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PGIS as a sustained (and sustainable?) practice: First Nation experiences in Treaty 8 BC, Canada

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Introduction

Participatory GIS (PGIS) has been present in Canada for the past three decades. Some trace its roots back to the work of Franz Boas, who recognised that ‘the recording of locally used place-names can be used to explicate the systematic nature of Aboriginal land use’ (Natcher, 2001). However, the first systematic study recognisable as a form of PGIS was the Inuit Land Use and Occupancy Project (Freeman, 1976). The project interviewed hundreds of Inuit in the early 1970s and resulted in over two hundred maps of seasonal subsistence activities. Freeman’s work was followed shortly by the work of Hugh Brody and the Union of BC Indian Chiefs in the Treaty 8 area of what is now northeastern British Columbia (see Box 1). This resulted in the publication of the book *Maps and Dreams* (Brody, 1981) and signalled the beginning of PGIS in the Treaty 8 area. While the history of participatory mapping in Treaty 8 has not been smooth, northeastern BC has experienced a very long history of sustained PGIS application.

This long history of participatory mapping, or traditional use study (TUS) as it is more commonly called in the area, has played a major role in the development of this practice in Canada and beyond. It makes Treaty 8 BC a critical site for learning about participatory mapping and PGIS as

Box 1: Treaty 8 and First Nations

First Nations is a common title used in Canada to describe the various societies of Indigenous peoples of North America, who are not of Inuit or Métis descent. The collectively used term for all three groups is Aboriginal Peoples or First Peoples.

Treaty 8 refers to the agreement signed in 1899 between First Nations of northern Alberta, northwestern Saskatchewan, the southwest portion of the northwest Territories, and the Queen of England. It was later followed by Adhesions in the northeastern portion of British Columbia in 1900. Treaty 8 encompasses a landmass of approximately 840,000 square kilometres, and is home to 39 First Nations communities. In this paper, we focus on the region of British Columbia.

sustained – and hopefully sustainable – practices.

After thirty years, issues of aboriginal land and resource rights continue. But the dialogue between First Nations in northeastern BC and the Canadian state has shifted from one about treaties and litigation to what has become known as ‘consultation’ regarding resource development decisions. Within this new era of consultation the value of good quality participatory mapping is increasing in importance while the challenges of building and maintaining a quality PGIS within First Nations communities continue.

In this, and every, context, it is important to remember

Map of Treaty 8 territory in Canada. Map produced by Steven DeRoy and Donovan Cameron, Treaty 8 Tribal Association



that lines on maps have power. The creation of maps is embedded in historical, social, and political contexts that cannot be separated from the maps themselves. Recognising and turning the power of maps towards indigenous goals, the Cree, Beaver, Dene, Sekani and Saulteau communities of Treaty 8 have been making their own lines, points

and areas using paper, mylars, and digital geographical information systems (GIS) for more than thirty years.¹ We use the term Traditional Use Studies (TUS) as a comprehensive term

¹ A mylar is a clear film plastic sheet, or acetate, that can be placed over paper maps and written on with permanent markers to collect data.

Treaty 8 First Nation members at a Traditional Use Study training session



Photo: Steve deRoy

to explain the processes of participatory mapping. As Tobias simply explains, 'think of it as the geography of oral tradition, or the mapping of cultural and resource geography' (Tobias, 2000).

The indigenous mapping tradition

Any history of mapping in the Treaty 8 area needs to begin with an acknowledgement that Treaty 8 First Nations are not strangers to the idea of mapping and documenting the way they use and understand their territories. Given the proper contexts, and the proper respect, elders from any of the Treaty 8 communities may speak of a long tradition of spiritual map making. Long before oil companies and anthropologists introduced paper maps, local spiritual leaders were dreaming their way through sacred landscapes of trails and forests. They returned to their families and loved ones with spiritually powerful 'dream maps' recorded in drum songs and drawn on moose or elk skins (Riddington 1988; 1990). These provided an indigenous record of human experience within a spiritually charged landscape, marking important places and experiences, and providing a tangible connection between this world and the next, as well as between the storied past and the always-changing future. Some of these sacred maps, and the skills to read them are still kept by elders of the Treaty 8 communities. Both the maps, and the elders who understand them, continue to provide a precious resource for those in need of guidance.

But PGIS maps are a very different kind. Rather than written on skins or in the memories of elders, they use GIS software, computer memory and database programmes.

Rather than being born from and integrated within indigenous structures of knowledge, they involve a set of non-indigenous priorities and technologies that are as likely to disintegrate indigenous structures of knowledge, society and power as they are to support them. But, just like dream maps, PGIS must, in some way, form a bridge between worlds by communicating between ideas of space and time.

Modern PGIS in Treaty 8 BC: 1974 to 2003

In the early 1970s, a massive oil and gas pipeline was proposed for the eastern slopes of the Rocky Mountains. This pipeline was built to link resources in Alaska to markets in the continental United States. To support their arguments against the project, the Union of BC Indian Chiefs (UBCIC) and the Treaty 8 Tribal Association hired researchers led by Hugh Brody to systematically document the land use activities of local First Nations based on their knowledge and use of the land. Brody's mapping was designed to inform the Mackenzie Valley Pipeline Inquiry. Members of the Treaty 8 First Nations, many of them now elders themselves, worked directly with Brody as research assistants and interpreters to interview elders and community members and map the importance of the land to local economies and livelihoods. This mapping project was the first of its kind in BC. It formed a critical part of the foundation for later TUS and PGIS related work in northeast BC and elsewhere.

TUS research in northeast BC was sporadic after Brody's work. Through the 1980s and early 1990s, participatory mapping played a major role elsewhere in BC through legal cases such as *Delgamuukw* (Sparke, 1998).² But only a handful of small mapping projects took place in northeastern BC (see Walde and Candler, 1996). Brody's maps disappeared from Treaty 8 territories shortly after they were completed and the systematic, regional approach to TUS that was taken in the 1970s was replaced by smaller projects. These projects had modest budgets involving single communities mapping out their own interests in response to particular proposed resource development projects. The projects were funded by either government or industry interests in order to fulfil vague legal requirements to 'consult'. Little was left with the communities in the way of a lasting legacy.

In the mid-1990s, a company proposed to harvest a large area of forest across from the reserve lands of the Halfway River First Nation, one of the more remote commu-

² *Delgamuukw* was a Supreme Court judgment that marked for the first time, at a national and constitutional level, an explicit recognition of Aboriginal title existing within the Canadian legal system.

Box 3: The Treaty 8 Tribal Association

The Treaty 8 Tribal Association (T8TA) represents six First Nations in Northeastern British Columbia. It acts as a coordinator, a facilitator, and technical support on various issues as mandated from time to time by the Council of Treaty 8 Tribal Association Chiefs.

nities of Treaty 8. The crown required the company to consult with the community. But the community refused to cooperate with the company because, at that time, 'consultation' was just a formal step towards the approval of the cutting permits. The community chose to express their opinion by setting up a blockade instead.

Because the community refused to cooperate, and because Brody's work had been largely done with the Halfway River First Nation, the company commissioned a report on the community's traditional land use based on Brody's published work, without speaking with a Halfway River member. The report found no evidence in Brody's existing maps that the area of the proposed cut block was of any great significance to the traditional practices of the Halfway River people. The logging company delivered the report to both the provincial government and to the Halfway River First Nation. Based on the report, the provincial government considered 'consultation' to have taken place and approved the cut block. So the Halfway River First Nation launched a court injunction against the development. After a difficult court battle, they won the case on the grounds that 'consultation' with First Nations had not been 'meaningful'.

It was within the context of new court decisions and increased oil and gas developments that the Treaty 8 Tribal Association (T8TA) made a renewed effort in the late 1990s to have local community's values recognised in resource management decisions. The organisation pushed for funds from the provincial government and received enough money to initiate the Treaty 8 Tribal Association (T8TA) TUS in 1998 (see Box 3).

The initiative involved the combined efforts of four of the seven Treaty 8 First Nations. The four communities agreed to work with the T8TA to document their interests over the entire Treaty 8 BC region using a single consistent set of methods. The work involved locating archival and historical documents, including Brody's work, other TUS work, and archaeological reports, and combining them with the map biographies and traditional knowledge of Treaty 8 elders and community members within a single digital GIS. Through a detailed search of at the offices of UBCIC in Vancouver, the T8TA was able to locate a few of Brody's orig-

Elder Max Desjarlais from the Moberly Lake First Nation, Treaty 8, British Columbia



Photo: Steve deRoy

inal paper base maps that had been made more than two decades earlier. These were repatriated back to the archives of the T8TA for safekeeping.

The T8TA TUS involved extensive training of local researchers followed by more than a year of careful interviewing, mapping and documentation. Mapping interviews were held with individual elders and community members and documented on mylar map overlays at a scale of 1:50,000. Interviews were audio taped and later digitised as .mp3 files and, where necessary, transcribed. Points, lines and polygons noted on base maps were digitised at the T8TA regional office and annotated using a combination of GIS and database software. The four communities mapped more than 28,000 TUS locations. Mapping interviews were supplemented with life history interviews and elder's circles where more general traditional ecological knowledge (TEK) was recorded. All of the materials produced were duplicated

and stored by the Treaty 8 Tribal Association. Each community received a complete set of their own data for ongoing use, as well as a complete workstation with basic GIS software. At least two community members from each First Nation received training in TUS interviewing, GIS operation, digital map making, and verification of site locations with the use of a global positioning systems (GPS).

While the T8TA TUS was successful in many ways, it was not able to negotiate a final information sharing and protection agreement (FIPSA) with the government of BC. Despite numerous attempts, the T8TA and the provincial government could not agree on how the information collected through the TUS should be used and maintained into the future. The T8TA sought to negotiate a relationship that would see the information used on an ongoing basis in resource management decisions. The T8TA wanted its use to be facilitated and overseen by a First Nations regional office that would sustain itself through charging fees for the services and data that it provided. In the absence of such an ongoing First Nations presence, it was feared that any data shared with the province would be misinterpreted and misrepresented against the interests of the Treaty 8 First Nations. In particular, there was concern that once the province had the data they would use it as a substitute for meaningful and consultative engagement with First Nations on projects of economic importance. In the absence of an information sharing and protection agreement, the data collected through the T8TA TUS was not shared with the province. It remained housed within the T8TA and was shared only with the four participating First Nations.

Current PGIS in Treaty 8 BC

The present goals and vision for the future of the Land and Resources Department of the T8TA is to create a centralised land use office that supports the First Nation offices through the use of GIS and PGIS practices. A community user needs-assessment was completed in 2004, evaluating the current state of GIS in the communities. Despite all previous efforts to maintain GIS with the communities, the 2004 survey revealed a lack of technical expertise in using GIS technologies. Presently, within community land offices, where GIS and PGIS take place, there is the overwhelming task of dealing with referrals and applications for development. Using GIS and PGIS effectively and efficiently in this process becomes another challenge faced by communities.

For example, the Doig River First Nation received 908 Oil and Gas applications in 2004, each with a 10-day decision turn-around. The 908 referrals do not include applications

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from the forestry and mining industries, BC Hydro, or many other proposals for development. In most cases, Doig River First Nation received incomplete application packages and lacked the necessary information, tools and time to make informed decisions.

Recognising the importance of empowering the community land use offices to make informed decisions relating to development activities, the Treaty 8 Chiefs signed memorandum of understanding agreements with the BC Ministry of Energy and Mines.³ As part of these agreements, the communities would gain an opportunity to harness GIS technology to help manage geographic data at the local level.

Recognising community challenges, both industry and government support Treaty 8’s initiative to ameliorate the consultation process, increase local capacity, and develop new decision support tools and to create a T8TA centralised data repository. In hopes of incorporating TUS data collected from numerous research projects in the past, seven out of the eight BC Treaty 8 communities received state-of-the-art mapping hardware and software from the BC Oil and Gas Commission.

At the community land use offices, personnel are responsible for evaluating impacts to cultural uses and values, using TUS data as an indicator. This evaluation process requires lands’ staff to review policies, overlay TUS map layers with proposed development, and field crews sent to the proposed site for assessment. When TUS sites have been identified within the area of proposed development, global positional systems (GPS) are used to gain a precise location of where TUS data may be located. However, new data presently being collected by elders and monitors is not being transferred into a digital format at this time.

³ First Nations communities operate under a general administration, under the direction of the Chief and Council, which often includes health, education, and land use offices as part of the organisation.

“Lack of information and the capacity to analyse it constrains the ability of the communities to respond to requests from industry and government for input on proposed development”

Many challenges arise when trying to create capacity with GIS technology at the local level. Factors that contribute to this are lack of staff, heavy workloads, limited funding, and a lack of community involvement, among others. Community effectiveness is limited by lack of access to current and relevant data. Lack of information and the capacity to analyse it constrains the ability of the communities to respond to requests from industry and government for input on proposed development.

So as part of a training strategy, using PGIS, four of the communities have engaged in the development of a 40-layer atlas. This atlas blends scientific and cultural knowledge for each of the community's critical use areas, or areas of significant importance to the community. The time that is set aside to develop this product is minimal, due to referral demands. In time, an atlas depicting forestry, environmental, ecological, industrial, and cultural values can be incorporated into the decision mechanisms that support or restrict development activities.

The T8TA is in the process of linking each of the regional communities to a centralised land use office. This office will house a repository of spatial data, including TUS and TEK datasets. Gaps in information relating to TUS data can then be identified and strategies can be developed for further research. Using GIS technology, T8TA can then begin to incorporate these vital datasets into community planning tables and support negotiations efforts.

PGIS as a sustained practice

Consideration of the past thirty years of PGIS activity in the Treaty 8 area seems to provide several lessons regarding the nature of PGIS as a sustained, and hopefully sustainable practice:

- TUS often comes in waves of activity followed by periods of relative inactivity. Maintenance of a sustained and sustainable PGIS involves anticipating and preparing for the low points of PGIS activity.
- Sustaining the legacy of PGIS through periods of low activity requires an institutional organisation that takes

its responsibilities for maintaining and protecting valuable PGIS data and resources seriously.

- It is critical that local indigenous interests remain in control of the data produced by a PGIS.
- In the case of Treaty 8 BC, where individual First Nations are very small, the regional stability of the T8TA has proven instrumental for sustaining the legacy of past PGIS efforts. With this said, the T8TA also continues to be challenged with representing the diverse interests of its membership.
- Building capacity at the community level is also important and valuable, even in cases where this capacity cannot be sustained over the long-term.
- It is critical to understand that maps are only indicators of the living knowledge that exists in communities. While there are still elders able to speak, maps must not become the authorities.
- There is a future for PGIS mapping, but is sometimes difficult to anticipate where that future will lead a community. One of the key questions that remains to be answered in the Treaty 8 is whether or not there is financial viability for PGIS beyond the occasional funding of mapping projects.
- Successful PGIS must deliver high quality products through following a consistent and documented set of methods. It must be based on good quality research that leaves a clear paper trail.
- It is critical that PGIS be community-initiated and participatory. But it is equally critical that it balances community involvement with quality outputs and realistic expectations.

Conclusion

Since the first TUS in the Treaty 8 area in 1974, PGIS has proved itself as a valuable tool in communicating First Nations relationship to and interests on the land. Through the changing political, social, cultural and ecological environments, PGIS has been able to adapt and maintain an important role. Though the urgency and need for TUS and PGIS has ebbed and flowed over the years, we have shown how the legacy of TUS in Treaty 8 is strong and how these maps remain important and powerful. As First Nations people are said to ‘carry maps of their homelands in their heads’ (Tobias, 2000), PGIS enables First Nations to carry evidence of this knowledge, whether it be to the negotiating table or to a community gathering, and use it to strengthen their voices, now and for future generations.

Mahsi cho! (Thank you!)

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