

## **The new Map Librarians: Local perspective and local experience on digital spatial data and map librarianship.**

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### ***Abstract***

*Map Librarianship is facing challenging times due to the explosion of digital information. Increasingly library users are expecting access to GIS and geospatial data as well as traditional paper maps. This presents many issues to most traditional library services. Now is the time for librarians to plan ahead and make strategic decisions about the future delivery and concept of the 'map library'. This paper discusses challenges, issues, and solutions that the University of Auckland Library has been addressing over the last 2 years in order to improve and enhance use and access to maps and geospatial data.*

### ***Keywords***

*Map Librarianship, map librarians, map libraries, Geographic Information Centers, digital maps, geospatial data, University of Auckland Library, Landscoper, MapLibrarian, digital libraries, GIS.*

### **Introduction**

In order to meet the challenges that the digital information revolution has created it is first necessary to understand how maps work and why there has been a transition from paper maps to digital data.

Traditionally a map library would hold a large collection of paper maps organized in map cabinets. The University of Auckland Library currently holds about 55,000 such maps. These maps have been used as a primary resource to store and communicate geographic information. However Goodchild<sup>1</sup> points out that sometimes clients encounter drawbacks in using these maps because they are:

- Static (snap shot in time)
- Fixed in what they show
- Unconnected to other information sources about space and place
- Can be awkward to access and use
- 2D
- generic (satisfy many users and uses simultaneously but are not user-centered)

MacEachren<sup>2</sup> suggests that we need to re-think the map in view of Geographic Information Systems (GIS) and database developments so that the map is:

- Part of the information infrastructure, not an end product
- Used as a tool to facilitate analysis and decision making
- A means of communication

Keller<sup>3</sup> summarises the attributes of the digital map of the future (geospatial information) as being:

- Flexible and customizable
- Not an end product, a database
- Dynamic
- Facilitating communication
- Fully connected to other data sources about space and place (and sometimes time)
- Not physical but digital medium
- Supports digital measurement and analysis
- Multi-media concept
- Represents reality

He believes that clients will want this to become the primary resource instead of the paper map. Although there have been suggestions that digital objects will totally replace analogue making paper maps obsolete, most librarians will disagree. Nothing can replace the ‘experience’ of handling and using a historic paper map. What librarians would like to achieve is improved access to and integration of geographic information regardless of format or location. This integration of information has been an achievable goal in other subject areas by use of the web over the last 10 years. However the specialized field of maps and spatial data poses a greater challenge and there have been few who have dared to venture here. “The task ahead looks daunting. Many of those suitable to champion the transition are shying away from serving because of the sheer work and effort involved.” (Keller<sup>3</sup>). In 1999 a Mapping Sciences Committee Workshop stated “A distributed geo-library is a vision for the future. It would permit users to quickly and easily obtain all existing information available about a place that is relevant to a defined need. It is modeled on the operations of a traditional library, updated to a digital networked world, and focused on something that has never been possible in the traditional library; the supply of information in response to a geographically defined need.” (McGlamery<sup>4</sup>)

### **The Changing Climate and Objectives of the University of Auckland Library 2001-2003**

In 2001 four fundamental changes proved to be a catalyst for the University Library to re-assess its delivery of maps and geospatial data. These were:

1. The start of a major 2 year Library building and re-organisation plan which would cause the Geography and Geology Libraries to be relocated to the upgraded General Library with the creation of a ‘Map Room’ containing about 55,000 maps, where 2 specialist librarians would work.
2. The appointment of a Digital Projects Librarian - a specialist who could make recommendations for digitization and implementing digital projects.
3. The School of Geography and Environmental Science and the University Library gained funding to embark on a 2-year joint project to create a digital map library and spatial data collection.
4. More data was becoming available digitally.

The University Library determined to improve and facilitate access to and use of the Geography, Geology and Map collections in order to achieve delivery of an enhanced service.

Specific aims were:

- That clients should be able to easily browse and retrieve information themselves
- That retrieval of maps and information should be speedy and efficient
- A central point of access should be established for printed and digital information

- There should be integration of access to hard copy and digital data
- There would be networked access via the web across the University Campus to core data giving clients 24 hour access to resources
- Clients would have the ability to search for information spatially
- Expert staff would be available to assist clients in accessing and using spatial information.
- A collection of spatial and map data sets focused on New Zealand would be created

We have been working towards this now for the last 2 years and have partly achieved some of these things through 2 projects: Landscoper, and MapLibrarian.

## **Challenges**

Initially there did not seem to be that many challenges to achieve the aims, but as things progressed many issues developed. In retrospect looking back over the last 2 years the challenges and issues can be grouped as follows:

### *Having a vision and a leader*

To make the transition from a traditional map library to the map library of the future it is essential to have a clear vision, good leadership and buy in from all participants to make this a reality. This sometimes faltered in our case since key people were all under great work pressures and jointly working on other major projects at the same time, so that focus sometimes slipped. Also it took us a while to realize that this was a bigger project than we had initially thought and that an overall strategy plan encompassing both projects was actually needed.

### *Changing Expectations and Client Needs*

From early on the School of Geography and Environmental Science (SGES) made it quite clear that their expectations of what the University Library Services should offer to Geography students and what was currently offered were different. Fortunately the Library maintains good relations and regular contact with all University Departments and is constantly looking at how the Library Service could be improved to meet present and future needs of its clients. The input it gains from departments is invaluable. Although the SGES are the main users of map information we were very aware that other departments such as the School of Business and Economics, and the Department of Planning were also key users and may have different needs. Finding out current and future needs is essential when planning service delivery.

### *Looking for suitable partnerships*

The University Library will always consider if there are any suitable partnerships either internal or external when embarking on major projects. We also turn to our international colleagues for advice on difficult issues. In this case we were able to form a partnership with the SGES and are still investigating if there are other ways we can work with other people that would benefit our users. We have also asked informally for advice from a wide range of people in relation to particular aspects of the project. For example we have contacted the National Library of Australia and NZ Institutions to discuss equipment for scanning maps, and have taken advice from international map listserv's about classification of maps. The partnership with SGES worked well in that SGES could provide the technical components such as a map server and web maps, cartographic and modeling expertise and advice on

software and technological developments, while the University Library has a service infrastructure to manage and deliver information.

### *Funding*

Gaining adequate funding to change your vision into reality is always a challenge. But this is only the first step. With any digital project gaining a lump sum is not adequate because digitization is an ongoing cost. Once you have purchased software, created websites, loaded digital objects etc someone needs to not only maintain these, but also update them and build on them. Otherwise substantial amounts of time, effort and money are quickly lost because your resources lose relevance and accuracy. We were fortunate in obtaining some funding for specific projects and purchasing data, but ongoing funding is still an issue.

### *Management of Information*

Acquiring, physically organizing, describing (cataloguing) and locating (classifying) information were and still are major hurdles. Finding and acquiring geospatial data is quite different from the Library's usual acquisition process. Physically collecting and moving all the geospatial and digital data that had been purchased over the last few years onto one server took 6 months. Moving the Geography and Geology Library maps to the new map room and integrating them took about the same. The hard copy maps had never been catalogued or classified, making it extremely difficult for clients to find things themselves (although there was always a librarian on hand to assist). With the collection being approximately 55,000 to even think about describing and locating it was a daunting task. To then try and decide what metadata schema to use to describe both digital and paper maps and if this was in fact possible became an issue due to the range of options available, and lack of our experience in this field. To try and integrate paper maps and geospatial information as one had big challenges both conceptually and physically.

### *Delivery and Retrieval of Information*

Evaluating what software systems were available or under development that would help us achieve our objective was difficult because we were looking for cutting edge technology and delivery systems. The inside knowledge from GIS experts was invaluable since this fell outside of the experience of our librarians. We also wanted to work within our own current infrastructure using if possible the University site license to the ARCGIS suite of products from ESRI, and also our Library Management System – from Endeavor Information Systems. The simple concept we wanted to achieve of being able to search for data spatially, and also across collections was actually ground breaking stuff and in the end we decided to develop our own proof of concept idea 'Landscape', and purchase 2 products that had recently been developed 'MapLibrarian' from Mapping and Beyond, and 'EnCompass' from Endeavor which together should provide solutions. However this involved taking risks since the area of development was so new and not fully deployed anywhere else.

In addition to this hardware requirements were considered so that clients would be able to view and print data using high spec machines, large monitors, printers and possibly scanners. Up until now students have only been able to use geospatial data in the student computing laboratories or the Geospatial Data Analysis Facility. There has been no access from the University Library or remotely. We wanted this to change in line with other resources. Access would be restricted to University students and staff by using the University authentication system to comply with copyright and licensing restrictions.

### *People and Communication*

Right from the start it has been challenging to articulate clearly what it is we hope to achieve. There has been a huge chasm between the understandings and perceptions of GIS people and librarians. I have yet to meet a person who is fully conversant in both the jargons that these 2 groups of people use and can see things from both points of view. Speaking as a librarian myself my own knowledge and understanding of 'geospatial stuff' has had to increase dramatically sometimes on a weekly basis. I can see the enormous benefits that could be gained by the end user following a 'mind meld' of these 2 areas of expertise. But the communication aspect is sometimes difficult and librarians in particular need to be willing to learn whole new areas of information from GIS specialists. Sometimes librarians are resistant to change or don't feel able to re-skill themselves so radically. Client's perceptions of what the 'map library' of the future is, the role of the librarian in that and how to access and use the facility also requires training and development. Using terms like 'Map Library' are in fact undermining our aims because we are really offering a 'Geographic Information Service' so clear articulation, communication and response are essential. Managing people through dramatic change needs to be handled carefully.

### *Time*

Achieving the aims was far more time consuming than anyone had initially thought and is still ongoing. Staff involved in the projects were doing the project work on top of their normal job so this lengthened the timeframes. It was often difficult to get all the relevant staff together at the same time for a meeting, so some decisions were slow in coming. Setbacks in software developments and installation also slowed things down. What were perceived initially to be relatively simple tasks were actually not and took longer than expected.

## **The Projects**

### **1. Landscooper**

The 'Landscooper' system has been developed by staff employed by the SGES, with Professor Pip Forer and Graeme Glen taking the lead. It is a beta version/proof of concept that has been developed as a framework for viewing, extracting and mapping spatial data and maps in an efficient and effective way. It will provide a means to access, view and extract data using ESRI GIS. The front web end is still under development but the back end and data are organized. The data has been purchased by the University Library Strategic Fund and the SGES budget and is stored together on a server in the SGES. It consists of the national topographic data set, the land resource inventory, 1996 census geographies and land cover database, NZ Road Centrelines with address range and address points, 2001 Census level 2 digital meshblock, area unit and territorial authority and regional council boundaries, 1991 level 1 digital meshblock boundaries in Gina Format, 1991 meshblock area unit, territorial authority and regional council link file, and colour aerial photography of the Northland Coast. In addition 100 key Auckland region hard copy maps are being scanned and will be delivered and viewed over the web using Mr Sid image compression technology. It is intended that these resources will be catalogued in our Library Management System with access being a link to Landscooper. In order to extract data clients will be able to use a dedicated workstation in the Map Library and workstations in the Spatial Data Analysis Facility in the SGES and student computing laboratories. Landscooper is an excellent concept and has great potential. Its strength lies in its ability to act as a central point of access for some key spatial datasets which were previously stored and accessed from several different locations, or simply not purchased because it was questionable how they should be delivered. Funding for the 2 year project has now finished and we are on the brink of being able to deliver a fully workable

system. We are still investigating ways of obtaining further funding to enable us to maintain and develop the system.

## **2. MapLibrarian**

When the Landscooper project was reaching its end we suddenly became aware of a new product on the market. This was called 'MapLibrarian' from Mapping and Beyond. The software seemed to suit our needs and would help us achieve some of our original aims. MapLibrarian is an index tool that enables retrieval of location information for both digital and hard copy maps, but what makes it unique is that the search interface allows geographical searching by use of a map interface, geographical co-ordinates or text. This is therefore nothing like the traditional library catalogue. The more we thought about it the more we realized how this tool could revolutionize the way clients retrieved maps. No longer would they need to ask for the type of map first eg digital, hard copy topographical, aerial photo they could simply do a geospatial search for their location and the system would list all relevant maps that the University held for that area with a physical location or e-link to the item. This project is still in the early days since the software is still under development (originally it had a backbone of ARCIMS, but this may change). Also the University Library has not catalogued or classified most of the hard copy map collection so we have no records to load into the system. A major retrospective cataloguing project is required, and downloading of data from national library systems (TePuna, Kinetica, Library of Congress). We intend to download the data in MARC format to our Library Catalogue and then bulk import this into MapLibrarian. There is still much more investigative work to be done in this area and strategy planning. However ultimately MapLibrarian like Landscooper has huge potential for the future. If other large Map Libraries were to purchase the system and exchange information a national map index would result. This would be similar to the concept for books and journals in TePuna the National Library Catalogue where a member of the public can easily check who holds particular items.

## **Conclusion**

The conclusions that we have reached so far in addressing the challenges that will take our 'map library' successfully into the future are that firstly a clear goal and a vision are required. Commitment to deploying a fairly substantial amount of money, staff and time are then necessary and it is likely this will be an ongoing commitment due to the rapid advances in technology and explosion of digital information. Acquiring and managing appropriate data are important factors, as is an understanding of present and future needs of clients. However the most difficult issue to address is the 'human factor'. As with most digital projects dealing with people rather than the new technology is often the most challenging part. For example changing clients perspectives on what a map library is, or should be, or will be; training expert library staff to select, organize and describe geospatial data; re-skilling front line staff to be able to not only assist clients in accessing the information but also in using and applying the information; getting GIS people to understand and communicate effectively with librarians and visa versa. These tasks have not been easy due to the steep learning curve that is usually required in the GIS field, the amount of jargon used by librarians and GIS people, and differing perspectives and understandings of what began as theoretical concepts. But we believe that with time and effort we can always find ways to improve our library service to clients and at the end of the day any librarian will tell you that giving the users what they need and acting proactively is the most important thing. That is after all what we are here for.

## References

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