number of colors available on the press per run, etc. are all factors that must be considered early in the project's planning stages.

Upon the completion of a project's production phases the file(s) must be transported to the service bureau. It is important to know the types of external storage media that are compatible with the service bureau's equipment. Most full-featured service bureaus are equipped with a variety of devices and media for transporting and archiving files. Small files are often transported via floppy diskettes, however, since graphic files, especially bit-mapped files can become quite large, other media (including Bernoulli and Syquest cartridges) are used extensively by service bureaus. Other storage media suitable for file transport include CD-ROM disks and data tapes. Recently, magneto-optical disks or cartridges have received a great deal of publicity due to their lower prices, improved performances, and expanding capacities. It is important to consult with your service bureau to find out the devices they use and support.

Finally, personal compatibility is perhaps as important as technical compatibilities. Personnel compatibility evolves through a sincere, business-like, yet cordial relationship of mutual respect and trust. If this type of relationship can be initiated with the service bureau by the cartographer and fostered over an extended period of time, mutual benefits are realized. The service bureau benefits by receiving files that are less likely to be problematic. The cartographer benefits by gaining a better understanding of what the service bureau does and what is required in the production stages of a project to obtain a better result. ❑

map library bulletin board

PATTEE LIBRARY, PENN STATE UNIVERSITY AND THE ASSOCIATION OF RESEARCH LIBRARIES GEOGRAPHIC INFORMATION SYSTEMS LITERACY PROJECT

by Melissa Lamont
Pattee Library
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At a quick glance, libraries may appear to be unusual places to find Geographic Information Systems (GIS). Yet, as mapping and GIS software have evolved and become more user friendly, libraries have become more technologically sophisticated. At the same time, libraries in the United States received an added push from the federal government. In theory, government agencies are to furnish copies of their publications to the Government Printing Office for free distribution to some 1400 depository libraries. These depository libraries agree to hold the information and provide it to the public. In practical terms, although a large number of government publications and data sets are deposited with the libraries, agencies use a variety of means to circumvent the law. Traditionally, depository librarians have found it necessary to lobby, hard, to assure public access to government publications. As the Census Bureau developed the TIGER Line Files, librarians strongly encouraged the agency to include the data files in the depository program. Admirably, Census complied. Thus, hundreds of libraries now hold TIGER files.

Unfortunately, the viewing software first issued with the TIGER file disks was slow and inflexible. Librarians began to charge out the disks, like books, to users. The directors at the Association for Research Libraries (ARL) recognized the TIGER Files as an opportunity for libraries. They negotiated a partnership with the Environmental Systems Research Institute (ESRI) and created the ARL/GIS Literacy Project [see the Map Library Bulletin Board , *Cartographic Perspectives* 1993 (14): 18-19]. ESRI provided software and training and the libraries agreed to provide feedback to the company and make the software and data available. The response from libraries was overwhelming. At the present, over one hundred United States and Canadian libraries are involved.

For many libraries, GIS has fit naturally into services already provided. Libraries provide a neutral ground for researchers and casual users. Some disciplines, such as history or economics, may have interesting GIS applications but may not need their own fully operational laboratories on a permanent basis. Likewise, small businesses often cannot afford the hardware or personnel to manage a mapping system. The library can meet the need of the non-traditional GIS clientele. In addition, libraries have always sought and held data–they search out information, provide the documentation or metadata, and make the information available to users. Many libraries view spatial data, and other data sets, as another format to acquire, catalog, and provide to the public.

Of course, the range of services and levels of expertise at each library will be different. At Penn State's Pattee Library we are working with the Center for Academic Computing and the Department of Geography to install a spatial data center. With a server located in the Maps Room, we will actively collect data (at first primarily Pennsylvania based

information), and we will make it available for downloading or for use in a public laboratory. Eight PCs, connected to the server, CD-ROM drives, and color, and black and white printers will be available in the Maps Room. We plan to offer mapping software and limited GIS capability. The in-house facility will be open the same hours as the library. To help staff the new lab, the Geography Department will offer a new course spring semester that will require students to staff the lab in addition to their time in the classroom. Topics to be covered include hardware troubleshooting, software skills, reference techniques and data organization as well as dealing with clients.

A few telephone calls, or a visit, to your local library will determine what kinds of services the library can provide. Although librarians are moving rapidly into new technologies, they still value traditional map library services also. Fortunately, paper maps will be with us for a long time. As the new editor of this column, I hope to highlight some of the interesting paper and digital collections various libraries hold, and address some of the current developments in map libraries. Your suggestions are welcome.❑

EDITOR'S NOTE:
I would like to welcome Melissa Lamont of the Pattee Library at Penn State University to the Editorial Board of *Cartographic Perspectives*. Melissa has agreed to take on the responsibility of the Map Library Bulletin Board column. It has been a number of years since this column has been a regularly featured item in *CP* and I am pleased that Melissa is committed to see that this important column appears in every issue.

Sona Karentz Andrews
Editor, CP

reviews

BOOK REVIEW

Map Projections: A Reference Manual
Lev M. Bugayevskiy and John P. Snyder, Taylor and Francis Ltd., 1995, xx and 328 pp., references, appendices, index. $ 105.00. Cased. (ISBN 07484 0303 5); Paper. (ISBN 07484 0304 3).

Reviewed by C. Peter Keller
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Here is a reference manual about map projections that combines the best knowledge about the subject by leading experts in Russia and the United States. The book is an extensively revised translation of a Russian text with the translated title *Cartographic Projections - A Reference Manual* written by Lev M. Bugayevskiy and Lyubov' A. Vakhrameyeva (since deceased), published in Moscow in 1992. The preface informs us that John P. Snyder was brought abroad during the translation to "add pertinent Western material for balance and to correct some of the impression inadvertently given in the Russian text Westerns projections."

The book is divided into an introduction, eleven key chapters, an extensive list of references and eight appendices. The introduction sets the tone. It is here that We learn that this book is about mathematical cartography, defined as the theory and mathematical analysis of map projections and their characteristics. We also learn about the history of map projections starting with early Greek works but quickly moving to a who's who in Russian and American map projection research. The introduction concludes with a brief summary of advances in measurement of the shape of the earth.

The first key chapter covers the general theory of map projections. Spanning 48 pages and broken into eight main sections, this chapter lays the mathematical foundation for the rest of the book. We are introduced to mathematical notations and relationships between curvilinear, three-dimensional rectangular, plane rectangular, plane coordinate, and triaxial ellipsoid coordinate systems. Map projections are classified using five criteria. Conditions and mathematical properties of the key characteristics of conformality, equivalence, equidistance, and azimuthal distortion are examined.

Chapters Two through Four introduce the mathematical formulation, characteristics and, wherever applicable, a brief history of a large number of different map projections. Chapter Two focuses on map projections with straight parallels. In 39 pages we learn about the families of cylindrical and pseudocylindrical projections. Chapter Three covers map projections with parallels in the shape of concentric circles. Here, 45 pages introduce us to conic, azimuthal, perspective azimuthal, pseudoconic, pseudoazimuthal, and retroazimuthal projections. Chapter Four concentrates on map projections with parallels in the shape of non-concentric circles, namely polyconic projections.

Chapter Five moves on to discuss map projections for topographic maps, named-quadrangle maps, and projections used in geodesy. We learn about eleven of the most common projections for topographic mapping, including three projections not covered in the previous chapters. Topographic mapping in Russia and the United States is given special attention.