The Future Is Now: a Map Librarian's Response to "The Map Library's Future."

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"The map library's future will no doubt be influenced by how map librarians are able to respond to the current circumstances and challenges within cartography, libraries, and various other parts of society in general."

C. Peter Keller makes many assertions and predictions on the future of map libraries in his recent essay published in *Cartographic Perspectives*.[1] However, instead of being based on any form of objective data or experience, these assertions and predictions appear to be based primarily on his personal perceptions of trends in map libraries and an assumption that users like himself are the primary or most important type of map library users. In this article I will respond to Keller's assertions and predictions and present my own version of the map library's future. Michael Gorman's statement "all important questions expand until they fill the world" is applicable to our question of the map library's future. In other words, we cannot answer the question "what is the future of map libraries?" until we know the answer to the broader question of "what is the future of libraries?" Further, we cannot answer that question until we know "how will people learn, and advance knowledge in the future?" This question, in turn, depends on the answer to "what is the future of society and of our civilization?"[2] The map library's future will no doubt be influenced by how map librarians are able to respond to the current circumstances and challenges within cartography, libraries, and various other parts of society in general. But ultimately, causal factors from business, government or the physical environment, often beyond control, may have the greatest impact on the map library's future.

Changing Times: Horses and Motorcars or Apples and Oranges?

Keller begins with an analogy of the map being equivalent to the horse and digital geodata being the motorcar. The analogy is then used to bolster his claim that today's user is "no longer thinking of the traditional map library as a primary resource. They think of the map library as the traditional "stable" for paper maps, looking somewhere else to find the "garage" housing the digital mapping environment."[3] A more appropriate analogy would be maps as apples and digital geodata as oranges. Although users may prefer one format (or fruit) most have used (or consumed) both. Likewise many users will again in the future have needs for both formats. Just as apples and oranges together make a good fruit salad, paper maps and digital geodata compliment one another within the map library.

    Keller's argument that current map libraries should completely retool and focus primarily on digital geodata is primarily based on two assumptions: the "Golden Days" of paper maps are over (the paper map is becoming obsolete) and the expert GIS user is the map library's primary user. To bolster his argument that the paper map is in decline, Keller presents two pieces of anecdotal evidence.

    As the first thread of evidence, Keller suggests that "today, those wishing to be associated with status and power no longer insist on having their picture taken next to a map or globe. Instead they opt to pose with images of computing hardware displaying information."[4] Keller presents no data, nor does he cite any studies, if any exist, that would confirm this assertion. Indeed, the opposite may still be true. A survey of portraits accessioned between 1990 and 2000, accessible via the Internet from the United

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Kingdom's National Portrait Gallery within the "Politics, Government and Political Movements" category reveals that none out of a population of forty-six portraits have computer hardware in the background.[5] The point here is not to argue about the use of maps and globes as signs of status or significance. If, however, we are to make sound decisions about the map library's future, then we need tangible data and information and not analogies upon which we can base those decisions.

Keller's second thread of evidence for the suggestion that the paper map is obsolete follows: "knowledge gained during the ongoing technology and information revolution."[6] This "knowledge" is essentially Goodchild's lists of the fundamental weaknesses of paper maps and the potential of the database as map paradigm.[7] Keller focuses solely on the weaknesses of the map and the strengths of the database. To be objective paper maps, databases and even Goodchild's thesis all have strengths and weaknesses--as Pickles and Rhind have pointed out.[8] For example, one could argue that being static and fixed may be not be a weakness but a strength (less likely to be misused or intentionally altered or taken out of context). Another example is the poor cartography and the associated repercussions that are associated with the general displacement of cartographic teaching and standards within the academia and GIS community that have been suggested in this periodical and others.[9]

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1) Are GIS Users Our Primary Users?
Implicit throughout his essay is the perception that the geographic information user of the future will be like Keller himself is (i.e. a digitally networked and technologically sophisticated high level user within the GIS community). Although important, the GIS community will remain a minority of the map library's users for the foreseeable future. First, the "Technology Society" or "Information Society" has yet to reach the majority of the World's population.[10] Second, even for that small segment of the World's population with the technology required for GIS, there is a diversity of users, skills and information needs. While their interests and needs may overlap, each library has a distinct and diverse clientele. And, each map library's collection is unique and varied, from large antiquarian collections to libraries providing topographic quadrangles for hiking expeditions. A good map librarian knows the community and serves the clientele with appropriate maps as well as appropriate technologies.

POINTS OF CONTENTION AND ALTERNATIVE VIEWS

2) Are We GIS Experts?
Although many map librarians are currently users of GIS, I disagree that most map librarians are now, or will ever really be expert users of GIS. Most map librarians have broad responsibilities including the care and maintenance of the collection, reference and research. To become highly proficient with GIS would require much more time than most librarians are able to devote. More likely, librarians will master mapping tools such as *ArcGIS* to quickly display data on a map to help answer a reference query. Likewise, librarians will be able to consult and provide advice on a range of GIS data related issues, in particular metadata. My point is to recognize that the real GIS experts are those using it every day as a part of a their daily work or research and it would be rare that a librarian could or would need to reach this level of expertise.

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3) GIS Service Models in Map Libraries
I agree with Keller that "the foci of the mandate of the future will be on 'access' and 'use' of geographic and associated attribute information."[11] However, this is because these are essentially the foci of most map librar-

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ies now. What I disagree with is Keller's assertion that these foci imply primarily, if not completely, digital information. Ironically, within his "vision for a future" Keller depicts an interesting scenario within a map library wherein "advances in printing technology will allow tomorrow's users to be able to print and take away a hard copy of a digital facsimile in full size and exceptional quality, if desirable."[12] I agree that this technology will improve access and that digital data will be increasingly important to map libraries. However, the process of digitizing maps on "just in case" scenario seems to contradict his argument that map libraries will need to adopt a business model approach. It is more economical for users to borrow or at least view the existing hard copy and map libraries to digitize, if needed, on a "just in time" scenario. Again, many map libraries, at least in the U.S., have already been engaged in digital scanning projects. However, it is not economically feasible for most individual libraries to attempt to scan large portions of their collections.

Because of the diversity among librarians and users within and between map libraries, we have seen a diversity of GIS Service models emerge. Keller points to many of these models and examples of map libraries that have gone "global" or those that have found champions in aiding their transition to a map library of the future. Although examining the GIS services of any of these libraries would be beneficial to one attempting to provide and promote a new service, no critical assessment of the various models has been done on GIS in libraries. I would warn Keller to be wary of any premature pronouncement of success this area. We really do not yet know which models are actually sustainable for libraries in the long run. We have, however, begun to realize what models are not viable for most. For example: in my opinion, the least viable and sustainable model is that which attempts to provide hardware and software akin to a GIS computer lab. Adler and Larsgaard still suggested that this is a viable model as recently as 1999 in describing the Automated Cartographic Information Center of the Borchert Map Library at the University of Minnesota.[13] It would be difficult for any map library to justify maintaining the most recent hardware and software for a large number of workstations that would simply be redundant of the services being provided within other campus computing facilities or the Geography Department.

There are, of course, many effective models of GIS and digital geodata services in libraries. The point here is to affirm that these services are normally based on local needs and not global aspirations. Thus no two are exactly alike.

David Rhind identifies many of the causal factors of change in cartography.[14] Many of these same factors that may cause change within cartography will impact the map library of the future and may be beyond the immediate control of librarians, cartographers or even our collective voice. These may include more restrictive intellectual property rights, less access to government produced data, and a decreasing competition among GIS software producers. To Rhind's list of causal factors I would add the uncertainties of the physical environment and human error. Any map library could fall victim to environmental disaster (i.e. electrical shortages, fire, flood, acts of war, etc…). Virtual libraries also depend on a physical infrastructure which itself is not immune to disaster or neglect. Both physical and virtual libraries are impacted by human error or sabotage (i.e. misfiling, theft, failure to backup data, viruses). There are many historical examples of causal factors impacting map libraries. Map libraries in the U.S. benefited greatly from the mapping and geographical information gathering activities of the Second World War. After the war, this material flooded into many map libraries. There is no indication that this pattern

will repeat for digital data. The opposite may be true; high-resolution data will be more restricted in the future.[15] Another important indirect result of the Second World War (the baby-boom generation), that may have a great influence on the future of map libraries and libraries in general, is the demographic makeup of our population. Librarians are struggling with the uncertainty that libraries will not be able to replace staff equal to the rates of impending retirements of the next twenty years. The map library of the future may not have a trained and experienced map librarian staffing it because one may not be available.

Also within his section on "Visions for the Future," Keller suggests that map libraries may have to adopt the business model approach to their services within this virtual, digital, and global environment. I would argue that most map libraries already facilitate, as a part of their reference services, many of the informational usage activities Keller suggests that we perform and charge fees for. The responsibilities of many map librarians include: offering assistance with map interpretation, creating a quick custom map for reference, helping with map design, helping users understand where they can find data, teaching classes, and providing location searching. However, like Eratosthenes, the ancient Greek mathematician and library director in Alexandria who was known as "Beta" since he was often second in prominence within a given discipline, map librarians, though well versed in many of these topics and activities, are rarely the expert in any. If map libraries, or any library or academic department for that matter, had to realize a net profit in the virtual environment, most would soon fail. Just as many of the "dot com" information provision companies that were to replace print and make libraries obsolete failed. Furthermore, charging fees that go beyond the recovery of incidental material costs is in direct conflict with the mission of many institutions. This type of rationing contributes to the disparity in resources available among the "haves and have-nots."

4) What Map Librarians Do Best
The five core functions (identify, collect, organize, preserve, and make available) of the traditional map librarian are still relevant for digital geodata. Although each function still needs to be performed, librarians need not, and should not, always be solely responsible for each nor will the emphases on any particular function be the same as it is for paper maps.

No where in Keller's essay do we find mention of what it is that librarians are really the best at: creating metadata or cataloging for the information in their collections. In my view librarians have the skills to be able to provide a high level organization to the virtual collections of data via metadata. For many GIS users the creation of metadata is onerous and the more complex the dataset, the more time consuming and complex the metadata. With the cataloging skills of librarians and the GIS skills of geographers and cartographers, the disciplines can work together on collaborative projects to insure that GIS data is adequately documented and retrievable in the future.

For the functions of storing, preserving and making accessible digital data, several university libraries, such as those mentioned by Keller, have sponsored or have been directly responsible for creating and maintaining National Spatial Data Infrastructure (NSDI) clearinghouses. However, many more have collected and in effect become the informal clearinghouses of unique or local data sets for their users. Opportunities for user driven collecting will continue. Also, many map libraries have begun archiving legacy data sets to preserve and make accessible historical information.

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SUMMARY

Map Libraries will continue to grow and be relevant in the future because of the diversity of our users, collections and services. For most map libraries, to ignore the paper collection would be to ignore the needs of a set of users that may not be as digitally connected (or wish to be) as the expert GIS user. As individual map libraries try to evolve and balance their resources, they will need real facts to make informed decisions. However, even in making sound decisions we face risks of indirect and direct causal factors from government (i.e. laws, security, war, politics), business, technology and the physical environment (floods, fires, electrical blackouts) that are often beyond our control.

NOTES

[1] C. Peter Keller, "The Map Library's Future." *Cartographic Perspectives* 38 (Winter): 73-77.

[2] Michael Gorman, "What is the future of cataloguing and cataloguers?" in Programme and Proceedings of the 63rd General Conference of the International Federation of Library Associations and Institutions, Copenhagen, Denmark, August 31—September 5, 1997, 1. < http://ifla.inist. fr/IV/ifla63/63gorm.htm>

[3] Keller, 73.

[4] Ibid., 73.

[5] http://www.npg.org.uk/live/index.asp

[6] Keller: 73.

[7] Michael F. Goodchild, "Cartographic Futures on a Digital Earth." *Cartographic Perspectives* 36 (Spring): 3-11.

[8] John Pickles, "Cartography, Digital Transitions, and Questions of History." *Cartographic Perspectives* 37 (Fall): 4-18; David Rhind, "Business, Governments and Technology: Inter-linked Causal Factors of Change in Cartography." *Cartographic Perspectives* 37 (Fall): 19-25.

[9] Judith A. Tyner, "Whither Cartography? *Cartographic Perspectives* 38 (Winter): 3-6.

[10] Rhind: 20.

[11] Keller: 74.

[12] Ibid.

[13] P.S. Adler and M.L. Larsgaard, "Applying GIS in Libraries," in *Geographical Information Systems: Principles, Techniques, Applications and Management*, 2nd. ed. P.A. Longley, M.F. Goodchild, David J. Maguire ed. (New York: John Wiley & Sons), 907.

[14] Rhind, 19-25.

[15] Mark K. Anderson, "Military Wary of Map's Release," *Wire News* (December 12, 2000).