documents, which, because they are created by clumsy software tools, fail to meet the objectives of sound index construction. Liebscher poses the question of how index terms (or, more properly, the semantic links between them?) and hypertext links differ, and concludes that the authoring of a hyper-document text is really a form of indexing. Soergel's paper is the longest in the volume. Relying in part on the work of Halasz, it updates his own well-known approach to information storage and retrieval (ISAR) system design to incorporate multimedia features. The result is "a unified frame-work for indexing and searching in database, expert, information-retrieval, and hypermedia systems" (p. 111). (This reviewer *still* doubts the applicability of a simple entity-relationship model to a domain as complex as the bibliographic universe.)

The question of the sixties, "To what extent is indexing an intellectual as opposed to a clerical or automatic activity?" is still alive and unanswered. In the third area of this volume, it is assumed that some intellect is needed to index appropriately, and that the place to expend R&D effort is in the developing of computer support tools for indexers. What we have here are interesting, but not really surprising, state-of-the-art descriptions of computer support systems in place at the National Library of Medicine (Humphrey), Petroleum Abstracts (Bailey), and NASA (Buchan as well as Sil-vester and Genuardi). A final paper, taking a more investigative approach, describes research under-taken to ascertain problems faced by document analysts at Chemical Abstracts, and strategies to address them.

Fully automatic indexing of full text is the topic of the final area. Harman's review of issues need-ing resolution in full-text indexing is useful, but makes one uncomfortably aware of how little accept-able research data there is to support any opinion about what is and what is not effective. Warner looks at the role of linguistic analysis in full text retrieval; disappointingly, it would seem not much is happening. The last paper, sounding the theme "raw hardware power [can be used] to reduce human costs" (p. 281), looks at what supercomputers can do for text-based systems. Systems for automatic classification using such computers at Dow Jones Press Release News Wire and at the U.S. Census are described, even evaluated (how rare in how-we do-it-here papers!). They are rather breathtaking.

And the index to this collection? Well, on the whole, it looks satisfactory, but there is a blind reference: machine-aided indexing, *See* Computer-aided indexing (p. 303) (the descriptor chosen for this concept is "Computer-assisted indexing"). Less satisfactory are some of the bibliographies at the end of the papers. In these fast times, it may be too much to insist upon uniformity of style through-out; but at least within any given bibliography we have a right to expect a consistent citation style and the inclusion of all important data elements. Several of the bibliographies are flawed in these aspects (e.g., p. 215; pp. 296–297) and one (pp. 194–199) seems something of a gratuitous dump.

University of California, Los Angeles   ELAINE SVENONIUS

Encyclopaedic Dictionary of Information Technology and Systems. A.E. CAWKELL. Bowker Saur, London (1993). vi + 339 pp., $75.00, ISBN 1-85739-036-9.

An encyclopaedic dictionary cannot be expected to be as all-inclusive in scope as a dictionary, nor as in-depth in its treatment as an encyclopaedia. However, it must still meet the same standards for ease of reference and authoritative information as both dictionaries and encyclopaedia. The *Encyclo-paedic Dictionary of Information Technology and Systems* provides much useful and interesting infor-mation, but it fails on the last two counts to live up to its title.

Information technology and systems is a broad field, potentially drawing on the disciplines of computer science, communications, information, and library science. This work concentrates primar-ily on information technology hardware and software. Information is interpreted quite broadly, and there are lengthy discussions of television, teletext, and various computer graphic formats, as well as traditional textual or bibliographic information systems. Whereas library automation and online databases are included, information science terminology is covered only peripherally. The point of view of the explanations is definitely British — although many North American developments in infor-mation technology are mentioned, coverage is more specific and detailed when it comes to British or European products, services, or companies.

Entries include some people, acronyms, and organizations, as well as terms and concepts, and vary in length from a simple one-line definition to extensive explanations of different aspects of a subject that may continue for ten pages or more. Facsimile, for example, is not just defined; its history, and problems of resolution and noise are explained and illustrated clearly. In general, the entries are easy to read, and frequently contain background information that explains related concepts or the history and context in which the concept developed. The information provided is generally up to date (as of April, 1993).

However, the *Encyclopaedic Dictionary* is not without some very serious flaws in content and organization. While some difficult concepts, such as "workstation," are deftly explained, too often wording is inaccurate or misleading. "Hacker" is only defined in the sense of "cracker" (p. 111; cf. McDaniel), and "bibliometrics" is incorrectly restricted to "the study of bibliographies in scientific articles and books" (p. 11; cf. Watters, p. 19). In an article on programming languages, we are told that "Pascal has displaced Basic as 'the serious programmers' language" (p. 47). Does the author really mean that C is not a serious programmer's language? Readers consulting the *Encyclopaedic Dictionary* for basic information on the subject may very well be misled.

The division of longer topics into separate entries with subheadings arranged alphabetically means that a single subject often extends over separate, arbitrarily arranged sections. This structure, together with the limited cross-references and the lack of an index, make it difficult to find information. Looking for information on thesauri, the reader is referred to "Indexing — Thesauri," but not to almost two pages of information on the topic under "Images — Indexing, Visual Thesauri," and several paragraphs and an important figure (the only reference to the type of relations found in a thesaurus) that appear in the introductory entry "Indexing." The loss is not complete in the latter case, as several paragraphs from this section are repeated, word for word, in the more specific entry on thesauri.

The most serious flaw in the *Encyclopaedic Dictionary*, however, is the lack of a bibliography or list of references, and the inadequate and inconsistent citations throughout the text. This is especially annoying in a reference work aimed in part, at least, at librarians and information professionals. In one only too typical entry, direct quotations are made from "Freedman (1987)," "the book *Information 2000*," and "Eugene Garfield" (p. 89). Who was Freedman? Who wrote *Information 2000*? In what book or article did Garfield make the statement quoted? The reader gets no help in checking up on the references or in finding sources of further information on a topic.

The *Encyclopaedic Dictionary* provides useful information, especially on computer hardware and software issues. Difficult to consult but easy to read, it is more useful for casual browsing than for reference. Given the rapid changes in the field of information technology, this work may still appeal to those who need a handy source for a variety of current information on IT. However its flaws mean it cannot be relied on as a single source for knowledge of information technology and systems, or be easily used as a starting point for exploring the field in more depth.

REFERENCES

McDaniel, G. (1994). *IBM dictionary of computing*. New York: McGraw-Hill.
Watters, C. (1992). *Dictionary of information science and technology*. Boston: Academic.

Bibliomatics Inc.   RON DAVIES
Ottawa, Ontario, Canada

Metacognition: Knowing about Knowing. J. METCALFE and A.P. SHIMAMURA (EDS.). MIT Press (A Bradford Book), Cambridge, MA (1994). xiii + 334 pp., $32.50, ISBN 0-262-13298-2.

"Metacognition" is the knowledge people have about what they know, remember, and think. Typical variables investigated in research into metacognition include judgments about "feeling of knowing," ease of learning, and stated levels of confidence felt by people who have learned a fact or a skill. There is a good deal of experimental evidence suggesting that these metacognitive phenomena play a role in monitoring and controlling cognitive tasks such as learning, recalling, and problem solving. For example, someone who thinks that he or she knows a fact will be more likely to spend the time and effort to recall that fact. Someone who feels confident about having learned a skill may be more likely to attempt a task requiring that skill.

This book is a worthwhile addition to the handful of titles on metacognition that have appeared since the mid 1980s. The editors appear to have made an effort to steer away from one main focus on the metacognition literature: classroom teaching and learning. The terms "teaching," "classroom," "reading," and "writing" do not appear in the subject index. Rather, the chapters presented here emphasize the basic concepts and methods of metacognition research, associations between metacognition and neurophysiology, and very general applications of research findings to learning and problem solving, rather than to specific learning situations or tasks.

The result is a convenient, one-volume introduction to the issues and methods of research into metacognition. The editors and the authors of the individual chapters have impeccable credentials as respected researchers in this field. The chapters "Why investigate metacognition?" and "Methodological problems and pitfalls in the study of human metacognition" may be of greatest interest to