

uate and manage its resources and how these varied across its territory. Statistics, and their graphical depiction in maps, were essential aspects in the state's control and regulation of its population.

Dupin's maps were soon followed by those of D'Angeville (health and wealth choropleths, 1836), Balbi and Guerry (first multivariate crime maps, 1829), Minard (economic maps and great advocate of the study of political economy, whose map of Napoleon's march on Moscow was made famous by Tufte), and the Belgian statistician Adolphe Quetelet, on topics such as education, crime, cholera and disease, the production and transport of goods, sanitation and many other aspects of living conditions (Konvitz, 1987, Robinson, 1967, 1982). At the same time August Comte invented the term "sociology" Quetelet's proselytizing efforts on behalf of statistical science ensured that it would be founded on the idea that social facts are always statistical in nature.

Thematic mapping then was developed not by cartographers, but by social scientists and engineers on behalf of government for political reasons. And there's no doubt, in my opinion, that the same reason applies today: maps are made and used for decision-making and policy formation at many levels from the nation to the business to the individual.

This brings me to online community mapping and "critical GIS." Critical GIS is an emerging field perhaps best thought of as an outgrowth or component of the "GIS and society" debates that were hot in the 1990s (Schuurman, 2000). Critical GIS acknowledges the place of politics in mapping (and, if you excuse the pun, the politics of place in mapping). Critical GIS is not an effort to *insert* politics in cartography and GIS, but to say that mapping is essentially in itself a political act or practice. So critical GIS is not ideological

in the same way that propaganda mapping is.

If it seems odd to emphasize the political in mapping, I would argue that there is a far greater danger in failing to do so. When enquiry is not pursued politically it will fail politically. A story about a suburban county near Atlanta illustrates this point. The county school board recently decided to put a disclaimer in their school biology textbooks that states "evolution is a theory, not a fact." No other scientific theories in the science books were similarly highlighted—not even more controversial ones. The move followed a petition signed by 2,000 people, mostly Christian fundamentalists (Griffis, 2002). Science has clearly failed here—but it didn't fail scientifically (evolution is one of the best-proved scientific theories we have) it failed politically. The scientific community should be leading the public debate on this issue, not reacting to it.

It's the same in the mapping community (i.e., cartography and GIS). Maps are already used politically, whether it be for redistricting, enacting the census, risk assessment and inventorying in the face of threats, or making choropleth maps of your population's health in order to govern better. The question is, what kind of political debate and policy goals do we *want* to construct with mapping? Maps are never an end in themselves but are part of our political existence (whether at the national level or the personal level; what is called the "politics of the self"). Online community mapping of the type covered in this column is one example of this. In future columns we will examine more examples of community mapping carried out online.

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¹ Lecture "Why Visualize" given at the Center for Spatially Integrated Social Science (CSISS) workshop on Map Making and Visualization, Santa Barbara, July 2002.

map library bulletin board

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Introduction/Overview

The 11,000 square foot Jerry Crail Johnson Earth Sciences and Map Library is an external branch at the University of Colorado at Boulder (CU) library system. The largest academic and research library in

the state of Colorado, CU is also part of the Association of Research Libraries, which is reflected in the university's library holdings. The CU University Libraries consist of a main branch, Norlin, and five specialized branches. The Map Library is a unit on the basement level of the Jerry Crail Johnson Earth Sciences and Map Library, located in the Benson Earth Sciences building. The Benson Earth Sciences building also houses the departments of Geological Sciences and Environmental Studies.

The overall University Libraries' mission is to provide materials, information, and services, to serve as a research resource, and to share these resources as a leader in the national and international library community. The Map Library considers this its mission as well and strives to meet the needs of all its users.

History of the Map Collection

A map collection at CU has been in existence for several decades. CU is a regional depository for the Federal Depository Library Program (FDLP), a program created to allow better public access to United States federal government publications by creating depository libraries. These depository libraries receive materials free of charge and are required to provide access for these resources to the public. Due to this depository program, a map collection began before staff positions were created to manage the collection. The map collection has changed hands and departments over the years. It was a part of the Government Publications department and other divisions with a variety of staff in charge of the collection, usually in addition to their main library duties. For years, the collection – mostly uncataloged – was located in an isolated basement room with limited access in Norlin, the main library. Not only were users

unaware of the collection, but it was also difficult to locate. They struggled to use it with little or no trained staff available. Finally, the map collection found a permanent home and staff in January of 1998.

When construction began for the new Earth Sciences Library, Suzanne Larsen, Head of the Earth Sciences Library and a member of the planning team, requested that the map collection find a permanent home with the new earth sciences library. At the same time a position was moved from elsewhere in the library system so that a Map Librarian could be hired to guide the collection. This change was a momentous step for the map collection. Now access would increase dramatically, qualified staff would be available, cataloging could begin to allow better remote access, and a collection development plan could be introduced. A full-time staff position, a Library Technician III, came with the map library to the new site. A half time Library Technician II from the Earth Sciences part of the library branch was shared with the Map Library. At a later date this position was reallocated to full time and more than one half of those hours were designated to the Map Library. Quickly the map collection use began to grow as new users discovered its vast resources. I started as the Map Librarian in August of 1999.

The Earth Sciences and Map Library is named in honor of Jerry Crail Johnson, one of the first women to graduate from Northwestern University with a degree in geology. A gift to the Earth Sciences Library by the Crail-Johnson Foundation was critical to the funding for the construction of the entire building. The Johnson family's deep appreciation for reading and literature and interest in the earth sciences, instilled by their mother, make this a perfect testimonial to her memory.

Map Library Collection

One important aspect to note about the CU Map Collection is that only about 35% is cataloged and searchable in Chinook, the Libraries' database of its resources. Though the University Libraries has a central cataloging department, map cataloging is done in-house in the Map Library. Due to the lack of permanent staff, very few items in the map collection were cataloged in the past. Over the past three years, a tremendous leap in the cataloging of maps at CU has occurred. With several qualified staff and students working hard in the Map Library, most CIA maps, USGS topographic maps, National Geographic Maps, historic urban plans and recently published government depository materials are now searchable in the library catalog. Retrospective cataloging is difficult when new acquisitions also arrive daily, yet the map library staff is driven to make its collection more accessible to all.

Maps

The map collection consists of over 200,000 maps, over 1,000 atlases and reference books, and a growing spatial data collection. The collection primarily consists of publications from United States federal mapping agencies. Some agencies that contribute maps are the U.S. Geological Survey (USGS), Bureau of Land Management, Central Intelligence Agency, U.S. Forest Service, and National Oceanic and Atmospheric Administration. The Map Library houses all current USGS 7.5 minute topographic map series, as well as the 1:100,000, 1:250,000, and several states' county map series. This also includes older editions (from the 1880s – 1960s) of USGS topographic and special mining maps and a set of historic Colorado plat maps. The collection also boasts a com-

plete collection of USGS thematic series maps, a large set of topographic forest service maps, a wide selection of aeronautical charts and resources, a complete collection of current nautical charts, and current road maps for all parts of the world. A large collection of detailed World War II and Cold War era topographic maps of Europe, Russia, Asia and Africa produced by the Army Map Service/Defense Mapping Agency, are especially good for genealogist's research. There are national and international geologic maps as well. The library has a set of 1:100' maps from the City of Boulder consisting of base, planimetric, water, and sewage type maps. A recent student project involved collecting detailed maps of cities and towns around the state to add to the collection. Historic reproductions of national and international cities have been collected. Now, detailed topographic mapping for other countries are being collected, such as for Britain, Ireland, Canada, Chile, and Mexico.

Monographs

The map collection covers a range of disciplines such as geography, geology, history, architecture, environmental studies, and recreation. There are no "stacks" in the map library; only atlases and reference materials relating to map reading, map projections, place names, geographic dictionaries, and similar resources. The Earth Science collection stacks are physically located in the basement where the Map Library is housed. This collection's resources include the some of the same disciplines as above, as well as paleontology, oceanography, and mineralogy, and often these resources are used along with the map collection resources.

Digital

With the acquisition of a GIS/Map

computer, which has a 21" Monitor, DVD/CD-ROM drive, RW CD-ROM drive, 100MB ZIP drive, and an HP 8"x11" or 11"x17" Color Printer, software and digital data collection began. USGS digital raster graphics (DRG) on CD-ROM are available for all of Colorado and for parts of other U.S. states. Digital Orthophotos (DOQ) on CD-ROM are also available for a few parts of U.S. states and soon for the Boulder/Denver region of Colorado. Digital topographic maps for Colorado, New Mexico, Arizona, Utah and Wyoming, are available via CD-ROM to view and print on the map library computer. Several packaged GIS data CDs, mainly small scale, have also been added to the collection, as well as some geography department Colorado data and soon some geology department data. The computer is available for map, GIS, or library related usage.

Web site

The Map Library Web site is also considered a valuable resource, both in-house and for non-local patrons. Much of the information about the collection, policies, staff, and projects is located on the Web site. Also added is a "Local Resource" section with links to other CU library holding, other local libraries, and local map vendors. For fun, a Geography Trivia section is also on the Web site.

The key section of the Map Library Web site is "Web Resources." <http://www.libraries.colorado.edu/ps/map/links/links.htm> The web resources, or web links, are arranged in categories such as "aerial & satellite photos," "Colorado," "federal government resources," "GIS," "maps online (current)," "travel," etc. Once a user selects a category, a page of web links and descriptions are provided, arranged in either geographic or alphabetical order, depending on the category. As frustrating as searching the

Web can be, there are incredible resources online. These resource links are used both in house and remotely to provide patrons with well-organized quality map-related Web sites.

Notable acquisitions

Recently the CU Geography Department offered the Map Library their air photo collection. After the map library donated the few non-Colorado series to other academic libraries, the collection now contains at least 20,000 Colorado air photos. The series are made up of various government agency projects dating anywhere from the 1930s – 1970s. The geography department hopes by having these available in the Map Library, the photos will be managed, made accessible, preserved, and used more frequently. A few series may be unique to this library so preservation and access is key. A few of these sets have been indexed in a variety of ways. An overall consistent way to access the collection is lacking, therefore it is the map library's goal to make these air photos accessible to all. (See Digital Projects for more information)

Collection development

Trying to build a good collection in only a few years is a difficult task. Since most of the focus and the most heavily used resources are local in scope, there is the constant need to acquire the most current resources year after year. In addition, a more current international collection is necessary to support the research of CU's faculty. Requests from patrons, mainly graduate students, professors, and researchers are taken seriously, and purchases have been made because of specific requests.

Circulation

Since maps are a specialized

format, not as easily handled as books, the CU Map Library has its own circulation desk. Though a small branch, with the Earth Sciences Library circulation desk right upstairs, it was decided to have a separate desk for map circulation. Staff and students are trained to work with maps and patrons are given information on handling maps. Most maps circulate except for historic (pre-1950), fragile, or reference maps. Heavily used maps are kept as reference, such as the most recent edition of all USGS Colorado 7.5 minute topographic series. Patrons may check out up to 10 maps for a 2 week loan period. Renewals on maps are also an option. CD-ROMs that are not reference, primarily data CDs such as DRGs, can be checked out for 2 days, also with renewal options.

Admittance

In accordance with the mission of the University Libraries, anyone can visit the Map Library at CU. All materials are open to the public. Those wanting to check out materials must follow the University Libraries patron rules. Any current affiliate of the university (professor, student, etc.) has borrowing privileges. All other public patrons may request a library card only if they are over 18 years old and registered citizens of the state of Colorado.

Users

Most users of the Map Library are students and professors from mapping related fields such as geography, geology, environmental studies, and architecture. The library also sees patrons from disciplines such as, history, anthropology, business, engineering, and other earth science related fields. Every semester orientations to graduate students in Geography and Geology are given. Throughout the semester, many classes visit the

map library for an overview of its resources and some stay for a class session, such as an introduction to topographic maps, an overview of GIS and digital data, or even to view and analyze the air photos.

Public users range from CU affiliates, such as from the Institute of Arctic and Alpine Research (INSTAAR) and researchers from private companies and government agencies such as USGS Denver, BLM, etc., to genealogists, Boulder high school students, and other interested users. Many people from around the state of Colorado use these resources when they are in the area, since CU has the largest academic research collection in the state.

Digital Projects

The Colorado air photo project is the main digital project the Map Library is pursuing currently. The goal is to first create a digital index of the entire air photo collection and then scan the collection of air photos. The photos will then be checked out on CD-ROM and/or available online.

Using ESRI's ArcView 3.2, with a Landsat 3-meter resolution image, 1:100,000 DRGs for densely populated areas, and other overlays, shapefiles are being generated for each photo series with an extensive metadata table. The table consists of such fields as landmark, latitude/longitude, date, series number, image condition, county, etc. The objective is to allow patrons to access the collection spatially by clicking a point or boxing a section of the image, or by querying the various fields in the metadata table. The ArcView project can be both used in the library to access the collection and eventually online (hopefully as an ArcIMS server), which will both serve the index online as well as provide the capability to view and download the photos. The library is actively

pursuing grants to fund labor for the indexing and scanning, as well as buying equipment to scan and serve this project to all.

General Information

The Jerry Crail Johnson Earth Sciences and Map Library is located on the University of Colorado, Boulder campus, to the south of Colorado Avenue across from Folsom Field and at approximately 40° 0' 29" N, 105° 15' 55" W, SE 1/4, Section 31, T1N, R70W. Take a virtual tour: <http://www-libraries.colorado.edu/ps/map/vtour/vtour.htm>

Reference services are available from trained students at all times, or from staff Monday-Friday 8am-5pm.

The Huxley Map Library Western Washington University

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The Huxley Map Library is located in Arntzen Hall 101 on Western's campus. It is one of a handful of map collections in the United States that is administratively and physically separated from the main library. Hours are Monday-Friday from 9-4, Tuesday and Thursday from 9-1, and Wednesday from 6-8. Summer session hours are limited to Monday-Friday from 9-1 as staffing is very limited. During intersessions, the facility is closed. Parking is available by permit from the Visitor Information Center. Please refer to the WWU home page for additional information.