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How Libraries are Providing Access to Electronic Serials: A Survey of Academic Library Web Sites

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How Libraries are Providing Access to Electronic Serials:

A Survey of Academic Library Web Sites

Electronic journals are here to stay. Pioneer electronic journals such as *Psycoloquy, Postmodern Culture*, and *PACS Review* are now listed in *Ulrich's International Periodicals Directory*. Long-standing scholarly print journals are jumping into the game with their own electronic versions. And new electronic journals are starting up on a daily basis. With this rush of electronic serial titles comes a host of management concerns, but an established method of managing electronic serials in libraries has yet to emerge.

Several subscription agents are developing e-journal management services, or aggregator services, including Blackwell's Electronic Journal Navigator and BIDS JournalsOnline. While this is a promising new type of service, it remains unproven; for now, many librarians are electing to handle the situation by constructing their own electronic journal home pages. The home pages represent each library's effort to organize its electronic journal collection to provide better access for its users. But how exactly are librarians creating and organizing these electronic journal pages? Has an accepted model evolved for the organization and management of e-journal Web sites? This article:

- examines the content, organization, and features of academic library electronic journal Web pages.

- discusses the decisions and issues involved in creating an e-journal home page.

- provides a summary of how the 114 web sites the authors reviewed handled these issues.

- draws conclusions about typical e-journal web site organization and offer recommendations regarding desirable characteristics for a model site.

Literature Review

It is not the intent of this article to reproduce the literature on the history and future of electronic journals, as others have already done an excellent job of telling the story. Sasse′ and Winkler[1] and Lancaster[2] reviewed the early history of electronic publishing, while Langschied[3], Barschall[4], and Stoller[5] described the first e-journals in detail. Instead, in this section, the authors will review the literature discussing the ideas and efforts of librarians to provide access to electronic journals.

Access Media

Since scholarly electronic journals first began to make their mark in the early 1990's, librarians have been concerned with how to manage them and how to make both current and back issues available to users. In 1991, Metz[6] expressed concern that e-journals be made available to users in as "hospitable a home as possible." Stoller[7], writing in 1992, defined both "libraries" and "providing access" as broadly as possible to encompass whatever technology would become available for this purpose. At that time, he saw three options -- printing and binding the e-journals; downloading them to a personal computer; or downloading them to a mainframe computer and providing access through a local area network (the method he preferred).

Manoff et al.[8] reported in 1993 on efforts at MIT to use WAIS as a delivery mechanism

for e-journals. The MIT group ultimately decided that Gopher -- the newest technology

-- would be a better delivery system because it could link to other Internet resources.

Woodward and McKnight[9] described the state of CD-ROM, networked (via gopher or

World Wide Web), and online (via Dialog or BRS) electronic journals available in 1995.

At that time, they noted, "many...libraries are now beginning to add e-journals to their

collections." They also observed that publishers were migrating to the World Wide Web

(WWW) for the publication of e-journals.

Management Issues

Bibliographic control, archiving and storing, and selection of e-journals are the

predominant issues related to the management of electronic journals. Woodward and

McKnight[10] provided a good overview of bibliographic control of e-journals. More

precisely they discussed learning which e-journals are available, obtaining publication

data, dealing with cataloging issues, and the scarcity of indexing for e-journals. Neavill

and Sheble'[11] addressed issues related to archiving and storing electronic journals.

These included the permanent availability of electronic archives, the preservation of

digital media, problems with obsolete hardware, and the authentication of records and

versions. Nisonger[12] provided a thorough discussion of the selection of e-journals,

covering personnel, and selection criteria and procedures; he included evaluating the e-

journal collection and writing an e-journal policy as part of the selection process.

Nisonger appended a lengthy selected bibliography on electronic journals that covered

articles through 1995.

In the last couple of years, a new wrinkle in the management of electronic journals has

been the appearance of commercially produced e-journal aggregator services provided

by subscription agents. Henley and Thompson[13] described several such services

available in 1997. Machovec[14] provided an excellent and complete overview of the

electronic journal market in 1997. He discussed at length the individual publishers,

projects, commercial management services, and non-commercial sites involved with

electronic journals.

World Wide Web Home Pages

Although the World Wide Web has emerged as the current medium of choice for

distributing and accessing electronic journals, the literature discussing the use of library

home pages devoted to them has been rather limited. Jones[15] shared the findings and

recommendations of the Electronic Journal Task Force established at the University of

Denver. The Task Force made recommendations touching on personnel, the cataloging

of e-journals, selection criteria, and Web page design. Moothart[16] looked at four

different e-journal home pages and offered practical suggestions and ideas for building

and maintaining an effective e-journal home page.   Cameron[17] offered his *Directory of

Computing Journals* as a prototype for making journals accessible through the Web. In

this ambitious project, he envisioned a directory of serials that would be comprehensive

within a given discipline, and would include both electronic and print journals. He

discussed criteria for Web page design as well as maintenance issues.

Library consortia have also concerned themselves with providing Web-based access to

electronic journals for their members. Cochenour and Jurries[18] discussed the building

of the Colorado Alliance of Research Libraries (CARL) electronic journals Web pages.

The e-journal annotations and archiving provided by CARL's Web site were especially

notable. Allen[19] presented the Committee on Institutional Cooperation's (CIC)

consortial electronic journal Web site as a model for the management of free-access e-

journals. The CIC is the academic equivalent to the Big Ten athletic conference plus the

University of Chicago. While they have extensive funding and other resources, some of

the characteristics and features of their e-journal collection can be applied to individual

libraries with less funding. The collection also serves as a resource to which individual

libraries can link.

A Survey of Current Practice Regarding Library E-Journal Web Sites

Electronic Journals Defined

Electronic journals have been available for a number of years through a variety of

electronic media. Some writers define e-journals exclusively as those which are

produced, published, and distributed solely in an electronic format. Others use a very

broad definition, encompassing print journals which are also made available

electronically and even digital copies of articles included in indexing services such as

Lexis-Nexis and *SIRS Researcher*.

For the purposes of this article, an electronic journal is defined as periodical literature that is made available as an individual title via an electronic medium, typically the World Wide Web. This definition includes journals and magazines produced only in electronic media, as well as those with print counterparts. The terms *electronic journals, e-journals*, *electronic publications* and *electronic serials* are used interchangeably throughout this article.

Issues and Considerations for Development

Once a library has decided to build an electronic journals Web site and has assigned the project to a committee, department, or individual, there remain numerous issues and considerations. Personal experience, study of the available literature, and the examination of 114 academic sites led the authors of this paper to identify the following basic considerations for creating an e-journal home page.

Scope: Those creating e-journal Web pages should first determine the general purpose and scope of the site. The site could be devoted to scholarly e-journals only, or it might include magazines, newspapers, and newsletters as well. E-journal site creators might only provide links to the electronic journal sites of other institutions or take great care in selecting individual titles for inclusion.   The extent of resources allocated for purchase of e-materials will also affect the scope of the site. While there are more than enough quality free-access e-journals to support an e-journal page, the inclusion of restricted-access (fee charged) e-journals can greatly enhance any site.

Many respected publishers such as Academic Press and Reed Elsevier are now offering their print journals in electronic format.

Selection Criteria: If individual e-journal titles will be selected and included on the site, appropriate library staff must develop selection criteria. In addition to traditional selection criteria such as authority, cost-effectiveness, and appropriateness of subject the following criteria merit consideration in the selection of electronic publications:

1.	Coverage of the periodical. Some e-journal publishers offer the full text of the entire publication, abstracts only, table of contents only, or some combination of these options. How much coverage is desirable for patrons who will be using the electronic journals?

2.	Archival concerns. Will back issues continue to be available?

3.	Availability of indexing. Are the journals indexed--either by a standard index or by a publisher's on-site search engine?

4.	Print equivalents. Should the collection automatically include journals already held in print?

5.	Additional cost issues. Does the library have funds available to purchase new subscriptions? Do the selection criteria relax when the e-journals are free?

6.	Trial Subscriptions: Will access be provided to subscriptions that are available free of charge for a limited time only, recognizing that this creates an additional maintenance workload?

7.	Viewing software. Some e-journals use text formats that require specific readers, java enabled browsers, or software to display non-Roman alphabets. Should e-journals with special software requirements be included?

Organization: Decisions must be made about how the site will be organized. Consider who will be using the e-journal collection and how they might approach it. For instance, the e-journals could be simply listed alphabetically by title; alternatively, they

could be arranged by subject or by publisher. Anecdotal evidence suggests that faculty are more likely to search by title and students by subject. A site could even provide a search engine to allow patrons to quickly locate desired e-journals.

Features: There are innumerable special features that could be added to enhance an electronic journal home page. Annotations for each e-journal can provide assistance for users and key words for a search engine. The Web page creators must determine what information will be included in the annotations and whether each annotation warrants a page of its own. Links to the local library catalog or to other library e-journal pages can also be helpful. A fuller discussion of features is included in the Discussion and Analysis section below.

Methodology

This study involved an exploratory content analysis of academic library e-journal Web sites from North American universities. The sample of Web sites was gathered using two different methods. First, a message sent to reference listserv LIBREF-L requesting URLs for local e-journal sites generated seven responses. Second, a search of over 250 academic library home pages listed in the Yahoo! Internet Directory (http://www.yahoo.com/Reference/Libraries/Academic_Libraries) identified an additional 107 e-journal Web sites. This resulted in a total sample size of 114 sites, which the authors visited and analyzed between October 1, 1997 and January 2, 1998. We gathered information directly from the Web sites and recorded data on a previously prepared checklist for later analysis.

Discussion and Analysis

Scope of E-Journal Collections

One goal of this study was to determine the scope of existing electronic journal collections.

Sixteen of the 114 sites reviewed (14 percent) were aggregations of links to other institutions' e-journal collections, and thus could not be included in most of the analysis below. However, most library e-journal sites (86 percent) had assembled their own collections of at least a few individual titles. Although we excluded consortial sites from this study, we noted that some consortia are setting up electronic journals collections for their members.   These may include package subscription deals or comprehensive collections of free-access titles. Notable examples are OhioLINK, CARL, and the CIC. Interestingly, some consortia members did not have links to their own consortium's page from their own journals pages or from anywhere else on the libraries' web pages.

Libraries can choose to include either free- or restricted-access electronic journals, or both. The authors defined *free-access journals* as electronic-only journals available free of charge with no use restrictions imposed. *Restricted-access journals* require payment for any access, whether electronic or print, thus restricting use to subscribing institutions. As shown below, the majority of the home pages surveyed had a combination of free-access and subscription journals; however, some collections contained as few as two or three titles of one type or the other.

Restricted-Access E-Journals Only   21%

Free-Access E-Journals Only	14%
Both Restricted- & Free-Access E-Journals	65%

The electronic versions of established print journals do not always mirror the information in the print version. The electronic versions may have only selected articles, abstracts, or tables of contents. We identified at least 27 sites that included journals containing less than full text. There were probably many more that included this type of journal without labeling it as such. A few libraries stated that they specifically excluded journals with less than full text from their collections. Some publishers of print journals offer an electronic version free of charge on a trial basis. Seventeen libraries were identified that specifically listed some journals as "trial subscriptions."

Initially we tried to count the number of libraries that included popular magazines or newspapers along with the expected scholarly journals. This proved to be frustrating and ultimately useless. Aside from the difficulty of determining whether a certain title was popular or scholarly, or even whether a certain title was a newspaper or not, there remained the problem of whether a certain title was part of the e-journal collection or not. If a library added a link to the Electronic Newsstand to the end of its page, did that constitute popular magazines in the collection? What about libraries with separate lists of newspapers and journals, not necessarily even connected to the same page? The current state of most electronic journal collections seemed to make these distinctions pointless.

Selection Criteria

Although it would have been desirable to review the selection criteria used for all of the e-journal collections visited, only fifteen (15%) of the sites surveyed stated specific selection criteria. A few of these consisted of little more than a brief statement that the titles listed are the electronic journals to which the library subscribes. Those of the fifteen which did list guidelines typically included such criteria as: full text (7); available via the Internet/WWW (6); peer-reviewed/scholarly (6); of interest to the local campus community (6); and no additional cost to the library (5). Less commonly cited were quality/value (4); comes with print subscription (2); English language (2); covers a specific subject (2).

Even when no specific guidelines were given, selection criteria can often be inferred by examining what is actually in the collection. Sometimes a collection will grow beyond or in spite of stated selection criteria. A library may have no funds to acquire electronic journals and thus decide to concentrate on free-access e-journals. Even so, such a library could end up with a large number of restricted-access titles that come free (sometimes for a limited time only) with a print subscription. These "bargain" subscription deals probably account for the seemingly random nature of many electronic journal collections.

Organization

E-journal Location: Almost all the library sites reviewed had a separate section or page devoted to electronic journals, sometimes in conjunction with a section of other full-text electronic resources. Some libraries included government documents or indexes with their e-journals, while a very few used a subject-oriented approach that included electronic journals along with various other Internet-based resources. We did notice a small trend toward the latter. When doing some rechecking of the results in February 1998, just one month after the completion of the initial survey, it was discovered that one or two sites had changed from a separate web page for e-journals to arranging all Internet sources by subject.

Bibliographic Access: An important consideration in designing an electronic journals page is how the journals will be arranged to provide bibliographic access. This survey found the most popular categories to be: title; publisher; narrow subject, such as astronomy or literature; and broad subject, such as sciences or humanities (see Figure 1). Most libraries offer more than one access point.

<Insert Figure 1 about here>

From conversations with librarians at various conferences, we discovered that some librarians feel title access via the web page is unnecessary if the e-journals are listed in the OPAC. Others believe that e-journals should be made available in as many places as possible, at least until their use becomes commonplace. While it was beyond the scope of this study to determine whether e-journals were included in the catalogs of the libraries surveyed, it can be seen that most libraries did choose to provide title access

through their web pages. In addition to being the most popular arrangement, the title list was also the only access point for 28 of the web sites surveyed.

A few libraries used other categories to arrange their journal collections. Two libraries divided their journals into subscription and non-subscription lists, two had a category for e-journals produced on their own campuses, and two had specifically labeled lists of scholarly and non-scholarly publications. One library included a list of e-journals in call number order (presumably these were also included in the catalog), and one only had a search engine to retrieve e-journals by title.

Accessibility From Library Home Page: The overwhelming majority of sites surveyed (91.7%) placed their e-journals only one or two clicks away from the library's home page. Two sites buried their e-journals as many as four or five clicks away. (see Table A) It should be noted that libraries whose e-journals are extremely difficult to locate might not have been included in the study as the authors would have been unable to find them!

<Insert Table A about here>

Another consideration in making the e-journals page accessible from the library's home page is what to name the intervening links. As might be expected, most libraries called the final link to the e-journals page either "E-journals" or "Electronic Journals." Libraries that placed the e-journals page two or more clicks from the home page usually used some variation on the theme of "Electronic Resources," including "Internet Resources,"

"Full Text Resources," and "Online Resources." Some link names, however, were rather obscure, and could lead to confusion for those using the site: "Library Services," "Gateway to the Internet," and "Search [OPAC] and other Databases" are a few examples. Figure 2 lists the link names leading to the e-journals page for libraries with two or three links.

<center><Insert Figure 2 about here></center>

Features

Annotations : The amount of information provided in an annotation about each individual e-journal in a collection varied greatly among sites, and even within many sites. As shown below, three-fourths of the surveyed sites (not including those which contained only links to other collections) had some type of annotation for at least a few of their e-journals, usually on the same page as the list of titles.

Same Page	69%
Separate Page	7%
None	24%

The annotations ranged in size from a few words to full separate pages for each title. Many libraries which subscribed to *Project MUSE* used the full page annotations provided by the project. Some libraries offered icons, some of which were hot-linked, to indicate use restrictions or to give quick insight to some aspect of the e-journal.

The kind of information in the annotations also varied. (See Figure 3) The most frequent type of annotation was a statement that access to the journal was limited to

users from that campus. Descriptions of journal content, including the subjects covered

by a given journal and whether it was full text were also commonly found. Some less

common annotations, which could prove to be very useful to e-journal readers, were:

printing and downloading instructions; links to the OPAC record; and dated statements

of the last time a particular e-journal was having connectivity problems.

<center><Insert Figure 3 about here></center>

Some libraries were consistent from title to title about the kind of information provided in

the annotations, while others were very inconsistent. For example, one title might have

a lengthy annotation that provided a description of the e-journal's subject content, the e-

journal's publisher, and the volumes available electronically. The following title might

offer only a statement of use-restriction and one after that might not have an annotation

at all.

Other features: Library electronic journal sites consisting of more than just links to

other sites typically had other features in addition to a list of e-journal titles, whether

annotated or unannotated. Sixty-two percent still included links to other library or

institutional collections. Some frequently encountered links included E-Journal (E-

DOC's electronic journal database), NewJour Electronic Journals and Newsletters, CIC-

Electronic Journals Collection, and other consortial links.   About a third of the sites

surveyed had links to their OPAC (39%) and/or electronic databases to which they

subscribed (35%). We expected to find these features more frequently, as they seem

like natural companions to an electronic journals page. There may have been fewer

because of the limited number of libraries with web-based OPACs and databases.

Search engines to search the library's web site were another feature encountered. The

precise number of sites with this feature was difficult to determine. Sometimes the

search engine was linked directly to the e-journals page and sometimes it was linked to

the library's home page, while still allowing the user to search for a particular e-journal

title. Some search engines would not actually search for an e-journal title, whether

linked to the e-journals page or the home page.   Still, it could be said that about a third

of the library web sites had some type of link to a site search engine.

Some features were found less frequently, but still worthy of note. For example, one

site contained information on how to cite e-journals and links to viewer software, such

as Adobe Acrobat. Figure 4 lists all the features discovered by this study.

<Insert Figure 4 about here>

Recommendations and Conclusions

Many attractive, well-organized e-journal sites are being created by academic librarians

throughout North America. While one precise model for an e-journal web collection has

not yet come forth, there are specific characteristics emerging as standards for

inclusion. The e-journal web sites typically: offer access only one or two "clicks" away

from the library home page (92%), offer annotative information for individual titles

(77%), list individual titles alphabetically (74 %), provide access to both free-access and

restricted-access e-journals (65%), and provide links to other library/institutional e-

journal collections (62%).

Two general categories of e-journal pages also emerge. One category is a low-maintenance site that usually includes many links to e-journal collections from other institutions or commercial enterprises and very few (if any) links to individual e-journal titles. The second category is a much higher maintenance site that offers a large collection of selected e-journal titles.

For good examples of high-maintenance sites that have an extensive listing of selected e-journal titles look at the collections of the University of Pennsylvania and Bowling Green State University. The University of Pennsylvania site (http://www.library.upenn.edu/resources/ej/xej-news-indext.html) provides links to over 1,600 electronic journals. The journals are arranged both alphabetically and by narrow subject, and brief annotations comment on their content. The authors' site at Bowling Green State University (http://www.bgsu.edu/colleges/library/infosrv/ejournals/ejhome.htm) also offers both title and subject access to both free- and restricted-access journals. In addition, this e-journal site offers full-page annotations for many titles. (Select a non-Academic Press title to see an example of an annotation.)

Libraries lacking sufficient staff-time and other resources to devote to the collection of e-journals may elect to build a "low-maintenance" style of e-journals page, consisting of links to other institutional e-journal sites. Ashland University Library (http://www.ashland.edu/~bweiss/ejour.html, accessed 5/4/98) has a simple, low-

maintenance electronic publication page containing only eight links. The selected links

include a variety of sites for accessing newspapers, magazines, and journals, from both

commercial and institutional organizations. The electronic collection sites that the

authors of this study suggest to consider for inclusion as links on a site are listed in

Figure 5.

<center><Insert Figure 5 about here></center>

After analysis of all 114 academic e-journal sites in this study and the experience of

constructing an e-journal web site, the authors would also like to offer these further

suggestions:

- Libraries that have a search engine on their web site should ensure that the search engine is capable of finding individual e-journal titles listed on the e-journal site.

- To increase patron access, it is advisable to link to the e-journals page from more than one page within the library's site, especially if it isn't linked directly from the home page.

- The names of the links should be clear and descriptive, effectively leading users to the e-journal collection site.

- Uniformity among annotations is recommended when possible. If issue availability (i.e. v.7 (1992)-present) is given for some titles, give it for all entries.

- There are several comprehensive collections of free-access electronic journals already available on the Internet. An individual library would be wise to focus on an e-journal collection that would best serve their primary clientele.

• Lastly, create a manageable site. Be sure that the individuals responsible for it
will be able to effectively maintain it.