

BOOK REVIEWS

by

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Speech Synthesis. Technology for Disabled People.

Alistair D.N. Edwards. Baltimore: Paul H. Brookes, 1991, 157 pp. Illustrated.

by Jerome D. Schein, Ph.D., Professor Emeritus of Sensory Rehabilitation, New York University, and David Peikoff Chair in Deafness Studies, University of Alberta, Edmonton, Canada

The young engineer who wrote this book addresses two rehabilitation problems: a) providing a voice for those who have lost theirs; and, b) replacing visual displays with vocal outputs for those who cannot see. In surveying both paradigms, Edwards delves into both the pluses and minuses of technical solutions, and he peers into the future to assay directions these technologies may take.

Before tackling the specifics, Edwards provides two chapters on technical problems facing developers and users of synthesized speech. Despite the esoteric nature of some of the issues—phonetics, prosody, paralinguistics, computer-interface requirements, etc.—these chapters are easy to read, because the author has mastered the art of stating complex material (with which some of the readers may not be familiar) in simple terms they do know or can quickly master from brief definitions. Consider the following:

One approach to dealing with the problem of differing pronunciation of phonemes is to recognize that variations on the basic phonemes exist, which are known as *allophones*. They are not separate phonemes, because if one was substituted for the other in a word, that word would still be recognizable—it just might sound a little odd. As with phonemes, linguists disagree as to how many distinct allophones there are in the English language, but high-quality speech synthesizers have been developed on the basis of around sixty of them (p. 17).

That example typifies the text, making it accessible to readers who are not familiar with some of the technology involved in synthesizing speech.

Following his general discussions, Edwards focuses on some specific products. He describes and evaluates Equal-

izer, Light Talker, Touch Talker, Dolphin Hal, Frank Audiodata, and the Kurzweil Personal Reader. These all manage text: either text-to-speech or speech-to-text. In another chapter he describes techniques for dealing with graphics using programs like Outspoken and Soundtrack. These latter are critical for blind computer users. Edwards urges, on their behalf, that “adapted auditory interfaces must exploit sounds in a more imaginative manner” than they now do.

Peering into the future, Edwards looks to articulatory synthesis as a way of attaining better quality speech synthesis. He foresees a music manuscript processor that will supplant braille for blind composers. Finding faster means of inputting speech is another area that Edwards believes will bear fruit in the near future. He raises questions about reading machines in the ‘paperless offices’ of the future. Tailoring speech outputs to particular individuals so that their use of synthesized speech would not be noticeable appears to Edwards as a dream. Another dream: all computer interfaces will be based on multiple media, “just as human communication is.” Edwards cautions, however, that “It is the decisions which designers make when they are not thinking about the needs of disabled users which usually have the greatest effect on them” (p. 122).

Edwards is a considerate author with a generous publisher. While he writes from a British perspective, he consistently points to U.S. counterparts or, lacking those, provides adequate references to enable readers to find what they want in either country. The text is also well-indexed and contains several helpful appendices.

Do-It-Yourself Listening and Signaling Devices for People with Hearing Impairment. Revised Edition.

William Paschell. Wheaton, MD: Author (3717 May Street), 1991, 58 pp. Illustrated.

by Jerome D. Schein, Ph.D.

The author holds the Chair of Assistive Devices, Washington Area Group for the Hard of Hearing, and

Veterans Organization for the Hearing Impaired. His organizational experiences and his own hearing impairment have sensitized him to the range of this disability, from mild to deaf. Accordingly, his self-help manual concerns itself with a broad array of devices, not just those for persons with mild to moderate losses but also those for persons with severe to profound losses. In addition, Mr. Paschell lists equipment sources and accessible ELDERHOSTELS, advises on how to set up an assistive-device center, and essays about practical means of managing the daily problems facing persons with impaired hearing.

The text is clearly written, avoiding technical jargon in favor of simple directions that make it useful to persons without electronics backgrounds. The author acknowledges the feedback he has received from "our do-it-yourself authors," so this monograph should be accepted as a pretested product—something that is fairly rare among such publications. Rehabilitators can, then, recommend it to their clients with confidence that they will find it useful not only as a self-help guide to assistive devices, but also as bibliotherapy.

Visual Devices for Deaf and Hard of Hearing People: State-of-the-Art. Judith E. Harkins. GRI Monograph Series A, No. 3. Washington, DC: Gallaudet Research Institute, Gallaudet University, 1991, 49 pp. Illustrated. by Jerome D. Schein, Ph.D.

The author organizes the information about devices to aid visual communication for deaf and hard of hearing people around four areas: telecommunications, broadcast media, face-to-face, and environmental awareness. The contents of each section describe products, discuss applicable government policies, and present views of research and development at present and in the near future.

Leafing through the chapters, one is struck with the great progress made in the past quarter-century. No longer can one point to the irony of Alexander Graham Bell creating a giant economic barrier for deaf people as he attempted to develop a device to aid in their speech development. Adapted telephones (telephonic devices for the deaf or TDDs) now enable deaf persons to access the phone system, though there is still a distance to travel between here and quality.

Captioned television gives deaf people the opportunity to become 'couch potatoes'—a status formerly limited to those who could hear and see. One small omission in the text is any mention of the use of radio signals to transmit information in readable form, a technique whose feasibility was demonstrated nearly two decades ago.* If this pro-

cedure were revived, it would add substantially to the range of telecommunication for deaf persons.

Ways to facilitate proximal communication, such as devices to assist in lip-reading and those that convert speech to print, are being tested and refined. Their place in the future of communication for deaf persons is as yet not clear, since research often springs surprises. Of particular interest are approaches to speech-to-text conversion that do not require human mediation, as exemplified by *DragonDictate*. Such automatic translation opens intriguing vistas for the participation of a deaf person in meetings.

The use of lights and vibrators to signal changes in the environment have become numerous and varied. All of these developments have not reached the same stages of commercialization and consumer acceptability, but this monograph makes clear that further progress is a reasonable expectation for the days ahead.

The Gallaudet Research Institute is providing a significant service to the field by keeping it advised of advances in communication for deaf and hard of hearing people through the monograph series. Rehabilitators and educators should strive to keep informed about the Institute's numerous publications forthcoming in this area. Those fortunate enough to obtain the publication under review here will certainly be encouraged to seek out more like it.

Rehabilitation Engineering. Edited by R.V. Smith and J.H. Leslie, Jr. Boca Raton, FL: CRC Press, 1990, 548 pp. by Franklyn K. Coombs, Director, Rehabilitation Research and Development Unit, VA Medical Center, Decatur, GA

The CRC *Rehabilitation Engineering* text is not the typical reference book one would expect from CRC. It is, as are many "state of the art" reviews, a collection of papers by professionals well-known in their specialized area of clinical service delivery. Unlike other reference books, this text does not contain the usual collection of charts and tables of data to solve well-defined problems. Instead, what is available to the reader is a collection of ideas describing how certain general situations are addressed. From these ideas, the person seeking information about "assistive technology" may gain valuable insight on how best to approach his/her own specific situation.

The text illustrates a typical problem in this field, which is, how many clients (or patients) need these services? The

*J.D. Schein and R. Hamilton. *Impact 1980: Telecommunications for Deaf People*. Silver Spring, MD: National Association of the Deaf, 1980.

introduction in Chapter 2, on the “numbers game,” states (on page 15, last paragraph) that there are “about 400,000 people” (who use a wheelchair). However, the opening paragraph of Chapter 11 (page 195) states that there are “approximately 750,000 people” with disabilities that require the use of wheelchairs. This is almost a 100 percent difference in the “numbers game.” It is neither the fault of the authors nor the editors that there is no better definition of the magnitude of the problem, or the need of the users. This is a problem with which all professionals in the field of rehabilitation must grapple.

The text is divided into four major sections: MEDICAL, EVALUATION, SPECIAL APPLICATIONS, and DEVICE ASSESSMENT. The SPECIAL APPLICATIONS section is subdivided into six smaller categories of *Independent Living*, *Communication*, *Seating and Mobility*, *Vocational*, *Transportation*, and *Recreation*. These sections present a fair overview of the spectrum of clinical rehabilitation engineering.

There could have been better organization of the chapters and the organization of the book. Specifically, Chapter 17, entitled “Rehabilitation Engineering Clinic,” was placed under the *Recreation* category in SPECIAL APPLICATIONS. Considering that this is the theme of the text, one would have expected this to have a special place, or at least not be a subheading under *Recreation*. This was distressing because Chapter 17 was a very good review of the practice of clinical service delivery in rehabilitation engineering. In this line, Chapter 4, “Selection of Assistive Devices for Children,” was out of place in the MEDICAL section. It may have been better placed following Chapter 20, which discussed the needs of children. Similarly, Chapter 16, entitled “Rehabilitation Assessment/Practice Demographics of Worker Disability” in the Table of Contents, was placed under the *Recreation* category in SPECIAL APPLICATIONS. However, in the text, it was only “Demographics of Worker Disability.” This chapter may have been better placed after Chapter 2, which presented an overview of the disabled U.S. population.

The *Transportation* category consisted of one chapter of 118 pages in length. Considering that the other chapters presented an introduction or an overview of a specialty area, this chapter contained excessive detail. It may have been better served if had been shortened by the editors, with reference to other texts for detail of application. Much of this information may become outdated, which further supports the reduction in the numerous lists and forms.

Each of the chapters is worth reading by those in clinical practice, in spite of the criticism on organization. It

may also serve as an introductory text for students in several different disciplines, who may be new to the field and could use the broader picture presented. The text, in general, is above average, and should be a useful reference for those in clinical practice.

Life in the Community: Case Studies of Organizations

Supporting People with Disabilities. Edited by Steven J. Taylor, Robert Bogdan and Julie Ann Racino, Volume 1 in the Community Participation Series. Baltimore: Paul H. Brookes Publishing Co., 1991, 280 pp.

by Alexandra Enders, O.T.R., *The Montana University Affiliated Rural Institute on Disabilities, University of Montana, Missoula, MT*

The 15 very readable case studies which form the core of this book describe agencies and groups that are attempting to help people with developmental disabilities, including those with severe disabilities, to move into the community and become part of the community. Based on site visits conducted from 1985 to 1990, the pragmatic researchers document positive examples of community integration with a view toward identifying ideas, practices, and strategies that others can use to help people attain physical integration (e.g., community-based housing and coordinated support services), as well as social integration (becoming active participants in the community).

A reflection of the current state of the art, the emphasis is primarily on physical integration, and issues related to suitable housing situations; however, broader community integration issues are included, especially the challenges involved. Part 1 focuses on children with developmental disabilities and their families; Part 2 covers adults; and Part 3 puts community integration issues into the broader context of community and society.

The most interesting and broadly applicable parts of the book are the introductory chapter, section introductions, Preface, Foreword, and Conclusion. Here the authors and editors provide a framework and context for reviewing the case studies and for asking the right questions: they synthesize the characteristics of responsive organizations, and in Chapter 11, provide guidance for sustaining positive changes.

For people working in clearly defined areas such as assistive technology, this book provides a good overview of some of the real life struggles for integration facing people with disabilities in the community, and shows them where the technology fits in. This is a useful book for anyone interested in organizational analysis, especially in areas where human services are driven by social policies undergoing

rapid and profound changes. And for those working in community integration, it provides many thought-provoking examples of effective approaches to service, and the challenges that lie ahead.

Living with Low Vision: A Resource Guide for People with Sight Loss. Lexington, MA: Resources for Rehabilitation, 1990, 151 pp.

by William De l'Aune, Ph.D. and Bruce B. Blasch, Ph.D.,
Rehabilitation Research and Development Unit, VA Medical Center, Decatur, GA

The title promises and the book delivers an organized catalog of information about organizations and assistive devices that can assist individuals with impaired vision. Thoughtfully printed in 18 point bold type, the publication is organized into eleven chapters. Each chapter consists of introductory remarks about the topic, a listing of organizations capable of providing information or assistance, and an alphabetized register of relevant publications and/or assistive devices. Mailing addresses and prices are also included.

The topics covered by chapters are: Experiencing Vision Loss, Reading with Vision Loss, How to Keep Working with Vision Loss, High Tech Aids, Making Everyday Living Easier, Self-Help Groups, Services for Elders, Services for Children and Adolescents, Services for Veterans, Services for People with Vision Loss and Hearing Loss, and, Special Services and Products Listed by Eye Disease.

The major assumption underlying this book is that information in an accessible form will assist individuals in living with vision loss. This appears to be a very defensible point of view. Obvious efforts have been made to list some of the more obscure information about vision loss, while eliminating some of the complete and comprehensive sources. Because of this, there is a question if this is a professional presentation with errors of omission, or if it is a promotional piece for other materials from Resources

for Rehabilitation. Two glaring examples include the omission or mention of the Association for Education and Rehabilitation of the Blind and Visually Impaired (AER), and the limited information about the American Foundation for the Blind (AFB). AER is the international organization of professionals serving individuals with a visual impairment. This organization has chapters in every state and province in the U.S. and Canada. The AFB publishes the *Directory of Services for Blind and Visually Impaired Persons in the United States* (the 23rd edition of this publication may be viewed as a competing publication). Also, this foundation has many services and resources including a toll-free hotline providing information on visual impairment, regional offices, and national consultants.

The organization of the material that is included is well handled. The narratives are rudimentary but appropriate in scope if this is simply to be used as a directory. However, at times the reader may feel that it is a do-it-yourself proscription of low vision aids or, for example, after reading an eleven-line section dealing with the topic of "Experiencing Vision Loss," the reader can correctly surmise that some of the more subtle points may not have been covered.

Perhaps the greatest challenge presented to a resource guide such as this is less the content, but the context in which it will be used. Access to information, no matter how accurate or complete, is necessary but not sufficient to negotiate the complex problems of vision loss. *Living with Low Vision* is a tool that provides minimal direct information on the topics covered (in some cases a "laundry list"), and access to further information. If used for this purpose, it may be a useful addition to the bookshelf of professionals and consumers. If it is used as a source of content information, it is far less adequate. The publisher has accomplished his stated objectives of preparing a resource guide. It is the responsibility of the reader to recognize and respect the inevitable limitations on detail imposed by this success, and therefore determine its true value.