Building and maintaining a library Gopher: traditional skills applied to emerging resources

By Ruth A. Riley, M.S.†
Associate Director
University of Arkansas for Medical Sciences Library
4301 West Markham—Slot 586
Little Rock, Arkansas 72205-7186

Barbara Louther Shipman, A.M.L.S.
Head, Electronic Information Systems
Alfred Taubman Medical Library
The University of Michigan
1135 East Catherine
Ann Arbor, Michigan 48109-0726

Gopher software has emerged rapidly as a powerful tool for providing library users with organized access to Internet resources. Building and maintaining Gophers is one way in which librarians' traditional knowledge and skills are being applied in a nontraditional area. In March 1992, the University of Michigan’s ULibrary Gopher was created, mainly as a means of providing access to U.S. Census data and the U.S. Department of Commerce’s Economic Bulletin Board. In an effort to broaden the scope of the Gopher, librarians were asked to submit ideas for new resources to access. The result was the ULibrary Gopher Working Group, a team of eighteen librarians from six libraries on campus. The Alfred Taubman Medical Library staff drafted a menu design for life sciences resources and received basic UNIX training. In March 1993, the life sciences section of ULibrary became fully operational and now is maintained by the Taubman staff. This paper describes the history of the ULibrary Gopher and the working group, the creation and ongoing maintenance of the life sciences area of the Gopher, staffing issues, and the relationship of Gopher building to traditional collection development.

INTRODUCTION

Gopher software allows users to access Internet-based information resources by means of a simple interface based on hierarchical menus. When the University of Minnesota announced the development of Gopher in July 1991 on the Campus-Wide Information Systems electronic discussion group (CWIS-L), computer system administrators rapidly recognized its power as a tool for implementing their local campuswide information systems [1]. As Gopher administrators began “pointing” or providing links to other institutions’ electronic resources, Gopher quickly emerged as an equally powerful tool for navigating the Internet.

Librarians have exploited Gopher as an instrument for providing local users with organized, subject-oriented access to Internet resources. Building and maintaining Gophers is one way in which librarians’ traditional knowledge and skills are being applied in a nontraditional area. The University of California, Santa Cruz’s InfoSlug Gopher was the first Gopher system to be based in and administered by a library rather than a computer center or research unit [2]. The University of Michigan’s ULibrary Gopher, cre-
ated in early 1992, was one of the first Gophers in the country to be administered by a university library committee, the ULibrary Gopher Working Group. Librarians in the Alfred Taubman Medical Library (TML) created the life sciences area of the ULibrary Gopher. This paper describes the history of the ULibrary Gopher and the working group, the creation and ongoing maintenance of the life sciences area of the Gopher, staffing issues, and the relationship of Gopher building to traditional collection development.

BACKGROUND

The University Library at the University of Michigan (UM) consists of seventeen separate libraries with one of the largest collections in the country, totalling approximately 5.8 million volumes. It is administered by the dean and two assistant directors for public services and technical services (including library systems) respectively. There soon will be a third assistant director, for electronic initiatives.

Most of the work done on the ULibrary Gopher is done by public services staff. When ULibrary was developed, the Public Services Division comprised the Cooperative Access Services unit and six subject-related clusters of libraries, including the Health Sciences Libraries cluster—TML, the Dentistry Library, and the Public Health Library. Due to cost cutting at the University, there are now fewer front-line librarians in the Public Services Division than there once were, and those who remain have greater responsibilities than did reference librarians ten years ago. This is due in part to the richness of the computing environment at UM.

UM offers a wealth of computer resources. While the campus is shifting from a mainframe environment to one that is more distributed, all faculty, staff, and students continue to be eligible for accounts on the university’s mainframe system. They also can use the more than 1,100 public microcomputers on campus. Electronic mail has been used heavily for some time, and computer conferencing is very popular. The UM Library’s integrated library system includes two online public access catalogs (OPACs) and provides access to eleven databases. A number of remote OPACs are accessible through PACLink. The full MEDLINE database is available to faculty, staff, and students at no charge. There are currently thirteen Gopher servers and more than twenty World Wide Web servers operating on campus.

HISTORY OF ULIBRARY GOPHER

In 1991, the University Library’s Documents Center had been providing access to the U.S. Department of Commerce’s dial-in Economic Bulletin Board (EBB) for five years. Because the access procedures were cumbersome, the technology librarian at the Graduate Library was trying to find software to run a local bulletin board that would provide access to both EBB and the U.S. Census files. At about this time, the University of Minnesota’s Gopher software became available. The technology librarian and two staff members began experimenting with Gopher as an easy means of accessing EBB and census information. All new EBB files were downloaded on a daily basis and loaded on the UM Gopher in February 1992. Preliminary announcements about the new ULibrary Gopher were made shortly thereafter.

The ULibrary Gopher was fairly limited in scope initially and generally was perceived as “belonging” to the Graduate Library. Librarians in the divisional libraries especially had no sense of ownership of the ULibrary Gopher. Nor were there many specialized resources available at that point. When the technology librarian took a job at another institution, the other two staff members involved with the ULibrary Gopher became solely responsible for its maintenance.

In an effort to broaden the scope of the Gopher, librarians were asked to submit ideas for new resources it could access. Librarians who made suggestions became the core of what now is known as the ULibrary Gopher Working Group, a team of eighteen librarians from six libraries on campus. This group began to meet on a regular basis, to restructure the ULibrary Gopher to reflect the diverse collections on campus and develop a philosophy and selection policy for resources.

Members of the working group initially consisted of mostly mid- and upper-level managers, as well as a few reference librarians. Group meetings were facilitated by two librarians with fairly high-level administrative positions, the head of Library Systems and the assistant to the assistant director for public services. The membership seemed appropriate at the beginning, because many policy decisions had to be made. Issues discussed by the group included staffing options, UNIX training, publicity, authentication of users for subscription services such as United Press International’s NewsWire, and use of ULibrary Gopher as a platform for other subscription services, such as Modern Language Association Bibliography. Although the membership of the group was quite large, many meetings were attended by only ten to twelve members. Because there were no funds or staff positions designated specifically for the Gopher initiative, the general tenor of the discussions and policy making was fairly informal and consensual.

Over a six-month period, the working group discussed ways of organizing the ULibrary Gopher. Organizational schemes discussed centered on the format and medium, the audience, the library, and subject
matter. Group members looked at a number of other Gophers before arriving at the scheme eventually implemented—broad subject approach, which seemed to provide the optimal organization. This approach would allow the group to build specific areas over time without having to alter the main menu frequently. Figure 1 illustrates the top-level menu design that the group finally agreed upon.

When a user chooses “Science Resources,” a sub-menu appears that offers the option of “Life Sciences” or “Physical Sciences.” Organization of ULibrary was to a certain extent influenced by the membership in the working group. Because no one from the Natural Sciences Library was a member of the group, the life sciences area was not divided into health and biological sciences. This decision meant that TML staff had to engage in a broader scope of resource discovery and evaluation than may have been necessary. But there was already strong interest among the TML staff in the areas of molecular biology and genetics. The Natural Sciences Library now is represented on the working group, and a separate area for biological sciences has been implemented on ULibrary.

Once the basic organization had been selected, group members from different libraries agreed to take on the responsibility of suggesting organizational schemes for specific pieces of ULibrary. The TML representatives agreed to develop the life sciences area of the Gopher.

The TML staff drafted a list of potential resources and a menu design for the life sciences area. The initial resources were limited to those with which the staff was most familiar and those judged to be reputable and well established. These included selected resources from the National Institutes of Health Gopher, several genetics databases, a few electronic publications, CancerNet, Biology file archive sites, Biomedical Shareware, and the Search for Biologists service at the Johns Hopkins University. Figure 2 depicts the life sciences menu as of March 1993.

A Graduate Library staff member carried out the basic UNIX programming needed to set up the initial life sciences menus. In March 1993, the life sciences area became fully operational. That April, the TML representatives on the ULibrary Gopher Working Group attended two workshops on UNIX for Gopher, to obtain the training necessary to maintain the life sciences area independently. The process of maintaining the life sciences area of the Gopher has two basic parts: maintenance of existing resources and addition of new resources. These tasks are described in the following sections.

**MAINTENANCE OF EXISTING RESOURCES**

Because most of the Life Sciences area consists of links to remote resources, the functionality of these links must be monitored on a regular basis—at least every two weeks. Maintenance also includes ensuring that the resources on remote servers are up to date and receiving continued support. For example, when the electronic version of *Morbidity and Mortality Weekly Report* fell significantly out of date, a notice had to be placed on the menu to alert users to the problem. The timely resolution of broken links and other remote resource problems are key to maintaining a quality Gopher.

**ADDITION OF NEW RESOURCES**

The addition of new resources is the other part of maintaining the ULibrary Gopher. Internet resources are proliferating rapidly. New resources are available every day. If a local Gopher is missing pointers to these new resources, it quickly will lose its value to users. To maintain the viability of a local Gopher as an effective Internet navigation tool, new resources should be added at least every month. This process has three components: resource discovery, resource evaluation, and menu design.

**Resource discovery**

Various methods are used to discover new resources, including reading electronic discussion lists and Usenet newsgroups, running Veronica searches, and
reading Internet resource guides such as Lee Hancock's Internet/BITNET Health Sciences Resources [3]. The TML staff frequently checks the Clearinghouse for Subject-Oriented Internet Resource Guides to learn about new guides relevant to the life sciences. The clearinghouse is a joint effort of UM's University Library and School of Information and Library Studies and resides on the ULibrary Gopher. Visits to well-established biomedical Gophers are made on a regular basis. The TML staff also checks the New Gopher Sites list on the Washington and Lee University Gopher frequently. This list changes daily and shows all of the new Gopher servers in Gopherspace each day. With the rapid proliferation of biomedical resources on the Internet, resource discovery is the easy part of adding new resources to the Gopher.

Resource evaluation

The more challenging task is resource evaluation. The ULibrary Gopher Collection Development Policy (Appendix), created in 1992 by staff members of the University Library, provides a solid framework for the evaluation of potential resources for the life sciences area. The policy establishes criteria for including remote resources in ULibrary menus.

In assessing the quality of a resource, the following factors are important. Is there an “about file” element indicating the producer, contact information, frequency of updating, documentation, and “help” features? Are the menus of the resource effectively labelled, or are they so cryptic as to be unintelligible to users? (An entry labelled “up111a.txt” is not likely to be very meaningful to Gopher users.) Finally, is the information complete and accurate? This is not always the case. For example, when the periodic table of the elements first became available on the Internet, it was missing two elements.

To facilitate the evaluation of potential resources by the TML staff, an experimental area called “Life Sciences Area Possibilities” was created. New resources are placed in this area so that staff members can experiment with them and make recommendations for inclusion or exclusion from the life sciences area. The library staff thinks of the possibilities area as the “approval shelf” for Internet resources. This area originally was designed to be used solely by staff, but it now is included in the life sciences area as a menu option labeled “Experimental Area,” which contains an “about file” that encourages users to send library feedback on potential resources. To date, there has been no input from users other than what has been solicited in course evaluations.

Menu design

The third part of adding new resources to the Gopher is menu design. When the life sciences area menu was created, a limited number of resources was included. As the number of Internet-based information resources in the life sciences increased, the menu had to be revised. The TML staff tried to design a menu that would accommodate additional resources without requiring frequent modification. Figure 3 depicts the life sciences menu as of September 1994. An attempt was made to balance breadth and depth by keeping menus no longer than one screen and avoiding hierarchies deeper than five levels. In menu labels, the institution maintaining a remote resource is identified if possible, and dates are included for resources that are updated frequently.

ADDITION OF LOCAL RESOURCES

Local information files are added to the life sciences area on an experimental basis. In collaboration with a faculty member in the School of Dentistry, fifty tables of data on properties of biomaterials were loaded by the TML staff. Because this was the library's first experience with loading a local information resource other than internal library documents, TML staff members agreed to do this on a strictly experimental basis. They felt that the biomaterials information would be of interest to researchers outside dentistry and was appropriate for inclusion in the life sciences area. Some reformatting and staging was required before the tables could even be loaded. The tables now are loaded and will be moved into the life sciences area in the near future, pending resolution of copyright issues.

The TML staff has been approached by other units interested in loading course catalogs and college-specific information. This type of information was determined to be more appropriately situated on the campuswide information system, GopherBLUE, maintained by the Information Technology Division. The TML staff intends to develop guidelines for faculty and departments interested in submitting research-oriented information resources for inclusion in the life sciences area.

STAFFING IMPLICATIONS OF GOPHER

Gopher commonly is perceived as a relatively inexpensive way of distributing library information and accessing Internet resources. Although it is relatively

---

‡ The Clearinghouse of Subject-Oriented Internet Resource Guides is available via the University of Michigan's ULibrary Gopher under "What's New and Featured Resources/Clearinghouse of Subject-Oriented Resource Guides."

§ The New Gopher Sites list is available via the Washington and Lee University Gopher in Virginia under Explore Internet Resources/New Internet Sites/New Gopher Sites.
inexpensive in terms of technology costs and staff time to create a Gopher, ongoing maintenance and updating can be quite costly in terms of staff time. Maintenance of resources as well as resource discovery and evaluation are ongoing processes. If these processes stop, a Gopher falls out of date and loses much of its value.

UM is undoubtedly not the only institution in which staff members who take on additional responsibilities do not routinely give up other responsibilities. It is always difficult to identify things that no longer need to be done when an important new job activity arises. Indeed, librarians routinely take on new responsibilities in addition to preexisting responsibilities rather than eliminate a program or service. In the case of the ULibrary Gopher, TML staff members made a conscious decision that the new work was important, even though resource discovery and evaluation frequently would have to be done on nights and weekends. Certain potential subject areas of the Gopher were not developed, because no one was willing to commit to the time required.

Internet resource discovery is very time consuming. Not only do new resources need to be identified, but they also need to be evaluated over a period of time. Because the value of Internet resources is based in part on the fact that they are current, resource discovery and evaluation should be a constant, ongoing process. To be performed adequately, this new job activity cannot be handled as an add-on task. However, job responsibilities could be redistributed in order to allow one person extra time in which to carry out resource discovery. This situation has been resolved to a certain extent in the Health Sciences cluster, because the position description for the coordinator of information management education and end-user services has been revised to include work on the Gopher. Resource discovery remains a problem in other libraries on campus. The situation will be resolved further in TML when Internet resource discovery and evaluation become part of selectors' responsibilities.

INTEGRATION INTO TRADITIONAL SELECTION ACTIVITIES

The integration of Internet resource discovery and evaluation into the traditional activities of librarians is part of a larger shift in selection responsibilities in the UM Health Sciences Libraries. All of these librarians have collection development responsibilities for print resources. The selection of most electronic information resources for TML traditionally has been the responsibility of one or two persons. Because of the proliferation of new electronic resources, the intention is to transfer some of this responsibility to selectors who traditionally have selected only print materials in particular areas. They will screen new electronic products and resources in their selection areas and may conduct product evaluations before forwarding a recommendation.

Internet resources will be handled in a similar manner. Staff members have been assigned different electronic sources, such as electronic discussion groups and news groups, which will be monitored for new resources. These will be collected centrally and distributed to selectors based on subject area. Selectors will evaluate resources to determine if they are appropriate for ULibrary.

It is hoped that many of the criteria applied to print resources—such as program relevance, collection depth, and quality—can be applied to Internet resources as well. Language is rarely an issue with Internet resources. Other considerations regarding print materials, such as price, storage, and space, are not relevant to resources considered for availability on a Gopher. For local resources that a Gopher points to, storage space is an issue but only in the sense of electronic (not physical) storage space. Staff costs definitely must be factored in when deciding what resources to make available on a Gopher. This is especially true of local resources, which must be kept current, often using considerable staff time.

Statistics for ULibrary Gopher indicate that it is used heavily. It often is mentioned in the literature as a good place to obtain certain types of information. It is hoped that in the future, statistics on the usage of specific parts of the life sciences area can be used in the same way that print collection use studies are employed. Use statistics currently are generated for the upper-level menus of ULibrary but not for specific resources in the life sciences area. When such data become available, use of a resource can serve as an indicator of its continued value to ULibrary.

Although many of the factors traditionally considered by selectors in their decision making can be
applied to electronic formats, selectors may require some additional training in identifying and evaluating Internet resources. As library collections shift from print-based materials to electronic formats, however, the integration of Internet resource discovery and evaluation into traditional collection development activities seems only logical.

CONCLUSION

The work of the TML staff on the Life Sciences area of the ULibrary Gopher incorporates many traditional library activities, including the organization of information and the selection of materials. Despite the challenges involved, it has been exciting and rewarding to shape the ULibrary Gopher in the same way that librarians have shaped print collections in the past. Although Gopher technology soon may be outmoded, it is clear that as long as the flood of electronic information continues, the expertise of librarians in evaluating and organizing it effectively will be of value to users of library resources.

REFERENCES


Received October 1994; accepted November 1994

APPENDIX

University of Michigan, University Library
ULibrary Collection Development Policy
November 1992
Mark Sandler, Louis Rosenfeld

Description of ULibrary Gopher
ULibrary is a combination of locally and remotely mounted textual and data resources, links to other Internet-based resources, and the Gopher software used to access and mount these resources.

ULibrary’s resources include
- databases (e.g., U.S. Census)
- meta-information (e.g., user guides, “about” files)
- remote Gophers
- remote resources directly “pointed” to by ULibrary (e.g., UN Conference on the Environment and Development, Usenet news groups)
- links to operational non-Gopher systems (e.g., online library catalogs)

Purpose
The ULibrary system supports research and instruction for the University of Michigan, and by extension, scholars nationally and internationally. The system is intended to facilitate convenient access to local and remotely mounted Internet resources that are likely to be of ongoing interest to academic users. In addition to permitting ready access to resources known to users, the Gopher software organizes information in such a way as to call attention to new resources of potential value and interest.

New issues for collection development
It is impossible to divorce ULibrary’s content from the Gopher software that serves it. Thus certain differences between a ULibrary collection development policy and traditional policies must be considered:

The Gopher software is designed to enable users to navigate between Internet-based resources. (The Internet is an international collection of telecommunications networks which provides millions of users access to millions of computers.) At present, Gopher provides only rudimentary tools for information retrieval within resources. Although improvements in retrieval are forthcoming, both resource discovery and the searching of full-text documents can present problems for users.

As it is fairly easy to add locally-mounted resources to a Gopher, decisions will need to be made regarding which electronic resources to purchase and which free resources to make available via ULibrary, as increasing scale could diminish the usefulness of the system’s menus and menu requirements for the data: it should be possible to coherently display any data as ASCII text on a standard 80-character-wide computer monitor; non-ASCII content presently cannot be displayed, as both Gopher and the campus’ hardware and network infrastructure are as yet not sufficiently developed.

ULibrary, as presently configured, provides access to countless resources at other institutions at no cost to users. The issue is no longer one of whether or not to provide access to a resource, but how easily accessible it should be. As a remote resource can be accessed indirectly, via navigating through other institutions’ Gopher menus, or more directly, by pointing to the resource from a ULibrary menu, the following questions arise. How close (i.e., easily accessible) should a resource be made to ULibrary users, and what criteria should guide those decisions?

Criteria for resource selection
Resources locally mounted and maintained will be selected according to the following criteria:
- content-based criteria
- quality of the information to be mounted
- relevance to known activity and interest on campus
cooperative agreements with other providers of Gopher-based resources
relationship to other library systems and resources
technical-based criteria
acceptable plan for maintaining the currency of the file
size in accord with the storage capacity of the system
cost of licensed materials
labor involved in mounting the information
navigation, retrieval and use must be efficiently handled by Gopher software (e.g., full texts, volumes of files per resource)

The content of locally mounted resources can range from specialized scholarly resources to reference tools to general campus information. Preference is given to resources that reflect the research and instructional programs of the university in recognition that other systems are in place to provide campus and community information.

Remotely mounted resources “pointed” to by our local system can range broadly in format, quality, and content. Potential criteria for including remote resources in ULibrary menus are:

- perceived quality of the resource
- convenient access for campus users
- relevance to known activity and interest on campus
- “fit” with locally mounted ULibrary resources
- cooperative agreements between the university and the institution that mounts the resource
- relationship to other library systems and resources
- adequate instruction for access and use
- evidence of ongoing maintenance

Requests for additions and modifications to ULibrary
Faculty, staff, and students at the University of Michigan can address requests to Graduate Library Administration, 209 Hatcher North, University of Michigan, Ann Arbor, MI 48109-1205. Electronic mail requests can be directed to ULIBRARY@UMICH.EDU (Internet).

Non-University of Michigan users of ULibrary are welcome to submit comments and suggestions to the above address.