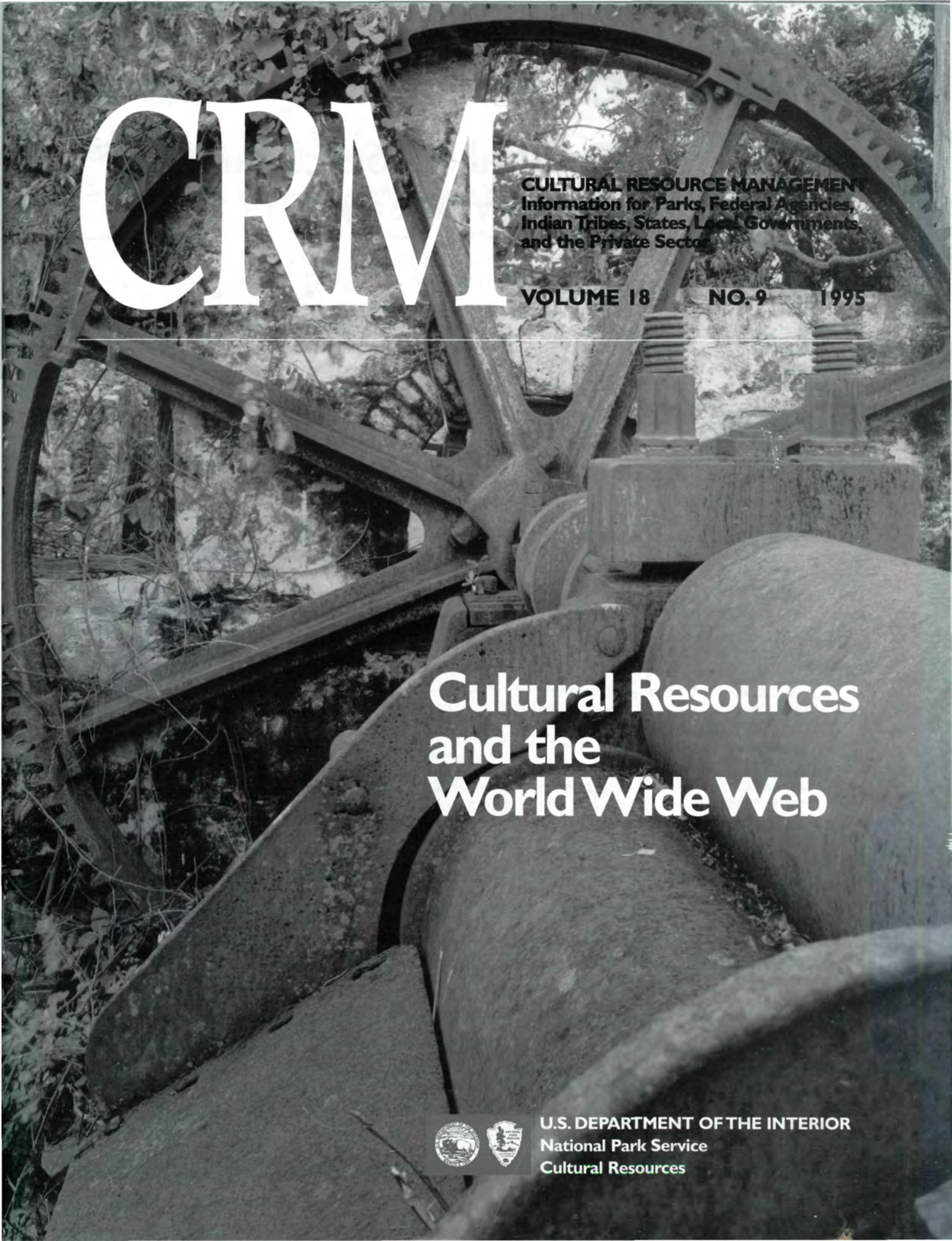

CRM

CULTURAL RESOURCE MANAGEMENT
Information for Parks, Federal Agencies, Indian Tribes, States, Local Governments, and the Private Sector

VOLUME 18 NO. 9 1995

Cultural Resources and the World Wide Web

U.S. DEPARTMENT OF THE INTERIOR
National Park Service
Cultural Resources

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To promote and maintain high standards for preserving and managing cultural resources

DIRECTOR
Roger G. Kennedy

ASSOCIATE DIRECTOR
Katherine H. Stevenson

EDITOR
Ronald M. Greenberg

PRODUCTION MANAGER
Karlota M. Koester

GUEST EDITOR
Diane Vogt-O'Connor

SPECIAL ISSUE ADVISOR
Steve Grosz

ADVISORS
David Andrews
Editor, NPS
Joan Bacharach
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Randall J. Biallas
Historical Architect, NPS
John A. Burns
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Antoinette J. Lee
Historian, NPS
John Poppeliers
International Liaison Officer
for Cultural Resources, NPS
Brit Allan Storey
Historian, Bureau of Reclamation
Federal Preservation Forum

CONTRIBUTING EDITORS
Stephen A. Morris
Certified Local Governments (CLG) Coordinator, NPS
Kay D. Weeks
Technical Writer-Editor, NPS

CONSULTANTS
Michael G. Schene
Historian, NPS
Wm. H. Freeman
Design, Imaging, Production–Freeman Publishing Services

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Cover photo: Exit end of Cane Crusher of a Sugar Mill at Estate Annaly in St. Croix, Virgin Islands. Suggests the motion and interlinked nature of World Wide Web, where all knowledge is grist for the mill. Photography by Jet Lowe. Courtesy of the Historic American Engineering Record Collection at the Library of Congress. Image number HAER VI-8-3.

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Diane Vogt-O'Connor

What in the World is the World Wide Web?

The World Wide Web (also known as the Web or WWW) has become one of the most exciting new tools for cultural resource managers in the latter half of the 20th century. Combining aspects of publishing, broadcasting, networking, teaching, interactive participation, resource sharing, and even fund-raising, the Web offers cultural resource managers exciting new opportunities and challenges.

Among the opportunities is the chance to bring your collections, sites, structures, exhibitions, publications, and expertise into the homes and offices of some 10+ million Web users. Museums, archives, libraries, schools, tribes, professional organizations, and businesses are all developing Websites to share their cultural resources with the burgeoning audience of Web users.

Among the challenges is the need to keep the information lively, changing, audio-visually rich, story-oriented, and compelling for a relatively young, educated, and feisty international audience. The competition for the attention of this audience is fierce—leading to a suprisingly high level of sophistication in many cultural Websites and in many Web users. The payoffs include a rich array of public relations, educational, and outreach advantages; as well as the challenge of being able to adequately handle the increasing volume of queries and visitors resulting from the increasing visibility of your cultural resources.

This issue of *CRM* serves as an entry-level manual for cultural resource managers wanting to learn how to use the World Wide Web as both an informational source and as an outreach tool. It contains articles on:

- How to search the WWW for effective use;
- Where to find assistance and resources in all aspects of Web use and development work;
- Guidance on future directions in governmental information policy;
- Case studies on Web development from the Smithsonian Institution, the Committee on the Preservation of the Anthropological Record, and the National Park Service; and
- Guidance on the legal aspects of Web work.

NPS Internet/World Wide Web

Ever since the invention of movable type, people refractory to change have grumbled that older methods weren't sufficient to get a message across. Smoke signals, drums, and courier pigeons had after all, extended the reach of the human voice. Writing had certainly extended both the reach and the shelf-life of messages.

But movable type did have its sway, after which came movable images, sometimes with subtitles, sometimes not. Now, in what some people describe as the post-Gutenberg age, we are at work on the process of moving from printed language to printed language and images.

Internet is a stage in an unfolding process of amplifying the volume of the data exchanged and the speed of transmission. There is no practical alternative to the Park Service's participation in this latest evolution of communications. Everybody is going to be using Internet or World Wide Web or something close to them.

National Park Service Director Roger Kennedy and Secretary of Education Richard Riley viewing the World Wide Web with students from Ashburton Elementary School.

We must be among those having this capability, just as we needed to be among those capable of verbal language (with children, we call it talking) and capable of making use of the miracle of writing. The only question really becomes, How should we add some wisdom to the store of information? How do we seek some quality amid the burgeoning of quantity?

Roger G. Kennedy
Director, National Park Service

What is the Web?

The Web is an internationally networked information system that presents text including databases and high resolution images, sound, and video on all aspects of knowledge. The effect is like an ever-growing multimedia encyclopedia that is being created interactively and cooperatively by the users.

The World Wide Web is also:

- A highly visible place to define who we are, what we have, and what we do to a rapidly growing audience currently estimated to be over 10+ million users.
- An innovative forum for testing out new ideas for sharing our resources in publications, exhibitions, interpretation programs, and educational activities integrating text, graphics, audio, and video.
- A showcase for our staff expertise in "Ask the Experts" columns, online magazines, and online chat sessions.
- A virtual visitors center for sharing practical information on our cultural resources with tourists.
- An opportunity to use our cultural collections and resources to leverage funding for digitization and outreach projects via digital vendors, corporations, and foundations.
- A powerful antidote to professional isolation in remote areas as the Web allows us to network with our professional colleagues and friends regardless of how distant they may be.
- A speedy way to maintain, share, and update policies, procedures, and training in a single searchable place at minimal cost.
- A superior desktop research tool allowing access to digital information including databases made or held by libraries, archives, museums, and other cultural resource repositories and organizations internationally.
- A powerful broadcast studio for sharing information on our events, activities, and programs.
- A web of informational resources uniting cultural resources professionals internationally through both planned searches and serendipitous browsing via hypertext links.
- A place to sell products and request donations via cooperating associations in order to make cultural resources more self-supporting.
- A democratic assemblage of information that requires basic training before mastery is possible.
- The world's most powerful printshop for telling our stories and sharing our mission, history, and vocation with an international audience.
- The "killer application" that provides a common entry point to all other features of the Internet.

Diane Vogt-O'Connor is the Senior Archivist in the Museum Management Program of the National Park Service and guest editor of this issue of CRM.

Henry C. Kelly

Government Information Policy

The communication tools provided by contemporary technology provide convenient, practical, inexpensive access to people and information resources worldwide. Anyone with an inexpensive home computer willing to spend $10 a month can sit at home and look at pictures taken by the Hubble telescope almost as soon as the NASA scientists in charge of the project.

Interested citizens can look at government press releases, proposed legislation, and other documents the instant they are released. Online browsers can now participate in discussion groups that span the globe, search through digital

libraries, and explore archival photographic and sound recordings ranging from classics to amateur productions. While full motion video on demand is now expensive, intense competition to deliver entertainment products to homes is likely to make even this service available to most Americans by the end of the decade.

These tools are already transforming the way Americans do business. Networked information and online tools are making standard transactions more efficient and providing opportunities to do things that were simply not considered possible—and certainly not affordable—using earlier technologies. Businesses can advertise and sell products through the World Wide Web. Hospitals can send CAT-scans through the net to get expert consultations from distant specialists. Students and scholars can avoid the cost and inconvenience of traveling around the world searching for text or multi-media materials and search enormous archives, located around the world, without leaving their studies.

The White House World Wide Web page.

Perspective on What's New

Networked information is just the tip of the iceberg—the easy part where the artifacts of earlier communications technology (such as prints, photos, recordings) are digitized and transferred to computer archives. Modern information technology clearly also offers something qualitatively different—a unique ability to create synthetic environments. These environments permit an entirely novel form of communication. Instead of seeing a photograph of an old airplane, for example, a complete three-dimensional representation of the plane can be constructed in the computer so that it can be turned and examined from all sides. Moreover, simulations permit you to enter the plane and fly it over terrain as historically accurate as archival records permit.

Similarly, completely rendered ecologies can be simulated based on archival documentation. These ecologies can be explored by individuals or groups working together in the same simulated environment. The individuals joined in the exploration need not be in the same physical place. The individual participants can cooperate only in the same virtual space seen on their computer screens. These environments can convey information just as it would be explained if an infinitely patient expert led you on a field expedition or the way an experienced manager would apprentice new staff members so that they could learn the intricacies of a business.

Computer simulations, of course, allow risks real expeditions wouldn't allow and permit explorations only possible through imagination—exploring lost cities, the miniature internal worlds of cells, or enormous worlds in outer space. These advanced, interactive, multi-dimensional systems convey information and ideas in ways that are easy to grasp, and in ways that make it easy to bridge the gap to more formal representations of information in words and numbers.

The Administration's Broad National Information Strategy

While it's impossible to predict the impact of these powerful new tools with any precision, there can be little doubt that mastery of the power of information technology will be essential to the U.S. economy in decades ahead. It also is likely that these new tools can be used to achieve real gains in areas ranging from health care, to entertainment, education, public health and safety.

Recognizing this, the Administration has an ambitious program designed to ensure that as many Americans as possible are able to take advantage of new information technologies as rapidly as possible. Since it's obvious that virtually

all of the work and investment will be done without federal direction or funds, the strategy has the following basic elements:

1. Ensuring that the laws and regulations governing communications encourage private investment and create a competitive environment with inter-operable systems—an environment needed both to stimulate innovation and to prevent the emergence of monopolies. The Administration has been working with the Congress to design legislation that will achieve these objectives. It has been working with a variety of standards, organizations, and business groups to promote seamless interoperability between systems, to ensure the privacy of communications without compromising critical law-enforcement responsibilities, and to ensure the protection of intellectual property.
2. Ensuring the widest possible access to new technologies both by protecting universal access to phone, broadcast, and some advanced services in a modernized telecommunications market and by providing funds for connecting schools and libraries to advanced services. Universal service is a key part of the Administration's proposals for telecommunication reform—including provisions providing affordable links to classrooms. The Department of Commerce's Telecommunications and Information Infrastructure Program provides matching funds for schools, libraries, rural health care providers, economic development agencies, and state and local governments with innovative proposals for using telecommunication services.
3. Supporting research in areas key to widespread use of advanced information services where private funds are not available either because the risks are too great or the benefits to the nation far outweigh the benefits that any individual firm could capture. This has meant investing in key areas of advanced computer and communication technology (such as the six gigabit test networks being conducted in partnership with major telecommunication firms) and key systems issues relevant to the construction and evaluation of advanced education and training technology.

   The user-friendly, graphic interfaces now enjoying explosive market growth under names like Mosaic and Netscape resulted directly from federal software development funding. Federal research is also funding work in specific applications including health care (medical record management, digital transfer of X-rays, and other images), education and training, intelligent transportation management (traffic signals, air traffic control), and a host of other areas.
4. Providing convenient, efficient access to government information. The new communications technologies can make government operations and government information much more accessible, more timely, and more personal to citizens. They can also make it much easier to ask questions and receive responses that are timely, accurate, and tailored to individual interests and needs.

   These technologies can range in function from providing timely information on environmental regulations to efficient methods of filing state and federal income taxes.

   The information systems can also provide important tools for improving the productivity of government operations, making it easier to coordinate complex projects and keep the paperwork to a minimum.
5. Ensuring that worldwide communication services are inter-operable with domestic systems. The advantages of the new communication systems clearly don't stop on America's borders. U.S. businesses, research teams, students, and ordinary citizens clearly benefit when they are able to use the internet to reach archives in Italy as easily as archives in Nebraska.

The administration is working with a number of international organizations to encourage all nations to achieve universal acceptance of the principles needed to build an efficient global information infrastructure that incorporates competitive, private, inter-operable systems. The effort has met with surprising success in spite of the fact that many nations began the decade with their communications systems completely controlled by state monopolies.

Government Information

Clearly the federal government's central role in accelerating the development and use of advanced information technologies is ensuring a regulatory environment that encourages innovation and competition. At the same time, the government must provide the public with protection against monopoly abuse and ensure universal access to basic services. But the government has other crucial responsibilities—perhaps the most obvious of which is to make the best possible use of the new technology to make its own operations

more efficient, more open, and more comprehensible.

The federal government is too often seen as a distant, hostile power operating without concern for the needs of individual citizens. The Clinton administration began with a commitment to make every possible use of new information technology to do the following:

- Streamline government operations
- Reduce paperwork
- Make government operations more open, responsive, and transparent
- Drastically cut the paperwork and forms required to deal with the government

Technology clearly can't solve all of the problems caused by obsolete government management practices. Technology can provide key tools for achieving federal goals quickly and at an acceptable cost. Private firms have found that information technology can only lead to real productivity gains when it is used as an integral part of broad management reforms. The Vice President's "reinvention taskforce" has done just this. It has been issuing a stream of dramatic management changes aimed at making government more responsive to its ultimate customers—the citizens it is supposed to serve. Information technology plays an important role in many of these reforms.

Dramatic gains in the performance of a large system like the federal government require making investments and taking some risks before savings can be realized. This is obviously difficult in a time of extreme fiscal stringency. Many agencies are faced with the problem of maintaining an increasingly expensive system for handling public requests and inquiries while finding the funds to invest in modern information systems that will eventually make their operations much more efficient and less costly. The Administration feels that it has developed a balanced approach which can ensure adequate investment in new systems while still cutting the overall cost of government. But its plans are vulnerable to budget cuts from the Congress.

Federal efforts to use information have taken three basic forms:

1. Providing convenient and easy-to-use tools for searching through the maze of government information and locating what you want when you want it.
2. Making raw data available in digital form so that it can be stored, searched, and transmitted by the new systems.
3. Providing a convenient way for citizens to communicate with the government—both sending forms to the government and receiving individualized data from the government.

Navigating within the Federal Information Infrastructure

The White House Home Page is centerpiece of the federal government's efforts to make information available. This World Wide Web page (http://www.whitehouse.gov) provides a single point of entry to the federal digital world. Supplemented by the FedWorld collections maintained by National Telecommunications and Information Service (URL: http://www.Fedworld.gov) the White House Home Page leads systematically to federal information—everything from agency press releases to genome sequences in NIH. The basic page is being upgraded to provide more convenient searching tools for the majority of us who may not have known to look for the Weather Bureau inside the National Oceanic and Atmospheric Administration (NOAA) inside of the Department of Commerce.

In addition, a series of specialized entry points has been developed for users with clearly identified interests. The U.S. Department of Agriculture, for example, provides a convenient point of entry for users familiar with its extension service programs. The Vice President's National Performance Review team has worked with the Small Business Administration and the Department of Commerce to introduce a U.S. Business Advisor page (URL: http://www.far.npr.gov.VDOTS) providing a format convenient for small businesses interested in finding practical information on regulations, Small Business Innovation Research programs, and other topics.

Creating Digital Records

While much of the information generated by the federal government is produced on computers—including the word processor used to create this manuscript—only a fraction of this information is available online. There are several reasons for this. Some are simple to remedy and others much less tractable.

Problems resulting simply from inertia or lack of understanding on the part of public officials are real but are being quickly remedied. The more serious problem is finding the funds needed to purchase and maintain the computer and communication equipment needed to make the information available, to periodically refresh the data, and to reformat it as the communications, software, and hardware systems change. In most cases it should be much less expensive for the government to initially make information available in electronic form than it is to make it available through conventional means, such as printing documents or answering phones.

Agencies find it difficult to justify investments in new computer systems while they main-

tain parallel, older systems to serve people lacking access to computer communications. The problem is compounded because many agencies must fund data dissemination by selling their publications. Shifting to free electronic dissemination would dry up the only source of funds available for making information available in any form. There is an old debate about whether the economy as a whole benefits if the federal government charges citizens for information which they could use to improve the performance of their businesses or make them better citizens. The new technology has forced the issue into the spotlight at a time when funding for any new programs—however cost effective—is difficult to obtain.

In spite of these problems, the administration has aggressively encouraged agencies to make material available in digital form. The efforts have met with a considerable amount of success—particularly in agencies familiar with the new technologies. A search of the federal digital holdings will, for example, lead to the following: (begin at URL:http://www.whitehouse.gov).

- Extensive collections of National Agricultural Statistics maintained by USDA including the National Spatial Data Infrastructure database in the Soil Conservation Service
- Collections of unclassified satellite photographs from the CIA
- An enormous variety of real time and historical weather data and weather satellite imagery from NOAA as well as extensive environmental data and information on geographic, atmospheric, and oceanographic information
- Extensive collections of press releases, regulatory notices, and announcements from most federal agencies
- Educational statistics from the Department of Education
- Seven million references and abstracts in the National Library of Medicine
- GRATEFUL MED software providing inexpensive access to the Library's collection of medical and health science information
- The National Park Service's descriptions of the 360+ national parks, including overviews of trails, camping, weather, site highlights, and peak tourism; as well as overviews of all NPS programs from curation to the Historic American Buildings Survey (http://www.nps.gov)

The funding problem is compounded when the information is not available in digital form. This is true particularly for archival information where documents are available only as ink on paper, microfilm, original photographs, motion pictures, sound recordings, and other document types captured using older technologies. The cost of digitizing this information can be very high, though the actual life of each generation of digital copy may be shorter than that of the original document. Digital data can be copied to new storage technologies at a comparatively low cost.

The bulk of the reformatting cost is associated with moving original rare materials from storage and ensuring that they are properly handled, described, and made available. Materials with unclear copyright status may also require some legal research. It would be extremely useful to provide digital representations of archival and museum materials, such as photographs, sculptures, or technology of historic interest.

The most attractive digital format for archival and museum materials would be one in which the digitized image could be manipulated—or even disassembled—as a part of an interactive virtual environment. The cost of creating such representations is now well beyond the reach of agencies with federal collections. Technology costs change rapidly however.

It is unlikely that much archival information on cultural collections will be transferred to digital form using today's tight federal budgets. Instead, cultural resource managers must develop innovative funding approaches including foundation funding, partnerships, and cooperative agreements with business and academia.

To be successful, these innovative approaches must take advantage of the enormous resource represented by federal archivists, curators, historians, and other staff. These cultural resource managers are familiar with the significance of the digitized collections. Cultural resource managers provide significant "value added" services when they share their knowledge and expertise about the digitized collections with the public via the new information technologies.

Communicating with the Government

Effective use of new information systems means much more than simply making information available in raw form on a modern communication network. The effectiveness of the system depends on an ability to reduce the transaction costs people experience when dealing with the government. In particular, this means getting clear, timely answers to questions and minimizing the paperwork and hassle involved in responding to federal requests for information.

We hope that the networks being put in place will lead to a great improvement in systems which now depend largely on phone-answering and paper-mailing. Several additional steps are

—**Kelly**, *continued on back page*

Paul Handly

Developing a National Park Service World Wide Website

A Brief History

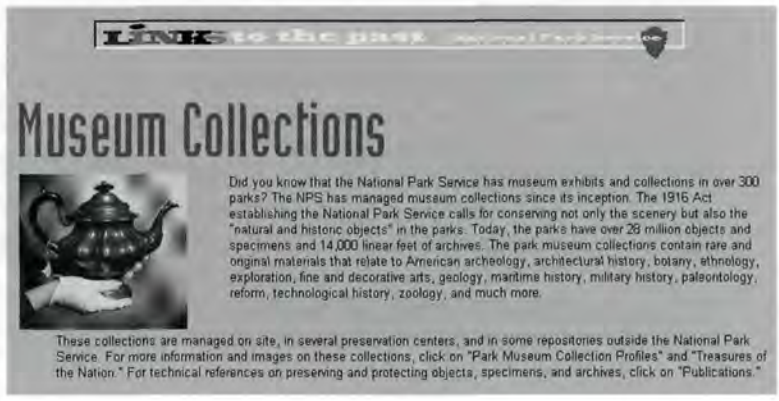
It's been described as an electronic insurrection. A ground swell of resources and creativity has been set free, and the key that opened the flood gates of this creativity is the World Wide Web (the Web). The Web, the graphical medium of the Internet, has put a whole new face on the way information is shared inside organizations and around the world. The Web has empowered millions who can now share their stories and information complete with pictures, sound, and even video.

The National Park Service World Wide Web home page.

The marriage between the National Park Service and one of the world's most innovative information technologies is easier to understand by looking at the purpose of the Internet. At its root, the Internet is designed as an information tool, and as such, it becomes a natural extension of the suite of interpretative tools used by the National Park Service staff to convey the experiences and uniquely American spirit that the nation's park lands embody. The importance of the Internet as a method of interpretation should not be underestimated.

In April 1994, an Executive Order required federal agencies to provide spatial data online for public access. The Internet was clearly the best and most accessible way to provide information across the United States. It was clear that the NPS should provide more than just raw spatial (Geographic Information System [GIS]) data on the Internet, and before long a small group of people began developing data applications on the Web that would be attractive to users. By October 1994, fueled by the Yosemite home page developed by Joe Coho of the Western Regional Office, Patrick Gregerson and the author developed basic home pages for the parks in the then National Capital Region (NCR). A discussion group was formed within NCR to discuss the potential and future direction for the NCR Websites.

By January 1995, this truly servicewide revolution had caught the attention of the Director and his staff. The Director applauded the work done on the Web, formalized the program and gave it his support. A small group, made up of WASO program staff, regional staff, a superintendent, and other park staff, was formed to plan out the development of the NPS Web program. That same month, the first conceptual framework for the NPS Website was presented at a national teleconfer-

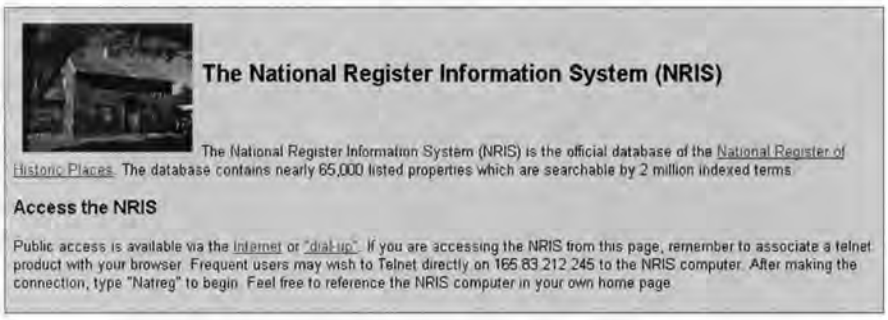


The NPS Museum Collections home page includes profiles of over 300 NPS museum collections; a Treasures of the Nation exhibit containing images and descriptions of nationally significant objects and specimens; and bibliographies and publications created by the NPS Museum Management program.

The National Park Service Archeology home page.

ence, and based on that framework, members of the team agreed to work toward completing the first stage of the NPS Website by March 1995.

For the next two months, an intensive effort was made by team members to flesh out a comprehensive Website for the entire National Park Service. Each program office was primarily concerned with developing its respective home page, but offices with more expertise assisted in the development of multiple home pages. Dave Duran, of the NBS (formerly the NPS GIS Washington Office) who posted the first draft of the National Park Service home page months earlier, worked closely with the author in setting up and building the current NPS Web Server, even as Dave was developing the NBS Website. The Denver Service Center's Technical Information Center (DSC) scanned the entire Red Book Index (The National Parks: Index 1993) and sent it to the NCR where the file was converted into Web hypertext mark-up language (HTML) format. This text was the basis for each of the 368 park home pages. The graphic headers for each page were developed largely thanks to Russell Bellknap of the DSC's Eastern Team. Each program area of the Service contributed to the rapid growth of the Website. It is this "distributed" nature of the Web and its authors that is the real power and force behind the exponential growth of the Web in general, and the NPS site in specific.



The National Register Information System home page.

By March 1995, much of the work that had been outlined in the original meeting two months earlier had been completed. Two review and comment sessions were held to help hammer out the kinks in the new NPS Website. The first session, based in Denver, consisted of approximately 20 interested parties from the natural resources, planning, and other communities with the NPS. The second session, held in Washington, DC, provided a similar opportunity for interested parties and other NPS Web developers to shape the growth and look of the NPS presence on the Web. By National Park Week the NPS Website had grown from a prototype to a full-blown vehicle for conveying interesting information to the public and to NPS employees throughout the Service.

Soon after National Park Week, Steve Grosz, Steve Pittleman, Chip Jenkins, Betsy Chittenden, the author and many others began the task of producing the first servicewide vision document aimed at guiding the further development of the NPS Website. By early August the *NPS Web Primer* and the *NPS Web Manual* were released via cc:Mail. Using these two documents, employees throughout the Service have added to the growth of NPS's Web development.

The interest and commitment to the NPS Web development process by a wide range of NPS employees is a reflection of the growing interest in the larger Internet community as a whole. The transformation from the one-or-two person effort into a servicewide effort occurred faster than many previously thought possible.

The NPS efforts have not been lost on the vast audience of the Internet. Those who have contributed to this process should be proud of the fact that the NPS Website was rated in the top 5% of all most popular sites on the Web by Point Survey. Through the dedication of this "grassroots" effort, much has already been accomplished and with the growing interest by park staff, who knows where this might lead?

Paul Handly is the National Park Service Webmaster.

Marc Pachter

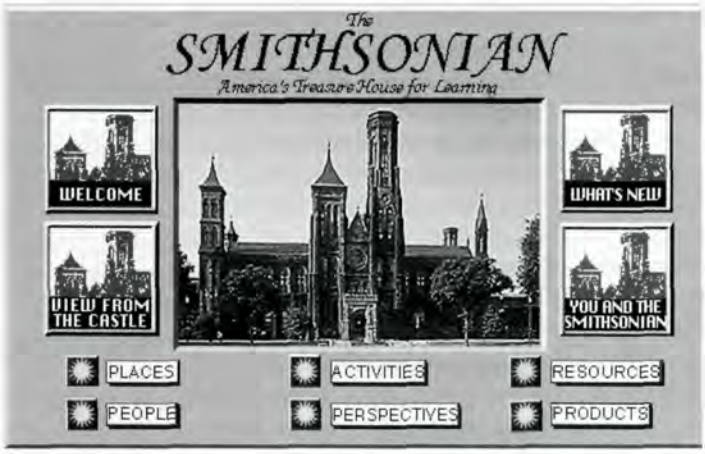
The World, the Web, and the Smithsonian

Once I would have said that a task as ambitious as creating a vast, useful, and consistent Smithsonian presence on the Internet was inherently impossible. This has nothing to do with the complexity of available technology. Indeed, online technology has progressed to the point that it can be said **any** organization can master it. The problem faced by the Smithsonian is organizational **complexity**, organizational **culture**, and organizational **will**.

The Smithsonian, seen from the outside, appears to be a tightly coordinated institution. In fact, it is constructed from such an amazing variety of resource bases (having both public and private funding derived from many different sources), origins (each museum and research center emerged out of different historical circumstances and governance structures), and intellectual focuses (it harbors myriad disciplines and tasks within the larger groupings of science, history, and art) that any effort to create a unified strategy of presentation is, to say the least, bound to be an adventure.

Why did the effort work in this case? First of all, it must be said that electronic projects of any kind evoke a necessary and refreshing humility from most participants in the planning process. Very few people in our line of work bring long histories, recognized expertise, or embedded assumptions to discussions about online presentations.

There may be doubts among some about the usefulness of such efforts—we are still in the age of faith, not certainty about the potential use of new enormous visual databases flashed around the world in an instant—but there is also remarkably little smugness about the right and the wrong way to proceed. This leads to a refreshing openness among participants, genuine discussions about needs and solutions to needs, and even a certain communal spirit which comes of all being in it together.



The central Smithsonian's World Wide Web home page represents the Institution's first guess as to the routes of information sought by potential users of the 20-hour-long site.

If this server is busy, you may want to visit the Smithsonian mirror site in California

Welcome

A brief video clip of the Secretary welcomes you to the Web. Audio only is also available but requires software t simultaneously run audio and visual information or an audio player. Links to an Overview of Smithsonian Muse description of Navigating the Electronic Smithsonian, a search capability to explore all aspects of the Institution, Encyclopedia Smithsonian (answers to frequently asked questions about the Smithsonian and other topics), and information on Planning a Visit to the Smithsonian are available here as well.

View from the Castle

This section contains a monthly message from the Secretary of the Smithsonian Institution on topical issues. It n viewed either as text or played with software that has audio capability. Links to Smithsonian News Releases and Secretary's Speeches can also be viewed.

What's New

This section includes information on new and temporary exhibitions for most of the Smithsonian's museums an galleries and the National Zoo. It also includes new and recent additions to the Smithsonian Web Server. And a s which describes Electronic Smithsonian. Finally, press releases from the Smithsonian are available electronically

In the Smithsonian's case at least, humility came into play even in central administrative planning. There was, blessedly, no rigid master plan from on-high which began the process of our online conversion. From the first, it was recognized that we had to tap into the energy and intuition of those staff around the Institution who had long been testing the possibilities of the Net and other electronic options.

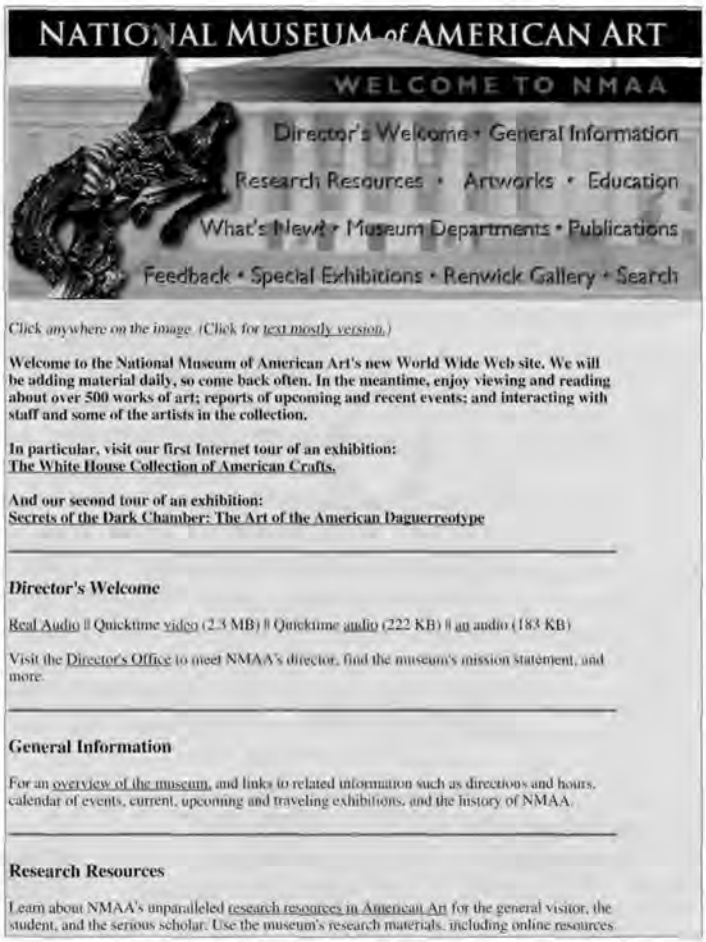
The Smithsonian's first comprehensive experiment in the development of an information-rich and user-friendly home page was conducted by its National Museum of American Art in a two-year relationship with a commercial online service.

A full year before January 1995, when we began our determined effort to create an all-Smithsonian Website, we had invited anyone in the Smithsonian community who had an electronic project to a staff-only multimedia fair. This was facilitated by the resourceful director of our Information Age exhibition at the National Museum of American History. The effect was electric (no pun intended).

We also benefitted from a few years of testing online possibilities with such commercial services as America Online (AOL) and Compuserve. The AOL connection was particularly useful as a galvanizing force because, although coordination was centered in a pan-Institutional office, experience was monitored by a users' group from throughout the Institution. The high morale within the group, which owed much to the sensitive coordination of our Office of Elementary and Secondary Education, led to a voluntary decision to return whatever profits came to individual units from AOL participation into a common pool to improve online strategies.

In all organizations there are pace-setters. In ours, there were a number who, to paraphrase a country song, "were online before online was cool." Chief honors go to the National Museum of American Art, whose director saw the possibilities of building new audiences and therefore directed museum energies and resources to understanding the programmatic uses of the medium.

It wasn't enough to get technical knowledge; the curators had to be involved from the first. On the science side, the curator of a major exhibition, Ocean Planet, decided to develop a parallel online exhibition, which would test the differences between the presentation of information in physical space and cyberspace. In this she was aided by a dedicated NASA volunteer. Fundamental to both pioneering strategies was the recognition that this was the first medium whose presentations were continually affected by the interaction of the audience.



To bring these vital and disparate experiments together to create the dense Smithsonian Website launched in May 1995, took a number of happy circumstances. The first was the arrival of the 10th Smithsonian Secretary, I. Michael Heyman, who, when installed in September 1994, announced his commitment to the electronic transformation of the Institution. To underscore his commitment, he appointed a Counselor for Electronic Communications, whose 20-year background in the Institution was programmatic, not technical, and asked him to work directly with the newly arrived Senior Information Officer, the first in the Smithsonian's history.

Within months the decision to create a pan-Institutional Website was made. How fast this could be achieved depended in part on how quickly the Secretary's mandate permeated the institutional culture; but the toughest issue was finding a lead figure to guide the process of constructing both a central home page and home pages for the many museums, centers, and offices, which were all in dramatically different stages of preparation. The National Science Foundation's "gift" of a senior staffer to marshall the effort answered this need. As a bonus, Peter House brought to the task unflagging energy and an outsider's perspective on the vagaries of our organiza-

tional culture. His questions helped establish frameworks for the Institution's construction of home pages that answered not only our needs but also those of potential users.

What we learned in the doing rather than the thinking about a Website would take pages to relate, but a few hard-won insights bear telling briefly. Our first temptation, to get the home page out as fast as possible, was, fortunately, resisted. It is true that online is a forgiving medium; unlike other forms of publication one can correct mistakes or fill in later information.

The Smithsonian's first systematic attempt to make available a large database of graphic images was launched by its photography unit, the Office of Printing and Photographic Services.

It is best to think of the first presentation of a Website as a comprehensive first impression of an institution. The more planning that is done in advance, the richer the experience of the user and the more likely a return visit and the possibility of "feedback." The second and opposite temptation, to stand pat with all the information initially presented and not to perpetually update and revise, must also be resisted. A Website is a form of publication not entirely fluid nor entirely fixed.

Office of Printing and Photographic Services

54K)

Smithsonian Photographs Online

Making the photographic resources of the Smithsonian available on picture pages.

Current Feature

- Give Me A Home Where the Butterflies Roam. Michelle Baker's photographs of butterflies attra the National Museum of Natural History's new Butterfly Habitat Garden, plus the story of how the mus first outdoor exhibit was built.

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Contents

- Science Defined by the Hands of a Book Artist. Reprinted from the June, 1995 Smithsonian Magazine. Photographs by Rick Vargas and Richard Strauss.
- A unique approach to Studying the Jungle Canopy in Panama - the Smithsonian's Tropical Research Ins pioneers a safe Canopy Access System using a modified tower construction crane. Including a personal account by photographer Carl Hansen on how he photographed the crane and scientists working there, a as a portfolio of photographs taken from the crane's unique perspective.
- A slide show of award-winning photographs by Smithsonian photographers (Optimized for Netscape 1 Award-winning photographs by Smithsonian photographers. (Regular www page)
- Photographs from the Dinosaur Hall of the Smithsonian's National Museum of Natural History.
- A documentary photography project: Reflections on the Wall: The Vietnam Veterans Memorial by the photographers of the Smithsonian's Office of Printing & Photographic Services
- Funeral services for former Supreme Court Chief Justice Warren Burger at Washington's National Presbyterian Church. Burger, also former Chancellor of the Smithsonian Board of Regents, was eulogiz Washington dignitaries including Chief Justice William Rehnquist and Associate Justice Sandra Day

Any systematic attempt to go online forces an organization to reexamine its bank of published materials. Things that sit on the shelf can suddenly look embarrassing or at least out of date in the harsh light of the electronic environment. Our central visitor information unit reexamined all materials presented for usefulness in the new medium.

We also had to ask ourselves whether central information packages were as necessary in cyberspace, where a visit to an individual museum can happen through a simple click. Many of the museums, research centers, and offices continue to challenge the notion of a central home page which requires a number of transactions before coming to their particular home page. At the very least, however, everyone seems pleased that the central initiative got the entire institution thinking about the uses to which a home page might be put.

The future of our Website will depend on a number of things. We'll need to create a regular monitoring and updating system which not only reflects changes in the Institution but also reflects the knowledge we're gaining about what our electronic audiences want of us. We'll need to be innovative in the creation of new online experiences shaped by more clearly formulated educational goals. And we'll need to develop a more systematic pan-Institutional strategy of digitally capturing and making available increasing numbers of the images and objects we hold.

No one yet understands the full potential of this medium. Within our first 13 weeks we registered over 4 million "hits" on the home page, 20% from outside the United States. But who are these electronic visitors? How do they use the information provided? Will they want to visit the **actual** not **virtual** Smithsonian more or less? Will they overwhelm us with increasing requests for information, and should we mind?

What we do know is that our audiences are less and less passive in their interaction with the Smithsonian. They want to see more of what we have, to address more and more of what we say, and participate more in the communities of information that we represent. The electronic revolution is not alone the cause of this change but it will certainly prove to be one of its most powerful manifestations. We had all better be ready.

Marc Pachter is the Counselor for Electronic Communications, Smithsonian Institution.

David Andrews, Veletta Canouts, and S. Terry Childs

Forging a Presence on the World Wide Web

Rule #1: A Website is better than a publication.

Rule #2: A Website is not a publication.

Rule #3: There are no rules.

This is the reality that the NPS cultural resources center confronted after hastily assembling a Web team earlier this year. We faced a medium still in its infancy, much like television in 1946. Unlike other modes of communication, there were, and are, few guidelines on how to use it effectively. Nevertheless, we had our orders, straight from Director Kennedy himself: Mobilize the medium, now.

One thing we knew: This wasn't print. Gone was linearity, since a site can link to one or a hundred other sites, not to mention cross-linking to areas within itself. A trifold brochure presents information in sequence, with panels opened and read as the design dictates. With the Web, viewers choose the order—or exit altogether, going from a petroglyph site at Chaco Canyon, say, to France's newly discovered cave art with the quick click of a mouse. Out the door too are regular schedules and editions, since information can be updated at will.

And though the Web isn't TV, visuals rule, sound bites speak volumes, chat groups are "live," and the audience is large enough to light up an Arbitron box—literally millions for a cost less than printing a four-color brochure. These are the numbers enticing the Park Service and thousands of other organizations worldwide onto the Web.

The National Park Service's first attempt to provide World Wide Web access to cultural resources servicewide is the "Links to the Past" home page. This project is a multidisciplinary collaborative effort.

Our biggest challenge wasn't technical (aside from the daunting deadlines we faced to get things up and running). The primary Web language, hypertext mark-up language or HTML, is a lot like the formatting codes typesetters used before desktop publishing came along; even without conversion software, HTML isn't difficult to master. What we had instead was a medium that refused to fit our organizational paradigm.

Our Web customers—the general public—would have little use for a program-by-program presentation of mission statements. Clearly, the public's interest crosscut our organizational boxes; archeology, for example, resides in several different offices. The audience would want to access a topic in a quick and simple way, the electronic equivalent of one-stop shopping.

But who was the general public? The mostly upper-income subscribers of Web browser services? What about kids? And what about our professional colleagues in other organizations—were they a subset of "general public"?

To complicate matters, no one was completely sure how to employ the new tool. Some wanted to use the Website for public relations. Others saw it as an education medium. Still others wanted to use it to market publications. In truth, few understood it and fewer still had the browser access necessary to understand the Web's multiple voices.

This made inspiring teamwork difficult—which was our job—especially among groups that hadn't worked together before. Cooperation was vital to putting our best face forward to the public.

At first, the Web team got hung up on technical issues like mastering HTML and debating an office-by-office approach vs. posting answers to the most frequent public inquiries. The team coalesced soon after we crafted a concept and story board, put together thanks to our experience in electronic and desktop publishing (the National Archeological Database, *Federal Archeology*). It was precisely because of this experience—which put us ahead on the learning curve—that our program chief encouraged our involvement in the team effort.

The presentation of the concept sparked a brainstorm. Why not offer customers easy access to information on all the fascinating resources we manage? Nationally significant lighthouses, Civil War battlefields, museum collections, sunken steamboats—these things, coupled with information on preserving them—would grab and hold viewer attention. The discourse shifted to a resource-based approach, which was ultimately adopted. Essential to implementing the concept was an understanding of the breadth of our programs and what they have to offer, as well as a grasp of how to navigate browsers to it.

Since time was of the essence, we focused on loading almost ready resources into the site. The curation program digitized 100 high-resolution photos of premier artifacts; the Geographic Information System (GIS) lab had maps of many Civil War battlefields; our program could link the site to the National Archeological Database.

There was and still is controversy over what constitutes effective communication on the Web. Some people in the center scanned in thick reports, while others limited what they loaded to bite-size bits. The trick, it seems, is to place longer documents (like legislation) in the deeper layers, for ambitious browsers who really want to dig into a topic. Long copy on top, we think, has to be absolutely riveting for the audience. Otherwise, click and they're gone.

In our program, we're adopting the less-is-more approach as we flesh out the archeology and ethnography segment of the site. We're being careful not to overload the screen, especially the upper layers, which we believe encourages site surfers to stick around.

So, does a Website best a publication? It depends on your audience and your communications goals. Print is more expensive, but boasts portability, sharp focus, and—in the hands of a good writer and designer—a better ability to communicate the message. You control exactly what goes in, who gets the information, and how they look at it. These are crucial elements in, say, a fund-raising piece for a museum.

A Website can reach millions at a minimal cost, but only those with the right software, and you lose some control over the material. Right now the Web severely constrains design, layout, and typography, so it makes sense to professionally design only the most important, uppermost layers of a site. Then there is the problem of getting your message heard amidst the clatter of thousands of other sites springing up. Just letting people know you're online is a challenge itself.

The promise of the Web, however, is enormous. Some experts expect that the sophisticated capabilities of CD-ROM will ultimately migrate over. Several corporations, notably Adobe and Netscape, are collaborating on a formatting program for Web pages, and Quark plans to market Orion (TM), a tool for converting layout files for Web use. Even now, a Website boasts the ability to broadcast an almost unlimited amount of information.

In the National Park Service, it doesn't take much to see the potential of this tool for an organization that is itself a nationwide network. Now that the deadline heat is off, we have the time and management support to tailor the medium to our needs. A Cultural Resources Web team was set up with co-team leaders. Within our own program, we've kept our initial Web group standing to build on the expertise gained so far. That way, we'll be better equipped to deal with the core questions facing site developers.

So is a Website a tool for public relations, for marketing, or for education? Probably all of the above, and more. As our program works to spin off an electronic version of our quarterly, *Federal Archeology*, aimed at non-professionals, we realize we can achieve both education and public relations goals. Meantime, we acknowledge that we must improve access for our professional colleagues as well (a whole other audience perhaps deserving its own Website). Our challenge is to come up with a structure that prompts viewers to explore all the byways we provide, without losing quick access to more traditional offerings like publications lists.

But then again, maybe we should publish some things exclusively on the Web and forget about printing them altogether. Or maybe we should compile more of our information as databases, which are better suited to electronic media than print. This sort of ongoing self-evaluation is taking place at many government agencies as they forge their online presence.

In the NPS cultural resources center, the World Wide Web is doing nothing less than making us rethink how we program the work we do. It's a medium to be reckoned with.

David Andrews is Managing Editor and Designer of Federal Archeology, *published by the Archeology and Ethnography program.*

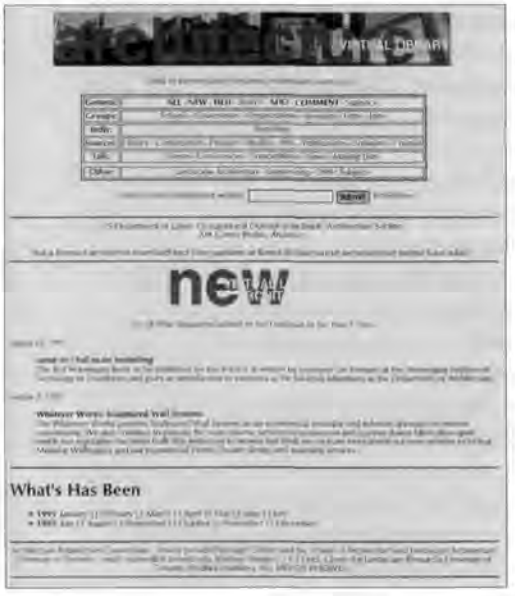
Veletta Canouts is Deputy Chief of the NPS Archeology and Ethnography Program, located in the National Center for Cultural Resources Stewardship and Partnerships in Washington, DC. She is also Program Leader for the National Archeological Database.

S. Terry Childs is Program Leader for Federal Archeological Collections, Records, and Reports (and NADB-Reports).

Jonathan Bayless

WWW Sites of Interest to Cultural Resources Personnel

It is now perhaps a cliché to start an article about the World Wide Web (WWW) with exclamations about the hundreds and thousands of new sites being created every day. The publicity generated about the Web has surely reached every professional involved in cultural resource preservation. However, for the majority of cultural resource professionals in the National Park Service, the Internet and all its allure remains a distant subject with no obvious relevance to the daily tasks of managing cultural resources. And perhaps for some offices, there could be compelling arguments that such access would not improve the quality of their accomplishments. At least in the short term. But such arguments will not remain true for very much longer.



The home page of the Virtual Library: Architecture and Landscapes site which may be found at http://www.clr.toronto.edu:1080/virtual-lib/arch.html

The home page of the Artsource site which may be found at http://www.uky.edu/Artsource/artsourcehome.html

Just as we have seen electronic mail revolutionize the speed and interconnection of information and individuals within an agency or office, the World Wide Web holds even greater potential to provide connections between interested public and professionals everywhere. It is hard to think back only a few short years ago, before email, to when paper-based transmission of all documents was the norm. In the near future, when journals, magazines, and perhaps even our own daily administrative business is accessible over the Net, we will find the Internet just as indispensable.

So what does the World Wide Web have to offer? Other articles in this series have addressed this question at length. The strongest reason, in my opinion, for gaining access to the WWW is to gain the knowledge and experience necessary to create our own sites. But in order to eventually place our own resources on the Internet, we must first take advantage of the opportunities to learn and explore what others have done. Because only those with a working knowledge will be able to develop their own well-designed WWW sites and provide open access to the cultural resources and research records that we manage as a public trust.

For a look at a virtual museum exhibit, I like the Smithsonian Institution at http://www.si.edu. For an excellent example of a museum exhibit on the web containing imagery, video, and sound, check out the White House craft show at http://www.nmaa.si.edu. Perhaps the video clip of Hillary Clinton's introduction still suffers from the limitations of current technology. But the choice of looking at the collections either from a material type (ceramics, metals, etc.) and artist categories, or a room-by-room tour of the White House, shows the potential for customized user approaches, and the images of the collections are simply beautiful.

For a look at a growing network of historians, archivists, museum curators, preservation groups, and historical societies, the History Computerization Project at http://www.history.la.ca.us/history gives hundreds

The home page of the White House Craft Show which may be found at http://www.nmaa.si.edu

of annotated directories and the chance to order a free copy of the History Database tutorial on computer database management. An entire series of virtual libraries are up and running. Try architecture and landscapes at http://www.clr.toronto.edu:1080/VIRTUALLIB/arch.html, or museums at http://www.comlab.ox.ac.uk/archive/other/museums.html.

More from the White House Craft Show.

A number of sites contain regular updated listings of cultural resource related sites, and so make "surfing" much easier. These include the UNESCO World Heritage Center's "Internet Resources for Heritage Conservation, Historic Preservation, and Archeology" site at http://hpb.hwc.ca:7002/ICOMOS_Main_Page.html, and Artsource, called a "Point of networked resources on Art and Architecture" at http://www.uky.edu/artsource/artsourcehome.html. A good starting place is the subject-oriented Internet resource guides at http://www.lib.umich.edu/chhome.html.

Many have seen the National Park Service's own Website at http://www.nps.gov, which includes information on a variety of parks, along with a large body of cultural resource information. But many have not seen the Department of the Interior's home page at http://www.info.er.usgs.gov/doi/doi.html. It provides hypertext access to all the bureaus within the department.

Being professionally interested in biological museum collections, I found it very productive to access a listing entitled "Internet Resources for the Biologist" that contains addresses for almost 80 sites at http://nfrcg.gov/home-page/htmls.html. And an important look at our new Interior agency, the National Biological Service, can be gained at http://www.nbs.gov. Be sure to look at their interactive map available from their home page, that points you to the appropriate regional office and gives addresses and contacts.

The NPS has just put together a "NPS World Wide Web (Internet) Primer" to help parks "capitalize on opportunities presented by the Internet." It's available to NPS staff on cc:mail by requesting it from the address "NPS Webmaster." And yes, it seems that in the virtual reality of the World Wide Web, you can call yourself whatever your mind's eye envisions itself to be. Myself, I've been considering the nickname of a 13th-century Chinese poet, who called himself the "travelling abode of

The home page of the Virtual Library: Museums, which may be found at http://www.comlab.ox.ac.uk/archive/other/museums.html

the vagrant weed." While we system curators do travel quite a bit, I'm still not sure such a title would convey the intended meaning, even in the virtual reality that grows more significant and real with each passing day.

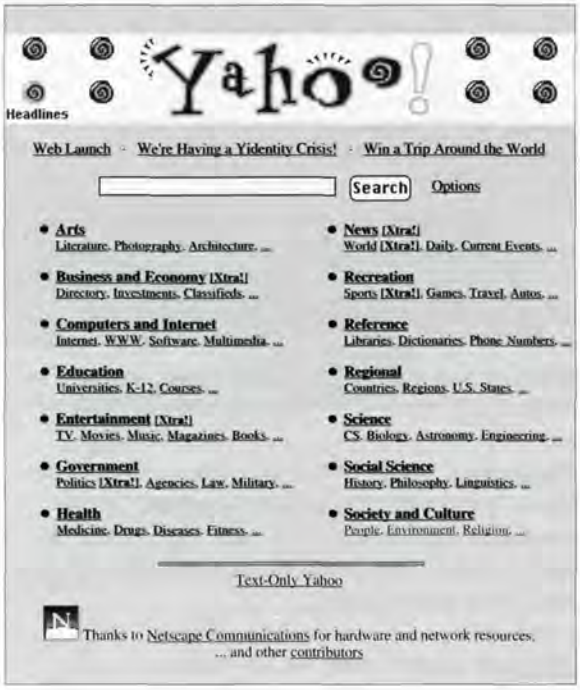
Jonathan Bayless is the System Curator, Pacific Great Basin System Support Office, National Park Service, San Francisco.

Hugh O'Connor

Searching the Internet Through the World Wide Web

The Internet is an enormous, dynamic, and evolving multimedia encyclopedia of all human knowledge and opinion. You can tap this searchable encyclopedia from a desktop computer. Within the last several years great progress has been made in making the Internet's store of knowledge and human expression more precisely accessible; but we are not yet at the point where precise subject searching of the Internet is generally easy, common, consistent, or well-understood. The Net is, we may say, still in its "Wild West" phase.

This article will cite and briefly discuss some of the major Internet search and retrieval tools, and lists currently available on the World Wide Web (WWW or the Web). The Web is the multimedia portion of the Internet containing images, text files, and audio and video clips. This article's approach will be to concentrate on tools that, in the author's experience, are the most comprehensive, powerful, and useful for scanning large regions of the Internet. Many good systems will go unmentioned in this review; but I have attempted to keep the list and my comments short in the belief that it is better to know about a few really good Internet searching tools than about the many, many good but limited and overlapping ones that are constantly appearing.



The search screen of Yahoo! which may be found at http://www.yahoo.com

What Can Be Searched on the Internet?

As of this writing, the Internet has grown to include:

- Several thousand telnet and FTP sites, containing an estimated 3 million accessible files, including duplicates and alternate versions. Telnet is a program that connects your computer to another one, and allows you to search the remote computer as if your computer were a linked (connected) terminal. FTP is the Internet's "file transfer protocol," a "downloading" utility.
- About 9,000 gophers (menu-based information search systems).
- Over 14,000 USENET newsgroups (online discussion groups whose messages may be accessed via the Internet).
- Almost 13,000 email-based mailing lists (online discussion groups whose messages appear in your email box once you subscribe) running on the listserv, listproc or majordomo list management software. These discussion groups are sometimes generically called listservs.
- More than 5 million World Wide Web pages.
- Several hundred substantial, searchable databases—like the online U.S. Code and Code of Federal Regulations—that are popping up on the Internet every day, faster than the most dedicated Internet students can track. Many of these are based on the WAIS (Wide-Area Information Server) system.

What are the Best Known Internet Search Tools?

From its inception in 1969, when it consisted of four linked computers, until the 1990s, the Internet was largely used by the government, its contractors and the academic research community. As the Internet grew, creative programmers developed a range of Internet search tools including:

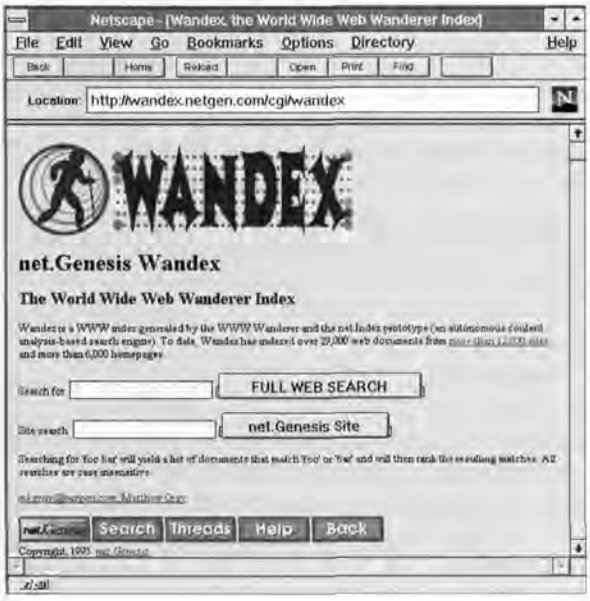
- Archie, a program to identify the software and text files available at the thousands of computers accessible by FTP

(the Internet's file transfer protocol). Currently there are about 38 Archie sites in existence. Since Archie searches file names and descriptions, files that lack descriptive names and appropriate descriptions can be missed. For Archie to work perfectly you must already know the name of the file you are searching for.

- Veronica, a program created to index information made available by gophers. Currently, about 20 Veronica "servers" exist. Veronica search results are frequently of limited relevance and the links to gopher menus provided are often incorrect, leading to missed connections. These errors occur because Veronica indexes of gopher sites are constructed only periodically; they cannot keep up with the constant changes that occur across the Internet.
- Jughead, a program that thoroughly indexes a single gopher site.
- Hytelnet, a program that organizes access to the many Internet-connected computer systems (telnet sites) and that permits users to sign on and search from remote locations.

Once developed, the Internet search systems tended to be overloaded with demand. In response, "mirror sites" that duplicated the original search sites were developed to help distribute this demand. For any given search system (Veronica, for instance) the different sites and servers have different levels of activity due to varying time zones. Recommended Internet practice calls for searchers to use the search site that is geographically closest to them before attempting to use more remote search sites.

The search screen of Wandex, the World Wide Web Wanderer Index which may be found at http://wandex.netgen.com/cgi/wandex



What are the Problems with the Internet Search Tools?

Search results are often not precise. The Internet is in constant flux, and Archie, Veronica, and other indexes, however frequently generated, cannot keep up with that flux. Within the last few years, the ease of searching the Internet has improved dramatically, principally through the development (as part of the World Wide Web) of rapid search engines with relatively simple search statement or screen menu displays presented to users.

By 1993, gopher systems were being discovered and used by rapidly-rising numbers of new Internet explorers. But by the end of 1994, it was the World Wide Web, with its hypertext links, high-resolution graphics, and multimedia file content, that had taken over much of the Internet community's attention. At the same time, the Web incorporated the Internet searching tools that preceded it, making them easier to use.

Along with the availability of new Web-based Internet search tools, however, there is still a touch of the old chaos in that the tools are of widely varying power and coverage. They are appearing with little correlation at various sites; and the search results one gets from different tools that cover the same basic database (World Wide Web pages, for instance) are different. It is now possible to find **something** fairly easily and quickly on almost any imaginable topic; but, using any one of the new Web-based search tools, you generally cannot hope to have searched the Internet comprehensively on any such topic.

What Search Tools are Available on the World Wide Web for the Whole Internet?

As the Web has emerged as the most active and frequently-used Internet utility outside of email, it has also begun incorporating the other Internet features (gophers, newsgroups, FTP capability) that, up till now, have existed separately and involved the use of different software.

It is now possible, for instance, to do an Archie search from several Websites (see http://pubweb..nexor.co.uk/public/archie/servers.html), or to search thousands of USENET newsgroups for messages containing specific keywords. The latter can be done at a Website called the DejaNews Research Service (http://www.dejanews.com/), which as of the time of this writing is still available free of charge.

Another free service involving the USENET system is Stanford University's Netnews Filtering Service (http://woodstock.stanford. edu:2000/), through which one can submit an emailed profile of keywords that are run periodically—daily, if one prefers—against the newsgroups that are received at Stanford. Registrees are sent a regular email

message consisting of the first several lines of each retrieved newsgroup message that matches the keyword profile. The full text of any partial messages that look interesting is obtainable on demand. Searches of "gopherspace" using public Veronica servers are possible through a Web browser at gopher sites like: gopher://gopher.scs.unr.edu/11 /veronica.

Other such services include a HYTELNET page (http://www.usask.ca/cgi-bin/hytelnet) that provides a rough index and access point to computers permitting remote access by the general public through the Internet telnet utility; the "WAIS Access through the Web" page (http://www.ai.mit.edu/the-net/wais.html) that lets some Web browsers access so-called Wide Area Information Server databases; and the "Search for Mailing Lists" page at the University of Indiana (http://SCWWW.ucs.Indiana.edu/mlarchive/). The latter is a database of email-based discussion groups running on the listserv, majordomo, or listproc software. It permits users to identify groups on their topics of interest from among nearly 13,000 available ones. Again, all of these rather amazing search services may be used free of charge as much as one likes.

There are also several powerful search services that concentrate on the World Wide Web itself. Among these are included Yahoo!, Lycos, the Open Text Web Index, InfoSeek, ALIWeb, the World Wide Web Worm, the World Wide Web Wanderer, WebCrawler, EINET Galaxy, Harvest Broker, CUI (Centre Universitaire d'Informatique), CUSI (Configurable Unified Search Index), and SavvySearch, among still others. Although several of these search systems started out as experimental systems developed in academic computer science departments, it is common for them to migrate from academia to a commercial site that has agreed to support the growing load of searches on its own hardware as a free public service.

How Do the Various WWW Search Tools Compare?

None of these search tools searches quite the same database in quite the same way. The syntax of search statements and the number of relevant items each system will allow you to display, for instance, vary widely. Some of the search services perform "relevance ranking" on search results to indicate how appropriate a particular retrieved item is to your search query. Each service offers a slightly variant range of search options and some are definitely easier and faster to use than others. Some are well-documented, some are not.

To illustrate this variability, the phrase "National Park Service" was used as the search statement on several of these systems in early September 1995. The results are in the box below.

Search Tool Name & URL	Number of Items Found (Hits)	Comments
Yahoo at http://www.yahoo.com	6 items	Retrieved 6 separate Web pages when the "National Park Service" was treated as a character string (adjacency searching) in which all words must appear next to each other in the same specified order before they will be retrieved.
Wandex, the World Wide Web Wanderer Index at http://wandex.netgen.com/cgi/wandex	9 items	
Open Text Index at http://www.opentext.com:8080/com.html	637 items	
WebCrawler at http://www.webcrawler.com	500 items displayed out of 1,466 retrieved	Note: WebCrawler only allows 500 retrievals, although it ranks them all in descending order of relevance.
Lycos at http://www.lycos.com/	974 items	Note: Lycos does not perform true adjacency searching, but instead simply finds all the selected terms in the material in whatever order. This search strategy increases hits but decreases relevance. Relevance ranking is performed on search results.
InfoSeek at http://www.infoseek.com/	>200 items	InfoSeek does not return a result greater than 200, and does not report how many additional relevant hits there are beyond 200.

What are the most Comprehensive Internet Search Tools on the WWW?

The most comprehensive databases of Web pages at this time (September 1995) appear to be Lycos, the Open Text Web Index, WebCrawler, and InfoSeek. The only commercial service among these, InfoSeek, may become more of a system of choice as the demand on the free systems grows, causing access problems and slowed response time, while its commercial nature limits use enough to avoid or delay overload. This is speculation, but it would be a logical outcome of the kind of growth in numbers of people with Internet access that has occurred over the last few years. For another site on Web searching tools, see "World Wide Web Robots, Wanderers and Spiders" at http://web.nexor.co.uk/mak/doc/robots/robots.html.

The search screen of Open Text Index, which may be found at http://www.opentext.com:8080/com.html

In a recent article ("Searching the World Wide Web: Lycos, WebCrawler and More," *Online*, July/August 1995, pp. 48-53), Greg Notess suggested a strategy that takes into account some of the differences and limitations of the Web search engines. "For single keyword searches of a large database, use Lycos. For multiword searches with an AND, try WebCrawler. For gopher resources, try veronica. And for a time-consuming comprehensive search, use CUSI" (p. 53). The CUSI site may be found at URL: http://web.nexor.co.uk/susi/cusi.html.

To these guidelines we might add that Yahoo! is especially useful if you want a fairly quick search through major Web resources only and when you want good search results without the requirement that they be comprehensive. Another reason for using Yahoo! is that it has extensive links to the other Internet searching systems and so has become an excellent gateway for those who want to run the same basic search through several different engines.

How Can Searching Techniques Be Improved?

Several factors account for differences in results from one search tool to another. The number of actual Web pages being searched by the systems varies. Some search engines are also searching gopher and FTP sites as well as Web pages. Some services search the entire text of the Web pages they index, rather than just the title and perhaps some summary descriptive text. Some search engines do not perform true adjacency searching but rather just look for the appearance of all the search terms in whatever order—an approach that tends to raise the number of retrieved items.

Perhaps more importantly, some of these search tools and services explain the rules under which they operate better than others. It is not unusual for users to be presented with a search form, into which they are to type their search terms, with no up-front, explicit statement of whether the system will assume the words must be adjacent (such as National Park Service); or that they are related by an implied Boolean AND or OR operator ("architecture" and "vernacular" but not "garage"); or whether the system performs truncation by searching the words as character strings that may be separate words or the root characters of longer words (for example, "photo" which might get you "photograph" or "photosynthesis").

The Web search systems' main pages will usually have a link to explanatory text that will go into these details, or may perhaps link to a more elaborate version of the search form with all search features and options made explicit. But the casual user in a hurry may not bother with this and may therefore not be made aware of the ways to make a search more efficient. Retrieval on the WWW is currently more art than science. If comprehensiveness is your goal, carry out your search on several systems. A WWW search should always be considered more advisory than definitive.

How is News and Current Information Searched on the Internet?

Another important area for Internet search and retrieval is that of news and newsfeeds. It has become apparent to many news agencies that distribution of news stories and wire service material is yet another useful application of the Internet. There is, in fact, an entire news service (ClariNet eNews—see http://www.clarinet.com/) that is available only through the Internet.

One particularly ingenious (and, once again, free of charge) site on the World Wide Web is the CRAYON site. CRAYON here stands for "Create Your Own Newspaper." It is the product of Jeff Boulter, a student at Bucknell University, who has hyperlinked a variety of Internet news sources and enabled the user to design his or her own "front end" for selecting which of these sources to use and what order to view them in. The user designs a personal newspaper with its own title that will present the day's news whenever accessed.

The Crayon news options are so wide as to allow for true personalization of the result. It is possible, for instance, to include or exclude international news, sports, weather, and even comic

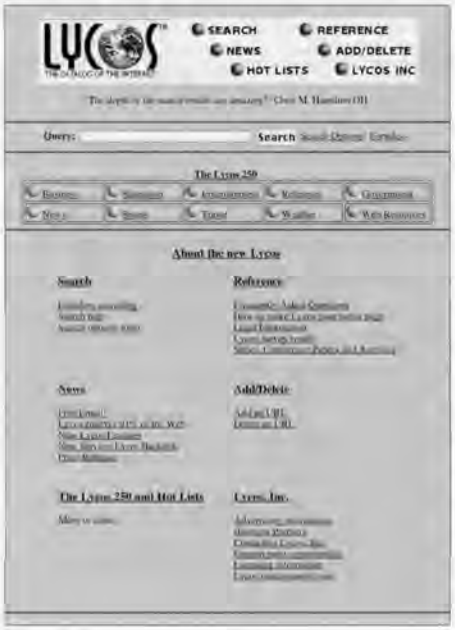
The search screen of WebCrawler which can be found at http://www.webcrawler.com/

strips, and to lay out the selected sources in customized order. Some of the news sources, like *Time* articles, are themselves hyperlinked to related past articles from the same source—providing a dimension of historical searchability to your newspaper.

The developer of CRAYON linked a variety of free sources from different sites on the Web into a cleverly-conceived central home page. This is a great example of the way originally disparate Web content can be "sliced and diced" and otherwise reassembled into new, value-added products through the device of hyperlinking. CRAYON, which had 81,403 subscribers internationally as of September 10, 1995, may be found at http://sun.bucknell.edu/~boulter/crayon/.

There are several sites, usually commercial, that now offer searching of general and specialized newsfeeds. Sometimes it is possible to set up an article profile that can retrieve news regularly on topics of continuing interest to the user. Sites to investigate for news retrieval include InfoSeek (http://www.infoseek.com/Home), NewsPage (http://www.newspage.com/), NewsHound, a San Jose Mercury News service (http://www.sjmercury.com/hound.html) and introNEWS at http://www.gold.net/info.highway/internews/.

The search screen of Lycos which can be found at http://www.lycos.com/



What is ENEWS and Where Do You Find It?

The field of automated news services, "enews", is a subset of electronic publishing (which includes magazine and journal publishing as well) and is evolving very rapidly right now. There are a number of Internet sites that attempt to offer comprehensive links to all those newspapers and other news publications (numbering in the hundreds) with some kind of Internet presence. That presence varies widely, from titles that offer a growing and searchable full-text backfile to those that simply show you part of a current issue and tell you how to subscribe to the paper edition.

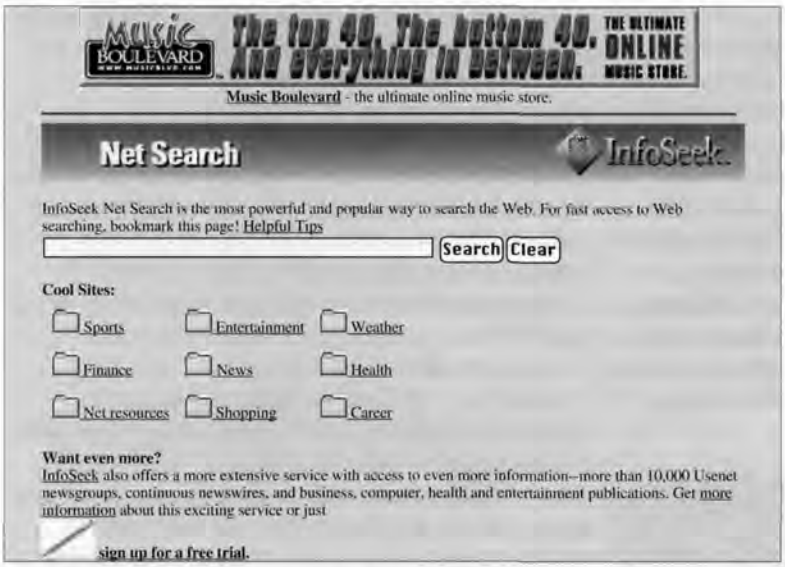
Some of the best sites that collect links to the nation's and the world's growing stock of enews titles include Taxi's International News (http://www.deltanet.com/users/taxicat/newstand.html), Steve Outing's Online Newspaper Services Resource Directory (http://www.nyc.pipeline.com/edpub/e-papers.home.page.html), the Ecola EZ Home Page (http://www.ecola.com/ez/), UNCG's News and Newspapers Online Worldwide (http://www.uncg.edu/~cecarr/news/) and "Onramp Access—Newspapers on the Net" (http://www.onr.com/newspaper.html). These are only five of many such sites, some of them consisting of articles and general information on the phenomenon of electronic news, that are available through the World Wide Web.

Sites that provide comparable links and information on non-newspaper publications on the Internet include: "On-Line Magazines" (http://www.middlebury.edu/~otisg/zines.shtml), the ZineRak (http://www.greencart.com/zinerak/), John Labovitz's E-Zine List (http://www.mer.net/~johnl/e-zine-list/index.html) and Internet Resources for Zines and EZines (http://www.acns.nwu.edu/ezines/net-resources.html).

What Comprehensive Searching Services Exist?

There are a few Websites that offer more comprehensive searching capabilities. The All-In-One Internet Search site (http://www.albany.net/~wcross/all1gen.html) is actually a system that links to over 100 Internet databases. Through various points within All-In-One, for example, one can search for the meanings of acronyms, perform a news search through CNN Interactive, determine the distance in miles between two user-specified U.S. locations, search the U.S. Code or the Code of Federal Regulations, or check out the Internet Movie Database. All-In-One may be expected to keep growing into a virtual reference collection as more database systems are linked to the All-In-One shell.

A fairly new commercial service that claims powerful search capabilities is the NLightN service (http://www.nlightn.com/), from The Library Company. NLightN searches the Internet as well as bibliographic databases and a set of full-text reference sources. It seems intent on becoming a single source through which the classic databases



The search screen of InfoSeek which can be found at http://infoseek.com/

well-known in libraries are accessible along with all the new content offered by the Internet.

What are Hotlists?

Finally, one must mention the large number of often subject-specific personal "hotlists" that have been brought up as Web pages. Many individuals have created and maintained guides to the Internet sites that cover topics of interest to them. As Web pages, these incorporate direct hyperlinks (mouse-clickable immediate transfers) to those sites. Such pro-bono enthusiasm means that the individuals will probably maintain and build those sites over time through their own diligent research—saving all of us a lot of effort.

If you can find a person or agency that cares enough about a particular subject to maintain a home page for it, chances are that person or agency will rigorously maintain the page. Such sites can sometimes be found by doing a very broad term search on the Yahoo! site or any of the other search systems to which it provides links.

One can also consult the root index of an extensive system called the World Wide Web Virtual Library (http://www.w3.org/hypertext/DataSources/bySubject/Overview.html) which organizes and links Websites as if they were part of some vast online research library—which, in fact, is just what they are.

In Conclusion

The Internet will continue to grow in content and complexity. Web pages grow over time, and incorporate new relevant links as they are discovered or as the developers of new pages have them linked to established ones. This is the almost self-indexing aspect of the Web. The search tools, indexes and resource lists that we have covered in this article are among those that can help keep one's Internet time as focused and productive as it is possible to be in such a dynamically evolving situation.

Hugh O'Connor is the Director of the Research Information Center of the American Association of Retired Persons.

Melissa Smith Levine

Electronic Publishing: A Legal and Practical Primer

Jules Verne's 1863 prediction that in the 20th century, "Photo-telegraphy allowed any writing, signature or illustration to be sent far away... Every house was wired," was a foresight worthy of the best clairvoyant.

The Opportunity

Recent technological advances provide astonishing opportunities to make information quickly, inexpensively, and widely available in ways never before possible. In order to minimize legal risk while using this new medium, consider developing a systematic electronic publishing policy that covers the technical and legal issues presented in this article. The policy must be free of confusing technical and legal jargon if it is to serve as a useful guideline for staff. Please note that this article presents a very brief overview of volatile and complex areas of the law.

The Challenge

Electronic publication over commercial online services and the Internet presents new legal challenges as legislatures, courts, and businesses catch up to technology already a part of everyday

life for many Americans. For example, defamation law generally provides recourse for publication (communication to a third party) of false written ("libel") or spoken ("slander") remarks that hold living persons or corporations up to hatred, contempt, or ridicule. A corporation recently sued Prodigy for libel when a subscriber posted a message accusing the corporation of criminal conduct. Prodigy was found to be responsible for the offending message because it assumed the legal role of a publisher by reviewing and managing messages posted through its system and because it exerted editorial control over content, such as screening messages for obscenities.

Kalahikiola Church in Kahala, Hawaii, one of the images shared through the World Wide Web on the National Park Service Links to the Past home page.

By contrast, a 1991 case held CompuServe not to be a "publisher" in an analogous libel suit. Why the contrary result? CompuServe did not actively manage and review materials transmitted through its system and acted more like a "common carrier" than a publisher. "Common carriers," such as mail and telephone services, are typically not held liable for the content of transmissions made through them because of the public interest in uninhibited communication and First Amendment concerns—as well as the impracticality of having common carriers review all those messages.

If you elect to monitor an online discussion you may be considered a "publisher" because you exert control over the nature of participation in the discussion. As a "publisher" you arguably may be responsible (and therefore liable) for the contents of a discussion, such as obscene or defamatory statements or the transmission of copyrighted material without permission of copyright owners. If you represent a part of the federal government, be cognizant of participants' First Amendment rights. Active control over online participation may be viewed as censorship. Excluding postings that contain obscenities may violate rights protected by the First Amendment. Governmental participation in online discussions requires thoughtful consideration to avoid a chill, actual or perceived, on the growth of this dynamic medium.

Non-Legal Considerations

Because images may be downloaded and altered in unpredictable ways, consider the ramifications of distributing culturally sensitive materials via digitized means. "The area of 'electronic curation' raises issues of access and control that are similar to the curatorial issues involving physical objects," according to Christine Steiner, Secretary and General Counsel of The J. Paul Getty Trust. "[These issues require a] balance between providing access to the image while maintaining control over its subsequent uses by others." Publication of images such as of prisoners of war, Holocaust-related materials, or photos of Native Americans or their sacred objects require particular sensitivity. Terence Winch, Head of Publications at the Smithsonian's National Museum of the American Indian, and his staff extensively research the identity of subjects in images of Native Americans depicted in old photographs and seek permission to use those images where possible from the person, their descendants, or tribal members.

Winch also recommends that old images of objects be carefully researched. The sacred nature of certain objects may limit the use of such photographs to certain circumstances. New photographs of sacred objects are used in consultation with appropriate tribal leaders. This special care is also consistent with the American Indian Religious Freedom Act of 1978, which provides that it is "the policy of the United States to protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions of the American Indian. ."

The Freedom of Information Act

The Freedom of Information Act requires that governmental agencies provide access to certain governmental records. Online services are an efficient, cost-effective way for agencies to make commonly requested materials available as required by FOIA, such as organizational descriptions, rules of procedure, final opinions, and policy statements. FOIA exempts certain matters from disclosure with written justification, such as where disclosure might create an "unwarranted invasion of personal privacy" (such as certain medical or personnel records). Some other exemptions include matters of national defense or foreign policy; "trade secrets and commercial or financial information" which may be privileged or confidential; "records or information compiled for law enforcement purposes"; or "geological or geophysical information and data, including maps, concerning wells."

Copyright

Prior to dissemination of the vast array of material in government collections, staff must assess copyright status. Copyright is governed by the Constitution, the Copyright Act of 1976, case law, and through international treaties like the Berne Convention. The Copyright Act of 1976 grants protection for any original work from the moment of fixation in any tangible medium of expression. Authors have the exclusive right to reproduce, prepare derivative works, distribute copies by sale or other transfer of ownership, publicly perform, and to publicly display their works. Copyright extends to: literary works; musical works; dramatic works; pantomimes and choreographic works; pictorial, graphic, and sculptural works; motion pictures and other audiovisual works; sound recordings; and architectural works. Copyright notice and registration are no longer required for protection; however, registration does provide certain advantages in case of an infringement suit. Only an author's expression of facts and ideas are protected, not the underlying facts and ideas themselves. Note that physical ownership or possession of materials is not necessarily a useful indicator of ownership of corresponding copyrights. If you want to use work protected by copyright, you must obtain the permission of the copyright owner. Lee Woodman, Manager of Multimedia Projects for the Smithsonian Institution's Office of Telecommunications, advises, "You have to be a detective to be sure that if there is a copyright, you know who owns it, whether it is active, and get all necessary permissions."

Works For Hire

Unless otherwise agreed in writing, employers automatically own the works of their employees created within the scope of employment as "works for hire." By statute, a work made for hire may also be specially ordered or commissioned from an independent contractor provided the parties expressly agree in writing that the work shall be considered a work made for hire for use as a contribution to a collective work, motion picture, audiovisual work, translation, supplementary work, compilation, instructional text, test or answer material for a test, or atlas. If you hire independent contractors to create source material or create a home page or World Wide Website, be sure that you enter a written contract before the contractor begins work. The contract should expressly state that the contractor's work is a work for hire and that, if for any reason it is deemed not to be a work for hire, that the contractor transfers to you (your employer) his or her rights including copyrights in the work prepared under the contract (and all work materials developed in preparation of the work). If spending federal monies, language of this sort may be mandated by procurement language.

Fair Use

"Fair use" is an exception to copyright protection that permits limited use without the permission of the owner for purposes such as satire, parody, criticism, news reporting, and research. Do not assume that simply because a proposed use is educational in nature that it is a fair use. Any use of a protected work without a license constitutes infringement, even if the use is inadvertent . Whether a use is a "fair use" is subject to a case-by-case analysis of these factors: "the purpose and character of the use, including whether the use is of a commercial nature or is for nonprofit educational purposes; the nature of the copyrighted work; the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and the effect of the use upon the potential market for or value of the copyrighted work."

A recent case addressed whether fair use applied to the photocopying of a journal by scientists engaged in research on behalf of their employer, a private corporation that subscribed to the journal for the scientists' use. The corporation did not obtain permission or pay additional compensation to the publisher of the journal for the photocopies. The court held that the photocopying was not a fair use but an infringement of the copyright held by the publisher of the journal. This construction of fair use does not bode well for those who reproduce materials subject to copyright, whether in electronic or print form, without the permission of and possible compensation to copyright owners.

Public Domain

A work is "in the public domain" once its copyright expires, meaning that no copyright protection exists. Additionally, any work prepared by a federal employee within the scope of employment is automatically in the public domain. Copyright protection for works produced after January 1, 1978, endures for the life of the author plus 50 years. For joint works, duration is measured from the death of the last surviving author plus 50 years. Anonymous works, pseudonymous works, and works made for hire are protected for the greater of 75 years from first publication or 100 years from creation. The rules governing duration of copyright for works created or published before January 1, 1978, are sufficiently complex to warrant assistance from an attorney experienced in copyright law.

The Rights of Publicity and Privacy

The quest does not end with determination of copyright status. Even if a work is in the public domain, multiple permissions may be required to

use a single work. Say your archives include a photograph taken in 1959 by a journalist within the scope of his employment at a newspaper. The photo was never published, and the copy in your possession was given to the archive by the photographer's family. The photo is of a movie star, who is still very much alive and continues to be well-recognized. You know that the copyright in photo itself may be owned by journalists' employer as a work for hire, even though the photo was never published by the newspaper.

The newspaper still exists so obtaining copyright permission is straightforward. However, the movie star's permission may be required to reproduce her image. Celebrities or "public figures" often have a legal right of publicity that protects the economic interest in their name, likeness, voice, and other aspects of their persona. Whether and how the right applies depends on the applicable state law—some states do not recognize it at all, and there is no applicable federal law. A conservative approach is to seek permission from celebrities or their families (some states extend the right for a period after death) particularly if a proposed use is more commercial than educational. Reproduction of an image on a t-shirt to be sold is likely to require permission. Digitization for transmission via an online service where the service is available for no subscription fee and is primarily for educational purposes is less likely to be troublesome. If the photo were of a politician or other public official, publicity would be even less of a concern because dissemination of information about the activities of public officials is deemed to be in the public interest.

The risk of violating the right of privacy, the "right to be let alone," is minimal in the case of the movie star and the pubic official because both seek out public attention and voluntarily live in the public eye. However, if the photo was taken without permission in a private context—if perhaps the photographer used a telephoto lens to catch his subjects at home—publication of the image could infringe upon the subject's right of privacy. Also, a photo taken in a private setting with the subject's consent for a particular use (such as the photographer's personal photo album) should not be used for another purpose (such as digitization for international online dissemination) without the permission of the subject.

The right of privacy tends to relate to private persons more than celebrities because private persons generally do not seek life in the public eye. Private persons may lose protection if they become the subject of newsworthy attention; this balances privacy interests with First Amendment concerns. Red flags for privacy issues are: material that intrudes on one's seclusion or private affairs, any public disclosure of private information, material that places a person in a false light, embarrassing situations, and nudity (whether of adults or children). If working with material that raises a red flag, obtain permission from the subject or his or her estate. Remember, fair use applies only to copyright and not to publicity and privacy claims.

Obscenity

Nudity in any form also raises the red flag of obscenity and pornography claims. Nude images of children are particularly inflammatory. Any visual depiction of a minor engaged in sexually explicit conduct, including "lascivious exhibition of the genitals," should be reproduced only with the most careful consideration. Dissemination of an image (not just the solicitation of a minor to pose for such images) may result in criminal penalty even in the absence of any commercial purpose. Educational, medical, or scientific images disseminated for legitimate academic purposes are less likely to fall under the purview of "sexually explicit conduct"; there is legislative history that indicates that legitimate sex education materials would not be considered child pornography.

In selecting any images that depict nudity, consider creating a board of advisors who have appropriate subject matter expertise. An advisory board can make substantive evaluations of the scientific or educational merit of disseminating particular materials and ensure that all delicate matters and culturally-sensitive materials are presented in an appropriate context. Criminal penalties for child pornography make it advisable to be extremely conservative in any depiction of nude children—even if disseminated for academic purposes. While there are applicable federal statutes laws, varying state laws make any definitive statement on obscenity and child pornography problematic. An electronic publication policy should recognize these issues, require an evaluation of the reason and merit of disseminating sensitive images, and direct staff to consult with their general counsel's office for assistance.

Conclusion

Digitization and online endeavors require thoughtful consideration of legal risks to facilitate efforts to provide the widest possible access to information while respecting the legal rights of others. The United States government is a wondrous source of information waiting to be digitized for easy access anywhere, anytime, by anyone. Even Jules Verne would be impressed.

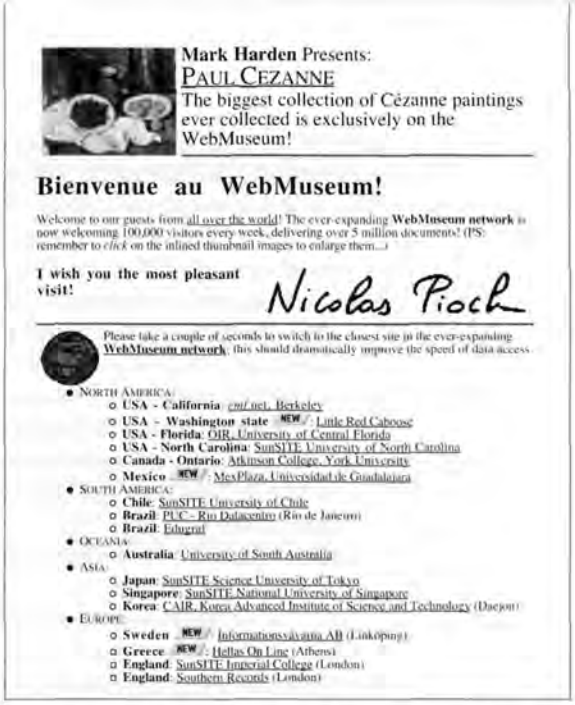
Melissa Smith Levine is an attorney in the Smithsonian Institution's contracts office where she negotiates contracts for the Institution's business activities, including online services, multimedia products, publishing, and licensing.

Diane Vogt-O'Connor

World Wide Web Resources

Information on the World Wide Web is now widely available in book stores, libraries, on public television stations, through university and community college courses, via vendors and traveling workshops, and on the Internet. Below is a list of some of the better resources currently available. It is hard to go a single day without announcements of several new Web publications or sites. The roughly five million pages on the Web are evolving rapidly, often changing on a daily basis. Published volumes and journals, while easy to use, tend to go out of date very rapidly. Web-based tutorials and indexes tend to provide the most current information, although WWW addresses, called URLs or uniform resource locators, tend to change frequently. Although Jay Staton generously checked all of these URLs on September 8th, by the time this issue is published some of the URLs below will no longer be correct. Happily, when a Website moves the manager will often maintain the old location as a cross-reference to the new site location. A simple click of the mouse usually links you to the new address of the site.

The list below includes some basic books and tutorials for newbies (Web novices), as well as Web tools and guidance for preparing Web pages. Several listserv indexes are given, although new users will benefit from reading about Netiquette in the basic sources before getting heavily involved. There are also lists of powerful Web browsing and searching tools, as well as a brief list of favorite cultural sites. Items marked with a * are highly recommended. For more information, watch the Curatorial Bulletin Board of the National Park Service.



Louvre site of WebMuseum at http://sunsite.unc.edu/louvre, one of the images shared through the World Wide Web.

Basic Books

*December, John and Neil Randall. *The World Wide Web Unleashed.* 2nd ed. Indianapolis, IN: Sams Net, 1995. This 1,346-page volume includes an introduction to the WWW and sections on web browsers and connections, web navigation tools and techniques, Web exploration by topic, preparing Websites, managing Web servers, Web trends, references, a net directory, a glossary, and an index.

Dougherty, Dale and Richard Komana. *The Mosaic Handbook for Microsoft Windows.* Sebastol, CA.: O'Reilly & Associates, Inc., 1994.

Eager, Bill. *Using the World Wide Web.* Indianapolis, IN.: Que Corporation, 1994. This 648-page book provides an overview of the WWW and URL sites. It was a pioneering work in 1994.

Gilster, Paul. *The Internet Navigator: The Essential Guide to Network Exploration for the Individual Dial-Up User.* 3rd ed. New York: John Wiley and Sons, Inc. 1995. This 600+ page book includes information on locating service providers; sending and receiving email; using "mail-only" access; using Telnet and FTP; searching with WAIS, WWW, Archie, Veronica, and other tools; and understanding bitnet.

*Krol, Ed. *The Whole Internet User's Guide & Catalog.* 2nd ed., Sebastol, CA.: O'Reilly & Associates, Inc., 1994. This 543-page book is the basic book on the Internet; with only one chapter devoted to the WWW. If you read only one Internet book, this should be it.

*Waltz, Mitzi. *The Internet International Directory.* Emeryville, CA.: Ziff-Davis Press, 1995. This oversized 526-page book includes a hyperlinked CD-ROM containing the full book text allowing you to link immediately to sites listed by clicking on their addresses—as long as you already have an Internet service provider and modem. The book includes an introduction and history of the Internet; information on international Internet connectivity; hardware and software needs; how to get an Internet account; how to locate Internet addresses; Netiquette; security and user safety; Internet resources, tools, and navigation tips; how to search; and information on personal connections and research uses. There is also information on legal issues, as well as subject and geographical indices.

Journals

Rubenstein, Dick. *Internet Voyager: Where to Go on the Net* (A monthly journal available from Blue Dolphin Communications, 83 Boston Post Road, Sudbury, MA 01776 for $78.) This journal reviews sites on business and finance, computing, special interests. It also provides brief news about the net, net resources, and cultural trends as well as providing a help column.

Stand Alone Software Tutorials

Guide to the Internet from Software Labs at 8700 148 Ave, NE, Redmond, WA 98052; tel: 206-869-6729.

Internet Informer for Windows from Software Labs (see address above)

Basic Online Training

*Beginner's Guides-Yahoo: Computers-Internet-Beginner's Guides entry from Yahoo at http://www.yahoo.com/Computers/Internet/Beginner_s_ Guides//

Compass in Cyberspace: Internet Training from John S. Maklowich at http://www.clark.net/pub/journalism/brochure.html

Entering the WWW: A Guide to Cyberspace at http://www.hcc.hawaii.edu/guide/www.guide.html

Internet Resource: Internet Resource Discovery, Organization, and Design by Lous Roosenfeld and Dr. Joe Janes, School of Information and Library Studies, University of Michigan at http2.sils.umich.edu/~lou/60694.html

ITTI: Information Technology Training Initiative (United Kingdom): http://info.mcc.ac.uk/CGU/ITTI/ITTI.html

Navigating the Internet, workshop for teaching the Internet via email by Richard Smith at gopher://jake.esu.edu/11/;HELP/net_stuff/training

Navigating the Internet workshop mail to: listserv@ubvm.cc.buffalo.edu Body:subscribe navigate YOUR NAME

Start Web: Where to Start for New Internet Users (html) by James Milles at http://www.law.cornell.edu/test/newuser4s.html

Training Materials Gopher at gopher://trainmat.ncl.ac.uk

Yale Internet Help at gopher://yaleinfo.yale.edu

Hypertext Markup Language and Hypermedia

Bad Style Page for Websites: A light-hearted guide to html at http://www.earth.com/bad-style

*A Beginner's Guide to HTML: The National Center for Superconduducting Applications' primer at http://www.ncsa.uiuc.edu/General/Internet/WWW/HTMLPrimer.html

Heslop, Brent and Larry Budnick, *HTML Publishing on the Internet*. Chapel Hill, NC: Ventana Press, 1995. (book)

HTML Developer's: WWW + HTML Developer's JumpStation, maintained by SingNet and hosted by One World Information Services at http://oneworld.wa.com/htmldev/devpage/dev-page.html

HTMLFAQ: Hypertext Markup Language Frequently Asked Questions at http://www.umcc.umich.edu/-ec/www/html_faq.html

HTML info/CERN: Hypertext Markup Language Working Materials from CERN (European Center for Particle Physics) http://www.w3.org/hypertext/WWW/MarkUp/MarkUp.html

Hypermedia and the Internet by David Green at http://life.anu.edu.au/education/hypermedia.html

Introduction to HTML: The Scholarly Communications Project of the Virginia Polytechnic Institute and State Universities Libraries at http://scholar.lib.vt.edu/reports/soa-sis-slides/HTML.Intro.html

*Lemay, Laura. Teach Yourself Web Publishing with HTML In A Week. Indianapolis, IN.: Sams Publishing, 1995. (book)

Morris, Mary E. *HTML for Fun and Profit*. Mountain View, CA.: SunSoft Press, 1995. (book)

Multimedia File Formats on the Internet at http://ac.dal.ca/~dong/contents.html

*WWW Style Manual: A guide to creating WWW sites at http://info.med.yale.edu/caim/StyleManual_Top.HTML

Writing HTML. A tutorial for creating WWW pages at http://www.mcli.dist.maricopa.edu/tut/

Yahoo's main directory for HTML at http://www.yahoo.com/computers/World_Wide_Web/HTML

Indexes, Navigational Tools, and Guides to Special Interest Services

*All in One Internet Search at http://www.albany.net/~wcross/all1srch.html

Argus Guide to Internet Tools and Resources at http://argus-inc.com/guide.html

The Clearinghouse for Subject-Oriented Internet Resource Guides at http://www.lib.umich.edu/chhome.html

Global Network Navigator Home Page: at http://nearnet.gnn.com/gnn/gnn.html.

Information Filtering Resources at http://www.ee.umd.edu/medlab/filter/

Internaut at http://www.zilker.net/users/internaut/index.html

Internet Browsers: Sources for Internet Browsers and Client Software at http://life.anu.edu.au/links/syslib.html

Internet Tools/EARN HTML: European Academic Research Network Association Guide to Network resource Tools in HTML at http://www.earn.net/gnrt/notice.html

*Internet Tools/December: A list summarizing Internet tools from John December at ftp://ftp.rpi.edu/pub/communications/internet.tools.readme or the John December Web Index Page at http://www.rpi.edu/~decemj/index.html.

*Library of Congress Directory of Internet User Guides at gopher://marvel.loc.gov:70/11/internet", "Internet Resources"

*Lycos Home Page for Hunting WWW Information at http://lycos.cs.cmu.edu/

National Science Foundation Resource Guide to Internet Resources at ftp://ds.internnic.net/resource.guide/overview

The Net: Descriptions of how to access information through Mosaic/Web by Robert Thau at http://www.ai.mit.edu/the-net/overview.html

*Net Cruiser: Netcom online guide at http://www.netcom.com/netcom/netcrz.html

The Online World by Odd de Presno (a shareware book) via email at Listserv@vm1.nodak.edu Body: get to where. Also available via at http at http:login.eunet.no/~presno/

Searching the Whole WWW at http://www.usf.edu/search.html

*Stanford News Filtering Service at http://woodstock.stanford.edu:2000/

URL guide/NCSA/NCSA: A Beginner's Guide to URLs by Marc Andressen http://www/ncsa/uiuc.edu/demoweb/url-primer.html

WAIS Searching: A Searchable Directory of WAIS Servers at http://www.wais.com/directory-of-servers.html

*WWW Virtual Library at http://www.w3.org/hypertext/DataSources/bysubject/overview.html

*Yahoo serves as a link to all other search services at http://www.yahoo.com

Yale Overview of Worldwide Internet Resources at http://www.cis.uyale.edu/HTML/WorldwideWebTop.html

Zen and the Art of the Internet by Brendan Kehoe (1st edition) at http://www.ensta.fr/internet/doc/zen.html

Listservs

*Email Discussion Groups at http://www.nova.edu/Inter-Links/listserv.html

LISTSERV Home Page at http://www.tile.net/tile/listserv/index.html

LISTSERV User's Guide (by ftp): at ftp://ftp.msstate.edu/docs/words-i/Net-Stuff/listserv.guide

Publically Accessible Mailing Lists: http://www.neosoft.com/internet/paml/

A Few Favorite Sites of Interest

ArchNet, provides a way to search archeological resources by region from this site, at http://www.lib.uconn.edu/ArchNet; also check out their Ethnohistory and Ethnoarchaeology sites.

California Museum of Photography Website at http://cmp1.ucr.edu

Center for Creative Photography (University of Arizona) Website at http://dizzy.library.arizona.edu/branches/ccp/ccp.html

Columbia University Digital Library Projects at http://www.columbia.edu/cu/libraries/projects/index.new.html

Computer Literacy Bookshops Home Page at http://www.clbooks.com/

Cornell University Rare and Manuscript Collections at http://rmc-www.library.cornell.edu

Discussion Lists for Historians at http:/neal.ctstateu.edu/history/world_history/histlist.html

Emory University in Atlanta's Michael C. Carlos Museum at http://www.cc.emory.edu/CARLOS/carlos.html

French Art is a lovely Website at http://dmf.culture.fr/files/imaginary_exhibition.html: also see http://www-leland.stanford.edu/~golnas/impressionism/impressionists.html and http://acacia.ens.fr:8080/home/massimin/sis/sis.html

George Eastman House at http://www.it.rit.edu/~gehouse

Getty Art History Information Program at http://www.ahip.getty.edu

Government Information Sources at http://iridium.nttc.edu/gov_res.html and at http://lib-www.ucr.edu/govpub/

Kodak (including PhotoCD information) at http://www.kodak.com

Library of Congress Exhibits at http://lcweb.loc.gov/homepage/exhibits.html

Mississippi State University has excellent art hotlinks at http://www.msstate.edu/Fineart_Online/art-resources

Museum Education Site License at http://www.umcp.umd.edu/MESL/home.html has excellent digital information

NASA's excellent site at http://www.ksc.nasa.gov/history/history.html has lots of images.

National Archives and Records Administration is at http://www.nara.gov and at gopher://gopher.nara.gov:70/1

National Library of Medicine is at http://www.nlm.nih.gov/hmd.dir/oli.dir

National Museum of American Art exhibit Secrets of the Dark Chamber at http://www.nmaa.si.edu/secrets/secretshtml/secrets.html

Online Computer Library Center Internet Resources at http://www.oclc.org:6990

Robotic Tele-Excavation Site allows viewers to interactively access a robotic arm at a remote site at http://www.usc.edu/dept/raiders/story/index.html

Seamless Website-Law and Legal Resources at http://seamless.com/

Smithsonian Institution Home page at http://www.si.edu/

University of California, Berkeley Museum Informatics Project at http://www.mip.berkeley.edu

University of Georgia at http://scarlett.libs.uga.edu/darchive/hargrett.html

University of Kansas World History Index at http://history.cc.ukans.edu/history/index.html

University of Southern California's WWW virtual Library Anthropology Pages at http://www.usc.edu/dept/v-lib/anthropology.html

University of Michigan School of Library and Information Studies at http://wils.umich.edu/UMDL

WebMuseum at http://sunsite.unc.edu/louvre is an award winning site.

World of the Vikings includes artifacts, history, runes, and other fascinating bits of Scandinavian and English history at http://www.demon.co.uk/history/index.html

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Diane Vogt-O'Connor is the Senior Archivist in the Museum Management Program of the National Park Service.

Audrey Ambrosino and Mark Bograd

From the Industrial Revolution to the Information Superhighway

Lowell National Historical Park and the World Wide Web

Photo by Gretchen Sanders Joy, courtesy Lowell National Historical Park.

It is not surprising that the city that launched the Industrial Revolution in the 1820s is jumping aboard another revolution some 175 years later. Lowell, Massachusetts is widely recognized as the first successful industrial city in the United States. Heralded for its "golden experiment" in industrial capitalism and technology in the early-19th-century, Lowell was a showpiece for the newly emerging nation and the world. Today, Lowell National Historical Park, the National Park Service unit charged with preserving and interpreting the history of the American Industrial Revolution, is eagerly experimenting with some of the newest technology—the Internet and the World Wide Web—to help make that history more accessible.

At Lowell National Historical Park, current activities on the World Wide Web include posting a home page on the Lowell Folk Festival. The festival, the largest free folk festival in the nation, is sponsored by the park, the City of Lowell, the Regatta Festival Committee, and the National Council for Traditional Arts. It takes place each year on the last full weekend of July and features three days of traditional music, dance, crafts, and food. The Festival's home page (URL http://www.uml.edu/Lowell/FolkFestival) was developed in June 1995 by park volunteer Manuel Fernandes, using information and photos already being used for more traditional promotion.

The Lowell Folk Festival Website includes a rundown of festival events, schedules, directions, accommodations, and information about festival performers and craftspeople. Early indications are that it has been successful in helping to spread the word about the festival. As one electronic mail message from a "web surfer" put it, "We wouldn't

be going if it weren't for the Website. Someone forwarded the URL to my wife, she mailed it to me, and I forwarded it to my father in Maine who is coming down that weekend. . " Future plans for Lowell Folk Festival site include the addition of both audio and video clips as well as presenting a festival retrospective (the 1996 festival will be Lowell's 10th). Other current World Wide Web efforts at the park include building on the Lowell National Historical Park section of the NPS home page, adding more in-depth information about park resources and visitor offerings.

Another potential park Web project involves a partnership with a group called the Concord Consortium and with the Charles River Museum of Industry in Waltham, Massachusetts. The Consortium, an innovative group of educators based in Concord, Massachusetts, has submitted a planning grant to the National Science Foundation to design a Virtual Museum of Invention and Technology, which would be based on resources available at the Park, the Charles River Museum, and other sites located in the United States and abroad.

The proposed Virtual Museum would be modeled in part after the Berkeley Museum of Paleontology Website which features the Berkeley Museum as the primary resource with a "virtual subway" providing connections to other thematically-linked museums (including museums in Russia and France). The Consortium's planning grant would be followed by an NSF Informal Science Grant to produce the Virtual Museum. It would be designed not only to make information and resources available, but also to facilitate interactive education for learners of all ages. Potential exhibits may include weaving on a virtual loom, designing and building machines online, live video feeds of existing park interpretive programs, and opportunities to understand how water turbines and waterwheels work. The intention is to encourage visitor interaction with the exhibits, the park, and other electronic visitors.

Lowell National Historical Park represents a unique collection of cultural resources which are interpretively rich, exceptionally educational, and highly enjoyable for those who visit the park. The park themes and sites are both diverse and complex, lending themselves well to the ambitious and exciting virtual museum experience described above. The project would take advantage of current technology to present the industrial revolution story, would offer additional opportunities for interactive education, and ideally encourage a wider audience to visit and to learn about our nation's unique historical and cultural treasures.

Audrey Ambrosino is Public Information Officer and Mark Bograd is Supervisory Curator at Lowell National Historical Park, located in Lowell, Massachusetts.

Winona Peterson

Gettysburg NMP and the Electronic Frontier

Photo by Richard Frear, courtesy Gettysburg National Military Park.

Among Gettysburg National Military Park's significant cultural resources are 90+ archival collections totaling over 500 linear feet of soldiers' diaries, letters, and photographs; Gettysburg Battlefield Memorial Association records; and reference copies of the records of the first park commissioners and historians. In December of 1994, an assessment of Gettysburg National Military Park's records was completed by the WASO Senior Archivist. Recommendations made in the assessment have caused the park to take a closer look at what has been done in the past, and to begin planning for the future of these significant holdings. For the purposes of this article, the Gettysburg archives are defined as the non-official, audio-visual, textural and electronic records acquired or created by the park for the purpose of reference, exhibitions or resource management.

The cultural resources branch of the Resources Management Division requires ongoing

access to the information contained within these archival collections to perform its daily functions. Thus, the bulk of the park's archives has fallen under the mantle of that branch and has been used as a tool for NPS mission-oriented research. There has also become an increased interest by the American public in the events that shaped the beginnings of military parks and in the history of the historic preservation movement. Researcher demand has placed yet another burden on already tasked cultural resources. Interestingly enough, it has only been within the past decade that these holdings were deemed of significant value to persons other than park historians.

Since mid-January of 1995 the park has been on a vision quest for the future of the archives. What follows is a description of where we have been, and in which direction the park would like to find itself going. For those of you also on your vision quest, don't give up! We are all out there together and much of this is uncharted territory. It has been Gettysburg's experience that most everyone contacted for information and resources are more than willing to share their expertise.

The ultimate outcome of this project is to preserve the original documents, organize the information about the documents in a logical manner, and to make the documents and their finding aids accessible to researchers. The new more accessible format must reproduce the original and allow for the retirement/protection of the originals. Once the newly formatted information is accessible, the park will conserve the originals and then store them appropriately. Some of this conservation will be accomplished through an agreement with Harpers Ferry Center's Division of Conservation.

The park has been approached by several private organizations wishing to digitize the collections at no cost to the park. These vendors hope to develop a number of products using park archival materials as content. The vendor would profit by selling the products under the vendor's name(s). Under some circumstances, the park might obtain a portion of the profits.

Similar projects are being explored in other parks. Gettysburg acquired contracts and agreements from these parks and closely considered them. The positive side of such collaborative arrangements would be that the archival collection digitization could be quickly accomplished, using the expertise and personnel of the private company. However, such collaborative work assumes that the fundamental building blocks, such as archival finding aids, are in place.

The first question to be asked is whether or not a good finding aid exists. If the answer is "no," then one must complete some legwork before entertaining offers like that mentioned above. To reformat the archival information without a means to retrieve it makes the information practically useless to the prospective user. Gettysburg NMP is currently in the process of developing a finding aid for the archives. Once this vital component is completed the project can proceed.

There are a number of software programs on the market that would provide assistance in the development of a finding aid. Whatever you choose should provide good collection management capabilities as well as a versatile, standard means of documenting your holdings. The park is currently assessing the potential benefits of having long-term volunteers, interns, and/or privately-funded contract employees assisting park staff in the completion of this phase of the project.

When funding is found, we also plan to purchase a software program to support and facilitate this work as well as the necessary hardware to get the project to its full potential. Currently, we are forming a partnership with the Adams County Historical Society and Gettysburg College, whose collections provide a nice complement to the holdings maintained by the National Park Service. Ultimately, these combined collections (as well as those under the purview of the park's curator) should be networked and made accessible to researchers.

Using contacts from the Department of Agriculture who are providing technical and informational support, we hope to expand the park site on the World Wide Web to make these archival collections accessible to researchers all over the world. It will be some time before the park is prepared to make this step; however, it continues to be part of the planning for meeting the ultimate goals of the project.

The park hopes to develop a means of having funds funnel back to this project to defray some of the costs and to support upgrades in technology as they develop. As public demand increases for photo duplication, there is a market for that service. This project will make the process of image-making less time consuming while at the same time providing revenue to the park.

Various sources of funding are being explored. One of the avenues entertained was to "hire" a project director through a grant to be submitted by a cooperating non-profit organization. This person would oversee the digitization of the collection, write grant proposals for continued financial support, and oversee the work of the long-term volunteers or other staff. General oversight would still be the responsibility of the park historians.

A few words of caution when undertaking a project of this sort: technology is changing at a mind-boggling rate of speed. This is not a good excuse for doing nothing; however, some of the companies providing services have kept up the changing pace; others have not. Make sure you identify your needs, then work to find the best match out there.

In many cases, microfilming will still be a necessary component in your strategy since microfilm lasts 10 to 20 times as long as digital media and is not software-dependent as some compressed images and proprietary packages are. Digital images can be used to produce long-lived computer output microfilm, just as digital images can be produced from microfilm. Many major preservation organizations are currently recommending this two-part approach as it provides the best combination of long-term preservation and access advantages for significant materials. Your park may end up using a number of different media depending on the types of collections you hold.

One area that seems to be out of reach because of budgetary constraints is that of training. Numerous sources provide training that has a high price tag attached. What we have learned has been through trial and error. We have benefitted from many phone conversations with people who are also taking these same tentative steps toward a technology which contrasts markedly with the aging archives in their care. It would be desirable to have NPS-sponsored training and a sharing of resources currently found among its staff throughout the agency. There is a great pool of knowledge among all of the parks in the system as well as in other government agencies. We should be working together for the good of the National Park Service.

Some day researchers will be able to access our information resources without leaving the comfort of their own homes. This technological advance will ultimately save the government time and money, put resources in the hands of those who need it most, and help the NPS meet its mission to leave its cultural resources unimpaired for the use and enjoyment of future generations.

Winona Peterson is a historian at Gettysburg National Military Park.

Jim Ogden

Technology and Technology

Chickamauga and Chattanooga

Burnside Fourth Model 1864 Carbine, Fuller Gun Collection. Photo by Ray Parks.

Chickamauga and Chattanooga National Military Park commemorates and preserves portions of two significant Civil War battles—the Battle of Chickamauga and the Battles for Chattanooga. For thousands of visitors, an adjunct to studying the fields of these important engagements is the time spent learning from the Claud E. and Zenada Fuller Collection of American Military Shoulder Arms. Displayed in the Chickamauga Battlefield Visitor Center in Fort Oglethorpe, Georgia, the Fuller Collection is one of the premier assemblages of our nation's military longarms from the Colonial period through World War I.

With 355 exhibited weapons and several hundred associated items (bayonets, scabbards, cartridges, and some variant parts), the Fuller Collection reflects significant technological developments that fueled industrial advances in the United States. Amassed by the Fullers over more than 50 years, the collection is a nationally-important cultural resource. Fuller's lifetime of work has been the foundation on which many more recent arms scholars and researchers have built their studies. While some of these investigators have advanced the scholarship on certain weapons much further than what Mr. Fuller was able to do in the first half of the 20th century, Mr. Fuller's work is still a benchmark for those laboring in the field.

Now, a modern technology will help interpret and make Mr. Fuller's knowledge more readily available. This spring, Chickamauga and

Chattanooga National Military Park and the Southeast Field Area's Museum Services Division began the process of converting the data on the Fuller Collection to CD-ROM. In addition to data from the newly updated Automated National Catalog System (National Park Service automated museum catalog) catalog records, Mr. Fuller's 700 pages of typescript notes on the weapons, a pair of photographic images of each weapon, and other data from Fuller's papers will be included in the CD-ROM format. When completed, the CD-ROM will represent each weapon in the Fuller Collection and most of the associated items as well as incorporating Mr. Fuller's knowledge of his collection.

Visitors viewing the collection who desire more information will be able to access the CD-ROM information by entering the weapon's displayed catalog number into one or more terminals in the exhibit area. The system will then display the descriptive data on each weapon from the ANCS catalog card, the text of Mr. Fuller's notes on that weapon, an overall photograph and a breech area photograph of the weapon, and other applicable data including cross references to related arms in the collection. This electronic system will replace the present need for the visitor to leave the collection display area and inquire at the information desk (where a staff member has to retrieve a bound copy of Mr. Fuller's typescript notes from the National Military Park's Longstreet/Thomas Library). With CD-ROM terminals in the collection exhibit area, visitors will be more directly served and additional research interest will be fueled. A controlled means to provide the visitors with a hard copy of the data is also being explored.

When the project is completed, modern technology will be providing access to technology of an earlier age; Mr. Fuller's legacy to the American people will be entering today's information age.

Jim Ogden is a historian at Chickamauga and Chattanooga National Military Park.

Diane Vogt-O'Connor

Council for the Preservation of Anthropological Records and the World Wide Web

Anthropology is concerned with the study, documentation and understanding of human biological, cultural, and linguistic diversity. Anthropological archives are unique and irreplaceable repositories of primary data about human and cultural diversity, commonalities among peoples, anthropological research, as well as the history of the discipline.

The CoPAR WWW site at http://lcweb.loc.gov/homepage/exhibits.html.

What is CoPAR?

A new organization created by anthropologists, archivists, librarians, and scholars, the Council for the Preservation of Anthropological Records (CoPAR) identifies, preserves, and encourages the use of the archival and manuscript collections documenting anthropological research.

CoPAR's goal is to convince record producers, collectors, and holders that they are stewards

CoPAR

Council for the Preservation of Anthropological Records

Mission and Statement of Principles

The Council for the Preservation of Anthropological Records (CoPAR) was incorporated in February 1995 to identify, encourage the preservation, and foster the use of the records of anthropological research. Anthropology is concerned with the study, documentation, and understanding of human biological, cultural and linguistic diversity. Anthropological records contain primary data about, and provide the basis for, continuing research on human diversity, as well as the history of the discipline. Anthropological records thus present a unique and irreplaceable segment of human knowledge. CoPAR has as its objective the initiation of programs to: foster awareness and the importance of records preservation; provide information on records location and access; help provide support for existing repositories; provide consulting and technical services; and conduct special projects as needed. This objective is outlined in the following statement of principles:

1. Anthropological records contain irreplaceable information about human and cultural diversity and commonalties. Those records are at risk.
2. Producers, collectors, and holders of those records are stewards of them and the information they contain.
3. Stewardship implies certain responsibilities; among them:
   - To assure that the records are properly preserved and passed on to future generations;
   - To be aware that information contained in the records has complex meanings for the subjects, producers, collectors, holders, and managers of them;
   - To be aware that there are often conflicting ethical and legal issues relating to those records and the uses that may be made of them;
   - To collaborate with subjects, producers, collectors, holders and managers of records to insure the proper preservation of, and access to, those records, and access to, those records.

CoPAR is sponsored by the major anthropological organizations in the United States in cooperation with other relevant professional organizations, such as the Society for American Archivists and the American Library Association, and government agencies, such as the National Park Service.

Workshops

of these records, responsible to future generations. Anthropological archival and manuscript collection stewards must preserve and make accessible their records. CoPAR plans to ensure the preservation and access of these records by:

- Cooperatively training the record stewards
- Identifying potential resource sources and cooperators for this work
- Developing a master descriptive database, the National Guide to Anthropological Records, on the World Wide Web.

What is the National Guide to Anthropological Records?

CoPAR will encourage records creators, collectors, and holders to participate in the National Guide to Anthropological Records database to be mounted on the World Wide Web. The database will document the location, content, and preservation status of existing anthropological records, thus serving as a union guide of anthropological archives, manuscripts, and personal papers in the United States at the archival collection-level.

An average descriptive record in the Guide is expected to be around 2,000 characters with the data query form including the following fields:

- Archival collection title
- Accession number
- Principle investigator/collector
- Sponsor/funding source
- Temporal context of the data
- Dates of the collection
- Keywords on the
  - -Subject/topic
  - -Culture/ethnicity
  - -Linguistic systems

CoPAR's work involves the development of:

- Database files based upon a survey on anthropological archives, libraries, and individuals' holdings
- Search engine
- Data entry system
- User (searcher) interface for use via WWW and telnet protocols that includes
  - -Map Viewer with zoom and hide capabilities
  - -Place marks
  - -Variable Display capabilities

What is CoPAR's Charge to Records Creators, Collectors, and Holders?

CoPAR believes that anthropological records stewardship implies responsibilities:

- To ensure that the records are preserved for future generations.
- To be aware that the information found in archives has complex meanings for the subjects, producers, collectors, holders, and managers of the records.
- To be aware that there are often conflicting ethical and legal issues relating to those records and their potential users.
- To collaborate with subjects, producers, collectors, holders, and managers of records to ensure the proper preservation of, and access to these records.

What is the Project Schedule?

Workshops were held in spring 1995 to prepare the ground for the National Guide to Anthropological Records. The first workshop—held in Tempe, Arizona, in March 1995—developed a discipline-wide set of minimal descriptive standards for anthropological records based on archival professional standards. The second workshop—held in Reno, Nevada, in April 1995—developed a framework for outreach and education of the various archival, anthropological, and library constituencies including standards, guidance, and workshops.

A proposal for development of the database was submitted by Arizona State University staff to the National Center for Preservation Technology and Training and the National Endowment for the Humanities in spring 1995. Work on the database is scheduled to begin in fall 1995, pending funding.

Who Sponsors or Collaborates with CoPAR?

Collaborating institutions include the following:

- -Arizona State University's Department of Anthropology
- -University of Arkansas's Center for Advanced Spatial Technology
- -University of Nevada at Reno's Department of Anthropology
- -Arizona State Museum
- -National Park Service's Museum Management and Archeology and Ethnography programs.

CoPAR is also sponsored by the major anthropological organizations in cooperation with the Society of American Archivists and the American Library Association. The Wenner-Gren Foundation for Anthropological Research has provided ongoing funding for the project. For a peek at CoPAR plans, see the CoPAR WWW site at http://aspin.asu.edu/provider/anthro/copar.

Diane Vogt-O'Connor is the Senior Archivist in the Museum Management Program of the National Park Service.

—**Kelly**, *continued from page 8*

being taken to simplify transactions with the federal government.

- A system will shortly be in place which will allow businesses to transmit their annual wage reports to the IRS electronically, greatly reducing the paperwork associated with annual wage reports.
- The President has ordered all agencies to accept all data submissions in electronic form. Work is underway to find an acceptable way to validate submissions with an electronic signature and to protect sensitive private information.
- Experiments are underway that will allow a wide range of public benefits to be distributed electronically through automated teller machines and point-of-sale retail terminals vastly reducing paperwork and reducing fraud.

Clearly this is just the beginning, transactions ranging from national park camping reservations to Medicare claims are likely to be conducted through the Internet in the near future leading to major productivity gains in government as well as vastly improved service.

Epilogue

Technology is producing a dramatic change in the way we communicate with each other and with the reservoir of ideas that we've inherited. Such a profound change in such a fundamental part of the human experience is likely to reshape the way the world works and lead to major leaps in the productivity of all forms of organizations—including public organizations.

Unlike the productivity gains of the industrial revolution, these gains can be made while increasing the way products and services are tailored to the interests and needs of individuals. They can increase the real choices and real power available to individuals as well as introducing new opportunities for collective activities.

The Administration is doing everything it can to ensure that Americans benefit from the revolution and avoid the dangers inherent in rapid change. We're certainly intent on seeing that the federal government is more responsive and "user friendly."

Henry C. Kelly is the Associate Director, Office of Science and Technology Policy, Technology Division, Executive Office of the President.

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