Teaching the History of Cartography: A Case for the Marriage of Special Collections and Distance Learning

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Abstract

Very few institutions offer introductory courses in the history of cartography. Distance learning is a way to make this type of course more widely available. This paper discusses the ways in which special collections resources (maps, atlases and related materials) can be used in conjunction with existing distance learning technologies to expand access to educational opportunities in the field. The purpose of this article is to discuss the feasibility of the distance approach, not to provide a detailed example. Expanding access through distance learning would benefit students, life-long learners, librarians, faculty, and other interested individuals. The main emphasis is on blended learning situations, employing both synchronous (real-time) and asynchronous technologies.

Keywords: history, cartography, teaching, education, special collections, maps, atlases, charts, distance learning, blended learning, web based learning, synchronous classes, libraries, life-long learners

Introduction

"What are special collections?" Such was the dinner-table query of a retired businessman, a professed map enthusiast and collector, at an orientation dinner for students attending a session of the University of Virginia's

Rare Book School. The question is not unusual, and it is one of ongoing concern for people involved in special collections librarianship. One recent book on academic libraries, frequently used as a text for classes on the subject, makes no mention of special collections (Budd 2005). Librarians are concerned about ways to encourage student involvement with these unusual, frequently sequestered, materials (Allen 1999).

As I started my Rare Book School class on special collections, this problem of definition and recognition was the opening foray into the subject. Any good definition is complex, and involves several considerations, including the notions of comprehensive and non-circulating collections, often of substantial monetary or historical value, with materials not simply important because of the text or individual image, but rather for their artifactual value. This definition merges concepts of library, museum and archive.

None of this would be foreign to a scholar in the history of cartography, to a map librarian handling early cartographic materials, or to a seasoned map collector. Special collections of these materials are essential tools for researchers and scholars in the field. These collections are fundamental for educating people with varied types and levels of subject backgrounds, and who need to work with and study primary source materials. In spite of these needs, courses teaching the history of cartography are few and far between (http://www.maphistory.info/courses. html), and the availability of distance learning options is even scarcer. I would venture to say that distance courses in the history of cartography are virtually non-existent. These shortages create problems in generating student interest in the field, especially early in their careers, or providing appropriate courses for the growing number of life-long learners. By way of comparison, there are a number of distance offerings for persons interested in Geographic and Information Science (http://spatialnews.geocomm.com/education/distance_edu/index2.html). These are, however, asynchronous and do not rely on technologies allowing real-time interaction, such as the ones discussed herein.

The purpose of this paper is to discuss the idea of a marriage, a collaboration, between special collections with sizable and significant cartographic materials and available distance learning technologies, with the intent of facilitating access to instruction in the history of cartography. My interest in these collaborations derives from my experience in teaching a short introductory course for the Jefferson Institute of Lifelong Learning (http://www. jilluva.org) in Charlottesville, Virginia entitled "The Roles of Old Maps: History, Art, Cartography and the Building of Nations." (See the appendix for a course outline.) This class is for life-long learners, and most of the students are 55 years of age or above. Although it is not taught as a distance class, it occurred to me that it could easily be adapted to a distance learning environment. As I began to explore the technologies available for distance learning, I was also conceptualizing how this course could be constructed in a geographically dispersed environment. My interest in these distance technologies was further fueled by my involvement in a Master of Science program, which is taught online in a blended learning environment, with both synchronous (real-time) and asynchronous technologies.

Technical Considerations

There are a number of established technologies already in use for the delivery of both synchronous (real-time) and asynchronous distance classroom instruction. Substantial planning is required, including consideration of software and hardware requirements, setup and maintenance costs, copyright/fair use issues, and more. There are a number of models for distance learning (University College 1997). My main interest here will be what has been termed a "distributed classroom," where a course is extended to a group of students in diverse locations, which may simultaneously include onsite and distance participants. The model under consideration falls under the rubric of what has been called blended learning (Singh 2003). This is a rather broad umbrella, but certainly includes coupled online real-time classes and various asynchronous elements (on or off-line), which can be done by a

student at a time of his or her choosing. It is also possible to record a live classroom session and have it archived online for asynchronous replay.

This discussion will focus mainly on audio classes, not simply on the delivery of a professorial lecture. These live classes are interactive, thereby allowing students to ask questions, participate in class breakout groups to work on specified materials, employ text-chat during the class, and more.

Table I outlines some advantages and concerns of this distance environment. The ability of distance learning to reach students in diverse, even international, locations is well known. The instructor can even deliver the lecture and facilitate the class discussion from a distant location. Existing technologies, such as the widely employed Centra 7 software package (http://www.saba.com/products/centra/live/virtual_classrooms_universities.htm), allow for both the synchronous and asynchronous functions described above. Students can actually arrange their own online live group meetings to facilitate planning of classroom projects. PowerPoint presentations are easily loaded, and images can be employed in various ways to facilitate the lecture content, including discussion of iconography, paper quality, printing techniques, coloration, bibliographical concerns and more. A whiteboard is available to facilitate class discussion. Guest lectures from distant locations may be coordinated during the synchronous class presentations. "Web safaris" are possible during class, opening other avenues of discussion.

TABLE 1: Advantages and Concerns of Distance Education

ADVANTAGES	CONCERNS
can reach a geographically dispersed audience	cost (development/maintenance)
can provide instruction to underserved areas (both intellectually and geographically)	faculty concerns (time, reimbursement)
attraction for life-long learners	training time (students and faculty)
synchronous (real-time) presentation allows for spontaneous interactions (duplex audio)	lack of hands-on material access
sessions can be recorded and archived for asynchronous use	limitations of PowerPoint format
potential for online collaborations	technical malfunctions during class
diverse imaging capabilities	lack of face-to-face interactions
ability to have guest lecturers from distant locations	copyright/fair use issues
	works best with high-speed connections

There are obvious concerns that must be addressed. Cost issues will be considered below. Another limitation is the lack of direct, hands-on material for study in the distance environment. This limitation can be partially circumvented in various ways. Thus, it may be posible for students to access local examples of early cartographic materials by visiting local library collections or even the shops of regional antiquarian map dealers. Another issue is the added training required for both instructors and students using the distance environment (Bower 2001). From

a faculty perspective, a well-constructed distance class takes added time, training and preparation, and may not be rewarded within a traditional, tenure-based, academic environment.

In my opinion, the advantages of distance learning outweigh the disadvantages. Distance learning can make the holdings of a special collections library become more accessible, in a relatively secure environment, with a class structure that can easily accommodate 30 or 40 students. (Class size should nonetheless be limited, since teachers have to consider grading tests, papers, and other academic tasks for the course.) The ability to have synchronous classes compensates for some of the loss of spontaneity available in the conventional face-to-face classroom. Students and faculty gain experience and skills in working in a distance-learning environment.

Supporting software, such as BlackBoard (http://www.blackboard.com/products/as/), can be used in conjunction with the live class materials. This provides the capability for individualized, asynchronous discussion groups, for posting the course syllabus and reading assignments (which can be uploaded to the sites or available via the university library's e-reserve system), and for uploading higher resolution images for individualized study. It is also password protected, which helps when considering fair use and copyright issues (Harper 2001). With respect to fair use, keep in mind that these classroom images are not going to be published, and are specifically limited to use within the context of the course. They will not be maintained online once the class is completed. Some of the existing online map repositories stipulate specific use guidelines, which would allow students and instructors in a protected distance environment the ability to use their images with minimal difficulty. Students can then download and manipulate the images on their own, using some open-source (free) and relatively simple software programs, such as IrfanView (http://www.irfanview.com/), which can handle a variety of formats including JPEG 2000. Students can also submit assignments via the BlackBoard system, or via conventional e-mail. These varied technological capabilities enhance the capacity for intra- and inter-institutional collaborations.

Budgetary Issues

The cost of developing and maintaining educational programs is a never-ending concern. The budgetary considerations for the distance environment are numerous (Rumble 2001). Interinstitutional cost comparisons are difficult due, in part, to variations in methods of cost analysis, the types and sizes of institutions involved, the geographic locale of the centralized support facility, and pre-existing institutional facilities for and commitments to distance learning programs. There have been some attempts to standardize approaches to costing media development (Hulsmann 2000), but these are not well established.

Published cost comparisons vary 10-15 fold, in part for the reasons outlined above. Software costs vary considerably, and some institutions receive major discounts. Hardware costs are continuously falling, so periodic replacement of servers and PCs is not that onerous for many institutions. User license costs are highly variable, in part due to the potential number of concurrent users and special financial arrangements with individual institutions. Skilled maintenance staff and software support capabilities are essential. All these considerations underscore the importance of broad institutional support for centralized distance learning capabilities. Most of this discussion assumes a centralized campus facility, although newer software with an online support base (maintained by the software company, not the university) may be the wave of the future, allowing for the addition of even more sophisticated live video-conferencing options. These newer options begin to minimize the need for institutionally provided maintenance and software support. Examples of the latter, which allow access for both PC and Macintosh users, include Elluminate (http://www.elluminate.com/academic_edition.jsp) and Horizon-Wimba (http://www. horizonwimba.com/products/liveclassroom/).

Considerations for the History of Cartography

The applications discussed above have clear implications for teaching a wide variety of subjects, in real-time, with capabilities of sharing documents and allowing for diverse media formats with multiple levels of communication via a distance environment. Materials are easily distributed to participating students, and various evaluation tools (online tests, open book essay tests, live presentation of group and individual papers) are available.

These options will facilitate the incorporation of many sorts of special collections materials, including cartographic, into the distance education environment. This will raise both use and visibility for these collections of primary source documents, enhancing student experiences with materials and subjects generally difficult to access via the older face-to-face classroom models.

Six images are presented and discussed below. All are possible starting points for the discussion of numerous important conceptual elements: historical, bibliographical, political, socioeconomic, artistic/iconographic, scientific, curatorial and more.

Figure 1. R. de Hooghe. World map (from Dutch Bible). ca. 1687.

Figure 1 shows a map from a late 17th century Dutch Bible. In terms of teaching an introductory course in the history of cartography, this image can be a starting point for any number of map-focused topics: maps in Bibles, religious iconography, the history of engraving, coloration patterns (including contemporary vs. modern color). This image, as with others below, is easily loaded into a PowerPoint presentation, which can be uploaded from the instructor's computer to the Centra 7 (see above) classroom site. Image resolution and size reduction can be automated. (I usually select the option reducing the PowerPoint images to the smaller GIF format.) Smaller image formats are easier for students with slower connections to download, particularly for the real-time classes. The same image could be reloaded into BlackBoard, using a format with greater resolution and larger size, to be studied later at the students' leisure. A variety of class assignments can be developed for asynchronous student preparation. Individuals or small groups can be required to prepare their own PowerPoint presentations, which can be shared synchronously with the rest of their classmates. Students should be encouraged to use both print and online resources, and to consider fair use/copyright issues in selecting their images. Students would be encouraged to use both print and online resources, and to review general principles of fair use and copyright issues that might affect image use in more public settings. Online BlackBoard discussion rooms, e-mail communications, and live Centra practice sessions would all be available to facilitate student and faculty interactions. When appropriate and feasible, students might be assigned to arrange their own visits to special collections for the purposes of developing an essay assignment.
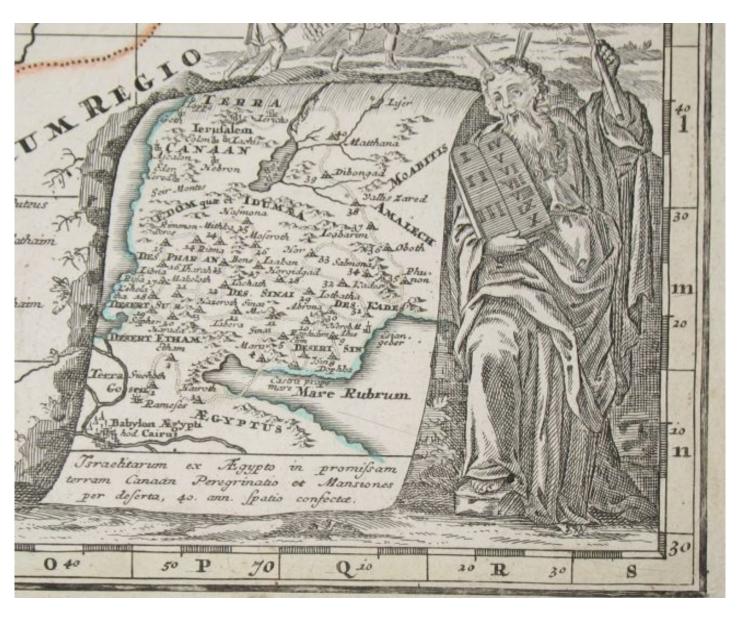

Figure 2. G.M. Seutter. Map of Holy Land (close up of image in right lower corner of map). ca. 1725.

Figure 2 shows a close-up of an area of an 18th century map of the Holy Land, depicting a horned Moses. This imagery can be explored in context not only of its use on the map, but with respect to the artistic history of the image itself (Melinkoff 1970).

Figure 3. J. Pine. Chart of the Thames (commemorating the defeat of the Spanish Armada). 1739.

Figure 3 shows a chart of the Thames, commemorating the English defeat over the Spanish Armada, based on images from tapestries from the House of Lords. This might lead to any number of discussions, including river charts, military battle commemorations, Henry VIII's interest in military mapping (extending to discussions of the *Boke of Idrography*).

Figure 4. Carey & Lee. West Indies. 1822.

Figure 4 is an early 19th century map of the West Indies, purposely selected for its visual flaws. This can lead to commentary on the importance of paper in mapmaking, visual inspection issues (foxing, browning, pigment deterioration, etc.), the problems of wood-pulp papers, and the use of letterpress text on maps.
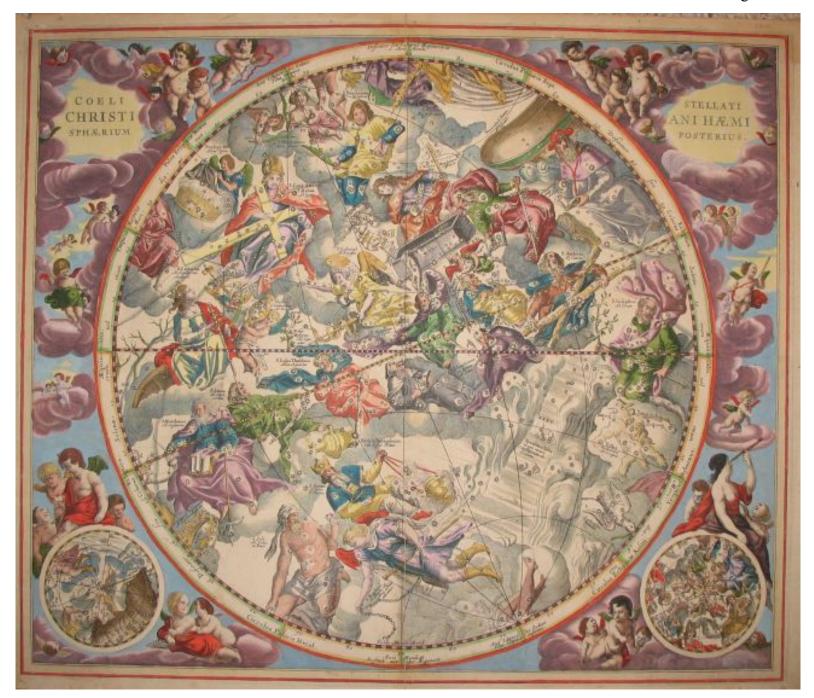
Figure 5. A. Cellarius. Celestial Chart (Christianized zodiac). 1661.

Figure 5 is a mid 17th century celestial chart from Cellarius' well-known *Harmonia Macrocosmica*. Discussions here could include the general history of celestial charts, Cellarius' sources, and the historical connections between cosmology and cartography.

Figure 6. Braun & Hogenberg. View of Toledo, Spain. ca. 1598

Figure 6 is from Braun and Hogenberg's landmark *Civitates Orbis Terrarum,* showing a largely mythical view of Toledo, Spain. Discussions might center on the history of atlas production and/or the history of city views and plans. One could also discuss the relationships between the major 16th century Dutch and Flemish mapmaking houses.

All of the illustrations shown were taken with an inexpensive digital camera, which can be easily linked to most PCs. The pictures can be edited in a variety of ways, with little professional expertise. This type of technology renders much of the cartographic imagery of special collections accessible, without reliance on expensive technology and without creating unusual demands on either library personnel or the selected materials. The photos can be obtained within the secure confines of the library environment and the results shared with the online class. As already stated, this creates access to primary sources in ways previously not possible.

In addition to the singular special collections holdings of an individual library, there are several websites that provide substantial materials for potential use in an online history of cartography course. A broad overview of cartographic images on the web may be seen at the Map History site (http://www.maphistory.info/webimages.

html), maintained by Tony Campbell. A few specific examples include the cartographic segment of David Rumsey's visual collections site (http://www.davidrumsey.com/collections/cartography.html), the cartographic selections of the American Memory project of the Library of Congress (http://memory.loc.gov/ammem/browse/ListSome.php?category=Maps), the National Library of Australia's online map catalog (http://urlsnip.com/832568), the online exhibits of the Osher Map Library at the University of Southern Maine (http://www.usm.maine.edu/maps/web_exhibit.html), the Collaborative Digital Libraries project of the Library of Congress (http://international.loc.gov/intldl/find/digital_collaborations.html), and the Newberry Library's growing list of slide sets that are freely available online (http://www.newberry.org/smith/slidesets.html). This is but a smattering of the growing online image and information sources that might be used for the preparation of a distance course in the history of cartography.

Conclusions

Modern technology has created the capability for a variety of distance learning formats, several of which are applicable to the history of cartography. The use of online visual imagery is a rapidly growing phenomenon within the academic environment (Snavely 2005). Real-time classes, supported by existing types of learning software, can and should be developed. This would extend the intellectual reach of many special collections libraries, allowing exposure of their richness to new groups of students in History of Cartography courses for high-school students, undergraduates, graduates, and lifelong learners. Classes should be constructed at various educational levels. The Newberry Library offers some online materials for younger students (http://www.newberry.org/k12maps/). There is also an outline of a course previously taught by Waldo Tobler, constructed for a class heavily weighted towards undergraduate geography students (http://www.geog.ucsb.edu/~tobler/publications/pdf_docs/cartography/History.pdf), much of which could be worked into a distance format. Another format might be adopted to teach a course in a style previously planned by the University of Virginia's Rare Book School (http://www.virginia.edu/oldbooks/courses/history/h65/). This class was to have much more emphasis on curatorial issues, coupled with the extensive use of hands-on materials that characterizes Rare Book School courses. (This class had to be put on hold due to the untimely death of David Woodward.)

The online environment also has the capability to foster collaborative efforts between various intra- and inter-institutional departments. Classes can be constructed in a variety of educational formats, from entire courses to course segments in history, art, literature, architecture and more. These can be aimed at different groups of students with different educational goals. Classes could be developed to provide continuing education for faculty members, as well as the education of book and map dealers, and librarians involved with early cartographic materials. The focus and style of the courses would understandably involve different skill sets on the part of various teachers. The readings, discussion topics, student project activities, and testing procedures would need to be modified for particular circumstances. This idea of outreach to varied intellectual communities is by no means unique, and has previously been discussed with respect to teaching the history of cartography (Campbell 1987). The main difference here is the suggestion to move the course material to the distance environment, increasing the geographic reach of a subject in such scarce supply.

As with any academic endeavor, the quality of future classes will depend heavily on the quality of the faculty inputs towards the creation the coursework. The technologies to support these developments are in place, and there are general guidelines available for the development of distance education services within the library setting (Association of College & Research Libraries 2006).

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Appendix

COURSE OUTLINE: " THE ROLES OF OLD MAPS: HISTORY, ART, CARTOGRAPHY & THE BUILDING OF NATIONS"

By Joel Kovarsky (for JILL, Spring 2007, Second Session)

I. Session One (April 13)
   A. General Concepts of the history of cartography
   B. What is a map?
   C. Early historical perspectives in English literature dominated by collectors, dealers.
   D. Types of maps- varied classifications
   E. Maps as intellectual constructs; difference from other types of literacy
   F. Art/Science dualism- is this even helpful?
   G. Two casas (16 th century)- Spain and Portugal, early governmental bureaucracies, boards of trade), perhaps prototypes of first national
      hydrographic offices
   H. Age of Discovery (Dutch exploration, pre-eminence)
   I. Growth of map libraries
   J. Growth of thematic cartography
   K. Growth of history of cartography as a discipline
   L. Mid-20 th century biases (see C)
   M. Modern trends
   N. Notion of 'knowledge spaces'

**Slides for Day One- broad general overview (from Kish's set based on Clements Library materials, U. Michigan)
** Hands-on material- *Boke of Idrography* (Henry VIII), various samples (basic map descriptive terms), book on portolan history, Harley/Woodward series

II. Session Two (April 20)
   A. Concept of Mapmaker
   B. Commerce of cartography (Low Countries; 18 th century Europe, particularly France and England- Pedley reference)
   C. Map projections (Snyder book)- very basic considerations
   D. Prime Meridian
   E. Tools of trade (papermaking; printing—woodblocks, intaglio, lithography, others)
   F. Art & Cartography (Woodward publications, both for this and E)

**Slides for Day 2- Four Newberry Library slide sets (Map Promotion in Early Modern Europe, The John Smith Map of Virginia- Definitions and Derivatives, Fact and Legend in the Catalan Atlas of 1375, Renaissance Surveying Techniques and the Mapping of Raleigh's Virginia)

**Hands-on materials- *Virginia in Maps*, Catalan Atlas facsimile (German edition), several de Bry early VA/FL images, examples for individual printing techniques, decorative items (Cellarius, Blaeu image of Tycho Brahe observatory, Pine Spanish Armada/Thames), others

III. Session Three (April 27)

   A.Care of old maps (physical handling, environmental issues, restoration, matting and framing, storage)

   B. Paper- point out various physical considerations (neatline, margins, cartouche, browning, foxing, color) with in-class materials

   C. Special collections issues (access/handling, security, digitization)- to include discussion of recent Forbes-Smiley theft case

   D. Geospatial information (GPS, GIS); how good is Google Earth?

   E. Reference materials (what depth, is online enough?)

**Hands-on material- various items to illustrate points, to include both single maps and maps in books/atlases.

IV. Sessions Four & Five (May 4 & 11)

   These sessions will be held at the Albert & Shirley Small Special Collections Library of the University of Virginia, and will begin at 9:30 am. It is suggested that you be there at about 9:15 am, on the basement level, in the large auditorium. The library staff will give the group an overview of the facilities, and quite a number of special items will be pulled (in small segments) for you to see. There will be brief discussions of these items, and time for some questions and answers. Because most of these are quite valuable items, they will not be available for individual handling and perusal, but I wouldn't miss these sessions. The facility itself is quite remarkable. Driving and parking directions will be given by at least Session Three above.

V. Session Six (Final Session; May 18)

   A. The Modern Nation/State (notion relies heavily on Christopher Pierson's discussions in The Modern State) – importance of maps/cartography in many of the basic elements

   B. Historical and modern exploration (and exploitation): land, sea, air (and space), cyberspace

   C. Public transit systems

   D. Digital highways

   E. Military uses

   F. Biases inherent in map production (Monmonier, How To Lie With Maps)- Gerrymandering (1812 cartoon):

** Slides for Day 6- Two Newberry Library slide sets (Hiding and Highlighting Power in Eighteenth-Century North American Maps, Representing the Republic: Cartographic Discourses in the USA 1865-1900)

**Hands-on materials: Survey maps (book), railway maps (Cram/Grant examples), atlas physical phenomenon examples, Monmonier books (Bushmanders…, other), blue-back sailing chart (Irish Sea), Shenandoah National Park (Geological Survey)

ONLINE SOURCES (BASICS)
Map History/History of Cartography (major gateway site): www.maphistory.info
Annotated Bibliography Books for Introduction to Subject: www.theprimemeridian.com/bibliography.htm
Condensed Web-Resource Guide: www.theprimemeridian.com/collectorguide.htm
Care of Old Maps: www.theprimemeridian.com/MapCare.htm
Ordnance Survey Glossary (Mapping Terminology and Acronyms): http://www.ordnancesurvey.co.uk/oswebsite/aboutus/reports/misc/glossary.html
Bookbinding and Conservation of Books (A Dictionary of Descriptive Terminology): http://palimpsest.stanford.edu/don/don.html
Cartographic Connections ("Improving Teaching through the Use of Historic Maps"): http://libraries.uta.edu/ccon/