



# ACCESS

## NEWS FROM THE UNIVERSITY LIBRARIES AT NOTRE DAME

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### Networks and Libraries

by Robert C. Miller

**A**cademic research libraries exist to collect and provide access to a broad range of resources needed to pursue academic research by students and faculty. Traditionally, this has been done by the selection, purchase and processing of print material. The assumption was that if it is needed, we should buy it. For a number of years, this principle has been modified by the idea that if we don't have it, we'll get it on interlibrary loan. Success at Notre Dame in both areas has been mixed: our limited funds have precluded acquiring locally all that we might, and ILL processes have been less than totally satisfactory.

But times and research needs are changing. While print media will be with us and will be of continuing importance for a long time, it is clear that electronic versions of a broad range of resources -- bibliographical, statistical and full text -- will be of increasing importance to researchers in the years ahead. This presents exciting prospects for both researchers and libraries because local physical ownership will be far less important, thanks to the impact of networks.

The word "network" is terribly ambiguous, covering everything from the informal exchanges at cocktail parties to closely integrated and managed "electronic highways." Indeed, it has been "networking" in one sense of the word that has led to the relative success of the national interlibrary loan system. But in the most pertinent sense, networking today refers to electronically based telecommunication systems. These networks can be relatively narrow in scope -- local area networks (LAN's) within a building or academic unit -- a campus "backbone" network linking LAN's and individual workstations -- or regional or even national networks linking resources at different institutions. While the specific details of these various levels of networking are beyond the scope of this presentation, it is important to note that very real progress has been made in the extension of the campus backbone network, and that Notre Dame has full access to the two major academically oriented national networks, BITNET and Internet, an ad hoc linkage of a broad variety of regional networks based on a National Science Foundation funded backbone.

Telecommunications networking has two principal motivations: communications and resource sharing. The first of these is the basic communications facility presented by networks. Through e-mail service it is possible for an individual at Notre Dame to communicate in a timely fashion with colleagues on campus, across the country or even internationally without the "telephone tag" syndrome. Bulletin boards, lists and conferencing expedite communication among individuals with similar professional or personal interests.

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### Librarians + Mathematicians = Quality Service

by Andrew J. Sommese,  
Mathematics Department

**N**otre Dame's Mathematics Library is excellent. It is one of the top handful of core mathematics collections in the world. Rare is the visiting mathematician who doesn't express surprise and pleasure over the library. Much of the credit for this resource goes to the ongoing collaboration of the mathematics faculty and the mathematics librarians. Recently the Mathematics Library became one of the first in the country to have *Mathematics Review* available on CD-ROM. To appreciate this development it is necessary to spend a little time discussing mathematics and the special role a mathematics library plays for mathematicians.

The core of mathematics consists of a treasure trove of concrete objects. For example, consider the usual unit sphere in 3-space defined by the triples  $(x,y,z)$  of real numbers satisfying  $x^2+y^2+z^2 = 1$ . Such an object has been known for centuries, and though at first sight seems simple is actually quite rich. Important Lie groups arise as its groups of symmetry and there are partial differential equations, and polynomials such as the spherical harmonics, and ordinary differential equations such as the hypergeometric equation, naturally

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## Librarians *continued from page 1*

associated with it. These objects and others like them have led to elaborate theories and concepts such as complex analysis and complex manifolds, partial differential equations and algebraic groups, etc.

In mathematics, papers and books from the last century are valuable and important. Studies of basic objects often contain results and information that is not absorbed into common knowledge because it doesn't fit well into any of the general theories being researched. Sometimes a subject is worked out and dies out because there are livelier fields of investigation going on. These older works can be critical to a modern investigation.

To be specific let me talk about my own subject of algebraic geometry. The subject was very widespread at the end of the last century, but gradually geometric intuition outstripped rigor to the extent that even the best geometers made errors, and basic results were in real doubt. Algebraic geometry disappeared or only survived as a shadow of itself through the late forties. In the 50's a renaissance in the subject occurred. New techniques and theories made it possible to put the geometric intuitions of the last century on a sure footing. The questionable results were settled. The dream of many of the great mathematicians of the last century of merging geometry and arithmetic was achieved. Many of the major open problems were settled and entirely new phenomena were discovered. During this period access to the old papers and books has been critical. Some major investigations of my own grew out of reading papers from the 1890's.

In recent years core mathematics has been used in important ways in engineering, science and business. Often the results used are old -- sometimes very old. Again, in my area I think of how an abstract theorem (the Grothendieck-Frisch generic flatness theorem of the 60's) turned out to be exactly the result to allow solution by A. Morgan and C. Wampler (both of General Motors Research Laboratories) and myself of a non-trivial problem of kinematics, the so called nine-point path synthesis problem for four-bar linkages. Or again how in vision theory the 19th century invariant theory of conics is giving a way for machines to see objects such as tools and pick them up.

When mathematicians do their research, they are always running to the library to look up the results of other mathematicians -- often from quite a few years ago -- on some question near a question they are studying. This aspect of a mathematics library as a laboratory means that there is a direct link between the library being "complete" and a mathematician being able to understand the known parts of a question quickly. Mathematicians are very concerned with having the best library possible.

In many areas of mathematics major papers occur in conference proceedings. In my discipline this is a tradition. These proceedings are often edited by top mathematicians, carefully refereed and are an important part of the permanent literature of the field. The mathematics

librarians have worked carefully with the mathematicians for years to fill holes in our collection. Traditionally the mathematicians and mathematics librarians have also worked to build a "complete collection" in areas of current interest and to have a solid, though not necessarily as complete, collection in the rest of mathematics. Certainly this has contributed to the Mathematics Library being the very much used resource it is by the rest of the Notre Dame community. Recently the Mathematics Department has undertaken to build new groups of faculty in applied mathematics. This has led to the need for a whole set of journals and standing series of books of which the department wasn't even previously aware. The mathematics librarians and the administration at the University Libraries have been very helpful and have worked with the department on this problem in this era of strained budgets.

Mathematicians were aware of the possibility of doing online searches. A few have used this service. Unfortunately mathematics research grants are quite bare -- too bare to afford online searches. For this reason CD-ROM technology starts a new era for mathematicians.

*Mathematics Review* and *Zentralblatt für Mathematik* are two very important journals summarizing almost all articles published in mathematics. Certain mathematicians, including myself, have a preference for *Zentralblatt*, which is often more timely and often includes in a review the summaries of results obtained since the article under review was published. Previously both came out in many, ever larger, annual tomes. Searching for articles on a topic required patience and the ability to lift heavy objects. Now we can do searches on a PC, download to a floppy, read the floppy into our Macintosh computers and search, T<sub>E</sub>X and read the review and eventually paste the references into our article. The Notre Dame Mathematics Department is one of the first in the world to have this capability. The reason for this is that the Mathematics Department and the University Libraries have worked together --- even on relatively small matters such as hardware. The Mathematics Department supplied some IBM PC's and a hard disk. The Libraries supplied the CD-ROM's, a CD-ROM reader, the extra memory and other necessary hardware as well as the expertise to put the system together.

Most importantly the *mathematics librarians brought this service to the mathematicians' attention.*

The system is not perfect. The whole *Mathematics Review* database requires two CD-ROM's -- one for the period 1980-87 and one for the period 1987-91. If we had two CD-ROM readers, the database could be seen as single entity and searches could be made over the whole period, instead of once on each disk. The PC's are ancient and slow. The service should be available over the network. *Zentralblatt* is not yet available -- though it will be soon. To my mind these small transient difficulties are the growing pains on the way to a future



P. Karpinski

*Always available: hands-on instruction*

where the mathematical literature is available in electronic form. Having the valuable CD-ROM service early is an extra boost for our research. It is one of the many fruits of the cooperation of the mathematicians and the mathematics librarians towards the goal of making our library the best mathematics library in the world.

## Networks *continued from page 1*

The range of topics for these services is virtually unlimited; current examples include such disparate subjects as jokes, earthquakes, campus-wide information systems, military developments, etc. A list of such services currently available through BITNET along with advice on how to access these lists can be obtained at the Hesburgh Library Reference Desk.

The second motivation is the desire to share resources. What resources? The initial motivation behind national networking and federal funding was access to external computing resources, especially supercomputers necessary for a multitude of computational problem solving and specialized application programs not locally available. Beyond that there is growing interest in expanding access to a broad range of subject oriented databases. These include

statistical files such as census, survey and other consumer data files and full text databases, especially older literary texts converted to machine readable form in databases such as ARTFL (French), TLG (Greek) and Oxford Text Archives (English). More recently, the catalogs of other libraries have been made accessible -- a list of library catalogs on Internet is also available at the Hesburgh Reference Desk. Internet is also being looked to for access to a broad range of newly developed current electronic publications, particularly newsletters and a rapidly growing number of refereed journals. Finally, especially exciting for the future are the increasing number of graphics files containing images of motion pictures, photographic stills, drawings, books, even manuscripts.

Given the long range importance of electronic networking for academic communications and resource sharing, there are two national level initiatives that are of major import. The first of these is the National Research and Education Network (NREN), a proposed federally funded network that would provide a high speed linkage for the research and higher education communities. Legislation authored by Senator Albert Gore failed passage in the dying moments of the last session of Congress in December 1990. However, it has surfaced again as the High Performance Computing Act of 1991. It is extremely important that this network be established in some form if the networking needs of higher education are to be adequately addressed. Significant technical, managerial and practical problems with the current Internet make a true national network extremely important. Its legislative and budgetary success will be of major importance to academic researchers throughout the country.

The other initiative of importance is the Coalition for Networked Information (CNI), a cooperative project of the Association of Research Libraries, CAUSE (a national administrative computing group) and EDUCOM (the major academically oriented computer organization). Notre Dame has membership in all three base organizations and in the Coalition through a joint effort of the Office of University Computing and the University Libraries. The Coalition's efforts are focused on ensuring that local and national information resources -- computing resources, library catalogs, local databases, other local resources, national bibliographical and full text files -- are made conveniently available through the national network.

These two initiatives, NREN and CNI, seek to provide both the "highway" and the appropriate potential traffic on that "highway" that will collectively improve the efficiency and productivity of the higher education/research community in the United States. The Office of University Computing and the University Libraries are committed to supporting these initiatives and to keeping the Notre Dame community aware of developments affecting both.

# Notre Dame's ARL Standing Climbs

by Robert C. Miller

The 107 university members of the Association of Research Libraries (ARL) are the largest libraries in comprehensive research universities in the United States and Canada. While success in meeting local needs is ultimately the most important measure of any library, comparisons with other libraries are inevitable. In the case of university libraries the annual ARL statistics are a fruitful source of information. Unfortunately, only inputs are currently measured; there is no information on outputs, i.e., services delivered, which is the ultimate reason for libraries.

With this caveat, the accompanying table illustrates the relative progress Notre Dame has made in a number of areas in recent years. Especially noteworthy is the dramatic rise in our comparative standings on volumes added and on the "ARL Index" ranking which combines the other five factors in a statistically complicated fashion. The fact that these improvements could be achieved with one of the smallest sized staffs in the ARL is a real tribute to the library faculty, staff and student assistants who labor with such dedication on behalf of the Notre Dame community.

The Notre Dame Libraries have a long way to go to become the kind of information resource the faculty and students really need. Nonetheless, the ARL comparative rankings and, more importantly, local user input suggest that the Libraries are headed in the right direction. The support of the administration, the efforts of the library faculty and staff and the active involvement of our users will accelerate that momentum.

# Indiana Governor's Conference on Library and Information Services

by George E. Sereiko

Governor Evan Bayh invited 200 Indiana residents to serve as delegates to a conference, which met in Indianapolis November 16-18, 1990, to discuss library and information services. The delegates were selected from four groups of Indiana residents -- librarians; friends and trustees of libraries; state, county and local government officials; and the general public. The purpose of the conference was to obtain input for the development of library and information services in Indiana, and to prepare Indiana's delegates for the White House Conference on Library and Information Services which is scheduled to be held from July 9-13, 1991.

The three overall themes of the conference were library and information services for literacy, for productivity, and for democracy. Discussions focused on ways that libraries could help in developing and expanding literacy; on ways they could provide information to businesses and industries which would aid them in their quest for improved productivity; and on ways they could serve as resource and information centers for citizens who live in a democratic society.

Prior to the conference, the delegates received background material in the form of discussion papers on the three themes and responses to them. At the conference a series of speakers presented further information to the delegates before they assembled in their small "breakout discussion groups."

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## COMPARATIVE RANKING IN ARL 1984-1990

	84-85	85-86	86-87	87-88	88-89	89-90
TOTAL MEMBERS	106	106	106	107	107	107
TOTAL VOLUMES	72	66	66	63	62	64
VOLUMES ADDED	101	59	70	46	38	39
CURRENT SERIALS	86	79	83	88	81	79
TOTAL EXPENDITURES	98	99	101	100	96	99
TOTAL FTE STAFF	101	96	91	93	94	94
ARL INDEX	100	78	79	74	74	73

## A Correction

In the article on serials costs which was included with the last Special Issue of *Access*, I stated that subscription prices for Pergamon journals would rise by 90% next year. Further investigation revealed that this is not true, and we do not yet know what the costs for Pergamon journals will be. A misinterpretation of a price list and unclear information from someone at the Pergamon booth at the ALA Conference caused our error, which we regret very much.

Maureen Gleason

Development Council, Inc.-Partners in Education, the field of labor studies, and a business resources corporation. The talks dealt with the need for American business and industry to find better and more effective ways to produce products of quality which can be sold in the international marketplace.

At the third session, the state librarian, the deputy director of the Indiana Youth Institute, the director of the Department of Employment and Training Services, and a public library director talked about the tragedy of illiteracy. They emphasized the urgent need to resolve this enormous problem which becomes ever more critical as information becomes ever more essential for survival.

After each of these general sessions, the delegates met in their assigned breakout discussion groups. The organizers of the conference arranged the membership of the groups so that each one had an equal number of librarians, friends and trustees, government officials, and the general public. It was in these meetings that the delegates were able to present their concerns and points of view, and it was also here that resolutions were drawn up to be presented to the general assembly for discussion and possible acceptance.

The final three general sessions dealt with the resolutions which had been submitted for consideration. Though time was running out, the delegates managed to approve 29 resolutions (10 dealing with literacy, the same number for democracy, and nine for productivity) before the conference adjourned. Literacy seemed to be the key issue for a majority of the delegates. The first literacy resolution stated that "No single issue is more worthy of support than literacy because the foundation of a democratic, productive society is a literate population."

The delegates were of the opinion that libraries had a definite role to play in aiding American business and industry to become more competitive internationally. One of main resolutions in this category was that "Libraries build coalitions with government agencies, other libraries, community agencies, educational agencies, business and industry, and other groups to promote effective and efficient ways to share resources in increased productivity for all Indiana residents and organizations."

Democracy became the catchall for the general concerns about library services. Its first resolution urged that "Local publicly funded library services be mandated for all Indiana residents." Other resolutions were concerned with compatible technologies, adopting marketing techniques, censorship, library accountability and preservation of library materials.

The conference was an interesting experience with a democratic approach to solving some problems which plague our society. While fewer people could have produced these resolutions in less time at less expense, there are now 200 informed supporters of libraries whose assistance is needed if Indiana and the nation are to progress toward enhancing and expanding library services.

## Indiana *continued from page 4*

The first general session focused on democracy. The speakers were a director of a public library, a professor of English education, a newspaper publisher, and the chief justice of the Indiana Supreme Court. They presented their views on what libraries could do to prepare citizens for their roles in a democracy and to sustain their interest in issues and in participating in elections.

The second general session was concerned with productivity. The speakers came from the Indiana Economic

# PsycLIT is for Everyone

by Joanne Bessler

**P***sy***LIT**, a broad, versatile and extraordinarily user-friendly information resource published by the American Psychological Association, is now available at the Hesburgh Library Reference Desk.

*PsycLIT* indexes and abstracts psychology related articles appearing in 1,400 journals from over 50 different countries. Although the majority of these articles are in the fields of psychology or psychiatry, many focus on sociology, social work, education and management. There are also a significant number of articles on psychology related aspects of literature, political science, linguistics, anthropology, biology, sports, sciences, engineering ad infinitum. The most cursory review of the list of the journals indexed in *PsycLIT* (such as: *Sports Psychology*, *Aviation*, *Space & Environmental Medicine*, *Journal of Advertising Research*, *Zoo Biology* and *Modern Language Journal*) reveals the extent of its scope.

The coverage of *PsycLIT* is similar to that of its fabled paper partner -- *Psychological Abstracts*. What makes *PsycLIT* so superior is that 17 years of journal research are included on two compact discs. *PsycLIT* permits the researcher to search multiple years simultaneously. In minutes the searcher can identify literature published from 1974 to the present. Users can also refine their searches with great precision -- specifying factors such as: date of publication, language, author, title of journal, type of population studied, etc.

Although *PsycLIT* offers the searcher sophisticated searching capabilities, it is incredibly easy to use. The first time searcher can do a reasonably effective search merely by typing a key word or phrase, pressing the RETURN key and following the instructions at the bottom of the screen.

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