

# LINDA C. SMITH & MYKE GLUCK

---

## Introduction

Electronic technologies, including geographic information systems (GIS), are creating new ways of meeting the needs of library users for spatial and cartographic information. The 32nd Annual Clinic on Library Applications of Data Processing, held at the Beckman Institute on the campus of the University of Illinois at Urbana-Champaign (UIUC) on 2-4 April 1995, addressed the theme of "GIS and Libraries: Patrons, Maps, and Spatial Information." Current interest in this topic is evident in the publication of several special issues of journals shortly after the clinic took place. "Making GIS a Part of Library Service" (Lutz, 1995), "Geographic Information Systems (GISs) and Academic Libraries" (Hernon, 1995), and "Global Change and the Role of Libraries" (Rand, 1995) can be consulted for papers that complement and supplement the conference papers compiled in this volume. In particular, Longstreth (1995) identifies important information sources on GIS in his discussion of GIS collection development, staffing, and training.

## GIS AND LIBRARIES

In his keynote address, Mark Monmonier presents a retrospective look at his book, *Technological Transition in Cartography*, published in 1985. The book examined the future of cartographic technology and the role of policy in the collection, dissemination, and use of spatial information. Monmonier hoped that readers would develop an understanding of the idea that the product of cartography is the information, not the image. His clinic paper briefly surveys each of the book's seven chapters and notes that many of the issues addressed remain pressing subjects today.

Four papers in this volume consider issues involved in describing spatial data sets and in organizing and providing access to digital libraries of spatial data. Mary Lynette Larsgaard examines the applicability of traditional library cataloging methods—e.g., Anglo-American Cataloguing Rules, USMARC—to catalog what she terms "planetospatial data" in digital form. Drawing on experience gained in cataloging resources for Project Alexandria, one of six projects funded by the National Science Foundation's Digital Library Initiative, she identifies several problem areas that need to be resolved in order to produce good catalog records. Michael Domaratz (in a paper based on a transcript of his presentation at the clinic) reviews the work of the Federal Geographic Data Committee in developing Content

Standards for Digital Geospatial Metadata (data about data) to provide support for a National Spatial Data Infrastructure. He also discusses the emergence of the National Geospatial Data Clearinghouse as a distributed, electronically connected, network of geospatial data producers, managers, and users. The intent of the clearinghouse is to allow users to determine what geospatial data exist, find the data they need, evaluate the usefulness of the data for their applications, and obtain or order the data as economically as possible. William E. Moen provides an overview of the Government Information Locator Service (GILS), a new federal initiative to assist the public in discovering, identifying, and locating government information. The basic components of GILS are: structured records with standardized data elements that describe and provide access information to federal information resources; agency-based information servers hosting these records; client software to support information retrieval from servers; and ANSI/NISO Z39.50 as the communications protocol between clients and servers. Because spatial data are an important category of government information resources, GILS may facilitate the identification and use of spatial data. Barbara P. Battenfield observes that as the size of a digital library increases, challenges for data organization and collection maintenance will also increase. She describes how models that are used in the physical and social sciences to predict growth and changes in size of particular phenomena can be applied to the growth of digital libraries. Allometric principles can be used to estimate the scale at which existing procedures will fail and new procedures must be implemented to handle further growth.

Ray R. Larson and Linda L. Hill explore issues in system design for enhanced access to geographic information and spatial data. Larson describes the characteristics of geographic information retrieval and spatial querying, examines the advantages of spatial browsing as a method of presenting a variety of georeferenced information in a coherent framework, and analyzes the feasibility of automatic indexing of geographic information embedded in text. Hill considers geospatial retrieval systems within the framework of the U.S. Global Change Data and Information System. She presents characteristics of an ideal geospatial retrieval system and describes five examples of the types of spatial retrieval available today. Myke Gluck demonstrates the value of experimental research in addressing a series of related questions: What are the geospatial information needs of the general public? What are the different formats and tasks for geospatial information suggested by the public? What formats for geospatial information are most useful under differing task situations? and What role may the public library play in assisting to resolve geospatial information needs for the public? Findings of Gluck's studies are helpful in suggesting ways that libraries and system designers can improve access to geospatial information.

Robert Lee Chartrand and Christie Koontz provide examples of applications of GIS. Chartrand emphasizes the importance of geographic-oriented information for emergency preparedness and response and argues that special libraries in particular should be prepared to fill this need. Koontz demonstrates the applicability of GIS to library market analysis by graphically estimating geographic boundaries and analyzing socioeconomic characteristics within prescribed markets. Examples are drawn from an analysis of branch location and populations served by the Evansville-Vanderburgh County public library system.

The last three papers consider issues in implementing GIS. Dean K. Jue draws on a survey of libraries that have introduced GIS, in order to identify factors associated with successful implementations. He also presents a decision flowchart to help public librarians evaluate the type of GIS services that could be provided in any given library environment. Anne Watts offers a case study of a successful GIS application at the St. Louis Public Library: an electronic atlas of 1990 census tract maps and data for St. Louis City and County. She describes the system design and how it has been used as a public workstation. Watts notes several factors contributing to the success of the project: well-defined and limited system, collaboration between the library and outside experts in its development, an internal organizational champion, and approaching the project as a natural extension of the library's information services. Mark Joselyn (in a paper presented at the clinic by Sheryl G. Oliver, GIS Manager, Illinois Department of Energy and Natural Resources) provides an example of a state government initiative to gather and make available spatial digital data. Data sets contained on the Illinois CD-ROM were primarily constructed by divisions of the Illinois Department of Energy and Natural Resources, with others derived from U.S. Geological Survey and census files. The CD-ROM was distributed free of charge to government agencies, schools, and libraries.

## OTHER COMPONENTS OF THE CLINIC

In addition to the papers presented in this volume, the clinic included a talk by Brent Allison, head of the John R. Borchert Map Library at the University of Minnesota, on "GIS in Academic Libraries" (see Allison [1995] for a recently published account of Minnesota's Automated Cartographic Information Center). A presentation on "Local Initiatives in GIS" by Douglas Johnston of UIUC and R. Christopher Schroeder of AEC Centrec Consulting Group, Savoy, Illinois, highlighted activities of CCNet in Champaign County, Illinois, and focused on GIS issues for agriculture. The clinic began with two preconference workshops covering an overview of GIS concepts (Mark P. Armstrong, University of Iowa) and spatial analysis in the social sciences (Gerard Rushton, University of Iowa). Demonstrations drew on individuals

associated with the U.S. Army Construction Engineering Research Laboratories and UIUC to provide examples of GIS systems and applications. The editors gratefully acknowledge the contributions of all these individuals to the success of the clinic.

LINDA C. SMITH  
MYKE GLUCK  
*Editors*

## REFERENCES

- Allison, B. (1995). University of Minnesota: Remote access and the Internet. *Journal of Academic Librarianship*, 21(4), 283-287.
- Hernon, P. (Ed.). (1995). Geographic Information Systems (GISs) and academic libraries. [Special issue]. *Journal of Academic Librarianship*, 21(4), 231-296.
- Longstreth, K. (1995). GIS collection development, staffing, and training. *Journal of Academic Librarianship*, 21(4), 267-274.
- Lutz, M. (Ed.). (1995). Making GIS a part of library service [Special issue]. *Information Technology and Libraries*, 14(2), 77-122.
- Monmonier, M. S. (1985). *Technological transition in cartography*. Madison, WI: University of Wisconsin Press.
- Rand, R. Y. (Ed.). (1995). Global change and the role of libraries [Special issue]. *Library Hi Tech*, 12(1-2), 7-84.