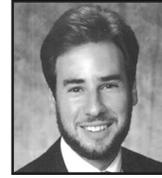




From the Editor



Steve McConnell

# How To Read a Technical Article

*How to Read a Book* by Mortimer J. Adler stayed at the top of the US best-seller list for more than a year when Simon & Schuster first published it in 1940. Adler brought his experience as long-time editor of *Encyclopedia Britannica* to bear on the project. Revised and updated in 1972, the book is still a tremendously practical guide to the various kinds of reading we do both personally and professionally. Adler includes sections on general reading as well as specialized sections on reading fiction, history, philosophy, science, and mathematics.

## READING LEVELS

Adler differentiates between four levels of reading. *Elementary reading* is the most basic and is characterized by learning to recognize individual words

**The more you engage in dialog with an author, the better.**

on a page. *Inspectional reading* is more advanced; it is characterized by trying to get the most out of a book or article within a given amount of time. *Analytical reading*, still more advanced, is characterized by trying to get the most out of a book or article

with an unlimited amount of time. *Syntopical reading* is the most advanced form. It involves reading sets of books or articles on a common topic in a way that enables you to extract information that might or might not be present in any of the individual materials studied.

Adler describes several techniques a person can use to read a book quickly for inspectional reading. You might think of this as systematic skimming. He suggests that you first study the title: what does it tell you about the kind of book or article it is? Next

study the table of contents. What subject areas are covered? What is the book's emphasis? Can you infer the author's main points from the table of contents? Next, read the preface. In a well-written preface, the author will summarize why the book was written, who the book was written for, and what you should expect to get from reading it. Study the book's index: it may tell you what the author actually talked about, in contrast to the table of contents, which tells you what the author planned to talk about. After that, study the introductory text in each chapter, and then dip into the book's first and last chapters.

Technical articles are a little more difficult than books in that they typically don't include tables of contents, indexes, and so on. For technical articles, you might consider reading the abstract, introduction, and conclusion, then reading the introductory text in each section.

If you're after a general understanding of a book or article's main points rather than the detailed logic, inspectional reading may suffice. If you later need a more detailed understanding of the book's contents, your inspectional reading will have prepared you to find that information quickly. Prior to taking the advice in *How to Read a Book*, I had always felt a little guilty about not "finishing" a book. But Adler makes a strong case for not going beyond inspectional reading unless you need to. I found his suggestions liberating—he told me that it was acceptable to read a book in this way and gave me a systematic method for doing something I had previously been doing only haphazardly.

To read a book or article analytically—for understanding rather than just for information—you must acquire an understanding of both the way the author has organized the subject matter and the subject-matter details. By jumping into the details first, starting at page 1 and reading through to the end,

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you have to acquire both kinds of knowledge simultaneously, which is very difficult. By performing inspectional reading first, you quickly acquire an understanding of the organizational framework; then you can fit the details into the framework during a more careful second reading.

### QUESTIONS FIRST, ANSWERS SECOND

One rule of analytical reading is that you should try to state as clearly as possible the problem that the author has tried to solve. In reading an article submitted to *IEEE Software*, I always ask, "Why would *Software's* readers care about this? Does it address a real problem? In what specific way will it make our readers' lives easier?"

A related idea is that the more you engage in a dialog with the author of a book or article, the better your understanding is likely to be. If you've done inspectional reading first, you will probably have a

long list of questions for the author: "Why did you include subject X and not subject Y? Do you think subject Y is unimportant? Is it outdated? Did you simply not know about it? Does it really make sense to discuss subject B before subject A?"

In addition to such specific questions, Adler proposes four generic questions that you can ask of each book or article you read:

1. What is the book or article about as a whole?
2. What is being said in detail, and how is it being said?
3. Is the book or article true in whole or in part? (You have to read the material carefully enough to answer the first two questions before you can answer this one.)
4. What of it? How does the author's conclusion relate to you or your work?

As editor of *Software*, I have a more specific set of questions I ask of each submitted manuscript. Bearing these questions in mind helps me understand what an article is about.

First, I have to assign each submitted article a "CR code," which is a classification scheme *IEEE Software*

uses to assign submissions to reviewers who have indicated an interest in that subject. The first question I ask, then, is a variation of Adler's "What is this about?" My question is, "What is the article's CR code?" Often, I can assign a code simply by reading the article's title, abstract, and conclusion. If I have difficulty assigning a code, that is my first clue that the purpose of the article might be unclear—though sometimes it is our classification scheme that is unclear.

The second question I ask of each submission is "What genre is it?" Every article submitted to *IEEE Software* is assigned one of the genres that are highlighted in this issue's focus, and those genres are later used to guide the peer reviewers' review of the article. The genre designation amounts to a partial answer to Adler's question of "What of it?" Is the article a How To? A Case Study? A Tool Report? A Practice Tutorial? A Research Tutorial? An Applied Research Result? An Experience Report? An Essay? Or does it not fit neatly into any of our defined genres?

When the peer reviews for an article come back, I consider each of Adler's four questions in deciding

whether the article is suitable for publication. I rely on reviewer comments to help me determine whether the article is "true in whole or in part" and whether it will be useful to our readers. If we receive an article in a specialized area, such as an Applied Research Report, the article's vocabulary might be too specialized for me to understand completely. I may have to revert to "elementary reading." Reviewers who know more about the specialized subject matter than I do help me to determine the answer to Adler's second question, "What is being said in detail, and how is it being said?"

Sometimes, the reviewers conclude that nothing is being said! In that case, we reject the article. Other times, something valuable is being said, but it isn't being said clearly enough for our magazine. In those cases, we work with the author to revise the material so that our typical reader will be able to benefit from the author's insights. Because *IEEE Software* is a magazine, not a journal, we rework all the articles we publish, to varying extents, so that our typical reader will be able to read them at the analytical level. ❖