Quality Technical Information: Paving the Way for Usable Print and Web Interface Design

Theo Mandel, Ph.D.
Founder and Principal Consultant
Interface Design and Development
9862 East Doubletree Ranch Road
Scottsdale, AZ 85258-5638
theomandel@interface-design.net
www.interface-design.net

"A gem of a book that distills most of the key concepts of interface and information design"

Abstract

Principles of information style and design have been around for years. Look at the shelf life of Strunk and White's classic The Elements of Style, published in 1959 and still a bestseller. Producing Quality Technical Information is a gem of a book, whose precise, bullet-style list of seven requirements and a checklist is now even more insightful in the fast-paced world of online information and the World-Wide Web. As a writer, I'm amazed how the IBM authors crystallized the essence of good information design in less than 100 pages. This commentary describes how the book's seven qualities and thirty individual requirements can easily and usefully be extrapolated to address key issues of interface design and usability for today's professional designers and developers.

I.7.5 Document analysis—*human factors*

Keyword*s: quality, technical information, usability, interface, Web, design, user*

Introduction

Wow! You don't often get to read an almost 20-year-old book that is as relevant (or even more) today as it was when it was originally published. Like a fine wine, this book has improved with age and remains insightful and enjoyable reading. In early 2001, Bob Waite asked me to review the book *Producing Quality Technical Information* (IBM, 1983) and write a commentary on its appropriateness in today's technical environment and its lasting importance to the profession. The commentary wasn't due until the end of the year, so naturally I procrastinated until later in the year. In this case, that was a good thing. By the time I began to read the book and write my commentary, I had recently signed a contract with my publisher, John Wiley and Sons, to write the second edition of my 1997 book, *The Elements of User Interface Design*. I was getting myself into the appropriate frame of mind to focus on the basic fundamentals of designing user-oriented and user-

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friendly software and Web interfaces when I picked up this book and started to read. Boy, am I glad I did! *Producing Quality Technical Information* is a gem of a book that distills most of the key concepts of interface and information design that are critically important today in any type of information design, but especially Web interface and interaction design.

My commentary focuses on how this book preceded and inspired much of the work in information design and also how the book's concepts and examples are important in hard-copy, online, and Web-based information design and development. Although the book was written well before the advent of the World-Wide Web, I'll show that the ideas and examples described here pinpoint some of the most important issues in developing effective and usable Web interfaces.

How Quality is Defined - Quality by Requirements and Example

Quality is one of the universal goals of product and information designers as well as developers. However, most development teams never really define quality. If it is defined, it is usually something so vague or ill defined that it cannot actually be measured. As a software interface design and usability consultant and educator, part of my mission is to help clients and students define quality and usability for their development processes and for their products. If a product's quality and/or usability goals are not explicitly defined up front, you can't tell if a product is complete and if it meets successful criteria at the end of the development cycle.

One reason this book is a classic is that it did not attempt to address quality from a theoretical or textbook perspective. The IBM authors defined quality through the use of examples. They first define the requirements that make up quality, and then, using simple and concise examples, they definitively illustrate the improper (and then the proper) way to create information that meets these requirements. The book's simple yet elegant definition of quality is, "Technical information that meets all the requirements is quality information." This definition, backed up by the rest of the book (including a checklist), helps the reader learn, by example, that quality can be something effective, measurable, and repeatable. That is, indeed, a major accomplishment.

Design, Develop, and Review from the User's Perspective

In "About This Book," the authors introduce the concept of reviewing technical information for quality. I believe a key point they discuss is that of the user's perspective. Reviewers are asked to "…pretend that you are the intended reader; judge from that *reader's point of view.*" This is critical, not only from the reviewer's perspective, but from the designer's and developer's perspective. In fact, the first requirement, task-orientation, details the key concepts of user- and task-oriented design: "When we give readers how-to information in a task-oriented way, we help them do their job. Essentially, then, task-oriented writing is writing in terms of how the reader does the task."

This concept is so critical to today's software and Web interface design that I think this is the most important contribution the book makes for readers today. I'd like to expand on the concept and how it applies to product and information design today.

Most poorly designed products suffer from a lack of awareness and focus on users: who they are, what they want, how they work, and how they really use computers. A focus on users—developing ***with*** users and not ***for*** them—has become central to quality software and Web design today. Figure 1 (Mandel, 1997) shows the role of users in an iterative interface design process. Users should be involved in all phases of the design and development process.

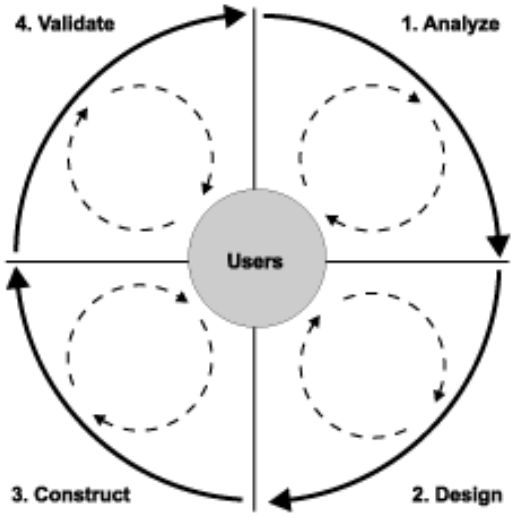

Figure 1. An iterative user interface design and development process. (Mandel, 1997)

Understanding users and what they do is a major part of phase one, the analysis phase. Before any system can be designed and built, you must first define the problems that customers or users want solved, and at the same time you must understand their jobs and how they approach them. Learn about users' capabilities and the tasks they perform. Watch and learn from actual users of programs, not supervisors or managers. Notice the hardware and software constraints of their current computer systems and constantly remind yourself not to restrict your designs to what users currently can do with the system. Your solution must satisfy not only the current needs of users, but also their future needs.

Users should be involved in the second phase of the process, the design phase, as a part of the design team and as representatives of the intended user population. The third phase, construction, involves users by iteratively allowing them to review and evaluate product prototypes as they are developed. The final phase, validation, involves users as participants in usability evaluations of products and interfaces. Usability evaluations are critical to the iterative development process. It's the way to get prototypes and product in the hands of actual users to see if and how they use the product. The goal of usability evaluations is to measure user behavior, performance, and satisfaction. If usability evaluations are used in the development process, they are often included near the end of the development cycle. However, this is much too late to implement changes based on the usability evaluations. Even if changes are made, there is no way to tell if the revised product is any more usable unless it is tested again. The impact to schedule and cost usually preclude this additional testing. Usability evaluations should be done early and often!

Function vs. Usability: Developers vs. Designers

Unintentionally, the book highlights a key difference between developers and interface/information designers. The appendix lists particular roles of information reviewers. These roles include writer (lead writer, peer writer, manager), product developer, technical editor, graphic editor, and copy editor. Additionally, human factors engineers are also mentioned as possible reviewers. When all 29 of the individual quality requirements are listed, writers and editors are listed as reviewers for all requirements. Product developers are listed as reviewers for only four of the thirty quality requirements. This taxonomy inadvertently highlights the different focus of developers and interface/information designers. It is a difference of function versus usability. Developers traditionally focus on the quality of their code, as measured by functional specifications and quality assurance. Interface and information designers focus on the usability of the product, the interface, the navigation and interaction, as well as both hardcopy and online documentation. Designers measure success via user satisfaction, and quantitative usability measurements such as task time, task completion, errors, and assists.

Evolving from Technical Writing to Interface Design and Usability

Reading this book reminds me of the evolution of my own career. When it was written, I had just joined IBM as an Information Usability Engineer in Austin, Texas. With a Ph.D. in cognitive psychology, and having completed an internship at IBM in Boulder, Colorado, I jumped right into the newly established world of technical information design and usability.

In the early 1980s we tried to create "quality" technical documentation for hardware and software products that were very complicated and rich in function. There was little product competition, and customers purchased products based on the functions they provided, with little thought to the product's learnability or ease of use. "User-friendly" products hadn't evolved yet, so the best we could do was to write and review product documentation to help users trying to do their tasks using function-oriented products. As described earlier, the book's appendix (titled "Who Checks Which Quality Requirements?") shows the importance of the writer and reviewer in developing information that people can actually use. Over the past twenty years, writing technical documentation has evolved and blossomed into a very important and focused field that spearheads today's focus on designing and developing products (all types of products, including hardware, software, Websites, and Web applications). Today, profession-

als focus on interface design, contextual design, information architecture, human factors, and usability.

I would like to describe how the book's specific quality requirements were precursors to today's Golden Rules of interface design and perhaps inspired the development of important principles for today's online information design and usability.

Task Orientation

Task orientation defines how to develop information based on how to use a product rather than functionality (how a product works). This is a fundamental tenet of user-centered design: Don't explain how something works; explain how I can use it!

The key concept is a focus on the user's point of view. This may seem like a simplistic approach or no more than common sense, but unfortunately the concept is still overlooked in much of today's product design and development. As a consultant, my livelihood is based on the reality that many executives and developers don't really focus on how people work or the jobs and tasks they perform. Rather, they focus on describing a product's functionality. The focus on the user's point of view reinforces the user interface models (Figure 2) defined in the early 1990s by IBM (1992) and further discussed by Mandel (1997). The user's conceptual model is internal and is based on his or her experiences, skills, and beliefs. The developer's model, on the other hand, is explicit and can be more formally defined. A product functionality point of view focuses on the hardware and software system, platform, tools, and specifications. This has little to do with the types of users and how they use a product. The designer's model is one of an architect or intermediary, representing the perspective of the

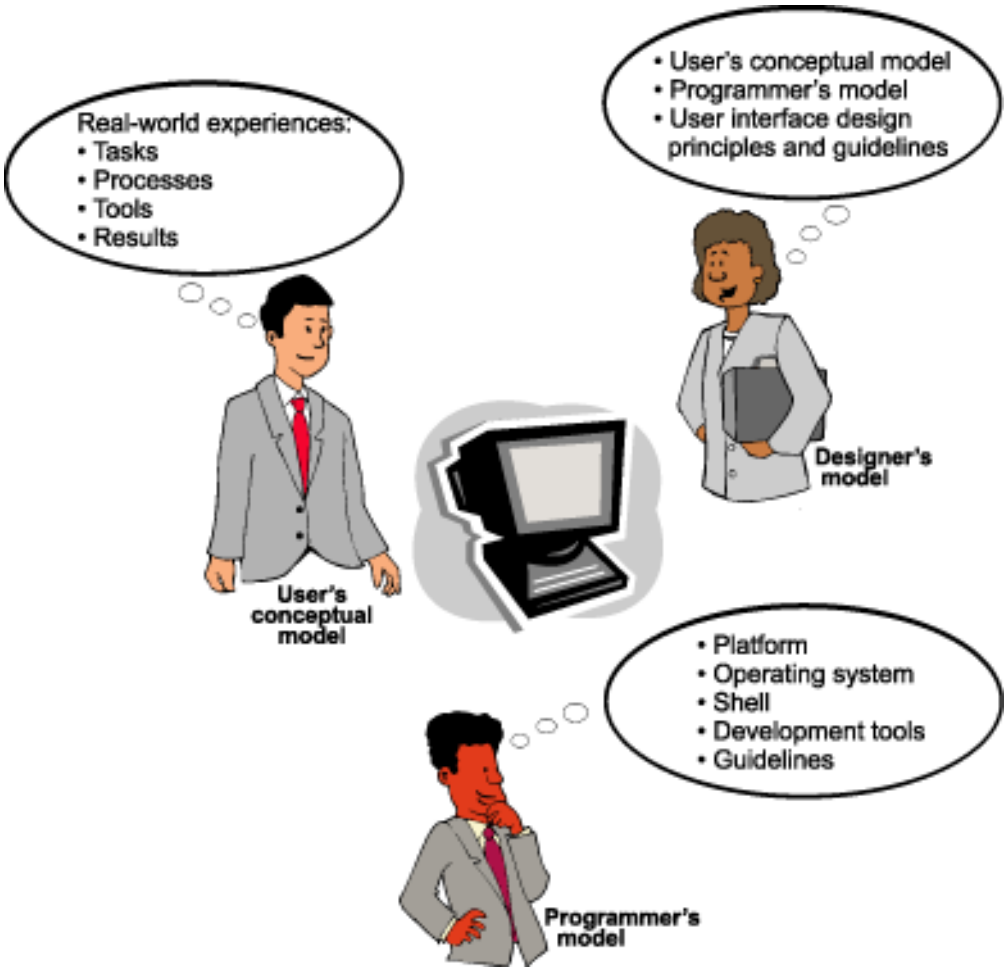

Figure 2: User interface models. (IBM, 1992)

users, who works with developers to ensure that, while the product will be functionally complete, it must also be usable and enjoyable to users.

Task relevance and sequence are also an important part of a focus on the user. This is especially important in today's Web design environment. Site viewers should not be forced to wade through irrelevant information on a Website while they try to perform what they believe are simple tasks. Task sequencing involves defining product interaction and navigation. This is critical for complicated processes, such as wizards and forms, which are now commonplace in applications and Websites. The book also brings up the idea of learning as a task in itself: "Sometimes the 'use' of information is to l*earn a concept* before doing the task that the learning serves. In this case, order of presentation should facilitate learning." The in-depth focus on this area has been called contextual design (Beyer and Holtzblatt, 1997). Contextual design focuses on users and the context in which they work. This approach introduces a customer-centered approach to business by gathering customer data from the field and using it to drive the definition of a product or process, while supporting the needs of teams and their organizations.

Finally, this section describes how information titles and headings should be designed to reveal the task. They provide a roadmap to aid the user in navigation. This is an important design technique I call *progressive disclosure*. Progressive disclosure helps users understand where they are, where they've been, and where they can go, without even having to go there! Good information design in an application or Website involves presenting the appropriate level of detail while allowing and enabling users to dig deeper when they want to, where they want to go, and how they want the information. This encourages exploration, and an interface's predictability builds the users' confidence in their ability to navigate and use the information.

Organization

Organization and consistency are cornerstones of our field and has blossomed into a specialty area of its own. Information architecture (IA) focuses on designing usable and useful information based on content and tasks. IA is the blueprint of a Website upon which all other aspects are built: form, function, navigation, interface, interaction, metaphor, and visual design. The book points out important organizational goals such as predictability and exploration. These concepts are critical for information and Website navigation and overall structure. The book also points out the importance of gestalt, discussing how to reveal "how the pieces fit together."

In addition to again highlighting progressive disclosure, the book's authors also describe one of the most common errors in Web design: overemphasizing less important elements of an interface. This is what I call the "Las Vegas effect." Not all information is created equal! Many Websites don't focus on emphasizing the main points and subordinating secondary information. Designers must allow easy identification and access to the most important information. It is hard to believe these words were written twenty years ago, but they are even more important for today's Web interface designer: "We should also avoid overemphasizing what is not so important. When we give unwarranted emphasis to secondary information through placement, wordiness, detail, or repetition, we make that information seem more important than it is."

This reminds me of a favorite quote: "Things should be made as simple as possible—but no simpler" (Albert Einstein).

Entry Points

Entry points address how to define information to enable workflow and to aid in finding information. As we all know, searching for information on the Web can be an exasperating and time-consuming experience, even for the most computer- and Web-literate users.

Defining entry points also addresses progressive disclosure. A well-designed table of contents or navigation scheme allows users to "intuit" the information contained at a deeper level without actually having to navigate to that particular site or page. How do you do that? Well, one way is by making links meaningful ("Readers can find topics quickly in an index when the entries anticipate the phrases they think of.") At the same time, however, screen real estate is a precious commodity; therefore the book's

instruction to use succinct headings and links is, again, a critical piece of usable Web design.

The book also encourages the use of multiple entry points, again, something very important in Web design. One thing we've learned from user-centered design is that there is no "average" user. We must design navigation, organization, and entry points for all types of users and all types of navigation and search strategies. This includes creating simple, guided navigation for casual and novice users as well as fast-path techniques for more experienced users.

The book encourages highlighting key terms and defining new concepts and terminology using interface elements such as glossaries, examples, illustrations, and definitions. Readability and understandability are also improved by chunking information with succinct and meaningful headings and captions.

Clarity

Presenting clear and concise information has become more important over the years as users have less and less time and patience for poorly written information and poorly designed Websites. The phrase "user-friendly" information, popular when this book was written, has evolved into one of creating an enjoyable "user experience." How we speak to our readers and viewers, the terminology we use, and the tone of the information must be appropriate for users and their tasks. As the authors point out, "We clarify our transactions with readers when we clearly and consistently define each new term we do use."

Consider this quote: "Present material so readers can understand it the first time." Does that apply to Web interfaces or what! If viewers don't "get the point" from a Website in just a few seconds, with one click of the back button, they are "outta there!" On the Web, homepage design is critical to capturing the viewer's attention and interest immediately (if not sooner!). The homepage must be designed to be a "billboard" for the site. It must display--in an instant--the name, brand, product, and message for the viewer. And, like a billboard, it must draw the user into the application in a seamless fashion. It needs to encourage them to explore further.

The authors encourage using examples, scenarios, and narratives to illustrate points. Web design enhances this ability by effective use of appropriate multimedia, such as audio, animation, and video.

Visual Communication

The concept of visual communication is to attract and motivate the reader with graphics. This was an important concept twenty years ago, but now ever so critical with the advent of selling products and services on the Web. We now live in a visual age. With the increased pressure to turn users into customers and customers into return customers, a popular debate has evolved in the Web design community, one of usability versus graphic design. The question is, what's the correct approach: "Cool = Usable" or "Usable = Cool?" On one extreme, creative designers and marketers (the "Cool = Usable" school) use Macromedia Flash technology to create Websites that are glorious displays of visual media, but are totally unusable for most users. On the other hand, Jakob Nielsen, well known Web usability "guru," expounds on the poor usability of the Web, and uses almost no graphics on his own Website (www.useit.com). Nielsen is the loudest and most visible proponent of the "Usable = Cool" school. As an interface design and usability consultant, author, and educator, my job is to help designers find the appropriate balance point along the usability-cool continuum, one that blends aesthetics, branding, and user experience with an understandable and navigable site. One important thing to remember: being visual doesn't mean short-circuiting usability.

In addition to the importance of graphic aspects of information, the book also points out the importance of visual elements of using text: "Also, attend to the way you present the text itself; paragraph length, highlighting, headings, matrices, tables, lists, typestyle, and spacing, leading, and white space generally." Many Web designers get so wrapped up in their focus on graphics and aesthetics that they overlook simple and traditional guidelines for presenting text information.

The book also highlights the use of appropriate media as well as the use of multiple media to inform

and teach: "Some readers are word-oriented; others are picture-oriented. Showing as well as telling is important to ensure that both kinds of readers get the point. For example, graphic symbols, tabs, and color can be powerful organizers. Simple textual devices like highlighting and short paragraphs are visual techniques that help readers find information." With the worldwide impact of the Web and the available technology, it is now really possible to inform, instruct, and train people using multimedia, within ever-decreasing bandwidth constraints.

Accuracy

The easy access to information on the Web and the impossibility of really knowing the source of that information make this requirement an absolute necessity for all forms of communication today. Technical communication, by its very nature, is often detailed and complex, but it must be accurate.

Trust is an important part of the user experience that both individuals and corporations try to foster, especially after the tragic events of September 11, 2001 in New York City, Washington, DC, and western Pennsylvania. Viewers need to know that the information they receive is accurate, timely, and appropriate, regardless of how they found the information. A large part of Web development is maintaining the accuracy and timeliness of information on an ongoing basis. A Website is like a garden; you must pull weeds and replace plants and flowers on a timely basis or the garden will not attract and interest its viewers. Your product's credibility rests on its accuracy.

Completeness

The final quality addresses today's craving for information, both printed and online. How often have you searched for information on a topic or product, only to be frustrated when you found some information, but not all of the information you wanted? Completeness means providing enough information for users and their tasks, yet not providing extraneous information. Completeness becomes even more important as we utilize more user-centric and task-oriented approaches to information design. Information designers and developers must determine how much--and how little--information users want and need for a particular topic or task. As our field matures, this requirement becomes more of a science than an art, as it has been in the past.

Quality Requirements Checklist

The final offering in the book is a checklist containing all of the individual requirements discussed in the book. The authors continue to help readers understand how to judge quality by providing a simple reviewer's checklist. In addition, they point out that the review process should not be as simple as gathering Yes-No responses. Reviewers are encouraged not to simply check if a requirement is met or not met (*quantitative feedback* to the writer), but also to provide comments that explain why a requirement is not met and recommendations on how to rewrite the information so that it does meet the requirement (*qualitative feedback* to the writer).

This recommendation is important, as quantitative measurements in design and usability often don't provide insight into the real problems, especially with binary (Yes-No) choices. When conducting usability evaluations of print or online information, the user's qualitative feedback, often in the form of "think-aloud" protocols, satisfaction questionnaires, and debriefing interviews, provides valuable information into the user's experience with the site or document that could not have been gleaned from the quantitative statistics alone.

Summary

I found this book to be informative, easy to read, and full of good advice for anyone developing any type of written or visual information. The authors provide an elegant elemental approach to quality in design that is as valid today as when it was written. It is an inspiration to me in my evolution as an interface design and usability professional dedicated to making products and information more enjoyable and usable.

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