



LETTER FROM THE PRESIDENT

As many of you know, in December we called attention to the fact that unauthorized persons are gaining access to licensed electronic resources on college and university campuses via improperly configured proxy servers. In this issue of JSTORNEWS we provide additional background information on open proxies as well as a description of how we discovered the problem. While I expect that the discussion and implementation of potential solutions will gravitate to other venues over time, for now we have created web pages for participating institutions that offer background, context, and updates on progress in the ongoing discussions of this important issue (www.jstor.org/resources/openproxies.html).

We are also pleased to report on two important enhancements to the website that benefit JSTOR users. First, we continue to work hard to make JSTOR as accessible as possible to the visually impaired community. We have now completed the first phase of that important and continuing effort. Second, we recently added the capability for users to export citation information in a variety of formats. This feature makes the process of incorporating citation information in scholarly research significantly more convenient.

The year 2002 was another exciting one for JSTOR. There are now 322 titles included in the archive, provided by 182 different publishers. Over 1,500 participating institutions from 71 countries underwrite the ongoing costs of providing access to this important journal literature and insuring its long-term maintenance. We feel fortunate to receive such widespread support, but we also recognize that along with it comes great responsibility. We continue to strive always to exceed your expectations. Please do not hesitate to share with us your advice and feedback.

Happy New Year!
Kevin M. Guthrie

OPEN PROXY SERVERS: GATEWAYS TO UNAUTHORIZED USE OF LICENSED RESOURCES

JSTOR takes a system-wide perspective in fulfilling its mission to build and maintain a trusted archive of important scholarly journals and to extend access to that archive as broadly as possible. By balancing the needs of the publishers, libraries, and scholars that we serve, our goal is to provide a resource that benefits all constituents in the scholarly community.

A good example of this balancing act can be seen in JSTOR's access methodology for the college and university community. For our participants in this community, JSTOR offers unlimited, site-wide access to the archive via IP-based authentication. At the same time, we establish relationships with our participating publishers to preserve and provide access to their backfiles under a set of defined conditions outlined in the Archive License Agreements signed by each participating institution. JSTOR takes very seriously its obligation to be a responsible steward of the content in the archive and satisfy its publisher commitments. Part of that obligation is to take measures to ensure that the JSTOR archive is made available only to authorized users. For example, we monitor for signs of excessive downloading, a behavior which may indicate attempts to obtain significant portions of the content in violation of our Terms and Conditions of Use (<http://www.jstor.org/terms.html>).

Recently, JSTOR experienced and responded to a deliberate effort to gain unauthorized access to the archive and to systematically download a very large number of articles. While working through this situation, we uncovered disturbing evidence about not only the methods used to gain access to JSTOR, but also the broad awareness of these methods within communities intent on illegally downloading licensed resources in general. The unauthorized use exploits unrestricted proxy servers on college and university campuses in order to gain access to any and all resources licensed by that campus. We are sharing this story broadly in the community to alert everyone to this serious weakness in this particular authentication approach. Although we cannot propose a simple solution to

the problem, it is our hope that this story will contribute to a constructive and productive dialogue that will lead to the implementation of more effective methods for authentication - methods that will balance important issues such as broad access, security, privacy and user convenience.

Unauthorized Use of the Archive

Stephen Martin, JSTOR's User Services Technical Assistant, first noticed unusual patterns of use of the archive in August, and since then has worked diligently to uncover what was transpiring. Once it was clear that it was unauthorized activity, we began looking for ways to bring the abusive behavior to a halt. He describes the chain of events that led to his discovery:

Toward the end of August we noticed that an IP address at a participating site was downloading a lot of articles—hundreds of complete issues. We denied access to JSTOR from that address and sent a note to our contacts at the site. At this point, we had no reason to think that this was anything other than ordinary, “over-enthusiastic” use of the archive.

A few days later, another address had a noticeably high number of article downloads, with hundreds of complete issues. So, again, we denied access from the second address and sent a message to our contacts there. Our first indication that something strange was afoot was in their reply. They had contacted the office to which the IP address in question belonged; no one there had been using JSTOR, and the machine that the IP address belonged to was an internal web server, and thus not a workstation from which people typically browsed the web.

The web server, which had been set up innocently and which was basically unused, was also an unrestricted, or “open” proxy server exploited as part of what now appeared to be a coordinated effort to download JSTOR content.

Proxy servers, by way of background, are computers with access to the Internet that are configured specifically to relay requests from one machine on the network to another machine. Proxies can serve a number of legitimate purposes. For example, in the case of electronic resources authenticated by IP address, they are often used to provide remote access to authorized faculty and students when they are away from the campus network. These proxies function acceptably as long as the appropriate measures are taken to ensure that only authorized users are allowed access. However, we are discovering that as proxy servers proliferate, many are being set up without proper access restrictions. It is not uncommon, for example, for individual departments on campuses to maintain their own proxies, or for students or staff to set up personal web servers and to unknowingly establish an “open” machine. When one of these unrestricted proxy servers is assigned an IP number within a range to which JSTOR has been instructed to allow access, literally anyone in the world with access to the Internet can access JSTOR via this proxy. These so-called “open proxies” provide wide-open gateways to any licensed resource or campus service which uses IP authentication.

In this specific instance, the unauthorized user had downloaded lists with the IP numbers of open proxy servers from web sites specializing in providing this information. Once these IP numbers were obtained, the user tested them to determine if they were authorized for access to JSTOR. From the IP numbers that did have access, downloading of articles commenced.

Implications for the Scholarly Community

This unauthorized use has been an eye-opening experience for us, and further research for information about open proxies has resulted in some disturbing findings. As we discovered early on, novices

who are setting up web servers on their local machines don't always realize that there may be steps required to restrict open ports on these machines. It is also striking to note that most of the open proxies we found existed unbeknownst to those who are ultimately responsible for the security of the academic resources they have licensed on behalf of their institutions. Although the threat of open proxies has been recognized for some time in the web community, it does not appear that many resource providers or administrators are aware of the fact that open proxies are being used to gain access to restricted campus resources. Those people who want to take advantage of this situation, however, are quite aware of these openings. Lists of “Open Proxy Servers” float around the Internet just like illegal calling card and credit card number lists. We recently discovered a web page, for example, within which a student provides detailed and easy to follow instructions for finding and using open proxies to freely download restricted resources.

This state of affairs is alarming and it is highly probable that unauthorized use of licensed resources takes place continually. JSTOR has begun implementing technological solutions that help uncover and prevent this behavior on our end, but as long as IP authentication remains a primary authorization mechanism, and open proxy servers continue to proliferate, no technical solution can be 100% effective.

At this point, we encourage our participants to become more familiar with more robust methods of authentication than is offered by IP addresses. There are a number of initiatives underway, most notably Shibboleth (<http://shibboleth.internet2.edu>) and the DLF-sponsored project to develop a protocol to assist institutions in using digital certificates to authenticate licensed resources (<http://www.diglib.org/architectures/digcert.htm>). We would be happy to work with participating institutions that are ready to implement either of these capabilities.

JSTOR has posted information on open proxy servers for participants at <http://www.jstor.org/resources/openproxies.html>. Also, Kevin Guthrie's December 6 message to JSTOR participants can be found at <http://www.jstor.org/resources/openproxies.message.html>. If you are not a JSTOR participant and want more information, please contact us at jstor-info@umich.edu.

CITATION EXPORT FEATURES NOW AVAILABLE IN JSTOR

Many JSTOR users have expressed an interest in exporting bibliographic information from a JSTOR article or citation list in a format compatible with their local bibliographic software. These requests have come from numerous professors, students, and librarians, and reflect the increased popularity of electronic research and bibliographic software programs such as EndNote®, ProCite®, and Reference Manager®. In response to these frequent requests, earlier this year JSTOR began developing a feature that would facilitate the export of citation information from the archive in a variety of formats. As Virginia Benjamin, Faculty Liaison for Electronic Library Services of the University of Georgia libraries, noted, “I have a student or faculty member ask on almost a weekly basis about JSTOR compatibility with the citation managers, so I'm thrilled to hear of your progress.”

Released in November, the new citation manager functionality gives users the ability to save citations from the search results, table of contents, article view, and citation view pages. Users can then export citations in a variety of text-based formats: tagged fields, tab delimited, or printer friendly.

There are also a variety of export options. Citations can be downloaded as a text file, sent in an email, or viewed in a new browser window. More information about these export formats and options is available at <http://www.jstor.org/help/citationmanagerhelp.html>.

After export, researchers then have the ability to manipulate JSTOR citations for the creation of personalized bibliographies. Items that have traditionally been especially difficult to manage, such as stable URLs and abstracts, are now easier for researchers to organize, store, and utilize.

In this initial implementation, the exported citation data is compatible with EndNote, ProCite, and Reference Manager, with the flexibility to adapt to other bibliographic software in the future. For added convenience, JSTOR is also providing downloadable filters for each of these programs. Links to the filters and instructions for downloading them are available at http://www.jstor.org/help/filters_help.html.

The inclusion of JSTOR citation data in a tab-delimited format will also allow users to approximate specialized bibliographic software functionality with other more common desktop applications, including spreadsheet programs such as Microsoft Excel. More information about exporting citations to bibliographic software, including spreadsheets, is available at http://www.jstor.org/help/export_help.html.

The new functionality also benefits JSTOR users who do not use bibliographic software by allowing them to save, print, or e-mail the citation information found through JSTOR searches or browsing. Each article citation includes a link to save the citation to a Saved Citations list. From the Saved Citations list page, users are allowed to choose their export options and export their citations.

If you have questions about using this new feature, or would like to offer suggestions for future implementations, please don't hesitate to contact us at jstor-info@umich.edu.

JSTOR INTRODUCES NEW ACCESSIBILITY FEATURES

We recently released modifications to our website and to the full-text article delivery capabilities within JSTOR that enhance the archive's accessibility for visually impaired and learning disabled users. Improving accessibility to the JSTOR website and the JSTOR archive for this particular group of users is consistent with our mission to extend access to the archive as broadly as possible. In addition to benefiting visually impaired and learning disabled users, these modifications also help a number of our library participants who may have obligations to comply with various accessibility requirements.

Challenges in Creating an Accessible Archive

Improving the accessibility of the JSTOR archive poses unique challenges because journal content in the archive is delivered to end users in image-based formats. Unlike material that appears online in text or HTML format, PDF images are not compatible with the screen reading software relied upon by many visually impaired users; however, this image-based approach is central to the fulfillment of JSTOR's mission, which is in part to function as a trusted archive upon which libraries can depend. This is a basis for our not-for-profit status and is a key premise on which we were founded. If libraries are to rely on our archive of journals, JSTOR must deliver the journal content in a manner that preserves the integrity and the "look and feel" of the original print journals. Therefore, we are developing mechanisms to deliver the images in a format compatible with assistive technologies.

TIFF Download Option

As a first step in facilitating access while remaining true to our archival mission, we now offer users the ability to download articles in TIFF (Tagged Image File Format) as well as image-based PDF and PostScript formats. Through the TIFF approach, each page image for an article is packaged into a single, multipage file. Once downloaded, this file can be directly opened and read with a document scanner and reader, such as Kurzweil 1000. Alternatively, the TIFFs can be used with Optical Character Recognition (OCR) software to convert the image file to text. The images that make up these TIFF packages are the same as those used to create our High Quality PDFs and therefore, the two formats are virtually identical in file size and quality.

Improved Site Navigation

In addition to improving the accessibility of journal material in JSTOR through the creation of the TIFF download option, we have completed the first phase of accessibility improvements to our website that will better enable users of assistive technology to navigate to the TIFF option. Many of these modifications streamline the navigation process and make it more intuitive, thereby improving the usability of the site and overall user experience for the broader JSTOR community. The modifications we have made thus far represent a major step in our efforts to make all pages within the JSTOR website compliant with standards relied on by the accessibility community - Section 508 of The Rehabilitation Act and W3C WAI Priority 1 standards. With our latest modifications, all of the main pages a user encounters in the process of retrieving JSTOR journal content are compliant.

JSTOR tested these changes by using popular screen readers and by engaging accessibility experts and members of the visually impaired community, who reviewed the modifications and provided useful feedback. Our improvements to the navigability of our website have been well received. Likewise, JSTOR's delivery of content in TIFF format, while not as preferable to users of assistive technologies as text-based format, is appreciated in light of our need to balance the interests of the accessibility community and the fulfillment of our archival mission. Axel Schmetzke, Ph.D., Associate Professor of Reference and Instruction at the University of Wisconsin-Stevens Point, says:

JSTOR has been most responsive to recent concerns about the accessibility of online information products. Not only did JSTOR re-design its website (its gateway web pages to its archival articles files) to accommodate the needs of all users, including those with visual disabilities, it also decided to add TIFF files as an output option for its archived articles. While TIFF files are still image-based, they provide fewer hurdles than PDF-image files for those users who seek to convert them into accessible text files with the help of OCR software. ... Certainly, this is a step in the right direction. ...

This non-profit organization is to be commended for its sincere and ongoing effort to improve the accessibility of its product. ...

According to Bryna Coonin, Coastal Resources Management Librarian, East Carolina University, "JSTOR is among the very few vendors of electronic library products who are currently aware of, and seriously attempting to address, issues of accessibility. JSTOR is making a genuine effort to make this valuable resource more accessible to all of its authorized users."

We look forward to working with our participants and the visually impaired community to further these accessibility improvements, and would appreciate any feedback or questions you might have about our recent efforts. Further details about JSTOR and accessibility, including instructions for accessing and using the TIFF option, are available on our website at <http://www.jstor.org/about/accessibility.html>.

UPDATE ON JSTOR'S COLLECTION DEVELOPMENT ACTIVITIES

In December, JSTOR completed its largest journal release to date, making available the final 47 titles in the Arts & Sciences II Collection (A&S II). This brings the total number of titles in the JSTOR archive to 322. According to Heidi McGregor, Director of Publisher Relations at JSTOR:

Completing the A&S II Collection marks an important milestone for JSTOR. With the release of the first titles in the A&S II Collection in June 2001, we promised our participating institutions that we would build the collection to 100 titles by the end of 2002. Delivering on this promise with a total of 122 quality titles and some 3.4 million pages of content is tremendously gratifying. What is even more exciting is the breadth of journal coverage in the collection, expanding our long-term commitment to the humanities and social sciences.

Journals in African Studies, Archaeology, Classics, Geography, History of Science, Latin American Studies, Middle East Studies, and Slavic Studies are at the core of the collection, currently accessible to over 800 participating institutions.

Additional information about the Arts & Sciences II Collection, including a complete list of titles and participation information, is available on the JSTOR website at <http://www.jstor.org/about/asII.list.html>.

Beginning in January, JSTOR will also make available a collection of journals in mathematics and statistics. The Mathematics &

Statistics Collection, as it is named, will bring together 30 journals from various existing JSTOR collections (22 journals from Arts & Sciences I, 5 journals from Arts & Sciences II, 2 journals from General Science, and 1 journal that appears in both Arts & Sciences I and Business).

Unlike other JSTOR collections where we have always added new journals to the archive, the Mathematics & Statistics Collection will be comprised entirely of journals already available through existing JSTOR collections. We are taking this new approach, unique in our experience, in response to the expressed interests of a targeted research community that does not currently participate in JSTOR, and who have a limited need for the broad spectrum of disciplines available through our larger collections. We were encouraged to make this collection available by academic departments and library groups, primarily based in Europe, that focus on research in mathematics and statistics. We are delighted to reach out to this new group of institutions and scholars.

It is important to emphasize that the Mathematics & Statistics Collection does not offer new content for the vast majority of our existing participants. Therefore, should you be interested in participating in the Mathematics & Statistics Collection, we urge you to look carefully at the list of journal titles at <http://support.jstor.org/mathstats/list.html>. To request additional information about this collection, please contact jstor-participation@umich.edu.

<http://www.jstor.org>



JSTOR FACTS

January 1, 2002 - December 18, 2002

Total accesses:	78,734,885
Searches performed:	16,372,408
Articles printed:	10,456,475
Pages viewed:	34,499,042

Total issues available:	82,139
Total full-length articles available:	870,171
Total articles:	2,018,295
Total pages currently available:	12,083,462

Number of participating institutions: 1,513
Number of countries with participants: 71

Number of participating journals:	365
Number of journals available online:	322
Number of participating publishers:	182

COMMENTS

In April of 2002 our University started to participate in JSTOR with the Business, Arts & Sciences I and Arts & Sciences II Collections, and through this year it has been named by our students and teachers as one of the best information resources available.

Luz María Cabarcas Santoya, Library Director
Pontificia Universidad Javeriana
Bogotá, Colombia

I just used for the first time the save/export citations function. I exported my citations to ProCite quickly and easily. The new function is totally fabulous! It made my night!

Sarah Hayford, Student
University of Pennsylvania

JSTOR is truly remarkable! As a mathematician I find the easy access a gift from heaven.

Jenny Harrison, Professor
University of California - Berkeley

I have only just discovered JSTOR and I want to say a big thank you to all of your researchers and web people for doing such a great job. You have been a lifesaver for me today!

Sheila Bannerman, Student
University of Lethbridge
Lethbridge, Canada

I am a first time user of this service and have just downloaded a 1988 article. Having this kind of access is of enormous help. Thank you for making this service available to the scholarly community.

Hugh F. Cline, Adjunct Professor of Sociology and Education
Columbia University

