

Dark Ages interesting, although a student without a scientific background (a primary audience for this text) would probably lack the context to appreciate them and might consider them distracting. Looking at the stated goals of the series, while the chapter successfully introduced “the fundamental concepts of technology,” the introduction was not deep enough, or relevant enough to daily life, to provide a “meaningful experience with technology.” While mention was made of “the scientific and cultural settings within which engineers work, and the impacts (positive and negative) of technology on individuals and society,” there was no substantial discussion of these issues.

The next chapter is a lengthy and somewhat morbid study of electrical safety that is never satisfactorily connected to the remainder of the text. Following this chapter, the book progresses smoothly toward an explanation of television and radio. Chapters on the building blocks of signals, resonance, an engineers’s view of hearing, digital signals, and signal transmission provide the necessary foundation for understanding radio, television, broadcasting, and narrowcasting.

While it builds on the same fundamentals, a chapter on medical ultrasound imaging seems out of place in this progression. This chapter, however, most completely fulfills the books stated goals. It explains the technology, shows the setting in which military applications (SONAR) moved into the civilian sector, and discusses the complex questions that determine when and why ultrasound should be used.

All the chapters can be commended for excellent review questions that highlight the key points of each chapter. The selection of problems after each chapter, most of which pose moral, ethical, and societal questions about new technologies, are likely to spark fascinating classroom discussions. The more extended questions are also very interesting in and of themselves.

In the hands of a skilled teacher sharing the goals expressed in the

introduction, this book could be a very useful tool. It is an extremely readable and entertaining explanation of some of the most common technologies in today’s world. A talented discussion leader would find the problems after each chapter effective at starting meaningful discussions. The teacher would need to pull the scattered facts from the text together and provide a coherent framework for them. Most importantly, he or she would have to go further than the text in connecting these facts to the world at large. In summary, there is much to praise in this book. However, without a skilled facilitator, *The Age of Electronic Messages* falls short of its goals by teaching much more about the machines that generate the messages than about the age they affect.

**Designing & Writing Online Documentation: Help Files To Hypertext. William K. Horton (John Wiley & Sons, 1990, 364 pp.)**

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Anyone who tries to keep up with the diverse literatures that inform the design of computer-human dialogs and other forms of online information will appreciate this accessible, readable synthesis and the advice that it offers. Horton spans a wide range of research, practice, and theory, culling out implications for design and making them accessible to the writer or developer.

We subjected the book to two kinds of reviews: an “armchair” review that evaluated both the depth of the literature coverage and the extent to which the implications that Horton offers are supported by the studies he cites; and an “in situ” review that assessed how well the book serves in an on-the-job, down-to-brass-tacks design process. Our conclusion: this is a useful, well-done book, not just for writers and writing students, but for anyone with an interest in online information. In other words, if you

read *SIGCHI Bulletin*, you might find this book handy. We certainly did.

The book is aimed at anyone who designs online information, defined broadly enough to include human-computer dialogs, error messages, and computer bulletin boards as well as help files and manuals. Horton lists the following readers who might benefit from it: technical writers, programmers and product developers, teachers and students, researchers in human factors and user-interface design. The book reinforces the importance of treating all sources of online information—error and status messages, commands, menus, help files, online books, databases, and so on—together, keeping them coherent and complementary. Horton also emphasized the benefits of teamwork in the design of online information, since it is a place where the expertise of writers, designers, and developers necessarily come together. Both observations—the unitary quality of online information and the importance of teamwork—are pertinent, especially when designing information for large or diverse systems.

To get the most from the book, you need to know that the information is not parceled out as neatly as the TOC might suggest. Horton does describe the book’s organization in the preface, but readers who skip around (as we did) can be misled about what to expect, especially from Chapters 9-12. Chapters 1 and 2 are introductions to online documentation, including a consideration of what kinds of information are candidates for online treatment. Chapters 3-8 cover basic principles of online information, including (chapter by chapter) the design of human-computer dialogs, access to online information, organization and display of online documents, the use of media other than text (pictures, sounds, and motion), and basic principles of writing for online presentation. Chapters 9-12 cover specific types of online information, ranging from messages, commands, and menus through help systems and online books to computer bulletin boards, full-text databases, and hypertext. Chapter 13 is a look into the crystal ball.

It is a mistake to think that you can simply dip into the chapter on, say, help facilities and find everything that the book has to say about them. The strategy of putting the principles into the early chapters and the applications into later chapters means that relevant information is distributed throughout the book. You'll need to read (at a minimum) chapters 4, 5, 6, and 8 in order to get a full picture of the research that is pertinent to designing the kinds of information described in chapters 9, 10, 11, and 12. If you're interested in help systems specifically, you'll need to read the early chapters, including 3, as well as all of 10, 11, and 12 in order to get complete coverage.

The good news is, reading even that many chapters is not a strain. Horton's easy-going prose, extensive use of illustrations and examples, appealing page layout, and lucid integration of research findings make the book approachable and even enjoyable. The biggest distraction is the poor proofreading; there are enough surface errors of various kinds to mar an otherwise readable and useful text. You'll need to read attentively; Horton's style is refreshingly spare, but if you miss a roadmark like a transitional device, you'll not have it repeated.

Horton does a good job of surveying and synthesizing the diverse literatures that can inform the design of online documentation. A sampling of the areas covered includes technological developments (e.g., optical disks and videodisks); text design; online help; computer-human interaction; health aspects of computers; computer use in education; quality; database query formats; and knowledge-based systems. Although we could not find any references to material later than 1988, there was already an extensive body of relevant literature to that time and a compendium of it is a much-needed contribution. While we all feel compelled to keep up with the latest developments in our various fields, a collection of this kind can keep us from forgetting what has already been investigated and help us focus on how to apply or go beyond that. A review of some 10 studies referenced in the book indicates that Horton's summa-

ries are accurate, if a bit short, and the implications that he draws both sensible and practical.

There are times, though, when the elliptical nature of the summaries combine with the imperatives in the guidelines to create ambiguity. In some places, for example, the material appears contradictory. On page 137, the author says that tests have shown that both novice and expert users prefer overlapping windows. On the following page, the guideline says, "...use overlapping windows for expert users, but question their use for novices" (138). Similarly, Horton suggests that online help should be designed "to aid the user with small, specific actions" and that a designer should use computer tutorials or online books to "provide the big picture" (254). But a few pages later, he notes that in a help system that he helped to develop, a call to the context-sensitive help system opens the online reference manual to an appropriate section (257). Those statements are not really contradictory, of course; one can certainly structure an online manual so that small, tightly-focused sections are available for access through a context-sensitive help system. You might not realize that, however, unless you already had some experience with online information or with the studies that Horton cites as support.

Any book of guidelines suffers from essentially the same problem: guidelines are not useful unless they are applied sensitively to particular contexts. How do you know how to apply guidelines? In general, you use your own judgment. But if you are short on experience, which might be why you bought this book in the first place, you might not trust your judgment. The book has two saving graces in this regard. First, the guidelines themselves were culled carefully from the research and Horton's discussion often includes pointers for how to contextualize them. Second, because he cites so many sources, you can examine what the original articles had to say as a check on your judgment. The authors of the cited material will often be considerably more explicit about why they recommend one practice over

another or how they made decisions in similar circumstances. That is certainly true, for example, of the papers on the Andrew help system that Horton cites. Students, especially, but also writers and designers who are uncertain about how to apply certain guidelines in their particular contexts are well advised to take advantage of the book's rich pointers to a more extensive literature.

Further strengths: the book is useful for those who are working with a mix of hardcopy and online information, as most writers are. Many of the guidelines are equally applicable to hardcopy documents and Chapter 2, with its thumbnail sketch of documents that are candidates for online treatments and those best left to hardcopy, is especially helpful. We were also impressed by Horton's emphasis on users and the general usability of online information. His consideration of factors that can influence the use of online documents (such as overall response time) is pertinent for negotiating the kinds of tradeoffs that are typically encountered (e.g., whether to add more information even if it slows down access).

We would like to have seen more information in this book on retrofitting online information—adapting or redesigning existing material as opposed to designing from scratch. Many writers and system developers, including us, do not get the luxury of designing from the ground up. Evolution paths often must be created to get from one kind of online information to another, better kind. This complex, confusing process is one that designers increasingly encounter as online information becomes more common. Horton is right to suggest that writers should not feel compelled to accept "arbitrary limits" imposed by the delivery system with which they are working (102), but at the same time, most of us face pragmatic limitations on what changes can be made to our delivery systems in particular time frames and must walk an elaborate matrix of tradeoffs when making decisions for, say, a given release. Chapter 4, for instance, provides information that allows a designer to assess the strengths and

weaknesses of a given online documentation system, but the same designer might reasonably be perplexed at chapter's end about where to go from there.

However, our caveats and "wish list" of further information do not prevent us from feeling that Horton's book is a useful, approachable text that should be on the shelf of anyone who designs online information. In addition to what you can gain from it, if you employ contractors or parttimers from time to time, the book will be an invaluable resource for helping them learn or review the principles of online design quickly.

Typically, a good book points the way to other books, both real and prospective, and we left this one hoping for new work that addresses the organizational and managerial aspects of online information projects. Some of the most compelling problems for designers of online documents have little to do with screen displays, color,

modularity, or the specifics of a delivery system. They concern the need for new reporting procedures, collaborative activities, review and testing processes, version control, and training, among others. Horton's book is a good step toward understanding online information, but we hope that it is only the start.

## NEW BOOKS

**Computerization and Controversy:  
Value Conflicts and Social Choices**  
Charles Dunlop and Rob Kling  
(Editors)

This anthology introduces some of the major social controversies about the computerization of society. Through a collection of over 50 articles, it highlights some of the key value conflicts and social choices. It helps readers such as students, professionals, managers, and laymen to recognize the social processes that drive computerization, and explains the

paradoxes and ironies of computerization.

The authors include Paul Attewell, Carl Barus, Wendell Berry, James Beninger, John Bennett, Alan Borning, Niels Bjorn-Anderson, Chris Bullen, Roger Clarke, Peter Denning, Pelle Ehn, Edward Feigenbaum, Linda Garcia, Suzanne Iacono, Jon Jacky, Rob Kling, Kenneth Kraemer, John Ladd, Kenneth Laudon, Pamela McCorduck, David Parnas, Judith Perrolle, James Rule, John Sculley, John Shattuck, Brian Smith, Clifford Stoll, Lindsay Van Gelder, Fred Weingarten, Joseph Weizenbaum, and Terry Winograd.

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