

row, they do in fact stimulate considerable thought about what it is in these facilities that we ought to scrutinize for our collective well-being. For instance, their discussion on librarians as teachers (p. 136–43) points up the need to design our facilities with maximum accommodation for instructional opportunities. Their description of information arcades and commons, when we associate it with separate overviews of instruction for electronic research skills and holistic computing, precipitate a cluster of questions regarding the kind of core public service areas and human support systems we need to design into academic libraries for the foreseeable future. And their confirmation of the continuing value of paper collections begs a series of questions related to the integration of paper and electronic technologies across the design, space, and services continuum.

In sum, this remains a good read for either the planner or the idea-monger if the reader is willing to make a major accommodation for at least half the work. The person contemplating public services programs in the next generation of libraries is not likely to be interested in lighting options (p. 70–76), and the project manager preoccupied with lighting issues is not likely to be much concerned with a generic syllabus for teaching information technology (p. 141–42). But in the end, no one thinking about a new academic library construction, renovation, or remodeling program can afford not to read and to learn from this book.—*Chris Ferguson, Leavy Library, University of Southern California, Los Angeles*

**Managing Internet Information Services.** By Cricket Liu and others. Sebastopol, Calif.: O'Reilly, 1994. 630p. \$29.95 (ISBN 1-56592-062-7).

O'Reilly released this "Nutshell Handbook" at the end of 1994, and given the pace of change on the Internet, it is surprising that most of it is still useful to people who want to provide information services on the Internet, even though the book devotes too much space to setting up Gopher systems and never mentions the Netscape web browser. The preface is

careful to note that the bulk of the book is aimed at people who are competent UNIX system administrators or "those with fairly strong UNIX knowledge," but asserts that the two chapters at the beginning and the two chapters at the end of the book are appropriate for "less technical people" (p. xxvi). The first chapter gives an overview of what the Internet is and different ways to be connected. The second chapter gives a summary of the kinds of services it is possible to set up (finger, telnet, mailing lists, FTP [file transfer protocol], Gopher, WAIS [Wide Area Information Server], and World Wide Web) and offers some ideas on reckoning the technical and human requirements for running such services. The next twenty-six chapters move from general to specific with each type of service—with how-tos on setting up and administering particular software programs that run on computers with the UNIX operating system. And there are a couple of chapters on ways to enhance the security of systems. Systems administrators that set up and use as few as one or two of these programs (most of which are freely available over the Internet or included in most implementations of the UNIX operating system) would benefit from having *Managing Internet Information Services* on the systems administrator's bookshelf along with whatever more in-depth documentation they can get their hands on, such as the documentation that is distributed with each program. However, this book provides a reassuring step-by-step approach that is often missing from program documentation.

The authors conceive the tasks presented in the book as typically performed by people with two distinct roles: the systems administrator in charge of the performance of the computer and the installation and configuration of the programs, while the "data librarian" is responsible for the organization and presentation of the information. In the library world, this might mean that systems librarians would do the system administration, while the data-librarian function would be performed by catalogers or reference librarians. Twelve of the thirty chapters in the

book and parts of other chapters are marked, with a small graphic icon of an open book, as being particularly appropriate for the data librarian. The balance of the book is aimed at systems administrators. Notable among the data-librarian sections are the final two chapters in the book on legal and copyright issues and on protecting intellectual property. The notion of publishing information on the Internet and then using cryptographic methods to keep the information away from people who are not your customers seems somewhat anathema to the spirit of free exchange in the open system design of the Internet, itself traditionally embedded in the research and education environment. But that is what the authors have put forth as the main option for protecting your intellectual property.

Regrettably, setting up a Gopher server receives too much emphasis in this handbook. Although the Gopher material (eight chapters and three appendixes) might be useful to many people administering systems that are already in place, people starting from scratch will likely ignore these sections, skipping ahead to the chapters on the World Wide Web. World Wide Web servers, the authors point out, have many advantages over Gopher servers (graphic capabilities and more powerful and flexible linking capabilities). Perhaps a future edition of the book will admit that Gopher is now largely superseded by the Web and will devote much less space to Gopher.

The authors do a good job of explaining the client-server dichotomy. Even though the book is really about servers and not clients, the authors nevertheless explain how Web browsers are capable of being clients not only of Web servers but also of Gopher and FTP servers. And there are thumbnail sketches of several notable Web browsers that run on UNIX machines, including Lynx, the widely used text-only alternative to Netscape or Mosaic. Netscape did not yet exist when the book was written, and consequently it isn't mentioned. The chapters on the Web provide a good introduction to HTML (hypertext markup language), Web design issues, clickable image maps, the Common

Gateway Interface, forms, and, of course, setting up a server. The authors provide pointers to HTML authoring and conversion tools available on the Internet.

*Managing Internet Information Services* combines general information—succinct and understandable definitions and explanations of some broad Internet concepts—with very specific information such as step-by-step help for people setting up the particular programs highlighted in the book. The Web server software highlighted is the httpd (for “hypertext transfer protocol daemon,” a “daemon” being a program that runs automatically in the background without having to be invoked by a user or administrator) program from the National Center for Supercomputing Applications (NCSA). The FTP server software presented is the Washington University Archive FTP daemon (WU-ftp.d). The database indexing and searching engine discussed is free-WAIS. The mail reflector software discussed is Majordomo. There is a chapter devoted to Xinetd, a drop-in replacement with security enhancements for the UNIX standard inetd (for “Internet daemon,” a superserver that keeps track of multiple Internet service programs). And there are the chapters on the Gopher daemon. All these chapters are silver bullets for people who want to set up these particular programs on a UNIX machine. If you don't want to get near a UNIX box, or want to use programs other than the ones mentioned, the book is still useful for the conceptual overview and the sections aimed at the data librarian.

But why wouldn't you want to use the programs presented? Yes, you could run some other Web server software (commercial or not) on UNIX or Windows NT or a Macintosh. But according to the authors, “Right now, UNIX is the platform best-suited to providing Internet information services: most of the implementations of these services are on UNIX. Most services support delivery to a number of platforms, including PC's and Macs, but those computers don't yet have the speed or sophistication to handle hosting a full-blown information service” (p. 6). UNIX is the de facto standard operating system

for computers providing information on the Internet, and the programs presented are themselves virtually standard. They are widely used, easy to obtain, and relatively well supported. (Programs that are freely available are usually provided as is, without any guarantee, and without telephone support. They are well supported by user groups on the Internet accessible through USENET news, etc.). Arguably, this view of the Internet, with UNIX as the preeminent operating system, and freely available programs presented as the standard service programs, might be less defensible in late 1995 than it was when this handbook was written. UNIX might or might not keep its place as the preeminent Internet operating system; the standard programs presented might be augmented or replaced by other programs.—*John P. Edwards, Teachers College, Columbia University*

***Digital Libraries '94: The First Annual Conference on the Theory and Practice of Digital Libraries, June 19–21, 1994, College Station, Texas.*** Ed. J. L. Schnase and others. Hypermedia Research Laboratory, Texas A & M Univ., 1994. 221p.

This book is a compilation of papers presented at the First Annual Conference on the Theory and Practice of Digital Libraries held in College Station, Texas, in June of 1994. Since then, of course, a second conference has been held, and the proceedings of that conference are also available in a separate publication. Both these proceedings and the 1995 proceedings can also be accessed online at URL <http://bush.cs.tamu.edu>.

The genesis for the 1994 conference was the 1993 solicitation from the National Science Foundation/Advanced Research Projects Agency/National Aeronautics and Space Administration (NSF/ARPA/NASA) that invited universities and their partners in the scholarly and commercial sectors to submit proposals for projects that would implement some aspect of the digital library. The solicitation was deliberately vague so as to encourage maximum creativity in proposals. Because only a few of the many proposals received

were funded, the digital libraries conference was organized as a forum for researchers to air the many diverse ideas contained in all the proposals. Consequently, this book contains papers that describe many of the projects for which proposals were submitted. To ensure the quality of papers presented, the editors report that each received at least three reviews. The result is a high-quality volume of conference proceedings.

The book contains twenty-nine scholarly papers and thirteen position statements—short one- or two-page papers describing digital library research. The authors of the NSF/ARPA/NASA solicitation had hoped that a very wide range of proposals would be generated. The papers in these proceedings reflect exactly that. Rather than coalescing around a single vision of the digital library, they reflect a very wide diversity of ideas and research. These proceedings make it clear that, at the time the papers were written, digital library research was concerned mostly with the pieces that might one day lead to the digital library. The papers are highly diverse, and it is difficult to find common themes that unite them. Probably for that reason, the editors made no attempt to organize the papers by topic. Some papers do not fit neatly into a single category but straddle several. Nevertheless, as diverse as they are, some common strands can be gleaned from the papers.

One group of papers examines the digital library broadly. The authors ask the questions:

- What is a digital library?
- What are the assumptions underlying the digital library?
- What kinds of digital libraries are there (taxonomies)?
- How are they organized?

Six papers deal with these questions, ranging from the philosophical (why should a digital library be called a library?) to the practical (what architectures are most suitable for implementation?). Areas of research that need to be addressed are also discussed in these papers.

A second group of papers examines particular test-bed implementations of digital libraries such as in particular insti-