

saying ("Managers do things right; leaders do the right things"), or draw on the Myers-Briggs Type Indicator. Not surprisingly, the bibliographies often cite the same sources.

Characteristically, many of the essays begin with easy, self-evident, or unsubstantiated generalizations: "Perhaps no area of library leadership receives so much criticism as the area of communication"; "Communication is one of the most discussed topics in libraries"; "Conflict is one of our most difficult areas for communication because we generally feel strongly about the issues involved in the situation." Similarly, many conclude vaguely: "In short, growing to greatness as a library communicator is a never-ending process"; "Through the preceding steps and the use of positive communication skills, we can take our position of leadership"; "An appropriate response, then, to those who urge greater leadership from librarians, and for those who desire to exert more leadership in the world outside the profession, is attention to increasing our communication skills."

The writers often admonish us: "Being a good listener is the other essential part of communication and should not be forgotten." Urging us to believe that communication is important, the essays exhort us to communicate well, but after reading several, one cries, "Communicate what?" A few give practical tips or examples. These range from reorganizing the library to using body language carefully: "If standing, place your feet as parallel as possible (inward indicates subordination)."

Five noteworthy contributions provide substance. Eugene S. Mitchell's concise "Review of Leadership Research" directs readers through the literatures of management and librarianship. Peggy Johnson writes clearly about openness, trust, and intuition in personal communication in "The Role of Empathy in Managerial Communication." John M. Budd's "Leading through Meaning: Elements of a Communication Process" distinguishes between information and meaning. Rosemary Huff Arneson's "Me-

diation: A Language of Leaders" describes the potential of the formal process of mediation as a management tool. Richard H. Moul's "Discourses of Vision and Necessity: The Information Age, the Library, and the Language of Leadership" offers concepts with which to perceive and criticize our professional discourse.

Unfortunately, this book does not succeed on its own terms and falls short of its potential. It probably will not make better leaders. Had the editor articulated a deeper vision and had the writers reflected on one another's work, they might have worked together toward one common end and produced a book that added up to more than the sum of its parts.

Rather shamefully, the book lacks an index. Of all people, librarians and the editors of ALA publishing should know the value an index adds to the book.

This book exhibits the problem with leadership everywhere in our country today: hollow words and generalities instead of deeds and substance. Like bad politicians, we aspiring library leaders stand here mouthing platitudes with our feet carefully parallel, claiming a position of leadership and hoping no one will notice we are doing nothing.—*Marcia Pankake, University of Minnesota, Minneapolis.*

From Memex to Hypertext: Vannevar Bush and the Mind's Machine. Ed. by James M. Nyce and Paul Kahn. San Diego, Calif.: Academic Press, 1991. 367 p. \$40 (ISBN 0-12-523270-5).

Vannevar Bush could well be to electronic information theory what Panini is to the study of language or Melvil Dewey to library science. As director of the Office of Scientific Research and Development, Bush oversaw the massive scientific bureaucracy created for weapons research during World War II. An engineer by trade and a pre-war pioneer in the development of electromechanical analog computing devices, Bush grew concerned as the war came to a close about the future of scientific research. In a 1945 essay, Bush explained it this way:

There is a growing mountain of research. But there is increased evidence

that we are being bogged down today as specialization extends. The investigator is staggered by the findings and conclusions of thousands of other workers—conclusions which he cannot find time to grasp, much less to remember, as they appear. Yet specialization becomes increasingly necessary for progress, and the effort to bridge between disciplines is correspondingly superficial. Professionally our methods of transmitting and reviewing the results of research are generations old and by now are totally inadequate for their purpose.

That essay, "As We May Think," proposed a device called a *Memex* as a solution to what is perhaps still a disturbingly familiar problem. The *Memex* was to be "a device in which an individual stores all his books, records, and communications, and which is mechanized so that it may be consulted with exceeding speed and flexibility. It is an enlarged supplement to his memory." Bush's original thumbnail sketch of the *Memex* included a vast store of information on microfiche cached in a personalized retrieval device hidden in a desk. Among other items, "As We May Think" predicted the desktop computer, computer databases, the laserdisk, optical scanning, artificial intelligence, multimedia technology, and on-line searching—technologies essential to the contemporary library. But perhaps the more essential issue, as Bush wrote (in 1945!), "goes deeper than a lag in the adoption of mechanisms by libraries. . . . Our ineptitude in getting at the record is largely caused by the artificiality of systems of indexing. Information retrieval systems," Bush argued, "must function more like the associative pathways of human thought" if they were to remain useful in the age of the information explosion.

From Memex to Hypertext is a three-part collection of Vannevar Bush's writings along with essays by others focusing on the *Memex* concept and its subsequent influence on information theory and computing. The first part describes the development of the ideas in "As We May Think" in the contexts of Bush's work with analog computers and the social history of scientific

speculation in the 1930s and culminates with the seminal 1945 essay. The second part covers Bush's continuing extension of the theoretical and engineering issues of *Memex* in later years as digital computing technology developed. The third part, "The Legacy of *Memex*," traces its influence in current work in information retrieval, computer software and hardware design, and hypertext.

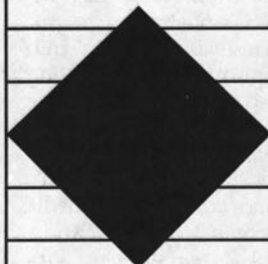
Although many of the technologies predicted and proposed by Bush in "As We May Think" have become part of everyday life, the "generations old" methods for disseminating information—traditional paper journals, citations, indexes, and catalogs—which Bush found so inadequate in 1945 continue to be the basis of the modern university library. Thus while Bush's original writings are fascinating in their prescience and their close understanding of the history of the relationship between information retrieval technology and intellectual progress, the contemporary reader may find the last section—concerning the extension of Bush's theoretical constructs into the practical reality of a working electronic university—of more interest.

Hypertext is the intellectual descendant of the *Memex*, an attempt to put Bush's "natural" indexing system into practical use through modern computing technology. Included in the last section are pieces by hypertext pioneers Doug Engelbart and Ted Nelson; an excellent explanation of the relationship between Bush's ideas, hypertext, and current multimedia technologies by Norman Meyrowitz; and a contemporary scholar's experience with trying to implement the *Memex* concept in classical studies (Gregory Crane's *Perseus Project* at Harvard).

From Memex to Hypertext is an important contribution to the emerging field of electronic information theory, both for the critical links it establishes between the early work in the field and current technologies and as an anthology of the theoretical essays of its most cited pioneer, Vannevar Bush. While individual essays may be overly technical or specific in detail for many readers, the collection as a whole is a solid integration of the historical,

theoretical, and practical problems of accessing electronic information. It is recommended reading for those grappling with planning and philosophical issues concerning the use of electronic resources and for library school courses in information retrieval theory, information systems

design, reference, and collection management. Librarians and their technical partners would surely profit from, or at least be reassured by, this half-century of material that addresses our contemporary concerns.—*Matthew Wall, Swarthmore College, Swarthmore, Pennsylvania.*



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