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Insights into the benefits of specialist vocology training

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ABSTRACT: This paper discusses the key benefits of studying vocology from the perspective of a recent graduate of the Summer Vocology Institute. It identifies the components of the curriculum considered most useful and interrogates how studying vocology can impact the professional practice of singers, teachers and researchers.

KEYWORDS: vocology, Summer Vocology Institute

VOCOLOGY

Vocology as a professional discipline has been defined as “the science and practice of voice habilitation” (Titze, 2000). The case for vocology has been argued extensively by Titze (1992, 1996, 2019) and Titze and Verdolini Abbott (2012), and the professional advantages of being a vocologist are likely to become even more apparent when the Pan American Vocology Association launches its “PAVA Recognised Vocologist” designation (Hersey, Scearce, & Johnson, 2020). An ever- increasing number of universities and private organisations are offering vocology training courses. In 2019, the current author completed one such program, the Summer Vocology Institute (SVI). This article reflects on her experience of the course and the impact it has had on her practice as a singer, teacher and voice researcher.

SUMMER VOCOLOGY INSTITUTE

The SVI is an intensive, eight-week program run annually by the National Center for Voice and Speech (NCVS) and administered by The University of Utah. It is the brainchild of Dr. Ingo Titze (University of Iowa Foundation Distinguished Professor of Voice and Speech) who teaches on the course alongside other members of the NCVS and visiting faculty. The curriculum is an accelerated version of the course originally offered as an add-on specialty in the Master of Arts degree in speech-language pathology at the University of Iowa. Since its inception in 2000, there have been 312 graduates including, it appears, four Australians. The short course format is comprised of four subjects(units) organised into three blocks that may betaken in different years, making it possible for working professionals to attend. In 2019,attendees included speech-language pathologists, singing teachers (classical and contemporary) and laryngologists. The course is assessed via examination and assignment, and graduates can receive academic credit from The University of Utah. Upon successful completion of all three blocks, participants receive a certificate of completion. Graduates are requested to use the term "NCVS-trained vocologist" when describing their vocology credentials.

Overview of the 2019 SVI

Principles of Voice Production

The first three weeks of the SVI are a foundation course in voice science taught by Dr. Ingo Titze. It closely follows the textbook Principles of Voice Production (Titze, 2000) with the addition of some material that has emerged since the book's publication. The course covers

laryngeal anatomy, biomechanics of laryngeal tissue, aerodynamics of respiration, vocal fold oscillation, generation and propagation of sound, vocal acoustics, voice classification and age- related changes, control of fundamental frequency, control of vocal intensity and efficiency, vocal registers, fluctuations and perturbations in vocal output (e.g. jitter, shimmer, and vibrato) and an overview of voice disorders. A breakdown of each topic can be found in the book's table of contents, see: http://ncvs.org/POVtoc.pdf. While the textbook can be used for self-study, a major benefit of attending the course is the opportunity for interaction, asking questions and hearing Titze's opinions on how concepts in the book might apply practically to speech and singing. For example, the chapter "Biomechanics of Laryngeal Tissue" discusses stress relaxation over time of the thyroarytenoid muscle, which was researched by Alipour-Haghighi & Titze (1985). What is not mentioned in the textbook or the original research paper is the potential significance of this to the singing of high notes. As Titze explained in class, the propensity of the tissue to relax over time means that strain (here meaning elongation) must be continuously increased if fundamental frequency is to be maintained. In other words, when singing a sustained high note, there needs to be a continual increase in contraction of the cricothyroid muscle, otherwise the pitch will go flat. Once the physical limit of cricothyroid contraction has been reached, the pitch can no longer be maintained. Most of the tissue relaxation occurs within the first second, which could explain why some singers find it possible to sing a pitch at the top of their range briefly, but struggle to sustain that same pitch (I. Titze, personal communication, June 11, 2019).

The practical application of voice science is central to vocology, and this unit includes a number of practical assignments. In an anatomy lab led by Dr. Tobias Riede (Associate Professor of Physiology at Midwestern University), we dissected a cow larynx, which helped to consolidate our knowledge of laryngeal anatomy, calculated the stress-strain relationship of the dissected vocal fold tissue, and estimated the corresponding fundamental frequency. As with the daily assignments involving a voice-related physics problem, this facilitated deeper learning and gave tangible meaning to concepts that might have otherwise seemed abstract.

Voice Habilitation

The three-week unit on voice habilitation draws largely on speech-language pathology. The first week was taught by Dr. Aaron Johnson (Assistant Professor of Otolaryngology in the New York University School of Medicine) and focussed on vocal health, particularly the prevention, management and assessment of voice disorders. One assignment required us to devise evidence- based vocal health guidelines, which I have since used as the basis for a presentation on vocal health for singers. Although the diagnosis and treatment of the disordered voice is beyond the scope of vocology (Titze, 2019), it is beneficial for voice teachers to have some knowledge of the etiology, pathophysiology, symptoms, and treatment of common voice disorders so they can offer an informed opinion as to whether a student with a voice complaint should seek medical advice. This is important because teachers are likely to be the first port of call for a student with a voice problem. Vocologists are also better equipped to work with singers recovering from vocal injury.

Week two of Voice Habilitation considers how principles of exercise science and perceptual-motor learning, as well as research on compliance and concordance can be applied to voice training and rehabilitation. These classes were taught by Dr. Katherine Verdolini Abbott (Professor of Communication Sciences and Disorders at the University of Delaware), who co- wrote the textbook accompanying this unit (Titze & Verdolini Abbott, 2012). Examples of the practical application of the principles discussed include evidence-based

strategies for dealing with vocal fatigue, and timing feedback (knowledge of results) to maximise student learning.

The third week is an overview of voice therapies and training models used in voice rehabilitation. This week was taught by Starr Cookman (Assistant Professor of Surgery, University of Connecticut School of Medicine) and covered a number of therapies, such as expiratory muscle strength training, which have applications to singing teaching. We also discussed research on therapies involving vocal exercises and how this might be applied to voice training.

Instrumentation for Voice Analysis

Running concurrently with the unit on voice habilitation is a three-week course on instrumentation for voice analysis. Consisting of lab practicums designed to introduce a range of instruments and skills utilised in voice research, it was facilitated by Dr. Lynn Maxfield (National Center for Voice & Speech and The University of Utah) who taught alongside a number of guest presenters. Some of the practicums, such as interpreting and performing videostroboscopy and using the KayPentax Phonatory Aerodynamic System, were rare opportunities to experiment with technologies not usually available to non- health professionals. We reviewed case studies, practiced auditory-perceptual evaluation, spent time in a cadaver laboratory, and observed high- speed videoendoscopy and electroglottography at the University of Utah's Voice Disorders Center. Several of the practicums involved tools and technologies that can easily be incorporated into the voice studio. As a singing voice researcher, I was particularly interested in the labs on acoustic measures, formant analysis and spectrography, spirometry and airflow measures, and voice range profiles. We also experimented with voice simulation software, which could be employed by voice teachers to demonstrate the impact of different vocal tract shapes on acoustic output. Although the course is introductory level, it was effective in facilitating an appreciation of the applications and limitations of each instrument and laid the foundation for using the literature to develop more advanced skills.

Voice for Performers

The final two weeks of the SVI focus on the singing and acting voice. As a classical singer, I was naturally interested in the classes taught by Lynn Helding (Professor of Practice in Voice and Vocal Pedagogy at the University of Southern California Thornton School of Music), who offered valuable insights into teaching formant tuning and the application of cognitive-science principles to vocal pedagogy. Matt Edwards (Associate Professor and Coordinator of Musical Theatre Voice at Shenandoah Conservatory) and Kate DeVore presented classes on commercial and musical theatre styles and voice training for actors, respectively. Interdisciplinary sharing of knowledge is a hallmark of vocology, and the greater understanding of the classical voice I gained from these classes is testament to this. Other classes, taught by Dr. Titze and Dr. Maxfield, covered topics such as voice research, the role of the singing voice specialist, tessitura, formant tuning, and science-informed singing exercises. Since returning from the SVI, I have frequently referred to this material and adopted many of the strategies and exercises into my teaching and singing practice.

IMPACT ON PROFESSIONAL PRACTICE

The most immediate benefit of attending the SVI has been the ability to more easily comprehend the voice science literature. It is not an exaggeration to state that books and

research papers I previously struggled to understand now appear relatively straightforward. This has enabled me to continue developing as a vocologist and be better equipped to be critical in my evaluation of the pedagogy literature. As a researcher, I have also built on the skills I developed at the SVI in formant analysis, which I have used to demonstrate my research on the acoustic impact of traditional pedagogy techniques.

This year, I have been offering a series of online classes for students enrolled in the Master of Music degree in Opera Performance at the University of Melbourne. Topics have included vocal health, semi-occluded vocal tract exercises, respiratory physiology, and vocal acoustics, all very much developed out of my SVI learnings. Significantly, I have been able to devise ways to demonstrate the practical application of voice science to singing and explain scientific concepts using non-technical language. This is a skill I have carried over to my private teaching practice, where I feel my observations have benefitted from a more intricate knowledge of the processes involved in vocalisation. I am also more adept at devising strategies to target specific technical issues — a skill that is at the heart of vocology. As Dr. Maxfield concluded in our final class, "the biggest argument in favour of voice science for the voice practitioner is that it gives you the path to the desired output...It's not that we gave you specific tools; we gave you the foundry to forge your own tools. My experience attests to this." (L. Maxfield, personal communication, August 3, 2019).

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BIOGRAPHY

Victoria Lambourn is an opera singer and NCVS-trained vocologist. She is currently completing a PhD in Performance Science at the University of Melbourne, where she has also been contributing her teaching skills to the Master of Music in Opera Performance course. As a singer, she has performed regularly as a principal artist with Opera Australia, the Australian state opera companies, and the Hessisches Staatstheater Wiesbaden. On the concert platform, she has performed with the Australian symphony orchestras and given concerts in Europe,

New Zealand and Asia, where her performances have been broadcast on national television. Several of her recordings appear on the ABC Classics and Chandos Records labels.