A New Service From Libraries:
Electronic Publishing

Gail McMillan

ABSTRACT

Libraries are continuously improving traditional services but now they are also responding to stringent economic times by producing and distributing information electronically. Publishing electronic journals, distributing pre-publication abstracts, digitizing images, incorporating hyperlinks between and within documents and databases, and providing online access to local news are some of the innovative services academic libraries have begun to provide. This paper describes how one library addressed the challenges and took advantage of opportunities and readily available new technologies to meet the information needs of their future remote clients as well as their current local patrons.

Many challenges face libraries today and these challenges often provide us with the incentives to initiate innovative and sometimes experimental services. One of these effective new services available from Virginia Tech's University Libraries is the electronic production—as well as the distribution—of information. The rapidly growing number of personal computers and the increasing use of world-wide computer networks are radically influencing the range of available library services as well as the nature of academic publishing.

Faculty awareness of the growing pervasiveness of Internet connections among their colleagues on other campuses helped push many on my campus to consider publishing electronic jour-nals. An article in the April 1991 Virginia Tech faculty/staff newspaper served to alert many of us in the library to the early stages of what in hind-site has become an historical event. The article named two faculty members who were going to edit a new journal that would be published only on the Internet by an entity called the "Scholarly Communications Project." Innocuous though the article may have seemed, library administrators, front-line librarians, and support staff needed no further prodding to begin planning how to provide access to this and future electronic journals. We shared a common belief that electronic journals would develop into a standard source of information to which libraries would provide access, along with, not instead of, materials in traditional formats. We

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did not, however, anticipate that one journal published by the fledgling Scholarly Communications Project would grow so rapidly to include nine journals, three newspapers, collections of data and images, a listserv, and monographs in the form of theses and dissertations.

The Scholarly Communications Project was visualized by its founding director, Lon Savage, as an exploratory effort into new means of scholarly communications that could, among many things, reduce the costly distribution of print journals normally done through commercial publishers. Paul Gherman, then-University Librarian, felt strongly that the Project belonged in the library, that it would get librarians involved in new and expanding publishing efforts that should become an integral part of the library's mission. These benefits and other service considerations converged in an academic library to improve access to scholarly information through still-developing technology. In July 1991, the Scholarly Communications Project moved out of the broad-based Communication Network Systems unit (that is, away from hand fulls of computer experts and high powered equipment) into the University Libraries where locating and providing information and a strong service orientation has nurtured its development.

In four years, the Scholarly Communications Project has demonstrated that the libraries can perform very well as information providers through a variety of electronic publishing activities, such as:

1. Publishing a no-frills electronic-only journal that is e-mailed to subscribers as each article passes peer review (*JIAHR*)
2. Publishing full online versions of hard-copy journals (*Catalyst, JITE, JTE, JVME*)
3. Distributing abstracts through listservs (*Modal Analysis*)
4. Providing online images (still and full motion, color and black and white, with and without audio) from many sources including journal articles, experiments, and digitized special col-

lections (*JTE, JVME*, uniforms, N & W, *Spectrum, WDBJ-7*)
5. Providing access to raw research data and specialized databases (*JFE Databank, FDA Approve Drug Database*)
6. Publishing local and regional newspapers (*Roanoke Times* and *Virginian Pilot*)
7. Publishing university and library publications (*Spectrum* and *BiblioTech*)
8. Providing Internet access and word-searching of the archives of a listserv (*VPIEJ-L*)
9. Publishing theses and dissertations electronically
10. Providing electronic access to collections of library materials (*Electronic Reserve*)

As a library builds its collection of digital information through electronic publishing, it is in essence building a virtual branch library with many of the same elements and concerns of any branch. However, it can provide constant access, timely, and uninterrupted access to all of its holdings.

Another advantage of electronic publishing is the ability to reach a vastly expanded and diverse audience of readers—people who might otherwise never see the printed publication and never be exposed to the research and ideas documented in these specialized, scholarly journals. For example, the *Journal of Technology Education*, published in our remote corner of southwest Virginia for the relatively small field of teachers of technology (previously industrial arts) at the high school, college, and university levels, is regularly accessed online by people around the world. It had quite limited exposure when it was solely a quarterly, hard-copy publication relying on the postal system to deliver it into the hands of its 500 paid subscribers. However, since it has become an electronic journal, in 1993 its articles were accessed over 13,000 times and in 1994 over 29,000 times by Gopher alone.

The Scholarly Communications Project is also like a university press in that it publishes scholarly information that has been through full peer re-

About the Scholarly Communications Project

Electronic Journals

- The Community Services CATALYST
- The Journal of Fluids Engineering DATABANK and related resources
- Journal of Industrial Teacher Education
- Journal of Mathematical Systems, Estimation, and Control
- Journal of Technology Education
- Journal of the International Academy of Hospitality Research
- Journal of Veterinary Medical Education
- Journal of Youth Services in Libraries
- Modal Analysis

Project Collections

Digital Image Collection - from the Special Collections Department of University Libraries.
Virginia News Archive - Virginia newspapers, television broadcasts, news scripts.
Theses and Dissertations - VPI & SU Theses and Dissertations.

Other Publications

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* FDA Approved Animal Drug Data Base      * The Virginia Tech Spectrum
* VPIEJ-L Discussion Archives             * Alternate versions of the Spectrum
* VPI & SU Theses and Dissertations       * BiblioTech
* University Libraries Electronic Reserve
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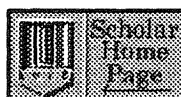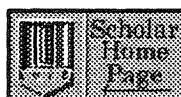
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view. It does not provide editorial assistance but it provides some guidance about online display and fully indexes all publications. The range of publishing services it provides includes: (1) offering editors a variety of electronic publication options, (2) offering readers and subscribers a range of electronic access options, (3) indexing and word-searchable databases, (4) hyperlinks within and between articles and publications, (5) timely access to online information, (6) constant online availability of all of its information and publications, and (7) statistical reports.

There are two principal reasons for not restricting these activities to a single electronic publishing routine. One is that electronic publishing is such a new and developing phenomenon that no one yet knows what will become the standard, or accepted, or expected means for electronically publishing scholarly works. Secondly, a small but stable staff with relatively few publications can handle a lot of varied tasks, but as our staff of 2 FTE remains constant but our publication list grows, we find ourselves relying more on automated conversion software and editor-defined access. What this means is that if an editor gives us her journal as text with HTML tags, we no longer offer to reformat files for direct Gopher access. Instead, we provide additional full-text access to such a journal with a character-based Web browser such as Lynx.

With Internet access, some interested staff, and the appropriate equipment, libraries can begin small by publishing electronic-only journals that have no frills. Encourage your editors not to delay publication until they have amassed a set number of articles or pages needed to meet a printer's requirements. Take this step away from paper publications that will lead to timely dissemination of scholarly research and demonstrate one of the true advantages of electronic publishing. We discourage our editors from restricting access and charging for subscriptions because in over four years none of our print-also electronic journals has lost any paid subscribers as a result of the publications also being freely available electronically.

Most editors of paper-based journals are still anxious to replicate printed journals because they believe that this familiarity will ease the transition from paper to screen for their current subscribers. Editors of new, electronic-only journals, however, do not have this tie to a subscriber base and are more alert to attracting subscribers by offering features that are unique to electronic journals.

When libraries begin electronically publishing existing, paper-based journals, they are generally not going to be able to retrospectively convert the entire set of back issues. The Scholarly Communications Project publishes eight journals that began as and continue to be simultaneously published in paper, and the older ones are available online only from the point at which the Project began publishing them electronically. A newer publication begun in 1989, however, the *Journal of Technology Education*, is available at any hour of any day from the first to the most current issue, because the editor required and saved all submissions on diskettes. When he read about electronic publishing opportunities available through the Scholarly Communications Project, he retrieved copies of all the diskettes as they had been prepared for the campus print shop so that they could be made available through the Internet. Important lessons have been learned from publishing each electronic journal and these we have compiled into "Guidelines for Editors of Electronic Journals." Many of these are very practical lessons that are shared with potential editors of new electronic journals. For example, each article should be separated into individual files so that readers can retrieve just the article(s) they want to read, not necessarily the entire journal. This also reduces the size of the files being accessed and, therefore, improves the time it takes to download and/or print the articles. A result of separating the components of a journal is that each part needs to include identifying information. With each article should display of the name of the journal, the issue number and/or date, and a copyright statement. Because electronic journals are not confined within covers where this information usually can be found,

nor do the files of articles usually include displays of headers or footers, it takes a conscious effort to make this information a visible part of each article published electronically.

In addition to publishing full electronic journals, libraries can publish article abstracts and tables of contents. This is one way libraries can introduce a segment of their new clientele—both the journal's subscribers and its sponsors to some of the advantages of the Internet and to electronic publishing.

While libraries may be ready to publish electronic journals, many editorial and advisory boards are quite hesitant. They are afraid to "give too much away" to non-subscribers. "Too much" may include the abstracts as well as articles, so they may feel more comfortable limiting online access to the table of contents. However, most of our editors appreciate reaching a worldwide audience that will be exposed to its articles, and perhaps increase the paid subscriber list, as well as promote the goals of the sponsoring organization. As with traditional library services, our virtual branch must also be ready to meet the needs of a wide-ranging user community that includes editors and the readers of their journals as well as the virtual library's others patrons.

Some editors will bring new ideas that can help lead libraries to publishing information that might not otherwise be generally available. The editor of the *Journal of Fluids Engineering* suggested trying something unique—neither full text nor abstracts. The Project provides Internet access to the raw data upon which his authors' articles and research are based. This gives other researchers access to the same data to repeat the analysis or to use the data in other ways. In July 1994, the Project also began publishing *JFE*'s experiments in fluids engineering in the form of video clips. Project personnel digitized three short segments and scanned a still image for experimental online access. This editor also wants to create an interactive online discussion forum that validates each participant, another experiment in scholarly communications.

In addition to having ready access to faculty editors on our campuses, libraries usually also have a working relationship with academic publishers. These relationships may lead to opportunities for libraries and publishers to cooperatively publish electronic journals. We are cooperating with MIT Press to serve as an access point as well as an archival site for its first electronic journals, the *Chicago Journal of Theoretical Computer Science* and its *Journal of Functional and Logic Programming*. This means that regional subscribers may want to use the bookmark functions of their World Wide Web browsers to link to our server rather than the home server at MIT. We have also been queried by an Internet service provider notifying us that they wanted to link their users to our site. The only concern we had about this was if MIT Press expected us to monitor users to be sure they had paid their subscriptions. However, this is not our responsibility and MIT Press is allowing open and free access with readers operating on the honor system to pay for their subscriptions. Another service we will provide for the MIT Press is what we already do for all of our journal editors—report statistics about use per title from each type of access point (i.e., Gopher, World Wide Web, etc.).

The Scholarly Communications Project has discussed electronic publishing with representatives of scholarly societies and commercial publishers in the United States and Great Britain. For one publisher, the Proejct may electronically publish the peer-reviewed articles while the paper journal will contain only the article abstracts. Other journals will be printed in full on paper and the Project will publish abstracts as articles are accepted for publication or as the issue is ready for distribution as an advance notice of what subscribers can look for in the next issue. Whether these abstracts will merely be posted for impromptu retrieval and/or e-mailed to subscribers is yet to be determined but we have learned that listserv maintenance and e-mail distribution requires the active participation of the electronic journal's managing

editor because resolving problems with individual e-mail address is very time consuming.

In addition to focussing on scholarly activities, libraries often provide access to information of local and regional interest. The goals of the Scholarly Communications Project call for promoting the advantages of electronic publishing for works of regional interest as well as to experiment with electronic access to scholarly information. Last fall (1994) we began experimenting with providing access to newspapers for the Blacksburg Electronic Village (BEV) as well as to improve library services. BEV is a cooperative venture with the town, the local telephone company, and the university, and among its many offerings it wanted to provide access to current issues of our regional newspaper, including the local section called the *New River Current*. The library's newspaper indexer as well as its Special Collections staff have other motives for having newspapers online, that is, to avoid current manual and labor-intensive clipping, filing, and indexing duties and potentially costly Internet access through pay-per-use services.

One of the most recent additions to the Project's list of publications is "Virginia News." Here we provide access to two daily newspapers, the *Virginian-Pilot & Ledger Star* and the *Roanoke Times & World News*. Discussions and negotiations with the parent company, Landmark Communications, began in February 1994, and by July, Project staff could dial into the newspaper's library to downloaded the daily files to the Project's server. These were marked with HTML tags and indexed before being available for public access. Today an automatic script calls the newspaper's computer in the pre-dawn hours, downloads the files, and inserts HTML tags for timely public access. Each newspaper gave us tapes of several years of back issues and we responded with quite timely availability and word indexing. The files, however, are so numerous that indexing must be batched for the weekends.

Providing access to newspapers also means working with a different client that has a stronger economic motivation than most scholarly societies that sponsor electronic journals. The newspapers' representative agreed to allow us same-day access to the most current issue of each newspaper, the archaic computer system in each newspaper's library can not yet compile the files that comprise the printed tabloid within the same day of publication. I am optimistic that a trial period, including monitoring paid subscriptions and the number of times an issue is accessed will provide preliminary evidence that electronic access will not lead to lost revenues and may increase readership among the electronic village's citizens.

As libraries experiment in each new area of electronic publication, distribution, and access, we should try not just to replicate print publications and traditional library services but to improve upon them. One way to improve information access is by linking various sources of similar information such as local and regional news. Last year two separate donations lead us to create the Virginia News link on our World Wide Web home page. In addition to the newspaper files, our local CBS-affiliated television station, WDBJ-7, offered my library their scripts, logs, and videos of news from 1950 to the present. Because of physical (not virtual) space limitations, the only way the library could accept the archive would be to convert the paper and video tapes to digital files for online storage and access. The Scholarly Communications Project agreed to digitize this tremendous source of regional and local information so that we could create a really fantastic amalgamation of news reports with hyperlinks and word-searchable files. This project is in an experimental phase—we entered a sample of the newscasters' scripts and digitized a small portion of the accompanying videos. One of the important lessons learned from this experiment is that the news clips need to be quite short or the time required to download the clip is exorbitant. It is also a good service to display the play time of the clip as well as its file size.

Virginia News

A service of the Scholarly Communications Project

University Libraries, **Virginia Polytechnic Institute and State University**

Roanoke Times & World-News The Roanoke Times and World-News

The Virginian-Pilot The Virginian-Pilot

WDBJ-7 Multimedia News Archive

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This opportunity followed closely on another collaborative endeavor with the university's PhotoGraphic Services Unit and the library's Special Collections Department to improve access to fragile but extremely popular materials. Special Collections houses many thousands of photographs, glass slides, and negatives donated by the Norfolk and Western Railroad Corporation and others. To prepare a prototype digital collection for demonstrations, we collaborated to bring up on the World Wide Web a sample of these images. The prototype was designed to do several things. First, PhotoGraphic Services wanted to demonstrate some of the recent technology that could enable them to inexpensively produce, high-quality digital images—if they had the financial resources to buy the latest equipment. Second, Special Collections wanted to show how new technology could preserve the collections and at the same time give vastly improved access to them through the Internet. And, third, the Project welcomed the opportunity to incorporate digital images and hyperlinks (text to image, image to image) into its published information. At the Project, each high resolution image (sent by PhotoGraphic Services to Kodak for digitizing and production of a photoCD) was loaded into the Project's server and converted to an appropriate screen resolution suitable for computer displays and to fewer bytes to be transmitted across most networks at reasonable speeds.

At the same time that we began experimenting with image displays, we began taking advantage of other system and software capabilities. We drafted a form so that on- and off-campus viewers could do two things. They could request (and pay) for reproductions—from high-quality color slides and overheads for impressive presentations to less expensive black-and-white photocopies for classroom handouts. We also considered an online "comment" capability so that Tech alumni, for example, viewing our images locally or from anywhere in the world could send us messages identifying pictures that might be particularly useful for putting the images in the context of their experiences on campus and in town.
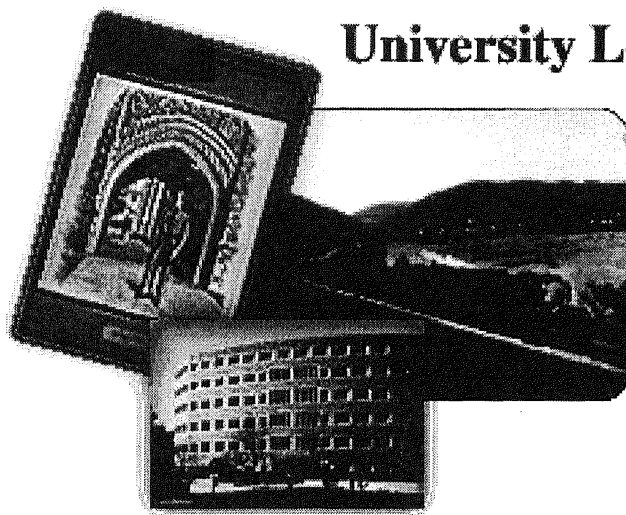
These are some of the ways to improve library resources and services and to enhance the use of the digital image databases, and to reduce the wear-and-tear on popular but fragile library materials. Another area where academic libraries can enhance their services through Internet access is by electronically publishing theses and dissertations. We are working with our Graduate School to determine the form of Internet access and the workflow. We also have a library task force that is determining how to reduce redundant data entry at each processing point. We have also created an experimental electronic library reserves collection that provides access by course number and instructor's name to course materials. Both the electronic reserve system and electronic theses and dissertations system use World Wide Web capabilities and Adobe Acrobat software to provide access to a wide variety of original file formats. Both Web browsers and the Acrobat Reader are free to those readers who have Internet access.

Libraries can also provide Internet access to internal documents and reports as a service to their staffs and well as their sister institutions. The Scholarly Communications Project has published the University Libraries' second report on policies regarding electronic journals, which is a complete revision of the 1991 document, as well as its semiannual publication, *BiblioTech.*

The Project's publications can be accessed with a World Wide Web browser at http://scholar.lib.vt.edu/ as well as with Gopher (URL:gopher://scholar.lib.vt.edu:70/) and FTP (URL:ftp://scholar.lib.vt.edu). The Scholarly Communications Project is committed to maintaining all issues of its publications online indefinitely. And, while the Project's staff has increased .5 FTE since its founding, its budget has been reduced but its activities, including but not limited to electronic publishing, have increased at least ten-fold.

University Libraries

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CONCLUSION

Libraries are not just buildings where information passively resides waiting to be discovered. Academic libraries are initiating innovative services such as producing and distributing information electronically. Publishing electronic journals, distributing pre-publication abstracts, storing and providing open access to digital images and raw data, and creating hypertext links between databases and among files are some of the effective new services academic libraries have successfully initiated. Taking advantage of new technology to provide innovative services is not, necessarily, to have found *The Way*. The library and the Scholarly Communications Project at Virginia Tech are experimenting as part of the (r)evolution—trying different approaches (systems, formats, platforms) and weeding out the ones that do not work as well as those that do. All of this and more has been accomplished without demanding more from the library's budget, by working with the ever-developing expertise of in-house library personnel, and by collaborating with our university community and others who have an interest in the academy and improved library services.

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