

# Voice Pedagogy – What do we need?

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## ABSTRACT

The final keynote panel of the 10th Pan-European Voice Conference (PEVOC) was concerned with the topic “Voice Pedagogy – What do we need?” In this communication the panel discussion is summarized and the authors provide a deepening discussion on one of the key questions, addressing the roles and tasks of people working with voice students. In particular, a distinction is made between (a) voice building (derived from the German term “Stimmbildung”), primarily comprising the functional and physiological aspects of singing; (b) coaching, mostly concerned with performance skills; and (c) singing voice rehabilitation. Both public and private educators are encouraged to apply this distinction to their curricula, in order to arrive at more efficient singing teaching and to reduce the risk of vocal injury to the concerned singers.

Keywords: Voice pedagogy, Vocal pedagogy, Singing, Voice Training, Voice Research, Coaching, Rehabilitation, Education

## INTRODUCTION

Voice pedagogy<sup>1</sup> is at the crossroads of science and practice. While exciting advancements have been made in this relatively new area of study, many questions still remain unanswered or even unasked. The final keynote panel of the 10th Pan-European Voice Conference (PEVOC) was entitled “Vocal Pedagogy – What do we need?” This panel discussion featured five prominent voice pedagogues and scientists from around the world: moderator Brian Gill (US) and panelists Janice Chapman (UK), Norma Enns (GER), Christian T. Herbst (AUT), and Jeannette LoVetri (US), who were invited by the scientific coordinator and conference co-chair, Dr. Jan Švec. The goal of the panel was to flesh out the issues that exist in the world of singing and suggest solutions that will help to advance this area. In this short communication, the panel discussion is summarized, and additional comments are being provided by the authors.

## PANELISTS’ CONTRIBUTIONS

The panelists briefly presented their opinions on what voice pedagogy needs in order to move forward. This was followed by an open discussion guided by input from the moderator and including questions from the audience. Here, we provide a summary of the more salient topics introduced by the panelists:

- 1) How do we get the pertinent information regarding healthy vocal technique to both the people involved in voice training AND those interested in recreational voice use?
- 2) Research is needed in all areas of voice, including:
  - a. different age groups
  - b. high-level performers who have maintained healthy production for a long period of time
  - c. amateur singers
  - d. different styles and the specific changes made in the vocal mechanism
  - e. medical conditions/medications and their effects on voice use
  - f. practical application of research discoveries
- 3) Research should involve collaboration with high-level practitioners.
- 4) “Vocal pedagogy – what we don’t need”: pseudo-scientific explanations from non-empirical fields such as astrology, out-of-context use of knowledge/technology, purely dogmatic application of didactic methods.

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<sup>1</sup> Both “voice pedagogy” and “vocal pedagogy” are popularly used. For the sake of consistency, the term “voice pedagogy” will be employed throughout this manuscript.

- 5) Why is the quality of voice training not monitored in some way at universities even though other areas of study have this type of oversight?
- 6) How do we establish a common language in the field of voice?
- 7) There is a large percentage of voice students that will fail to pursue a full-time career as artists (see e.g. (Gembris & Langner, 2005) for the situation in Germany). Is this acceptable? Is poor training the reason for this statistic?
- 8) Most singers are not professionals, but amateur choir singers (e.g. an estimated 1 % of the population for the USA(Bell, 2004), and according to an online survey by Chorus America about 20 % of American households have one or more members “participating in a chorus”(“The Chorus Impact Study. How Children, Adults, and Communities Benefit from Choruses,”)). Therefore, amateur choir directors should be a primary target group for dissemination of voice pedagogy knowledge and skills.
- 9) Regrettably, most hiring of voice teachers today is based on the singing career they have had, not on their knowledge of voice pedagogy.
- 10) What are the roles of the different people who work with voice students, e.g. coaches, voice teachers, diction teachers, singing voice specialists? How do we define each job and is there any overlap?

The remainder of this manuscript is concerned with the authors’ elaboration of the final issue, i.e., establishing a distinction between the areas of authority when working with voice students. The ensuing discussion solely conveys the opinion of the two authors and does not necessarily reflect the viewpoints of the other panelists.

## **AUTHORS’ COMMENTS AND DISCUSSION**

What constitutes proper training when it comes to being a voice teacher? One panelist initiated this topic by discussing what she referred to as “an epidemic in the voice world: retired singers becoming teachers.” Successful singers certainly have acquired expert knowledge about their own voice and also about music, as they have been experiencing both in a very intense and intimate way for an entire career. It can however not be taken for granted that, in order to be a good pedagogue, a life-long career singer has acquired sufficient objective knowledge about anatomy, physiology and acoustics of the voice. A purely subjective appreciation of voice function, solely based on one’s own perception, might not provide the necessary grounds to be a successful voice technician or voice “builder”.

The ability of a singer is largely determined by (a) anatomical boundary conditions of the individual singer, determining and sometimes limiting the potential of the singer’s vocal instrument (Titze, 1998); (b) a behavioral set of skills comprising the singer’s vocal technique; and (c) the singer’s musical, emotional and intellectual potential. As the anatomical boundary conditions are only subject to slow change over a singer’s life span (Ramig et al., 2001), voice pedagogy mostly concentrates on the latter two topics. In this context, distinguishing between

functional and aesthetic aspects is crucial, since these constitute distinct areas of competence in voice pedagogy.

On a functional level, voice pedagogy is concerned with the establishment of optimized sound production behavior within the chosen aesthetical context. The individual anatomical variability of the vocal instrument suggests that there cannot be a unified vocal behavior for all singers. Rather, the taught vocal technique needs to be adjusted and optimized for each individual. Diversity is introduced on several levels, i.e., by gender (see e.g. different formant tuning strategies for males and females in their upper range, resulting in different jaw opening paradigms (Sundberg, 1975; Coffin, 1980; Sundberg & Skoog, 1995; Miller, 2008; Garnier et al., 2010)); by voice category (Roers et al., 2009) or fach (Large, 1984); and more subtle anatomical variations such as distinct geometric features of the hypopharynx (Honda et al., 2004), different mucosal wave speeds (Berke & Gerratt, 1993) or variations in the geometry of the vocal folds and the glottal channel (Sidlof et al., 2008), whose systematic influences on singing technique and voice classification are as yet largely unexplored.

It is the opinion of these authors that lack of efficiency (and, *ad extremum*, vocal damage) in voice pedagogy is mainly caused by the voice pedagogue's failure to tailor the singing technique to the physiological needs of the individual student. Following clinical practice (Goldman, 1997), a voice teacher might consider to individually adapt her pedagogical concept after arriving at a physiologically informed diagnosis of the respective singer's habitual vocal behavior and anatomical boundary conditions. The establishment of such a causal relationship requires that the pedagogue have sufficient knowledge about the acoustical and physiological principles of sound production in singing. In this proposed paradigm, a voice pedagogue who derives her qualification exclusively from singing beautifully is comparable to a medical doctor who derives her qualification solely from being healthy. Along the same lines, a voice pedagogue who indiscriminately applies her vocal exercises to all her students based on the sole fact that these exercises were good for her is comparable to a doctor who only prescribes the medications that cured her own diseases.

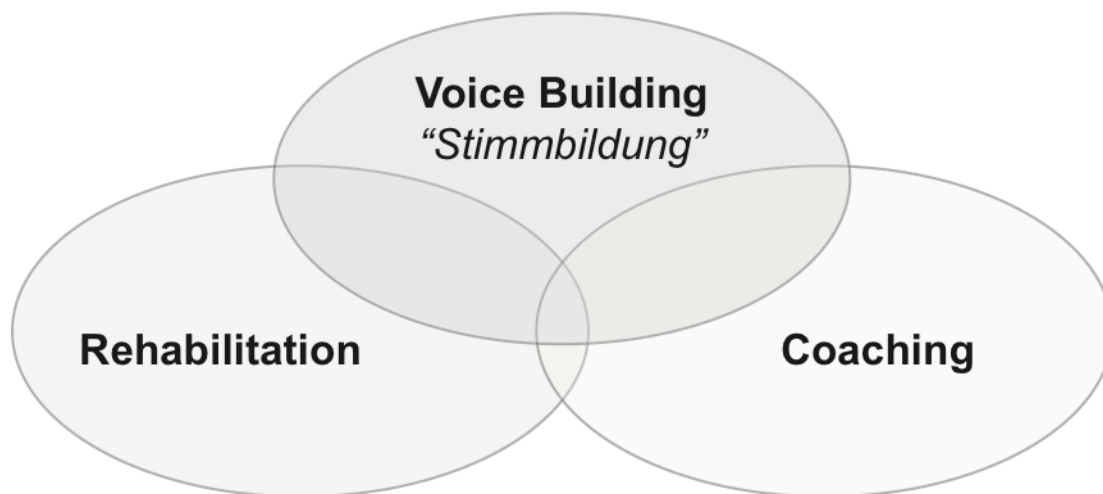
These elaborations suggest that there is an enormous difference between the knowledge required to sing well as compared to the knowledge to help others sing well. In the best case scenario, a good voice pedagogue is equally endowed with singing/performance skills and with knowledge about the physiological and acoustical backgrounds of singing, to be practically applied in a teaching situation. While a select few people throughout history have existed who excel to the highest level in both these areas, the majority of practitioners will have higher competency in one or the other. Consequently, we suggest distinguishing between different roles/responsibilities in the realm of voice pedagogy.

Inspired by Haupt's visionary thinking (Haupt, 2010), we define the following areas of responsibility in which vocal training occurs:

1. Voice Building (derived from the German word *Stimmbildung*), i.e. functional and physiological aspects of singing, including vocal coordination and musical skills

2. Coaching, i.e., performance skills <sup>2</sup>, including stage presence, dramatic impetus, languages, etc.
3. Rehabilitation/re-training of the singing voice

These three areas of responsibility represent distinct roles in voice pedagogy, and individuals are not necessarily limited to one exclusive role. Given proper knowledge and expertise, a person could indeed adopt different roles, even during the course of one work session with a singer when appropriate. An idealized schematic of the three roles/areas of responsibility is presented in Figure 1. This figure suggests that voice building has larger areas of overlap with both coaching and rehabilitation, whereas coaching and rehabilitation are largely independent (even though inadequate coaching could certainly create the need of voice rehabilitation).



**Figure 1: Proposed areas of responsibility in voice pedagogy (see text).**

**Voice building** is certainly the most central area of voice pedagogy. It is concerned with “building the instrument”, by establishing motor control and behavioral patterns which allow sustainable healthy voice production within the limits of “acceptable” or “beautiful” singing as determined by the chosen singing style and aesthetics. On a perceptual level, voice building aims at establishing a vocal coordination that is both reliably stable to convey the individual singer’s “voiceprint” – including a unique personal timbre – and allows for dynamic adjustments needed for musical expressivity. Acoustically and physiologically, this is enabled by features like frequency modulation patterns (vocal vibrato) in accordance with the chosen aesthetical style (Dejonckere et al., 1995); the type and degree of glottal adduction (Herbst et al., 2011); a consistent centre frequency of the singers’ formant cluster (Sundberg, 1974) pursuant to the respective singer’s voice category (Berndtsson & Sundberg, 1994); or adequate formant tuning

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<sup>2</sup> Musical skills is referring to the “how to” with regard to the execution of dynamic changes, ornamentation, changes in timbre, etc., whereas performance skills, which may include some discussion of musical skills, always stays within the realm of “when to”.

strategies (Schutte et al., 2005; Henrich et al., 2007; Miller, 2008; Titze & Worley, 2009; Sundberg et al., 2013). Voice building is thus a formidable task that, apart from the competence to sing at an expert level, requires deep knowledge of the anatomic, physiologic and acoustical principles of voice production, and the ability to efficiently apply this knowledge in a pedagogical situation without overburdening the student with cognitive load. Such an approach, involving the aforementioned causal relation between a physiologically based diagnosis (informed by expert knowledge of the underlying physiological and acoustical principles of voice function) and the proper choice of singing exercises should be preferred to “copycat” and trial-and-error methods that are solely derived from aesthetics instead of voice function. This is not to say that the purely “instinctive” approach, having less physiological and acoustical underpinning, is always bound to fail, as demonstrated by many examples of great singers/teachers having equally great students. In such cases, the success in teaching seems to be derived from an aesthetic that happens to align with a good (and healthy) voice technique. However, we maintain that the “intuitive” path in voice teaching has the potential to fall short when it comes to working with students who have more severe functional issues, or when a teacher needs to affect change in the most efficient, timely and effective manner, striving to minimize both the chance of voice injury and the temporal and financial resources expended in voice training.

A purely knowledge-driven approach, on the other hand, might be equally insufficient, as it is bound to overlook aspects of musicality and the expected aesthetic of a given musical genre. Additionally, it might fail to address the singing student as a holistic human being. Ideally, an optimal synergy is found between these two extremes, where the knowledge-driven approach constitutes the boundary conditions for pedagogical inputs, within which the teacher does his best to intuitively reach the student. After all, expert knowledge of acoustics and voice physiology is vital for the voice builder, but the singing student should not be overburdened with it.

In this context, the teacher’s “trained ear” plays a central role. This skill, which we label “expert listening” for the purpose of this discussion, encompasses a set of competencies on several levels:

- (1) Most obviously, expert listening pertains to musicality (and as such, this aspect of expert listening is also very relevant for the coach – see below). It involves features such as rhythm, temporal precision, intonation, stylistic issues, diction, and perhaps most importantly, musical expressivity.
- (2) Expert listening is however also deeply rooted in the acoustic and psychoacoustic domain, allowing the voice builder to comprehend the singer’s voice timbre, pitch, and loudness. Timbre, defined as “*that attribute of auditory sensation in terms of which a listener can judge two sounds similarly presented and having the same loudness and pitch as dissimilar*” (ANSI, 1960), is closely related to the radiated sound spectrum, which is determined by the spectral composition of the voice source and the supra-glottal vocal tract resonances (Herbst & Svec, in press). Expert listening at the psychoacoustic level should attempt to objectively assess features like periodicity/irregularity, fundamental frequency (F0), amplitude and F0 modulation (vibrato), broadband noise components, spectral slope of the voice source, or formant structure. Subjective descriptions like “shallow sound” or “the voice is not connected to the body” are

suboptimal and might better be avoided. Present-day voice science provides real-time and offline assessment software, which some voice teachers may wish to employ for their own and their students' training.

- (3) On the level of physiological diagnostics, an expert listener is able to identify physiological causes for certain wanted or unwanted features (depending on “Fach”, stylistic, aesthetical and vocal health boundary conditions) in the sound, causally based on (a) successful description of these features on the (psycho)acoustic level (see above), and (b) proper knowledge about voice physiology and voice acoustics. The more obvious examples of such causal relationships would include: a rising larynx or widening embouchure when the timbre is too bright in/above the *passaggio*, due to rising formants (Miller, 2008; Bozeman, 2013); incomplete glottal adduction when the voice sounds “breathy” and the sound spectrum contains broadband noise and weaker higher harmonics (Herbst & Švec, 2014); or potentially too little air flow/too much glottal adduction when the voice sounds “pressed” and the first harmonic of the spectrum is too weak (Gauffin & Sundberg, 1989; Herbst et al., in press).

Within this definition of expert listening, the musicality aspect is historically the most prominent one, and it is well established amongst teachers and in pedagogical curricula. The (psycho)acoustic and physiological diagnostic aspects, on the other hand, seem to be less deeply rooted in the current consensus amongst practitioners, which might in some cases be an obstacle to efficient and healthy voice building<sup>3</sup>. It is therefore the purpose of this manuscript to advocate an equal balance between these three levels of expert listening.

**Coaching** involves the transfer and establishment of skills that are directly related to stage or studio performance and artistic expressivity. As such, it is the area that requires a less detailed, yet still foundational knowledge of the acoustics and the physiology of the singing voice. Coaching is most efficiently accomplished by someone who has sufficient active and/or supporting professional experience in a performance or recording situation. This definition does not only involve successful singers, but also extends to other knowledgeable practitioners such as *répétiteurs*, directors or producers. Good coaching is a vital aspect of a (professional) singer's education, and is as such equally important as voice building. It is, however, crucial to rigorously distinguish between these two areas of responsibility (which might be present in one single individual, provided the required qualifications are met), as they involve distinctly different knowledge and skills. An exclusive vocal coach might explicitly or implicitly venture into the work of voice building without realizing that she does not have the detailed knowledge needed to ensure proper application of tools she has merely observed. Technical suggestions from someone without proper training in the anatomy, physiology and acoustics of the voice may have the potential to frustrate and confuse a singer, slow down the process of training, and, as a worst-case scenario, might lead to the establishment of inefficient singing habits and voice injury. In

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<sup>3</sup> To the knowledge of these authors, as yet no empirical studies that would evaluate the causal effect of “unhealthy” teaching methods on vocal health of students have been conducted, due to obvious ethical considerations. Likewise, data on vocal health symptoms of singers, grouped by educational institution or respective singing teacher are not available, even though such (de-identified) information would be crucial in order to understand if different training methods do have a systematic effect on vocal health, or whether singers' vocal injuries are predominantly caused by individual factors.

this context, coaches might also be careful with emotional inputs, some of which could influence the vocal function in unwanted ways, either temporarily or chronically, thus counteracting the work done in voice building. Caution is also advised when coaching diction and languages, since newly imposed vowel colors could easily threaten the singer's well-established articulatory habits needed for proper formant tuning, especially in and above the *zona di passaggio*.

When discussing the area of **rehabilitation and re-training** of the singing voice, it is useful to consider the reasons for a vocal impairment. In particular, one should distinguish between (a) damage arising from improper voice use and (b) voice disorders that would have arisen regardless of the patient being a singer. Organic symptoms of both categories can certainly be treated by medical staff (e.g. phoniatricians) who do not necessarily have special insights into the singing voice. However, when considering either the cause for disorders arising from improper voice use during singing, or residual functional impairments arising from compensatory gestures acquired during the duration of the organic disorder that became habitual, medical staff with special training in the physiology of singing – and thus a certain amount of knowledge about voice building – is required.

A special problem can be posed by diffuse impairments of the singing voice, as they lead to functional deteriorations of the singer's vocal technique, while the speaking voice is largely unaffected. When considering the order of sequential phylogenetic acquisition, the two primary functions of the larynx are swallowing/lower airway protection and breathing, whereas phonation (with singing as a "special case") constitutes only a tertiary function (Asher et al., 1996). In this context, certain unwanted habitual laryngeal behavior traits, potentially evoked by the sympathetic nervous system, can severely interfere with the goals of voice building, and these need to be addressed in a therapeutic and rehabilitative context<sup>4</sup>.

These considerations give rise to a general problem in the treatment and the rehabilitation of the injured singing voice. While the protocols for the assessment, diagnosis and treatment of the speaking voice are by and large well established (see e.g. (Hirano, 1981; Fried, 1996; Dejonckere et al., 2001)), the respective definitions, guidelines and tools for the singing voice are either missing or only just being developed (see e.g. (Rosen & Murry, 2000; Murry et al., 2009; Moreti et al., 2012; Castelblanco et al., 2014)). Respective dedicated educative curricula especially concerned with the diagnosis, treatment and the rehabilitation of the injured singing voice are not available on a broad international basis. It is therefore imperative to establish in the near future such curricula at tertiary educational institutions that deal with voice, in an effort to properly disseminate the salient foundational research results.

In response to current demand, voice builders with further formal training in the area of voice disorders are already uniquely positioned to help with rehabilitation (Provided that a proper phoniatric examination by medical personnel has preceded the attempted rehabilitation.) as they have the detailed understanding of function, providing the framework for choosing specific rehabilitative techniques; often, habitative exercises (such as semi-occluded vocal tract exercises (Titze, 2006) or resonant voice work (Lessac, 1967)) apply equally well for rehabilitation and re-training, since the goal is often the same: to reduce effort and increase

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<sup>4</sup> On a related note, it might also be appropriate to mention the psychological factors involved in recovery from injury or stemming from stage fright or deeper psychological issues, warranting the inclusion of a psychologist as part of an interdisciplinary rehab team.



efficiency. Another current trend is the engagement of speech language pathologists (SLP) with an interest in singing in the rehabilitation of the injured singing voice. Such an approach is however only beneficial if the involved therapist has a sufficiently deep understanding of the concepts of voice building. The required knowledge and expertise is not acquired by simply being singers themselves. The respective education might be provided by dedicated specialised graduate or post-graduate courses and curricula, combining insights from both voice building and the SLP realm.

The theme of the 10th PEVOC was “A Celebration of Interdisciplinary Collaboration.” In analogy to sports training and rehabilitation from injury (where athletic trainers, coaches, physical therapists, etc., often collaborate) (Association, 2014), an interdisciplinary approach to voice training might involve having a voice “team” consisting of specialized personnel (singing teachers, voice coaches, laryngologists, speech language pathologists, etc), if the respective institution’s infrastructure allows for that. With this team approach, both (semi)professional and amateur vocalists would have access to a group of experts that can effectively meet their vocal needs<sup>5</sup>. Such optimized conditions are however only possible if each member of the team has the appropriate training. We therefore encourage educative institutions to review, and, if needed, revise their training programs based on the recommendations presented in this paper. Ideally this will be an ongoing process in which the concerned curricula are updated regularly to incorporate the novel scientific findings and scientifically grounded pedagogical concepts that are expected to emerge in the coming years.

To facilitate this, future singing voice research is encouraged, in accordance with our definition of “expert listening”, to concentrate on establishing causal relationships between (a) physiological gestures and configurations of the sound generating system, (b) acoustic output, and (c) perceptual/psychoacoustic assessment of sound quality. These findings will aid in the clarification of popular pedagogical terms like “shallow sound”, “unsupported singing”, “unconnected sound”, “hitting a ceiling”, etc. Once these causal relationships have been made clear, ranges of respective physiological behavior can be identified which are both healthy and aesthetically acceptable, and finally, strategies for helping the singer to achieve such desired physiological behavior can be proposed, in order to establish solid and reliable guidelines for “evidence based voice pedagogy”.

## CONCLUSION

Recognizing the essential knowledge needed for each area of training will provide the singing voice community with a road map for the education and the training required for practitioners to excel in the respective areas. Delineation – including an awareness of overlap – is needed in order to make training more effective and efficient. Such an approach will help singers avoid confusion that arises when people inappropriately step over boundaries into areas where they do not have any real expertise and competence. Dissemination of existing and acquisition of new scientific insights into the pedagogy and (re)habilitation of the singing voice is expected to vastly enhance the quality of vocal teaching over the following decades. The pace of such a

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<sup>5</sup> But note that the areas of responsibility defined in this text might also be (at least partially) covered by one individual.

development is however dictated by the willingness of the involved practitioners (teachers, coaches, therapists, etc.) to educate themselves in voice science matters.

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