Opportunities for Research Libraries in the NSF Cyberinfrastructure Program

by David G. Messerschmitt, Roger A. Strauch Professor of Electrical Engineering and Computer Sciences and Acting Dean, School of Information Management and Systems, University of California, Berkeley, and Member of the NSF Blue-Ribbon Advisory Panel on Cyberinfrastructure

A National Science Foundation (NSF) Blue-Ribbon Advisory Panel recently recommended a new Advanced Cyberinfrastructure Program (ACP). The program offers a chance to reformulate many processes of scientific investigation around the unique opportunities of information technology (IT), and for libraries to contribute to scholarly activity in science and engineering research in new ways. Research libraries house core competencies and expertise highly relevant to ACP and its challenges. However, the natural organization of scientific repositories around disciplinary needs presents challenges to the institutionally based organization predominant in the research library community.

Digital Science

Science and engineering research has long emphasized a give-and-take between theoretical and experimental methodologies, increasingly supported and supplemented by computational modeling (extending theory into new domains), data analysis (extending experimentation), and their combination. The NSF panel observed that research activities based on information technologies have reached a scale and importance that warrants giving them status as a third leg of scientific research methodology, which I term here digital science. An increasing number of scientists engage predominantly in digital science, as others engage in theory and experimentation.

The U.S. National Virtual Observatory (NVO) [http://www.us-vo.org/] illustrates the growing importance of digital science. Without constructing a new telescope, but simply creating a large repository of observational data and a set of tools for accessing and manipulating this data, astronomers have created what they call “the world’s best telescope.” This non-telescope is expected to yield major new discoveries by aggregating and manipulating, for each small patch of sky, data collected at many different times by many different telescopes at many different wavelengths. The NVO also levels the playing field, opening up opportunities for major discoveries from scientists (and amateurs) in all corners of the world.

A second example illustrates other possibilities and challenges presented by digital science: The Advanced National Seismic System (ANSS) [http://www.anss.org/] will consolidate and interconnect 16 regional seismic monitoring networks in the U.S. into a single (although incomplete) national network. In contrast to astronomical observatories, it is unlikely that more than one seismic sensor will monitor any given location. However, such a network will capture a vast number of seismic events, both natural (earthquakes, volcanic eruptions, landslides, etc.) and man-made (including terrorist-originating). Real-time processing of this data may provide sufficient advance warning to shut down critical and vulnerable facilities (e.g., gas mains, transportation systems, and nuclear plants) and direct emergency services’ responses. After the fact, this information is a primary resource for geophysical scientific investigation. Future generations of investigators may make new discoveries based on mining the totality of the collected data by comparing events across geography and time.
Together these examples illustrate the benefits of integrating data acquisition, processing, storage, and access. They also illustrate the critical roles of both data organization and preservation. Digital science includes at least five complementary elements:

- collection of data from the physical world (using distributed sensors and instruments);
- distributed and remote access to organized repositories of such data;
- computation using theoretical models and experimental data;
- presentation of results for scientific visualization and interpretation; and
- support for collaboration among scientists.

The ACP recognizes the importance of these activities with new levels of management attention (led by NSF, but with coordinated activities in other federal agencies and internationally) and funding (estimated at $1 billion per year by NSF, to be supplemented by other agencies).

**The Advanced Cyberinfrastructure Program**

Some major elements of the ACP are illustrated in the figure above. Digital science and engineering research often involves close coordination of theory, experiment, and collaboration among digital scientists, so geographically distributed collaboration and access to geographically distributed sensor networks and instrumentation are crucial. Much of digital science is conducted by authoring (or in many cases executing existing) discipline-specific and generic software that automates data collection and capture, computational models and data analysis, visualization of the results, and collaboration. Software is a primary tool of a digital scientist, just as microscopes and telescopes and pencil and paper are tools of experimental and theoretical scientists.

Cyberinfrastructure encompasses the bottom two layers supporting these activities. First, it provides computational and communication resources, software, and services that are shared by the digital science community. Second, it provides repositories of shared data and software that can be appended, accessed, and utilized in the course of those applications.

"Resources and services" comprise both information technology and human resources. An example of a technology-based shared service is authentication and conditional access to repositories without regard to institution or nationality. One major goal is to capture in shared resources and services much of what is common among applications, and also to provide tools and services that make applications much easier to develop (so that scientists can focus more on their science). But many crucial resources and services are people-based, such as supporting users in accessing...
**What Needs Preservation?**

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Data repositories and using and developing software applications.

One issue for the panel was to define what needs to be coordinated or centralized, as opposed to what is best delegated to local groups. The major centralized activities proposed include shared supercomputers with power and capacity beyond the reach of individual institutions, shared data repository centers focused on capturing, organizing, and preserving data and software, and shared development centers for the production, integration, maintenance, and support of software tools and infrastructure.

The ACP would also support research into information technologies, new uses of IT and new organizations for scientific investigation, addressing shortcomings of the technology, and exploring ways that science and engineering research can be revolutionized through IT.

**What Needs Preservation?**

One of the central themes of ACP is preservation. Today the system for preserving and granting access to scientific data is informal at best. In practice much data is unavailable or eventually lost. One goal of the ACP is to ensure the selective long-term preservation of this data and, beyond this, the stewardship and curation of these repositories so they are easily discoverable, identifiable, and accessible. Here "accessibility" refers to software applications and instruments as well as scientists, and access for not only reading but also (conditionally) for additions and changes. By "organized" and "identifiable," we mean consciously and conscientiously structured to make repositories more valuable to scientific investigation, such as by function, location, time, etc., and annotated in ways that make repositories searchable and documented in machine-readable form. By "preserved," we mean available in this manner far into the future (centuries and millennia).

Information (represented by data and its descriptive and structural metadata) is the most obvious target of preservation, but shown above are other preservation needs. In the course of scientific investigation, the logic, processes, and algorithms are documented not only by scholarly papers (themselves a target of preservation) but also the software that realizes the models, simulations, and data analysis. This software should be selectively preserved for critical analysis and for its future reuse, modification, and execution so that others can reproduce, build upon, and extend outcomes. In addition, the results of major computations (especially where the software that generated them is not preserved) should be selectively preserved for future critical analysis and reuse.

Software has a dual role, as a human- and machine-readable information artifact and as a behavioral artifact resulting from its execution. The preservation of software as a behavioral artifact requires technical breakthroughs because, absent special measures, today's
Descriptive metadata captures the relevant context of the scientific data—what experimentation or modeling it was based on, when and where it was captured, and a host of similar information vital to future investigators.

I assert, therefore, that future digital science data and software preservation targets are not separate, but should be assumed from the beginning to be largely inseparable. In the next section, we refer to “preservation artifacts” to mean both data and software and (frequently) their combination. The software preservation issue assumes far greater significance than might first appear.

Reformulating the Processes of Scientific Investigation

In any domain of application, the first use of IT is invariably the automation of existing processes, but historical experience suggests that major benefits follow when processes are reconsidered and reformulated in light of the unique characteristics and capabilities of the technology. Digital science is a major opportunity for reformulating the processes of scientific investigation, since capture, preservation, and access can in many instances be designed largely from scratch in an IT-rich environment.

Federated and networked repositories render place largely irrelevant. The physical storage of even logically federated repositories need not be centralized—a repository with the appearance of centralization can be composed from geographically separated sub-repositories. A globally accessible sub-repository or whole repository need be created and managed only once, in one place.

The management of these repositories can be divided into four basic functions:

- **Data stewardship**—This includes provisioning and operations of facilities, acquiring, installing, operating, and maintaining the physical storage/processing and networking infrastructure. It also includes backup, replication, and mirroring operations on data to ensure its integrity and long-term preservation. This is the primary defense against loss due to deterioration of physical media, natural disaster, or sabotage. This function should be transparent to (and strongly separated from) any knowledge of the structure or semantics of the data being managed.

- **Content curation**—This includes the logical organization of repositories, as well as the definition and maintenance of metadata standards (both structural and semantic),

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software will certainly not be executable in future computing environments. This is a major technical and operational challenge, considerably more challenging than data preservation.

In fact, digital science repositories cannot be cleanly separated into passive information artifacts (e.g., “documents” and “data”) and behavioral artifacts (e.g., software). This distinction is rapidly blurring, as access to data is increasingly intermediated by various behavioral software-mediated functions. A number of examples illustrate this point:

- Documents, including scholarly publishing and communication, increasingly incorporate “active content,” such as audio or video or animations.

- Digital rights management incorporates techniques like watermarking (to identify the origin) and encryption (to enforce conditional access) that require software mediation.

- Modern database management systems do not make “raw” data available, but access is software-mediated through query languages such as SQL.

- Modern object-oriented programming methodologies prohibit direct access to data, requiring that it be intermediated by software procedures. Audio or video need not be accompanied by detailed formatting standards if software is available to translate from whatever representation is chosen to (uncompressed and unencrypted) standards for playback or display.

It is persuasive that raw data in isolation should rarely be the exclusive target of preservation—structural rules, organizational paradigms, and contextual information (all represented as supporting metadata) must be preserved as well. For scientific data, there are thus two distinct forms of metadata:

**Structural and organizational metadata** exposes (in machine-understandable form) the data structures and semantics necessary to interact dynamically with the data. This could be the subject of direct standardization, but the trend is to avoid the inflexibility of this approach through software intermediation, and to define descriptive languages for discovery and use of these abstracted representations. This is consistent with the observation that much scientific data will represent active content, as for example animations in the visualization of the results of scientific modeling or historical evolution of observational parameters.
to ensure that preservation artifacts can be located, accessed, and interpreted as needed, with tools to support both machine and human search, navigation, and access. As these repositories will become truly gigantic over the millennia, this is crucial to avoiding a debilitating “needle in a haystack” problem.

- **Origination services**—Individual users (individuals or groups and their instruments, sensors, and machines) create, structure, and attach metadata, and store scientific data and software during the course of scientific investigations in accordance with logical organizational standards or guidelines established by content curators. An important user service function aids originators of digital artifacts to condition them for the repository, or does this conditioning on their behalf (a traditional “publisher” function).

- **Access services**—Users (and their instruments and machines) access data without changing it during the conduct of new scientific and engineering investigations. An important user-service function aids consumers of digital artifacts (a traditional “library” or “museum” function), including finding what they need, linking it to their own instruments and machines, and configuring, executing, and using any associated software.

All four functions have an important human-resource element. Staff performing data stewardship must be physically co-resident with the storage facilities, but there is no similar requirement for other functions. Thus, modern networking de-emphasizes the role of place—the physical and logical mapping of data can be quite different, and distributed repositories can appear to be organized in any manner we please through appropriate federation.\(^\text{11}\) This admits essentially complete freedom to define a human organizational structure and geographical dispersal of each of these roles as appropriate. In terms of efficiency and effectiveness, geographic proximity is hugely significant for human organizations and largely irrelevant for storage and processing facilities.

### Preservation and User-Service Roles

Clearly there is an institutional role in ACP that parallels (if not replicates) functions traditionally performed by publishers as well as libraries and museums. Individual research grants don’t fund the long-term preservation and access services for digital artifacts gathered or developed at considerable expense, nor are investigators themselves invariably prepared or motivated to carry this out, especially over time frames extending beyond a career or lifetime. As the NVO illustrates, there will be direct scientific returns for centralized and well organized repositories, as opposed to a proliferation of project-based repositories. It is unlikely that commercial publishers will find this an attractive opportunity, given the relatively infrequent (but high-value) uses (many far in the future). It is therefore envisioned that NSF (and other agencies) would fund the organization, preservation, and user service roles of the ACP, centralized and separate from individual investigative grants. They would likely be performed by non-profit or commercial organizations under contract to NSF.

Academic research libraries have focused on serving their respective institutions, notably also cooperating with and sharing resources with other institutions. A few libraries serve a discipline rather than an institution (an example is the U.S. National Library of Medicine [http://www.nlm.nih.gov/]). Much intrinsic value of the repositories in the ACP will follow from their discipline-based (as opposed to institutional-based) organization, as illustrated by the NVO example. Both the organization of and access to preservation artifacts should be transparent across both institutional and international boundaries. This is a mismatch with the current emphasis of research libraries on serving predominantly users within their own institutions across all disciplines, but certainly does not preclude libraries’ contribution and participation, especially in light of the organizational freedoms afforded by emerging technologies and the prospects for specific public funding for a broader service role in the ACP.

There are other reasons that the ACP should not be viewed as a traditional institutional responsibility, and digital science repositories should not be thought of as a collection or federation of “institutional repositories,” although such repositories can play significant roles in filling gaps, or making up for temporary shortcomings, or providing for non-scientific disciplines.\(^\text{12}\) Complete coverage of scientific disciplines would not be assured if this depended on the long-term guaranteed participation and assumed budgetary responsibility of every institution. The fragmentation of institutional
repositories would likely be inefficient, since every institution would have to maintain the expertise to cover all disciplines. In fact, there are considerable economies of scale and scope—particularly in the domain knowledge required to support originators and consumers of digital artifacts—in the centralization of responsibility for individual disciplines. There would also be a problematic disconnect between responsibility (to users across the world) and budgetary sources (appropriately focused on serving internal users).

Stepping back for a moment, the most natural greenfield organization (starting from scratch) of the repository functions of the ACP would be something like the following:

- A small number of contracted centers could perform data stewardship of digital artifacts. These could be specialized commercial organizations (these already exist for similar purposes) located in low-wage regions. There is no need to organize this function along disciplinary boundaries, or to geographically constrain it. Mirroring of these sites would assure preservation in light of natural disasters and sabotage. and an appropriate networking and caching infrastructure could achieve performance goals.

- One (or at most a few) content curation centers could perform content curation for each discipline (or a few related disciplines). In addition to the development and maintenance of standards (such as for metadata) and related software (such as tools), each such center could accumulate the expertise and focus necessary to support the discipline-specific aspects of origination services and access services, and provisioning of support services for both institutions and individual users.

- In addition to possibly hosting content curation centers, individual institutions should provide origination and access-service functions to local users, emphasizing discipline-blind aspects while interfacing with disciplinary content curation centers on behalf of users.

The parallels between these three functions and the printer and bookbindery, publisher, and library for printed materials are evident. Binderies are content-blind, publishers tend to specialize in disciplines, and libraries predominantly serve local users across all disciplines.

While I have emphasized a disciplinary granularity for the content curation activities, this is not totally appropriate for ACP either. There will be considerable commonality across the needs of distinct disciplines, and these should be captured not only for efficiency but also to avoid balkanization that will make interdisciplinary efforts more difficult in the future. The experience in the commercial world has been that IT is often a major barrier to change (such as new products or mergers and acquisitions). In the future, digital science should insulate that IT is an enabler of (and not barrier to) interdisciplinary forms of digital science—researchers in one discipline should find the incorporation of the repositories of other disciplines into their research to be natural and well supported. This will require that ACP specifically look for pan-scientific commonalities (including standards and software), working cooperatively with and among the collection of disciplinary centers.

Aside from the organizational and granularity issues, there are other distinctions that make a difference. I already mentioned the importance of preservation of software as both information and behavioral artifact, including supporting active content and software-mediated data access. This is far more difficult and sophisticated than similar roles in the print world, and more proximate to the museum world (especially interactive science museums). In addition, these collections will not simply be accessed for reading, but may be dynamically incorporated into distributed computing applications for appending, changing, and reading, adding entirely new responsibilities and support issues. For both reasons, user support will be crucial, and the choices made in partitioning this support structure between the user’s institution and centralized groups has major implications to efficiency and effectiveness.

Returning to the greenfield opportunity, one of the supposed “benefits” of networking is purported to be disintermediation—direct interaction between originator and consumer. Actual experience in the commercial world and elsewhere has been somewhat different. While intermediary functions change, sometimes radically, they rarely disappear. Can the traditional intermediary role of the library and museum be molded to the needs of digital science? Will new institutions arise to meet these needs?

Library Contributions
I have argued that ACP repositories should be organized along disciplinary and pan-scientific rather than institutional lines. Even if you accept this, research libraries (including institutionally based ones) can play important natural roles within ACP. I have already mentioned support and interface functions for local users. Two other possible roles are as the home of disciplinary centers of content curation, and contributing to the research and design activities.
of the ACP. All these roles build on unique core competencies that libraries have developed and nurtured over centuries.

Research libraries (singly or in consortia) would be a natural home for content curation centers, based on funding from NSF and other agencies rather than their local institutions. These centers would design the organizational paradigms and detailed standards for structural and descriptive metadata, provide content origination and access services to scientists worldwide (or at least nationwide), and provide local institutionally based user support. Libraries obviously already bring competency and experience to these functions, although they would doubtless have to build disciplinary and software development and support expertise far beyond what they possess today, and will require collaboration with both domain and computer science communities.

Many of the issues faced by ACP are not well understood, and for this reason ACP includes a large research function, including research in information technology, in the scientific disciplines themselves, and in the social sciences. I mentioned previously the capture of commonalities (such as metadata) among disciplines, maintaining ready interoperability across disciplines, and preserving software as a behavioral artifact. But there are many, many other issues, many of them familiar to librarians. The issues surrounding metadata and software intermediation of scientific data are poorly understood. Our assertions above about the scale and scope economies of centralization are examples of larger economic issues requiring study and quantification. Conditional and role-based access requirements for scientific data (such as the differences between pre- and post-publication access) have not been addressed. The ownership and intellectual property issues are extraordinarily challenging. There are many public and institutional policy issues, such as the responsibility of investigators obtaining public funding to add their data to repositories (many of them feel such data is personal property), and possible liability, privacy, free speech, and homeland security issues. Research libraries could themselves become involved in research underlying the design of the ACP and the digital science it supports in collaboration with domain and computer scientists.

There is a larger opportunity here for research libraries. It is clear that IT will (or at least should, unless we choose to ignore it) radically transform research and scholarly discourse, including the traditional communication and archival functions of publication and access. But what does this mean precisely? Libraries are already studying and experimenting with institutional repositories, which would fundamentally alter the relationship of libraries, scholars, and publishers. This is a major step, but only scratches the surface of what may be possible, and what may be beneficial or appropriate. The ACP offers an opportunity to confront these issues boldly and directly with financial support from NSF and other agencies. Although ACP addresses only the realm of scientific and engineering research, the ideas generated and lessons learned should have broader implications. The need to build a largely new platform for scholarly discourse in science and engineering affords a once-in-a-lifetime opportunity to deeply reflect upon and contribute to the future of scholarly discourse more generally.

Acknowledgements
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5. Specifically all data is encapsulated in “objects,” and access to that data must be mediated by “methods” associated with those objects.

6. This is illustrated by “Interface Definition Languages” for object repository brokers <http://java.sun.com/products/jdk/IDL/> and the “Web Services Description Language” <http://www.w3.org/TR/wsd1>.

7. Of course, passive documents characteristic of traditional forms of scholarly communication will continue to be prevalent, both within digital science and especially in other disciplines.

8. There are technical issues requiring research, but I speak here in terms of possibilities, as opposed to the current state of the technology.

9. This might also be termed “physical stewardship,” in that it emphasizes the physical representations of data.

10. This might also be termed “logical curation,” in that it focuses on the logical representation, structure, and organization of repositories and is transparent to their physical representation.

11. Of course, this does have systems performance implications, which can be manipulated through appropriate caching mechanisms.


13. An illustration of this in the commercial world is eBay <http://www.ebay.com/>; which allows buyers and sellers to conduct business directly but also creates new intermediaries (eBay itself, as well as payment escrow services).

RETHINKING THE FEDERAL DEPOSITORY LIBRARY PROGRAM

A t a Depository Library Council meeting in early April, Bruce James, the new Public Printer and Judith Russell, the new Superintendent of Documents facilitated a discussion with members of the library community concerning future directions for the Federal Depository Library Program (FDLP). In his remarks, the Public Printer noted a number of trends that are influencing the FDLP and its future. For example:

- the U.S. Government Printing Office (GPO) focus on “traditional” printing is changing to a focus on information preparation and dissemination services;
- two-thirds of the information resources in the FDLP are now available only electronically;
- in five years, approximately 95% of government information will be available only in electronic format; and
- issues concerning permanent public access to government information and authentication issues are critically important to the future of the agency and to the FDLP and must be resolved.

A supporter of the FDLP, the Public Printer, in a nutshell declared that the “FDLP will fall under its own weight unless it is reconfigured substantially.” Although some members of the library community have been strong advocates for changes to the FDLP for quite some time, this is the first time that GPO leaders have signaled the need for change.

Both James and Russell repeatedly stressed the need to:

- experiment with electronic and digitization pilot projects in order to test new delivery mechanisms;
- restructure the current framework of the program significantly to better serve the libraries and the public; and
- institute a new GPO focus on services to participating federal depository libraries such as training and consulting vs. inspections.

Importantly, Russell is engaged in discussions with ARL, the American Association of Law Libraries, and the Medical Library Association as to how best to meet the diverse needs of different library types. For example, are there specific needs or different approaches that could be undertaken within the research library community or within the law library community to better meet the needs of those participating libraries? Appropriately, there is a great deal of concern with the declining participation in the FDLP. In 1955, there were 563 participating libraries. This number jumped to 1,405 in 1992 when print resources were at an all-time high.

RE-EXAMINING THE SERVICES GPO PROVIDES TO THE PUBLIC

T ogether we must re-examine the services that GPO provides to the public directly and through the depository libraries. We must define the services that are required now and in the future to support the mission. We must address the fundamental question that we have been asking each other since 1995: Why be a depository library when you can obtain “everything” (or virtually everything) free on the Internet without being part of the program?....

We must identify services that are of value to you as library directors. I know that you are challenged daily to accomplish more with fewer resources. The depository libraries represented in this room invest far more resources in the Federal Depository Library Program than GPO does—some past estimates suggest that each of your libraries spends $10 for each $1 worth of publications you receive, and that may be conservative. We must find a way to rebalance the scales so that libraries are willing to continue to expend resources on public access to government information.


In 2002, there were 1,297 Federal depository libraries with a number of additional institutions indicating an interest in dropping out of the program.

Russell is very interested in preserving the program and discussing what the benefits are, or should be, of being a Federal depository library in the almost all-electronic environment. To that end, she spoke at the ARL Membership Meeting in Lexington, Kentucky, May 15, 2003. Russell’s presentation is available on the ARL Web site <http://www.arl.org/arl/proceedings/142/russell.html>.

To pursue this topic further, Ridley Kessler and Beth Rowe of the University of North Carolina at Chapel Hill and Bill Sudduth of the University of South Carolina are conducting a survey of participating ARL Federal depository libraries both regional and selective. (The survey will also include the remaining non-ARL regional depository libraries.) The goal of this effort is to gather current information on the Federal depository library program, such as investments in staff, services, space, etc., that will inform the debate and assist directors and GPO in their deliberations. The survey will be available in July with analysis completed by early fall.
**DIVERSITY**

Jerome Offord, Jr., Program Officer for Training and Diversity

**ARL/MLA SELECT 2003–2004**

**LEADERSHIP AND CAREER DEVELOPMENT PROGRAM CLASS**

ARL and the Medical Library Association (MLA) are pleased to announce the 2003–2004 Leadership and Career Development (LCD) Program participants. The LCD Program is designed to increase the number of librarians from underrepresented racial and ethnic groups in positions of influence and leadership in research libraries by helping them develop the skills needed to be more competitive in the promotion process. This year, ARL and MLA formed a national collaboration to target librarians from underrepresented groups within medical librarianship. This collaboration will allow at least two librarians from the medical field to participate in the LCD Program. Below is a list of this year's participants along with their research topics and mentors.

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<td>Mireille-Paule Kotoklo</td>
<td>TBA</td>
<td>Nancy Baker</td>
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<td>Coordinator for Access Services, DePaul University</td>
<td>Information Literacy Programs</td>
<td>University Librarian, University of Iowa</td>
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<td>Gregory Lewis</td>
<td>Providing Information for Consumers at Multiple Reading Levels</td>
<td>Peter Graham</td>
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<td>Public Service Director, Metropolitan College of New York Library</td>
<td>Consumer Health Information-Seeking Behavior of African Americans: Understanding the Influence of Social Networks</td>
<td>University Librarian, Syracuse University</td>
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<td>Tammy Mays*</td>
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<td>Stella Bentley</td>
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<td>Consumer Health Coordinator, Medical Librarian, University of Illinois at Chicago</td>
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<td>Ophelia Morey*</td>
<td>Programming Possibilities within the Academic Library</td>
<td>Dorothy Jobe</td>
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<td>Senior Assistant Librarian, State University of New York, University at Buffalo</td>
<td>Analyzing the 2001–2002 Public University Libraries Data to Determine the Impact of Recent Economic Conditions on Funding Patters</td>
<td>Director of Libraries, Baptist Health System</td>
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<td>Elaina Norlin</td>
<td>TBA</td>
<td>Betsy Wilson</td>
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<td>Edward Sanchez</td>
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<td>Dean of Libraries, University of South Carolina</td>
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<td>Head, Desktop &amp; Networking, University of North Carolina at Chapel Hill</td>
<td>Creating an Annotated Bibliography of Primary Resources Related to African Independence Movements from 1929 to 1980</td>
<td>Ernie Ingle</td>
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ARL Activities
Kaylyn Hips, Editorial and Research Associate

ARL Membership Meeting Focuses on Libraries as Place and Space
by Judith Matz, ARL Communications Officer

The Universities of Kentucky and Louisville warmly welcomed representatives of one hundred seven institutions to Lexington for ARL’s 142nd Membership Meeting on May 14–16. The theme of the meeting, “A Community Commons: Libraries in the New Century,” was a popular one and clearly reflected the interests of research libraries.

Library Architecture in Developing Community
The meeting program examined the connections between research libraries as place and as space and how both identities contribute to a sense of community in academe and beyond. The program examined the role of library architecture in developing a community. Paul Willis (University of South Carolina) spoke about “The Kentucky Concept” that guided the development of the William T. Young Library. He described the importance of the library as a gathering place for students, providing them a sense of community in an era of remote access. Sarah Thomas (Cornell University) followed with a virtual tour of libraries that have used architecture to build community, creating libraries that are warm, welcoming places for students. Stephen Murray (Columbia University) presented a virtual tour of cathedrals and churches in medieval France and spoke about the relationship between space and community in medieval architecture.

Emergent Roles for Research Libraries
Wendy Pradt Lougee (University of Minnesota) spoke about the library as part of a collaborative enterprise, woven into the fabric of the university. Rather than being defined only by its collections or services, the library works as a diffuse agent within the broader community, weaving its expertise throughout the learning, teaching, research, and services of the parent institution. Expanding on the vision of library participation in the research community, David Messerschmitt (University of California, Berkeley), a member of the National Science Foundation panel recommending a new Advanced Cyberinfrastructure Program, addressed the expertise that libraries could bring to the creation and preservation of shared data repositories. Lorcan Dempsey (OCLC) followed with an analysis how digital content management is changing the library concepts of place, collection, and service.

Insights into User Behavior
To better understand how people use information resources and libraries, Brian Schottlaender (University of California, San Diego) presented findings from the University of California Collection Management Initiative that examined journal use at different campus libraries. In all disciplines and at all libraries, the use of digital resources far exceeded the use of print materials. Fred Heath (Texas A&M University) reached a similar conclusion. By looking at the findings from both the LibQUAL+™ and Oustell research on library user perceptions and values, he said it was clear that library users see electronic access to information as crucial. They may still want to read from paper but finding and receiving information electronically is identified as a priority.

GPO Depository Library Program
Judith Russell, the new U.S. Superintendent of Documents of the Government Printing Office, addressed the Federal Relations luncheon. She spoke about future directions of the Depository Library Program and urged ARL directors to become part of the ongoing decision-making process for redefining the program.

Additional Highlights from the Meeting
The University of Kentucky hosted a reception, tours, and dinner at the impressive new William T. Young Library. Three new ARL directors were introduced and welcomed to the ARL community: Mark Haslett (University of Waterloo), Ruth Jackson (University of California, Riverside), and Carol Diedrichs (University of Kentucky). In addition, the University of Louisville hosted a reception and dinner at which members bid farewell to three ARL directors who are retiring: Harold Billings (University of Texas at Austin), Joan Gotwals (Emory University), and Murray Shepherd (University of Waterloo).

Discussion sessions were held on:

- “Combining and Redefining Service Points,” led by Nancy Baker (University of Iowa)
- “Promoting Open Access: The Information Program of the Open Society Institute,” led by Jean-Claude Guédon (Université de Montréal)

Background papers, slides, and summaries of all the meeting presentations are available on the ARL Website at <http://www.arl.org/arprocceedings/142/ >.

Transitions
Miami: William Walker, currently Senior Vice President and the Andrew W. Mellon Director of the Research Libraries at the New York Public Library, was named University Librarian effective October 1.
Purdue: Emily Mobley announced her retirement as Dean of Libraries effective January 9, 2004, when she will move to the libraries faculty in a half-time position, retaining her endowed chair.

Other Transitions
Society of American Archivists: Nancy Perkin Beaumont, Senior Vice President of Communications for the American Physical Therapy Association, was named SAA Executive Director effective July 15. Beaumont replaces Susan Fox, who stepped down in September 2002 to take a similar position with the American Association of Law Libraries.

Special Libraries Association: Janice R. Lachance was appointed Executive Director effective July 1. She has held a variety of positions within the U.S. Office of Personnel Management, serving as the agency’s Director from 1997 until 2001.

Patricia Promis (Arizona)
Deborah Turner (California, Santa Cruz)
Diane Parr Walker (Virginia)
Sarah Barbara Watstein (Virginia Commonwealth)
Frances C. Wilkinson (New Mexico)
Julia Zimmerman (Ohio University)

Herbert Van De Sompel of the Los Alamos National Laboratory Research Library was awarded the Frederick Kilgour Award for Research in Library and Information Technology for 2003. Van De Sompel is recognized for his work in developing the SFX system linking technology and the OAI protocol for metadata harvesting. The award is given by OCLC and the Library and Information Technology Association (LITA), a division of the American Library Association.

HONORS
Brigham Young University won the SIRSI Leader in Library Technology Grant. The award recognizes the university’s project that extends the services and resources of its Harold Lee Library to distance education students located in many areas of the world, creating an integrated portal to independent study courses and library resources.

Joyce C. Garnett, University Librarian at the University of Western Ontario, was elected President of the Canadian Association of Research Libraries. The two-year term runs until 2005.

Alan H. MacDonald was recognized by the Canadian Association of Research Libraries with the CARL national award for Distinguished Service to Research Libraries. He received the award for his exemplary leadership at Dalhousie University, the University of Calgary, and through numerous professional associations.

UCLA Senior Fellows for 2003 were announced following a nationwide competition. The 15 fellows—all top managers of academic research libraries—will attend a three-week program at UCLA August 11–29, 2003. The Senior Fellows for 2003 are:

- James K. Bracken (Ohio State)
- Virginia Danielson (Harvard)
- Amy Dykeman (North Carolina at Charlotte)
- Lisa Janicke Hinchliffe (Illinois at Urbana-Champaign)
- Erika C. Linke (Carnegie Mellon)
- Sara Lowman (Rice)
- Catherine Murray-Rust (Oregon State)
- Don Pansera (Library of Congress)
- Susan E. Parker (California State, Northridge)
- Ralph Hopp 1915–2003
Ralph Harvey Hopp died February 7. He served as University Librarian at the University of Minnesota from 1971 to 1976. A native of Nebraska, Ralph earned a B.S. in engineering from the University of Nebraska. He received his M.S. and Ph.D. from the University of Illinois. He came to the University of Minnesota Libraries in 1953 as Assistant Director. Ralph was deeply involved in planning Wilson Library. He assumed the position of University Librarian in 1971. During his administration, computers became an essential part of library research and the Minnesota Union List of Serials (MULS) was published in 1974. He was ARL President in 1975.

Jim Ranz 1921–2003
Jim Ranz died on January 29. He served as Dean of Libraries at the University of Kansas from 1975 to 1990. In the nearly 15 years of Jim’s leadership, the KU Libraries made notable accomplishments in building the collections, providing automated tools and services to readers, increasing the size of the staff, and developing new and renovated library facilities. Jim worked closely with other university leaders to secure appropriate levels of funding for library collections and staff salaries. He is credited with launching a series of automation efforts, beginning early in his career by transitioning the KU Libraries to the cooperative cataloging programs of OCLC and ending his career with the initiation of the first online catalog. His most visible accomplishments were in the building and renovation of library facilities.
ARL Calendar 2003
<http://www.arl.org/arl/cal.html>

August 13–15  Advanced XML: Data Transformation with XSLT
              Charlottesville, Virginia

September 8–9  Exposing Hidden Collections
               Washington, D.C.

September 22–25 Library Leadership for New Managers
               Program
               Washington, D.C.

October 3–4    New Ways of Listening to Library Users: Tools for
               Measuring Service Quality
               Washington, D.C.

October 7–8    Leading Change
               Washington, D.C.

October 14–16  ARL Board and Membership Meeting
               Washington, D.C.

October 17    Scholarly Tribulations: How Traditional Practices in
               the Disciplines are Driving Technology in
               Different Ways
               Washington, D.C.

November 4–6  Library Management Skills Institute: The Manager
               Los Angeles, California

December 8–9   CNI Fall Task Force Meeting
               Portland, Oregon

Online Lyceum
Can’t make it to our in-person events? Take a look at our Online Lyceum Web-based course offerings at <http://www.arl.org/training/lyceum.html>.