

Book Reviews

Marion E. Hersch and Michael A. Johnson, eds, *Assistive Technology for the Hearing-impaired, Deaf and Deafblind*. Berlin, Heidelberg, New York: Springer-Verlag, 2003 (XIX + 319 pages, hardcover). ISBN 1 85233 382 0

Every once in a while a book is published which you think should have been written years before. *Assistive Technology for the Hearing-impaired, Deaf and Deafblind* is such a book. It was written to fill in the gap in the range of textbooks available for electrical and technical engineers who want to study the developments and issues in the field of assistive technology. These include fundamental and physical engineering principles, but also design issues and human end-user aspects. This book covers these issues for people with hearing impairments.

The book is divided in 9 chapters, where the first one starts off with really basic, but essential information about the anatomy and physiology of hearing (impairment) and possible treatments. This chapter would also be very useful for students of phonetics.

The second chapter concerns the measurement of hearing and gives detailed information about the various tests that are used nowadays to track down possible hearing deficits. It also gives some technical insight into the way analogue and digital equipment that is used in audiometry functions.

The third chapter covers the hearing aids and the technological principles that underlie these apparatus. Various types of equipment are described, ranging from relatively old-fashioned hearing aid types such as the body-worn aid to recent developments such as cochlear implants and auditory brain-stem implant aids. All types of hearing aids are also placed in a historical perspective.

The fourth chapter describes the technology behind the induction-loop systems, that are available to deaf and hearing impaired students. The fifth chapter describes relatively new technologies that underlie infrared communication systems, which special attention for design issues and ergonomic problems.

Chapter six starts off with the topic of telephony, which may seem a rather odd topic to discuss in a textbook about AT for people with hearing impairments. However, after having explained the basic issues of telephony, the book then turns to discuss how the design can be enhanced to provide for more accessible equipment, such as text and video telephones. This way chapter six forms the linking chapter between the hard of hearing on the one hand, vs the deaf and deaf-blind end-users on the other hand, where the problems are of a totally different kind.

Alarm systems are viewed and discussed from different angles, such as electrical engineering and aspects of AT design, in chapter 7. In addition to the technological principles underlying design-for-all alarm systems, it is also explained why these existing alarm systems are almost always unsatisfactory or completely unusable for the deaf and hearing impaired end users. Suggestions for improvements and adaptations are given, which will make these devices usable for deaf and hard-of-hearing persons.

Chapter eight discusses the AT that was designed over the years for deaf students who have additional visual problems. In the first part of the chapter some insight is given in the definitions and demographic aspects of deaf-blindness, as well as the complex communication problem the deaf-blind have to deal with. The remainder of the chapter gives an overview of the devices that have been developed for the blind, but which may also be helpful for deaf-blind people, or systems that are basically designed for deaf people, but come in useful for deaf-blind persons. These devices range from very simple domestic appliances via low-tech systems to the latest blue tooth technology, and from systems designed for communication to alerting devices. The chapter ends giving suggestions for future research in this area and points to the fact that there is a considerable lack of devices for deaf-blind people compared to the number of systems that were designed for either deaf or blind people.

The final chapter 9 is a very important one. It describes the problems researchers and developers of new AT devices come across in the process of developing

and distributing a final product. The necessity of involving end users in various stages of the design and development cycle is clearly presented, including the fact that researchers have to be aware of the fact that they talk 'jargon', which is difficult to understand for laymen participating in evaluation experiments. Issues such as Deaf Culture, ethical issues and data protection legislation are also touched upon.

Each chapter concludes with a series of specific questions concerning the topics addressed, contains elaborate lists of references and suggestions for further reading; these cover benchmark publications that may date back for some decades (or occasionally even more) to references to recent publications. In addition, sometimes references to relevant web-sites are given, which are very valuable.

Although the book provides a state-of-the-art overview of recent technologies, developments go so fast that the newest are not included in the book. An example of this is the use of avatar technology for generating synthetic sign language as was done in the Visicast project. Interested readers may want to have a look at the project's web-site: <http://www.visicast.co.uk>.

In summary it must be said that this book indeed covers a wide range of topics and may be of interest to an equally wide range of students. Although this fact could result in the book being superficial, this is fortunately never the case. The topics are dealt with in depth, but hardly anywhere to such an extent that they are impossible to follow for a reader with a different (non-technological) background. The authors have succeeded in writing a book which is likely to become the standard textbook for students in the field of AT but also to students from another discipline who wish to know more about AT for the hearing-impaired, deaf and deaf-blind.

For the authors I have the following suggestion: Since new developments in the AT field succeed one another in a rapid pace, please consider publishing updates to the book every few years. They could even be made accessible through the Internet for people to download.

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Simeon Keates and John Clarkson, *Countering Design Exclusion: An Introduction to Exclusive Design*. Berlin, Heidelberg, New York: Springer-Verlag, 2003 (X + 227 pages, softcover). ISBN 1 85233 699 4

By reading this article, you are part of the INCLUDED POPULATION of T&D. You can handle the physical properties of the magazine format like turning the pages, you have the visual skills to read written information and you have the cognitive capability to value the content for possible future application. T&D does not EXCLUDE you in fulfilling the need to be informed about developments within your area of interest. Now try to imagine how many others are not part of the included population of T&D.

By being part of the included population we are automatically part of the more extended 'ideal population' of T&D. That is the maximum number of people who could possibly use an 'idealised product' that satisfies our needs to be informed about T&D developments. The idealised product in this case can be defined as: 'an information provider on T&D subjects' and includes also for example audible or Braille information.

Having set these populations, it is possible to enumerate the ratio between them, resulting in a measure of the inclusive merit of T&D magazine: how inclusive is T&D compared to its theoretical maximum?

Are you still with me? Anyhow, when you are a designer, a company policy maker or a product researcher, you should be interested in the inclusive merit of a product and a dozen more instruments to facilitate inclusive design and as such you belong to the 'target population' of the book: *Countering design exclusion*.

'Countering design exclusion' aims on raising awareness by companies and their designers of the importance of making products that adequately take into account the needs of the full range of users: inclusive design. The book promotes the use of inclusive design practices without focussing on one single best approach. A huge variety of methods and instruments is presented and consistently positioned within the iterative design cycle, all supporting the message with respect to inclusive design: avoid ignorance, make choices informed. Strong point is the wide spread use of examples concerning products that we all are familiar with. Weak point at the same time is the lack of examples where the authors finally present their 7-level approach. Examples to illustrate the success of the approach should have underlined its strengths and have been the best promotion for adoption.

The book starts very promising with a chapter on failures and successes with inclusive design. It's en-

couraging to know for instance, that it is not only you who can only use the on/off switch of the remote control of the VCR. Important lesson to learn from these examples is that inclusive design is good design from the perspective of sale: inclusive design appeared to be very commercially successful.

From there on the book can be divided into three sections. The first section is presenting relevant background information to prepare the reader for the every now and then complex matters that are dealt with in sections two and three. Section two requires some perseverance from the reader. This is where the above mentioned methods and instruments are explained. It is sometimes complex and theoretical material to work through and there is some imbalance in the way the information is presented. This varies from very general to rather detailed explanations of the different instruments. Finally, in the third section all the information comes together within a strategy to counter design exclusion and more specifically within a so-called 7-level approach for inclusive design.

Section one, chapters 2 to 6, deals with a number of aspects playing a role when discussing the possibilities and the impact of inclusive design. The first thing to mention is the importance of legislation and regulation. USA and UK both have legislation in this area and appear to be far ahead in adopting inclusive design practices compared to e.g. other countries in Europe. Next challenging statement is: designers design for themselves. As a consequence, most products do not take into account the needs of persons from outside the designer population, resulting in a significant exclusion. Simply think about the fast growing group of elderly. Another remarkable issue in section one of the book is the clear explanation about understanding the concept of inclusive design. This has to do with design exclusion and also with product acceptability. For details, read the book. In the last chapter of section one, the reader is being prepared for section two: gather the data to make choices informed. It is explained how to manage information in the inclusive design practice. The approach discussed is called the knowledge loop for inclusive design and should result, according to the

authors, in successful inclusive design.

Section two, chapters 7 to 10, presents a number of instruments that support the inclusive design practice. Inclusive design is in its nature user-centred design. 'Knowing the user' is therefore the well chosen title of the chapter presenting a wide variety of data-gathering methods and information sources on user characteristics. User models are presented and user wants and capabilities detailed. Capabilities are then matched with capabilities required by design solutions, resulting in methods for measuring design exclusion. Even methods to quantify design exclusion in absolute figures are given. Attention is also paid to the importance of assessment in the design practice and to the role of the user in those assessments.

Section three presents the 7-level approach, an instrument with high potential for countering design exclusion according to the authors. The approach sets a 7 step framework and each step represents an aim. The first is: identify the complete problem to be solved. The way to achieve this aim can vary according to the expertise and knowledge of the designer. The recommendation is to choose from the variety of instruments given in the book. Likewise for the other 6 steps. The 7-level approach is illustrated presenting a case study on the design of an information-kiosk for UK post offices. Missed opportunity here is the missing evidence of the success of the approach. The case study as such is well documented, but the final result is not assessed with the methods given in section two. Nevertheless, 'countering design exclusion' provides designers with accessible and useful guidance to inclusive design practice. Designers, please recommend this book to the other half of the target population, your management. Let them make an informed choice: inclusive design is not an option, it will be a business requirement in the near future.

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