Contents

Preface

This book is for anyone interested in voice, but it should have special appeal to those who study, teach, or take care of the vocal instrument. In preparing the material, I have tried to fulfill two objectives. The first is the usual attempt to bring more current knowledge into the classroom. But given the inevitable time lag in publication, a textbook can usually fill that need less adequately than conference proceedings or journal articles. A second objective is to lay down a set of scientific principles that apply to all aspects of voice production. The emphasis is on physical law rather than empirical observation. Relatively few data sets are included, but much effort has gone into defining terms, establishing causality, and relating physical processes of voice production to other physical processes, inside or outside of the human body.

Finding simplicity and structure in complex systems is the essence of modern science, whether we study cloud formations, ocean currents, leaves on trees, galaxies in the universe, protein molecules, or acoustic signals emerging from a quaking earth. At first glance there is often an apparent disarray. But when the fragments are lined up and analyzed, there is often more similarity than difference. It is this underlying similarity, the unifying elements of currently existing fragments of voice science and practice, that I have tried to assemble in this book entitled *Principles of Voice Production*.

Although the book is introductory in style, it is intended to be more than a brief overview of the field. Ideally, it is suited for the first semester of a two-semester sequence in voice science, speech-language pathology, vocal music, or theatre speech. In the second semester, this book would be supplemented with a more method-oriented book on voice disorders, singing, oration or drama. Written at a senior or first-year graduate level, the text is also suitable for practicing speech-language pathologists, singing teachers,

voice coaches, otolaryngologists, voice scientists, musical acousticians, and communication engineers dealing with voice transmission. Given the diversity of backgrounds among these professionals, however, the level of presentation cannot be ideal for everyone.

Some familiarity with introductory physics, at least at the high school level, is desirable. Whenever possible, I have tried to clarify concepts in three distinct ways: by wording and rewording, by formula, and by graphical illustration. Readers should be able to absorb the material in at least one of these three ways, with relatively little mathematical sophistication.

The first six chapters are formidable. They deal with the physical principles of air and body tissue in motion. They also deal with acoustic waves riding on an airstream. Once the physical principles of air, tissue, and wave motion are mastered, the more practical issues of voice control and voice care are addressed in the remainder of the book.

Beginning with Carl Seashore, the University of Iowa has enjoyed over half a century of interdisciplinary approaches to communication arts and sciences. Professionals at this institution have relied on their combined resources in basic science, medicine, engineering, theatre, and music. The enthusiasm for such approaches remains today. Graduate students in vocal performance and pedagogy, theatre arts, and vocology (a specialty in speech-language pathology to be described in the Introduction) enroll together for a first exposure to the mechanisms involved in voice and speech production. Otolaryngologists in residence and fellowship are exposed to similar materials. This system sets up many opportunities for subsequent cooperation in training, treatment, and care of the human voice. Under the auspices of the National Center for Voice and Speech, in which the University of Iowa plays a central role, this multidisciplinary approach is extended beyond the walls of a single institution. In particular, the Denver Center for the Performing Arts has become a staunch ally in voice research and its direct application to professional theatre.

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Two outstanding teaching assistants, Stephen Austin and Kenneth Tom, literally took over the course in my numerous absences. In some way it became their course, and I hope they will have a chance to improve on it in their own careers.

Ingo R. Titze