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Heads Up: Confronting the Selection and
Access Issues of Electronic Journals

Faye A. Chadwell

Head, Collection Development

University of Oregon Library

Eugene, OR 97403-1299

Chadwelf@oregon.uoregon.edu

Sara Brownmiller

Systems Librarian

University of Oregon Library

Eugene, OR 97403-1299

snb@darkwing.uoregon.edu

Summary: This article examines how collection development and acquisitions librarians can best adapt their policies and procedures to face the challenges of selecting and providing access to electronic journals. It emphasizes the necessary changes librarians should consider in their collection development policies, provides an overview of the benefits and disadvantages of electronic journals, and covers the extra dimensions that providing access add to selection decisions. It provides assistance to help librarians reap the most of the promise and potential of electronic journals.

In her excellent overview of librarians' administrative angst surrounding electronic journals, Dana C. Rooks comments that "we as librarians must embrace the potential of electronic serials and adapt our resources to incorporate this new tool, as we have adopted microforms, online services, fax and other technologies" (Rooks, 1993, 453). Just how successful or wrought with failure have librarians been in their quest to "embrace the potential of electronic serials?" The truth is definitely in the telling and librarians' stories about handling electronic journals indicate varying levels of frustration and triumph. Consider these anecdotes, for example:

- A student user at a reference desk is thrilled that a journal is available electronically. She has a vision impairment ordinarily requiring that she pay someone to read an article to her. Because the electronic version is available and compatible, she can use specialized computer software in the library to have her computer read the materials to her.
- While working with a professor to obtain access to two electronic journals, librarians discover that the professor, as editor of one of the journals, does not even know that the publisher requires a licensing agreement. To top this, he also provides the incorrect URL for the other title he wants.
- A reference librarian easily resolves a user's dilemma when the user learns to her dismay that a necessary issue of a journal title has been sent from the library stacks to the bindery. Realizing that her library subscribes to the electronic version of this title, the savvy reference librarian immediately locates the desired issue on the library's web page.
- A collection development librarian admits to her colleagues that she avoids the difficulties of electronic journals by promptly shoving all flyers and notices about their availability into one of her desk drawers.

Certainly good evidence exists, especially beyond this last anecdote, to suggest that more and more libraries are accepting the challenge of providing access to electronic journals rather than shirking or hiding from the responsibility. An Association for Research Libraries' flyer detailing the results of a SPEC survey of ARL libraries suggested that as of 1994, 35 ARL libraries were receiving electronic journals. In her 1997 survey of 132 ARL academic and research libraries and 3 non-ARL academic libraries, Barbara Hall found that "The overwhelming majority of the responding libraries (91%) offer access to networked electronic journals. Of the 78 libraries providing access, almost all provide links to remote e-journal metasites or jumpstations (N.B. metasite is defined as a server providing both archives and Internet links across many disciplines, and jumpstation is defined as a Web page that has links to other sites but does not have stored archives)" (Hall, 1997).

Likewise there is sufficient evidence demonstrating that more and more publishers have begun publishing their titles on the Web. As of November 1997, three electronic journal aggregators, OCLC's FirstSearch Electronic Collections Online (ECO), Blackwell's E-Journal Navigator, and SwetsNet, could boast that they each will be providing full-text access for at least 500 to 1,000 electronic journal titles in the very near future.

Because of the rapidity of these developments, however, a high level of stress remains among librarians attempting to handle the changes electronic journals are bringing to libraries, especially in the collection development and acquisitions arenas. Some librarians would still choose to avoid facing the

future. How best then to reduce the stress and ease the fears of librarians in the first place? That is, how can collection development and acquisitions librarians adapt their selection and acquisitions processes in order to make the best possible collection development decisions where electronic journals are concerned?

For starters, collection development and acquisitions librarians need to adapt their collection development policies and procedures to address the specific demands of this format from the point of selection. Clear communication about collection development plans and decisions is crucial because of the wide impact even the selection of a single electronic journal title will have on multiple departments throughout a library. Successfully incorporating electronic journals will also mean understanding the considerable benefits of electronic journals and weighing these against their possible drawbacks when selecting a title or set of titles. In some cases, libraries may do well to switch from a print subscription to an electronic one; in other cases, the disadvantages may make a transition inopportune or even impossible for a particular library. Finally, collection development and acquisitions librarians must gain better comprehension of the many access issues that electronic journals present and/or librarians must collaborate with those individuals who have more experience with the provision of electronic access for library resources. Dealing with electronic journals offers librarians opportunities for collaborating with their colleagues that perhaps no other format has done.

To provide some common understanding of the issues involved in selecting and acquiring electronic journals, libraries might consider using a set of pre-order guidelines and providing these guidelines to everyone. The University of Oregon Library Systems developed such a set of guidelines which is a component of the Library's policy on electronic journals (University of Oregon Library System, 1996). Even if some librarians only need to consult the form a few times, at least the guidelines will have served as an important education tool for learning more about the various issues. For others who may only need to consult the guidelines occasionally, they will always be readily available.

We have already noted that hundreds of electronic journal titles have become available in a rather short time frame. Librarians can assume that this number will only increase even as they celebrate adding their 2000th electronic journal to their collection. While the focus of many of these electronic journals remains in the sciences and in technical areas, coverage of the social sciences and the humanities is expanding daily. However, just because there is a growing and diverse array of available electronic journals from which to choose does not mean that librarians need to abandon the subject specific policies we have already established. First and foremost, when considering whether to subscribe to an electronic journal, collection development librarians should be sure that electronic journals meet the selection criteria in appropriate subject areas or disciplines already developed for formats such as print, videotapes, CD-ROMS, or microforms. As the University of Oregon Library System's collection development policy for electronic journals states: "Specifically their purchase

should adhere to the chronological, geographical, language, and date of publication guidelines set forth in general and subject specific policies.

“(University of Oregon Library System, 1996).

The UO policy states further: “As with other material, subject specialists should also 1) consider future and present curriculum and research needs; 2) select materials which meet the standards the Library expects of all materials in regard to excellence, comprehensiveness, and authoritativeness, and; 3) weigh the purchase of a particular title against other possible acquisitions from the materials budget.” (University of Oregon Library System, 1996). In more basic terms, if a library does not select books or printed periodicals in science and mathematics that focus on the nineteenth century and are published in a language such as Japanese or Tagalog, then it is highly unlikely that this library will focus its collection of electronic journals on subjects irrelevant to its defined user groups, their interests and needs, and the institutional mission. Since journal titles relate to the curriculum and research needs of a university or college or to specific patron needs in the public library arena, librarians are also not going to spend time and energy selecting free titles with no relevancy to library users. Focusing selection decisions on predetermined subject areas defined in collection development policies will not create new responsibilities for librarians.

What is new with electronic journals is handling the various subscription options for electronic journals and their corresponding pricing models. These

models are much more varied and complicated than just selecting between an individual and institutional subscription to a print title.

Here are some possible scenarios. First, libraries may obtain electronic access for free if they already subscribe to the print or when they place a subscription to the print version. On the other hand, if libraries have print holdings or seek to add a new title, they may obtain electronic access at generally 10 to 20 percent above the cost of the print subscription. If desired and feasible, they may obtain the information only in electronic format for a reduced price, usually 10 to 20 percent less than a print subscription would cost. In some cases, electronic access may cost as much as a print subscription. With some new titles, libraries will receive titles electronically because the publisher is issuing their new journal titles only in electronic format from the initial issue. Likewise, some publishers may opt to drop publishing the print version and move to only electronic availability from a certain point in time into the future.

Because many libraries are investigating the benefits of consortial purchasing, they should understand that consortial negotiations might complicate subscription options and pricing models immensely. Some publishers are quite consortium-friendly, while others do not want to deal with consortia or have yet to develop processes for handling consortia. Publishers may base consortial quotes on a number of criteria including the total number of subscriptions held among participants, the number of student FTE per participating institution, the amount of the materials budget per library, or some combination of factors.

In the past, publishers have offered package deals for buying a specified set of print titles. Whether considering print or electronic subscriptions, librarians will need to consider purchasing a bundle of titles that may include titles for which collection development librarians might not have previously elected to subscribe to in any format. These titles were simply outside the collecting scope of their libraries. Dealing in the electronic realm may increase the number of such package deals and libraries can expect to confront some publishers who only license access to their electronic journals if libraries subscribe to a pre-set package. Such bundling of titles will have less impact in a consortial setting, since there may be a broader variety of titles owned among consortial members than by a single institution.

Once a selection decision is made for an electronic journal, librarians must negotiate an acceptable licensing agreement before access is permitted. Collection development and acquisitions librarians have acquired some experience handling licensing agreements, and though more often the exception than the rule, even some printed serials titles have been subject to licensing agreements or leasing agreements. With electronic journals, handling licensing agreements is a given. Depending on a library's preparation and experience, this given is a necessary frustration or a frustrating necessity. Unfortunately, (at least to date) licensing is not a part of the acquisition process of serials management that librarians can hand over to serials vendors. In fact, licensing electronic journals means that librarians must have more direct contact with publishers. Direct contact could initiate more positive interaction between serials

publishers and collection development librarians. Without developing a completely separate article on licensing, librarians must consider how to provide for the broadest possible access to the greatest number of users. At the very least, librarians should not settle for fewer rights and more responsibilities in terms of copyright restrictions and provisions of access than they have experienced with printed materials. Important points to focus on when licensing a title include the number of users, restrictions on who has access, where users may gain access, how users may obtain access, and what users may do with the information in terms of downloading, copying, printing, and e-mailing.

Collection development librarians will probably always categorize their collections by the various subject areas to which they are attempting to provide coverage. But because librarians will probably deal directly with publishers when acquiring access to electronic journals, they must also begin to think about their journal collections in terms of the publishers who are providing access to the titles. At first, librarians may deem this shift in thinking an added frustration to handling electronic journals because they have to check the status of their print holdings publisher by publisher. We would emphasize again, however, that dealing more directly with publishers and accumulating knowledge of one's holdings by specific publishers will only increase librarians' understanding of individual publishers' subscriptions models and pricing practices. The benefits will be that collection development librarians improve their decision making about selecting journal titles, managing serials costs, canceling serials titles, and providing document delivery.

If a library is going to pay extra for electronic access (and since a library will definitely deal with hidden or indirect costs for providing access to some electronic journals), librarians do not want to expend their dwindling serials funds for electronic titles that represent no more than electronic copies of the print titles. Collection development librarians want to select titles that enhance or improve on what is available in print. They want to be sure that the promise of electronic journals pays off. To ensure this payoff, librarians must deliberate on an assortment of features specific to electronic journals, while they must weigh the format's advantages over print journals against its drawbacks. And of course, librarians must carry out this deliberation in addition to considering the standard collection development guidelines that cover language, chronological, or geographical focus.

Some of the features and corresponding issues to contemplate when selecting electronic journals include: number of users, increased access, supplemental information, updates, and added access to other titles, locating citations and journals, timeliness, searching and customization capabilities, adaptive technology, spacing issues, usage data, preservation and archiving, and site stability.

Number of users: Electronic journals should provide access to multiple users even if they are reading the same article or issue. Print journals limit access to one user per article, issue, or bound volume.

Increased access: Electronic journals should be available 24 hours a day outside the walls of libraries. With print journals, a user may want to read print

journals at home, but most libraries will not allow journals to circulate outside the boundaries of their building, even sometimes limiting access just to sections of the building. A user has to photocopy the desired article(s) to take with her. Print journals are also not available when the Library is closed. Finally, print journals may disappear from their location on library shelves or be at the bindery. In these cases, they might be temporarily unavailable to users until they are reshelfed or returned.

Supplemental information, updates, and added access to other titles:

Because most libraries will seek access to electronic journals via the publisher or an aggregator, they should consider the possibility of supplemental information or added access. By supplemental information, we refer to electronic journals that either provide links to supplementary materials, like that often found in an appendix. Librarians can liken updates to the content of electronic journals to newspaper publishers that provide various editions of their newspapers depending on the time of day when the issue is released. Added access to titles refers to when publishers provide access to the titles and abstracts of journal issues—issues to which a library does not yet subscribe.

Locating citations and journals: The advent of electronic journals and Web-based catalogs should make locating articles in journals much easier. More libraries, including the University of Oregon Library System, are cataloging electronic journals to which they subscribe and linking directly to them from their Web catalog. Simultaneously, many libraries are maintaining a website devoted specifically to electronic journals. Most librarians are familiar with the difficulties

that novice library users face when trying to locate journals. More and more database aggregators and electronic journal aggregators provide direct access to full-text titles directly through an electronic index that is searchable via title, author or subject. Users may locate a citation or reference to an article in an electronic index and then link directly to the journal's content without ever having to check a library's catalog. Users should also be able to link to other relevant journals or to the footnotes and cited references through hyperlinks. With print journals, users had to locate the citation, check to see if their library owned the titles in the library's catalog, and then retrieve the necessary printed title from the stacks. If they located references to interesting or related articles, they had to plod through the same process again and again.

Timeliness: Electronic journals should be able to provide access to journal content in a more timely fashion than print journals. Often electronic journal publishers can provide access to content at least two to three weeks in advance of print. With print titles, libraries may often take at least two to three days after a title's arrival in order to make it shelf-ready.

Searching and customization capabilities: With journal information in electronic format, users should have greater searching and customization capabilities. Users must be able to search the table of contents from multiple issues, the full text of journal articles, as well as the title, author, and subject or topic covered. Publishers should also consider the possibility of allowing users to customize their use of electronic journals. For example, the Institute of Physics provides these personalization options: an individualized filing cabinet, a

personalized main menu, an e-mail alerting service, and personalized default searches and configurable PostScript downloads. Users can search via the title, author, subject or topic covered for articles of interest in print journals or electronic indexes, but they do not have the capability of linking directly to the full text.

Adaptive technology: Used in conjunction with adaptive technology such as JAWS (Windows), ZoomText (Windows), Dragon Dictate (Windows), Outspoken (Mac) Inlarge (Mac), or Power Secretary (Mac), electronic journals should provide easier access to information for users with disabilities. Computerized readers allow visually challenged users to listen to desired materials that are available electronically so they do not have to depend on readers. Availability of journals at a terminal will also mean that users with disabilities do not have to wait for or schedule additional assistance with library staff to retrieve physical items from the stacks.

Spacing issues: In the future, electronic issues should largely eliminate spacing problems, although the Library will incur costs for properly archiving materials through its purchase and maintenance of appropriate software and hardware. However, as libraries have added journal titles and other print materials, they have gradually run out of physical space to house the title runs to which they subscribe. Not having to provide shelving space for long runs of journal titles means that libraries do not have to periodically seek funding for building expansions, compact shelving, or offsite storage.

Usage Studies: Producers of electronic journals should be able to provide statistics on how a user consults a journal and how a user searched a journal electronically--by specific journal title or broad subject access. If usage studies are not possible, at the very least, librarians should consider devising some method of tracking how many times users consult a library's web page on electronic journals, if not specific titles. In these days of serious budgetary scrutiny and possible cancellation of titles, librarians need to assess how often library users are using journal titles. Planning and executing a usage study of print journals is labor and time intensive. Studying the usage patterns of print journals may also not accurately account for all types of internal uses.

Preservation and archiving: Libraries should have electronic access to the archives of electronic journals and they should have perpetual access to the information which they have purchased if they decide to no longer subscribe to a title. Despite the somewhat disheartening and low percentage of libraries participating in archiving, the outlook for (and so the promise of) archiving electronic journals remains positive. Publishers, such as Project Muse, are offering the annual cumulations of titles on CD-ROMS to subscribing libraries. Many publishers, especially societal publishers, are maintaining electronic access to their journal archives while electronic journal aggregators such as OCLC are willing to take on not only archiving responsibilities, but also perpetual access.

Site stability: Libraries should expect that the websites and URLs will remain relatively stable. If they change or disappear, publishers need to inform

librarians so that they can make necessary changes to an individual library's Web pages or to links in Web catalogs. Librarians should also consider some mechanism for periodically checking websites using the available technology.

Knowledge or familiarity with technology eases the burden of selecting electronic journals. However, because electronic journals have varying degrees of access requirements, collection development and acquisitions librarians must also either learn the access lingo and gain the necessary skills or cozy up to someone who is more familiar with these issues.

To provide access to an electronic journal, librarians must be familiar with authentication methods used by the publisher to allow access, with the different electronic formats in which the journal may be available, and with the different Web applications and/or plug-ins which may be required to view the articles in an electronic journal. In addition to these, librarians must decide how to make their users aware of electronic journals, perhaps through the library's Web pages or through the library's catalog. The final access issue is perpetuity or archiving electronic information. Since the library is not physically acquiring an e-journal how will the library be able to provide access when a subscription lapses or an electronic journal ceases publication?

Most electronic journals that a library subscribes to will be accessed remotely, with the contents of the journal residing on the computers of the publisher or vendor. Most publishers and/or vendors of electronic journals require that electronic access be limited to authorized users when access is available outside the library. Authorized users are usually defined as the primary

constituency of an institution. For a university this would be the students, faculty and staff of the institution. For a public library, authorized users may be people with a valid library card.

Thus far publishers have allowed access to their publications by either requiring that a user come from an approved IP address, that the user enter an institutional login/password, or that the user establish her own account, usually coupled with IP detection. IP addresses are the physical address of a computer attached to the Internet and are usually seen in four parts: aaa.bbb.ccc.ddd. IP detection can be the easiest for users trying to connect to an electronic journal from a computer on campus – from an office or computer lab or dorm. The user simply has to know the URL of the e-journal or select the appropriate link from a Web page and the contents are delivered to them. IP detection, however, can be problematic when the publisher is unwilling to license an entire campus. For example, an entire university may be covered by a Class B domain, the first two segments of a computer's Internet address which could look like 129.334.xxx.xxx. Some publishers, however, restrict access to the Class C level, 129.334.295.xxx. For large institutions, the primary clientele of a physics journal, for example, may be served by more than a single Class C domain. With such a restriction placed by the publisher, some physics faculty and students may be denied access to this important material in their office or lab.

Reliance on IP address detection for access, however, presents serious problems for users who do not have remote access to the campus computing network. Thus one of the first issues to confront librarians setting up access to

e-journals is how to verify that remote patrons are eligible users. On-campus patrons trying to connect to electronic journal are usually not a problem because the IP address of the computer they are using falls within the approved range. However, one of the strengths of an electronic journal is its availability any time, anywhere. Some institutions are able to serve as the Internet Service Provider (ISP) for their authorized users, allowing students to dial into their campus computer network from home. When a student then ventures out onto the World Wide Web, her computer address is affiliated with her academic institution.

If the institution is unable to serve as the ISP for its students and faculty, does it have the means to authenticate students and faculty as being affiliated with an institution before a faculty member ventures out onto the Web? This is a critical issue confronting many libraries and colleges. Some vendors have programs that will do this, such as IAC's Remote Patron Authentication Service (RPAS). Innovative Interfaces Inc (III), although not an e-journal vendor, offers such a feature, Web Access Management, in their software, making it easier for III libraries to authenticate patrons for services other than their online catalog. There are also programs such as Kerberos, which allow host (IP) to host (IP) security by verifying that a user is eligible for services allowed to a specified range of IP addresses.

Rather than IP detection, some publishers of e-journals allow access to their publications by requiring the user to submit an ID and password. The use of IDs and passwords may not provide better security against unauthorized access to an electronic resource given the ease of electronic communication

among friends and colleagues. IDs and passwords present their own problems to the library, specifically how the ID and password are distributed or shared among users who may legitimately access a specific publication. From a Web page, users can be instructed to contact the library for the required ID and password. Some libraries have created Web pages that provide password information, although the Web pages containing this confidential information is restricted to the institution's primary clientele. For some electronic publications, libraries may be able to write a script that logs a patron into a specific resource after confirming that the patron's IP address falls within permissible ranges. Publishers requiring use of an ID and password may also implement IP detection, looking first to see if a user comes from an authenticated IP address, then requiring the user to input an ID and password.

Another variation of the password method of access requires each user to register individually with the remote site. The patron provides information about her right to have access to an electronic journal, such as her institutional affiliation or a subscription number from an institutional subscription. The patron then creates a user ID and password for her own use. As patrons create an ID and password, they are usually required to acknowledge acceptance of copyright and appropriate use restrictions. Once this is done, the publisher allows access based solely on the user ID and password or may first utilize IP detection, followed by a registered ID and password. The use of individual IDs and passwords can help to reassure the publisher that each person accessing its

service is aware of copyright and license restrictions about appropriate use of material obtained.

Once a library establishes access to an electronic journal, by providing appropriate IP addresses to the publisher or by implementing a publisher mandated password system, the librarians must be familiar with the formats in which a publisher will deliver the content of the electronic journals. Formats commonly in use today include proprietary formats like PDF (portable document format) requiring Adobe Acrobat or RealPage by Catchword to view the actual text, postscript files in various types of zipped or compressed formats, and text or Rich Text Format (RTF). Patrons new to the Web will need assistance to complete the setup of their own Web browser for full functionality or assistance using some of the helper applications on workstations within the library.

Proprietary formats, such as PDF, require the use of a helper application to display electronic articles. Articles in PDF or RealPage are basically an image of the actual text page. At present, this format may come the closest to delivering a version of the text, which in appearance looks like the original physical page. PDF documents require the patron to be able to access a helper application, Adobe Acrobat. Without Adobe Acrobat, the patron's Web browser will not be able to display the article. Articles from e-journals, which arrive at the patron's desktop as PDF documents, can be very large files. Network capacity available at an institution, both on and off-campus, may have a negative impact on the ability of patrons to easily and quickly retrieve articles from electronic journals.

In addition to PDF, many publishers and vendors offer access to their journals in a Postscript format. Postscript is a program developed by Adobe, which describes how a page should look to a Postscript-compatible printer, and produces a high quality look. Patrons must know how to download a Postscript file and to print in Postscript format to be able to read an article. E-journal articles in Postscript format, however, cannot be viewed before printing, unless an additional program, such as Ghostscript and Ghostview, resides on the workstation. Postscript files are frequently very large. Consequently, these files are usually compressed using a program such as gzip to speed transmission. The file must then be decompressed before it can be printed. Patrons will need to have access to the correct decompression program for their article.

Presently some electronic journals are available simply as text files, with basic HTML tagging to display them on the Web, providing only the text of the articles and not graphics or tabular data. The journals available from Project Muse at Johns Hopkins University Press are an example of articles available in this format. Even long articles can be quickly transmitted in this format. Another useful feature of articles in a text format is the ability to add hypertext links to the text of the article. Project Muse makes the footnote number in the article text a link to the footnote at the end of the article, while the footnote number in the footnote section returns the reader to the footnote within the article text. As more journals become available electronically, publishers will increasingly provide links to other electronic articles either from within the text of an article or from an article's bibliography.

Many helper applications, such as Adobe Acrobat, are freely available for downloading from the Web. However, librarians should determine in advance the specific requirements for each electronic journal. Does the text of the journal come in a proprietary format requiring the use of a specialized Web help application? Is this helper application easily and freely available? Is this helper application easy to install and use? Does the application allow the user to download the article for future use or printing? Newer versions of some Web browsers automatically install many helper applications with the installation of the browser. However, libraries should keep in mind whether its workstations or their patrons' computers are sufficiently powerful to run the latest versions of both Web browsers and helper applications.

In addition to the access issues just discussed, libraries must decide how to alert their patrons to their ability to use electronic journals. Faculty and students are becoming increasingly aware of the gradual shift to electronic publishing. They may come to the library seeking access to publications they know to be available electronically. Many journal publishers offer their publications in multiple formats – print and electronic, with the electronic version available for no or little additional cost to libraries with current subscriptions to a print title. An increasing number of libraries are cataloging electronic journals, either by supplementing an existing serial record with the electronic information or by creating a serial record for the electronic version. Libraries with a Web interface for their online catalog can provide a hypertext link to an electronic journal allowing the patron to move easily from the online catalog to the

electronic publication. With catalog records in place for electronic journals, patrons will look to the library for access to an electronic publication just as they have for print publications.

In addition to access through the online catalog, some libraries use their Web pages to alert patrons to the existence of electronic journals. This can be a simple alphabetical list or it may be a listing of titles by discipline. Updating Web pages can be faster than providing cataloging for electronic journal titles, especially when the cataloging of this new format must compete with the cataloging of traditional formats. However, libraries that maintain Web pages of their electronic journals will need to resolve when such a task is no longer necessary because electronic journals have become fully integrated into the collection.

The final issue for libraries to address, and the one that raises the most unanswered questions, is how to archive the information in electronic journals to insure that the information is available far into the future. With print publications, as long as the publications are produced with long-life, acid free paper, users can expect to get access to the information for perhaps one hundred years or longer. Not so with electronic information. The problem of archiving must actually be approached from two directions: first, from the technical side – will computers ten years from now be able to retrieve and display data created today – and from the policy side – who should have the responsibility to archive electronic information, the publisher or producer, the vendor who may or may not be the same as the producer, or the subscriber.

Librarians are certainly aware of these perplexing issues for archiving electronic information but a satisfactory solution has yet to be identified. From the technical perspective, what is the best medium for archiving electronic journal articles? Should it be on floppy disks, cd-rom, magnetic tape, or hard disk formats? Each medium has its advantages and disadvantages. Each of these can provide a short-term solution for archiving. Librarians should, however, be careful to adhere to current standards for existing technologies and plan to periodically re-assess their archival choices to see that the stored data can be retrieved with existing technology. At what point will they need to reformat or refresh older data to insure its compatibility with the technology of the future?

Just as important as the technical access issues is who bears responsibility for this task. Librarians can immediately agree that electronic information needs to be preserved for future use. The difficult questions are who will do this and how. In the print world, publishers rarely possess archival responsibility, which has fallen to libraries to preserve and maintain information. Should this be the model for electronic journals as well? It certainly is not clear that libraries are taking on this responsibility. According to the same survey conducted by Barbara Hall, 75 percent of the responding libraries are not archiving electronic journals locally (Hall, 1997). Most of those which do archive, archive "only a handful" which are typically "produced by the local organization."

Even if a publisher offers to archive and maintain its publications, the publishing world is very fluid. Publishers cease to exist or they merge with other publishers to form new entities who may not place any value on the archived collections. The complexity and cost of archiving electronic collections makes this a difficult but fundamental challenge for librarians.

The outlook need not be so bleak as Hall's statistics portend. Some libraries are investigating archival solutions through such collaborative efforts as the Committee on Institutional Cooperation's Electronic Journal Collection. (The CIC is an academic consortium of major research universities, mostly from the Big 10 Athletic Conference). Another early solution to the archival issue is a commitment by some electronic journal aggregators, such as OCLC's FirstSearch Electronic Collections Online (ECO), to offer perpetual access to electronic information to the subscriber. The aggregator accepts the responsibility of monitoring and evaluating new technical developments and insuring that the electronic journal data can be retrieved with new technologies. Thus the electronic collections are archived once with access by many, rather than each library, or even a group of libraries, having to solve this problem individually. Only time will allow librarians to determine the feasibility of this alternative.

Despite the enormous changes since Dana Rooks' article in 1993, librarians should not expect our angst (or that of publishers and patrons) to magically dissipate. If we can predict anything with certainty, we should foretell that the angst would only be heightened. Likewise, electronic journals are not

going to disappear during the course of most of our careers, no matter how many notices and advertisements we hide amidst a dated collection of conference badges. However, we can successfully maneuver through the maze of electronic journals if we adequately adapt our selection processes and procedures and if we address the specific demands of this format. Ironically, librarians may even find that dealing with the selection and acquisition issues of electronic journals may improve the ways in which they select and handle other formats, including print subscriptions. We can also accept that fluidity or flux will probably be the natural state for this format, although we might yearn for stability, consistency, and perpetuity and we might try to hide from the inevitability of change.

References

1. Dana C. Rooks, "Electronic Serials: Administrative Angst or Answer," *Library Acquisitions: Practice & Theory*, 17, (1993): 449-454.
2. Barbara Hall, "From Archiving Electronic Journals: Current Practices and Policies in Academic Research Libraries, Summary of Presentation on Archiving the Internet by at the ALCTS Computer Files Discussion Group, American Library Association Annual Conference,"
<http://www-lib.usc.edu/Info/Acqui/research.html>, June 28, 1997.
3. University of Oregon Libraries, "Collection Development Policy for Electronic Journals," <http://darkwing.uoregon.edu/~chadwelf/ejoupoli.htm>, August 20, 1996
4. University of Oregon Libraries, August 20, 1996.
5. Hall, 1997.
6. Hall, 1997.