A COURSE SYLLABUS AND HANDBOOK FOR UNDERGRADUATE VOICE PEDAGOGY INSTRUCTION

by

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Preface

"It's a very ancient saying / But a true and honest thought / That if you become a teacher / By your pupils you'll be taught."[1]

I was first given the opportunity to teach undergraduate voice pedagogy as an Associate Instructor while completing doctoral coursework at the Indiana University Jacobs School of Music. Under the guidance and supervision of Dr. Brian Horne, I created the course syllabus that was the inspiration for this document. I have since had the privilege of teaching the course five times at two different institutions over the past five years. In that relatively short time, the course has undergone countless revisions based on suggestions from advisors and colleagues, my own experience with what worked and what didn't, and student feedback.

Each time I instructed the course, I was struck by how different the experience could be, depending on the instructional setting, number of students enrolled in the course, the ratio of vocal performance majors to music education students, the participation of instrumentalists, and even the occasional graduate student. I am always grateful for the variety of experiences, ideas, and perspectives that my students bring to the class, and, while I feel strongly about upholding core course expectations and requirements, it has been a wonderful learning experience and challenge to find ways of adapting course content to meet the needs of diverse student populations.

I am indebted to all of my mentors and students, past and present, who have helped shape both this course and my teaching as a whole.

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[1] Richard Rodgers and Oscar Hammerstein II, "Getting To Know You," *The King and I* (New York: Williamson Music, Inc. 1951), 61.

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Chapter 1: INTRODUCTION

In a 1992 article appearing in the *NATS Journal* (now known as the *Journal of Singing*), entitled "A Voice Pedagogy Course Syllabus," columnist Thomas F. Cleveland wrote:

> Voice Pedagogy is essential to the education of every singer, especially those who want to teach singing. With few exceptions, a typical voice pedagogy class presents techniques and images which can be used by a teacher to elicit desired sounds from a singer-student. In this course setting, a master teacher shares his or her approach to the teaching of voice, and the aspiring singing teachers make note of these activities and devices in hopes of using them in the future with students of their own.[2]

According to the National Association of Schools of Music Handbook 2015-2016, coursework in pedagogy is common in Bachelor of Music in Performance degree programs, as well as for Baccalaureate degrees in Music Education (Bachelor of Music Education, Bachelor of Music in Music Education, Bachelor of Science in Music Education, and Bachelor of Arts in Music Education) throughout the United States. [3] The NASM Handbook further stipulates that students specializing in Vocal/Choral Music must demonstrate, among other skills: "vocal and pedagogical skill sufficient to teach effective use of the voice."[4] In Bachelor of Music in Pedagogy programs, NASM states that pedagogy courses occupy at least 25% of the curriculum.[5]

In the Indiana University Jacobs School of Music, for example, students completing a Bachelor of Music in Voice Performance must complete a minimum of two

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[2] Thomas F. Cleveland, "A Voice Pedagogy Course Syllabus," *The NATS Journal* 48, no. 3 (January 1992): 33.

[3] "National Association of Schools of Music Handbook 2015-2016" (Reston, VA: The National Association of Schools of Music, 2015), accessed May 2, 2016, http://nasm.arts-accredit.org/site/docs/Handbook/NASM_HANDBOOK_2015-16.pdf, 115.

[4] Ibid., 117.

[5] Ibid., 100.

credit hours in pedagogy courses, "such as E130 Introduction to Music Learning (2 cr.) or E494 Vocal Pedagogy (3 cr.)."[6] For students completing Bachelor of Music Education degrees in Choral Teaching and General Music Teaching, E494 Undergraduate Vocal Pedagogy is a mandatory course.[7]

Studies and surveys by Wellborn (1999),[8] Deloach (2000),[9] and Walz (2013),[10] provide an overview of vocal health and pedagogy instruction at various institutions in the United States, confirming that voice pedagogy is indeed a standard component of many voice performance and education programs.

"The Case for the Undergraduate Pedagogy Course"[11]

In her 2013 dissertation, "Training the 21st Century Voice Teacher: An Overview and Curriculum Survey of the Undergraduate Experience," author Ivy B. Walz outlines her rationale for offering a pedagogy course at the undergraduate level: "The undergraduate vocal pedagogy course exposes students to the many approaches to singing, to vocal health, to the idea of slow but meaningful change, and to the idea that the art of singing is truly a life long journey."[12] She suggests that "gaining an understanding of the voice promotes curiosity and fascination, leading to better

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[6] "Jacobs School of Music Bulletin, 2015-2016," (Bloomington, IN: Indiana University Jacobs School of Music, 2015), accessed May 2, 2016, http://bulletins.iu.edu/iub/music/2015-2016/music-pdf.pdf, 12.

[7] Ibid., 14-15.

[8] Georgia Gail Wellborn, "An Investigation of Vocal Pedagogy Instruction at Selected Private Liberal Arts Institutions," (D.A. diss., University of Mississippi, 1999).

[9] Dionne Bateman DeLoach, "An Investigation in the Teaching of Vocal Health, Recovery and Rehabilitation in Vocal Pedagogy Courses at Selected Public Institutions," (D.M.A. diss., University of Mississippi, 2000).

[10] Ivy B. Walz, "Training the 21st Century Voice Teacher: An Overview and Curriculum Survey of the Undergraduate Experience" (D.M.A. diss., University of Cincinnati, 2013).

[11] Ibid., 11-16.

[12] Ibid., 12.

independent work in the practice room, as well as inspiration for future research."[13] Providing students with introductory, yet accurate information about vocal function is highly beneficial to students' vocal development. The undergraduate voice pedagogy course, in conjunction with applied voice study, helps students develop an understanding of the vocal instrument, as well as skills necessary to identify, diagnose, and correct vocal faults, both in their own singing, and in their students' singing. Through connection of course concepts to the often subjective language used to describe the sounds of singing, students begin to better understand their own voices, and take ownership of their instruments.

Undergraduate voice pedagogy courses benefit both voice performance majors and students completing Music Education degrees. Education majors without prior voice training may complete only two or three years of voice lessons at the university level before they begin instructing general music classes or choral ensembles in school settings. (In the Jacobs School of Music, B.M.E. Choral Teaching and General Music Teaching students **not** majoring in voice must complete three, two-credit courses of study in V100 (Elective/Secondary Voice).[14] For these students, in addition to learning different approaches to voice building and instruction, possessing a working knowledge of vocal function and healthful vocal practices is necessary in order to ensure that they can both model for, and instill, these behaviors in their students.

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[13] Walz, "Training the 21st Century Voice Teacher: An Overview and Curriculum Survey of the Undergraduate Experience," 11.

[14] "Jacobs School of Music Bulletin, 2014-2015," 14-15.

Creating an Undergraduate Voice Pedagogy Course

Faculty tasked with creating an undergraduate voice pedagogy course face many challenges and decisions with respect to course structure and content. If the course is an introductory class (in a series of courses), what is the most effective way to impart the required content, as well as satisfying any subsequent course prerequisites? If the course is a "standalone" class, which components should be prioritized? How can the instructor balance foundational knowledge of anatomy and physiology with pedagogical application and critical listening? How might one adapt course content to accommodate both voice performance majors and education majors?

Another important consideration is the selection of a course textbook and other materials. The twenty-first century voice teacher and voice pedagogy instructor has access to a veritable overabundance of possible resources. There exists almost an overwhelming amount of information, thanks to excellent publications available from Inside View Press, Plural Publishing and Blue Tree Publishing, among others, peer-reviewed publications such as the *Journal of Singing* and the *Journal of Voice*, and a plethora of audiovisual, multimedia, and voice analysis tools. Sophisticated acoustic technology and instructional aids once confined to expensive research labs may now be purchased cheaply or downloaded as freeware, and run on a personal computer or even a smartphone app. However, many of the texts are incredibly complex, highly technical, and too advanced for undergraduate use. This and other considerations will be addressed in this document as a way to help instructors navigate the field of available resources.

The following is a complete syllabus and handbook for undergraduate voice pedagogy instruction that may be used by graduate teaching assistants and/or junior

faculty. The first part of the document addresses large issues related to course content and design, and the curriculum overview, sample lesson plans, and suggested course outlines will serve as a course package/template that may be adapted and modified for different institutions, student populations, and instructional settings.

This type of course may take many different forms. The proposed curriculum represents but one possible avenue, and I offer it in the hope that it might be a useful starting place for graduate students or junior faculty instructing voice pedagogy courses for the first time.

Chapter 2: REVIEW OF RELATED RESOURCES

This section provides a description of texts and materials to be used in the proposed course. It is by no means an exhaustive survey of available voice pedagogy resources. Decisions regarding textbooks and supplemental materials were made according to student populations and available publications at the time, with the aim of balancing both newer resources, and introducing students to the standard texts that form part of the voice pedagogy literature "canon."

Chosen Course Textbook

McCoy, Scott. *Your Voice: An Inside View.* 2nd ed. Delaware, OH: Inside View Press, 2012.

Your Voice: An Inside View has, in recent years, become a popular choice of text for undergraduate voice pedagogy instruction. According to the Inside View Press website, the text is now the most widely used text in voice pedagogy and music education programs in the United States and Canada. [15] As reviewer Darryl Edwards writes in *Canadian Music Educator*, "It takes its place in the contributions of Oren Brown, Richard Miller and Barbara Doscher, while incorporating the voice science of Ingo Titze and the vocology of Robert Sataloff…"[16] Indeed, McCoy's text covers a wide swath of topics related to voice pedagogy instruction, comprising voice science, anatomy and physiology, and some pedagogical application. It largely avoids philosophizing, focusing instead on facts and objective observations. As such, there is little discussion regarding actual voice instruction. Rather, each of the twelve chapters is dedicated to an aspect of

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[15] Scott McCoy, "Your Voice: An Inside View," Inside View Press, accessed March 1, 2016, http://www.voiceinsideview.com/In_view.html.

[16] Darryl Edwards, "Music Makers: Voice – Scott McCoy's 'Your Voice: An Inside View,'" *Canadian Music Educator* 50, no. 3 (Spring, 2009): 50.

singing and voice building. Following the introductory chapter, "Listening,"[17] McCoy leads the reader through the separate components of the voice. Respiration, phonation, resonation, articulation, and the auditory mechanism are all addressed. In a one-semester pedagogy course, it seems unlikely that there would be sufficient time to cover articulatory and auditory structures in significant detail; nonetheless, these chapters are highly informative and detailed as the rest of the text, and serve as excellent additional reading or enrichment activities. Chapter 9, "Health,"[18] written in collaboration with Lucinda Halstead, M.D., is an informative and thorough overview of vocal hygiene, phonotraumatic behaviors, and pathologies.[19] Students and instructors alike will benefit from the clear, direct language, and up-to-date information—especially concerning over-the-counter medications and their possible effects on the voice.[20]

Readers familiar with the first edition of the text will notice considerable additions to chapters concerning resonance and physics of sound, with expanded sections dedicated to voice analysis (Chapter 5: "Analysis"[21]), and a larger number of "enrichment" activities—sections entitled "Exercise your Brain," than previously included in the first edition.[22] As a result, sections (of the second edition in particular) might be considered too advanced or specialized for undergraduate use. However, while mathematically-inclined students may enjoy McCoy's enrichment activities, time constraints—especially within the framework of a one-semester course—will likely not allow for in-class exploration of much of this material.

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[17] McCoy, 1-15.
[18] Ibid., 127-142.
[19] Ibid., 127-141.
[20] Ibid., 128-129.
[21] Ibid., 53-75.
[22] Scott McCoy, *Your Voice, an Inside View: Multimedia Voice Science and Pedagogy*, 1st ed. (Princeton, NJ: Inside View Press, 2004).

Perhaps the text's greatest value is in the accompanying CD-ROM, which contains both the text and an array of images, videos, sound files, and animations. Students have the option to complete the readings using the CD-ROM, and viewing or listening to the examples as they read. These animations and images contribute immeasurably to classroom lectures and discussions, and help to clarify and enhance student learning and comprehension.

Supplementary Texts

Boytim, Joan Frey. *The Private Voice Studio Handbook: A Practical Guide to All Aspects of Teaching*. Milwaukee, WI: Hal Leonard Publishing Corporation, 2003.

Joan Frey Boytim is a recognized authority in voice instruction, and is particularly known for her contribution to repertoire resources for young singers and independent studio teaching. She is the compiler of numerous anthologies of vocal repertoire, including the well-known G. Schirmer series *The First Book of Solos* (Parts I and II) and *The Second Book of Solos* for each voice type.[23] In *The Private Voice Studio Handbook*, Boytim offers advice and the voice of experience gained from over fifty-five years of private voice studio teaching. As is noted in her biography, Boytim has "devoted herself almost exclusively to teaching teenagers to sing, which has been her passion."[24] The impetus for the text was the series of columns Boytim published in *InterNos*, a periodical for members of the National Association of Teachers of Singing. Under the heading "A Private View," the column ran for five years and fifteen issues of *InterNos*.[25] The format

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[23] "Joan Frey Boytim Complete Publications," Hal Leonard Corporation, 2010, accessed March 15, 2016, http://www.halleonard.com/bin/PromoVocalBoytimpubs.pdf.

[24] Joan Frey Boytim, *The Private Voice Studio Handbook: A Practical Guide to All Aspects of Teaching* (Milwaukee, WI: Hal Leonard, 2003), iii.

[25] Ibid., xiii.

of the column was a series of questions and responses. In the columns, the fictional character "Nancy," a young and inexperienced voice teacher receives advice and guidance from "Mrs. B." on a variety of subjects related to independent studio voice instruction. Boytim compiled and expanded these columns into *The Private Voice Studio Handbook*, which focuses on "the practical, day-to-day matters that might face a typical teacher."[26] Through twenty-five chapters, Boytim discusses the different concerns related to building a studio 'from the ground up,' so to speak; the first seven chapters are dedicated to establishing a studio, preparing studio space in one's home, organizing student information, and auditioning students, among other topics. Subsequent chapters address music reading and vocalises, selecting repertoire, and approaches to teaching. The final sections of the book discuss additional, miscellaneous topics related to studio teaching, including preparing teenage students for university music program auditions, writing recommendation letters, competitions, and attending NATS conferences and other events. Boytim also includes practical business advice, such as methods of organizing payment plans, taxes, insurance, and planning for retirement. There are two chapters dedicated to instructing children and adult beginners. Finally, Boytim speaks to ethical issues such as photocopying music, and the NATS Code of Ethics. The Appendices include solfeggio pages and their accompaniments, and catalogues of anthologies of which Boytim is the compiler. The overall tone of the text is conversational, as much of the content is drawn from Boytim's own anecdotal experience. It is approachable, comprehensible, and practical.

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[26] Boytim, xiv.

Bozeman, Kenneth W. *Practical Vocal Acoustics: Pedagogic Applications for Teachers and Singers*. Hillsdale, NY: Pendragon Press, 2013.

Bozeman's text is a relatively recent and important contribution to the field of voice pedagogy, following in the work of Berton Coffin, Donald Miller, and others. His text is the product of research from over three decades of study and investigation of the relationship between singing and vocal acoustics.[27] In the preface to the text, Bozeman describes how, while on a sabbatical and working with Richard Miller at Oberlin College during the late 1980s, he discovered how "the voice turned over and 'closed' in a parallel relationship to the first formant locations of vowels."[28] That is to say, Bozeman observed how the male voice, specifically, transitioned into the upper register (from open timbre to close timbre without changes in the laryngeal register[29]) at different locations depending on the vowel being sung.[30] Therein lies the foundation of Bozeman's text—a resonance phenomenon which he explains was simultaneously observed by Donald Miller and others at the Groningen Voice Research Lab in the Netherlands[31]—"the male voice turns over when the second harmonic rises above the first formant."[32]

While the acoustic principles and concepts presented are not new, per se, what is innovative is Bozeman's approach: Writing for voice teachers, and using clear, illustrative examples and instructions, Bozeman explains how the principles of voice acoustics that govern register transitions may be applied to studio voice instruction. In his introduction, Bozeman writes:

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[27] Kenneth W. Bozeman, *Practical Vocal Acoustics: Pedagogic Applications for Teachers and Singers* (Hillsdale, NY: Pendragon Press, 2013), xiii.
[28] Ibid.
[29] Ibid., 23.
[30] Ibid., 26.
[31] Ibid., xiv.
[32] Ibid.

> This book represents an attempt to place principles emerging from voice science in a clear and practical pedagogic context for voice teachers and voice pedagogy students. An effort has been made to distill from the science of vocal acoustics those factors that are essential for teachers at the beginning of the twenty-first century to understand and that are most likely to be productive for improving our pedagogic efficiency, and to present them in language that is generally accessible.[33]

This is not to say that the text is overly simplified. To the contrary: the content demands a working knowledge of basic vocal acoustics. Fortunately, Bozeman provides the reader with a "primer" on formants and harmonics, as well as overviews of vocal resonance, and harmonic/formant interactions (Chapters 4 and 5, respectively).[34]

Although the subject matter is science-based, Bozeman simultaneously acknowledges the importance of other, more "traditional" elements of voice pedagogy, such as the role of affect/emotion in instruction.[35] He is also careful not to dismiss outright historical pedagogical terminology such as "head" and "chest" registers, as used to describe vibrational modes. Rather, he helps connect acoustic terminology with more traditional voice teaching by way of "translating" complex ideas into easily applicable exercises and strategies.

There are numerous ways to approach this text, and to incorporate it into classroom use. Instructors may wish to use Chapters 4 and 5 ("Formants Primer" and "Harmonic /Formant Interactions") as an introduction to the subject, and as a complementary resource (or substitution) for the equivalent chapters in the McCoy text.[36] Readers are encouraged to complete the accompanying *Madde* voice synthesizer exercises interspersed throughout the text.

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[33] Bozeman, 1.
[34] Ibid., 11-31.
[35] Ibid., 39.
[36] McCoy, 53-75.

Writing about this and other tools for voice analysis, Bozeman writes:

> With sophisticated yet inexpensive sound analysis technology now widely available, more voice teachers are curious about its potential value for the studio, and are seeing the need to understand and be well-informed about the acoustics of vocal registration—at the very least, as a means to more efficient pedagogy, but also as an essential element of voice pedagogy courses.[37]

Chapters 6 and 7 deal with female/treble resonance strategies and male *passaggio* training, respectively, and chapters 8 through 10 address aural perceptions of "turning over," and pedagogic applications and strategies for achieving resonance "stability" in a more general way.[38] Bozeman also dedicates a chapter to the acoustics of belting—a useful resource for class discussions of contemporary commercial music pedagogy.

Especially helpful for both instructor preparation and classroom use is the way in which Bozeman illustrates many of the book's concepts through the use of YouTube recordings. In Chapter 6, "Female/Treble Voice Resonance Strategies," for example, Bozeman shows F1/H1 tracking through the example of soprano Leontyne Price singing "Beim Schlafengehen" (from Richard Strauss' *Vier Letzte Lieder*), and selects a particularly clear example of F1 tracking on the words "sehnliches" and "Kind."[39] In both examples, Price opens the vowel on the ascent, thereby, explains Bozeman, keeping "F1 close to the pitch being sung."[40] The vowels are "actively opened/modified to maintain whoop timbre. In both cases the opening of the vowel is sufficient to keep H1 within the effective bandwidth of F1 for fullness and roundness of tone quality."[41] Using a recording of José Van Dam, Bozeman illustrates the "turning" of the voice during a melismatic

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[37] Bozeman, 1.
[38] Ibid., 59-66.
[39] Ibid., 35.
[40] Ibid.
[41] Ibid.

passage on [ɑ] near the end of the piece. Bozeman notes that "the vowel shift is rather notable in this rich, deep, beautiful voice, but is typical for such voice types."[42]

Chapter 13, "Acoustic Explorations" provides exploratory exercises for each of the concepts discussed in the preceding chapters, and the accompanying DVD shows several of Bozeman's students demonstrating said exercises.[43]

Doscher, Barbara M. *The Functional Unity of the Singing Voice*. 2nd ed. Lanham, MD: The Scarecrow Press, Inc., 1994.

In his 1989 review of *The Functional Unity of the Singing Voice*, Richard Dale Sjoerdsma described Doscher's text as an "excellent" work that would take its place alongside other standard, "distinguished" voice pedagogy textbooks, including "William Vennard's *Singing: The Mechanism and the Technic* (1964), D. Ralph Appelman's *The Science of Vocal Pedagogy* (1967), John Burgin's *Teaching Singing* (1973), and Richard Miller's *English, French, German, and Italian Techniques of Singing* (1977)."[44] "The purpose of the book," writes Sjoerdsma, "is to provide a text that describes the anatomy and physiology of the breathing and phonatory mechanisms, and the acoustical laws necessary to an understanding of resonance, with the recognition and demonstration of their functional unity."[45]

Suffice it to say, Doscher's text represents another important contribution to the voice pedagogy literature, and a longtime standard text for voice pedagogy classes. Doscher, like others before her, addresses the separate components of vocal production in a series of chapters on respiration, laryngeal anatomy, phonation, posture, sound,

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[42] Bozeman, 52.
[43] Ibid., 126.
[44] Richard Dale Sjoerdsma, "Bookshelf: Barbara M. Doscher, *The Functional Unity of the Singing Voice*," *The NATS Journal* 45, no. 3 (January/February 1989): 48.
[45] Ibid.

resonance, formants, and registration. However, Doscher also makes a point of explaining in clear terms the interrelated nature of the separate components, as suggested by the title. In Chapter 9, an essay entitled "The Functional Unity of the Singing Voice: A Gestalt,"[46] Doscher summarizes her pedagogical philosophy, and explains the concept of *gestalt*:

> The singing mechanism is a perfect example of gestalt since it can function correctly only when all of its components are working together. Although we have dealt in some detail with specific anatomical parts of the singing mechanism, the study of these parts is an artificial separation for the purpose of instructional clarity. The three major functions of respiration, phonation, and resonation are actually an inseparable unit, and when this unit is operating properly, a cyclical interplay takes place.[47]

Accompanying Doscher's writing are numerous diagrams and schematic illustrations that help clarify and illuminate the text. There is also a good dose of humor, provided by the cartoons and tongue-in-cheek captions sprinkled throughout the book. Doscher concludes the text with two substantial appendices: "Vocal Abuse and Misuse," and "Vocal Hygiene."[48] In the first, Doscher outlines causes, symptoms, and treatments for structural disorders, functional disorders, and phonotraumatic behaviors. The second, vocal hygiene, is less significant by comparison, but a useful overview of best vocal hygiene and behavioral practices for care of the professional voice.

Students will no doubt appreciate Doscher's straightforward writing style and no-nonsense approach. Used either as the assigned text, or as a supplementary resource, Doscher's text is a valuable inclusion to the undergraduate voice pedagogy curriculum.

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[46] Barbara M. Doscher, *The Functional Unity of the Singing Voice*, 2nd ed. (Metuchen, NJ: Scarecrow Press, 1994), 211-213.

[47] Ibid., 211.

[48] Ibid., 214-258.

Malde, Melissa, MaryJean Allen, and Kurt-Alexander Zeller. *What Every Singer Needs to Know About the Body*. San Diego: Plural Publishing, Inc., 2009.

What Every Singer Needs to Know About the Body serves as a useful supplementary text for the undergraduate pedagogy class. Instructors might elect to assign chapters or portions of the text for additional study, or simply adopt some of the numerous exploratory exercises for class use. Published by Plural Publishing, the text is a succinct yet thorough manual of the structures of singing and gesture. It is based on the principles of "Body Mapping," anatomy, physiology and body awareness. In the first chapter, Allen defines a "body map" as the following:

> The *body map* is your mental representation of your body's size, structure, and function. The body map is of enormous importance to singers because the integrity of any movement depends on the integrity of the body map that governs it. When you correct and refine your body map, your movements improve, resulting in better singing.[49]

It follows, then, that if singers and teachers have an incorrect mental image or perception of the body and structures of singing, it could lead to inefficient or even disordered singing. Near the beginning of the book, Allen provides an illustrative example:

> A singer who erroneously believes he has an upper jaw will try to open his mouth with the nonexistent upper jaw. This mistake in his structural map leads to a mistake in function. Because he has mapped two jaws instead of one, opening his mouth as is he had an upper jaw and a lower jaw, his head tilts slightly back in order to open his imagined upper jaw. Therefore, his movement is awkward and his singing is tense.[50]

This is but one example of how incorrect body mapping causes inefficient singing. Barbara Conable, in her introduction to the text, points out that it is not a lack of

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[49] Melissa Malde, MaryJean Allen, and Kurt-Alexander Zeller, *What Every Singer Needs to Know About the Body* (San Diego, CA: Plural Publishing, Inc., 2009), 2.

[50] Ibid., 4.

technique that causes singers to "suffer," but rather problematic movement. Specifically, the problem lies in "faulty movement, tense movement, [and] movement done without awareness and therefore without discernment."[51]

The text also relies on the principles of kinesthesia and inclusive awareness, which are described as interrelated concepts. Writes Allen: "Kinesthesia is the perception of your body in motion: how it moves, where it moves, and the quality of that movement…"[52] while inclusive awareness "…is the skill of perceiving self and world simultaneously."[53] By training their kinesthetic sense, Allen asserts, singers will become more sensitive, so as to perceive their bodies in motion. Further to this, they will be able to "discriminate" movements, so as to guard against tension or imbalance, and will eventually find optimal movement. Inclusive awareness goes one step further, so to speak, and incorporates awareness of self and surrounding environments. Singers who successfully use inclusive awareness expand their awareness to "include [themselves] in relationship to [their] world:"[54]

> With inclusive awareness your focus can easily shift to what needs your attention the most: the conductor in one moment, how much air you are taking in during the next moment, and the fact that the singer next to you has skipped a measure in the next moment. The difference between inclusive awareness and rapid scanning is that you are still in relationship with the other elements even as you shift focus from element to element.[55]

The text is divided into seven chapters and includes two appendices. The first chapter, "Body Mapping, Kinesthesia, and Inclusive Awareness"[56] provides an

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[51] Malde, Allen, and Zeller, vii.
[52] Ibid., 5.
[53] Ibid., 7.
[54] Ibid., 8.
[55] Ibid.
[56] Ibid., 1-10.

introduction to the book's three core concepts, and subsequent chapters generally correspond to different components of the singer's instrument: core and balance, breath, the larynx, resonance, and articulation.[57] The seventh and final chapter addresses physical communication and gesture through explorations of arms, hands, leg, and shoulder movements. Additional sections deal with facial expression, concentration and attention, and eradicating unwanted movement.[58] Scattered throughout are numerous exploratory activities that could be incorporated into class meetings, or assigned as homework. The two appendices discuss performance anxiety, and the cognitive foundations of body mapping.[59]

McKinney, James C. *The Diagnosis and Correction of Vocal Faults.* Nashville, TN: Genevox Music Group, 1994.

Another textbook frequently used in voice pedagogy classes,[60] James McKinney's revised and updated version of his 1982 publication, *The Diagnosis and Correction of Vocal Faults*, is a valuable supplemental resource for both instructor preparation and course readings. McKinney, a student of the late William Vennard,[61] created his text as a diagnostic manual of vocal problems related to function. Writes McKinney: "It is designed to serve as an instructional handbook or a reference manual on the diagnosis and correction of vocal faults."[62] McKinney's text was, in part, borne out of comparative studies investigating "the way a medical doctor would diagnose the health problems of a

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[57] Malde, Allen, and Zeller, 11-164.
[58] Ibid., 165-197.
[59] Ibid., 199-210.
[60] An informal survey of voice pedagogy syllabi available online showed that numerous classes use the McKinney as either the assigned course textbook, or a supplemental resource.
[61] James C. McKinney, *The Diagnosis and Correction of Vocal Faults: A Manual for Teachers of Singing and for Choir Directors* (1994; repr., Long Grove, IL: Waveland Press Inc., 2005), 3.
[62] Ibid., 7.

person and the way a singing teacher would diagnose the vocal problems of a student."[63] In the book's introduction, McKinney explains how he developed his approach. For sessions he presented at NATS summer workshops,[64] he prepared audio recordings of ten vocal faults, and asked the attendees to answer three questions for each example: "What is wrong with the sound that you are hearing? What do you think is causing it? What would you do about it if you were the teacher?[65] These are the questions addressed in McKinney's text.

The first chapter lays the foundation for the unifying concept of the text—the likening of the vocal diagnostic process to that of a medical practitioner. Reduced to its most basic components, McKinney outlines the "plan of action" for voice teachers: recognize symptoms, determine causes, and devise cures.[66] Within this system, McKinney classifies vocal faults by physical processes involved in the singing act (respiration, phonation, etc.),[67] with further subcategories of *hypofunction* and *hyperfunction* (underuse and overuse, respectively).[68]

Subsequent chapters of the text are therefore dedicated to these separate, yet unified processes. Beginning with an exploration of the nature of sound, McKinney then addresses the standard elements of posture, breathing and support, phonation, registration, resonation, and articulation. Additional chapters concern voice classification, the speaking voice, and vocal coordination.[69]

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[63] McKinney., 5.
[64] Ibid.
[65] Ibid.
[66] Ibid., 12, 19.
[67] Ibid., 12, 16-17.
[68] Ibid, 12, 17.
[69] Ibid., 8-10.

One of the handiest components of the text is the accompanying CD of audio examples. In it, McKinney (and occasionally his students) demonstrate common vocal faults, including: hypofunctional/hyperfunctional phonation, forced breathiness, postnasality/forced nasality, sounds which are too bright/too dark, and faults related to vibrato, among many others.[70] Within the context of the proposed course, McKinney's text is an invaluable resource for the classes dedicated to instruction and correction of vocal faults. At the conclusion of each major unit of study, for example, after students are familiar with basic anatomical, physiological and acoustic concepts, students can listen to the examples of vocal faults, discuss what they are hearing, and propose solutions for how to best remedy them.

Miller, Richard. *The Structure of Singing: System and Art in Vocal Technique*. Belmont, CA: Schirmer, 1996.

It is difficult to overstate the importance and influence of Richard Miller's writings, and of this text in particular. Debra Greschner, in a 2007 article in the *Journal of Singing* entitled "Bookshelf: Books by Richard Miller," confirmed that *The Structure of Singing* is widely used as a textbook in voice pedagogy classes.[71] In the same issue, Paul Kiesgen paid tribute to Miller in an article entitled "How Richard Miller Changed the Way We Think About Singing." In it, he speaks to Miller's legacy:

> Through his teaching, extensive writings, and frequent appearances as a clinician, Richard Miller has influenced the thinking of singers and teachers throughout the world. Perhaps his most significant contribution is that he made us rethink the way we evaluate singing. Traditionally singers and teachers have listened to the sound and made decisions about the voice based almost entirely on whether they like the sound or not. Richard has asked us to consider the function first, assuring

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[70] McKinney, CD of sample vocal faults.

[71] Debra Greschner, "Bookshelf: Books by Richard Miller," *Journal of Singing* 63, no. 3 (January/February 2007): 349.

> us that a voice that is functioning well will indeed produce the best possible sound.[72]

First published in 1986, *The Structure of Singing* was Miller's second text.[73] Debra Greschner, in "Bookshelf: Books by Richard Miller,"[74] notes that the text is "considered by many to be the author's *magnum opus*."[75] Following the publication of his first book, *English, French, German and Italian Techniques of Singing* (later re-published as *National Schools of Singing*), the product of Miller's observations of voice lessons at numerous conservatories and schools in Europe, Miller presented his own "pedagogic philosophies" in *The Structure of Singing*.[76] Kiesgen explains how, after arriving at the conclusion that the Italianate school of singing produced the highest efficiency of function, Miller published *The Structure of Singing*, which "stands as a monument to the traditional Italian/International vocal approach, advocating what is usually described as *bel canto,* while carefully avoiding the claim that is made by some that they have rediscovered the secrets of the old masters."[77]

The text is organized into seventeen chapters and six appendices. Beginning with onset, Miller systematically addresses different components of voice building, chapter by chapter: onset, breath management, agility, resonance, vowel differentiation, *sostenuto*, registration, *aggiustamento*, range extension, *messa di voce*, vibrancy, and coordination are all addressed in turn. Each chapter begins with an overview and explanation of

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[72] Paul Kiesgen, "How Richard Miller Changed the Way We Think about Singing," *Journal of Singing* 63, no. 3 (January/February 2007): 261.
[73] Ibid., 262.
[74] Ibid.
[75] Ibid.
[76] Greschner, "Bookshelf: Books by Richard Miller," 349.
[77] Kiesgen, "How Richard Miller Changed the Way We Think about Singing," 262.

concepts, and includes numerous exercises specifically selected to address the technical skill at hand. That is to say: each exercise has a specific purpose and intended result.

The remaining chapters concern philosophy and pedagogy, such as in the chapter dedicated to "Pedagogical Attitudes," as well as vocal health and hygiene. The first five appendices provide the most detailed anatomical and physiological information in the text. These include: "Laryngeal Structure and Function," "The Structure and Mechanics of the Breath Apparatus," "The Physiology of the Vocal Tract Resonator System," and "The Physical Factors of Vocal Registration."[78] In these appendices, Miller includes numerous images and diagrams from Zemlin, Lubosch, and others.[79] The text also includes thorough glossaries of nonmusical terms, vocal terms, and a pronunciation guide for IPA.[80]

Ware, Clifton. *Basics of Vocal Pedagogy: The Foundations and Process of Singing.* Boston: McGraw Hill, 1998.

Basics of Vocal Pedagogy is another possible choice for class use. Ware's text covers much of the same territory as other voice pedagogy texts, but with the addition of sections dedicated to philosophy and psychology. (Chapters one through three address the "Philosophy of Singing," "Psychology of Singing," and "Body-Mind Integration," respectively.)[81] The text is conveniently designed for "the typical single-term course lasting from ten to fifteen weeks."[82] Ware himself summarizes his unique blend of voice science and philosophy: "The methodology of *Basics of Vocal Pedagogy* presents a

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[78] Richard Miller, *The Structure of Singing: System and Art in Vocal Technique* (Belmont, CA: Schirmer, 1996), 241-296.

[79] Ibid.

[80] Ibid., 297-313.

[81] Clifton Ware, *Basics of Vocal Pedagogy: The Foundations and Process of Singing* (New York: McGraw-Hill Education, 1998), v.

[82] Ibid., viii.

pragmatic, unified pedagogy based on an eclectic integration of both scientific-mechanistic and holistic approaches."[83]

Ware's blend of philosophizing and voice science is unique, and therefore offers a different perspective on standard topics. The inclusion of subjects such as solo vocal performance, interpretation and artistry, and comparative and historical teaching methodologies are useful for the application and pedagogy section of the course.

Speech and Hearing Sciences Texts

Seikel, John A., Douglas W. King, and David G. Drumright. *Anatomy and Physiology for Speech, Language, and Hearing*. 4th ed. Clifton Park, NY: Delmar Cengage Learning, 2010.

Anatomy and Physiology for Speech, Language, and Hearing is a text used for introductory speech anatomy and physiology courses at numerous institutions across North America.[84] As such, the text comprises the large units of study related to human communication, including respiration, phonation, articulation, resonation, mastication and deglutition, hearing, and neuroanatomy/neurophysiology.[85] Each of these large subject areas is divided into two discrete sections; for example, "Anatomy of Phonation" and "Physiology of Phonation" are separate chapters.[86] (Taking a cue from this textbook, the proposed course curriculum likewise follows a similar format for addressing these subjects in class. Please see Appendix A for further details.) While the content of this text **far** exceeds the information necessary or practical for an undergraduate voice pedagogy class (especially a one-semester course), *Anatomy and Physiology for Speech, Language,*

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[83] Ware, viii-ix.

[84] An informal web search of online university syllabi revealed that this textbook is used in introductory anatomy and physiology of speech courses at numerous institutions across the United States.

[85] J. Anthony Seikel, Douglas W. King, and David G. Drumright, *Anatomy and Physiology for Speech, Language, and Hearing*, 4th ed. (Clifton Park, NY: Delmar Cengage Learning, 2010).

[86] Ibid., viii-ix.

and Hearing is an informative resource for instructor preparation. The first chapter, "Basic Elements of Anatomy"[87] is an excellent primer for those with little-to-no background in human anatomy. The chapters are well-organized, the prose straightforward and comprehensible, and the numerous diagrams and images that accompany the text are exceedingly clear. Anatomical terms in blue print are defined on each page, and bullet-point summaries appear at the end of each chapter. Published by Cengage Learning, the text is accompanied by Anatesse learning software that includes additional images, diagrams, and animations.

Zemlin, Willard R. *Speech and Hearing Science: Anatomy and Physiology*. 4th ed. Boston: Pearson, 1998.

This is the anatomy and physiology text cited by McCoy several times throughout *Your Voice: An Inside View,* and often appears as a suggested resource under the headings "References and Recommended Reading."[88] Zemlin was a member of faculty at the Department of Speech and Hearing Science at the University of Illinois at Urbana-Champaign, and the University of Illinois School of Basic Medical Sciences.[89] Zemlin was also a contributor to the *NATS Bulletin*, as the author of three articles in 1966, 1971, and 1984.[90] According to the W. R. Zemlin Memorial Web Site, Zemlin's "influence on the field of speech and hearing science has been an unmatched phenomenon."[91] *Speech*

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[87] Seikel, King, and Drumright, 1-34.

[88] McCoy, 25, 37, 52, 79, 101, 126, 169, 175.

[89] "W. R. Zemlin Memorial Website," University of Illinois at Urbana-Champaign Department of Speech and Hearing Science, accessed March 15, 2016, http://zemlin.shs.uiuc.edu/.

[90] "Journal of Singing Index," National Association of Teachers of Singing, accessed February 10, 2016, http://www.nats.org/cgi/page.cgi/journal-of-singing-index.html.

[91] "W. R. Zemlin Memorial Website," University of Illinois at Urbana-Champaign Department of Speech and Hearing Science.

and Hearing Science: Anatomy and Physiology was used as a standard text for speech anatomy and physiology courses at numerous institutions as recently as 2010.[92]

Zemlin writes in the preface:

> Each of us who is concerned with the rehabilitation of speech, language, and hearing should be able to visualize the anatomical structures involved, to understand their usual functions, and to hypothesize how they might function under adverse circumstances.[93]

While, granted, most students studying voice pedagogy are not training to become speech language pathologists (although this is one possible career avenue for voice majors), Zemlin's assertion might be applied to singers and voice teachers, as well.

The text is divided into eight large chapters, with several sub-categories in each. The chapters most relevant for undergraduate voice pedagogy instruction are: Chapters 2, 3, 4, and 6, which address breathing, phonation, articulation, and hearing, respectively.[94] Each section discusses the relevant structures in thorough detail, and there are numerous accompanying pictures and diagrams. As with *Anatomy and Physiology for Speech, Language, and Hearing*, Zemlin's text provides far more detail than is necessary and appropriate for undergraduate voice pedagogy, but it is nonetheless beneficial for instructor preparation.

Anatomy Images and Copyright Issues

One important issue the voice pedagogy instructor may encounter is the availability of anatomy images which may be **legally** reproduced and distributed for classroom use. Certainly, there is no shortage of excellent images and computer

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[92] An informal web search of online university syllabi revealed that this textbook is used in introductory anatomy and physiology of speech courses at numerous institutions across the United States.

[93] Willard R. Zemlin, *Speech and Hearing Science: Anatomy and Physiology*, 4th ed. (Boston: Pearson, 1998), xiv.

[94] Ibid., iii-x.

animation software programs available for purchase. Software programs designed for medical students and healthcare professionals, such as *Visible Body*,[95] among others, are fantastic resources. However, there are legal limitations that govern their classroom use. In preparing PowerPoint slides for class meetings, for example, the instructor may well find a wealth of excellent images, animations, and other media available through web searches, but very few of these may be legally reproduced without permission. Only images published under a Creative Commons License (or similar) may be included, and even then, must be attributed.[96] Happily, images from the 1918 edition of *Gray's Anatomy* are now public domain, and may be reproduced without penalty.[97] Instructors may also make use of the images, diagrams and animations available through Wikimedia Commons, which hosts a surprisingly large collection of freely usable media files.[98] The site also provides download and citation instructions for each file, so that instructors may correctly attribute authors' work in PowerPoint slides, handouts, and other class materials.

Other options for finding legal images are to use Google's popular "Image" search, specifying "Search tools/Usage rights/Labeled for reuse."[99]

Bastian Medical Media. "Laryngopedia."

Laryngopedia is an online resource published by Bastian Medical Media, and founded by Dr. Robert W. Bastian, an otolaryngologist and "internationally recognized

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[95] "Products," Visible Body, 2016, accessed May 20, 2016, http://www.visiblebody.com/index.html.

[96] "About the Licenses," Creative Commons Corporation, 2016, accessed May 20, 2016, https://creativecommons.org/licenses/.

[97] McCoy, ii.

[98] "Wikimedia Commons," Wikimendia Commons, last modified May 15, 2016, accessed May 25, 2016, https://commons.wikimedia.org/wiki/Main_Page.

[99] "Google Images," Google, accessed May 20, 2016, https://images.google.com/.

authority in the treatment of voice, airway, swallowing, and coughing disorders…"[100] This comprehensive database includes an enormous array of materials, including multimedia encyclopedia entries (with embedded photos and videos), a photo gallery, and a video gallery.[101] Users may browse by topic, keyboard, or format, and the site provides detailed instructions for downloading media to both PC and Mac computers. According to the site's Terms of Use, all of the materials may be used freely, provided the user preserves the Laryngopedia watermark.[102] In addition to anatomy and physiology, Laryngopedia provides information about voice, swallowing, airway, and coughing disorders, thorough descriptions of treatment procedures and tools, and numerous patient handouts. Among these, users may access Bastian's "Swelling Tests:" self-diagnostic tools that help singers "detect acute or chronic vocal fold mucosal injury reliably."[103]

University of Illinois at Urbana-Champaign Department of Speech and Hearing Science. "W. R. Zemlin Memorial Web Site."

The W. R. Zemlin Memorial Web Site is an online collection of anatomical images related to the respiratory system and larynx. According to the website's introduction, the photographs are "a sampling of Dr. Zemlin's photographic slides of the larynx, central nervous system, skull and respiratory system. It was his desire to share this information with others in speech and hearing science and related professions."[104]

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[100] Bastian Medical Media, "Who we are," Laryngopedia, accessed July 13, 2016, http://laryngopedia.com/about-us/who-we-are/.

[101] Bastian Medical Media, "Our Mission," Laryngopedia, accessed July 13, 2016, http://laryngopedia.com.

[102] Bastian Medical Media, "Terms of Use," Laryngopedia, accessed July 13, 2016, http://laryngopedia.com/about-us/terms-of-use/.

[103] Bastian Medical Media, "Patient Handouts," Laryngopedia, accessed July 13, 2016, http://laryngopedia.com/treatment/patient-handouts/; http://laryngopedia.com/wp-content/uploads/2016/04/Swelling-Tests-Long-Version-.pdf.

[104] "W. R. Zemlin Memorial Website," University of Illinois at Urbana-Champaign Department of Speech and Hearing Science, accessed March 15, 2016, http://zemlin.shs.uiuc.edu/.

There are numerous images of excised larynges which show the cartilages and muscles from every imaginable aspect, as well as images taken during vocal fold stroboscopy. The images on the site are under copyright and may not be reproduced for classroom use without permission.[105] However, instructors may refer students to this excellent resource as a supplement to course readings.

Instructional Tools

Granqvist, Svante. *MADDE* (Version 3.0.0.2 for Windows). Tolvan Data, 2000-2011. Compiled 10/8/2010.

The *Madde* Voice Synthesizer is a freeware product designed by Swedish engineer Svante Granqvist.[106] Using the program, it is possible to replicate the human voice "singing" a range of pitches available within a standard keyboard. It is one of the preferred resources of author Kenneth Bozeman, who relies heavily on the *Madde* synthesizer for his work with vocal acoustics.[107] The software is available for download at the following site: http://www.speech.kth.se/smptool/. Bozeman writes in *Practical Vocal Acoustics*:

> *Madde* can be useful for occasional explanations in the studio, and even for audio demonstrations of harmonic/formant interactions and the passive vowel modifications that accompany them, but it is especially well suited for voice pedagogy classes. *Madde* can be used to illustrate 1) the effect of pitch on the number of harmonics within useful range, 2) the roll-off (tilt) in power of the source harmonics, 3) the effect of the presence or absence of formants, and 4) the aural effects of all harmonic/formant interactions.[108]

Using the guided "exploration" activities provided by Bozeman, instructors and students may use the software to better understand the effect of mode of phonation on

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[105] "W. R. Zemlin Memorial Website."
[106] Bozeman, xiv.
[107] Ibid., 95.
[108] Ibid., 96.

source harmonics, harmonic/formant crossings, and open versus close timbre.[109] The "F1/F2" map allows users to model and change the different vowels by plotting values on x and y axes. Students will be able to hear how the alteration of formant locations creates and changes vowels.[110] The *Madde* synthesizer is relatively user-friendly, and is certainly an interesting and interactive tool for teaching this subject matter. Bozeman concludes: "Svante Granqvist's *Madde* voice synthesizer is an outstanding instructional tool—the best available to date—for acoustics presentations/explanations for undergraduate voice pedagogy classes or for any audience."[111]

Miller, Donald, Garyth Nair, Harm K. Shutte, and Richard Horne. *VoceVista* (Version 1.0.0). 2008.

VoceVista software is available for purchase with either an individual or institutional license, or as accompanying software to Donald Miller's text, *Resonance in Singing*.[112] *VoceVista* includes several displays, including: a sound spectrogram (narrow-band display), power spectrum, electroglottograph waveform (EGG), (which requires an additional purchase of electrodes), and the audio waveform.[113] Two available additional displays are the "Waveform Envelope" (displays relative sound pressure level), and the "Closed Quotient History," which "gives an indication of the closed quotient (CQ) over the course of the adjacent spectrogram."[114] *VoceVista* has evidently become a standard fixture of university voice pedagogy curricula, as indicated by the number of schools currently using *VoceVista*/EGG listed on *VoceVista*'s website—a list of over one hundred

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[109] Bozeman, 116-120.
[110] Ibid., 121.
[111] Ibid., 97.
[112] Donald Gray Miller, *Resonance in Singing: Voice Building through Acoustic Feedback* (Princeton, NJ: Inside View Press, 2008).
[113] Ibid., 7-11.
[114] Ibid., 11-12.

and twenty institutions in North America and Europe.[115] For an introduction and tutorial for learning spectrograms, readers are directed to Ian Howell's "Spectrogram Primer for Singers"[116] available on the New England Conservatory Vocal Pedagogy blog.

Thorpe, William, J., Jean Callaghan, Pat Wilson, Jan van Doorn, and Jonathon Crane. *Sing & See* (Version 1.5.8). Birkenhead, Auckland, NZ: Cantovation Technology, 2003-2015.

Sing & See software is another instructional aid currently used in voice studios and voice pedagogy classes.[117] An alternative (or perhaps a complementary resource) to *Voce Vista*, *Sing & See* is software that displays—in real time—a visual representation of a singer's sound. The display conveys information about pitch, timbre, intonation, onset, amplitude, and vibrato.[118] Displays include "Pitch trace," (which allows students to see how their pitch changes from note to note), a piano keyboard display, and a stave view. *Sing & See* is available in both Student and Professional versions; the Student version includes only the aforementioned displays, while the Professional version has the addition of spectrograph display, real-time spectrum, and a level meter.[119] The Student version assists students with pitch-matching, while the spectrograph features are more suited to advanced study. While upperclassmen students may find the pitch-matching component too rudimentary for their own singing, it is a possible resource for their own

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[115] "Customers," VoceVista, 2016, accessed March 30, 2016, http://www.vocevista.com/customers/.

[116] "A Spectrogram Primer for Singers," NEC Vocal Pedagogy, January 26, 2014, accessed May 3, 2016, http://vocped.ianhowell.net/a-spectrogram-primer-for-singers/.

[117] Walz, "Training the 21st Century Voice Teacher: An Overview and Curriculum Survey of the Undergraduate Experience," 37.

[118] "Sing & See Features," Sing & See, 2015, accessed May 5, 2016, https://www.singandsee.com/features.

[119] Ibid.

teaching. Instructors also have the option to purchase the teacher's manual: *How to Sing and See: Singing Pedagogy in the Digital Era*.[120]

Wall, Joan, and Robert Caldwell. *Singer's Voice*, *The Complete Set*. Caldwell Publishing Company; Diction for Singers.com, 2002. 6 DVDs.

Another longtime fixture of voice pedagogy classes, the "Singers Voice" series of videos by Robert Caldwell and Joan Wall, originally released on VHS, are now available on DVD. The set includes the five original videos ("Breath," the two-part "Vocal Folds," "Vocal Tract," and "Resonance," along with the newer, sixth video, entitled "The Human Voice.") [121] Reviewer Donald Simonson writes in *Choral Journal*:

> The latest and last video in the series is entitled *The Singer's Voice: The Human Voice*. It employs state-of-the-art 3-D animation to bring all of the concepts presented in the previous titles together. In a concise and clear manner, anatomy and function are reviewed with life-like animations of the larynx and respiratory system. (…) The film covers a number of important concepts and topics including formant frequencies, formant tuning during singing, vocal registers, and pleasing vocal resonance. The beautiful animations and insightful narration make very difficult subjects crystal clear.

Instructors may wish to show these videos to supplement lecture content and to reinforce course concepts.

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[120] Jean Callaghan and Pat Wilson, *How to Sing and See - Singing Pedagogy in the Digital Era* (Surry Hills, Australia: Cantare Systems Pty Ltd, 2004), 1.

[121] "Singer's Voice the Complete Set, Diction for Singers.com, 2013, accessed May 21, 2016, http://www.dictionforsingers.com/singer-s-voice-the-complete-set.html.

Chapter 3: COURSE CONTENT AND DESIGN CONSIDERATIONS

Establishing an Undergraduate Voice Pedagogy Course and Curriculum

Having established a rationale and justification for undergraduate voice pedagogy courses, this document will now examine the requirements, content, and considerations the instructor must confront when creating the class.

One Course or Two?

Undergraduate voice pedagogy instruction may be neatly divided into a two-semester sequence. Doscher, in her preface to *The Functional Unity of the Singing Voice*, seems to support this approach. In describing her text, she writes:

> The book's primary use is as a college textbook. Courses in the physiology and acoustics of the singing instrument are multiplying and may now be found even in our smaller colleges. In most instances such courses rightly precede comparative methodology, repertory for young students, and other more practical aspects of the profession.[122]

In a hypothetical two-term sequence, the first class is an introductory course encompassing postural, respiratory, phonatory, and resonatory systems, as well as an overview of the physics of sound. Time permitting, students may also receive instruction in articulatory and auditory anatomy and physiology. Vocal health, hygiene, and pathology may also be components of the course.

The second course in the sequence, then, is a true pedagogy course, wherein students study different pedagogical approaches to voice instruction, both through study of historical voice pedagogy scholarship, and through studio and classroom observation. Using resources specifically designed for studio use, students learn how to structure and run voice lessons and classes, and select appropriate vocalises and repertoire for students

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[122] Doscher, ix-x.

of all ages. Time permitting, students may also study education philosophy in addition to teaching strategies for studio and classroom instruction. This class could include units specifically dedicated to teaching students "throughout the lifespan," with classes about teaching children, adolescents, adults, and senior citizens. This course would require students to instruct non-voice major students of their own.

At many institutions, however, it is far more likely that undergraduate voice pedagogy will be limited to one three-credit (or even 2-credit) course.[123] Therefore, all of the material described above must be condensed into a one-semester course, and the instructor must necessarily prioritize certain components, and exclude others. This handbook does not presume to dictate which elements to include, (this should be determined by the instructional setting), but rather presents a number of topics and subtopics that may be included in a two-semester sequence, but removed for a shorter course, if necessary. These suggestions appear throughout the document, and sample course schedules for both one and two-semester courses appear in the appendices.

Student Population and Degree Programs

In both the one-semester and two-semester models, the majors and degree programs of the enrolled students will influence the type of content presented. For music education students, whether general music or choral music specialists, their goals for the course and hoped-for outcomes may differ from those of voice performance majors. However, creating separate courses for performance and education majors is unrealistic—even within the largest institutions. Therefore, it is worth considering the background, needs, and goals of the student population when determining course content.

[123] An informal survey of NASM-accredited schools in the University of Wisconsin system revealed that, at several institutions, undergraduate voice pedagogy is only a two-credit course.

Determining Course Content: Voice Science and Voice Pedagogy

One need look only as far as the introductory chapters of various texts in the voice pedagogical literature from past decades to learn that the application of voice science in voice teaching was once, it seems, an inclusion that needed to be justified and explained. While the study and application of anatomy, physiology, physics, and acoustics principles is now well-established in the literature, it is worth revisiting for the purpose of crafting an undergraduate voice pedagogy course. One might argue that, for practical reasons and time constraints, voice science content should be minimized to allow for study and discussion of practical application. Indeed, this is one of the most pressing issues facing the instructor tasked with teaching undergraduate voice pedagogy.

In an article published in 2007 in the *Journal of Singing,* Kenneth Bozeman addresses the intersection of voice science and voice pedagogy:

> University faculty are increasingly renaming and adjusting voice pedagogy courses to be courses in voice science and pedagogy. While teachers in earlier centuries relied primarily on the authority of historic schools of pedagogy and teacher lineage, the situation today is somewhat different. Though few would claim to base their teaching exclusively on voice science, many now seek to compare historic pedagogy, or at least their own personal pedagogic histories, with information emerging from the investigations of voice science in order to confirm or adjust their approach, for new input, and for help in articulating more accurately vocal function and strategy for their students.[124]

As early as 1967, in *The Science of Vocal Pedagogy,* D. Ralph Appelman writes: "Vocal pedagogy by necessity is both aesthetic and scientific; its scientific entity is distilled from the pure sciences of mathematics, acoustics, linguistics, and anatomy…."[125]

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[124] Kenneth Bozeman, "A Case for Voice Science in the Voice Studio," *Journal of Singing* 63, no. 3 (January 2007): 265.

[125] D. Ralph Appelman, *The Science of Vocal Pedagogy: Theory and Application*, Reprint ed. (Bloomington, IN: Indiana University Press, 1986), 3.

The study of voice pedagogy therefore necessitates a study of anatomy and physiology. But how much is practical to include within the course? Speaking directly to this issue, Appelman continues:

> The teacher of these courses is faced with the problem of determining how much science, mathematics, and anatomy to include within a vocal pedagogy course for voice majors seeking a music degree. The answer to this question is to include *only such acoustic, linguistic, and physiological facts as will be directly applicable and meaningful as studio tools for vocal diagnosis, or to provide the singer with transferable, factual information that will aid him in his interpretation and performance in song.*[126]

One way to balance course content is through the use of instructional modules and submodules: units and activities that may be added or removed from the course curriculum in order to accommodate different instructional settings. As an example, within the one-semester model, wherein students must study both voice science and complete a teaching practicum, it is unlikely that course time will allow for a separate unit of study dedicated to articulatory and auditory anatomy. Instead, the instructor may elect to briefly refer to only the most important structures and concepts, and perhaps provide the students with resources for further reading and enrichment activities. Within the third large course module, "Sound, Resonance, and Registration," for example, the instructor may elect to jettison in-depth exploration of complex resonance concepts.

PowerPoint lectures provide another option: slides may be included, but "hidden," and revealed during class meetings only if time and interest allow. In his text, *Your Voice: An Inside View*, McCoy includes numerous activities for further learning. For

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[126] Appelman, 5. (Emphasis mine)

example, the "Exercise your brain" activities[127] scattered throughout the text provide ample opportunities for enrichment work.

For students completing degree programs in education, the undergraduate voice pedagogy course—if it includes a teaching component—presents an opportunity to practice voice instruction before they direct choirs and/or teach general music classes in their teaching practica. In this case, the instructor may wish to reduce the voice science components of the course to allow for more one-on-one supervision and in-class practice teaching.

Possible Challenges

While the study of singing encompasses many different objective disciplines (anatomy and physiology, acoustics, physics, mathematics, etc.) teaching voice is, in many ways, a highly subjective endeavor. Consequently, when teaching voice pedagogy, one must consider the variety of philosophies, methodologies, ideas, tonal preferences, and backgrounds among singers and teachers of singing. One need only look as far as Jerome Hines' compendium, *Great Singers on Great Singing*,[128] for example, to find myriad, often conflicting ideas written by singers describing their own instruments and techniques.

The voice pedagogy instructor will doubtless need to make decisions with respect to the instruction of subjective issues within voice pedagogy. Ideas concerning breath management and support, for example—to say nothing of registration, resonance, and vowel modification—are particularly diverse. How, then, might the graduate student or junior faculty member tasked with teaching voice pedagogy best address these issues?

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[127] McCoy, 29-30, 32-33, 34-35.
[128] Jerome Hines, *Great Singers On Great Singing* (New York: Limelight Editions, 2004).

The first chapter of McCoy's text, *Your Voice: An Inside View*[129] addresses this issue by way of Critical Listening exercises.[130] Here, McCoy presents a series of recorded examples from opera and commercial music, and asks students to evaluate each of the singers on fifteen characteristics on a "rating continuum." Included in this chapter are the survey results he has gathered from a panel of colleagues and students, so that readers may compare their own responses with those of the panel. Unsurprisingly, the results reveal a wide variety of responses.[131] McCoy acknowledges the multiplicity of opinions:

> A single, universally accepted vocabulary describing singing is as elusive as a single, universally accepted method of breath management. A vocal characteristic one singer hears as vibrato might be labeled by another as shimmer or spin. One singer's ideal resonance is another's nasality. The expressive, raspy sound suitable for a jazz singer might be a sign of vocal damage in an opera singer.[132]

McCoy's solution is to address critical listening and subjective vocal terminology at the outset of the text, so as to show how descriptions of vocal sound may be connected with physiological and acoustical events. By placing these characteristics on a continuum, rather than an absolute, McCoy avoids condemnatory language, and instead sets up a framework for evaluation using paired comparative terminology. He writes:

> One convenient way to describe vocal sound is through paired comparative words that can be placed on a continuum, such as dark/bright, dramatic/lyric, or clear/breathy. The following terms are not necessarily qualitative—a dark voice is not better or worse than a bright voice—nor are they intended to be comprehensive; they can, however, serve as a starting point to help refine listening skills.[133]

Throughout the text, McCoy—for the most part—avoids absolutes and limits the text content to objective topics. In the chapter concerning breath management (Chapter 7:

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[129] McCoy, 1-15.
[130] Ibid.
[131] Ibid., 9.
[132] Ibid., 2.
[133] Ibid.

Respiration), for example, McCoy is careful to present multiple perspectives on different types of breathing and approaches to breath management. By presenting "just the facts," minimizing subjective, opinionated content, and presenting multiple perspectives through the survey results, McCoy effectively avoids divisive and inflammatory language.

The graduate teaching assistant or junior faculty member may do well to take a cue from McCoy and others, and adopt a facts-based approach to much of the course material. Certainly, this is more straightforward in the voice science portion of the course(s), than in the pedagogy components. However, through using a variety of class materials (assigned readings from numerous and varied sources), making a conscious effort to present multiple perspectives and approaches, and encouraging students to read, discuss, and to shape their own opinions, the instructor may more easily navigate this component of the course.

Chapter 4: Learning Objectives and Student Outcomes

The following are the learning objectives and student outcomes as they appear in the course syllabus:

- Students will gain an understanding of the anatomy and physiology of the vocal mechanism through a study of respiration, phonation, resonation, registration, and articulation.
- Students will hone critical listening skills and develop vocal vocabulary to describe singing voices through adjudication exercises.
- Students will become familiar with various components of vocal technique and voice building, and how these may be applied to instruction, with emphasis placed on the ability to detect, diagnose, and correct vocal faults.
- Through assigned readings and class discussion, students will explore a variety of pedagogical approaches to voice instruction, as well as how to effectively select appropriate technical exercises and repertoire for students of all ages and abilities.
- Students will apply course concepts and develop voice teaching skills through observation, practice, feedback, discussion, and reflection.

Chapter 5: COURSE DESCRIPTION

The following is a description of the proposed course, as it would appear in the class syllabus and course calendar:

Undergraduate Voice Pedagogy [3 credit, 400-level course]

Prerequisites: Six terms of applied voice or consent of the instructor

This course will cover the anatomical, physiological and acoustic elements of singing as a means of providing students with a detailed working knowledge of the vocal mechanism. Emphasis is placed upon application of these principles to voice instruction, and providing students with tools and resources to aid them in their teaching and performing endeavors.

Chapter 6: COURSE CONTENT

This section will provide an overview and brief description of the different course units, or modules. For sample lesson plans and lecture materials, please see Chapter 7. The following modules are designed as standalone units, and, along with submodules (indicated by subheadings), may be added, removed, or rearranged at the discretion of the instructor.

Outline of Topics and Organization of the Course

Instructors must make decisions concerning organization and ordering of topics. One standard approach is to consider the various components of the voice individually, before discussing their function as a unified whole. Doscher, in the preface to *The Functional Unity of the Singing Voice*, summarizes this idea:

> The anatomical and physiological investigation of the specific areas of respiration, phonation, and resonation during the act of singing represents an artificial separation of a functional unit. A whole network of muscles and muscle-groups comprise the physiological organ of the voice. […] The major parts of this functional unit are: (1) Lungs (air or force) (2) Larynx (vibrator) (3) Resonance cavities (selective sound filter) (4) Aperture (mouth or emission linkage).[134]

McCoy takes a similar tack in his text, analogizing the voice as a tripartite musical instrument.[135] As such, this is a useful organizing principle for structuring an undergraduate voice pedagogy class, and one that may be recalled throughout the course. In the introduction to Chapter 3: "Resonance," McCoy explains:

> All musical instruments, including the human voice, have at least three features in common: to make sound they must have a power source, a vibrator, and a resonator. For a trumpet, the power source is the breath, the lips are the vibrator and the tubing of the instrument is the resonator. Violins and other bowed string instruments use the bow as a power source, the string as the vibrator and the body

[134] Doscher, xviii.
[135] McCoy, 26.

> of the instrument as the resonator. Pianos rely on the hammer—actuated by the fingers—as the power source, the string as the vibrator and the sounding board as the resonator.[136]

Not only is this analogy helpful for structuring the course, it helps "demystify" the vocal instrument, and establishes the foundation for the anatomical, physiological, and acoustical principles to be studied in the course. Students will learn from the outset that the components of the voice, although unseen, may be studied like any other instrument.

The proposed course follows a rather traditional approach to voice pedagogy instruction, beginning with a unit on respiration, followed by phonation, and concluding with resonation and registration. In a one-course pedagogy curriculum, the second half (or final portion) of the course is then dedicated to selected topics related to teaching voice.

Description of Units

Unit #1: Posture, Alignment, and Respiration

Objectives

- Learn basic terminology for the study of anatomy and physiology, including vocabulary for anatomical views, axes and planes, and types of muscles and their actions.
- Explore elements of efficient posture and alignment for singing.
- Describe the structures and function of the respiratory system, and the role it plays as the "power source" for speech and singing.

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[136] McCoy, 26.

- Consider several approaches to breath management for singing, as outlined in various texts from voice pedagogy literature. As a class, students will discuss both the merits and disadvantages of a wide variety of approaches to breath "support."
- Explore a wide variety of postural and breathing exercises.
- Consider and discuss vocal faults related to breathing and breath management, and explore remedies for these issues.

Suggestions for Assigned Reading

- *Your Voice: An Inside View*, Chapters 1, 6, and 7
- *The Functional Unity of the Singing Voice*, Introduction, Chapters 4 and 6
- *The Structure of Singing*, Chapter 2
- *The Diagnosis and Correction of Vocal Faults*, Chapter 4
- *Basics of Vocal Pedagogy: The Foundations and Process of Singing*, Chapter 3

Description

After a general introduction to the course, students will begin a unit on Posture, Alignment, and Respiration. This unit opens with an introduction to anatomical terminology, including terms of orientation, anatomical views, axes and planes, types of movements (abduction, adduction, flexion, etc.) and types of muscles and their actions.[137] While this information may, at first, seem unrelated to singing, it is necessary in order to understand anatomical images (to orient readers when viewing structures from a certain "aspect," for example),[138]and helps students with their comprehension and memorization later in the course. If students learn early on that muscles are often named in order from their "origin" to "insertion" (points of attachment), and that contraction of muscles brings the point of insertion closer to the point of origin, this provides clues as to both location

[137] McCoy, 76-79.
[138] Ibid., 76.

and function.[139] As an example: the paired cricothryroid (CT) muscles are so named, because they originate on the external surface of the cricoid cartilage, insert into the thyroid cartilage, and therefore pull the thyroid cartilage closer to the cricoid, thereby elongating the vocal folds.[140]

Posture and Alignment

After this introduction (and continued review of anatomical terminology), students will explore efficient body alignment for singing. A valuable resource for this component of the course is *The New Rules of Posture: How to Sit, Stand, and Move in the Modern World* by Mary Bond.[141] While an in-depth investigation of postural alignment is beyond the scope of a one-term course structure, the explanations and exercises (called "explorations") in Bond's text may be easily incorporated into lecture material throughout the course, and provide a starting point for further student research. Other useful resources and possible activities for this unit might include the postural and exploratory exercises provided by Doscher,[142] Ware,[143] and others. Students may wish to experiment with some of the contraindicated postural behaviors (such as jutting the neck forward, tightening abdominal muscles, and a sunken chest) and then attempt to breathe and sing, so as to feel why these are inefficient for singing. Connections may also be drawn between different personality types and their possible associated postural faults. (For example, students might consider how a goal-oriented student with an "A-type

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[139] McCoy, 79.

[140] Ibid., 111.

[141] Mary Bond, *The New Rules of Posture: How to Sit, Stand, and Move in the Modern World* (Rochester, VT: Healing Arts Press, 2007).

[142] Doscher, 69-84.

[143] In addition to the physical-vocal and postural exercises provided in Chapter 3: "Body-Mind Integration," of *Basics of Vocal Pedagogy* (32-51), Ware has also made various warm-ups and exercises available on his personal website: Dr. Clifton Ware, "Books," accessed April 25, 2016, http://www.clifware.com/#!books.

personality" might behave, stand, and sing differently than a shy, introverted, or lethargic student.)

Respiration

This part of the unit begins with an explanation of the laws and principles governing respiration, including rules of airflow, and Boyle's law, which states that: "given a gas of constant temperature, if you increase the volume of the chamber in which the gas is contained, the pressure will decrease. (…) The opposite is also true: If you decrease the volume of the chamber, the pressure will increase."[144] This principle is critical to student understanding of respiration, as it explains the process by which air enters the lungs: the descent of the diaphragm in conjunction with the upward and outward expansion of the ribcage increases the thoracic volume vertically and laterally.[145] Because the lungs are coupled to the interior walls of the thorax by the pleurae, this expansion in turn increases the volume of the lungs, thereby creating an area of low pressure, otherwise known as a vacuum.[146] Through these introductory concepts, students discover that air is **drawn** into the lungs as a result of the expansion of surrounding structures, rather than the other way around.[147] For many students, this is a new and revelatory concept, and often marks the beginning of changes to how they think about and approach breathing and breath management for singing.

Respiratory Anatomy

The second component of this module is an overview of the "support" structures of respiration which include the vertebral column, rib cage, sternum, and pectoral and

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[144] Seikel, King, and Drumright, 36-37.
[145] Ibid., 132.
[146] Ibid., 151.
[147] Ibid., 37.

pelvic girdles.[148] This is followed by a discussion of the soft tissues of the thorax and respiratory passageway: the trachea and bronchi, lungs, and bronchial tree.[149] Here, students learn about the movement of the air through the system, expanding on their knowledge of air pressure and thoracic expansion. Finally, students learn to identify the muscles of respiration: inspiratory muscles (including the primary muscle of inspiration, the diaphragm), external intercostal muscles, primary expiratory muscles (internal intercostal muscles and abdominal muscles), and accessory muscles of the thorax, neck, upper arm, and shoulder.[150] (This final group may be included for reference only.) By the end of these classes, students should demonstrate an understanding of diaphragmatic and intercostal muscle function.

Respiratory Physiology

A separate class on the physiology of respiration outlines the step-by-step processes of inspiration and expiration. If time allows, this section may include a discussion of volumes, capacities, and pressures of the respiratory system (including the pressure most important for singing: subglottal pressure).[151] A discussion and explanation of inspiratory checking action (the process by which inspiratory muscles—specifically, the external intercostal muscles—remain engaged during exhalation in order to counteract the elastic recoil of the thorax)[152] introduces the next component of the module.

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[148] Seikel, King, and Drumright, 38-60.
[149] Ibid., 60-79.
[150] Ibid., 79-106.
[151] Ibid., 138-157.
[152] Zemlin, 64.; "Letters to the Editor," *Journal of Singing* 67, no. 2 (November/December 2010): 128.

Breathing Techniques

Following the introductory classes on respiratory structures and function, students will then apply these concepts to a discussion and exploration of breathing techniques and breath management for singing. Ideally, students will begin to connect new vocabulary and concepts to learned behaviors and techniques they already use in their own singing and teaching. This class includes a discussion of the four stages of breathing for singing as outlined by McKinney in *The Diagnosis and Correction of Vocal Faults*: inhalation, suspension, controlled exhalation, and recovery.[153]

McCoy, in Chapter 7: "Respiration," introduces this component of the course:

> Having explored the primary respiratory muscles, we are now equipped to examine the manner in which they are used during breathing for singing. Almost all voice pedagogues agree that four principal methods of breath management can be described: clavicular (upper chest), thoracic (lower chest), abdominal (belly breathing) and a balanced breath, often now called *appoggio*, which is a combination of the latter two. Each of these methods can be used to provide *breath support* for singing and to aid in *breath control*.[154]

McCoy provides a description for each of the above methods, noting the structures and muscular actions involved, as well as advantages and contraindications for each method.

Breath Management

In addition to identifying different types of breathing, students will discuss methods of breath management, sometimes referred to as breath support or breath control. McCoy and McKinney assert that these are, in fact, separate yet related functions. McKinney explains:

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[153] McKinney., 48-53.
[154] McCoy, 88.

> Although the terms "breath support" and "breath control" often are used interchangeably, they really are not the same thing. *Breath support*, as previously defined, is a function of the breathing muscles. **Breath control** mainly is a function of the vocal cords themselves. It may be defined as a dynamic relationship between the breath and the vocal cords which determines how long you can sing on one breath. If the relationship is not an efficient one, if the vocal cords are not closing properly, it is possible to run out of air very quickly, regardless of how well your support mechanism is functioning.[155]

McCoy summarizes the subtle distinction between the two terms: "Support, therefore, is a pulmonary function. Breath control, however, is a laryngeal function. (…) We might say that breath support enables the production of beautiful sounds; breath control allows these sounds to last to the end of long phrases."[156]

Classroom exploration of different breathing techniques and approaches to breath management may take many forms. After explaining the descriptions of each, the instructor may wish to have students experiment with each approach. This discussion might also include an explanation of *Bauchaussenstütze* ("distended belly support"), and other breathing methodologies associated with various national and historical schools of singing.[157]

Having studied the different breathing techniques and approaches to breath management, students may ask which is the *best* approach? Whereas Miller favors the Italianate *appoggio* approach to breath management,[158] McCoy's definition is somewhat more tempered, although he acknowledges that abdominal-thoracic is the most favored and commonly-accepted method among voice pedagogues. He writes: "For several generations, singers have described a breath that is a combination of the best attributes of

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[155] McKinney, 54.
[156] McCoy, 88-89.
[157] Richard Miller, 311.
[158] Ibid., 23-29.

thoracic and abdominal breathing. This is often referred to as balanced breathing or through the Italian term *appoggio* (from the verb *appoggiare*, which means to lean on)."[159]

Here, a guided examination and evaluation of different methodologies can be a useful approach to addressing a potentially "sticky" or even divisive subject. It may also be useful to explain that approaches to breath management are dependent upon multiple factors, such as age, sex, body type, fitness level, etc.[160] Research by Jennifer Cowgill that appeared in a 2009 article in the *Journal of Singing*[161] confirmed that, indeed, different body types tend to breathe differently:

> The data showed marked correlations between body type and breathing tendencies that corresponded with the standard anecdotal observations. For example, endomorphs showed movement in the umbilicus area (*appoggio*), mesomorphs showed movement in the rib cage area (costal), and ectomorphs showed movement in the lateral chest area (pancostal).[162]

It is also worth noting that approaches to breathing and breath management may necessarily change over the course of a singer's life, or even to accommodate the various technical demands of different types of repertoire.

Correcting Faults Related to Respiration

The Respiration module concludes with a class dedicated to diagnosing and correcting postural and breathing faults. McKinney's text is an ideal resource for this component of the module, as the chapter entitled "Breathing and Support" addresses specific faults related to breathing and breath management, such as upper-chest

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[159] McCoy, 91.
[160] Ibid.
[161] Jennifer Griffith Cowgill, "Breathing for Singers: A Comparative Analysis of Body Types and Breathing Tendencies," *Journal of Singing* 66, no. 2 (November/December 2009): 141-147.
[162] Ibid., 146.

breathing, rib breathing, back breathing, belly breathing, hypofunctional breathing, hyperfunctional breathing, hypofunctional breath support, and hyperfunctional breath support.[163] McKinney describes the causes of the problems, contraindications for singing, and then provides corrective procedures for addressing each issue.

Teaching Posture and Breathing

Unlike the study of phonation or resonation, where moving parts cannot be seen, the Posture, Alignment, and Respiration module lends itself especially well to active participation. Throughout the course of the unit, instructors may wish to allow time for exploratory activities, wherein students may experiment with different stretches, postural explorations, and physical-vocal exercises. If time allows, instructors may consider incorporating other movement modalities such as Alexander Technique,[164] Feldenkrais Method,[165] Somatics,[166] and yoga,[167] among others. Instructors could assign small groups of students to present on the different modalities, or invite a certified instructor/practitioner to give a guest workshop.

These types of classes give students the opportunity to share ideas from their own singing and teaching, and help them collect new exercises to add to their teaching "arsenals." (These exercises may also be included in their resource binder assignments. Please see Chapter 8: Course Assignments and Grading Procedures for more details.)

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[163] McKinney, 56-64.

[164] Glen Park, *A New Approach to the Alexander Technique: Moving Toward a More Balanced Expression of the Whole Self* (Freedom, CA: Crossing Press, 1998).

[165] Samuel H. Nelson and Elizabeth Blades-Zeller, *Singing with Your Whole Self: the Feldenkrais Method and Voice* (Lanham, MD: Scarecrow Press, 2002).

[166] Thomas Hanna, *Somatics: Reawakening the Mind's Control of Movement, Flexibility, and Health* (Cambridge, MA: Da Capo Press, 2004).

[167] Judith E. Carman, *Yoga for Singing: a Developmental Tool for Technique and Performance* (New York: Oxford University Press, 2012).

Unit #2: Phonation

Objectives

- Understand the primary biological functions of the larynx: (protecting the airway and thoracic fixation).[168]
- Study the structural framework of the human larynx, including the location, structure, and function of the hyoid bone and laryngeal cartilages.
- Identify and describe the function of the intrinsic laryngeal muscles, as well as the four types of muscular actions required for phonation: adduction, abduction, lengthening, and shortening of the vocal folds.[169]
- Understand and describe the myoelastic and aerodynamic factors involved in vocal fold vibration.
- Understand and describe the step-by-step process of phonation.
- Explain and describe the muscular and breath pressure adjustments necessary to increase or decrease frequency and amplitude of voicing.
- Identify the layers of the vocal folds.
- Describe the body-cover model of vocal fold vibration, and the resultant glottal source modes.

Suggestions for Assigned Reading

- *Your Voice: An Inside View*, Chapter 8
- *The Functional Unity of the Singing Voice*, Chapters 2 and 3
- *The Structure of Singing*, Chapter 1
- *The Diagnosis and Correction of Vocal Faults*, Chapter 5

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[168] McCoy, 102.
[169] Ibid., 110.

Description

The second unit of the course explores the oscillator component of the vocal instrument: the larynx and vocal folds.

Structures of the Larynx

As with the first module, this unit begins with an overview and explanation of the structures related to phonation. The first class in the unit introduces students to the larynx: "a musculocartilaginous structure located at the superior (upper) end of the trachea."[170] The first class on structural anatomy concentrates primarily on the framework of the larynx. Through course reading, lecture materials, and audiovisual resources, students will learn about the "oids:" the hyoid bone, thyroid cartilage, cricoid cartilage, and paired arytenoid cartilages.[171] To help students visualize these structures, instructors can lead the class through two "body mapping" exercises described in *What Every Singer Needs to Know About the Body*:[172]

> To approximate the shape of the cricoid cartilage, try this. Make a ring with the tips of your pinkies and thumbs together. Place the ring on a flat surface. Interlace your remaining fingers to form a curving wall roughly perpendicular to the surface. Your thumbs represent the front of the cricoid cartilage, and your fingers represent its back. In other words, this "model" is facing the opposite way from the cricoid cartilage in your larynx.[173]
>
> A similar activity teaches students to "model" the thyroid cartilage:
>
> If you make a slightly rounded tent with your eight fingers and then turn the tent on its side with the thumbs extending straight upward, you are approximating the shape of the thyroid cartilage. The extended thumbs represent the superior horns at the back of the thyroid cartilage. You could also represent the inferior horns

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[170] Seikel, King, and Drumright, 166.
[171] McCoy, 107-110.
[172] Malde, Allen, and Zeller.
[173] Ibid., 82.

> pointing down, if you had another set of thumbs! Your fingers represent the front of the thyroid cartilage, and your thumbs represent its back.[174]

The second class in the module explores the intrinsic laryngeal muscles and their function. Students will learn about the four "independent, yet interrelated" actions required for phonation[175] in Chapter 8 of *Your Voice: An Inside View*:

> To initiate and sustain phonation, the vocal folds must be drawn together to close the glottis, an action called *adduction*. Conversely, they must be drawn apart, opening the glottis to stop phonation and for respiration, an action called *abduction*. Because both speech and singing are inflected with a variety of pitches, a mechanism also must exist for lengthening and shortening the vocal folds. In this regard, the vocal folds function somewhat like a rubber band; when stretched, they become thinner and tighter, producing oscillations of higher frequency.[176]

Given the complexities of the laryngeal structures, anatomical images and animations (such as those available on the accompanying CD-ROM to McCoy's *Your Voice: An Inside View*) are particularly useful for classroom instruction. It is beneficial for students to view the structures from as many different aspects as possible. Instructors may wish to purchase a larynx model for classroom use, or have students construct their own using art supplies. Vocal Process.co.uk provides a paper template that may be downloaded and used to create a laryngeal model with a "tilting" thyroid cartilage, and rotating arytenoid cartilages.[177]

The Vocal Folds

After studying the structural framework of the larynx, and the structure and function of the intrinsic laryngeal muscles, the next topic is the vocal folds themselves.

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[174] Malde, Allen, and Zeller, 85.
[175] McCoy, 110.
[176] Ibid.
[177] "Build Your Own Tilting Larynx," Vocal Process, 2015, accessed January 3, 2016, http://vocalprocess.co.uk/build-your-own-tilting-larynx/.

Students should be able to identify and describe the structures of the vocal folds—"discreet [sic] layers of varying density and viscosity"[178]— when viewed in cross-section. Images of the vocal folds (included on the *Your Voice: An Inside View* CD-ROM) clearly show the outermost layer, the epithelial tissue, three layers of lamina propria and vocal ligament, and the innermost layer, the thyroarytenoid muscle.[179] Students will discover that it is precisely this layered structure that allows the inner and outer portions of the folds (the body and cover, respectively) to move independently.[180]

McCoy's analogy in Chapter 8 is an excellent explanation of this process:

> To better understand how this works, try a little experiment on yourself: gently massage the back, and then the palm of your hand. Notice that the skin on the palm is firmly attached to the flesh beneath it. As you massage the back of your hand, however, the skin is relatively free to move (somewhat like the skin of a kitten). Next, gently poke a finger against the palm and back of your hand; the palm offers much more padding than the back, acting somewhat like a shock absorber. Your vocal folds share both of these characteristics; the cover slips over the body like the skin on the back of your hand, while the lamina propria cushions blows like the palm of your hand.[181]

Phonation

Students may be surprised to learn that voicing is not a result of repeated muscular impulses, but rather due to a combination of muscular adduction, elasticity of tissues, and aerodynamic factors.[182] McCoy introduces this concept with the following experiment:

> Tap one of your fingers as rapidly as possible on a solid object. If you are particularly dexterous, you might be able to do this as quickly as 7.5 times per second. If you alternate fingers as if playing a trill on the piano, you might approach 15 or more strokes per second. To sing, however, your vocal folds must

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[178] McCoy, 103.
[179] Ibid., 102-103.
[180] Ibid., 103.
[181] Ibid., 104.
[182] Ibid.

> open and close at a much faster rate—up to 1,400 times per second for the F6 sung by Mozart's *Queen of the Night*. No muscle in the human body is able to contract and relax at anything close to that rate. Vibration at this velocity only can be achieved with the assistance of airflow.[183]

Students must therefore understand the aerodynamic processes involved in vocal fold oscillation. This necessitates an explanation of both the Bernoulli Principle and its corollary effect, the Venturi Effect.[184]

One "tried and true" illustration of the Bernoulli Principle is to hold two pieces of paper close together so that they are nearly touching, and to blow air between them. Students will observe that the movement of the air causes the pieces of paper to move towards each other and stick together. Another example of the Bernoulli Principle is when one holds one's thumb over the opening of a garden hose, and the water shoots out much farther, and at a greater velocity than normal.[185]

The above examples demonstrate how, "given a constant volume of air or fluid, *at a point of constriction there will be a decrease in pressure perpendicular to the flow and an increase in the velocity of the flow*."[186] Bernoulli's laws of fluid dynamics apply to vocal fold vibration in the following way: Given an area of constriction in a passageway, such as the one created by the vocal folds, air velocity will increase, and this moving air in turn creates an area of lower pressure.[187] During voicing, the adducted vocal folds are forced open by subglottal pressure generated by the respiratory system. The elasticity of the folds causes them to return midline to the point of equilibrium, but as they do so, this

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[183] McCoy, 104.
[184] Matthew Hoch, *A Dictionary for the Modern Singer (Dictionaries for the Modern Musician)* (Lanham, MD: Rowman & Littlefield Publishers, 2014), 186.
[185] McCoy, 105.
[186] Seikel, King, and Drumright, 229.
[187] Ibid.

creates the aforementioned constriction, causing the suction that provides additional closing force for the vocal folds.[188]

McCoy and others are quick to note, however, that while the Bernoulli Principle is partially responsible for vocal fold oscillation, it is unlikely that aerodynamic factors alone are sufficient to sustain voicing.[189] Writes McCoy:

> Current voice scientists describe numerous interrelated factors that contribute to vocal fold vibration, including the natural oscillation frequencies of vocal fold tissue (which shares properties in common with a spring), the resistance to the movement of air through the supraglottal vocal tract, and the interaction of resonance with the vocal folds.[190]

Recent theories provide a more complete picture of how phonation is sustained during voicing. In Chapter 8: "Phonation,"[191] McCoy explains how the Myoelastic-Aerodynamic Model, current through the 1960s, has more recently been replaced by the One-Mass Model and the Three-Mass Model, which account for inertia, and the asymmetry of air pressure depending on whether the glottis is in a convergent (superior portions of the vocal folds are close together) or divergent (bottom portions of the folds are close together) shape.[192]

By the conclusion of this part of the unit, students should be able to describe the step-by-step process of vocal fold vibration.[193] One way to accomplish this is to generate a step-by-step process as a class, with one student serving as a note-taker. Alternatively, instructors may elect to write out the steps on separate notecards or papers, and have the students arrange them into the correct sequence.

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[188] Seikel, King, and Drumright, 229-231.
[189] McCoy., 106.
[190] Ibid.
[191] Ibid., 104-107.
[192] Ibid., 106-107.
[193] Ibid., 105.

Onset and Offset

Another important component of this unit is a discussion of onset and offset of voicing. Using Miller's first chapter of *Structure of Singing* as a primary resource, students will learn how to identify and remedy either the hard (glottal) attack or the soft (breathy) onset in favor of the balanced onset and offset.[194] Instructors may wish to provide a bit of historical context by incorporating a brief summary and discussion of Garcia's *coup de la glotte* (stroke of the glottis).[195] Doscher, in *The Functional Unity of the Singing* Voice, addresses this issue:

> There is still controversy about what Manuel Garcia meant when he advocated the use of the *coup de glotte*. Does the phrase mean stroke of the glottis or articulation of the glottis, a fine semantic point?[196]

A thorough discussion about the controversy surrounding this concept is far beyond the scope of this document and curriculum. Nonetheless, Doscher, McCoy, and others suggest that Garcia's intention was a "clean, balanced onset."[197] In the balanced onset, or the "aerodynamic-myoelastic attack," writes Doscher, "clean, precise articulation is the goal with no danger of the vibrator either being abused, being starved for air, or producing insufficient adductive pressure."[198]

Pitch and Intensity Control

This is one of the more challenging subjects in the unit, as the mechanisms for changing vocal pitch and intensity are interrelated processes.[199] Doscher, in *The*

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[194] Richard Miller, 1-19.
[195] McCoy, 113.
[196] Doscher, 62.
[197] McCoy, 62.
[198] Doscher, 62.
[199] McCoy, 114.

Functional Unity of the Singing Voice, lists the factors responsible for determining the fundamental frequency and intensity of vocal sound:

1. Vocal fold tension or glottal resistance
2. Aerodynamic power (ratio of subglottic pressure to airflow)
3. Length of the vocal folds
4. Mass of the vocal folds[200]

McCoy, in *Your Voice: An Inside View*, provides several activities to clarify these concepts. First, he suggests that students alternate between clapping in slow motion, and at a vigorous rate, in order to better understand how increased rate of vibration is concomitant with higher intensity. Students will note that clapping is much louder at a faster rate.[201] Secondly, McCoy illustrates the effect of increased vocal fold mass on intensity:

> To demonstrate the impact of changing thickness on amplitude, sequentially clap one, two, three, and then all four fingers of one hand against each other. You will hear the sound progressively get louder as the width of the clapping hand increases. Changes in the vertical thickness of the vocal folds induce similar changes in amplitude.[202]

The final concept addressed in this sub-module, pitch control, requires returning to the subject of vibrational modes. As such, it may be useful to remind students that the body and cover of the vocal folds move independently. Using their paper laryngeal models or a model larynx, students will discover how the separate muscular actions of the cricothyroid muscle and thyroarytenoid muscle lengthen and shorten (and stiffen) the vocal folds. In my experience, student confusion often results from the concept that folds become thinner, but also stiffer. McCoy clarifies the issue nicely: "Higher pitches require longer, stiffer and narrower vocal folds, but louder sounds require thicker vocal folds that

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[200] Doscher, 64.
[201] McCoy, 115.
[202] Ibid.

offer more resistance to glottal airflow. (…) The CT muscles pull the folds to the appropriate tension for a given pitch while the TA muscles counter with appropriate tension for the given amplitude."[203] Readers are directed to an online tutorial available from the National Center for Voice and Speech that includes a particularly useful animation that shows very clearly the independent actions of the cricothyroid and thyroarytenoid muscles.[204]

Correcting Faults Related to Phonation

As with the first module, the Phonation unit concludes with a class (or classes) dedicated to critical listening and correcting faults related to phonation. Here, the fifth chapter of McKinney's *The Diagnosis and Correction of Vocal Faults* is a particularly useful resource. Using the accompanying CD, students will listen to and learn to identify examples of: hypofunctional phonation, forced breathiness, and hyperfunctional phonation.[205] In addition to the corrective procedures recommended by McKinney, this is an opportunity for sharing ideas as a class in order to create a list of vocal exercises to remedy the above problems. A suggested activity: Working in pairs or in small groups, students are assigned one of the above examples, and asked to generate a list of possible solutions.

Unit #3: Sound, Vocal Resonance, and Registration

Objectives

- Study basic concepts of sound, including soundwaves, compression and rarefaction, propagation, and the overtone series.

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[203] McCoy, 116.

[204] "How Humans Control Pitch," National Center for Voice and Speech, accessed May 11, 2016, http://www.ncvs.org/ncvs/tutorials/voiceprod/tutorial/cover.html.

[205] McKinney, 82-92.

- Define and explain terminology related to resonance, such as forced and free resonance, and resonant frequency.
- Identify and discuss the resonant properties of certain types of free resonators, as determined by their shape, size, opening, and material.
- Using the Source-Filter theory, describe how the vocal tract amplifies and enriches the soundwaves produced by the vibrating vocal folds.
- Gain a basic understanding of vocal formants: what they are, how they are created, and how one may modify them using the movements of the articulators.
- Through study of spectrographs, recognize and identify different acoustic vowel patterns based upon the locations of F1 and F2.
- Study the connection between the locations of F1 and F2 and different types of vowels and their classifications (front/back and open/close).
- Study laryngeal and acoustic registers.
- Gain a basic knowledge of how vocal acoustics and vowel modification may assist in both male and female registration.
- Define and describe the Singer's Formant, and understand the importance of the role it plays in elite vocalism.

Suggestions for Assigned Reading

- *Your Voice: An Inside View*, Chapters 2 through 5, 12
- *Practical Vocal Acoustics*, Chapters 2 through 7, 10
- *The Functional Unity of the Singing Voice*, Chapters 5 through 8
- *The Structure of Singing*, Chapters 4 through 7; 9 through 11
- *The Diagnosis and Correction of Vocal Faults*, Chapters 6 and 8
- Scott McCoy, "Formantology," *Journal of Singing* 70, no. 1 (September/October 2013): 43-48.

Description

At the discretion of the instructor, this module may be broken up into two smaller units, dividing the "nature of sound" portion from vocal resonance. In *Your Voice: An Inside View*, McCoy elects to place chapters on sound, resonance, formants, and analysis near the beginning of the book, even before addressing respiration and phonation. In either case, the "tripartite instrument"[206] analogy works well for introducing the concept of vocal resonance. Students will learn how the vocal tract functions much in the same way as a piano's soundboard or a trumpet's tubing.[207] That is to say, it amplifies and enriches the buzz created by the vocal folds. As McCoy states: "How do the sounds produced by our vibrating vocal folds…turn into the beautiful sounds our ears and brains interpret as singing? The answer lies in resonance."[208]

The Nature of Sound

In order to understand resonance, students must first learn about the physical nature of sound. Some students may have previously studied this as a component of high school physics classes; others may have completed "Physics of Sound" or "Physics of Music" courses as part of their degree.[209] Others, however, may have no prior knowledge of the subject. To these students (and instructors!), McCoy writes:

> …we must enter the world of physics, acoustics, and anatomy—foreign territory for most singers and voice teachers. Don't be intimidated! Exploration of the physics of sound involves only a little more "number crunching" than is required to balance a checkbook. And yes, it is acceptable to use a calculator.[210]

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[206] McCoy, 26.
[207] Ibid.
[208] Ibid.
[209] Indiana University, for example, offers PHYS-P 105 Basic Physics of Sound. Please see: "Course Listing: Basic Physics of Sound," Indiana University Bloomington Office of the Registrar, accessed May 24, 2016, http://registrar.indiana.edu/browser/soc4168/PHYS/PHYS-P105.shtml.
[210] McCoy, 16.

Speaking anecdotally, it is not just the math or "number crunching" involved that intimidates students. Rather, students may find it difficult to comprehend the abstract concepts and principles inherent to the study of sound and resonance. Fortunately, there exists a wealth of excellent resources (videos, animations, tutorials, etc.), many of which are available online for free. These may be used to supplement class readings and discussion.

Soundwaves

In the introductory classes of this module, students will become familiar with the basic components of sound. They will learn that, "at its fundamental level, sound is compression and rarefaction within a medium."[211] Chapter 2 of *Your Voice: An Inside View*, provides a thorough overview of sound waves, frequency, amplitude, wavelength, and the harmonic series. Students should be able to understand and describe how soundwaves are created, how they propagate through a medium, and are perceived by the ear and brain as sound. McCoy's "car analogy" helps clarify these concepts for students:

> If frequency, period and wavelength are confusing to you, use the analogy of watching cars on a road. If you count the number of cars that pass by each minute, you are measuring frequency. If you measure the time lapse between successive cars, you are looking at period. If you measure the physical distance between two cars, you are looking at wavelength.[212]

Additionally, *Your Voice: An Inside View* includes a chapter on human hearing (Chapter 12).[213] However, in the one-course pedagogy curriculum, this subject may be discarded, or only briefly summarized. A two-course sequence could allow for a more in-

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[211] McCoy, 17.
[212] Ibid., 20.
[213] Ibid., 170-175.

depth exploration of human hearing. Texts by Seikel,[214] Zemlin,[215] and others are possible resources for this content.

Harmonics

There are many interesting resources available to enhance lecture material on the overtone series. One such resource is "Musical Phonology," the first of Leonard Bernstein's six lectures given at Harvard University in 1973, entitled "The Unanswered Question."[216] In a short (ca. 10-minute) excerpt, Bernstein presents an interesting and engaging explanation of the overtone series. Instructors may also easily demonstrate harmonics using the classroom piano:

> Silently depress middle-C (C4), then loudly strike and release the C-natural one octave lower (C3); you will hear C4 quietly sounding. Repeat the exercise sequentially depressing G4, C5, E5 and so on. Each will be heard to resound in response to the striking of C3."[217]

Timbre

Following an explanation of the harmonic series, students will explore how patterns of harmonics give different instruments and voices their unique timbres.[218] Again, McCoy explains this succinctly:

> Timbre is the result of the unique pattern of overtones present in each musical sound. All instruments and voices produce a fundamental frequency and overtones; each, however, does so with different relative amplitudes. This is referred to as the spectral envelope. Spectral envelope can be visualized using an acoustic analysis method called a *power spectrum*. The resulting graph displays amplitude on the vertical axis and frequency on the horizontal axis, permitting the relationship between F_0 and its harmonics to be seen clearly.[219]

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[214] Seikel, King, and Drumright, 447-478.
[215] Zemlin, 414-512.
[216] Leonard Bernstein, *The Unanswered Question – Six Talks at Harvard by Leonard Bernstein*, vol. 1, *Musical Phonology*, (Kultur Video, 2013).
[217] McCoy, 22.
[218] Ibid.
[219] Ibid.

Resonance

Once students demonstrate a basic understanding of the physical nature of sound, the next subject in the module is "the phenomenon of resonance."[220] Doscher's definition is a possible starting place for this material. She writes: "How is resonance defined? It is the relationship that exists between two vibrating bodies and results in an increase in amplitude and a more efficient use of the sound wave. Optimum resonance occurs when these two bodies are timed to the same frequency."[221] McCoy's two-part definition, adapted from the Merriam-Webster Collegiate Dictionary, provides still more information: "Resonance is the intensification and enriching of a musical tone by supplementary vibrations."[222] McCoy observes that there are two important components of this definition: "1. *Intensification* (amplification) and *enrichment* (change of timbre); 2. *Supplementary vibration*, that is, vibration of something beyond the original sound source: little vibrations become big vibrations."[223] Here, an explanation of phase, reinforcement, and interference will help students to understand how soundwaves that are in phase can reinforce each other (constructive interference), and how those that are out of phase will attenuate each other (destructive interference), and those that are exactly inverted will cancel each other out completely.[224]

Vocal Resonance

In this part of the module, students will also study the differences between free and forced resonance, and the role each play in the human voice. Students will learn that

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[220] Doscher, 97.
[221] Ibid., 98.
[222] "Merriam-Webster, *Merriam Webster's Collegiate Dictionary.*, 11th ed. (Springfield, MA: Merriam-Webster, Inc., 2003), quoted in McCoy, 26.
[223] McCoy, 26.
[224] Appelman, 111.

the free resonators in the human body include: the trachea, the larynx, the vocal tract, and the piriform sinus.[225] Forced resonance accounts for the supplementary vibrations that singers feel internally (such as in the head and chest), but does not contribute to vocal sound.[226]

Consequently, subsequent class material will focus on free resonance. McCoy's rather lengthy exploration of quarter-wave resonators in Chapter 3 of *Your Voice: An Inside View* provides the explanation for why resonator tubes have multiple resonant frequencies.[227] Included images and animations on the accompanying DVD help to clarify these concepts, but instructors may wish to simplify this content for undergraduate use.[228]

Until this point in the course, study of sound and resonance has been limited to models of uniform shape, size, and diameter. Explanations of quarter-wave resonators, for example, assume a "tube of uniform diameter that is closed at one end and open at the other."[229] Of course, as McCoy explains, the vocal tract is far from uniform, and instead functions as a series of combined resonators. McKinney, in Chapter 8 of *The Diagnosis and Correction of Vocal Faults*, outlines the laws governing the resonance properties of different cavities, including those pertaining to: size, shape, type of opening, composition and thickness of the walls, surface, and combined resonators.[230] Students will learn how,

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[225] McCoy, 28.
[226] Ibid., 27.
[227] Ibid., 28-36.
[228] McCoy's most recent publication, *Your Voice: The Basics*, which is advertised for undergraduate instruction, contains a significantly pared-down version of this content. Please see: Scott McCoy, *Your Voice: The Basics* (Columbus, OH: Inside View Press, 2015), E-textbook.
[229] McCoy, 35.
[230] McKinney, 120-129.

as a result, "the vocal tract is resonant over a range of pitches in spite of its relatively short length."[231]

Complicating matters is the movability of the tract, which allows for a multitude of possible resonant frequencies. McCoy summarizes:

> Perhaps this helps explain why it can be so difficult to master the art of singing—our options are nearly limitless. Every time we change the shape of the vocal tract, resonance is altered. Careful movements of the tongue, jaw, soft palate, larynx, and pharyngeal wall provide the exquisite control of resonance that enables singers to produce a musical scale with uniform timbre, to create the vowel sounds required for language, and to portray the entire range of human emotion through song.[232]

Source-Filter Theory

At this point in the unit, broader concepts of the physical nature of sound and resonance are now applied to singing, using the source/filter theory of voice production. To introduce this concept, McCoy, in chapter four of *Your Voice: An Inside View*, analogizes the larynx and vocal tract with a stereo:

> Source/filter theory can be easily understood through the analogy of a stereo system. Stereos require a sound source, such as a CD player, and an amplifier. Almost all stereo amplifiers also have some sort of tone control. In this analogy, the amplifier and tone controls combine to form the filter. […] Adjustment to these controls results in amplification or attenuation of high or low frequency sounds. […] The vocal tract is the amplifier and graphic equalizer of the human voice. It is highly adjustable and has remarkable ability to modify sound selectively. Like the stereo component, it can amplify sounds in one small frequency band while virtually canceling adjacent frequencies.[233]

This analogy introduces class material on vocal formants, the resonant frequencies of the vocal tract.[234] Revisiting the concept of the spectral envelope, students will discover how the locations of the formants, areas of high resonance potential,

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[231] McCoy, 35.
[232] Ibid., 36.
[233] Ibid., 38.
[234] Ibid., 40.

amplify the harmonics that fall on or near them. McCoy's figures in Chapter 4 "Formants" are particularly useful, as they demonstrate differences between the uniform spectral slope produced by the vibrating vocal folds, and the spectral envelope after the glottal source has been filtered by the resonance of the vocal tract.[235]

Formants

After serving as the special guest for a NATS Chat[236] in February, 2013, entitled "Everything you always wanted to know about formants…but were afraid to ask," Scott McCoy published a follow-up article in the September/October 2013 edition of the *Journal of Singing*, under the heading: "Formantology."[237] Describing the events of the evening, McCoy reflects:

> Based on the questions posed during this session, and confirmed by similar live and online events I've done, significant gaps exist in many people's understanding of voice resonance, especially relating to formants. These informational lapses are understandable, especially considering two factors: the intangibility of resonance and the limited exposure most of us had to the concepts during our own training. Nonetheless, I remain steadfast in my belief that singing teachers must understand resonance at least as well as physiology.[238]

McCoy's sentiment may well 'strike a chord,' so to speak, with a number of his readers—perhaps even those tasked with instructing undergraduate voice pedagogy classes. The study of formants, in particular, is one that students seem to consistently find challenging. McCoy's article, perhaps even more so than the equivalent chapter in *Your Voice: An Inside View*, serves as an excellent primer on voice acoustics. McCoy organizes the information into three units: "…the sound produced by the larynx, the

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[235] McCoy, 39.

[236] NATS Chats are "live online, real-time discussions for voice teachers and singers." Please see "NATS Chats," National Association of Teachers of Singing, 2016, accessed April 16, 2016, http://www.nats.org/nats-chat.html.

[237] Scott McCoy, "Formantology," *Journal of Singing* 70, no. 1 (September/October 2013): 43-48.

[238] Ibid., 43.

sound that goes out to the audience, and the resonance characteristics of our vocal tract that transform the former into the latter."[239]

To assist students in memorizing the harmonic series, McCoy suggests the following mnemonic device: Beginning on the pitch G_2, the harmonic series is P8 (octave), P5, P4, M3, m3, m3, M2, M2, M2, M2, m2. Students can remember the following sentence: "**g**ood **g**irls **d**on't **g**et **b**ar **d**ates **f**rom **g**uys **a**lthough **b**eing [**s**een **s**harply] (C-sharp) **d**ressed."[240]

One possible area of confusion results from the conflation of harmonics and formants. McCoy describes the differences between the two as follows:

> They are not the same thing. Harmonics are tangible, audible features of the sound produced by the glottis. Formants, however, are invisible and inaudible. They are like the wind: you can see leaves rustling in a tree, but you don't see the wind that is making them move. You can hear harmonics (or see them in spectrum analysis), but you must infer that stronger harmonics have been amplified by a formant. Harmonics are the paint; formants are the artist's brush that helps create a masterpiece.[241]

Vowel Formants

The next sub-module in the unit concerns the formation and acoustic properties of vowels. As McCoy and others explain, vowel sounds are created by specific patterns of overtones, which can be seen by viewing their respective spectral envelopes, or "acoustic signatures."[242] Using the information from McCoy, Bozeman, and perhaps others, students will study how movements of the jaw and tongue create vowel sounds by way of shifting formant locations:

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[239] McCoy, "Formantology," 43.
[240] Ibid., 44.
[241] Ibid., 45.
[242] McCoy, 41.

> The most important factor in the production of vowels and vowel formants is the location of the tongue, followed by the shape of the lips and the opening of the jaw. All of these factors have the ability to change the shape of the vocal tract, which in turn causes predictable alterations of formant frequencies.[243]

Specifically, students need to understand the general rules that govern formant locations:

1. A constriction near the opening of the vocal tract (created by the forward position of the tongue "hump") raises F2
2. A constriction near the back of the oral cavity (created by the back position of the tongue hump) lowers F2
3. Dropping the jaw raises F1
4. Closing the jaw lowers F1
5. Shortening the vocal tract (either by raising the larynx or spreading the lips) raises formant frequencies
6. Elongating the vocal tract (by lowering the larynx or rounding the lips) lowers formant frequencies.[244]

In addition to these rules, Bozeman, in *Practical Vocal Acoustics*, provides additional explanation for the roles of F1 and F2 in creating timbre. He explains that "the first formant determines depth or fullness of timbre, and the openness-closeness dimension of vowels," while the second formant "plays a role in the clarity of vowel definition, [and] the front-back dimension of vowels…"[245]

In order to help students remember the locations of the first and second vowel formants, McCoy once again provides mnemonics:

> For the cardinal vowels, /i – e – a – o – u/, the first formants track the pitches of a C-major triad, in first inversion, open position (extending beyond an octave). Therefore, F1 for those vowels will be found at approximately: /i/ = E_4, /e/ = C_5, /a/ = G_5, /o/ = C_5, /u/ = E_4. (…) You can estimate F1 of the remaining vowels by plotting their relative position between the cardinals.[246]

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[243] McCoy, 41.
[244] Ibid., 41-42.
[245] Bozeman, 13, 15.
[246] McCoy, "Formantology," 45.

> (…) Let's move on to the second formants for those cardinal vowels. This time, we'll reverse the order, going from close to open in the pattern /u – o – a – e – i/. The typical center pitch for F2 now tracks as follows: /u/ = E_5, /o/ = G_5, /a/ = D_6, /e/ = B_6, /i/ = D_7[247]

To help remember the locations of F2 in the above order, McCoy suggests the mnemonic: "**E**very **G**ood **D**ad **B**uys **D**iapers."[248]

Voice Analysis

One of the additions to the second edition of McCoy's *Your Voice: An Inside View* is the expansion of Chapter 5, "Analysis."[249] Here, McCoy describes the various measures used for acoustic and physiological analysis of voice. The vast array of technologies presented may exceed the scope of an undergraduate voice pedagogy course, but are certainly applicable to graduate and advanced study. Therefore, the chapter is a useful overview of available technology, and provides a starting place for further research. For in-class purposes, instructors may wish to focus on a handful of the included measures, including: audio waveform, fundamental frequency, amplitude, power spectrum (FFT), and reading spectrograms.[250] If time allows, (and given sufficient departmental funds) use of EGG (Electroglottography) and Donald Miller's exploratory activities would help clarify concepts of open and closed quotient.[251]

Learning to read spectrographs will serve students both in their own singing and teaching, but will also help prepare students for graduate voice pedagogy classes and advanced study. In addition to *VoceVista*, there are many spectrogram software programs available for purchase, or downloaded as freeware. There are even "apps" available for

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[247] McCoy, "Formantology," 46.
[248] Ibid.
[249] McCoy, 53-75.
[250] Ibid.
[251] Donald Miller, 11-12.

smartphones, such as *Spectrogram Pro* and *SpectrumView* among others.[252] In *Practical Vocal Acoustics*, Bozeman advocates for the incorporation of spectrogram analysis as a component of voice teaching:

> Of all the ways we analyze and graph sound, the spectrographic image is visually the most analogous to sound over time, and therefore the most approachable, understandable, and even intuitive for students. With minimal initial explanation, students can both see and hear important characteristics of their singing in the playback, leading to productive commentary or discussion.[253]

Specifically, Bozeman posits that spectrographic display is best for assessing:

> 1) Vibrancy (immediacy, consistency, continuity)
> 2) Vocal line (tonal and general timbral continuity)
> 3) General sense of overall resonance
> 4) General presence and strength of the singer's formant cluster[254]

McCoy agrees:

> While realtime spectrograms can be used in many ways during voice instruction, in my experience, five applications are most important: control of vibrato; control of legato; monitoring the strength and bandwidth of the singer's formant; monitoring elements of diction, including the duration of consonants, and the length of diphthongs (both intentional and accidental); and verifying the pitch accuracy of vocal onsets and releases.[255]

Singer's Formant (Cluster)

Various sources describe the Singer's Formant, or the Singer's Formant Cluster[256] as the "bright, ringing, almost bell-like quality"[257] that is present in the singing voice when the resonators are in tune with the vibrator. It is this clustering of formants 3 through 5, in the frequency range of approximately 2400-3200 Hz—regardless of vowel

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[252] Dominik Seibold, *Spectrogram Pro* (Version 3.0), 2011-1015.; Oxford Wave Research, Ltd., *SpectrumView* (Version 1.2), 2011-2014.
[253] Bozeman, 98.
[254] Ibid., 101.
[255] McCoy, 60.
[256] Bozeman, 17.
[257] McCoy, 47.

formation—that allows singers to be heard over an orchestra.[258] The spectrum diagrams provided by McCoy in *Your Voice: An Inside View* demonstrate this phenomenon particularly clearly.[259] Bozeman outlines the physiological conditions that must be present to create the singer's formant, or singer's formant cluster: "a low larynx, an open throat, and a narrowed epilaryngeal exit.[260] One of the take-home messages for this topic is that overly breathy or pressed sounds will not produce the harmonics needed to produce the "ring."

Registration

The study of registration includes both phonation and resonation components. As such, instructors will need to make decisions as to the location of this material within the course schedule. McCoy, in *Your Voice: An Inside View*, elects to address registration after units on both phonation and resonation. In fact, Chapter 10, "Registration," is one of the final chapters in the text. Doscher takes a similar approach in *The Functional Unity of the Singing Voice*. Instructors may wish to follow this format; alternatively, they may instead elect to teach registration between the phonation and resonation units, while phonation is fresh in students' minds.

Very few topics in voice pedagogy are subject to as much controversy and disagreement as the issue of registration. McKinney writes in Chapter 6 of *The Diagnosis and Correction of Vocal Faults*: "No other area of vocal instruction is as shrouded with mystery, semantic confusion, and controversy as the subject of registers and

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[258] McCoy, 49.
[259] Ibid., 47-50.
[260] Bozeman, 17.

registration."[261] McCoy and Doscher (and likely others) all begin their respective chapters on registration with a similar sentiment. With this in mind, it may be useful to begin, as McCoy does,[262] with a discussion of terminology related to registration. Instructors may begin with a provided list of terms (such as "head voice," "chest voice," "loft," "falsetto," and "vocal fry"), and then ask students to contribute their own. As a class, students can brainstorm register terminology, and then later make connections between more descriptive terms with corresponding register terminology.

Manuel Garcia's definition of a register, from *Traité complet de l'art du chant* (1847)[263] is a logical starting place for this unit, as it both acknowledges an important figure in historical voice pedagogy, and is a way of organizing the information for students. Garcia's definition reads as follows:

> The word register means, a series of consecutive and homogenous sounds produced by the same mechanism, and differing essentially from other sounds originating in mechanical means of a different kind[264]

McCoy explains that this definition contains three important pieces of information: 1) Registers are a series of contiguous pitches; 2) These pitches are produced in the same physiological manner, and; 3) Pitches produced within the same register have similar acoustic properties (have a similar timbre).[265]

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[261] McKinney, 93.
[262] McCoy, 143.
[263] Manuel Garcia, *Garcia's Treatise on the Art of Singing: A Compendious Method of Instruction With Examples and Exercises for the Cultivation of the* Voice, ed. Albert Garcia (London: Leonard and Co., 1924).
[264] Ibid., 4.
[265] McCoy, 143.

Laryngeal Registers

"Produced in the same physiological manner,"[266] of course, refers to vibrational mode of the vocal folds associated with the two predominant registers or glottal source configurations.[267] In this section of the unit, students will learn about the vibrational modes: Mode 1 (Thyroarytenoid-dominant production), the vibrational mode associated with "chest voice," and characterized by short, thick, rectangular-shaped vocal folds; and Mode 2 (Cricothyroid-dominant production), which is associated with "head voice," and characterized by thin, elongated, wedge-shaped vocal folds.[268] Discussion may also include the auxiliary registers: pulse (glottal fry, *Strohbass*) register, and whistle register (flageolet).[269] This portion of the course should address how traditional terminology for the registers, "head" and "chest" voice, is a result of where the singer feels sympathetic resonance, rather than where tones are produced.[270]

Traditional Register Terminology

Traditional register terminology used in the Italianate school figures prominently in this unit. Students should be able to define and describe the registration events referred to as the *primo passaggio* (first register transition), *secondo passaggio* (second register transition), the *zona di passaggio* (the span of pitches that lies between the two), *voce di petto* (chest voice), *voce mista* (mixed voice), *voce di testa* (head voice) and their corresponding laryngeal configurations.[271]

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[266] McCoy, 143.
[267] Bozeman, 6.
[268] Ibid.
[269] Richard Miller, 125-126; 147-148.
[270] McCoy, 144.
[271] Richard Miller, 115-118.

Acoustic Registers

Acoustic registers present a unique set of challenges. Students must initially understand how each of the above vibrational modes correspond with acoustic patterns of the spectral envelope. Mode 1, also referred to as "modal voice," or the speaking register for men and women (and where men sing the majority of their range), is characterized by a "complex pressure waveform with more, stronger high harmonics."[272] Due to the shallow spectral slope, or roll-off, it is "inherently brassier in timbre."[273] Mode 2, by contrast, with its "headier" resonance, is "flutier" in timbre, as a result of the steep spectral slope/drop-off created by the little-to-no vertical phase difference of the vocal folds. In Mode 2 vibration, higher partials receive less acoustic energy.[274]

Vowel Modification

In this part of the unit, students will learn about the relationship between the vowel formants and their locations, and how these may be modified through movements of the jaw and tongue in order to accommodate text at the extremes of one's range, as well as how to facilitate register transitions. McCoy, in the article "Formantology" suggests that students memorize formant locations, so as to better understand vowel modification strategies.[275]

Registration Strategies for Male Voices

In Chapter 7 of *Practical Vocal Acoustics*, Bozeman outlines strategies for navigating the primary acoustic register transition of male voices; that is, "from what has historically been called chest to head voice (or chest to middle/mixed registration or a

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[272] Bozeman, 6.
[273] Ibid.
[274] Ibid, 6-7.
[275] McCoy, "Formantology," 45-46.

lighter version of laryngeal mode one.)"[276] Bozeman describes how, during this transition, the second harmonic (H2) rises above the first formant (F1) in what he identifies as passive vowel modification. Historically, this has been called "vocal cover," or "turning over."[277] The pitch of turning, states Bozeman, occurs approximately one octave below the first formant location of the vowel being sung.[278]

Much of Bozeman's advice involves working to navigate the change from open timbre to close timbre. Specifically, Bozeman warns of the powerful F1/H2 acoustic coupling that, if tracked above the normal F1 location of the vowel being sung, results in the "yell timbre."[279] "Overcoming this instinct," he writes, "is crucial in training young males to negotiate their *passaggi* successfully with Western classical timbre."[280] Bozeman advocates the use of close vowels such as [o] and [e] at the turning location (*primo passaggio*), and helping students avoid the instinctive opening of the vowel which inhibits rather than allows the passive vowel transitions. He suggests: "If the yell instinct is stubborn, suggesting depth, thinking a slightly closer vowel and an internalizing affect or direction (sobby; in, down and out) while ascending, are often fruitful strategies."[281] Students will also likely appreciate Bozeman's summary of male *passaggio* events, which makes clear connections between acoustic events, and traditionally understood register transition locations.[282]

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[276] Bozeman, 25.
[277] Ibid., 49.
[278] Ibid., 23.
[279] Ibid., 21.
[280] Ibid.
[281] Ibid., 39.
[282] Bozeman., 48.

Registration Strategies for Female/Treble Voices

Bozeman's suggestions and strategies for female registration primarily involve: strengthening open vowels in the middle voice, establishing the F1/H1 "whoop" timbre for upper middle voice, and the transition into whistle mode.[283] Students will learn that women "face a similar problem at the top of the treble clef as men do an octave lower."[284] That is to say, they tend to lock H2 with F2 (similar to the way men do with H1/F2), and so must shift to a more rounded vowel, such as [o], which lowers F2, and allows F1 to link with H1.[285] Here is an excellent place to incorporate the musical excerpts and accompanying YouTube recordings provided in *Practical Vocal Acoustics*; among these are very clear examples of F1/H1 tracking.[286]

Of course, in all likelihood neither the composers nor singers of the example pieces were aware of the acoustic principles behind their modifications. This presents another opportunity for class discussion and exploration: ask students to bring difficult passages from their own repertoire, and discuss the vowel modifications they could use for register transitions and extremes of range. In some cases, students will find acoustic "proof" for something they have already discovered in their own singing: that certain vowels simply "work" better than others in specific parts of the voice.

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[283] Bozeman, 33-35.
[284] McCoy, "Formantology," 47.
[285] Ibid.
[286] Bozeman, 35.

Unit #4: Teaching Voice

Objectives

- Explore and study a variety of topics related to teaching voice. The instructor may wish to select some or all of the following topics:
- Study voice building and vocal coordination through an investigation of various aspects of vocal technique, including: resonance balancing, vocal vibrancy, *sostenuto*, agility, range extension and stabilization, vowel modification (*aggiustamento*), and dynamic control, among others.
- Using readings and class discussion, compile vocalises and exercises for both studio and classroom use. Students will consider the purpose and efficacy of vocal warm-ups and exercises.
- Study the physical causes of vocal vibrancy, as well as problems related to rate and extent of vibrato.
- Explore the German *Fach* system and other methods of voice classification. Students will consider the merits and disadvantages of this system as a tool for voice instruction.
- Study the growth and development of the larynx throughout the lifespan from infancy to late adulthood.
- Learn about the laryngeal changes that adolescent males and females experience during puberty, as well as strategies for teaching adolescent voices in studio and classroom settings.
- Learn how to select appropriate repertoire for students.
- Study vocal hygiene and best practices for care of the voice.

- Consider issues related to teaching Contemporary Commercial Music (CCM).
- Complete mock adjudication and critical listening exercises.

Suggestions for Assigned Reading

- *Your Voice: An Inside View*, Chapter 1, 9, Appendix 1
- *The Functional Unity of the Singing Voice*, Appendices I and II
- *The Structure of Singing*, Chapters 8, 14, and 16
- *The Diagnosis and Correction of Vocal Faults*, Chapter 11
- *The Private Voice Studio Handbook: A Practical Guide to All Aspects of Teaching*, Chapters 8, 9, 10-12, 15, 19,
- *Basics of Vocal Pedagogy: The Foundations and Process of Singing*, Chapters 10, 13
- *Solutions for Singers*, Appendix IV
- *Teaching Kids to Sing*, Chapters 1 through 4

Description

The final section of the one-semester course is dedicated to application and pedagogy. Through lectures, class discussion, and practice teaching, students will begin to apply course concepts to their own teaching, and will gain firsthand experience with different approaches to voice building.

This portion of the course necessarily requires a broader range of resources. Whereas the respiration, phonation, and resonation units draw primarily upon a selected number of standard voice pedagogy texts, readings may be assigned from a variety of sources for the various submodules. The instructor may wish to assign readings from the *Journal of Singing*, *Music Educators Journal*, or the *Journal of Research in Music Education* in addition to the recommended texts.

Coordinating and Unifying the Vocal Process

As this unit is the culmination of the course, and therefore integrates respiration, phonation, resonation, and registration, it may be useful to introduce the module with a

class dedicated to coordinating and unifying the vocal process. For the purpose of this topic, sections from Clifton Ware's text, *Basics of Vocal Pedagogy* are particularly useful. Chapter 10, entitled "Coordination: Unifying the Vocal Process,"[287] identifies and discusses six different components of the vocal process: volition, respiration, phonation, resonation, articulation, and communication.[288] In this chapter, Ware defines and discusses elements of coordinated vocalism in turn; among these are intonation, vibrato, agility, *sostenuto*, dynamic flexibility, and range extension.[289] It is ideal if this material precedes (or is presented in conjunction with) choosing vocalises for teaching, as students will begin to consider how different warm-ups and vocalises serve different vocal purposes.

Vibrato

Of the topics listed above, instructors may elect to allocate part or all of one class meeting for the study of vocal vibrancy. For this subject, the proposed curriculum draws primarily upon Chapter 14 of Miller's *The Structure of Singing*, "Vibrancy in Singing: Vibrato and Vocal Timbre."[290] Students will become familiar with the physical causes of vibrato, as identified by Seashore, Smith, and Shipp, and explained by Miller, who uses the term "to describe several kinds of pitch fluctuation that may occur during a sustained tone."[291] Miller states that "three parameters are generally determinable in vibrato, being the fluctuation of pitch, variation of intensity, and the number of undulations per

[287] Ware, 178-195.
[288] Ibid., 178.
[289] Ibid., 179-188.
[290] Richard Miller, 182-196.
[291] Ibid., 183-185.

second."[292] Miller's chapter explains historical Italianate terminology used to describe unfavorable types of vibrato, including *oscillazione*, *tremolo*, and *trillo*.[293] Additional readings from McCoy,[294] Doscher,[295] and McKinney[296] will help identify faults and issues related to vibrato rate, extent, and respiratory energy.[297] Using the CD of sample vocal faults that accompanies McKinney's text, students will hear examples of vibratoless voice, vibrato that is inconsistent, too wide, too slow, too fast, and vibrato that is exaggerated by too much energy.[298]

Teaching Voice: Pedagogical Approaches

Before students learn specific tools for teaching voice, it may be useful to first consider differing approaches to voice pedagogy. Here again, Ware's text is one possible resource: Chapter 13, "Teaching Singing," briefly outlines the history of voice pedagogy, from ancient Greece and Rome, to the present day.[299] In this whirlwind summary, Ware identifies the main tenets, trends and influences of the major national schools throughout the centuries.[300] The second part of the chapter is dedicated to "foundations of effective teaching," wherein Ware considers voice teacher motivation, "model" voice teacher characteristics, the varied and different roles voice teachers inhabit, different types of voice teachers, aspects of the teacher/student relationship, and styles and modes of teaching.[301]

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[292] Richard Miller, 182.
[293] Ibid.
[294] McCoy, 5.
[295] Doscher, 198-204.
[296] McKinney, 196-201.
[297] Ibid., 197.
[298] Ibid., 196-201.
[299] Ware, 249-255.
[300] Ibid., 255-274.
[301] Ibid., 255-261.

Miller, in *The Structure of Singing*, also addresses both vocal coordination and differing approaches to teaching voice. Chapters 15 and 16 concern these topics, and the chapter "Pedagogical Attitudes: The Aesthetics of Vocal Timbre,"[302] in particular is a useful starting point for class discussion. While both the Ware and the Miller texts are, at times, rather subjective, these readings bring up many useful ideas and issues for students to consider.

Assigning Vocalises

Throughout the course, students will begin to develop a working repertory of technical exercises that they will use in their teaching. Course content in this submodule will focus on different types of warm-ups, technical exercises, and vocalises appropriate for students of all ages and abilities. Students will consider the merits of systematic and eclectic approaches to technical instruction, and learn how to evaluate and select appropriate vocal exercises for their students. Because it functions as a manual for voice building, Miller's *The Structure of Singing* (as well as his other texts for specific voice types, such as *Training Soprano Voices*,[303] *Training Tenor Voices*,[304] and *Securing Baritone, Bass-Baritone, and Bass Voices*,[305]) provides a wealth of exercises specifically designed to target the different components of coordinated vocalism, organized by chapter.[306] Other texts may be used to supplement Miller's; certainly, students will have multiple sources from which to draw. (Instructors may wish to point students to methods books and collections of vocalises from the historical literature, including those by

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[302] Richard Miller, 205-217.
[303] Richard Miller, *Training Soprano Voices* (New York: Oxford University Press, 2000).
[304] Richard Miller, *Training Tenor Voices* (New York: Cengage Learning, 1993).
[305] Richard Miller, *Securing Baritone, Bass-Baritone, and Bass Voices* (New York: Oxford University Press, 2008).
[306] Richard Miller, 79-181.

Marchesi,[307] Concone,[308]Vaccai,[309] and Panofka,[310] to name a few.) Suggested class activities for this submodule might include asking students to bring in and demonstrate some of their regular warm-ups and vocalises, and singing them together as a class.

Selecting Repertoire

Selecting repertoire for students is one of the most significant parts of teaching voice, and therefore an important topic for class discussion. For this, both Boytim and Ware's texts are particularly beneficial. In Chapter 12, "Solo Vocal Performance,"[311] Ware provides an overview of principal historical vocal music styles, generic styles of vocal repertoire, and outlines some of the criteria for selecting vocal repertoire for students. Students will evaluate the pedagogical objectives, musical and textual worth, singer and voice type compatibility, and type of audience when making decisions about repertoire.[312] To be very specific, teachers must consider: range/tessitura, age of the student, musical complexity/difficulty, relationship of the piano and vocal line, among many other criteria.[313] The remainder of Ware's chapter includes useful, step-by-step guides for learning and preparing repertoire, but due to time constraints, topics such as these may fall outside of the scope of the class.

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[307] Giuseppe Concone, *School of Sight-Singing*, ed. B. Lütgen (New York: G. Schirmer, Inc., 1986).

[308] Mathilde Marchesi, *Vocal Method* (New York: G. Schirmer, Inc., 1986).

[309] Nicola Vaccai, *Practical Method of Italian Singing: for Soprano or Tenor*, ed. John Glenn Paton (New York: G. Schirmer, Inc., 1975).

[310] Heinrich Panofka, *Twenty-four Progressive Vocalises* (New York: G. Schirmer, 1900).

[311] Ware, 226-248.

[312] Ibid., 228-229.

[313] Ibid.

One valuable resource for this sub-module is Beverly Patton's article "Seven Ways to Practice a Song or Homage to Sergius Kagen."[314] In this 2002 article published in the *Journal of Singing*, Patton shares the seven-step process she expects of her students—a regimen that she extracted and adapted from Sergius Kagen's *On Studying Singing*.[315] Among the suggested steps, Patton recommends: speaking the text aloud, clapping/tapping the musical rhythms, speaking the text in rhythm, and separating the text from the melody.[316] Using Kagen/Patton's method, integration of text and melody are the final step in the music-learning process.[317] While this process is far from revelatory, especially not at the university level, it may serve as a good refresher and reminder for students, and a model that they may wish to incorporate in their own teaching.

Voice Classification

Depending on time limitations, the instructor may wish to dedicate a class (or classes) to the issue of voice classification and *Fächer*. Author Pearl Yeadon McGinnis has written a text that explains the German *Fach* system to North American singers. *The Opera Singer's Career Guide: Understanding the European Fach System*[318] is a thorough resource that identifies and describes the twenty-five different sub-categories of *Fächer* used in German-speaking European houses. By providing examples of roles, arias, and characteristics of each of the voice types, McGinnis' text essentially functions as an

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[314] Beverly Patton, "Seven Ways to Practice a Song or Homage to Sergius Kagen," *Journal of Singing* 59, no. 2 (November/December 2002): 165-167.

[315] Ibid., 165.

[316] Ibid.,166.

[317] Ibid.

[318] Pearl Yeadon McGinnis, *The Opera Singer's Career Guide: Understanding the European Fach System*, ed. Marith McGinnis Willis (Lanham, MD: Scarecrow Press, 2010).

English companion to the *Handbuch der Oper*.[319] Ware also provides an overview of voice classification criteria in Chapter 10 of *Basics of Vocal Pedagogy*,[320] a discussion which considers physical characteristics, vocal timbre, tessitura and register transitions, and vocal range.[321]

Teaching Voice Across the Lifespan

For students who will become classroom educators and direct choral ensembles in elementary, middle, and secondary schools, an understanding of child and adolescent vocal physiology is crucial. Similarly, students who plan to teach private voice lessons or direct community or church choral ensembles must understand the effects that aging has on singing. For these reasons, this curriculum includes a submodule that investigates voice anatomy and physiology throughout the lifespan.

A class dedicated to child and adolescent voice explores laryngeal growth and development from infancy to adolescence. Drawing from texts by Seikel,[322] Philips,[323] and others, students will study how the rapid growth of the larynx, vocal folds, and surrounding support structures[324] during childhood necessitates specific and thoughtful approaches to child voice instruction. Students will consider historical perspectives, psychomotor coordination, appropriate pitch ranges and tessitura, and cultivating healthy tone, among others.[325] While choral pedagogy is simply beyond the scope of this course, education students will ideally, in conjunction with choral methods courses, explore both

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[319] Rudolf Kloiber, Wulf Konold, and Robert Maschka. *Handbuch der Oper*, 13th ed. (München: Deutscher Taschenbuch Verlag, 2011).

[320] Ware, 188-194.

[321] Ibid.

[322] Seikel, King, and Drumright.

[323] Kenneth H. Phillips, *Teaching Kids to Sing* (New York: Cengage Learning, 1996).

[324] "Voice Changes Throughout Life," The National Center for Voice & Speech, The University of Utah, accessed May 20, 2016, http://ncvs.org/e-learning/tutorials/lifespan.html.

[325] Phillips, 23-102.

the male and female changing voice, learning how psychological and anatomical changes brought on by puberty affect adolescent voices.[326] Specifically, this sub-module will include an overview of the stages of adolescent voice development, and briefly introduce students to important contemporary systems for classifying boys' voices during puberty. Among these are the Cambiata approach, developed by Irvin Cooper in the 1960s, and the "contemporary eclectic theory" advocated by Cooper's student, John Cooksey.[327]

Another class (or portion of a class) is dedicated to singing into late adulthood. Here, students will consider the physiological, cognitive, and physiological changes that occur in adults of advanced age and their corresponding effects on the singing voice, most notably: the ossification of laryngeal cartilages, atrophy and dystrophy of muscular cells, and edema (swelling) within laryngeal tissues.[328] Recent publications by Inside View Press (*Sing Into Your Sixties…And Beyond!*),[329] and Plural Publishing (*Choral Pedagogy and the Older Singer*),[330] may be useful resources for instructor preparation or assigned student reading.

Vocal Health

The proposed one-semester course outline allows for one class dedicated to vocal health, but this content may easily be spread out over several classes. (In my classes, there was always at least one student who had chosen to research vocal health for their final research project; I then supplied additional content.) This submodule may

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[326] Leon Thurman, "Boys' Changing Voices: What Do We Know Now?" *Choral Journal* 52, no. 9 (April 2012): 10.

[327] Ibid.,13.

[328] "Voice Changes Throughout Life," The National center for Voice & Speech, The University of Utah, http://ncvs.org/e-learning/tutorials/lifespan.html.

[329] Sangeetha Rayapati, *Sing Into Your Sixties... and Beyond!* (Delaware, OH: Inside View Press, 2012).

[330] Brenda Smith and Robert T. Sataloff, *Choral Pedagogy and the Older Singer* (San Diego, CA: Plural Publishing, 2012).

encompass a wide range of topics, such as vocal hygiene practices, structural voice disorders, neurological disorders, and an overview of medications that affect the voice. For students who will become classroom music teachers, vocal hygiene education is particularly important. All professional voice users must learn how to avoid overuse, but classroom teachers are particularly vulnerable to phonotrauma.[331] Therefore, a discussion of behavioral modifications may help students avoid vocal problems down the road. The old adage "an ounce of prevention is worth a pound of cure" is particularly true for young voice teachers who wish to avoid vocal fatigue, disorders, or even permanent vocal damage. For these topics, instructors may elect to use the relevant chapter in *Your Voice: An Inside View*, authored by Lucinda Halstead, MD, or to introduce students to one of the many texts by Robert Sataloff (Plural Publishing), Anthony F. Jahn, and Karen Wicklund, among others.[332]

Teaching Belt and Contemporary Commercial Music (CCM)

As voice teachers in the twenty-first century, voice pedagogy students will most likely be expected to teach different styles and genres of music, both within the studio and classroom setting. Therefore, this curriculum includes Contemporary Commercial Music (CCM) and Musical Theatre instruction. Musical Theatre is now a regular category of the NATS National Student Auditions,[333] and some of the chapter and

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[331] Evelyne Van Houtte et al.,"Voice Disorders in Teachers: Occupational Risk Factors and Psycho-Emotional Factors," *Logopedics Phoniatrics Vocology* 37 (2012): 107.

[332] Readers are directed to: Robert Thayer Sataloff, *Vocal Health and Pedagogy*, 2nd ed. (San Diego, CA: Plural Publishing, 2006), D. Garfield Davies and Anthony F. Jahn, *Care of the Professional Voice: a Guide to Voice Management for Singers, Actors and Professional Voice Users*, 2 ed. (New York: Routledge, 2004), and Karen Wicklund, *Singing Voice Rehabilitation: a Guide for the Voice Teacher and Speech-Language Pathologist* (Clifton Park, NY: Cengage Learning, 2010), to name a few.

[333] National Association of Teachers of Singing, "Chapter, District, Region, and National Student Auditions," NATS Student Auditions Resource Page, 2015, accessed May 24, 2016, http://www.nats.org/_Library/NSA_Files/NSA_Categories_-_Aug_6x.pdf.

regional auditions have expanded to include CCM categories as well.[334] Class activities could involve discussion, exploration, and recorded examples of different types of CCM styles and techniques, including an overview of belt, mix, and legit styles.[335] Primary resources for this component might include publications by Robert Edwin and Jeannette LoVetri, among others.[336]

Critical Listening and Mock Adjudication

The final classes in the proposed one-term course are dedicated to critical listening. Ideally, students will have completed critical listening activities throughout the term in conjunction with classes on diagnosing and correcting vocal faults, as well as during their teaching sessions. The course concludes by returning, full circle, to the "Listening to Singers" submodule, with a review of subjective/paired vocal terminology.[337] With their newfound knowledge of vocal anatomy, physiology, and acoustics, students are better equipped to make connections between subjective terminology and the physiological processes of singing. Instructors may wish to have students complete "mock adjudications" of recordings of young singers. (I have found that YouTube recordings of teenaged students performing pieces from the standard vocal

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[334] "Chapter, District, Region, and National Student Auditions."

[335] Robert Edwin, "Belt is Legit," *Journal of Singing* 64, no. 2 (November/December 2007): 213.

[336] Readers are directed to Robert Edwin's column, "The Bach to Rock Connection," a column dedicated to Contemporary Commercial Music pedagogy which ran in the *NATS Bulletin*/*Journal of Singing* from 1985 through 2002, and the "Popular Song and Music Theater" column in the *Journal of Singing*, of which he is the Associate Editor. Jeannette LoVetri, credited with creating the term "Contemporary Commercial Music" (CCM), is an authority on non-classical voice pedagogy, and the creator of Somatic Voicework. Jeannette LoVetri,"The Necessity of Using Functional Training in the Independent Studio," *Journal of Singing* 70, no. 1 (September/October 2013): 79-86.

[337] McCoy, 1-7.

literature—such as the *24 Italian Songs and Arias*,[338] for example—works very well for this activity.)

[338] *24 Italian Songs and Arias: Medium High Voice* (New York: G. Schirmer, Inc., 1992).

Chapter 7: SAMPLE LESSON PLANS AND LECTURE MATERIALS

The following are sample lesson plans for five different classes throughout the term.

Sample Lesson Plan 1

Week 1, Class 2: *Anatomy, Posture, and Alignment*

Purpose: This class introduces students to one of the foundational concepts of voice pedagogy: establishing efficient postural alignment. In addition to learning terminology related to anatomy and physiology, students will explore the components of postural alignment, as well as physical exercises and activities for finding and encouraging efficient posture in themselves and in their students.

Objectives and Learning Outcomes:

- Define and explain common anatomical and physiological terminology used in voice pedagogy research and writing
- Gain an overview of the terminology used to describe large regions of the human body
- Define and explain terminology of anatomical orientation and movements used for describing the location and function of different structures
- Identify and describe different types of muscles and their functions
- Explain the importance of efficient posture for breathing and singing
- Outline components of efficient posture, as described by McCoy, Doscher, Ware, and others
- Discuss common faults related to postural alignment

- Explore a variety of physical and vocal exercises designed to encourage efficient postural alignment

Assigned Reading: McCoy, pp. 76-79; Doscher, pp. 69-84

Introduction:

- Discussion: What is meant by healthful posture and bodily alignment? Why is it important to the study of singing?

Development:

- Using PowerPoint slides, visuals, and animations, explain broad terminology related to anatomy and physiology
- Identify and explain location and terminology for large regions of the human body, including the thorax, abdomen, dorsal trunk, pelvis, and head
- Identify and describe the axial and appendicular skeleton
- Identify and explain anatomical views and terms of orientation:
    - Aspects
    - Axes and planes
- Explain terminology relating to anatomical location: external, internal, distal, medial, lateral, proximal, etc.
- Using images, animation, and demonstration, explain terminology related to movement: abduction, adduction, extension, flexion, etc.
- Discuss terminology related to different types of muscles and their actions
- Identify and explain useful prefixes for students to memorize in order to better understand locations and movements of structures related to singing

- Identify elements of healthful and efficient posture, as described by various voice pedagogues
- Explore and explain how efficient body alignment contributes to healthful vocalism
- Discuss activities and techniques for modifying posture
- Identify and describe common faults related to posture, and how these negatively impact singing

Suggested Activities:

- Pointing to different areas on the body, or using motions of the arms/legs, have the students take turns identifying large anatomical structures (torso, axial skeleton, etc.), as well as movements (adduction and abduction)
- As a class, create a list of elements of "good" posture. Have a student take notes on the board. Compare these elements with those outlined by McCoy and Doscher.
- Have the students work in pairs to try out some of the suggested postural exercises on each other
- Experiment with some of the exploratory activities in *The New Rules of Posture*, by Mary Bond:
    - Page 37 – "Exploration: Postural Sway"[339]
    - Page 63 – "Exploration: Slouching"[340]
    - Page 136 – "Exploration: Self-Assessment of Your Feet"[341]
    - Page 147 – "Practice: Aligning Your Legs"[342]

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[339] Bond, 37-38.
[340] Ibid., 63.
[341] Ibid., 136.
[342] Ibid., 147-149.

- Page 162 – "Exploration: Narrow Focus and Open Focus"[343]

- As a class, discuss which activities worked well, and which ones were not as successful

Closure/Assessment:

- Quick write: list five elements of efficient posture for singing, and explain why each of these is important

Resources for Class Preparation:

Bond, Mary. *The New Rules of Posture: How to Sit, Stand, and Move in the Modern World*. Rochester, VT: Healing Arts Press, 2007.

Malde, Melissa, Mary Jean Allen, and Kurt-Alexander Zeller. *What Every Singer Needs to Know About the Body*. San Diego: Plural Publishing, Inc., 2009.

Seikel, John A., Douglas W. King, and David G. Drumright. *Anatomy and Physiology for Speech, Language, and Hearing*. 4th ed. Clifton Park, NY: Delmar Cengage Learning, 2010.

Sample Lesson Plan 2

Week 2, Class 1: *Respiratory Anatomy, Part I – Introduction to the Respiratory System and Principles of Respiration*

Purpose: This is the first of two classes designed to introduce students to the structures and function of the Respiratory System. In this first class, students will consider the Respiratory System as the motor component of the tripartite vocal mechanism, and will learn about some of the principles which govern its function. Structures of respiration are also discussed.

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[343] Bond, 162-163.

Objectives and Learning Outcomes:

- Considering the "tripartite" model of the voice as an instrument, explain how the Respiratory (Pulmonary) System represents the power source and activator for the voice
- Define the terms *respiration*, *inspiration*, and *expiration*
- Explain and describe (in brief) the process of gas exchange
- Understand principles of respiration which govern the movement of air in and out of the lungs, include air pressure (Pressure = Force/Area), and Boyle's Law
- Identify bony structures of respiration, including the vertebral column, rib cage, pectoral girdle, and pelvic girdle
- Identify and describe different types of vertebrae and ribs, as well as their functions
- Identify soft tissues and structures of the thorax and respiratory passageway, including the trachea and lungs

Introduction

- Review tripartite model of the voice as an instrument
- Explain and discuss how the Respiratory System functions as the power source and activator for the vocal instrument, and is analogous with the bellows of a pipe organ
- Show video or animation demonstration of organ bellows or pipe bag (bagpipes)
    - This analogy serves to demonstrate that the process for bringing air into the lungs is muscular, and 'sets the stage' (so to speak) for explication of the movement of air drawn into the lungs through the movement of the diaphragm and external intercostal muscles

Development:

- Briefly summarize the process of respiration, including gas exchange
- Introduce students to one of governing principles of respiration (Pressure = Force/Area) using the analogy of the flipper and the stiletto:
    - Show slide with images of a stiletto next to a swimming flipper. Present the following question to students: "If someone stepped on your toes while wearing one of these shoes, which would hurt more?" The obvious answer is the stiletto, but have students explain why, using the formula they have just learned. (Because the person's weight is distributed over a larger surface area of the flipper, and a smaller surface area of the heel, the stiletto would clearly be more painful.)[344]
- Briefly summarize and explain Boyle's Law and its relevance/importance to the process of respiration
- Explain *Horror vacui* ('nature abhors a vacuum') and its importance and relevance to respiration[345]
- Using images, diagrams, and animations, introduce students to the "supportive structures" of respiration: the vertebral (spinal) column, ribcage, pectoral girdle, sternum, and pelvic girdle
    - Explain in detail the different types of ribs and vertebrae
- Using images, diagrams, and animations, introduce students to the soft tissues of the thorax and respiratory passageway: the pharynx, the trachea, and the lungs

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[344] Theresa Burnett, "Respiration Review," Class lecture, Voice Disorders from Indiana University, Bloomington, IN, September 3, 2010.

[345] Ibid.

- Using provided images and animations, explain the passage of air through the system to the bronchial tree and the terminal respiratory bronchioles—the site of gas exchange

Suggested Activities:

- Think/pair/share activity: have the students theorize why the Respiratory System is analogous to a syringe
- Using provided handouts, students will label structures of respiration on anatomical diagrams as they are identified throughout the lecture

Closure/Assessment:

- Quick write: at the conclusion of class, have students explain some of the governing principles of respiration, using the analogies described in class
- Have students describe the path of air through the respiratory system

Resources for Class Preparation:

Doscher, Barbara M. *The Functional Unity of the Singing Voice*. 2nd ed. Lanham, MD: The Scarecrow Press, Inc., 1994.

McCoy, Scott. *Your Voice: An Inside View.* 2nd ed. Delaware, OH: Inside View Press, 2012.

Seikel, John A., Douglas W. King, and David G. Drumright. *Anatomy and Physiology for Speech, Language, and Hearing*. 4th ed. Clifton Park, NY: Delmar Cengage Learning, 2010.

Zemlin, Willard R. *Speech and Hearing Science: Anatomy and Physiology*. 4th ed. Boston: Pearson, 1998.

Sample Lesson Plan 3

Week 4, Class 3: *Phonation*

Purpose: This lesson follows two class sessions dedicated to the anatomy of the larynx and surrounding structures. Students will learn the step-by-step process of phonation, as well as the muscular processes required to begin and end voicing. Significant time will be spent on explaining the aerodynamic processes involved in the aerodynamic myoelastic model of voice production. Students will explore models of phonation, including recent research and development in the field.

Objectives and Learning Outcomes:

- Considering the tripartite model of the voice as instrument, explain how the vibrating vocal folds function as the oscillator, "creating periodic variations in air pressure our ears interpret as sound"[346]
- Understand and explain the biological functions of the larynx (non-speech laryngeal functions)
- Describe the four independent but interrelated muscular actions required for voicing: abduction, adduction, lengthening, and shortening
- Identify and describe different theories of vocal fold oscillation (Myoelastic-Aerodynamic Model, One-Mass Model, and the Three-Mass Model)[347]
- Explain and describe the Venturi and Bernoulli effects, and the role these play in phonation

[346] McCoy, 102.
[347] Ibid., 104-107.

- Identify and comprehend stages of vocal fold vibration, as well as different vibrational modes (Mode 1/Mode 2 and Body/Cover)[348]
- Describe the process of onset of phonation, and the three commonly-described types of onset or attack
- Understand and describe the processes of sustaining and terminating phonation
- Define terminology related to phonation, such as: fundamental frequency and amplitude
- Describe how the three changeable properties of the vocal folds—tension, length, and mass—may be manipulated in order to raise and lower frequency, intensity, and amplitude of vibration[349][350]

Introduction

- Review content of previous two classes: laryngeal anatomy
- Review tripartite model of vocal production, explaining how the larynx functions as the vibrator component of the vocal instrument

Development and Activities:

- Using the class laryngeal model or paper models, demonstrate movements of abductor/adductor muscles
- Using laryngeal models, have the students practice moving the relevant parts on their models in order to understand abduction, adduction, lengthening, and shortening of the vocal folds

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[348] McCoy, 103-104.
[349] Ibid., 114-116.
[350] Theresa Burnett, "Laryngeal Anatomy Review," Class lecture, Voice Disorders from Indiana University, Bloomington, IN, September 3, 2010.

- View animations on the *Your Voice: An Inside View* accompanying CD-ROM, as well as other videos available online
- Recreate the Bernoulli effect by blowing between two pieces of loose leaf paper

Closure/Assessment:

- After the material has been presented, using a Word document, have the students collaborate to create a step-by-step process of phonation
- Have the students do a quick write, and then take turns explaining the process of phonation to each other
- Have the students explain phonation as if they were teaching it to a child or adolescent student

Resources for Class Preparation:

- Laryngeal models

McCoy, Scott. *Your Voice: An Inside View.* 2nd ed. Delaware, OH: Inside View Press, 2012.

Seikel, John A., Douglas W. King, and David G. Drumright. *Anatomy and Physiology for Speech, Language, and Hearing*. 4th ed. Clifton Park, NY: Delmar Cengage Learning, 2010.

Zemlin, Willard R. *Speech and Hearing Science: Anatomy and Physiology*. 4th ed. Boston: Pearson, 1998.

Sample Lesson Plan 4

Week 6, Class 2: *The Nature of Sound*

Purpose: In order to comprehend complex phenomena of vocal resonance (including formants, vowel modification, and registration) students must first understand basic concepts of the physics of sound. Therefore, the unit on vocal resonance begins with an

introduction to the nature of sound. Here, students will complete an abridged "Physics of Sound" course, becoming familiar with sound waves, frequency, amplitude, the harmonic series, timbre etc. Ideally, students will possess some background knowledge of these subjects prior to completing the course, but if not, it will serve as both a basic introduction for some, and a review for others.

Objectives and Learning Outcomes:

- Define and explain sound and resonance
- Understand and explain compression and rarefaction waves
- Understand the movement (propagation) of sound waves through air
- Understand and explain the differences between frequency, period, and wavelength
- Comprehend the relationship of frequency (represented in Hz) to pitch (subjective)
- Understand and describe how the overtone/harmonic series is created
- Be familiar with the complex waveform—the superimposition of the waveform of several harmonics atop the lowest, loudest pitch, the fundamental—and how varying types of complex waveforms are responsible for creating timbre

Introduction:

- By way of introduction to the unit, have students discuss their thoughts and background related to sound and acoustics. Have any of the students, for example, completed a Physics of Sound course?

Development and Activities:

- As a class, watch the excerpt from Leonard Bernstein's "Musical Phonology"[351] lecture about the overtone series
- Using the directions provided in Chapter 2 of *Your Voice: An Inside View*, demonstrate the overtone series using the piano[352]
- Have the students sing the overtone series as a class
- Watch Anna-Maria Hefele's tutorial on overtone singing[353]
- Have the students experiment with overtone singing[354]
- View video "Spectrograms: Instruments and Timbre"[355] to demonstrate the differing acoustic profiles of various instruments
- Using McCoy's car analogy,[356] have students recreate the scene using a stopwatch, and several toy cars. Have students present to each other, explaining the difference between frequency, period, and wavelength.

Closure/Assessment:

- Quick write prompt: Describe three characteristics of soundwaves
- Quick write prompt: Describe the differences between frequency and pitch, and amplitude and volume

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[351] Leonard Bernstein, *The Unanswered Question – Six Talks at Harvard by Leonard Bernstein*, vol. 1, *Musical Phonology* (Kultur Video, 2013).

[352] McCoy, 22.

[353] Anna-Maria Hefele, "Polyphonic Overtone Singing – Anna-Maria Hefele," posted September 30, 2014, accessed December 29, 2015, https://www.youtube.com/watch?v=vC9Qh709gas.

[354] McCoy, 22.

[355] National Music Centre, "Spectrograms: Instruments and Timbre," posted April 28, 2015, accessed May 3, 2016, https://www.youtube.com/watch?v=P9Kozlt0tTg.

[356] McCoy, 20.

Resources for Class Preparation:

Bernstein, Leonard. *The Unanswered Question – Six Talks at Harvard by Leonard Bernstein*. Vol. 1, *Musical Phonology*. Kultur Video, 2013.

Doscher, Barbara M. *The Functional Unity of the Singing Voice*. 2nd ed. Lanham, MD: The Scarecrow Press, Inc., 1994.

McCoy, Scott. *Your Voice: An Inside View*. 2nd ed. Delaware, OH: Inside View Press, 2012.

Seikel, John A., Douglas W. King, and David G. Drumright. *Anatomy and Physiology for Speech, Language, and Hearing*. 4th ed. Clifton Park, NY: Delmar Cengage Learning, 2010.

Sample Lesson Plan 5

Week 11, Class 1 (or 3): *Assigning Repertoire*

Purpose: One of the many responsibilities of a voice teacher is assigning, or helping students to choose appropriate repertoire. In this class, students will consider the myriad factors teachers must take into account when gauging pedagogical appropriateness of repertoire.

Objectives and Learning Outcomes:

- Consider the pedagogical objectives of repertoire; i.e. What is the purpose of assigning repertoire to students? (Encourage student practice, incorporate technical concepts into repertoire, develop repertory and improve musicianship, etc.)
- Identify and understand the teacher's responsibilities in assigning repertoire (Provide guidelines and parameters, guide student through repertoire-learning process, knowledge of style and performance practice, etc.)
- Identify and discuss criteria for selecting repertoire

- Develop awareness of appropriate types and categories of repertoire for the following age groups:
    - Elementary school-aged children
    - Adolescents
    - Adult beginners
    - Skilled amateurs
- Be familiar with numerous resources for finding repertoire (books, anthologies, etc.)
- Develop a personal regimen for teaching repertoire

Introduction:

- Journal and discussion: students will take a few minutes to write down any issues or questions they have encountered in their own teaching with regard to assigning repertoire. Questions to consider: What types of pieces have you assigned to your student? How did you decide which pieces to give them? How is the student doing with the pieces?

Development and Activities:

- Assign one student to be a "scribe." As a class, generate a list of criteria that teachers need to consider when choosing repertoire for students
- Go on a class "field trip" to the vocal music section of the music library, pointing out the different types of anthologies and collections available for voice teachers (collections found within the M1619s, M1620s, M1503s, etc.)
- Bring in copies of teaching materials for students to peruse

- Prior to class, generate a list of different hypothetical students of differing ages, genders, and levels of ability. Using provided anthologies, students will work in pairs to find one or two pieces that would be appropriate for a student. Each pair will present their findings to the class and explain their choices.

Closure/Assessment:

- Think/pair/share: What are five criteria you will consider from now on when choosing repertoire for your students? What is one thing you will do differently next time you are working on a song with one of your students?

Resources for Class Preparation:

- Various vocal music anthologies (for varying ages and abilities)

Arneson, Christopher. *Literature for Teaching*. Delaware, OH: Inside View Press, 2014.

Boytim, Joan Frey. *The Private Voice Studio Handbook: A Practical Guide to All Aspects of Teaching*. Milwaukee, WI: Hal Leonard Publishing Corporation, 2003.

Emmons, Shirlee, and Stanley Sonntag. *The Art of the Song Recital*. Long Grove, IL: Waveland Press Incorporated, 2001.

Miller, Richard. *Solutions for Singers: Tools for Performers and Teachers*. New York: Oxford University Press, 2004. (Appendix IV: Repertoire for Younger or Beginning Singers)

Ware, Clifton. *Basics of Vocal Pedagogy: The Foundations and Process of Singing.* Boston: McGraw Hill, 1998.

Chapter 8: ASSIGNMENTS AND GRADING PROCEDURES

The following are suggested assignments for the proposed course as they appear in the course syllabus:

Readings and Homework

Readings will be assigned nearly every class session. Each student is expected to read the material to be discussed before each class. Most of the readings will be assigned from one of the required course textbooks, but some supplemental readings will be assigned, as well. These will be made available via the school's Learning Management System (*Oncourse*, *Desire 2 Learn*, or otherwise), or distributed in class. Students are notified that the schedule of class topics and readings is tentative and subject to change. Students will be notified of significant changes to the schedule both in class and via email.

Tests

Students will complete an in-class test after the completion of each major unit of study, totaling three or four throughout the term. (The suggested curriculum with a student teaching component includes a Resource Binder assignment in lieu of a fourth unit test. Please see Appendix A for details.) Test material will be drawn from lectures, class discussions, and required readings. Unit tests include multiple choice, fill in the blank (with a provided word bank), matching, and short and long answer questions.

Final Exam

The final exam is a cumulative exam that may either be completed during the assigned class exam period, or assigned as a take-home final. Final exam questions are essay questions worth several (15-20) points each. Questions concern large areas of voice

pedagogy, including: posture and alignment, respiration, phonation, resonation, registration, and voice instruction.

Student Teaching and Journal Entries

This assignment has several components:

1. Students will submit two (2) journal entries describing their *own* voice lessons with their applied voice instructor. Journal entries should include the following:
    - The date of the lesson
    - Technical exercises/vocalises sung
    - The student's perceived purpose of the exercises
    - Repertoire studied (if applicable)
    - Instructor corrections and feedback
    - Student reflections and impressions of the lesson
2. Each participant in the class is required to teach eight (8) half-hour lessons to their own student reasonably spaced throughout the term. Students are responsible for arranging regular lessons with their students at mutually agreeable times.
3. For six (6) of these lessons, students will complete a journal entry/reflection paper (1-2 pages) describing the lesson in detail. Each reflection paper should include the following information:
    - The date of the lesson
    - Vocalises and technical exercises used
    - Repertoire studied (if applicable)

Questions for the students to answer:

- What is an activity or a correction that you made that worked well?

- What did not work well?
- During the lesson, did any issue arise that you felt unqualified or unsure of how to address?
- What might you do differently next time?

Students must then write up their reflection papers and submit them to the course instructor within a week of the lesson. This additional restriction is to ensure that students are both completing lessons on a regular basis, and reflecting on their teaching immediately following the lesson. All journal entries must be submitted no later than the final week of the course. Students will be reminded to plan accordingly.

4. The instructor will observe the student teaching in one lesson outside of class (to be arranged at the discretion of the instructor, but suggested during Week 10 of the course. Larger class sizes may necessitate multiple weeks of lesson observations.) The instructor will observe this lesson and should only interject if necessary. Afterwards, the instructor and student will discuss the student's teaching (without the student's student present.)
5. Students will teach once in front of the class (to be arranged at the discretion of the instructor, but suggested during Week 12 of the course. As in the case of the lesson observations, in larger classes, instructors may need to dedicate increased class time to in-class teaching, possibly to the exclusion of other material.) These half-hour lessons will be followed by class discussion.

This assignment may pose a challenge with respect to evaluation of student teaching. As discussed in Chapter Three, teaching voice is, in many ways, a subjective endeavor. The voice pedagogy instructor, in an effort to provide constructive criticism for

the student teacher, may inadvertently critique a methodology learned from the student's own teacher—a colleague of the voice pedagogy instructor. In order to avoid a potentially contentious situation, the instructor may wish to limit the graded portion of the assignment to the written content alone. In this case, the student grade for this assignment is derived solely from the timely submission and thorough completion of lesson journals, rather than the content of the student-taught lessons. Instructors will likely wish to provide constructive feedback and make suggestions, but avoid assigning a numeric grade for the lessons themselves.

Resource Binder

Over the course of the term, students will compile a resource portfolio to aid them in their future teaching endeavors. Resource portfolios will be due near the end of the term. The resource portfolio should include the following sections (not necessarily in this order):

1. Relevant articles, resources, media, webpages, diagrams, etc. which students have encountered over the course of the semester
2. Warm-ups and vocalises, divided into the following subsections:
    - Posture and alignment
    - Breath management
    - Co-ordinated vocal onset and release
    - Resonation
    - Vowel differentiation and modification
    - Registration (male and female)
    - Range extension and stabilization

- Co-ordination: *Sostenuto*, vibrancy, agility, legato, *Messa di voce* and dynamic control

These exercises may be taken from class lectures, pedagogy texts, lessons students have observed, students' own lessons, etc. This section should include at least three exercises which students have designed themselves. Students should aim to include a few different exercises for each subsection, noting vocal range and/ or voice type for which the exercise is intended (when appropriate). Students may feel free to include additional subsections and exercises.

Included in the assignment instructions is this suggestion:

> One important aspect of teaching voice is identifying an element of faulty production, and then quickly selecting (or creating!) an appropriate vocalise or exercise to remedy the problem. Remember that one exercise may address multiple technical areas, and that an exercise that works well for one singer may not work at all for another! (This is why it is beneficial to have numerous exercises at your disposal.) Writing and selecting vocalises may seem daunting at first, but it becomes easier over time with practice. Be creative![357]

3. Sample repertoire for students of various ages, skill levels, and voice types.

For each of the following, students should list one suitable piece they could assign:

- A thirteen-year-old female who is beginning voice lessons for the first time. She has studied piano and violin for a number of years, and reads music well. She has sung in numerous community and school choirs. She has sung first or second soprano in all of these ensembles, and has a strong head voice, but a relatively weak middle voice.

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[357] Rachel Wood, "MUSC 338 Applied Voice Pedagogy" (Course syllabus, University of Wisconsin-Whitewater, Whitewater, WI, Spring, 2016).

- A forty-five-year-old female who sings alto in her church choir. She approaches you for lessons because she wants to become more confident in her singing and music-reading abilities. She has never studied music formally, and has only been in the choir for a few months. She sometimes has difficulty pitch-matching, but is slowly improving with practice.
- A seventeen year-old male (baritone) who has studied voice for several years, and is considering auditioning for university music programs.
- A sixteen-year-old female with no formal musical training, but has sung in her high school choir for the past two years. She has limited music-reading skills, but has a fairly good ear and learns music easily by rote. She is primarily interested in popular styles of music and musical theater. She is a self-professed "belter," and has no interest in "classical" music.
- A ten-year-old male beginning voice lessons for the first time. He sings in the local children's choir (an auditioned choir) where they regularly integrate musicianship skills (sight-reading and some theory) into rehearsals. He has an excellent ear and is VERY keen.

For each piece, students must include the title, composer's name and dates, vocal range and available keys, and publisher and/or anthology where the piece can be located.

4. Miscellaneous resources

This section might include sources concerning lesson preparation, ideas for studio policies, information about organizations (such as NATS), voice teacher ethics, etc.

Final Project

1. Topic Proposal: The topic proposal should briefly outline the thesis and content of the paper. It should include an explanation of the chosen topic, and address the questions the student will answer in the paper. This need not be extensive, although ideally students will have done a significant amount of research by the time they submit their proposals. Proposals should not exceed one (1) written page in length. Students are required to include a preliminary Turabian-style bibliography of at least five (5) sources which they have consulted. Papers should draw from a variety of sources, and bibliographies should include at least one book and one journal article.
2. Written Component: The written paper should be between 6 – 8 pages in length, double spaced, not including the title page, bibliography, appendices, etc. Students are required to use a standard font (Times New Roman, Arial, etc.) 12-pt font with a one inch margin. Students may select any topic related to voice pedagogy that is of interest to them. Students are encouraged to consult the course syllabus and *Journal of Singing* for topic ideas. Students are free to submit potential topic ideas to the instructor as they develop, and are required to submit a draft for review no later than two weeks before the paper deadline.

   Students are required to use the standard reference for music-related projects, *A Manual for Writers of Term Papers, Theses, and Dissertations (8th Edition)* by Kate L. Turabian.[358] Students should consult this source for citations, bibliography, title page and overall format.

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[358] Kate L. Turabian, *A Manual for Writers of Research Papers, Theses, and Dissertations,* 8th ed. (Downers Grove, IL: University Of Chicago Press, 2013).

For this project, students are required to cite a minimum of five sources. (Students may cite course textbooks and use them as a starting point for research, but they will not count towards the five sources.) Students may wish to begin their research with the NATS (National Association of Teachers of Singing) *Journal of Singing*. As the journal dates back to the 1960s (formerly called the *NATS Journal* and the *NATS Bulletin*) and contains articles on virtually every topic related to singing, students may begin by selecting articles of interest to them, and consulting the sources the authors have listed in their bibliographies.

For many students, this assignment may represent one of the first major research papers they will complete at the university level. Therefore, voice pedagogy research methods, academic writing, citation, paper style, and formatting should be explained and discussed in greater detail in class meetings.

3. Oral Presentation: Students will present their research in class during the final week(s) of the semester. Students should be given guidance how to deliver an academic presentation, and also be reminded that their presentations should extend beyond simply reciting their papers word for word. Students are encouraged to include visual aids and other media, if possible. Presentations should be between 15-20 minutes long, allowing time for questions and discussion. Students may elect to use PowerPoint or Prezi for their presentations. Students should prepare a one-page handout for their colleagues to be included in the Resource Portfolios.

Sample Grading Procedures (Single-term course with a teaching component)

The student's grade shall be calculated as follows:

Assignment	**Weight**	**Letter Grade**	**Percentage**
Tests (3 X 10%)	30%	A	(93-100)
Student Teaching Lesson Journals (2 + 6) Teaching Observation In-class Teaching	25%	A-	(90-92)
		B+	(87-89)
		B	(83-86)
		B-	(80-82)
Research Project Topic Proposal (10%) Written Component (50%) Oral Presentation (40%)	20%	C+	(77-79)
		C	(73-76)
		C-	(70-72)
		D+	(67-69)
Resource Binders	10%	D	(63-66)
Final Exam	15%	D-	(60-62)
Total	**100%**	F	(0-59)

Other Suggested Activities

Depending upon the number of course assignments, instructors may wish to expand the lesson journal assignment to include lesson observations of faculty lessons and studio classes. Students should aim to observe a variety of teachers and students of varying ages and gender. Reflections of these lessons should follow the same format as the lesson journals (please see Student Teaching and Journal Entries assignment) and include a significant amount of detailed information. Instructors may also wish to adopt an online forum for discussion and reflection of weekly readings and lessons.

Chapter 9: REFLECTIONS AND CONCLUSION

Reflections

While creating this syllabus and handbook, I had the unique opportunity to instruct undergraduate voice pedagogy at two different postsecondary institutions within the span of five years. While originally created for the Indiana University Jacobs School of Music, I have now adapted the class for my current position at another institution. Here, the majority of voice majors are completing Music Education degrees with a Choral Emphasis, and so, naturally, I have made several revisions. This has presented a wonderful opportunity to consider how the curriculum may be adapted for different instructional settings and student populations.

Most of my current students will embark upon their teaching practica in the schools within a year of completing the class, so incorporating practice teaching into the course curriculum was necessary and expected. I therefore made significant revisions to the course structure.

Where I had once assigned a fourth unit test, I instead added a "Resource Binder" project. The details of this assignment are outlined in the previous chapter, but the overall intent of the project was to help the students create a portfolio that would be of immediate use to them in their classroom and studio teaching. My hope is that it provides them with something they can take with them into their teaching studios and classrooms.

By adding a teaching component, I necessarily had to make decisions regarding which units and sub-modules to remove and rearrange. I therefore compressed the first three units, and removed several sub-modules from the fourth unit. In the unit on resonance and registration, for example, I pared down lectures on soundwaves and

resonance, and simplified the analysis component of the course. In the fourth unit, I removed the lectures about voice classification and *Fächer*, and replaced them with more substantial content about pedagogical approaches, selecting appropriate vocalises and repertoire, and added entire classes dedicated to child and adolescent vocal development.

Supervising Student Teaching

In order for students to gain meaningful teaching experience, they began meeting with their own students fairly early on in the semester. For some, this was perhaps much earlier than they would have liked to begin teaching. Nonetheless, they worked consistently throughout the term with their own students, and when I observed their teaching first in a private setting, and a second time in a class meeting, they made considerable progress.

As it turned out, I felt that the student teaching observations were one of the most valuable components of the course, and in future incarnations of the class, I will expand this assignment, and increase the number of supervised lessons. (Relatively small class sizes at my current institution allow for this type of one-on-one instruction.)

Observing student teaching gave me substantially greater insight into student comprehension and progress than any assignment or test. These sessions also revealed areas where I need to revisit and revise course content. Basic concepts that I had taken for granted, such as comprehension of male/female vocal ranges, were revealed as an area of some confusion for certain students. Some students required more guidance with respect to repertoire instruction. Still others had a firm understanding of course concepts, and simply needed encouragement and positive reinforcement. All of the students demonstrated significant progress and personal growth, and, happily, they often surprised

me with their ingenuity and creativity in their teaching. The students enthusiastically confirmed that the supervised lessons and feedback were very valuable learning experiences. While I recognize that a student teaching component will not be appropriate or possible within every instructional setting, I was very pleased overall with this addition to the class.

Avenues for Future Research

As stated at the outset of the document, there currently exists a vast wealth of voice pedagogy literature, and given the current rate of voice science research and publication, one can only assume that this body of literature will continue to grow. However, I still see a need for a textbook that is specifically tailored for undergraduate instruction. That is to say, I believe that middle ground may be found between the types of introductory texts used in vocal methods courses, and the highly discipline-specific voice science publications. I envision an undergraduate voice pedagogy textbook or course pack with suggested activities, explorations, and assignments embedded within the content of the text.

Of course, given the current climate in higher education, with postsecondary institutions increasingly offering online or blended content classes (a combination of web-based online learning, and traditional classroom instruction), it is worth considering how undergraduate voice pedagogy courses might work within this type of model. Lecture content, including PowerPoint presentations, pre-recorded lecture content and audiovisual resources can easily be made available to students online through course management systems, freeing up class time for discussion and detailed explanation of concepts, as well as increased application and practice teaching. Online discussion

forums, embedded voice analysis tools, and video recorded or skype lessons and "meetings" could all work well within this format.

Undoubtedly, the increasingly "tech-savvy" millennial generation of students will continue to shape and inform education practices. The most recent publication by Scott McCoy and Inside View Press is an excellent example of this: *Your Voice: The Basics*[359] is an abridged version of *Your Voice: An Inside View*, which is available **exclusively** as an electronic textbook. It contains much of the text of the original publication, but made much more "user friendly" with images, videos, animations, and multimedia examples embedded directly within the text. Students can download the text to iOS and OS-X devices, and view multimedia content as they read.[360]

Concluding Remarks

Voice pedagogy instruction is an important component of any undergraduate vocal performance or education degree. Students completing performance degrees who do not intend to pursue education may eventually end up teaching voice in one form or another, whether through an independent studio, performing arts school, or at the university level. To this end, knowledge of the structure and function of the vocal instrument, various approaches to vocal instruction, and practical advice concerning lesson structure and repertoire selection will serve these students in their graduate studies and professional careers.

Similarly, education students entering the teaching world must understand vocal function in order to properly model healthful vocal behavior, to diagnose and correct vocal problems in their students' singing, and to preserve their own singing and speaking

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[359] Scott McCoy, *Your Voice: The Basics* (Columbus, OH: Inside View Press, 2015), E-textbook.
[360] Ibid.

voices in the classroom setting. It is necessary for choral and general music teachers to be proficient in technical instruction and assigning repertoire for students of varying ages.

For all students, knowledge of basic vocal function and science, and methodologies for diagnosing and correcting vocal faults will be beneficial both during their college studies and beyond. As students must eventually become, in a sense, their *own* voice teachers, faculty and students must make the most of this precious time in undergraduate programs in order to establish healthful vocal practices and to foster student independence. The more knowledge a student possesses about the vocal instrument, the more readily they will be able to recognize and diagnose problems in their own singing long after they have completed their degree program. Voice pedagogy classes, in conjunction with applied voice lessons, can help achieve this end.

Finally, the undergraduate voice pedagogy class establishes a foundation on which future learning may occur. This will allow students to understand and digest the ever-expanding body of knowledge of voice science, adopt new teaching methodologies, and will, ideally, inspire them to continually explore and hone their craft for a lifetime of singing, learning, and teaching.

APPENDIX A: SAMPLE COURSE OUTLINES (ONE TERM)

Voice Pedagogy course with a student teaching component:

Week	Topic	Assignments	Reading
1	Introduction; Critical Listening		McCoy: Chapter 1 (1-15) Doscher: Introduction (xii-xix)
	Anatomy, Posture, and Alignment		McCoy: Chapter 6 (76-79) Doscher: Chapter 4 (69-84)
	Anatomy, Posture, and Alignment, continued		
2	Respiratory Anatomy		McCoy: Chapter 7 (80-88, 92-96, 99-100) Doscher: Chapter 1 (1-17)
	Respiratory Anatomy and Physiology		McCoy: Chapter 7 (97-98) Doscher: Chapter 1 (18-29)
	Respiratory Physiology, continued		
3	Approaches to Breath Management		McCoy: Chapter 7 (88-92) Miller: Chapter 2 (20-29)
	Teaching Breathing and Correcting Faults; Critical Listening		McKinney: Chapter 4 (46-64)
	Test 1: Posture, Alignment and Respiration		
4	Laryngeal Anatomy	**Submit student information**	McCoy: Chapter 8 (102-104, 107-112, 118-121) Doscher: Chapter 2 (30-53)
	Laryngeal Anatomy, continued		
	Phonation		McCoy: Chapter 9 (104-107, 112-118, 121-126) Doscher: Chapter 3 (58-68)
5	Phonation, continued	**Two (own)**	

		lesson journals due	
	Teaching Phonation, Onset, and Correcting Faults; Critical Listening		McKinney: Chapter 5 (76-92) Miller: Chapter 1 (1-19)
	Phonation Review		
6	**Test 2: Laryngeal Anatomy and Phonation**		
	The Nature of Sound		McCoy: Chapter 2 (16-25) Doscher: Chapter 5 (85-105)
	Resonance		McCoy: Chapter 3 (26-37) Doscher: Chapter 6 (106-132)
7	Resonance, continued		McCoy: Chapter 4 (38-52) Doscher: Chapter 7 (133-170)
	The Source/Filter Theory of Voice Production and Vowel Formation		
	Voice Analysis		McCoy: Chapter 5 (53-75)
8	Registration	**Final Project Topic Proposal due**	McCoy: Chapter 6 (143-157) Doscher: Chapter 8 (171-195) McCoy: Chapter 6 (143-148)
	Registration Pedagogy		
	Teaching Resonance/Registration and Correcting Faults; Critical listening		McKinney: Chapter 8 (129-142)
9	Resonance and Registration Review		
	Test 3: Resonation and registration		
	Coordination: Unifying the Vocal Process		Ware: Chapter 10 (178-188) Doscher: Chapter 9 (211-213) Boytim: Chapter 15 (64-74)
10	Vibrancy	**Student lesson observations (arranged)**	Miller: Chapter 14 (182-196) Doscher: Chapter 8 (198-210)

	Teaching Voice: Pedagogical Approaches		Miller: Chapter 16 (205-217) Ware: Chapter 13 (249-264)
	Assigning and Developing Effective Vocalises		Miller: Chapter 6 -8 (79-114 – reference only) Boytim: Chapter 9 (34-37)
11	Selecting Repertoire		Boytim: Chapters 10-12 (38-51)
	Teaching Voice Across the Lifespan: Infancy to Adolescence		Ware: Chapter 13 (264-270) Phillips: Chapter 4 (69-89)
	Teaching Voice Across the Lifespan: Adults and Seniors		Boytim: Chapter 19 (92-100)
12	In-Class Teaching and Discussion	**Submit draft of final papers**	
	In-Class Teaching and Discussion		
	In-Class Teaching and Discussion		
13	Studio Teaching and Ethics		Boytim: Chapters 2-8 (4-29)
	Teaching Musical Theater and Contemporary Commercial Music		Selected readings from the *Journal of Singing*
	Vocal Health		McCoy: Chapter 9 (127-142) Doscher: Appendices I and II (214-258)
14	Student Final Project Presentations	**Final Papers due**	
	Student Final Project Presentations		
	Student Final Project Presentations		
15	Critical Listening and Adjudication		
	Critical listening and Adjudication		
	Exam Review	**Resource Binders due in class**	
16	Final Exam	**Final Exam in class or take-home**	

Voice Pedagogy course without a student teaching component:

Week	Topic	Assignments	Reading
1	Introduction; Critical Listening		McCoy: Chapter 1 (1-15) Doscher: Introduction (xii-xix)
	Anatomy, Posture, and Alignment		McCoy: Chapter 6 (76-79) Doscher: Chapter 4 (69-84)
	Anatomy, Posture, and Alignment, continued		
2	Respiratory Anatomy		McCoy: Chapter 7 (80-88, 92-96, 99-100) Doscher: Chapter 1 (1-17)
	Respiratory Anatomy and Physiology		McCoy: Chapter 7 (97-98) Doscher: Chapter 1 (18-29)
	Respiratory Physiology, continued		
3	Approaches to Breath Management	**Lesson Observation Plans due**	McCoy: Chapter 7 (88-92) Miller: Chapter 2 (20-29)
	Teaching Breathing and Correcting Faults; Critical Listening		McKinney: Chapter 4 (46-64)
	Test 1: Posture, Alignment and Respiration		
4	Laryngeal Anatomy		McCoy: Chapter 8 (102-104, 107-112, 118-121) Doscher: Chapter 2 (30-53)
	Laryngeal Anatomy, continued		
	Phonation		McCoy: Chapter 9 (104-107, 112-118, 121-126) Doscher: Chapter 3 (58-68)
5	Phonation, continued		
	Teaching Phonation, Onset, and Correcting Faults; Critical Listening		McKinney: Chapter 5 (76-92)

			Miller: Chapter 1 (1-19)
	Phonation Review		
6	**Test 2: Laryngeal Anatomy and Phonation**		
	The Nature of Sound		McCoy: Chapter 2 (16-25) Doscher: Chapter 5 (85-105)
	Resonance		McCoy: Chapter 3 (26-37) Doscher: Chapter 6 (106-132)
7	Resonance, continued		McCoy: Chapter 4 (38-52) Doscher: Chapter 7 (133-170)
	The Source/Filter Theory of Voice Production and Vowel Formation		
	Voice Analysis		McCoy: Chapter 5 (53-75)
8	Registration	**Final Project Topic Proposal due**	McCoy: Chapter 6 (143-157) Doscher: Chapter 8 (171-195) McCoy: Chapter 6 (143-148)
	Registration Pedagogy		
	Teaching Resonance/Registration and Correcting Faults; Critical listening		McKinney: Chapter 8 (129-142)
9	Resonance and Registration Review		
	Test 3: Resonation and registration		
	Coordination: Unifying the Vocal Process		Ware: Chapter 10 (178-188) Doscher: Chapter 9 (211-213)
10	Vibrancy	**Lesson Logs and Observations due**	Miller: Chapter 14 (182-196) Doscher: Chapter 8 (198-210)
	Voice Classification and *Fach*; Female *Fächer*		Ware: Chapter 10 (188-193)
	Male *Fächer*		
11	Teaching Voice: Pedagogical Approaches		Miller: Chapter 16 (205-217) Ware: Chapter 13

			(249-264)
	Assigning Effective Vocalises		Miller: Chapter 6-8 (79-114 – reference only)
	Selecting Repertoire		
12	Teaching Voice Across the Lifespan: Infancy to Adolescence	**Submit draft of final papers**	Ware: Chapter 13 (264-270) Phillips: Chapter 4 (69-89)
	Teaching Voice Across the Lifespan: Adults and Seniors		Selected readings from the *Journal of Singing*
	Test 4: Teaching Voice		
13	Studio Teaching and Ethics		
	Teaching Musical Theater and Contemporary Commercial Music		Selected readings from the *Journal of Singing*
	Vocal Health		McCoy: Chapter 9 (127-142) Doscher: Appendices I and II (214-258)
14	Student Final Project Presentations	**Final Papers due**	
	Student Final Project Presentations		
	Student Final Project Presentations		
15	Critical Listening and Adjudication		
	Critical listening and Adjudication		
	Exam Review		
16	Final Exam	**Final Exam in class or take-home**	

APPENDIX B: SAMPLE COURSE OUTLINE OF TOPICS (TWO TERMS)

Voice Pedagogy I

Week	Topic
1	• Introduction • Critical Listening
2	• Posture and Alignment • Movement Modalities
3	• Respiratory Anatomy • Respiratory Physiology
4	• Breathing for Singing • Approaches to Breath Management
5	• Laryngeal Anatomy • Laryngeal Physiology
6	• Onset and Offset • Modes of Phonation
7	• Nature of Sound • Introduction to Resonance
8	• Vocal Tract Resonance • Source-Filter Theory
9	• Vowel Formation and Modification • Voice Analysis
10	• Registration • Registration Pedagogy
11	• Vibrancy • Unifying the Vocal Process
12	• Articulatory and Auditory Anatomy • Vocal Health
13	• Student Presentations
14	• Student Presentations
15	• Student Presentations

Voice Pedagogy II

Week	Topic
1	• Introduction
2	• Survey of Pedagogical Approaches
3	• Survey of Pedagogical Approaches, continued
4	• Technical Instruction and Vocal Coordination
5	• Selecting Repertoire
6	• Teaching Across the Lifespan: Children, Adolescents, and Adults • Using Technology in the Studio and School
7	• Contemporary Commercial Music Pedagogy • Voice Classification Systems
8	• In-class teaching
9	• In-class teaching
10	• In-class teaching
11	• Building a Studio • Studio Ethics
12	• Adjudication • Critical Listening
13	• Student Presentations
14	• Student Presentations
15	• Student Presentations

Bibliography

Appelman, D. Ralph. *The Science of Vocal Pedagogy: Theory and Application*. Reprint ed. Bloomington, IN: Indiana University Press, 1986.

Bastian Medical Media. "Laryngopedia." Last modified 2016. Accessed July 13, 2016. http://laryngopedia.com/.

Bernstein, Leonard. *Musical Phonology.* Vol. 1, *The Unanswered Question: Six Talks at Harvard by Leonard Bernstein*. DVD. Directed by Clark Santee. 1973; Boston: Kultur Video, 2013.

Bond, Mary. *The New Rules of Posture: How to Sit, Stand, and Move in the Modern World*. Rochester, VT: Healing Arts Press, 2007.

Boytim, Joan Frey. *The Private Voice Studio Handbook: A Practical Guide to All Aspects of Teaching*. Milwaukee, WI: Hal Leonard Publishing Corporation, 2003.

Bozeman, Kenneth. "A Case for Voice Science in the Voice Studio." *Journal of Singing* 63, no. 3 (January 2007): 265-270.

_____. *Practical Vocal Acoustics: Pedagogic Applications for Teachers and Singers.* Hillsdale, NY: Pendragon Press, 2013.

Burnett, Theresa. "Respiration Review." Class lecture, Voice Disorders from Indiana University, Bloomington, IN, September 3, 2010.

Caldwell, Robert and Joan Wall. *The Human Voice*. DVD. Redmond, WA: Caldwell Publishing Company, 2001, 2002.

_____. *The Singer's Voice: Breath*. Videocassette. Dallas, TX: Pst...Inc., 1991.

_____. *The Singer's Voice: A Fiberoptic View of the Vocal Folds*. Videocassette. Dallas, TX: Pst...Inc., 1992.

_____. *The Singer's Voice: Vocal Folds*. Videocassette. Dallas, TX: Pst...Inc., 1992.

_____. *The Singer's Voice: Resonance*. Videocassette. Dallas, TX: Pst...Inc., 1994.

Callaghan, Jean, and Pat Wilson. *How to Sing and See - Singing Pedagogy in the Digital Era*. Surry Hills, Australia: Cantare Systems Pty Ltd, 2004.

Carman, Judith E. *Yoga for Singing: a Developmental Tool for Technique and Performance*. New York: Oxford University Press, 2012.

Cleveland, Thomas. “A Voice Pedagogy Course Syllabus.” *The NATS Journal* 48, no. 3 (January 1992): 33, 46.

Coffin, Berton. *Coffin's Sounds of Singing: Principles and Applications of Vocal Techniques with Chromatic Vowel Chart*. 2nd ed. Metuchen, NJ: Scarecrow Press, 1987.

Concone, Giuseppe. *School of Sight-Singing*. Edited by B. Lütgen. New York: G. Schirmer, Inc., 1986.

Cowgill, Jennifer Griffith. “Breathing for Singers: A Comparative Analysis of Body Types and Breathing Tendencies.” *Journal of Singing* 66, no. 2 (November/December 2009): 141-147.

Davies, D. Garfield, and Anthony F. Jahn. *Care of the Professional Voice: a Guide to Voice Management for Singers, Actors and Professional Voice Users*. 2 ed. New York: Routledge, 2004.

DeLoach, Dionne Bateman. “An Investigation in the Teaching of Vocal Health, Recovery and Rehabilitation in Vocal Pedagogy Courses at Selected Public Institutions.” D.M.A. diss., University of Mississippi, 2000.

Doscher, Barbara M. *The Functional Unity of the Singing Voice*. 2nd ed. Lanham, MD: The Scarecrow Press, Inc., 1994.

Edwin, Robert. “Belt is Legit.” *Journal of Singing* 64, no. 2 (November/December 2007): 213-215.

Garcia II, Manuel. *A Complete Treatise on the Art of Singing.* The editions of 1847 and 1872 edited and translated by Donald V. Paschke. New York: Da Capo Press, 1975. Quoted in Scott McCoy, *Your Voice: An Inside View.* 2nd ed. Delaware, OH: Inside View Press, 2012.

Granqvist, Svante. *MADDE* (Version 3.0.0.2 for Windows). Tolvan Data, 2000-2011. Compiled 10/8/2010.

Gray, Henry, T. Pickering Pick, and Robert Howden. *Gray's Anatomy: the Unabridged Running Press Edition of the American Classic*. Unabridged ed. Philadelphia: Running Press, 1974.

Greschner, Debra. “Bookshelf: Books by Richard Miller.” *Journal of Singing* 63, no. 3 (January/February 2007): 349-352.

_____. “Bookshelf: Kenneth W. Bozeman, *Practical Vocal Acoustics: Pedagogic Applications for Teachers and Singers*.” *Journal of Singing* 70, no. 5 (May/June 2014): 621-623.

Hal Leonard Corporation. “Joan Frey Boytim Complete Publications.” 2010. Accessed March 15, 2016. http://www.halleonard.com/bin/PromoVocalBoytimpubs.pdf.

Hanna, Thomas. *Somatics: Reawakening the Mind's Control of Movement, Flexibility, and Health*. Cambridge, MA: Da Capo Press, 2004.

Hefele, Anna-Maria. “Polyphonic Overtone Singing – Anna-Maria Hefele.” Posted September 30, 2014. Accessed December 29, 2015. https://www.youtube.com/watch?v=vC9Qh709gas.

Hines, Jerome. *Great Singers on Great Singing*. New York: Limelight Editions, 2004.

Hoch, Matthew. *A Dictionary for the Modern Singer (Dictionaries for the Modern Musician)*. Lanham, MD: Rowman & Littlefield Publishers, 2014.

Howell, Ian. “A Spectrogram Primer for Singers.” NEC Vocal Pedagogy. January 26, 2014. Accessed May 3, 2016. http://vocped.ianhowell.net/a-spectrogram-primer-for-singers/.

Indiana University Jacobs School of Music, ed. *Jacobs School of Music Bulletin 2015-2015*. Bloomington, IN: Indiana University Jacobs School of Music, 2015. Accessed May 2, 2016. http://bulletins.iu.edu/iub/music/2015-2016/music-pdf.pdf.

Kiesgen, Paul. “How Richard Miller Changed the Way We Think about Singing.” *Journal of Singing* 63, no. 3 (January/February 2007): 261-264.

Kloiber, Rudolf, Wulf Konold, and Robert Maschka. *Handbuch der Oper*. 13th ed. München: Deutscher Taschenbuch Verlag, 2011.

Malde, Melissa, Mary Jean Allen, and Kurt-Alexander Zeller. *What Every Singer Needs to Know About the Body*. San Diego, CA: Plural Publishing, Inc., 2009.

Marchesi, Mathilde. *Vocal Method*. New York: G. Schirmer, Inc., 1986.

McCoy, Scott. “Formantology.” *Journal of Singing* 70, no. 1 (September/October 2013): 43-48.

_____. *Your Voice: An Inside View*. Princeton, NJ: Inside View Press, 2004.

_____. *Your Voice: An Inside View.* 2nd ed. Delaware, OH: Inside View Press, 2012.

_____. “Your Voice: An Inside View.” Inside View Press. Accessed March 1, 2016. http://www.voiceinsideview.com/In_view.html.

_____. *Your Voice: The Basics*. Delaware, OH: Inside View Press, 2015. E-textbook.

McGinnis, Pearl Yeadon. *The Opera Singer's Career Guide: Understanding the European Fach System*. Edited by Marith McGinnis Willis. Lanham, MD: Scarecrow Press, 2010.

McKinney, James C. *The Diagnosis and Correction of Vocal Faults.* Nashville, TN: Genevox Music Group, 1994.

Miller, Donald. *Resonance in Singing*. Princeton: Inside View Press, 2008.

Miller, Donald, Garyth Nair, Harm K. Shutte, and Richard Horne. *VoceVista* (Version 1.0.0). 2008.

Miller, Richard. *Securing Baritone, Bass-Baritone, and Bass Voices*. New York: Oxford University Press, 2008.

_____. *Solutions for Singers: Tools for Performers and Teachers*. New York: Oxford University Press, 2004.

_____. *The Structure of Singing: System and Art in Vocal Technique*. Belmont, CA: Schirmer, 1996.

_____. *Training Soprano Voices*. New York: Oxford University Press, 2000.

_____. *Training Tenor Voices*. New York: Schirmer Books, 1993.

National Association of Schools of Music, ed. *National Association of Schools of Music Handbook 2015-2016*. Reston, VA: National Association of Schools of Music, 2015. Accessed May 2, 2016. http://nasm.arts-accredit.org/site/docs/Handbook/NASM_HANDBOOK_2015-16.pdf.

National Center for Voice and Speech. "How Humans Control Pitch." National Center for Voice and Speech, The University of Utah. Accessed May 11, 2016. http://www.ncvs.org/ncvs/tutorials/voiceprod/tutorial/cover.html.

National Center for Voice and Speech. "Voice Changes Throughout Life." National Center for Voice and Speech, The University of Utah. Accessed May 20, 2016. http://ncvs.org/e-learning/tutorials/lifespan.html.

National Music Centre. "Spectrograms: Instruments and Timbre." Posted April 28, 2015. Accessed May 3, 2016. https://www.youtube.com/watch?v=P9Kozlt0tTg.

Nelson, Samuel H., and Elizabeth Blades-Zeller. *Singing with Your Whole Self: the Feldenkrais Method and Voice*. Lanham, MD: Scarecrow Press, 2002.

Oxford Wave Research, Ltd. *SpectrumView* (Version 1.2). 2011-2014.

Panofka, Heinrich. *Twenty-four Progressive Vocalises*. New York: G. Schirmer, 1900.

Park, Glen. *A New Approach to the Alexander Technique: Moving Toward a More Balanced Expression of the Whole Self*. Freedom, CA: Crossing Press, 1998.

Patton, Beverly. "Seven Ways to Practice a Song or Homage to Sergius Kagen." *Journal of Singing* 59, no. 2 (November/December 2002): 165-167.

Phillips, Kenneth H. *Teaching Kids to Sing*. New York: Cengage Learning, 1996.

Rodgers, Richard and Oscar Hammerstein II. "Getting To Know You," *The King and I*. New York: Williamson Music, Inc., 1951.

Sataloff, Robert Thayer. *Vocal Health and Pedagogy*. 2nd ed. San Diego, CA: Plural Publishing, 2006.

Seashore, Carl. *Psychology of Music*. New York: McGraw-Hill, 1938.

Seibold, Dominik. *Spectrogram Pro* (Version 3.0). 2011-1015.

Seikel, John A., Douglas W. King, and David G. Drumright. *Anatomy and Physiology for Speech, Language, and Hearing*. 4th ed. Clifton Park, NY: Delmar Cengage Learning, 2010.

Simonson, Donald. "On the Voice—Seeing Vocal Pedagogy in a New Light: What's New in Technology!" *Choral Journal* 44, no. 8 (March 2004): 37-42.

Sjoerdsma, Richard Dale. "Bookshelf: Barbara M. Doscher, *The Functional Unity of the Singing Voice*." *Journal of Singing* 45, no. 3 (January/February 1989): 48.

_____. "Letters to the Editor." *Journal of Singing* 67, no. 2 (November/December 2010): 127-129.

Thorpe, William, J., Jean Callaghan, Pat Wilson, Jan van Doorn, and Jonathon Crane. *Sing & See* (Version 1.5.8). Birkenhead, Auckland, NZ: Cantovation Technology, 2003-2015.

Thurman, Leon. "Boys' Changing Voices: What Do We Know Now?" *Choral Journal* 52, no. 9 (April 2012): 8-21.

University of Illinois at Urbana-Champaign Department of Speech and Hearing Science. "W. R. Zemlin Memorial Website." Accessed March 15, 2016. http://zemlin.shs.uiuc.edu/.

Vaccai, Nicola. *Practical Method of Italian Singing: for Soprano or Tenor.* Edited by John Glenn Paton. New York: G. Schirmer, Inc., 1975.

Velarde, Rachel. "Vocal Pedagogy at the End of the Twentieth Century: Revealing the Hidden Instrument." D.M.A. diss., Arizona State University, 2013.

Visible Body. "Products." Accessed May 20, 2016. http://www.visiblebody.com/index.html.

Walz, Ivy B. "Training the 21st Century Voice Teacher: An Overview and Curriculum Survey of the Undergraduate Experience." D.M.A. diss., University of Cincinnati, 2013.

Ware, Clifton. *Basics of Vocal Pedagogy: The Foundations and Process of Singing.* Boston: McGraw Hill, 1998.

Wellborn, Georgia Gail. "An Investigation of Vocal Pedagogy Instruction at Selected Private Liberal Arts Institutions." D.A. diss., University of Mississippi, 1999.

Wicklund, Karen. *Singing Voice Rehabilitation: a Guide for the Voice Teacher and Speech-Language Pathologist*. Clifton Park, NY: Cengage Learning, 2010.

Zemlin, Willard R. *Speech and Hearing Science: Anatomy and Physiology*. 4th ed. Boston: Pearson, 1998.

Van Houtte, Evelyne, Sofie Claeys, Floris Wuyts, and Kristiane Van Lierde. "Voice Disorders in Teachers: Occupational Risk Factors and Psycho-Emotional Factors." *Logopedics Phoniatrics Vocology* 37 (2012): 107-116.