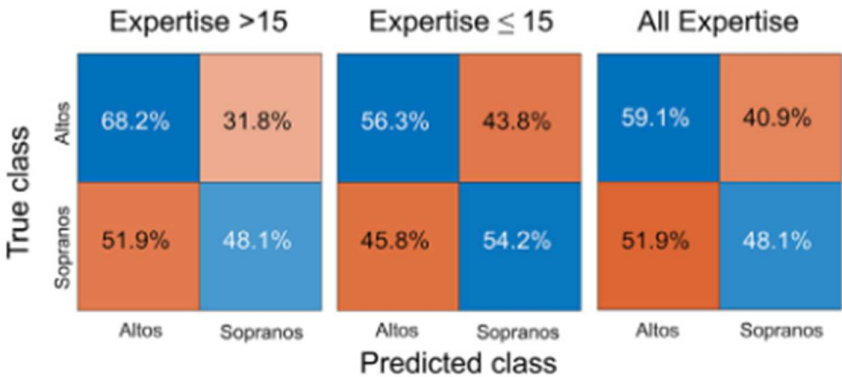


Figure 9: Confusion matrices. Two-way tables summarizing the relative frequencies grouped by expertise. The colour emphasizes the relative frequency the darker the colour (Rast et al., 2021, p. 3).

According to Rast et al. the 3D reconstructed HRCT data corroborated that sopranos have significantly shorter vocal folds than altos, and that the length of the resonance space is significantly shorter in sopranos than in altos. However, when combining all parameters, Rast et al. were only able to correctly predict a soprano in 74.1% of cases and an alto in 68.2% of cases, thus rendering the prediction of the singing voice classification from laryngoscopy or HRCT not reliable enough for clinical use (Rast *et al.*, 2021, p. 1-6).

KO in FG2, a highly accomplished laryngologist and speech pathologist with over 20,000 laryngoscopies carried out, firmly denies being able to distinguish a soprano and an alto, let alone a soprano and a mezzo soprano, from each other by laryngoscopy. She explained that “what we can't see from a laryngoscopy is the depth of the fold, nor can we really sort assess the muscular mass. I mean, the vocal folds extend under the ventricular folds”. KO went as far as to suspect that the given laryngoscopy images representing respectively the visible difference between soprano and alto vocal folds (Fig. 8) were coincidental: “I think that's by chance because I think again, if you had a large number of subjects, you would find tremendous variability among subjects”. However, KO's views on the HRCT were not discussed.

There is a first of its kind statement in the book by Gates, Forrest and Obert according to which they speculated that “a secret ingredient to being naturally predisposed to coloratura agility lies in the ratio of slow-twitch fibres to fast-twitch fibres in the thyroarytenoid muscles. Fast-twitching fibres are the closest to the medial edges of the folds that allow for high-speed contraction. The vocal folds of coloratura may tend to more fast-twitch muscles fibres and a sharper edge to the medial vibrating lips during phonation. A lyric's vocal folds may have fewer fast-twitch fibres and slightly rounder vibrating edges during phonation” (Gates, Forrest and Obert, 2013, p. 207). Although such a theory sounds not only exciting but also conceivable, KO was firm to underline that this was still a hypothesis: “you can say that there are some people whom you can reference in our book who have mused or hypothesized... We may eventually determine that something as simple as muscle twitch fibres”.

Kwak et al. reflected on how singing requires mastery of an instrument that is entirely within the body and composed of human tissue. It requires young people, who often do not have an education in anatomy, to translate abstract models and analogies about form and function into a working understanding of how to produce sound. Voice teachers work with their students to translate the language of anatomy into a sensorimotor experience to help enable and empower them to produce sound in a healthy way, which illustrates the critical role that singing teachers play. Classical singing requires years, even decades, of training and instruction before a singer is prepared to perform on an operatic stage. In a way, asking elite young singers to answer questions about vocal anatomy, physiology, and function is about as fair as asking otolaryngology residents to answer questions about music theory, opera libretti, and vocal technique. They also pointed out that singers typically do not seek medical attention until they encounter a problem. Vocal pathology is not uncommon and as such is not worthy of the stigma which clings to it still today (Kwak *et al.*, 2014, p. 191-195).

Findings of a study by Sielska-Badurek et al. in 2017 suggested that classically trained singers and students have strong misconceptions about the physiology of the vocal mechanism. Two groups of singers answered sets of questions of varying degrees of depth and difficulty three months apart with one group participating in a vocal rehabilitation program (SG2) and the other performing as a control group (CG2). Most singers in both groups indicated that the anatomical and physiological knowledge of the vocal tract is useful, few singers responded that the knowledge is unnecessary. In addition, most classical singers did not have sensorimotor self-awareness of their vocal tract. And although most of the singers defined their anatomical and physiological knowledge of the vocal tract as weak or inadequate at the start of the study, the below table (Fig. 10) demonstrates the differences between the two groups at the start and end of the three months. The results of the study strongly suggested that singers would benefit from receiving education from phoniatrists and speech-language pathologists (Sielska-Badurek *et al.*, 2017, p. 122.e23).

	SG			CG		
	Mean ± SD	Median	Range	Mean ± SD	Median	Range
Theoretical knowledge of the vocal function and sensorimotor self-awareness of the vocal track on first visit	19.9 ± 7.2	20.5 (42.7%)	0–34	20.2 ± 7.1	20.5 (42.7%)	2–32
Theoretical knowledge of the vocal function and sensorimotor self-awareness of the vocal track on second visit	33.4 ± 6.6	32.5 (67.7%)	20–46	23.1 ± 5.9	22.5 (46.9%)	15–35
Theoretical knowledge of the vocal function on first visit	13.6 ± 5.91	13.5 (45%)	0–24	14.8 ± 5.7	15.5 (51.7%)	2–24
Theoretical knowledge of the vocal function on second visit	21.6 ± 4.0	21.5 (71.7%)	12–29	1.4 ± 4.2	17 (56.7%)	10–26
Sensorimotor self-awareness of the vocal track on first visit	6.3 ± 2.9	7 (38.9%)	0–12	5.5 ± 2.8	5.5 (30.6%)	0–12
Sensorimotor self-awareness of the vocal track on second visit	11.8 ± 3.2	12 (66.7%)	5–17	5.6 ± 2.9	6 (33.3%)	1–12

Figure 10: (Sielska-Badurek et al., 2017, p. 122.e23)

Whilst reading through the studies on the vocal physiology knowledge levels among singers, which at first may seem outside the scope of my chosen topic, I have repeatedly reflected on how it pertains to my research question: how does Fach, - and age-appropriate repertoire support vocal longevity in classically trained female voices? I would argue that although it is the responsibility of the teacher to answer for this essential guidance, understanding the workings and the development over time of our instrument lies ultimately with the singer as it is a survival necessity if a singer intends to become a professional in this field.

As demonstrated by the vast research as well as the focus group experts, Fachs typically change over time and voice classification remains an area of continuing investigation. Hence, following the natural course of aging and the acquiring of skills must be matched with age,- and Fach-appropriate repertoire, and this can only be achieved by relevant knowledge. My view is corroborated by Schlonegger et al. with their statement that both teachers and students would benefit from published, scientific standards of voice use for young singers with developing and stabilizing vocal instruments. They are also of the opinion that to date, despite a considerable body of literature reporting on the vibratory, acoustic, and perceived effects of vocal loading, there remains an insufficiency of data indicating when particular vocal in-efficiencies may first develop. Furthermore they found that the heavy vocal demands imposed on voice students during their college/university studies could put their still developing voices at risk and that students may be unaware of the negative, cumulative effects of such heavy vocal loads on their voices, lacking or ignoring training in vocal hygiene (Schlonegger and Hunter, 2017, p. 21).

Conclusions and reflections

When I first considered my research topic and handed in the application for ethical approval, I very ambitiously outlined a plan for not only to research how Fach, - and age-appropriate repertoire supports vocal longevity of classically trained female singers, but to also synthesise a guide of appropriate repertoire for the long-term development of female opera voices. It very soon became apparent that such a guide was impossible to fit into the parameters of this project. Furthermore, I found that I should first consider which elements could form part of such a supporting guide and, also, establish as much evidence as possible as to *why* appropriate repertoire for the long-term development of female opera voices is so important. The only book, to my knowledge, to systematically provide guidance on the topic of Fach and related repertoire is *Guide to Operatic Roles and Arias* by Boldrey Richard from 1994 (Boldrey, 1994). It is an important work and of great importance for any singer considering a career in opera, and has acted as a source of support and confirmation throughout my work in the opera industry. However, the reasons for *why* following such guidance are so important remain unclear. Kari Ragan and Scott McCoy have written articles on the subject of “correct repertoire” but also without going in deeper to the *how* and *why* this would have an impact on the voice (McCoy, 2012; Ragan, 2016). The study of the human voice is becoming more and more revelatory; partly because of new available technology and instruments of research, and in many cases because of the interconnectedness of research material which at its origin seemed irrelevant to singing, as pointed out by Brunssen (Brunssen, 2018, p.3). Although expecting the young aspiring singer to possess in depth knowledge and understanding of such explicit research is surely excessive and unrealistic, it does not take away from the fact that an abundance of established basic facts about the functionality of the voice are available and should be considered as a prerequisite in the singing curricula.

The pertinent concluding points that I have gathered from this research project are the following:

- Decades of research demonstrating the need for education about vocal physiology among singing students (Sapir, 1993; Broaddus-Lawrence *et al.*, 2000; Tepe *et al.*, 2002; Braun-Janzen and Zeine, 2009; Phyland *et al.*, 2013; Donahue *et al.*, 2014; Kwak *et al.*, 2014; Schloneger and Hunter, 2017; Sielska-Badurek *et al.*, 2017;)
- We are not able to conclusively determine voice classification (KO, 2022; Rast, 2021;)
- Fachs evolve over time and training (FG2, FG1)
- Question of nurture versus nature (KO, 2022;)
- We do not know why larger voices mature slower than lighter voices (KO, 2022;)
- Need for guidance combining practice and science

In summary for the purposes of this investigation:

- ✓ I have consolidated the relevant literature and pedagogical information about how physiologically a voice ages;
- ✓ I have consolidated the relevant literature and pedagogical information about voice classification to date;
- ✓ I have consulted with 'expert' pedagogue working with classically trained female singers to gain a view of their experiences and teaching;
- ✓ I have consulted with 'expert' otolaryngologists and speech-language pathologist regarding their knowledge of voice physiology, aging of the voice and voice disorders;
- ✓ I have gained insight from classically trained female singers between the ages of 24 and 39 through subject specific questionnaires;
- ✓ I have gained insight from mature established professional female opera singer in her 50s through subject specific interview;
- ✓ I have increased my own proficiency in voice pedagogy for young aspiring female opera singers with a view to becoming 'expert' and able to deliver structured guidance toward a long-term career in opera;

- ✓ I have found sufficient reasoning and leads to demonstrate the need for such a guide of repertoire with incorporated pedagogical compendium;
- ✓ I have been able to present evidence which supports the correlation of an age-appropriate program of repertoire with vocal longevity;
- ✓ I have received strong feedback from all aspects of my chosen triangulation methods supporting the development of a guide which would take into consideration the correlation between required vocal age and vocal exertion when choosing repertoire;
- ✓ I have identified particular areas requiring additional consideration, these include:
 1. Considering repertoire paths that would be conducive to easing earlier the psychological pressure of “employability” for the larger young voices.
 2. Considering optional repertoire choices in the lighter Fachs that would be accessible for heavier Fachs in their earlier stages of development. This approach was especially supported by KS during our conversation.
 3. Implementing such an approach into my wider professional practice in the opera industry.

Reviewing and assessing the various information that I have found to date and evaluating and considering its implications both in general terms and in relation to my professional practice has been the goal of this investigation. It has been essential for me to link the theoretical with subjective practice in order to successfully relay such knowledge onward. Reflection-on-practice has allowed me to develop my self-knowing but, most importantly, I also hope that it will have turned my insight into improved action (Ghaye, 2010).

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APPLICATION FOR ETHICAL APPROVAL

In order for research to result in benefit and minimise risk of harm, it must be conducted ethically. A researcher may not be covered by the University's insurance if ethical approval has not been obtained prior to commencement.

The University follows the OECD Frascati manual definition of **research activity**: "creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications". As such this covers activities undertaken by members of staff, postgraduate research students, and both taught postgraduate and undergraduate students working on dissertations/projects.

The individual undertaking the research activity is known as the "principal researcher".

Ethical approval is not required for routine audits, performance reviews, quality assurance studies, testing within normal educational requirements, and literary or artistic criticism.

Please read the notes for guidance before completing ALL sections of the form.

This form must be completed and approved prior to undertaking any research activity. Please see Checklist for details of process for different categories of application.

Delete the Guidance Notes at the end of the form BEFORE submitting your application

SECTION A: About You (Principal Researcher)

1	Full Name:	Katherine Haataja			
2	Tick all boxes which apply:	Member of staff:	☐	Honorary research fellow:	☐
3	Undergraduate Student	☐	Taught Postgraduate Student	☒	Postgraduate Research Student
4	Institute/Academic Discipline/Centre:	WAPPAR			
5	Campus:	Carmarthen			
6	E-mail address:	k.haataja@operosa.org			
7	Contact Telephone Number:	07714218328			
For students:					
8	Student Number:	1807575			
9	Programme of Study:	MA in Professional Practice (Voice Pedagogy)			
10	Director of Studies/Supervisor:	Louise Emanuel			

SECTION B: Approval for Research Activity

1	Has the research activity received approval in principle? (please check the Guidance Notes as to the appropriate approval process for different levels of research by different categories of individual)	YES	☒	NO	☐
					Date
2	If Yes, please indicate source of approval (and date where known):	Research Degrees Committee	☐		
3	Approval in principle must be obtained from the relevant source prior to seeking ethical approval	Institute Research Committee	☐		
4		Other (write in) WAPPAR Ethics Board Representative	☒		

SECTION C: Internal and External Ethical Guidance Materials

Please list the core ethical guidance documents that have been referred to during the completion of this form (including any discipline-specific codes of research ethics, and also any specific ethical guidance relating to the proposed methodology). Please tick to confirm that your research proposal adheres to these codes and guidelines.	
1	UWTSD Research Ethics & Integrity Code of Practice ☒
2	UWTSD Research Data Management Policy ☒
3	☐

SECTION D: External Collaborative Research Activity

1	Does the research activity involve collaborators outside of the University?	YES	☐	NO	☒	
2	If Yes, please provide the name of the external organisation and name and contact details for the main contact person and confirmation this person has consented to their personal data being shared as part of this collaboration.					
3	Institution					
4	Contact person name					
5	Contact person e-mail address					
6	Has this individual consented to sharing their details on this form?	YES	☐	NO	☐	
7	Are you in receipt of a KESS scholarship?	YES	☐	NO	☐	
8	Is your research externally funded	YES	☐	NO	☐	
9	Are you specifically employed to undertake this research in either a paid or voluntary capacity?	Voluntary	YES	☐	NO	☐
10		Employed	YES	☐	NO	☐
11	Is the research being undertaken within an existing UWTSD Athrofa Professional Learning Partnership (APLP)	If YES then the permission question below does not need to be answered.	YES	☐	NO	☐
12	Permission to undertake the research has been provided by the partner organisation	(If YES attach copy) If NO the application cannot continue	YES	☐	NO	☐

Where research activity is carried out in collaboration with an external organisation

13	Does this organisation have its own ethics approval system?	YES	☐	NO	☐
14	If Yes, please attach a copy of any final approval (or interim approval) from the organisation				

SECTION E: Details of Research Activity

1	Indicative title:	A study into how fach, - and age-appropriate repertoire supports vocal longevity in classically trained female voices: synthesising a guide of appropriate repertoire for the long-term development of female opera singers.		
2	Proposed start date:	23/2/22	Proposed end date:	30/10/22
3	Introduction to the Research (maximum 300 words) Ensure that you write for a <u>Non-Specialist Audience</u> when outlining your response to the three points below: • <i>Purpose of Research Activity</i> • <i>Proposed Research Question</i> • <i>Aims of Research Activity</i> • <i>Objectives of Research Activity</i> Demonstrate, briefly, how Existing Research has informed the proposed activity and explain • <i>What the research activity will add to the body of knowledge</i> • <i>How it addresses an area of importance.</i>			
4	Purpose of Research Activity The purpose of this project is to research how fach, - and age-appropriate repertoire supports vocal longevity of classically trained female singers from the ages of 20 to 50, and to synthesise a guide of appropriate repertoire for the long-term development of female opera voices. Female voice fachs may “overlap” in the early stages of vocal development easily causing misjudgement of vocal capacity and leading to vocally detrimental repertoire choices. In the author’s opinion current classical pedagogy offers limited guidance in terms of program of repertoire which explains why certain repertoire is physiologically age-appropriate. The purpose of this research project is to fill that gap. (this box should expand as you type)			
5	Research Question For the benefit of young aspiring female opera singers, is there a way to present physical evidence which supports the correlation of an age-appropriate program of repertoire with vocal longevity? Can a cohesive age-appropriate program of repertoire be synthesised? (this box should expand as you type)			
6	Aims of Research Activity To develop a program of repertoire and guide that is accessible and useable for female singers in classical training. To develop my own knowledge and skills not only as a pedagogue but also more broadly as proficient in the field of opera and able to provide guidance in programs of repertoire. (this box should expand as you type)			
7	Objectives of Research Activity • To consolidate the relevant pedagogical information about how physiologically a voice ages			

	• To consult with 'expert' pedagogue colleagues working with aspiring female opera singers to gain a view of how they utilise their skills/knowledge within their teaching • To consult with otolaryngologists and speech-language pathologists regarding their knowledge of voice disorders • To gain insight from young aspiring female opera singers • To gain insight from mature established professional female opera singers • To use motor learning theory and other course models to structure a program of repertoire and guide that is accessible and useable for female singers in classical training • To increase my own proficiency in voice pedagogy for young aspiring female opera singers with a view to becoming 'expert' and able to deliver structured guidance toward a long-term career in opera (this box should expand as you type)
8	Proposed methods (maximum 600 words) Provide a brief summary of all the methods that may be used in the research activity, making it clear what specific techniques may be used. If methods other than those listed in this section are deemed appropriate later, additional ethical approval for those methods will be needed.
9	Using a Design Based Research model. Triangulation I will take three viewpoints for the purposes of synthesising a guide of appropriate repertoire for the long-term development of female opera voices. The three viewpoints will be; a group of experts (voice pedagogue colleagues working with aspiring female opera singers as well as otolaryngologists and speech-language pathologists), female singers (1 young/early stage, 1 'mid-stage' professional and 1 established mature professional), investigative literary review presenting physiological evidence of the aging process of the voice which in turn will support the correlation of an age-appropriate program of repertoire with vocal longevity in the opera industry. Methods: 1) Focus Group The method of data collection for the 'experts' will be in the form of a focus group that will be recorded and transcribed. The focus group will consist of 6 – 10 people and I will act as a facilitator. 2) Semi-structured Interviews The 'singers' data will either be in the form of semi-structured interviews, which will be recorded and transcribed, or questionnaires which will be emailed to the participants. 3) Literary review My investigation will build on existing literature about voice aging as well as my existing knowledge of the opera repertoire and work within opera companies. This data will inform the content and focus of the program of repertoire guide that I design. Using an iterative cycle, I will ask for feedback from both groups on the course models and make adjustments. (this box should expand as you type)

10	Location of research activity Identify all locations where research activity will take place.
11	The research will mainly be conducted online over zoom or via email. There may be in-person meetings/interviews at the relevant person's work practices. (this box should expand as you type)
12	Research activity outside of the UK If research activity will take place overseas, you are responsible for ensuring that local ethical considerations are complied with and that the relevant permissions are sought. Specify any local guidelines (e.g. from local professional associations/learned societies/universities) that exist and whether these involve any ethical stipulations beyond those usual in the UK (provide details of any licenses or permissions required). Also specify whether there are any specific ethical issues raised by the local context in which the research activity is taking place, for example, particular cultural and/or legal sensitivities or vulnerabilities of participants.
13	NA (this box should expand as you type)

14	Use of documentation not in the public domain: Are any documents NOT publicly available?	NO	☒
		YES	☐
15	(this box should expand as you type)		

SECTION F: Scope of Research Activity

1	Will the research activity include:	YES	NO
2	Use of a questionnaire or similar research instrument?	☒	☐
3	Use of interviews?	☒	☐
4	Use of diaries?	☐	☒
5	Participant observation with their knowledge?	☐	☒
6	Participant observation without their knowledge?	☐	☒
7	Use of video or audio recording?	☒	☐
8	Access to personal or confidential information without the participants' specific consent?	☐	☒
9	Administration of any questions, test stimuli, presentation that may be experienced as physically, mentally or emotionally harmful / offensive?	☐	☒
10	Performance of any acts which may cause embarrassment or affect self-esteem?	☐	☒
11	Investigation of participants involved in illegal activities?	☐	☒
12	Use of procedures that involve deception?	☐	☒
13	Administration of any substance, agent or placebo?	☐	☒
14	Working with live vertebrate animals?	☐	☒
15	Other primary data collection methods, please explain in this box For example, 'focus groups'. Please indicate the type of data collection method(s) in this box and tick the accompany box.	☒	☐

16	Details of any other primary data collection method: I will be using focus groups (this box should expand as you type)		
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If NO to every question, then the research activity is (ethically) low risk and **may** be exempt from **some** of the following sections (please refer to Guidance Notes).

If YES to any question, then no research activity should be undertaken until full ethical approval has been obtained.

SECTION G: Intended Participants

1	Who are the intended participants:	YES	NO
2	Students or staff at the University?	☐	☒
3	Adults (over the age of 18 and competent to give consent)?	☒	☐
4	Vulnerable adults?	☐	☒
5	Children and Young People under the age of 18? (Consent from Parent, Carer or Guardian will be required)	☐	☒
6	Prisoners?	☐	☒
7	Young offenders?	☐	☒
8	Those who could be considered to have a particularly dependent relationship with the investigator or a gatekeeper?	☐	☒
9	People engaged in illegal activities?	☐	☒
10	Others (please identify specifically any group who may be unable to give consent) please indicate here and tick the appropriate box.	☐	☒
11	Other – please indicate here: (this box should expand as you type)		

12	Participant numbers and source Provide an estimate of the expected number of participants. How will you identify participants and how will they be recruited?	
13	How many participants are expected?	I expect a maximum of 9 participants (this box should expand as you type)
14	Who will the participants be?	There will be six 'experts' in the focus group, and three 'singers' in the interview/questionnaire group. (this box should expand as you type)
15	How will you identify the participants?	I will identify the 'expert' participants by my familiarity with their work and standing in our field. I will identify the 'singer' participants by their level of interest in participating and motivation to learn. I will recruit accordingly from fellow colleagues and social media. (this box should expand as you type)

16	Information for participants:	YES	NO	N/A
17	Will you describe the main research procedures to participants in advance, so that they are informed about what to expect?	☒	☐	☐
18	Will you tell participants that their participation is voluntary?	☒	☐	☐
19	Will you obtain written consent for participation?	☒	☐	☐
20	Will you explain to participants that refusal to participate in the research will not affect their treatment or education (if relevant)?	☒	☐	☐
21	If the research is observational, will you ask participants for their consent to being observed?	☐	☐	☒
22	Will you tell participants that they may withdraw from the research at any time and for any reason?	☒	☐	☐
23	With questionnaires, will you give participants the option of omitting questions they do not want to answer?	☒	☐	☐
24	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	☒	☐	☐
25	Will you debrief participants at the end of their participation, in a way appropriate to the type of research undertaken?	☒	☐	☐
26	If NO to any of above questions, please give an explanation			
27	<i>(this box should expand as you type)</i>			

28	Information for participants:	YES	NO	N/A
29	Will participants be paid?	☐	☒	☐
30	Is specialist electrical or other equipment to be used with participants?	☐	☒	☐
31	Are there any financial or other interests to the investigator or University arising from this study?	☐	☒	☐
32	Will the research activity involve deliberately misleading participants in any way, or the partial or full concealment of the specific study aims?	☐	☒	☐
33	If YES to any question, please provide full details			
34	<i>(this box should expand as you type)</i>			

SECTION H: Anticipated Risks

1	Outline any anticipated risks that may adversely affect any of the participants, the researchers and/or the University, and the steps that will be taken to address them.					
	If you have completed a full risk assessment (for example as required by a laboratory, or external research collaborator) you may append that to this form.					
2	Full risk assessment completed and appended?	<table border="1"> <tr> <td>Yes</td> <td>☐</td> </tr> <tr> <td>No</td> <td>☒</td> </tr> </table>	Yes	☐	No	☒
Yes	☐					
No	☒					
3	Risks to participants For example: emotional distress, financial disclosure, physical harm, transfer of personal data, sensitive organisational information					
4	Risk to Participant: I will be recording the focus group and interviews and transcribing the data so there will be the risk of some personal data disclosed. There is a risk that the focus group may consist of diverse opinions with some people dominating	How will you mitigate the Risk to Participant I will mitigate this risk by ensuring I use a code for all the participants and having all data stored on my password secured computer of which only I have access.				

	or feeling professionally compromised. Some participants may feel that they cannot contribute due to shyness or not wanting to offend. Professional anxiety may be an issue for some of the singers. Professional Singers may reveal vocal pathology. <i>(this box should expand as you type)</i>	I will mitigate against this by giving much consideration to the facilitation aspect. I will take guidance on how to facilitate a focus group and will use an independent facilitator if necessary. I will ensure that pastoral care is appropriately provided via Operosa and other available support groups. I will ensure that singers are referred to an otolaryngologist where a singer presents with vocal issues. <i>(this box should expand as you type)</i>		
5	If research activity may include sensitive, embarrassing or upsetting topics (e.g. sexual activity, drug use) or issues likely to disclose information requiring further action (e.g. criminal activity), give details of the procedures to deal with these issues, including any support/advice (e.g. helpline numbers) to be offered to participants. Note that where applicable, consent procedures should make it clear that if something potentially or actually illegal is discovered in the course of a project, it may need to be disclosed to the proper authorities			
	NA <i>(this box should expand as you type)</i>			
6	Risks to investigator For example: personal safety, physical harm, emotional distress, risk of accusation of harm/impropriety, conflict of interest			
	Risk to Investigator: There may be a risk of emotional distress recalling the stress of vocal disorders or difficulties. <i>(this box should expand as you type)</i>	How will you mitigate the Risk to Investigator: I am aware that there can be emotional distress around the discussion of my vocal training experiences and will seek support if needed. <i>(this box should expand as you type)</i>		
7	University/institutional risks For example: adverse publicity, financial loss, data protection			
	Risk to University: The risk to the University will be of data protection. <i>(this box should expand as you type)</i>	How will you mitigate the Risk to University: This will be mitigated by all data being coded to ensure anonymity and securely stored in my computer which has a password and is only accessed by myself. All data will be destroyed at the end of the project. <i>(this box should expand as you type)</i>		
8	Disclosure and Barring Service			
9	If the research activity involves children or vulnerable adults, a Disclosure and Barring Service (DBS) certificate must be obtained before any contact with such participants.	YES	NO	N/A
10	Does your research require you to hold a current DBS Certificate?	☐	☒	☐

SECTION I: Feedback, Consent and Confidentiality

1	Feedback What de-briefing and feedback will be provided to participants, how will this be done and when? I will provide my contact details to the participants and offer them a copy of my final report to read. <i>(this box should expand as you type)</i>
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2	Informed consent Describe the arrangements to inform potential participants, before providing consent, of what is involved in participating. Describe the arrangements for participants to provide full consent before data collection begins. If gaining consent in this way is inappropriate, explain how consent will be obtained and recorded in accordance with prevailing data protection legislation. I will inform all participants prior to gaining formal consent via email and give details of their time involvement and what information I am seeking and its purpose. I will send a formal consent form via email for them to sign. <i>(this box should expand as you type)</i>
3	Confidentiality / Anonymity Set out how anonymity of participants and confidentiality will be ensured in any outputs. If anonymity is not being offered, explain why this is the case. I will use a code for each participant, the key to which will be stored in a password secured file on my computer. I will not name participants or the organisations to which they are affiliated. <i>(this box should expand as you type)</i>

SECTION J: Data Protection and Storage

In completing this section refer to the University's Research Data Management Policy and the extensive resources on the University's Research Data Management web pages (<http://uwtsd.ac.uk/library/research-data-management/>).

1	Does the research activity involve personal data (as defined by the General Data Protection Regulation 2016 "GDPR" and the Data Protection Act 2018 "DPA")?	YES	NO
	"Personal data" means any information relating to an identified or identifiable natural person ('data subject'). An identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person.	x	☐
2	If YES, provide a description of the data and explain why this data needs to be collected:		
	Personal data that will be collected includes the email addresses and names of participants, the signed consent forms and the audio/visual recordings made and the transcriptions of these. <i>(this box should expand as you type)</i>		
3	Does it involve special category data (as defined by the GDPR)?	YES	NO
	"Special category data" means sensitive personal data consisting of information as to the data subjects' – (a) racial or ethnic origin, (b) political opinions, (c) religious beliefs or other beliefs of a similar nature, (d) membership of a trade union (within the meaning of the Trade Union and Labour Relations (Consolidation) Act 1992), (e) physical or mental health or condition, (f) sexual life, (g) genetics, (h) biometric data (as used for ID purposes),	☐	x
4	If YES, provide a description of the special category data and explain why this data needs to be collected:		
	NA <i>(this box should expand as you type)</i>		

5	Will the research activity involve storing personal data and/or special category data on one of the following:	YES	NO
6	Manual files (i.e. in paper form)?	☐	☒
7	University computers?	☐	☒
8	Private company computers?	☐	☒
9	Home or other personal computers?	☒	☐
10	Laptop computers/ CDs/ Portable disk-drives/ memory sticks?	☒	☐
11	"Cloud" storage or websites?	☐	☒
12	Other – specify:	☐	☒
13	For all stored data, explain the measures in place to ensure the security of the data collected, data confidentiality, including details of password protection, encryption, anonymisation and pseudonymisation:		
	All data will be kept in password protected computer storage on my personal laptop which will not be shared. Audio/visual data will be transcribed and would be shown to participants to check accuracy of reporting. Any USB sticks used to store or transfer data will be password protected. All participants will be given a unique identifier to ensure confidentiality and this list will be kept securely in the password protected folder. <i>(this box should expand as you type)</i>		
14	All Data Storage		
15	Will the research activity involve any of the following activities:	YES	NO
16	Electronic transfer of data in any form?	☒	☐
17	Sharing of data with others at the University?	☐	☒
18	Sharing of data with other organisations?	☐	☒
19	Export of data outside the European Union or importing of data from outside the UK?	☒	☐
20	Use of personal addresses, postcodes, faxes, emails or telephone numbers?	☒	☐
21	Publication of data that might allow identification of individuals?	☐	☒
22	Use of data management system?	☐	☒
23	Data archiving?	☐	☒
24	If YES to any question, please provide full details, explaining how this will be conducted in accordance with the GDPR and DPA (and/or any international equivalent):		
	All data will be encrypted and kept in password protected personal computer which will not be shared. Any USB sticks used to store or transfer data will be password protected. All data transfers will be encrypted and password protected. All participants will be given a unique identifier to ensure confidentiality and this list will be kept securely in the password protected folder. The data will be stored until the completion of the project and then deleted. In accordance with the DPA2018, participants will have the right to ask to see what data is held relating to them, and this data will be deleted immediately if the participant requests this, in which case the data will not be used in the project. <i>(this box should expand as you type)</i>		

25	List all who will have access to the data generated by the research activity:		
	Only myself, the principal researcher. <i>(this box should expand as you type)</i>		
26	List who will have control of, and act as custodian(s) for, data generated by the research activity:		
	Only myself, the principal researcher. <i>(this box should expand as you type)</i>		
27	Give details of data storage arrangements, including security measures in place to protect the data, where data will be stored, how long for, and in what form. Will data be archived – if so how and if not why not.		
	All data will be encrypted and kept in password protected cloud storage on my personal MAC Air laptop which will not be shared. Any USB sticks used to store or transfer data will be password protected, and will be reformatted at the end of the project in order to destroy the data. The data will be stored until the completion of the project and then deleted. <i>(this box should expand as you type)</i>		
28	Please indicate if your data will be stored in the UWTSD Research Data Repository (see https://researchdata.uwtsd.ac.uk/). If so please explain. <i>(Most relevant to academic staff)</i>		
	NA <i>(this box should expand as you type)</i>		
29	Confirm that you have read the UWTSD guidance on data management (see https://www.uwtsd.ac.uk/library/research-data-management/)	YES	☒
		NO	☐
30	Confirm that you are aware that you need to keep all data until after your research has completed or the end of your funding	YES	☒
		NO	☐

SECTION K: Declaration

31	The information which I have provided is correct and complete to the best of my knowledge. I have attempted to identify any risks and issues related to the research activity and acknowledge my obligations and the rights of the participants. In submitting this application I hereby confirm that I undertake to ensure that the above named research activity will meet the University's Research Ethics and Integrity Code of Practice which is published on the website: https://www.uwtsd.ac.uk/research/research-ethics/		
	Signature of applicant:	Katherine Haataja	Date: 15/03/2022

For STUDENT Submissions:

32	Director of Studies/Supervisor:	Louise Emanuel	Date: 18-3-22
33	Signature:	<i>Louise Emanuel</i>	

For STAFF Submissions:

34	Academic Director/ Assistant Dean:		Date:
35	Signature:		

Checklist: Please complete the checklist below to ensure that you have completed the form according to the guidelines and attached any required documentation:

☒	I have read the guidance notes supplied before completing the form.
☒	I have completed ALL RELEVANT sections of the form in full.
☒	I confirm that the research activity has received approval in principle
☐	I have attached a copy of final/interim approval from external organisation (where appropriate)
☐	I have attached a full risk assessment (and have NOT completed Section H of this form) (where appropriate) ONLY TICK IF YOU HAVE ATTACHED A FULL RISK ASSESSMENT
☒	I understand that it is my responsibility to ensure that the above named research activity will meet the University's Research Ethics and Integrity Code of Practice.
☒	I understand that before commencing data collection all documents aimed at respondents (including information sheets, consent forms, questionnaires, interview schedules etc.) must be confirmed by the DoS/Supervisor, module tutor or Academic Director.
☒	I have deleted the guidance notes before submitting the PG2 for consideration

RESEARCH STUDENTS AND STAFF ONLY

All communications relating to this application during its processing must be in writing and emailed to pgresearch@uwtsd.ac.uk, with the title 'Ethical Approval' followed by your name. You will be informed of the outcome of your claim by email; therefore it is important that you check your University and personal email accounts regularly.

STUDENTS ON UNDERGRADUATE OR TAUGHT MASTERS PROGRAMMES should submit this form (and receive the outcome) via systems explained to you by the supervisor/module leader.

This form is available electronically from the Academic Office web pages:

<https://www.uwtsd.ac.uk/academic-office/appendices-and-forms/>

Application Process

All staff research projects and all research students must submit the Ethical Approval Form to the **University Research Ethics Committee** via the Academic Office (pgresearch@uwtsd.ac.uk). Staff research directly in relation to personal study for taught undergraduate or Masters programmes should be submitted via the Institute procedures explained below.

Taught masters and taught undergraduate research Ethical Approval Forms are considered **within Institutes**. Institutes will provide details of the specific processes for this. Where the Ethical issues within any single ethical application are of particular concern the Institute will refer these to the University Research Ethics Committee. Any student activity that involves the collection of primary data needs to undergo Ethical approval, this includes assignment work as well as dissertations.

that you comply with and tick all that are relevant to your research.

7 Leinster Gardens

London, W2 6DP

Dear Madam,

Dear Sir at UWTSD,

Please accept this letter as permission for **Katherine Haataja** to undertake research for her study titled '**A study into how Fach, - and age-appropriate repertoire supports vocal longevity in classically trained female voices**'. All the participants will be aged over 18 years old and all data will be kept strictly confidential. Participants who agree to take part will be advised prior to the study via email about the nature of the study and must agree to take part in questionnaires and interviews before anything will take place. All participants have the right to withdraw at any time throughout the study should they wish to do so.

Yours Sincerely,

Katherine Haataja

March – October 2022

**“A study into how fach, - and age-appropriate repertoire supports vocal
longevity in classically trained female voices”**

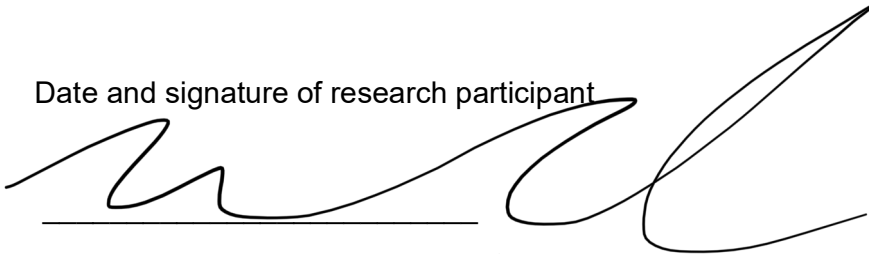
Consent to take part in research

1. I Kate Sheppard voluntarily agree to participate in this research study.
2. I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
3. I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted.
4. I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study.
5. I understand that participation involves answering questions about my active engagement in voice research or/and voice studies or/and voice practice.
6. I understand that I will not benefit directly from participating in this research.
7. I agree to my interview being recorded.
8. I understand that all information I provide for this study will be treated confidentially.
9. I understand that in any report on the results of this research my identity will remain anonymous. This will be done by changing my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.
10. I understand that disguised extracts from my interview may be quoted in the final report but I will remain anonymous.
11. I understand that if I inform the researcher that myself or someone else is at risk of harm they may have to report this to the relevant authorities - they will discuss this with me first but may be required to report with or without my permission.
12. I understand that signed consent forms and original audio recordings will be retained in in London, United Kingdom until completion of the final dissertation in 2022.
13. I understand that a transcript of my interview in which all identifying information has been removed will be retained for a further two years after the final exam.
14. I understand that under freedom of information legalisation I am entitled to access the information I have provided at any time while it is in storage as specified above.

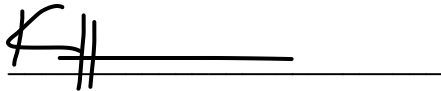
15. I understand that I am free to contact any of the people involved in the research to seek further clarification and information.
16. Although English may not be my native language, I confirm that I have fully understood the content of this form.

Researcher Name – Katherine Haataja

Date and signature of research participant

A large, stylized handwritten signature in black ink, consisting of several loops and a long horizontal stroke at the end.

I believe the participant is giving informed consent to participate in this study

A smaller, stylized handwritten signature in black ink, featuring a large 'K' and a horizontal line.

Katherine Haataja

March – October 2022

**“A study into how fach, - and age-appropriate repertoire supports vocal
longevity in classically trained female voices”**

Consent to take part in research

1. I.....Kerrie Obeid..... voluntarily agree to participate in this research study.
2. I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
3. I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted.
4. I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study.
5. I understand that participation involves answering questions about my active engagement in voice research or/and voice studies or/and voice practice.
6. I understand that I will not benefit directly from participating in this research.
7. I agree to my interview being recorded.
8. I understand that all information I provide for this study will be treated confidentially.
9. I understand that in any report on the results of this research my identity will remain anonymous. This will be done by changing my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.
10. I understand that disguised extracts from my interview may be quoted in the final report but I will remain anonymous.
11. I understand that if I inform the researcher that myself or someone else is at risk of harm they may have to report this to the relevant authorities - they will discuss this with me first but may be required to report with or without my permission.
12. I understand that signed consent forms and original audio recordings will be retained in in London, United Kingdom until completion of the final dissertation in 2022.
13. I understand that a transcript of my interview in which all identifying information has been removed will be retained for a further two years after the final exam.
14. I understand that under freedom of information legalisation I am entitled to access the information I have provided at any time while it is in storage as specified above.

15. I understand that I am free to contact any of the people involved in the research to seek further clarification and information.
16. Although English may not be my native language, I confirm that I have fully understood the content of this form.

Researcher Name – Katherine Haataja

Date and signature of research participant

Kerrie Oberf 8-23-22

I believe the participant is giving informed consent to participate in this study

KH

Katherine Haataja

March – October 2022

“A study into how fach, - and age-appropriate repertoire supports vocal longevity in classically trained female voices”

Consent to take part in research

1. By completing this questionnaire, I hereby confirm that I voluntarily agree to participate in this research study.
2. I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
3. I understand that I can withdraw permission to use data from my questionnaire within two weeks after the questionnaire, in which case the material will be deleted.
4. I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study.
5. I understand that participation involves answering questions about my active engagement in voice research or/and voice studies or/and voice practice.
6. I understand that I will not benefit directly from participating in this research.
7. I agree to my questionnaire being saved and used for research purposes.
8. I understand that all information I provide for this study will be treated confidentially.
9. I understand that in any report on the results of this research my identity will remain anonymous.
10. I understand that disguised extracts from my questionnaire may be quoted in the final report but I will remain anonymous.
11. I understand that if I inform the researcher that myself or someone else related to my questionnaire is at risk of harm as a result of my questionnaire they may have to report this to the relevant authorities - they will discuss this with me first but may be required to report with or without my permission.
12. I understand that the data from my questionnaire including my consent will be retained in in London, United Kingdom until completion of the research in 2022.
13. I understand that my questionnaire in which any identifying information has been removed will be retained for a further two years after the final exam.
14. I understand that under freedom of information legalisation I am entitled to access the information I have provided at any time while it is in storage as specified above.
15. I understand that I am free to contact any of the people involved in the research to seek further clarification and information.
16. Although English may not be my native language, I confirm that I have fully understood the content of this form.

By ticking the appropriate box agreeing to proceed in the online questionnaire I consent to the above listed terms and conditions.

RESEARCH PROJECT BMPF7013 - Part 1

Consent to take part in research – S24

Q1. Do you consent?

Yes

Voice Research Project 2022 by Katherine Haataja

Q2. Are you happy to proceed?

Yes

Part 1: General

Q3. What is your age?

24

Q4. Are you a singing student?

Yes

Q5. If yes, do you hope to become a singing professional?

Yes

Q6. Are you already a singing professional?

No

Q7. If yes, for how long?

No Response

Q8. Are you taking voice lessons?

Yes

Q9. At what age did you start taking voice lessons?

13

Q10. How often do you take voice lessons?

2 a week

Q11. If applicable, how long have you studied with your current teacher?

4 years

Q12. How many voice teachers have you worked regularly with? (Not including master classes etc.)

4

End of part 1 - Please proceed to Part 2 about your vocal practice.

Q13. Are you happy to proceed?

Yes

RESEARCH PROJECT BMPF7013 - Part 2

Part 2: Vocal Practice

Q1. Do you practice independently?

Yes

Q2. Do you feel confident practicing independently?

Yes

Q3. How many days per week do you practice independently?

5

Q4. How long do you practice for?

3 4 h

Q5. Do you do voice warm up exercises?

Yes

Q6. If yes, how long for?

15 min

Q7. Do you do voice cool down exercises?

No

Q8. If yes, how long for?

No Response

Q9. When working independently on songs or arias; do you typically work through the whole piece or only part of it during one practice session?

Whole piece

Q10. Do you typically work through more than one piece or section of an opera during one practice session?

More than 1

Q11. Do you ever feel vocally tired after having worked independently? If yes, please describe how?

No

Q12. Do you ever feel vocally tired after a session with your teacher? If yes, please describe how?

No

Q13. Do you ever feel vocally tired after a concert or a performance? If yes, please describe how?

No

End of part 2 - Please proceed to Part 3 about voice classification.

Q14. Are you happy to proceed?

Yes

RESEARCH PROJECT BMPF7013 - Part 3

Part 3: Voice Classification

Q1. Are you knowledgeable about voice classification?

Yes

Q2. Have you been told about your voice classification/fach?

Yes

Q3. If yes, when?

Immediately after the beginning of schooling

Q4. Did/do you agree with this assessment? If yes, why? If no, why?

Yes, because i belive in my teacher

Q5. Are you currently singing repertoire of this particular fach?

No

Q6. Has this assessment of your fach changed since?

Yes

Q7. Do you think you are you working on a wide range of repertoire? If yes, please give examples.

No Response

Q8. Please list three of the most recent pieces you have worked on?

Verdi - I Vespri Siciliani - Elena's Bolero
Rossini- Bel raggio lusinghier - Semiramide
Obradors- Con amores la mi madre

Q9. Who chose these pieces for you?

Teacher

Q10. Are these pieces vocally challenging to you? If yes, please explain how?

in the beginning it was difficult for me to sing coloraturas, it tired me a lot because I didn't know how to sing them, I perfected coloraturas with practice and now it's not hard for me anymore

Q11. Do you ever feel vocally tired after having worked on this repertoire? If yes, please explain how?

if I sing them several times in a row, it makes me tired

End of part 3 - Please proceed to Part 4 about Vocal Hygiene.

Q12. Are you happy to proceed?

Yes

RESEARCH PROJECT BMPF7013 - Part 4

Part 4: Physiology and Vocal Hygiene

Q1. Have you experienced longer term vocal fatigue or vocal trauma?

Yes

Q2. Did you seek help from a laryngologist/medical voice practitioner?

Yes

Q3. In your opinion, are you knowledgeable in the physiology of the vocal instrument?

Yes

Q4. If yes, where did you learn about it?

In school

Q5. If no, would you be interested in learning about it?

No Response

Q6. Has any voice teacher ever given you instruction about vocal physiology?

Yes

Q7. If yes, did you find it helpful?

Very

Q8. If yes, please explain how?

Her instructions make it easy for me to sing,
she explained to me what I should pay attention to while singing

Q9. If no, please explain why?

No Response

Q10. Are you mindful about vocal hygiene? (Care of the voice)

Yes

Q11. If yes, please explain how?

I don't smoke, I avoid alcohol, I avoid whispering and shouting, I try to get enough sleep

Q12. Has any voice teacher ever given you instruction about vocal hygiene?

Yes

Q13. If yes, please give examples?

she told me that I must always be rested, to avoid crowds

Q14. What is your greatest voice related concern?

No Response

RESEARCH PROJECT BMPF7013 - Part 1

Consent to take part in research – S32

Q1. Do you consent?

Yes

Voice Research Project 2022 by Katherine Haataja

Q2. Are you happy to proceed?

Yes

Part 1: General

Q3. What is your age?

32

Q4. Are you a singing student?

No

Q5. If yes, do you hope to become a singing professional?

Yes

Q6. Are you already a singing professional?

Yes

Q7. If yes, for how long?

5 years

Q8. Are you taking voice lessons?

Yes

Q9. At what age did you start taking voice lessons?

17

Q10. How often do you take voice lessons?

Once or twice a week

Q11. If applicable, how long have you studied with your current teacher?

2 months

Q12. How many voice teachers have you worked regularly with? (Not including master classes etc.)

6

End of part 1 - Please proceed to Part 2 about your vocal practice.

Q13. Are you happy to proceed?

Yes

RESEARCH PROJECT BMPF7013 - Part 2

Part 2: Vocal Practice

Q1. Do you practice independently?

Yes

Q2. Do you feel confident practicing independently?

Yes

Q3. How many days per week do you practice independently?

Every day

Q4. How long do you practice for?

Two hours

Q5. Do you do voice warm up exercises?

Yes

Q6. If yes, how long for?

Until I feel warm up

Q7. Do you do voice cool down exercises?

No

Q8. If yes, how long for?

No Response

Q9. When working independently on songs or arias; do you typically work through the whole piece or only part of it during one practice session?

Part by part

Q10. Do you typically work through more than one piece or section of an opera during one practice session?

Sometimes

Q11. Do you ever feel vocally tired after having worked independently? If yes, please describe how?

I don't anymore

Q12. Do you ever feel vocally tired after a session with your teacher? If yes, please describe how?

No

Q13. Do you ever feel vocally tired after a concert or a performance? If yes, please describe how?

No

End of part 2 - Please proceed to Part 3 about voice classification.

Q14. Are you happy to proceed?

Yes

RESEARCH PROJECT BMPF7013 - Part 3

Part 3: Voice Classification

Q1. Are you knowledgeable about voice classification?

Yes

Q2. Have you been told about your voice classification/fach?

Yes

Q3. If yes, when?

First year of singing lessons

Q4. Did/do you agree with this assessment? If yes, why? If no, why?

Yes

Q5. Are you currently singing repertoire of this particular fach?

Yes

Q6. Has this assessment of your fach changed since?

No

Q7. Do you think you are you working on a wide range of repertoire? If yes, please give examples.

No

Q8. Please list three of the most recent pieces you have worked on?

O mio Fernando (aria, La Favorita)
Santuzza
Maddalena

Q9. Who chose these pieces for you?

I did

Q10. Are these pieces vocally challenging to you? If yes, please explain how?

No Response

Q11. Do you ever feel vocally tired after having worked on this repertoire? If yes, please explain how?

Yes. Sometimes I don't feel my body enough and my muscles don't work properly

End of part 3 - Please proceed to Part 4 about Vocal Hygiene.

Q12. Are you happy to proceed?

Yes

RESEARCH PROJECT BMPF7013 - Part 4

Part 4: Physiology and Vocal Hygiene

Q1. Have you experienced longer term vocal fatigue or vocal trauma?

Yes

Q2. Did you seek help from a laryngologist/medical voice practitioner?

Yes

Q3. In your opinion, are you knowledgeable in the physiology of the vocal instrument?

No

Q4. If yes, where did you learn about it?

No Response

Q5. If no, would you be interested in learning about it?

Yes

Q6. Has any voice teacher ever given you instruction about vocal physiology?

A little bit

Q7. If yes, did you find it helpful?

Yes

Q8. If yes, please explain how?

Understanding of voice is the main thing. Now I know how to use my muscles

Q9. If no, please explain why?

No Response

Q10. Are you mindful about vocal hygiene? (Care of the voice)

Yes

Q11. If yes, please explain how?

I don't smoke, don't scream, taking care when I have a cold
Doing what is good for my whole body

Q12. Has any voice teacher ever given you instruction about vocal hygiene?

No

Q13. If yes, please give examples?

No Response

Q14. What is your greatest voice related concern?

Menopause

RESEARCH PROJECT BMPF7013 - Part 1

Consent to take part in research – S39

Q1. Do you consent?

Yes

Voice Research Project 2022 by Katherine Haataja

Q2. Are you happy to proceed?

Yes

Part 1: General

Q3. What is your age?

39

Q4. Are you a singing student?

No

Q5. If yes, do you hope to become a singing professional?

No

Q6. Are you already a singing professional?

Yes

Q7. If yes, for how long?

8 years

Q8. Are you taking voice lessons?

No

Q9. At what age did you start taking voice lessons?

15

Q10. How often do you take voice lessons?

once in few months

Q11. If applicable, how long have you studied with your current teacher?

6 years

Q12. How many voice teachers have you worked regularly with? (Not including master classes etc.)

3

End of part 1 - Please proceed to Part 2 about your vocal practice.

Q13. Are you happy to proceed?

Yes

RESEARCH PROJECT BMPF7013 - Part 2

Part 2: Vocal Practice

Q1. Do you practice independently?

Yes

Q2. Do you feel confident practicing independently?

Yes

Q3. How many days per week do you practice independently?

5

Q4. How long do you practice for?

1- 3 hours

Q5. Do you do voice warm up exercises?

yes

Q6. If yes, how long for?

30 minutes

Q7. Do you do voice cool down exercises?

no

Q8. If yes, how long for?

No Response

Q9. When working independently on songs or arias; do you typically work through the whole piece or only part of it during one practice session?

both

Q10. Do you typically work through more than one piece or section of an opera during one practice session?

yes

Q11. Do you ever feel vocally tired after having worked independently? If yes, please describe how?

no

Q12. Do you ever feel vocally tired after a session with your teacher? If yes, please describe how?

no

Q13. Do you ever feel vocally tired after a concert or a performance? If yes, please describe how?

no

End of part 2 - Please proceed to Part 3 about voice classification.

Q14. Are you happy to proceed?

Yes

RESEARCH PROJECT BMPF7013 - Part 3

Part 3: Voice Classification

Q1. Are you knowledgeable about voice classification?

Yes

Q2. Have you been told about your voice classification/fach?

Yes

Q3. If yes, when?

At the start of the University studies

Q4. Did/do you agree with this assessment? If yes, why? If no, why?

No, and I changed the direction after the studies because it was wrong fach for me.

Q5. Are you currently singing repertoire of this particular fach?

no

Q6. Has this assessment of your fach changed since?

yes

Q7. Do you think you are you working on a wide range of repertoire? If yes, please give examples.

relatively wide, but mostly focused on lyric soprano opera repertoire and songs

Q8. Please list three of the most recent pieces you have worked on?

Manon, Puccini
Tatiana, Tchaikovsky
Mozart, Donna Elvira

Q9. Who chose these pieces for you?

myself

Q10. Are these pieces vocally challenging to you? If yes, please explain how?

yes, musically and some parts technically, which leads to developement

Q11. Do you ever feel vocally tired after having worked on this repertoire? If yes, please explain how?

No

End of part 3 - Please proceed to Part 4 about Vocal Hygiene.

Q12. Are you happy to proceed?

Yes

RESEARCH PROJECT BMPF7013 - Part 4

Part 4: Physiology and Vocal Hygiene

Q1. Have you experienced longer term vocal fatigue or vocal trauma?

Yes

Q2. Did you seek help from a laryngologist/medical voice practitioner?

Yes

Q3. In your opinion, are you knowledgeable in the physiology of the vocal instrument?

Relatively

Q4. If yes, where did you learn about it?

Books and medical advice

Q5. If no, would you be interested in learning about it?

not much

Q6. Has any voice teacher ever given you instruction about vocal physiology?

basic

Q7. If yes, did you find it helpful?

Not much

Q8. If yes, please explain how?

No Response

Q9. If no, please explain why?

I like to feel, specify and know what I do technically and musically in my own body. And I do not like to be overwhelmed with information on physiology. To know, yes, but not to know too much.

Q10. Are you mindful about vocal hygiene? (Care of the voice)

Yes

Q11. If yes, please explain how?

Lots of water, regular sleep, mental hygiene, regular meals and regular medical checks.

Q12. Has any voice teacher ever given you instruction about vocal hygiene?

No

Q13. If yes, please give examples?

No Response

Q14. What is your greatest voice related concern?

no concerns

COLOUR CODING: Classification – Age - Health

Katherine: I do. It's right here. Lets have a look. Did you have a chance to read through my ridiculous list?

Kerry: Uh-huh.

Katherine: Okay, cool.

Kerry: I didn't think it was ridiculous at all.

Katherine: Thank you, that is good to hear

Kerry: What have your projects been on so far? Have they been kind of leading to this moment?

Katherine: Yes. I would say that they have definitely led to this moment, but because I started as an opera singer, and I'm one of those exact singers who started out with no clue whatsoever, what was happening, all that knowledge about the voice and how it works. Over the years I gained experience and some knowledge but I soon wanted to learn much more. So that's what led me to this. So among many things I've been looking into twang, understanding how... And I was really interested about your tongue root kind of videos, and how, take Marilyn Horne for example, how she uses that.

I really like it because that's what I think very strongly myself when I'm listening to the singers, is that as long as you are flexible, and there's this understanding that the instrument has to be fluid and mindfully managed, that you can't keep it stuck it in one place. And that tongue root is not a bad thing as long as you use it in moderation and mindfully.

Kerry: Right. Well, we all use it. That's how we're shaping our sounds. We all use it. It's just Marilyn Horne uses a more extreme version of it.

Katherine: Yes.

Kerry: Shakira uses a more extreme version of it, but we're all using it to greater or lesser degrees, depending on how we want to shape and contour the song. That's our primary shaper. The back of the tongue is the primary timbre shaper.

Katherine: Yes. I think what initiated my thinking was listening to these certain singers, young singers in the Balkan region and they're trying to make their voices big. They're often pulling back their tongue . I had a teacher who asked me to sound darker... I'm lyric-mezzo, and she thought that I had a nice, darker timbre, and she decided, "You should be singing Dalila." I was barely 18.

So it's ridiculous, and what did I do? I stuck my tongue down my throat in order to create this darker sound, and this is just one example of things that I'm hearing

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repeatedly in the Balkan region. And then also in the Balkan region, which is where I'm mainly working, they love, obsessively love Verdi. So any Cherubino is bound to be singing Eboli at one point. That's the thing that I'm interested in is, if a young singer is singing Eboli at 20, physically, what is she doing to her voice? I understand that it's not just one thing, but if she is causing trauma that is what I want to learn. Anyways, so that was the summary of it, and I guess looking at that... I guess in those interview questions, that's where I'm trying to go.

Kerry: So looking now at questions about aging voice?

Katherine: Yes.

Kerry: And kind of what happens as we get older. Have you read anything by the changing voice by Cate Frazier-Neely?

Katherine: Cate Frazier-Neely? No, I have not. Let me write that-

Kerry: Nancy Bos?

Katherine: Let me write those things down.

Kerry: They might be a great resource for you. They have a book called... Hang on and I'll tell you what it's...

Katherine: Cate Neely.

Kerry: The book...

Katherine: I've been reading Karen Brunssen. I mean, I've read so much stuff, articles and-

Kerry: The book is called Singing Through Change: Women's Voices in Midlife, Menopause, and Beyond.

Katherine: Oh, very good.

Kerry: They have done a huge, extensive, lot of research on the aging voice.

Katherine: Excellent.

Kerry: I shouldn't say they've done the research, what they've done is, they've compiled the research. So they've gathered all the articles and kind of summarized them in this book.

Katherine: Brilliant.

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Kerry: That would be a really good starting place for you. But what I can tell you is that really, our voices start to age from our mid 20s on, and we start having some ossification of cartilage, even in the 20s. It's interesting because they don't like to call menopause aging, and I understand that on one hand, because doctors have a tendency to go, "Oh, you're just getting older." And they don't necessarily separate menopause from what happens after menopause, which is really where aging speeds up.

But from a medical standpoint, that's not really accurate, to not call menopause aging, because menopause is actually aging of the reproductive system. It does kind of signal the beginning of a more rapid decline of aging in terms of our cellular ability to repair and replenish, and all of those kinds of things. So for me, I have a harder time separating aging from menopause, because as I said, menopause is aging of the reproductive system. And so it is part of aging.

But like I said, I understand why they've done that because they want physicians to understand that women can still sing in menopause. They're not washed up just because they're going through menopause. It's not the end of the road for them. I understand on one hand why they've kind of done that separation, but the truth is, like I said, we really start our aging process probably in our 20s, and even our ears start aging the moment we're born.

So we're born with the most hair cells in our cochlea that we will ever have. Your hearing is the best when you're born, and it begins to decline almost immediately.

Katherine: All right.

Kerry: So really our bodies are in a process of aging from birth on. Like I said, it's a bit of a complicated question, and even just starting your paper by saying something like identifying the moment at which somebody begins to age, is a bit controversial because it depends on what system in the body you are talking about.

So if we're talking about the ears, the ears begin to age at birth. If we're talking about our reproductive system, our reproductive system begins to age the moment we have our first period, because we start shedding eggs, and we're born with the number of eggs we will ever have. So each month we lose some eggs, so we are literally aging and getting rid of the number of eggs.

So from that standpoint, we're really starting to age the moment we have our periods. So like I said, that even just answering that question of when does aging begin, is complicated.

Katherine: Yeah. I was reading one of the articles, I was going through menopause articles, and there was this how HRT affects, and how there were so many articles that were talking about the benefits of taking HRT. And especially if you're taking the hormone replacement therapy that is not the combined one, but only progesterone. If you're only

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on progesterone, that sort of is much more beneficial to just the youthfulness of the system or maintaining it longer. So that was very interesting.

Kerry: In their book, that's what they summarize all those hormone studies, and so I think you'll find that very helpful in terms of how you begin to take a look at that. But it's interesting because oftentimes, I think we blame things on when singers start to lose their voice. I can think of certainly somebody like Maria Callas, who famously couldn't sing as she got older, or didn't sing as well as she got older.

Everybody likes to blame it on the heavy repertoire that she was doing, but I actually think she was shifting repertoire as a result of early menopause. In her biography, you read that she actually went through quite an early menopause, and they would not have had hormone replacement therapy, probably at that stage of her life.

So I think she had a significant change to her voice because of going through menopause early, and she shifted repertoire to try to continue sing, because one of the big things that happens is, we lose range, and you lose access to your top notes.

Katherine: So why is that? Is it because the layers they become stiffer and they don't stretch anymore, or what is it?

Kerry: It's because the cartilages have stiffened, and so the cartilages can no longer do this to the vocal folds. It's not the vocal folds themselves so much, as it is the cartilages that no longer have that flexibility that they once had.

The other thing is the vocal folds do become heavier. Your vocal folds actually have hormone cells in them that are very much like what we have in our vaginas. It's very bizarre.

Katherine: Yes. I read that.

Kerry: But the vocal folds themselves actually get a little heavier as we get older, and they do become less pliable, less flexible. The elasticity of the vocal folds changes, the cellular levels change in them. And so we don't totally understand what those hormone receptors do in the vocal folds, but we have hormone receptors there just in the same way we do in our vaginas. So for one thing, as we start going through menopause, we get drier down there, and we get drier at the vocal folds as well.

Katherine: It's interesting because in this, about the age, for example, the question number four, that's there, how the superficial layers of the vocal folds. Obviously they've done these researches on cadavers, that the older vocal, that they were clear changes just on the surface of them, and how they're just older looking than the younger ones.

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I'm just curious to understand; again, I'm sorry. I feel like I'm asking this question repeatedly. How does that manifest in sound? What does it do to the sound that we are producing?

Kerry: Well, like I said, those changes at the vocal fold level really make the sound deeper. So they make the sound a bit heavier, a bit deeper. The other thing that happens with aging is not only the vocal folds themselves sort of changing, but also the rate at which our neuromuscular fibers are recruited.

So in other words, the signal coming from the brain that tells the muscle fibers to contract, is slower. It also doesn't contract as many fibers. So we have a tendency to get wobbly or vibratos, because we're actually not having enough effort at the vocal fold level, to maintain a healthier rapid vibrato.

Katherine: That was my question next, about the vibrato. How does that translate into the vibrato being like that?

Kerry: So like I said, you could really look at this from ossification is occurring, cellular changes within the vocal folds themselves that make the vocal folds heavier and weightier. So it tends to be that women's voices tend to get a little heavier. Men's voices actually get higher pitched because it's not that they can necessarily hit higher notes, but they tend to talk a little higher, as they grow older. It's probably because as their vocal folds begin to atrophy, they're trying to get closure, and so they naturally compensate by speaking a little higher.

So there are definitely cellular changes at the vocal folds. There are definitely ossification changes that are occurring at the cartilage level, and there are neuromuscular changes that are occurring with how we recruit and contract muscle. It's sort of a multifaceted process, and also our hearing has changed as we get older, and our hearing really drives our motor process.

So as we are not hearing quite as well, we may not be making sort of example, fine tuning those higher frequencies quite as well, because like I said, the pathway in the brain is that we audiate, or we imagine what we want the sound to be, and we're sort of fine tuning that based on our hearing. So the whole process is of a difficult thing to navigate, and requires management along all those levels.

So as I said, the biggest change for women is that the voices get heavier and deeper, and I think women experience more transition with the voice, sooner than men do. With men, their voices just tend to get weaker, and they just tend to not have quite the robustness of the voice that they once had.

So their voices might even get a little lighter, a little weaker. They may compensate by pushing a little bit, but women definitely experience that heaviness. Did you ever know a singer named Susan Dunn?

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Katherine: No.

Kerry: Beautiful opera singer. She sang at the Metropolitan with Pavarotti and-

Katherine: Okay. So same sort of time as Marilyn Horne type of period?

Kerry: Probably. Probably she was popular in the 80s, I would say.

Katherine: Okay, cool. Sorry, what'd you say her name was again?

Kerry: Susan Dunn.

Katherine: Susan Dunn, check her out. Great.

Kerry: Grammy winning American spinto soprano, but she totally lost her voice.

Katherine: Did we know why?

Kerry: It's interesting because I actually worked with her. She came to a workshop I taught. She was still teaching, and again, I think it's hormones, and aging. She can't even match pitch now. She can't get her voice to go where she wants it to go.

Katherine: Incredible.

Kerry: That's not her. That's not her musical abilities. There's a tendency... I wish we could dispel the myth that it's something people have done wrong.

Katherine: Yeah. That's good to know. That's really sort of good to bring about, because I mean, obviously, in my line of work. I'm not working at all really with older singers, so where my interest lies is really trying to get the young singers to take care of their voice, and do the right choices, and to elongate their career prospects by doing the right kind of course.

Kerry: Yes. So one of the big things I think, that a singer can do as they are entering even perimenopause, the 10 years before menopause, so this is by the time they're in their potentially mid 30s, they need to be monitoring their hormone levels, with a gynecologist or with somebody who can help them navigate-

Katherine: How interesting.

Kerry: At what point they want to add in some progesterone or whatever. So those are the kind of things that we know now. We also know that you shouldn't take off extended periods of time from singing. That it's really vital that you continue to sing. For example, we get a lot of teachers who sing a lot during the academic year, and they take three months off, and they don't open their mouth in the summer.

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Then they come back in the fall and suddenly they have a problem for the first time. And it's like, "Okay, you can get away with that when you're in your 20s and 30s, but when you're sort of at menopause, that not stretching and moving those cartilages every day-

Katherine: Yeah, it forgets. Muscle memory.

Kerry: Yeah, and you're going to get increased ossification and stiffness in the system, compared to what you might have had in your 20s. So I think there's a lot to be said for that, but your specific question about Fach, talk to me about what you wanted to talk about with regard to Fach.

Katherine: Yes. As I'm reading everything, I can get my hands on about it, there still doesn't seem to be a consensus or is there? In your opinion, is there now a consensus on the classification and what actually is it? Is it range, timbre and tessitura? Are those sort of the guiding three pillars in your opinion? Where are we at?

Kerry: To assign a Fach you mean what to kind of...

Katherine: Yes.

Kerry: **Figure out a person's Fach. I think lot of it has to do with weight and agility of the voice, and sort of size of the voice or weight of the voice. And agility is also another big factor. And of course the dramatics tend to not have as much agility, although there are dramatic color of tourists. So I mean, they do exist, but I think often you'll find that there's a trade off there, that if you have a bigger, heavier voice, often they don't have quite the flexibility that you would expect. Because sort of get that heavier weight, they are locking in a little bit more, they're pushing a little bit more.**

Katherine: Now, physiologically, a person who does have the fireworks coloratura, [inaudible 00:29:07] whoever, and then somebody else who is more like a Jessye Norman, or somebody who is... I mean, obviously as people, they already look different, but in your opinion, what is it? Is there something in the instrument itself that dictates that?

Kerry: **I don't think we know the answer to this yet. I've thought about this a lot. Because as I have played with now, the back of my tongue, more and more and realized I can imitate almost any timbre, that it's kind of like, is it nature or nurture? And that's the age old question? Is it nature or nurture? Are these, for example, Jessye Norman, who I saw perform, I don't know, 10 years ago or something, she was here. I went to a really small concert, sat about four rows back from her, was amazing experience.**

But somebody like Jessye Norman, is it the size of her vocal folds, for example? I don't think we know that because there's not that much variability from one cadaver to the next, in terms of the size of the vocal folds. They might vary by a millimeter or two.

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Katherine: Or was it just because her teachers thought, "Oh, my God, your voice is divine," and then she just kind of like, "You have to sing this," like you say, is it nature or nurture?

Kerry: **I think it's probably 80% nurture, and probably like 20% nature. I mean, let's face it, she had an enormous mouth, she had an enormous neck, and so her resonating space was quite large.**

Katherine: Yes.

Kerry: And you certainly look at somebody like Joan Sutherland as well, who had this just massive oral structure; big teeth, big jaw.

Katherine: Yes, absolutely.

Kerry: And she certainly would've had a very different resonating space than other people, and yet she was coloratura. I mean, she was able to do these tremendous things with her voice. Like I said, I think part of this is just nurture, a big part of it is probably nurturing the voice. You start to develop something that sort of feels like, "Okay, I'm making nice tones here," and your teacher goes with it.

Your teacher goes with the color of the voice that you're making, or the size of the voice you're making. We reinforce that, and so I think over time, we're reinforcing the muscles and the mechanism that are creating that timbre with.

Katherine: We're nurturing that part of training and not so much the other part of training.

Kerry: That's right.

Katherine: That's a very interesting point, really interesting.

Kerry: **I've worked with a lot of mezzos who have really dark, beautiful timbres, and they actually can't twang. It's kind of like they've spent so much time nurturing that darker timbre that they can't even find the twang. It takes quite a long time for them to even find it, because it's a different muscular setup.**

Katherine: Yeah, absolutely.

Kerry: **It's a completely different placement. So I guess my hunch is that it's more nurture than nature, and it's more the way we train and maneuver the voice-**

Katherine: That makes so much sense to me. That is exactly-

Kerry: But there probably is like a 20%-

Katherine: Of course. We do have a voice.

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- Kerry: Like I said, these huge, enormous resonating spaces that those ladies had. Marilyn Horne on the other hand, had this tiny, short neck, and so she worked differently with what her anatomy was, to get her size.
- Katherine: Or Bartoli. Bartoli, the same. She's all squished together and it's fascinating. It really is fascinating.
- Kerry: It is fascinating. I will tell you though, I have found known several big [inaudible 00:33:52] tenors who really did not age well. There seems to be something about really pushing the voice like that. It's just been interesting because in almost all the cases, they've ended up with far worse atrophy, than the average person would end up with.
- Katherine: What does that kind of atrophy... What does it look like? When you go in and you look at it, where is it and what does it look like?
- Kerry: The vocal folds are very thin, and they don't come together very well. So instead of coming together like this, they kind of have a bowed appearance. So they don't have the muscle tone that they should have.
- Katherine: The cause of that has happened over years and years and years? How long does one have to keep pushing your voice in that sort of direction? I mean, I know there's no answer.
- Kerry: I don't think anybody knows. Nobody's done any research on this, and I don't know how you'd research it. I had a student one time take a look at how long in the most popular operas, let's pick Marriage of Figaro, whatever, Elixir of Love, and Tosca, just different ones, and let's look at, for example, how long is the leading person actually singing on the stage? How long are they vocalizing? How much of that is in a difficult part of their timbre, in a difficult part of their range?
- So for example, one opera, it might be that they're actually singing there for a really short duration, but everything they sing is in a difficult part of their tessitura, right at the second passagio, for example, whatever, or at the very top of their range, they're singing in high notes. You sort of think like, well, even though they're singing only six minutes, the entire opera or 10 minutes or whatever-
- Katherine: They're doing it exactly where it hurts.
- Kerry: They're doing it where it's really challenging and difficult, versus this opera where maybe they sing 20 minutes, but it's in a much more comfortable part of the range, and they're not having to bark over the orchestra. It would be a really hard thing to study this, I think, because-
- Katherine: I mean, from a personal point of view, although Cherubino and Sesto and [inaudible 00:36:49] sits perfectly, but try Dorabella and I'm strangled. It's so interesting.

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Kerry: Dorabella, you said?

Katherine: Yeah. It just sits right there by the end of it.

Kerry: In Così?

Katherine: Yes.

Kerry: Yeah. I agree with you. I mean, I know this to be true, so that's why I often thought it'd be really helpful if we had warnings we could give students, like **it's not so much the amount of singing, it's also how difficult it feels to you.**

And how fatigued does this particular repertoire make you feel? That would be a fascinating project to interview people who have done various roles, and to ask them how strenuous the role felt in terms of vocally.

Katherine: Yeah. This is what interests me. This is really what interests me, because if that would be something that was available, then it's such important, valuable information for young singers, in order to be able to gauge a little bit. Somebody was like, "They were always pushing me to sing Dorabella." I was like, "Oh my God, I have to sing Dorabella," and it really did not work for me.

Kerry: **What might be a really interesting project is to pick three or four soprano roles. Pick a voice type and pick the roles that any good soprano who would've performed, would've maybe done all of those roles. They would've performed this part, that par, and it might be so fascinating to send them a little questionnaire, and have them rank how difficult the vocal part was for each of those roles.**

You might ultimately be able to come up with some kind of a rating scale by perceived difficulty in terms of where the tessitura is and the placement of the piece and the duration. And that might be really interesting to look at, does it have anything to do with the duration, the overall duration of singing? Because you could very easily figure out how long that particular role is actually singing on the stage, right?

Katherine: Yeah.

Kerry: **How long are they singing on the stage? So that would be easy. So in terms of overall length of time, you you would assume then that the person who is singing the longest, that that role would be ranked the most difficult to sing. Vocally fatiguing. And yet. It may end up being something that is 10 minutes less singing-**

Katherine: But because it sits right there.

Kerry: **But much more challenging. I think that would be a really fascinating project. Like I said, just to have people, maybe you could devise a little questionnaire; how vocally fatigued**

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did you feel each night when you left the stage? How well did you feel the next day when you performed it. Did you have any actual difficulties? Did you have any pathology develop during your performance?

Katherine: Vocal fatigue, exactly. That to me is just...

Kerry: But you're not going to be able to do it by every thought. You're going to have to-

Katherine: No, I would only stick to sopranos and mezzos, that's it. I wouldn't even go down to alto. Again, so much research out there about the length of the vocal folds and blah, blah, blah, and this and of that, and yet still, teachers are telling mezzos that they're sopranos, and sopranos that they're mezzos. And I think it has to do with the timbre thing because you get misguided by this color issue, that you fall in love with this, "Oh my, you have such a beautiful color, and height." Of course, how much height does the voice have?

Kerry: I agree that it's entirely timbre. I've worked with a base baritone guy, who's yanking his tongue back too far, and he's trying to overly darken his tone. I think he's a tenor, and his teachers are trying to make him a base baritone.

Katherine: That's insane.

Kerry: He's got a real head.

Katherine: It makes me gag, just hearing it.

Kerry: That's his sound, and yet I've got him doing some musical theater stuff, and it's like, he's got this gorgeous tenor quality in there, and he's got some ring in the voice. I think he's misclassified. I think it's caused all kinds of problems for him, **but now it's all wrapped up in his identity.**

Katherine: That is so dangerous. It is so awful. This is something that I encounter nonstop. There's this adulation toward certain types of opera, and so teachers, first of all, they drive their singers to be... How many times do I have a young singer come to me, "I'm a dramatic soprano." "Oh, really? Okay." Because the teacher thinks so, because it is the role to be, it is the voice to have. If there's the slightest sound of timbre there, you're stamped immediately. When would you even classify a singer age wise?

Kerry: **That's the question. What is the age of classification or what age, and I would say we shouldn't be classifying probably until we're in the mid 20s.**

Katherine: I agree. Totally agree.

Kerry: **More like maybe even late 20s because the voice hasn't even settled into itself, until you're sort of in your mid 20s.**

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Katherine: Yeah, absolutely.

Kerry: If we're labeling people by the time they're 21, that's probably too early. Even in the master's program, 22, 23. I mean, I would say really labeling somebody should probably be done by the time they're like 24, 25, okay, maybe we can start thinking about a label.

Katherine: So then what kind of repertoire do you then assign singers like that? Obviously, it's all individual, but how far do you go to experiment and test? Where is the no-go zone?

Kerry: So for me, I really think **all singers need to be singing a variety of repertoire until they get to that sort of mid 20s. They need to be exploring all the colors of the voice.** They need to be exploring some agility. They need to be exploring some making bigger sounds. As they get older, they also begin to identify more. When you talk about a singer kind of finding your voice, it's not so much that you find your physiology, it's that you find a timbre that you feel you like, and that you feel resonates with who you are as an artist.

So I think it has far less to do with the physiology, and it has much more to do with just what feels good to you as a performer. Like I said, and then you begin to nurture that part of yourself. So until then, I think we need to be teaching our students to access all different colors in their range, exploring their full range, exploring some things with flexibility. Probably staying more in the art song realm, maybe some Mozart, but I mean, art song, Mozart, musical theater-

Katherine: Young singers repeatedly tell me they find Mozart so difficult to sing.

Kerry: Well, I was going to say, I perform [inaudible 00:45:49], you never got to take a breath.

Katherine: No, it's a huge role. Fiordiligi is crazy big, and the range goes up and down. You need to have all that, legato and agility. It's huge.

Kerry: All four voices are singing there, and so you're sort of singing over top of each other. I can remember that being much more fatiguing, then I turned around, I was working in a dinner theater then, and I turned around, the next night and I would do...

Katherine: Nice.

Kerry: That was much easier to sort of do that the next night. So that's just what I said, and yet I sang less in the Così, because we were doing excerpts, we were doing a little mini version of it. But it was far more fatiguing to me than the other piece was.

So for me, like I said, as an early musician, I sort of feel like what we would do in art school, if we were teaching somebody to paint, if they were in art school, they'd learn about pottery, they'd learn about different kinds of acrylics and oil paints, and all of these things. They would be exploring all of them.

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- Katherine: That is not happening in the singing classes, most of the time.
- Kerry: No, we're too early to label people and we don't let them develop all their muscular abilities. Because I think really good artists, they can do pencil drawings and they can do pen and ink, and they can do acrylics and they can do some pottery. And maybe ultimately, they end up going in one direction, but they still have abilities in all of those other things. I think we're missing the boat, not doing that with people, and I think they end up with holes in their training.
- Katherine: Absolutely.
- Kerry: And holes in their muscular abilities. Let's face it, even voices that are not agility, that sort aren't classified as being agile voices, they do occasionally have some moments where they have to have some agility. Or the agility voices, the highest sopranos do occasionally have to go down into their chest register. I think we really do people an injustice or a miss...
- Katherine: Disservice.
- Kerry: Disservice when we're not allowing them to develop all those various aspects.
- Katherine: Obviously, all singers have weak spots, where we feel like, ooh, for whatever reason, and what those reasons are, I don't know. We're just different. For me, my lower register change was always a challenge. The upper one, no problem. And this sort of the understanding of it, that it's okay to strive for this rounded, so that it's the same on all sides, that it's just the same voice, no matter how you turn it, and that you keep it flexible. And you use all these tools to it that you have available to you.
- But so many are not choosing to use them. They're stuck in their way, and they're like, "No, this is me, and this is what I'm going to do."
- Kerry: The interesting thing is, as you explore other repertoire, what they have difficulties with is inevitably what's going to be their difficulty in their classical voice. So for example, my mezzo who can't twang because she's worked so hard on her dark timbre, it's like, that's the issue. When she has trouble in her classical singing, it's because she hasn't learned how to access those brighter frequencies, and those don't come up real often for her. But when they do, it's a problem in her classical singing then.
- Because she's never explored that part of her voice, so she hasn't spent enough time there. So anyway, for me, that's part of my diagnostic thinking. So this is a lot of stuff for you to think about in terms of where you want to go with your project.
- Katherine: I have to go with this topic, but this definitely gives me a lot of additional things and answers questions that I've had pending. I need this clarified in order to... And just to finish off. In your opinion, if a young singer is pushed to sing a great big role that sits too

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high for too long, and is really pushing and challenging, what is it about her physical being, her cartilage, her whatever it is, everything, what is it that is not supporting that yet?

Kerry: It's got to do more with the shape of the larynx. Women are more apt to get hurt than men, I can just tell you that. Women are more apt to develop nodules, to develop polyps, something on the vocal fold edge than men are. **20**, and it's already closer together in men.

So that's why there's protrudes, because they have a sharper angle, and women's thyroid is more like this. So what that means on the inside, is that women's vocal folds are further apart, and it's harder for them to get complete closure.

Katherine: I see, oh, I didn't know that.

Kerry: So as we are singing in the higher range, those vocal folds are already being pulled apart a little bit, and the average singer, as we go higher, closure tends to diminish. And so sopranos or women who have to sing up in that upper tessitura, they are only getting closure on the front half of their vocal folds. That means that's bearing the brunt of the vibration rather than the whole length of the fold, and they're having to work harder to get those vocal folds together, so they're pushing a little bit more.

So it is a physiologic thing for the women, that they're a little bit more predisposed to have some issues just because of the-

Katherine: How does the trauma then happen? How does the trauma of that... If they're working so hard, how does the vocal fatigue... I'm trying to understand why is that-

Kerry: They get some transient swelling on the vocal folds, so where those vocal folds are banging together, they tend to get a little edema, a little swelling on the edge of the fold.

Katherine: Is that what is called vocal loading? Because they're just

Kerry: Vocal load is the amount of time they're actually voicing. The amount of load, and how heavy it is. But the edema, the swelling is something that occurs. A lot of professional singers they'll get a little transient swelling. They feel just a little hair horse, maybe the next day it's resolved and they're back to normal.

But that's why it's interesting to note, if you did some kind of a survey, it would be really interesting to note if they felt hoarse or vocally fatigued at the end of the performance, and how they felt the next day.

Because that swelling that doesn't resolve in sort of 24 hours, is more problematic because if you're then going into the next night's performance on chords that are

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already a little swollen to start with, then they're going to, over time, be the ones who develop some pathology.

Katherine: I see. That does make sense. Excellent. Okay, that clarified a lot. Really, this has been just fantastically helpful.

Kerry: Have you watched the Endoscopic Course by any chance? I've got an Endoscopic Course. There is a cost to it, but you might really enjoy it. It's \$145 course, but it's got eight hours of instruction. I don't know if you've got the bandwidth for more instruction, but...

Katherine: Where do I find that?

Kerry: It's at getvocal-now.com, but I would definitely recommend the book that I suggested for you, about aging, and getvocal-now.com. It's a course on endoscopic evaluation and interpretation. And there's a dash after the getvocal-now.com. That course has tons of information about the vocal folds and pathologies, and sort of how everything works and the velum. It's a really good course, it's on demand, so you can just watch it when you want, and there's a 100 page book that comes with it. So there's just tons and tons of information on there.

I think that might be useful for you, but like I said, I've often thought it'd be really interesting to rank order how long a role actually is versus perceived complexity of performing it.

Katherine: Yeah, exactly. Because that is-

Kerry: And how fatiguing it feels.

Katherine: Yeah, exactly.

Kerry: It'd be interesting, like did you develop a pathology during your performance of this role?

Katherine: Mm-hmm, that too.

Kerry: If so, swelling, polyp, nodules, other. That would be really fascinating.

Katherine: Yeah. But are singers willing to admit that?

Kerry: If it's anonymous, yes.

Katherine: Yeah.

Kerry: I mean they might have to sign a consent, that their actual survey could be anonymous. So that would be really fascinating.

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Katherine: Yeah, exactly.

Kerry: But like I said, if you go listen to Susan Dunn, God, that was a spectacular voice, and she totally lost her voice.

Katherine: That is so weird. That is really, really extraordinary.

Kerry: She just wasn't heard from anymore. She just kind of vanished from the performance scene, and then years later I met her at a workshop, and she couldn't match pitch, and she couldn't get her voice to go there. She knew exactly where she wanted it to go, but she couldn't get her voice to do it. When I look at her, this is pretty judgemental, but when I look at her, she's a very large woman, and I suspect she has too much testosterone, and she's extremely tall. She's got big hands.

She's got sort of large features, and I think at some point she's had a hormonal problem, and that has changed her vocal fold mass.

Katherine: That's why there's a disconnect.

Kerry: **And that is not reversible. If you have too much testosterone, if you catch it early... But if you've had years of too much testosterone, you can't ungrow your body. Do you know what I mean? Once the vocal folds have increased in size or increased in length or increased in mass, you can't undo that. So that's why I say for singers, they really need a gynecologist that they can trust, to stay with the same gynecologist throughout their life span.**

Preferably they'd find somebody who they're going to pretty frequently as a singer, and saying, "Hey, let's just check my hormones and see if I'm starting to enter perimenopause, and if so, let's consider some hormone replacement." Those things, if you let them go, once you're through menopause, it's too late, you can't do that anymore.

Katherine: That is so fascinating. That's the kind of thing that would cause typically panic in any opera singer who is sort of worried about this kind of thing. But we need to be educated in a way that it just sort of, cohesively is all okay, as long as you follow these parameters, and they all support each other, the whole structure of it.

Kerry: That's right. Well feel free to book in again, sometime if you want to.

Katherine: All right, that would be great. Thank you so much for your time.

Kerry: Well, thanks and have a good day, and let me know if I can help in any other way.

Katherine: Absolutely. Thank you so much, Kerry, take care.

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Kerry: Bye-bye.

Katherine: Bye.

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Interviewer:

Oh, I am very good. Thank you so much, again, a thousandfold for taking the time to just allow me to get these couple or few questions just make it clear in my head.

Kerrie:

Sure, sure. No worries. So you have some more questions?

Interviewer:

I do have more questions and some of them came up as I was going through what we spoke about last time and then when writing my conclusions and so on. And there's this question that just keeps coming back to me and I cannot find an answer for it really clearly and... I mean, we know that there are lighter voices and larger voice. Obviously, my focus is on female voices, and we all know as singing professionals, teachers and so forth and in my work in the opera world, that the smaller voices, they take less time to mature than the bigger voices. I have students with the most phenomenal big voice who will end up being a dramatic mezzo one day. But because you don't want to label them too soon and you want to give them the possibility of sing something else. Because they're not ready to sing the heavy stuff. So you want to try and give them something, some alternatives.

Interviewer:

They'll never be engaged professionally to sing that repertoire, which is a shame in my opinion, because how are they otherwise going to get the professional experience that their fellow soprano is already getting galloping around from engagement to engagement. And there she is, not getting any professional experience. So what can I tell those students to comfort them? **What is it in the voice, the physiological facts that make it so that they just are slower to develop?**

Kerrie:

That's a good question. I don't know that anybody really knows the answer to that. I think, I guess my musings on this idea might be that some things, it might be that hormones change in these voices that are ultimately going to be bigger voices that they may, as they sort of mature and hormones fluctuate, that they may end up with... I'm guessing greater levels of testosterone or something like that. Kind of bulk and weight the voice a little more. I mean, I've heard that our larynx doesn't stop growing till we're sort of in our mid twenties. So on some level, I think there's probably some physical maturation that occurs with time and age, but I would be **more inclined to think that it has to do with maybe hormones changing as they get a little bit older.** But again, I don't know that anybody knows the answer to that.

Kerrie:

But I agree with you, those bigger voices do tend to develop later. I always thought that it also had to do with just learning to coordinate musculature, but those bigger voices are in place early on, as you said. You can pinpoint the ones that are going to be a bigger voice, so they must already have **greater weight and mass to their vocal folds.** Something along those lines that eventually they sort settle into and learn how to use. But again, I don't know that anybody knows the answer to that. I'm kind guessing that it may be hormone mediated. It maybe a combination of things.

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Interviewer:

Okay. Well, yes. And it's difficult because we can't really go in there and have a look while they are singing and so forth. But then, there seem to be many opinions also about what you can actually tell with a laryngoscopy. **Would you say in your professional view that you are able to differentiate the vocal folds of a... Let's say, alto and a soprano? No, you wouldn't?**

Kerrie:

Nope. You can't. It's interesting because sometimes you look at really thin vocal folds, you think that's definitely going to be a soprano and they're not. And so what we can't see from a laryngoscopy is the depth of the fold, nor can we really sort assess the muscular mass. I mean, the vocal folds extend under the ventricular folds or under the false vocal folds. And so we really don't have a sense of how much muscle fiber they have, how much... So you really can't just look at vocal folds and identify as soprano or not.

Interviewer:

Interesting. I had understood from all the stuff that I was reading, there's so many opinions out there and pictures where they have put two pictures of thinner and slightly fatter vocal folds, and maybe it's just in that particular study they have found strikingly different specimens, "Wow, we found a fat vocal fold." Then they found one skinny specimen on a soprano and the other one just happens to be an alto... It's so difficult to decipher what you can lean on and what you cannot.

Kerrie:

I would be really hesitant to interpret those studies because it depends a lot. The way the vocal folds appear during phonation depends a lot on what mode of foundation you're in. So if you're in sort of more of a head voice, your vocal folds are going look thinner. Because you're pulling them a little more [inaudible]. And so-

Interviewer:

Because I had some pictures where they are just in resting, where they're reportedly in breathing and supposedly relaxed position. And one of them is skinnier and the other one is fatter, and the one is supposedly soprano and the fat one is an alto. So I mean, is it just by chance or?

Kerrie:

I think that's by chance because I think again, if you had a large number of subjects, you would find tremendous variability among subjects. So if this was a small study and they looked at... There's an interesting paper by a guy, a Greek guy named [inaudible] and he says that 80% of our research is wrong. Not only voice research, but just sort of 80% of all research is wrong. And don't quote me on 80%, it might be 75, it might be 78.6 or... But it was basically the idea of the article was it's wrong because we don't have a high enough power. We don't have a high enough number of subjects, we don't have control groups, we don't have... Et cetera, cetera. And so in voice in particular, we never have enough power in our studies. We never have enough subjects, we never have enough control groups, we never have enough...

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Interviewer:

We don't have enough knowledge. I mean, it's...

Kerrie:

Right. That doesn't mean that we can't sort of read those, but we read them with a different lens of caution. And really, as somebody who's done... I've done about 20,000 endoscopies, and I could not identify even male or female, let alone...

Interviewer:

Within the female range.

Kerrie:

Within the female range.

Interviewer:

How incredibly, incredibly interesting. I'm so glad I asked you that question because it was really putting me this way and that [inaudible] and I wasn't sure, what am I going to write about this? So really that is very, very interesting. Now then, jumping to a different topic, which we touched upon, the vibrato, when we were talking last time, and sometimes I come across these young voices that have... Because unfortunately, in the Balkan region, they put them on stage when they're so not ready and they cannot make any [inaudible]. So they're basically hurling their lungs on stage and doing their best to sound big and mature. So I hear these bruised voices all the time. You can hear it, the back of their voice, there in their throat. I can hear it. And then there's the vibrato. Now, what is it that makes the vibrato go all wobbly... A young 20 something and she has a vibrato of a 50 year old, 60 year old woman. What is it that makes that happen? Do we know?

Kerrie:

I know. I don't know if anybody would agree with me, but vibrato occurs because it's believed that it has to do with the feedback loop. How long the message takes to get to the muscles, and then how long that feedback takes to get back to the brain, that it has something to do with that length of time that it takes for those to cycle. Now, beyond that, that's not quite the whole picture. It's felt that it has to do with some kind of agonist and antagonist relationship. That basically you've got two muscle groups firing once. So we can think of the larynx kind of doing its work and maybe the tongue being sort of the antagonist. And so these groups or organs work in relationship with each other. And so what I find when people get a big wobbly vibrato is they're under energized, particularly in their tongues.

Kerrie:

Their tongues are too relaxed and it's not providing enough counterbalance or support to the larynx. And so if you think about a slow rate of vibrato, they are likely having under energized production. And so what I tend to do to fix it, and it works a charm, is increased effort in their tongue, which sounds terrible, horrible, awful.

Interviewer:

How do you do that?

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Kerrie:

So I have them work on keeping a brighter, higher position with a tongue and e position, and I actually have them feel the effort in their tongue. So I say, "When you're singing E, can you hear the thump there? Or is it soft and mushy?" If it's soft and mushy, they don't have enough energy there. And almost always you'll find... I've got a really interesting video of a guy I worked with. He was a base baritone. I'm not totally sure I agree with the base part of that. But anyway, he was pulling his tongue away far back, and he had a big wobble. He had a horrible wobble in his tongue. And I worked on bringing his tongue more forward, bright him up, actually increasing energy because his tongue was too much energy in the back, not enough energy in the front.

Kerrie:

And so we worked on bringing his tongue more forward, higher, brighter, and it totally stabilized his vibrato. And also got him kind of out of that chokey sound that he had. That little bit of overly compressed choke sound. The interesting thing is, when people hear that, they often misinterpret, we need to relax the tongue more. Because they're hearing something with the tongue and that's true. But my solution for him, if I had just relaxed only, we might have gotten rid of the choking component, the [inaudible]. That bit of it. But we would've still had the [inaudible]. It would've been more like, [inaudible] instead of [inaudible].

Interviewer:

Dynamic active. Yes. Exactly.

Kerrie:

Yes, yes. So I hesitate to use the word tension, or I usually often just talk about we're going to increase energy in the front. Because otherwise the back of a tongue wins. If you think of a tug of war and you've got too much effort in the back pulling on the rope, we need some energy on the other side of that rope, kind of bringing us some of that energy to the forward, to balance things. And so that usually resonates with people. It doesn't fly in the face of what they've heard about a relaxed position or something. And then it's just... So I have them just practice in speech [inaudible].

Kerrie:

Keeping at kind of high forward position. [inaudible]. Making sure they don't add tension here. [inaudible]. So then we start working with a little singing, maybe some light scales, gradually building into a repertoire and kind of feeling that they can maintain that position. Generally takes two or three weeks for them to stabilize there. But it's a fix.

Interviewer:

That is very, very interesting. Great. And then one more question actually I only have, which is that I was already reading the book where you were contributing before, but I hadn't finished it, so wasn't kind of completed my questions about it. The one that you did with Gates?

Kerrie:

Oh yeah, yeah.

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Interviewer:

Yes. And at the very end of it, there's the most, incredible statement that I have never, ever nobody that I've asked have ever come across this. And I was just like, and it's like, "Wow. Oh my God, this is what I really want to know about." And it's about the slow twitch fibers and the fast twitch fibers where... So it says that there's a possibility of a difference in ratio of slow twitch fibers, two fast twitch fibers in the thyroretinoid muscles resulting in the differences between voices that are predisposed to [inaudible] agility and voices that are typically associated with... That are not so [inaudible] wise. I mean, is that something that you would agree to or was that more of Gates' opinion?

Kerrie:

I don't think it was Gates's opinion. I think it was Dr. Forrest opinion.

Interviewer:

I see.

Kerrie:

And he often mused about these things. And there have been shown to be differences in the number of muscle fiber, the types of muscle fiber, fast twitch or slow twitch. There is variability among singers. And so he's basically amusing that there maybe-

Interviewer:

It kind of make sense because they're marathons and they're fast runners. And it's a muscle... And so from a very basic point of view, it would kind of be a fantastically likable solution. But whether it could be that easy, I don't know.

Kerrie:

Again, I hesitate to say that's it... Because in fact he sort of drove me nuts because he tended to go from a research study to conclusion pretty quickly, and I love him dearly. He's one of the smartest people I've ever worked with. But in fact, he scored the highest ever scores on the otolaryngology. They take kind of annual exams to re up their... He's always in the very top percentages and super smart. But like I said, he tended to make quick leaps from research studies to use things about what that might mean. And so I'm not sure I would go there except you might mention it.

Interviewer:

I would love to mention it, but the statement doesn't go anywhere. It's just that statement, literally. And then there's nothing more about it. Yeah.

Kerrie:

And you can say that there are some people whom you can reference in our book who have mused or hypothesized... We may eventually determine that something as simple as muscle twitch fibers.

Interviewer:

Yes, exactly.

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Kerrie:

... Contribute to this. But I think the conclusion of all of this is to say, we still don't know.

Interviewer:

It is true. Why are some voices, why are they so predisposed to [inaudible] and some are just does not happen? Just like you were talking about, is it nature or nurture? And I think there's a lot in that.

Kerrie:

I have a question for you. So I have worked with a number of dramatic voices over the years who ultimately developed pathology. I mean, they came to me once they had the pathology. It wasn't that I worked with them and then they got it. But I've worked with people who had big careers and one of them was the big heldentenor who had an injury, another heldentenor who developed tremor. And I've often wondered how do you know any big dramatic voices who have sung throughout their lifespan and maintained longevity or are they at a higher rate of...

Interviewer:

I would say that, what I'm always-

Kerrie:

They don't develop injuries like nodules that can be sort of fixed. They develop sort of more debilitating types of problem and like paresis or tremor. And I've often wondered if it's the push to the voice that makes them develop those things, or perhaps it's whatever it was in their bodies that made them a bigger voice to begin with.

Interviewer:

I do believe, from my modest experience, I would say that from physically being in the presence and working with and listening to singers and then just listening and following careers that are of singers that I do not know. And having worked with in production, we were doing Tchaikovsky's *Iolanta* a few years back, and we ended up hiring... We got so many Russian singers coming to audition for it, which was fantastic. So the majority of the singers in the cast were Russian. And I followed Russian singers over there because... And when you're working in the Russian houses, I mean they are like machines. It's an insane amount of work that they are being put through. And for example, Olga Borodina, she for sure was born with that voice. I have no doubt about that. She had that. And I would say that she's one of those singers who was born to sing that dramatic repertoire and she's sang it throughout and she's sang it splendidly.

Interviewer:

So whether now she's sort retired from the scene, whether that's because she's all happy and [inaudible] about it or whether there was something then at the end, I don't know.

Kerrie:

How old was she do when she stopped performing?

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Interviewer:

I would say that she might have been late fifties, something like that.

Kerrie:

That's kind of unusually long, right?

Interviewer:

Yes it is. Exactly. Yeah, exactly. My point, I mean, is that she is an extraordinary exception because she was an absolutely extraordinary singer. I couldn't say for sure regarding your question, but she's the only example that comes to mind where and she would sing Cenerentola she would sing, Amneris and you name it. I mean, really everything. And when she's singing Cenerentola I mean, you can hear that that is not like Bartoli. It's not that kind of coloratura. It doesn't [inaudible] it's not this crystalline kind of thing. It's worked, it's trained. You can hear it that she has trained it, that is nurture versus nature. You can hear that her by nature, she is not a coloratura, but she had nurtured it to become lovely.

Kerrie:

I've often thought that would be an interesting study to look at injury by voice type.

Interviewer:

Absolutely. Yes.

Kerrie:

And because I'm convinced first of all, women have more injury than men because of the shape of their thyroid cartilage.

Interviewer:

Yes. I remember you said that last time.

Kerrie:

Within voice types, I think it would be really interesting to look at the incidents of injuries and what types of injuries they have. And you'd want to look at... I mean, not you personally, but whoever would use such a study would probably want to look at more professional level.

Interviewer:

Absolutely. Yes. Yes. Because I mean, in the professional level, when you're there, and especially when you are at that vulnerable young age where... Because even if you have this, let's say [inaudible] type of voice, and you go and audition as a 20 year old something, and then there's the one another for [inaudible] or something, and then they're not going to hire you for that role. Although you could sing it simply because they can hear that. No, no, no, no, you should be singing, [inaudible]. And she should not be singing [inaudible] right now. So it's just that it's an equation that is a frustrating one, but what to do about it. And then you have the opposite, the [inaudible] who then end up singing these things because they have the stage experience.

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Interviewer:

So they're thrown to sing, [inaudible] because they already have the experience that the actual voice that could sing it doesn't have it. So it's a chicken and an egg situation that is so frustrating. And that's where I find that very often these problems then occur where, goodness me, I mean [inaudible] singing [inaudible] It's madness. It's sheer total suicide eventually.

Kerrie:

Yeah. Yep. For sure. Yeah. So what other questions do you have?

Interviewer:

No, I think that was really it, that I was so intrigued by the slow twitch fibers comment in the book at the end. But I think that those were... Now I'm very clear on, and if I may, I will obviously quote, because this is recorded and I'll have that transcribed and everything. So just that I'll take caution on those points that we touched upon about the vocal chords and then about the vibrato and that sort of thing. So that's going to be...

Kerrie:

Yeah. Yeah. But if you ever work with a singer who's got a big wobbly vibrato, try a brighter, higher tongue and see what happens.

Interviewer:

For sure. I really appreciate that advice.

Kerrie:

For sure. Yeah. Okay. Well listen, nice catching up with you.

Interviewer:

Thank you for giving time away from your weekend. I really appreciate it.

Kerrie:

No worries. I always enjoy talking to people, so. All right. Take care. Bye-bye.

Interviewer:

You too. Bye.

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Interviewer ([00:01:37](#)):

So anyways, I guess we can just start with the questions. So you as a singer, let's start with that and then, please add in whatever you think that applies to experience with your singers, your students, however they have been. Please, just pile it on. The more information I get from you the better and super helpful. So, have you had vocal trauma?

Kate ([00:02:23](#)):

Yeah, I have. A couple of times, but the time I remember the most was when I was doing the Young Artist program in Australia, it was in Opera Queensland. And I had to have scope and went to a speech therapist and had a... I can't remember what they call them here, ENT or something.

Interviewer ([00:02:53](#)):

Laryngologist, yeah.

Kate ([00:02:58](#)):

I'd been diagnosed previously with reflux, but this was the first time I lost my voice and I had a lot of work on, I was doing multiple roles and lots of training and stuff. So I had to have some speech therapy... and be conscious of when I was eating and all that stuff.

Interviewer ([00:03:34](#)):

And was it caused just by vocal fatigue, over singing, too much stuff going on? What was the general?

Kate ([00:03:40](#)):

Well, the body's a funny thing. I think there is a physical element to reflux for singers because of that pressure on your stomach. I have anxiety anyway, but I think **anxiety is a component of reflux**. I think if you're anxious, your stomach turns. So I think there's a component of that and I was very busy with lots of performing and auditioning, lots of stuff, high pressure. And I think when you are performing, the costumes themselves can have, if you're wearing a lot of corsets. Eating strange hours. **There's lots of components that go into reflux. I mean, where do you draw the line? It was cause I was doing so much singing and I find even these days, the more singing I do, I can feel some of the symptoms come back. So would you call that vocal fatigue or would you call that? Where would you draw the line for that?**

Interviewer ([00:05:08](#)):

So your experience of that was only vocal reflux. There was no other symptoms that you had, hoarseness, or that you felt that you were struggling vocally, sheer vocally?

Kate ([00:05:21](#)):

No, I did. **I lost my voice and I had lost my voice for some time and I'd had vocal fatigue. I think that having reflux is a component of that. If that makes sense.**

Interviewer ([00:05:36](#)):

Yeah. Absolutely.

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Kate ([00:05:40](#)):

I don't think I can separate the two. I also think that singers are probably more, silent reflux they call it because I wouldn't have known that I had it if I hadn't been a singer. So yeah, it does mean that my voice can be peak more easily because I'm predisposed to it anyway. But I don't know.

Interviewer ([00:06:16](#)):

And would you say that it was-

Kate ([00:06:18](#)):

It's a tricky one.

Interviewer ([00:06:19](#)):

Yeah, it is a tricky one. But would you say that it was just because you were working so much, there was so going on rather than you? You were singing, you were happy with the repertoire you were singing. You didn't feel uncomfortable in the repertoire or did you feel that you were also at the point age wise where you were pushing your limits or were you in a safe repertoire area as it were?

Kate ([00:06:50](#)):

I think the repertoire, it was around the time I did my first Verdi requiem. I was covering a couple of roles and singing a couple of roles. I didn't think any of the roles were beyond me at all but I was fairly confident with my range, but I hadn't quite worked out what my vocal fach was at that time.

Interviewer ([00:07:26](#)):

What age were you?

Kate ([00:07:26](#)):

Sorry?

Interviewer ([00:07:27](#)):

What age were you around that time? How old were you?

Kate ([00:07:35](#)):

I was early to mid thirties. Mid thirties. I was coming into my mid thirties. Yeah, early to mid thirties then.

Interviewer ([00:07:45](#)):

Exactly. [inaudible 00:07:45] Go ahead.

Kate ([00:07:51](#)):

I was just going to say I'd done a few years as a full-time chorister, so I had good vocal stamina. So then I went into to a young artist program. I was looking for another voice teacher and I hadn't found one because I moved cities, I hadn't found one. And when I was in the chorus, I hadn't been regularly having

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voice lessons just because we were on stage six nights a week. So I felt myself that I was a good strong singer and had good stamina. So, perhaps the added stress of soloistic work, it is a different tester, requiem and all that, you are singing in all sorts of things. And I think when you're in the chorus, if you're having a bad day or you've had a rehearsal that day, what you can mark and it's not as... you know where you can back off. It's a different pressure being in the chorus.

Interviewer ([00:09:17](#)):

Of course it is, absolutely. Have you seen anything like this with your students that you've been working on? How do you assign pieces to your students? How do you go about that?

Kate ([00:09:49](#)):

I mean, it depends and I've got different levels of students and some that are more interested than others. **I like students to explore and stretch themselves. I think they have to have an affinity to piece. If they're going for an audition, for a vocal program or something or getting their audition arias together, then I think we have to be quite strategic.** So I had a young mezzo soprano and we really had a look at what her strengths were, and she's a good little actress as well. And what roles. So we looked at an Orlovsky and Belle, really putting together a package.

Interviewer ([00:10:50](#)):

Nice.

Kate ([00:10:52](#)):

What ticks all those boxes so that they are presenting themselves as a... **There's no question in the mind of the auditioning panel what this person is. When they look down their list of artists, they can go, "Oh okay, this is a mezzo soprano that we are going to hear now."** And I think I hadn't heard that guidance myself, so I guess I'm much more conscious of it. And I'm on a music board and stuff for the Tate Trust. So I guess I think in those terms a bit more now. And having had experience auditioning a lot, you of tend to think, how are you presenting yourself when you go for an audition? What are you saying to them? When you walk in the room, when you have this list, what are you saying to the panel about you without having even opened your mouth? And I think that's really important. And it shows you're an intelligence singer as well, that you know who you are and where you sing.

Interviewer ([00:12:10](#)):

Yeah. Absolutely.

Kate ([00:12:13](#)):

Whereas me as a young singer, I remember doing earlier [inaudible 00:12:18] and I sang for the music director, Richard Hickocks, when he was still alive. And I sang Puccini, I sang Senza Mamma and I sang Queen of the Night. Those were my two arias that I sang. And he said, "This girl's a Verdi singer. Why isn't she singing this? **And it was just because I had no idea, I had this enormous range. I had a voice that could sing most things. I hadn't been given good advice because I didn't have the right vocal teacher at that time.** I was in the chorus. I knew what that was casting for later. And I said, well I can sing that and I can sing that but-

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Interviewer ([00:13:14](#)):

Take anything, yeah. I recognize that so well yeah, just take anything, give me anything. I just need the experience. I just want to have stuff to put on my CV.

Kate ([00:13:26](#)):

I just want to sing. Yeah.

Interviewer ([00:13:29](#)):

Exactly. Keep me on the stage, I'll sing anything.

Kate ([00:13:37](#)):

So in hindsight, I can see how stupid that was in terms of presenting myself in an intelligent way. So I guess that informs what I give to my students and it depends on their experience, how old they are, what they want to do. Are we building on a five, six aria repertoire that all fits together quite cohesively? Or are we playing? Are we doing something that you'd like to explore and see where the voice might go with that? Because you learn something from every aria you sing.

Interviewer ([00:14:17](#)):

Yeah.

Kate ([00:14:21](#)):

Because I love to give the handle to my singers. If I give my sopranos Piangero, one of the Cleopatra arias, and they love it and well, she sings, she's got several arias in this opera. If you like it, if you like the character, why don't we look at the other arias and see what it is to sing? Why don't we look at more of the rest? What does it feel like to know more of the character and to go through her journey? But I mean, it depends what the student wants. It's very much led by them.

Interviewer ([00:15:05](#)):

Have you ever had students who come thinking that they are this and that and then you are listening to them and thinking, that's just not it?

Kate ([00:15:19](#)):

Yeah, for sure. I've had students that want to do Puccini and then I am just very gently going, "Okay, well why don't we look at [foreign language 00:15:35]. What do you think of this Handel aria? Or why don't you have a listen to some of these things? And embracing something they might be really enthusiastic about. But yeah, let's not do you or, I think maybe we can look at that later on, but why don't we have a look at some of these things, build up this part of your voice and see where that goes?

Interviewer ([00:16:09](#)):

So diplomatic, that's fantastic. I really wish more teachers were like that because, as they start discovering these other things, they start strengthening other areas of their voice and then all of a sudden, things start clicking and boom, amazing things happen.

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Kate ([00:16:29](#)):

True. Exactly. **I don't know where a voice is going to go and I don't want to say to someone, no, you can't sing that.** Because that is something they love. They've heard it, they want to sing it. It's horrible to quash someone's musical dream or musical desire.

Interviewer ([00:16:55](#)):

Absolutely.

Kate ([00:17:01](#)):

The other thing I really use quite a lot are the 24 songs and arias book scenarios. There's some fantastic more meaty, dramatic arias in that. If it's that feel that you think the student might be after, that more dramatic event that they're arching toward and then go up. Have you had a look at-

Interviewer ([00:17:28](#)):

Something else.

Kate ([00:17:31](#)):

And drama. Let's have a look at that, and that's great cause it goes through that passaggio area into the top, but you're not having to whack out these big A's and B's. **But they might feel that satisfaction of singing something that they can really put their heart and soul into.** Anyway. Yeah, it really does just depend on. Because I mean, as a singer, sometimes what you want to do is you want to get into that **mood to get stuck into that repertoire because the tendency is to push the voice.** But can we do that in a safe way?

Interviewer ([00:17:31](#)):

Yeah, exactly.

Kate ([00:18:23](#)):

Can we find a safe way?

Interviewer ([00:18:28](#)):

And when was the first time that somebody actually then suggested a fach to you?

Kate ([00:18:35](#)):

Well, I had quite a journey with my singing. I was with a terrible teacher at the conservatoire where I was, in Australia. And I had a really fractious relationship with that teacher, and she took me through to my first recital. And I was able to change teachers on the back of... I complained to the university she teaches to. She was a fantastic teacher, this Megan Sutton. **And within my first lesson, she was one of these real old school teachers, and she wore these jeans with the belt and she put my hand inside her waist, breathed in and trapped my hand between her waist and sang. And she said, "That's what you need Kate."** And I'd already been at university for about three years. She was the first one to show me that breathing, and I'd had problems with pitch and all this thing.

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(00:19:47):

So within that first hour, I was singing in tune and it just completely changed my-

Interviewer (00:19:56):

And how old were you then? How old were you then?

Kate (00:20:06):

Going into mid to late twenties then. I don't think it was too young for Wagner. Probably in terms of stamina and stuff, yes. **But the Elsa aria I think is quite a nice lyric place to start for a young dramatic... And she was the first one to say, "No, you're a dramatic singer. You should do it."**

(00:20:39):

I was with her for a year and then I moved to the East States of Australia and there was a friend of mine who had moved there and she said there's this fantastic teacher, Anna Connolly. Brilliant woman and she came from, and there was that whole school of teaching happening on the east coast driven by Anna Connolly. And she was like the new thing. So I went to her. **But Anna Connolly was sure I was a dramatic coloratura. So she was the one that gave me Traviata, Queen of the Night, all that repertoire. So there was this confusion that I had because I thought, oh okay, I'm a baby dramatic soprano, oh okay. And then I was like, oh I'm a dramatic coloratura. So I sang the Traviata aria and got into the full-time chorus in Sydney. And then I was singing six days a week, not really without any guidance and not really sure. And I wasn't then having regular singing lessons.**

Interviewer (00:21:49):

Yeah.

Kate (00:21:53):

I had lessons from visiting teachers and coaches and things. But yeah, it was more of a survival time. And then I got into the arts program and that was when I started getting into trouble vocally because I was singing soloistic stuff and really had a problem. And that's when I met Lee-Ann Keagan. So after my arts program, I moved to the UK and I've had lessons with her. She was in Germany. I would go back and forth to her but I was with her for about five years. She was a good, solid teacher and I got work straight away in the UK. I was understudying at ANO and Turndot. Fidelio, all those big roles, I was understudying straight away. And I don't really consider that I had much of a solid technique at that time.

Interviewer (00:23:24):

What always strikes me is how a teacher or a lack of a teacher, it really just weighs so much in a singer's career. One is especially vulnerable when you change teachers because then you don't know what you are leaving behind, because you'd like to keep some of the good stuff because there's always some good stuff that has kept you going until now. And then, what is the direction that you are going into next? I love hearing that you're gently going around repertoire and classification with your students because I was just talking to Carrie Obert the other day and she was also just encouraging. She was encouraging this thinking that you should have a variety in repertoire in the teaching space that the singer can really

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explore. And especially when you are young, the different areas of your voice, they strengthen through different types of singing. It's not just one, one, one like that.

(00:24:47):

And I find that that is something that is, it undermines the natural development or the potential of the development of the voice.

Kate (00:24:58):

Yeah.

Interviewer (00:25:00):

So it's such a shame when that happens because I get these young singers who come into the room and they just want to be this, they're told that they're like this and that is that.

(00:25:14):

And then, when I suggest something else, to them, they look at me thinking what sacrilege. How could you even think that I would sing something like that?

Kate (00:25:29):

Yeah, Absolutely. **And there's so much that goes into it in the psychology of the singer themselves.**

Interviewer (00:25:36):

Yeah, absolutely. Yes.

Kate (00:25:37):

What draws them to that repertoire? What is it that you like about that repertoire? And where does that fit in with where you're going and what you want to express as a singer? And I think all those things have to be considered as well. What are they wanting to say?

Interviewer (00:26:08):

How important have you found in your students and you yourself because I imagine that you record yourself over the years. All of us, we record ourselves and go, "Oh my god." But over the years, you listened to your voice the way it is and then you listening to your students, how much importance do you put, since I know that your studies have taken you onto spheres that are much more sophisticated. But just listening in an audible level, how does timbre, just the sheer timbre and the color of the voice, how would you describe your relationship with timbre and how much importance do you give it?

Kate (00:27:11):

I guess, until the voice is set up well and all the pieces of the puzzle are together. The student is negotiating their full range with ease, they're singing in a healthy way. I really think things like the timbre can change, the whole mechanism needs to settle. If you have a new student coming in and they haven't settled their larynx down, it's still raising with the pitch-

Interviewer (00:27:58):

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It alters it.

Kate ([00:27:59](#)):

They're singing in a very constricted way. If their tongue is doing weird things, if they've got a really tight jaw, all those things will affect the timbre. I think until their technique is in a settled and consistent place, it's one of the last things I would really think about.

Interviewer ([00:28:26](#)):

I totally agree. Like I told you perhaps before, I find that it often, it is pushed in a direction which isn't necessarily the natural timbre. And just because a teacher likes it or because you like it, because you want to emulate somebody, you want to sound like somebody. Because all the stuff that I've read, yes, the timbre is one of those components that, when talking about classification and all that stuff, fach and so forth. But I do feel that it's a slippery slope with this timbre issue, that you really shouldn't, like you said, put too much weight on it until the other stuff has been achieved and accomplished vocally.

Kate ([00:29:32](#)):

Yeah. And then I think, when you do get to that level, the timbre will be a personal taste of the music director you're singing or what country you're singing in. So in Germany, I have a friend who is of dramatic fach. She considers herself German fach, dramatic soprano and she thought I was more Italianate. Whereas here in the UK, I think I have a preference for singing Wagner. That is to do with the timbre of her voice. She says she has a more chocolatey milk sound as a fach. I don't hear that in someone like Birgit Nilsson or some of the old time singers. So I really think a lot of it is personal taste and personal taste of who you're singing for.

Interviewer ([00:30:26](#)):

Now, how have you, with age and just the sheer physical development, the cartilage becoming harder and all of those things allowing you to develop, have you found big differences with age? Obviously, it's a tricky thing because it's the training as well. You can't separate the training from the age when you've been training throughout your life as a singer. But I mean, looking back, because I was asking Kerry especially about these things. What is it about the sheer physical aging development that, and with these cartilages, what is it about the harder cartilage that allows a mature voice to sing those massive big arias and lengthy lines and just sustain all of that? And why is it that a little wobbly, young little flexible and softer voice just can't maintain it?

([00:31:36](#)):

And I was just wondering if you, looking back at then, and I know that you've just said that you didn't quite have a technique together, you didn't quite know whereabouts you were going. But how would you explain just the feeling of it? Because I'm trying to pinpoint the feeling, I'm trying to understand what is it when singing, where in your voice would you describe that you have felt it the most, this development and the gradual gaining of stamina?

Kate ([00:32:13](#)):

Gosh. I really think, for me, it was singing those big roles. Because I remember when I first got to Fidelio for example, I remember looking at the final act of that final scene and it was all above the stage,

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absolutely relentless. It was relentless and I could not sing it when I first sang through. I thought I'm never ever going to be able to sing. How's anyone singing this? And then you coach with someone, you rehearse it, and before you know it, you are singing the entire role and you're enjoying it. You inhabit it and you inhabit yourself. And somehow, your voice grows into this role. I don't know what happens. All I can imagine is, and not being a weight lifter or a runner or any athlete, is the physical training. I think your body-

Interviewer ([00:33:37](#)):

Is it just you feel that it's just a combination of everything? The breadth, the support and everything that happens in the larynx, the relaxed?

Kate ([00:33:46](#)):

Yeah. Even all the muscular, sure. Everything has to work together in a beautiful, the breath works. Everything has to work together, doesn't it? The body eventually learns and then it goes on to automatic pilot and before you know it, you're flinging through those passages that you thought you'd never see. And it feels glorious. I don't know what the mantra is. It's practice. I mean, you can be unlucky and get a conductor that won't go with you or a repetitor that won't help you, although that's another topic. But I think physically, I've got no idea. I mean really, it happens with every role.

([00:35:03](#)):

Singing Turndot, singing Tosca. Something like Tosca, I found that role and tessitura much easier to come to. Even that second act, which is pretty relentless.

Interviewer ([00:35:18](#)):

I want you to keep that thought because I want to know why Tosca was easier for you. But I think my Zoom thing comes to an end. If you could just click the same link again, please, and then we'll go back.

Kate ([00:35:30](#)):

Sure. Okay, done.

Interviewer ([00:35:31](#)):

Thanks. Hello.

Kate ([00:36:02](#)):

Hello. Oh, sorry.

Interviewer ([00:36:09](#)):

No, there you are. Perfect, yes. So why was Tosca easier? Why did it feel easier?

Kate ([00:36:16](#)):

I think it's so well written for starters, for my voice anyway. And I really just loved the character of it. That emotional, all that drama in that second act. For me, it just fits so well with how I like to sing. I

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don't like to sing carefully. And for me, it was just such a joy and it was just really a thrill to just feel like you could sing with abandon really, and passion, and it feels right.

Interviewer ([00:37:17](#)):

Yeah, exactly.

Kate ([00:37:21](#)):

Because so much of classical singing I think is like standing on the head of a pin. Is this right? Whereas with something like Tosca, it's like.

Interviewer ([00:37:32](#)):

Yes, exactly. And again, how old roughly were you when you were singing the Tosca and you felt that? How old roughly were you?

Kate ([00:37:46](#)):

I would say mid forties. Early mid forties. Yeah.

Interviewer ([00:37:57](#)):

That's so great. I mean that's-

Kate ([00:37:57](#)):

Probably my favorite role to me.

Interviewer ([00:38:01](#)):

That to me sounds exactly like the thing where things start clicking because that is the perfect age for your fach to be really blossoming. You know are at your wow. And it's interesting because of what you've had, you started out with a rocky road and you've kind of gone through hoops and all kinds of situations and teachers and doubt. I think that the doubt is really what can kill your soul.

Kate ([00:38:40](#)):

Absolutely, yeah.

Interviewer ([00:38:44](#)):

So no, it's so great. And when you are working-

Kate ([00:38:44](#)):

For an artist.

Interviewer ([00:38:55](#)):

So when you are working with your students, obviously, how long have you had your longest student for? How long have you been working with them typically?

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Kate ([00:39:14](#)):

I guess at the moment, because I had a couple of students. I had one, she got into the Trinity Laban program, the master's program. I think they get a teacher, so they move on. But I've got of a couple of amateur, I mean, they sing in big choirs and things... that I've had like five, six years I would say.

Interviewer ([00:39:57](#)):

And the student who did go to this master's degree, whatever, how long did you work with her?

Kate ([00:40:07](#)):

Probably three or four years I would say.

Interviewer ([00:40:11](#)):

And during that time, when she came to you, at what level, what was she singing typically when she came to you and then by the time she was preparing her masters, this is exam to get in, what was she singing? What was the trajectory like?

Kate ([00:40:29](#)):

She was singing a very lightish soprano stuff. There was no connection. She had a lot of trouble with her tongue, which I found out later and after some time that she'd been a clarinetist and I thought that was really interesting. So she was a really good musician, a C or D E,F. Yeah. That passaggio, E, she felt very uncomfortable singing that note. And then, as the voice started settling, there was a very lovely warm timbre. But because she wasn't comfortable going into the top of the voice, I was keen for her to go more into that light lyric mezzo soprano. And I suspect she will, but I thought for the purposes of auditioning and where she wanted to go, present herself as that because it's much easier to move into lyric soprano land from lyric mezzo. And she's such a good actress as well, so those trials and roles were great for her.

Interviewer ([00:42:16](#)):

So the passaggio was difficult and then once she was over it, it was easier or it was still difficult?

Kate ([00:42:29](#)):

It got easier and by the end, she could sing [inaudible 00:42:32] Oh God, the Cherubino.

Interviewer ([00:42:43](#)):

[inaudible 00:42:43]

Kate ([00:42:46](#)):

I could sing it. Even that is very passaggio. I mean, you could argue that it could be sung by a young soprano or a young mezzo. So by the end, she was negotiating that beautifully. Some of the Orlovsky stuff which goes up there, all of that was great, but that took a good couple of years of working very gently and we had a lot of middle voice stuff to work out as well. I mean, it took a long time and she did her auditions and she got through and it was fantastic, really good on her. It was great. They were doing

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some presentations. I couldn't go unfortunately, I really wanted to see where she was up to with her voice and stuff.

Interviewer ([00:43:50](#)):

So when she auditioned at the end, did she audition as a soprano or a mezzo?

Kate ([00:43:57](#)):

No, mezzo. Yeah. And I was very honest with her. I said, look, you may well go into lyrics soprano repertoire, but why don't we work within this realm at the moment? It's more comfortable. You've got a lot more scope, we're very happy with that. The other one we did was a beautiful aria from Vanessa. Must the Winter Come So Soon? That was lovely for her. She had some lovely repertoire.

Interviewer ([00:44:39](#)):

How was her coloratura?

Kate ([00:44:40](#)):

Okay. It wasn't the best feature of her voice. I can't remember what we did. We must have done something with a little bit. I can't remember. I've got to really, because I remember her audition we with the Orlovsky and the Must The Winter Come So Soon, but we must have had something with some coloratura in it. I'll have to go back.

Interviewer ([00:45:18](#)):

Yeah. When I was talking to Kerrie again, so many interesting things come up. She co-wrote a book with some woman called something Gates. So, it's a good book but not my favorites and I actually didn't get to the end of the book until after I'd spoken to her. And at the very, very end of the book, there is this odd little one, kind of like a passage, that claims something so wow that you just want to know more about it. So I'm going to have a second call with Kerrie and I'm going to ask her about it but she says, I'll quote you, "They explore the possibility of a difference in the ratio of slow twitch fibers to fast twitch fibers in the thyrocolloid muscle so that it results with voices that are naturally predisposed to coloratura and those that are not."

Kate ([00:46:28](#)):

Definitely. But you can hear it in your students. You've got students that can run coloratura so easily and other students, it's a struggle and you got to say, let's try again.

Interviewer ([00:46:43](#)):

Yes.

Kate ([00:46:48](#)):

Pre-master thing was that every voice should do coloratura because it's good for the voice. You should do your handle, you should do your runs. Because it's good for the voice, it's not necessarily what you are singing or present yourself as, but it's a good exercise for the voice. But some voices just do not. And I know for me, if my voice is sluggish or it's feeling too thick or whatever, I maintain doing coloratura

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because I know it helps me to keep the flexibility and lightness in my voice because I've got a real tendency to down. But anyway, I don't know if that is the answer to the question, but yes, the coloratura.

Interviewer ([00:47:39](#)):

But I had never seen it actually written down in any research.

Kate ([00:47:46](#)):

But as a teacher, you know that.

Interviewer ([00:47:48](#)):

Yeah, exactly. It's like it's this known, understood thing but nobody has ever, as far as I know, I haven't seen it written down in this way that they're pinpointing this scientifically proven supposedly thing. So I want to-

Kate ([00:48:10](#)):

I don't know how to figure that out. I mean, you can't. Did they cut open all these different-

Interviewer ([00:48:16](#)):

Well, I don't know. They're exploring the possibility of a difference in the ratio of these slow twitch fibers and fast switch fibers. Some runners are fast and some runners are slow marathoners.

Kate ([00:48:31](#)):

That's true.

Interviewer ([00:48:31](#)):

So why is Usain Bolt so bloody fast?

Kate ([00:48:35](#)):

I'm a marathon girl. I would not be a sprinter.

Interviewer ([00:48:40](#)):

Exactly. So I mean it makes sense. And like you said, as teachers and singers, we know that to be a fact that for some, it's just easier because it is. And so I just found that to be a really, really interesting comment. But then it's literally one paragraph and then they don't elaborate on it anymore and then the book ends. Like, okay, you kept the most interesting part to the very end.

Kate ([00:48:40](#)):

Yeah.

Interviewer ([00:49:14](#)):

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So I'm going to definitely going to ask about that. There's always this eternal question, soprano or mezzo and blah blah blah. Not that it's at all really important and because, like we said, you should just explore the voice and let it happen. But singers, they're in a hurry and I find that singers especially, is it possible to, because there's yes and nos from all the stuff that I read. Is it possible to recognize just by looking at the vocal chords? Are they fat and longer or are they short and skinnier? And there's so much research where, yes, they can see that they are and all that stuff, but then for whatever reason, they still say that, not with hundred percent certainty can we, you know?

(00:50:19):

What do you think about that? Is it possible or not? Okay, let's put it this way. Let's not say mezzo soprano, let's say soprano and alto. You would think, yes.

Kate (00:50:35):

Okay. I think with a soprano and alto, you've got much more. I would say, if it's a true alto and a true soprano, I think physically, it must be something, whether it is at the vocal chord level or, I've heard people talk about the length of necks for different singers, different body type or whatever. But I think for mezzo soprano, and I think particularly so for a dramatic mezzo versus a dramatic soprano, a lyric mezzo versus a lyric soprano, I would say there's pretty much not much in it.

Interviewer (00:51:25):

And it's a shame that we are put in these boxes when actually we should be able to navigate that.

Kate (00:51:32):

I think so too. And I really think you have to look at the whole singer. What is this singer presenting us physically? If I was going to cast, what are they presenting? Are they a boyish of young girl? I prefer to teach women because that's what I-

Interviewer (00:51:32):

Me too.

Kate (00:51:55):

So I'll just talk about women. Are they presenting us a very energetic, young, fit, perhaps whatever their age is. But is that what they're presenting us? Are they more a curvy woman? Where do they sit physically and as a casting person? Because I think also, if you are serious about having an operated career, those things have to be taken into consideration. And sadly, that is the case. The way that casting works, it is such a tough business.

Interviewer (00:52:47):

Yeah, it is.

Kate (00:52:48):

Don't try and find yourself into, and I know that's a whole different conversation around women's bodies and things like that.

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Interviewer ([00:52:54](#)):

But they're facts that you can't get around.

Kate ([00:53:02](#)):

Some of those roles, you've got to be like for a Cherubino or a Siebel, you're a young.

Interviewer ([00:53:02](#)):

Yeah, exactly. Testosterone bursting. Absolutely.

Kate ([00:53:18](#)):

Yeah. And those fachs were developed for the Germans, God bless them. Well, this is this fach. This is the type of singer, type of person, type of voice, type of look that fits into this box and that's what we really have to go with. The reality of it is when you sing in a house in Germany as a mezzo, you'll sing a range of different roles. But you can't go in singing this and that, X, Y, Z and look like you don't know what you're doing. Anyway, sorry, I'm going off-

Interviewer ([00:53:57](#)):

And another final note is that I find it so heartbreakingly difficult sometimes where, when I'm working with or seeing, not just as a teacher, but also in the festival context, when we are casting, there's a young singer, let's say that there's two singers. There's a young soprano singing Pamina and Susanna and all the Donizetti's and whatever. And she's in her 20 to 25, early mid-twenties. And then you have the same singer, same aged, another singer, who is a really clearly dramatic voice, soprano, mezzo, who knows. And she's nowhere near so able as the soprano. And this then impacts the employability. And then it must be the most frustrating thing for this massive voice to hear that, well, you'll get there, it's going to happen. It just happens later for you. So, the soprano, there she is galloping around from production to production, earning good money while the other voice is still just spending all her money on teachers and not making ends meet except maybe working in a cafe as a barista or something. And that to me is heartbreaking.

Kate ([00:55:40](#)):

And then they come and say, "Where are all the big dramatic voices? Where are all the dramatic voices?" And you think, well, they're working as a secretary.

Interviewer ([00:55:40](#)):

Exactly.

Kate ([00:55:46](#)):

And they've given up.

Interviewer ([00:55:54](#)):

You can't tame the monster. It just seems like it's such an injustice, and that feeling can the instrument even bigger. What makes the instrument more difficult to tame. That, to me, is the ultimate holy grail of

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if we only could just learn to understand what is it that makes that voice so much harder to tame than the lighter voice.

Kate ([00:56:30](#)):

Until it is trained and tamed, you don't know, is that actually the voice that you should have been putting 10 years of training into? You don't know.

Interviewer ([00:56:42](#)):

No, exactly.

Kate ([00:56:43](#)):

The process.

Interviewer ([00:56:44](#)):

Yes.

Kate ([00:56:45](#)):

Do they have the personality, the stamina?

Interviewer ([00:56:50](#)):

Physical aging, that cartilage that we were just talking about, all of that stuff.

Kate ([00:56:54](#)):

Another idea. In the old days, opera companies would look after these voices for years. They would have them in the ensemble, they'd give them little roles, they'd have little walk on parts. They would be nursed all the way through. And then they would be gradually allowed or able to sing some of this repertoire. It doesn't happen now and how do you fund 10 years of training?

Interviewer ([00:57:31](#)):

Without just abandoning it? Yes.

Kate ([00:57:37](#)):

Yeah.

Interviewer ([00:57:40](#)):

So that to me is, if I can find the answer to that someday, that would be a wonderful thing.

Kate ([00:57:50](#)):

You can have a student come in. That young mezzo, slash soprano, slash whatever she was that I was training when she first came to me, I thought that she was determined and this is what she wanted. It was a couple of years before it could be any kind of a voice. And who's to say she won't become a lovely

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big lyric soprano or whatever. But yeah, I've got friends in Australia that are dramatic sopranos. One, she's worked in a department store for years. She's just done Brunhilde. And my friend that was singing with her, she just said it took her a good six weeks for her voice to find its groove because she'd been working. And in Europe, you wouldn't be given that luxury if you weren't singing well straight off the bat. But because it was pandemic time, it was a smaller opera company, they were using local artists and it's pretty hard to find a Brunhilde. She was of given a bit of leeway. She did a good job towards it apparently. I mean, I didn't hear it, but apparently. But she's in her fifties.

Interviewer ([00:59:24](#)):

It is, it's unfair. Really, it's so unfair but maybe that's just the way it is. But at least, I would like to. I don't know. And so what can they sing? Surely there are roles that they could sing parallel. But if only we weren't in such a hurry to put the singers into a fach. Because the moment such a singer is put into, "You're a dramatic mezzo" fach in her twenties because her instrument is substantial, then nobody's going to consider her for anything else, a Charlotte. She could well perhaps sing a Charlotte. That's not dramatic role, but she could do it just as a thing to do. So I would love it. Anybody listening to her-

Kate ([01:00:31](#)):

I could have sung Mimi or something like that in my late twenties. I could have done something like that and I enjoyed singing that lighter Puccini. **But there were sopranos my age that had a much more together technique.**

Interviewer ([01:00:51](#)):

Exactly. And they were perfect for that role.

Kate ([01:00:58](#)):

So, even though something like that would've given me confidence, experience, all those things. There's a singer Rachel Nichols and she's saying baroque for years, her career.

Interviewer ([01:01:12](#)):

I think that's such a clever thing to do. And I was just going to get to that. I think that such singers should then just because, really good baroque singers, they don't grow on trees either. So if you really go into that repertoire then, that's where you have such a scale and where the voice is just from the alto to the mezzo to the soprano to the coloratura, all of that. So yes.

Kate ([01:01:39](#)):

Yeah. Because it's that she's now gone on and she sings Ella Mai's and Isholders and Brent Hill, she now sings all this big. I was wondering when she and did she go to allow the voice to open out into that bigger repertoire? It's not a voice that I enjoy listening to, let me just say that, but I am fascinated that that was her trajectory.

Interviewer ([01:02:10](#)):

Yes. And that's my point as well here.

COLOUR CODING: Classification – Age - Health

Kate ([01:02:10](#)):

She made a good career as a baroque.

Interviewer ([01:02:26](#)):

Definitely. I mean, that's exactly my point, yes, let's say that that's such a young, dramatic mezzo future of something could possibly, possibly maybe that she would be cast in a role Charlotte or some baroque piece or whatever, that the seasoned critic in the audience will say like, "Well, she's not very properly cast," or whatever. So what? Because she won't be cast, she will be cast in 10 years time, what is she supposed to do working the department store? Why can't she be singing other things, to be given the opportunity to do that?

Kate ([01:03:08](#)):

I think it's so interesting to consider having a 10 year plan for a dramatic voice or a group of people. Say you had a group of five young dramatic sopranos that you'd identified as talented big voices but not ready. **What could you do for 10 years?** Are there some one act operas or something that you could give them to get their stage stripes? And they've given that once or twice a year or workshop or whatever and they are nursed for 10 years. How amazing would that be. Who's got the funding for that? I don't know. But the Elizabeth Canal-

Interviewer ([01:04:05](#)):

Opera in itself already so niche, this would be a niche in a niche in a niche.

Kate ([01:04:09](#)):

The very niche. **The Elizabeth Canal award was supposed to be for dramatic sopranos and yet the cutoff age is still something like 35.**

Interviewer ([01:04:21](#)):

Which is ridiculous. How does that work?

Kate ([01:04:25](#)):

And so a lot of the voices that are winning that competition are not dramatic voices and lyric voices. So the whole purpose, fantastic soprano, and she sang as a dramatic mezzo. So she's sang every Wagner role, mezzo and soprano. She sang as a mezzo for 20 years and then she retrained as a soprano. I mean, God rest her soul. It was a God given, incredible voice.

Interviewer ([01:04:56](#)):

Sorry. You were cutting out when you said who was this?

Kate ([01:04:59](#)):

Oh, look her up. Elizabeth Connell.

Interviewer ([01:04:59](#)):

COLOUR CODING: Classification – Age - Health

Okay.

Kate ([01:05:02](#)):

And she was a South African, she's sang in Australia. Huge woman, massive woman. And I was singing the [inaudible 01:05:19] lieder and I went to her to work on them every few months. And then we started working on Turndot and other Wagner arias and stuff. And it was fantastic because she was my voice type and I was singing with a teacher with this fantastic technique and fantastic voice and we were singing with each other. It was the best experience. And then she very sadly passed away. I only had some months with her, but she was in incredible. Sorry.

Interviewer ([01:05:49](#)):

No, I'm sorry to have made you sad.

Kate ([01:05:51](#)):

Incredible. She was an incredible singer and an incredible teacher and-

Interviewer ([01:05:57](#)):

How lucky you were to have met her and to have had that experience. That's so fantastic! That is an amazing experience!

Kate ([01:06:07](#)):

Yeah, she was just wonderful and yeah, very very sad. Very sad though.

Interviewer ([01:06:13](#)):

How do you spell her last name? With a K or a C?

Kate ([01:06:19](#)):

C O N N E L L. And I'll send you a link.

Interviewer ([01:06:21](#)):

Okay, please. That'd be great.

Kate ([01:06:23](#)):

Her final concert that she did probably two months before she passed away. And I'll send you one of the songs from that, which is just, you can hear the quality of the voice.

Interviewer ([01:06:38](#)):

That's so interesting.

Kate ([01:06:40](#)):

She actually recorded herself singing for her own funeral.

COLOUR CODING: Classification – Age - Health

Interviewer ([01:06:47](#)):

Oh my God.

Kate ([01:06:50](#)):

She recorded it a couple of weeks before she died. So she was singing incredibly right up to the very end.

Interviewer ([01:06:57](#)):

What was she ill with?

Kate ([01:07:02](#)):

She had sarcoma and it got into her. She had a very aggressive bone cancer and it got into rest the rest of her body. I was actually in Australia auditioning when she had that final diagnosis that it would come back, she had a very short time too. I couldn't actually go and see her at the end because she didn't want anyone crying on her.

Interviewer ([01:07:02](#)):

Yeah. Wow, what a woman.

Kate ([01:07:39](#)):

Awful, because she kept say, "Where's Kate?" But she didn't want anyone crying. But I regret it now. I should have just gone. I'll send you a recording of her or I'll give a YouTube link of her.

Interviewer ([01:07:47](#)):

Definitely.

Kate ([01:07:49](#)):

Anyway, yes.

Interviewer ([01:07:50](#)):

Well, Kate, it has been an absolute pleasure. Thank you so much. Again, I don't understand where does the time go? My Zoom tells me we're running out of time again, it's crazy. Anyways, so just fantastic feedback. Really, really appreciate it. And if listening, going through all this again, if a particular question comes up again, then I will pick your brain again just for a very short finalizing touches kind of thing. But there's so much material now for me to just go through and analyze and bake it into all the other stuff that I've found. And oh my god, you know exactly what I'm talking about.

Kate ([01:08:36](#)):

I know, it's that final hurdle and you'll get there. If I can help or if you need a cheerleader or something. Yeah, I'm happy to do that. But it's been lovely to talk. I hope you got what you wanted.

Interviewer ([01:08:55](#)):

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COLOUR CODING: **Classification** – **Age** - **Health**

Oh, absolutely. No, I think we really covered so much stuff now and, perfect. I'm sure I have more than enough.

Kate ([01:08:55](#)):

Wonderful, okay. Well, best of luck.

Interviewer ([01:09:10](#)):

Thank you. Let's hook up soon.

Katherine Haataja 1807575
Final MA Assignment BMPF7013
Reflective Diary

28.04.2022

I am so grateful to have KO, leading Speech Language Pathologist/Singing Health Specialist from Columbus, USA, participate in my study. This will allow me to gather extensive and verified data about the otolaryngology aspect of my study. Very exciting!

30.04.2022

KS, a fellow student in the MA program as well as a terrific professional mature soprano with an impressive dramatic repertoire to date has also agreed to participate in this study. She also teaches predominantly female singers so this will be of additional benefit for my investigation. The other focus group members have also been confirmed which I am very pleased about.

04.05.2022

Whilst reading through the already long list of literary review material, as usual, I am therein discovering further referenced relevant material that needs investigating. Once again I am finding myself in a never ending task of chasing “the very last article” for my investigation...I will have to draw the line somewhere eventually...

11.05.2022

Finally completed and submitted my Project Proposal! I always stumble on the methodology part and have to keep myself focused and not allow the assignment to sprawl in every direction...

12.05.2022

I am finding surprisingly many repeated comments spanning decades about the lack of instruction in vocal hygiene or instruction about voice physiology. Decades of the same conclusion.

29.06.2022

Having finally finished my extensive literary review I am looking at copious amounts of information which will require clear structuring and preparation according to relevance vi-a-vis to my research subjects' viewpoints.

02.07.2022

Working on my interview questions and deciding how to balance the interviews with questionnaires; my initial thoughts are that I will interview the experts and based on these conversations I will be able to best formulate the questionnaires for the singers. I am hugely privileged in having KO taking the time to answer questions, and I will start with these interview questions. They are based on the vast amount of literary review that I have carried out over the past months. Whilst working through these questions, I am sure, considerations of how each question is pertinent to a singing student or an experienced singer will become apparent.

03.07.2022

Nope. Not done with Lit Review. More material just keeps popping up and it is too important to ignore.

12.07.2022

Panic is setting in. I realise that I have as usual set myself a too wide a scope and that I should narrow down my goals. The amount of literature that I have reviewed has been hugely instructive, time consuming and has brought about new considerations. I will focus on considering answers to my research question but not aim to construct structures of repertoire lists for different voice types or paths for easing the psychological pressure of "employability". This will jeopardise the assignment losing focus and therefore I must make amendment to my initial plan outlined earlier and cut out the synthesising of a repertoire guide. I have indeed realised that creating such a guide of repertoire or amount of work would represent the content of a PhD.

23.07.2022

Working on the interview and questionnaire texts and finding that further definition is required for each subject. This makes me slightly nervous of the amount of information

that a) I am hoping to gain and 2) the amount of information that I will end up with to process.

18.08.2022

Three singers, one in her 20s and two in their 30s have agreed to participate in my study and will be completing the questionnaires.

26.08.2022

Just finished my session with KO; what a fabulous professional. I have so much material to work through and since we touched upon angles related to my subject which could easily expand the scope, I have to be careful and keep everything focused and to the point. Now to analysing the data and fitting it into my reasearch. Very happy!

31.08.2022

I have now received all my questionnaires back. I am actually quite nervous as to how all of the data will fit with my material to date...

06.09.2022

The interview with KS today was great. We had so much to talk about and provided me with so much material. My mind is buzzing with references in my lit review that link to so many points in our conversation. Awesome!

24.09.2022

Additional interview session with KO done today and I was able to clarify some final points. So grateful, this really has given me confirmation that I am on the right track and pursuing answers to valid questions.

02.10.2022

Finishing presentation draft and waiting for very last comments from Debbie, hope to have everything completed and submitted just in time before the deadline.

