

**Artikulatorische und akustische Phonetik.** By HENNING REETZ. Trier: Wissenschaftlicher Verlag Trier, 1999. Pp. 200. Paper. ISBN 3884763377. € 23,50.

This book is designed as a university-level textbook for German-speaking students of phonetics who come from liberal arts backgrounds and are relatively weak in math and physics. While somewhat similar in coverage and tone to Peter Ladefoged's *Elements of acoustic phonetics* (2nd edn., Chicago: University of Chicago Press, 1996), it includes materials not in the *Elements* or most other books of this type, such as detailed information on the hearing mechanism. Reetz manages to make difficult material extremely accessible, clear, and even fun to go through and learn. It is easy to understand how he earned a teaching award in 2001.

A listing of main topics covered in the two main parts of the text, parts 2 and 3, provides a clear idea of what to expect from this volume. Part 2 explores sound waves, speed of sound, wave types, microphones, waveforms, frequency, wave length, amplitude, RMS amplitude, decibels, SPL, phase, resonance and damping, filtering and digitalization of acoustic signals, sampling rates, speech analysis and processing, Fourier transforms, spectra, harmonics, windowing, spectrogram reading, cepstra, LPC, and the mel, Bark and ERB pitch scales. R provides useful definitions of five different types of sounds: *Ton* 'tone', *Klang* 'complex signal', *Geräusch* 'sound', *Rauschen* 'noise', and *Knall* 'impulse'. English equivalents are given for each key term and usually their etymologies as well, a thoughtful touch for language-oriented readers.

The text abounds in apt analogies taken from everyday life, which are often accompanied by clear and frequently charming illustrations, such as the Katzenjammer Kids-type drawings used to explain the propagation of transverse and longitudinal waves (6, 9). Reference to the *Alphorn* (35) to illustrate tube acoustics adds a touch of local color from the author's home region.

Part 3 covers the anatomy, physiology and dynamics of the speech and hearing organs, the Bernoulli effect, interactions between the vocal folds and vocal tract, the evolution of human hearing, and various theories of how the hearing mechanism works, including some of the most recent findings in the field. Formants and the acoustic structure of individual sounds are also covered here. R describes with great clarity the problem of how a biological system with definite reaction and transmission speed limits can successfully perceive high frequencies (170).

The three appendices include background in basic physics (mass, weight and pressure; energy, power and intensity) for nonscience students, definitions of physical terms with English and sometimes Latin equivalents, and average formant and fundamental frequency values for men, women and children. There is an English and a German index of key concepts, a bibliography, and recommendations for further reading.

A few dozen typos were spotted, mostly superfluous stray verbs. These may be corrected in the newest edition (2003).

This book offers a rare treat for anyone who happens to like both German and phonetics. An English version should soon be available from Blackwell if it is not already. [Karen Steffen Chung, *National Taiwan University*.]