
Sanjoy Mahajan, a physicist, is the associate director for teaching initiatives at the Massachusetts Institute of Technology Teaching and Learning Laboratory. The TLL works with faculty, teaching assistants, and students to promote excellence in teaching and learning.

Carver Mead, one of Mahajan’s thesis advisors at Cal Tech, says in the foreword to this book:

Most of us took mathematics courses from mathematicians—Bad Idea! Mathematicians see mathematics as an area of study in its own right. The rest of us use mathematics as a precise language for expressing relationships between quantities in the real world, and as a tool for deriving quantitative conclusions from those relationships.

So if you want the answer, or something close to the answer, and you don’t care about the proof, the techniques in this book might be just what you’re looking for.

Mahajan considers his work to follow the path of the great mathematics teacher George Polya. Polya cited Euler and Laplace as mathematicians who perceived that “the role of inductive evidence in mathematical investigation is similar to its role in physical research.” Some of the techniques that Mahajan describes are similar to those Euler used to find the sums of infinite series in the 1700s.

Although the ideas Mahajan puts forth are relatively simple, many of his examples would be difficult to follow for someone without at least the prerequisites for an MIT education. If you have those prerequisites, you might enjoy reading this book.

Grammar, usage, and editing


Just over a hundred years ago, Ambrose Bierce, a journalist better known for his cynical Devil’s Dictionary, wrote Write It Right, a quirky collection of prescriptions for writers. Recently, Jan Freeman, who writes a language column for the Boston Globe, decided to examine Bierce’s maxims. She apparently decided to do so for an indirect reason. Bierce’s fiercely expressed complaints are largely irrelevant today and have been replaced by new pet peeves. By showing the irrelevance of most of Bierce’s complaints, Freeman helps us gain perspective on our own hobgoblins. They might be just as quaint a hundred years from now as Bierce’s are today.

Bierce, like many language purists today, based many of his rules on a belief that English should be logical. But many of the illogical usages he complained about had been established hundreds of years before, and many persist today. Freeman makes this clear again and again as she carefully analyzes all 441 of Bierce’s rules. If you’re interested in usage issues, you’ll enjoy this book.


Now in her fourth career, Hilary Powers has been a freelance editor since 1994. She says she chose editing to enable her to emulate Nero Wolfe—that is, never to have to leave home on business. Before completing her first year as an editor, she had abandoned paper. She works only online, a fact that has necessitated her mastery of Microsoft Word.

The target audience of this small, spiral-bound book is anyone who edits for a living. Anyone who uses Word, however, will find useful information in it.

For example, editors must master Word’s change-tracking facilities, but many noneditors use that feature too. Macro programming is another powerful Word feature that will quickly repay your learning how to use it well. Powers shows you where and how to use macros and provides free downloads of her own macros to help you learn the details.

Whether the task is mastering macros or simply selecting configuration options, this book removes your excuse for avoiding it. If you’re like most Word users, you could do a lot of what this book recommends without reading it. Once you have this book, however, and read about the huge increases in efficiency that Powers achieves, you won’t be able to resist the urge to tinker.

I’ve known Powers for many years, so I can testify that she writes the way she speaks. Her style is clear and colorful, never boring. The topics she covers are practical and useful. If you use Word, you should read this book.

Communicating


Scott Berkun is a technical author who decided to try to make a living as a public speaker. He succeeded, and this book tells how he did it and what he learned along the way. None of it’s
glamorous—even his being interviewed with prominent business leaders by Maria Bartiromo on CNBC. Berkun shows you the tricks of the trade—the drab details and shameless gimmicks that help ensure that your audience goes away happy.

One of the parts I like best is “The Clutch Is Your Friend.” This chapter title comes from something Berkun’s brother told him to help him learn to drive a car with a manual transmission. It introduces some excellent rules about how to teach—whether you’re facing one person or 5,000.

Berkun says, “Everything in this book is true and written to be useful, but if you don’t always want to hear the truth, this book might not be for you.” By this he means that after seeing how sausage is made, you might never want to eat it again. That hasn’t been my experience. I find the material fascinating. If you ever speak in public, you’ll learn something useful from this book.


Dan Roam designs presentations and gives seminars about visual thinking. Here’s his elevator pitch for this book:

Visual thinking means taking advantage of our innate ability to see—both with our eyes and with our mind’s eye—in order to discover ideas that are otherwise invisible, develop those ideas quickly and intuitively, and then share those ideas with other people in a way they simply “get.”

Those of us who communicate for a living know that visual communication is an important tool, but few of us feel comfortable using that tool. The biggest obstacle that Roam must overcome is “I can’t draw.” He allays that concern in this book by using simple drawings made from rough hand-sketched elements. Nobody draws worse than I do, but I can replicate any of the drawings in this book—at least well enough to communicate effectively.

In planning how to explore or express an idea visually, Roam asks five questions about what he wants his drawing to emphasize:

- Simple or elaborate?
- Qualitative or quantitative?
- Vision or execution?
- Individual or comparison?
- Change (delta) or status quo?

This gives him the colorful mnemonic SQUID, for which he provides a minimal but recognizably squidlike sketch.

Roam applies the SQUID questions in each of his main areas: discovering, developing, and selling ideas. On this framework he hangs profusely illustrated examples. All you have to do is read along with pencil and paper at hand, and you’ll learn that you really can use visual thinking effectively.


Anne Gentle is a technical writer who ran a company blog in the prehistoric days of that technology (2005). She learned about using wikis for documentation by volunteering for the One Laptop per Child project. She also works with Floss Manuals, a community that supports tools for producing free documentation for free software.

Gentle sees a structural shift from one-way product documentation toward interactive, collaborative product support that includes plenty of user-generated content. Technical communicators steeped in the old model need help understanding and moving to the new one. This book provides such a guide. Gentle proceeds methodically through the new technologies and discusses the issues that arise for communicators.

If you have a role in technical product documentation, you should read this book.
My backlog of books to review has grown out of hand. I don’t have time or space to do justice to all of them. So, here are some interesting books with brief explanations of why I hope you’ll find reading them worthwhile.

Math and philosophy

Recently I’ve read two books co-authored by Ellen Kaplan. She wrote one with her husband Robert and one with her son Michael. Both books are simultaneously erudite and readable, with delightful allusions to many aspects of culture. The books deal with some of the philosophical and technical underpinnings of the modern world.

Another math book, by a physicist, focuses on how to solve thorny problems using heuristic techniques, approximations, and lucky guesses.


In 1994 Robert and Ellen Kaplan founded The Math Circle (www.themathcircle.org), a school “designed for students who enjoy math and want the added challenge of exciting topics that are normally outside the school curriculum.” In this book, they introduce us to numbers, plane geometry, and some of the mathematicians who have furthered the study of these subjects. Because some of the deepest results of mathematics arise from considering the infinite, the authors try to ensure that we understand the definitions and philosophical underpinnings of that concept.

Georg Cantor’s proof that the infinity of real numbers is greater than the infinity of whole numbers is well known and easy to understand. The authors show us the painful years-long path Cantor followed to arrive at that insight. This kind of humanization of mathematicians is one of the book’s strengths. The intuitionists and the formalists, like Swift’s big-endians and little-endians, both turn out to have the same sorts of foibles as the rest of us.


The dust jacket of this book bears a photograph, taken by Robert Kaplan in 1961, showing Ellen Kaplan pushing Michael Kaplan in a stroller. Subsequently, Michael studied European history at Harvard and Oxford. He is now a writer and film maker. Ellen is a classical archaeologist. She has taught math, biology, Greek, Latin, and history. Neither author is a professional mathematician. Perhaps their backgrounds explain their ability to see the big picture.

Probability and statistics have infiltered practically every important aspect of our lives. It began simply enough when gamblers sought help from mathematicians like Fermat and Pascal. The resulting mathematics soon helped sea traders hedge against the unpredictable risks their ships faced with each voyage. The insurance industry expanded to cover other commercial and personal uncertainties.

Insurance and medicine have become entwined. Whereas death panels might be a fantasy, medical practice and reasoning are firmly grounded in probability. In 1976, I wrote a review of Galen and Gambino’s Beyond Normality: The Predictive Value and Efficiency of Medical Diagnoses (Wiley, 1975). Their work explained how to apply Bayes’ theorem to evaluate the value of diagnostic testing. At the time, most physicians were only beginning to understand this type of reasoning. Now it controls much of what they do.

Legal reasoning is another area where thinking about probability can be useful. It does, however, sometimes lead to highly unintuitive results. This has led appeals courts to reject expert testimony based on Bayes’ theorem. According to the authors, “the technique has been forbidden, not because it doesn’t work, but because the court may not understand it. We can continue to err, as long as we err in ways we find familiar.”

Game theory and military planning underlie decisions that affect our very existence. In fact, the Cold War came to...