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MAP CURATORS' GROUP SPECIAL ISSUE

Moving On. Where Should the University Map Collection be Going?

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This paper argues for the importance of retaining a map library presence on UK university campuses at a time when many are under threat of closure, and access to geospatial data is increasingly moving to web-based services. It is suggested that the need for local expertise is undiminished and map curators need to redefine themselves as geoinformation specialists, preserving their paper map collections, but also meeting some of the challenges of GIS, and contributing to national developments in the construction of distributed geolibraries and the provision of metadata, especially with regard to local data sets.

The inevitable retort from the University's 'space committee' as it retired from its inspection of the Map Room was 'Aren't these maps all on-line now?' – allowing, of course, no time for a considered and serious response!

The focus of this paper is on the current problems facing the traditional and relatively small map collections found in higher education institutions (HEIs) in the United Kingdom, but placing this within a wider context. Map collections of this kind have been under pressure since they reached their high point in the 1960s – and not only from the space police. Many such collections grew up in departments of geography, built on the wide distribution of war theatre maps following World War II, and reflecting an enduring perception that only geographers need and use maps! When new paradigms for geography began to emerge in the sixties and seventies which seemed to bear little need for them, all those multiple sets of Ordnance Survey (OS) inch-to-the-mile or early *Landrangers* began to occupy wasted space, space needed for new technology, new staff, and burgeoning student numbers. Over the last two or three decades, many such collections have been reduced in size, squeezed into tighter spaces, allowed to atrophy, or have even been eliminated. And inevitably most have been starved of funds. Some of these collections were absorbed into university libraries, but rarely flourished there either, and today a trawl of the *Directory of UK Map Collections* (www.cartography.org.uk/Pages/Publicat/Ukdir/index.html) and of the various map library websites reveals that the majority of such collections are still departmentally- rather than library-based (confirmed also in Moore's 1999 analysis).

Over the last decade, of course, a much stronger argument for the demise of the traditional paper map collection has emerged. As we all recognize, there has been a sea-change in the form of the product which map libraries offer. This product, once supplied as marks printed on paper, has been transformed to another medium, digital, and another means of transmission, electronic, and in doing so has radically changed its spots. While map libraries have to question anew their function and even their existence, the cartographic industry too has endured its own crisis, downsizing, re-tooling and losing cartographers by the score. Formerly highly regarded graduate and postgraduate courses in the traditional skills of cartography have ceased in several UK universities, and increasingly national mapping agencies are discontinuing the production of some printed map series in favour of topographic data stored and disseminated in digital form. All this seems to point to a withering of traditional mapping and the ascendancy of digital maps and geospatial data.

A VIRTUAL MAP LIBRARY

For the *user* of maps and spatial data this is not all bad news. In Britain today, any individual registered as student or staff in a higher educational institution, providing the latter subscribes to Digimap, can now access from their desktop a collection of Ordnance Survey maps far richer and more extensive than any local academic paper-based collection could previously aspire to. For a comparatively modest institutional subscription, the online mapping service

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Digimap offers access to almost the entire Ordnance Survey range of contemporary digital maps, has recently added historical OS maps to its service, and other, thematic, map series may be added in the future. Moreover, a trawl of the websites of National Mapping Organizations (NMOs) (whc.unesco.org/map-agencies.htm) of the developed world also reveals a huge growth in accessibility to national topographic series online, with free printing of extracts often permitted. The first agency to offer such a service in Europe was the National Land Survey of Finland (www.maanmittauslaitos.fi/), which in 1996 launched a site giving browsing and downloading access to its digitized topographic map series. Recently the Survey has launched a new Citizen's Map Site which affords browsing and printing of topographic maps up to a scale of 1:16 000. Many other NMOs have followed this initiative – Denmark's (www.kms.dk/), for example, has a 'Find a place' facility on its website offering official survey maps to street level scales of 1:10 000 and 1:4000. On this site you can also choose between a contemporary map and a selection of historical maps. Even Ordnance Survey GB, well known for its protective copyright policy, now offers a 'Get-a-map™' service on its website, allowing the browsing and free printing of small *Landranger* and *Explorer* map extracts. Additionally there are numerous Internet mapping services such as MapQuest and Multimap. While not all such offerings come free, the amount of high-quality data distributed through the net is now far superior to what a local map library could previously hope to provide. In my own institution, we could never afford to maintain more than a very local cover of Ordnance Survey 1:1250 and 1:2500 scale plans. Now Digimap facilitates access to the basic scale data for the whole of Great Britain.

Not only contemporary mapping, but significant collections of historical mapping, have been imaged on the web, and there are now powerful search tools to help locate them. Among the more substantial are the Library of Congress site and the David Rumsey Collection, while on home territory the National Library of Scotland and the British Library have been very active in this area (image sites are listed on the Map History website at www.maphistory.info/webimages.html). Meanwhile, for all those small format location maps so beloved of students, the Perry-Castañeda Library site (www.lib.utexas.edu/maps/) offers an extensive and growing archive of the small format CIA maps which this author tried so hard in the 1980s to obtain for his collection.

THE MAP CURATOR'S ROLE

Does this cornucopia of online maps render the university map collection redundant? If so, by obvious implication, doesn't that make the curator redundant as well? Perhaps we should begin by recalling what map curators actually do! The term 'curator', favoured in Britain against the American preference for 'map librarian', is suggestive. Traditionally map curators were employed to curate and develop a corpus of paper maps. Their concern was first with the physical conservation of the maps in their care, secondly with their storage and organization, thirdly with their retrieval (usually through a complementary system of cataloguing and classification), fourthly with the development of the collection through selective acquisition, and lastly, but certainly not least, with promoting and interpreting the maps and the data they contain to the users.

What happens, then, when nobody seems to need those maps any more, because they can more conveniently find up-to-date digital mapping on their desktop? All these functions apply just as importantly to digital data. But just as the paper map has become digital and then migrated to the web, so its curators have abandoned the map room! Increasingly the data themselves are being held on a remote server rather than locally. Not only contemporary map data, but historical too, are being stored at, organized, catalogued and retrieved from a central source. Somewhere, others are doing essentially a map curator's job on behalf of the many locally employed curators. Some of these people are real map curators in real libraries. As indicated above, the national libraries and a few others, both in the UK and in other developed countries, have been scanning – and making available on the web – significant parts of their historical map stock. Some, like the staff servicing Digimap (edina.ac.uk/digimap/) in the Edinburgh University Library, or servicing geospatial data at MIMAS (www.mimas.ac.uk/) may not think of themselves as map curators, but are nevertheless mediating between data providers and users, with a diminishing role for local site representatives or curators.

Elsewhere, academics have seized the opportunity offered by digital systems to build themed databases from diverse sources, and to serve them on the web. In the UK an excellent example of this has been the development of the *Great Britain Historical GIS Project* by a team at Portsmouth University (Gregory *et al.*, 2002). This now has a user-friendly web presence as *A vision of Britain through time* (www.visionofbritain.org.uk/). Most radical of all is the elimination of any intermediaries, as is the case when an NMO distributes or markets its data directly to the public.

Cataloguing too is becoming more centralized, and centrally distributed, not only through the shared cataloguing between major UK libraries and its availability on the COPAC website (www.copac.ac.uk/), but also, and importantly for digital mapping, through online metadata services such as Gigateway (www.gigateway.org.uk/). Gigateway, administered now by the Association for Geographic Information, facilitates online metadata creation through an application called MetaGenie. Although as yet its contents are very limited, eventually this service may provide a mechanism for comprehensive online searching for sources of UK spatial data.

It appears then that others may be taking over the curator's tasks – but not all of them. In particular the curator's significant role as information specialist is undiminished. Marley (2001) has effectively illustrated this through the use of two typical reference interviews in a Canadian library, showing the importance of the person-to-person interview to tease out exactly what the user requires and how the requirement might be fulfilled. She also illustrated the need for the modern map curator to be familiar with a wide range of sources, both paper and digital, local and web-based, and to be able to handle such

practicalities as file formats, file conversion and printing routines.

THE PROBLEM OF GIS AND LIBRARIES

So far, use of the term GIS has been deliberately avoided. The virtual library described above was largely a library of static maps which have simply been scanned and placed on the web. But the use of vectorized map data and the growing availability of geocoded thematic data, with the ready availability of GIS software (including web-enabled GIS), offer the map user the possibility of many new applications. As is shown by Fleet and Kowal elsewhere in this issue, the new *MasterMap*® format of Ordnance Survey is engineered specifically for use as framework data to which other data may be added and manipulated with a GIS. Clearly the static map is no longer enough, and a map library's fuller engagement with digital media is difficult to avoid.

In the United States, where university map libraries are predominantly located within the main library system, there has, over a decade or more, been a steady move towards incorporating GIS facilities within libraries. These were needed to handle the huge amounts of digital spatial data distributed on compact disk through the Federal Library Deposit Program, and libraries began to recruit information specialists with GIS qualification or experience, usually to work in close association with more traditional map librarians. Academic libraries in the United States have also benefited from the ARL Geographic Information Systems Literacy Project (www.arl.org/info/gis/), set up in 1992 to equip librarians with GIS skills. In the year 2000, Stone Muilenburg undertook a survey of the take-up of GIS by United States libraries (Stone Muilenburg, 2001). She found that a significant proportion of her respondents not only provided an advisory service and basic technical assistance, but were also providing customized maps on demand, and even getting involved in analytical work with spatial data. In other words, they were providing a level of service and support which would be exceptional in a UK library. In the UK, departmentally-based academic map libraries often have very limited staffing, although they do sometimes have the advantage of closely located GIS and cartographic facilities.

In a more modest study of academic libraries in Ontario, where data availability bears closer comparison with the UK, Collingworth (2005) found that ten out of 11 respondents had a GIS capability in their libraries, and over half provided user training. A recent sampling of UK academic map libraries by Fox (2005), however, indicates that only half the respondents were providing support to Digimap users, and only two mentioned support for GIS software. Most were content to refer GIS problems to specialists elsewhere.

So, are UK map curators missing an opportunity here? Do they have to become fully-certified GIS operatives to survive? Traditionally a large part of the curator's task has been that of reference work, and digital geospatial data needs its reference librarians as much if not more. There is much work to be done in this field: in the sourcing of information for users, in providing information on the practicalities of scaling, or merging datasets, and of file conversion, without actually sitting at a terminal and creating a map. But there is a thin line between advising and doing, and an enormous implication in terms of staff time for the latter. It is not surprising than many UK map librarians point the enquirer somewhere else to obtain GIS support.

Although there have been a number of workshops and seminars in the UK and Europe to help map curators get to grips with digital mapping, most of the published literature emanates from America and points unequivocally to a GIS route for map libraries. In the face of this, Campbell (1999 and 2000) has taken a refreshingly contrary view to all the hype about the virtues of digital libraries, and while his views provide a welcome antidote, some of his predictions about the future library are already proving wrong. For example, the Digimap service in its present form is far less restrictive in scope and permitted use than he predicted, and competition is freeing up the availability of data online. In spite of the man-hours required to convert large historical map collections to raster images, huge progress is being made here too. But while expounding the value of the printed map, Campbell too recognized that we need to become experts on access to online data sources: 'We need to become specialist Web information brokers' (Campbell, 1999, p. 8).

IS THE PAPER MAP LIBRARY REDUNDANT?

Given the drift of the arguments in this paper so far, we need to question whether map collections should dispose of all space-wasting paper maps. The answer to this is a resounding 'no', although it must be said that if a paper map collection is locked away, with very restricted access, and not kept up-to-date it is of limited value in an academic context.

Users still expect to be able to use paper maps, and in spite of NMOs ceasing to publish certain map series (mainly large scale ones), there are plenty of printed maps being published at the present time, and in greater variety, than ever before. These include an improving range of tourist and city maps designed to meet the needs of the adventure traveller, and also many with interesting thematic content, or which adopt new visualization techniques, valuable in a teaching and learning context. How much easier to haul out a printed map or atlas to illustrate a cartogram approach to census mapping, than to have to search for something similar on the web.

Although there is much duplication of material between map collections in HEIs, each collection also possesses some measure of uniqueness. Very often, too, local collections have acquired local material and, as has been shown by the research and publications of the Charles Close Society, no collections, not even the Legal Deposit Libraries, hold the complete range of all Ordnance Survey maps ever published.

A map collection is made stronger by the integration of paper map holdings with digital spatial data. Many users have an expectation of a printed paper map, when a digital map would serve better. Increasingly the opposite is also true.

MAP LIBRARY FUTURES

In preparing this paper, I am aware that my view is very parochial, and although I have visited many collections over

the years, my close experience has been with only one. Although many UK collections in HEIs have a common origin, today each one is individual. An idealistic approach to the future of such map libraries can be very different from the reality. In *The Map Library in the New Millennium* (Parry and Perkins, 2001), the editors concluded the book with a debate on the future of the map library. The two proponents deliberately took opposing views and tried to support their case by drawing on some of the views expressed by contributors to the volume. The debate was informal and spontaneous (it was conducted by email) rather than carefully crafted. Essentially Perkins argued for the demise of academic map libraries on the grounds that economic, political and legal conditions were stacked against their ability to become centres for the management and supply of digital mapping. The present author, on the other hand, presented a more optimistic picture of how the map curator could adapt. I have to admit that Perkins had the best arguments, reflecting as they did the real rather than an ideal world. In fact a decade ago, he had already questioned whether map libraries could or would meet the digital challenge, warning of the danger of a split between the map librarian and experts in the distribution and management of digital data (Perkins, 1995). Fox's survey has indicated that in many cases such a separation has occurred (Fox, 2005). Many university academic map libraries are in a parlous state even in terms of their paper map holdings, because they have been starved of funds and have insufficient staffing. The most successful are probably those which have promoted their services institution-wide, and which have been able to work in close association with staff involved with IT (Sherren, 2002). It is a potential strength of a geography department or similar location for a map library that it may be able to exploit the synergy with staff involved with GIS and cartographic production, and even to share use of expensive hardware, digitizing and printing facilities.

Since its launch in 2000, the Digimap service has offered academic map libraries a useful gateway into the handling of digital data. In its pilot and initial phases Digimap was promoted very much as a map library service and as a complement to a paper map collection where such existed. But with the subsequent introduction of online registration, the need for the site representative to meet face to face with the user has diminished. At this author's institution, having to register with site representatives in the map library brought new users within its compass, where they could discuss their needs, receive help if required, see examples of good and bad practice in scaling Digimap printouts, and also be introduced to the virtues of the printed paper map collection! Of the 22 respondents to Fox's questionnaire, however, only 12 were providing significant Digimap support.

There is, of course, absolutely no point in trying to preserve the status quo unless you can demonstrate a need. As Keller pointed out in a much-debated paper on 'The map library's future', radical thinking is required to accommodate the new paradigm of 'geographical information', otherwise '... map libraries face the risk of being perceived obsolete by the present and future geographic information user community' (Keller, 2001, p. 73). The focus in future should be on access and use rather than storage, with the erstwhile map curator developing further his or her role as facilitator. There is no doubt that users of digital data, especially when the data are expressed as a map, often require the services of people who can help them acquire, download, view, print, or even interpret the data or map.

One can envisage perhaps three scenarios for the future of the academic map library:

1. The map library (or spatial data resource centre) becomes the acknowledged centre in the institution to mediate between user and map and data sources, whether those sources are held locally or remotely. Its mission would include provision of information on data availability and quality, and help with access and use. It would also provide onsite facilities for viewing, downloading and printing.
2. The map library becomes a paper map archive only (and might well be eliminated if little used), with all digital enquiries being routed to GIS expertise residing elsewhere, such as the university's computing centre, or a geography department.
3. The web becomes master, with users depending entirely on the services of distributed geolibraries and on online help, and with the assumption that GIS training would be given within individual disciplines.

The second and third scenarios clearly indicate a wasting and probable death of the map collection. Many UK map collections seem at present to be following the second model, and some have even ceased to provide funds to maintain the currency of still-popular paper map series. There is ominous talk of the need to reduce the size of the collections or move them to a remote location (the space police again). Obviously this author supports the first scenario! It is similar to that proposed by Keller. One of the problems noted by Fox is that some UK collections do not have onsite access to computer terminals, except perhaps in the curator's office, thus severely limiting the ability to help users with online activities. Providing and maintaining the hardware and software for a spatial data laboratory is expensive (Deckelbaum, 1999) so, wherever the location, it is important that the facility is recognized and promoted as a service for the whole institution. The oft-quoted statistic that Digimap usage is 80% by non-geographers is certainly reflected, in this author's experience, in the use of paper maps too, and makes it imperative that the collection is not seen as a resource limited to the use of a single university department or school.

Much has been written about the concept of the distributed 'geolibrary', as first exemplified by the Alexandria Digital Library Project in the USA (Goodchild, 2004). Elements of such a library can also be seen in the development of National Spatial Data Infrastructures and spatial data clearinghouses (Boxall, 2004) and, as suggested at the beginning of this paper, anybody can construct their own primitive geolibrary by listing a series of web links to spatial data sources. Many map library websites in the UK already do this by providing a selection of recommended links. But academic map libraries could also contribute to the construction of geolibraries by providing metadata for local datasets held locally. Goodchild (1998) has pointed to the advantages of

geodata being held 'on a server close to, or within, the geographic footprint of the material' (Goodchild, 1998, p. 62). Given the staffing and the funds, local collections could play a proactive role in acquiring and conserving local spatial datasets, just as in the past they have often acquired local paper-based map resources. There is a danger otherwise that potentially valuable data will not be archived and will be lost (Parry, 2003).

The prime example of a collection which has extracted local data from national datasets and elsewhere and reformatted them to provide a regionally-focused geolibrary has been McGlamery's networked Map and Geographic Information Center (MAGIC, magic.lib.uconn.edu/) at the University of Connecticut. This ambitious project has been enormously successful, with over 9000 zipped data files being downloaded from the site each month. 'Through the Internet, MAGIC has been able to build a public collection of Connecticut's cartographic lineage' (McGlamery and Cromley, 2001, p. 7). While this model would not transfer easily to UK collections, it provides an illustration of how an academic library has recognized a local public need, and has set about fulfilling it.

There is no doubt that UK academic map collections are under threat as never before, and many are probably too weak to survive. Yet it can be demonstrated that those which integrate their paper map collections with at least some support for acquiring and handling digital spatial data continue to play an important role in the academic community. As Keller has stated, today's map curators need champions with the vision and insight to fight for the map library's future. 'Those map libraries that can find a champion will most likely make the transition to a map library of the future, while those without vision and leadership will fade into the backwater and face eventual closure' (Keller, 2001, p. 76). Keller's predictions would seem to apply to the situation in the UK today.

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