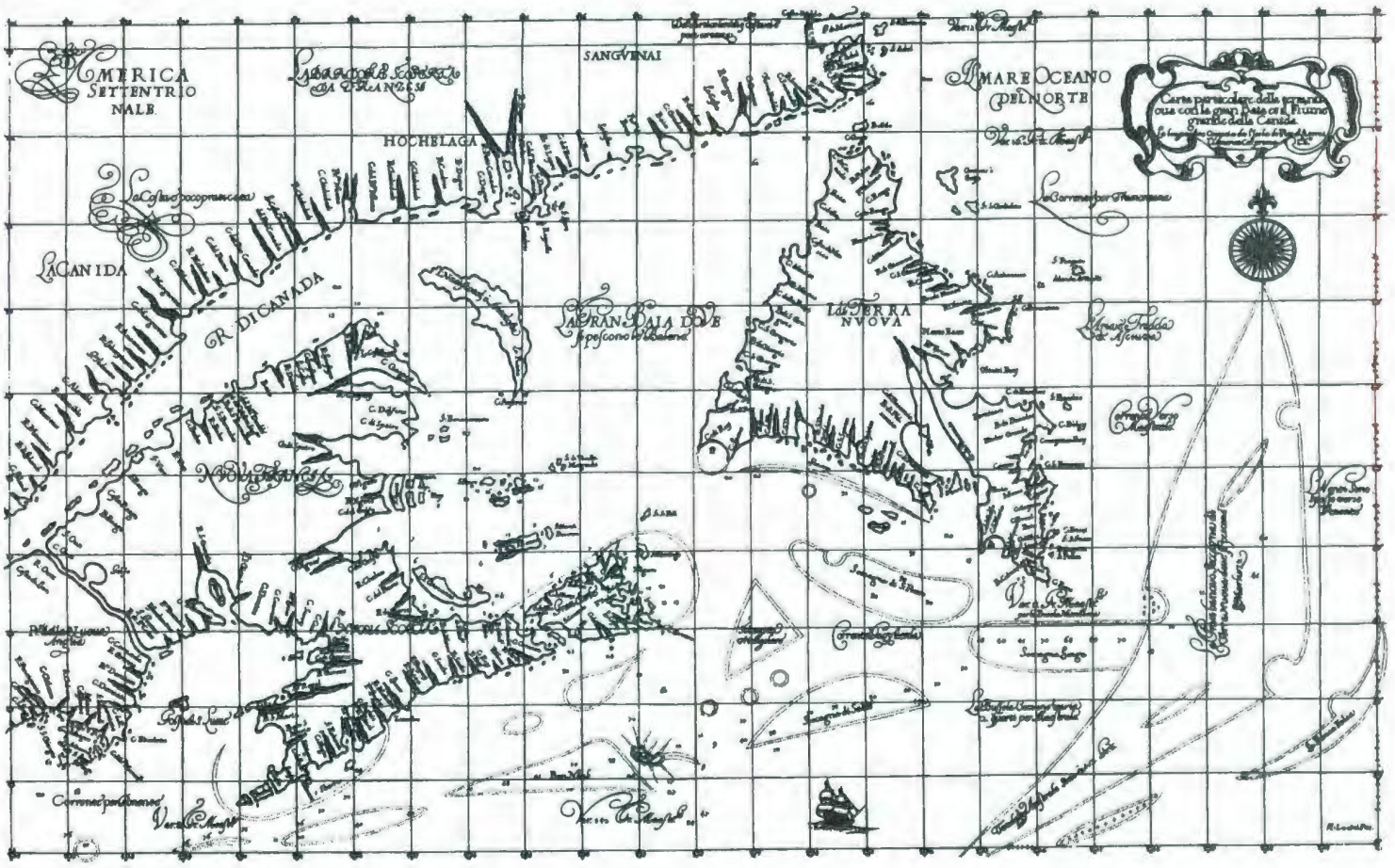
ASSOCIATION OF CANADIAN MAP LIBRARIES AND ARCHIVES

BULLETIN

ASSOCIATION DES CARTOTHÈQUES ET ARCHIVES CARTOGRAPHIQUES DU CANADA



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ASSOCIATION OF CANADIAN MAP LIBRARIES AND ARCHIVES / ASSOCIATION DES CARTOTHÈQUES ET ARCHIVES CARTOGRAPHIQUES DU CANADA

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Views expressed in the *Bulletin* are those of the contributors and do not necessarily reflect the view of the Association.

Les opinions exprimées dans le *Bullein* sont celles des collaborateurs et ne correspondent pas nécessairement à celles de l'Association.

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PRESIDENT'S MESSAGE

Albeit a bit later than usual this year, conference season is upon us again! Conference program, accommodation and registration information is now available on the web. This year we're meeting with the Canadian Cartographic Association in St. John's, Newfoundland, in what is shaping up to be a memorable conference.

I'd like to extend a warm welcome to Michele Shular as the new Reviews editor for the ACMLA *Bulletin*. I'd also like to encourage members to suggest material for review and of course volunteer to review new things. The new Geospatial Data Reviews section of the *Bulletin* is doing well, with two new reviews in this issue, one for data from Ontario and one for data from Alberta. Thank you for a great idea and job well done to Richard Pinnell, the Geospatial Data Reviews editor, who would of course love to know of any data sources you would like to see reviewed or review yourself. Andrew Nicholson is filling Pierre Roy's shoes well on the Regional News section. Please ensure you send Andrew any news you'd like to share with the map and GIS community.

The newly revamped ACMLA web pages have now gone live. Thanks to Colleen Beard and Gerald Romme for a great job on the new pages. Please send any further comments about the new web pages to Colleen.

On May 12th and 13th, the Library of Congress is hosting an IFLA Workshop and a conference entitled "Map and Geographic Information Collections in Transition". A few of our members are attending. We look forward to hearing about the conference in a later edition of the *Bulletin*.

The ACMLA Names task force has been working hard at selecting three names to put forward on a vote to the membership. Exact voting procedures have not been decided on, but will be announced soon. You will remember from the AGM last spring that the final ballot will include the Association's current name and three new proposed names.

This is my last President's message, as I am stepping down after the St. John's conference. Thank you so much to the ACMLA membership for the opportunity to lead the Association for two very quick years and for one as secretary. Thank you to Grace Welch, Pat McIntyre, Andrew Nicholson, James Boxall, Susan Jackson, Ann Smith, David Jones, and Colleen Beard who have worked with me on the executive during those three years. Thank you especially for your patience, sense of camaraderie and for your good nature. It was truly a joy and a lot of fun to work with you. I look forward to continuing in my role as Past President on the executive next year. Thank you as well to Cathy Moulder for doing such a fine job with editing the *Bulletin* and for helping me out (holding my hand in a lot of cases) with various articles and President's messages.

I'd like to wish everyone a great and productive summer, and I hope to see you in St. John's.

Marcel Fortin
ACMLA President

IMPLEMENTATION OF GEOGRAPHIC INFORMATION SYSTEMS (GIS) INTO LIBRARY AND ARCHIVAL SYSTEMS

Christine Cullingworth
Information Resources Librarian, University of Winnipeg

Introduction

Geographic information is among the most commonly sought-after information by library users. Maps provide many different types of information about the world around us. Geographic Information Systems (GIS) have added another dimension and perspective to this information, and libraries should take advantage of these new technologies and opportunities. "Geographic Information System (GIS) technology is a rapidly growing and powerful method for managing and analysing spatial data and information for libraries" (Cox and Gifford 1997, 449). Along with the rapid growth of these systems, efforts are also being made to better document the geospatial data created and collected. For example, "the Spatial Data Transfer (SDTS) promised to facilitate the transfer of spatial data and thus ensure the preservation of its informational value" (Jansen 1994, 192).

This paper will examine the use of GIS within academic libraries. Some of the questions to be considered are: What is a GIS? How can an academic library benefit from providing GIS services? And is collection development in academic libraries moving toward digital data? It will also investigate the collection, retrieval, storage and dissemination of digital data within an academic library setting.

What is a GIS? An Overview

A simple description of a GIS is that it is a database of databases. Aronoff states that GIS are computer-based systems that are used to store and manipulate geographic information. They are designed for the collection, storage and analysis of objects and phenomena where geographic location is an important characteristic or critical to the analysis. For the most part (especially in today's computer structured age), when a reference to GIS is made it is usually referring to a computer-based system, however GIS is not limited to this. In its broadest sense, a geographic information system is any manual or computer-based set of procedures used to store and manipulate geographically referenced material (georeferenced data). Georeferenced data is a term used to describe spatial data that has a known location on the earth's surface, usually stated in X, Y co-ordinate pairs. The distinctiveness of a GIS is that it provides four sets of capabilities: 1. input; 2. data management (data storage and retrieval); 3. manipulation and analysis; and 4. output (Aronoff, 1989).

"The first generation of GIS combined computer mapping and database management techniques to organize, update and query spatial and related non-spatial data" (Jansen 1994, 193). This was primarily used for maps or cartographic material and was made possible because of the standardization within cartographic production, which in turn has made cartography less subjective. Recupero indicates that "in a relatively concise scheme the cartographic system begins with the real world or geographical reality, on the basis of which the cartographer forms his or her conception of that reality and presents some part of this conception on a map. The map reader in turn, studies the map and creates or modifies his or her own conception of the real world" (Recupero 1995, 30). Cartographic information is based on certain criteria and external guidelines, and these guidelines determine what will be put on a map. When cartographers work within such strict guidelines, "cartography becomes a science of translation rather than interpretation" (Recupero, 1995, 31). As a result, this aids the librarian in helping patrons to understand and find the information being sought within cartographic material, including within a GIS. A GIS also contributes to the structure of these guidelines and

This paper has been abbreviated from the original version submitted as part of Individual Study course 697, Master's of Library and Information Science, University of Western Ontario, April 2002.

the way information is portrayed on a map through its programming.

Jansen reveals that "GIS has moved from [just the] mapping and basic data management to innovative types of geospatial analysis and data modelling. As more organizations apply the GIS to these activities, the systems have become as valuable in supporting policy decisions as they had once been in map-making or spatial data management" (Jansen 1994, 193). He continues by quoting Berry:

> A GIS takes us beyond mapping to application modelling. Our attention increasingly focuses on the considerations embedded in the derivation of the 'final' map. The map itself is valuable, but the thinking behind its creation provides real insights for decision-making. From this perspective, the model becomes even more useful than the graphic output.

As stated previously, a GIS "is a computer tool for managing geographic feature location data and data related to those features. In a GIS, the map data are separated into common thematic data layers or objects. The geographic data may then be manipulated to derive new information, to perform complex spatial analyses, and to generate maps and reports" (Cox and Gifford 1997, 449). Thus, the automated system encompasses a number of components which include hardware, software, data about geographical features (such as points, lines, areas and their descriptions), and the people who use and analyse these features. It is also a device that standardizes, organizes and stores the data and the newly derived information.

A second major characteristic of a GIS is its capability to manipulate data by theme and/or data layers. Cox and Gifford state that map data in a GIS may be separated into, and stored as, common thematic (relating to, or constituting a theme) data layers. The layers are organized based on common geographic themes, for example contours, rivers, lakes, spot heights to name a few, or by type of data to be stored i.e. points, lines and polygons. Another method for organizing spatial data is object-orientated. In this method, the geographic features and all of its related information (attributes) are stored as an object. An object represents a single entity, which describes both its content and behaviour. Every object belongs to a class, which defines a structure and set of operations that are common to a group. The point of storing information in thematic data layers or as objects is so that data may be overlaid to form new datasets, creating new information in the process. This ability to manipulate the different data layers and objects, and to create new information provides a GIS with vast analytical power (Cox and Gifford 1997).

A third characteristic of GIS is topology. Topology is the key component that differentiates GIS from graphic or cartography systems. It is a mathematical formula used to define spatial relationships, and defining spatial relationships is vital to GIS. Simplified, "it is how geographic features are related to one another and where they are in relation to each other. Topology is what enables a GIS to emulate our human ability to discern and manipulate geographic relationships" (Cox and Gifford, 1997, 452). It utilizes two concepts: absolute location and relative location. Absolute location refers to the actual location of a geographic feature, while relative location is the location of a feature in relation to (an)other feature(s).

Thus, the final characteristic of a GIS is its capacity to analyse geographic data, both spatial and attribute. Analysis may be done through the process of querying, resulting in the creation of new information, and the process of data overlay. To recap the key aspects of what has already be said, in order to overlay multiple datasets the layers must be in the same projection or co-ordinate systems, and topology must be established.

What Does a GIS Do? Data Management

Before GIS information can be managed, information must be in the system. There are five basic ways of inputting information into a GIS: 1. digital data on disk or CD ROM; 2. manual keyboard entry of X and Y co-ordinates; 3. digitizing a map using a digitizing table; 4. scanning; and 5. Global Positioning System (GPS) points. Organization of data is an important feature of a GIS. The data management function is handled by a database management system, which is a group of computer programs that organizes and manages the spatial data. This system controls the way data is stored and retrieved so that data relationships are maintained or constructed.

Cox and Gifford indicate that the tools for data management are critical because GIS databases may be very large (even gigabytes of data). The

analytical capabilities of a GIS produce large amounts of derived data, and the management systems helps to organize the data layers and track their usage. It also helps by erasing unused or outdated data. Many GIS have a library management feature. This feature manages the data by utilizing a spatial tiling system, which enables the use of the data layers without damage to the master database. The system also aids the management of updating by tracking the changes and replacing the updated layers into the library (Cox and Gifford 1997). Documentation of the data is performed by the management system, and is an important function. Each data layer should have its own metadata tag/file, "the metadata document the source of the information; describe the features the area covered, and the data structures; and document an assessment of the accuracy and quality of the data" (Cox and Gifford 1997, 454). Some of the metadata tags are produced by the GIS, but much information must be supplied and input by people. Unfortunately, GIS information does not have universally accepted data standards or software that easily allows casual users to develop, modify or view locally developed digital geospatial data. The Federal Geographic Data Committee (FGDC), a U.S. interagency committee, is currently developing and distributing data standards for GIS data at the federal level, and many other organizations are adopting these as well.

The development of data standards is very valuable, especially when it comes to archiving and preserving the data. One approach might be to have a hardcopy of everything in the system; however this may result in loss of information because hardcopies cannot preserve the spatial data relationships or the related attribute data that would allow future researchers to engage in spatial modelling and analysis. The value of GIS is its ability to model and analyse different types of data, but in order to archive and preserve its functionality the software, and sometimes the hardware, must also be saved. Saving the software and hardware, in turn, creates proprietary concerns because archives and libraries do not normally accession and preserve them. "In order to preserve data relationships, the archival community's solution to the GIS problem at the least will have to involve saving unique baseline spatial data in a software and hardware independent format. This tactic accomplishes the goal of preserving informational content in data so that they may be analysed by another system" (Jansen 1994, 194).

How can Academic Libraries Benefit from Providing GIS Services?

In an advertisement to sell their products, Environmental Systems Research Institute (ESRI) advertises a range of GIS packages for libraries, such as ArcView GIS and Spatial Database Engine (SDE) – both client/server software for managing large spatial databases. The lead-in line ESRI uses to catch potential clients is "if a picture is worth a thousand words, then a map must be worth a million" (ESRI, 1999). The advertisement works because it is very true. Maps may contain an enormous amount of information within a small amount of space. The advertisement then proceeds to tell one why ESRI products are needed in libraries:

> Libraries are the campus nerve centre, tying all departments and disciplines together by their common need for information. As a clearinghouse for all kinds of information, libraries need to provide tools that make information easy to access and understand. One of these is a geographic information system (GIS). A GIS turns ordinary databases into interactive maps and provides tools to query those databases in ways not possible with traditional spreadsheets. A GIS is useful to students and researchers in any discipline from agriculture to zoology. Providing a GIS workstation at the library makes these tools available to the entire campus community, not just one or two departments.

Even though this is an advertisement and ESRI is trying to convince people to buy their products, it provides some significant points. The library should be a central melting pot of ideas and information for dissemination, and which unifies the departments in a university. By providing GIS services in the library, this tool is made available to students and researchers alike from many different disciplines (not only the sciences, but also the arts), who might not otherwise have the resources/funds to purchase it. "Inclusion of GIS in the curriculum has quickly spread to disciplines such as design, social and political sciences, public administration, agriculture and life sciences, and veterinary medicine" (Argentati 1997, 464).

Adler also examines dissemination of information by stating that "disseminating data and information

must be linked to providing access to that same information" (Adler 1995, 233). Providing access to different types of information is important for any library, and is usually incorporated into the library's mission statement or mandate. Adler continues by explaining that "libraries provide citizens, researchers, and educators in the public and private sectors with the tools and needed information to make informed judgements. And, second, in a time of scarce resources, libraries provide accesses to the tools and resources to make better use of information (in this case, the use of GIS transforms data into information) in researching those decisions and judgements" (Adler 1995, 234).

However, to provide access to the information contained within a GIS certain requirements are needed, namely the hardware, software, and personnel. The fairly sudden appearance and rapid spread of GIS has created challenges for libraries and librarians. Since a more diversified range of communities will be using GIS data, program development must reflect this. Therefore, a new set of user needs and services must be incorporated into the library environment, and new training possibilities must also be formed. Argentati points out that the "development of GIS services has involved, and in some cases, transformed, the efforts of government documents librarians, map librarians, reference and subject specialist librarians, and others throughout the academic library organization" (Argentati 1997, 463).

Hernon indicates that there are both advantages and disadvantages to incorporating GIS services into academic libraries. GIS involves some knowledge of geography, data display, data quality and provenance, research methods, statistics, and computers. GIS may also be labour-intensive, costly, and the library must have staff that are well informed in geographic information systems. Research and academic libraries are continually being confronted with the introduction of new technology and services, and thus must constantly redesign training programs to accommodate them. GIS is one such service, and with the abundance and nature of spatial data available, its use is growing and diversifying in many university departments. This presents a good opportunity for libraries to rethink their current practices and to do it in an atmosphere beneficial to research, education and public access.

Some other advantages that GIS services provide in academic libraries are: it gives data a visual dimension (providing information in both 2-dimensions and 3-dimensions); and it "clarifies relationships offering opportunities for researchers to adopt research designs based on cluster sampling and through the addressing of research questions and testing hypotheses, they can create new information and knowledge" (Hernon 1997, 446). GIS provides a needed link between the traditional library environment and the rapidly growing technological or digital library, by providing ongoing functions in organization, access and preservation of digital datasets and information.

Is Collection Development in Academic Libraries Moving Toward Digital Data?

There are many factors that contribute to the approaches of each library for user instruction and assistance; these will be determined by factors such as campus interests, staff resources, funding, and the cultivation of faculty awareness and partnerships. Libraries that provide GIS services have had an assortment of challenges, opportunities and learning experiences on several major fronts: "partnerships, both within and beyond the immediate organization; staffing and management; user education and training; and data access" (Argentati 1997, 466). Taking these into consideration and the detail that the user population will grow in both size and diversity, libraries should consider an ongoing evolution in GIS services and digital data collection.

Canadian universities do not seem to be as advanced at integrating GIS into their libraries as universities in the United States. Most of the research available on GIS and academic libraries is taken from an American perspective; this may be due in part to the cost of digital data. Government data are expensive in Canada; meanwhile researchers and universities in the United States are able to obtain digital data from the federal government at a significantly lower cost. Ronald McMahon comments that "the December 1994 issue of the *University of Kansas Science Bulletin* notes that the exorbitant cost of Canadian data in comparison to U.S. data has resulted in Canadian researchers making policy recommendations based on U.S. data. In addition, the article observes that Canadian students are becoming more familiar with U.S. data because Canadian data are too costly to access".

Similarly, in an article written in the *Ottawa Citizen*, Tim Naumetz, a reporter, remarks that federal user fees hinder research in Canada and the policies stifle business. The increase in the cost of federal information began in 1986 during the Brian Mulroney government. This government brought in a cost-recovery program for the collection of a wide range of government information, and some believe that it is obstructing university research and computer-age business ventures in Canada. In the Naumetz article, James Boxall, an academic Map Curator and Head, is quoted as stating that "the cost of obtaining electronic topographical maps, census information and compact discs containing government information has become prohibitive for graduate schools across the country" (Naumetz 1999, A9). Another researcher and librarian, agrees with Mr. Boxall. Andrew Hubbertz notes that "the federal government has failed to act on a two-year-old plea to eliminate the burdensome fees and make information more available to researchers and computer-age entrepreneurs" (Naumetz 1999, A9).

In actuality, Canadian government information is being paid for twice, once by the taxpayers who fund the collection of data, and again through the cost-recovery fees; a point that Kirsti Nilsen alludes to with her statement "Statistics Canada provides a sterling example of a government agency that has greatly increased prices for electronic (and paper) information. Given that taxpayers have already paid for the collection of government information through their taxes, the resulting information products should be available free or at marginal costs" (Prophet 1999).

Costs build when graduate schools try to establish intensive research programs; all the while cuts to social programs are occurring, tuition fees are increasing and budgets are being reduced. The returns the government is receiving for the cost-recovery fees are minimal compared to the cost of collecting the information, therefore is it really beneficial to charge these extra fees? Has cost recovery contributed to deficit reduction? In the case of Statistics Canada this is a very difficult question to answer. If we were able to identify non-government cost recovery revenue and Statistics Canada's expenditures for enhanced marketing services, this question could be answered. Given the additional effort involved in policing and formalizing licensing agreements and in actively pursuing the sales of products and services, the revenues generated through cost recovery minus associated expenditures probably net to zero. It may give the illusion that additional revenues are being made available for expenditures elsewhere in the organization, however, in all likelihood this policy fails the deficit reduction test. (Nilsen 1999)

However, the U.S. government, which collects similar data, provides it practically free of cost (only requiring the shipping and handling) to university researchers and businesses. This gives the U.S. institutions greater advantages over Canadian ones. In some cases, Canadian universities are even obtaining American data because it is less expensive. Should Canadian universities not be using Canadian information? It is not right that they must go to the United States to obtain data to use in teaching and research.

Another issue that goes along with the cost of government information is the copyright permission on government information under the Crown copyright provisions. The Canadian government is allowed to impose copyright restrictions and extract royalties. It has been argued that if the copyright restrictions on government information were not so strict, more information would be used and more revenue could be generated. Again, James Boxall makes an important point arguing that "if the government dropped the fees and copyright restrictions it imposes on information sought by the private sector, taxes generated through economic growth would outweigh the foregone revenue" (Naumetz 1999, A9). The U.S. federal government is prevented by law from exercising a copyright on public information it gathers and organizes. Should this not be so in Canada as well? As Canadian taxpayers, we should be allowed access to government information that we have paid to have collected.

In April 2002, Statistics Canada released some of the new 2001 Census data (the population of Canada), and arguments about the high cost of these data again appeared in the newspapers. In an article for the *Globe & Mail*, David Akin wrote "some important Canadian data are too expensive and that's harming our ability to create new jobs and new wealth on the knowledge economy" (Akin 2002, A13). He continues by addressing the fact that these types of data will play a vital role in the strategic planning of Canadian organizations. Akin does acknowledge that some of these data will be made available for free, but much of the important

information will only be made available to those who are willing to pay for it.

One portion of the information collected by Statistics Canada is geospatial data, and there is a small, flourishing community of users of these data types in Canada. These users are trying to persuade policymakers that these raw data are valuable and should be made available for free or as close as possible to free because it would produce great benefits for all. Again, Akin in comparing Canada to the United States, states "in the U.S., data collected by the public's representatives – the government – about the public are viewed as the public's good. The job of government, in the U.S. at least, is to get this information into the hands of the public with as little fuss as possible" (Akin 2002, A13). But in Canada, government information collected by public representatives is viewed as a moneymaker, and it is inferred by some that our government is doing an inadequate job of getting data about the country out to those who can make use of it. A rebuttal to Akin's article by Martin Podehl, of Statistics Canada, states that Statistics Canada only recovers the cost of providing data for specialized private use. Podehl continues by adding that "a key objective of our data dissemination program is to have the widest possible use of our information without charge. This is certainly the case for the 2001 Census. In addition to our Website, data from the census and other statistical programs are also made available with charge through Canada's network of more than 700 depository libraries" (Podehl 2002, A16). The data made available is only a subset of 2001 census data, and will not meet the needs of all researchers, especially those who need raw data and not the aggregated datasets.

This leads to the next matter, government information depository programs. Are these programs providing digital data along with the traditional types of information? Examining the Map and Chart Depository Program, administered by Natural Resources, the answer is yes. Libraries may participate in the Map and Chart Depository Program as a full or selective members. Educational institutions which are full map and chart depository libraries and who have GIS capabilities, may apply to receive digital formats as well as the traditional paper copies. Access to Natural Resource Canada's topographic maps series in both vector and raster formats, and elevation data will be available via FTP. The University of Western Ontario has also initiated an Internet Data Library System (IDLS), which disseminates statistical data from Statistics Canada under the Data Liberation Initiative (DLI). This library is a Web-based client/server system that provides users with the ability to search for data at the file, variable or value level. The IDLS was originally created for the University of Western Ontario community; however, many other universities have requested to be involved. These other universities are charged a nominal annual fee to participate. Map products are one of the many data types represented in the IDLS, "these may be found by name, and then downloaded in compressed format to decompress and use on your local machine. Eventually, it is hoped to have all DMTI [Desktop Mapping Technologies Incorporated] resources linked with the system" (Gray, personal conversation).

The provincial government has also been trying to find better ways of sharing its geospatial data. Recently, Land Information Ontario (LIO) has developed a data-sharing exchange in the form of membership in the Ontario Geospatial Data Exchange (OGDE). Membership will come from all levels of government, and will also be available to First Nations and aboriginal communities and broader public sector entities such as conservation authorities and post-secondary educational institutions. The data itself is free; however, there is an annual fee (waived in the first year) for the Federal Government, municipalities and non-government members.

In the past, cost has been a major deterrent in the use of government data, however, the Access to Information Act seems to be changing this and is having an impact on the availability of government information at reasonable costs. The use of digital data in academic environments is now becoming more common, thus, the need to implement GIS into libraries systems is fast becoming a necessity.

GIS Capabilities within Academic Map Libraries: An Exploratory Assessment

Despite the popularity of geospatial information, there is a lack of empirical research in the area of user needs. "User studies that focus on geospatial information needs or uses are rare in the library and information studies (LIS) literature. For example, a 1994 special issue of the *Journal of the American Society for Information Science* devoted to

spatial information called for increased understanding in the use of spatial information but did not include any user studies" (Gluck, Danley and Lahmon 1996, 409). Thus, with a short survey I will attempt to provide some statistics on the GIS capabilities found in the academic map libraries of Ontario.

Purpose

The purpose of this study was to find out what type of GIS capabilities (hardware, software, data and access to this data) academic map libraries have for their user communities. To some extent, this study was also examining the direction libraries are heading in the digital environment.

Methodology

This is an exploratory study done as part of an Individual Study course in the program of Master's of Library and Information Science at the University of Western Ontario. It was conducted by emailing a letter of introduction, along with a five-page questionnaire, to all fourteen academic map librarians within Ontario, listed in the 1999 *Directory of Canadian Map Collections* (the latest publication). A letter from the University of Western Ontario's Map Librarian and the investigator's supervisor were also sent to encourage participation and to give credibility to the study.

An email survey was determined to be the best method of gathering information on the GIS capabilities in academic map libraries given the limitations on time. The timing of the surveys (April) fell in a very busy part of the term for respondents. Before the survey was sent out, it was pre-tested by Western's Map Librarian, Cheryl Woods. Unfortunately, there was not enough time or funding to perform personal interviews, which would have been a better method of gathering information.

To least inconvenience the participants, the survey was developed so they could answer the questions quickly with minimal word processing problems, i.e. shifting boxes or boxes that would not check. The length of time it should have taken to fill in the survey was approximately thirty minutes. There were no known physical or psychological risks for participating in this survey, and the participants were given a choice to either email or fax the surveys back to the investigator.

Participation in this study was done on a voluntary basis, and the participants were free to withdraw at any time. As well, they were not obligated to answer any questions in the survey that they found objectionable or that made them feel uncomfortable. It was assumed that if the participants did not return the survey they were not willing to participate. Another assumption made was that if the surveys were returned, the information in them could be used in the analysis. Confidentiality will be kept by aggregating the analysis (using no names, instead a number was assigned, and only that number will be used). The returned surveys were also destroyed when the tabulations were completed.

Analysis

The response rate for this email survey was very good at 85%. There are fourteen academic map libraries in Ontario which are either associated with a library system or a geography department. The universities themselves range from predominately undergraduate, to comprehensive, on through to those that offer medical/doctoral degrees. The map libraries contain print material roughly estimated in the range of seventeen thousand to two hundred thousand items, as well as many digital maps, air photos, satellite images and other material not catalogued. Unfortunately, one survey bounced back with an incorrect email address, which may have been due to the fact that the librarian is no longer working at that particular library. Thus, thirteen surveys were successfully sent out, and eleven completed surveys were returned.

The first question that the survey dealt with was the size of the collection, keying in on certain material

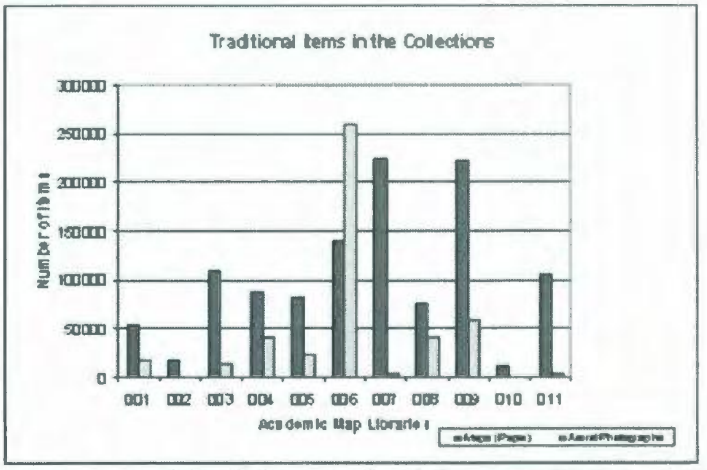

Figure 1. Traditional Items in the Collections (black = maps (paper), gray = aerial photographs).

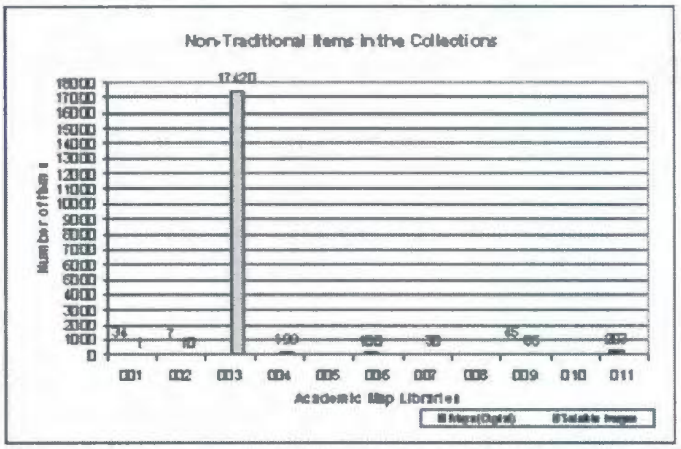

Figure 2. Non-Traditional Items in the Collections (digital maps and satellite images).

types. Figures 1 and 2 show the number of items in each category, comparing the more traditional material types of paper maps and aerial photographs, and digital map and satellite images.

Figures 1 and 2 also present comparison data on the relative sizes of the academic map libraries in Ontario. As can be seen, there are some libraries that have collected a lot of these material types and some that do not have much at all. The amount of material in each library would depend on numerous factors such as the user needs (what research and programs are being conducted in the universities), size of the university, and budget to name a few.

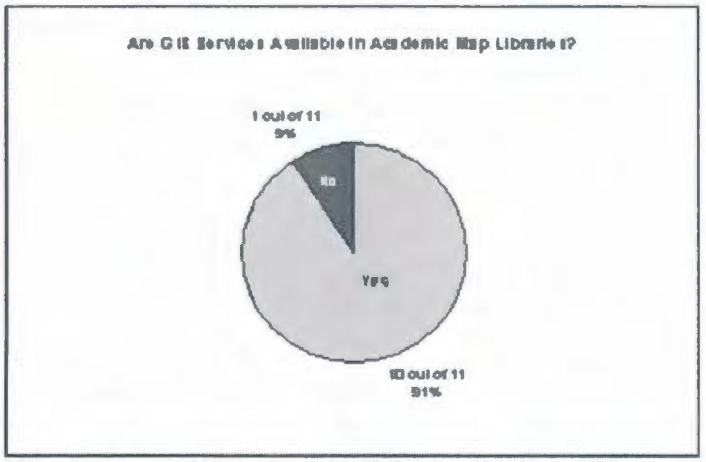

Figure 3. Are GIS Services Available in Academic Map Libraries?

I discovered that ten out of the eleven libraries who returned survey have GIS capabilities within the library. This was more than I anticipated because GIS has just recently become a resource available in libraries. On the other hand I find it a very good thing because it opens up the availability of this tool, and allows people who might not have access to department labs to use geospatial data in their studies.

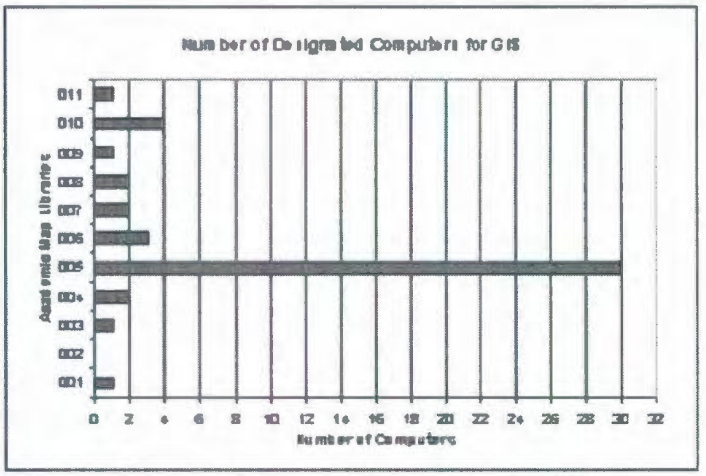

Figure 4. Number of Designated Computers for GIS.

The number of computers available in the library for GIS indicates the accessibility and availability of these programs. The average number of computers designated to GIS in the libraries is 1 or 2. With the increased abundance of digital data and the usefulness of GIS to analyse and model information, it would be interesting to compare in several years and see if this number rises. The number of computers designated for GIS may also reflect the number of licenses available for these programs.

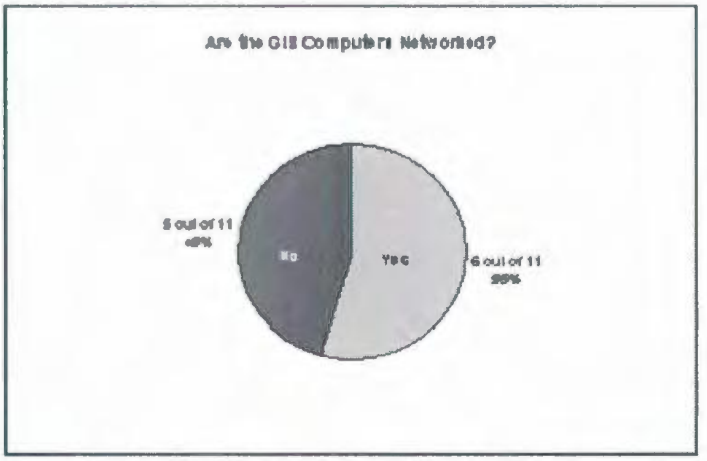

Figure 5. Are the GIS Computers Networked?

I also wanted to see whether or not the computers that had GIS software installed were stand-alone or networked for access to the Internet, which would allow for the downloading data. It was almost an even break with the networked having slightly more. This question was examining the accessibility of GIS programs, and the availability of the Internet. There are Websites that have free geospatial data to be downloaded i.e. GeoGratis, if

one has the programs to view and manipulate these data. This may also be an indication of the number of licenses available for GIS programs in the library. Although a program may be networked, its access may still be prohibited without a key.

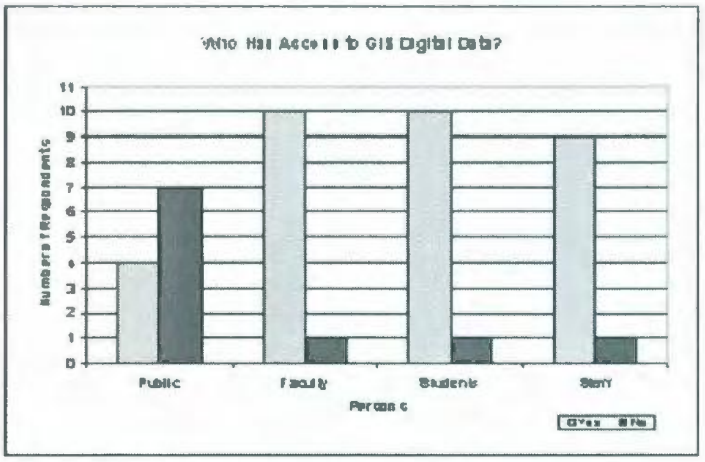

Figure 6. Who Has Access to GIS Digital Computers? (public, faculty, students, staff; gray = yes, black = no).

As to the question on who has access to the digital data that the library holds, the public did not fare so well. Most academic libraries cater to those who work, teach or study in the university community (and licenses only allow for educational or research purposes). Although some libraries do have the permission to allow access to the general public. However, this may become more problematic as consortia develop. It must be kept in mind that the library that indicates no access for faculty, students, and staff is the one library that does not have GIS capabilities.

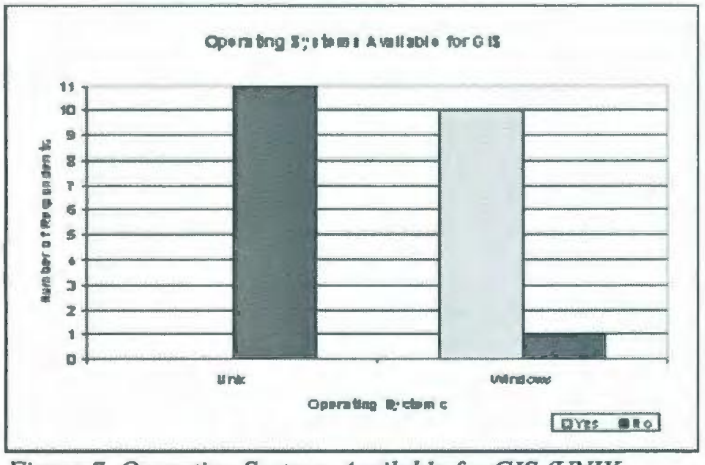

Figure 7. Operating Systems Available for GIS (UNIX, Windows; gray = yes, black = no).

The most common operating systems available for GIS programs are UNIX or Windows; however, in this study none of the libraries had UNIX workstations. In some respects when manipulating large amounts of digital data, UNIX workstations can be a more stable working environment with a more rapid processing time. But on the other hand, it is more expensive and more knowledge of programming languages is needed.

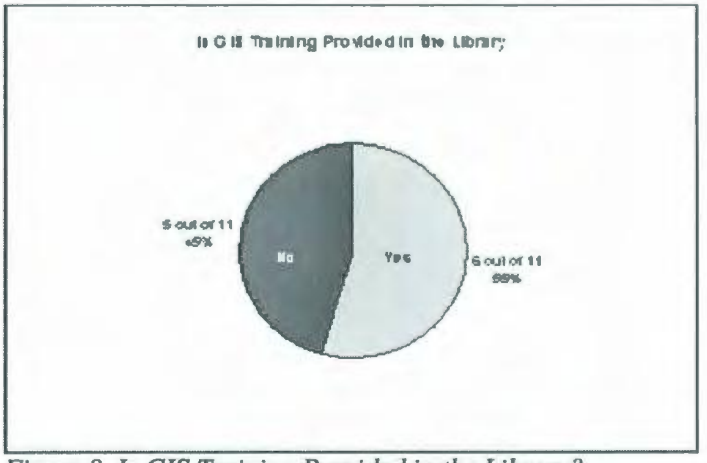

Figure 8. Is GIS Training Provided in the Library?

The survey indicated that there is GIS training going on in the libraries (6 out of 11 libraries provide some training). The libraries that do not provide training, mention that the training is being done in the labs associated with the different departments that utilize GIS. This raises the question of what access is available for those people who do not have access to those labs, and who still want to use digital data. It makes sense that the libraries provide some training, just as libraries provide bibliographic instruction. Again, there are many variables that

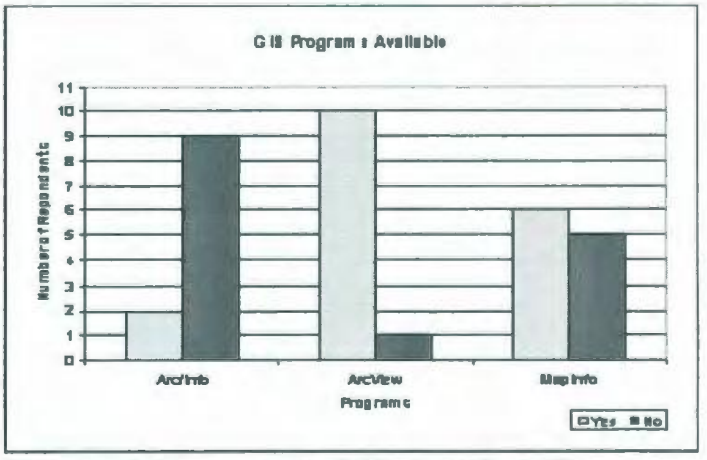

Figure 9. GIS Programs Available (ArcInfo, ArcView, MapInfo; gray = yes, black = no).

affect the libraries' capabilities to provide training, primarily staffing issues and the library budget.

The most common GIS programs that libraries use are shown in Figure 9. ESRI products, ArcView and ArcInfo are the most commonly found GIS programs. ArcInfo is not as widespread as I thought it would be. This is probably because it is not user friendly. It is command-line driven, and requires knowledge of UNIX programming, thus making it less appealing for general or casual users. ArcView, on the other hand, is ESRI's desktop GIS software. It is GUI (graphic user interface) operated, and easier to manage for the general or casual user. Other programs available in some libraries are: IDRISI, Adobe, ER-Mapper, ArcPress and ArcPad.

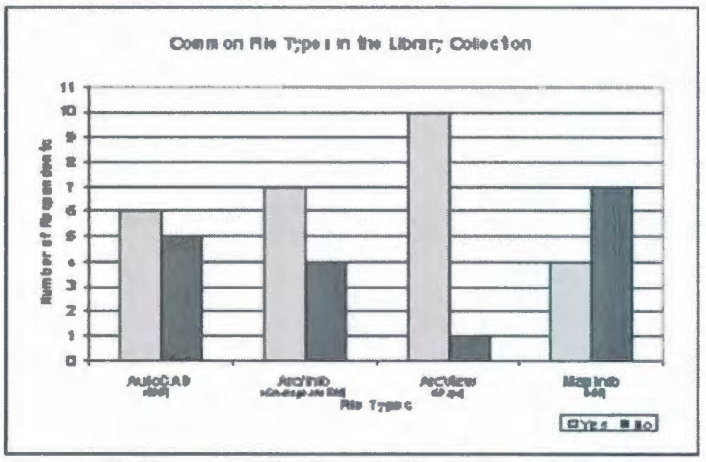

Figure 10. Common File Types in the Library Collections (AutoCAD, ArcInfo interchange, ArcView shape, MapInfo; gray = yes, black = no).

The common file types used in map libraries correspond to the available programs, but also include some generic types. AutoCAD (DXF) is one such generic file type, and many GIS programs can import and convert data stored in this format. ArcInfo's export or interchange file (E00) is another file type that can be imported into different programs; for example a utility, Import 71, may be used to convert E00 files into Shape files which can then be opened in ArcView. Other common file types that libraries use are: GeoTIF, TIF, MrSID and JPG. However out of all of these, E00 and Shape files are the preferred types of file formats for GIS data and the most widely used. It is important that other file types be made available not just for use in libraries, but also within the university computer labs. If the library is to be the central repository for geospatial data, then it must be able to serve its patrons. Faculty, staff and students who need and use geospatial data may have software available to them that the library does not, and this should be a consideration when purchasing data files.

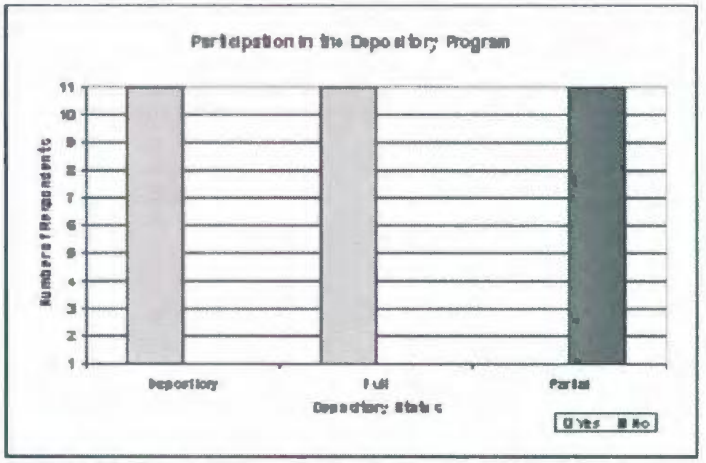

Figure 11. Participation in the Depository Program (gray = yes, black = no).

Every academic map library in Ontario is taking part in the Canadian Federal Map and Chart Depository Program; not only are they participating but these libraries are all full depository (receiving everything that the Federal Government makes available in the depository program). Other data sources from which the libraries are obtaining information include: provincial government, municipal government, regional sources, private sources (in-house research), and commercial sources.

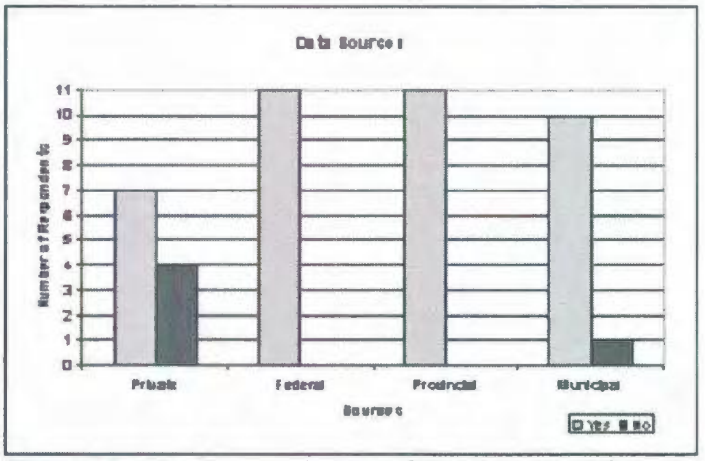

Figure 12. Data Sources (private, federal, provincial, federal; gray = yes, black = no).

The different types of digital data collected in the libraries is shown in Figure 13, while Figure 14 is a chart presenting information on the collection of

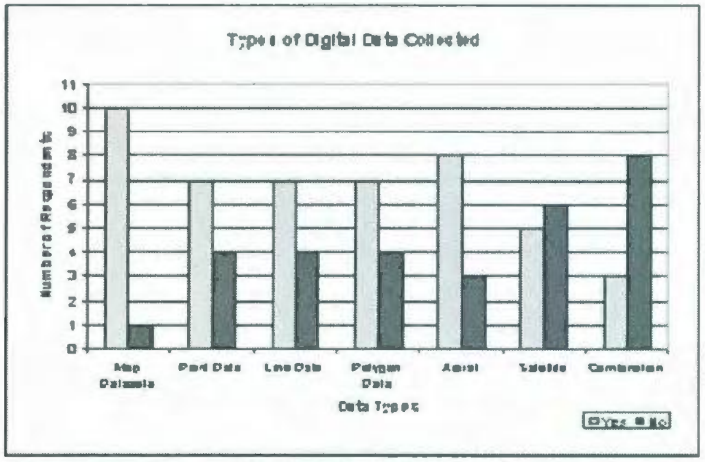

Figure 13. Types of Digital Data Collected (map datasets, point data, line data, polygon data, aerial, satellite, combination; gray = yes, black = no) .

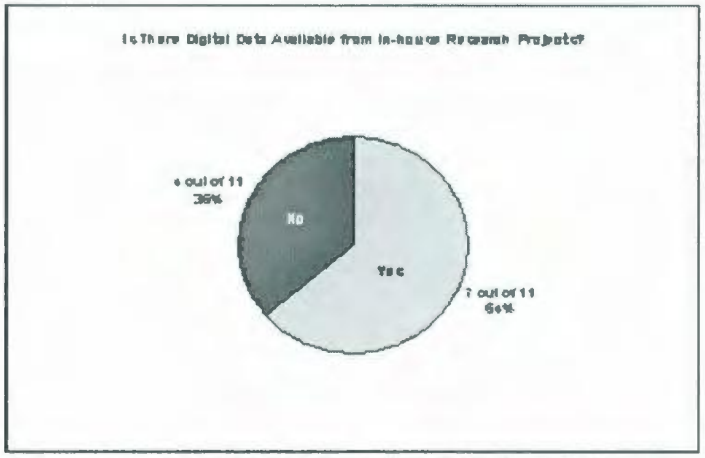

Figure 14. Is There Digital Data Available from In-house Research Projects?

information from in-house (university) research projects. Some universities are currently creating mandates to collect the research data from research projects, but not all have this in place. It is hoped that in the future all libraries would be collecting this type of information on an ongoing basis. This again would be subjected to licensing agreements.

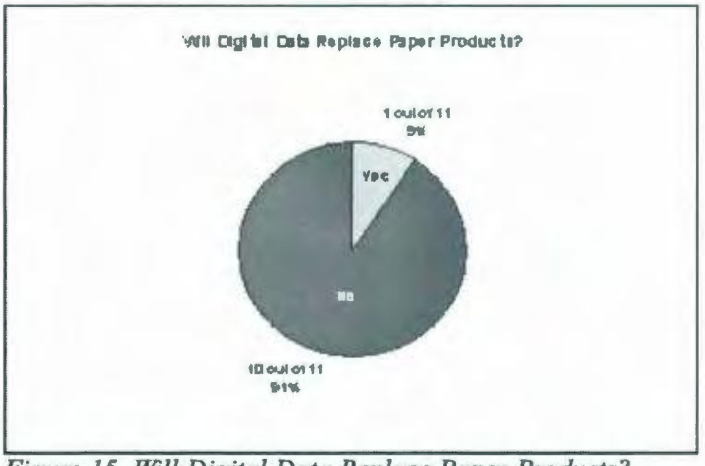

Figure 15. Will Digital Data Replace Paper Products?

A positive response was given by those who filled out the survey; 91% believed that digital data will not replace paper map collections. Comments received make mention that: paper products will not disappear for all audiences; some people may not have access to the hardware and software needed to process digital data. As well, the formats complement each other and many people still prefer to use paper maps because they are easier to read and interpret. Digital data allow the users to customize base information by adding new information, and changing scales and projections.

Most GIS users still need a final product (a printout of their maps); this is what students are graded on and what researchers need for publication. One respondent pointed out our whole mentality has not changed, and the end product is rarely completely digital. Digital data might reduce the cost for libraries, but the government cannot keep up with the demand to have all map series in digital format. As well, there are added costs to the government in hardware/software, and training of personnel. Thus, both paper and digital products will be available in the future.

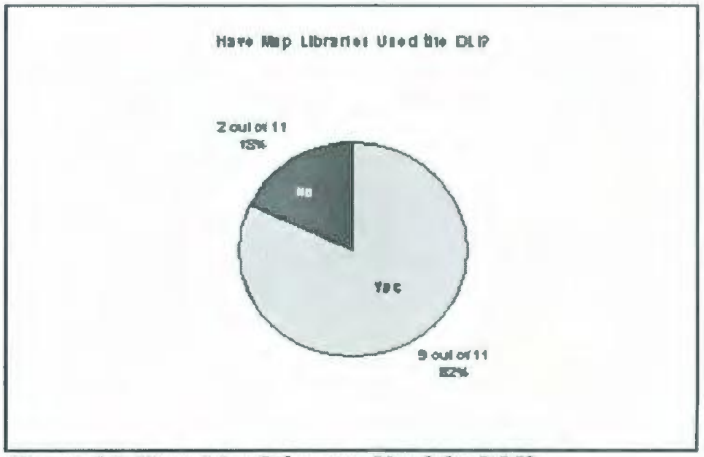

Figure 16. Have Map Libraries Used the DLI?

Most academic map libraries in Ontario were taking advantage of the Data Liberation Initiative from Statistics Canada. Through this initiative, there are geospatial datasets provided in the way of streets, political boundaries, and other types of census data.

Most libraries catalogue their digital datasets according to AACR2 and MARC coding as Figure 17 shows. However, using Internet protocols or standards does not seem popular yet. Some libraries are also creating records using Excel and Word to

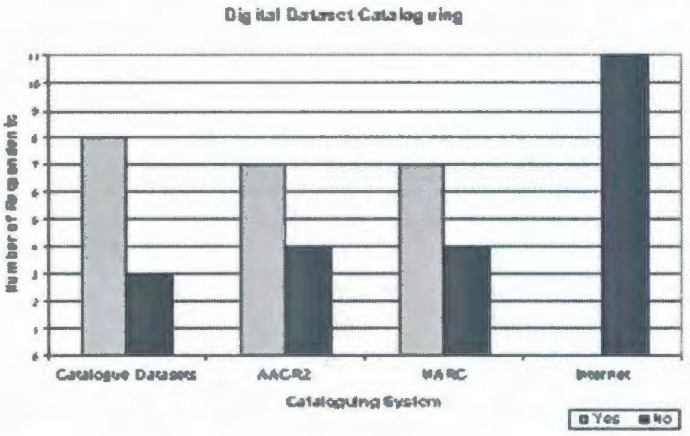

Figure 17. Digital Dataset Cataloguing (catalogue datasets, AACR2, MARC, Internet; gray = yes, black = no) .

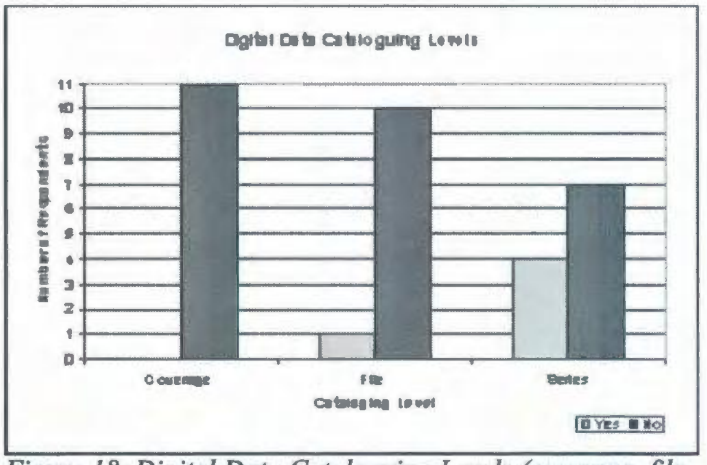

Figure 18. Digital Data Cataloguing Levels (coverage, file, series; gray = yes, black = no).

describe the data. Cataloguing by series seems to be the preferred cataloguing level. Cataloguing is time consuming to begin with, but cataloguing at the coverage level would be very time consuming, albeit useful if one needed to locate particular data.

Seven out of eleven libraries have cataloguing records of digital data in the OPAC system. They also provide README files (metadata files). README files are important because they describe the data down to the coverage level, along with information about file formats, coverage names, coverage description, projection and scale. It was interesting to note that the libraries were not downloading digital data as much as had been anticipated by this researcher. There are many Websites that provide free data, but downloading free datasets would depend on the needs of individual researchers. Downloading large datasets which might not be used is not efficient use of IT service space (just-in-case collection development has gone out of fashion). However, providing a URL (link) will help users find the data in case it would be of use to them in their research.

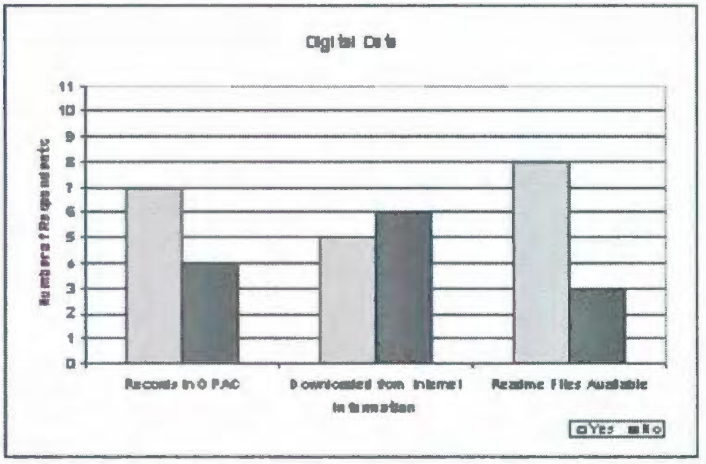

Figure 19. Digital Data (records in OPAC, downloaded from Internet, Readme files; gray = yes, black = no) .

Figure 20 indicates librarians' responses to the question, "Who utilizes digital data from the library most often?" Students are the main users, followed by faculty, which makes a lot of sense because the library caters first and foremost to the students. The most prominent department/faculties using the digital data in the library are: Geography, Earth Science, Environmental Science, Engineering and Biology. Other departments/faculties that commonly use digital data are: Forestry, Outdoor Recreation, History, Anthropology, Health Science, Urban and Regional Planning, Epidemiology, Disease Analysis, Architecture, Zoology, Atmospheric Science, and Business to name a few listed by respondents. Some of the major reasons given in the survey for using GIS data are: education

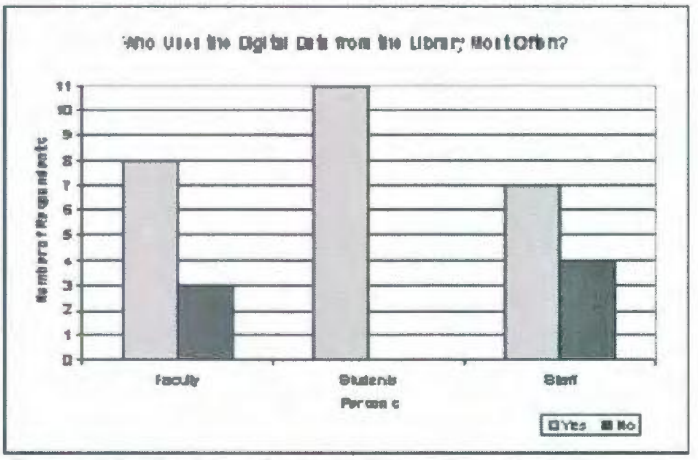

Figure 20. Who Uses the Digital Data from the Library Most Often? (faculty, students, staff; gray = yes, black = no).

(teaching), research (non-commercial use), theses, course projects/assignments, and specific migration patterns, elevation modelling, climate research and trip planning.

According to respondents, GIS data may be manipulated in some libraries (6 out of 11 library respondents state that users are manipulating data in the library), however other major places that people are manipulating data are department computer labs or in their offices. On the rare occasions, people might also work on them at home,; of course this is depended upon having the appropriate hardware/software.

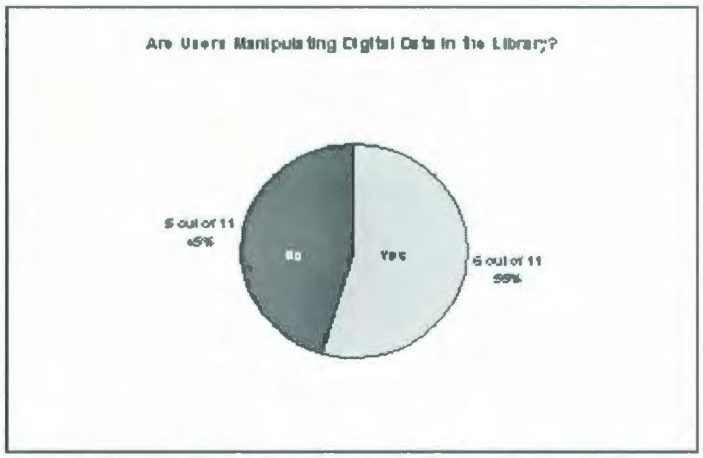

Figure 21. Are Users Manipulating Digital Data in the Library?

Library printing capabilities are another aspect that was examined. If people can manipulate the data in the library to produce a map, then they should also be able to print a hardcopy of it. Unfortunately, printing capabilities are not at the same level as

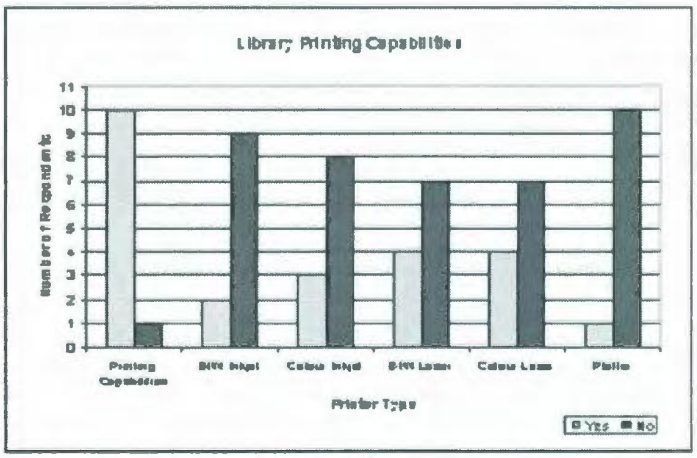

Figure 22. L:ibrary Printing Capabilities (printing capabilities. B/W inkjet, colour inkjet, B/W laser, colour laser, plotter).

manipulation capacities. Most libraries have some printing, but not always in colour, and only one library has access to a plotter which is useful for large-sized maps.

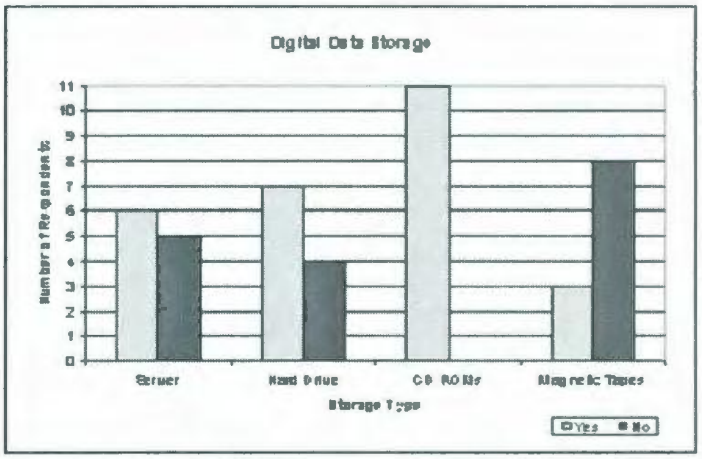

Figure 23. Digital Data Storage (server, hard drive, CD-ROMs, magnetic tapes).

Data storage is another issue. CD-ROMs seem to the most common method of storing data, followed next by hard-drives and servers. It makes sense that magnetic tapes are not as common since that technology is on its way out, especially since CD-ROMs have appeared. CD-ROMs might eventually be replaced by DVDs which can hold more data per disk. However, I would have thought that the best way to store digital data, especially data that is commonly used, would be on a server. Servers, on the other hand, are more costly, therefore depending on the library budget this option may not be feasible.

Conclusions

This study provides empirical data that supports my initial expectations. Academic map libraries in Ontario are taking advantage of the digital data available right now. Most libraries are using GIS to some extent (or have some GIS capabilities), and hopefully this trend will continue and grow. The realization must be made that libraries are affected by a number of factors such as: the user community (what is being taught and what research is being carried out within the university); the library's size; library staff (the expertise of each staff member); and most importantly the library budget (including the cost of hardware, software and data). Licensing agreements also affect how data are disseminated, and as more consortia are formed could create fewer or more problems.

Most importantly, digital data will not replace paper products in the library. Both digital and paper information complement one another, and provide abundant information in different ways. Most people still prefer to use paper maps, but digital information will be easier to manipulate (performing analysis and/or modelling). As well, a hardcopy map is usually the end product of a GIS project, as stated before the end products may come in both digital and print.

Another major consideration is the cost associated with the hardware, software and output devices needed to view, manipulate and store (the majority of files are large unless compressed, and therefore, can take-up a lot of space) digital data. Cataloguing and metadata standards must be developed and implemented. Digital data may also create archiving and preservation issues that will not be as easy to resolve.

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Acknowledgement

I want to give a warm hearted thanks to: Kirsti Nilsen for guidance throughout the project; to Cheryl Woods for all her support and encouragement; and to all those who participated in the survey, thank-you for taking the time out of your busy schedule to fill it in.

REMAPPING THE WAR OF 1812-1814

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Maps are powerful devices for recording, storing, interpreting, and portraying history. Unfortunately, they are seldom used in full measure for such purposes. As an explication of this thesis, my observations on a sample of maps used to illustrate the events of the War of 1812-14 are described here. These illustrations are confined to maps readily found in historical monographs and atlases. They do not include manuscript maps preserved in numerous archival, library or private collections. The information was derived from material collected to prepare the plate on the War of 1812-14 in the Historical Atlas of Canada *(vol. 2, 1993). An earlier version of this article was presented at the Eleventh International Conference on the History of Cartography, Ottawa, July 1985.*

The War of 1812-14

Historians still debate the causes of the War of 1812-14. Simplistically, one might say its real cause lay in the temper of the time. The war was a personal brawl between "Jonathan" and "John Bull"; a rather vicious settling of old grudges from the American Revolutionary War and the Treaty of Paris of 1783, about which both sides were dissatisfied. Moreover, American and British ships shared the carrying trade of the world, so rival sailors met and fought in every port. Canada became the prime focus of American political military subjugation. Its acquisition appeared the easiest means of punishing the British along with their Indian allies and was, according to Thomas Jefferson, "a mere matter of marching". The frustration created by American expansion of settlement was, itself, a major factor in the causes of the war.

This was an unnecessary, futile, and, in many respects, incredible war in which, as far as Canada was concerned, a population of about 400,000 held at bay a nation of 7,500,000. This repulse by Canada of its powerful neighbour's aggression, albeit with more British power, leadership, and Indian help than Canadian legend allows, was indispensable to the eventual creation of an independent Canada. Even as a British possession of loosely connected provinces, the war provided Canada with its first clear sense of a self-conscious nationhood. Equally, a determination not to become Americans was generated through this conflict. Although foiled in their attempt to annex Canada and brought to an economic standstill through the strangulation of the British blockade, the Americans also "found" themselves as a nation because of the war.

The Maps

Most of the maps reviewed here are found in several major sources: historical and military atlases, in a variety of both general and specific history books, and, occasionally, in the memoirs of participants. Although there is a remarkable similarity of mapping in such sources, some distinctions can be made. First, there is a subtle difference between maps found in most historical atlases and those found in monographs. Second, monograph maps almost invariably fall into three categories: regional, operational, and sketch diagrams.

Atlases

In atlases published since Paullin and Wright's 1932 *Atlas of the Historical Geography of the United States*, maps of the War of 1812-14 usually follow directly the example set by that work. Prior to that time historical atlases -- when they included the War of 1812-14 at all -- merely depicted a regional map of Canada and the United States from the Great Lakes eastwards to the Atlantic coast and as far south as Long Island or occasionally Chesapeake Bay. Battle sites might or might not be mapped. Sometimes, even in post-Paullin and Wright atlases, regional maps of the theatres of war as often as not are merely place-name maps as, for example, the Chesapeake region in J. T. Adams's 1942 *Atlas of*

Author's note: I wish to acknowledge with my grateful thanks Ed Dahl for his suggestion where to publish this paper, as well as his most helpful editing. Wm. G. Dean

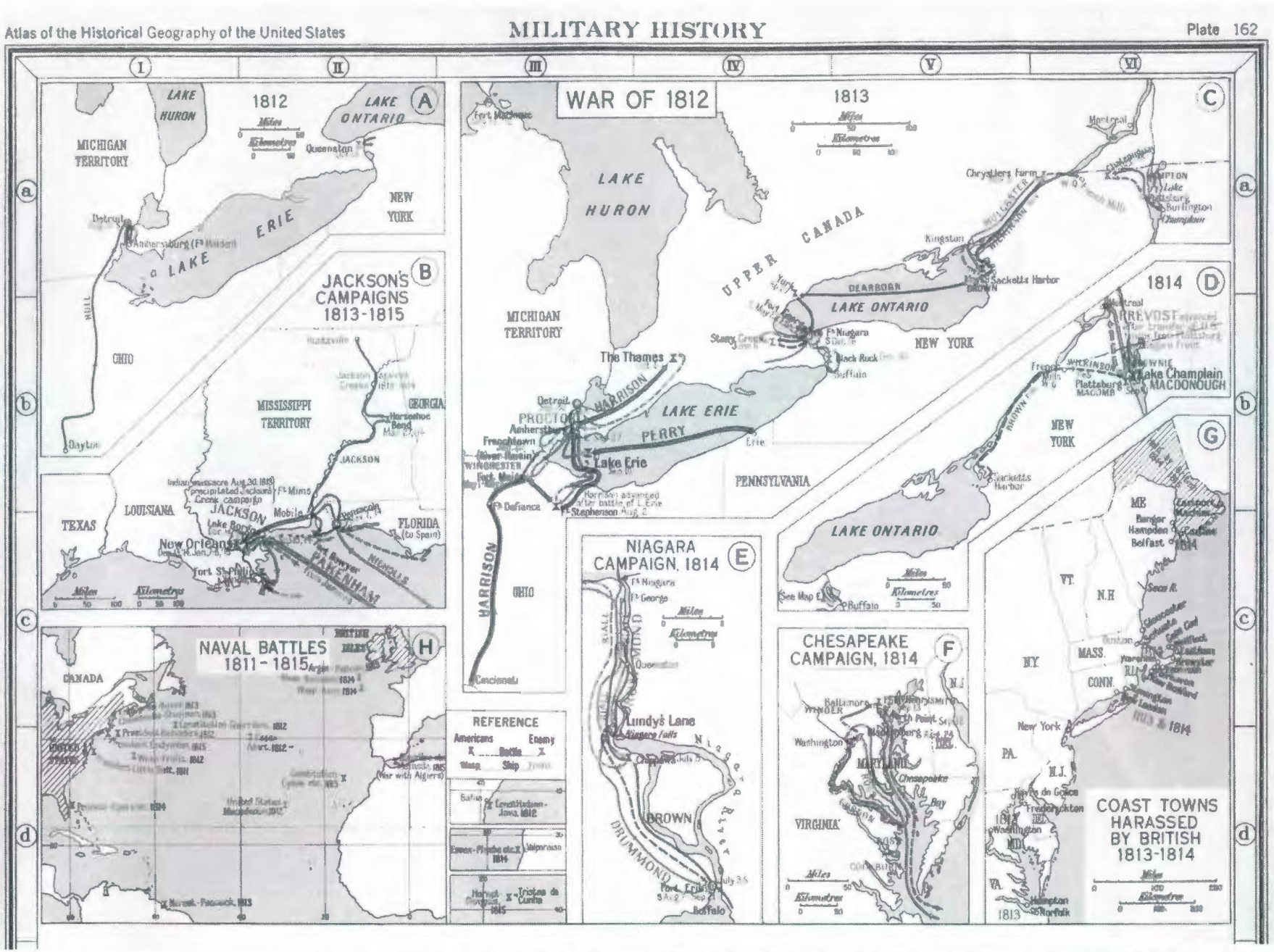


Figure 1. Map showing the operations of the War of 1812-14. In: C. O. Paullin and J. K. Wright. 1932. Atlas of the Historical Geography of the United States. *New York: American Geographical Society and the Carnegie Institution of Washington, plate 162. (Reproduced with the permission of the Carnegie Institution, holder of the copyright.)*

American History. One wonders if it isn't just such maps that help keep atlases unused on dusty shelves.

Paullin and Wright created a major innovation on their maps depicting the operations of the War of 1812-14 (Figure 1). They divided the war into its annual campaigns and consequent principal battle sites. They then added three separate annual maps of important northern events, though they overlooked a number of significant encounters. Their important events were the Niagara campaign of 1814 (fewer defeats than in the earlier years), the British Chesapeake campaign of 1814, which eventually captured Washington (though was driven away from Baltimore), and the coastal towns harassed by boats from the blockading ships offshore in 1813 and 1814. What was new was the mapping of major and minor advances of the American or British forces, in short, a crude indication of strategy, a subject hitherto unmapped. Two apt footnotes: first, the authoritative *Atlas of Military Strategy* by David Chandler (1980), when dealing with the "American War of 1812", ironically indicates no strategy whatsoever, only the tactics of four land battles -- Queenston Heights, Crysler's Farm, Fort George, and New Orleans -- thus presenting two overwhelming victories for each side. The *West Point Atlas of American Wars* (Esposito 1959) is also entirely tactical in its approach. Second, Paullin and Wright incorrectly located Fort Michilimackinac, a key outpost captured by the British at the outbreak of the war. Many atlases since, including *The National Atlas of the United States of America* (Gerlach 1970), have followed their example.

One little-regarded aspect of the war in all history-book maps and in atlases is the effect of the British naval blockade. The first faint indication that it might be important, I have found, appears in the *American Heritage Pictorial Atlas of United States History* (1966) where six crude ship profiles off the Atlantic coast on an otherwise attractive map of the war zone indicate the existence of the blockade. An improvement on this appears in K.T. Jackson's revised edition of J.T. Adams's *Atlas of American History* (Jackson 1978). In this version the profiled ships not only have sails but also their numbers in various ratings are listed. These numbers are not quite correct: according to the returns in the National Maritime Museum at Greenwich, there were in fact 121 (not 142) vessels of various ratings offshore during 1814. Nevertheless, just mapping the existence of the ships signifies that the blockade was important. Perhaps a more dramatic and accurate means of portraying the effect of the blockade is through a graph of its direct impact on American commerce and hence the economy (see Figure 6).

The few existing Canadian historical atlases mirror exactly their American counterparts. The one map on the war in Marcel Trudel's *Atlas historique du Canada français* is derived directly from a monograph, Kingsford's *The History of Canada* (vol. 8, p. 362), whose maps in turn originated in Major-General Wilkinson's *Memoirs* (1816). *Philips' Historical Atlas of Canada* (Chalmers, Eccles, and Fullard 1966) contains one plate in the Paullin and Wright pattern and is incomplete and less effective. More impressive is the plate in D.G.G. Kerr's *A Historical Atlas of Canada* (1960). This, without mention in the text, indicates the uncertain American strategical thrusts, but more importantly takes a highly significant step beyond previous work. The Kerr map traces British and American lines of communication, becoming one of the first maps on which logistics are singled out, albeit weakly, as a crucial element of this war. Most atlas plates showing logistics contain insets, normally of the much-fought-over Niagara region and the area south of Montreal.

Monographs

General histories of the war are legion, as are primary sources in a variety of published works and memoirs. Secondary sources dealing with most aspects of the war -- political, military, economic, biographical, medical, social, and regional -- also abound. Surprisingly few, however, contain maps. Most that do include maps use ones derived from a few sources and treat the same subject matter. Apart from contemporary sketch maps drawn by participants, the majority of whom were engineers or artillerymen, the base maps of the broad war zones evidently stem from two sources. These are the famous mapmakers Joseph Bouchette on the Canadian side and John Melish on the American side. It is noteworthy that in a few histories of the early nineteenth century, perhaps three or four maps were included. As time passed these numbers increased, especially from the time of B.J. Lossing's great *Pictorial Field-Book of the War of 1812* (1868)

until in the 1980s when Pierre Berton used no fewer than 57 maps in his two-volume work. G.F.G. Stanley published an unusually large number of maps -- 29 in all -- in his work on the land operations of the war (1983). Was this proliferation a matter of economics in map publication, or did it reflect a trend away from an almost entirely textual to an increasingly graphical society?

As noted above, there are three categories of monograph graphics: maps showing a theatre of action, or the "seat of war"; maps illustrating operational or battle tactics; and sequential diagrams of ship or fleet actions on the lakes or high seas. As with any classification, there are exceptions. In this instance, some texts include maps that represent both of the first two categories but these are comparatively rare. A review of some examples from each category will help demonstrate these points.

Probably the earliest example of the first category is *A Map of the American Lakes and Adjoining Country, the Present Seat of War between Great Britain & the United States. Done in part from a Sketch of the late Major General Sr. Isaac Brock* (London. Published Jany. 21, 1813, by Luffman, 377, Strand), which appeared after Brock's death. This map covers the whole area of the war in Canada, as do later versions in some more modern history texts. One modern version may be seen in H.L. Coles's 1965 work, *The War of 1812* (Figure 2). These maps are fairly typical in texts from the 1930s to the 1970s; like most of their predecessors, they consist mainly of place-names and battle sites. They could be said to be effective for their limited purpose.

More predominant are "seat of war" maps depicting particular regions. Prime examples are seen in a variety of maps of the Detroit River area and the Niagara frontier. Comparisons of originals and later versions can be made in both cases. One Detroit map reproduces a 1940 adaptation of a contemporary map. Note that as with most such maps, there is no scale. Lossing's 1868 map, also from participant sources, adds much relevant detail, such as the terrain difficulties in the marshes and creeks, as well as local information about important

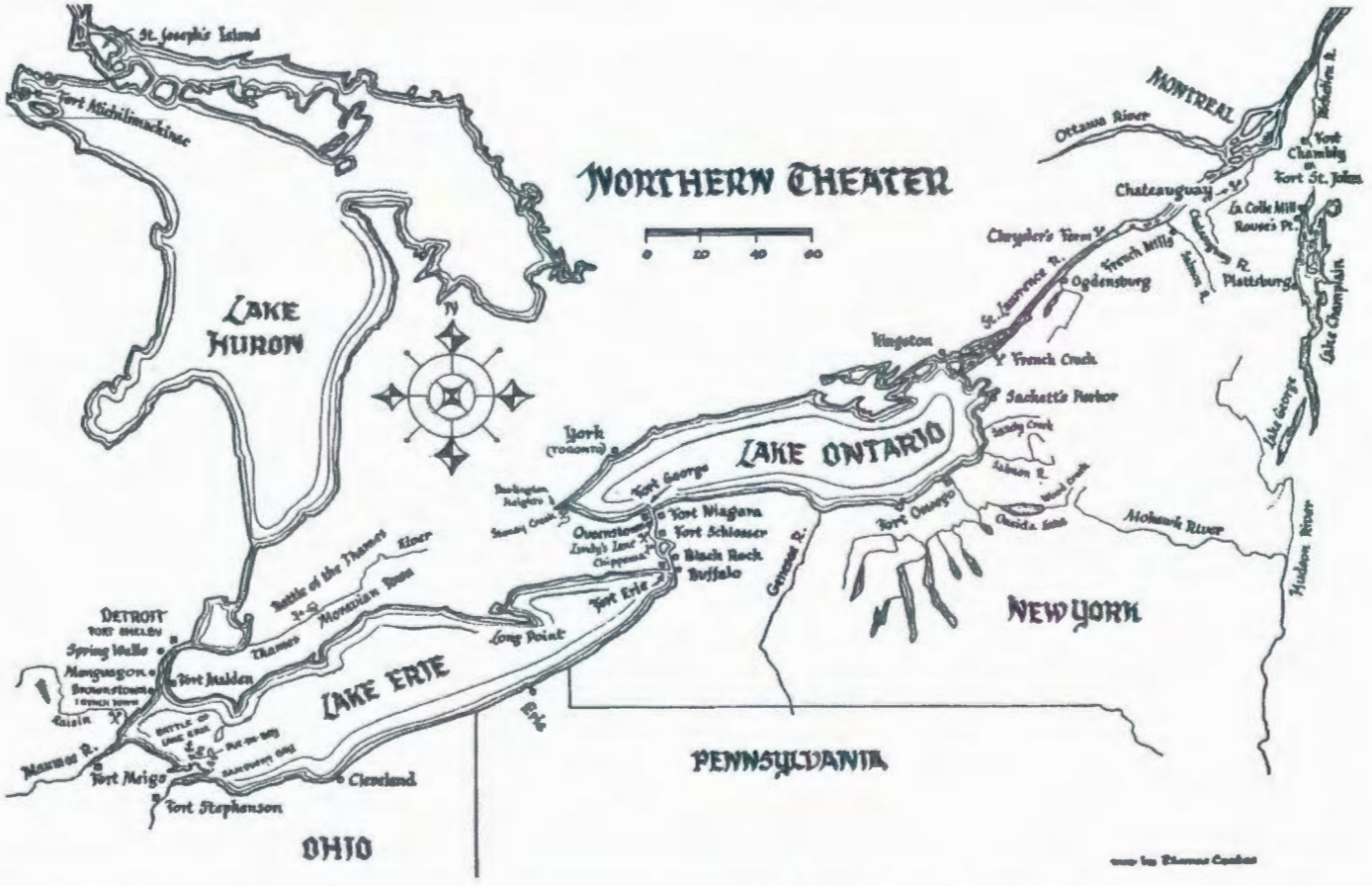


Figure 2. Map showing the "northern theater" of the War of 1812-14. In: H. L. Coles. 1965. The War of 1812. *Chicago: University of Chicago Press. (Reproduced with the permission of the University of Chicago Press.)*

houses, several mills, town layouts, and roads. It also plots more military information like the American shipyard, the British ship in the river (in two positions), old entrenchments, camps, and batteries. Berton (1980) presents a modern-day version of the Lossing map with less detail but adds distances in kilometres. Whereas Stanley (1983), although wrong in his location of Brownstown, takes us back closer to the original and concentrates largely on the detail of Brock's movements, also in kilometres, which would not have made much sense to Brock.

A similar series showing the same kinds of features illustrates the Niagara "seat". The original map is Major-General Wilkinson's as published in his *Memoirs* in 1816 (Figure 3). This was studiously copied by many authors well into the twentieth century. Examples of the much-reproduced detail are found in the work of the Canadian journalist Auchinleck (1855), the American historian Henry Adams (see reprinted edition: Henry Adams 1986), Lossing (1868), and Stanley (1983). Also copied directly from Wilkinson, the map in the work of the controversial English historian William James (1818) shows us the earliest version again. Another favourite seat was the St. Lawrence River area around Montreal. Lossing in 1868 (Figure 4) elaborated an original 1815 John Melish plate which was also published in Henry Adams (1986), probably in its original form. Hitsman (1965) shows us the rather stark style of Major Courtney C.J. Bond, long the mapmaker to Canadian historians.

Not all of the seat maps are pure; many are a mixture of locations, campaigns, and battle sites. Two examples will suffice for this variant: one, in Hannay's 1905 edition of a Canadian history of the war, is titled *Operations on the Niagara Frontier*. This is composed largely of battle sites throughout the whole region and includes the Indian tribal villages on the Grand River -- the first indication on a map since Wilkinson's that Indians were involved in the war. A more modern version is in Jacobs and Tucker's 1969 history which is particularly interesting in that it ignores the most serious American losses.

The third category of maps, the operational or battle map, are undoubtedly the most prevalent. They appear in a variety of papers, proceedings, and memoirs. Some of the earliest stem, again, from that tarnished warrior Major-General James

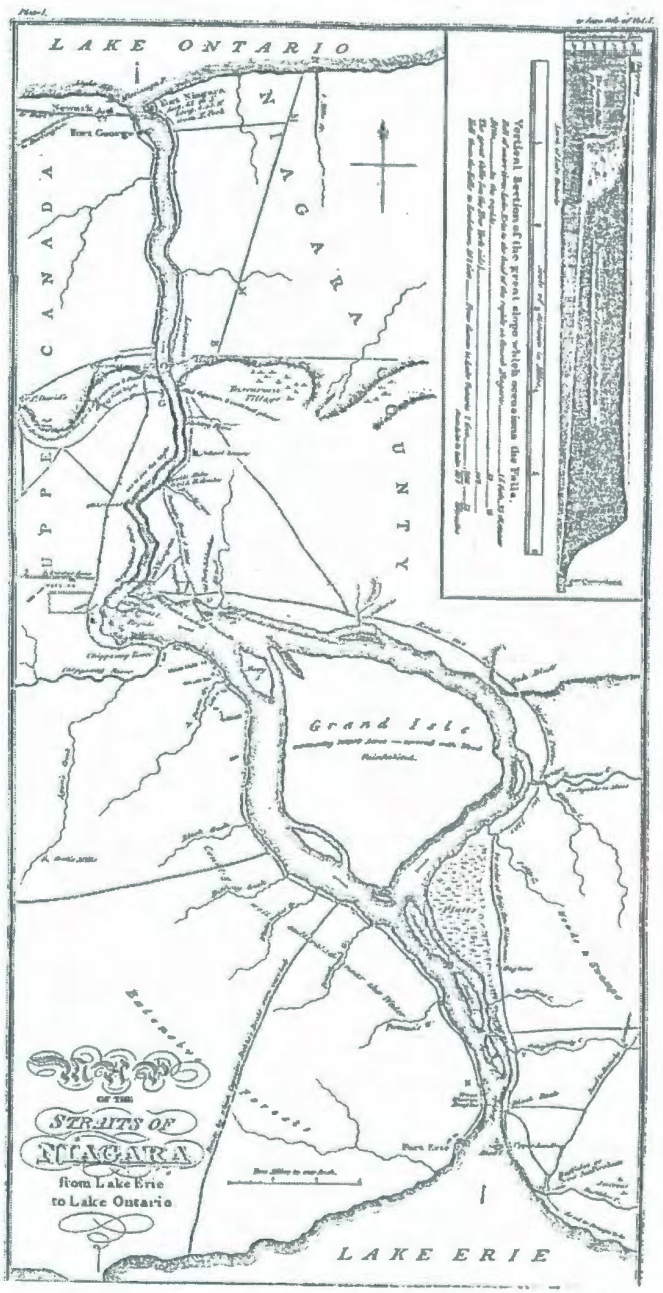


Figure 3. Map of the Straights of Niagara from Lake Erie to Lake Ontario. *In: J. Wilkinson. 1816.* Memoirs of My Own Times. *Philadelphia: A. Small. This map appears in the supplementary volume titled* Diagrams and Plans Illustrative of the Principal Battles..., *no. 15. (Library and Archives Canada, e-2712080.)*

Wilkinson, whose three-volume apologia of his military career (he was twice court-martialled but acquitted of the major charges) is *Memoirs of My Own Times* (1816). As we have seen, these memoirs were the major source for most early writers, American and English alike, although many rather favoured John Melish as the "official" source. Other maps, such as the awkwardly crude sketch map of the Battle of the Beaver Dams (Figure 5), included

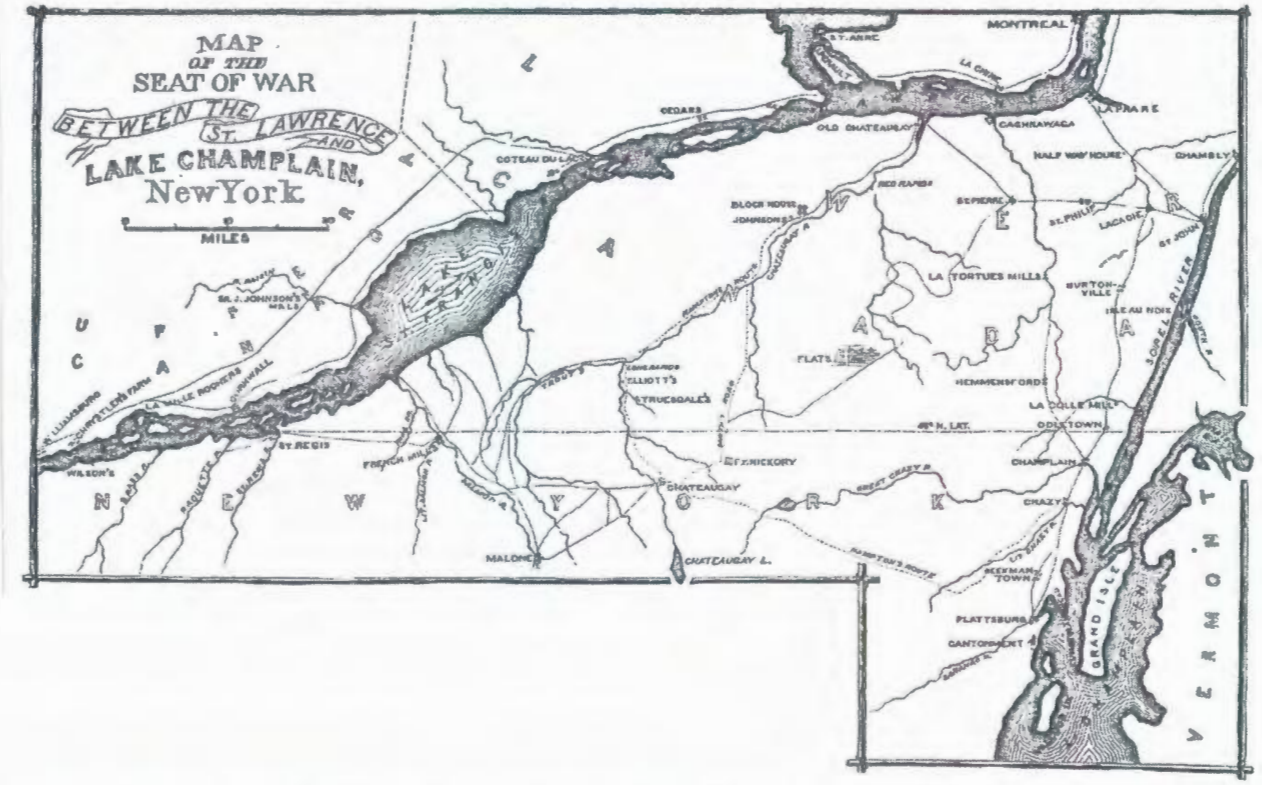


Figure 4. Map of the Seat of War between the St. Lawrence and Lake Champlain, New York. *In: B. J. Lossing. 1868.* The Pictorial Field-Book of the War of 1812. *New York: Harper & Brothers.*

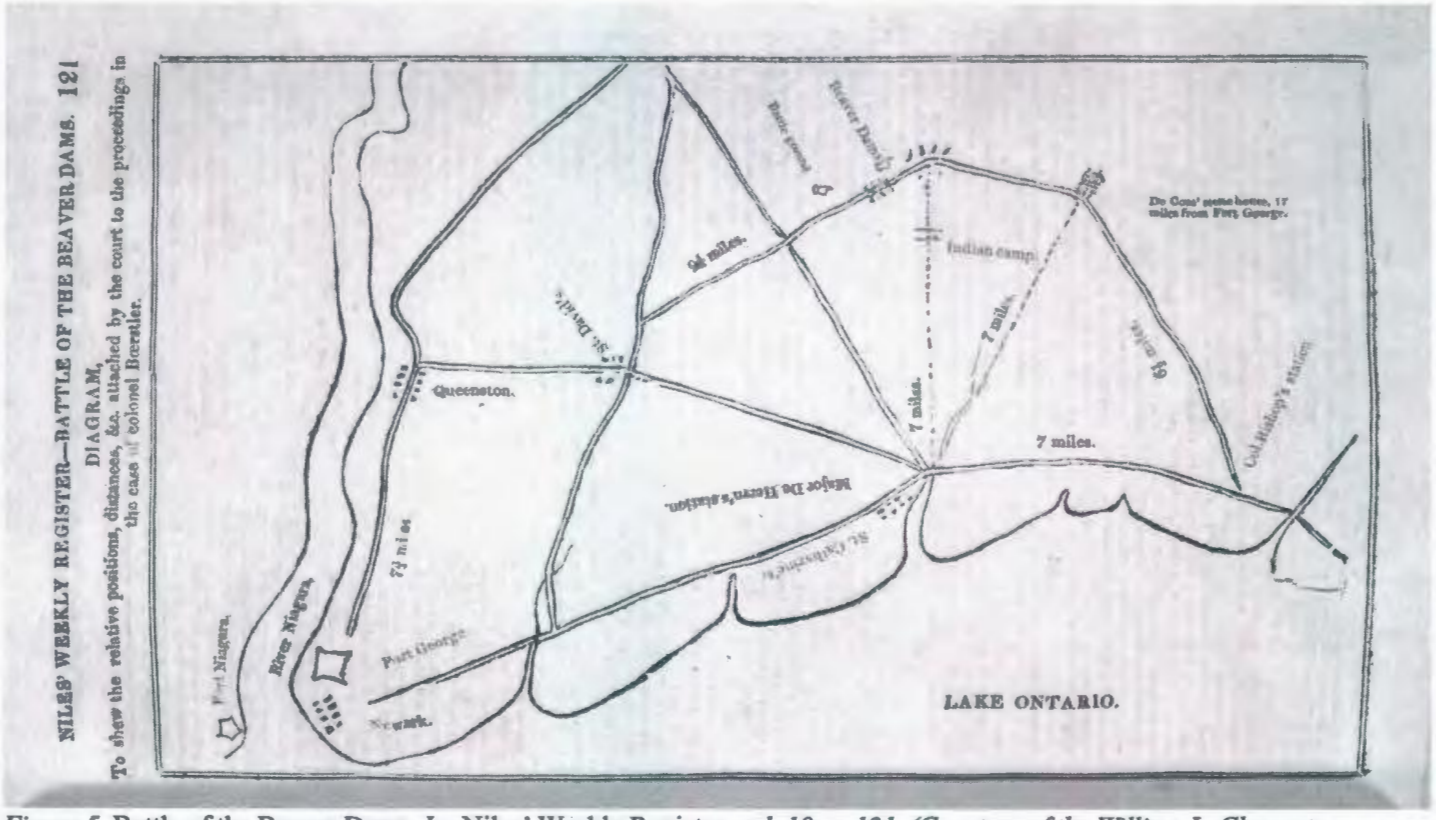


Figure 5. Battle of the Beaver Dams. *In:* Niles' Weekly Register, *vol. 10, p. 121. (Courtesy of the William L. Clements Library, University of Michigan — Ann Arbor.)*

with the report in 1821 of the court-martial proceedings of the defeated American commander, give us an idea of the probable character of many of the original contemporary maps, likely without scale and haphazard in orientation. A clearer modern image is Geoff Matthews's version in Berton's second volume (1981). More typical is a map of the Battle of Frenchtown derived from a sketch by an American officer taken prisoner and later paroled. The more-or-less formal version first appeared in Lossing (1868), and, as Matthews's copy in Berton (1980) shows, little has altered over 167 years except style.

Further examples of original manuscript maps were published by Lossing in 1868. A plan of Sackets Harbour drawn by a soldier posted there gives a realistic but scale-less and unskilled impression of his surroundings. A version of the British attack at the same place, based on an engineer's map, shows the contrast in topographic detail. A modern interpretation by Stanley resembles the latter. These limited samples illustrate the origin and subsequent formalization of such maps. Others stem from more trained sources as in engineering plans of such places as Fort Erie and Fort George where, before a battle, time usually allowed precise surveys which were subsequently used in government publications.

Finally, the diagrams of naval actions all stem from sketches by participants. Using the Battle of Lake Erie as an example of this kind of graphic, the original source was Stephen Champlin. His sketches were made from the vantage point of the schooner *Scorpion* which he commanded during the battle. The originals were artistically transformed by Lossing (1868), but may have been presented closer to their earlier form by Roosevelt (1882), or perhaps Jacobs and Tucker (1954). Then, in modern times, artistic license by Matthews in Berton (1981, pp. 159, 167, and 169) provides a sails-full, realistic bird's-eye view. In all cases, it is noteworthy that the movement of vessels, the wind direction, set of sails, and the rating of the various vessels is thought important. In Lossing's version the flagships are identified by small flags at their mastheads. Similar views of a number of ship-to-ship actions on the high seas appear in many of the American histories of the war. One assumes so many diagrams of this aspect are manifest because this was one phase of the war where the Americans were pre-eminently successful in only nine ocean actions!

Conclusion

As this paper indicates, the selection or omission of crucial information can easily bias historical interpretation. On reading accounts of the War of 1812-14, one is struck by the venomous bitterness displayed by historians recording the events even 25 year later. Perhaps this is one reason why maps were not used by the early writers. Making maps requires truthfulness and precision. It was almost 50 years after the war before maps came into widespread use, mainly through the work of Lossing. Maps, of course, are not as easily biased as verbal expression, although instances of mendacious maps can be found -- Jacobs and Tucker (1969) is an example.

Another point that could be made here is that there is little new or original in map making. It is the bias that is important. For example, it can be convincingly demonstrated that it was the logistical situation dominating the war that led directly to the American victory in the Battle of Lake Erie (see Stacey 1958). Indeed, logistics dominated the entire war as it does most wars. It is astonishing that the very basis of all warfare, logistics, is barely recognized in the War of 1812-14, either by the historians or the mapmakers.

Similarly strategy, or lack of it, leads to tactical actions or battles. Here, again, little is mentioned by the early historians, who have written in purely tactical terms, and virtually nothing strategical has been plotted by the mapmakers. Only in the most recent histories, such as Berton's, are there maps deliberately designed to demonstrate strategy. It is true that during most of the war British strategy was static in the sense that it was consciously defensive, whereas the American strategy until the later months was indecisive and confused. Nevertheless, there were broad strategic thrusts which led to campaigns and actions concentrated in certain areas -- eminently mappable stuff. Thus, in preparing the map plate on the War of 1812-14 for the *Historical Atlas of Canada* (Figure 6), I designed the research and consequent maps to display essentially the logistics and strategy of the war with considerably more detail and drama than in the Kerr atlas. Such is the whole purpose of remapping historical events.

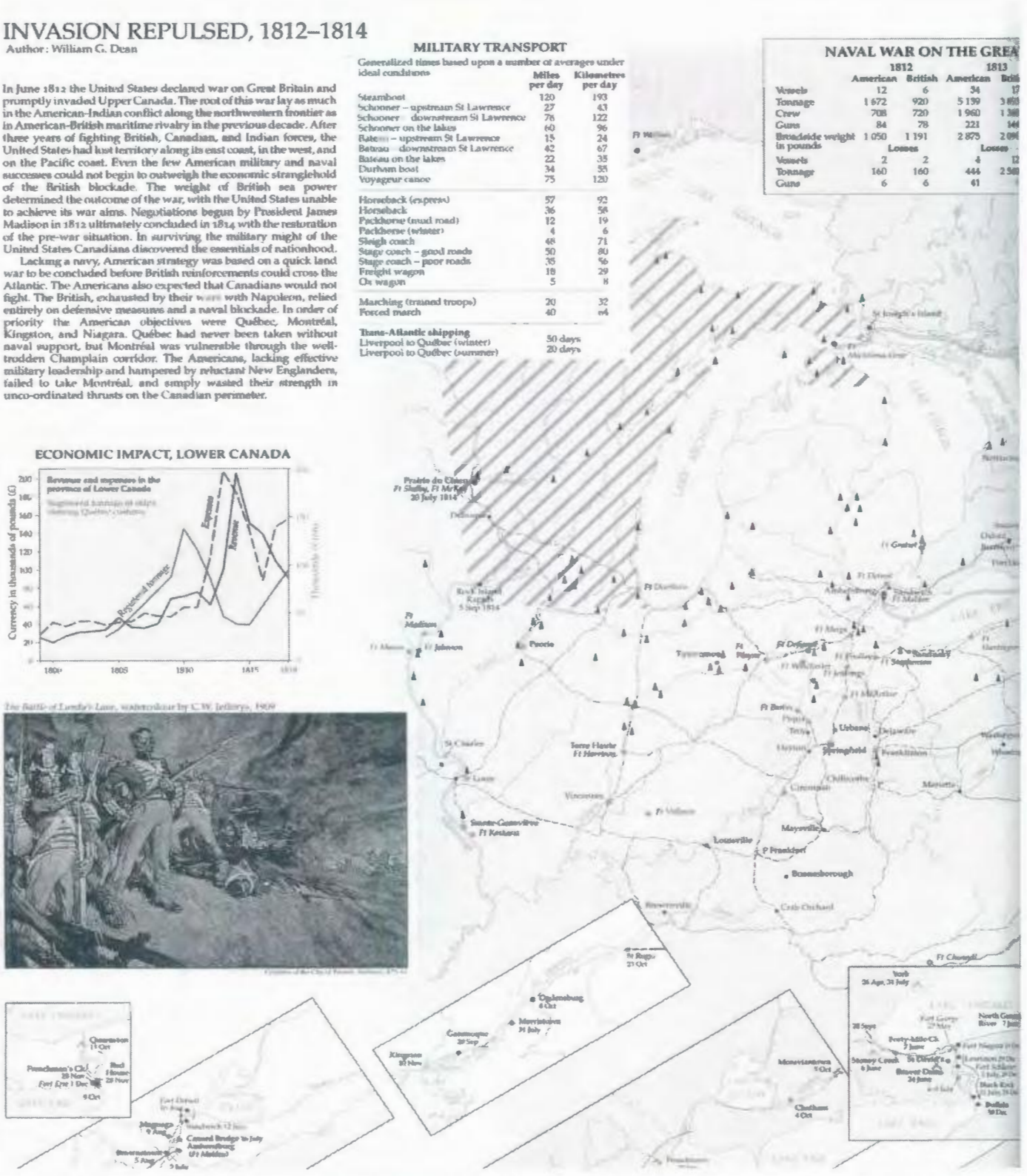
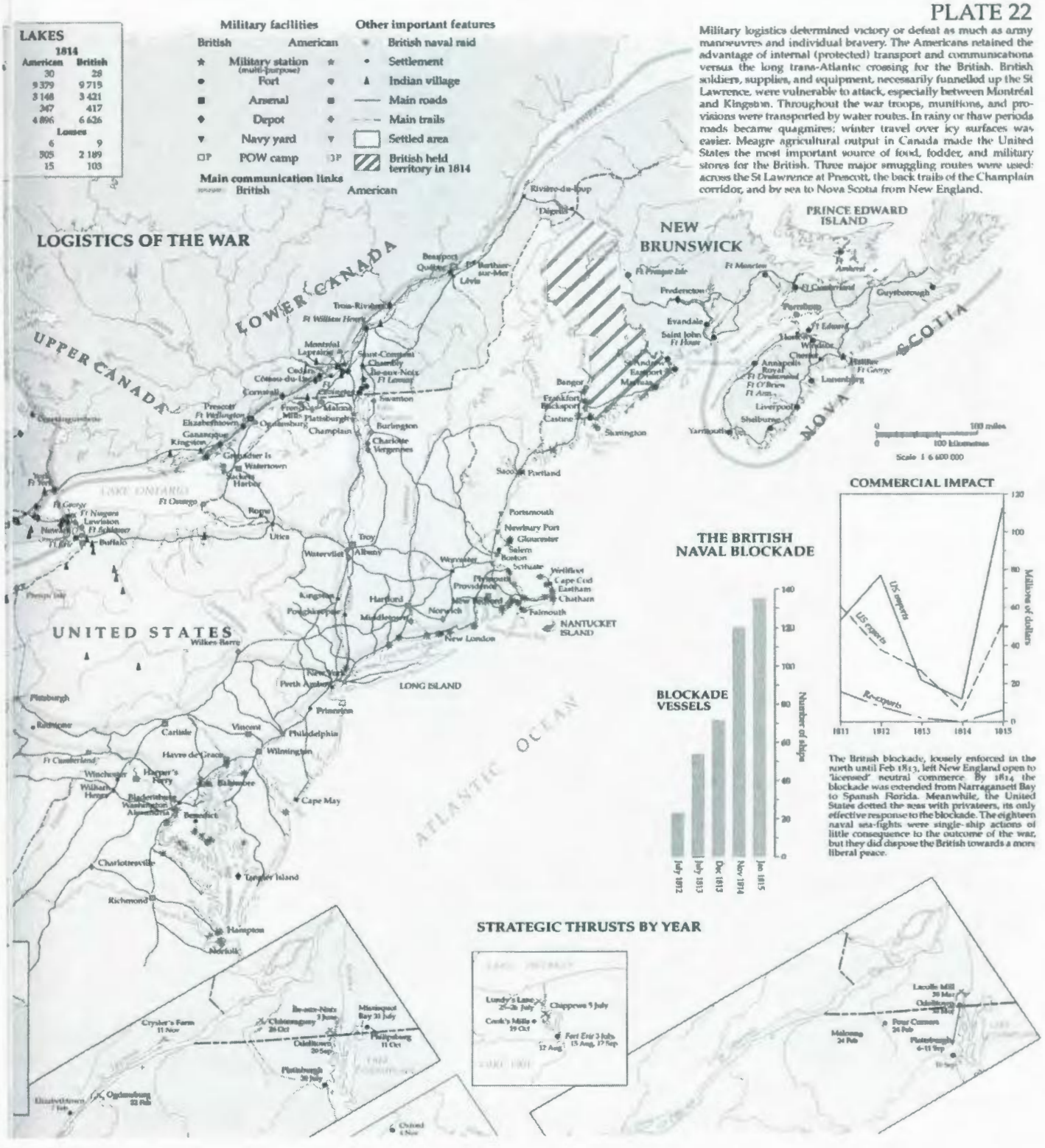


Figure 6. William G. Dean, *Invasion Repulsed, 1812-1814*. In: R. Louis Gentilcore and Geoffrey Matthews, eds. 1993. *Historical Atlas of Canada. Vol. 2. The Land Transformed, 1800-1891*. Toronto: University of Toronto Press, plate 22. (This map also appears as plate 38 in the *Concise Historical Atlas of Canada*, Toronto: University of Toronto Press, 1998).

PLATE 22

Military logistics determined victory or defeat as much as army manoeuvres and individual bravery. The Americans retained the advantage of internal (protected) transport and communications versus the long trans-Atlantic crossing for the British. British soldiers, supplies, and equipment, necessarily funnelled up the St Lawrence, were vulnerable to attack, especially between Montréal and Kingston. Throughout the war troops, munitions, and provisions were transported by water routes. In rainy or thaw periods roads became quagmires; winter travel over icy surfaces was easier. Meagre agricultural output in Canada made the United States the most important source of food, fodder, and military stores for the British. Three major smuggling routes were used: across the St Lawrence at Prescott, the back trails of the Champlain corridor, and by sea to Nova Scotia from New England.



The British blockade, loosely enforced in the north until Feb 1813, left New England open to 'licensed' neutral commerce. By 1814 the blockade was extended from Narragansett Bay to Spanish Florida. Meanwhile, the United States dotted the seas with privateers, its only effective response to the blockade. The eighteen naval sea-fights were single-ship actions of little consequence to the outcome of the war, but they did dispose the British towards a more liberal peace.

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Editor's note: I would also like to thank Ed Dahl for his assistance with the publication of this article, and particularly for his efforts in obtaining the copyright permissions for the use of all the maps and the digital images of the maps from Wilkinson and from *Niles' Weekly Register*. CM

A BASIC BIBLIOGRAPHY FOR NEW MAP LIBRARIANS

Grace Welch
University of Ottawa

The following is a basic bibliography of "must reads" for anyone who is new to the field of map librarianship or new to Canadian map libraries. It is not a comprehensive bibliography, but rather it is intended to give an introduction to the basics and provide a background on Canadian cartography. I have kept the list intentionally short, recognizing that a new map librarian/curator will only have limited time for reading. The list is organized in the order in which I think the material should be read, rather than alphabetically by author. This explains why I placed a text on map projections in the section of Geographic Information Systems, because it makes more sense after consulting the GIS texts.

My thanks to my colleagues who contributed suggestions to the bibliography.

Map Librarianship

Larsgaard, Mary Lynette. *Map Librarianship: An Introduction.* 3rd ed. Englewood, Colo : Libraries Unlimited, 1998.

> The "bible" for new map librarians, which covers all aspects of collecting, organizing and providing service on a cartographic collection. Covers maps, atlases, globes, digital data, remote sensing imagery and data.

Perkins, C.R., and R.B. Parry, eds. *The Map Library in the New Millennium.* London: Library Association, 2001.

> This book looks at the role of the map library in today's world and identifies the key issues facing those responsible for managing cartographic materials. As Alberta Wood notes, "a good book to give someone a sense of where we have been and where we might go".

Farrell, Barbara E. and Aileen Desbarats, eds. *Guide for a Small Map Collection.* 2nd ed. Ottawa: Association of Canadian Map Libraries, 1984.

> Now dated, but still worth a quick scan for the wealth of information presented in an abbreviated, easy to understand format. Very helpful for identifying key Canadian map series.

Understanding Maps

Campbell, John. *Map Use & Analysis.* 3rd ed. Boston, Ma: WCB McGraw-Hill, 1998.

> Excellent introductory text covering all aspects of understanding maps. Examples are primarily U.S.

Robinson, Arthur Howard. *Elements of Cartography.* 6th ed. New York: Wiley, 1995.

> Still a classic text on cartography. You may not need to read both Campbell and Robinson.

Sebert, L.M. *Map Reading.* Toronto: Renouf, 1984.

> This is a favourite because it is presents all aspects of reading and interpreting maps in a succinct, easy to read format. Simple illustrations based on Canadian map examples. Appendix C provides a very good explanation of Canada's National Topographic System.

Canadian Mapping

Nicholson, N.L., and L.M. Sebert. *The Maps of Canada: A Guide to Official Canadian Maps, Charts, Atlases and Gazetteers.* Folkestone, Kent: Dawson, 1981.

> A must read for anyone managing a

Canadian map collection. This book provides the background and history to all major Canadian mapping initiatives.

Thomson, Don W. *Men and Meridians: The History of Surveying and Mapping in Canada.* Ottawa: R. Duhamel, Queen's Printer, 1966.

Three volumes that provide a detailed history of Canadian mapping. Selective chapters may be of interest.

Hayes, Derek. *Historical Atlas of Canada: Canada's History Illustrated with Original Maps.* Vancouver: Douglas & McIntyre, 2002.

This is the only atlas on the list, in part because it beautifully illustrates Canada's early mapping, but also because of it's recent bibliography on Canada's history of cartography.

Geographic Information Systems

Longley, Paul, Michael Goodchild and David Maguire. *Geographic Information Systems and Science.* 2nd ed. Toronto: Wiley, 2005.

A new edition of one of the better textbooks on GIS.

Mather, Paul M. *Computer Processing of Remotely-Sensed Images : An Introduction.* 2nd ed. Chichester: Wiley, 1999.

This isn't strictly a GIS text, but because so much of remote sensing is related to GIS I included this book in this section. This text covers the basic principles of remote sensing and image processing. A 3rd edition is due out shortly.

Kennedy, Melita and Steve Kopp. *Understanding Map Projections: GIS by ESRI.* Redlands, Ca.: ESRI, 2000.

A good introductory text to map projections before moving on to more technical descriptions such as Synder's *Album of Map Projections*.

Cataloguing and Classification

Andrew, Paige G. and Mary Lynette Larsgaard, eds. *Maps and Related Cartographic Materials: Cataloging, Classification, and Bibliographic Control.* New York: Haworth Information Press, 1999.

A collection of articles detailing how the major cartographic formats should be catalogued and classified. The book is intended for new map cataloguers.

World Mapping

Parry, Robert B. and C.R. Perkins. eds. *World Mapping Today.* 2nd ed. London: Bowker Saur, 2000.

A comprehensive guide to available world mapping with descriptions and indexes of the major map series in each country.

Another Useful Tool for New Map Librarians is the TOOLKIT Link from the ACMLA website http://www.acmla.org

The ACMLA TOOLKIT includes links to

- Cataloguing Tools
- GIS Procedures/Instructions
- GIS in Libraries Bibliography
- Canadian Map Libraries and Archives
- UK Map Collections

The Western Association of Map Libraries also has a Tool Box website (with an American slant): http://www.waml.org/maptools.html

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Danial Duda
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It's a beautiful spring day here in St. John's as I write this, the kind of weather I hope we have for CARTO 2005. Things are well underway with planning the events for the conference (see the special report in this issue page 47) and all updates can be found on the conference website at http://staff.library.mun.ca/CARTO2005/. Thank you to everyone for asking questions and making suggestions for many and varied things. Everyone on the planning committee hopes all of you can make it and enjoy the wonderful city of St. John's as well as catch up with old friends and make new ones.

Many of you are aware that Alberta Auringer Wood only has a few more months before she retires from her long and distinguished career as Memorial University's Map Librarian. She announced her retirement late last fall and left the Map Library in January to take up the temporary duty of Acting Associate University Librarian. I became the Acting Map Librarian in January and as of April 1st, I am the new Map Librarian at Memorial. I have been very fortunate in my career, having worked with people like Ron Whistance-Smith and David Jones at the University of Alberta, and now with Alberta here at Memorial. I just want to take this opportunity to thank Alberta for all of her support and encouragement over these past 3 ½ years and I want to wish her and Cliff all the best in their future.

Dr. Clifford H. Wood has donated many of the maps he's used in teaching cartography while at Memorial. It's a wonderful collection of many of the techniques used over the past 30 years in creating and printing maps. Another collection that has been donated to the Map Library is municipal town plans from the provincial government's Department of Municipal and Provincial Affairs. Another great bonus is that the cabinets came with the maps. The reason they were donated is that the series is now digital and, with some internal changes happening in the government, Perry Murphy from Municipal Affairs wanted to find a good home for the printed maps.

Another provincial government initiative that Memorial is involved with is MapsNL, a website that has a wealth of geographical information for the province. We are working at arranging the main server for the site to be housed at Memorial. Neil McNaughton, from the provincial department of Environment & Conservation's Surveys & Mapping Division, will hopefully be doing a presentation of this site at CARTO 2005. The site is designed to help the education community for the province from K-12 and post-secondary institutions.

Finally, I want to thank our student employees for their work and contribution to the Map Library this term: Vanessa Benson and Randy Parsons (Regular Student Assistants) and Vince Murphy, Jacob Prince and Suzanne Smith (MUCEP Student Assistants). I wish each of you all the best in your future endeavours.

Ontario

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As of May 2005, Sharon Janzen, Map Library Assistant, will embark on a new and exciting life of parenthood. Needless to say, she will be taking a year maternity leave. Victoria Tasker will be filling these big shoes while Sharon is on leave. Vickie has been working in the Map Library for two years, part time, while pursuing a Geography degree. She has been trained well in ArcGIS and digital data delivery and is quite capable, and excited, about her appointment. Good luck to both!

In the Fall of 2004 it was a pleasure to teach a non-credit course through the Brock Continuing Education Program, *Discover Your World Through Maps*. Over four 3-hour evenings, the course covered basic topographic map reading skills; Alun Hughes' antique map collection; introduction to air photos, orthophotos, and interpretation; and Geo-caching with GPS, and route mapping using GIS. Its success has me committed to a repeat offering in the Spring of 2006.

Digitization Project: In co-operation with Library Systems, we are involved in a very exciting project of making our historical maps of Niagara accessible online. Using Millennium Media Management – a module of Innovative scanned (JPEG) images have been integrated into our existing catalogue records. An example of this can been seen in our Library Catalogue in the title, *Shore line of Lake Ontario in Port Dalhousie* http://catalogue.library.brocku.ca/search/t?SEARCH=shoreline+of+lake

For anyone interested, we have prepared an index of the Greater Toronto Area 2002 orthophotos in pdf format. This is an enhanced supplement to the shape file indexes provided to us from Ontario Ministry of Natural Resources. These can be accessed from our website at: http://www.brocku.ca/maplibrary/procedures/ortho2002_index/golden_horseshoe_index2.htm

Bibliothèque et Archives Canada/Library & Archives Canada
Division de la référence et de la généalogie/ Reference and Genealogy Division
Antonio Lechasseur
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Il me fait plaisir de vous informer que nous franchissons une autre étape dans l'intégration des services téléphoniques de Bibliothèque et Archives Canada. À compter du lundi 21 février 2005, les usagers qui nous contactent par téléphone auront accès à un seul babillard téléphonique plutôt que deux comme c'est le cas actuellement. Lorsque nos clients nous téléphonent en utilisant notre numéro sans frais ou notre numéro local (866-578-7777 ou 613-996-5115), ils auront les choix suivants :

Choix de la langue (anglais ou français)
1 - Renseignements au sujet des heures d'ouverture, de l'emplacement, du stationnement, du droit d'utilisation de Bibliothèque et Archives Canada.
2 - Information concernant les évènements culturels et les expositions.
3 - Répertoire des employés de BAC.
4 - Information concernant les demandes de photocopies déjà soumises.
5 - Information sur les dossiers de personnel militaire ou de fonctionnaires fédéraux.
6 - Recherche généalogique.
7 - Les services aux éditeurs tels que les ISBN, les ISSN, le CIP et le dépôt légal.
8 - Le service de référence pour des documents d'archives.
9 - Le service de référence pour les documents de bibliothèque et pour obtenir toute autre information.

De plus, des améliorations ont été faites au système dans les derniers mois pour faciliter la navigation entre menus. Dans les prochains mois, les options 8 et 9 seront fusionnées dans le cadre de la mise en œuvre du nouveau modèle pour la prestation des services de référence.

I am pleased to inform you that we have reached another step in integrating Library and Archives Canada's telephone services. As of Monday, February 21, 2005, clients who contact us by phone will have access to a single telephone bulletin board, rather than two as is the case now. When clients phone our toll free or local numbers (866-578-7777 or 613-996-5115), they will have the following choices:

Language choice (English or French)
1 – Information on hours, location, parking and use of Library and Archives Canada.
2 – Information on cultural events and exhibitions.
3 – Automated directory of LAC employees.
4 – Information about photocopy orders already submitted.
5 – Information about military or public servants' personnel files.
6 – Genealogy research.
7 – Services to publishers such as ISBN, ISSN, CIP and legal deposit.
8 – Reference services for archival documents.
9 – Reference services for library documents and for all other information.

As well, in recent months improvements have been made to the system to facilitate navigation between

options. In the coming months, options 8 and 9 will be integrated as part of the implementation of the new model for reference service delivery.

Nippising University
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The OCUL Map Group's Library Assistants Workshop is being held on June 23 and 24 in North Bay, Ontario. It will be hosted by The Education Centre Library at Nipissing University. This workshop is intended for map library assistants and support staff who work for OCUL Map Group member institutions. There will be educational sessions and round-table discussions, providing an opportunity for map library assistants to share information relevant to the rapidly changing field of geographic information management. The sessions will emphasize issues from the support staff perspective.

University of Western Ontario
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Our ongoing major project of inputting our card catalogue information into the retrieval software DB/Text by INMAGIC which we already use for atlases, departmental theses, foreign topographic series and foreign urban plans (http://janus.ssc.uwo.ca/mapref/pubsearch.htm) got off to a good start over the summer. We were able to complete the geographic areas for all African countries and the continent as a whole, as well as the USA. Tackling Asia and Australia are next on the list but it will be slow going through the academic year.

Through an agreement with the City of London, they have again provided us with a digital copy of their orthoimagery and topographic data which will be accessible to OCUL members on a secure site soon. It will replace an earlier version of the same data.

Recent tours of the map library have included; 20 reference librarians from the Science library, 2 local high school geography classes (grade 12), 10 high school geography teachers from one of the area school boards and 30 parents and students during Campus Preview Day.

A variety of cartographic material was on display for students who went on the annual fall Geography field camps. This year those trips included; New York, Montreal and Madawaska.

Alberta

University of Alberta
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The William C. Wonders Map Collection and its staff have been kept busy over the winter, primarily with ongoing operational activities, but also a few major items worth noting.

A draft of a major report "Maps and Geospatial Information at the University of Alberta Libraries: A plan for the future" was presented to the Library's senior administration and a final report is now in preparation.

At the University level, the Provost/V-P Academic has appointed an emeritus geographer to review GIScience activities across campus with an aim to future development of a GIScience initiative. The Map Librarian is part of his committee.

Members of the Geode Consortium (Alberta post-secondary institutions accessing provincial spatial data) have been meeting to develop a new and expanded program

The winter semester saw the arrival of a number of valuable resources, among them:

- *Imago Italiae* (a beautifully produced history of Italian cartography)
- *Beijing Li Shi Yu Tu Ji = The Collection of Beijing Historical Maps*
- *Goering's Atlas* (a facsimile of the 1946 US Army translation of an economic atlas seized when Herman Goering was captured).

Many of the atlases and cartographic books that came with the donation from Ron Whistance-Smith have been reviewed. Those that were not already represented in the collection have been added and many which duplicated our holdings are now available to the cartographic community. We are collaborating with The Edmonton Bookstore, a local business. The available items are listed on the website: www.edmontonbookstore.com.

NEW BOOKS AND ATLASES

Eva Dodsworth

Abrahamian, Yuri, et al. 2004. *Methods and materials for remote sensing : infrared photo-detectors, radiometers, and arrays.* New York: Springer. 168 p. $135.00 US. ISBN 1402077068.

Arctur, David and Mike Zeiler. 2004. *Designing geodatabases: case studies in GIS data modeling.* Redlands, Calif.: ESRI Press. 408 p. $39.95 US. ISBN 158948021.

Craib, Raymond. 2004. *Cartographic Mexico: a history of state fixations and fugitive landscapes.* Durham, NC: Duke University Press. 300 p. Paper: $22.95 US. ISBN 082233416. Cloth: $79.95 US. ISBN 0822334054.

DeMers, Michael. 2004. *Fundamentals of geographic information systems.* Hoboken, NJ: John Wiley. 480 p. $110.95 CDN. ISBN 0471204919.

Doherty, Gillian. 2004. *The Irish ordnance survey: a history, culture and memory.* Dublin: Four Courts Press. 238 p. £40.00. ISBN 1851828613.

Hayes, Derek. 2004. *America discovered: a historical atlas of North American exploration.* Toronto: Douglas & McIntyre. 224 p. $65.00 CDN. ISBN 1553650492.

Henry, Mark and Leslie Armstrong. 2004. *Mapping the future of America's national parks.* Redlands, Calif.: ESRI Press. 172 p. $26.95 US. ISBN 1589480805.

Ives, Jack. 2004. *Himalayan perceptions: environmental change and the well-being of mountain peoples.* New York: Routledge. 360 p. $120.00 US. ISBN 0415317983.

MacDougall, Doug. 2004. *Frozen earth: the once and future story of ice ages.* Berkeley: University of California Press. 267 p. $24.95 US. ISBN 0520239229.

Martin, Michael. 2004. *Deserts of the earth: extraordinary images of extreme environments.* Toronto: Penguin Group. 372 p., 271 ill. $90.00 CDN. ISBN 0500511942.

McCoy, Roger. 2004. *Field methods in remote sensing.* New York: Guilford Press. 148 p. Paper: $25.00 US. ISBN 1593850794. Cloth: $50.00 US. ISBN 1593850794.

Mesev, Victor. 2003. *Remotely sensed cities.* London; New York: Taylor & Francis. 433 p. £60.99. ISBN 0415260450.

McGuire, Bill, et al. 2004. *World atlas of natural hazards.* New York: Oxford University Press. 128 p. $250.00 US. ISBN 0340764058.

Mussulman, Joseph. 2004. *Discovering Lewis & Clark from the air.* Missoula, Mont: Mountain Press. 256 p. $40.00 US. ISBN 0878424903.

Nebenzahl, Kenneth. 2004. *Mapping the silk road and beyond.* London: Phaidon Inc. Ltd. 176 p. $75.00 CDN. ISBN 0714844098.

Newman, Peter and Andrew Thornley. 2004. *Planning world cities.* New York: Palgrave MacMillan Ltd. 256 p. Paper: $26.95 US. ISBN 0333748700. Cloth: $85.00 US. ISBN 0333748697.

Nuttall, Mark. 2005. *Encyclopedia of the Arctic.* New York: Routledge. 2278 p., 305 ill. $525.00 US. ISBN 1579584365.

Poole, Robert. 2004. *National Geographic and the world it made.* New York: Penguin Group USA. 357 p. $25.95 US. ISBN 1594200327.

Rehder, John. 2004. *Appalachian folkways.* Baltimore: Johns Hopkins University Press. 368 p. $39.95 US. ISBN 0801878799.

Rumsey, David and Edith Punt. 2004. *Cartographica extraordinaire: the historical map transformed.* Redlands, Calif.: ESRI Press. 160 p. $79.95 US. ISBN 1589480449.

Schneider, Gabi. 2004. *The roadside geology of Namibia.* Berlin: Gebrüder Bornträger. 294 p. EUR 38.00. ISBN 3443150802.

Seppala, Matti. 2005. *The physical geography of Fennoscandia.* New York: Oxford University Press. 472 p., 70 maps. $250.00 US. ISBN 0199245908.

Sickle Van, Jan. 2004. *Basic GIS coordinates.* Boca Raton: CRC Press. 192 p. $79.95 US. ISBN 0415302161.

Smil, Vaclav. 2004. *China's past, China's future: energy, food, environment.* New York: Routledge. 272 p. $129.95 US. ISBN 0415314984.

Stock, Robert. 2004. *Africa south of the Sahara: a geographical interpretation.* New York: Guilford Press. 490 p. $60.00 US. ISBN 1572308680.

Wishart, David. 2004. *Encyclopedia of the Great Plains.* Lincoln, NE: University of Nebraska Press. 940 p. $75.00 US. ISBN 0803247877.

What Else is New?

Geographic Information Systems Poster from USGS

http://erg.usgs.gov/isb/pubs/gis_poster/

An informative, illustrated "poster" introducing the basics of what a GIS is and how it works. Nice clear map examples and lots of glossy illustrations. Very slow to load because it is so graphics-intensive.

Three Ezines from GISDevelopment

http://www.gisdevelopment.net/ezine/index.htm

Sign up to subscribe to:
Site Update Ezine - main changes and updates to the GIS Development website
GIS News Update - major news from around the world on products, applications, business and various other sections in the field of the geo-spatial technology
Publication Ezine - latest updates of papers and research articles published in magazines and journals in the fields of GIS, GPS and remote sensing around the world

Great Circle Mapper

http://gc.kls2.com/

Interesting novelty. Draws a straight line (great circle route) between two airports. And curiously enough, some railway stations as well!

Imago Mundi Prize

http://www.maphistory.info/imprize.html

The biennial 'Imago Mundi Prize' is awarded for the *Imago Mundi* article judged to have made the most significant contribution to the discipline of the history of cartography. The first award (2005) was made to Dr Zur Shalev (PhD Princeton University, 2004), a Visiting Research Scholar, Modern History Faculty, Oxford University, for his article "Sacred Geography, Antiquarianism and Visual Erudition: Benito Arias Montano and the Maps in the Antwerp Polyglot Bible", *Imago Mundi: the International Journal for the History of Cartography*, 55 (2003), 56-80. This website provides a free link to the article for those who do not subscribe to *Imago Mundi*.

NEW MAPS

Dan Duda

Alberta's parks and protected areas, map guide, 2004. Rev. Mar. 2004.
Scale: 1:1,000,000
Published: [Edmonton]: Alberta Community Development, [2004].
Description: 1 map: col.; 66 x 76 cm., folded to 27 x 12 cm.
Notes: Relief shown by spot heights. Includes text and col. ill. Map of northern Alberta, text, tables of facilities, and col. ill. on verso.
ISBN: 0778521095

Angola.
Scale: 1:2,000,000
Published: Budapest: Cartographia Ltd., c2004.
Description: 1 map: col.; 88 x 67 cm., folded to 25 x 14 cm.
Note: Relief shown by gradient tints, shading, and spot heights. Inset: Cidade de Luanda. Index on verso. Legend in German, English, Portuguese, French, and Hungarian.
ISBN: 9633529530

Australia's great desert tracks.
Scale: 1:1,250,000
Published: Eight Mile Plains, Qld: Hema Maps Pty Ltd, 2001-2004.
Description: 1 map on 6 sheets: col.
Note: North West sheet includes inset. Includes basic graphic index on front cover of each sheet. Coverage: desert areas of Northern Territories, South Australia, Central Australia and Western Australia. Relief shown by gradient tints. Base data supplied by Australian Surveying and Land Information Group (AUSLIG). Each sheet includes table of important telephone numbers, advice about travelling in the desert, GPS coordinates and guidance on using GPS with the map. GPS plotted roads and tracks printed in purple; other roads and tracks compiled from AUSLIG 1:250 000 Geodata and other sources printed in red.
ISBN: 1865001597 (NW sheet); 1865001635 (NC sheet); 1865001600 (NE sheet); 1865001627 (SE sheet); 1865001643 (SC sheet); 1865001619 (SW sheet)

Bosnia and Herzegovina, mine situation as at Mar. 2004. Prepared and printed by BH MAC Sarajevo.
Scale: 1:400,000
Published: [Sarajevo?]: BH MAC, [2004].
Description: 1 map : col. ; 77 x 80 cm.
Notes: Computer-generated map. Relief shown by shading and spot heights. Includes note. "bh400 mine red.wor." Title in English; legend and note in Croatian, Serbian, and English; statement of attribution in Croatian and English.

Canada and the world. Prepared by Steven Fick, et al.
Scale: 1:35,000,000; 1 cm = 350 km
Published: Ottawa: Canadian Geographic Enterprise, c2004.
Description: 2 maps on 1 sheet: col.; 68 x 119 cm. on sheet 91 x 122 cm., folded to 16 x 26 cm.
Note: Shows Canada's influence and contributions in countries throughout the world. Includes text, inset maps of the Caribbean and the South Pacific, and ancillary maps and statistics on population, poverty and hunger, health, education, environment, HIV/AIDS. Includes bibliographical references.
Note: Online version available in French or English. System requirements for online version: Adobe SVG viewer.

Canada's land cover. Couverture des terres du Canada.
Scale: not shown
Published: Ottawa: Natural Resources Canada, Geomatics Canada, c2004.
Description: 1 map: col. ill.; 56 x 87 cm.
Note: Includes land cover classes with col. ill., text, and legend.
In English and French. Atlas of Canada.

Canada-United States trade and security partnership map: a state-by-state look at the world's largest trade and security relationship.
Scale: not given
Published: [Ottawa]: Canadian Embassy, 2004.
Description: 1 map: col.; on sheet 58 x 77 cm., folded to 20 x 10 cm.
Notes: Shows United States only. "All figures are in US dollars. Trade figures, from Statistics Canada, refer to 2003 merchandise trade." Includes text and insets of Alaska and Hawaii. Text, statistical tables

of exports and imports, statistical table of jobs, and 14 maps on verso.

D-Day: historical map.
Scale: not shown
Published: [Washington, D.C.]: National Geospatial-Intelligence Agency.
Description: 1 map: col.; 61 x 41 cm.
Note: Situation 2400 hrs 6 June 1944 HQ. FUSAG. Poster is part of a series displayed on Memorial Day, 2004, at dedication of National World War II Memorial in Washington, D.C., showing compilation of cartography and imagery, now known collectively as geospatial intelligence. "WW II historical map series"--NGA Web site (viewed on July 22, 2004). Contains map of Normandy dated June 6, 1944 with Allied units positions inked in and photograph of soldiers superimposed.
GPO item number: 0379-A-15 [For sale by Supt. of Docs., U.S. G.P.O., 2004]; $7.50

East coast Canada map.
Scale: 1:2,500,000
Published: Calgary: Oilweek, 2004.
Description: 1 map: col.; 71 x 102 cm.
Note: Supplement to *Oilweek*, February 2004. Includes inset maps and directories of Labrador, Grand Banks and Sable Island areas.

Energy map of the Atlantic Basin. Designed by K. Fuller and P. Bush.
Scale: not given
Published: London: Petroleum Economist, c2004.
Description: 1 map: col.; 86 x 110 cm., folded to 30 x 22 cm.
Note: Shows gas fields, oil fields, gas pipelines, oil pipelines, LNG plants and terminals and LNG trade flows. Relief and depths shown by gradient tints. Includes text, statistical tables, and graphs. Insets: Trinidad and Tobago; LNG import terminals on the US Eastern Seaboard/Gulf of Mexico; Gulf of Guinea.
ISBN: 1861861591

Iraq, situation map.
Scale: [ca. 1:2,450,000]
Published: [Washington, D.C. : U.S. Army, 2004].
Description: 1 map: col.; 48 x 41 cm., on sheet 80 x 54 cm., folded to 27 x 20 cm.
Notes: Special insert from *Soldiers*, the official U.S. Army magazine, January 2004, v. 59, no. 1. "Map source: Map Resources." Includes map of the Middle East and col. ill. World map on verso.
Note: Available also through the Library of Congress Web site as a raster image.

Backcountry Whistler: a marked route map for hiking, mountaineering, backcountry skiing, steep skiing, and heli-skiing.
Scale: 1:25,000
Published: [Vancouver?: s.n.], c2004.
Description: 1 map: col., plastic ; 60 x 77 cm., folded to 26 x 12 cm.
Notes: Relief shown by contours, shading, and spot heights. "Copyright ... by John Baldwin." Text, historical chronology, map of Husume Buttress, and col. ill. on verso.
ISBN: 0969155026

Mapa de América, político y físico. Ed. 2004.
Scale: 1:16,119,402
Published: Santo Domingo: Mapas Gaar S.A., [2004].
Description: 2 maps on 1 sheet: both sides, col.; 99 x 66 cm., sheet 101 x 69 cm., folded to 23 x 13 cm.
Notes: Relief shown by shading and spot heights on physical map. Includes statistical data, abbreviations, insets of political middle America and physical middle America, and col. ill. of flags.
ISBN: 9993492590

Mine contamination map, area—Sarajevo. Prepared and printed by BH MAC Sarajevo.
Scale: 1:50,000
Published: [Sarajevo?]: BH MAC, [2004].
Description: 1 map: col.; 74 x 78 cm.
Notes: "As at March 2004. Print date: March 08, 2004." Relief shown by contours and spot heights. Includes notes in Croatian, Serbian, and English.

Oilweek northern frontier map.
Scale: not shown
Published: Calgary: Oilweek, 2004.
Description: 1 map: col.; 43 x 43 cm. on sheet 69 x 99 cm.
Note: Supplement to *Oilweek*, November 2004. Includes enlarged maps of Mackenzie Delta/Eagle Plains, Norman Wells, and Fort Liard regions, list of First Nations settlement areas and regions, key to well symbols, wells by decade, primary lease holders and territorial premiers and ministers.

Papua New Guinea, general planning map. 2004 ed.
Scale: 1:2,000,000
Published: [Port Moresby, PNG?]: Geo-Graphics Ltd., [2004].

Description: 1 map: col.; 59 x 86 cm.
Notes: Relief shown by shading and gradient tints. Depths shown by contours and gradient tints. Includes list of abbreviations and advertisements.

Rail journeys of Australia.
Scale: 1:5,500,000
Published: Eight Mile Plains, Brisbane : Hema Maps Pty Ltd., 2004.
Description: 1 map: col., col. ill.
Note: Includes detailed information on great Australian rail jounreys, heritage railways, railway museums and miniature railways. Includes index and 13 ancillary maps showing suburban rail networks on verso.
ISBN: 1865002623.

Regions of provenance and native seed zones in Great Britain.
Scale: not given
Published: Edinburgh: Forestry Commission, 2004.
Description: 1 map: col.
Note: Includes 1 inset map of Orkney and Shetland, and index of commonly planted tree species (with scientific names and species codes). Shows location of seed sources in Great Britain, divided into 4 regions of provenance. Excludes Northern Ireland.
ISBN: 0855386290

Republic of Armenia, phisical [sic] map.
Scale: 1:1,250,000
Published: Erevan: [s.n.], 2004.
Description: 1 model: col., plastic ; 33 x 28 cm.
Notes: Raised relief model. Relief also shown by gradient tints and spot heights. Also shows cities/ towns by population grades, transportation routes, and forests.

Russia (political).
Scale: 1:9,000,000
Published: Budapest: Cartographia Kft., 2004.
Description: 1 map: col.; 59 x 94 cm., folded to 25 x 11 cm.
Notes: Covers Russia and the other former Soviet republics. Includes notes, "Regional administrative division" index, and inset of time zones. Notes, index of places, and col. ill. on verso. Legend in English, German, French, and Hungarian; alternate panel title in Hungarian, German, and French.
ISBN: 9633529395

UK constituencies 2004.
Scale: not given
Published: London: Dod's Political Publishing, [2004].
Description: 1 map: col.; on sheet 60 x 42 cm., folded to 22 x 10 cm.
Notes: Shows political-party control of parliamentary constituencies. Includes indexes of constituencies, 4 urban-region insets, Northern Ireland inset, and Dod logotype. Text, statistical directory of constituencies, and table of "Seats at April 2004" on verso.

United States maps: two side, physical and political.
Scale: [ca. 1:4,118,400]
Published: Dominican Republic: Mapas Gaar S.A., [2004?].
Description: 2 maps on 1 sheet : both sides, col. ; 66 x 98 cm.
Notes: Relief shown by shading and gradient tints. Thirteen ancillary maps.

Carto 2005
St. John's Newfoundland

July 26-30, 2005

http://staff.library.mun.ca/CARTO2005/

Special Column

LITERARY MAPS

Danial Duda
New Maps Editor

One thing that has always intrigued me with maps is the many and varied themes that can be communicated in a geographical or spatial setting. I learned to appreciate and eventually love maps through my passion of military history which really is a natural relationship: war and geography. But since I started to work with maps, in 1992 at the University of Alberta in the William C. Wonders Map Collection and now in the Map Library at Memorial University, I really enjoy showing people a map on a topic that is vital or intriguing to their interests or research: thus, I thought I would prepare a list of some maps that deal with a particular theme to remind us "map folk" about some of the wonderful cartographic items "out there." The first theme I chose is literature because of the Raymond Chandler map I remember from the University of Alberta.

If you have themes you would like me to prepare or have a map in your collection that isn't on this list (and I would think there are many of those), please let me know.

Danial Duda

Alberta Writers' Guild.
Scale: not given
Published: [Alberta]: National Book Festival, [19--].
Description: 1 map: col.; on sheet 88 x 57 cm.
Note: Shows the distribution of literary forms in Alberta. Includes index of authors and advertisements.

Black writers for young America. Artist, Rachael Davis; text Mary Ella Randall.
Scale: not given
Published: [Washington, D.C.]: District of Columbia Council of Teachers of English, c1976.
Description: 1 map: col.; 86 x 111 cm.
Notes: Pictorial map. Shows where selected authors were born or live and work. Includes ports. and text about authors.

A literary map of Canada. Compiled by Morris Wolfe and David Macfarlane; designed and drawn by Graham Pilsworth.
Scale: [ca. 1:6,250,000]
Published: Edmonton: Hurtig, 1979.
Description: 1 map: col.; 65 x 94 cm.
Note: Settings of Canadian lit. plotted with authors & titles (incl. fiction, poetry, drama, non-fiction); illustrations.

A literary map of Canada. Compiled by William Arthur Deacon; drawn and embellished by...Stanley Turner.
Scale: [ca. 1:7,000,000]
Published: Toronto: MacMillan Company of Canada Ltd., 1936.
Description: 1 map: col.; 47 x 83 cm.
Note: Insets: Some books of the St. Lawrence Basin - Land of Evangeline; settings plotted for Can. lit showing authors & titles; homes, graves, etc. of prominent authors; illustrations.

Literary map of England. [Drawn by] J.H. Clarke, May 1934; presented with the compliments of F.S. Crofts & Co., publishers, New York.
Scale: [ca. 1:1,850,000]
Published: [New York]: The Company, c1934.
Description: 1 map; 43 x 31 cm., folded to 22 x 10 cm.
Notes: Also covers Wales. Panel title: A literary map of England. "Reproduced from 'A chart of English literature' by Keal, Clarke, and Weaver." Indexed.

Literary map of New Brunswick/Carte litteraire de Nouveau Brunswick. Compiled by Michael O. Nowlan.
Scale: [ca. 1:1,800,000]
Published: Oromocto, N.B.: Michael O. Nowlan, 1977.

Description: 1 map: col.; 41 x 26 cm. on sheet 61 x 43 cm.
Note: Lists authors & titles with dates. Accompanied by: Confessions of a map maker.

A literary map of the British Isles: to accompany English literature in the Ginn literature series.
Scale: [ca. 1:1,900,830]
Published: Boston: Ginn and Co., c1964.
Description: 1 map: col.; 62 x 50 cm.
Notes: Literary map showing localities and regions mentioned in English literature. Relief shown by shading. Includes "Central London" inset.

Literary-pictorial British Isles. Edited by Henry J. Firley; illustrations by Ernest Dudley Chase; drawn by R. Baxter Blair; L. Philip Denoyer, geographer.
Scale [1:887,040]
Published: Chicago: Denoyer-Geppert Co., c1940.
Description: 1 map on 4 sheets: col., cloth backing; 138 x 103 cm., sheets 74 x 56 cm.
Notes: Pictorial literary map. Accompanied by: English literature index. Insets: Literary regions of British authors; London and vicinity; London.

Literature map of the British Isles. [Prepared by] Clement Tyson Goode, Bostwick Professor of English, University of Richmond.
Scale: [1:792,000]
Published: Chicago: A.J. Nystrom & Co., c1941.
Description: 1 map on 2 sheets: col.; 147 x 107 cm., sheets 81 x 115 cm. and 84 x 115 cm.
Notes: Literary wall map showing counties, localities, and mountains with literary associations. Accompanied by: Index, literature map of the British Isles/by Dr. Clement T. Goode. 76 p.; 19 cm. Includes poem in Middle English and 5 insets.

A map of Middle-Earth. Drawn and embellished by Pauline Baynes ; based on the cartography of J.R.R. and C.J.R. Tolkien.
Scale: [ca. 1:7,250,000]
Published: [London]: George Allen & Unwin, c1970.
Description: 1 map: col.; on sheet 74 x 51 cm.
Note: Relief shown pictorially. Includes col. ill.
ISBN: 0049120026

Narnia and the surrounding countries.
Scale: 1:1,077,120
Published: [S.l.]: Penguin Books Ltd., 1972.
Description: 1 map: col.; 20" x 28 ½" on sheet 20" x 30".
Note: Created by Pauline Baynes, based on the maps and writings of C.S. Lewis.

Outline maps for English literature. By John O. Beaty and Edwin J. Foscue.
Scale: not given
Published: New York, The Macmillan Company, 1930.
Description: 3 p. l., 4 p., XII maps. 28 cm.
Notes: Maps detachable.

A panorama of world literature.
Scale: not given
Published: Chicago, Denoyer-Geppert Co. [1955].
Description: 8 col. maps on sheet 112 x 163 cm.

A panorama of world literature. Edited by Henry J. Firley; illustrated by Jean Boys.
Scale: not given
Published: Chicago: Denoyer-Geppert Co., c1955.
Description: 1 map: col.; 95 x 153 cm.

Philological and historical chart, birth, development, and progress of the literatures of the world, their importance, their influence on each other, and the century in which such influence was experienced : with a list for each country of standard authors and their best works, illustrating also the division of languages into classes, families, and groups, as arranged by the most eminent modern philologists, and giving, lastly, the date of the first settlement, discovery or conquest of all countries, with their government, religion, area, population, and the percentage of enrollment for 1872, in the primary schools of Europe and America. By A.E.D. de Rupert, author of "Index to universal literature," etc.; to all educational institutions and to the general reading public in the United States, this chart is most respectfully dedicated by the author.
Scale [ca. 1:27,500,000]
Published: New York: A.S. Barnes & Co., [1878].
Description: 1 map; 66 x 123 cm.
Notes: "Entered according to Act of Congress, in the year 1878, by A.E.D. de Rupert, in the office of the Librarian of Congress at Washington."

A pictorial map of colonial-revolutionary American literature, 1585-1789. Edited by Henry J. Firley.
Scale: [ca. 1:1,280,000]
Published: Chicago: Denoyer-Geppert Co., c1965.
Description: 2 maps on 1 sheet: col.; 85 x 86 cm. and 85 x 101 cm., sheet 110 x 162 cm.
Notes: Includes lists "Key documents in the

formation of our country," colleges founded in colonial times, and important colonial periodicals, chronological time table of American and British writers, lists of authors by area, and ill. Insets: Well-known early American Indians; Early American writers born in Great Britain.

The Raymond Chandler mystery map of Los Angeles. 2nd ed.
Scale: Not drawn to scale
Published: Los Angeles: Aaron Blake Publishers; Layton, UT: Distributed to the book trade by Gibbs M. Smith, c1987.
Description: 1 map: col.; 51 x 61 cm., folded in cover 18 x 11 cm.
Notes: Illustrator Alice Klarke. Relief shown pictorially. At head of text on cover: Literary map. Includes text, descriptive indexes by novel, and col. ill. Insets with indexes: Hollywood; Lake Arrowhead; [Downtown] Los Angeles; Mexico; Santa Monica (Bay City). Text and publisher's map list on cover.
ISBN: 0879054220

The Sherlock Holmes mystery map. [England and London/drawn by] Wolnick '87; illustrator, Jim Wolnick; graphics, Susan Lewis.
Scale: Not drawn to scale
Published: Los Angeles: Aaron Blake Publishers; Layton, UT: Distributed to the book trade by Gibbs M. Smith, Inc., c1987.
Description: 2 maps on 1 sheet: col.; each 22 cm. in diam., sheet 53 x 68 cm., folded in cover 18 x 11 cm.
Notes: At head of text on cover: Literary map. Includes text, index of literary landmarks, and col. ill. of Sherlock Holmes mystery cases. Text, specimen map, publisher's map list, and col. ill. on cover.
ISBN: 087905428X

The South through its literature.
Scale: not given
Published: Nashville, Tenn.: George Peabody College for Teachers, 1941.
Description: 1 map: col.; 53 x 80 cm.
Notes: Map showing locations of literary works with authors' surnames. "Contribution to southern life and literature." Includes "The Southern Region" listing titles and authors.
LC Control Number: 93686576

Thoreau's rivers, Concord, Massachusetts.
Scale: ca. 1:25,340
Published: Geneseo, N.Y.: Thoreau Society, 1973.
Description: 1 map; on sheet 69 x 56 cm.
Note: From: Thoreau Society Booklet No. 27. Includes list of "Journal References".

Writer's map of Ontario. Compiled by John Robert Colombo; drawn by David Shaw.
Scale: not given
Published: Toronto: Colombo & Co., c1992.
Description: 1 map: col.; 34 x 59 cm., on sheet 76 x 108 cm., folded to 20 x 12 cm.
Note: Includes inset and descriptive index. Text and advertisements on verso.
ISBN: 0969509219

The writers' state, a literary map of Victoria. Designed by Ron Brooks ; compiled by members of ASAL from the forthcoming "Oxford illustrated literary guide to Australia" and the Victoria 150 Literature Committee.
Scale: not given
Published: [Melbourne?]: The Committee, [1984], c1981.
Description: 1 map: col.; 59 x 89 cm.
Notes: "Victoria 150 growing together 1984-5."

SOMETHING ELSE TO READ...

THE DISSEMINATION OF GOVERNMENT GEOGRAPHIC DATA IN CANADA
GUIDE TO BEST PRACTICES

Tim Werschler - Statistics Canada
Julie Rancourt - Department of Justice
Winter 2005
Version 1.2 (GeoConnections)

http://www.geoconnections.org/publications/Best_practices_guide/Guide_to_Best_Practices_v12_finale_e.pdf

(posted on CARTA February 12, 2005 by James Boxall)

REVIEWS

Michele Shular

Bussey, Ben and Paul D. Spudis. ***The Clementine Atlas of the Moon***. Cambridge: Cambridge University Press, 2004. 316 p. $80.00 US. ISBN: 0-521-81528-2.

The Moon was the focus of considerable attention early in the Space Age as two superpowers raced to place people on its surface. After three decades in the doldrums it is now re-emerging as a target for robotic and human exploration. The United States, the European Space Agency, Japan, India and China are all conducting or actively planning robotic missions to the Moon. For instance, in 2004 President Bush directed NASA to return astronauts to its surface within twelve to fifteen years. So this may be a good time for a new lunar atlas, and here we have an excellent candidate.

The authors are space scientists with impeccable credentials. Spudis in particular has a long history of involvement in lunar exploration and research. He was the deputy leader of the science team for the Clementine mission to the Moon which provided the images used in this atlas. Bussey is also a planetary scientist, and both men now work in the Applied Physics Laboratory at Johns Hopkins University, actively planning for new spacecraft missions to the Moon.

The Clementine Atlas is not just a minor update of previous work. It is a record of a specific lunar exploration mission and a fresh new look at our neighbour world. Clementine photographed the entire lunar surface with a set of digital cameras. This had never been done before. The only previous global photographic coverage was from NASA's Lunar Orbiters in the mid-60s, and those images – archived on film - are more difficult to obtain in our increasingly digital world. There have also been substantial additions to the set of placenames on the Moon since the Apollo days, and they are incorporated here. In the atlas, the lunar surface is divided into 144 regions, each of which is represented twice on facing pages. One is a mosaic of Clementine images with a latitude/longitude grid. The other is a shaded relief drawing made by the U. S. Geological Survey, with grid and placenames.

These 144 areas cover the entire surface of the Moon at uniform scale, and no other lunar atlas has ever done that before. Offsetting that considerable strength is a weakness which some users may find troubling, but which stems from the nature of the Clementine mission itself. It was designed to reveal surface composition information by taking images through different colour filters, including infrared. This works best if the sun is high, minimizing shadows in the images. Near the equator this produces images which are a confusing mass of light and dark spots. Only the steepest slopes, usually in recently formed craters, show up clearly. Sometimes it is hard to relate the relief drawing to the photograph opposite it, though this becomes easier with experience. Nearer the poles in each hemisphere the sun is closer to the horizon and shadows clearly delineate topography.

The book also includes an excellent summary of the current state of knowledge about the Moon, including results from Lunar Prospector, the spacecraft which followed Clementine. Rounding it off is a detailed gazetteer listing all the placenames found in the Atlas. It is the only up to date published gazetteer of the Moon in existence.

This book has much to recommend it, as outlined above. It has only one obvious flaw, a smattering of errors in the placenames. See for instance the crater Zucchius, spelled correctly on map 124 but incorrectly on map 125. Luckily these have been collected on a useful website available at: http://cwm.lpod.org/DataStuff/clem-corrections.htm, which is also easy to find by searching the web for 'clementine atlas corrections' in the event of changing URLs.

Should your library own this book? One word of warning: it is not ideal for amateur astronomers who want to see what their telescopes will show. Each separate region is depicted using a conformal projection as if seen from overhead, which does not match the orthographic view we see from Earth. Those users are better served by Antonin Rukl's *Atlas of the Moon* (1992) or similar works. But for people interested in past and forthcoming periods of exploration in lunar science, this is an excellent choice.

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GEOSPATIAL DATA REVIEWS

Richard Pinnell

Alberta Base Features. Government of Alberta, 2004

Reviewed by Laurie Schretlen

Alberta. *Base Features.* [electronic resource]. Edmonton: Government of Alberta, 2004.

The Alberta Base Features product is a set of vector data files at a scale of 1:20,000, made available to the public in 2004. The files tile seamlessly together to cover the province of Alberta, providing authoritative topographic layers to which other natural resource and land information can be related. Previously available only in Microstation (dgn) and AutoCad (dxf) formats, this provincial data is in ESRI shape (shp) format. Extensive updates were made to the original base files in that they were "merged, connected, updated, restructured, revised and attributed" [1] using a number of sources including provincial 1:20,000 and 1:50,000 topographic, 1:20,000 DEM, provincial vegetation inventory, and Indian Remote Sensing (IRS) imagery.

The Base Features data set covers five broad themes each comprised of a number of more specific entities.

1. **Access** includes roads, cutlines, railways, pipelines, powerlines, facilities, and airport runways.
2. **Hydrography** includes lakes, streams, rivers, canals, wetlands, and oxbows.
3. **Alberta township system** (ATS) includes grid lines and polygons to the quarter section level.
4. **Contours** include 10 metre interval lines (20 metre in mountainous regions). Spot elevation is included as annotation. The data is derived from 1:20,000 DEM.
5. **Geoadministrative areas** include municipal and county districts, cities and towns, provincial parks, Indian Reserves, forest management and wilderness areas, Department of National Defence bases and weapons ranges.

The Base Features were acquired on a DVD which contains folders organized according to the 1:50,000 National Topographic System (NTS). In all, there are just over a thousand folders containing files that provide geographic coverage for the southern half of Alberta. Each 1:50,000 mapsheet is divided into quadrants and named, for example: 82 O 12 NW, 82 O 12 NE to provide 1:20,000 equivalent tiles. While the mapsheet folders are entitled uniquely for the NTS area, the subfolder shape files are each named generically, for example, bf_contour.shp, bf_slnet_arc.shp, and bf_road_arc.shp.

Additional files and documentation include a readme text file, two Word documents, and a folder containing Microstation annotation files. *Base Features Annotation Spec.doc* is a single page note explaining that Base Features annotation is not available in shape file format but is located in the Microstation folder. *Base Features Metadata.doc* is a 40 page document containing the metadata. This document outlines accuracy and currency information, provides a comprehensive description of the different files, and includes a data dictionary for the attribute tables. The metadata is not in FGDC or ISO standard format.

The readme text file provides projection information. Although they are projected in 10 Degree Transverse Mercator (10TM) using NAD83, the shape files do not have an associated projection file. For more information on 10TM projection, which is commonly used in Alberta, see the MNC (Martin Newby Consulting Ltd.) website at http://www.martinnewby.com/projection-transformation.htm.

ArcGIS 9 and ArcView 3.2 were used to view selected tiles of the Base Features set. The shape files load easily into both programs, although ArcMap will warn the user that spatial reference information is missing. Lines, polygons and points all include attribute tables. Some tables are very brief, particularly the Geoadministrative polygons which simply contain a name field. Other attribute tables such as those for single line network, hydrography and roads contain more information including feature type and area, name, source of capture, and

capture date. None of the attribute tables are extensive, however.

The Microstation annotation files can be opened in both programs as well, but the font is very small, difficult to read, and cannot be adjusted. Both programs were able to convert the dgn file to a shape file which allows the annotation to be displayed as a label of the point feature. Some of the annotations appeared to be hydrography names, but the majority of the points were spot height elevation values and would be of interest to most users.

For the most part, the Base Features files are similar to the federal National Topographic Data Base (NTDB) files and would be useful for any spatial analysis requiring more detail than the NTDB, particularly for contours, cutlines, roads, and hydrography. Figures 1 and 2 provide a comparison of the level of detail between the two sources of data. The V shaped cutline was highlighted to provide an area of reference.

A summary of the strengths of the Base Features data set includes the level of detail for roads, contours, and hydrography. The Alberta Township Survey grid is an important layer because sites in the province are often referenced only by their ATS locations. The small file size (tile folders are approximately 1.5 – 3 MB each) and the seamless tiling facilitate ease of use. The 10TM projection avoids problems in displaying data across UTM zones in Alberta (zones 10, 11, 12). The shape file format is familiar to most users, toponyms are attributed, and currency of information is in the attribute tables.

Some of the limitations of the Base Features have become apparent with novice users. Projection problems are the most common issue. Users who want to bring in their own data usually have standard UTM projected files or GPS points. Because the Base Features lack a projection file, there is some work involved in aligning all the desired layers

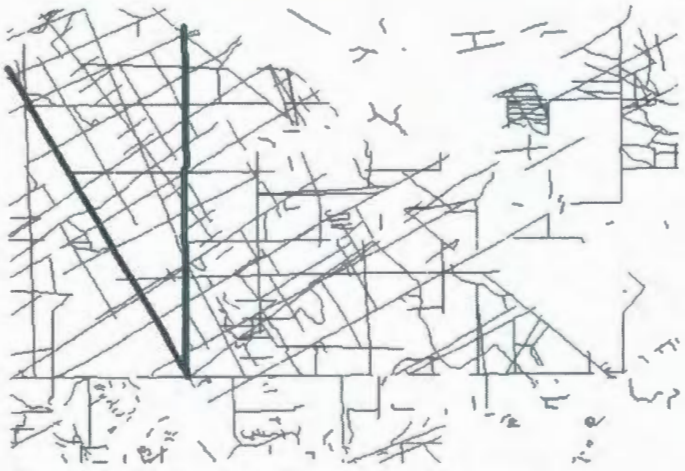
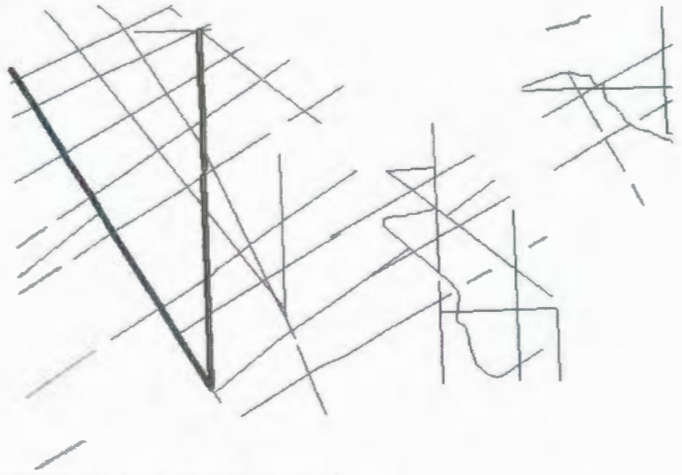


Figure 1. Alberta Base Features cutline sample.



NTDB 50 K cutline file sample.

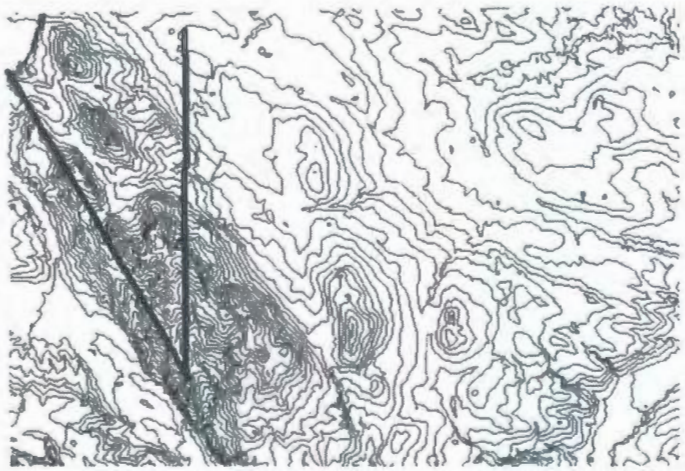


Figure 2. Alberta Base Features contour sample.

NTDB 50 K contour sample.

together. For those interested in larger areas, such as watersheds, the small area coverage of a 1:20,000 section requires the tiling and possibly merging of many files. The generic file names can become confusing when a table of contents contains 7 or 8 files with the same name.

Currency of the information is an issue for some users. Among the different features, the date varies within the same tile. For example, the capture date is 1982 for contours, while road dates can vary from 1982 to 2001. Users tend to miss the spot height elevation data because they have to read the documentation first and then know how to convert the dgn format. Some are disappointed to find that, although the geographic coverage of the files is for the province of Alberta, national parks are excluded because they are federal lands.

Nonetheless, since obtaining the Base Features data set in August 2004, University of Calgary MADGIC reference staff have found it to be an important interdisciplinary resource for geospatial-related teaching and research in Alberta. Examples of uses include georeferencing imagery, vector overlays for digital airphotos, basemaps for data collected in the field such as wildlife sightings and movements, vector layers for use with vegetation inventory data, environmental assessment base maps, and watershed studies.

With regard to availability and licensing, the Government of Alberta has retained copyright to the data, however " ... the Spatial Data Warehouse Ltd. (SDW), a not-for-profit company created in 1996, carries out the activities involved in updating, storing and distributing Alberta's digital base maps" [2]. AltaLIS is the SDW's distributing agent for the public. It is through AltaLIS that individuals or institutions can obtain an Education License. An annual campus site license would cost $3000.00. For short term projects, selected sets of files can be obtained for $10.00 – $50.00 per 1:20,000 map sheet depending on the features required. More detailed information can be found at the AltaLIS website: www.altalis.com/licensingandpricing/ or by contacting info@altalis.com.

A sample file and metadata documentation can be downloaded from the AltaLIS website: http://www.altalis.com/productsandsamples/freedownloadBFmap.html.

Notes

1. AltaLIS Ltd., *Base Feature Metadata*. June 2004. p.1.
2. Alberta Sustainable Resource Development. *Resource Data – Public Catalogue*. http://www3.gov.ab.ca/srd/land/g_data-catalogue_prov_base.html <accessed March 6, 2005>.

Data Sources

Province of Alberta. *Base Features, 82J16NW.* [Electronic resource]. AltaLIS Ltd.: Calgary, 2004.

Province of Alberta. *Base Features, 82J16NE.* [Electronic resource]. AltaLIS Ltd.: Calgary, 2004.

Natural Resources Canada. *National Topographic Data Base, 082J16, PRIDDIS, edition 5: version 2.* [Electronic resource]. Natural Resources Canada, Geomatics Canada.

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Forest Resource Inventory

Reviewed by Lise Doucette

Forest Resource Inventory [computer files]. (Varying dates). Sault Ste. Marie, Ontario: Ontario Ministry of Natural Resources, Forests Division.

The Forest Resource Inventory (FRI) is an ongoing survey conducted by the Forests Division of the Ontario Ministry of Natural Resources (OMNR). It is based on aerial photography and provides a forest cover inventory map of Ontario's crown forest.

The original purpose of the FRI, as formed in 1946, was to "locate merchantable timber species for supplying mills." [1] Since then, information generated from inventories such as the FRI "has contributed greatly to our knowledge of one of Ontario's renewable resources and continues to serve as the basis for major forest resource planning and policy decisions." [2]

The FRI data is framed by basic Ontario Base Map (OBM) data, including transportation, water and town features. The main feature of interest in the FRI data is the information associated with the productive forests, which includes percentages of species of trees located within distinct areas of interest (polygons). These ratios are expressed as a fraction of 1, with an accuracy of 0.1. The ratios for any given polygon add to 1.0.

The data is currently supplied in .e00 ArcInfo (ESRI) coverage file format for each FRI tile within the management unit of interest. The method of delivery is by mailed CD, or for the Ontario Council of University Libraries (OCUL) members of the Ontario Geographic Data Exchange (OGDE), a hard drive may be sent to the OMNR (contact information at end of this review). The data will also be mounted on the OCUL-OGDE server shortly, which is accessible to OGDE members only.

The data is supplied in either pre-ArcGIS 7.0 or ArcGIS 7.0 formats, depending on the date of the last FRI update. For the Sudbury data (created in 1990), I was unable to open the files using ArcView 8.3 and 9.0. Some files could be opened using ArcView 8.1, and all could be opened using ArcView 3.2a. For the purposes of this review I opened the files in 3.2a and converted the relevant information to shapefiles to then view in ArcView 9.0. The actual coverage includes only very basic information (area, perimeter, MNR code); it is necessary to first join the FRI attribute data table to the basic attribute table using the STAND variable, which is present for every polygon that covers productive forest area.

The FRI data is based on summer aerial photography taken at scales of 1:20,000 for northern Ontario and 1:10,000 for southern Ontario – note that this is the same scale as the Ontario Base Maps (OBMs). The projection is ULM using NAD83.

Dates of production of data vary according to the FRI schedule for that management unit. The FRI program started in 1946, and the current mandate is to update forestmanagement units every 20 years. The most recent data for the Sudbury forest, for example, is from 1989/1990. Generally, only the most recent data is available in digital format, whereas the earlier FRI data is available in paper format. The renewal schedule is available online. [3]

The aerial photography used to create the FRI data is generally obtained through contracts with private industry during the summer. The following summer, field data is collected to assist in the interpretation of the aerial photographs. The information is then digitized, and the attribute data is added. [4]

The FRI files are broken down into 48 forest management units with associated identification numbers. [5] Each unit consists of a number of tiles of size 100 km² (10 km x 10km), and each tile is named in a similar (though not identical) manner to the OBMs, according to the ULM zone, scale, northing and easting (the naming convention is explained in the readme.txt file that accompanies the data). For example, the Sudbury forest consists of 143 tiles, to cover an area of 14,300 km². Each compressed file ranges in size from 40K to 1.2MB; uncompressed, the files range from 67K to 2.1 MB. Each tile must be uncompressed before use, and instructions on this process are also included in the readme.txt file.

An extensive number of help resources are included with the FRI files; others are available online. An FRI Database Manual (in Word for Windows 95 format) is included – written in 1996, it provides a basic overview of the coding and understanding of attribute data, as well as describing the derived variables. The readme.txt file explains the numbering system for the tiles and the extraction process for the zipped files.

The files included in the DOCU folder (in .txt and Word for Windows 95 format) include a quality assurance guide, as well as extensive documentation for (among others): the database associated with the FRI data, the files used during the input and database phases of FRI automation, MNR codes, and full descriptions as they come from photo-interpretation for the productive forested stands. Much of the information is duplicated among the seven resources in this folder.

Also available online are Forest Regulatory Manuals [6] that are valuable companions to the other FRI documentation included, particularly because they are more current. The appendices of the Forest Information Manual provide attribute look-up tables in PDF format. Forest Operations, Management Planning, and Scaling Manuals are also available.

The ideal user of these resources has reasonable familiarity with ArcGIS software and the patience to scroll through what sometimes amounts to

hundreds of pages of information. I often found it necessary to use the **Find** function within Acrobat and Word to obtain the correct information. The most useful information came from the FRI Database Manual and the Forest Information Manual.

The metadata is included with the documentation, and all fields and attributes and described within tables in text format. However, the attributes are not always within one file, which can make searching difficult at times. It does not appear to be compliant with a recognized format.

The value of this data lies in the ability to identify species of trees within productive forest areas (identified through the attribute table as those polygons with a specific OMNR code 300), as well as the ratio in which they are found within polygons in those forests. For example, one polygon might have the following characteristics: **BW: 0.8; PO:0.2**, to indicate that white birch covers 80% of the polygon and poplar covers the other 20%. However, some of the tree identification codes require additional thought or analysis on the part of the researcher; for example, **AX** = any ash or mixed ash, but **Ab** is black ash only. For those interested in studying black ash, it is difficult to know how much, if any, black ash is contained in the **AX** area. This set of variables (tree species and ratio of occurrence) is the most heavily used part of the FRI data.

Figure 1 illustrates the distribution of the "dominant tree species" within productive forest areas on the southeastern shores of Lake Wahnapitae in northeastern Ontario.

Other interesting information included is the ecosite variable, which combines information on the vegetation and the soil types; perimeter and area of the polygons, and an MNR code that distinguishes land types such as productive forest, developed agricultural land, grass and meadow, wetland and water. This last code allows the FRI data to be used as more than just a forestry data set, although that is certainly its strength.

At a broader level, another data set that might be useful for those interested in forested land cover is the Ontario provincial land cover data (also produced by the OMNR and available in tiff and ArcInfo grid format). This data set indicate regions of coniferous and deciduous forest, classified as dense, sparse, or mixed coniferous/deciduous, at a much smaller scale.

As noted earlier, I had difficulty opening the files with several versions of ArcGIS and it was necessary for me to join the attribute data for each tile before proceeding with analysis. This is certainly a limitation of the FRI data set. The OMNR is currently in the process of updating much of the FRI data and intends to release a more user-friendly version in the next few years – until then, anyone wishing to use the FRI data will need to perform the multiple steps necessary to view and analyse the files.

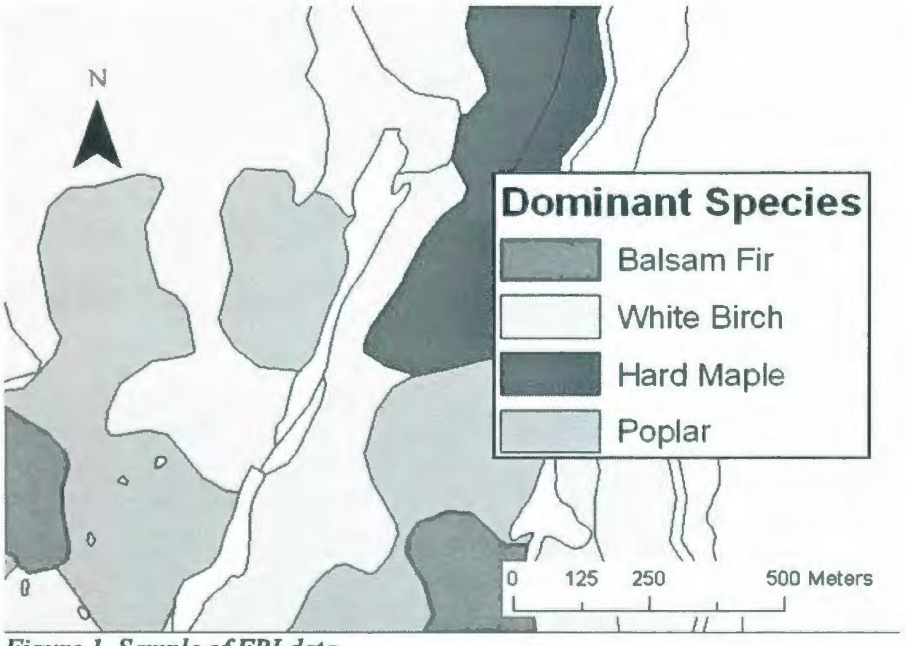

Figure 1. Sample of FRI data.

The FRI data has numerous possibilities for use in educational areas. It is currently being used by environmental earth science thesis students at Laurentian University – for example, one student is evaluating FRI data as a ground truth for an unclassified map illustrating land cover and land use created in ENVI using Landsat 5 Thematic Mapper imagery. The print FRI maps have been used extensively in the past in applied remote sensing courses for interpretation and comparison exercises, and it is anticipated that the digital data will be used for the same purposes during the next academic year.

The FRI data user will likely require assistance from the library; the non-experienced user may be overwhelmed by the amount of documentation and the necessary steps to view the data. The lack of forward-compliance for some of the files (depending on the creation date) will also be an issue for those with only the most recent version of ArcGIS. The FRI data that will emerge from the OMNR in the next few years will likely address this limitation. As well, it would be very useful for all map librarians to have access to a concise FRI guide in one document that explains how to work with the FRI data.

Licensing: Free on request to subscribers of the OGDE program through Catherine Bickram, OMNR, Data Exchange Administrator, catherine.bickram @mnr.gov.on.ca, 705-755-5047. As noted earlier, this data will be circulated to all OGDE members shortly by external hard drive and also mounted on the OCUL OGDE server. Licensing of the data for OGDE subscribers falls under the OGDE license agreement. Costs and licensing of data to others can be negotiated with Larry Bradt, Data Sharing and Licensing Officer, OMNR, 705-755-2216, larry.bradt@mnr.gov.on.ca

Notes

1, 2, 4. Ontario Ministry of Natural Resources, Forests Division. (2003). *Managing Ontario's Forests*. Available at http://ontariosforests.mnr.gov.on.ca/inventoryoverview.cfm

3, 5. See *Forest Management Planning in Ontario* at http://ontariosforests.mnr.gov.on.ca/fmpoverview.cfm for a link to *Forest Management Units in Ontario*, which includes a list of the units, a forest management plan renewal schedule, as well as a management unit map.

6. Ontario Ministry of Natural Resources, Forests Division. (2003). *Ontario's Regulated Manuals*. Available at http://ontariosforests.mnr.gov.on.ca/regulatedmanuals.cfm

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Thanks also to Sarah Rogers, François Prévost, and Jennie Byron for their technical assistance.

Welcome!

New ACMLA Members

Nipissing University/Canadore College
(Institutional member)
The Education Centre Library
c/o Tom Power
P.O. Box 5002
100 College Drive
North Bay, Ontario
P1B 8L7
Email: tomp@nipissingu.ca

Larry Laliberte (Full member)
GIS Librarian
University of Manitoba
Elizabeth Dafoe Library
Winnipeg, Manitoba
R3T 2N2
Email: laliber@cc.umanitoba.ca

Chris Kotecki (Full member)
Culture, Heritage and Tourism
Archives of Manitoba
200 Vaughan St.
Winnipeg, Manitoba
R3C 1T5
Email: ckotecki@gov.mb.ca

Grace Hung (Student member)
1138 Rue d'Argenson
Montreal, Quebec
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Email: grace.hung@mail.mcgill.ca

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CARTO 2005

July 26-30, 2005
Memorial University of Newfoundland
St. John's, Newfoundland
http://staff.library.mun.ca/CARTO2005/

The planning is well underway for CARTO 2005. I hope all of you can make it and come and enjoy the wonderful city of St. John's. Here are some of the things we have lined up for you while you are here:

Our Ice Breaker reception will be taking place in the historic Newman Wine Vaults, located in the downtown area of the city. These are the vaults where the Newfoundland Port was held before it went to market in England.

The Orienteering competition will be held in either Bowring Park or Pippy Park. For those not into the competition, we will also be offering at the same time, a walking tour of the park (Bowring Park) or the Botanical Gardens (Pippy Park).

Our Banquet is going to be held at The Admiral's Green Clubhouse which is located on Nagle's Hill. The view of the city and harbour from this site is quite spectacular.

On Saturday July 30th, we have arranged for a day-long tour that includes the following: a boat tour of the sites around St. John's harbour, a bus tour of the city, a visit to the new GeoCentre which is located on our famous Signal Hill, and then a tour of Quidi Vidi Brewery, located in the historic fishing community of Quidi Vidi, just northeast of Signal Hill.

Some of the highlights at this year's conference are:
- 30th anniversary of the CCA
- Metadata panel
- GIS Information Literacy
- GIS Freeware
- Captain Cook's cartography of Newfoundland
- National Atlas of Canada
- 75th anniversary of *Canadian Geographic*
- MapsNL: a website featuring Newfoundland and Labrador geographic information
- Fabian O'Dea's map collection
- Copyright issues in the cartographic/data community
- Library and Archives of Canada

If there is a topic you want to present, please contact me at dduda@mun.ca and I can pass it along to the Program Committee for consideration.

There will also be an exhibit of Canadian maps submitted to the International Cartographic Association, a place for vendors to show their wares, along with poster sessions and of course, student work and projects from the various cartography programs in the country.

If you have any questions about anything, please do not hesitate to contact me at dduda@mun.ca or phone at 709-737-8892.

See you all in July.
Dan Duda
CARTO 2005

PRELIMINARY PROGRAM FOR CARTO 2005

(see http://staff.library.mun.ca/CARTO2005/ for updates)

Tuesday, July 26

- Day - ACMLA and CCA Executive Meetings
- Day - Workshops - details to follow
- Evening - Icebreaker - being held in the Historic Newman Wine Vaults, the storage location of the famous Newfoundland Port

Wednesday, July 27

- Morning - Plenary Session and papers/presentations/panels
- Lunch - Sponsored Lunch - details being worked on
- Afternoon - Papers/presentations/panels
- Late afternoon - Orienteering competition at Bowering Park

Thursday, July 28

- Morning - CCA AGM and papers/presentations/panels for those not attending
- Lunch - CCA Short Executive Meeting
- Afternoon - ACMLA AGM and papers/presentations/panels for those not attending
- Evening - Banquet - being held at the Admiral's Green Clubhouse overlooking the city and harbour giving you a breathtaking panoramic view of the area

Friday, July 29

- Day - Papers/presentations/panels

Saturday, July 30

- Pre-Booked Tour/Field Trip - Two hour boat tour out of St. John's Harbour to Cape Spear on the "Scademia", a 90 foot schooner. Return for a bus tour of some of the historic sites of the city, a tour of the Johnson GEO CENTRE and wrapping up with a tour of the Quidi Vidi Brewing Company in the historic village of Quidi Vidi. (see http://staff.library.mun.ca/CARTO2005/Tours.html for more details)

ACMLA

Canadian Cities: Bird's Eye Views
Villes du Canada: Vues a vol d'oiseau

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