JOURNSTORAGE

REDEFINING ACCESS TO SCHOLARLY LITERATURE

LETTER FROM THE PRESIDENT

Broadly conceived, JSTOR's mission is to help the scholarly community take advantage of advances in information technologies. Our initial efforts, which have been focused on developing and maintaining a database comprised of the back issues of scholarly journals, have been successful thus far because of the special collaborative relationship that has been established among publishers, libraries and users. The value of these efforts has two primary components: creation and maintenance of a trusted archival repository; and enhanced and more convenient access to older journal materials. Providing these two benefits while simultaneously striving to reduce long-term costs for the scholarly community, have been guiding objectives for us in building the organization.

In this issue, we offer a series of articles that demonstrate our commitment to enhancing the convenience of access to our resource. In addition to these activities, which are focused primarily on improving access for present constituents, we are also working to extend access to new users and institutions that have not traditionally had access to journals like those included in the JSTOR database. We are beginning to respond to the interest expressed by institutions such as public libraries and government agencies, and are developing approaches for access to JSTOR that fit the needs of these communities.

As we broaden the community of institutions and individuals benefiting from JSTOR, we spread the costs of our services over an increasing number of participants. This diversification strengthens us and increases our ability to fulfill our archival promises. In this way, the twin goals of archiving and access become intertwined and mutually supporting. Our emphasis on this symbiotic relationship has been, and we think will continue to be, both immensely important and increasingly beneficial to our constituents.

Kevin M. Guthrie

JSTOR WORKING WITH LIBRARIES TO ENHANCE ACCESS ROLE

Libraries have traditionally served a dual role for their constituents, archiving knowledge and simultaneously providing access to that information. With physical barriers to access crumbling thanks to the Internet, students and faculty now have many different potential portals for accessing scholarly information. Librarians have taken an active role in the academic environment by developing new software and services to help ensure suitable access to quality information for their faculty, staff, and students. To assist with these efforts, JSTOR is embarking upon a program to help participating institutions educate their audiences about the library's role as access provider by building partnerships and establishing linking projects.

As an initial step in supporting the library as a central point of access to information, JSTOR is partnering with individual libraries and cooperative projects such as The California Digital Library (CDL) to link local collections and local indexes to the JSTOR database. The CDL is a virtual library offering a range of electronic resources to the University of California academic community. Recently CDL has been working diligently to link many of these electronic resources. According to Beverlee French, Director for Shared Collections at CDL, "A critical component of the CDL mission is to integrate available resources for our users. There is a large number of such resources, so the linking must be dynamic and it must be scalable. Since JSTOR is heavily used in the UC system, linking the contents of the JSTOR database to the various abstract and indexing databases loaded locally at CDL was a natural next step."

This type of "dynamic" or "algorithmic" linking to the JSTOR database is made possible, in great part, because of the database architecture decisions made by JSTOR several years ago. The decision to develop stable links, based upon the citation information about the article, allows an institution to develop local links "on the fly" based upon a stable algorithm. In

JSTOR's case, that stable algorithm is based upon the Serial Item and Contribution Identifier (SICI) standard.

As a next step JSTOR is implementing a new interface feature called the Provider Designation Service. A "provider designation" is a brief statement that will appear at the top of each dynamically created page in the JSTOR web site. The statement includes the name of the participating institution and will indicate to users that access to JSTOR is provided by their library. "The provider designation feature is a direct way to let our users know of the role their library plays in bringing JSTOR and other electronic resources to their desktops," says Kristen Garlock, JSTOR User Services Coordinator.

These initial efforts by JSTOR are but small steps in a long-term program to work cooperatively with libraries to enhance the library's role as access provider to their end users. As researchers rely increasingly on electronic resources, the role of librarians as highly skilled guides to the best available information is only likely to expand.

ENHANCING INDIVIDUAL ACCESS IN PARTNERSHIP WITH PUBLISHERS

Over the past year JSTOR has received numerous requests for access to the JSTOR database from independent researchers not affiliated with a JSTOR participant institution. In a significant first step to provide access to these individuals, JSTOR, in collaboration with nine publishers, has made their journal archives available to publisher organization members and journal subscribers. Some 7,500 scholars are now able to search, browse and print the full-text articles from key journals in their fields, twenty-four hours a day, from any computer in the world with a connection to the Internet.

In the time that JSTOR's Individual Access Program has been available it has proven to have tremendous utility. Since January individual subscribers have viewed nearly 25,000 articles and printed almost 9,000 articles. Michael Jennings, a member of the Ecological Society of America, wrote to ESA in April 2000: "I just used JSTOR again and want the ESA board and staff to know that, as a member, THIS IS REALLY GREAT. Thanks to those who set this up. It is a valuable benefit to me, and I am sure other members too."

Satisfying the needs of researchers is increasingly important for many scholarly associations. "One outgrowth of the online environment has been that scholars are finding new ways to gain access to current research literature and to one another," says Heidi McGregor, JSTOR's Director of Publisher Relations. "Membership organizations need to seek out new ways to enhance the value that they provide to their constituents. Providing access to their journal archives through JSTOR allows them to have a direct beneficial impact on the work of their members, without taking on the risk of building the archive and access tools themselves."

"More than one thousand members of the Mathematical Association of America (MAA) have signed up for access to the American Mathematical Monthly," says Donald Albers, Director of Publications and Electronic Services at MAA. "They like it so much that they are clamoring for the addition to JSTOR of our other two journals."

JSTOR's Individual Access Program is designed to allow publishers the flexibility to provide access in a way that best meets their unique needs, while allowing JSTOR to recover its development costs. The majority of publishers participating in the program have implemented a subscription model for charging their affiliate members, enabling them to generate additional revenue. Information about the publishers and journals participating in this program can be found on the JSTOR website at: www.jstor.org/about/individual.html.

JSTOR USAGE DATA REVEALS FASCINATING TRENDS

This article is adapted from summary information in Kevin Guthrie's paper "Revitalizing Older Published Literature: Preliminary Lessons from the Use of JSTOR", presented at the ***The Economics and Usage of Digital Library Collections Conference*** *held at the University of Michigan in March 2000*

As part of our not-for-profit mission, one of our objectives is to contribute to the understanding of how scholarly materials in electronic formats are being used. That was a key reason we developed the web statistics reporting system for libraries and publishers. Now that JSTOR has been available at some licensed institutions for as long as three years, we have begun to accumulate enough data to initiate questions about the impact of JSTOR on the use of older literature. For example: Do scholars and students utilize older articles? Does the usefulness of older literature vary by academic discipline? Are the digitized versions of older articles used more frequently than their paper counterparts? And do these data provide information that is useful for selecting scholarly materials to be digitized?

We are only at the initial stages of analysis, and for many of these questions we must collect much more data for any assertions to have statistical validity. Still, what we are finding already opens a fascinating window into some surprising usage trends, and points to hypotheses in five key areas.

1. The availability of older journal articles in electronic form through JSTOR seems to have increased the use of the older articles at participating sites.

In 1996, prior to widespread availability of JSTOR, we conducted a usage survey of ten JSTOR journals (in their paper format) at 6 colleges and universities. The mechanisms for counting uses of these paper journals were far from perfect, but they did give us a very rough sense of the extent of usage of these materials. Working cooperatively with librarians at these institutions, we recorded a total of 692 uses of the ten paper journals over a three month period in 1996. We then counted the number of uses in JSTOR of these same titles at the same six institutions during the last three months of 1999. A total of 7,696 articles were viewed and 4,885 were printed over the course of three months.

Another way to address the question of whether JSTOR is increasing use of these older materials is to evaluate the growth in usage. Judging from conversations with librarians, it is a safe assumption that the use of older journal articles (in

paper form) was not growing prior to their being digitized. By contrast, looking at the usage of JSTOR at the 82 sites that have had access to the resource since early 1997, one discovers that aggregate accesses at these institutions increased by a factor of 3.4 times from 1997-1998 and 2.5 times from 1998-1999. The cumulative growth in usage of the JSTOR database over this two-year period was an astonishing 740%.

2. Researchers and students value the interdisciplinary nature of JSTOR.

Another notable finding was that researchers are taking advantage of JSTOR's cross-title and interdisciplinary capabilities. For example, after sampling 68,000 searches in a single week of JSTOR use, we learned that approximately 90% of the searches specified more than a single title. In addition, JSTOR's ability to search across disciplinary clusters seems important to users. Out of 58,000 recent cluster-specific searches, 69% specified more than one cluster. As JSTOR adds new content in existing fields, and begins digitizing journals in additional academic disciplines, the interdisciplinary nature of JSTOR is likely to become even more important to users.

3. Older literature remains valuable in many fields.

One of the goals of the study was to take an initial snapshot of the relative value of older literature in the academic fields included in JSTOR. As a first estimation of this value, we looked at the top ten most frequently used articles (in terms of the number of times that the article has been viewed and/or printed) and noted the age of these articles.

In most of the major fields included in JSTOR, the articles in the top ten were older than one might have expected they would be. In economics, for example, the average age of the top ten articles most frequently printed and viewed was 13 years. More dramatically, in the field of mathematics, the average age of the most used articles was 32 years. These data are by no means conclusive, as some of the JSTOR journals have only been digitized relatively recently, but the early findings seem to contradict existing assumptions about the value of older literature.

4. Citation data alone do not reliably predict electronic usage.

Judging by the most-used articles in JSTOR, citations and usage do not correlate closely, suggesting that citations should not be used as the sole factor in selecting content to be digitized. To give just one example, the most frequently viewed article from one of the top journals in the economics collection has rarely been cited in other articles. The article, published in 1973, was cited only fourteen times between 1974 and 1999. Nevertheless, this article has been viewed 1,895 times and printed 1,402 times since it was made available in JSTOR, making it the 4th most-used article in economics. (note: Economics is the most-used collection in the JSTOR database, accounting for approximately 18% of total accesses). One interesting question raised by these data is whether the availability of these older articles in electronic form will increase their citation frequency and lengthen their citation "half-life." It is far too early to begin analyzing this question, but it is worth following.

5. The concept of "value" for research articles needs to be clearly understood as libraries consider acquisition and cancellation decisions for electronic content.

Increasingly, one hears that usage data should be used more aggressively by librarians in acquisition and cancellation decisions for current journal subscriptions. This makes perfect sense, as it goes to one aspect of the value of the journal to the constituency of that library. But it is important to recognize that usage is only one aspect of the value, not the entire value. Citations and citation impact factors reflect another kind of value.

The fact that top used articles in JSTOR may be infrequently cited, or that top-cited articles may be infrequently used, does not prove that one or the other is more important; rather, it indicates that both components must be considered. An article that gets assigned to an Economics 101 class at a large university will generate large numbers in the JSTOR statistics, but that high usage does not necessarily reflect the importance of the article to research and the future intellectual development of the field. The same could be said for the value of usage statistics in faculty tenure evaluations.

Usage statistics provide important information about the value of a journal on a campus, but they are more likely to reflect the value of the journal as a teaching resource than as a research resource. Both perspectives should be taken into account when using these data to help make journal subscription decisions.

For a copy of the complete paper, please contact: Carol MacAdam, Associate Director of Library Relations, 212-229-3700 or clm@jstor.org.

A REMINDER ABOUT REMOTE ACCESS TO JSTOR

When an institution begins participating in JSTOR, it is with the understanding that access to the archive is available to all faculty, staff and students affiliated with that institution, regardless of their location. Technologically, though, it is not always easy to provide remote access to these authorized users. Like most content providers, JSTOR's primary method of allowing restricted access is based on IP authentication. Currently there is no single remote access solution available that perfectly balances the needs of individuals, campuses, and content providers such as JSTOR, but there are some solutions that we believe can serve to supplement IP authentication and make remote access easier for all concerned.

The JSTOR Logon Script: JSTOR's logon script is one of the quickest and simplest solutions available to our participants. This script, developed by JSTOR technical staff, can be installed on a server belonging to a participating library or institution. The script is very simple, easy to install, and requires only two conditions: that the campus has a secure Web server from where the script can be run, and that there be an existing authentication method in place at that institution. Users may enter via the link from any location. Once a user has been authenticated, the process of connecting to JSTOR is invisible to them. Information about the logon script, as well as specific instructions for installing it, is available at: www.jstor.org/about/script.html. We are happy to consult

with our participants to determine if this script will work within their local campus environment.

Proxy Servers: Different types of proxy servers exist, and the decision about which type to use depends upon a combination of technical and user issues. JSTOR staff is available to discuss any questions regarding remote access issues, and we will work with participants to make sure the proxy server will provide access to JSTOR without any difficulties. Further background information about proxy servers is available at: www.jstor.org/about/remote.html.

Digital Certificates: One of the most promising authentication solutions for remote access is the use of digital certificates. While their use is not yet widespread among our participating institutions, the technology has distinct advantages over current authentication methods. For this reason JSTOR has assumed a leadership role in the library community in the testing and implementation of digital certificates. According to Spencer Thomas, JSTOR's Technology Coordinator, "Digital certificates can provide a single, standards-based method of authentication for all on-line applications. They are portable, and do not rely on the user's location or network address. This means that they are ideal for use by off-campus students, faculty, or staff who are otherwise denied access to resources controlled by IP address." The use of digital certificates promises a secure and easy means of authentication for remote access to electronic resources. Digital certificates are digital files that can certify the identity and affiliation of an individual seeking to access a digital resource.

At this time, all major browsers are able to work with digital certificates. Once certificates have been installed in a user's browser, the access system is invisible to the end user – the certificates will handle the authentication and logon processes. And, unlike the direct logon access method, a user's access to multiple sites is seamless. Enabling this technology does require a higher level of investment on the part of an institution. Universities need to manage the distribution of certificates, and users need to install certificates in every machine that they use for access to licensed content. It also requires the cooperation of content providers in accepting certificates, which also represents an increased investment. JSTOR is making these investments now in an effort to facilitate the use of digital certificates for the benefit of the library community.

JSTOR has been involved in the development of certificate-based authentication since early 1998. Spencer Thomas is a member of the Digital Library Federation's Authentication Architecture Working Group, and has also worked closely with the Corporation for Research and Educational Networking in the development of their certificate authority procedures. Currently, Thomas is testing JSTOR's use of digital certificate architecture with a small number of institutions, and is preparing for a larger test phase. In taking these steps, JSTOR is developing the technical infrastructure necessary for accepting certificates, and will be ready to incorporate this method of access as soon as it begins to be used by our participants. For those sites that are able to invest in this technology, it promises to be an exciting solution. Institutions that are considering the use of digital certificates may contact JSTOR for more information about these developments.

http://www.jstor.org

JSTOR FACTS

Statistics for
January 1, 2000 - May 31, 2000

Total accesses:	14,613,766
Searches performed:	3,478,560
Articles viewed:	2,833,373
Articles printed:	1,137,383
Pages viewed:	7,061,819
Total issues available:	32,413
Total full-length articles available:	380,365
Total articles:	864,008
Total pages currently available:	5,245,005
Number of participating institutions:	739
Number of participating journals:	124
Number of journals available online:	123
Number of participating publishers:	111

LETTER

To Carol MacAdam, Associate Director for Library Relations at JSTOR:

When it was announced in November 1999 that Bradford College would be closing, I had no idea what to expect from all of our library vendors. Because our president is committed to closing the college with dignity, I quickly drafted a form letter to explain to all our vendor representatives what was happening. I half expected to be overwhelmed by sales representatives calling to make sure they got their money. Instead I got many, many expressions of sympathy and generous offers to work out what could be done to salvage the year for our students. We received pro-rated bills where appropriate. Book vendors took back books graciously. Standing order publishers issued UPS "call tags" for standing orders that we needed to return.

I thought it might have been an oversight that our JSTOR access still worked after I told you that we were not able to pay for this semester. Now I know that you made the decision to continue access to JSTOR for our students as they finish up this last academic year.

It is apparent that you believe that we are all in this educational enterprise together. You have confirmed for me the professionalism of those who provide the many services that fill our libraries with information rich resources. I put down the phone after our conversation and felt deeply grateful, once again, for having chosen to become a librarian. I shall never forget your kindness.

Anne Pound
Head Librarian, Bradford College, Hemingway Library
320 South Main Street, Haverhill, Massachusetts
May 8, 2000